



75% PLAN REVIEW

NOVEMBER 16TH, 2020

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

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1126 Swift St.
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Sections reviewed:

Fire Protection:	F001 – F501	[PAGE 35-37]
Mechanical:	M001 – M704	[PAGE 58-69]
Plumbing:	P001-P901	[PAGE 71-79]
Electrical:	E101, E120 – E630	[PAGE 81, 83-92]

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.



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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.

Recommend concealed sprinkler heads in kitchen – easier to change out the plates than heads when they need replacing.

Open Patio generally requires dry type or anti-freeze type system to be specified.

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

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



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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.

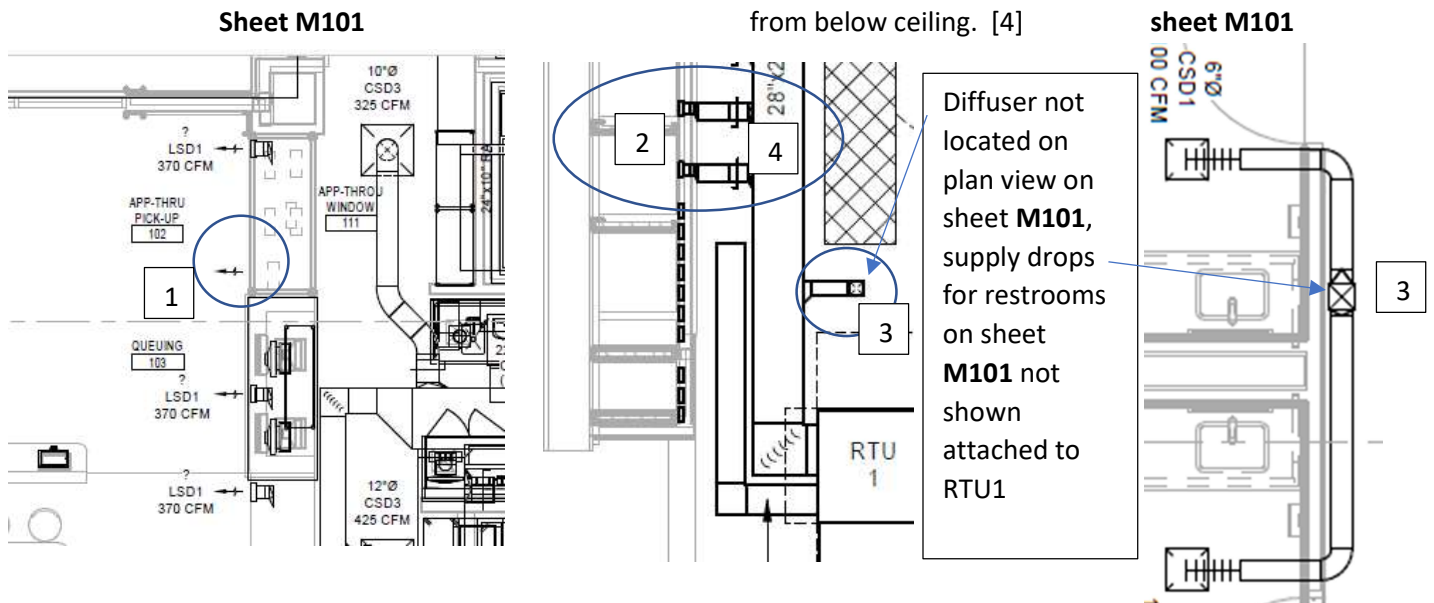
21. PROVIDE A **[LOCKING QUADRANT]** MANUAL BALANCING DAMPER IN EACH DUCT TAKEOFF FROM SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTS.

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

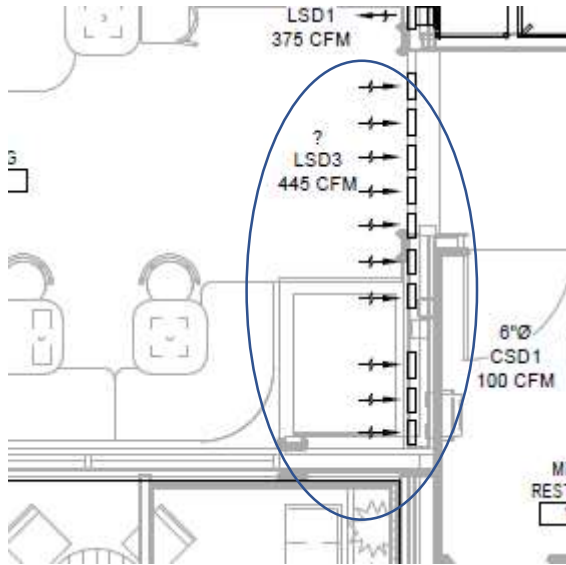
M101 & M150: dining RTU details

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

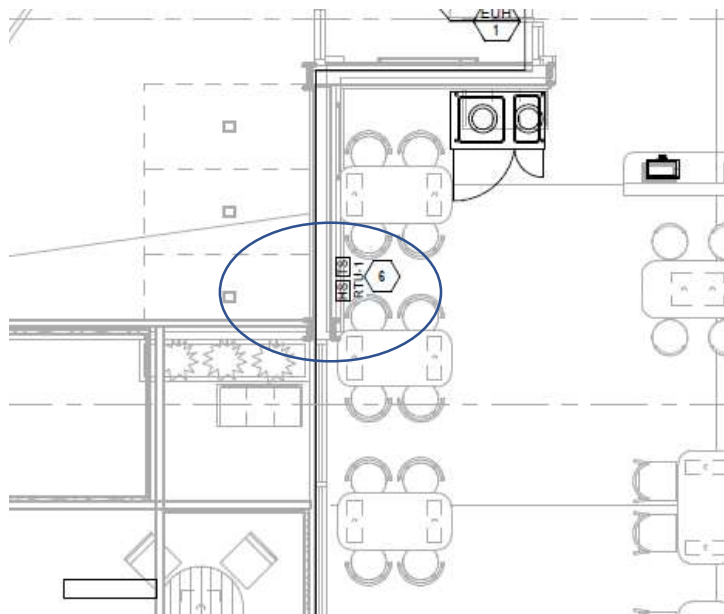
Sheet M150- damper at main – ensure access from below ceiling. [4]



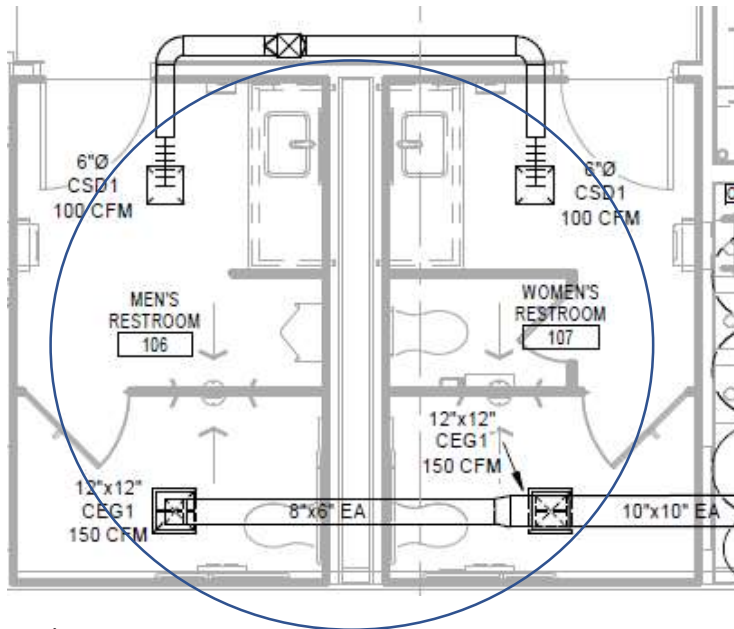
- Dining linear return slots not complete or shown with registers connected to branch/main return ducts, ensure diffuser branch ducts have accessible dampers (outside of any hard lid encase they are set shut or fail shut).



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.

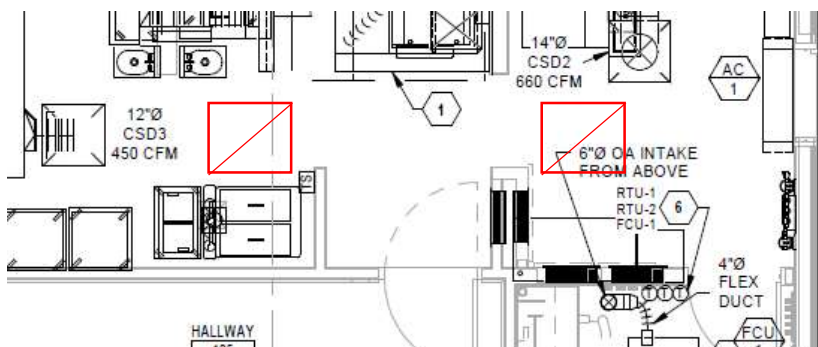
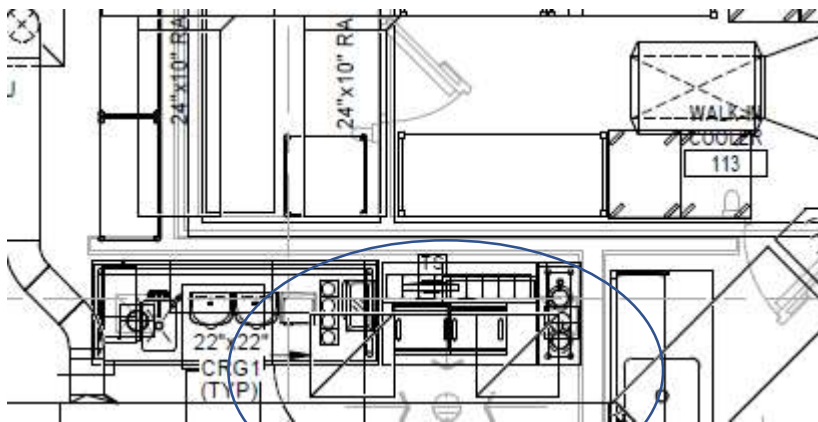


M101: Provide detail for hard ceiling/damper access for both exhaust and supply diffuser.



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

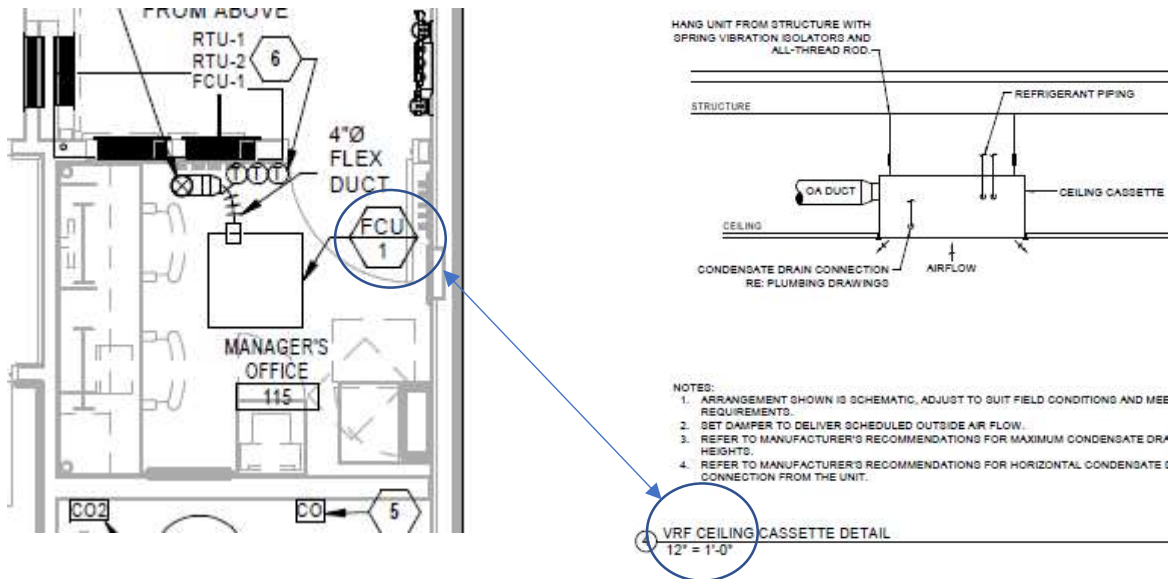


Office fan coil.

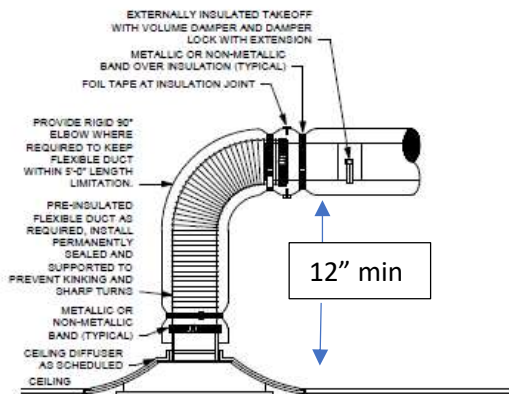
Relabel FCU-1 to VRF ceiling cassette on sheet M101 to match detail from sheet M501

Fan coil accessibility details should be illustrated on plans, specific to blower, electrical, and filter compartments. Shall follow applicable code guidelines for accessibility.

Consider showing 4" line damper in OA duct for fan coil



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:



- NOTES:**
1. FLEXIBLE DUCT LENGTH MAY NOT EXCEED 5'-0". EXTEND RIGID DUCT AS REQUIRED.
 2. REFER TO SPECIFICATIONS FOR FLEXIBLE DUCTWORK INSTALLATION REQUIREMENTS.

1 CEILING DIFFUSER DETAIL
12" = 1'-0"



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

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.

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.

M601 relabel table to VRF ceiling cassette to match sheet M101 and ceiling cassette detail M501

FAN COIL UNIT SCHEDULE (HEAT PUMP)																						
MARK	SERV	MODEL	SUPPLY FAN			COOLING COIL						HEAT REFRIGERATED COIL				ELECTRICAL				WEIGHT (LBS)	NOTES	
			CFM	HP	MCA	TH (MBH)	RH (MBH)	WAT (TYP)	LAT (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)	WTR (TYP)			
FCU-1	CARRIER	38MAQB18	440	0.008	0.008	11.6	19.0	19.0	12.2	8.7	8.7	12.2	8.7	8.7	12.2	8.7	8.7	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. ASSOCIATED CONDENSING UNIT SHALL BE BY THE SAME MANUFACTURER.
 C. FOR COOLING, EQUIPMENT RATED FOR 80°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. AIR REQUIRED FOR OPERATION OF HEATING AND COOLING CONTROL.
 F. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH AND DISCONNECT SWITCH INSTALLED ON SERVICE SIDE OF UNIT.
 G. PROVIDE REBAR POINT FOR CONCRETE CONNECTION.
 H. PROVIDE WITH SPRING VIBRATION ISOLATOR AND ALL THROUGH HARDWARE FROM.
 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.

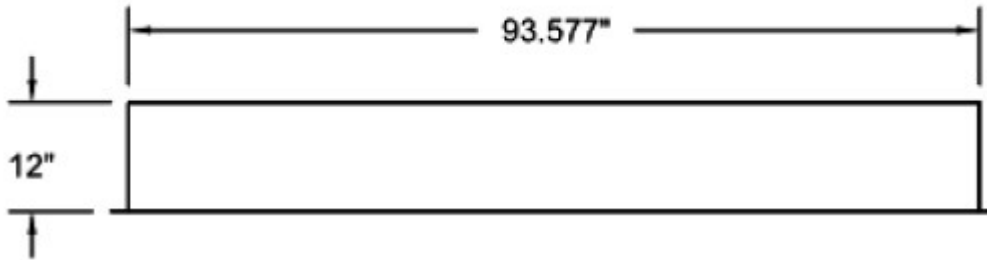
NOTES:
 A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
 B. EQUIPMENT CAPACITY SCHEDULED IS MINIMUM CAPACITY THAT MUST BE PROVIDED AT AMBIENT TEMPERATURE INDICATED.
 C. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT QUANTITY AND SIZE OF REFRIGERANT 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.

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).

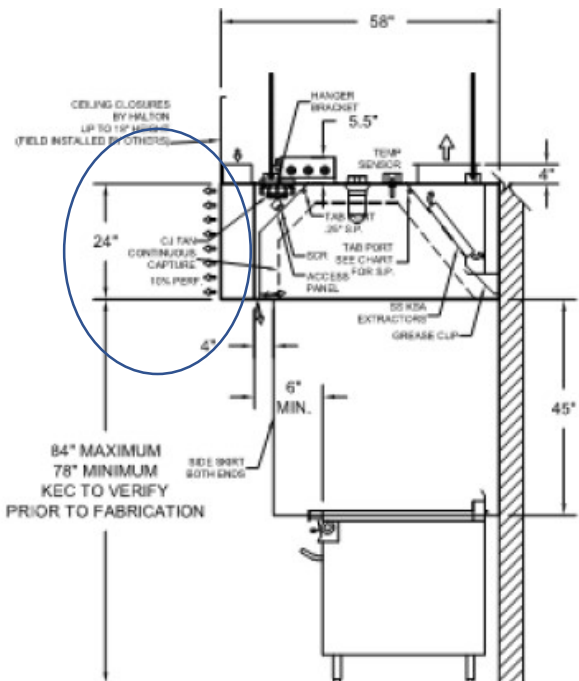
M701: MUA curb detail, consider increasing curb size from 12" height to minimum 18" height (MIN) to prevent snow packing in front of access doors.

ROOF CURB DETAIL



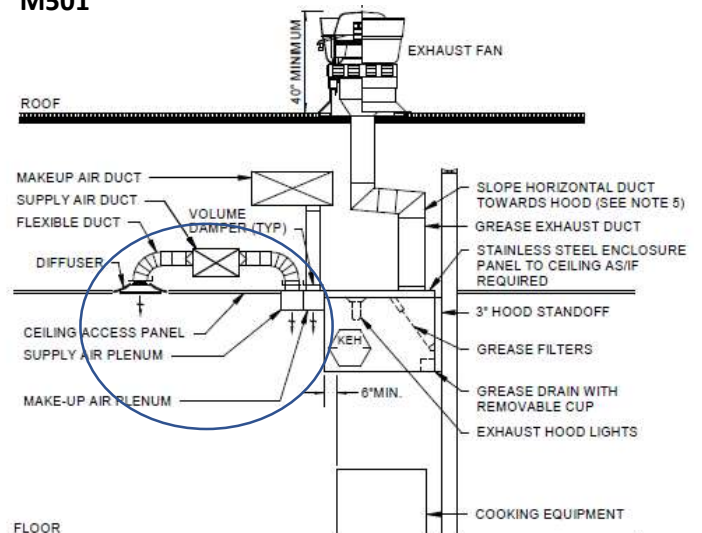
M702 Halton hood section detail differs from sheet M501 section detail. Planned supply plenum detail on M501 should match manufacturers supply orientation on M702.

M702



3 ITEM # 1-1, 1-2 SECTION VIEW

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

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

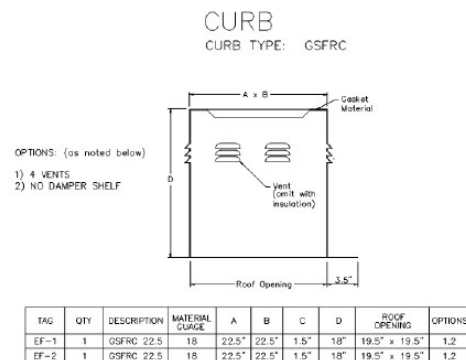
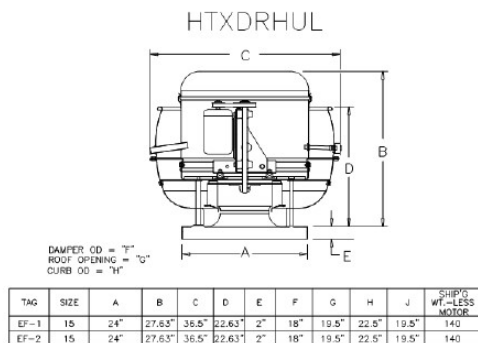
HOOD NUMBER	HOOD MODEL	EXHAUST AIR FLOW REQUIREMENTS						GREASE EXTRACTOR			CO	
		EXHAUST CFM	T.A.B. PORT STATIC PRESSURE	TOTAL HOOD STATIC PRESSURE	EXHAUST COLLAR			QTY.	SIZE			TYPE
					QTY.	LENGTH	WIDTH		L	H		
1-1	KVC	1657	.19"	.29"	1	12"	12"	5	20"	13"	KSA	ALI
1-2	KVC	1772	.22"	.33"	1	12"	12"	5	20"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

TOTAL EXH. CFM = **3429**



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.

Curb hinging details and fan fastening details should be shown.





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"

Ansul Notes:

Note 1: Change "in accordance with R-102 installation manual" to "in accordance with Ansul R-102 overlapping system manual"

Note 2: Change "wire rope" to "stainless steel cable"

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.

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.

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.

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)

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.



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PLUMBING REVIEW

P001-P901

[PAGE 71-79]

Plumbing:

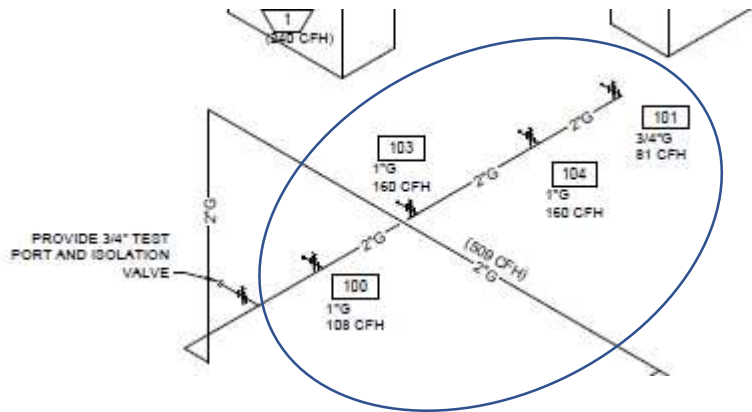
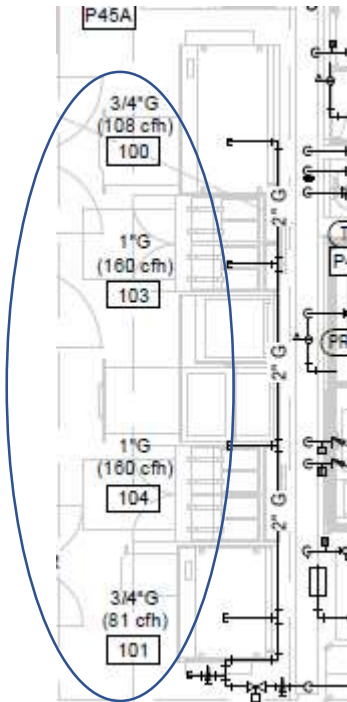
P001-P901

[PAGE 71-79]

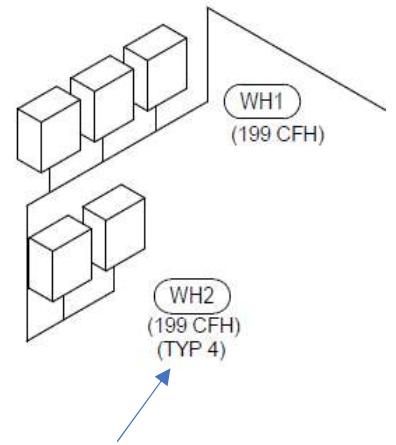
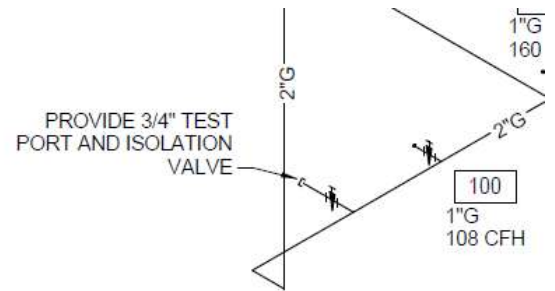
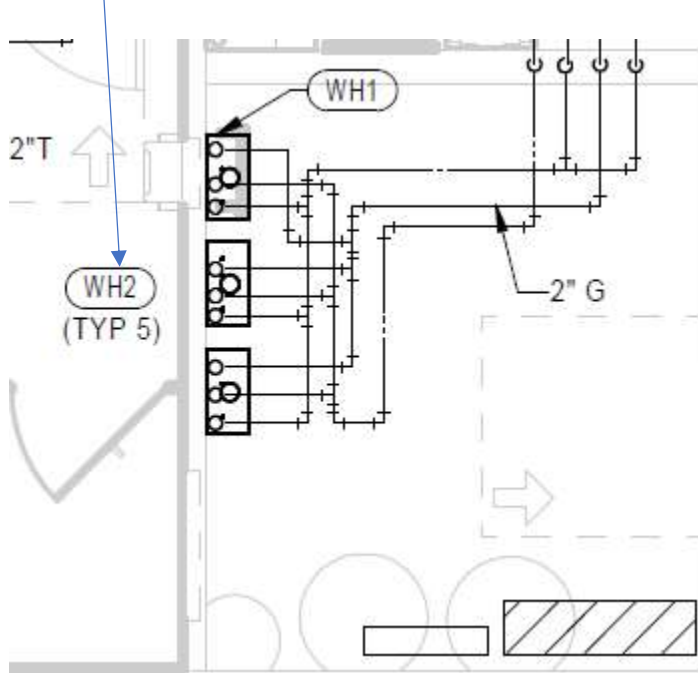
P120 and P901: Cook line gas connections per item are shown in reverse order from each other when comparing sheet P120 and sheet P901. Need to validate connection order to sequence properly on each sheet

P120 (ITEM 100 IS END OF LINE)

P901 (ITEM 100 IS BEGINNING OF LINE)

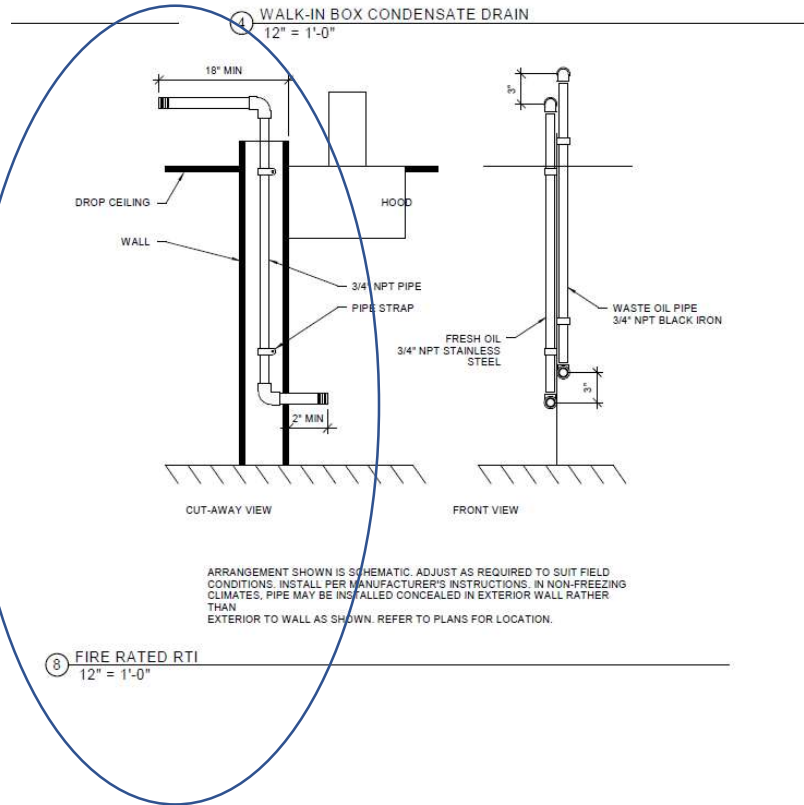


Water heater – **P120**: water heaters shown – note indicates WH2 (TYP 5)



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

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)





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ELECTRICAL REVIEW

E101, E120 – E630

[PAGE 81, 83-92]

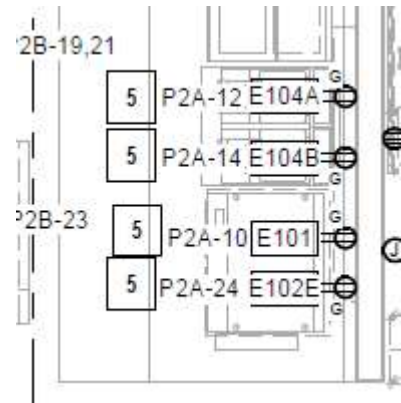
Electrical:

E101, E120 – E630

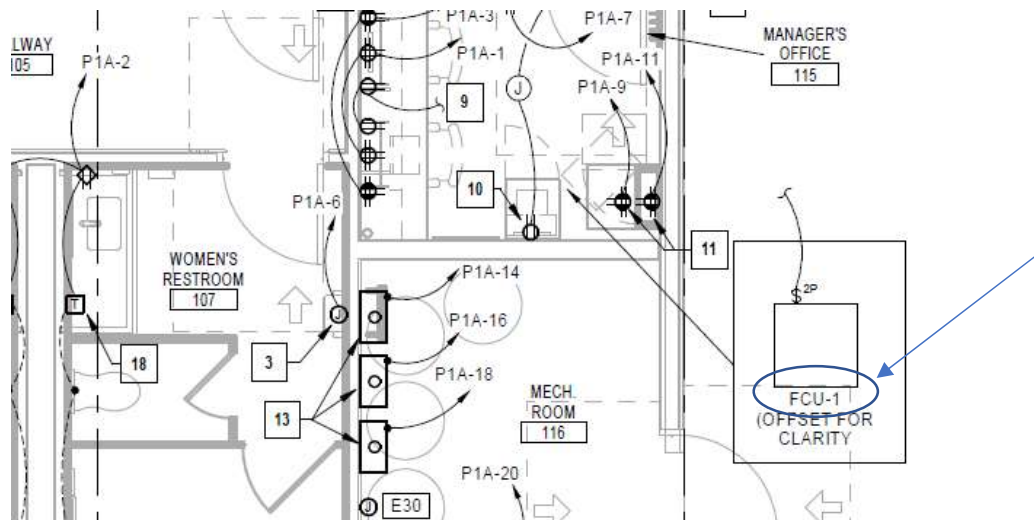
[PAGE 81, 83-92]

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

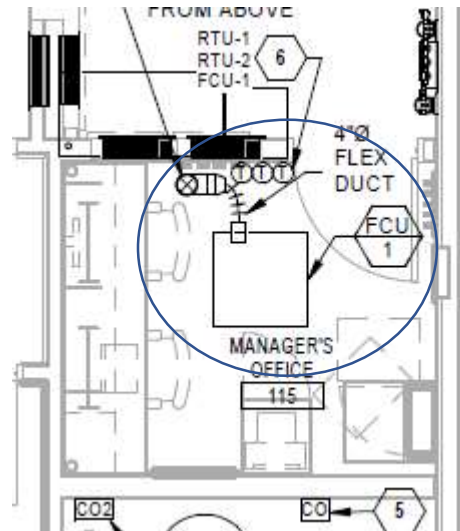
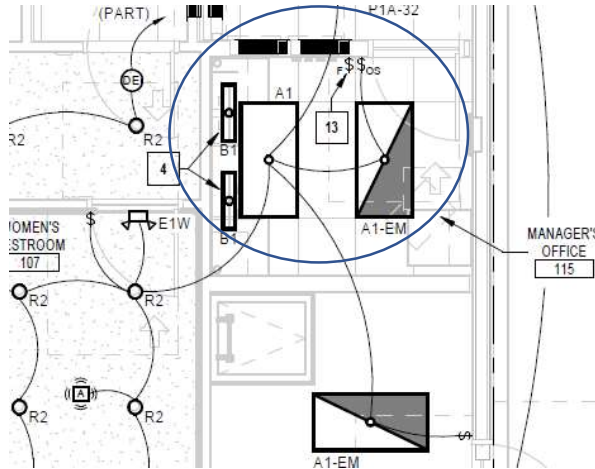
- SYSTEM.
5. ROUTE COOK LINE RECEPTACLE CIRCUITS THROUGH SHUNT TRIP CONTACTOR NEAR PANELBOARDS. SEE NOTE 7
 6. PROVIDE (2) SQUARE D 8903 SERIES, OR EQUIVALENT, ELECTRICALLY HELD, NORMALLY CLOSED, 8-POLE CONTACTORS WITH 30A RATED CONTACTS AND 120V CONTROL COILS IN AN ENCLOSURE ABOVE CEILING. CONNECT CONTACTOR 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.



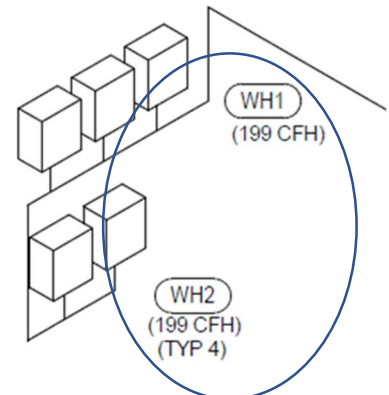
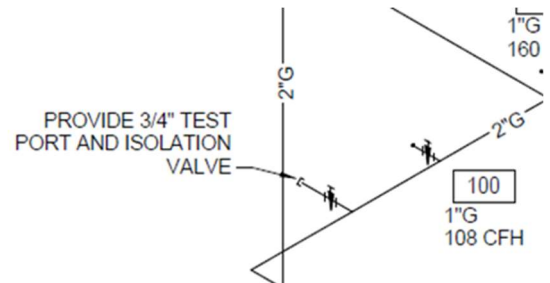
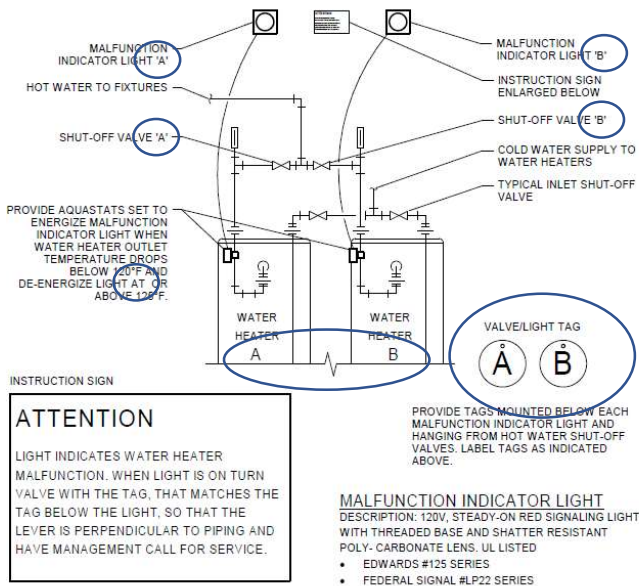
E101 - For consistency rename managers office FCU-1 to VRF (same as mechanical plan detail)



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.



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



1 WATER HEATER MALFUNCTION INDICATOR LIGHT
NOT TO SCALE