

ELECTRICAL DEVICE LEGEND	
SYMBOL	DESCRIPTION
	20A, 125V, 2P, 3W, NEMA 5-20R, DUPLEX RECEPT. MTD. 18" A.F.F. U.N.O.
	SAME AS ABOVE EXCEPT WEATHERPROOF
	SAME AS ABOVE EXCEPT GROUND FAULT INTERRUPTER
	SAME AS ABOVE EXCEPT DEDICATED CIRCUIT
	SAME AS ABOVE EXCEPT MOUNTED 4\"/>
	SAME AS ABOVE EXCEPT QUADRUPLX
	SAME AS ABOVE EXCEPT RECESSED
	3POLE DUPLEX RECEPT.
	SPECIAL PURPOSES RECEPT.
	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
	SINGLE POLE LIGHT SWITCH, 48\"/>
	SAME AS ABOVE EXCEPT 3-WAY SWITCH
	SAME AS ABOVE EXCEPT 4-WAY SWITCH
	SAME AS ABOVE EXCEPT WEATHERPROOF
	SAME AS ABOVE EXCEPT DUAL TECHNOLOGY OCCUPANCY SENSOR
	SINGLE POLE FAN SWITCH, 48\"/>
	SAFETY DISCONNECT SWITCH
	ELECTRICAL PANEL
	PROGRAMMABLE TIMECLOCK, NUMBER OF POLES AS REQUIRED
	HAND DRYER, PROVIDE DUAL GANG JUNCTION BOX
	JUNCTION BOX, SIZE AS REQUIRED TO FIT THE APPLICATION
	FAN SWITCH OPERATED

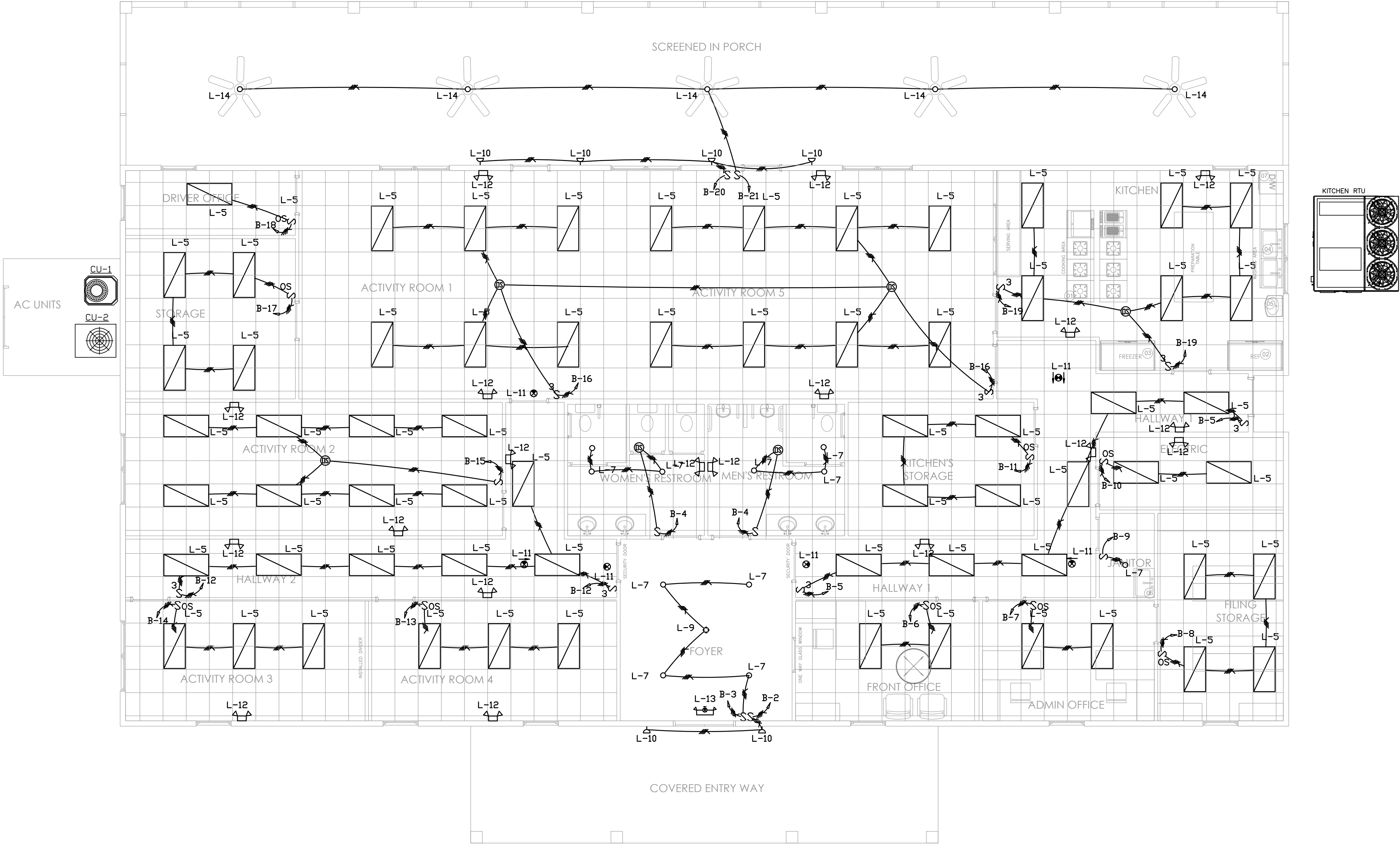
ELECTRICAL LIGHTING DEVICE SCHEDULE				
MARK	DEVICE DESCRIPTION	ELECTRICAL DATA		BASIS OF DESIGN *
		VA	VOLT	
L-5	LED 2X4 ARCHITECTURAL TROFFER	49	UNIV	WILLIAMS LT-24-L64-AF-UNV
L-7	6" CAN LIGHT	12	UNIV	COMMERCIAL ELEC CAT71
L-9	PENDANT MOUNTED LIGHT FIXTURE	39	UNIV	WILLIAMS LC6-L40-PM
L-10	EXTERIOR WALL PACK LIGHT FIXTURE WITH BATTERY BACKUP	40	UNIV	WILLIAMS WPTZ-L38-UNV
L-11	UNIVERSAL MOUNTED EXIT SIGN	5	UNIV	WILLIAMS EXIT-R-EM-WHT
L-13	UNIVERSAL MOUNTED DUAL EMERGENCY HEADS EXIT SIGN	5	UNIV	WILLIAMS EXIT-R-EM-WHT
L-14	CEILING FAN/LIGHT COMBO	35	UNIV	KPUY KPUY-1

NOTES:
* OR SIMILAR MANUFACTURER/MODEL OR SERIES. ALL LIGHTING SELECTION ARE TO BE REVIEWED / APPROVED BY THE OWNER PRIOR TO ORDER AND INSTALLATION

SEPARATE PERMITS REQUIRED
ALL FIRE PROTECTION SYSTEMS, FUEL, GAS, SIGNAGE AND OTHER BUILDING COMPONENTS REQUIRED BY LOCAL BUILDING AND FIRE AUTHORITIES TO BE INSTALLED OR MODIFIED VIA SEPARATE PERMIT, AND WHICH ARE AFFECTED BY THE WORK PROPOSED HEREIN, SHALL BE DULY INSTALLED OR MODIFIED ONLY THROUGH SEPARATE PERMIT AUTHORIZATION FROM THE AUTHORITY(S) HAVING JURISDICTION.

VOLTAGE DROP SCHEDULE - ALUMINUM						VOLTAGE DROP SCHEDULE - COPPER					
120 VOLT BRANCH CIRCUITS UP TO 10 AMPS			120 VOLT BRANCH CIRCUITS UP TO 14 AMPS			120 VOLT BRANCH CIRCUITS UP TO 10 AMPS			120 VOLT BRANCH CIRCUITS UP TO 14 AMPS		
TOTAL WIRE LENGTH (FEET)	WIRE SIZE (AWG)	EGC SIZE	TOTAL WIRE LENGTH (FEET)	WIRE SIZE (AWG)	EGC SIZE	TOTAL WIRE LENGTH (FEET)	WIRE SIZE (AWG)	EGC SIZE	TOTAL WIRE LENGTH (FEET)	WIRE SIZE (AWG)	EGC SIZE
151' - 230'	#4	#4	106' - 165'	#6	#6	1' - 150'	#12	#12	1' - 15'	#14	#12
231' - 360'	#2	#1/0	166' - 255'	#4	#4	151' - 240'	#8	#8	16' - 155'	#8	#8
361' - 445'	#1/0	#3/0	256' - 320'	#2	#1/0	241' - 380'	#6	#6	156' - 240'	#8	#8
			321' - 340'	#1	#3/0				241' - 445'	#6	#6
			341' - 440'	#1/0	#3/0				446' - 505'	#4	#4
									506' - 710'	#3	#2
									711' - 845'	#2	#1/0
MINIMUM BRANCH CIRCUIT WIRING FOR ALUMINUM IS #6 AWG. CONTRACTOR SHALL INCREASE WIRE SIZE BASED ON SCHEDULE ABOVE.						MINIMUM BRANCH CIRCUIT WIRING FOR COPPER IS #10 AWG. CONTRACTOR SHALL INCREASE WIRE SIZE BASED ON SCHEDULE ABOVE.					

NOTES:
* EMERGENCY EXIT LIGHTS ARE CONNECTED TO THE CORRESPONDING LOCAL LIGHT CIRCUIT CONNECTED TO THE UNSWITCHED SIDE OF THE CIRCUIT.
* ALL CIRCUITS SHALL HAVE INDIVIDUAL NEUTRAL CONDUCTORS CONTINUOUS FROM PANEL. SHARED NEUTRALS ARE NOT PERMITTED



LIGHTING PLAN
3/16" = 1'-0"

ALL THE DESIGN AND DETAILS ON THIS PLAN ARE THE PROPERTY OF LIGHTNING ENGINEERING INC. AND NOT BE USED, COPIED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF LIGHTNING ENGINEERING.

I HEREBY CERTIFY AS THE BUILDING DESIGN ENGINEER OF RECORD, THAT THE BUILDING DESIGN AS SHOWN ON THESE PLANS, SPECIFICATIONS, SCHEDULES, AND DETAILS, AND ALL DOCUMENTS CONFORMS TO THE BUILDING CODE. THIS CERTIFICATION DOES NOT INCLUDE ROOF TRUSS COMPONENTS OR ROOF STRUCTURE. I HAVE BEEN ADVISED BY THE OWNER OF RECORD, THAT THIS PLAN HAS BEEN PREPARED IN COMPLIANCE WITH THE BUILDING CODE WITH SUPPLEMENTS.

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FORT CHARLOTTE, FL 33980
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Hall Richardson Senior Center
TBD Address JT-21, JT-32, JT-33, Jesup GA
LGS Design & Drafting

No.	Description	Date
1		
2		
3		
4		

DRAWN BY: FGP
REVISED BY: JPP
PROJECT NO: 25 076 134

ELECTRICAL PLAN

SHEET NUMBER:
E-100

PANEL A										
VOLTAGE (L-N):		120		ENCLOSURE TYPE:		NEMA 1				
VOLTAGE (L-L):		208		MOUNTING:		SURFACE				
PHASES, WIRES:		3 ϕ 4 W		AIC RATING (A):		22000				
MINIMUM BUS CAPACITY (A):		200 A		NOTES:		M.L.O				
MAIN O.C. DEVICE (A):		200 A								
CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA)			POLE	TRIP AMPS	DESCRIPTION	CKT NO
1	EXTERIOR RECEPT	20	1	540	720		1	20	FOYER RECEPT	2
3	WOMEN'S AND MEN'S RESTROOM RECEPT	20	1			1440	0	1	20 SPARE	4
5	FRONT OFFICE RECEPT	20	1					1	20 ADMIN OFFICE RECEPT	6
7	FILING STORAGE RECEPT	20	1	720	0			1	20 JANITOR RECEPT	8
9	ELECTRIC RM RECEPT	20	1			540	720	1	20 KITCHEN'S STORAGE RECEPT	10
11	HALLWAY 2 RECEPT	20	1					1	20 ACTIVITY ROOM 4 RECEPT	12
13	ACTIVITY ROOM 3 RECEPT	20	1	1080	1080			1	20 ACTIVITY ROOM 2 RECEPT	14
15	ACTIVITY ROOM 1 RECEPT	20	1			1800	720	1	20 STORAGE RECEPT	16
17	DRIVER OFFICE RECEPT	20	1					1	20 SCREENED IN PORCH RECEPT	18
19	REFRIGERATOR	20	1	621	780			1	20 FREEZER	20
21	SPARE	20	1			0	109	1	20 EXHAUST FAN	22
23	SPARE	20	1					1	20 SPARE	24
25	SPARE	20	1	0	0		0	1	20 SPARE	26
27,29	AHU-1	20	2			0	0	2	20 CU-1	28,30
27,29	AHU-1	20	2					2	20 CU-1	28,30
31,33	AHU-2	20	2	0	0			2	20 CU-2	32,34
31,33	AHU-2	20	2			0	0	2	20 CU-2	32,34
35,37	SPARE	20	2			0	4000	3	45 WATER HEATER	36,38,40
35,37	SPARE	20	2			0	4000	3	45 WATER HEATER	36,38,40
39,41	SPARE	20	2			0	4000	3	45 WATER HEATER	36,38,40
39,41	SPARE	20	2					1	20 SPARE	42
				CONNECTED LOAD PHASE TOTALS (VA)						
				9541			9329			8680
				CONNECTED LOAD (KVA)			DEMAND FACTOR			DEMAND LOAD (KVA)
				12.0			1.00			12.0
				0.0			1.00			0.0
				0.1			1.25			0.1
				10.0			1.00			10.0
				4.8			0.50			2.4
				0.6			1.00			0.6
				TOTAL:			27.6			25.2
				LOAD (AMPS):			76.5			69.9
				DEMAND LOAD			25.2 KVA			
				SPARE CAPACITY			32.5 KVA			
				SPARE CAPACITY			90.1 AMPS			
				SPARE CAPACITY			56 %			
				PHASE BALANCE			A TO B			98 %
							B TO C			93 %
							C TO A			91 %

PANEL B										
VOLTAGE (L-N):		120		ENCLOSURE TYPE:		NEMA 1				
VOLTAGE (L-L):		208		MOUNTING:		SURFACE				
PHASES, WIRES:		3 ϕ 4 W		AIC RATING (A):		22000				
MINIMUM BUS CAPACITY (A):		400 A		NOTES:		M.L.O				
MAIN O.C. DEVICE (A):		400 A								
CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA)			POLE	TRIP AMPS	DESCRIPTION	CKT NO
1	SIGN	20	1	1200	80		1	20	LIGHTS EXTERIOR	2
3	FOYER LIGHTS	20	1			92	72	1	20 WOMEN'S AND MEN'S RESTROOM LIGHT	4
5	HALLWAY 1 LIGHTS	20	1	98	196			1	20 FRONT OFFICE LIGHTS	6
7	ADMIN OFFICE LIGHTS	20	1			12	98	1	20 FILING STORAGE LIGHTS	8
9	JANITOR LIGHTS	20	1					1	20 ELECTRIC RM LIGHTS	10
11	KITCHEN'S STORAGE LIGHTS	20	1					1	20 HALLWAY 2 LIGHTS	12
13	ACTIVITY ROOM 4 LIGHTS	20	1	147	147			1	20 ACTIVITY ROOM 3 LIGHTS	14
15	ACTIVITY ROOM 2 LIGHTS	20	1			392	686	1	20 ACTIVITY ROOM 1 LIGHTS	16
17	STORAGE LIGHTS	20	1					1	20 DRIVER OFFICE LIGHTS	18
19	KITCHEN LIGHTS	20	1	294	180			1	20 SCREENED IN PORCH LIGHTS	20
21	SCREENED IN PORCH CEILING FAN	20	1			175	1440	1	20 KITCHEN RECEPT	22
23	DISHWASHER	20	1					2	50 CU-1	24,26
25,27	KEF-2	20	2	372	4600			2	50 CU-1	24,26
25,27	KEF-2	20	2			372	0	1	20 SPARE	28
29,31,33	CU-2	30	3					3	150 KITCHEN RTU	30,32,34
29,31,33	CU-2	30	3	2882	10000			3	150 KITCHEN RTU	30,32,34
29,31,33	CU-2	30	3			2882	10000	3	150 KITCHEN RTU	30,32,34
35,37	KEF-1	20	2					3	35 AHU-2	36,38,40
35,37	KEF-1	20	2	372	3360			3	35 AHU-2	36,38,40
39,41	AHU-1	60	2			3750	3360	3	35 AHU-2	36,38,40
39,41	AHU-1	60	2					1	20 SPARE	42
				CONNECTED LOAD PHASE TOTALS (VA)						
				23908			23331			27291
				CONNECTED LOAD (KVA)			DEMAND FACTOR			DEMAND LOAD (KVA)
				5.0			1.25			6.2
				2.6			1.00			2.6
				49.3			1.00			49.3
				17.6			1.00			17.6
				0.0			1.00			0.0
				TOTAL:			74.5			75.8
				LOAD (AMPS):			206.9			210.3
				DEMAND LOAD			75.8 KVA			
				SPARE CAPACITY			39.5 KVA			
				SPARE CAPACITY			109.7 AMPS			
				SPARE CAPACITY			34 %			
				PHASE BALANCE			A TO B			98 %
							B TO C			85 %
							C TO A			86 %

NOTES:
* TC = INDICATES CIRCUIT TO BE TIMECLOCK CONTROLLED

BRAKER SIZE	COPPER (AWG OR KCMIL)		ALUMINUM (AWG OR KCMIL)		GROUND WIRE	
	COPPER	ALUMINUM	COPPER	ALUMINUM	COPPER	ALUMINUM
15 A	14	12	14	12	14	12
20 A	12	12	12	10	12	10
30 A	10	10	10	8	10	8
40 A	8	8	8	10	8	8
50 A	8	6	6	10	8	8
60 A	6	4	4	10	8	8
100 A	3	1	1	8	6	6
125 A	1	1/0	1/0	6	4	4
150 A	1/0	2/0	2/0	6	4	4
175 A	2/0	3/0	3/0	6	4	4
200 A	3/0	250	250	6	4	4
250 A	250	300	300	4	2	2
400 A	600	900	900	3	1	1
600 A	1500	2 SETS - 500	500	1	2/0	2/0

Insulated conductor: 75°C
NFPA 70, National Electrical Code, Table 310.15(B)(16)

ELECTRICAL DEVICE LEGEND	
SYMBOL	DESCRIPTION
	20A, 125V, 2P, 3W, NEMA 5-20R, DUPLEX RECEPT. MTD. 18" A.F.F. U.N.O.
	SAME AS ABOVE EXCEPT WEATHERPROOF
	SAME AS ABOVE EXCEPT GROUND FAULT INTERRUPTER
	SAME AS ABOVE EXCEPT DEDICATED CIRCUIT
	SAME AS ABOVE EXCEPT MOUNTED 4" ABOVE COUNTER HEIGHT
	SAME AS ABOVE EXCEPT QUADRUPLX
	SAME AS ABOVE EXCEPT RECESSED
	3POLE DUPLEX RECEPT
	SPECIAL PURPOSES RECEPT
	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
	SINGLE POLE LIGHT SWITCH, 48" A.F.F. 120/277V
	SAME AS ABOVE EXCEPT 3-WAY SWITCH
	SAME AS ABOVE EXCEPT 4-WAY SWITCH
	SAME AS ABOVE EXCEPT WEATHERPROOF
	SAME AS ABOVE EXCEPT DUAL TECHNOLOGY OCCUPANCY SENSOR
	SINGLE POLE FAN SWITCH, 48" A.F.F. 120/277V
	SAFETY DISCONNECT SWITCH
	ELECTRICAL PANEL
	PROGRAMMABLE TIMECLOCK, NUMBER OF POLES AS REQUIRED
	HAND DRYER, PROVIDE DUAL GANG JUNCTION BOX
	JUNCTION BOX, SIZE AS REQUIRED TO FIT THE APPLICATION
	FAN SWITCH OPERATED

NOTES:

- LOW VOLTAGE AND DATA PLANS NOT INCLUDED, PROVIDED BY OTHERS.
- ELECTRICAL CONTRACTOR TO PROVIDE CLEARANCES FOR ELECTRICAL EQUIPMENT PER NEC110.26
- Electrical outlets at ALL counters to be mounted horizontal with the lower portion of the box at 38" above F.F

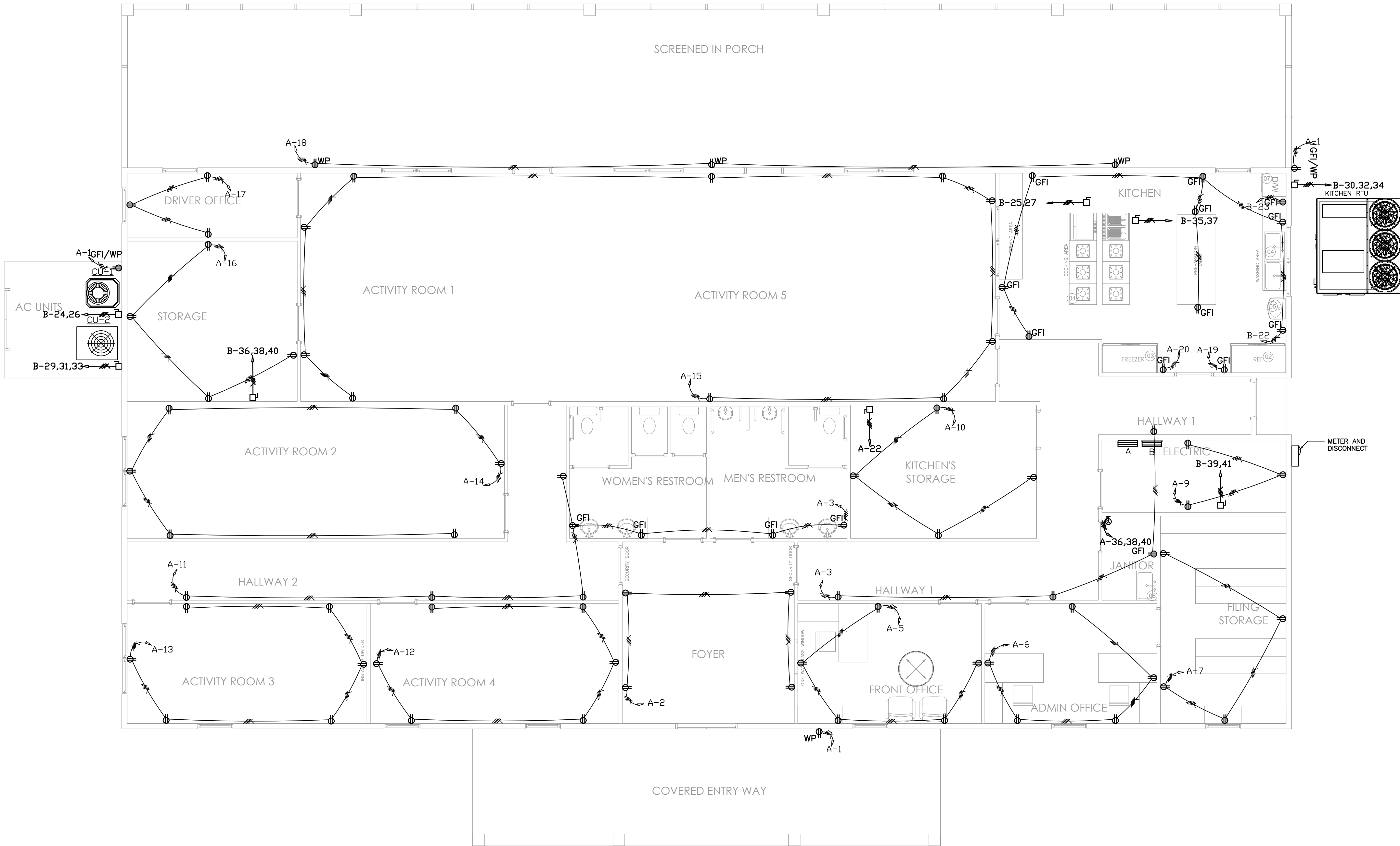
SEPARATE PERMITS REQUIRED

ALL FIRE PROTECTION SYSTEMS, FUEL, GAS, SIGNAGE AND OTHER BUILDING COMPONENTS REQUIRED BY LOCAL BUILDING AND FIRE AUTHORITIES TO BE INSTALLED OR MODIFIED VIA SEPARATE PERMIT, AND WHICH ARE AFFECTED BY THE WORK PROPOSED HEREIN, SHALL BE DULY INSTALLED OR MODIFIED ONLY THROUGH SEPARATE PERMIT AUTHORIZATION FROM THE AUTHORITY(S) HAVING JURISDICTION.

EQUIPMENT SCHEDULE					
ITEM NO	DESCRIPTION	MANUFACTURER	MODEL NO.	QUANTITY	SOURCED BY
01	COMMERCIAL RANGE	AMERICAN RANGE	AR-19	1	OWNER
02	REFRIGERATOR	TRUE	T-49	1	EXISTING
03	FREEZER	AMWCO	A-6F-HC54	1	OWNER
04	THREE COMPARTMENT SINK	STEELTON	522CS1824JK	1	OWNER
05	HAND WASH SINK	REGENCY	600HS17	1	OWNER
06	MOP SINK	REGENCY	600SM2124	1	OWNER
07	DISHWASHER	TBD		1	OWNER

NOTES:

- * ALL KITCHEN AREA OULETS TO BE GFCI



WIRING METHODS:

1. **BELOW GRADE:** SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED NONMETALLIC CONDUIT, CONDUIT MAY BE RUN IN OR BELOW CONCRETE, AND CONCEALED IN WALLS TO FIRST BOXES. ALL PVC COMPONENTS (PIPING, FITTINGS, CEMENT, ETC.) SHALL BE FROM THE SAME MANUFACTURER.
2. **EXTERIOR ABOVE GRADE:** SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED METALLIC OR NONMETALLIC CONDUIT. ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER.

NOTE: MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL BE SIX FEET (6').

3. **EXTERIOR EQUIPMENT:** SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED LIQUIDTIGHT FLEXIBLE METALLIC OR NONMETALLIC CONDUIT (MINIMUM 3/4"). ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER.

NOTE: MAXIMUM LENGTH OF FLEXIBLE CONDUIT BETWEEN MEANS OF DISCONNECT (OR JUNCTION BOX) AND EQUIPMENT SHALL BE THREE FEET (3').

4. **INTERIOR:** SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED METALLIC (EMT) CONDUIT. ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER. CONDUITS SHALL BE CONCEALED IN OR BEHIND CEILINGS, WALLS, OR FLOORS, EXCEPT WHERE EXPOSED RACWAYS ARE SPECIFICALLY PERMITTED.

NOTE: EMT SHALL NOT BE INSTALLED IN LOCATIONS (1) SUBJECT TO SEVERE DAMAGE, (2) IN CONTACT WITH EARTH, (3) IN CONCRETE SLABS ON GRADE, (4) OTHER LOCATIONS AS LISTED IN N.E.C. 2020, ARTICLE 358.12.

EXCEPTION: NON-METALLIC SHEATHED CABLE (NM, NMC, NMS) MAY BE USED WITHIN DWELLING UNITS, IN COMPLIANCE WITH N.E.C. 2020, ARTICLE 334.

5. **ELECTRICAL SYSTEM EXPANSION:** ANY PANELBOARD MOUNTED SO THAT ITS FRONT FACE IS FLUSH WITH THE FINISHED WALL SHALL HAVE ONE (1) 3/4" EMT CONDUIT INSTALLED FROM PANELBOARD TO ACCESSIBLE CEILING SPACE FOR EVERY FOUR (4) OR MAJOR FRACTION THEREOF, POLES INDICATED AS "SPACE" OR "SPARE" IN THE PANELBOARD SCHEDULE PER THESE DOCUMENTS.

EXCEPTION NO. 1: PANELBOARDS INSTALLED ON A WALL SURFACE, WHERE AT LEAST THREE (3) SIDES, NOT INCLUDING THE FRONT, REMAIN ACCESSIBLE AFTER CERTIFICATE OF OCCUPANCY SHALL NOT BE REQUIRED TO MEET #16320.5.

EXCEPTION NO. 2: DWELLING UNITS SHALL NOT BE REQUIRED TO MEET #16320.5.

5. **ELECTRICAL BOXES:** ALL OUTLET, DEVICE, AND JUNCTION BOXES SHALL BE STANDARD 4" SQUARE GALVANIZED STEEL OR APPROVED PLASTIC, 1-1/2" DEEP, WITH DEVICE RINGS OF THE SAME MATERIAL, UNLESS OTHERWISE NOTED. GALVANIZED BOXES SHALL BE MANUFACTURED BY APPLETON, NATIONAL, STEEL CITY, RACO OR APPROVED EQUAL. PLASTIC BOXES SHALL BE ALLED, NELCO, CARLON, OR EQUAL. ALL ELECTRICAL BOXES MUST BE ACCESSIBLE AFTER CERTIFICATE OF OCCUPANCY.

6. **THRU-FEEDS:** MAINTAIN THRU-FEEDS ON ALL ELECTRICAL DEVICES AT C.O.

GENERAL ELECTRICAL NOTES

CONTRACTOR SHALL VERIFY ALL REQUIREMENTS FOR TELEPHONE AND POWER SERVICES WITH RESPECTIVE UTILITY COMPANIES PRIOR TO SUBMITTING THE BID. IF THEIR REQUIREMENTS ARE AT A VARIANCE WITH THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL INFORM THE ARCHITECT IMMEDIATELY. ALL COSTS INCURRED WITH THE UTILITY COMPANIES FOR SERVICES SHALL BE INCLUDED IN THE BID PRICE. IF SUCH COSTS ARE NOT AVAILABLE AT BID TIME, THE CONTRACTOR SHALL INCLUDE WITH BID, A LETTER FROM A RESPONSIBLE PARTY WITH THE UTILITY COMPANY STATING SUCH, AND COSTS WILL THEN BE EXCLUDED FROM THE BID PRICE.

THIS CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS FOR MECHANICAL EQUIPMENT FROM MANUFACTURERS RECOMMENDATIONS PRIOR TO ROUGHING IN CONDUIT SIZE, WIRE SIZE AND CIRCUIT PROTECTION SIZE ACCORDINGLY. IF REQUIREMENTS ARE LARGER THAN CALLED FOR ON THE ELECTRICAL PLANS, NOTIFY THE ARCHITECT IMMEDIATELY.

CONTRACTOR SHALL VISIT THE SITE OF THE WORK PRIOR TO SUBMITTING BID TO EXAMINE CAREFULLY LOCAL CONDITIONS AND DIFFICULTIES TO BE ENCOUNTERED. ANY DISCREPANCY BETWEEN PLANS AND EXISTING CONDITIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.

COMPLIANCE STATEMENT

ELECTRICAL SHALL COMPLY WITH ALL PROVISIONS OF THE 2020 NEC, NFPA 70 AND OTHER APPLICABLE CODES AND ORDINANCES.

CLARIFICATION NOTES

ALL GENERAL PURPOSE RECEPTACLES WITHIN 6 FEET OF A SINK SHALL BE GFCI PROTECTED. ALL 125V SINGLE PHASE EQUIPMENT RECEPTACLES TO BE GFCI PROTECTED ON GFCI BREAKER CIRCUIT.

VOLTAGE DROP

THE PLANS REFLECT SYSTEM VOLTAGES DROP AS PER FBC ENERGY CONSERVATION CODE C405.6.3. FEEDER CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2 PERCENT AT DESIGN LOAD. BRANCH CIRCUIT CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3 PERCENT AT DESIGN LOAD.

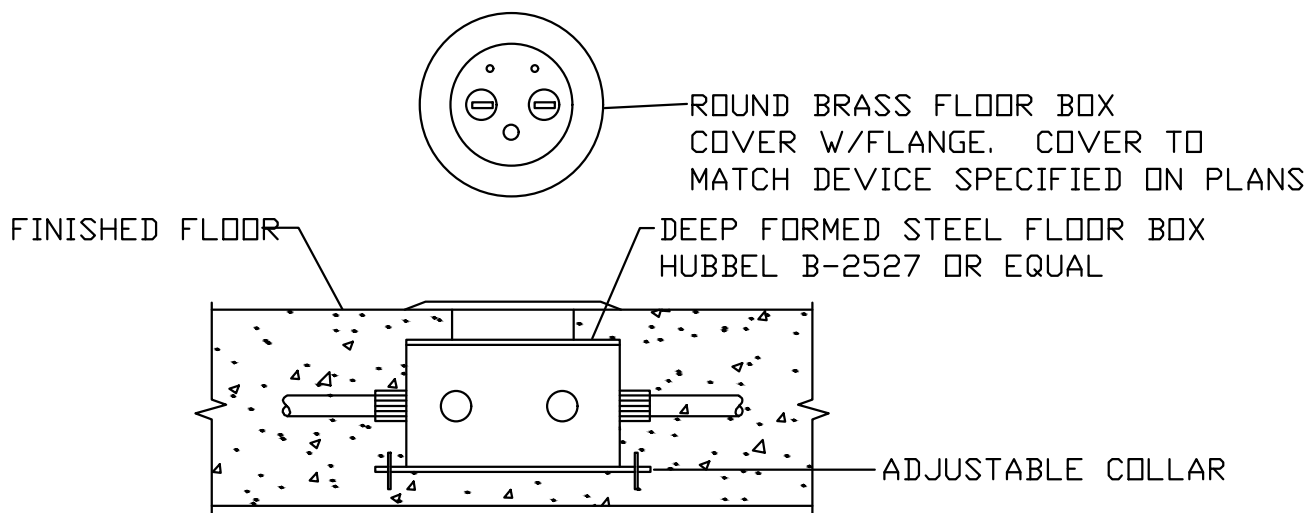
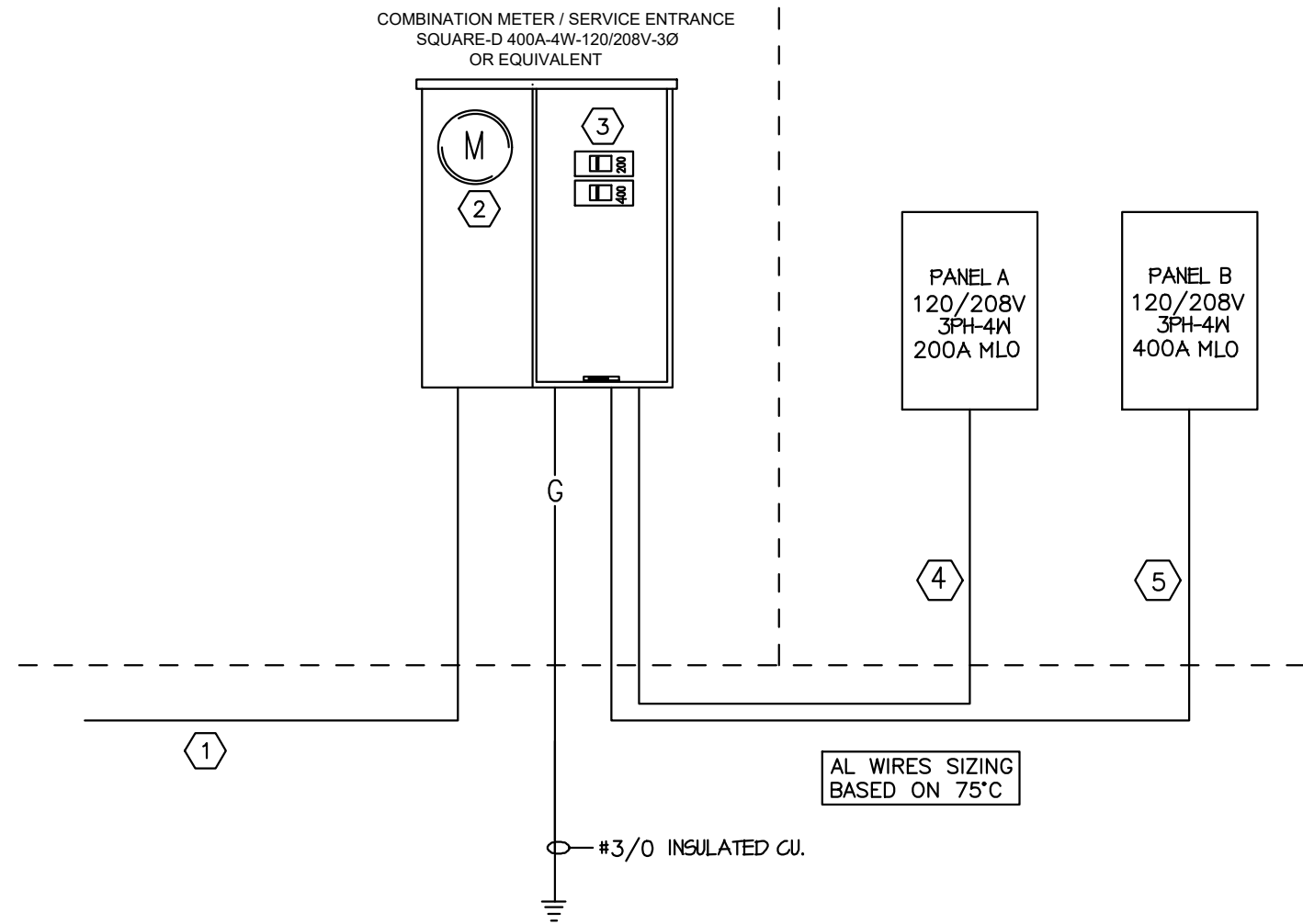
ELECTRICAL NOTES

ALL ELECTRICAL WIRING EXPOSED TO VIEW IN EMT
ALL ELECTRICAL IN CONDUITS, ARMORED CABLE OR BLUE CARLON CONDUIT
ALL 110V EQUIPMENT RECEPTACLES MUST BE GFCI PROTECTED PER NEC 210.8(B)(2).
ALL CONDUITS RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL FRAMING.
ALL LO-VOLT WIRING BY OTHERS UNDER SEPARATE PERMIT.
INCREASE WIRE SIZES FOR RUNS OVER 100' PER NEC 2020.

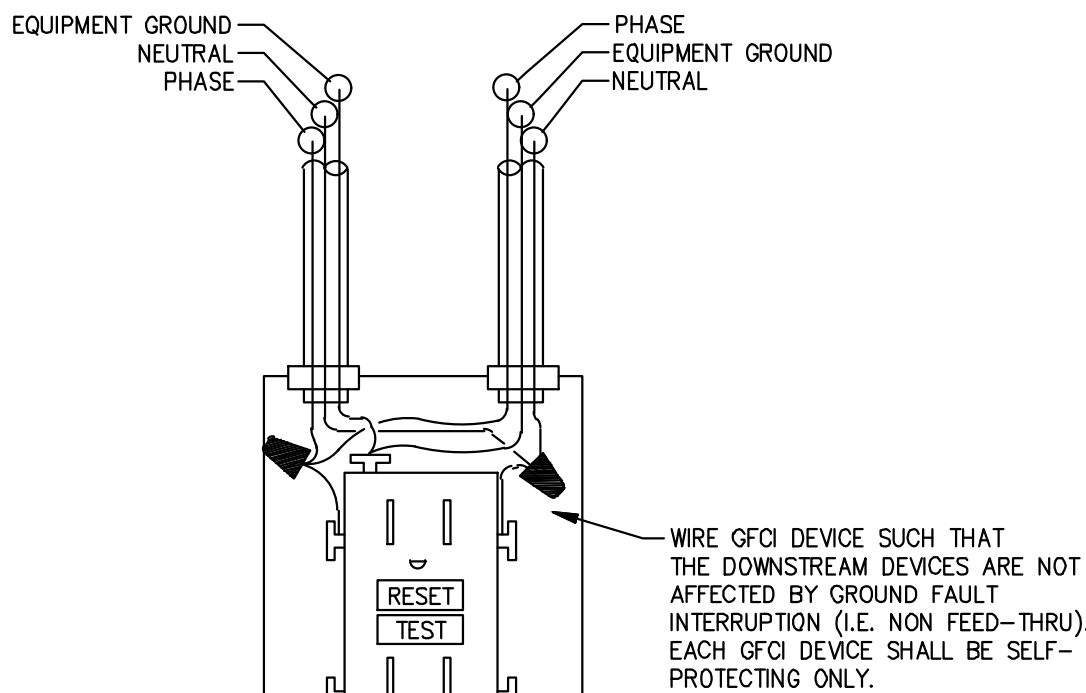
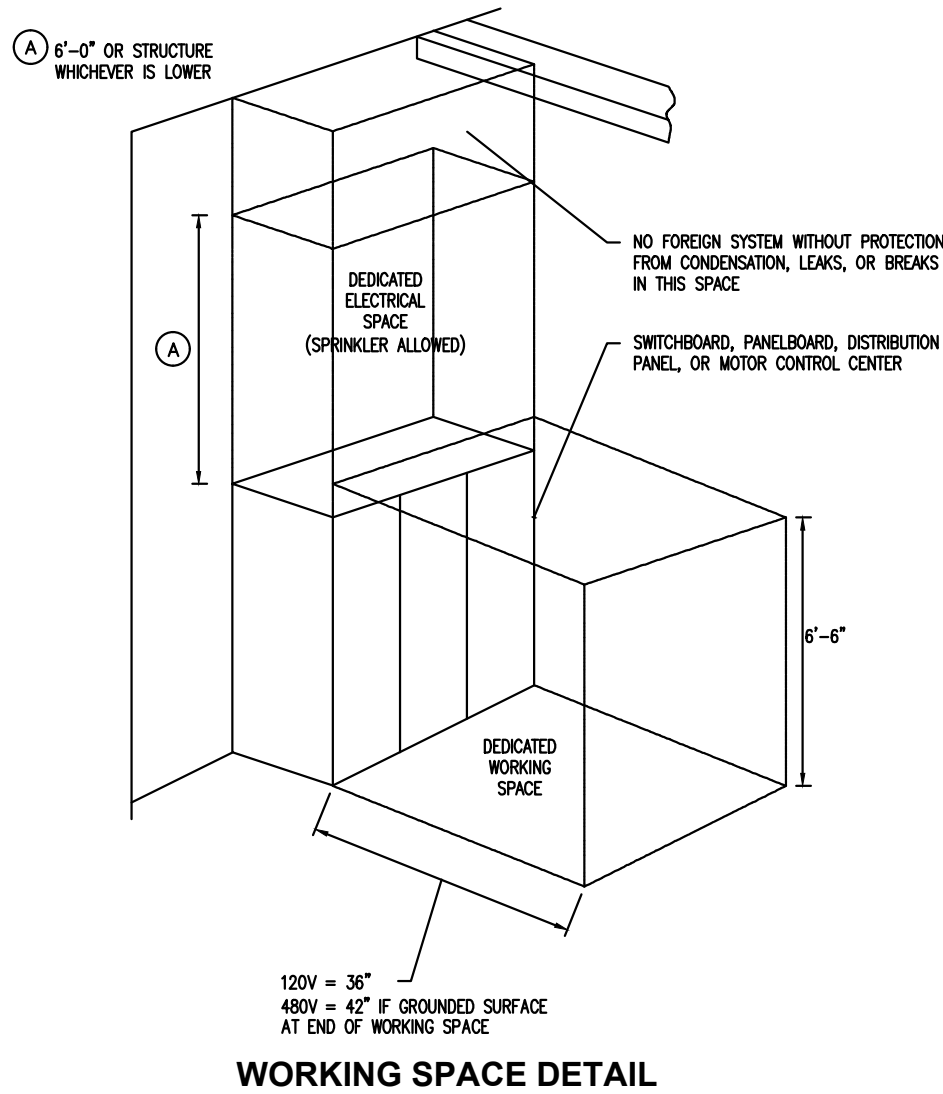
CONTRACTOR MUST VERIFY
ALL CLEARANCES AND
DIMENSIONS IN FIELD

ONE LINE CODED NOTES:

- ① (2)4#350 KCMIL CU. - 2 1/2" C
② UTILITY COMPANY METER SOCKET
PROVIDED BY E.G. PER UTILITY COMPANY
REQUIREMENTS. METER FURNISHED AND INSTALLED BY
UTILITY CO.
③ 600A, 1P NEMA3R DISCONNECT SWITCH W/ 600A FUSES.
④ 4#3/0 CU + #6 CU GND. - 2" C
⑤ (2)4#3/0 CU + #3 CU GND. - 2" C

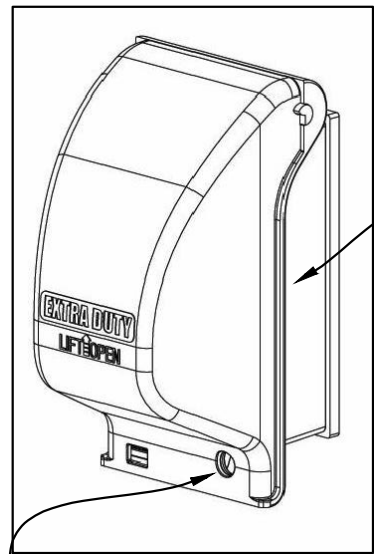


IN-FLOOR JUNCTION/OUTLET
BOX DETAIL
NOT TO SCALE



GFCI RECEPTACLE DETAIL
SCALE: NONE

PER N.E.C. 406.9(B), FURNISH AND INSTALL ALL EXTERIOR AND GARAGE RECEPTACLES WITH A EXTRA-DUTY GRADE "WHILE IN USE" WET LOCATION COVER. THE COVER SHALL BE U.L. 514D LISTED. EQUAL TO TAYMAC #MX3200 FOR SINGLE GANG G.F.C.I. RECEPTACLE. COVER INCLUDE GASKETS AND HARDWARE FOR A COMPLETE INSTALLATION. COVER SHALL BE METALLIC.

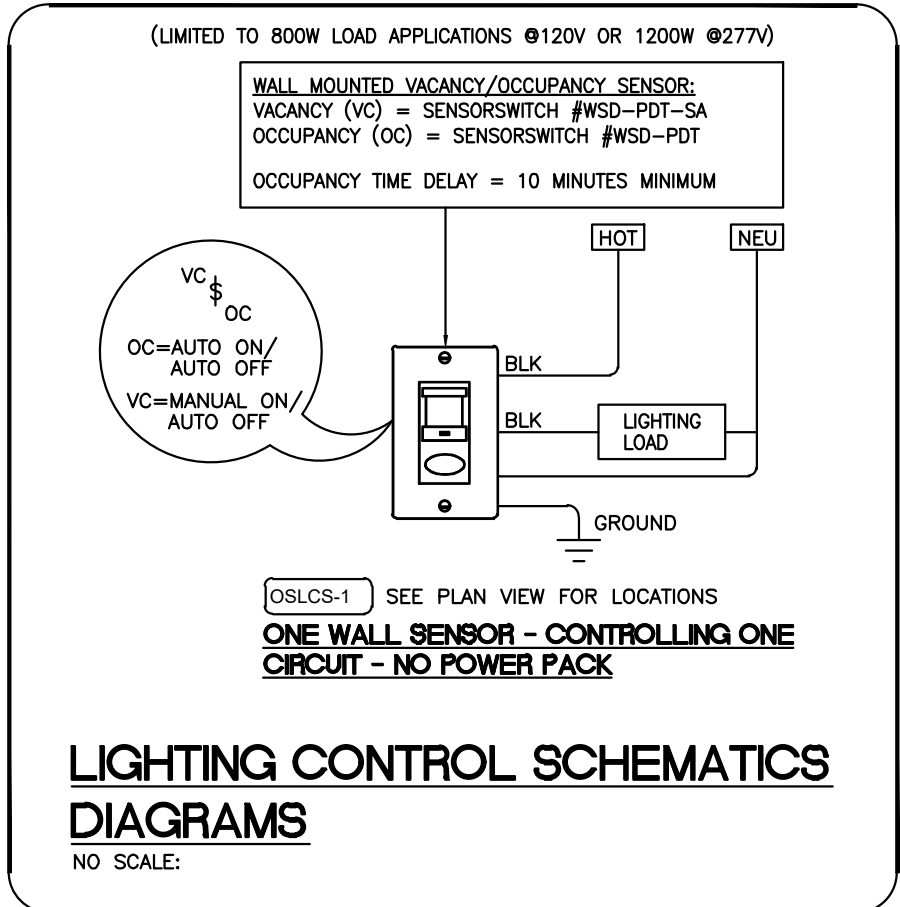


SUITABLE FOR
USE WITH ONE
(1) 120V, 20A,
G.F.C.I. DUPLEX
RECEPTACLE

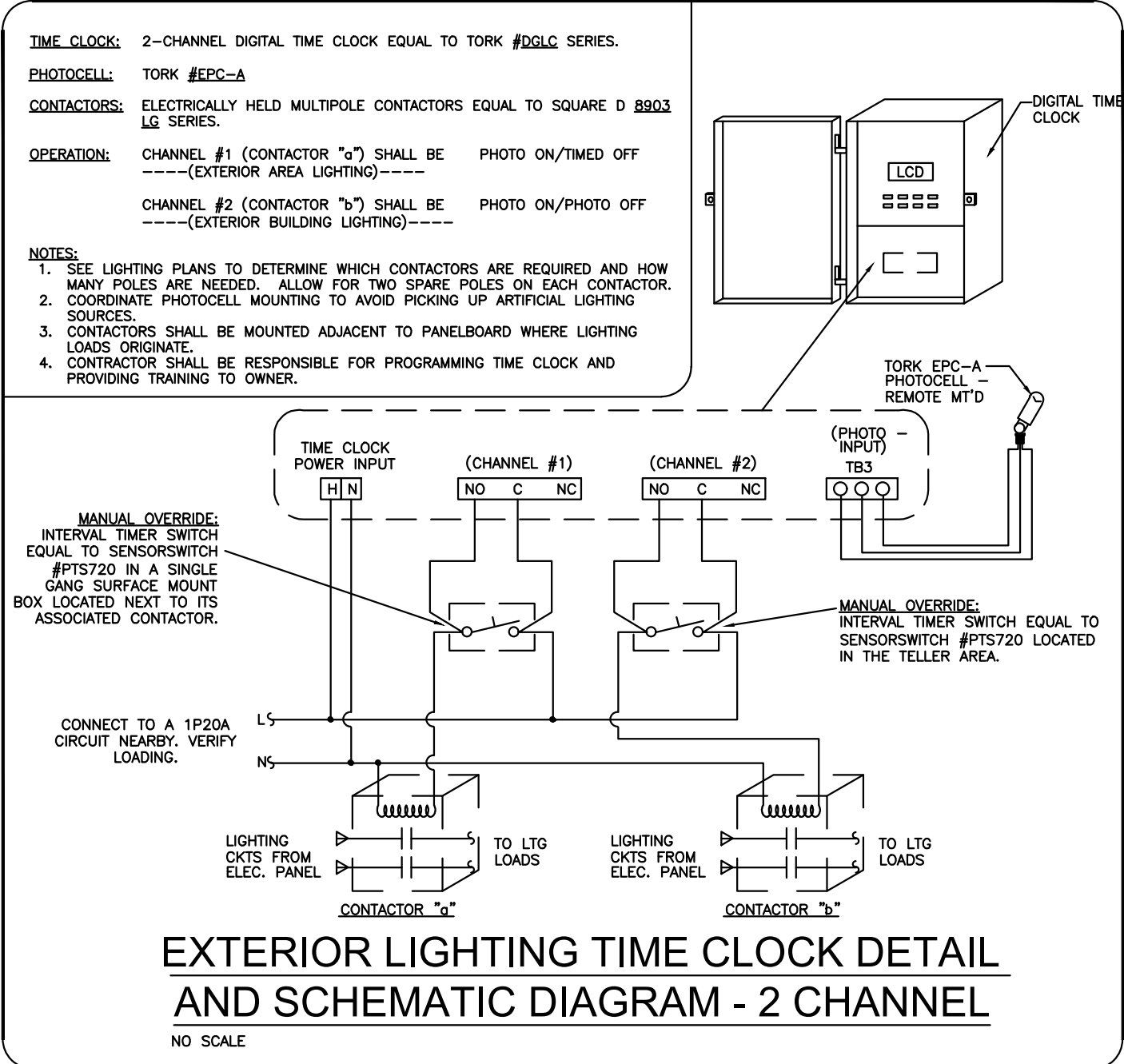
NOTE:
USE TAYMAC
#MX6200 WITH TWO
(2) 120V, 20A,
G.F.C.I. DUPLEX
RECEPTACLES

COVER SHALL ACCEPT
STANDARD SIZE PADLOCK

EXTERIOR RECEPTACLES COVER
NO SCALE



LIGHTING CONTROL SCHEMATICS
DIAGRAMS
NO SCALE:



EXTERIOR LIGHTING TIME CLOCK DETAIL
AND SCHEMATIC DIAGRAM - 2 CHANNEL
NO SCALE

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& ADDRESS:

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DRAWN BY: FGP

REVISED BY: JPP

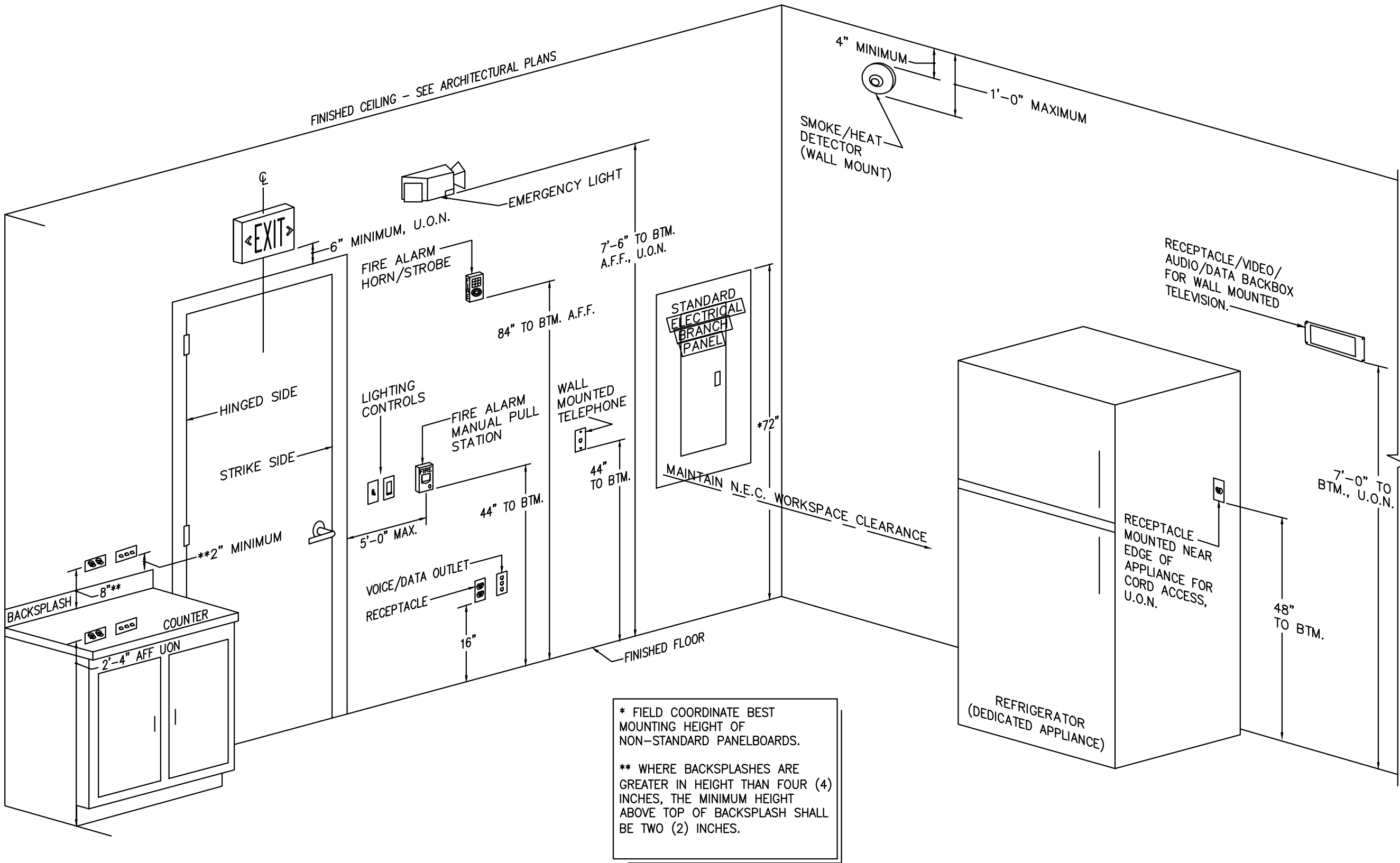
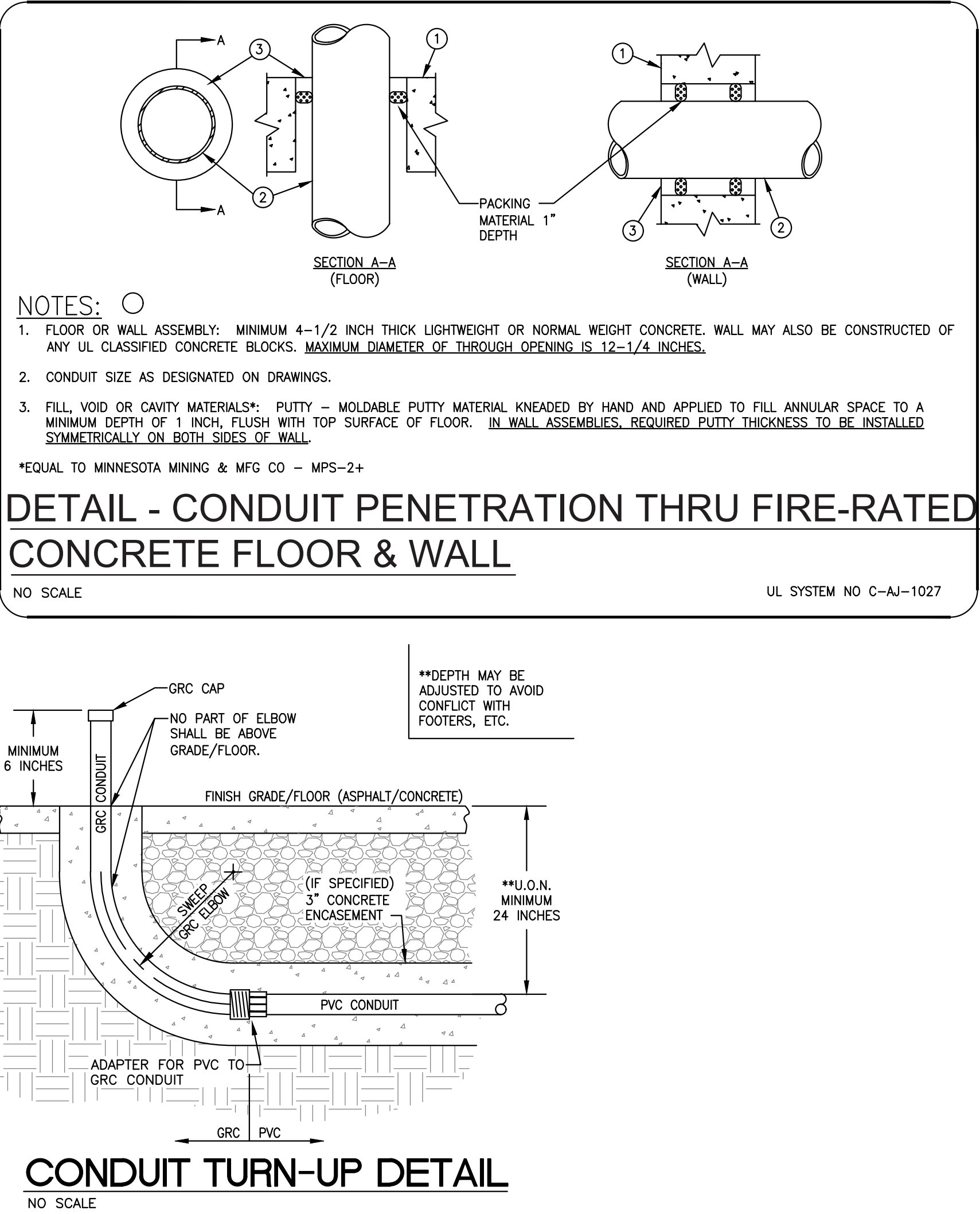
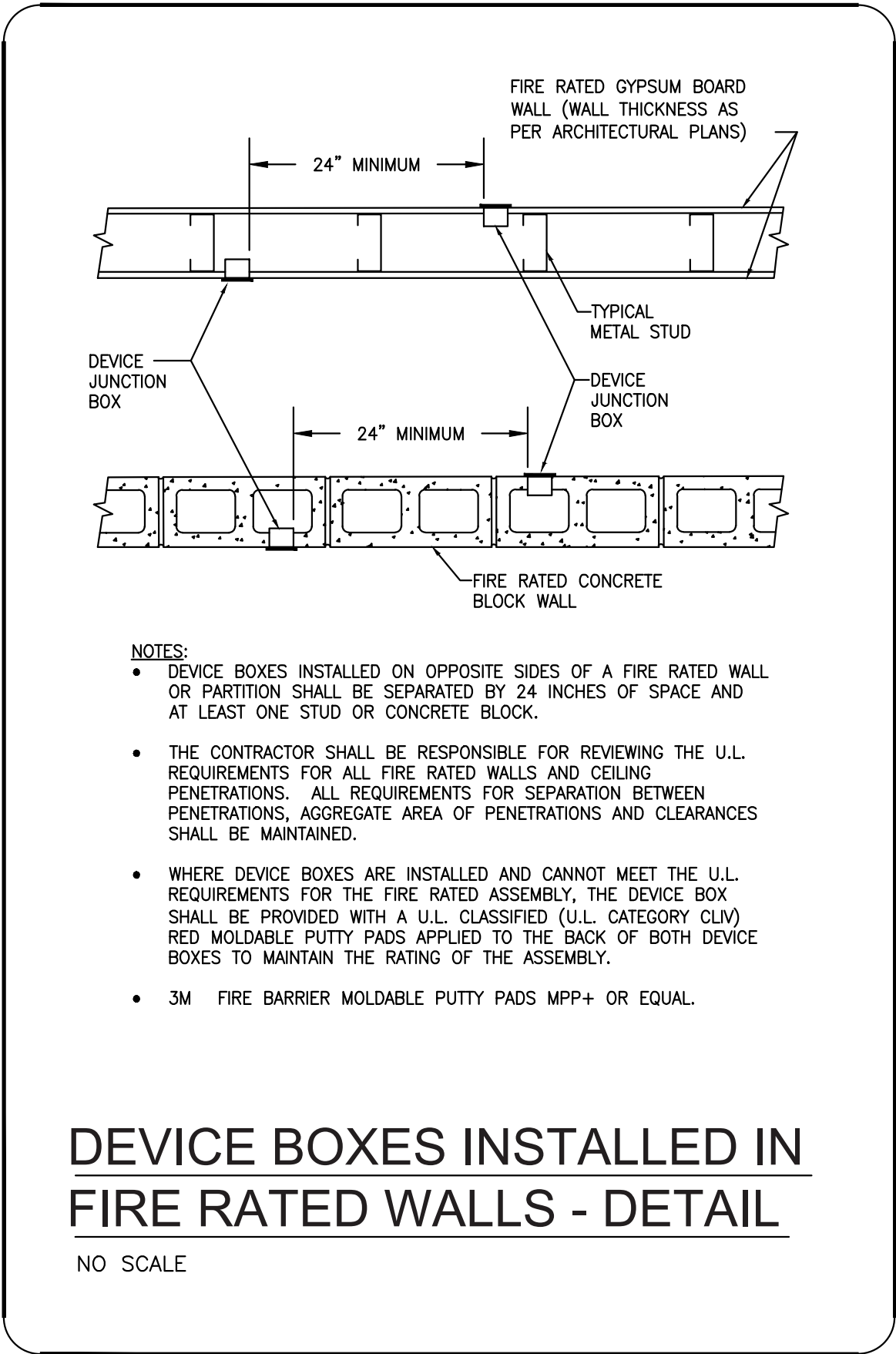
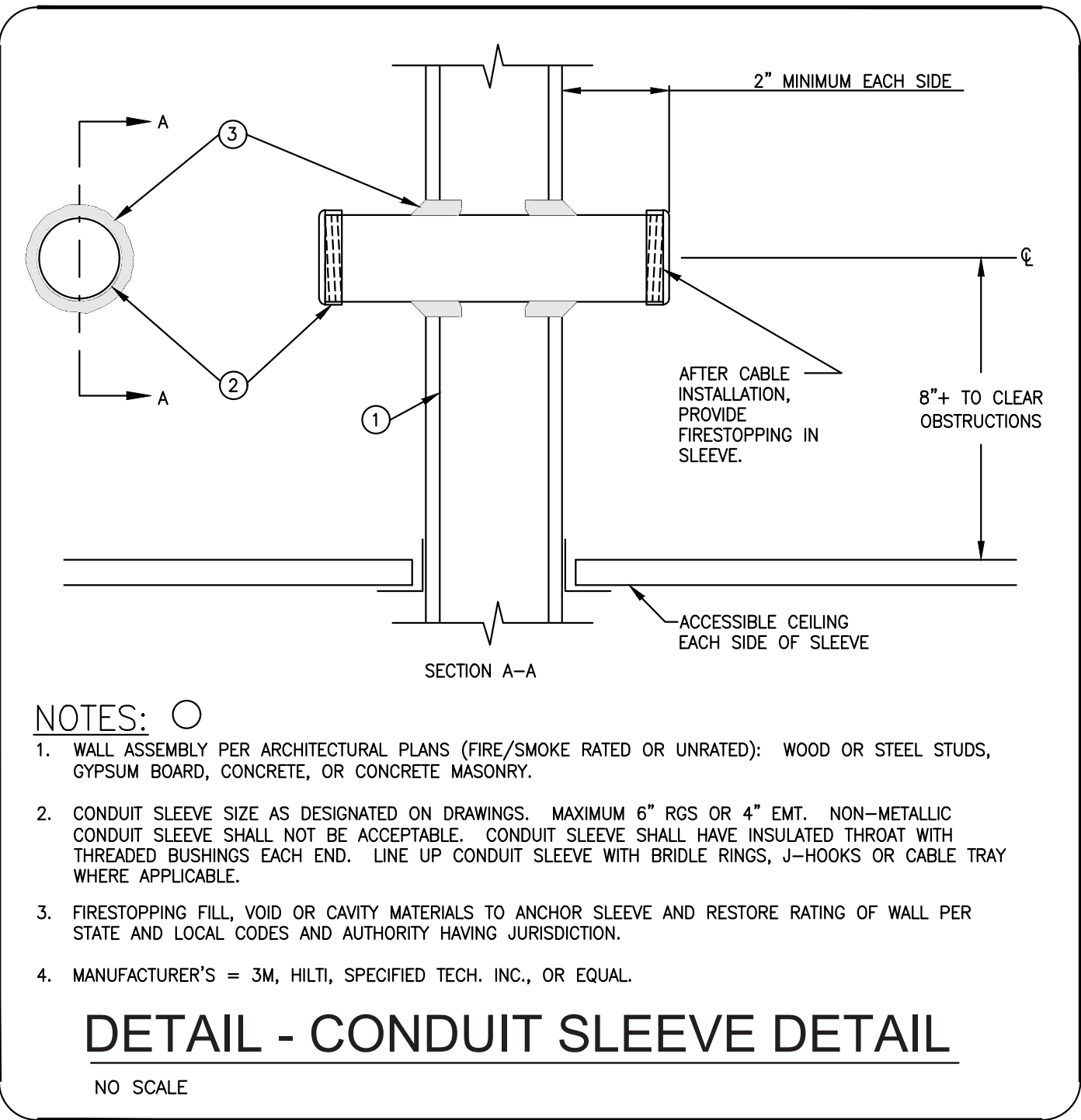
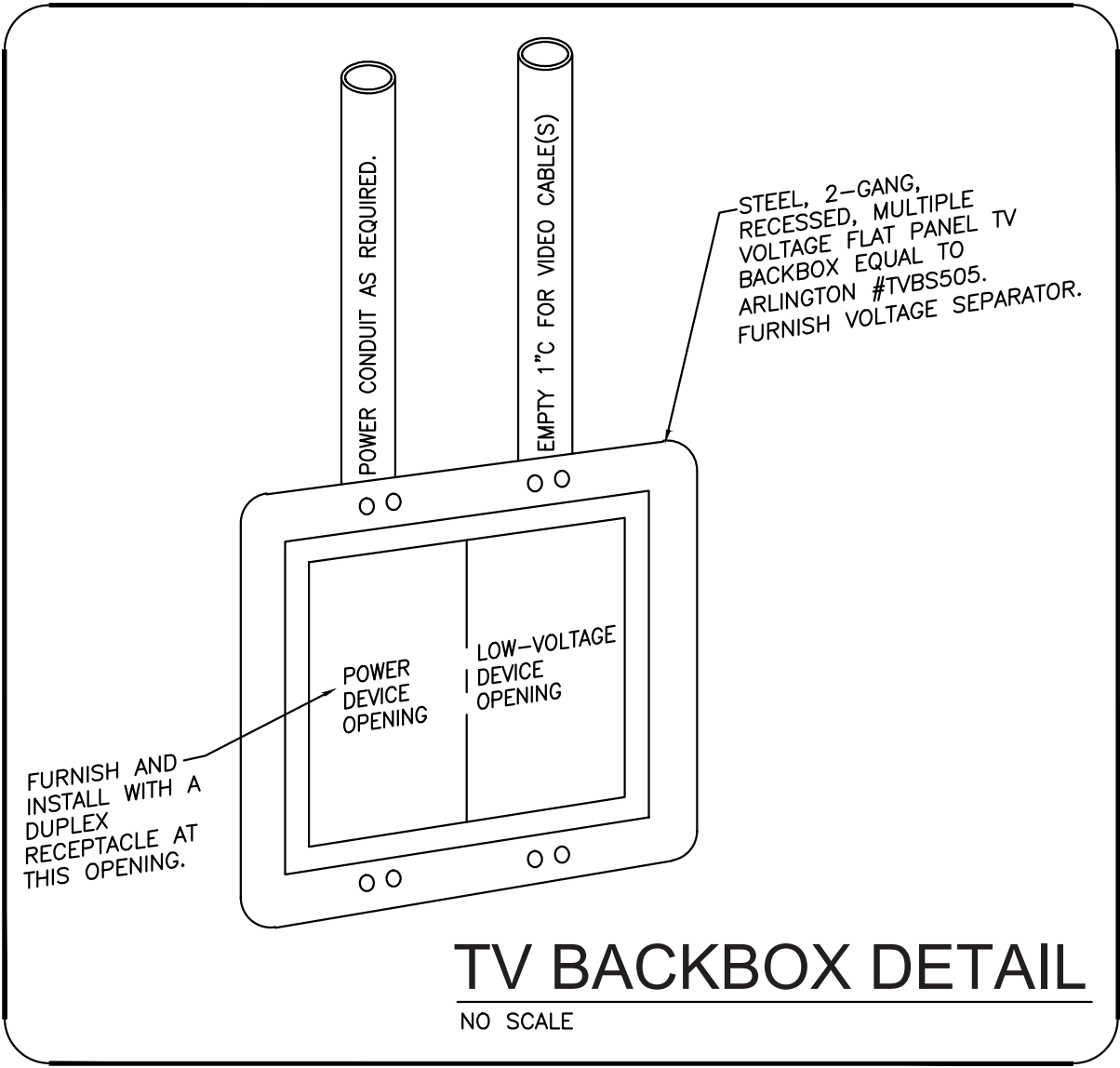
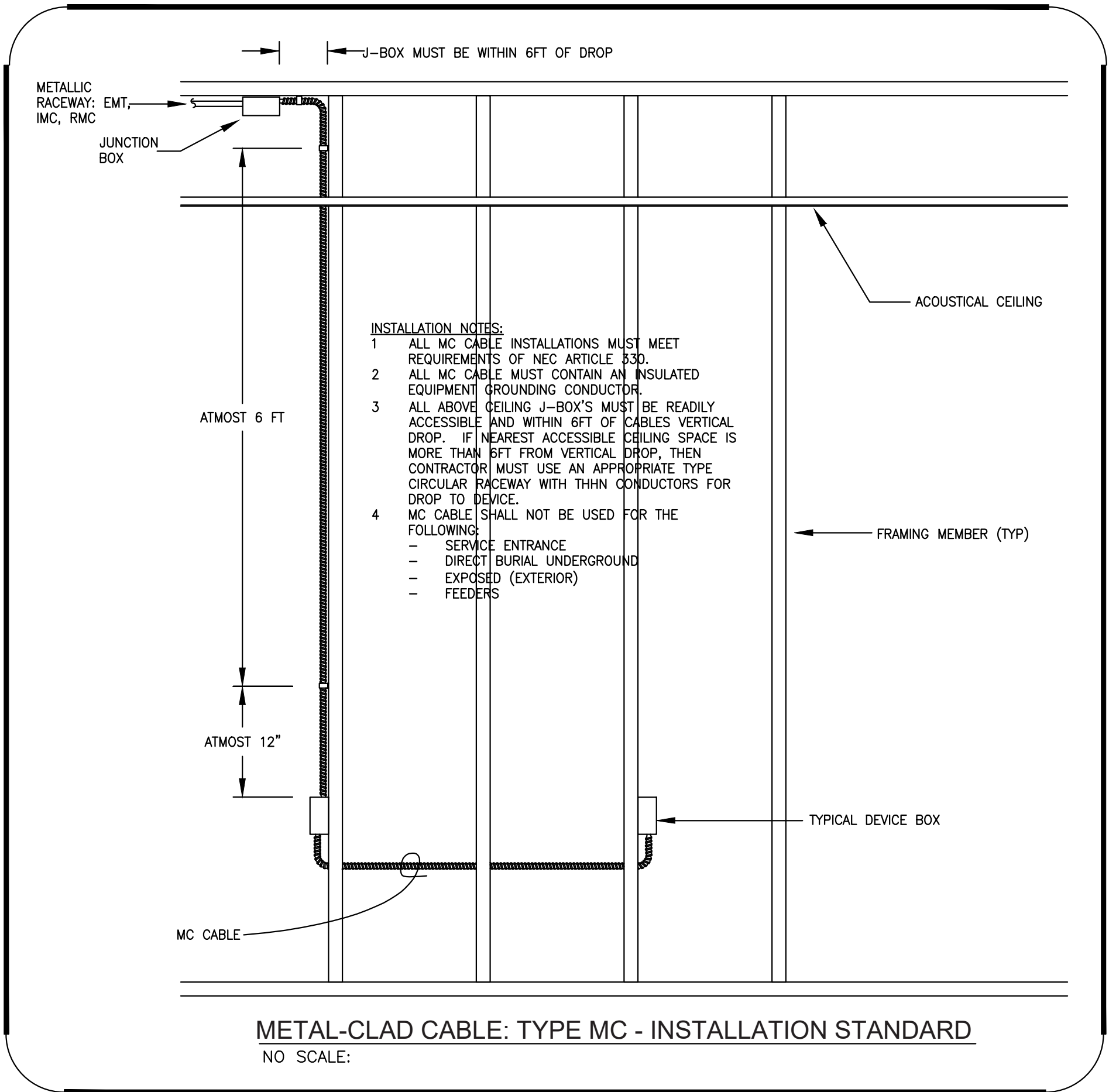
PROJECT NO: 25 076 134

SHEET TITLE:

ELECTRICAL
DETAILS

SHEET NUMBER:

ED-100



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PROJECT NAME & ADDRESS:

No.	Description	Date
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DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

ELECTRICAL DETAILS

SHEET NUMBER:

ED-101

MIN. REQUIRED PER TABLE ANSI/ASHRAE STANDARD 62.1 & 62.2										
SPACE NAME	OCCUPANCY CLASSIFICATION	SF	KNOWN OCCUPANT	RP	RA	EX	REQ. OA (CFM)	AIQP REQ. OA (CFM)	REQ. EX (CFM)	PROVIDED BY
FOYER	MAIN ENTRY LOBBIES	240	2	5	0.06	—	—	13	—	AHU-1
HALL1	CORRIDORS	327	—	—	0.06	—	20	—	—	AHU-1
HALL 2	CORRIDORS	275	—	—	0.06	—	17	—	—	AHU-2
FRONT OFFICE	OFFICE SPACE	176	3	5	0.06	—	—	16	—	AHU-1
ADMIN OFFICE	OFFICE SPACE	165	2	5	0.06	—	—	10	—	AHU-1
FILING STORAGE	STORAGE	198	—	—	0.12	—	24	—	—	AHU-1
KITCHEN'S STORAGE	STORAGE	192	—	—	0.12	—	23	—	—	AHU-1
KITCHEN	KITCHEN	423	3	7.5	0.12	—	66	—	—	MUA-KEF
ACTIVITY ROOM 1	DAYCARE	520	15	20	0.18	—	—	81	—	AHU-2
ACTIVITY ROOM 2	DAYCARE	396	11	20	0.18	—	—	60	—	AHU-2
ACTIVITY ROOM 3	DAYCARE	231	7	20	0.18	—	—	37	—	AHU-2
ACTIVITY ROOM 4	DAYCARE	242	7	20	0.18	—	—	38	—	AHU-2
ACTIVITY ROOM 5	DAYCARE	680	19	20	0.18	—	—	104	—	AHU-1
DRIVER OFICE	OFFICE SPACE	90	1	5	0.06	—	—	10	—	AHU-2
STORAGE	STORAGE	210	—	—	0.12	—	25	—	—	AHU-2
TOILET ROOMS-PUBLIC	TOILET ROOMS-PUBLIC	—	—	—	—	50/70*	—	—	300	EF-1
TOTAL							175	369	300	

* RATES ARE PER WATER CLOSET OR URINAL. THE HIGHER RATE SHALL BE PROVIDED WHERE THE EXHAUST SYSTEM IS DESIGNED TO OPERATE INTERMITTENTLY. THE LOWER RATE SHALL BE PERMITTED ONLY WHERE THE EXHAUST SYSTEM IS DESIGNED TO OPERATE CONTINUOUSLY WHILE OCCUPIED

NOTES:

- COORDINATE LOUVERS LOCATION WITH ARCHITECTURAL ELEVATIONS.
- CONTRACTOR TO LOCATE ALL PROGRAMMABLE THERMOSTAT PER 308.1 GENERAL. BC-A 8TH EDITION: THERMOSTAT REACH RANGES SHALL COMPLY WITH TABLE 308 (48")
- COORDINATE HVAC DUCTS WITH INTERIOR DESIGN PLAN
- DUCT SMOKE DETECTOR CONNECTED TO FIRE ALARM SYSTEM
- ALL DUCT INSIDE DIMENSIONS AS NOTED
- SEE MD-100 FOR EXHAUST FAN, AHU, CU DETAILS
- SEE AIQP CALCULATIONS ON SHEET M-101

AIR BALANCE SCHEDULE									
O.A PROVIDED									
UNIT	HVAC SUPPLY	HVAC RETURN	HVAC OA MIN REQ.	HVAC OA BALANCE	TOTAL O.A	EXHAUST MIN REQ.	EXHAUST BALANCE	TOTAL EXHAUST	AREA SERVED
	DESIGN	DESIGN	DESIGN	DESIGN	PROVIDED	DESIGN	DESIGN		
AHU-1	1990	1770	210	10	220				ACTIVITY ROOM 5/ OFFICE SPACE
AHU-2	2400	2120	268	12	280				ACTIVITY ROOM
KITCHEN RTU	3800		66	3734	3800				KITCHEN
KEF-1/KEF-2								4000	KITCHEN RR
EF-1						300			
TOTAL	8190	3890	544	3756	4300	300		4300	
						TOTAL	0		BUILDING PRESSURE

MECHANICAL AIR TERMINAL DEVICES SCHEDULE						
TAG	SIZE	DESCRIPTION	CONSTRUCTION	BASIS OF DESIGN		NOTES
			FINISH	MANUFACTURER	MODEL OR SERIES	
SD-1	24 x 6	SIDEWALL	ALUMINUM	PRICE	630	OR SIMILAR
SD-2	24 x 24	SQUARE PLAUQUE	ALUMINUM	ASPD		OR SIMILAR
RG-1	24 x 24	SINGLE DEFLECTION	ALUMINUM	PRICE	630	OR SIMILAR
RG-2	24 x 6	SIDEWALL	ALUMINUM	PRICE	630	OR SIMILAR
EG-1	6x4	SINGLE DEFLECTION	ALUMINUM	PRICE	630	45°BLADES,3/4"SPACING

NOTES:

- OR SIMILAR MANUFACTURER WITH THE SAME PERFORMANCE/SPECS

NOTES LEGEND	
①	10" O.A DUCT. SEE DETAILS ON SHEET MD-100
②	NOT USED
③	1" DEDICATED CONDENSATION DRAIN. SEE DETAILS ON SHEET MD-100
④	NOT USED
⑤	8" EXHAUST DUCT. SEE DETAILS ON SHEET MD-100

NOTES:

- OR SIMILAR MANUFACTURER WITH THE SAME PERFORMANCE/SPECS

MECHANICAL AIR HANDLER UNIT (ELECTRIC HEAT) SCHEDULE										
TAG	TON	FLOW RATE		ELECTRICAL DATA		ELECTRIC HEATING		BASIS OF DESIGN*		NOTES
		SUPPLY CFM	MCA AMPS	MOCP AMPS	VOLTAGE	COIL KW		MANUFACTURER	MODEL	
AHU-1	5	1,990	52.1	60	208/1/60	7.5		CARRIER	FJ4DNXD60	399
AHU-2	6	2,400	34.0	35	208/3/60	10		CARRIER	40RFAA07-5	210

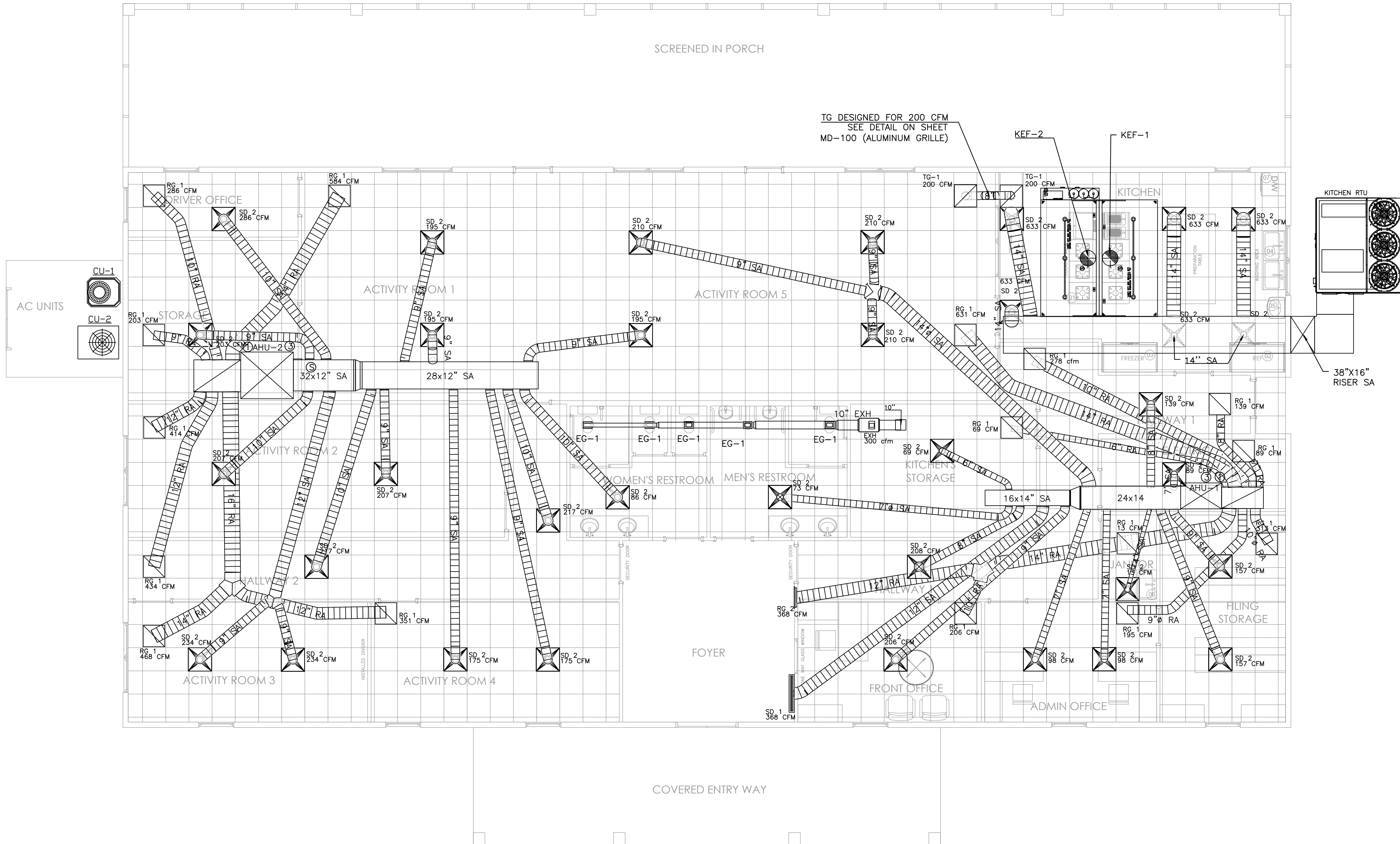
MECHANICAL CONDENSING UNIT (AIR COOLED) SCHEDULE												
TAG	CAPACITY		FAN DATA		COMPRESSOR DATA		ELECTRICAL DATA		BASIS OF DESIGN*		SEER	NOTES
	TONS	MBH	FAN QTY	COMPRESSOR QTY	FLA	LRA	MCA AMPS	MOCP AMPS	MANUFACTURER	MODEL		
CU-1	5	60	1	1	1.4	150	33.2	50	208/1/60	CARRIER	27SCA560-3	293
CU-2	6	74	2	1	1.5	136	25.0	30	208/3/60	CARRIER	38AUZD07-5	389

MECHANICAL FAN SCHEDULE									
TAG	FLOW RATE		MOTOR DATA		ELECTRICAL DATA		BASIS OF DESIGN*		NOTES
	CFM	WATT	MCA AMPS	MOCP AMPS	VOLTAGE		MANUFACTURER	MODEL OR SERIES	
EF-1	300	106	0.0	20	120/1/60		LOREN COOK	GN-542	OR SIMILAR
KEF-1	2000	746	8.1	20	208/1/60		CAPTIVEAIRE	DU85HFA	—
KEF-2	2000	746	8.1	20	208/1/60		CAPTIVEAIRE	DU85HFA	—

NOTES:

1- CONTROLLED BY 7 DAY PROGRAMMABLE TIME CLOCK / CONTINUOUSLY EXHAUST

MECHANICAL RTU UNIT (ELECTRIC HEAT) SCHEDULE										
TAG	TON	FLOW RATE		ELECTRICAL DATA		ELECTRIC HEATING		BASIS OF DESIGN*		NOTES
		SUPPLY CFM	MCA AMPS	MOCP AMPS	VOLTAGE	COIL KW		MANUFACTURER	MODEL	
KITCHEN RTU	10	3,800	142.2	150	208/3/60	45		CAPTIVEAIRE	CAS-HVAC3-1.250-20-30T	3,196



MECHANICAL PLAN
3/16" = 1'-0"

SEPARATE PERMITS REQUIRED

ALL FIRE PROTECTION SYSTEMS, FUEL, GAS, SIGNAGE AND OTHER BUILDING COMPONENTS REQUIRED BY LOCAL BUILDING AND FIRE AUTHORITIES TO BE INSTALLED OR MODIFIED VIA SEPARATE PERMIT, AND WHICH ARE AFFECTED BY THE WORK PROPOSED HEREIN, SHALL BE DULY INSTALLED OR MODIFIED ONLY THROUGH SEPARATE PERMIT AUTHORIZATION FROM THE AUTHORITY(S) HAVING JURISDICTION.

SYMBOL LEGEND:

- S — DUCT SMOKE DETECTOR
- SD — SUPPLY DIFFUSER
- RG — RETURN GRILLE
- TG — TRANSFER GRILLE
- EF — EXHAUST FAN (EF-X) 70 CFM OCCUPANCY LIGHT SWITCH OPERATED, UNLESS NOTED OTHERWISE.

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Δ		
Δ		
Δ		

DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

MECHANICAL PLAN

SHEET NUMBER:

M-100

ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - FOYER (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Breakrooms	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	240	Number of People2
Supply Air (CFM)	342	Emission Rate / Person (µg /min)320

Calculation of Breathing Zone Contaminants (Cbz)

Ventilation Rate Procedure OA				Indoor Air Quality Procedure OA			
VRP Outside Air Rate per Person		19.4	CFM	IAQP Outside Air Rate per Person		6.47	CFM
System Airflows		CFM	L/Min	System Airflows		CFM	L/Min
Supply Air		342	9685	Supply Air		342	9685
Outside Air		38.8	1098.82	Outside Air		12.93	366.27
Return Air		303.2	8586.62	Return Air		329.07	9319.17

Ventilation Rate				IAQ Procedure			
Factor	Description	Value	Units	Value	Units		
N	Contaminant Generation Rate	640	µg/min	640	µg/min		
Ez	Zone Air Distribution Effectiveness	1		1			
Voz	Outdoor Air Flow Rate	1098.82	L/min	366.27	L/min		
Ef	Filter Efficiency	0		0.65			
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³		
Fr	Flow Reduction Factor	0.7		0.7			
R	Recirculation Flow Factor =Vr/(Vo+Vr)	0.89		0.96			
Vr	Return Air Flow Rate	8586.62	L/min	9319.17	L/min		
Cbz	Contaminant, Breathing Zone	0.839	ppm	0.149	ppm		

Is the Cbz for the IAQP equal to or less than Cbz for the VRP?

Yes

Warning: These calculations are valid only for Air+ products and apply exclusively to projects using Air+ equipment. They do NOT apply to other manufacturers' products.

ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - ACTIVITY ROOM 2 (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Daycare (through age 4)	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	396	Number of People11
Supply Air (CFM)	449	Emission Rate / Person (µg /min)260

Calculation of Breathing Zone Contaminants (Cbz)

Ventilation Rate Procedure OA				Indoor Air Quality Procedure OA			
VRP Outside Air Rate per Person		16.48	CFM	IAQP Outside Air Rate per Person		5.49	CFM
System Airflows		CFM	L/Min	System Airflows		CFM	L/Min
Supply Air		449	12716	Supply Air		449	12716
Outside Air		181.28	5133.85	Outside Air		60.43	1711.28
Return Air		267.72	7581.83	Return Air		388.57	11004.4

Ventilation Rate				IAQ Procedure			
Factor	Description	Value	Units	Value	Units		
N	Contaminant Generation Rate	2860	µg/min	2860	µg/min		
Ez	Zone Air Distribution Effectiveness	1		1			
Voz	Outdoor Air Flow Rate	5133.85	L/min	1711.28	L/min		
Ef	Filter Efficiency	0		0.65			
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³		
Fr	Flow Reduction Factor	0.7		0.7			
R	Recirculation Flow Factor =Vr/(Vo+Vr)	0.6		0.87			
Vr	Return Air Flow Rate	7581.83	L/min	11004.4	L/min		
Cbz	Contaminant, Breathing Zone	0.803	ppm	0.521	ppm		

Is the Cbz for the IAQP equal to or less than Cbz for the VRP?

Yes

Warning: These calculations are valid only for Air+ products and apply exclusively to projects using Air+ equipment. They do NOT apply to other manufacturers' products.

ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - FRONT OFFICE (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Office space	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	176	Number of People3
Supply Air (CFM)	205	Emission Rate / Person (µg /min)260

Calculation of Breathing Zone Contaminants (Cbz)

Ventilation Rate Procedure OA				Indoor Air Quality Procedure OA			
VRP Outside Air Rate per Person		15.56	CFM	IAQP Outside Air Rate per Person		5.19	CFM
System Airflows		CFM	L/Min	System Airflows		CFM	L/Min
Supply Air		205	5806	Supply Air		205	5806
Outside Air		15.56	440.66	Outside Air		5.19	146.89
Return Air		189.44	5364.94	Return Air		199.81	5658.71

Ventilation Rate				IAQ Procedure			
Factor	Description	Value	Units	Value	Units		
N	Contaminant Generation Rate	260	µg/min	260	µg/min		
Ez	Zone Air Distribution Effectiveness	1		1			
Voz	Outdoor Air Flow Rate	440.66	L/min	146.89	L/min		
Ef	Filter Efficiency	0		0.65			
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³		
Fr	Flow Reduction Factor	0.7		0.7			
R	Recirculation Flow Factor =Vr/(Vo+Vr)	0.92		0.97			
Vr	Return Air Flow Rate	5364.94	L/min	5658.71	L/min		
Cbz	Contaminant, Breathing Zone	0.85	ppm	0.1	ppm		

Is the Cbz for the IAQP equal to or less than Cbz for the VRP?

Yes

Warning: These calculations are valid only for Air+ products and apply exclusively to projects using Air+ equipment. They do NOT apply to other manufacturers' products.

ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - ACTIVITY ROOM 3 (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Daycare (through age 4)	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	231	Number of People7
Supply Air (CFM)	529	Emission Rate / Person (µg /min)260

Calculation of Breathing Zone Contaminants (Cbz)

Ventilation Rate Procedure OA				Indoor Air Quality Procedure OA			
VRP Outside Air Rate per Person		15.94	CFM	IAQP Outside Air Rate per Person		5.31	CFM
System Airflows		CFM	L/Min	System Airflows		CFM	L/Min
Supply Air		529	14981	Supply Air		529	14981
Outside Air		111.58	3159.95	Outside Air		37.19	1053.32
Return Air		417.42	11821.33	Return Air		491.81	13927.96

Ventilation Rate				IAQ Procedure			
Factor	Description	Value	Units	Value	Units		
N	Contaminant Generation Rate	1820	µg/min	1820	µg/min		
Ez	Zone Air Distribution Effectiveness	1		1			
Voz	Outdoor Air Flow Rate	3159.95	L/min	1053.32	L/min		
Ef	Filter Efficiency	0		0.65			
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³		
Fr	Flow Reduction Factor	0.7		0.7			
R	Recirculation Flow Factor =Vr/(Vo+Vr)	0.79		0.93			
Vr	Return Air Flow Rate	11821.33	L/min	13927.96	L/min		
Cbz	Contaminant, Breathing Zone	0.83	ppm	0.276	ppm		

Is the Cbz for the IAQP equal to or less than Cbz for the VRP?

Yes

Warning: These calculations are valid only for Air+ products and apply exclusively to projects using Air+ equipment. They do NOT apply to other manufacturers' products.

ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - ADMIN OFFICE (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Office space	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	165	Number of People2
Supply Air (CFM)	194	Emission Rate / Person (µg /min)260

Calculation of Breathing Zone Contaminants (Cbz)

Ventilation Rate Procedure OA				Indoor Air Quality Procedure OA			
VRP Outside Air Rate per Person		9.95	CFM	IAQP Outside Air Rate per Person		4.97	CFM
System Airflows		CFM	L/Min	System Airflows		CFM	L/Min
Supply Air		194	5494	Supply Air		194	5494
Outside Air		19.9	563.57	Outside Air		9.95	281.78
Return Air		174.1	4930.51	Return Air		184.05	5212.3

Ventilation Rate				IAQ Procedure			
Factor	Description	Value	Units	Value	Units		
N	Contaminant Generation Rate	520	µg/min	520	µg/min		
Ez	Zone Air Distribution Effectiveness	1		1			
Voz	Outdoor Air Flow Rate	563.57	L/min	281.78	L/min		
Ef	Filter Efficiency	0		0.65			
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³		
Fr	Flow Reduction Factor	0.7		0.7			
R	Recirculation Flow Factor =Vr/(Vo+Vr)	0.9		0.95			
Vr	Return Air Flow Rate	4930.51	L/min	5212.3	L/min		
Cbz	Contaminant, Breathing Zone	1.329	ppm	0.214	ppm		

Is the Cbz for the IAQP equal to or less than Cbz for the VRP?

Yes

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ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - ACTIVITY ROOM 4 (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Daycare (through age 4)	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	242	Number of People7
Supply Air (CFM)	302	Emission Rate / Person (µg /min)260

Calculation of Breathing Zone Contaminants (Cbz)

Ventilation Rate Procedure OA				Indoor Air Quality Procedure OA			
VRP Outside Air Rate per Person		16.22	CFM	IAQP Outside Air Rate per Person		5.41	CFM
System Airflows		CFM	L/Min	System Airflows		CFM	L/Min
Supply Air		302	8553	Supply Air		302	8553
Outside Air		113.56	3216.02	Outside Air		37.85	1072.01
Return Air		188.44	5336.62	Return Air		264.15	7480.63

Ventilation Rate				IAQ Procedure			
Factor	Description	Value	Units	Value	Units		
N	Contaminant Generation Rate	1820	µg/min	1820	µg/min		
Ez	Zone Air Distribution Effectiveness	1		1			
Voz	Outdoor Air Flow Rate	3216.02	L/min	1072.01	L/min		
Ef	Filter Efficiency	0		0.65			
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³		
Fr	Flow Reduction Factor	0.7		0.7			
R	Recirculation Flow Factor =Vr/(Vo+Vr)	0.62		0.87			
Vr	Return Air Flow Rate	5336.62	L/min	7480.63	L/min		
Cbz	Contaminant, Breathing Zone	0.816	ppm	0.492	ppm		

Is the Cbz for the IAQP equal to or less than Cbz for the VRP?

Yes

Warning: These calculations are valid only for Air+ products and apply exclusively to projects using Air+ equipment. They do NOT apply to other manufacturers' products.

ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - ACTIVITY ROOM 1 (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Daycare (through age 4)	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	520	Number of People15
Supply Air (CFM)	455	Emission Rate / Person (µg /min)260

Calculation of Breathing Zone Contaminants (Cbz)

Ventilation Rate Procedure OA				Indoor Air Quality Procedure OA			
VRP Outside Air Rate per Person		16.24	CFM	IAQP Outside Air Rate per Person		5.41	CFM
System Airflows		CFM	L/Min	System Airflows		CFM	L/min
Supply Air		455	12886	Supply Air		455	12886
Outside Air		243.6	6898.75	Outside Air		81.2	2299.58
Return Air		211.4	5986.85	Return Air		373.8	10586.02

Ventilation Rate				IAQ Procedure			
Factor	Description	Value	Units	Value	Units		
N	Contaminant Generation Rate	3900	µg/min	3900	µg/min		
Ez	Zone Air Distribution Effectiveness	1		1			
Voz	Outdoor Air Flow Rate	6898.75	L/min	2299.58	L/min		
Ef	Filter Efficiency	0		0.65			
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³		
Fr	Flow Reduction Factor	0.7		0.7			
R	Recirculation Flow Factor =Vr/(Vo+Vr)	0.46		0.82			
Vr	Return Air Flow Rate	5986.85	L/min	10586.02	L/min		
Cbz	Contaminant, Breathing Zone	0.815	ppm	0.706	ppm		

Is the Cbz for the IAQP equal to or less than Cbz for the VRP?

Yes

ASHRAE 62.1 IAQ Procedure Contaminant Calculations Using Appendix E Equations

25076134 HALL RICHARDSON SENIOR CENTER - DRIVER OFFICE (5/28/2025)

Fields shaded in blue require user input	Grey are calculated but can be overridden	Dark grey are constants
ASHRAE Equation	Equation 5 - Filter return air and outside air, Constant Volume Supply Air, Constant V	
Space Type	Office space	
Ez	Ceiling supply of cool air: 1.0	
Area (Sq.Ft.)	90	Number of People 1
Supply Air (CFM)	231	Emission Rate / Person (µg /min) 260

Calculation of Breathing Zone Contaminants (Cbz)

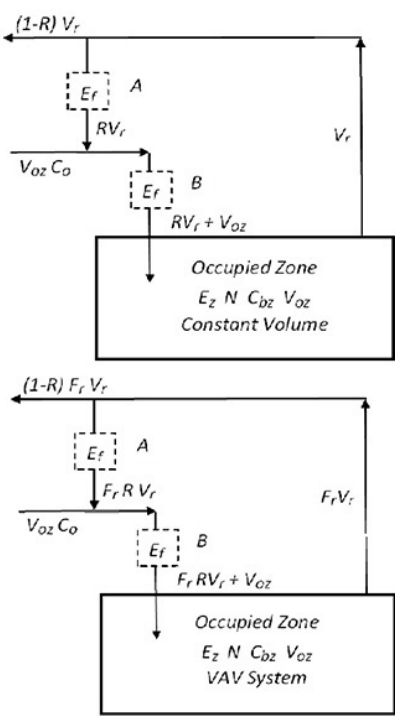
Ventilation Rate Procedure OA		Indoor Air Quality Procedure OA	
VRP Outside Air Rate per Person	10.4 CFM	IAQP Outside Air Rate per Person	5 CFM
System Airflows	CFM L/Min	System Airflows	CFM L/Min
Supply Air	231 6542	Supply Air	231 6542
Outside Air	10.4 294.53	Outside Air	5 141.6
Return Air	220.6 6247.39	Return Air	226 6400.32

$$C_{bz} = \frac{N + E_z V_{oz} C_o(1 - E_f)}{E_z (V_{oz} + R + V_r E_f)}$$

Factor	Description	Ventilation Rate Value	Units	IAQ Procedure Value	Units
N	Contaminant Generation Rate	260	µg/min	260	µg/min
Ez	Zone Air Distribution Effectiveness	1		1	
Voz	Outdoor Air Flow Rate	294.53	L/min	141.6	L/min
Ef	Filter Efficiency	0		0.65	
Co	Contaminant Concentration, OA	1.2	µg/m³	1.2	µg/m³
Fr	Flow Reduction Factor	0.7		0.7	
R	Recirculation Flow Factor = Vr / (Vo + Vr)	0.95		0.98	
Vr	Return Air Flow Rate	6247.39	L/min	6400.32	L/min
Cbz	Contaminant, Breathing Zone	1.271	ppm	0.089	ppm

Is the Cbz for the IAQP equal to or less than Cbz for the VRP? Yes

Warning: These calculations are valid only for Air+ products and apply exclusively to projects using Air+ equipment. They do NOT apply to other manufacturers' products.



AHU 1

Outside db	Htg	Cig	Inside db	Htg	Cig
(°F)	31	93	(°F)	70	75
Outside RH (%)	-	48	Inside RH (%)	-	50
Outside wb (°F)	-	77	Inside wb (°F)	-	63
Daily range (°F)	-	18	Design TD (°F)	39	18
Moisture diff. (gr/lb)	-	48			
Heating Equipment			Cooling Equipment		
Make Model	CARRIER 27SCA560-3		Make Model	CARRIER 27SCA560-3 FJ5ANXD60	
AHRI ref. Type	Split/ASHP 8.5 HSPF2		AHRI ref. Type	Split/ASHP 8.5 HSPF2	
Efficiency	42.0		Efficiency	12.8 EER2, 14.5 SEER2	
Heating Input	51.8 MBtu/h @ 47°F		Heating Input	42.0 MBtu/h	
Heating Output	14.1 gpd		Heating Output	18.0 MBtu/h	
Humidifier	93.7 °F		Humidifier	60.0 MBtu/h	
Leaving Air Temp	1990 cfm		Leaving Air Temp	55.0 °F	
Actual Heating Fan	Backup: Carrier FJ5ANXD60		Actual Heating Fan	1990 cfm	
Input = 10 kW, Output = 34121 Btu/h, 100 AFUE					

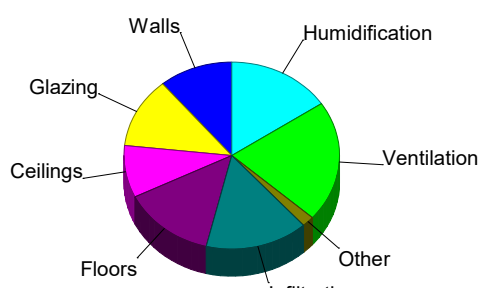
System Type	PEAKCV PACKAGE	% in H2O
Fan Motor Heat Type	0	
Fan & Motor Combined Efficiency	0	
Static Pressure Across Fan	0	

NAME	Area ft²	Heat Loss	Sensible Gain	Latent Gain	Htg cfm	Cig cfm	Time
HALLWAY 1	327	3074	7608	6093	145	425	Jul 1700 LDT
ELECTRIC	112	1570	1117	356	87	56	Jul 1700 LDT
JANITOR	35	324	271	111	12	13	Jul 1700 LDT
FLING STORAGE	198	4386	2964	629	301	157	Jul 1700 LDT
ADMIN OFFICE	165	2832	2469	728	191	134	Jul 1700 LDT
FRONT OFFICE	176	2958	2604	928	202	142	Jul 1700 LDT
ACTIVITY ROOM 5	680	11831	10917	4401	638	560	Jul 1700 LDT
KITCHENS STORAGE	132	1780	1484	610	64	70	Jul 1700 LDT
MENS RESTROOM	144	1107	974	314	78	57	Jul 1700 LDT
FOYER	240	3955	6657	4426	272	377	Jul 1700 LDT

AHU 1	2269	33797	37065	18595	1990	1990	Jul 1700 LDT
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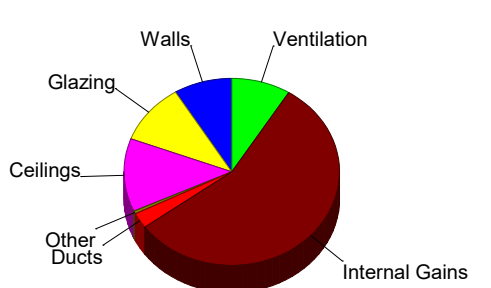
Heating

Component	Btu/h/ft²	Btu/h	% of load
Walls	3.5	3747	11.1
Glazing	29.9	4114	12.2
Doors	0	0	0
Ceilings	1.3	3048	9.0
Floors	2.1	4703	13.9
Infiltration	37.8	5207	15.4
Ducts	0	625	1.8
Piping	0	0	0
Humidification	5285	15.6	0.04
Ventilation	7069	20.9	0.06
Adjustments	0	0	0
Total		33797	100.0



Cooling

Component	Btu/h/ft²	Btu/h	% of load
Walls	3.0	3240	8.7
Glazing	28.3	3895	10.5
Doors	0	0	0
Ceilings	2.1	4665	12.6
Floors	0	0	0
Infiltration	1.4	193	0.5
Ducts	0	984	2.7
Ventilation	3232	8.9	0.02
Internal gains	20777	56.1	0.15
Blower	0	0	0
Adjustments	0	0	0
Total		37065	100.0



Latent Cooling Load = 18595 Btu/h
Overall U-value = 0.069 Btu/h/ft²·F, Window / Floor Area = 6.1 %

Data entries checked.

AHU 2

Outside db	Htg	Cig	Inside db	Htg	Cig
(°F)	31	93	(°F)	70	75
Outside RH (%)	-	48	Inside RH (%)	-	50
Outside wb (°F)	-	77	Inside wb (°F)	-	63
Daily range (°F)	-	18	Design TD (°F)	39	18
Moisture diff. (gr/lb)	-	48			
Heating Equipment			Cooling Equipment		
Make Model	CARRIER 27SCA560-3		Make Model	CARRIER 27SCA560-3 FJ5ANXD60	
AHRI ref. Type	Split/ASHP 8.5 HSPF2		AHRI ref. Type	Split/ASHP 8.5 HSPF2	
Efficiency	42.0		Efficiency	12.8 EER2, 14.5 SEER2	
Heating Input	14.7 gpd		Heating Input	42.0 MBtu/h	
Heating Output	48.5 MBtu/h @ 47°F		Heating Output	18.0 MBtu/h	
Humidifier	92.2 °F		Humidifier	60.0 MBtu/h	
Leaving Air Temp	1990 cfm		Leaving Air Temp	55.0 °F	
Actual Heating Fan	Backup: Carrier FJ5ANXD60		Actual Heating Fan	1990 cfm	
Input = 10 kW, Output = 34121 Btu/h, 100 AFUE					

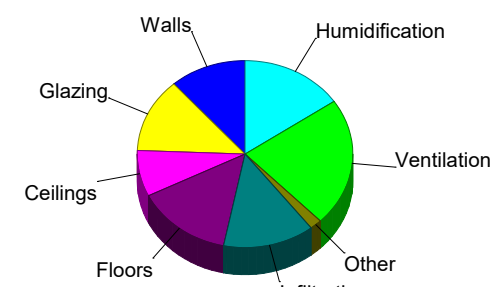
System Type	PEAKCV PACKAGE	% in H2O
Fan Motor Heat Type	0	
Fan & Motor Combined Efficiency	0	
Static Pressure Across Fan	0	

NAME	Area ft²	Heat Loss	Sensible Gain	Latent Gain	Htg cfm	Cig cfm	Time
DRIVER OFFICE	90	2965	2002	284	232	124	Jul 1700 LDT
STORAGE	210	3011	2019	667	164	109	Jul 1700 LDT
ACTIVITY ROOM 1	520	8946	8221	3413	456	456	Jul 1700 LDT
ACTIVITY ROOM 2	396	5830	5646	2538	269	323	Jul 1700 LDT
WOMEN'S RESTROOM	144	1107	974	314	76	62	Jul 1700 LDT
ACTIVITY ROOM 3	231	6002	4907	1535	382	282	Jul 1700 LDT
ACTIVITY ROOM 4	242	4966	4331	1569	288	245	Jul 1700 LDT
HALLWAY 2	275	2646	6388	5124	123	388	Jul 1700 LDT

AHU 2	2108	35472	34688	15444	1990	1990	Jul 1700 LDT
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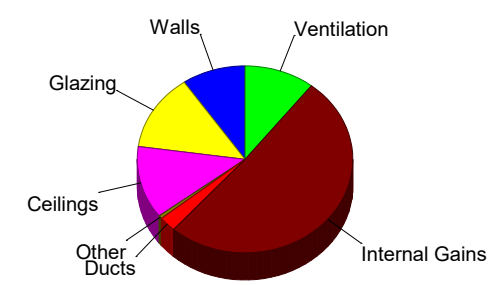
Heating

Component	Btu/h/ft²	Btu/h	% of load
Walls	3.5	4079	11.5
Glazing	29.9	4562	12.9
Doors	0	0	0
Ceilings	1.3	2832	8.0
Floors	2.1	5131	14.5
Infiltration	31.8	4860	13.7
Ducts	0	644	1.8
Piping	0	0	0
Humidification	5485	15.6	0.04
Ventilation	7881	22.2	0.06
Adjustments	0	0	0
Total		35472	100.0



Cooling

Component	Btu/h/ft²	Btu/h	% of load
Walls	2.8	3316	9.6
Glazing	30.0	4583	13.2
Doors	0	0	0
Ceilings	2.1	4353	12.5
Floors	0	0	0
Infiltration	1.3	193	0.5
Ducts	0	903	2.6
Ventilation	3670	10.6	0.03
Internal gains	17670	50.9	0.14
Blower	0	0	0
Adjustments	0	0	0
Total		34688	100.0



Latent Cooling Load = 15444 Btu/h
Overall U-value = 0.076 Btu/h/ft²·F, Window / Floor Area = 7.2 %

Data entries checked.

KITCHEN RTU

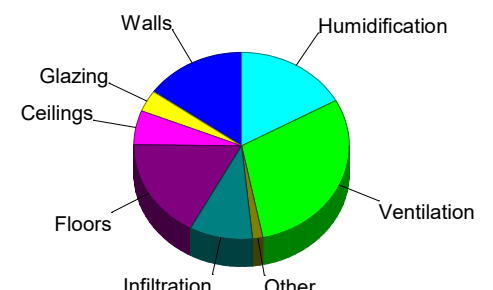
Outside db	Htg	Cig	Inside db	Htg	Cig
(°F)	31	93	(°F)	70	75
Outside RH (%)	-	48	Inside RH (%)	-	50
Outside wb (°F)	-	77	Inside wb (°F)	-	63
Daily range (°F)	-	18	Design TD (°F)	39	18
Moisture diff. (gr/lb)	-	48			
Heating Equipment			Cooling Equipment		
Make Model	CAPTIVEAIRE CAS-HVAC3-1250-20-30T		Make Model	CAPTIVEAIRE CAS-HVAC3-1250-20-30T	
AHRI ref. Type	Pkg gas furnace 93 AFUE		AHRI ref. Type	Pkg AC 12.82 EER2	
Efficiency	10.4 MBtu/h		Efficiency	98.0 MBtu/h	
Heating Input	9.6 MBtu/h		Heating Input	42.0 MBtu/h	
Heating Output	4.4 gpd		Heating Output	140.0 MBtu/h	
Humidifier	72.3 °F		Humidifier	55.0 °F	
Leaving Air Temp	3800 cfm		Leaving Air Temp	3800 cfm	
Actual Heating Fan			Actual Heating Fan		

System Type	PEAKCV PACKAGE	% in H2O
Fan Motor Heat Type	0	
Fan & Motor Combined Efficiency	0	
Static Pressure Across Fan	0	

NAME	Area ft²	Heat Loss	Sensible Gain	Latent Gain	Htg cfm	Cig cfm	Time
KITCHEN	423	9627	18358	3187	3800	3800	Jul 1700 LDT
KITCHEN RTU	423	9627	18358	3187	3800	3800	Jul 1700 LDT

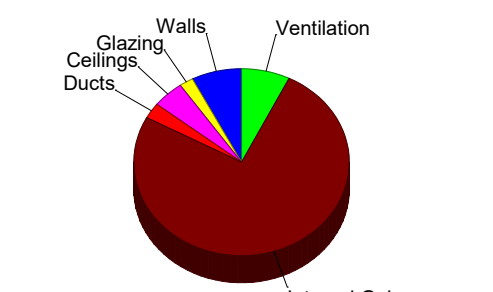
Heating

Component	Btu/h/ft²	Btu/h	% of load
Walls	3.5	1461	15.2
Glazing	29.9	358	3.7
Doors	0	0	0
Ceilings	1.3	568	5.9
Floors	4.0	1671	17.4
Infiltration	76.1	913	9.5
Ducts	0	149	1.5
Piping	0	0	0
Humidification	1631	16.9	0.17
Ventilation	2875	29.9	0.31
Adjustments	0	0	0
Total		9627	100.0



Cooling

Component	Btu/h/ft²	Btu/h	% of load
Walls	3.3	1379	7.5
Glazing	32.3	387	2.1
Doors	0	0	0
Ceilings	2.1	873	4.8
Floors	0	0	0
Infiltration	0	0	0
Ducts	496	2.7	0.01
Ventilation	1339	7.3	0.04
Internal gains	13884	75.6	0.41
Blower	0	0	0
Adjustments	0	0	0
Total		18358	100.0



Latent Cooling Load = 3187 Btu/h
Overall U-value = 0.081 Btu/h/ft²·F, Window / Floor Area = 2.8 %

Data entries checked.

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Hall Richardson Senior Center
TBD Address JT-21, JT-32, JT-33, Jesup GA
LGS Design & Drafting

PROJECT NAME & ADDRESS:

No.	Description	Date
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Δ		
Δ		
Δ		

DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

MECHANICAL DETAILS

SHEET NUMBER:

M-102

FOR QUESTIONS, CALL THE
Southwest Florida Office
REGION 61
PHONE: (813) 448 - 7884
EMAIL: reg68@captiveaire.com

PATENT NUMBERS
EXHAUST HOODS ND-2/BD-2/SND-2 (CANADA) - CA PATENT 2520435 C.

HOOD INFORMATION - JOB#7547855

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)							HOOD CONSTRUCTION	HOOD CONFIG	
										WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP		END TO END	ROW
1	Hood-1	6024 ND-2	CAPTIVEAIRE	10' 0"	600 DEG	I	HEAVY	200	2000			4'	16'	2000	1432	-0.582"	430 SS WHERE EXPOSED	ALONE	FRONT
2	Hood-2	6024 ND-2	CAPTIVEAIRE	10' 0"	600 DEG	I	HEAVY	200	2000			4'	16'	2000	1432	-0.582"	430 SS WHERE EXPOSED	ALONE	BACK

HOOD INFORMATION

HOOD NO	TAG	FILTER(S)					LIGHT(S)			UTILITY CABINET(S)					FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	TYPE	SIZE	MODEL #	QUANTITY	
1	Hood-1	CAPRATE SOLID FILTER	7	20"	16'	85% SEE FILTER SPEC	3	RECESSED ROUND	NO	LEFT	12"x60"x24"	TANK FS	4.0/4.0/4.0	SC-F012011MA	1 LIGHT 1 FAN	YES 1009 LBS
2	Hood-2	CAPRATE SOLID FILTER	7	20"	16'	85% SEE FILTER SPEC	3	RECESSED ROUND	NO							YES 584 LBS

HOOD OPTIONS

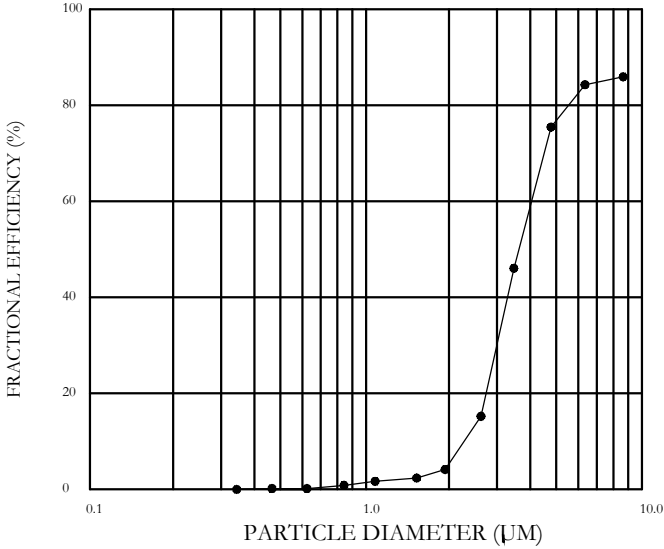
HOOD NO	TAG	OPTION					
1	Hood-1	FIELD WRAPPER	18.00"	HIGH	FRONT, LEFT, RIGHT.		
		RIGHT VERTICAL END PANEL	27"	TOP WIDTH,	21"	BOTTOM WIDTH,	80" HIGH INSULATED 430 SS.
		LEFT VERTICAL END PANEL	27"	TOP WIDTH,	21"	BOTTOM WIDTH,	80" HIGH INSULATED 430 SS.
2	Hood-2	FIELD WRAPPER	18.00"	HIGH	FRONT, LEFT, RIGHT.		
		RIGHT VERTICAL END PANEL	27"	TOP WIDTH,	21"	BOTTOM WIDTH,	80" HIGH INSULATED 430 SS.
		LEFT VERTICAL END PANEL	27"	TOP WIDTH,	21"	BOTTOM WIDTH,	80" HIGH INSULATED 430 SS.

SPECIFICATION: CAPRATE® GREASE-STOP® SOLID FILTER

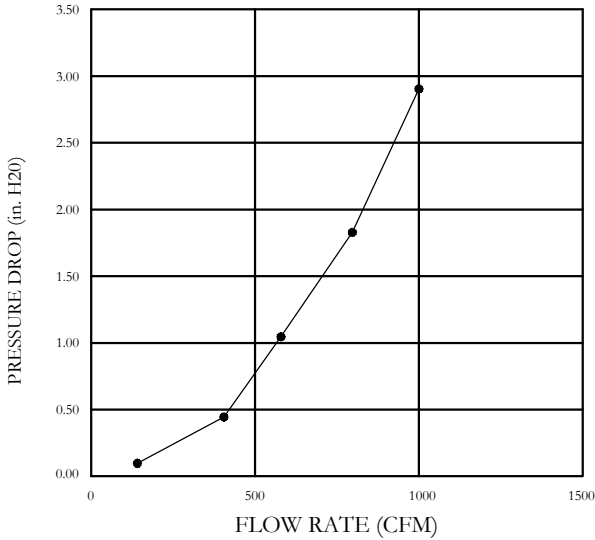
THE CAPRATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).
UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE. THE CAPRATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

EFFICIENCY VS. PARTICLE DIAMETER



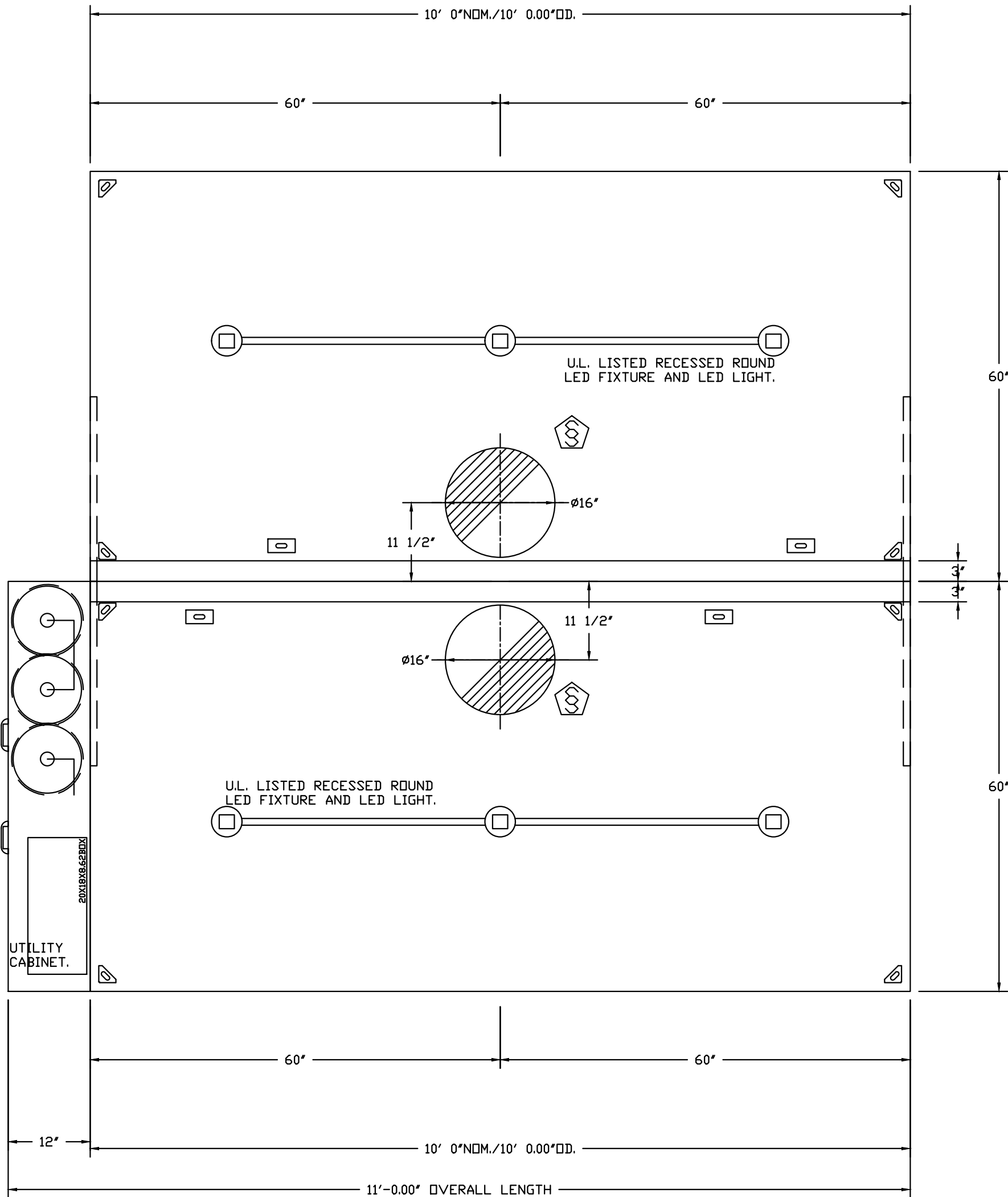
PRESSURE DROP VS. FLOW RATE



CAPRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.



PLAN VIEW - HOOD #2 (Hood-2)
10' 0.00" LONG 6024ND-2



PLAN VIEW - HOOD #1 (Hood-1)
10' 0.00" LONG 6024ND-2

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Hall Richardson Senior Center
TBD Address JT-21, JT-32, JT-33, Jesup GA
LGS Design & Drafting

PROJECT NAME
& ADDRESS:

No.	Description	Date
△		
△		
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△		

DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

MECHANICAL
DETAILS

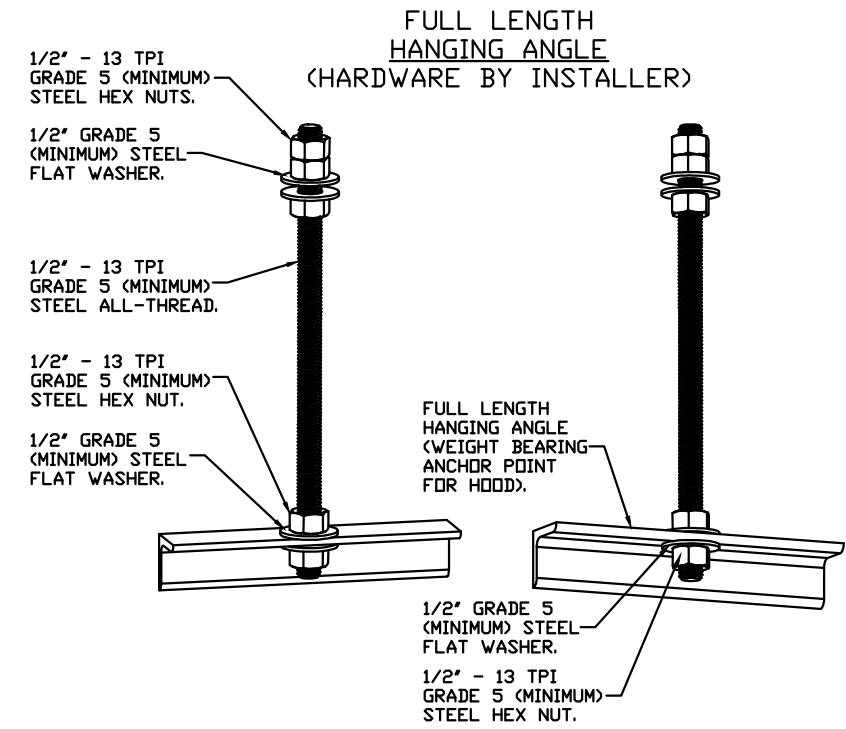
SHEET NUMBER:

M-103

CLEARANCE TO COMBUSTIBLES

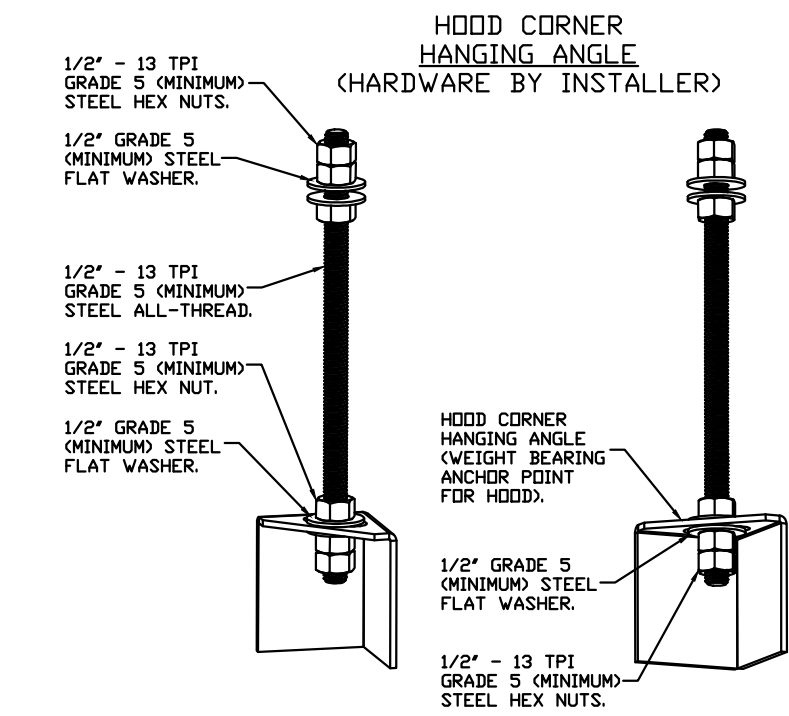
HOODS #	SURFACE	*CLEARANCE
1	TOP	18"
	FRONT	0"
	BACK	18"
	LEFT	0"
	RIGHT	18"
2	TOP	18"
	FRONT	0"
	BACK	18"
	LEFT	18"
	RIGHT	18"

- *0" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL710 STANDARD.
- HOOD MOUNTED UTILITY CABINETS REQUIRE 36" SERVICE CLEARANCE.



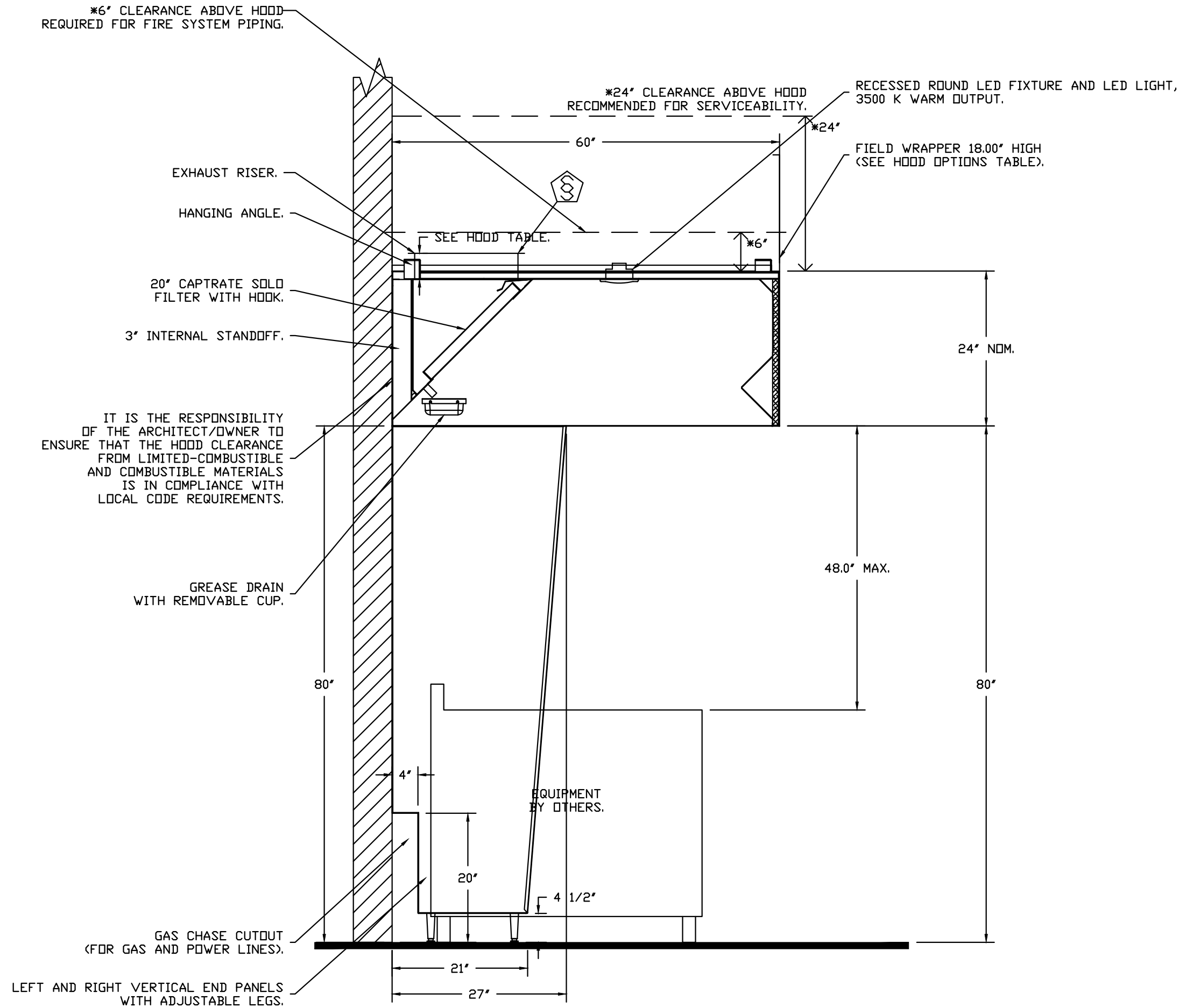
ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR FULL LENGTH HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

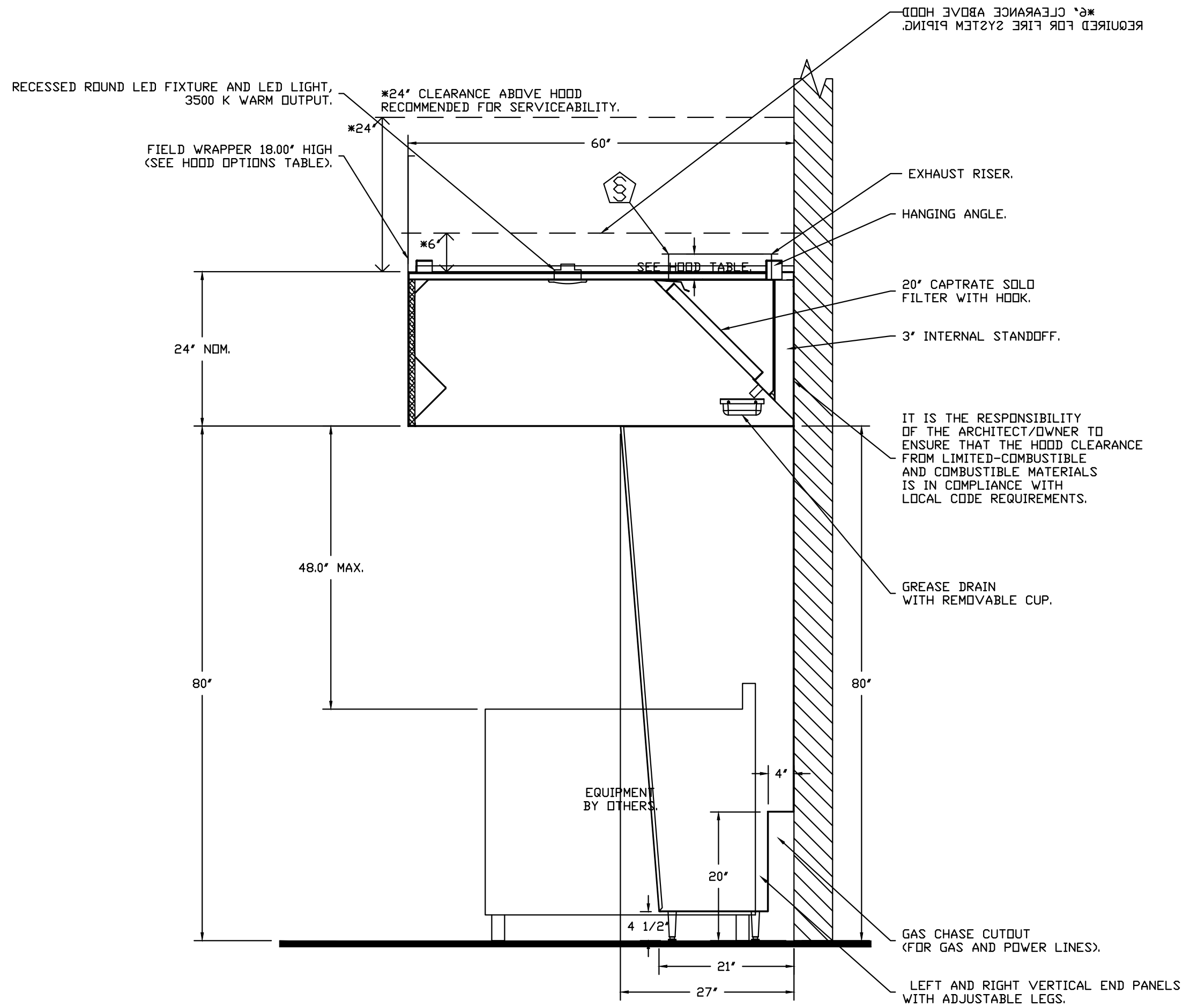


ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



SECTION VIEW - MODEL 6024ND-2
HOOD - #1 (Hood-1)



SECTION VIEW - MODEL 6024ND-2
HOOD - #2 (Hood-2)

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DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

MECHANICAL
DETAILS

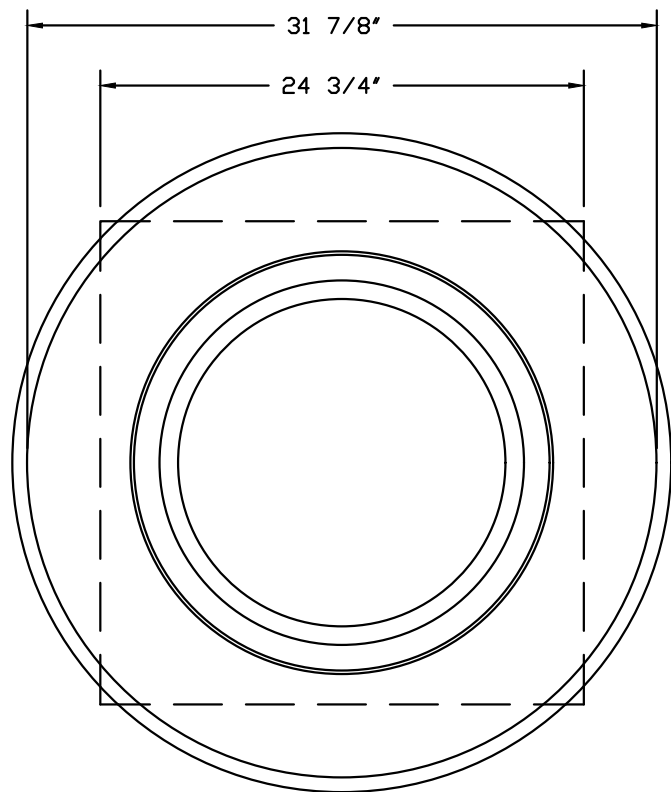
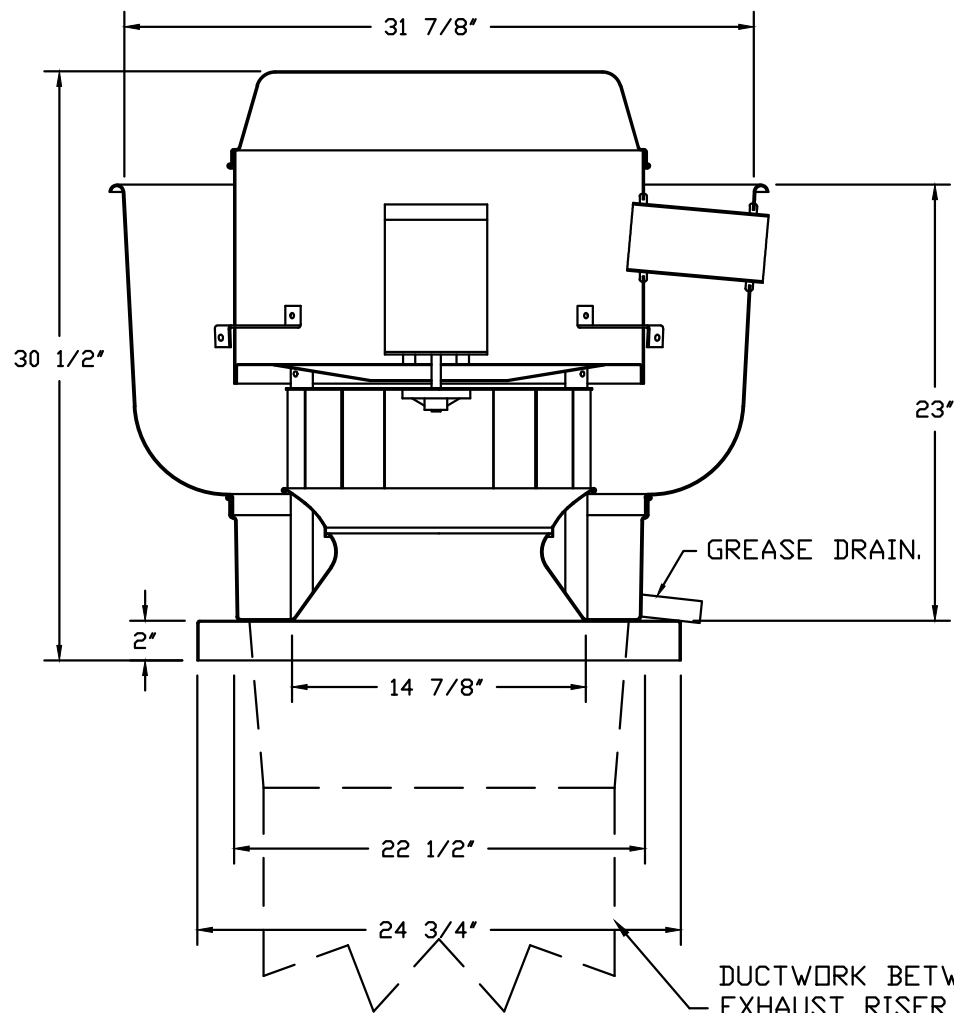
SHEET NUMBER:

M-104

EXHAUST FAN INFORMATION – JOB#7547855

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SDNES
1	KEF-1	1	DUBSHFA	CAPTIVEAIRE	2000	1.000	1435	TEAD-ECM	1.000	0.5320	1	230	6.5	633 FPM	94	13.9
2	KEF-2	1	DUBSHFA	CAPTIVEAIRE	2000	1.000	1435	TEAD-ECM	1.000	0.5320	1	230	6.5	633 FPM	94	13.9

FANS #1 (KEF-1), #2 (KEF-2) – DUBSHFA EXHAUST FAN



TOP VIEW

FEATURES:

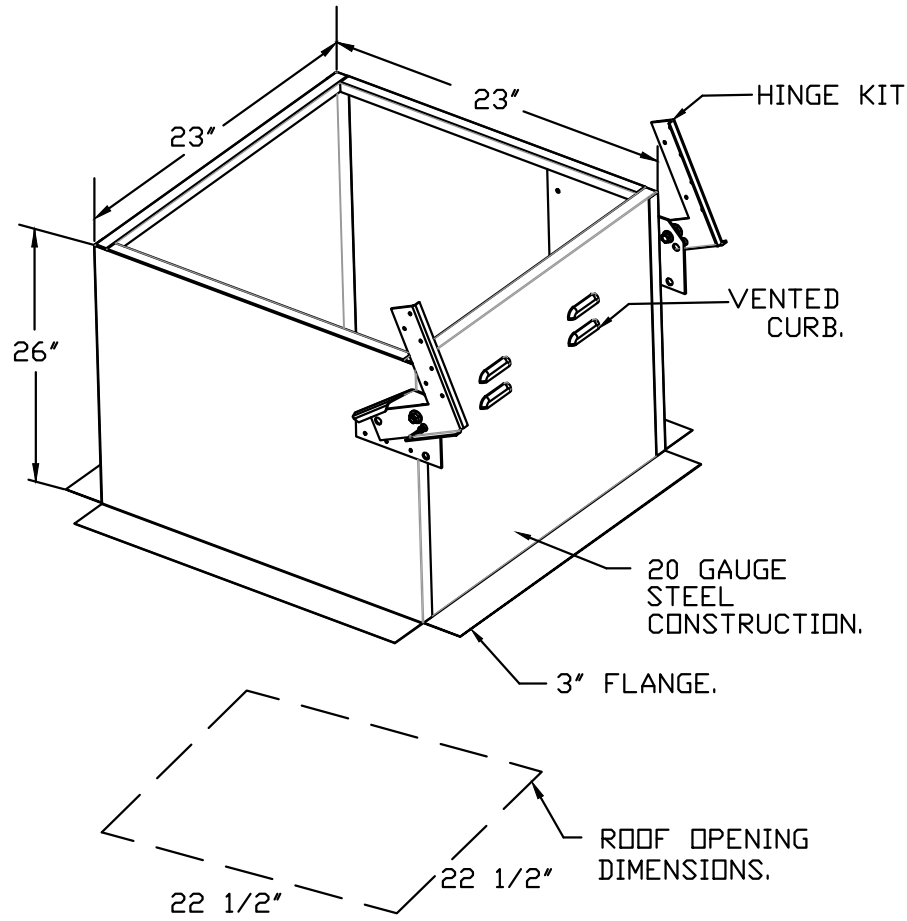
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

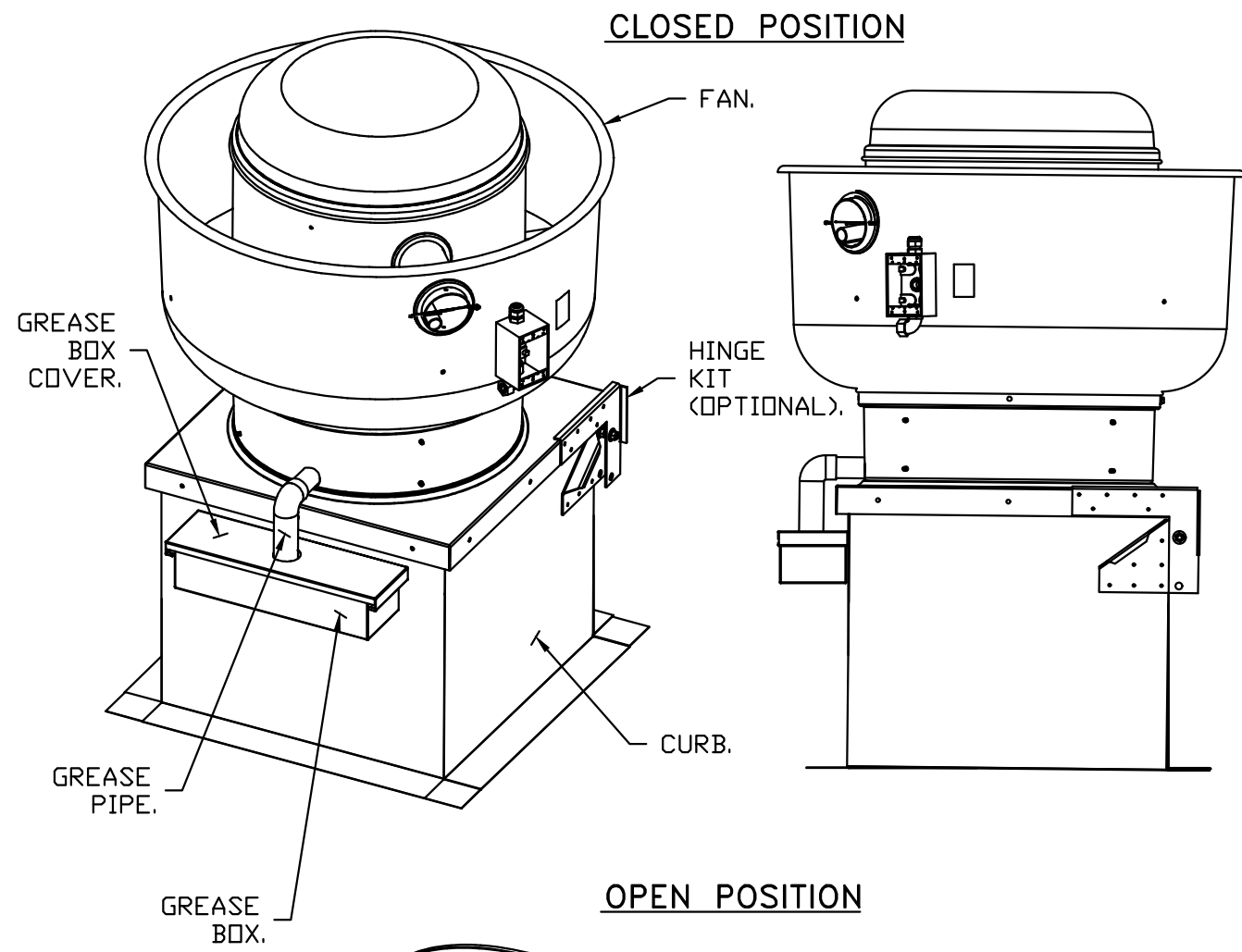
ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

- GREASE BOX.
- FAN BASE CERAMIC SEAL - DU/DRB5HFA
- INSTALLED AT PLANT - FOR GREASE DUCTS.
- ECM WIRING PACKAGE - PWM SIGNAL FROM ECM03 PREWIRE (TELCO MOTOR), CCW ROTATION.
- 2 YEAR PARTS WARRANTY.



GREASE BOX INSTALLATION



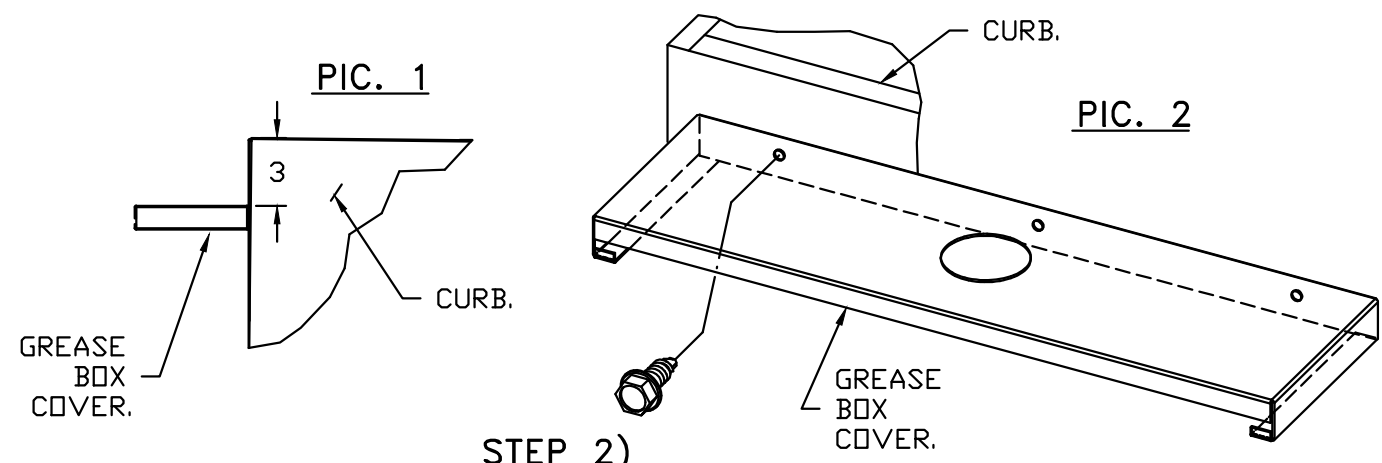
PARTS INCLUDED

- GREASE BOX.
- GREASE BOX COVER.
- GREASE PIPE.
- SHEET METAL SCREWS
- 3 - LONG (3/4" LG).

GREASE BOX FIELD INSTALLATION

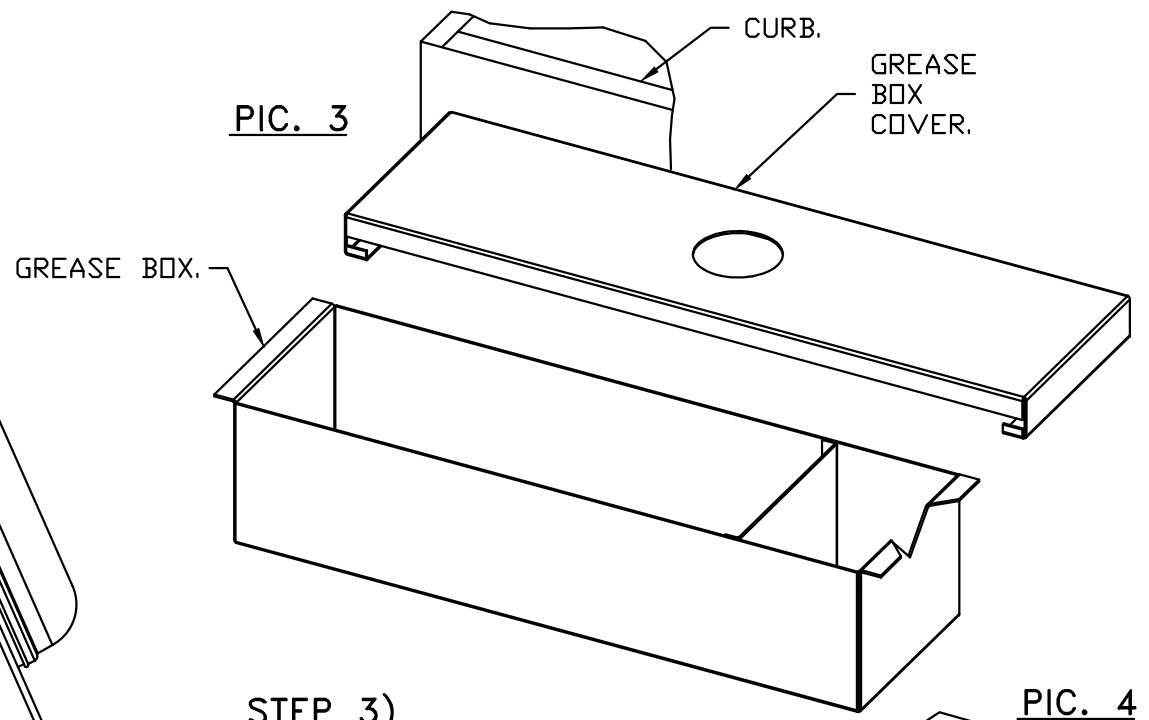
STEP 1)

ATTACH GREASE BOX COVER TO THE CURB, HOLD 3" DIMENSION AS SHOWN ON PIC. 1. SCREW GREASE BOX COVER TO CURB USING (3) LONG (3/4" LG.) SCREWS AS SHOWN ON PIC. 2.



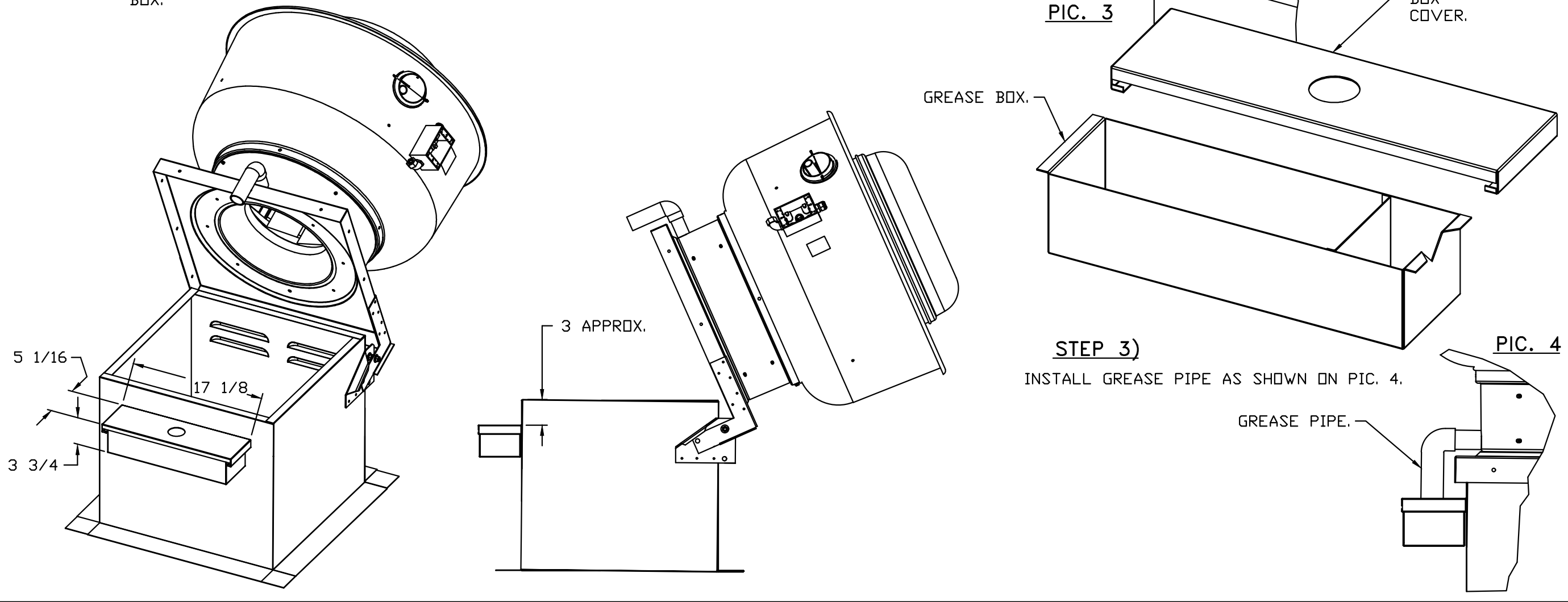
STEP 2)

ATTACH GREASE BOX TO GREASE BOX COVER, SLIDE AND DROP. AS SHOWN ON PIC. 3.



STEP 3)

INSTALL GREASE PIPE AS SHOWN ON PIC. 4.



*NOTE: UL 705 INSTALL.

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DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

MECHANICAL
DETAILS

SHEET NUMBER:

M-106

DOAS/RTU FAN SCHEDULE – JOB#7547855

FAN INFORMATION										ELECTRICAL INFORMATION										COOLING INFORMATION										REHEAT INFORMATION										GAS HEAT INFORMATION										A&L MINIMUM ROOM VOLUME			NOTES
FAN UNIT NO	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLOWER	RETURN AIR CFM	MAX OUTSIDE AIR CFM	TOTAL CFM	WEIGHT (LBS)	ESP	HP	PHASE	VOLTS	MCA	MDCP	OUTSIDE AIR DB	OUTSIDE AIR WB	MIXED AIR DB	MIXED AIR WB	LEAVING AIR DB	LEAVING AIR WB	DP	TOTAL	SENS.	IEER	ISMRE2	DISCHARGE DB	DISCHARGE WB	CAPACITY DESIRED	CAPACITY MAX	MOISTURE REMOVAL RATE	REHEAT DB	REHEAT WB	GAS TYPE	INPUT BTUH	OUTPUT BTUH	TEMP RISE	REQUIRED INPUT GAS PRESSURE	ROOM AREA (FT2)	AIRFLOW (CFM)	HEIGHT (FT)												
3	KITCHEN RTU	1	CAS-HVAC3-I250-20-30T	CAPTIVEAIRE	20P-3	0	3800	3800	3196	1.000	5.00	3	208	142.2A	150A		91.8F	82.2F	91.8F	82.2F	57.9F	57.8F	57.8F	348.2 MBH	140.2 MBH	14.9	5.8	70.0F	62.2F	51.1 MBH	204.6 MBH	182.4 LBS/HR	NATURAL	233172	188869	43F	7 IN. W.C. - 14 IN. W.C.	7196	1295	7.2	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17												
NOTES: 1. INVERTER SCROLL COMPRESSOR WITH INTEGRATED OIL SENSOR. DIGITAL DR STAGED SCROLL NOT AN APPROVED EQUAL. 2. DIRECT DRIVE PLENUM BLOWER. BELT DRIVEN BLOWERS ARE NOT ACCEPTABLE. 3. INTEGRATED MONITORING VIA CELLULAR CONNECTION BY MANUFACTURER. 4. REFRIGERATION PRESSURE MONITORING ON HIGH AND LOW PRESSURE SIDE OF SYSTEM INCLUDED THROUGH DIGITAL INTERFACE. 5. EC MOTOR CONDENSING FANS. 6. ELECTRONIC EXPANSION VALVE. TXV NOT ACCEPTABLE. 7. SUCTION LINE ACCUMULATOR. 8. FACTORY COMMISSIONING WITH 5 YEAR PARTS WARRANTY, 25 YEAR WARRANTY ON STAINLESS STEEL HEAT EXCHANGER. 9. AVERAGING INTAKE, EVAP AND DISCHARGE TEMPERATURE SENSORS (DISCHARGE SENSOR TO BE FACTORY MOUNTED WITHIN UNIT). 10. 2" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-13 INSULATION-MINIMUM 20GA EXTERIOR W/ 14GA BASE. 11. 82% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 64 TURN/DOWN WITH NG AND 54 TURN/DOWN WITH LP. 12. SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE. 13. FULLY MODULATING HOT GAS REHEAT. 14. 15 DEGREE LOW AMBIENT OPERATION. 15. FACTORY INSTALLED COMPRESSOR SOUND BLANKET. 16. DOWN DISCHARGE/DOWN RETURN. 17. MINIMUM ROOM AREA ASSUMED 7'2" SUPPLY DIFFUSER HEIGHT AND IS CALCULATED PER UL60335-2-40 4TH ED. VALUES BASED ON FACTORY CHARGE. ACTUAL SITE CHARGE MAY DIFFER.																																																					

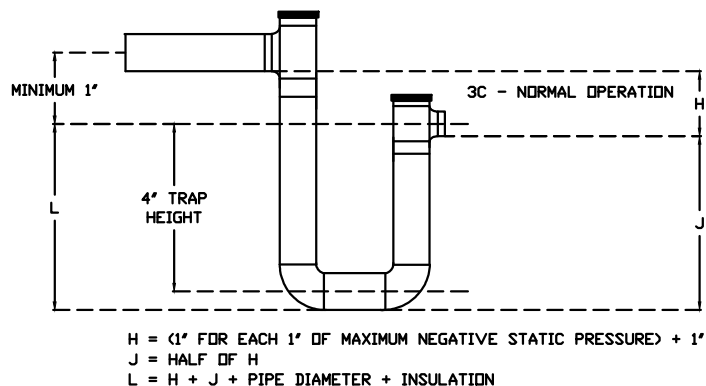
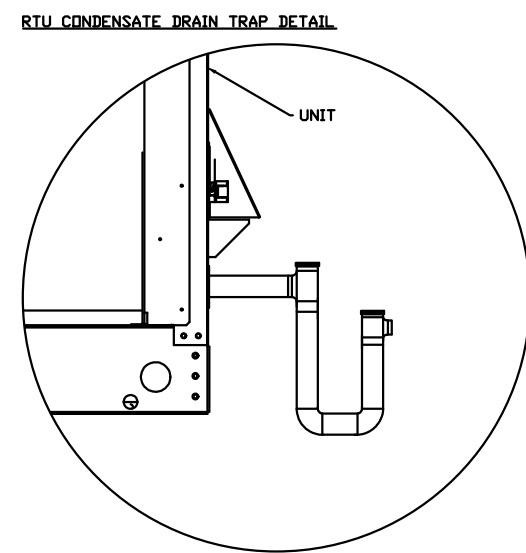
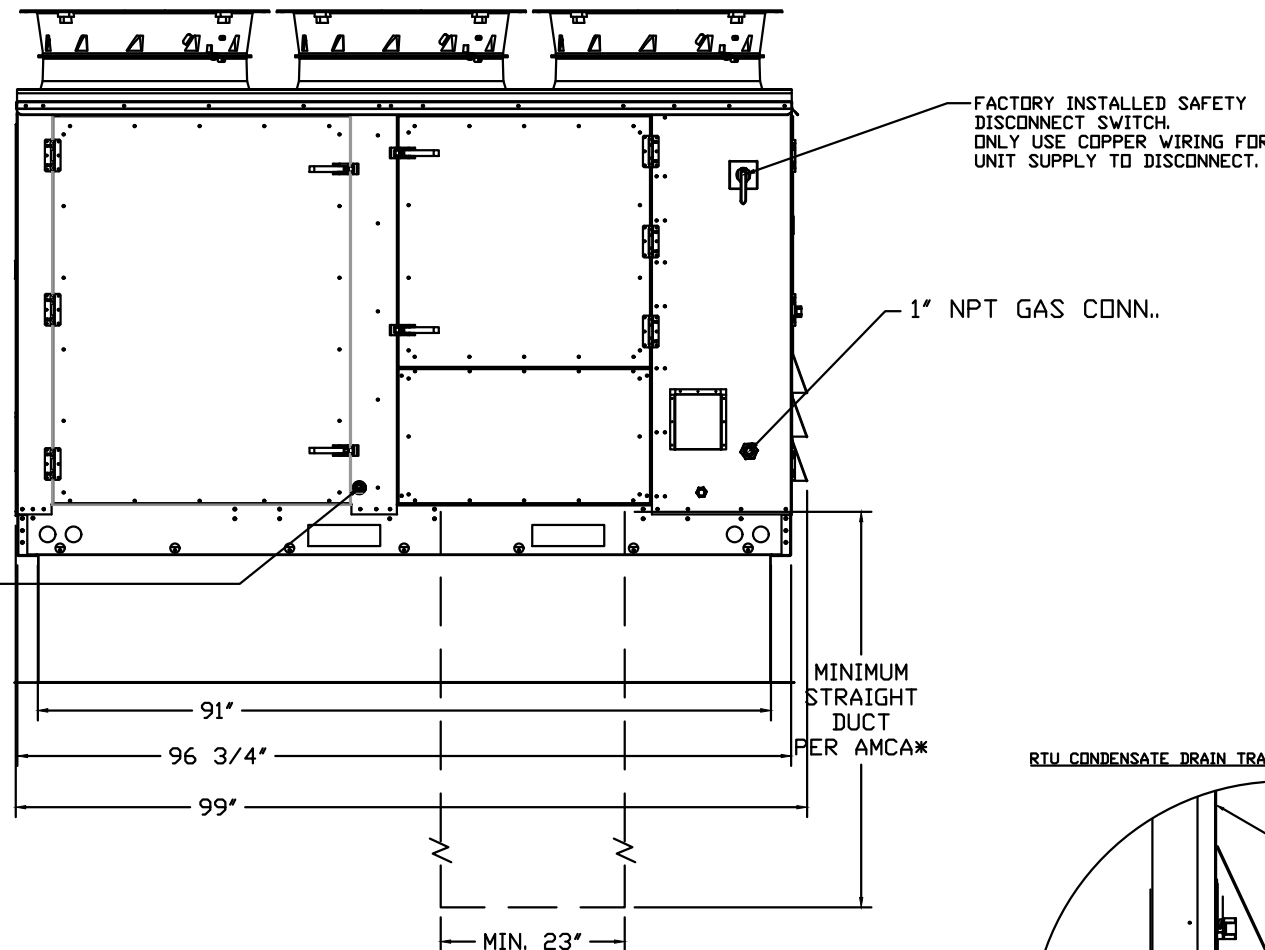
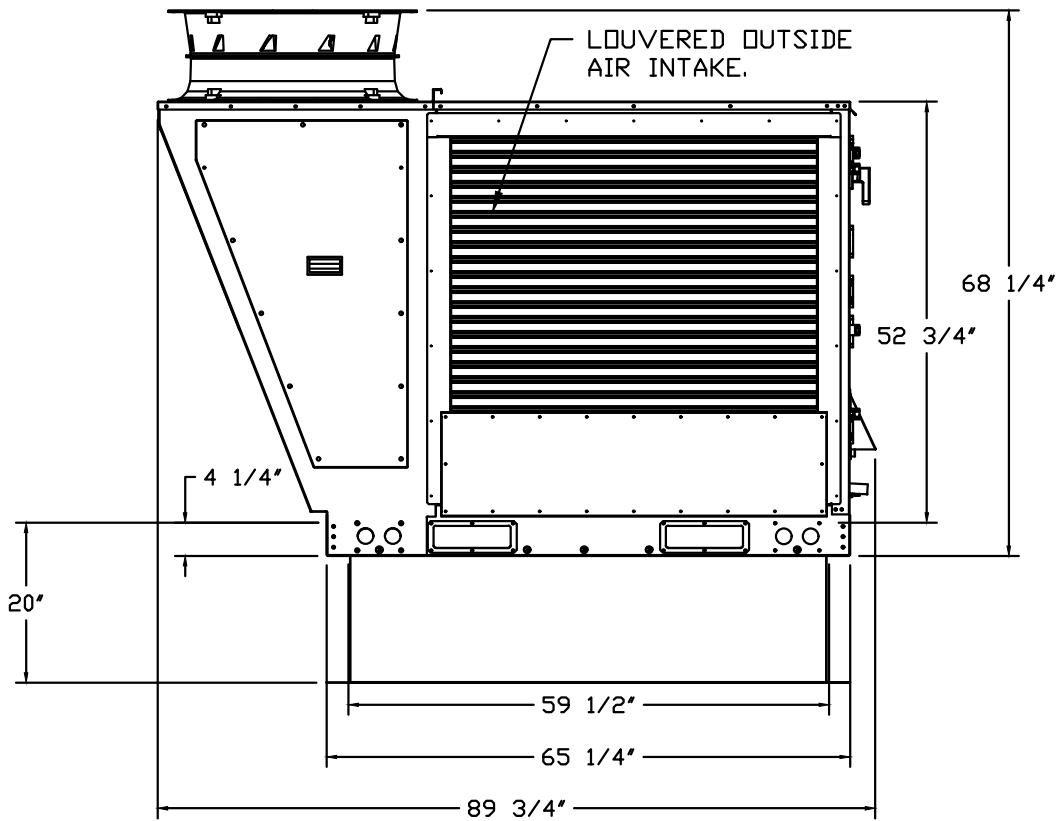
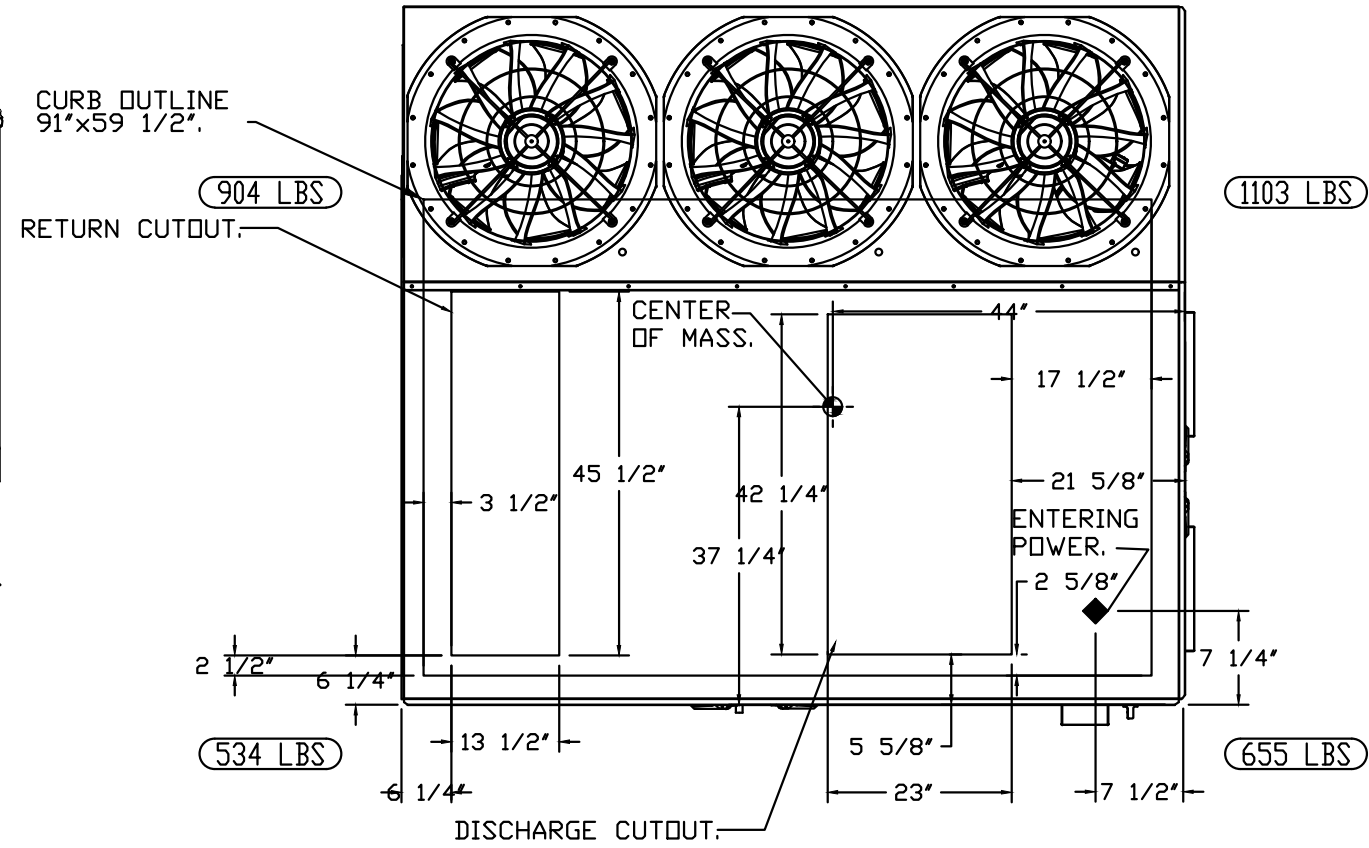
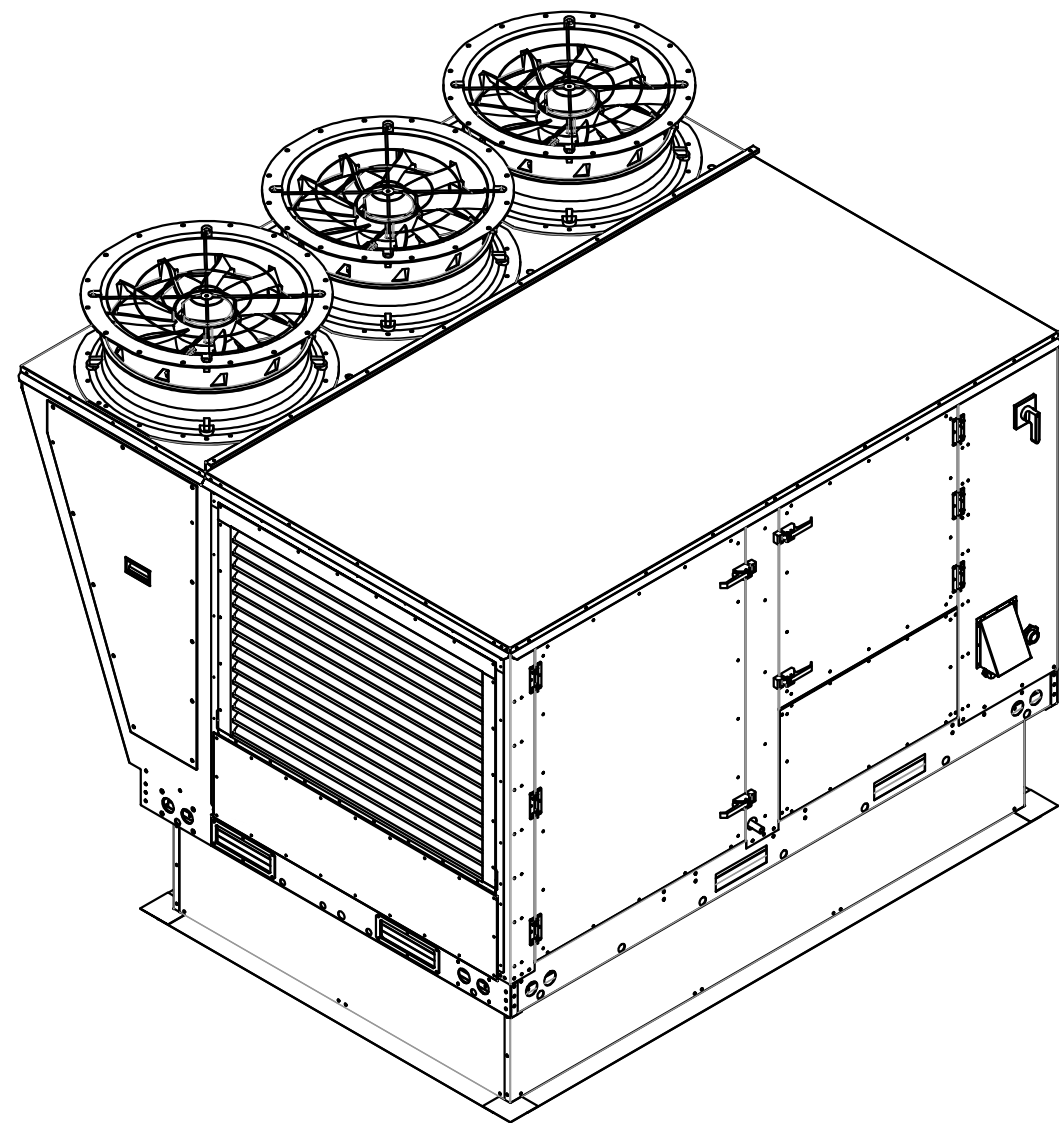
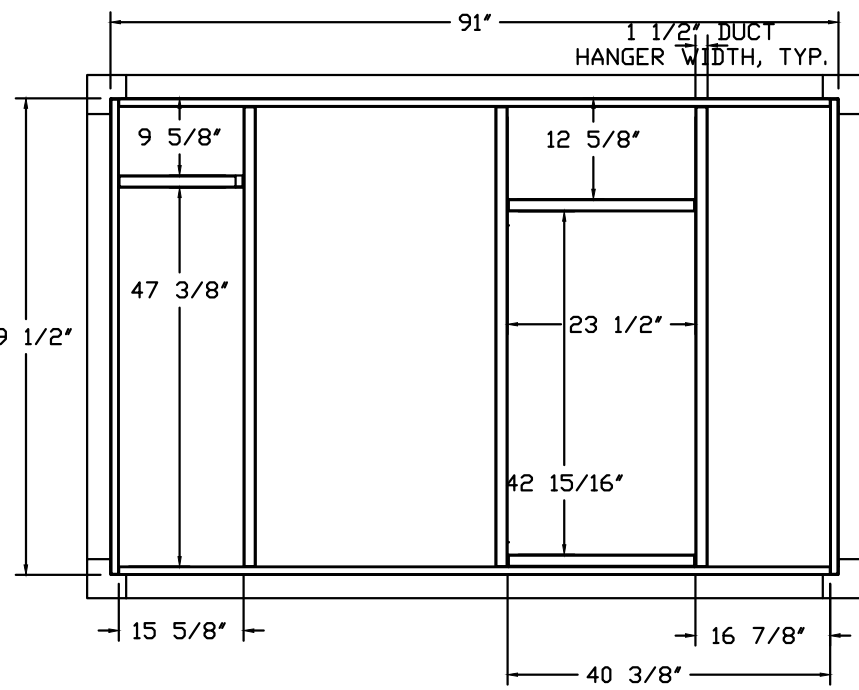
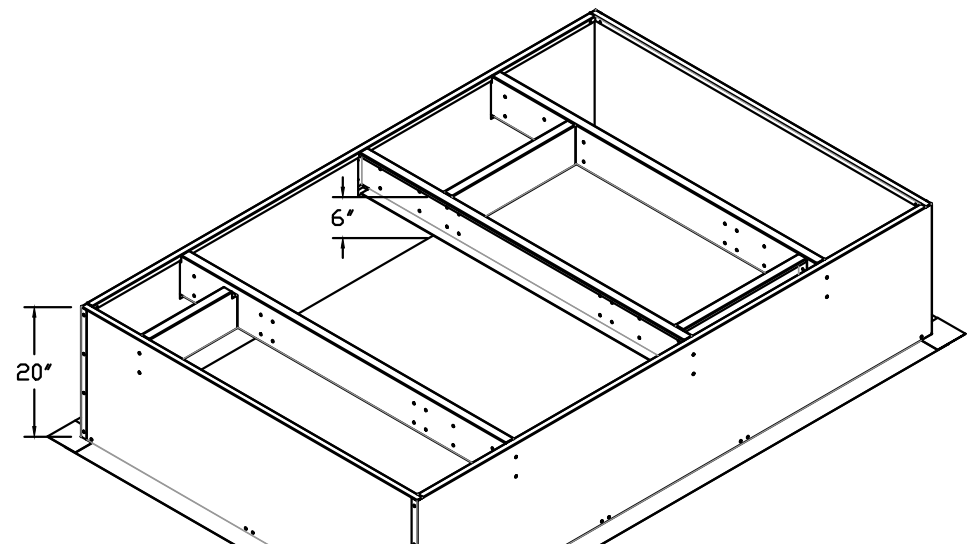
FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1	1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR8SHFA - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	ECM WIRING PACKAGE - PWM SIGNAL FROM ECMQ3 PREWIRE (TELCD MOTOR), CCW ROTATION
2	KEF-2	1	2 YEAR PARTS WARRANTY
		1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR8SHFA - INSTALLED AT PLANT - FOR GREASE DUCTS
3	KITCHEN RTU	1	ECM WIRING PACKAGE - PWM SIGNAL FROM ECMQ3 PREWIRE (TELCD MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
		1	INLET PRESSURE GAUGE, 0-35"
		1	MANFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE
		1	COOLING OVERRIDE
		1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU 750VA TRANSFORMER USED, IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "EP" PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
		1	RTU BLOWER DOOR SWITCH
		1	RTU3 DOWN DISCHARGE
		1	2" MERV 13 FILTERS FOR RTU3 (QTY. 4)
		1	2" MERV 8 FILTERS FOR RTU3 (QTY. 4)
		1	OVERHEAT STAT
		1	TOTAL CFM MONITORING
		1	VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
		1	30 TON MODULATING COOLING OPTION, 208/230V, SIZE 3 CABINET, R454B REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
		1	LOW AMBIENT COOLING OPERATION - DOWN TO 0°F AMBIENT
		1	R454B LEAK DETECTOR OPTION FOR RTUS
		1	OCCUPIED SCHEDULING
		1	INTAKE FIRESTAT SET TO 135°F
		1	FREEZESTAT
		1	DISCHARGE FIRESTAT SET TO 240°F
		1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		1	30 TON MODULATING REHEAT OPTION FOR SIZE 3 CABINET - SPACE SETPOINT CONTROL - R454B
		1	RTU3 CURB DUCT HANGER
		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
		1	RTUVZ670 COMPRESSOR SOUND BLANKET 230V - FACTORY INSTALLED
		1	RTU INTAKE/RETURN DAMPER - MANUAL CONTROL VIA HMI
		1	RTU3 DOWN RETURN
		1	2" METAL MESH FILTERS FOR RTU3 OUTDOOR INTAKE
		1	REMOTE TEMPERATURE AND HUMIDITY SPACE SENSOR
		1	VAV PACKAGE W/ 0-10VDC INPUT CONTROL (571 VFD INCLUDED)
		1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)
		1	EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET

HMI SCHEDULE					
UNIT NUMBER	HMI #	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS	
FAN #3	HMI #1 - UNIT	IN UNIT	NOT AVERAGED	55	
FAN #3	HMI #2 - SPACE		AVERAGED	56	

CURB ASSEMBLIES

NO	FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	40 LBS	CURB	23.000"W X 23.000"L X 26.000"H VENTED HINGED.
2	# 2	KEF-2	40 LBS	CURB	23.000"W X 23.000"L X 26.000"H VENTED HINGED.
3	# 3	KITCHEN RTU	130 LBS	CURB	59.500"W X 91.000"L X 20.000"H INSULATED.



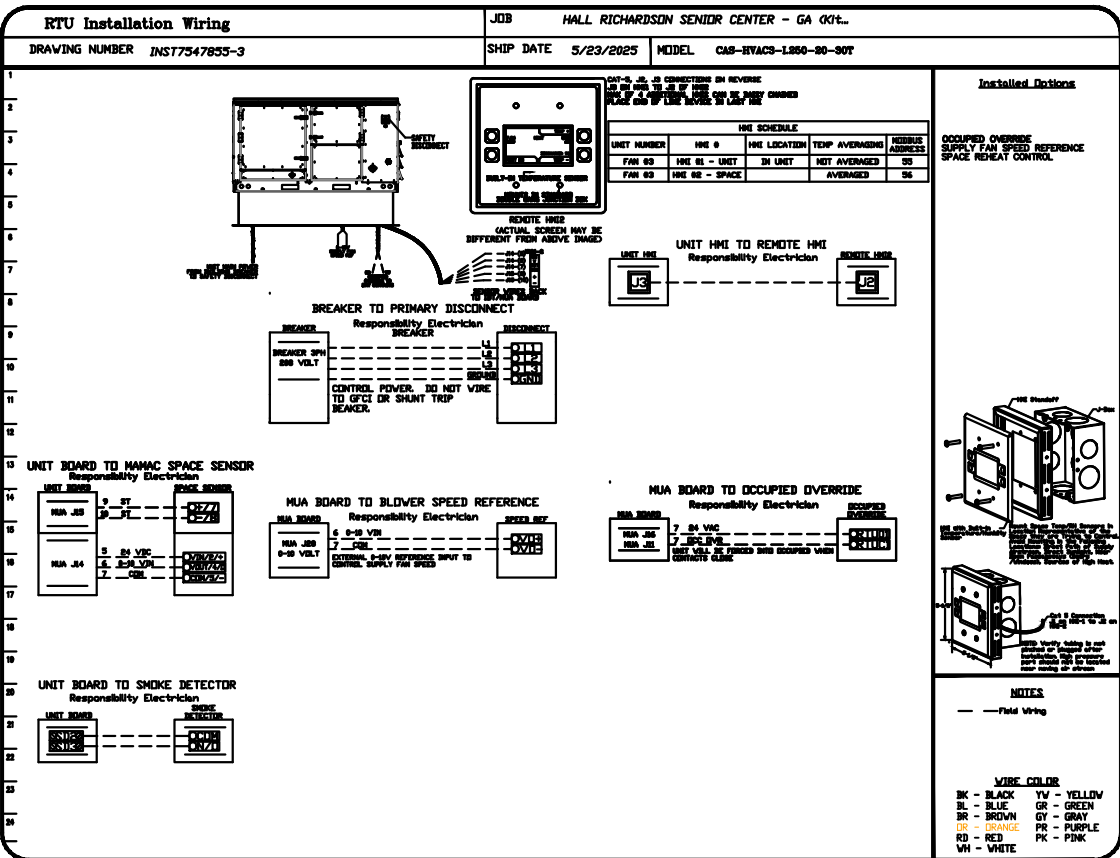
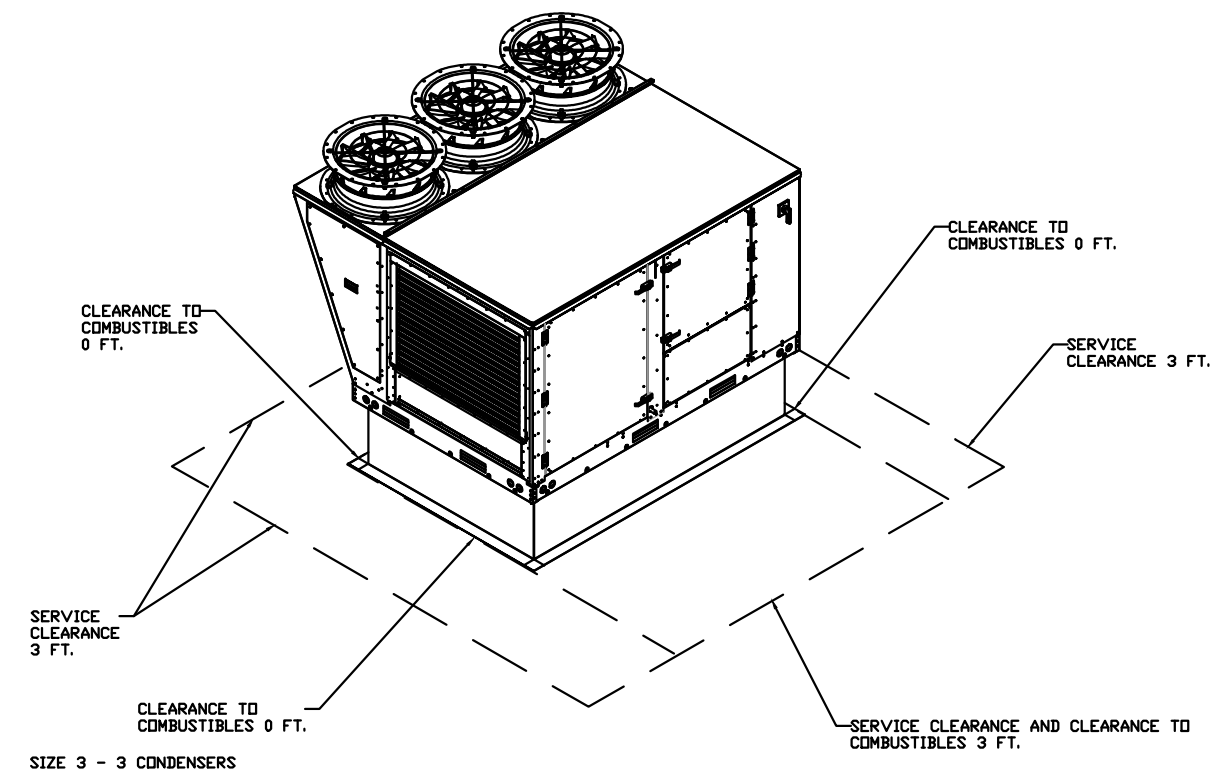
FAN #3 CAS-HVAC3-I250-20-30T - HEATER (KITCHEN RTU)

- NOTES:
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2.  DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
4. CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.
5. EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET.

*NOTE: INTEGRAL CO2 MONITORING AND CONTROL CAPABILITIES FOR ALL SPACE MOUNTED THERMOSTATS.

*NOTE: THIS UNIT IS INTENDED TO SERVE IN PLACE OF THE KITCHEN HVAC ROOF TOP UNIT (RTU) IN ADDITION TO PROVIDING APPROPRIATE MAKE-UP AIR FOR THE KITCHEN HOOD(S). RTU AND ASSOCIATED DUCTWORK SHALL BE REMOVED FROM SCOPE UNLESS REQUIRED FOR INTERNAL LOAD ESTIMATES. FINAL DESIGN SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 23" x 39".



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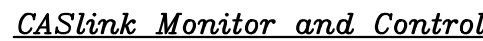
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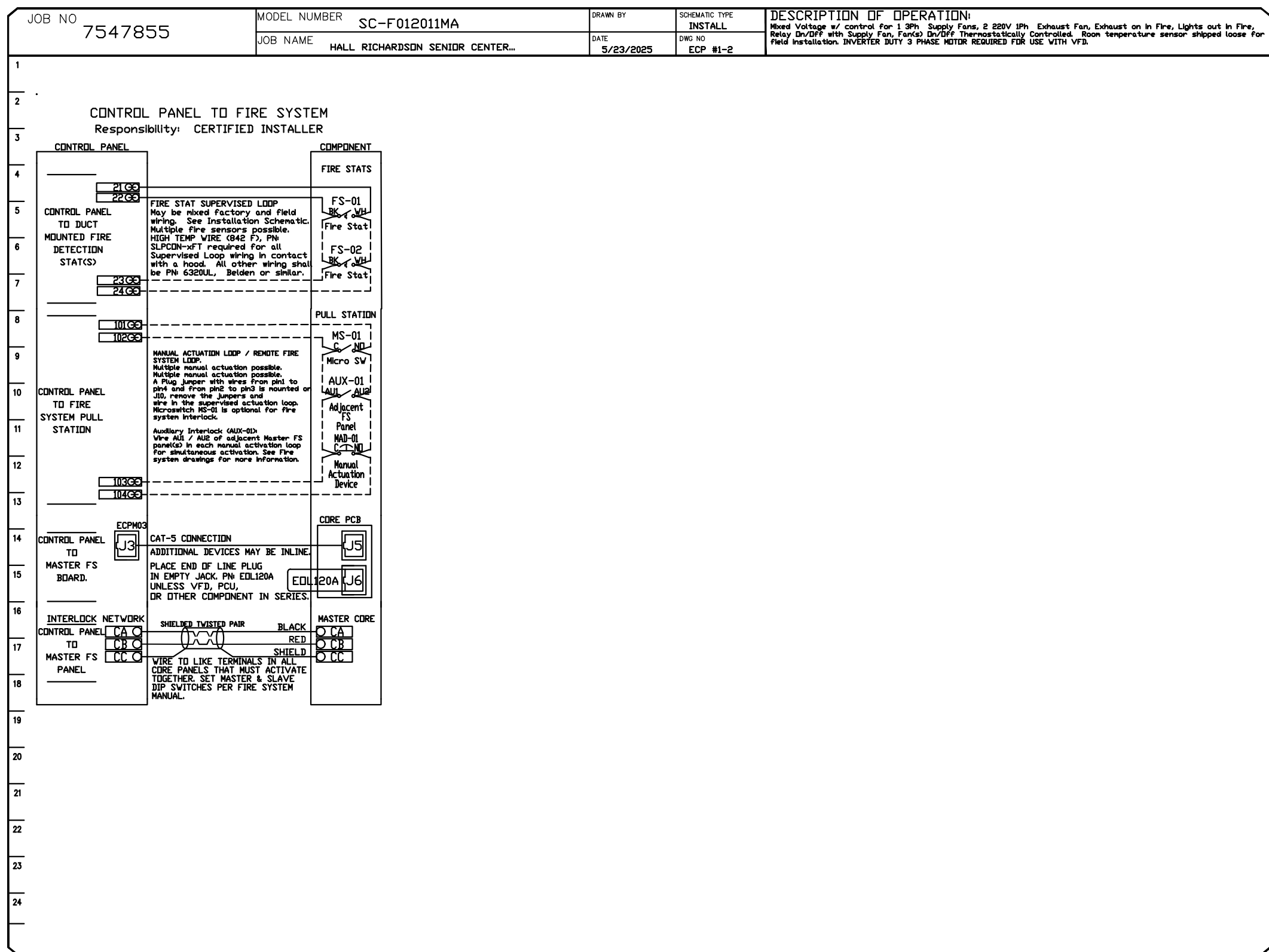
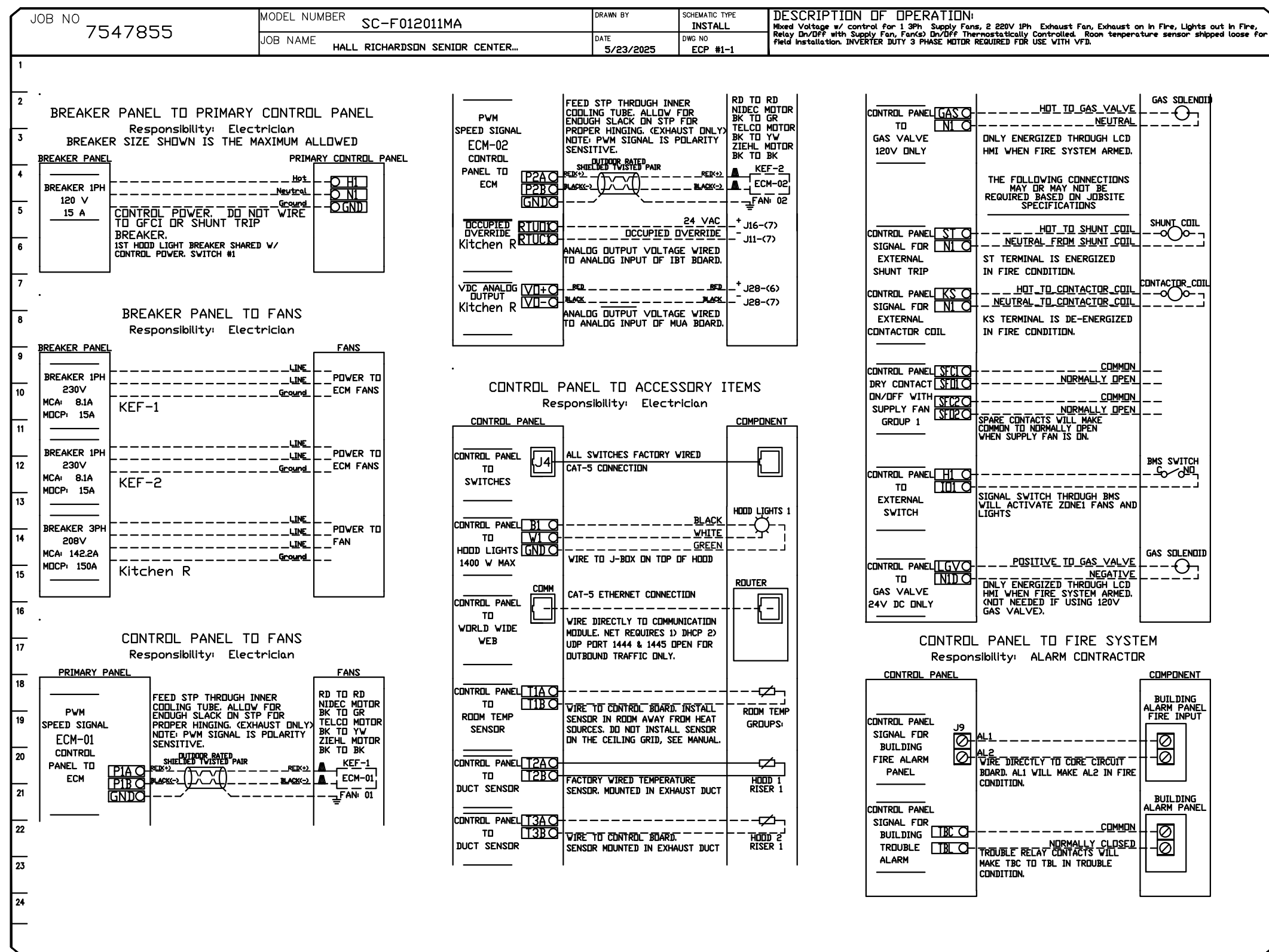
M-107

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED						
				LOCATION	QUANTITY		FAN TAG	TYPE	ø	HP	VOLTS	FLA	
1	SC-F012011MA	UTILITY CABINET LEFT	UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	KEF-1	EXHAUST	1	1000	230	6.5		
			HOOD # 1	1 FAN		KEF-2	EXHAUST	1	1000	230	6.5		
						Kitchen RTU	SUPPLY	3	5000	208	15.8		



- Hood control panel to support communications to cloud-based Building Management System.
- Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.
- Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as CONTROL in the points list.
- Hood Control Panel to allow cloud-based Building Management System to implement SYSTEM ECONOMIZER control strategies for fully integrated Building Management.

DVY Packages	Function	SC Packages	Function
Room Temperature	MONITOR	Room Temperature(s)	MONITOR
Duct Temperature(s)	MONITOR	Duct Temperature(s)	MONITOR
MUA Discharge Temperature	MONITOR	MUA Discharge Temperature	MONITOR
Kitchen RTU Discharge Temperature	MONITOR	Kitchen RTU Discharge Temperature	MONITOR
Fan Speed	MONITOR	Controler Faults	MONITOR
Fan Amperage	MONITOR	Fan Faults	MONITOR
Fan Power	MONITOR	Fan Status	MONITOR
VFD Faults	MONITOR	PCU Faults	MONITOR
Controler Faults	MONITOR	PCU Filter Clog Percentages	MONITOR
Fan Faults	MONITOR	Fire Condition	MONITOR
Fan Status	MONITOR	CORE Fire System	MONITOR
PCU Faults	MONITOR	Building Pressure	MONITOR
PCU Filter Clog Percentages	MONITOR	Fans Button(s)	MONITOR & CONTROL
Fire Condition	MONITOR	Lights Button(s)	MONITOR & CONTROL
CORE Fire System	MONITOR	Wash Button	MONITOR & CONTROL
Building Pressure	MONITOR		
Prep Tune Button	MONITOR & CONTROL		
Fans Button	MONITOR & CONTROL		
Lights Button	MONITOR & CONTROL		
Wash Button	MONITOR & CONTROL		



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REVISÉ PAR: JPP

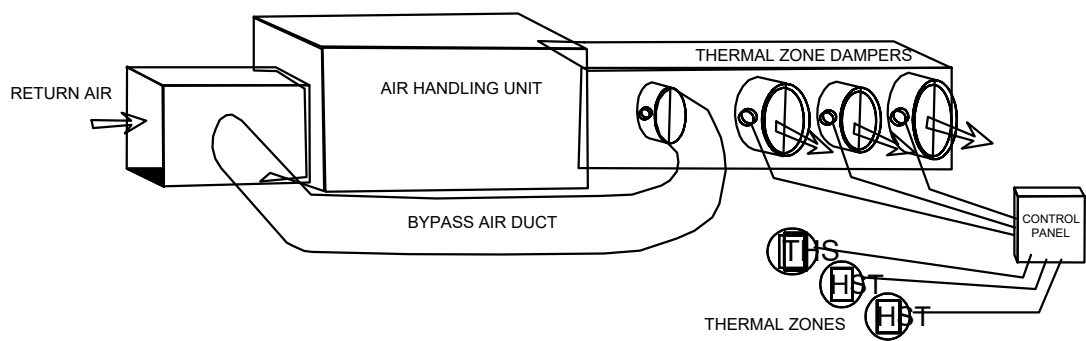
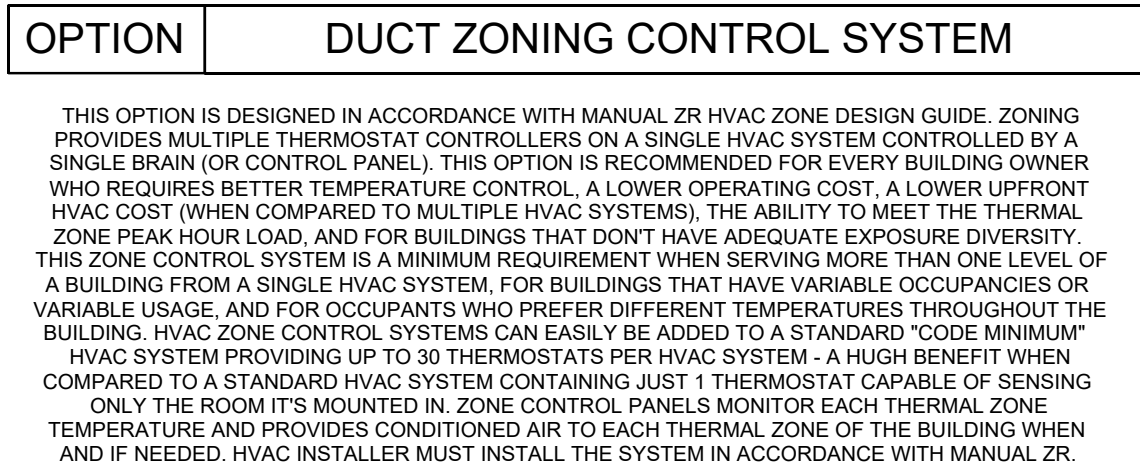
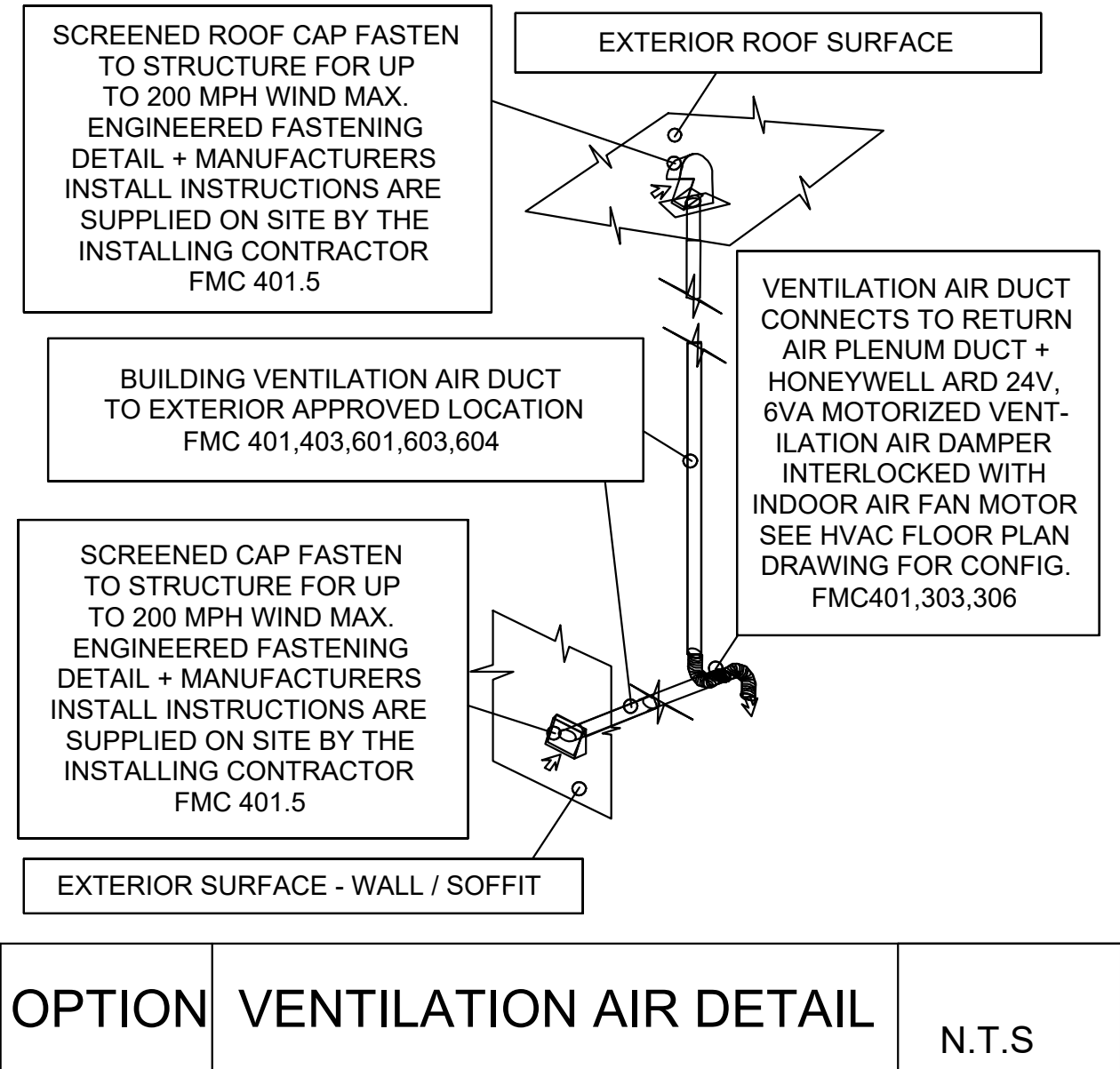
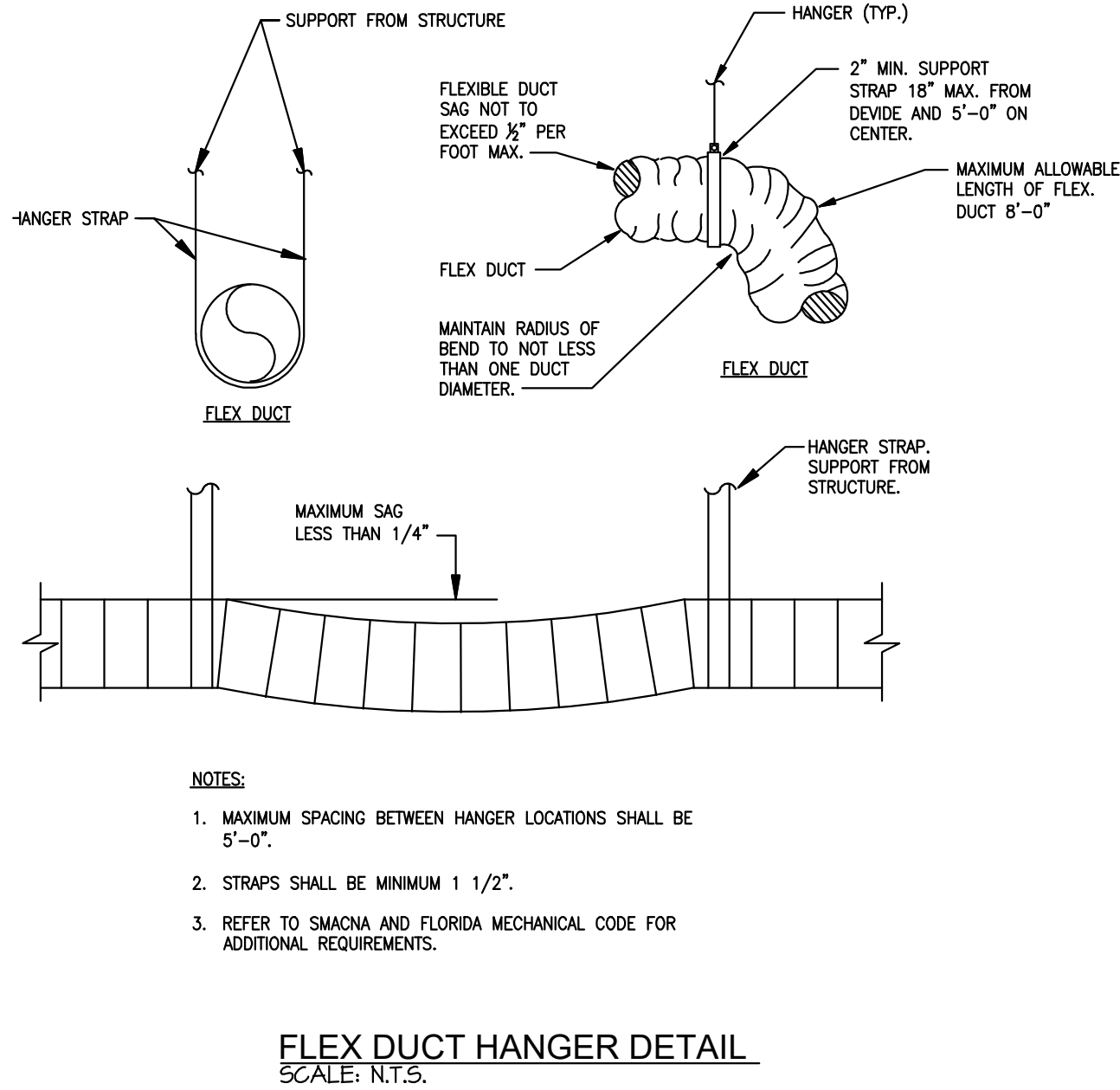
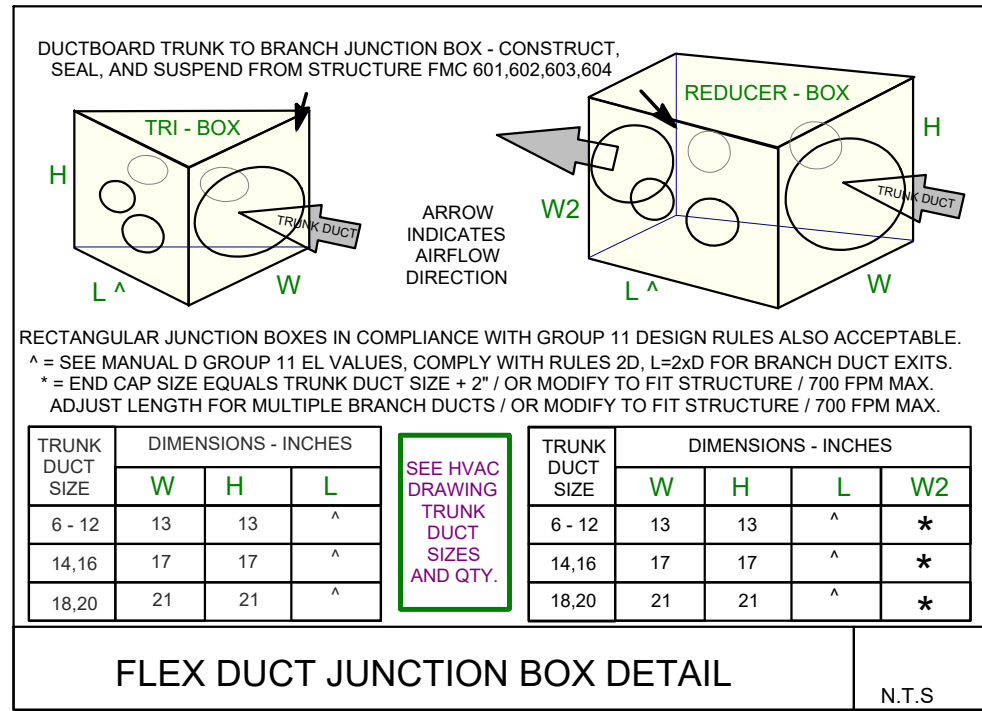
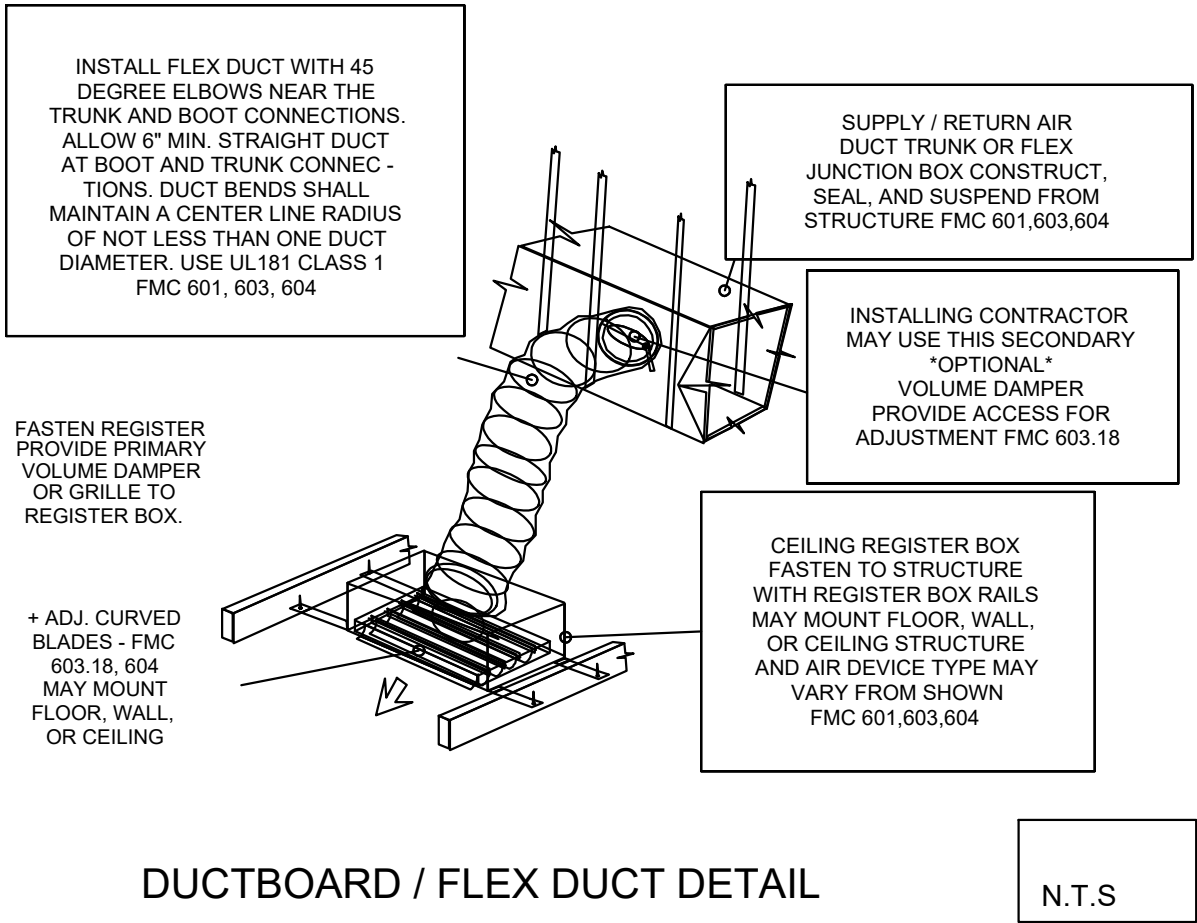
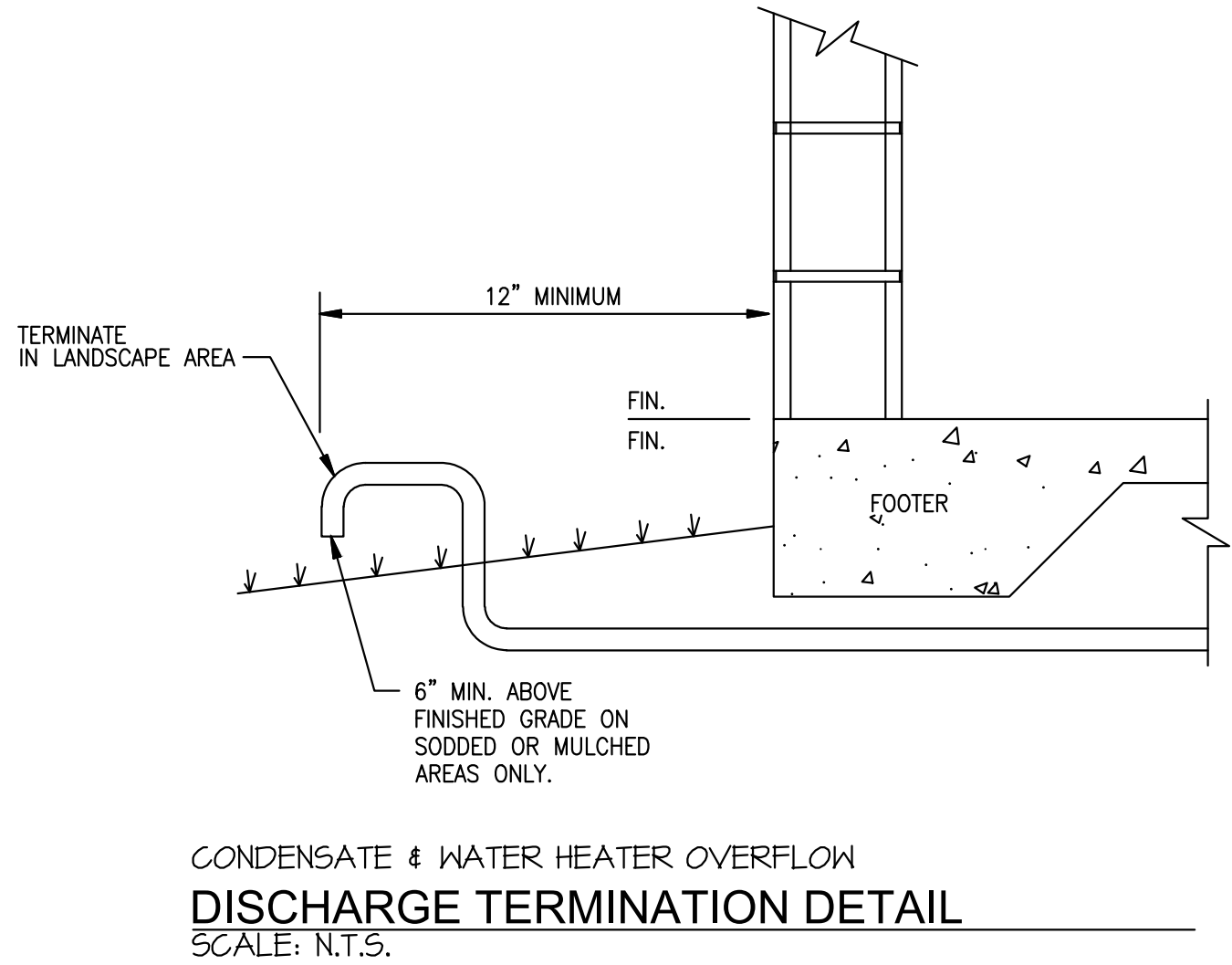
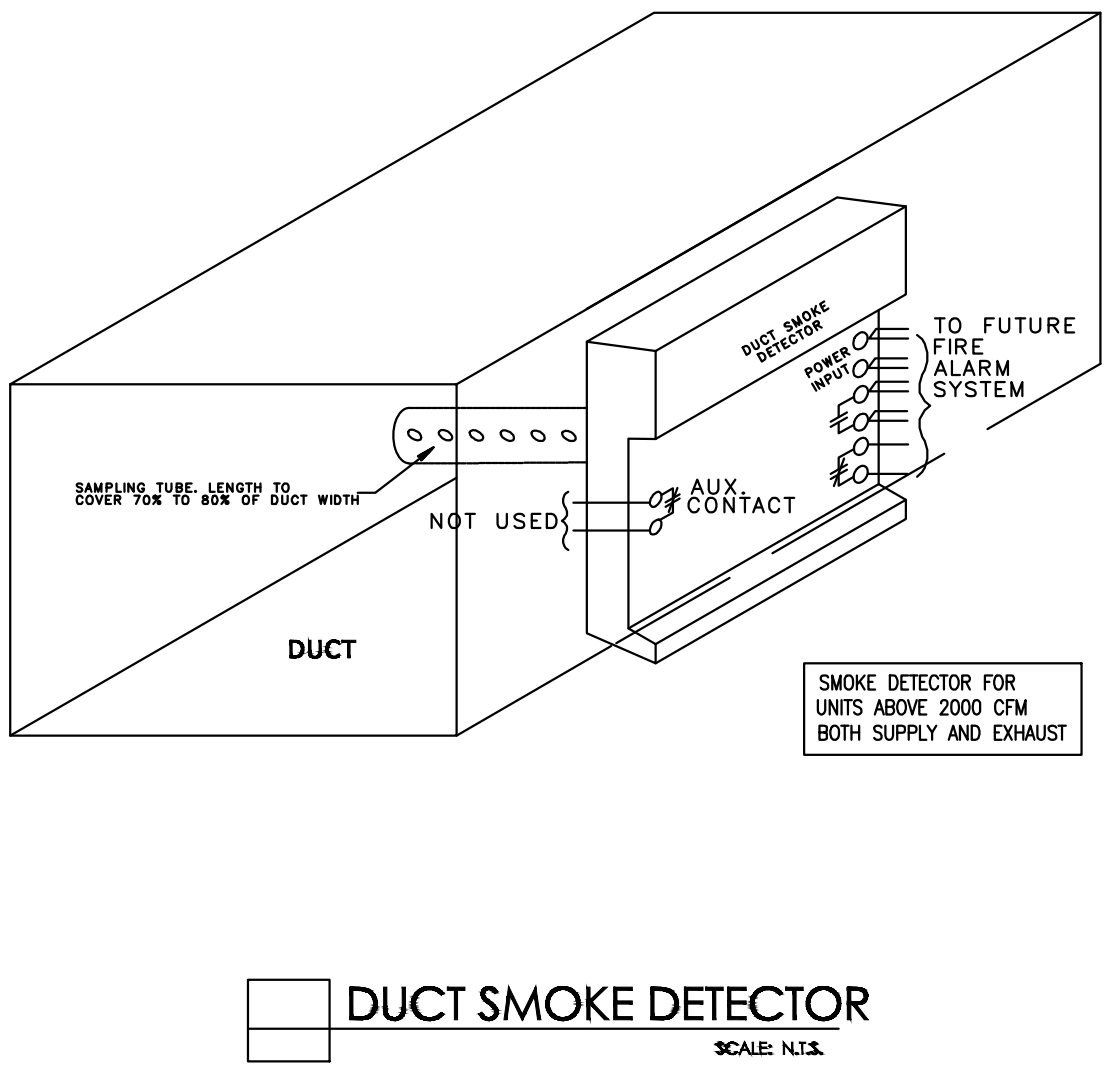
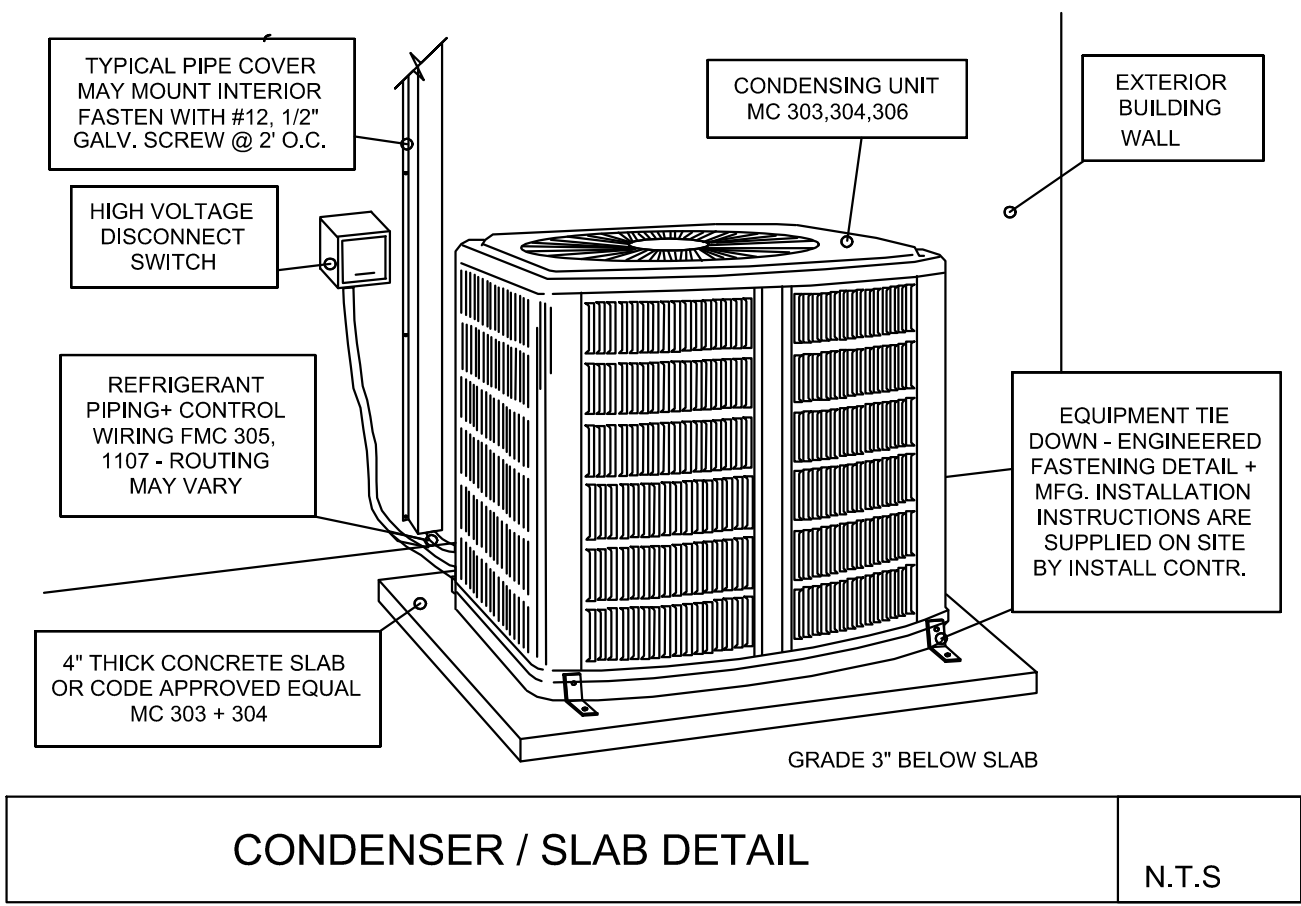
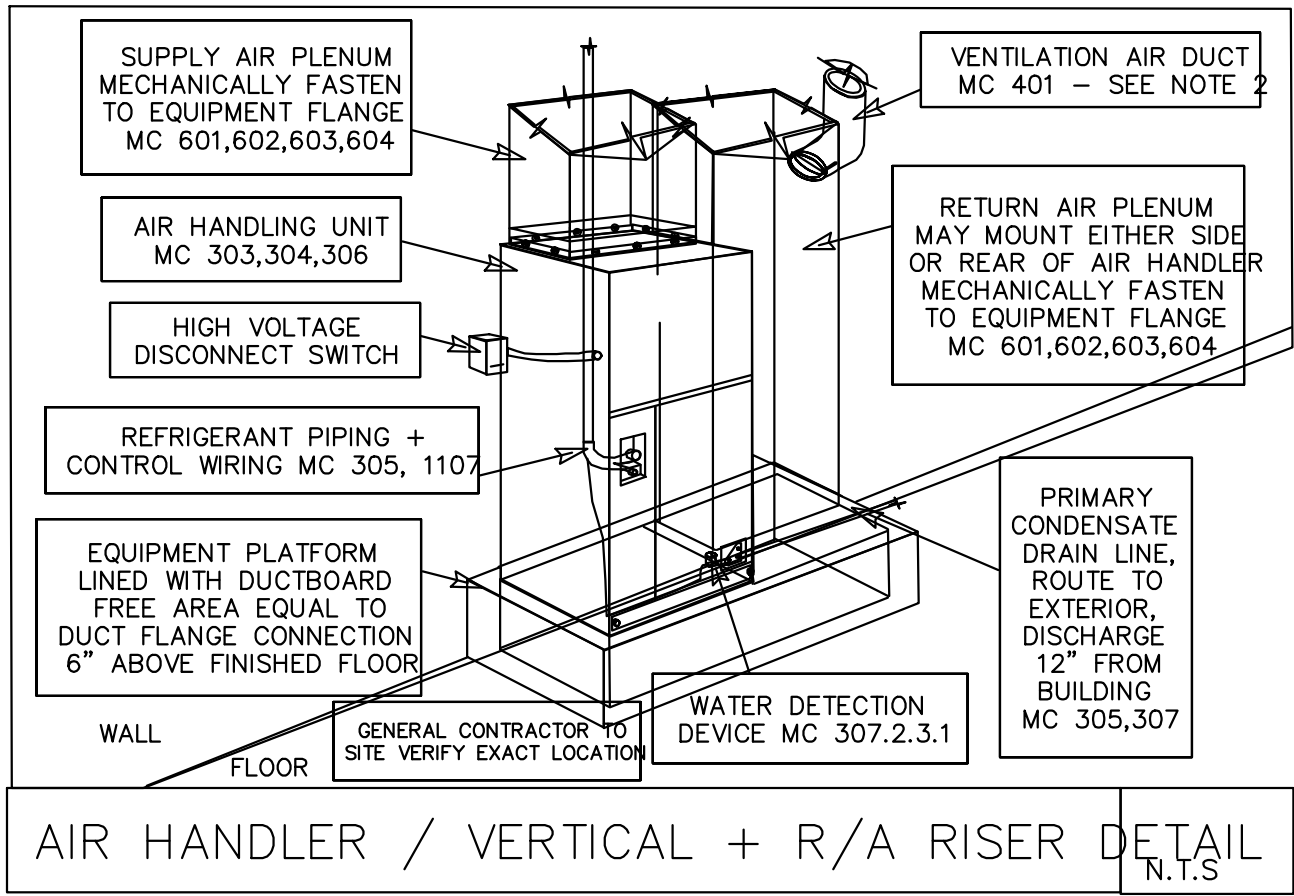
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SHEET TITLE:

MECHANICAL DETAILS

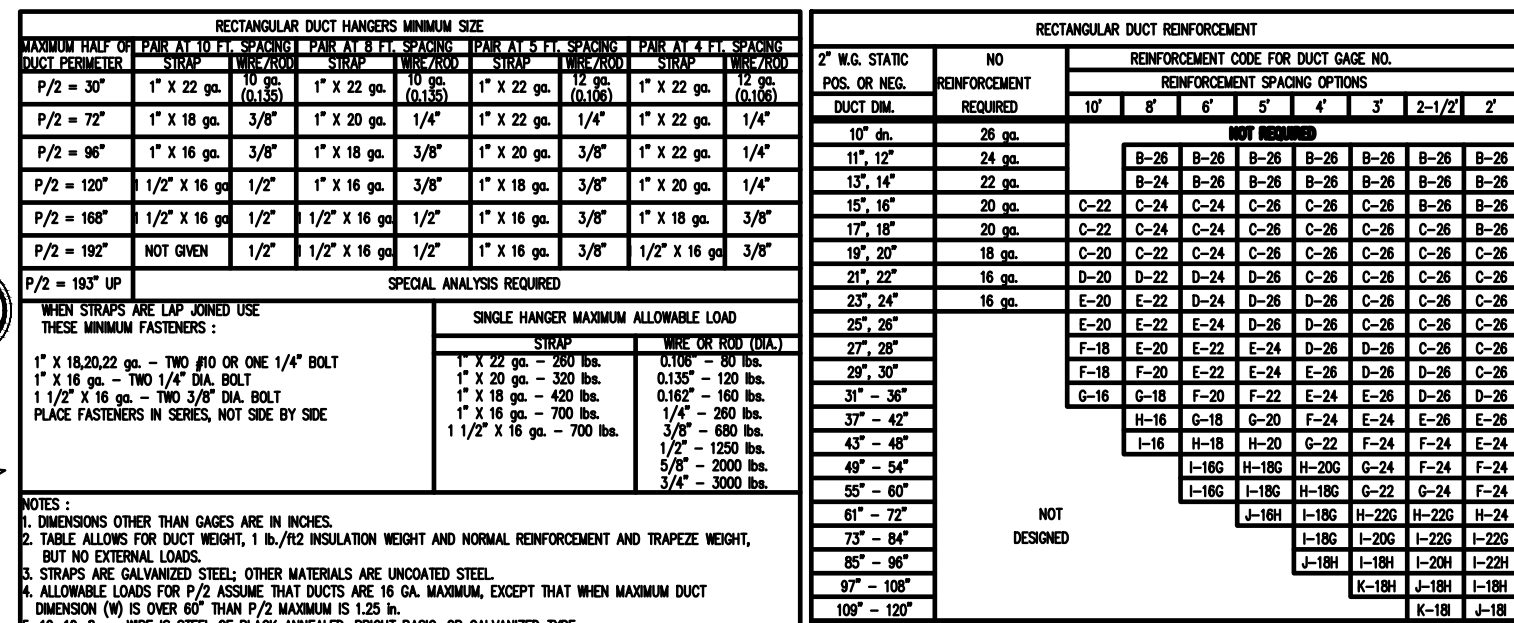
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SCALE: NTS



6 METHOD OF HANGING DUCTS DETAIL

M400



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MD-101

GENERAL

THE GENERAL MECHANICAL SPECIFICATIONS APPLY TO THE WORK SPECIFIED IN THIS SECTION. PROVIDE ALL LABOR, MATERIALS, SERVICES, EQUIPMENT AND APPLIANCES REQUIRED FOR THE FABRICATION, INSTALLATION, AND/OR RENOVATION OF MECHANICAL SYSTEMS INCLUDING HEATING, VENTILATING, AIR CONDITIONING AND MISCELLANEOUS SYSTEMS AS INDICATED IN DESIGN DRAWINGS AND AS OUTLINED IN THESE SPECIFICATIONS.

SCOPE OF WORK:

FURNISH AND INSTALL COMPLETE AIR CONDITIONING SYSTEMS AS INDICATED ON THE DESIGN DRAWINGS AND AS OUTLINED WITHIN THESE SPECIFICATIONS. WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FABRICATION AND/OR INSTALLATION OF THE SCHEDULED AIR CONDITIONING UNITS, EXHAUST FANS, AIR DISTRIBUTION AND DUCTWORK.

CLEANING, TESTING AND ADJUSTING: THE MECHANICAL CONTRACTOR, AT HIS EXPENSE, SHALL CLEAN, REPAIR, ADJUST, CHECK, BALANCE, AND PLACE IN SERVICE THE VARIOUS SYSTEMS HEREIN SPECIFIED WITH THEIR RESPECTIVE EQUIPMENT, ACCESSORIES AND PIPING. HE SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND TOOLS REQUIRED TO PERFORM TESTS REQUIRED BY THESE SPECIFICATIONS AND BY THE GOVERNING AUTHORITIES.

NO WORK SHALL BE COVERED OR CONCEALED UNTIL PROPERLY INSPECTED AND TESTED.

TESTING:

ADJUST THE AIR CONDITIONING SYSTEMS, VENTILATING SYSTEMS, FANS, ETC., TO DELIVER NOT LESS THAN THE REQUIRED AIR QUANTITY WITH QUANTITIES IN EXCESS TO BE SUBJECT TO THE APPROVAL OF THE ENGINEER IF FOUND TO NOT HAVE OBJECTIONABLE EFFECTS SUCH AS NOISE, DRAFTS, OR MOTOR OVERLOAD.

PRIOR APPROVAL BY THE ENGINEER OF TESTING AND BALANCING CONTRACTOR IS REQUIRED. THIS CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A TEST AND BALANCE REPORT TO THE ENGINEER AT TIME OF SUBSTANTIAL COMPLETION INSPECTION. THE REPORT SHALL BE PREPARED BY A CONTRACTOR CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL OR NATIONAL ENVIRONMENTAL BALANCING BUREAU.

THE TEST AND BALANCE REPORT SHALL BE TYPEWRITTEN AND CONTAIN THE FOLLOWING DATA:

1. DATE, TIME, WEATHER, WHEN TEST TAKEN.
2. AIR CAPACITIES AT EACH UNIT INCLUDING OUTSIDE AIR. (ENTERING AND LEAVING DB/WB)
3. STATIC PRESSURE THROUGH UNITS AND UNIT COMPONENTS.
4. MOTOR OPERATING VOLTAGE AND AMPERAGE.
5. DRIVE TYPES, SIZES AND SPEED RANGE.
6. IDENTIFICATION OF ALL AIR TERMINAL DEVICES WITH DESIGN CFM AND ACTUAL CFM.

ADDITIONALLY, SYSTEMS DRAWING CLEARLY MARKED TO IDENTIFY LOCATION OF EQUIPMENT AND AIR DEVICES TESTED SHALL BE PROVIDED ALONG WITH THE WRITTEN TEST AND BALANCE REPORT.

MAINTENANCE MANUALS

PROVIDE COMPLETE MAINTENANCE MANUALS (3 REQUIRED) ON ALL NEW EQUIPMENT. ORGANIZE OPERATING AND MAINTENANCE DATA INTO SUITABLE SETS OF MANAGEABLE SIZE. BIND PROPERLY INDEXED DATA INTO INDIVIDUAL, HEAVY-DUTY, 2-INCH, 3-RING VINYL COVERED BINDERS WITH POCKET FOLDERS FOR FOLDED SHEET INFORMATION. MARK APPROPRIATE IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER. INCLUDE THE FOLLOWING TYPES OF INFORMATION. THE INFORMATION WILL BE TURNED OVER TO THE OWNER AT TIME OF SUBSTANTIAL COMPLETION:

- OPERATING AND MAINTENANCE INSTRUCTIONS
- SPARE PARTS LIST
- COPIES OF WARRANTIES
- WIRING DIAGRAMS
- INSPECTION REPORTS AND APPROVALS
- SHOP DRAWINGS AND PRODUCT DATA
- TEST AND BALANCE INFORMATION

TRAINING SERVICES

THOROUGHLY INSTRUCT THE OWNER'S REPRESENTATIVE IN THE OPERATION OF ALL EQUIPMENT FURNISHED AND LOCATION OF ALL VALVES AND CONTROL DEVICES.

TRAIN BUILDING OWNER'S PERSONNEL DURING NORMAL WORKING HOURS ON STARTUP AND SHUTDOWN PROCEDURES, TROUBLESHOOTING PROCEDURES, SERVICING AND PREVENTATIVE MAINTENANCE SCHEDULE AND PROCEDURES. REVIEW WITH THE OWNER'S PERSONNEL, THE DATA CONTAINED IN THE OPERATING AND MAINTENANCE MANUALS. SCHEDULE TRAINING WITH OWNER, PROVIDE AT LEAST 7-DAYS PRIOR NOTICE TO ARCHITECT/ENGINEER.

HANGERS AND SUPPORTS

PROVIDE ALL NECESSARY HANGER RODS, CLAMPS AND ATTACHMENTS TO PROPERLY INSTALL AND SUPPORT DUCTWORK, PIPING AND EQUIPMENT FROM THE BUILDING STRUCTURE.

PROVIDE ANY ANGLE IRON OR UNISTRUT AND SUSPENSION RODS REQUIRED TO INSTALL EQUIPMENT, PIPING AND DUCTWORK. SUPPORTED LOADS SHALL NOT BE APPLIED TO CANTILEVERED ENDS OF UNISTRUT. ALL SUPPORTS EXPOSED TO OUTDOORS SHALL BE CLEANED, PRIMED AND PAINTED TO PREVENT RUSTING. FINISH COLOR AS SELECTED BY OWNER.

THE USE OF BALING WIRE OR PERFORATED METAL STRAPPING IS NOT ACCEPTABLE FOR SUPPORTS.

WARRANTY/GUARANTEE:

THE CONTRACTOR SHALL WARRANTY/GUARANTEE AND MAINTAIN THE STABILITY OF WORK AND MATERIALS AND KEEP SAME IN PERFECT REPAIR AND CONDITION FOR THE PERIOD OF ONE (1) YEAR.

DEFECTS OF ANY KIND DUE TO FAULTY WORK OR MATERIALS APPEARING DURING THE ABOVE MENTIONED PERIOD MUST BE IMMEDIATELY MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE TO THE ENTIRE SATISFACTION OF THE OWNER AND ARCHITECT AND ENGINEER. SUCH RECONSTRUCTION AND REPAIRS SHALL INCLUDE ALL DAMAGE TO THE FINISH OR FURNISHING OF THE BUILDING RESULTING FROM THE ORIGINAL DEFECT OR REPAIRS THERETO.

SUBSTITUTIONS:

EQUIPMENT AND DESIGN OF SYSTEMS INDICATED ON THE DRAWINGS AND WITHIN THESE SPECIFICATIONS SHALL BE CONSIDERED AS "STANDARD OF QUALITY". NO SUBSTITUTIONS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER. ALL EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED, FREE OF DEFECTS, AS SHOWN ON THE DRAWINGS OR INDICATED IN SPECIFICATIONS.

DEVIATIONS FROM SPECIFIED EQUIPMENT AFFECTING ELECTRICAL REQUIREMENTS SHALL BE COORDINATED BETWEEN VENDOR, MECHANICAL CONTRACTOR, AND ELECTRICAL CONTRACTOR PRIOR TO SUBMITTING BIDS. FAILURE TO DO SO WILL NOT BE CAUSE FOR CHANGE OF BID AT A LATER TIME. IN ADDITION, THE MECHANICAL CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR ANY AND ALL CHANGES TO ENGINEERING PLANS REQUIRED BY AUTHORITY HAVING JURISDICTION.

SHOP DRAWINGS AND SUBMITTALS:

SUBMIT SHOP DRAWINGS AND MANUFACTURER'S DATA FOR ALL NEW EQUIPMENT FOR ENGINEER'S APPROVAL PRIOR TO PURCHASE AND/OR FABRICATION. SHOP DRAWINGS FOR EQUIPMENT REQUIRING ELECTRIC POWER OR CONTROL WIRING SHALL INCLUDE COMPLETE WIRING DIAGRAMS.

HVAC CONTRACTORS SHALL SUBMIT COMPLETE DUCTWORK SHOP DRAWINGS FOR REVIEW BY THE ENGINEER. SHOP DRAWINGS SHALL INCLUDE COORDINATION WITH GENERAL CONTRACTOR REGARDING EXACT OPENINGS REQUIRED IN EXTERIOR WALLS. THE DUCTWORK SHOP DRAWINGS WILL ONLY BE REVIEWED FOR COMPLIANCE WITH DRAWINGS AND SPECIFICATIONS. DRAWINGS WILL NOT BE CHECKED FOR COORDINATION WITH OTHER TRADES OR BUILDINGS STRUCTURE. IT IS THE RESPONSIBILITY OF THE CONTRACTORS TO COORDINATE AND VERIFY ROUTING AND EXACT LOCATION OF SYSTEM COMPONENTS.

SYSTEM IDENTIFICATION:

PROVIDE IDENTIFICATION LABELS ON OR NEAR EACH PIECE OF MAJOR EQUIPMENT AND EACH OPERATION DEVICE, AND DISCONNECT. LABELS SHALL BE CONSTRUCTED OF ENGRAVED PLASTIC LAMINATE SIGN OR PLASTIC EQUIPMENT MARKER PERMANENTLY SECURED TO EQUIPMENT. LETTERING SHALL BE A MINIMUM OF 1/2 INCH HIGH FOR EQUIPMENT NAME AND 3/8 INCH HIGH FOR EQUIPMENT INFORMATION.

VALVES SHALL BE TAGGED USING PLASTIC LAMINATE TAGS SECURED WITH BRASS CHAINS INDICATING THE VALVE SIZE, SERVICE AND FUNCTION.

EXECUTION:

ALL LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC., INDICATED ON THE DRAWINGS IS DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE TO THE PLANS SUBJECT TO BUILDING CONSTRUCTION AND INTERFERENCES WITH OTHER TRADES. CONTRACTOR IS RESPONSIBLE FOR ANY FIELD MEASUREMENTS REQUIRED TO PROVIDE AN APPROVED AND FUNCTIONAL INSTALLATION.

COORDINATE WITH OTHER TRADES AND FIELD-VERIFY EXISTING CONDITIONS FOR EXACT LOCATION AND ROUTING OF SYSTEMS. PROVIDE OFFSETS, TRANSITIONS AND ADAPTORS AS REQUIRED.

NOT ALL COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION ARE SHOWN ON THESE DRAWINGS. REFER TO EQUIPMENT INSTALLATION INSTRUCTION, SCHEDULES AND APPLICABLE CODES FOR ADDITIONAL INFORMATION, INCLUDING REQUIRED CONNECTION LOCATIONS, TYPES AND SIZES.

PERFORM ALL WORK NECESSARY TO PREPARE THE STRUCTURE FOR THE INSTALLATION OF THE WORK. ALL HOLES, OPENINGS AND DAMAGED MATERIALS CREATED DURING CONSTRUCTION SHALL BE REPAIRED. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED SO AS TO BE WATER AND AIR TIGHT.

PIPING:

CONDENSATE DRAINS:

CONDENSATE PIPE TO BE TYPE L COPPER OR SCHEDULE 40 PVC. ROUTE AS INDICATED ON PLANS. UNITS 3 TONS AND SMALLER MAY DRAIN TO GRADE, ELSE COORDINATE WITH PLUMBER TO PROVIDE HUB DRAINS(S) IN MECHANICAL ROOM AND DRYWELL(S). HVAC CONTRACTOR TO PROVIDE P-TRAP AT UNIT SIZED FOR 2" GREATER THAN UNIT STATIC PRESSURE. PROVIDE CLEANOUT AT UNIT FOR SUSPENDED HORIZONTAL AIR HANDLERS. INSULATE CONDENSATE PIPE WITH 1/2" ARMAFLEX (OR EQUAL) INSULATION RATED FOR PLENUM APPLICATION. CONDENSATE DRAIN LINE SHALL BE NOT LESS THAN THE EQUIPMENT DRAIN LINE SIZE AND IN NO CASE LESS THAN 3/4" PIPE SIZE. DRAIN LINE SHALL SLOPE A MINIMUM OF 1/8" PER FOOT TOWARDS DRAIN. TERMINATION POINT SHALL BE COMPLY WITH BCM 2023 SECTION 307.2

REFRIGERANT PIPING:

PIPING SHALL BE FIELD FABRICATED ASTM B280 MUELLER STREAMLINE ACR OR READING HARD DRAWN FACTORY SEALED NITROGEN CHARGED SPECIAL REFRIGERATION DUTY COPPER TUBING. FITTINGS SHALL BE MUELLER OR NIBCO WROUGHT COPPER LONG RADIUS REFRIGERATION TYPE.

WORKMANSHIP ON THESE SYSTEMS MUST BE GOOD, AND CLEANLNESS OF PIPING SYSTEMS IS MANDATORY. WORK THAT DOES NOT MEET THESE CRITERIA SHALL BE REMOVED AND REPLACED AT NO COST TO THE OWNER. THE ENGINEER SHALL DETERMINE WHETHER THE WORK MEETS THESE CRITERIA.

COVER ALL EXPOSED LIQUID LINES AND ALL SUCTION PIPING (INDOORS AND OUTDOORS), FITTINGS, VALVES, ETC., CONTINUOUS THROUGH SLEEVES, HANGERS, ETC., WITH 3/4" FR/ARMAFLEX. INSTALLATION SHALL BE CONDENSATION FREE AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. PAINT ALL INSULATION EXPOSED TO OUTDOORS WITH UV PROTECTIVE PAINT PER MANUFACTURERS RECOMMENDATIONS.

REFRIGERANT PIPING BELOW GRADE SHALL BE ROUTED THROUGH MINIMUM 4" DIAMETER PVC PIPE SLEEVES TO EACH CONDENSING UNIT. ALL UNDERGROUND REFRIGERANT PIPING SHALL BE CONTINUOUS SOFT DRAWN TUBING WITH NO UNDERGROUND JOINTS ALLOWED. REFRIGERANT PIPE SIZES SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATION BASED ON LENGTH OF RUN BETWEEN CONDENSING UNITS AND AHU'S. REFRIGERANT PIPING SHALL NOT BE LOCATED IN A MEANS OF EGRESS

PIPING ROUTED ALONG BUILDING EXTERIOR WALL SHALL BE PROTECTED BY SHEET METAL HOUSING SECURELY ATTACHED TO WALL AT 8'-0" INTERVALS AND PAINTED TO MATCH BUILDING EXTERIOR.

TRAP OIL IN SUCTION LINE AT EVAPORATOR COIL. NO OTHER COIL TRAPS PERMITTED. PROVIDE SUCTION RISERS, CHECK VALVES, SOLENOID VALVES, OR OTHER DEVICES REQUIRED IN PIPING SYSTEM BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.

FURNISH ALL LABOR AND MATERIALS TO REPLACE REFRIGERANT LOST DURING THE ONE YEAR WARRANTY PERIOD.

PIPE HANGERS AND SUPPORTS:

PIPE HANGERS, WHERE NEEDED, SHALL BE GRINNEL #260 CLEVIS TYPE, 5'-0" ON CENTER, SECURELY ATTACHED TO BUILDING CONSTRUCTION. SPACE AT MIN. 5'-0" INTERVALS.

PIPE SUPPORT:

ATTACH LINES SECURELY ALONG PAD/FLOOR/EQUIPMENT/STRUCTURE TO PREVENT MOVEMENT. SUPPORT IN A MANNER THAT LINES DO NOT HANG FROM EVAPORATOR CONNECTIONS OR BLOCK ACCESS TO FILTERS, CONTROLS, ETC.

SUPPORT AT MIN. 8'-0" INTERVALS FOR VERTICAL PIPES, 5'-0" FOR SUSPENDED HORIZONTAL PIPING.

VIBRATION ISOLATION:

ALL BLOWER UNITS AND VIBRATING TYPE EQUIPMENT SHALL BE PROPERLY FITTED WITH MASON INDUSTRIES VIBRATION ISOLATION EQUIPMENT SIZED IN ACCORDANCE WITH EQUIPMENT WEIGHT AND DUTY.

PROVIDE FLEXIBLE CONNECTORS AT ALL SUPPLY AND RETURN CONNECTIONS TO AIR HANDLING EQUIPMENT CONSISTING OF HEAVY CANVAS OR NEOPRENE FABRIC WITH AIRTIGHT SEAMS AND CONNECTIONS TO THE EQUIPMENT.

AIR FILTERS:

FILTERS SHALL BE 1" FIBERGLASS MEDIA THROW AWAY TYPE IN A RIGID FRAME WITH A SUPPORTING MAZE ACROSS BOTH ENTERING AND LEAVING SURFACES. SUPPLY ONE COMPLETE SET OF FILTERS AFTER OWNER'S FINAL ACCEPTANCE. FARR 30/30 OR EQUAL.

DUCTWORK:

ALL DIMENSIONS ARE INSIDE NET FREE AREA.

MATERIALS: LOW PRESSURE SUPPLY AND RETURN DUCTWORK SHALL BE FIBERBOARD EQUAL TO MANSVILLE FR-800 (SUPERDUCT). PROVIDE MINIMUM "R" VALUE OF 4.2 FOR DUCTS INSTALLED IN CONDITIONED SPACE AND 6.0 FOR DUCT INSTALLED IN UNCONDITIONED SPACE. DUCTWORK SHALL BE LINED WITH ANTI MICROBIAL COATING. SEAL ALL JOINTS WITH GLASS FABRIC AND MASTIC. TAPE ALONE IS NOT ALLOWED.

MEDIUM PRESSURE DUCT SHALL BE STEEL SHEET METAL

GENERAL EXHAUST DUCTS SHALL BE GALVANIZED OR STAINLESS STEEL SHEET METAL

WET EXHAUST DUCTS SHALL BE ALUMINUM OR STAINLESS STEEL SHEET METAL.

ADJUSTABLE SPLITTERS AND DAMPERS SHALL BE INSTALLED IN EVERY SPLIT AND BRANCH DUCT AND SHALL BE PROVIDED WITH LOCKING QUADRANTS ON EXPOSED OR IN ACCESSIBLE AREAS OF THE DUCT FOR EASE OF OPERATION. ACCESS PANELS OR YOUNG REGULATORS SHALL BE PROVIDED WHERE DAMPERS ARE INSTALLED ABOVE HARD CEILINGS OR IN SOFFITS.

ELBOWS OR CHANGES IN DUCT DIRECTION GREATER THAN 45 DEGREES SHALL BE FITTED WITH AIR TURNS CONSISTING OF CURVED AIRFOIL BLADES OR VANES WHICH WILL PERMIT THE AIR TO MAKE ABRUPT TURNS WITHOUT APPRECIABLE TURBULENCE.

FLEXIBLE DUCTWORK SHALL BE ACOUSTICAL LOW PRESSURE TYPE WITH INTERIOR LINER, METAL HELIX, FIBERGLASS INSULATION WITH AN R-VALUE OF 6.0 OR GREATER, AND COPOLYMER SEAMLESS OUTSIDE SLEEVE. THE ENTIRE FLEXIBLE DUCT ASSEMBLY SHALL BE LISTED IN ACCORDANCE WITH UL-181 CLASS 1 AIR DUCT MATERIAL. THE MAXIMUM LENGTH OF ANY FLEX DUCT SHALL BE 7'-0". FLEXIBLE DUCTWORK SHALL MEET THE FLORIDA MODEL ENERGY EFFICIENCY CODE. ALL JOINTS AT CONNECTIONS TO DIFFUSERS AND DUCTWORK SHALL BE SEALED WITH GLASS FABRIC AND MASTIC.

INSTALL DUCTWORK INDICATED ON DRAWINGS, MAKING NECESSARY CHANGES IN CROSS-SECTIONS AND OFFSETS, WHETHER OR NOT SPECIFICALLY INDICATED.

SPIRAL DUCTWORK SHALL BE SIMILAR TO "SEMCO" MODEL SL(85)P LOW PRESSURE.

PROVIDE U.L.LISTED FIRE,SMOKE OR COMBINATION FIRE SMOKE DAMPER IN ALL PENETRATIONS OF RATED SURFACES PER APPLICABLE CODE AND IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND THE U.L. LISTING REQUIREMENTS. INTERLOCK THE UNIT WITH FIRE ALARM SYSTEM.

INSULATION:

SHALL BE AS MANUFACTURED BY CERTANTEED, OWENS-CORNING, MANVILLE, PITTSBURGH CORNING, ARMSTRONG, OR APPROVED EQUAL INSULATION SUNDRIES AND ADHESIVES SHALL BE AS MANUFACTURED BY BENJAMIN FOSTER, CHILDERS, VMASCO, OR APPROVED EQUAL. ALL INSULATION SHALL BE SUITABLE FOR INSTALLATION IN A RETURN AIR PLENUM.

INSULATE ALL SHEETMETAL DUCTWORK EXCEPT EXHAUST DUCTWORK EXTERNALLY WITH MANVILLE R SERIES MICROLITE TYPE 75 OR 100 INSULATION OR APPROVED. INSULATION TO HAVE TYPE II FSK FACING AND UL FIRE HAZARD CLASSIFICATION OF FLAME SPREAD 25/SMOKE DEVELOPED 50/FUEL CONTRIBUTED 50. INSTALL INSULATION PER SMACNA, FLORIDA MODEL ENERGY EFFICIENCY CODE AND MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION JOINTS SHALL BE SEALED WITH GLASS FABRIC AND MASTIC.

MINIMUM INSULATION REQUIREMENTS AS FOLLOWS:
- SUPPLY AND RETURN AIR UNCONDITIONED: 2" (R-6 MIN)
- OUTSIDE AIR: 2" (R-6 MIN)

PROVIDE ALL EXTERIOR INSULATION DUCTWORK OR PIPING EXPOSED TO THE OUTDOORS WITH A MINIMUM 8 MIL THICK ALUMINUM OR PVC JACKET.

CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ADEQUATE AND PROPER INSULATION AND MOISTURE-SEAL IN A MANNER THAT WILL PERMANENTLY PREVENT THE ACCUMULATION OF ANY OBJECTIONABLE MOISTURE ON THE EXTERIOR OF AIR CONDITIONING UNITS, REFRIGERANT PIPING, CONDENSATE DRAIN PIPING, AIR DUCTS OR OTHER PARTS OF THE SYSTEM. CONTRACTOR SHALL CORRECT THE CAUSE OF ANY CONDENSATION AND FULLY REPAIR, WITHOUT COST TO THE OWNER, ANY DAMAGES TO BUILDING SURFACES, FURNISHINGS OR EQUIPMENT CAUSED BY CONDENSATION FROM THIS SYSTEM, FOR THE FULL PERIOD OF GUARANTEE.

CONTROLS:

FACTORY MOUNTED CONTROL SHALL BE PROVIDED TO ACCOMPLISH THE SEQUENCE OF OPERATION. ALL INTERIOR CONTROLS SHALL BE FACTORY FURNISHED AND INSTALLED.

PROVIDE ALL 24 VOLT WIRING BETWEEN CONTROL DEVICES AS NECESSARY TO MAKE COMPLETE AND OPERATION SYSTEM. PROVIDE 110/24 VAC TRANSFORMERS AS REQUIRED. COORDINATE WITH DIVISION 16 FOR 120V POWER ROUGH-IN, CONTROL, POWER AND WIRING. 24 VOLT WIRING SHALL BE PLENUM RATED CABLE.

AIR CONDITIONING UNITS (DX SPLIT):

UNITS SHALL BE SPLIT SYSTEM AIR-TO-AIR ELECTRIC AIR CONDITIONING UNITS AND HEAT PUMPS AS SCHEDULED ON DRAWINGS. UNITS WITH INTEGRAL ELECTRIC RESISTANCE HEATERS SHALL HAVE A SINGLE-POINT ELECTRIC CONNECTION.

TOTAL COOLING CAPACITY OF THE UNITS SHALL BE AS SCHEDULED ON DRAWINGS. UNIT CABINET SHALL BE CONSTRUCTED OF GALVANIZED STEEL, BONDED AND COATED WITH BAKED ENAMEL. CABINET INSULATION SHALL COMPLY WITH FLORIDA ENERGY CODE.

FANS AND MOTORS - THE INDOOR AIR FANS SHALL BE OF THE FORWARD-CURVED CENTRIFUGAL CLASS 1 TYPE. MOTOR AND DRIVE TO PROVIDE HIGHER FAN OUTPUT WHEN JOB REQUIREMENTS EXCEED STANDARD FAN CAPACITY SHALL BE PROVIDED.

COOLING SYSTEM SHALL BE PROTECTED BY LOSS OF CHARGE PROTECTION, HIGH AND LOW PRESSURE SENSORS, COMPRESSOR MOTOR OVERLOADS, AND A TIMING DEVICE WHICH WILL PROHIBIT THE COMPRESSOR MOTOR FROM BEING SUBJECTED TO A STARTING CURRENT MORE THAN ONCE EVERY FIVE MINUTES.

HEAT PUMP/CONDENSING UNIT INSTALLATION: PROVIDE CONCRETE PADS FOR GRADE MOUNTED CONDENSING UNITS. PADS SHALL BE A MINIMUM OF 4" THICK, 3,000 PSI CONCRETE, AND SHALL BE 4" LARGER ON EACH SIDE THAN THE FOOTPRINT OF THE CONDENSING UNIT. VERIFY UNIT DIMENSIONS WITH APPROVED SHOP DRAWINGS PRIOR TO FABRICATION OF PADS.

EXHAUST FANS:

FURNISH EXHAUST FANS WITH PERFORMANCE AND CAPACITIES AS LISTED ON THE DESIGN DRAWINGS.

COORDINATE WITH ARCHITECT TO LOCATE EXHAUST FANS, EXHAUST GRILLES, WALL OR ROOF CAPS A MINIMUM DISTANCE OF 10'-0" FROM ANY OPERABLE WINDOW, DOOR OR FRESH AIR INTAKE.

AIR DISTRIBUTION EQUIPMENT:

FURNISH SUPPLY AIR GRILLES AND RETURN AIR REGISTERS WITH OPPOSED BLADE BALANCING DAMPERS AS SCHEDULED ON THE DESIGN DRAWINGS.

GRILLES, REGISTERS, AND CEILING DIFFUSERS SHALL BE FURNISHED AS SCHEDULED ON THE DESIGN DRAWINGS AND SHALL BE ALL ALUMINUM CONSTRUCTION UNLESS NOTED OTHERWISE. AIR DISTRIBUTION SHALL NOT EXCEED NO-30 NOISE CRITERIA AS DEFINED IN THE LATEST ASHRAE GUIDE.

ALL THE DESIGN AND DETAILS ON THIS PLAN ARE THE PROPERTY OF LIGHTNING ENGINEERING AND SHALL NOT BE USED, COPIED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF LIGHTNING ENGINEERING.

I HEREBY CERTIFY AS THE BUILDING DESIGN ENGINEER OF RECORD, THAT THE BUILDING DESIGN AS SHOWN ON THESE DRAWINGS IS THE DESIGN OF LIGHTNING ENGINEERING. THESE DOCUMENTS CONFORM TO THE BUILDING CODE. THIS CERTIFICATION DOES NOT INCLUDE ROOF TRUSS COMPONENTS OR STRUCTURAL DESIGN. THE DESIGN OF ROOF TRUSS COMPONENTS IS THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD. THIS PLAN HAS BEEN PREPARED IN COMPLIANCE WITH THE BUILDING CODE WITH SUPPLEMENTS.

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Hall Richardson Senior Center
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LGS Design & Drafting

No.	Description	Date
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DRAWN BY:	FGP
REVISED BY:	JPP
PROJECT NO:	25 076 134
SHEET TITLE:	

MECHANICAL
DETAILS

SHEET NUMBER:
MD-102

MECHANICAL SPECIFICATION

SCALE: NTS

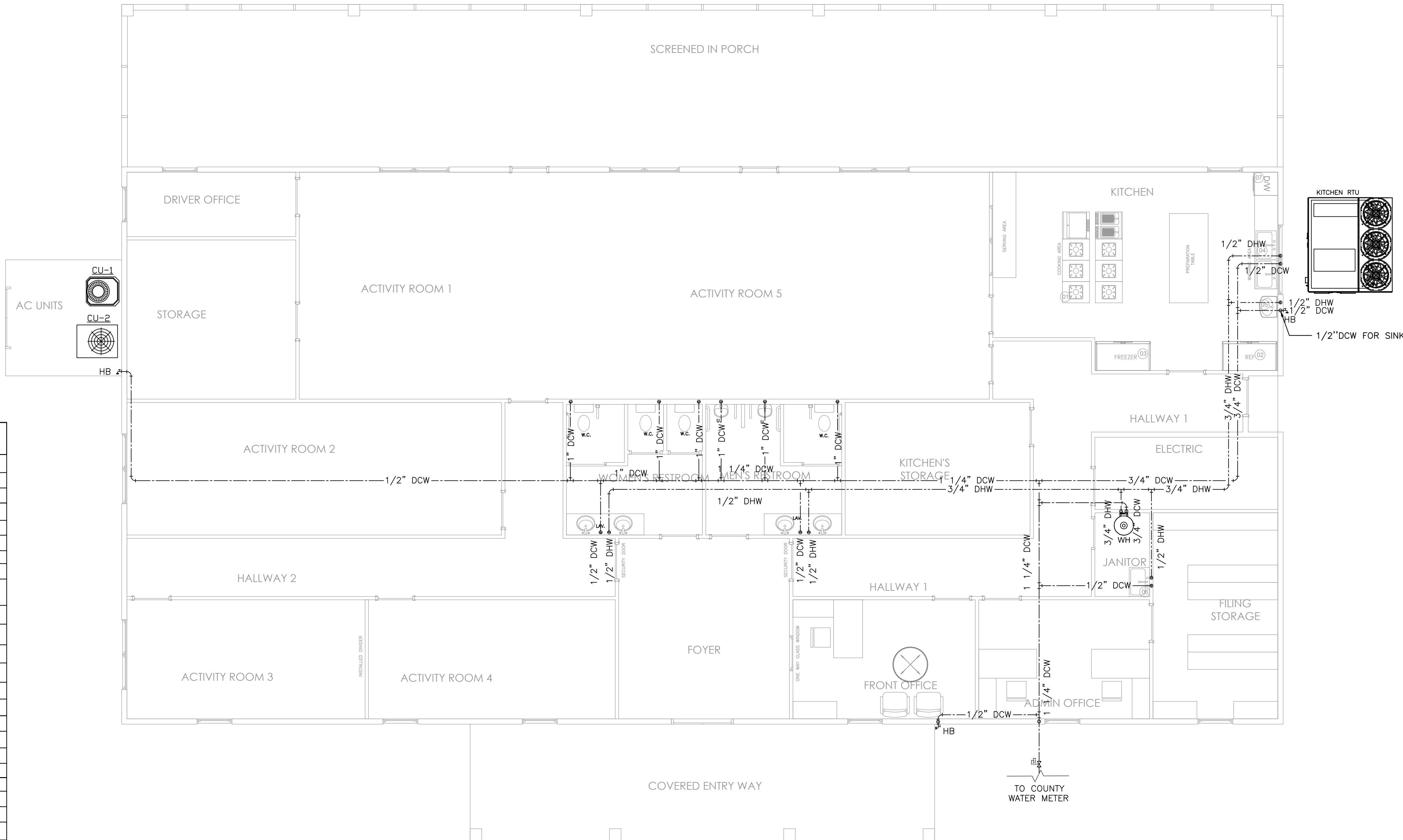
Water Supply Fixture Units

PLUMBING WATER HEATER (ELECTRICAL) SCHEDULE								
TAG	ELECTRICAL DATA		VOLTAGE	HYDRONIC REQUIREMENTS	BASIS OF DESIGN		OPERATING	NOTES
	MCA AMPS	MOCF AMPS		STORAGE CAPACITY GALLONS	MANUFACTURER	MODEL OR SERIES	WEIGHT LBS	
WH-1	36	45	208/3/60	80	RHEEM	ELD80-TB	220	

- * OR SIMILAR
* WATER HEATER DETAILS ON SHEET PD-101

- * MAXIMUM DEVELOPMENT LENGTH (FEET) - 200
- * TOTAL WSFU DEMAND REQUIRES 3/4" METER/SERVICE PIPE AND 1 1/4" DISTRIBUTION PIPE (PER TABLE E201.1, PRESSURE RANGE 40 TO 49 PSI).
- * MIXING VALVE (ASSE1070) REQUIRED FOR LAVATORIES PER FPC 416.5
- * RECOMMENDED MIXING VALVES FOR HANDSINKS TO PREVENT SCALDING
- * PROVIDE VACUUM BREAKER FOR ALL HOSE BIB
- * PROVIDE ACCESS PANEL FOR PLUMBING VALVES
- * PIPING FROM WATER HEATER TO THE TERMINATION OF THE HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED WITH 1" INSULATION (Table C403.2.10) ON BOTH THE INLET AND OUTLET PIPING, THE FIRST 8 FEET OF PIPING SHALL BE INSULATED

EQUIPMENT SCHEDULE						
ITEM NO	DESCRIPTION	MANUFACTURER	MODEL NO.	QUANTITY	SOURCED BY	NOTES
01	COMMERCIAL RANGE	AMERICAN RANGE	AR-19	1	OWNER	
02	REFRIGERATOR	TRUE	T-49	1	EXISTING	54.625w X 28.5h X 83.375d
03	FREEZER	AWAYCO	A-49F-1N54	1	OWNER	54w X 32.19h X 82.5d
04	THREE COMPARTMENT SINK	STEELTOWN	522531824K4	1	OWNER	60w X 33.5w X 43.75d
05	HAND WASH SINK	REGENCY	600MS17	1	OWNER	17w X 15d X 13.5h
06	MOP SINK	REGENCY	600SM2124	1	OWNER	24w X 23w X 35h
07	DISHWASHER	TBD		1	OWNER	STANDARD RESIDENTIAL DISHWASHER



DOMESTIC WATER PLAN

3/16" = 1'-0"

PLUMBING FIXTURE SCHEDULE		
ITEM	MODEL # *	DESCRIPTION
FD		FLOOR DRAIN
	30003-5A-Y	JOSAM COMPANY CAST IRON ADJUSTABLE FLOOR DRAIN
FCO		FLOOR CLEANOUT
	55000-1	JOSAM COMPANY CAST IRON CLEANOUT W/ROUND CAST IRON TOP
CO		EXTERIOR CLEANOUT
	58680-C04	JOSAM COMPANY CAST IRON CLEANOUT W/ACCESS COVER
WC		ADA WATER CLOSET (FLUSH TANK TYPE)
	K-5298-0	HIGHLINE COMFORT HEIGHT TWO-PIECE ELONGATED 1.0 GPF TOILET WITH STANDARD LEFT OR RIGHT HAND POLISHED CHROME TROP LEVEL
	ML1055	MAINLINE PLASTIC COMMERCIAL ELONGATED TOLLET SEAT
	C02-011	JONES STEPHENS CORP. CLOSET BOLT KIT
LAV		ADA LAVATORY
	K-1997-4-0	KOHLER BRENHAM WALL MOUNTED BATHROOM SINK
	K-1998-0	KOHLER BRENHAM SHROUD
	MLB120AF	MAINLINE SS BRAIDED FLEXIBLE SUPPLY
	MLQTCR19CX	MAINLINE CHROME PLATED STOPS
	P9704BG	DEARBORN BRASS PLASTIC TUBULAR P-TRAP
	S-170A-LF	LEONARD THERMOSTATIC MIXING VALVE
SS	ML102EZ	MAINLINE TRAP WRAPS
		MOP SINK
	BKMS-2424-12	BK RESOURCE SS FLOOR MOUNTED MOP SINK
	XD-141-RC	MAINLINE CENTURION TWO HANDLE WALL MOUNT FAUCET
HB	B-3940	T&S BRASS ROTARY WASTE VALVE W/TWIST HANDLE
		EXTERIOR HOSE BIB
S		WOODFORD FREEZE LESS SILLCOCK THAT WILL NOT RUPTURE WHEN THE FAUCET IS SHUT-OFF AND THE HOSE IS REMOVED. PROVIDE VACUUM BREAKER / ANTI-SIPHON BACKFLOW PREVENTION DEVICE. AN ANTI-SIPHON BACKFLOW PREVENTION DEVICE PROTECTS THE FAUCET FROM ANY POTENTIAL BACK PRESSURE AND CONTAMINATED WATER FLOWING BACK INTO THE MAIN LINE.
		KITCHEN SINK
	ELUH2816PD	ELKAY LUSTERTONE CLASSIC SS SINGLE BOWL UNDERMONT SINK W/PERFECT DRAIN
	K-10415	KOHLER FORTE SINGLE HANDLE KITCHEN SINK FAUCET
	MLB120AF	MAINLINE SS BRAIDED FLEXIBLE SUPPLY
	MLQTCR19CX	MAINLINE CHROME PLATED STOPS
	P9704BG	DEARBORN BRASS PLASTIC TUBULAR P-TRAP

- * OR SIMILAR

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**PROJECT NAME
& ADDRESS:**

No.	Description	Date
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DRAWN BY: FGP

REVISÉD BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

PLUMBING PLAN

SHEET NUMBER:

P-100

FIXTURE LEGEND & CONNECTION SIZE (INCH)							
LEGEND	NAME	OCCUPANCY	QTY	SAN	MIN.TRAP SIZE	DFU	TOTAL(DFU)
WC	WATER CLOSET	PUBLIC	4	3		4	16
LAV	LAVATORY	PUBLIC	4	2	1 1/4	1	4
O6	MOP SINK		1	3	1 1/2		
GT	GREASE TRAP		1	4		12	12
FD	FLOOR DRAIN		2	2	2	2	4
U	URINAL	PUBLIC	2	2	2	2	4
FS	FLOOR SINK		1	3	3		
							40

- * REQUIRED DRAINAGE PIPE DIAMETER 4" AND 1/8" SLOPE PER TABLE 710.1
- * MAIN SANITARY SEWER (SAN) 4"(U.N.D)
- * SEE TRAP PRIMER DETAIL ON SHEET PD-100

SIZE OF TRAP	DISTANCE TO VENT
1 1/2"	6'
2"	8'
3"	12'
4"	16'

FBCP: 909.1 Maximum Distance of Fixture Trap From Vent

GREASE INTERCEPTOR CALCULATIONS Quote: BE2XCB43

Reference No. 83592		Project Name: 25076134 HALL RICHARDSON SENIOR CENTER			
Step 1: Flow rate to grease interceptor					
Fixture flow rate: (cu in / 231) = gal x 0.75 / 2 min = 2 min flow rate					
NAME	TYPE	DIMENSIONS	QTY	CU IN	FLOW RATE
(04)3 Compartment Sink	3 Compartment Sink	18" x 14" x 12" (3)	1	9,072	14.73 GPM
(07)Dishwasher	Dishwasher (Undercounter)	5 gal.	1	1,155	2.5 GPM
Floor Drain	Floor Drain	N/A	1	N/A	0 GPM
(05)Hand Sink	Hand Sink	10" x 14" x 5"	1	700	1.14 GPM
Total					18.36 GPM

Step 2: Grease Production
Servings per day x Grease production value x Days between pump-outs = Grease output

Servings per day: 70
Grease production value: 0.0455 lbs per serving (Cafeteria - Full Serve: High / Flatware)
Days between pump-outs: 90 days

70 x 0.0455 x 90 = 286.65 lbs of FOG

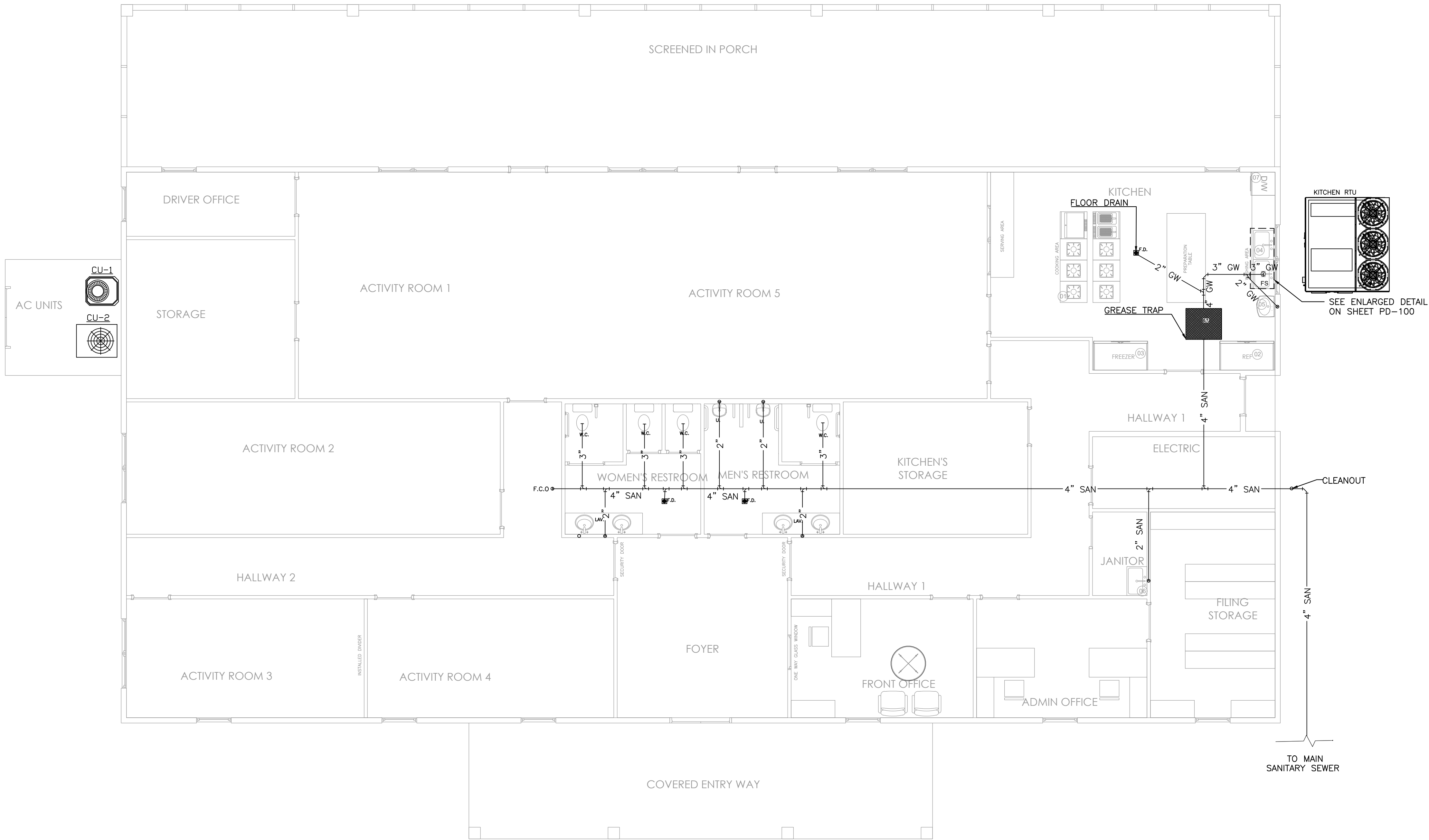
SCHIER MODEL	Description: GREASE INTERCEPTOR 50 GPM / 75 GPM, 4" PLAIN/FPT CONNECTIONS, PEDESTRIAN RATED COMPOSITE COVER
GB-50	Dimensions: Length: 37", Width: 32.25", Height: 28.5" Flow Rate/Grease Capacity: 50 GPM / 439 lbs Liquid Capacity: 65 gal

Specification Note: This Great Basin model has been sized to the flow rate and grease production requirements of the application and may not be substituted by liquid capacity alone. Any substitution requests must be approved by the specifying engineer and the authority having jurisdiction.

Please contact support@schierproducts.com for technical and procurement support for the specified Great Basin model.

EQUIPMENT SCHEDULE					
ITEM NO	DESCRIPTION	MANUFACTURER	MODEL NO.	QUANTITY	SOURCED BY
01	COMMERCIAL RANGE	AMERICAN RANGE	AR-19	1	OWNER
02	REFRIGERATOR	TRUE	T-49	1	EXISTING
03	FREEZER	AWAYCO	A-49F-HC54	1	OWNER
04	THREE COMPARTMENT SINK	STELLTON	S22CS31824UX	1	OWNER
05	HAND WASH SINK	REGENCY	800R517	1	OWNER
06	MOP SINK	REGENCY	600SMF2124	1	OWNER
07	DISHWASHER	TBD		1	OWNER

STANDARD RESIDENTIAL DISHWASHER



SANITARY SEWER PLAN
3/16" = 1'-0"

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DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

PLUMBING PLAN

SHEET NUMBER:

P-101

GAS EQUIPMENT SCHEDULE						
LEGEND	FIXTURE TYPE	QTY	MANUFACTURE	MODEL	MBTU	TOTAL
G-1	GAS BURNER	6	AMERICAN RANGE	AR-19	125	750
G-2	FRYER 2 WELLS	2	WOLF	T.B.D.	90	180
G-3	GAS GRIDDLE	1	WOLF	T.B.D.	90	90
						1020

EQUIPMENT SCHEDULE						
ITEM NO	DESCRIPTION	MANUFACTURER	MODEL NO.	QUANTITY	SOURCED BY	NOTES
01	COMMERCIAL RANGE	AMERICAN RANGE	AR-19	1	OWNER	
02	REFRIGERATOR	TRUE	T-49	1	EXISTING	54.025w X 28.5h X 63.375d
03	FREEZER	AWAYTED	A-49F-H254	1	OWNER	54w X 32.196 X 62.5d
04	THREE COMPARTMENT SINK	STELLTON	532C31824LK	1	OWNER	90w X 30d X 43.75h
05	HAND WASH SINK	RESENCY	600H517	1	OWNER	17w X 15d X 13.5h
06	MOP SINK	RESENCY	600SM2124	1	OWNER	24w X 23d X 35h
07	DISHWASHER	TBD		1	OWNER	STANDARD RESIDENTIAL DISHWASHER

* OR SIMILAR MANUFACTURE/SPECS

NAT GAS

-MAIN LINE LENGTH APROX. 50 FT

-GAS PRESSURE REGULATOR

HONEYWELL J48 (OR SIMILAR)

-SCHEDULE 40 METALLIC PIPE (INDOOR)

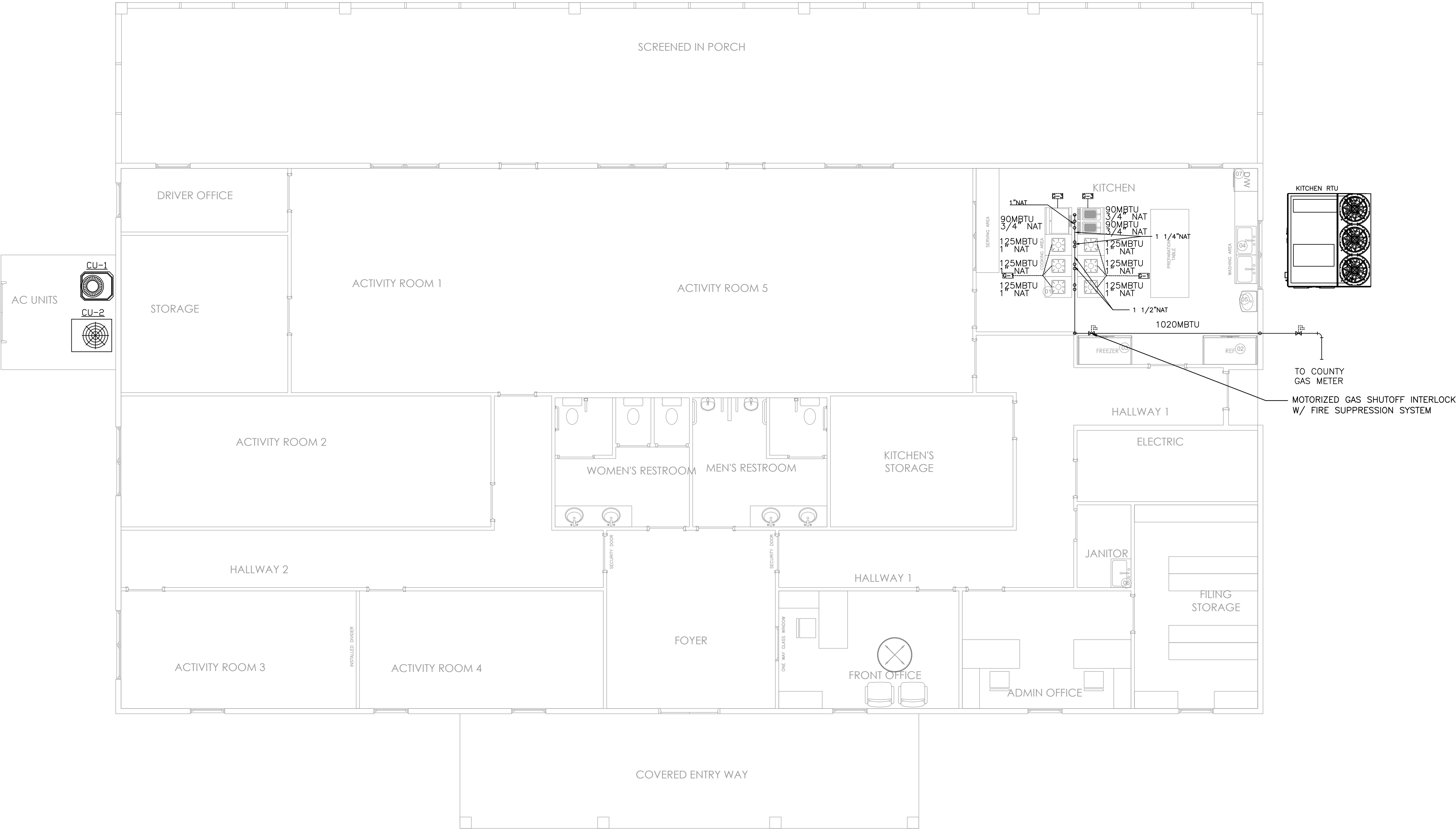
-POLYETHYLENE PLASTIC PIPE(OUTDOOR)

-INLET PRESSURE: 10.0 psi

-PRESSURE DROP: 1.0 psi

-PER TABLE 402.4(2) BC, FUEL GAS

* CONNECTIONS MADE OUTDOORS AND UNDERGROUND BETWEEN METALLIC AND PLASTIC PIPING SHALL BE MADE ONLY WITH TRANSITION FITTINGS CONFORMING TO ASTM D2513 CATEGORY I OR ASTM F1973.



GAS PLAN
3/16" = 1'-0"

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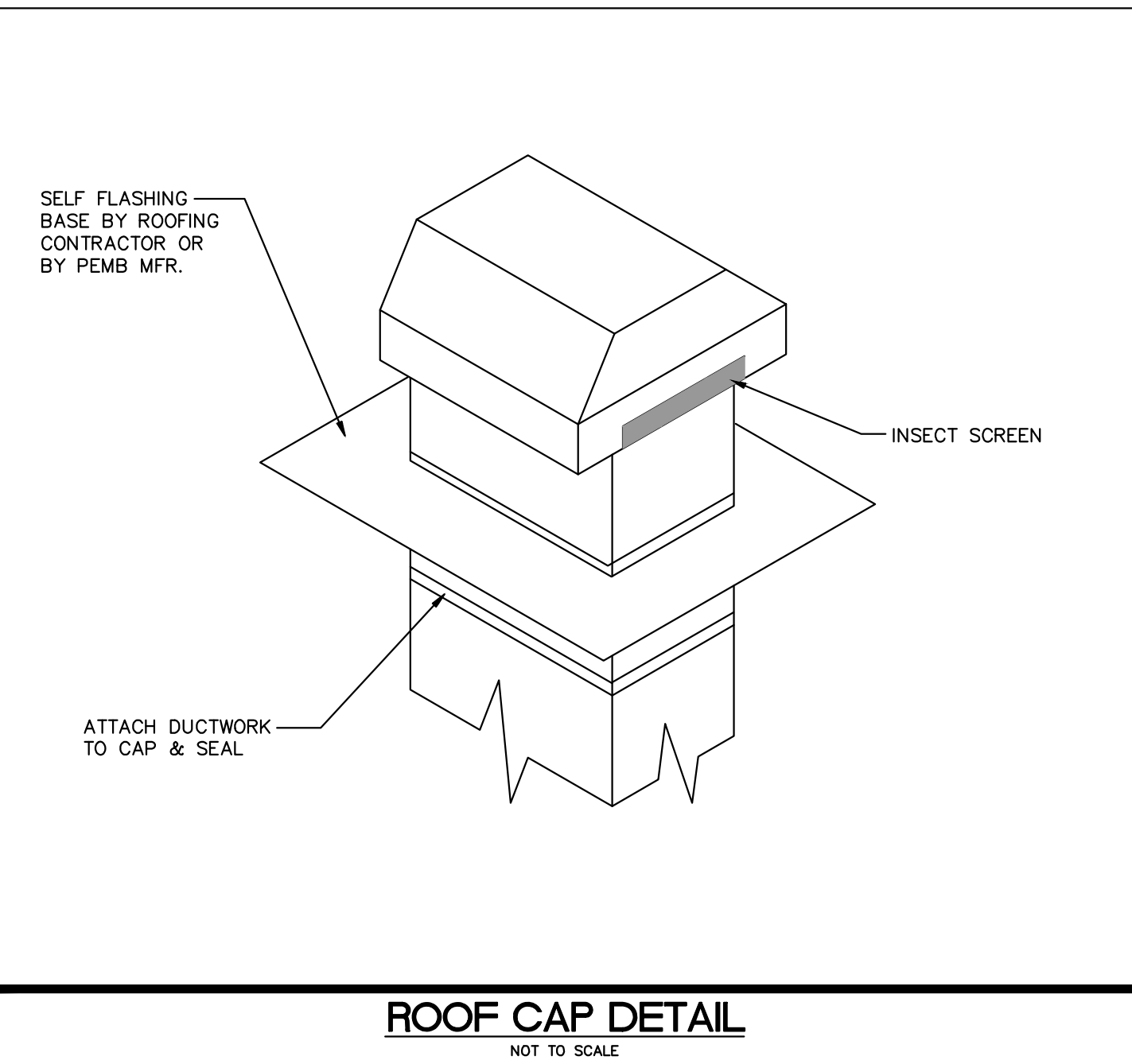
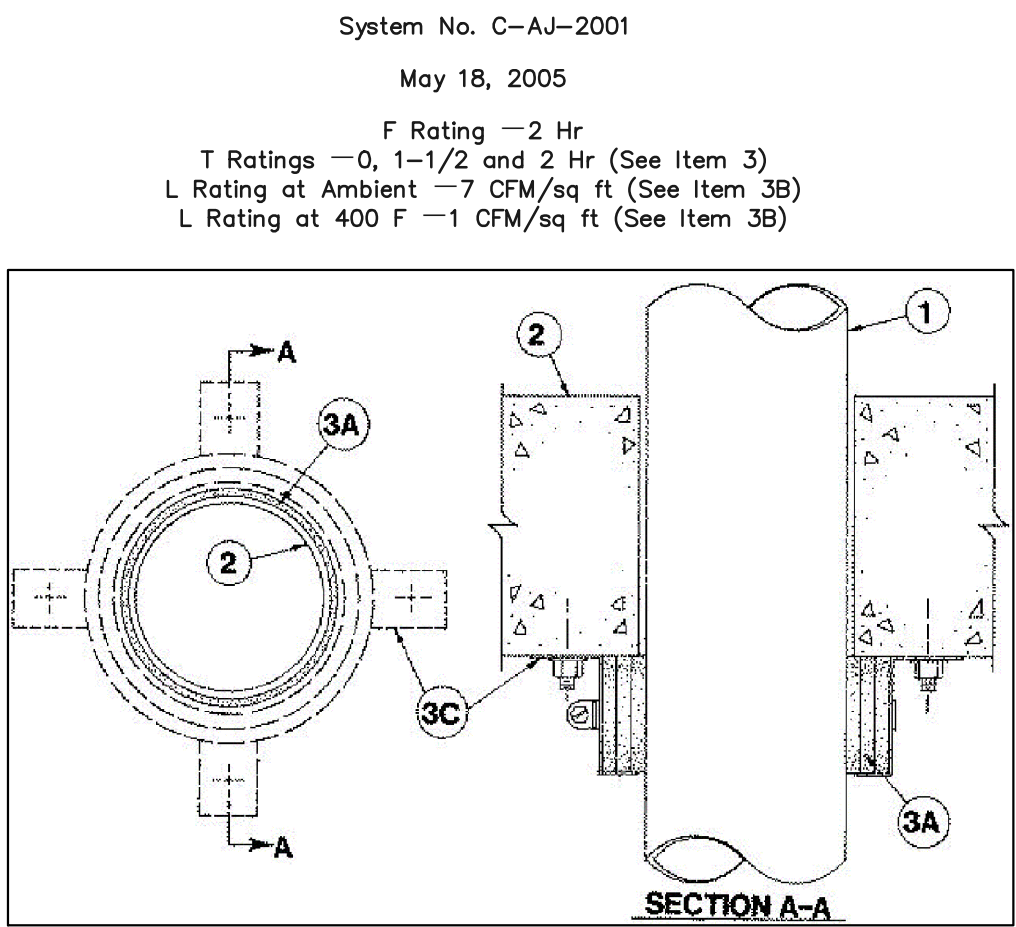
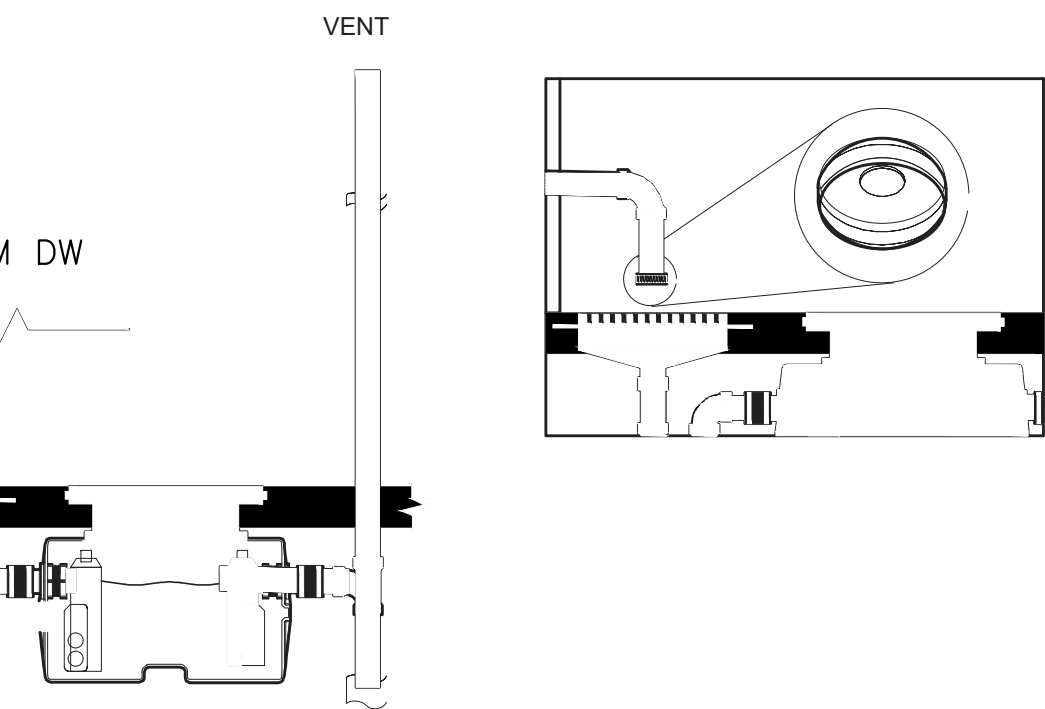
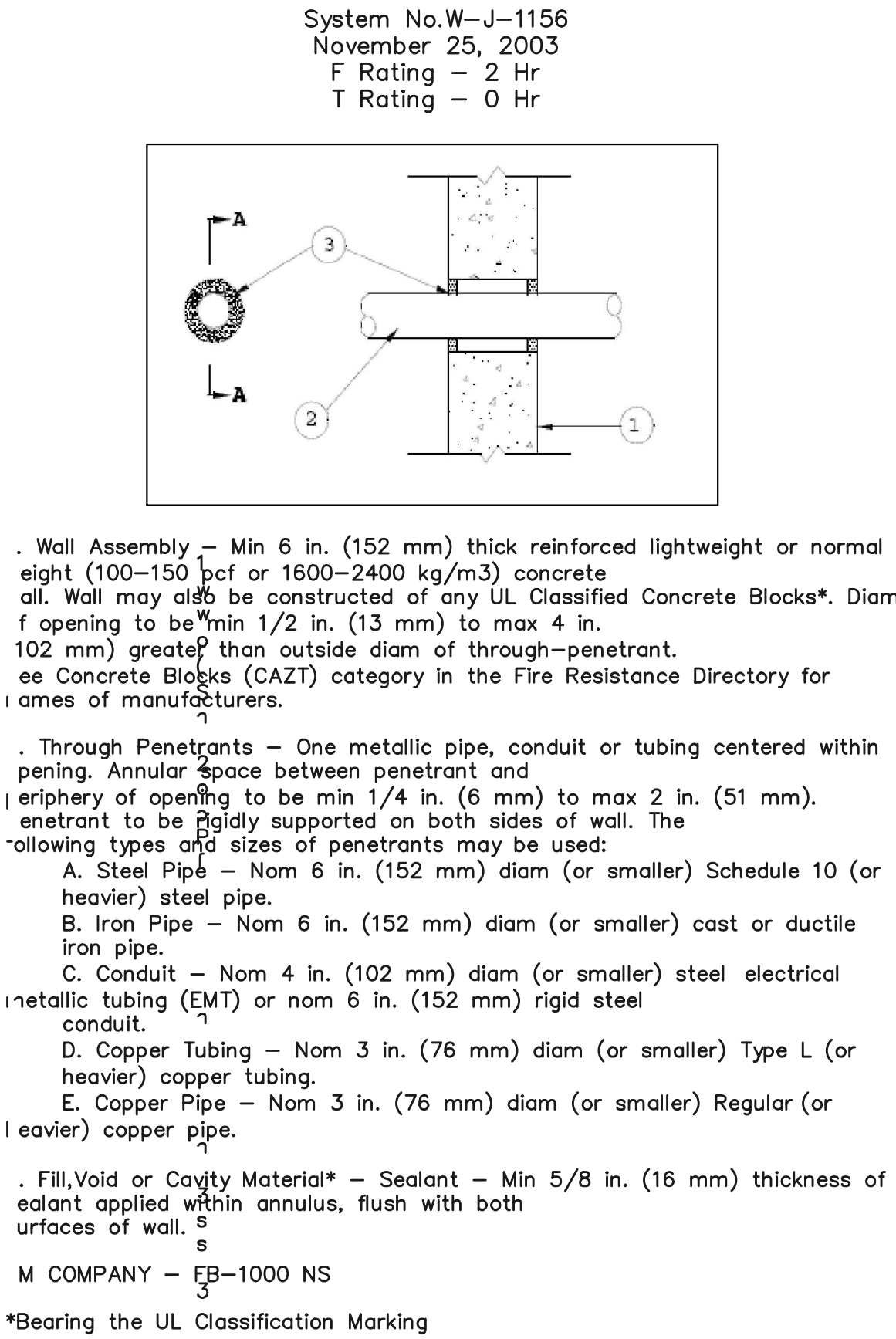
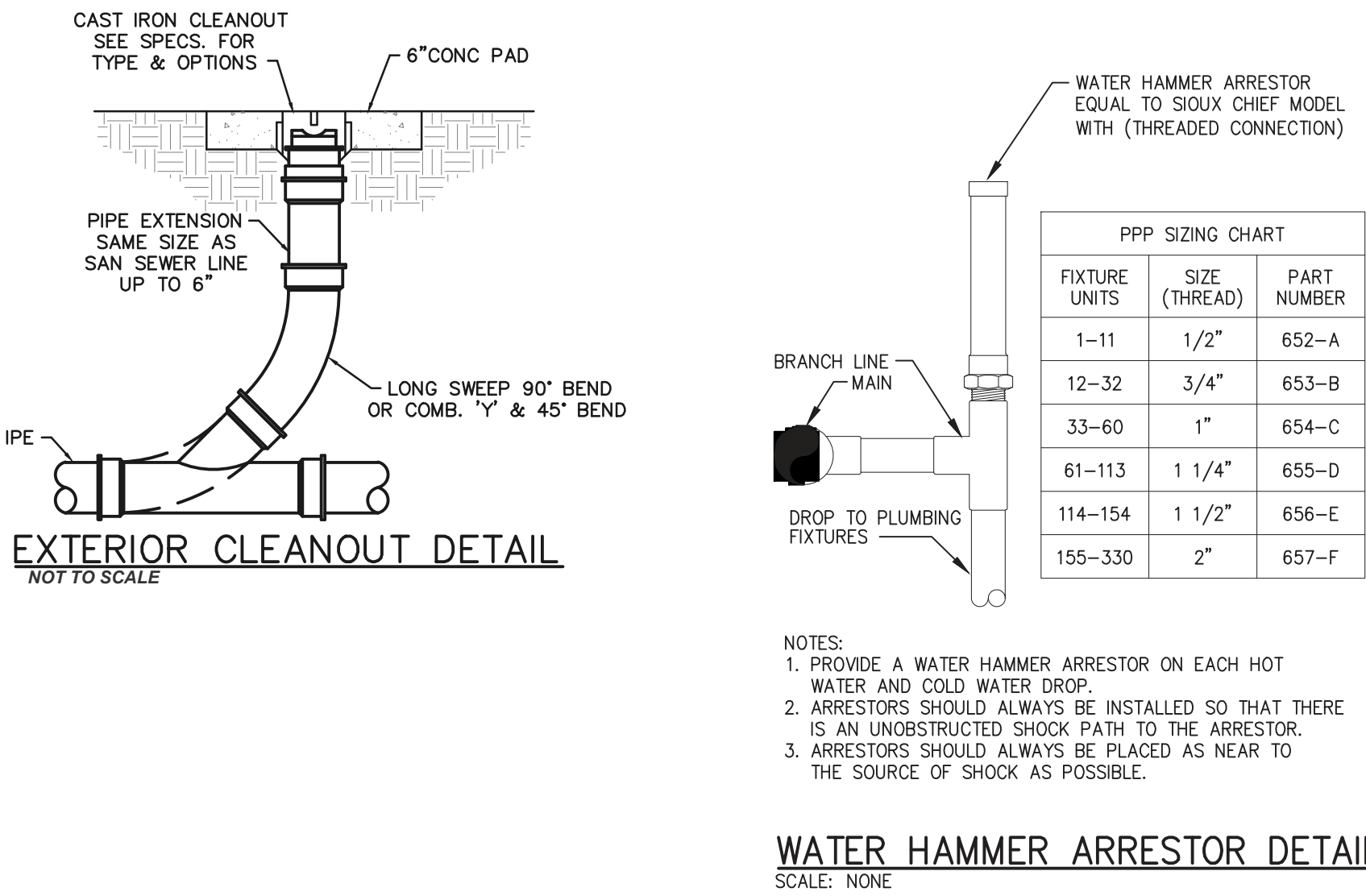
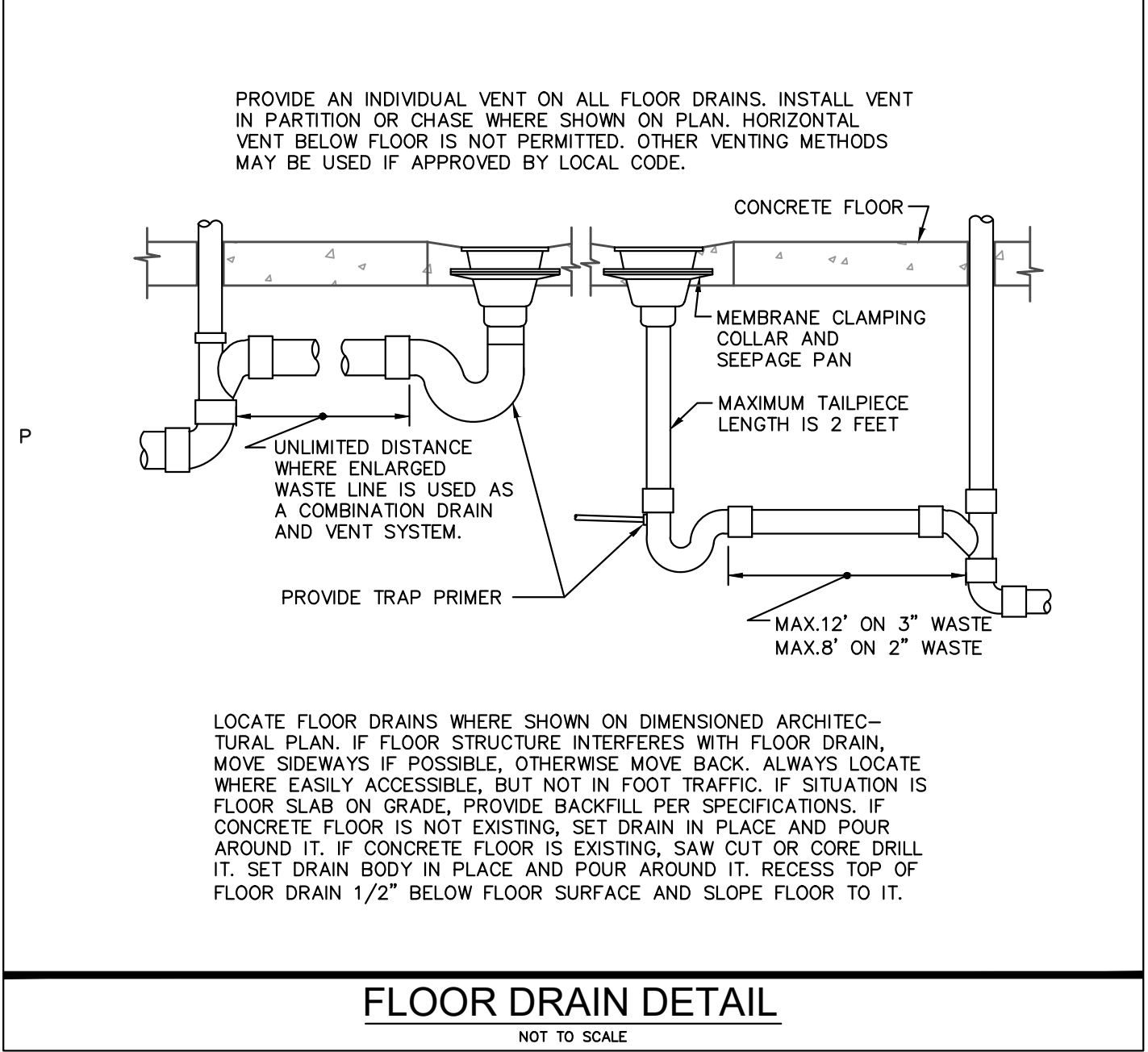
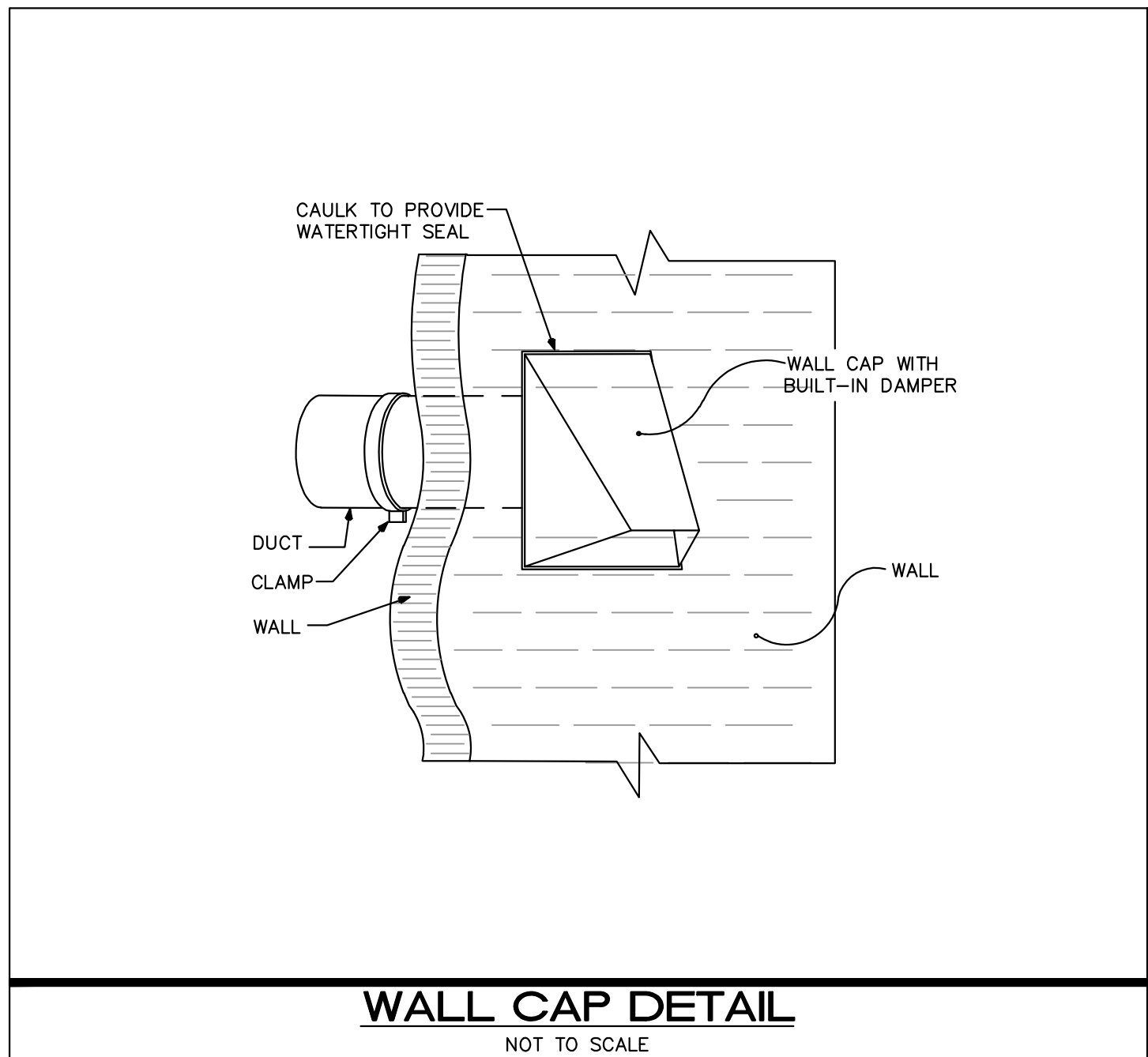
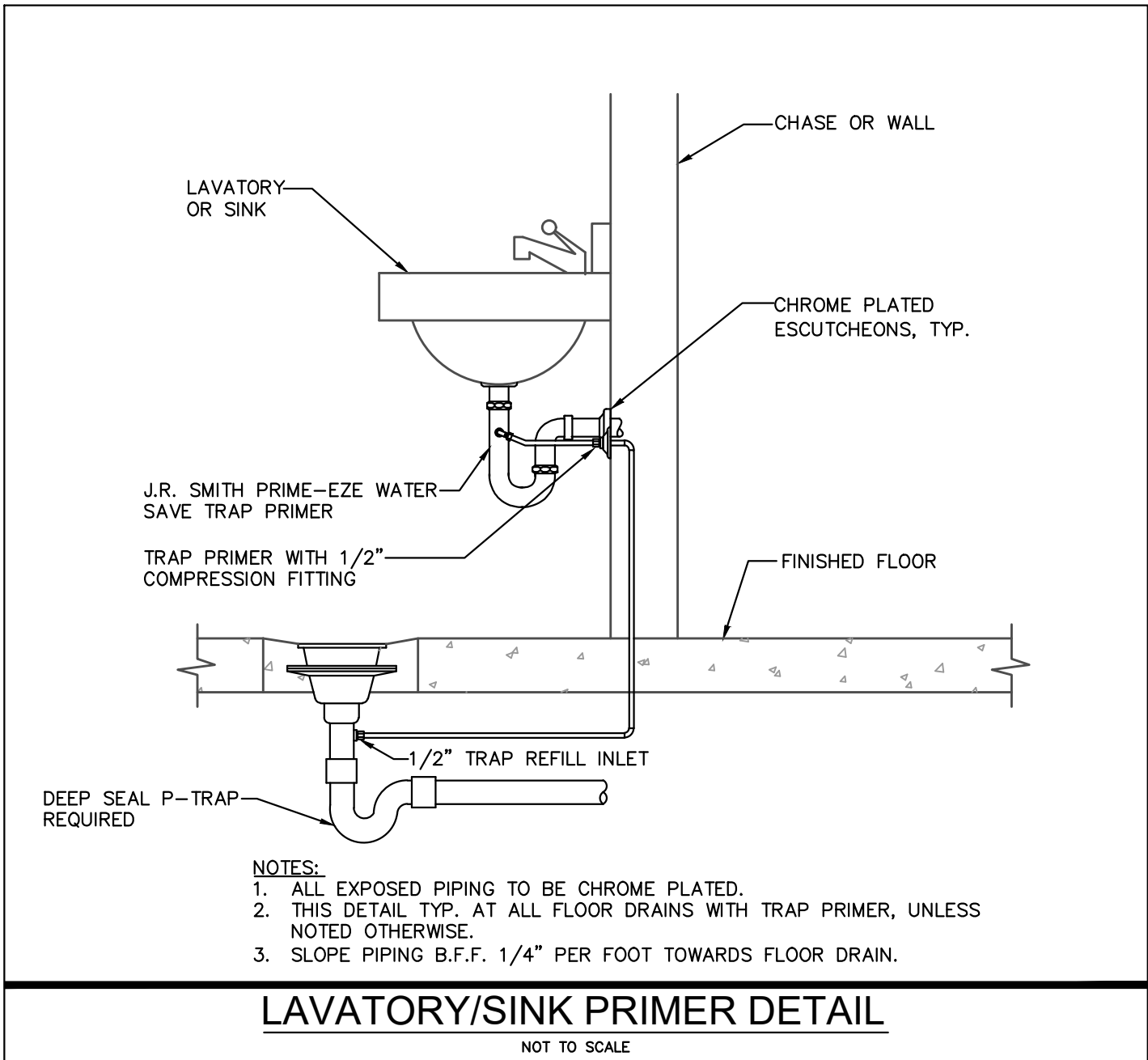
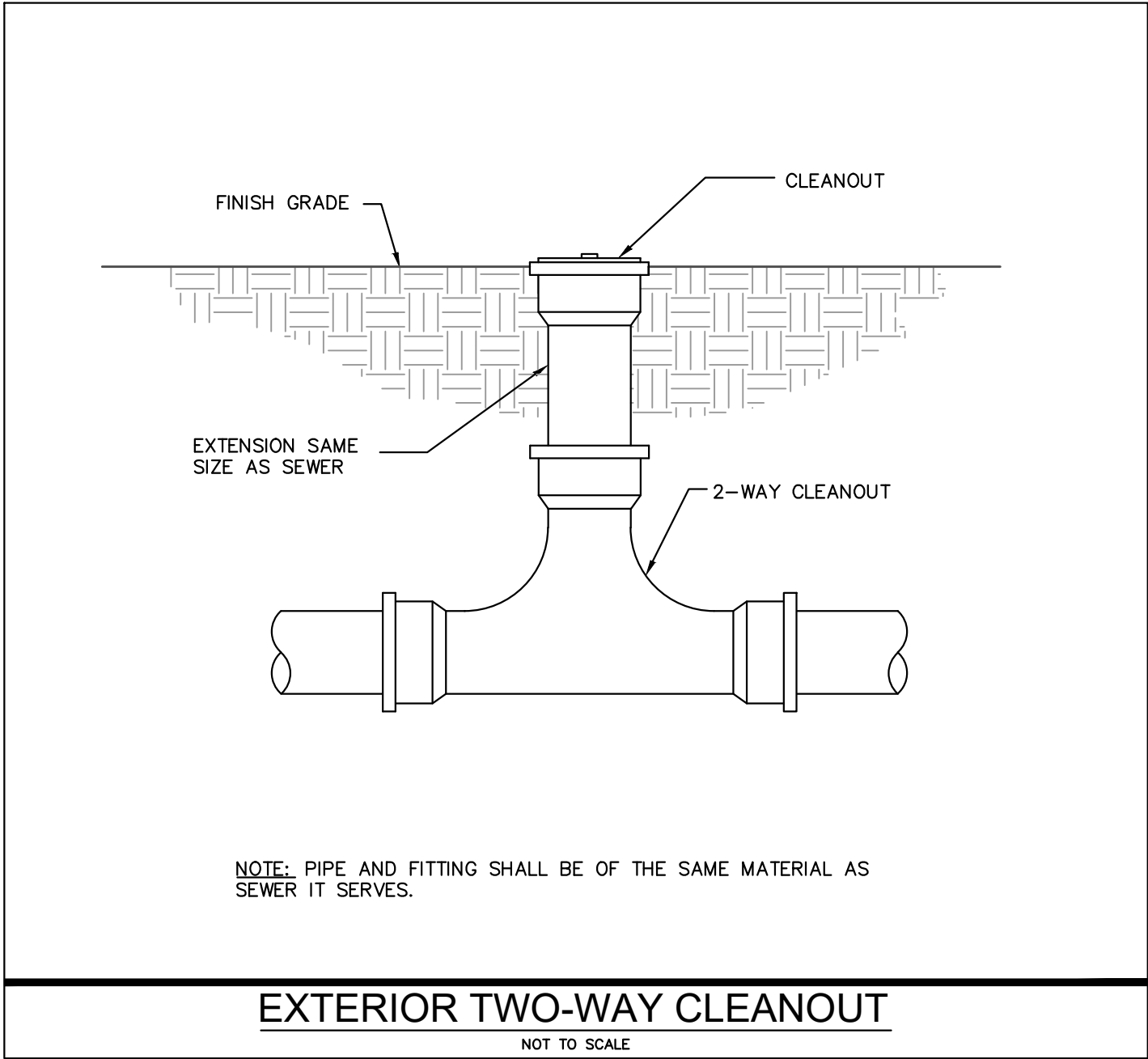
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PLUMBING
PLAN

SHEET NUMBER:

P-GAS



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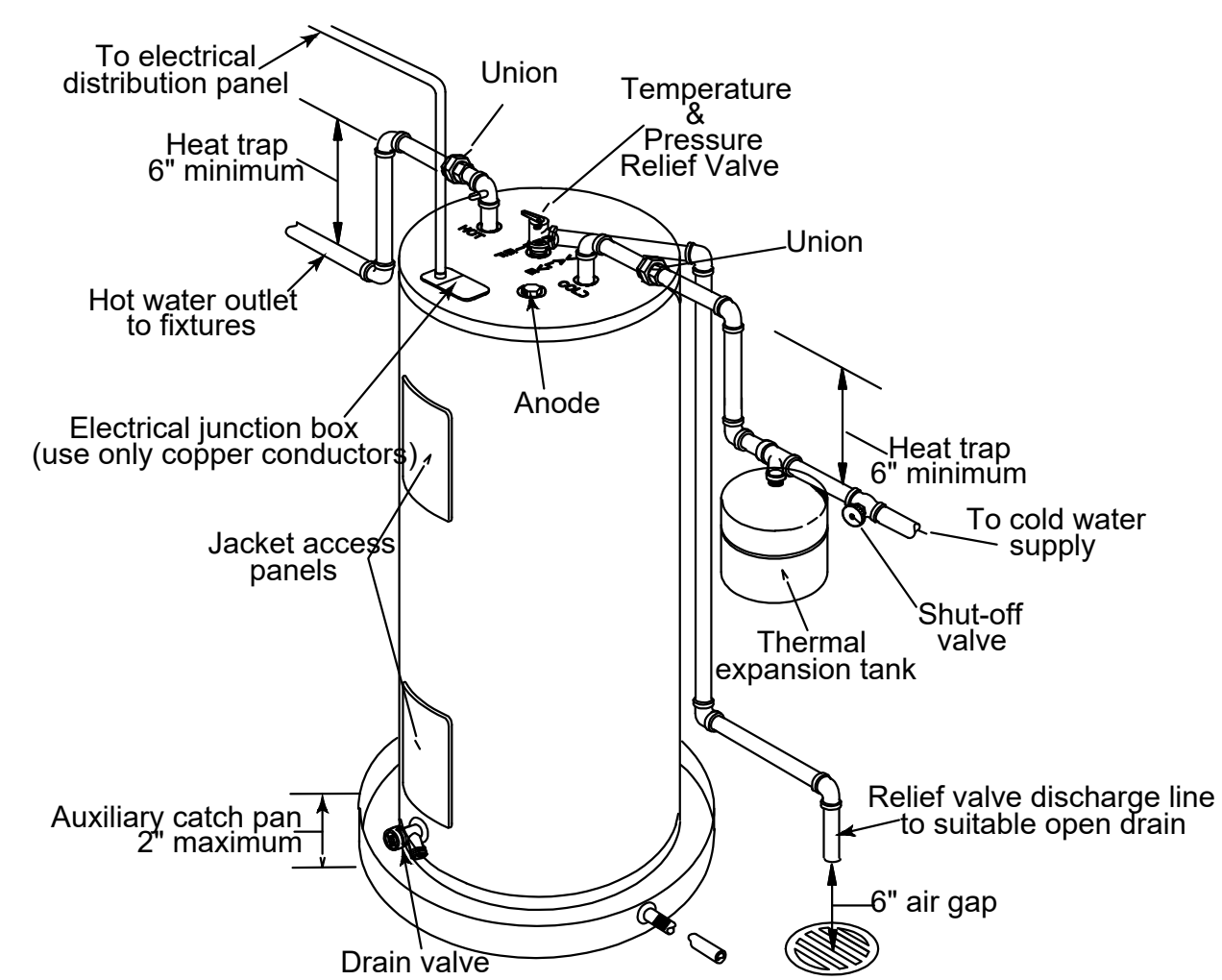
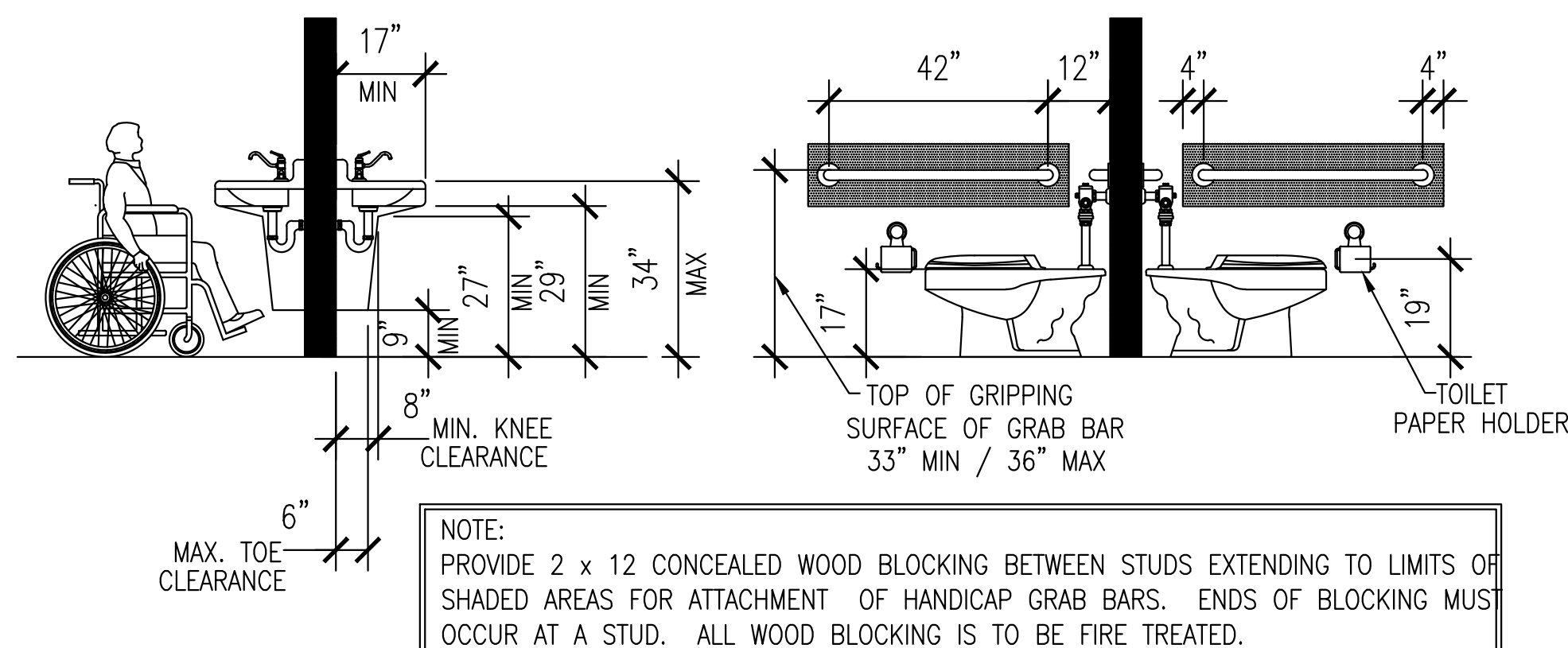
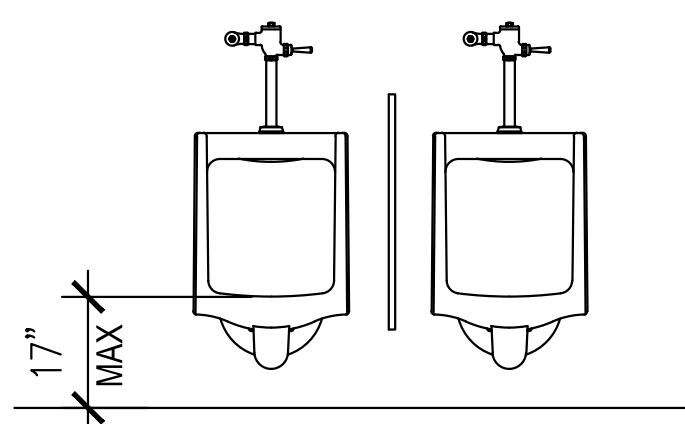
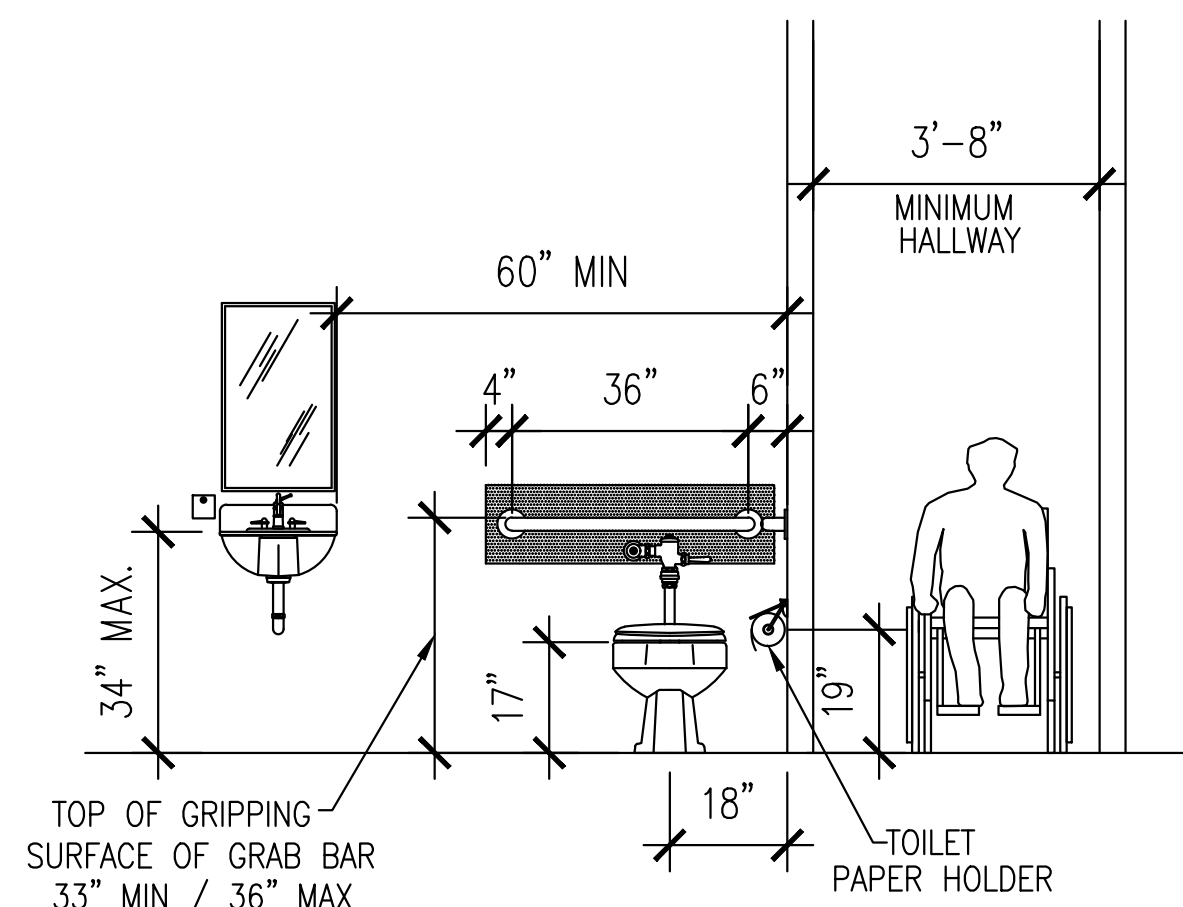
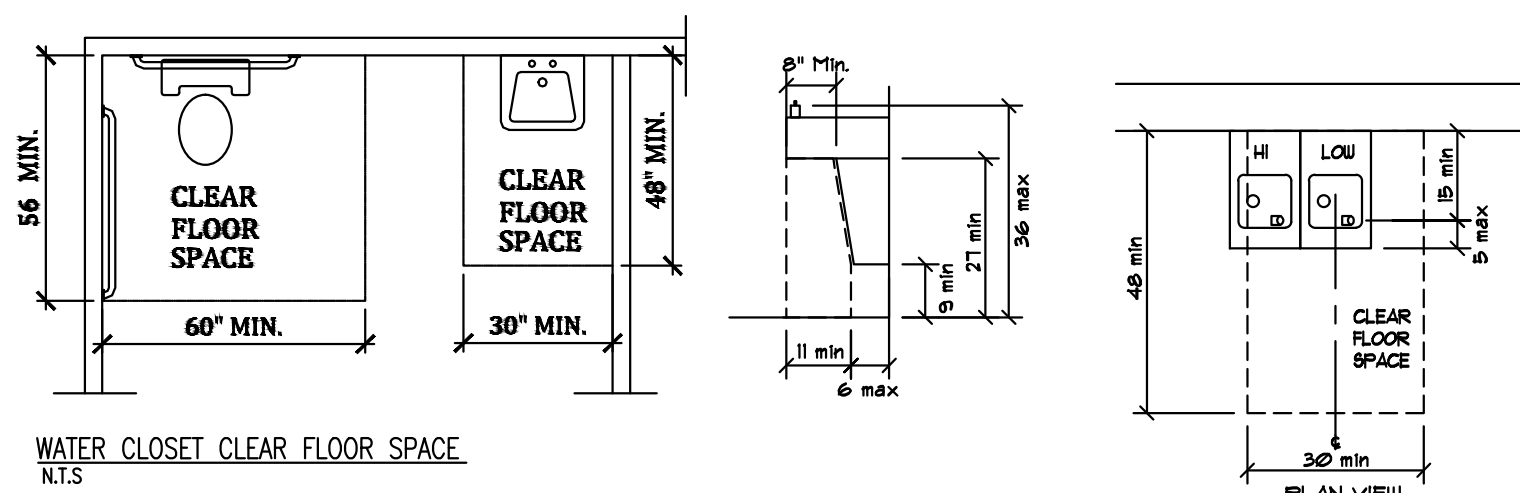
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DETAILS
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PD-100

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY
LAVATORY, PUBLIC (METERING)	0.25 GALLON PER METERING CYCLE
LAVATORY, PUBLIC (OTHER THAN METERING)	0.5 GPM AT 60 PSI
URINAL	1.0 GALLON PER FLUSHING CYCLE
SINK FAUCET	2.2 GPM AT 60 PSI
WATER CLOSET	1.6 GALLONS PER FLUSHING CYCLE



ALL FIRE PROTECTION SYSTEMS, FUEL, GAS, SIGNAGE AND OTHER BUILDING COMPONENTS REQUIRED BY LOCAL BUILDING AND FIRE AUTHORITIES TO BE INSTALLED OR MODIFIED VIA SEPARATE PERMIT, AND WHICH ARE AFFECTED BY THE WORK PROPOSED HEREIN, SHALL BE DULY INSTALLED OR MODIFIED ONLY THROUGH SEPARATE PERMIT AUTHORIZATION FROM THE AUTHORITY(S) HAVING JURISDICTION.

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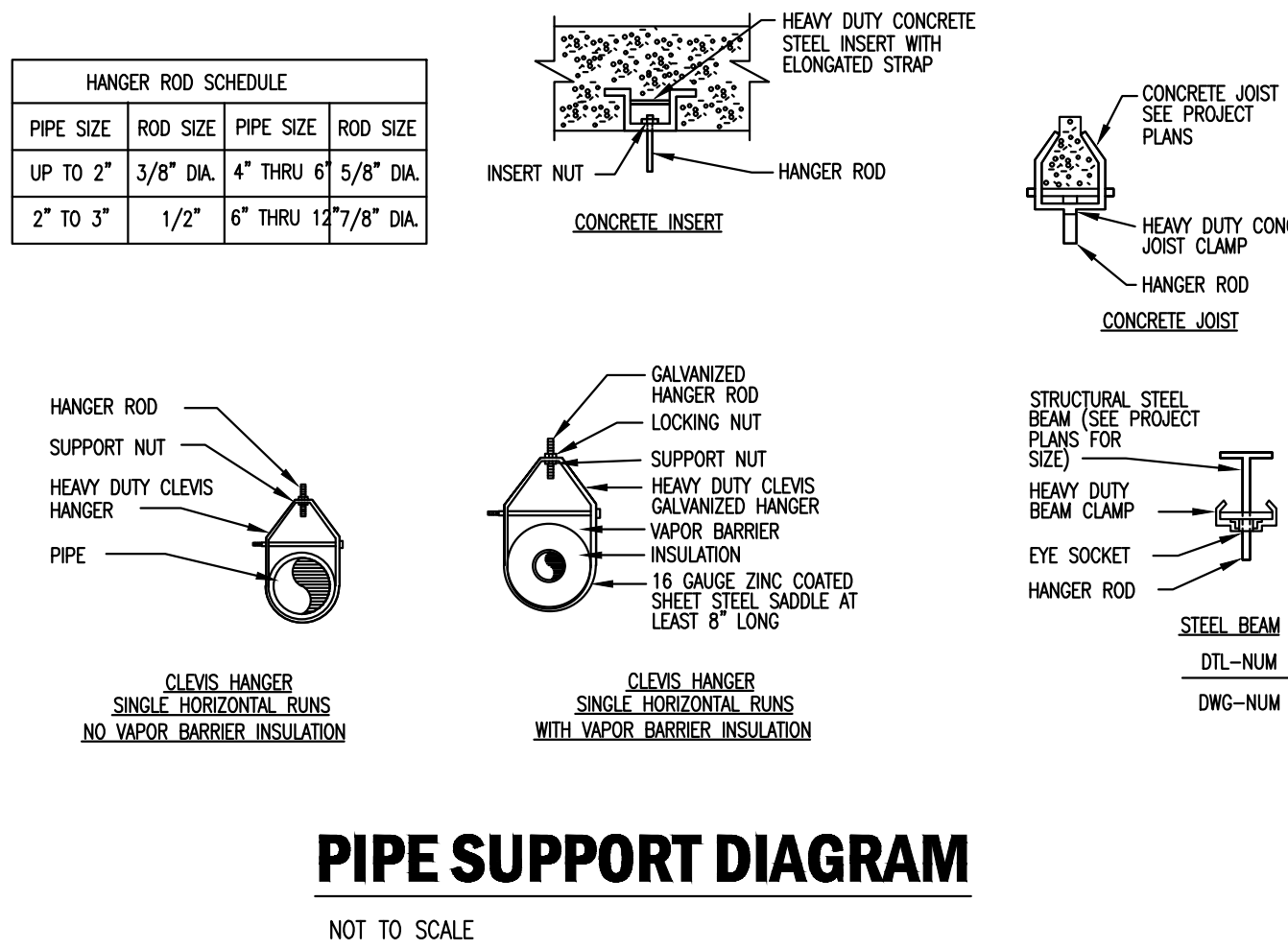
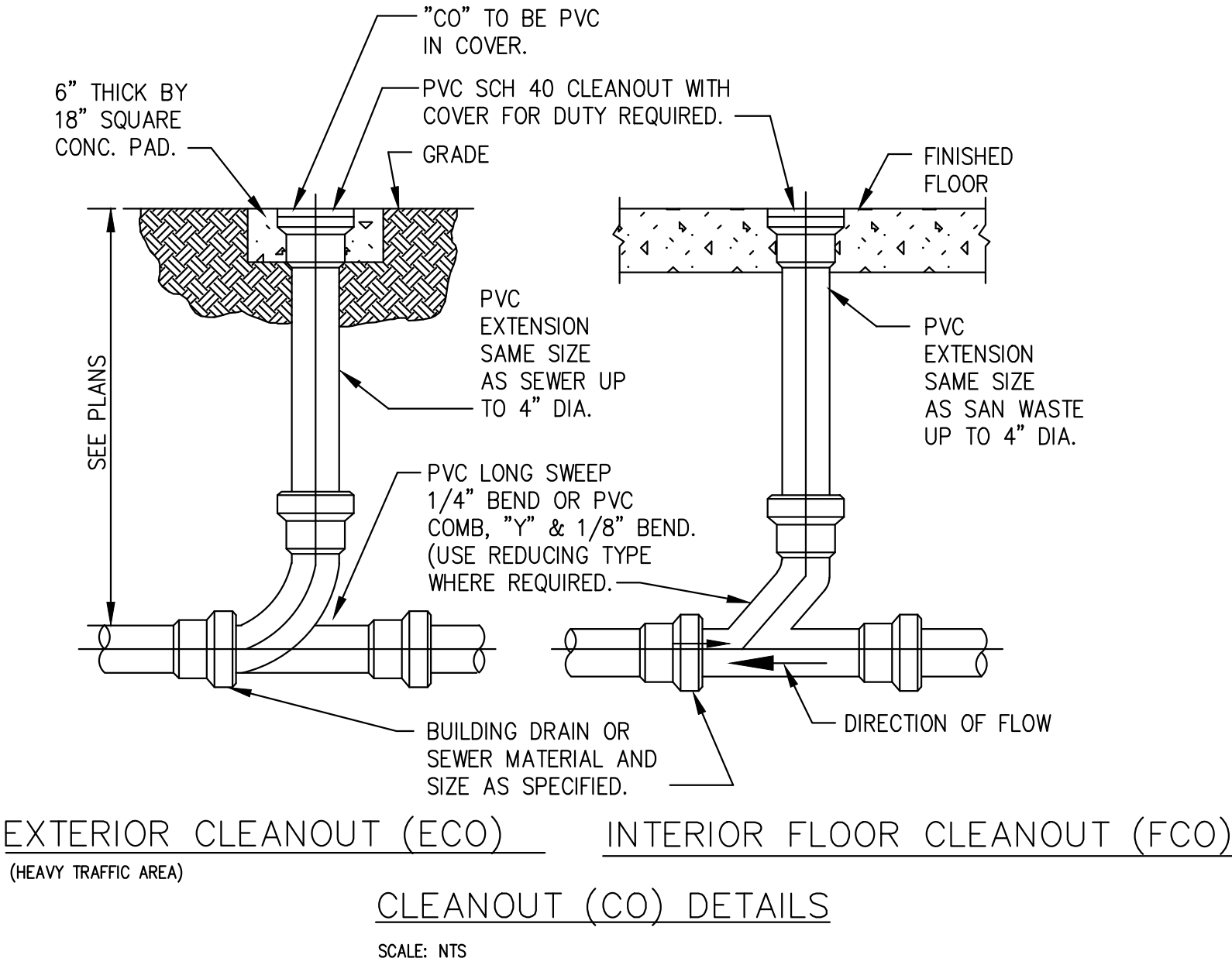
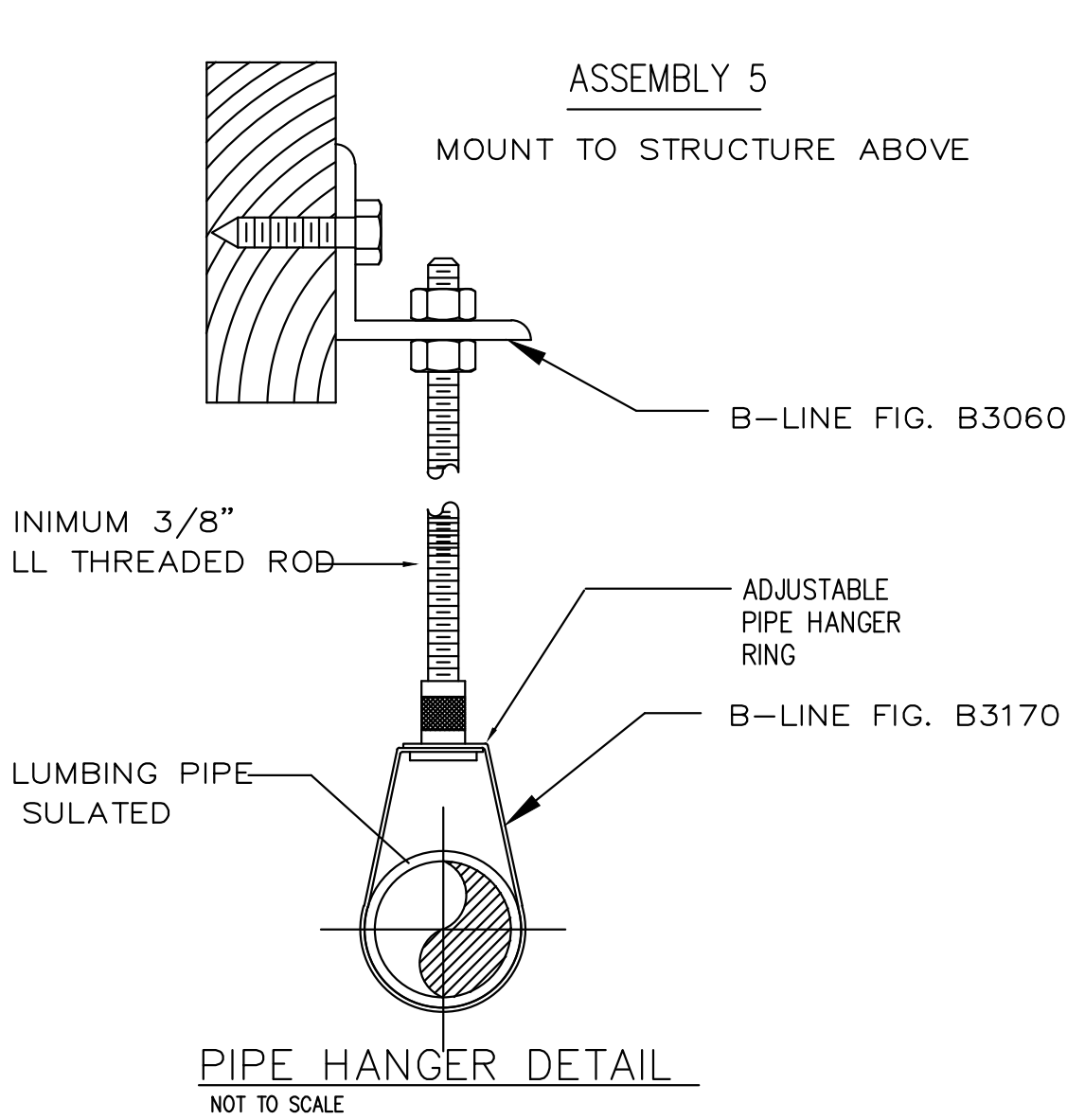
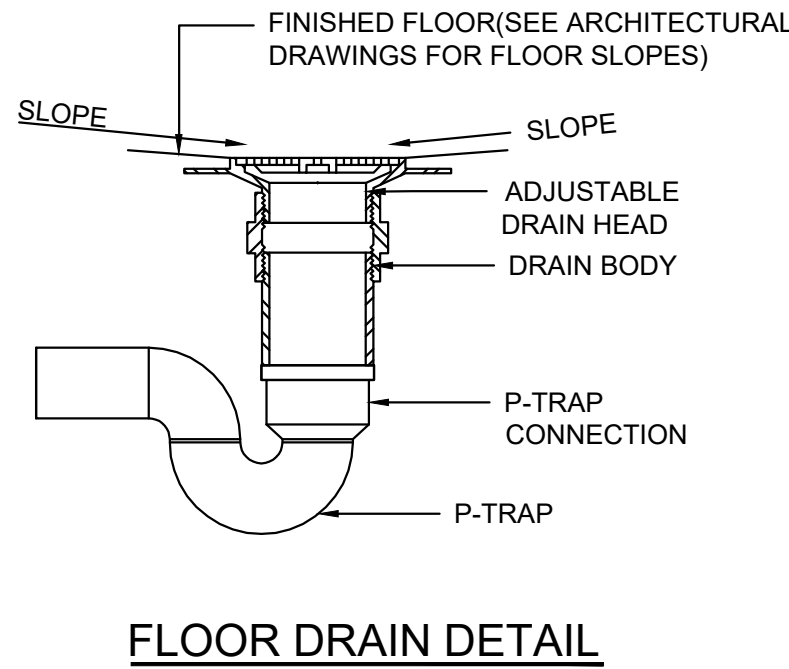
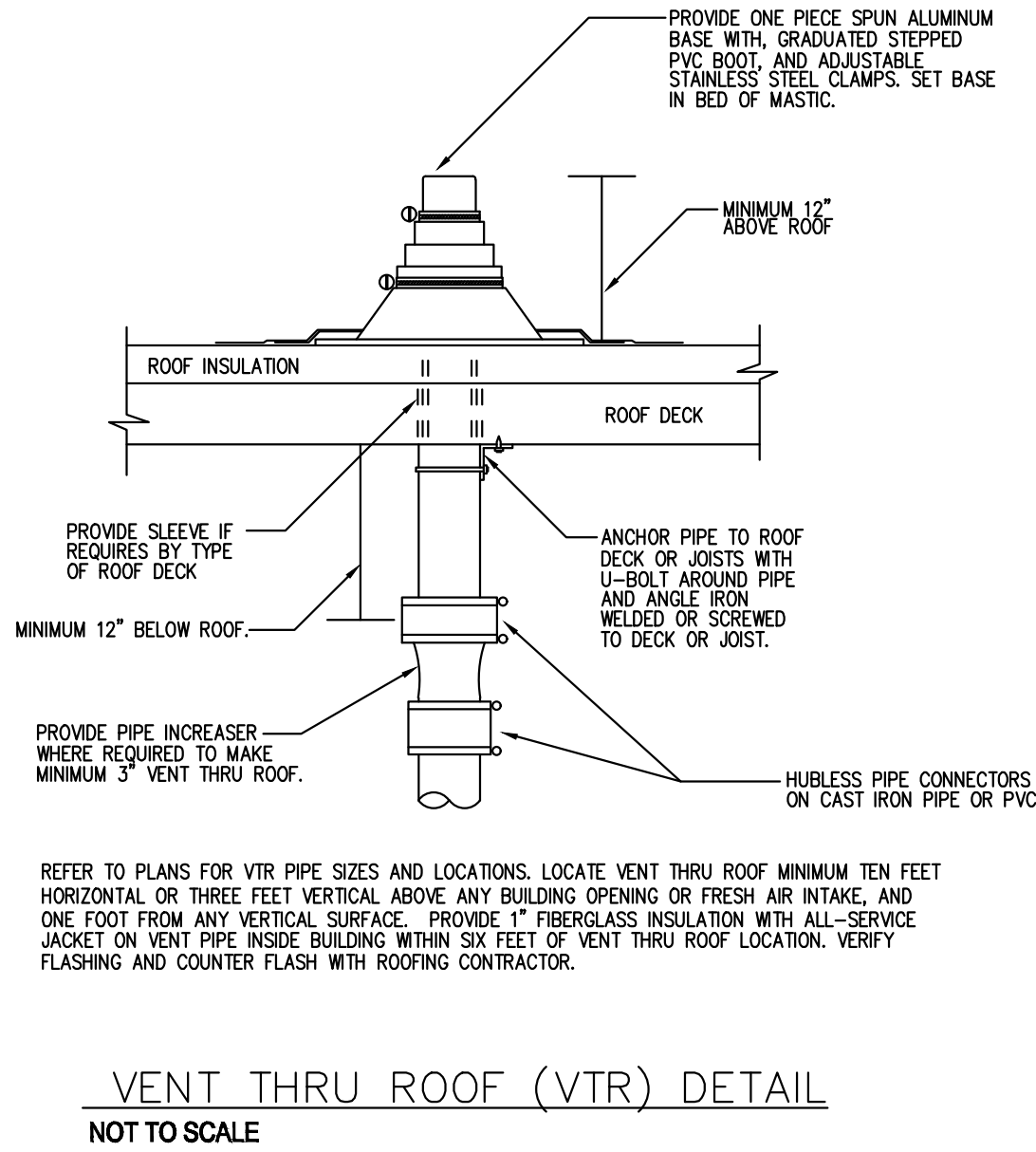
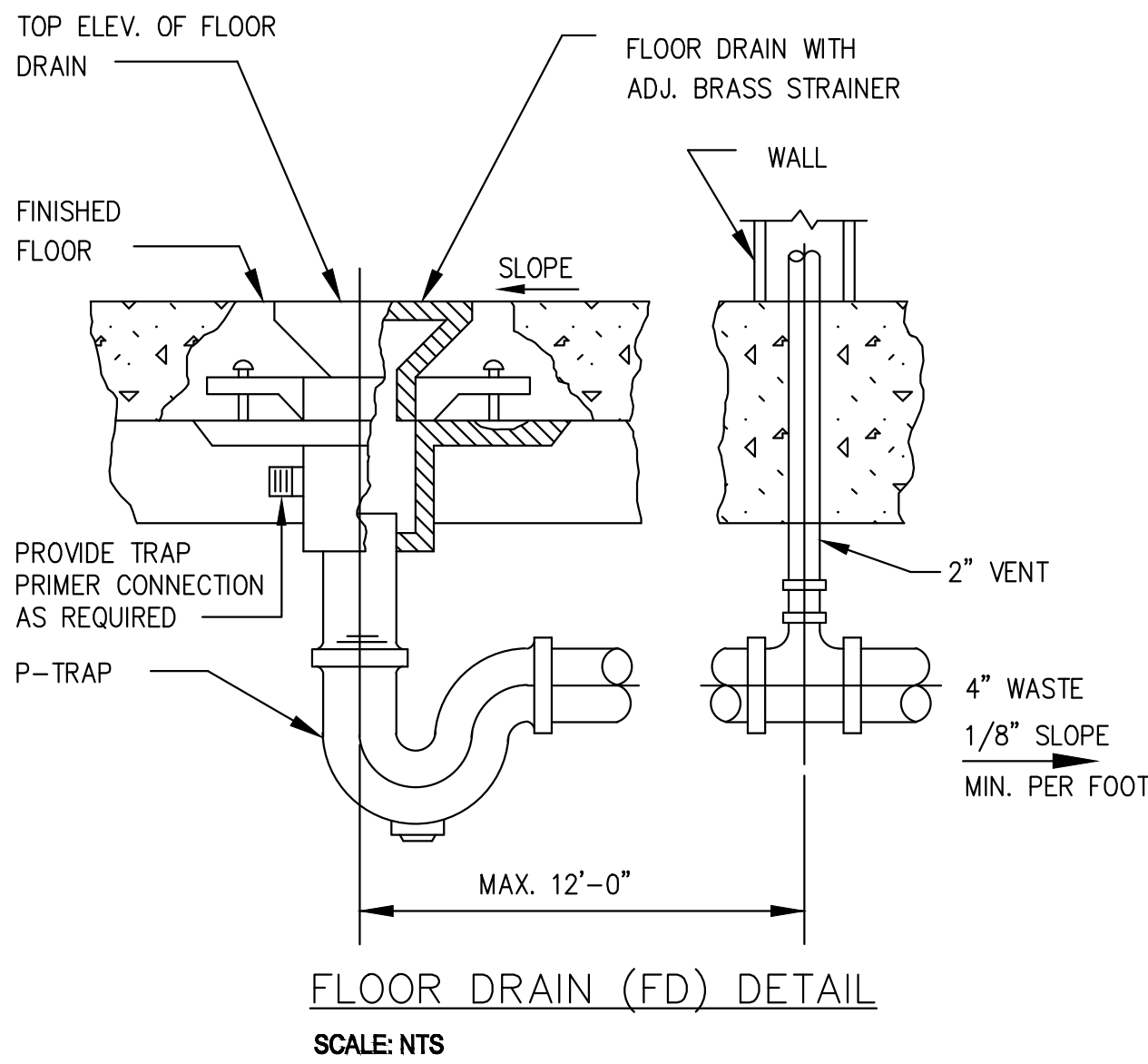
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PLUMBING DETAILS

SHEET NUMBER:

PD-101



Plumbing General Notes

- 1: Coordinate All Pipe Routing With All Other Trades Prior To Installation. Route All Piping To Avoid Ductwork, Electrical Raceways, and Building Structures. If Penetrations Through Structural Members Are Required For Plumbing Installations, Notify Architect and Structural Engineer Prior To Installation To Ensure That Structural Integrity Is Maintained.
- 2: This Contractor Shall Base His Proposal Upon The Equipment As Scheduled Or Specified. Using The Manufacturers and Model Numbers as Called For In The Specifications and Scheduled on The Drawings.
- 3: The Contractor Is Expected To Order All Materials In Sufficient Time To Avoid Delaying The Completion Of The Project. Delay In Deliveries Will Not Be Considered a Justifiable Reason For Submission Of Substitute Materials.
- 4: Route All Piping Concealed Above Ceiling, Within Walls, or In Chases Except as Specifically Noted, or In Mechanical Rooms. Piping Shall Not Be Run Thru Electrical Rooms or Closets.
- 5: Sleeve and Fire Stop All Penetrations Of Rated Walls, Ceilings, Floors, Etc. In Accordance With Applicable UL Standards and Local Codes To Maintain Rating. See Specifications. See Architectural Drawings For Rated Walls and Floors.
- 6: Pipe Routing Shown is Schematic and Is Intended To Indicate General Routing. Plumbing Contractor Shall Provide Any Additional Offsets and Fittings Required For Proper Installation and To Maintain Clearances As

Encountered In Field.

- 7: All Plumbing Installation and Materials Shall Be In Strict Accordance With All Local, State, and Federal Codes and Applicable Standards, Regulations, and Authorities Having Jurisdiction Over The Project.
- 8: Provide Access Panels To All Valves Within Chases or Above Non-Accessible Ceilings. Refer To Architectural Drawings For Ceiling Types.
- 9: Install Water Hammer Shock Arrestors At Each Fixture or Battery Of Fixtures Where Required. Arrestors Shall Be Factory Fabricated, Install Arrestors and Size Per Plumbing and Drainage Institute Standard P.D.I. WH-201. Accepted Manufacturers, Sioux Chief, Josam, Jay R. Smith, Watts (NO.15 Series), Wade. Air Chambers Are Not Acceptable.
- 10: Site Connections Shall Be Provided On Civil Site Utilities Drawings. All Services Shown On This Set Of Plans Terminate 5'-0" From Building, Unless Shown Otherwise on Drawings. This Contractor Shall Make All Final Plumbing Service Connections To Site Work Utilities.
- 11: Drainage Piping Shall Slope No Less Than 1/8" Fall Per Foot. See Specifications.
- 12: Furnish and Install Hose Bibbs and Wall Hydrants 24" Above Finished Grade/Floor And Proved Vacuum Breakers as Shown on Drawings With 150' Minimum Perimeter Intervals.
- 13: See Architectural Drawings For Exact Plumbing Fixture Locations,

Mounting Heights, Dimensions, and Handicapped Requirements.

- 14: Position Roof Drains at Low Points. For Exact Location See Architectural Drawings.
- 15: Plumber Shall Be Licensed By State And Local Authorities To Install Natural Gas Piping.
- 16: Verify Invert Elevations and Exact Locations Of Sewers To Which New Sewer Lines Are To Be Connected Before Installation.
- 17: All Vents Through Roof Shall Be A Min. 10'-0" From Any Air Intakes.
- 18: Plumbing Contractor Shall Install Dielectric Unions At All Connections Of Dissimilar Metals.
- 19: Rough-In All Wastes And Supplies To Special Equipment In Strict Accordance With Manufactures Recommendations And Make Final Connections. All Supplies Shall Be Valved. Install Vacuum Breakers Where Required By Code.
- 20: Submit Shop Drawings (Including Pipe Routing and Equipment Location) To Architect/Engineer For Review Prior To The Installation or Purchasing Of Any Piping And/Or Equipment.
- 21: Provide 'Minimum Air Gap' as Defined In ANSI A112.1.2 For All Water Distribution System Outlets. Where It Is Not Possible To Provide Minimum Air Gap, The Outlet Shall Be Equipped With An Accessible

- Back flow Prevent Complying With The Requirements Of The Standard Plumbing Code; Table 608.1.
- 22: All Water Piping Installed In Exterior Walls Shall Be Placed On The Interior Side Of The Wall. The Wall Insulation Shall Be Placed On The Exterior Side Of The Piping.
- 23: Pressure Reducing Valves Shall Be Installed On Branch Lines Serving Fixtures And/Or Equipment When The Pressure In The Line Exceeds 60 P.S.I. It Is Recommended That A Velocity Between 5 and 8 Feet Per Second Be Maintained.
- 24: Do Not Penetrate Wall Footings With Piping. Coordinate With General Contractor To Drop Footing For Sleeved Stem Wall Penetrations As Required To Clear Plumbing Services Where Absolutely Necessary.
- 25: Fixture P-Trap Distance From Fixture Outlet To Trap Weir Shall Not Exceed 24 inches.
- 26: Plumbing Contractor Shall Install Horizontal Combination Waste And Vent Systems In Strict Accordance With Florida Building Code Plumbing Edition.
- 27: Any Piping In Unconditioned Spaces Shall Be Fully Insulated And Protected From Freezing Temperatures.
- 28: Absolutely No PVC or CPVC Piping Will Be Allowed In Return Air Plenums.
- 29: Indirect Waste Per FBCP 802.1.1 And 801.2.

PROJECT NAME
& ADDRESS:

No.	Description	Date
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DRAWN BY: FGP

REVISED BY: JPP

PROJECT NO: 25 076 134

SHEET TITLE:

PLUMBING
DETAILS

SHEET NUMBER:

PD-102

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