PROJECT

Shake Shack – Oak Lawn, IL

4071 W. 95TH St.

Oak Lawn, IL 60453

OWNER:

Shake Shack

24 Union Square East 5th Floor
New York, NY 10003 USA

ENGINEER

Henderson Engineers

8345 Lenexa Drive, Suite 300

Lenexa, KS 66214

COMMISSIONING AGENT

National TAB

1126 Swift St.

North Kansas City, MO 64116

Sections reviewed:

Fire Protection:	F001 – F501	[PAGE 52-54]
Mechanical:	M001 – M704	[PAGE 77-90]
Plumbing:	P001-P901	[PAGE 91-100]
Electrical:	E101, E120 – E630	[PAGE 101-113]

Objective:

By definition, 75% plans are not complete and have certain pages still in progress. Therefore, our intent is to provide comments that assist the designer to create consistency of planned notes and details. Some comments call out minor discrepancies, others are for the owner-engineer's consideration to implement.

90% plan review provided shows updates to 75% plan, as well as new comment (if any) regarding final connected loads. Approved notes comment in Red following each item, further action or suggestion comment notes shown in red with yellow highlight. I noted all further action or suggestions as a summary on the last page of this document for convenience, SUMMARY OF REMAINING ISSUES which can be found on pages 22-24 of this document

FIRE PROTECTION REVIEW

F001 – F501 [PAGE 35-37]

Fire Protection: F001 – F501 [PAGE 35-37]

Note: Where Chicago or Oak Lawn code supersedes suggestions below, defer to local code.

Type V-B building requires sprinkler above ceiling in wood/combustible plenum space. Show this as a general note in the FP drawings. Noted F101-box note (90%)

Recommend concealed sprinkler heads in kitchen – easier to change out the plates than heads when they need replacing. Noted, F501-recessed type sprinkler heads (C.1) sprinklers in areas with acoustical or gypsum ceilings

Open Patio generally requires dry type or anti-freeze type system to be specified. Noted F101-box note (90%), dry type where required.

- If antifreeze, the system needs to be UL approved solution for fire sprinkler systems
    - If antifreeze, needs listed backflow device in separate line (RPZ type)
    - If antifreeze, Suggest Watts-909 or approved equal

- Note 22: Architect to attempt to maintain sprinkler head manufacturer standard colors, if possible, to prevent cost additions for color setup ($300, + $7 per head) along with additional lead times to order special paint.
- 200-286-degree temperature heads near high heat applications (kitchen hood area)
- Sprinkler heads near diffusers or heat producing devices need be rated as intermediate temperature range starting at 175 degrees and going up as related to specific heat source Noted F101-#2 (90%), Noted F501 (C)

Note from Sheet **F501:**

Water department should have water flow data for this property address (historic). Consider adding the historic static pressure, residual pressure, gallons they flow that can be shown on plans to assist sprinkler calculation and sizing for bidding. Awarded Contractor still needs to get updated data within 1 year for final calculations – addressed/noted F001, box note.

MECHANICAL REVIEW

M001 – M704 [PAGE 58-69]

Mechanical: **M001 – M704** **[PAGE 58-69]**

M001: mechanical notes:

Suggest specifying who is responsible for low voltage wiring for hoods (mechanical, electrician, or low voltage contractor) This may be Union area and may require specific trade to be specified.

To be consistent insert "locking quadrant" in Note 21. [Moved to note 18 & 19, corrected on sheet M001]

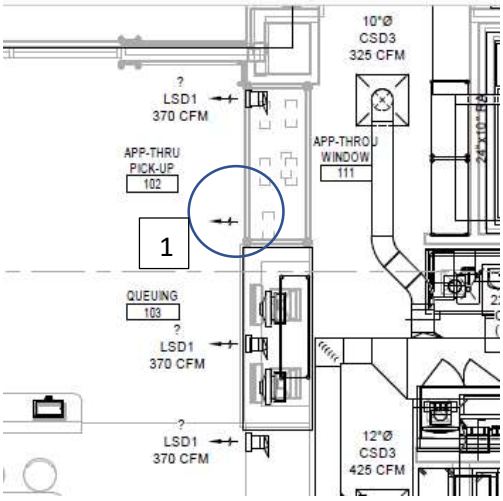
21. PROVIDE A [LOCKING QUADRANT] MANUAL BALANCING DAMPER IN EACH DUCT TAKEOFF FROM SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTS.

22. PROVIDE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY, RECTANGULAR/ROUND BRANCH DUCT TAKEOFF FITTING FOR BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS AND GRILLES. PROVIDE WITH INTEGRAL MANUAL BALANCING DAMPER AND LOCKING QUADRANT WHERE INDICATED ON PLANS

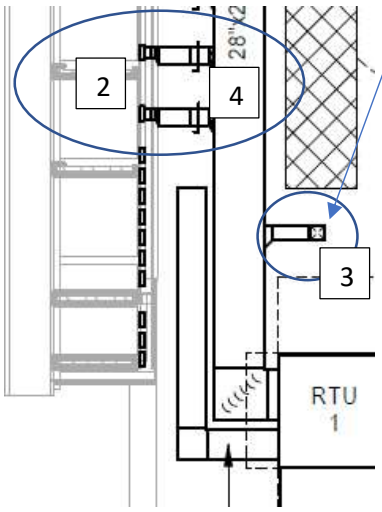
M101 & M150: dining RTU details All details below addressed and verified Sheet M101

- [1] M101: Dining RTU-1, incomplete diffuser plan (75%). Ensure dampers our accessible (outside of any hard lid)- remote dampers specified
- [2] Linear supply diffusers nearest the returns, consider throw pattern on diffusers to ensure supply air does not short directly back to return. High velocity throw diffusers are specified
- [3] restroom diffusers and restroom corridor diffuser do not show connected to RTU1. Drop connects from roof line

Sheet M101

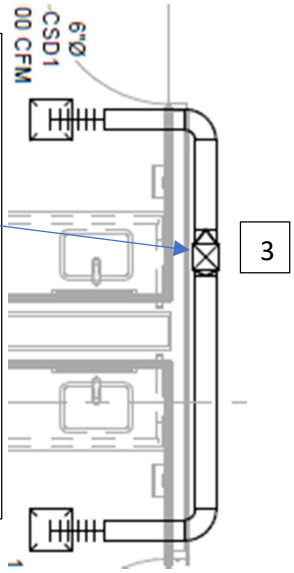


Sheet M150- damper at main – ensure access from below ceiling. [4]

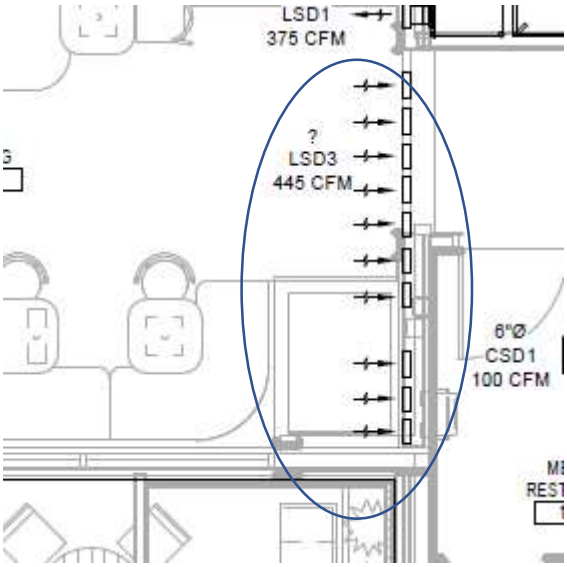


Diffuser not located on plan view on sheet **M101**, supply drops for restrooms on sheet **M101** not shown attached to RTU1

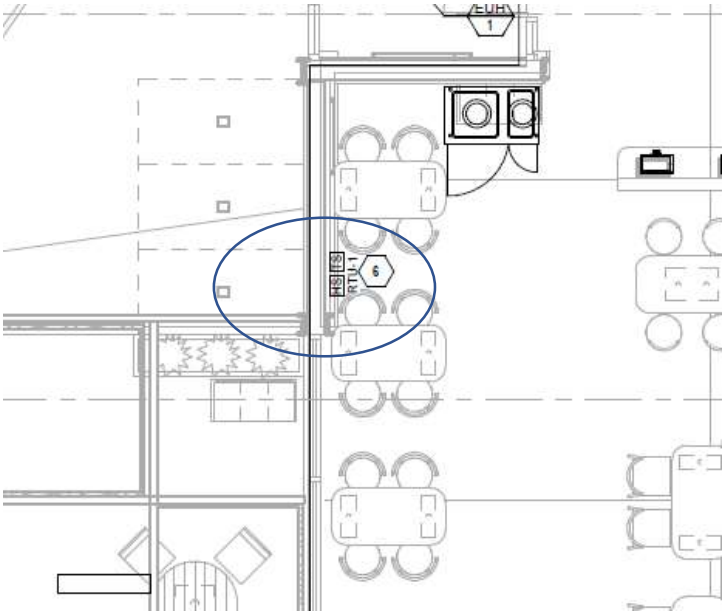
sheet M101



- Dining linear return slots not complete or shown with registers connected to branch/main return ducts, ensure diffuser branch ducts have accessible dampers (outside of any hard lid encase they are set shut or fail shut). Addressed on M101 and M501 remoted damper detail



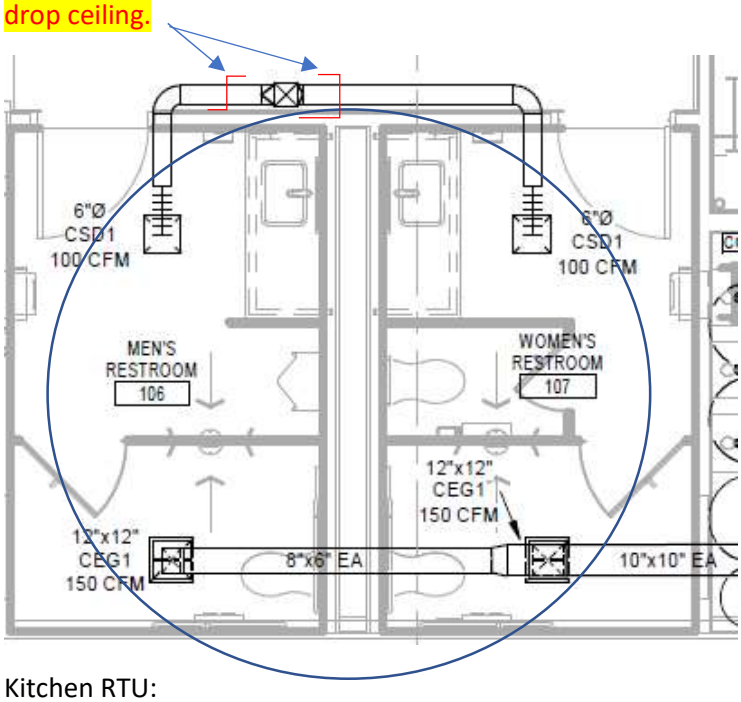
RTU-1 Suggest moving temp / humidity sensor to interior wall if possible or detail proper insulation from wall cavity and surface. Protect sensors from incidental contact since they are located between two customer tables. Location moved on sheet M101 to interior wall near returns



90% PLAN REVIEW

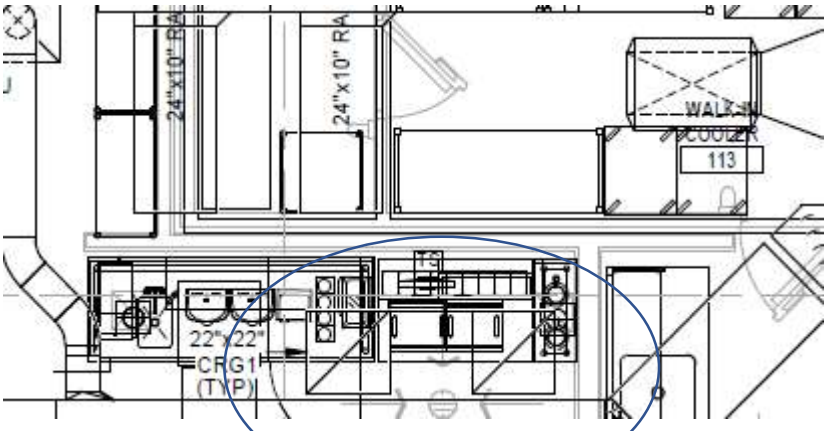
NOVEMBER 30TH, 2020

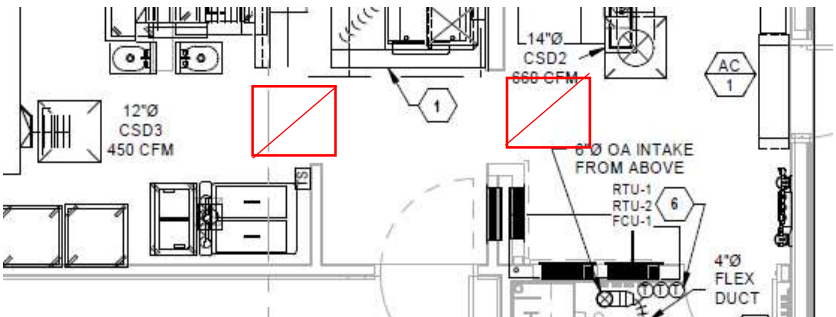
M101: Provide detail for hard ceiling/damper access for both exhaust and supply diffuser. Sheet M601 specifies CEG1 with opposed blade face dampers for exhaust, CSD1 supply diffusers do not show specified face dampers – need to show line dampers in Restroom corridor so long as it's a accessible drop ceiling.



Kitchen RTU:

Appears to be open – plenum return. Only two open return openings are in back the of the kitchen near the walk-in cooler. We highly suggest open (or ducted) returns are distributed to both ends of the kitchen. If open return, prefer a small return plenum box be installed on top of any open return with damper to allow for distribution of return air path to prevent drafts across the hoods. Returns also need to be 10ft from exhaust hoods Sheet M101: Detail revised; Returns located behind hood wall so as to minimize cross drafts at the hood



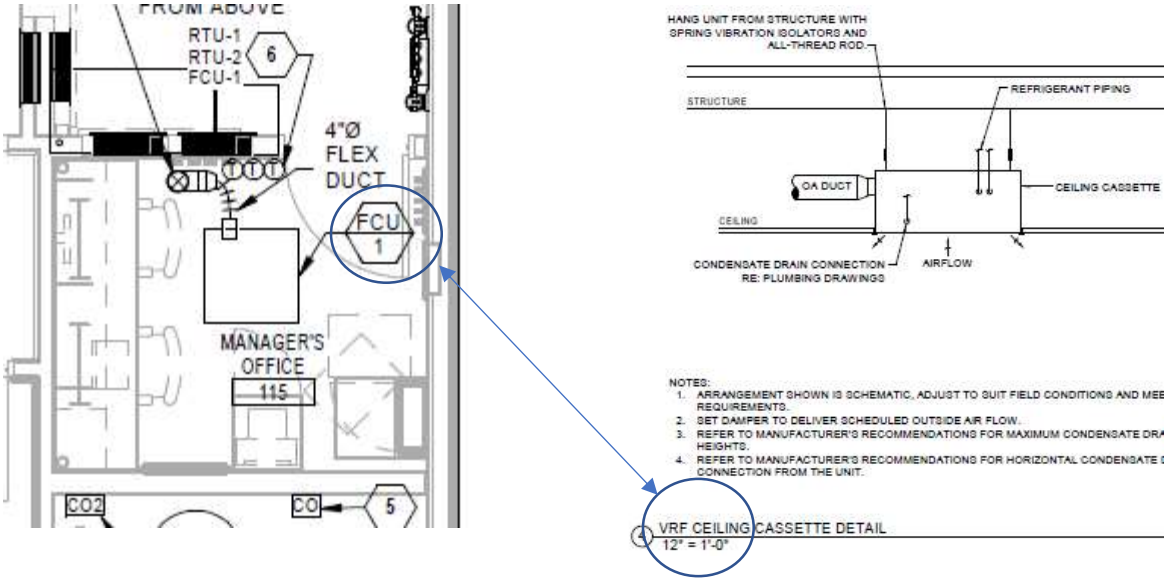


Office fan coil.

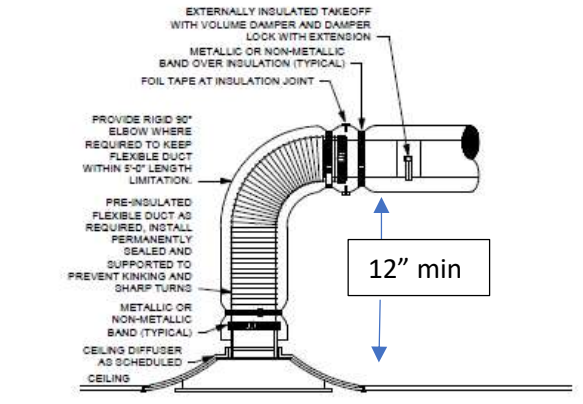
Relabel FCU-1 to VRF ceiling cassette on sheet M101 to match detail from sheet M501 – M601 schedule matches Fan Coil Tag

Fan coil accessibility details should be illustrated on plans, specific to blower, electrical, and filter compartments. Shall follow applicable code guidelines for accessibility. – M501, detail – Note 1 should address this issue for accessibility.

Consider showing 4" line damper in OA duct for fan coil-M101 motorized shut-off damper included



M501 – ceiling diffuser detail: Suggest adding minimum 12" height of straight vertical prior to connecting to diffuser to prevent uneven velocity's at face of diffuser: Addressed note 22 M001 / M590 Note 3.C.

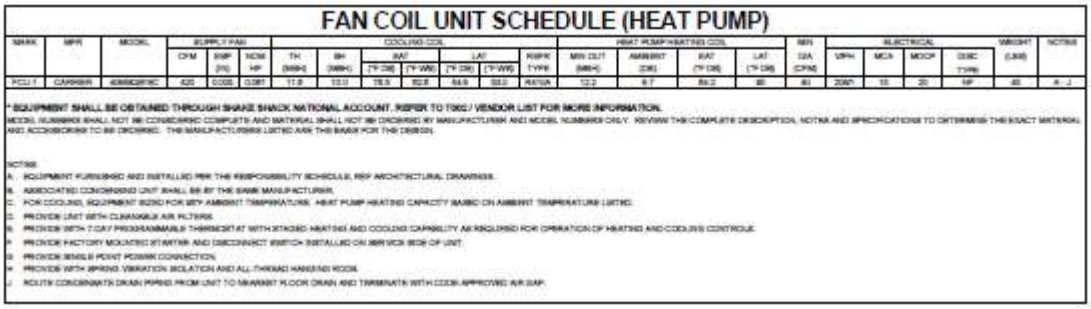


M502: suggest adding hinging details, coordinate with electrical whip for proper length and full hinge of grease fans, Sheet M501 detail addresses hinging of fan

M502: suggest showing proper installation of gravity dampers on all roof mount restroom or general-purpose fans. Detail to highlight damper set inside curb, 4" below fan base with proper flashing. Sheet M501 detail addresses gravity damper installation

M502: suggest showing RTU condensate trap proper details, include provisions for securing in place and draining away from outdoor air sources to approved roof drains. – Not shown, typically we like a detail that shows a minimum 1.5" drop from the fill line offset from the drain line, with drain line noted toward roof drains and away from outdoor air sources.

M601 relabel table to VRF ceiling cassette to match sheet M101 and ceiling cassette detail M501 – "VRF" removed from detail on sheet M501



FAN COIL UNIT SCHEDULE (HEAT PUMP)

MARK	MFR	MODEL	SUPPLY FAN			COOLING COIL					HEAT PUMP/HEATING COIL				MIN	ELECTRICAL				WEIGHT	NOTES
			CFM	ESP (in)	MOTOR HP	TH (MBH)	SH (MBH)	EAT (°F DB)	EAT (°F WB)	LAT (°F DB)	FLUID TYPE	MIN OUT (MBH)	AMBIENT (DB)	EAT (°F DB)	LAT (°F DB)	MIN OA CFM	VPH	MCA	MOCP	DISC TYPE	(LBS)	
FCU-1	CARRIER	40MBQB12C	425	0.025	0.061	11.6	10.0	78.5	62.8	64.6	R410A	12.2	8.7	64.2	90	40	208/1	13	20	NF	49	A - J

* EQUIPMENT SHALL BE OBTAINED THROUGH SHAKE SHACK NATIONAL ACCOUNT. REFER TO T002 / VENDOR LIST FOR MORE INFORMATION.
MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:
A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
B. ASSOCIATED CONDENSING UNIT SHALL BE BY THE SAME MANUFACTURER.
C. FOR COOLING, EQUIPMENT SIZED FOR 95°F AMBIENT TEMPERATURE. HEAT PUMP HEATING CAPACITY BASED ON AMBIENT TEMPERATURE LISTED.
D. PROVIDE UNIT WITH CLEANABLE AIR FILTERS.
E. PROVIDE WITH 7 DAY PROGRAMMABLE THERMOSTAT WITH STAGED HEATING AND COOLING CAPABILITY AS REQUIRED FOR OPERATION OF HEATING AND COOLING CONTROLS.
F. PROVIDE FACTORY MOUNTED STARTER AND DISCONNECT SWITCH INSTALLED ON SERVICE SIDE OF UNIT.
G. PROVIDE SINGLE POINT POWER CONNECTION.
H. PROVIDE WITH SPRING VIBRATION ISOLATION AND ALL THREAD HANGING RODS.
I. ROUTE CONDENSATE DRAIN PIPING FROM UNIT TO NEAREST FLOOR DRAIN AND TERMINATE WITH CODE APPROVED AIR GAP.

HEAT PUMP CONDENSING UNIT SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	REFR TYPE	COOLING CAPACITY			HEATING CAPACITY			ELECTRICAL			WEIGHT (LBS)
					TH (MBH)	AMBIENT (DB)	MIN EFF (SEER)	CAP (MBH)	AMBIENT (DB)	MIN EFF COP 47°F	MCA	MOCP	V/PH	
CU-1	FCU-1	CARRIER	38MAQB18	R410A	11.6	91.0	19.0	12.2	8.7	3.3	13	15	208 / 1	102.5

* EQUIPMENT SHALL BE OBTAINED THROUGH SHAKE SHACK NATIONAL ACCOUNT. REFER TO T002 / VENDOR LIST FOR MORE INFORMATION.
MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

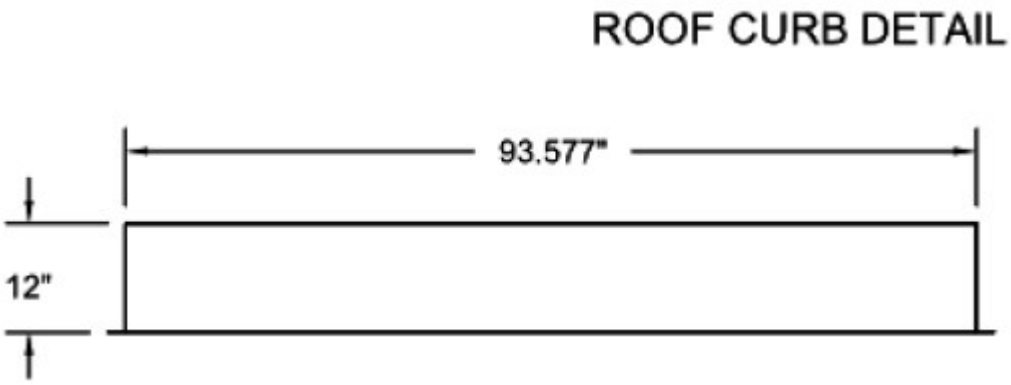
NOTES:
A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
B. EQUIPMENT CAPACITY SCHEDULED IS MINIMUM CAPACITY THAT MUST BE PROVIDED AT AMBIENT TEMPERATURE INDICATED.
C. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT QUANTITY AND SIZE OF REFRIGERANT PIPING.
D. PROVIDE LIQUID LINE FILTER DRYER AND SIGHT GLASS.
E. PROVIDE PREFABRICATED EQUIPMENT SUPPORT RAILS.
F. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
G. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
H. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.

M601: Suggest RTU OEM provide temp sensor and humidity sensor wiring detail for field installation clarity. Not shown, OEM to provide RH sensor/Stat-RTU wiring requirements for Humidistat with submittals

M601: Suggest note "S" [RTU shutoff with hood fire panel] to provide a wiring diagram by RTU OEM to clarify where to land the hood shutdown control wiring onto each RTU. (this detail is shown on the hood control panel). – detail not shown. OEM to provide control source type (120, 24, dry) and point of

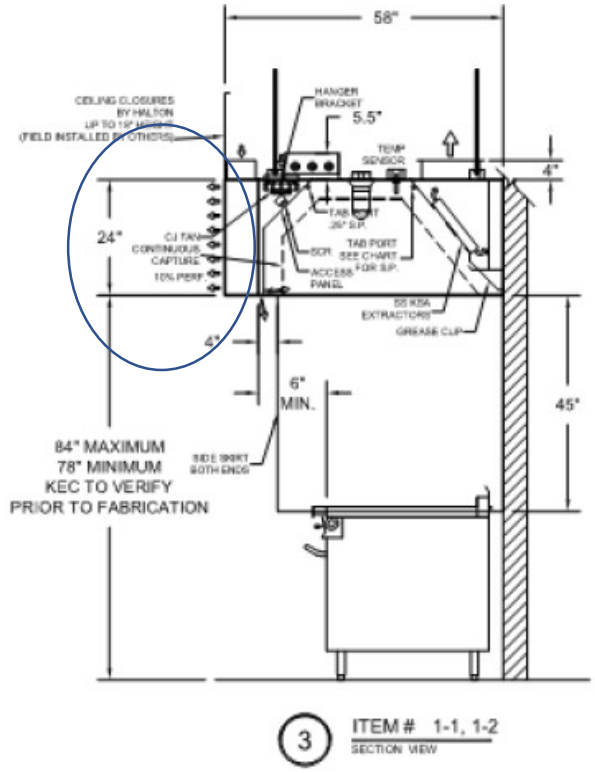
contact to manage signal with submittal. Other wise we suggest utilizing R/G from thermostat through dry contact in hood panel that shuts off in fire and set to occupied/unoccupied with hood operation (may require addition of relay in hood panel if dry contact is not available for Supply fan operation)

M701: MUA curb detail, consider increasing curb size from 12" height to minimum 18" height (MIN) to prevent snow packing in front of access doors. [No change to detail – still shows 12" height curb. Is this acceptable considering insulation thickness on roof and potential snow pack]

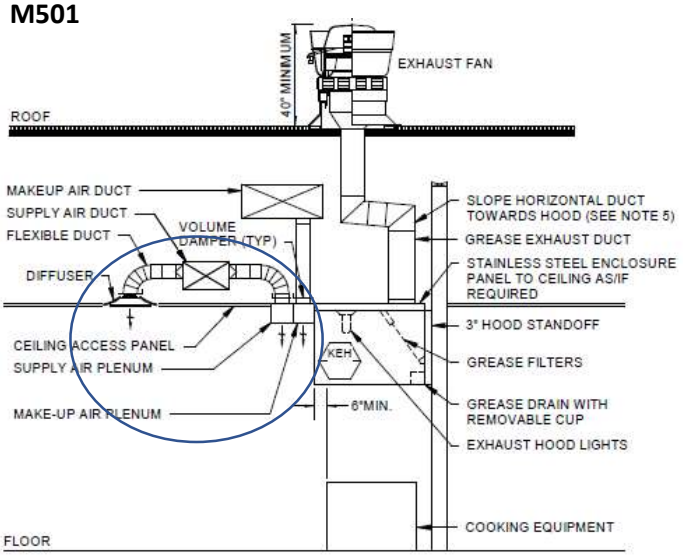


M702 Halton hood section detail differs from sheet M501 section detail. Planned supply plenum detail on M501 should match manufacturers supply orientation on M702. Detail fixed on M501

M702



M501



NOTES:
1. SUBMIT SHOP DRAWINGS OF ALL HOOD SYSTEMS TO CITY FOR APPROVAL PRIOR TO INSTALLATION.
2. TOTAL HOOD SYSTEM TO BE IN COMPLETE CONFORMANCE WITH NFPA, AND ALL LOCAL CODES AND REGULATIONS.
3. COORDINATE ALL FIRE PROTECTION SYSTEMS WITH FIRE PROTECTION CONTRACTOR WHO SHALL ALSO BE RESPONSIBLE FOR ALL PERMITS AND TESTING REQUIRED.
4. PROVIDE WRAP SYSTEM WHERE APPROVED BY LOCAL CODES IN LIEU OF RATED ENCLOSURE
5. PROVIDE ACCESS PANELS AS REQUIRED BY LOCAL CODE AND PER PLAN.
6. HOODS SHALL EXTEND MINIMUM 6" BEYOND ALL OPEN SIDES AND FRONT EDGE OF FOOD COOKING EQUIPMENT BEING SERVED.

M702 & M704 – EXHAUST FAN #2 CFM'S ARE NOT CORRECT – Correct table sheet M704 so EF-2 = 1772 – sheet M702 detail resolved

FAN INFORMATION TABLE

FAN NO	MODEL	QTY	CFM	S.P.	H.P.	VOLTAGE	AMPS	ACCESSORIES
EF-1	HSTXDRHUL1575SC HOOD #1-1	1	1657	.8"	3/4	115/1/60	5.6	MOUNT & WIRE DISCONNECT, SPD CNTRL, SQ GALV SF CURB, LABEL UL/CUL 762, GREASE CONTAINER, HINGE KIT
EF-2	HSTXDRHUL1575SC HOOD #1-2	1	1657	.8"	3/4	115/1/60	5.6	MOUNT & WIRE DISCONNECT, SPD CNTRL, SQ GALV SF CURB, LABEL UL/CUL 762, GREASE CONTAINER, HINGE KIT

HOOD INFORMATION TABLE

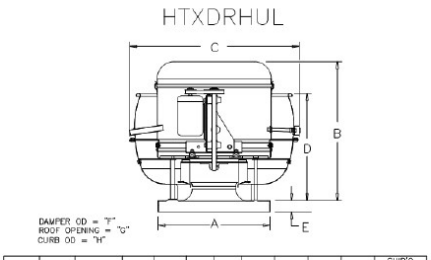
HOOD NUMBER	HOOD MODEL	EXHAUST AIR FLOW REQUIREMENTS						GREASE EXTRACTOR				
		EXHAUST CFM	T.A.B. PORT STATIC PRESSURE	TOTAL HOOD STATIC PRESSURE	EXHAUST COLLAR			QTY.	SIZE		TYPE	CO
					QTY.	LENGTH	WIDTH		L	H		
1-1	KVC	1657	.19"	.29"	1	12"	12"	5	20"	13"	KSA	ALI
								1	11"	13"		
1-2	KVC	1772	.22"	.33"	1	12"	12"	5	20"	13"	KSA	ALI
								1	11"	13"		

TOTAL EXH. CFM = **3429**

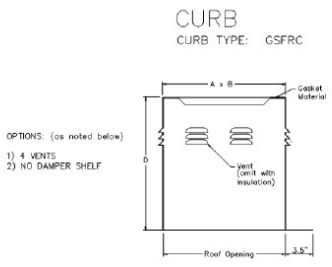
243"

M704: Code requires discharge point of exhaust fan to be minimum of 40" above finished roof. Curb dimension "D" is 18" tall. Fan Dimension "D" is 22.63" tall. The total height is 40.63". This does not allow for securing curb directly to deck and being sunk below possible roof batting. Suggest a 20" tall curb to ensure 40" clearance can be maintained. Corrected Detail 10 – M501, M704 does not show curb extension or curb height detail resolved – with insulation thickness on roof this may limit height of exhaust below code required 40" discharge height.

Curb hinging details and fan fastening details should be shown. Corrected Detail 10 – M501



TAG	SIZE	A	B	C	D	E	F	G	H	J	SHIP'G WT-LESS MOTOR
EF-1	15	24"	27.63"	36.5"	22.63"	2"	18"	19.5"	22.5"	19.5"	140
EF-2	15	24"	27.63"	36.5"	22.63"	2"	18"	19.5"	22.5"	19.5"	140



TAG	QTY	DESCRIPTION	MATERIAL GUAGE	A	B	C	D	ROOF OPENING	OPTIONS
EF-1	1	GSFRC 22.5	18	22.5"	22.5"	1.5"	18"	19.5" x 19.5"	1,2
EF-2	1	GSFRC 22.5	18	22.5"	22.5"	1.5"	18"	19.5" x 19.5"	1,2

M703 hood fire suppression details (full flood Ansul)

Title of system:

Change "Full Flood Ansul System" to Ansul's proper terminology "Ansul R-102 Overlapping System" Not corrected

Ansul Notes:

Note 1: Change "in accordance with R-102 installation manual" to "in accordance with Ansul R-102 overlapping system manual" Not corrected

Note 2: Change "wire rope" to "stainless steel cable" " Not corrected

Add note prior to note 3: Fire suppression contractor shall have an additional trip for an onsite pretest with the general contractor, mechanical, plumbing, building alarm and electrical contractors prior to final suppression with local AHJ. Deficiencies shall be resolved by responsible trade before the final can be schedule. Test should be conducted at 3 days (minimum) prior to scheduled final. Not corrected

Add Note: All connections to the fire suppression low voltage and high voltage Ansul micro-switches must be made in a U.L rated Junction box outside of the Ansul automan compartment to keep from voiding the listing of the Ansul system. Not corrected

Distribution Piping requirement notes:

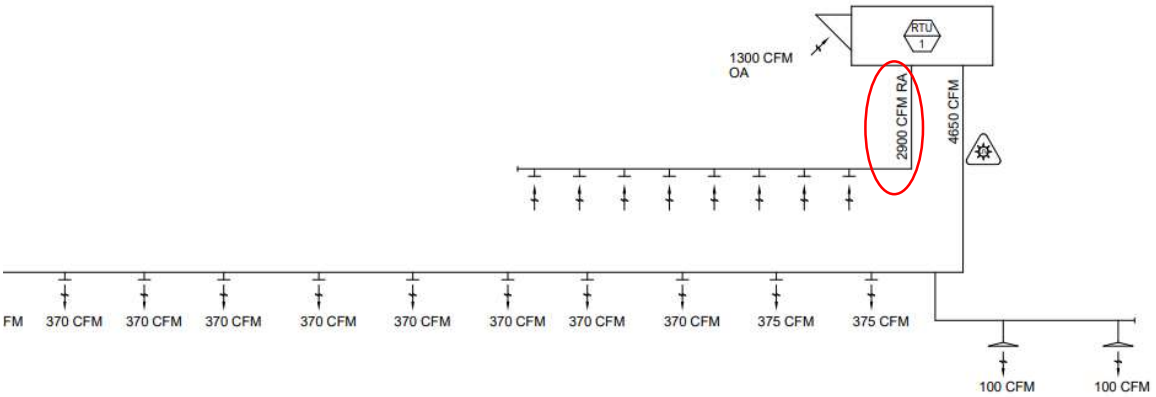
Note 1: Pipe shall be 3/8" schedule 40 black iron and shall have chrome plating or stainless-steel pipe where exposed under the hood. OK as is since this is pre-piped hood and chrome plating will be provided by factory under the hood.

Note 2: Change "final nozzle location may not vary from location shown" to "final nozzle locations shall not vary from the Ansul R-102 overlapping system protection piping requirements shown"

- Note the hood is indicating it will be factory pre-piped, so it will be engineer's discretion if they feel note 2 (above is required) OK as is since this is pre-piped hood and chrome plating will be provided by factory under the hood and this is overlapping protection.

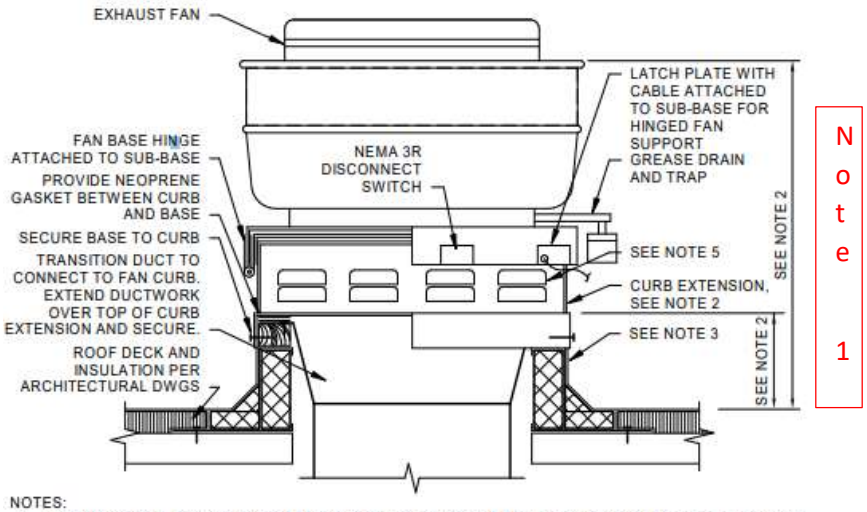
Halton Note: hand-held extinguishers, if required, are to be provided by others. Details need a note detailing whose responsibility it will be to provide these extinguishers and how many are required.

New 90% review comment. **M502:** Change RTU-1 Return air from 2,900 to 3,350



1 RTU-1 ONE-LINE DIAGRAM
NTS

M501 GREASE EXHAUST FAN DETAIL: Note 2 should be removed, no dampers allowed in grease ducts. Dimensional heights that indicate Note 2, should probably reference Note 1.



Note 1

NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.
2. ~~IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB.~~
3. PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.
4. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL.
5. VENTED CURB EXTENSION. IF DOUBLE-WALL U.L. LISTED ZERO CLEARANCE GREASE DUCT IS USED, PROVIDE BLANK OFF PANELS ON INTERIOR OF CURB OPENINGS AND SEAL AIRTIGHT.

HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

'BLAST GREASE EXHAUST FAN DETAIL
'S

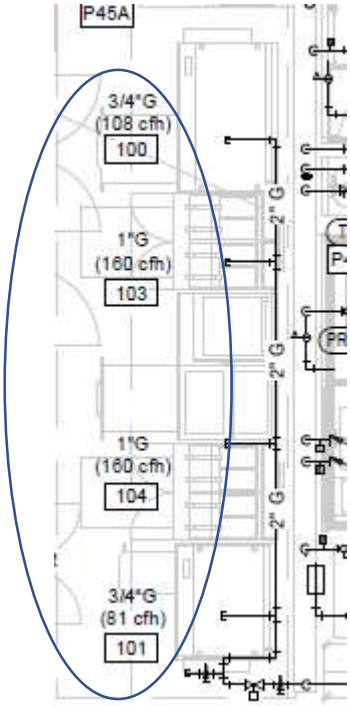
PLUMBING REVIEW

P001-P901 [PAGE 71-79]

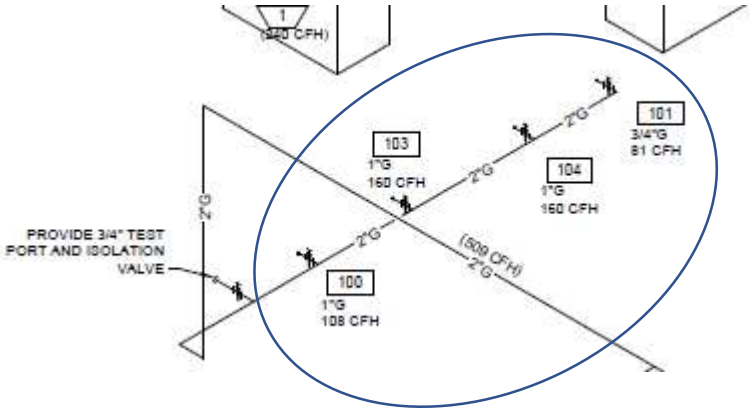
Plumbing: **P001-P901** **[PAGE 71-79]**

P120 and P901: Cook line gas connections per item are shown in reverse order from each other when comparing sheet P120 and sheet P901. Need to validate connection order to sequence properly on each sheet – sheet P901 has been corrected to match P120 tag orientation

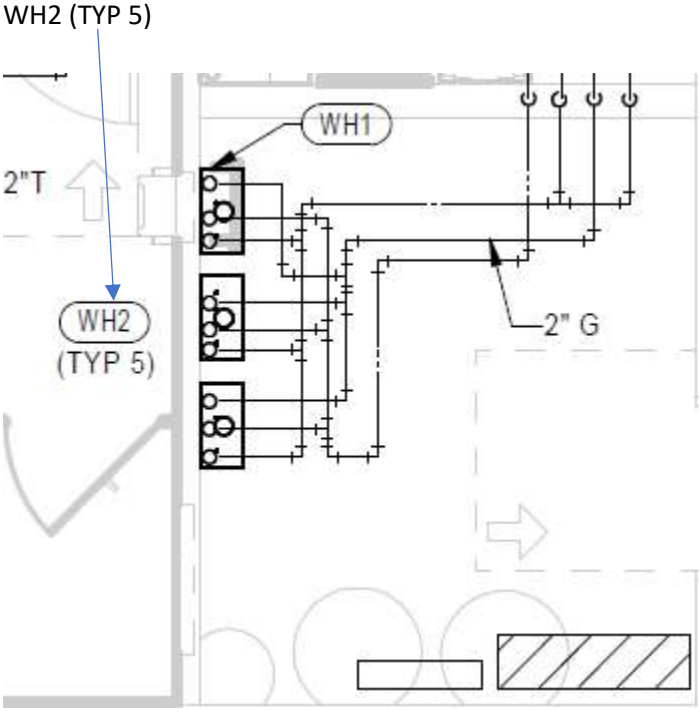
P120 (ITEM 100 IS END OF LINE)

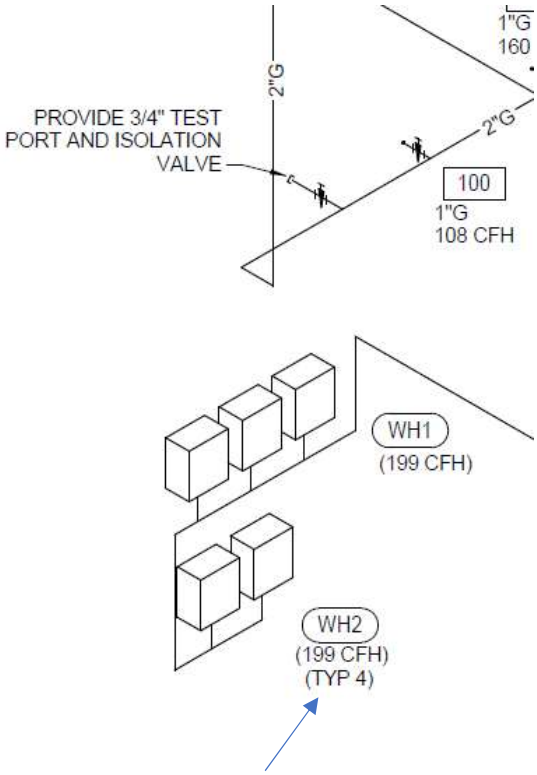


P901 (ITEM 100 IS BEGINNING OF LINE)



Water heater **– P120**: water heaters shown – note indicates WH2 (TYP 5)

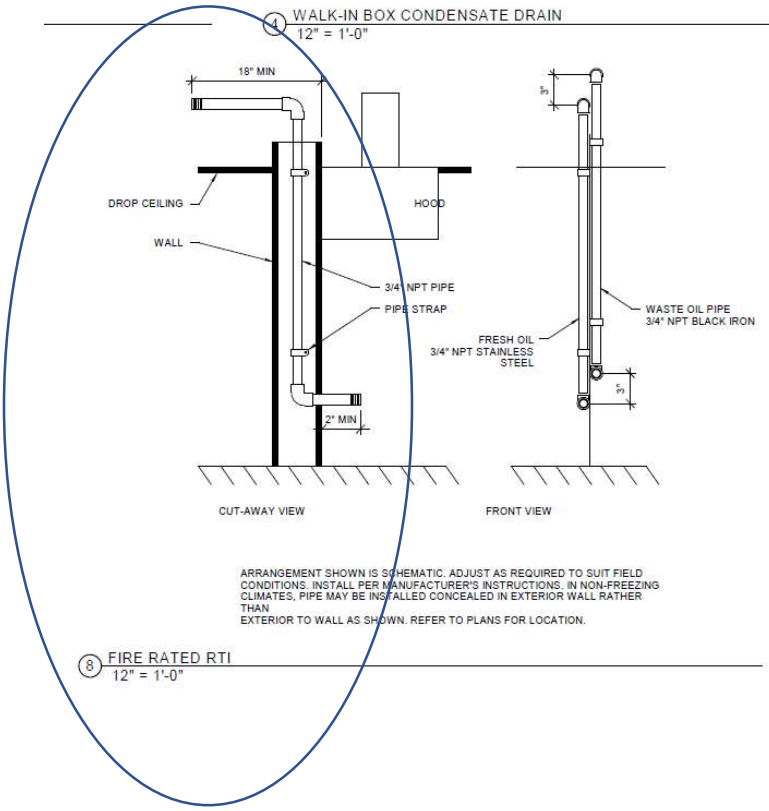




Detail **P901** (left) shows Two water heaters WH2 shows TYP 4 which differs from comment on P120 (above)

Sheet P120 has been updated to show (typ 4) to match detail on sheet P901

P502 – detail 8 – It is not clear if the hood section view is gas line or other. If gas line, we should show fire suppression gas valve install location and additional detail (size and type) – No issue contained within this original comment.



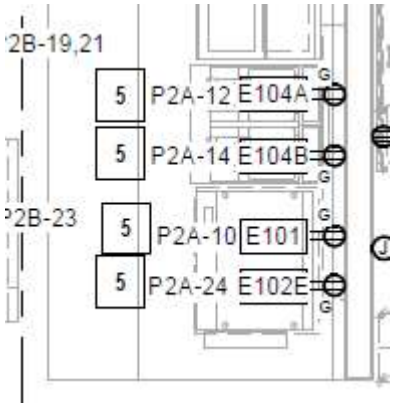
ELECTRICAL REVIEW

E101, E120 – E630 [PAGE 81, 83-92]

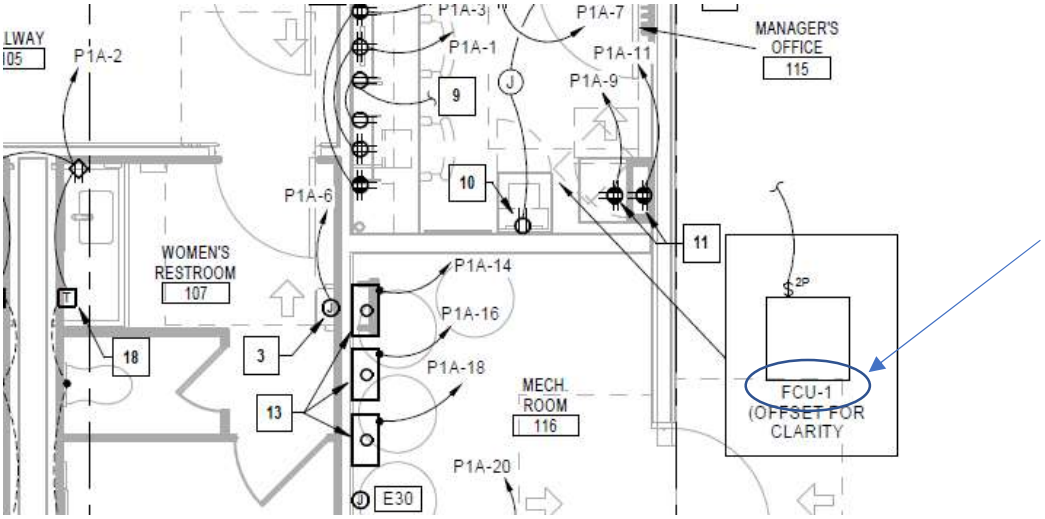
Electrical: **E101, E120 – E630** **[PAGE 81, 83-92]**

E101 – note 5 references note 7, seems to imply that it should reference note 6

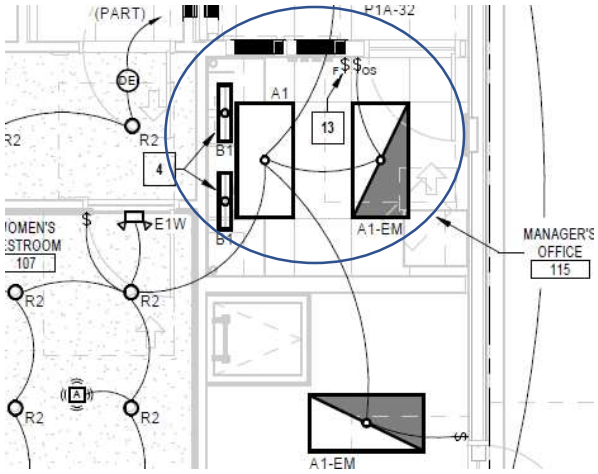
5. ROUTE COOK LINE RECEPTACLE CIRCUITS THROUGH SHUNT TRIP CONTACTOR NEAR PANELBOARDS SEE NOTE 7.
6. PROVIDE (2) SQUARE D 8903 SERIES, OR EQUIVALENT, ELECTRICALLY HELD, NORMALLY CLOSED, 8-POLE CONTACTORS WITH 30A RATED CONTACTS AND 120V CONTROL COILS IN AN ENCLOSURE ABOVE CEILING. CONNECT CONTACTOR COILS TO SHUNT TRIP TERMINALS IN HOOD CONTROL PANEL FOR AUTOMATIC SHUT-DOWN OF COOK-LINE RECEPTACLE CIRCUITS ON FIRE CONDITION. LABEL CONTACTOR ENCLOSURE "SHUNT TRIP CONTACTORS".
7. PROVIDE WEATHERPROOF PUSHBUTTON FOR DELIVERIES. FIELD VERIFY EXACT LOCATION AND CONNECT PUSHBUTTON TO LOW VOLTAGE TRANSFORMER AND BELL OUTSIDE OF MANAGER'S OFFICE.
8. PROVIDE LOW VOLTAGE TRANSFORMER AND BELL ABOVE DOOR. CONNECT TO PUSHBUTTON AT RECEIVING DOOR.

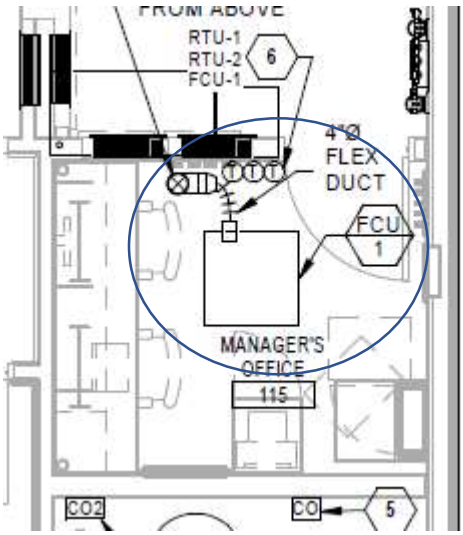


E101 - For consistency rename managers office FCU-1 to VRF (same as mechanical plan detail)

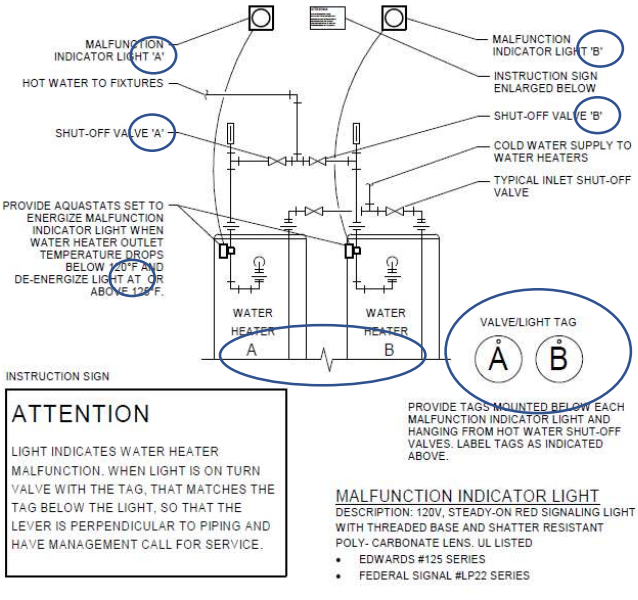


E120 – Manager's office emergency Light and VRF cassette Cartridge (sheet M-101) should be coordinated by contractors or shown to ensure they do not infringe on each other's required location. No apparent change – Need to avoid collisions based on ceiling tile layout, no change to current details on this issue. I would suggest noting ceiling grid to allow room between emergency light and room light for FCU-1. I believe this unit is slightly larger than 24" square so that row of ceiling grid may be wider. Please confirm.

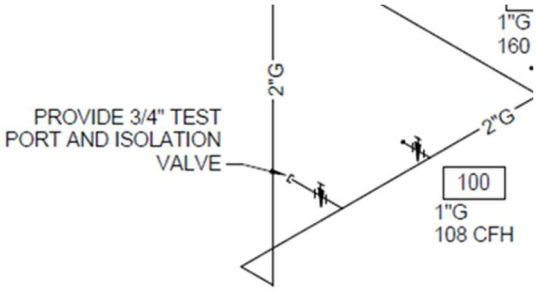


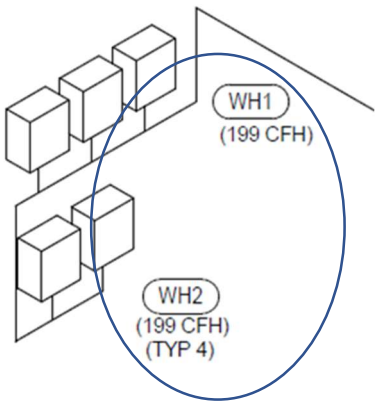


E501 – Water heater alarm indicator light's tags: Label malfunction indicator lights same mechanical label for each Water heater (WH1, WH2) – alarm indicator details removed



1 WATER HEATER MALFUNCTION INDICATOR LIGHT
NOT TO SCALE





SUMMARY OF REMAINING ISSUES

M101: Restrooms: Provide detail for hard ceiling/damper access for both exhaust and supply diffuser. Sheet M601 specifies CEG1 with opposed blade face dampers for exhaust, CSD1 supply diffusers do not show specified face dampers – need to show line dampers in Restroom corridor so long as it is an accessible drop ceiling.

M502: suggest showing RTU condensate trap proper details, include provisions for securing in place and draining away from outdoor air sources to approved roof drains. – Not shown, typically we like a detail that shows a minimum 1.5" drop from the fill line offset from the drain line, with drain line noted toward roof drains and away from outdoor air sources

M601: Suggest note "S" [RTU shutoff with hood fire panel] to provide a wiring diagram by RTU OEM to clarify where to land the hood shutdown control wiring onto each RTU. (this detail is shown on the hood control panel). – detail not shown. OEM to provide control source type (120, 24, dry) and point of contact to manage signal with submittal. Other wise we suggest utilizing R/G from thermostat through dry contact in hood panel that shuts off in fire and set to occupied/unoccupied with hood operation (may require addition of relay in hood panel if dry contact is not available for Supply fan operation)

M701: MUA curb detail, consider increasing curb size from 12" height to minimum 18" height (MIN) to prevent snow packing in front of access doors. [No change to detail – still shows 12" height curb. Is this acceptable considering insulation thickness on roof and potential snow pack]

M704: Code requires discharge point of exhaust fan to be minimum of 40" above finished roof. Curb dimension "D" is 18" tall. Fan Dimension "D" is 22.63" tall. The total height is 40.63". This does not allow for securing curb directly to deck and being sunk below possible roof batting. Suggest a 20" tall curb to ensure 40" clearance can be maintained. Corrected Detail 10 – M501, M704 does not show curb extension or curb height detail resolved – with insulation thickness on roof this may limit height of exhaust below code required 40" discharge height.

M703 (page 89)

Change "Full Flood Ansul System" to Ansul's proper terminology "Ansul R-102 Overlapping System" Not corrected

Ansul Notes:

Note 1: Change "in accordance with R-102 installation manual" to "in accordance with Ansul R-102 overlapping system manual" Not corrected

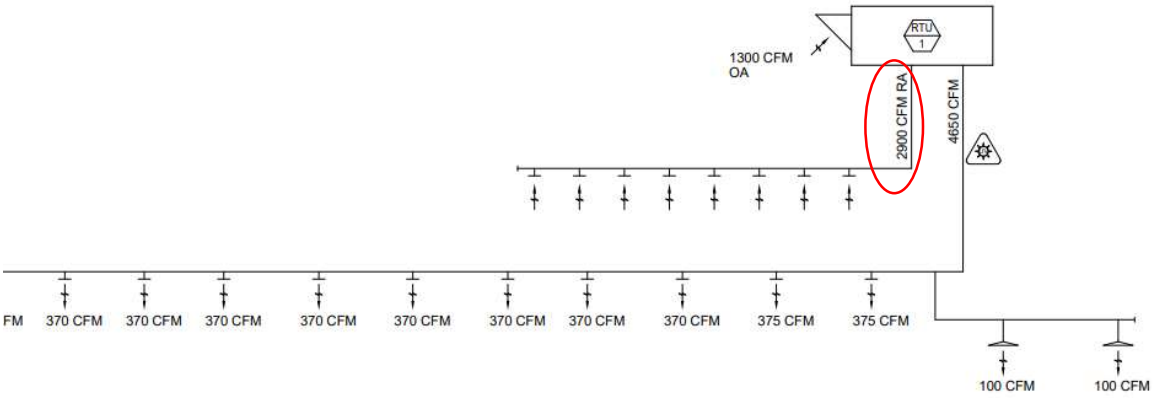
Note 2: Change "wire rope" to "stainless steel cable" " Not corrected

Add note prior to note 3: Fire suppression contractor shall have an additional trip for an onsite pretest with the general contractor, mechanical, plumbing, building alarm and electrical contractors prior to

final suppression with local AHJ. Deficiencies shall be resolved by responsible trade before the final can be schedule. Test should be conducted at 3 days (minimum) prior to scheduled final. Not corrected –

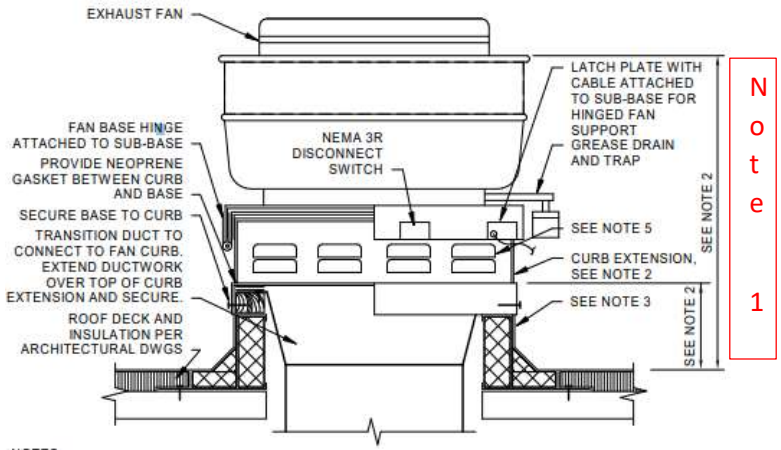
Add Note: All connections to the fire suppression low voltage and high voltage Ansul micro-switches must be made in a U.L rated Junction box outside of the Ansul automan compartment to keep from voiding the listing of the Ansul system. Not corrected

New comment: 90% review comment. **M502:** Change RTU-1 Return air from 2,900 to 3,350



1 RTU-1 ONE-LINE DIAGRAM
NTS

M501 GREASE EXHAUST FAN DETAIL: Note 2 should be removed, no dampers allowed in grease ducts. Dimensional heights that indicate Note 2, should probably reference Note 1.



NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.
2. IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB.
3. PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.
4. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL.
5. VENTED CURB EXTENSION. IF DOUBLE-WALL U.L. LISTED ZERO CLEARANCE GREASE DUCT IS USED, PROVIDE BLANK OFF PANELS ON INTERIOR OF CURB OPENINGS AND SEAL AIRTIGHT.

HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

E120 – Manager's office emergency Light and VRF cassette Cartridge (sheet M-101) should be coordinated by contractors or shown to ensure they do not infringe on each other's required location. No apparent change – Need to avoid collisions based on ceiling tile layout, no change to current details on this issue. I would suggest noting ceiling grid to allow room between emergency light and room light for FCU-1. I believe this unit is slightly larger than 24" square so that row of ceiling grid may be wider. Please confirm.