

**GENERAL NOTES**

- 1 REFER TO SHEET M-001 FOR MECHANICAL NOTES, ABBREVIATIONS, AND LEGEND SYMBOLS.
- 2 EXISTING EQUIPMENT NOMENCLATURE SHOWN IS FOR PROJECT GENERAL REFERENCE. THE EXISTING EQUIPMENT DOES NOT HAVE NAME TAGS.
- 3 THE EXISTING AIR DISTRIBUTION SHOWN IS ASSUMED BASED ON PARTIAL EXISTING DRAWINGS AND NON-DESTRUCTIVE FIELD OBSERVATIONS AND IT IS EXPECTED THAT ACTUAL FIELD CONDITIONS/ROUTING WILL DIFFER. HOWEVER, THE GENERAL EXTENTS AND INTENT OF DEMOLITION REQUIRED IS SHOWN AND NO ADDITIONAL COMPENSATION WILL BE GRANTED FOR ADJUSTMENTS TO ACTUAL EXISTING FIELD CONDITIONS UNLESS THE DIFFERENCE BETWEEN WHAT EXISTS AND WHAT IS SHOWN ARE DRASTICALLY DIFFERENT. THE GOVERNMENT SHALL HAVE THE FINAL DETERMINATION.

**KEYED NOTES**

- 1 DEMOLISH THE EXISTING AIR HANDLING UNIT AND ASSOCIATED CONDENSATE DRAIN, DRAIN PAN, CONTROLS, AND ELECTRICAL.
- 2 DEMOLISH THE EXISTING CONDENSING UNIT AND ALL ASSOCIATED REFRIGERANT PIPING, CONTROLS, AND ELECTRICAL.
- 3 DEMOLISH EXISTING PIPING INDICATED INCLUDING ALL PIPE HANGERS.
- 4 SEAL THE PIPE PENETRATIONS THROUGH THE WALL WEATHERTIGHT.
- 5 DEMOLISH THE EXISTING WALL LOUVER. EXISTING OPENING TO BE PREPARED TO RECEIVE NEW LOUVER. REFER TO M-101.
- 6 DEMOLISH THE EXISTING THERMOSTAT INCLUDING ALL CONTROL WIRING.
- 7 DEMOLISH THE EXISTING CONCRETE MECHANICAL PAD.
- 8 DEMOLISH THE EXISTING PACKAGED HVAC UNIT INCLUDING ALL PIPING, DUCTWORK, AIR DEVICES, CONTROLS, AND ELECTRICAL.
- 9 PATCH EXISTING EXTERIOR WALL OPENING WITH MASONRY CONSTRUCTION TO MATCH THE EXISTING, ADJACENT WALL CONSTRUCTION. REFER TO 2/G-003.
- 10 DEMOLISH THE EXISTING DUCTLESS MINI-SPLIT SYSTEM IN ITS ENTIRETY INCLUDING OUTDOOR HEAT PUMP, INDOOR FAN COIL UNIT, REFRIGERANT PIPING, CONDENSATE PIPING, CONTROL WIRING, AND ELECTRICAL.
- 11 DEMOLISH THE EXISTING SHEET METAL PIPE SHROUD.
- 12 DEMOLISH THE EXISTING KITCHEN HOOD AND ASSOCIATED DUCTWORK, PIPING, CONTROLS, AND ELECTRICAL.
- 13 DEMOLISH THE EXISTING DUCTWORK.
- 14 DEMOLISH THE EXISTING AIR DEVICE.
- 15 EXISTING MECHANICAL PAD TO REMAIN.
- 16 DEMOLISH THE EXISTING WALL MOUNTED ELECTRIC UNIT HEATER AND ALL ASSOCIATED CONTROLS AND ELECTRICAL. WALL SHALL BE PATCHED AND PAINTED TO MATCH EXISTING.
- 17 THE EXISTING EXHAUST GRILLES IN THE WOMENS LATRINE DO NOT APPEAR TO BE CONNECTED TO A DUCT SYSTEM. THERE IS NO EXHAUST FAN VISIBLE ABOVE CEILING OR ON THE ROOF. FOR BIDDING PURPOSES, ASSUME THERE IS A CEILING MOUNTED FAN WITH DUCTWORK THAT REQUIRES COMPLETE DEMOLITION INCLUDING CONTROLS AND ELECTRICAL.
- 18 DEMOLISH THE EXISTING SPIRAL DUCTWORK AND ALL ASSOCIATED AIR DEVICES AND HANGERS.
- 19 DEMOLISH THE EXISTING HEAT AND VENTILATION UNIT AND ALL ASSOCIATED DUCTWORK, CONTROLS, HANGERS, INTAKE LOUVER, AND ELECTRICAL.
- 20 EXISTING WINDOW TO BE REPLACED WITH A LOUVER OF THE SAME SIZE.
- 21 INFILL THE EXISTING WALL OPENING. REFER TO G-003.

**US Army Corps of Engineers**  
of Engineers®

ROBERT L. SEE  
LICENSED PROFESSIONAL ENGINEER  
STATE OF FLORIDA  
06-20-2022

MARK	DESCRIPTION	DATE

DESIGNED BY: JLG	ISSUE DATE: 20 JUN 2022	SOLICITATION NO.:	CONTRACT NO.:
DRAWN BY: JLG	CHARLESTON DISTRICT CHARLESTON, SOUTH CAROLINA		
CHECKED BY: RLS			
SUBMITTED BY: CROWWELL			
1300 East 6th Street Little Rock, AR 72202 501.872.2900 crowwell.com LANSID			

**FLO27 HVAC-ELEC-PLUMB RESET**  
PALATKA, FL

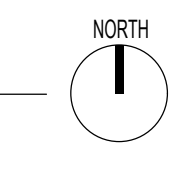
HVAC DEMOLITION PLAN - BLDG PAL01

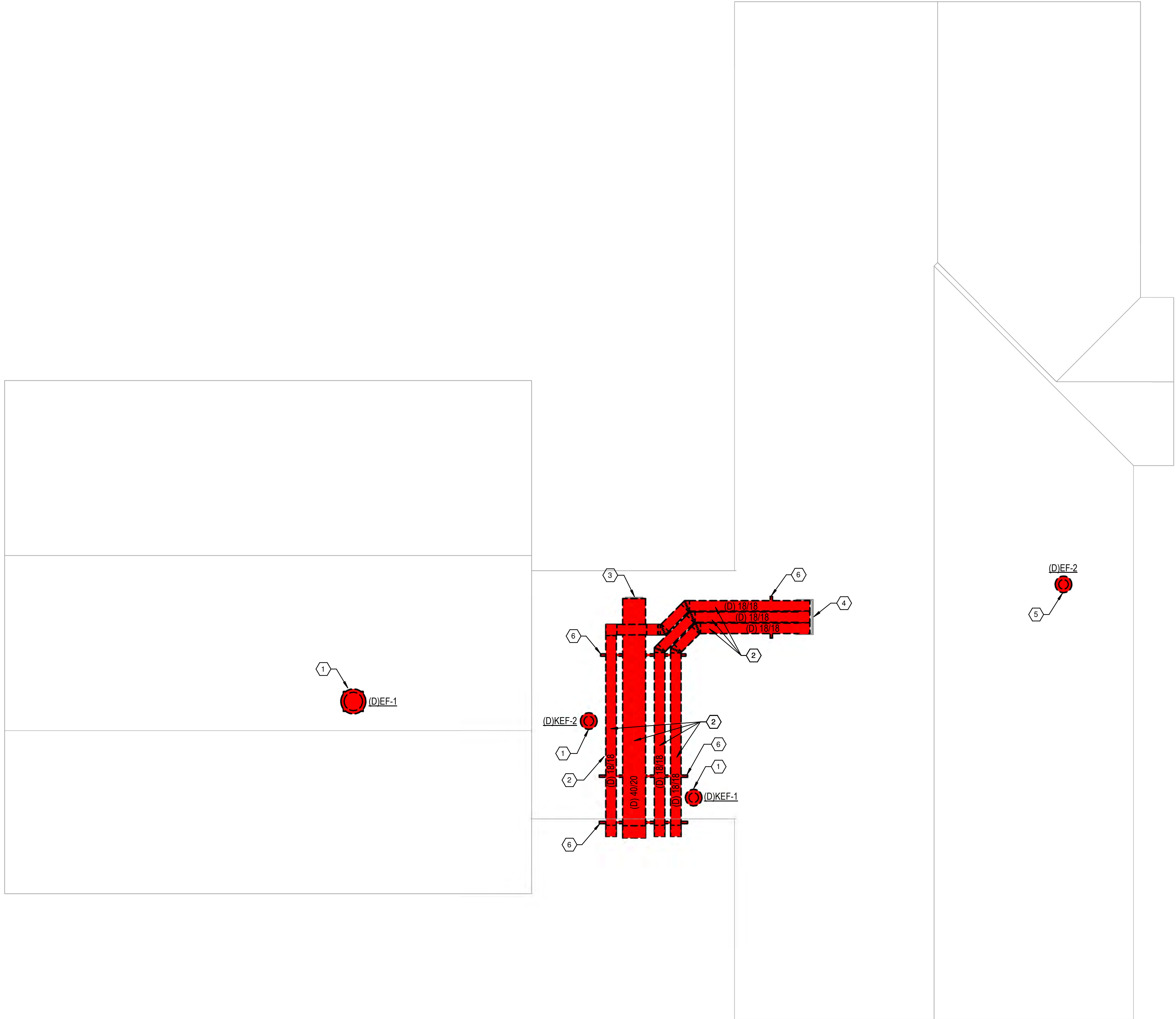
SHEET ID

**MD101**

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.

**1 HVAC DEMOLITION PLAN - BLDG PAL01**  
1/8" = 1'-0"  
0 4 8 16





**GENERAL NOTES**

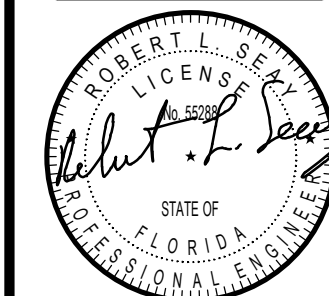
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**KEYED NOTES**

- 1 DEMOLISH THE EXISTING ROOFTOP EXHAUST FAN INCLUDING ROOF CURB, ALL CONTROLS, AND ELECTRICAL. PATCH THE EXISTING ROOF PENETRATION TO MATCH EXISTING. ROOF WORK TO BE COMPLETED BY THE CURRENT ROOF WARRANTY HOLDER. REFER TO SHEET M-002 FOR WARRANTY HOLDER INFORMATION.
- 2 DEMOLISH THE EXISTING ROOFTOP MOUNTED DUCTWORK.
- 3 THE EXISTING APPROX. 60/30 ROOF CURB SHALL REMAIN FOR NEW DUCTWORK.
- 4 CAP THE EXISTING CURB WITH AN INSULATED, WEATHERPROOF, GALVANIZED SHEET METAL CAP. SHEET METAL CAP SHALL BE PITCHED TO SHED WATER. REFER TO 3/G-003.
- 5 DEMOLISH THE EXISTING ROOFTOP EXHAUST FAN INCLUDING ALL CONTROLS AND ELECTRICAL. EXISTING ROOF CURB TO REMAIN.
- 6 ALL EXISTING TUBULAR STEEL AND ANGLE IRON STEEL DUCT STANDS LOCATED ON THE ROOF AND SUPPORTS LOCATED ON THE EXTERIOR WALL WILL BE DEMOLISHED. ROOF STANDS WILL BE DEMOLISHED TO THE ROOF DECK. ROOF SYSTEM WILL BE PATCHED BY THE ROOF SYSTEM WARRANTY HOLDER.



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SIZE: 501.872.2500	

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

**CROMWELL**

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cromwell@aec.com LANSI/D

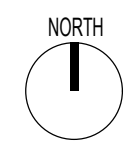
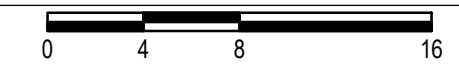
FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL

HVAC DEMOLITION ROOF PLAN - BLDG PAL01

SHEET ID

MD102

1 HVAC DEMOLITION ROOF PLAN - BLDG PAL01  
1/8" = 1'-0"



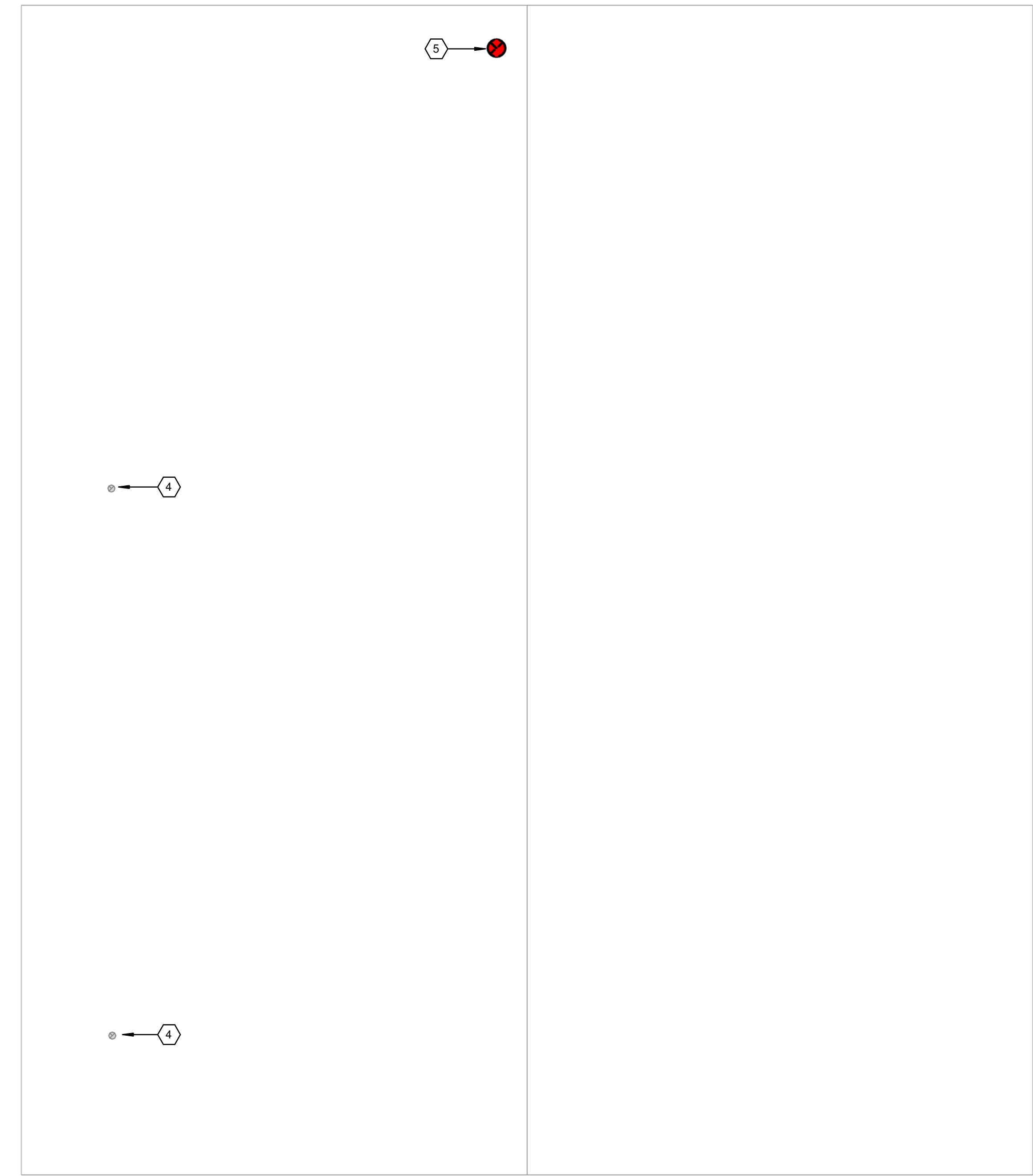
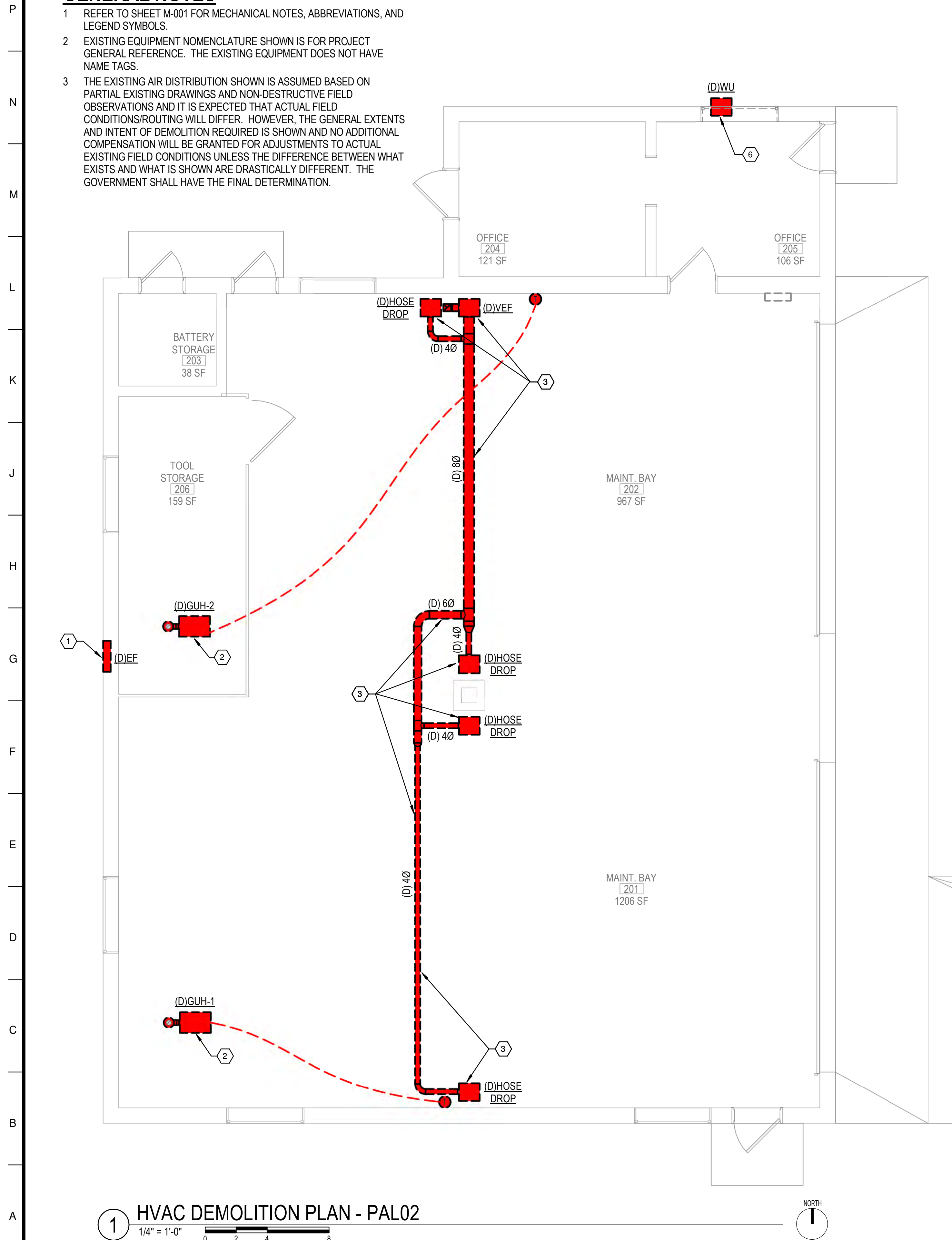
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### KEYED NOTES

- 1 DEMOLISH THE EXISTING WALL-MOUNTED FAN AND ASSOCIATED CONTROLS. EXISTING WALL PENETRATION TO BE MODIFIED FOR NEW LOUVER. REFER TO M-103.
- 2 DEMOLISH THE EXISTING UNIT HEATER, HANGERS, AND CONTROLS. DEMOLISH THE EXISTING FLUE PIPING TO 12" BELOW THE ROOF DECK. EXISTING FLUE THROUGH THE ROOF TO REMAIN.
- 3 DEMOLISH THE EXISTING VEHICLE TAILPIPE EXHAUST SYSTEM IN ITS ENTIRETY INCLUDING HOSE DROPS, OVERHEAD DUCTWORK, DUCT HANGERS, VEHICLE EXHAUST FAN, AND FAN CONTROLS. EXISTING ROOF PENETRATION AND WEATHER CAP TO REMAIN.
- 4 EXISTING FLUE TO REMAIN.
- 5 EXISTING ROOF CAP TO BE DEMOLISHED AND THE EXISTING ROOF PENETRATION TO BE MODIFIED AS INDICATED ON SHEET M-103.
- 6 DEMOLISH THE EXISTING WINDOW UNIT AND ASSOCIATED STEEL SECURITY CAGE. REPLACE THE EXISTING WINDOW. REFER TO ARCHITECTURAL.

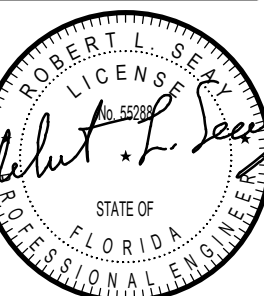


1 HVAC DEMOLITION PLAN - PAL02  
1/4" = 1'-0"

2 HVAC DEMOLITION ROOF PLAN - PAL02  
1/4" = 1'-0"



US Army Corps of Engineers®



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CHECKED BY: RLS

SUBMITTED BY: CROMWELL A/E

1300 East 6th Street Little Rock, AR 72202

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US ARMY CORPS OF ENGINEERS

CHARLESTON DISTRICT

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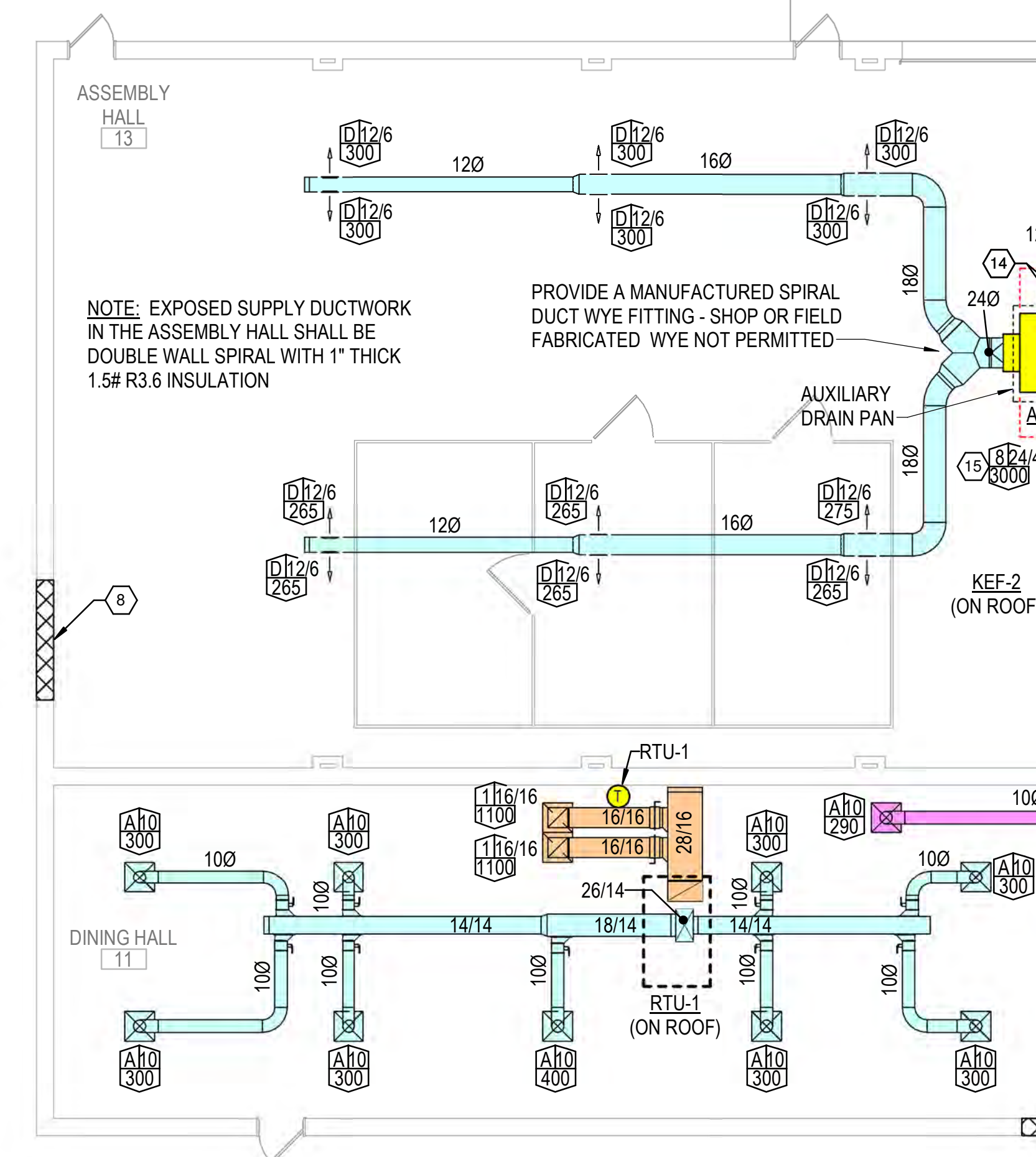
PALATKA, FL

HVAC DEMOLITION PLANS - BLDG PAL02

SHEET ID

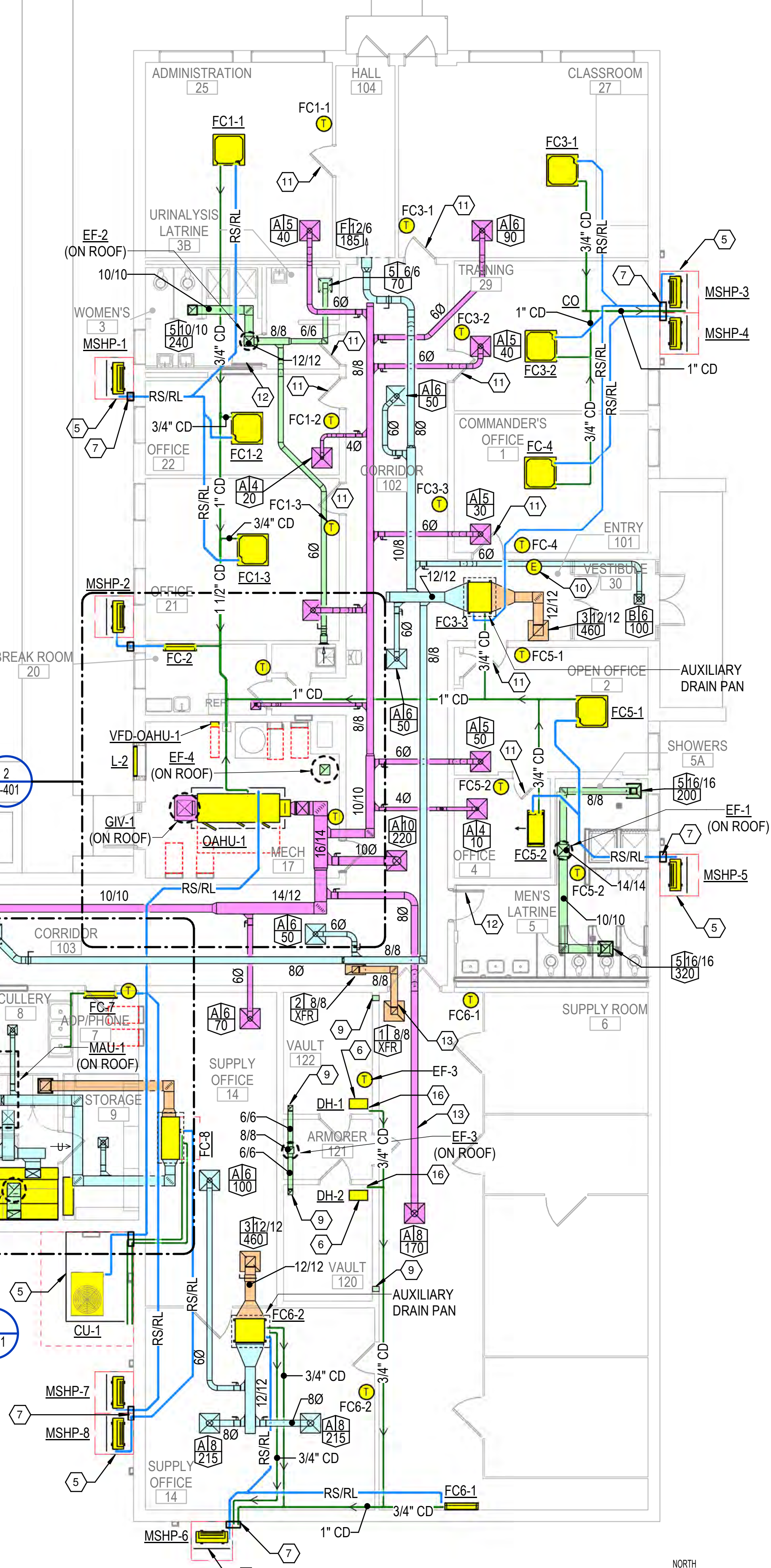
MD103

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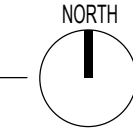


NOTE: EXPOSED SUPPLY DUCTWORK IN THE ASSEMBLY HALL SHALL BE DOUBLE WALL SPIRAL WITH 1" THICK 1.5# R3.6 INSULATION

PROVIDE A MANUFACTURED SPIRAL DUCT WYE FITTING - SHOP OR FIELD FABRICATED WYE NOT PERMITTED



1 HVAC PLAN - BLDG PAL01  
1/8" = 1'-0"

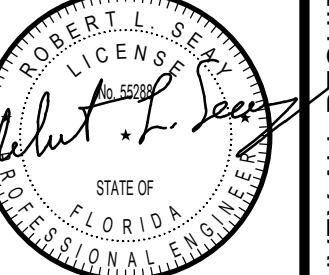
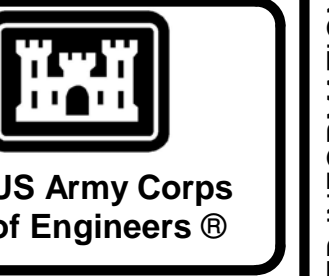


**GENERAL NOTES**

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**KEYED NOTES**

- INSTALL THE NEW LOUVER IN THE EXISTING WALL OPENING. LOUVER SIZE SCHEDULED IS APPROXIMATE, BUT SHOULD BE WITHIN +/- 2" IN LENGTH AND HEIGHT BASED ON FIELD MEASUREMENTS. FIELD VERIFY THE EXACT OPENING SIZE AND PROVIDE AN EXACT LOUVER SIZE TO FIT THE OPENING. CONTRACTOR'S FIELD MEASUREMENT SHALL BE CLEARLY INDICATED ON THE LOUVER SHOP DRAWING.
- INSTALL THE NEW MECHANICAL UNIT ON THE EXISTING CONCRETE MECHANICAL PAD.
- EXTEND DUCT FULL SIZE OF CONNECTION TO MECHANICAL UNIT.
- EXTEND DUCT FULL SIZE OF CONNECTION TO LOUVER.
- PROVIDE A 6" HIGH CONCRETE MECHANICAL PAD WITH 3/4" CHAMFERED EDGES EXTENDING FROM THE BUILDING OUT TO MIN. 6" BEYOND THE EDGES OF THE MECHANICAL UNIT. SLOPE THE PAD MIN. 2% TO DRAIN AWAY FROM THE BUILDING.
- PROVIDE A NEW ROOM CIRCULATING HEAVY-DUTY COMMERCIAL DEHUMIDIFIER WITH HOT GAS REHEAT REFRIGERATION SYSTEM AND COATED STEEL HOUSING, 55 LBS, 170 CFM, 17 PINTS PER DAY @ 65-DEG F / 60% RH, 120/1/60, 4.0 AMPS. PROVIDE A CONDENSATE PUMP WITH INTEGRAL RESERVOIR TO SERVE THE DEHUMIDIFIER. CONDENSATE PUMP TO HAVE AN ABS TANK/MOTOR COVER/VOLUTE, STAINLESS STEEL MOTOR SHAFT, 1/2 GALLON TANK CAPACITY, 20' OF CLEAR TUBING, 1/50 HP MOTOR, 120/1/60, 65 GALLONS PER HOUR CAPACITY. INSTALL THE CONDENSATE PUMP OVERHEAD NEXT TO THE DEHUMIDIFIER. INSTALL THE DEHUMIDIFIER AT 8' A.F.F. ON (2) UNISTRUT SADDLES SUPPORTED BY ALL THREAD RODS. ALL THREAD RODS SHALL BE ANCHORED INTO THE CONCRETE CEILING DECK.
- ROUTE THE MECHANICAL PIPING UP ALONG THE EXTERIOR WALL TO ABOVE CEILING HEIGHT, PENETRATE THE EXTERIOR WALL TO INSIDE THE BUILDING, AND CONTINUE AS SHOWN. SEAL THE WALL PENETRATIONS WEATHERTIGHT. PROVIDE A MINIMUM 20-GAUGE SHEET METAL SHROUD OVER THE PIPING EXPOSED ON THE BUILDING EXTERIOR WITH A 30-DEGREE PITCHED TOP TO SHED RAIN. PAINT THE SHROUD TO MATCH THE BRICK. COLOR TO BE APPROVED BY THE GOVERNMENT. INFILL THE OPEN BOTTOM OF THE SHROUD WITH MIN. 6" DEEP INFILL OF STAINLESS STEEL WOOL FOR RODENT PROOFING.
- INFILL THE EXISTING WALL OPENING. REFER TO G-003.
- THE EXISTING WALLS AND CEILING OF THE VAULT ARE COVERED WITH A HEAVY GAUGE STEEL EXPANDED METAL MESH. CUT THE MESH BACK AS REQUIRED TO PROVIDE A NEW 6x6 DUCT PENETRATION THROUGH THE EXISTING CONCRETE LID AND/OR WALL. WALL PENETRATIONS SHALL BE AS HIGH ON THE WALL AS POSSIBLE, APPROXIMATELY 8' A.F.F. PATCH THE STEEL EXPANDED METAL MESH BY EXTENDING NEW MESH UP TO THE 2x2x1/8" STEEL ANGLE AROUND THE VAULT PENETRATION. OVERLAP THE STEEL ANGLE WITH THE MESH AND WELD THE MESH TO THE STEEL ANGLE. PAINT THE NEW STEEL MESH AND STEEL ANGLE BLACK TO MATCH EXISTING. REFER TO SHEET G-002 FOR DETAILS OF THE PENETRATION THROUGH THE CONCRETE VAULT CONSTRUCTION.
- LOCATE THE EMERGENCY BUILDING HVAC SHUT-OFF SWITCH IN THIS VICINITY.
- EXISTING DOOR GRILLE TO REMAIN FOR TRANSFER AIR.
- NEW DOOR WILL HAVE A DOOR GRILLE FOR TRANSFER AIR. REFER TO THE ARCHITECTURAL PLANS.
- CAREFULLY REMOVE THE EXISTING LAY-IN CEILING TILE AND GRID NEEDED TO INSTALL THE NEW DUCTWORK. CAREFULLY STORE ALL EXISTING CEILING MATERIALS FOR RE-INSTALLATION. ANY EXISTING TILE AND GRID DAMAGED DURING THIS WORK WILL BE REPLACED WITH NEW MATERIALS TO MATCH EXISTING.
- ROUTE THE INSULATED 3/4" AHU PRIMARY CONDENSATE DRAIN AND 3/4" AUXILIARY DRAIN PAN LINE THROUGH THE EXTERIOR WALL, DOWN THE WALL, AND TERMINATE AT 6" A.F.F. PROVIDE A REMOVABLE INSECT SCREEN OVER THE END OF THE PIPE.
- INSTALL THE RETURN AIR GRILLE ON THE UNDERSIDE OF THE RETURN AIR DUCT.
- ROUTE THE CONDENSATE DRAIN LINE FROM THE CONDENSATE PUMP AT THE DEHUMIDIFIER TO ABOVE CEILING AND CONTINUE AS SHOWN.



06-20-2022

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1300 East 6th Street Little Rock, AR 72202	
501.872.2900	
US ARMY CORPS OF ENGINEERS CHARLESTON DISTRICT CHARLESTON, SOUTH CAROLINA	

FLO27 HVAC-ELEC-PLUMB RESET	
PALATKA, FL	
HVAC PLAN - BLDG PAL01	

SHEET ID	
M-101	

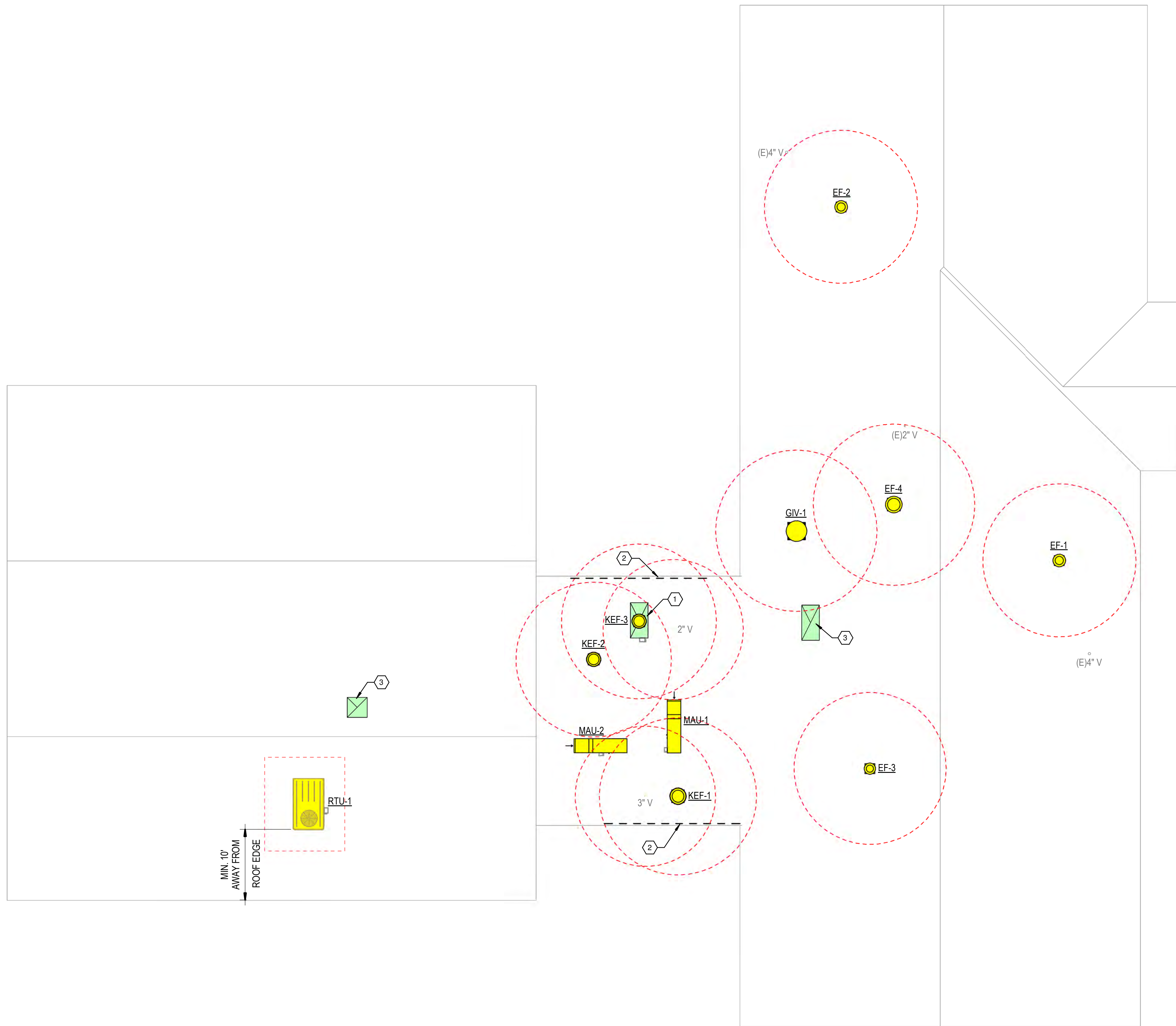
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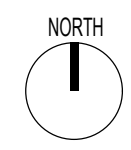
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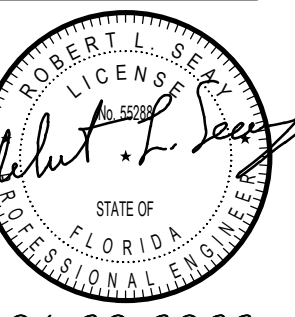
- 1 PROVIDE A TRANSITION CURB AS REQUIRED TO INSTALL THE NEW EXHAUST FAN ON THE EXISTING ROOF CURB. THE EXISTING ROOF CURB IS APPROXIMATELY 60"x30". VERIFY THE EXACT DIMENSIONS PRIOR TO ISSUING TRANSITION CURB SHOP DRAWINGS.
- 2 PROVIDE EDGE PROTECTION FOR ROOFTOP EQUIPMENT REQUIRING ROUTINE MAINTENANCE THAT IS LOCATED LESS THAN 10' FROM THE EDGE OF THE ROOF. REFER TO THE ARCHITECTURAL PLANS FOR DETAILS OF THE EDGE PROTECTION REQUIRED.
- 3 CAP THE EXISTING ROOF CURB WEATHERTIGHT. REFER TO G-003.



**1 HVAC ROOF PLAN - BLDG PAL01**  
 1/8" = 1'-0"  
 0 4 8 16



US Army Corps of Engineers®



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US ARMY CORPS OF ENGINEERS  
 CHARLESTON DISTRICT  
 CHARLESTON, SOUTH CAROLINA

**CROMWELL**  
 1300 East 6th Street Little Rock, AR 72202  
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**FLO27 HVAC-ELEC-PLUMB RESET**  
 PALATKA, FL

HVAC ROOF PLAN - BUILDING PAL01

SHEET ID  
**M-102**

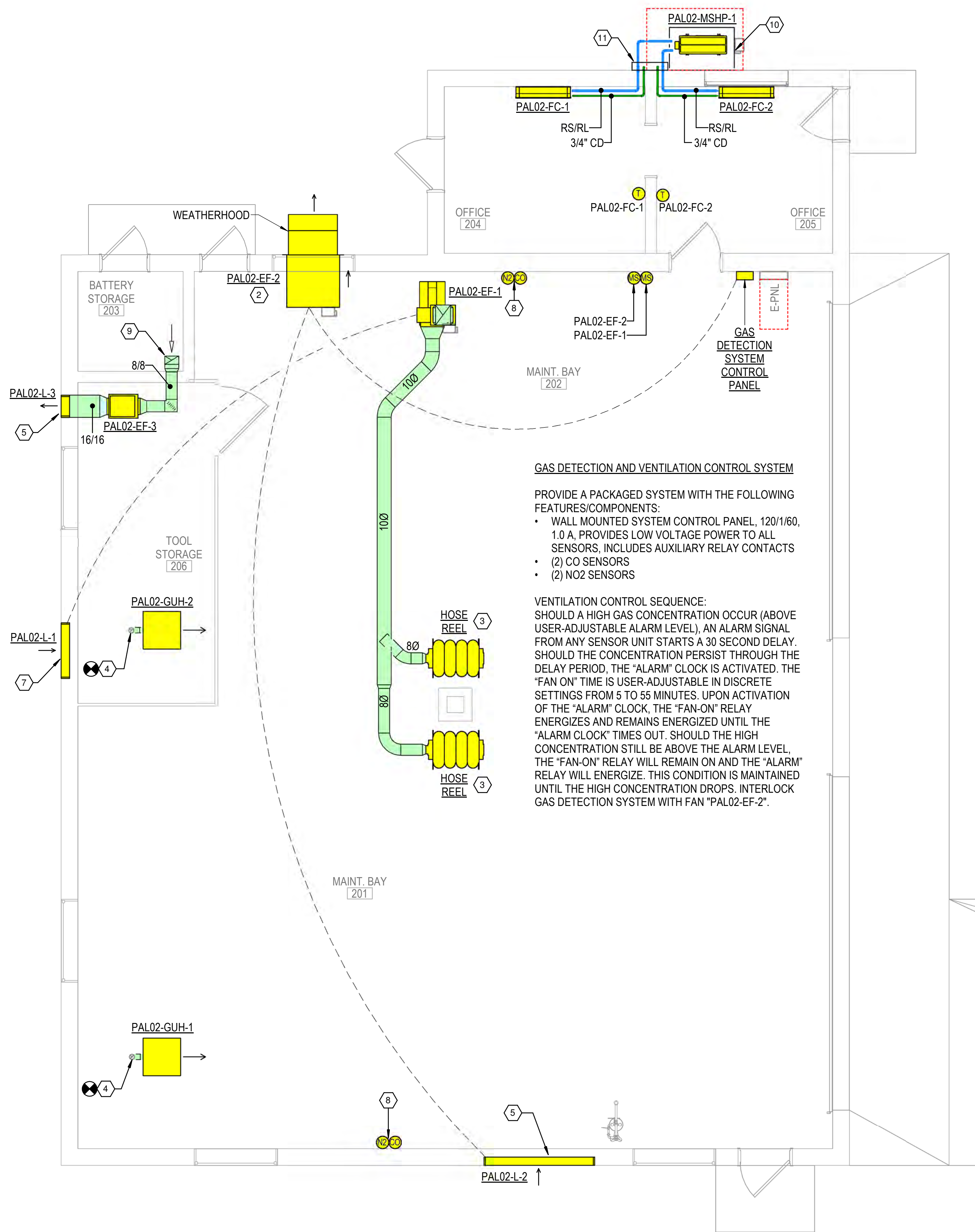
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- 2 INSTALL THE NEW FAN IN THE EXISTING WALL AT 12' A.F.F.
- 3 INSTALL THE BOTTOM OF THE HOSE REEL AT 12' A.F.F.
- 4 CONNECT THE NEW 4" TYPE-B DOUBLE WALL FLUE TO THE EXISTING FLUE STACK.
- 5 INSTALL THE NEW LOUVER IN THE EXISTING WALL AT 10'-0" A.F.F. LOUVER IS SIZED TO COURSE-OUT IN THE EXISTING CMU BLOCK.
- 6 EXISTING FLUE TO REMAIN.
- 7 MODIFY THE EXISTING 24"x24" OPENING TO ACCOMMODATE THE NEW LOUVER. THE BOTTOM EXISTING OPENING IS 10' A.F.F. AND THE BOTTOM OF THE LOUVER WILL BE AT THE SAME HEIGHT.
- 8 UNLESS OTHERWISE INSTRUCTED BY THE SENSOR MANUFACTURER, INSTALL THE CO AND NO2 SENSORS AT 5' A.F.F.
- 9 PROVIDE A 10"x6" EXHAUST RISER IN THE CORNER OF THE ROOM EXTENDING FROM THE FLOOR TO THE CEILING. INSTALL EXHAUST GRILLES AT 6" A.F.F. AND 6" BELOW THE CEILING. REFER TO 3/M-901 FOR FURTHER DETAILS.
- 10 PROVIDE A 6" HIGH CONCRETE MECHANICAL PAD WITH 3/4" CHAMFERED EDGES EXTENDING FROM THE BUILDING OUT TO MIN. 6" BEYOND THE EDGES OF THE MECHANICAL UNIT. SLOPE THE PAD MIN. 2% TO DRAIN AWAY FROM THE BUILDING.
- 11 ROUTE THE MECHANICAL PIPING UP ALONG THE EXTERIOR WALL TO ABOVE CEILING HEIGHT, PENETRATE THE EXTERIOR WALL TO INSIDE THE BUILDING, AND CONTINUE AS SHOWN. SEAL THE WALL PENETRATIONS WEATHERTIGHT. PROVIDE A MINIMUM 20-GAUGE SHEET METAL SHROUD OVER THE PIPING EXPOSED ON THE BUILDING EXTERIOR WITH A 30-DEGREE PITCHED TOP TO SHED RAIN. PAINT THE SHROUD TO MATCH THE BRICK. COLOR TO BE APPROVED BY THE GOVERNMENT. INFILL THE OPEN BOTTOM OF THE SHROUD WITH MIN. 6" DEEP INFILL OF STAINLESS STEEL WOOL FOR RODENT PROOFING.

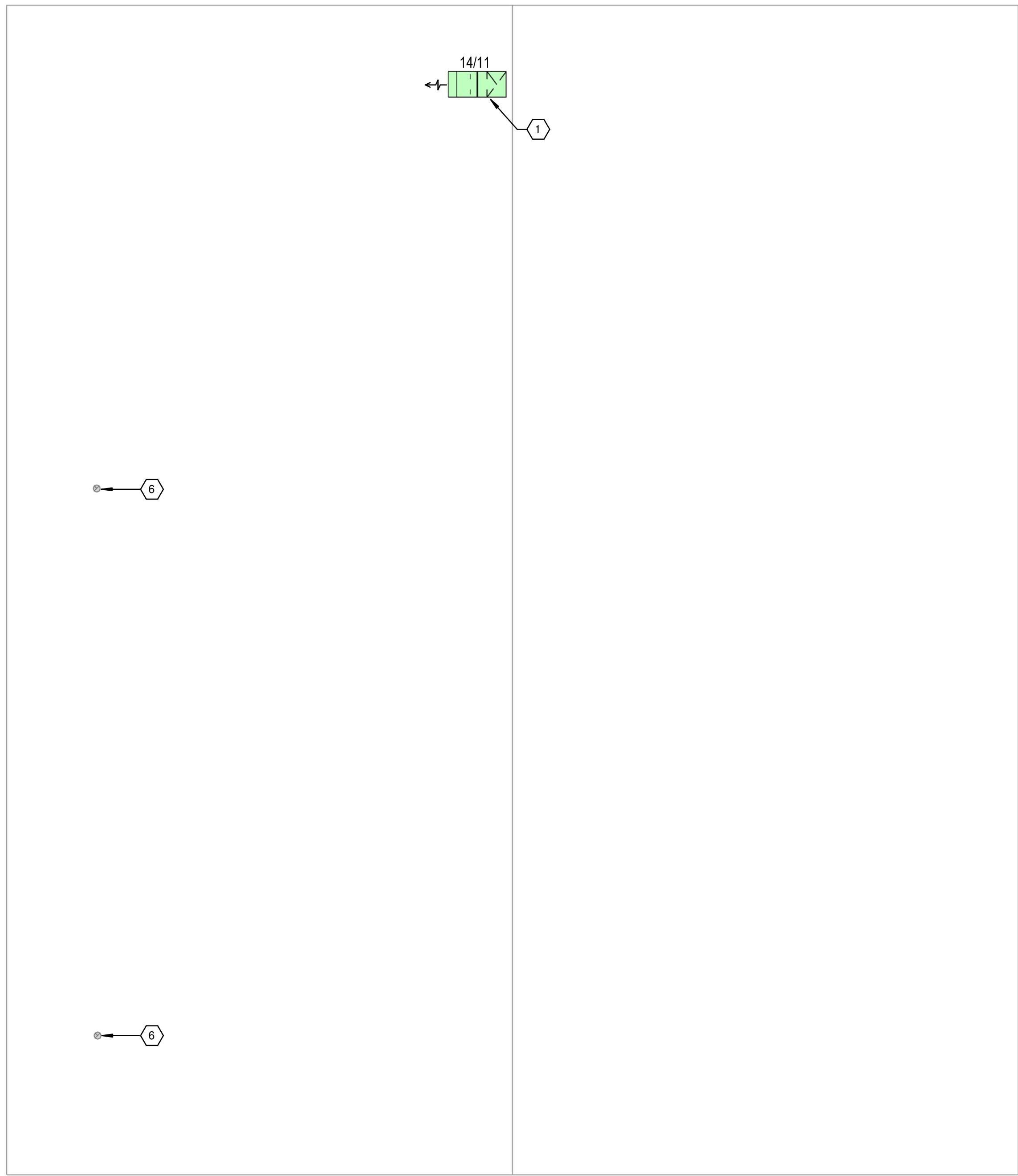


**GAS DETECTION AND VENTILATION CONTROL SYSTEM**

PROVIDE A PACKAGED SYSTEM WITH THE FOLLOWING FEATURES/COMPONENTS:

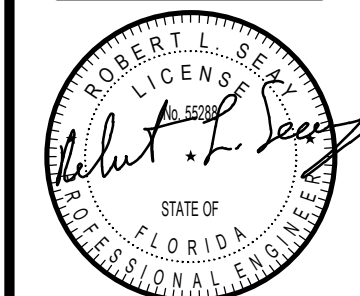
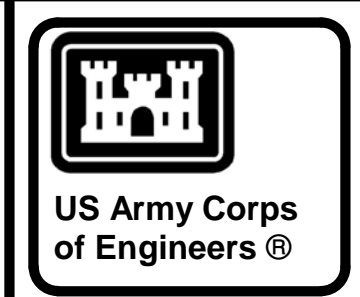
- WALL MOUNTED SYSTEM CONTROL PANEL, 120/1/60, 1.0 A, PROVIDES LOW VOLTAGE POWER TO ALL SENSORS. INCLUDES AUXILIARY RELAY CONTACTS
- (2) CO SENSORS
- (2) NO2 SENSORS

**VENTILATION CONTROL SEQUENCE:**  
 SHOULD A HIGH GAS CONCENTRATION OCCUR (ABOVE USER-ADJUSTABLE ALARM LEVEL), AN ALARM SIGNAL FROM ANY SENSOR UNIT STARTS A 30 SECOND DELAY. SHOULD THE CONCENTRATION PERSIST THROUGH THE DELAY PERIOD, THE "ALARM" CLOCK IS ACTIVATED. THE "FAN ON" TIME IS USER-ADJUSTABLE IN DISCRETE SETTINGS FROM 5 TO 55 MINUTES. UPON ACTIVATION OF THE "ALARM" CLOCK, THE "FAN-ON" RELAY ENERGIZES AND REMAINS ENERGIZED UNTIL THE "ALARM CLOCK" TIMES OUT. SHOULD THE HIGH CONCENTRATION STILL BE ABOVE THE ALARM LEVEL, THE "FAN-ON" RELAY WILL REMAIN ON AND THE "ALARM" RELAY WILL ENERGIZE. THIS CONDITION IS MAINTAINED UNTIL THE HIGH CONCENTRATION DROPS. INTERLOCK GAS DETECTION SYSTEM WITH FAN "PAL02-EF-2".



1 HVAC PLAN - BLDG PAL02  
1/4" = 1'-0"

2 HVAC ROOF PLAN - BLDG PAL02  
1/4" = 1'-0"



06-20-2022

MARK	DESCRIPTION	DATE

US ARMY CORPS OF ENGINEERS  
 CHARLESTON DISTRICT  
 CHARLESTON, SOUTH CAROLINA

**CROMWELL**  
 1300 East 6th Street Little Rock, AR 72202  
 501.872.2900  
 cromwell@conr.lanl.sld

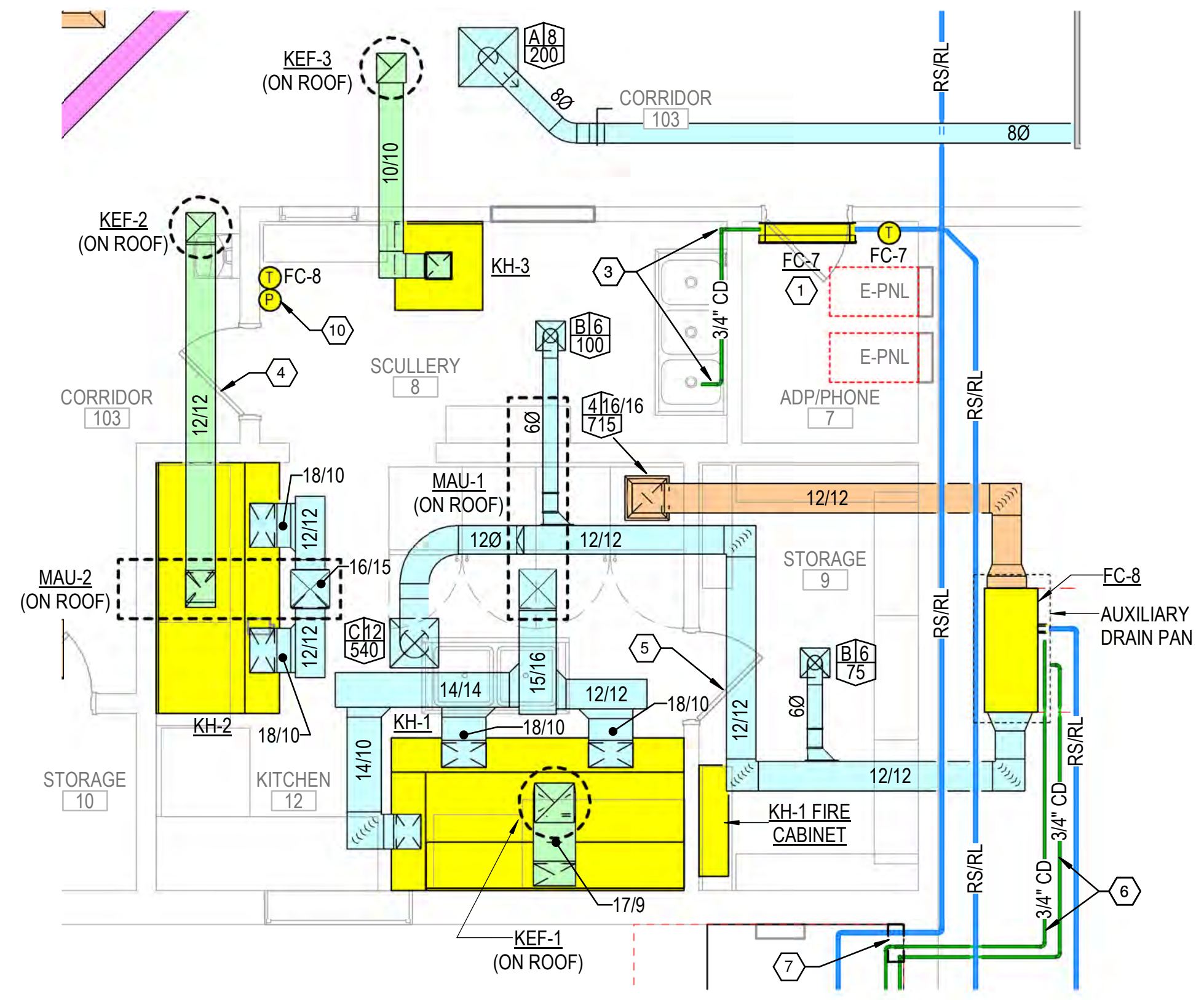
DESIGNED BY: J/LG  
 DRAWN BY: J/LG  
 CHECKED BY: RLS  
 SUBMITTED BY: CROMWELL A/E

ISSUE DATE: 20 JUN 2022  
 SOLICITATION NO.:  
 CONTRACT NO.:

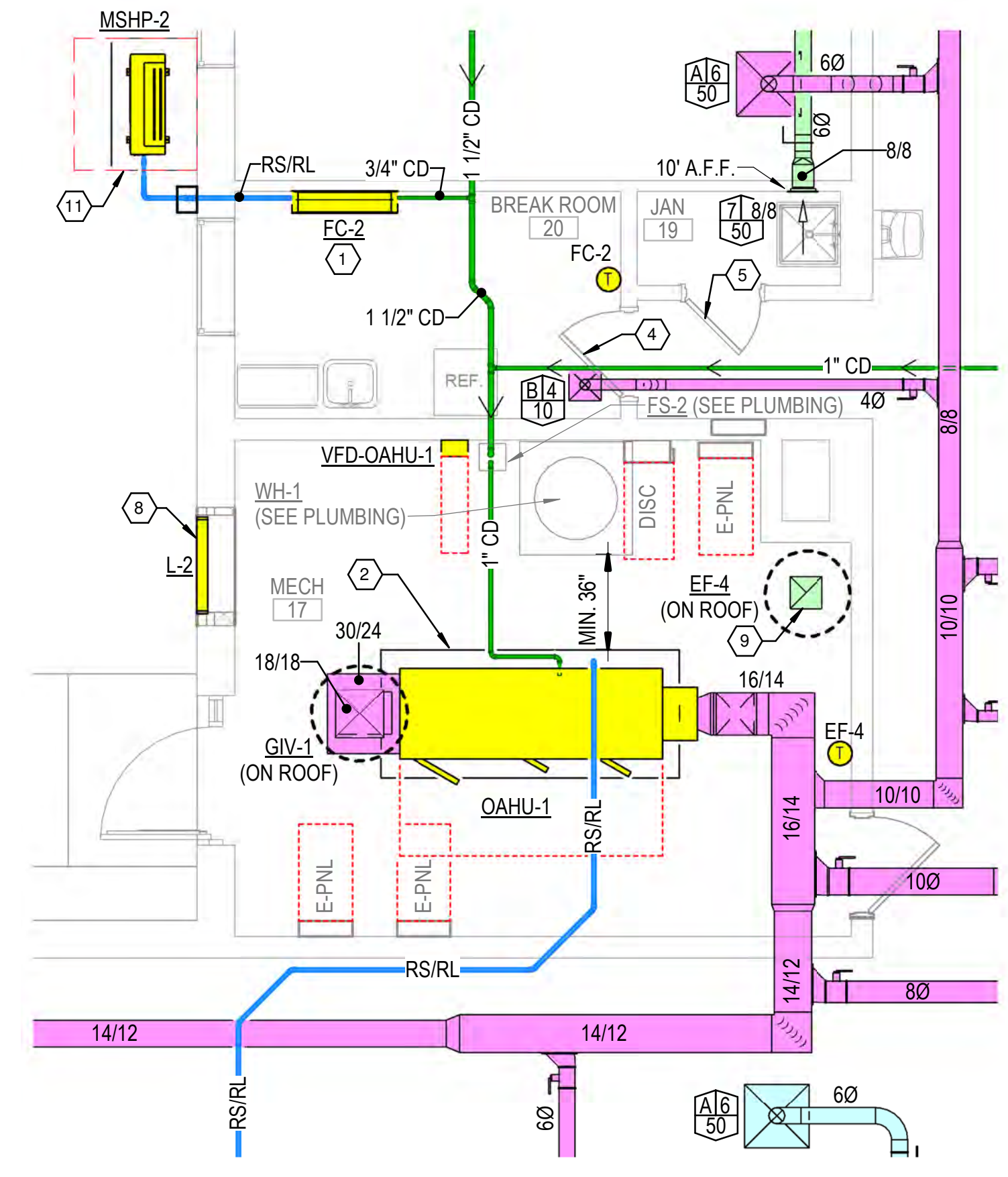
FLO27 HVAC-ELEC-PLUMB RESET  
 PALATKA, FL  
 HVAC PLANS - BLDG PAL02

SHEET ID  
**M-103**

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.



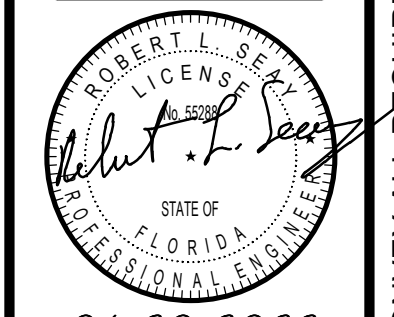
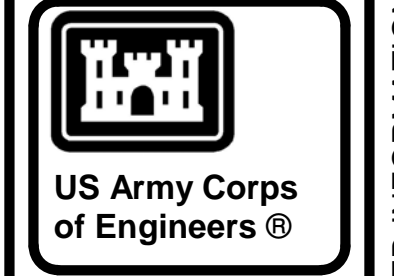
1 ENLARGED HVAC PLAN - KITCHEN  
1/4" = 1'-0"  
0 2 4 8  
NORTH



2 ENLARGED HVAC PLAN - MECHANICAL 17  
1/4" = 1'-0"  
0 2 4 8  
NORTH

**KEYED NOTES**

- 1 INSTALL THE NEW FAN COIL UNIT AT APPROXIMATELY 8' A.F.F.
- 2 PROVIDE A 6" HIGH CONCRETE HOUSEKEEPING PAD WITH 3/4" CHAMFERED EDGES EXTENDING MINIMUM 6" BEYOND THE EDGES OF THE MECHANICAL UNIT.
- 3 DROP WITH THE INSULATED CONDENSATE DRAIN EXPOSED IN THE CORNER OF THE ROOM TO FLOOR LEVEL. CONTINUE ALONG THE FLOOR, TIGHT TO THE WALL, AND TERMINATE INDIRECTLY AT THE FLOOR SINK BENEATH THE 3-COMPARTMENT SINK. SECURE THE CONDENSATE DRAIN PIPE ALONG THE WALL AND ALONG THE FLOOR AT 5' O.C.
- 4 EXISTING DOOR GRILLE TO REMAIN FOR TRANSFER AIR.
- 5 EXISTING 3/4" DOOR UNDERCUT TO REMAIN FOR TRANSFER AIR.
- 6 ROUTE THE INSULATED 3/4" AHU PRIMARY CONDENSATE DRAIN AND 3/4" AUXILIARY DRAIN PAN LINE THROUGH THE EXTERIOR WALL, DOWN THE WALL, AND TERMINATE AT 6" A.F.G. PROVIDE A REMOVABLE INSECT SCREEN OVER THE END OF THE PIPE.
- 7 ROUTE THE MECHANICAL PIPING UP ALONG THE EXTERIOR WALL TO ABOVE CEILING HEIGHT, PENETRATE THE EXTERIOR WALL TO INSIDE THE BUILDING, AND CONTINUE AS SHOWN. SEAL THE WALL PENETRATIONS WEATHERTIGHT. PROVIDE A MINIMUM 20-GAUGE SHEET METAL SHROUD OVER THE PIPING EXPOSED ON THE BUILDING EXTERIOR WITH A 30-DEGREE PITCHED TOP TO SHED RAIN. PAINT THE SHROUD TO MATCH THE BRICK. COLOR TO BE APPROVED BY THE GOVERNMENT. INFILL THE OPEN BOTTOM OF THE SHROUD WITH MIN. 6" DEEP INFILL OF STAINLESS STEEL WOOL FOR RODENT PROOFING.
- 8 INSTALL THE NEW LOUVER IN THE EXISTING WALL OPENING. LOUVER SIZE SCHEDULED IS APPROXIMATE, BUT SHOULD BE WITHIN +/- 2" IN LENGTH AND HEIGHT BASED ON FIELD MEASUREMENTS. FIELD VERIFY THE EXACT OPENING SIZE AND PROVIDE AN EXACT LOUVER SIZE TO FIT THE OPENING. CONTRACTOR'S FIELD MEASUREMENT SHALL BE CLEARLY INDICATED ON THE LOUVER SHOP DRAWING.
- 9 THE MECHANICAL ROOM HAS NO CEILING. THE FAN INTAKE SHALL BE OPEN TO THE ROOM BELOW.
- 10 HOOD FIRE SUPPRESSION SYSTEM PULL STATION SERVING "KH-1" TO BE INSTALLED AT THE EGRESS DOOR LEAVING THE KITCHEN.
- 11 PROVIDE A 6" HIGH CONCRETE MECHANICAL PAD WITH 3/4" CHAMFERED EDGES EXTENDING FROM THE BUILDING OUT TO MIN. 6" BEYOND THE EDGES OF THE MECHANICAL UNIT. SLOPE THE PAD MIN. 2% TO DRAIN AWAY FROM THE BUILDING.



06-20-2022

MARK	DESCRIPTION	DATE

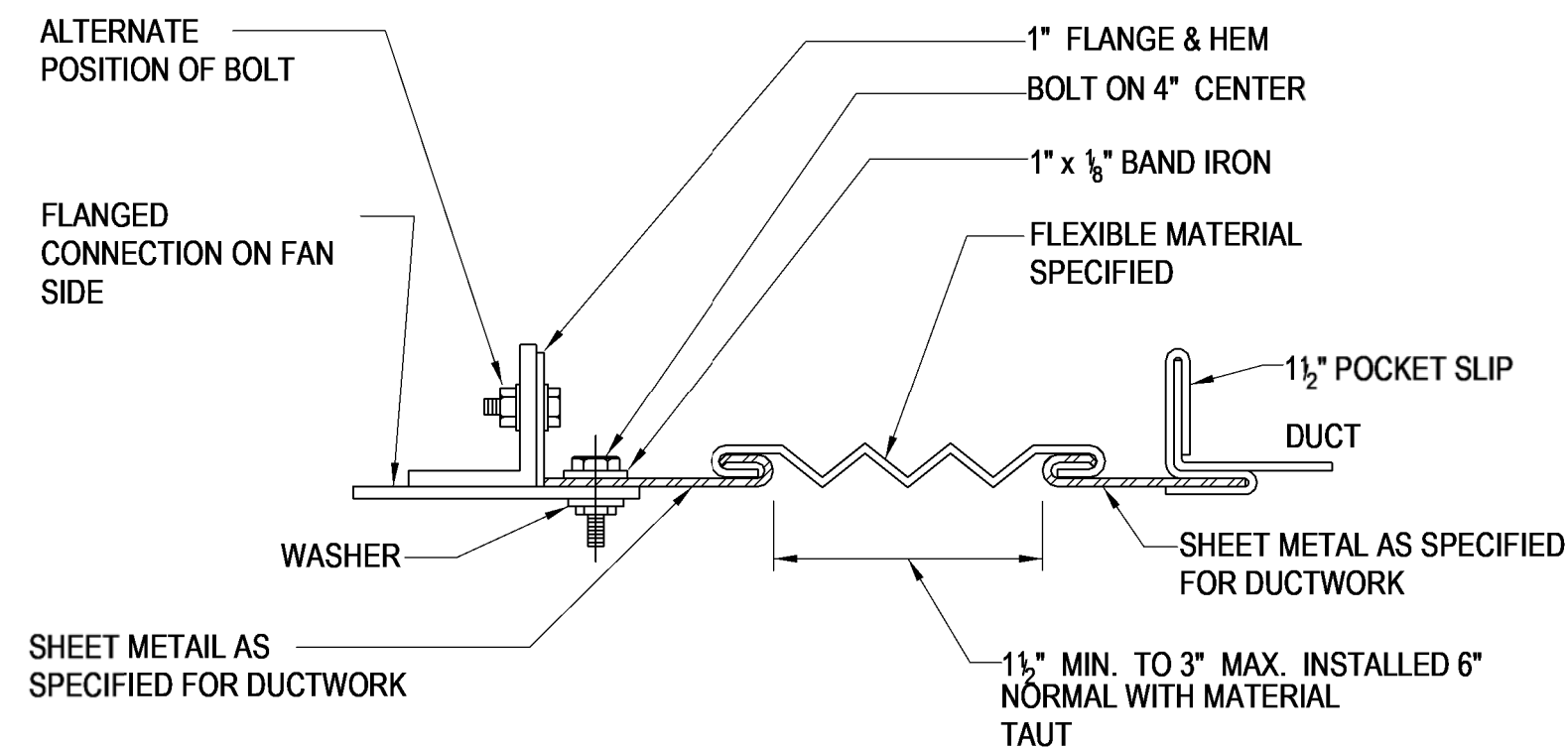
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DRAWN BY: JLG	SOLICITATION NO.:
CHECKED BY: RLS	CONTRACT NO.:
SUBMITTED BY: CROMWELL A/E	
1300 East 6th Street Little Rock, AR 72202 501.872.2900 cromwell@com.lansid	

FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
ENLARGED MECHANICAL PLANS

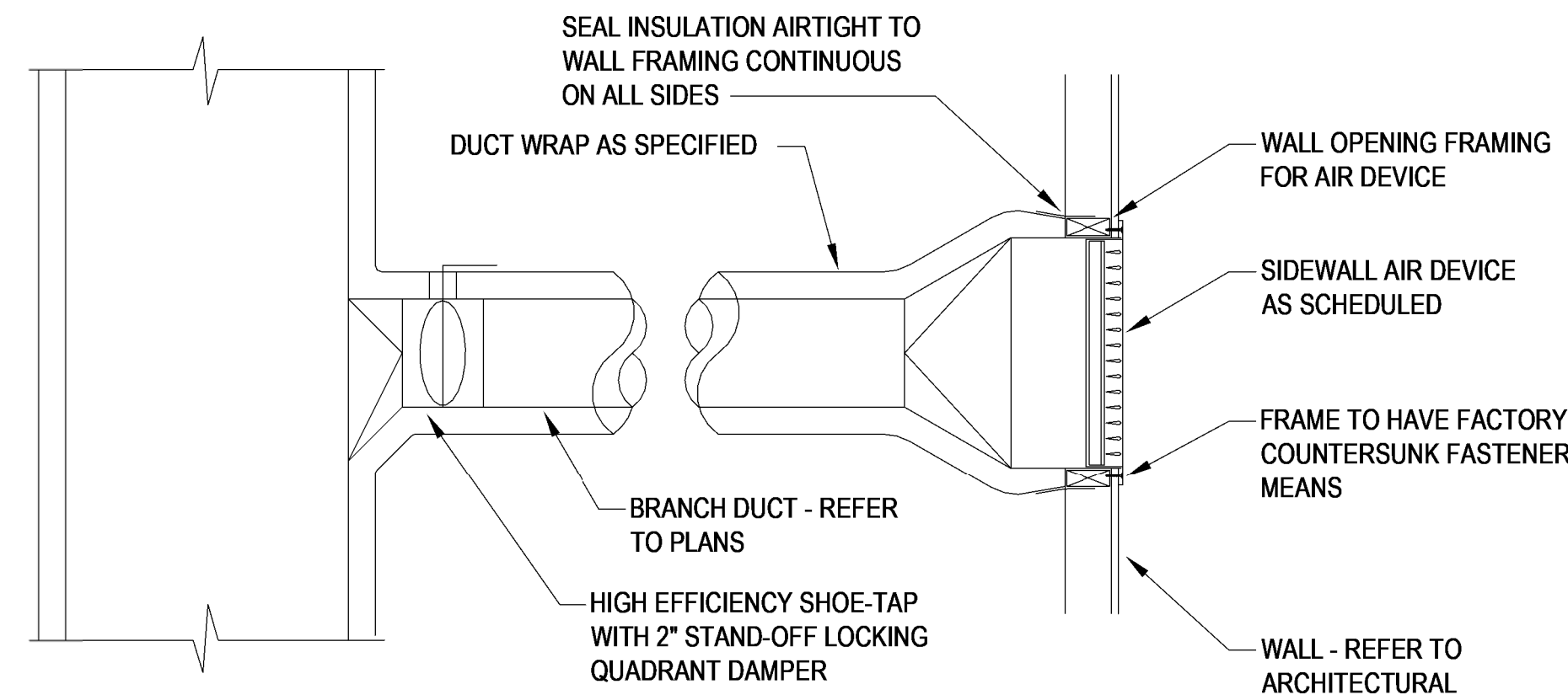
SHEET ID  
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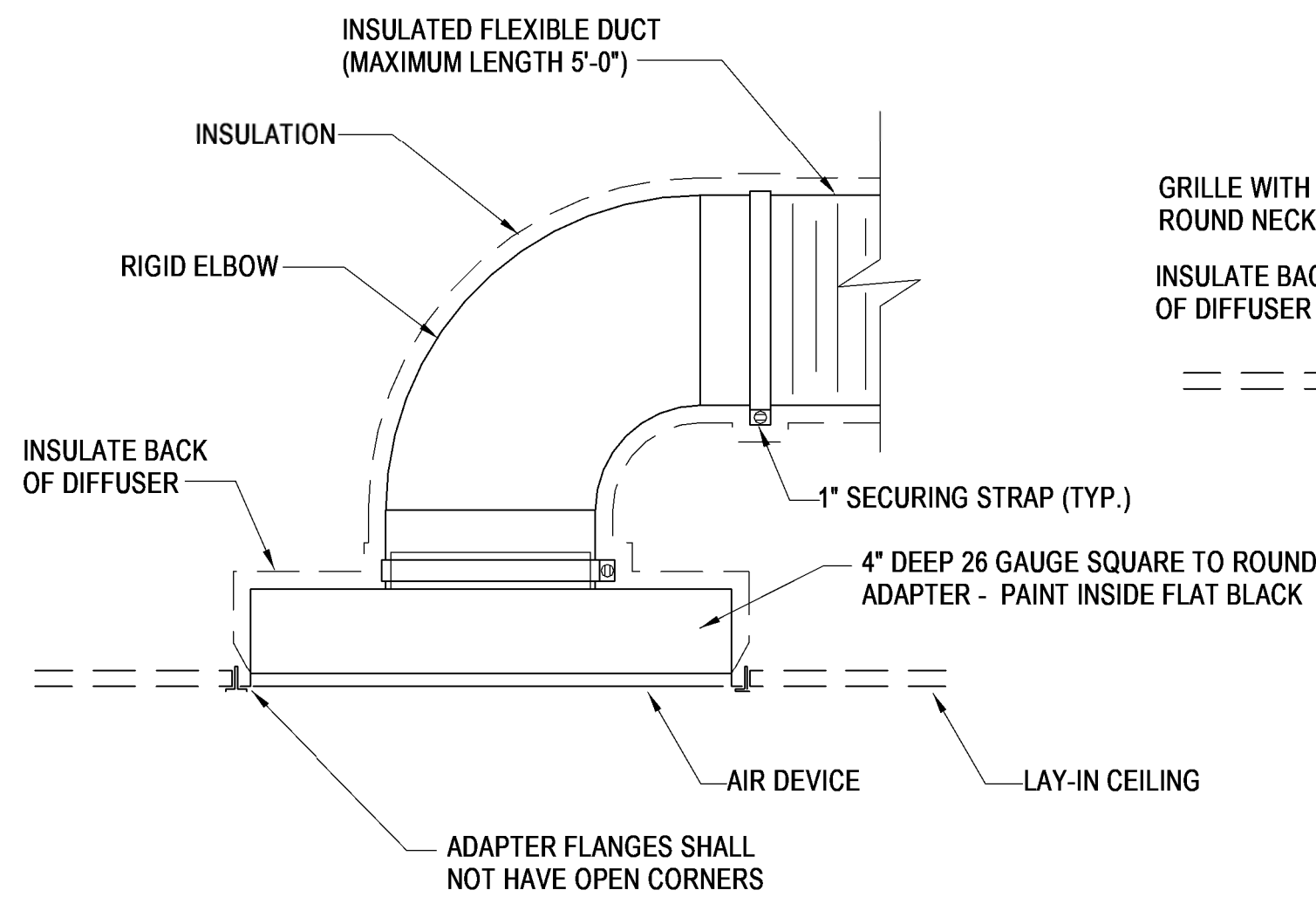
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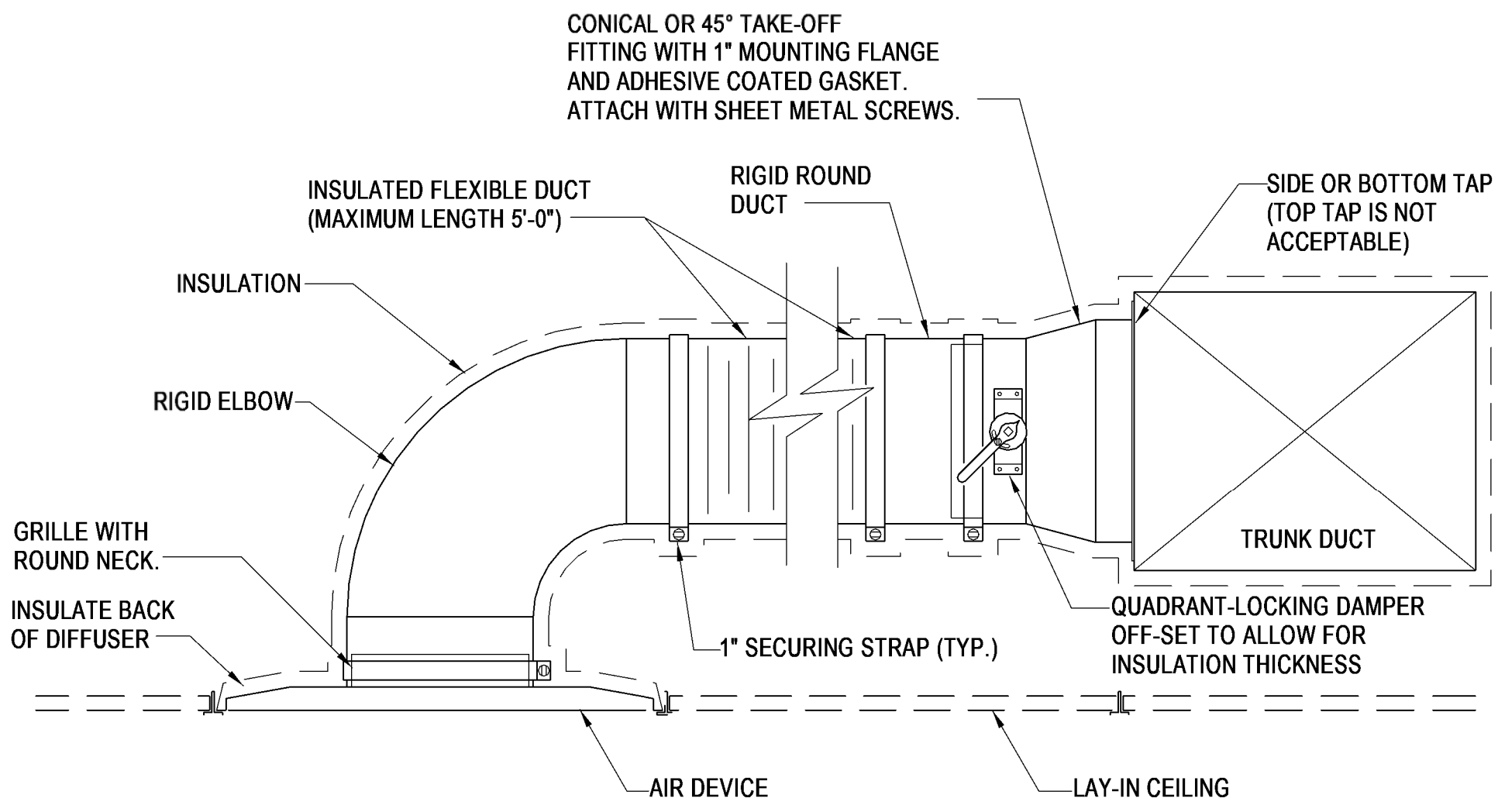
**1 DUCTWORK FLEX CONNECTION**  
NO SCALE



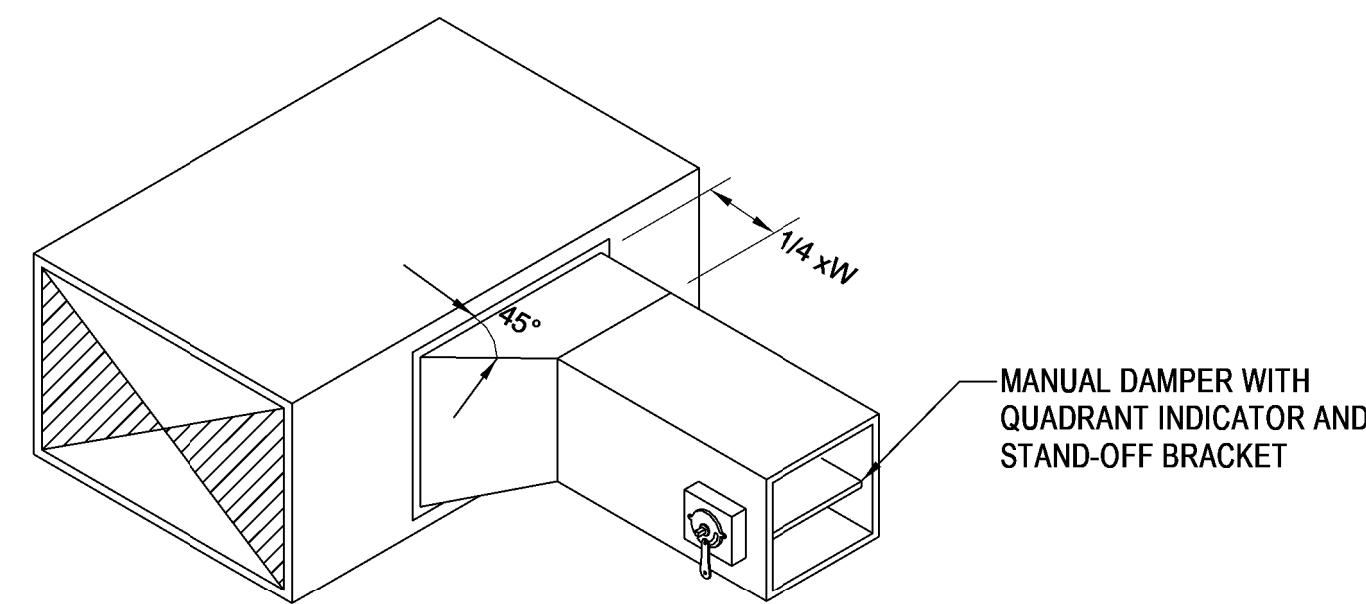
**2 SIDEWALL AIR DEVICE**  
NO SCALE



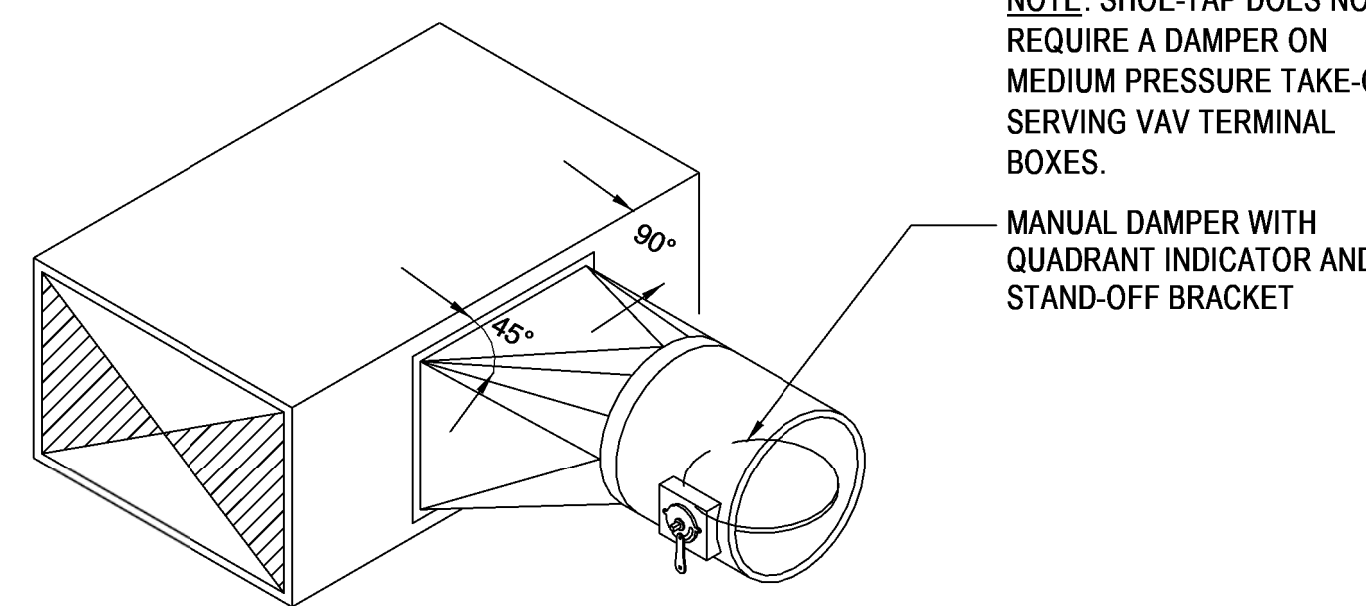
**3 ROUND DUCT CONNECTION**  
NO SCALE



**NOTES:**  
1. FLEX SHALL BE RUN AS STRAIGHT AS POSSIBLE AND CUT TO MINIMUM LENGTH. SWEEPING BENDS TO ACCOMMODATE EXCESS LENGTH ARE NOT ALLOWED.  
2. FLEXIBLE DUCT SHALL NOT BE PERMITTED ON NEGATIVE PRESSURE DUCTWORK (I.E. RETURN AND EXHAUST).

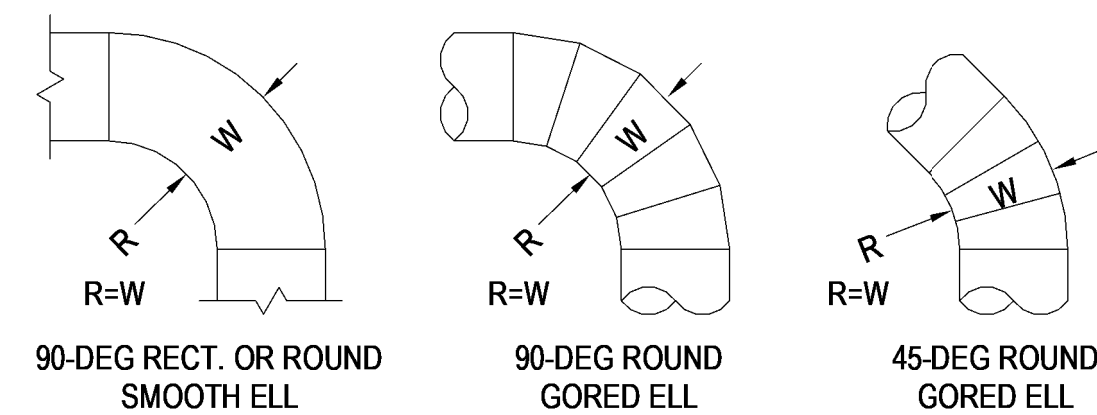


**RECTANGULAR TO RECTANGULAR**

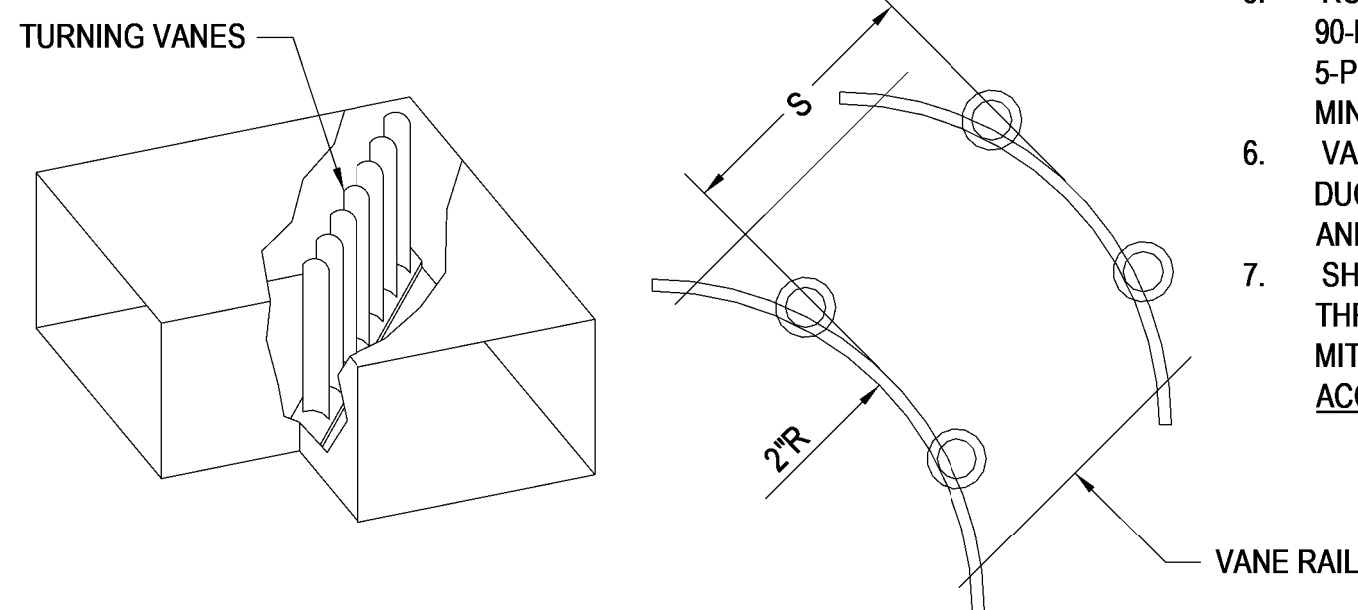


**RECTANGULAR TO ROUND**

**MEDIUM PRESSURE DUCT TAP**  
NOTE: SHOE-TAP DOES NOT REQUIRE A DAMPER ON MEDIUM PRESSURE TAKE-OFFS SERVING VAV TERMINAL BOXES.



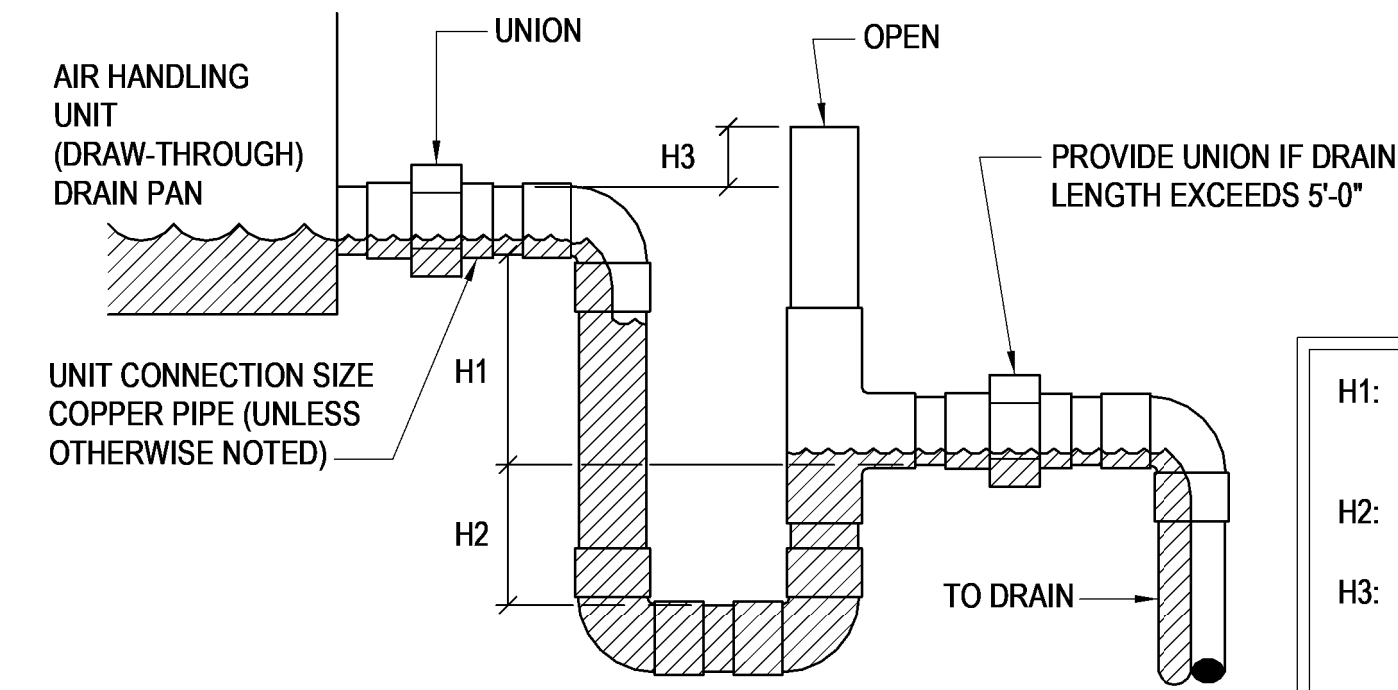
**STANDARD RADIUS ELL**



S=1.5" SGL THICKNESS VANES  
S=2.125" DBL THICKNESS VANES

**MITERED ELL**

- NOTES:**
- WHERE FULL RADIUS TURNS ARE NOT POSSIBLE, MITERED ELL'S WITH TURNING VANES SHALL BE PROVIDED FOR ALL CHANGES IN HORIZONTAL AND VERTICAL DUCT DIRECTION 45-DEGREE OR GREATER.
  - CONSTRUCT ELBOWS IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
  - TURNING VANE ELBOW SHALL BE ASHRAE FITTING CR3-9 WITH SINGLE WIDTH VANES FOR VANE LENGTHS UP TO 24".
  - TURNING VANE ELBOW SHALL BE ASHRAE FITTING CR3-15 WITH DOUBLE WIDTH VANES FOR VANE LENGTHS OVER 24".
  - ROUND ELBOWS SHALL BE SMOOTH OR GORED. 90-DEGREE GORED ELL'S SHALL BE MINIMUM 5-PIECE AND 45-DEGREE GORED ELL'S SHALL BE MINIMUM 3-PIECE.
  - VANES SHALL BE WELDED TO THE VANE RAIL IN DUCT SYSTEMS WITH AIR VELOCITIES 3000 FPM AND HIGHER.
  - SHORT RADIUS ELBOWS, ELBOWS WITH MITERED THROATS/RADIUS HEELS, AND ELBOWS WITH MITERED THROATS/CHAMFERED HEELS ARE NOT ACCEPTABLE.

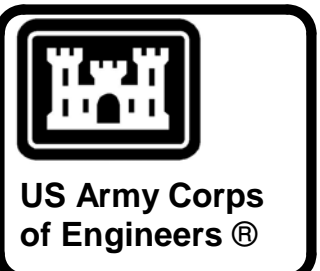


H1: NEGATIVE STATIC PRESSURE AT PAN +1"  
H2: 1/2 x H1 (MINIMUM)  
H3: 1" ABOVE TOP OF DRAIN PAN (MINIMUM)

**6 CONDENSATE DRAIN TRAP**  
NO SCALE

**4 DUCT TAKE-OFFS**  
NO SCALE

**5 DUCT ELBOWS**  
NO SCALE



06-20-2022

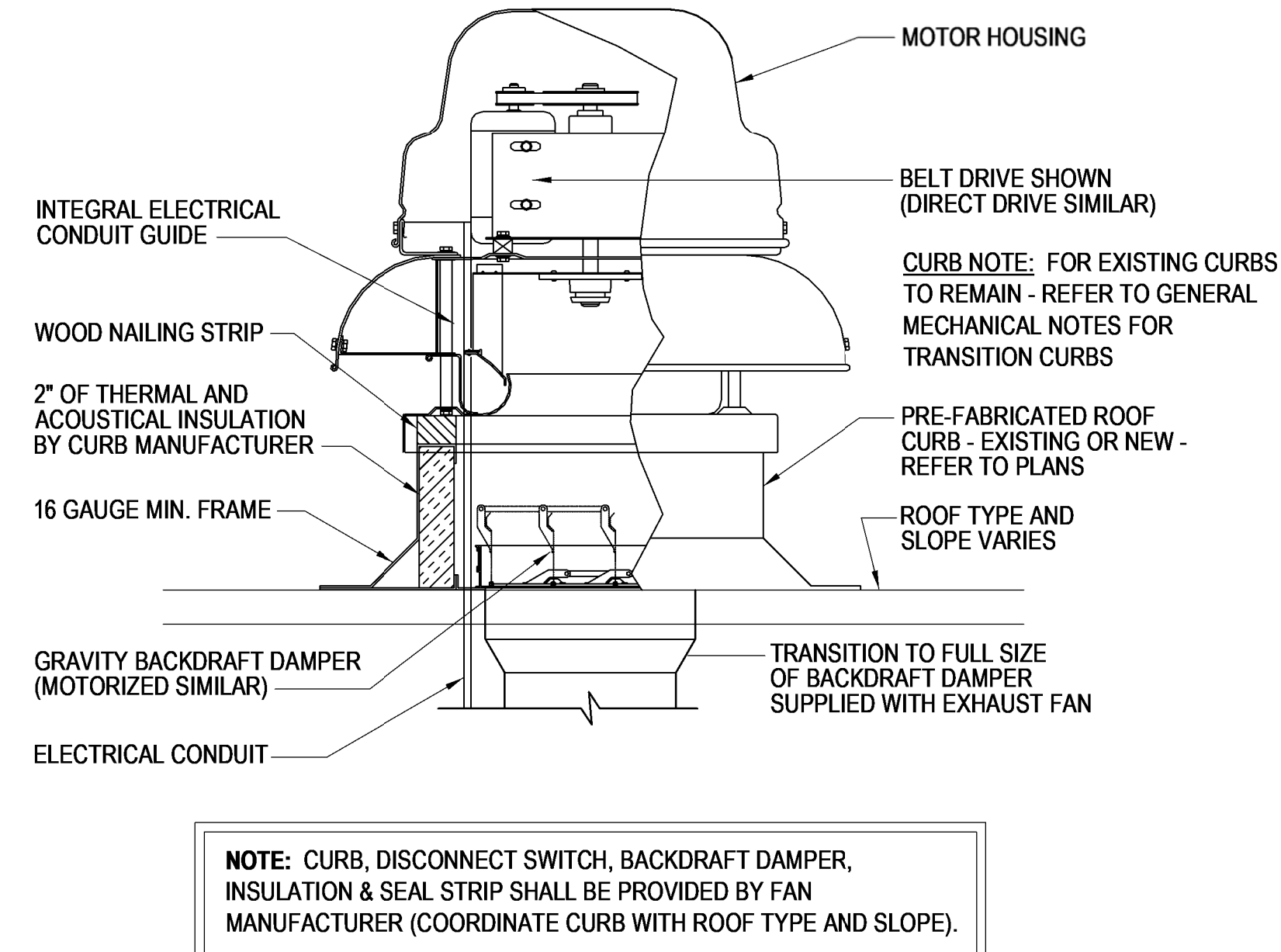
MARK	DESCRIPTION	DATE

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SUBMITTED BY: CROMWELL A/E	
SIZE: ANSI D	
1300 East 6th Street Little Rock, AR 72202	
901.872.2900	
<b>CROMWELL</b>	
US ARMY CORPS OF ENGINEERS CHARLESTON DISTRICT CHARLESTON, SOUTH CAROLINA	

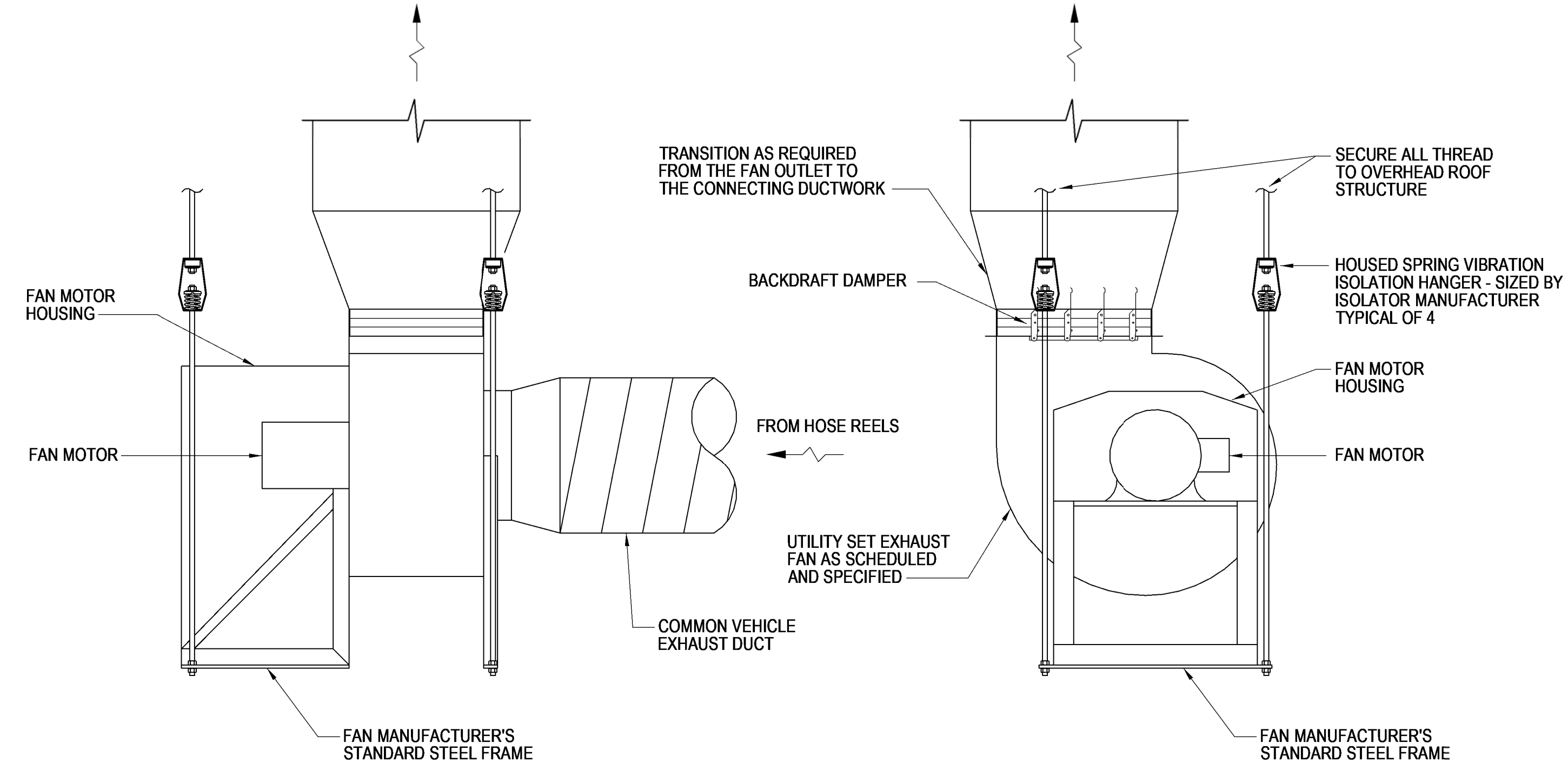
FLO27 HVAC-ELEC-PLUMB RESET	HVAC DETAILS
PALATKA, FL	

SHEET ID	M-501
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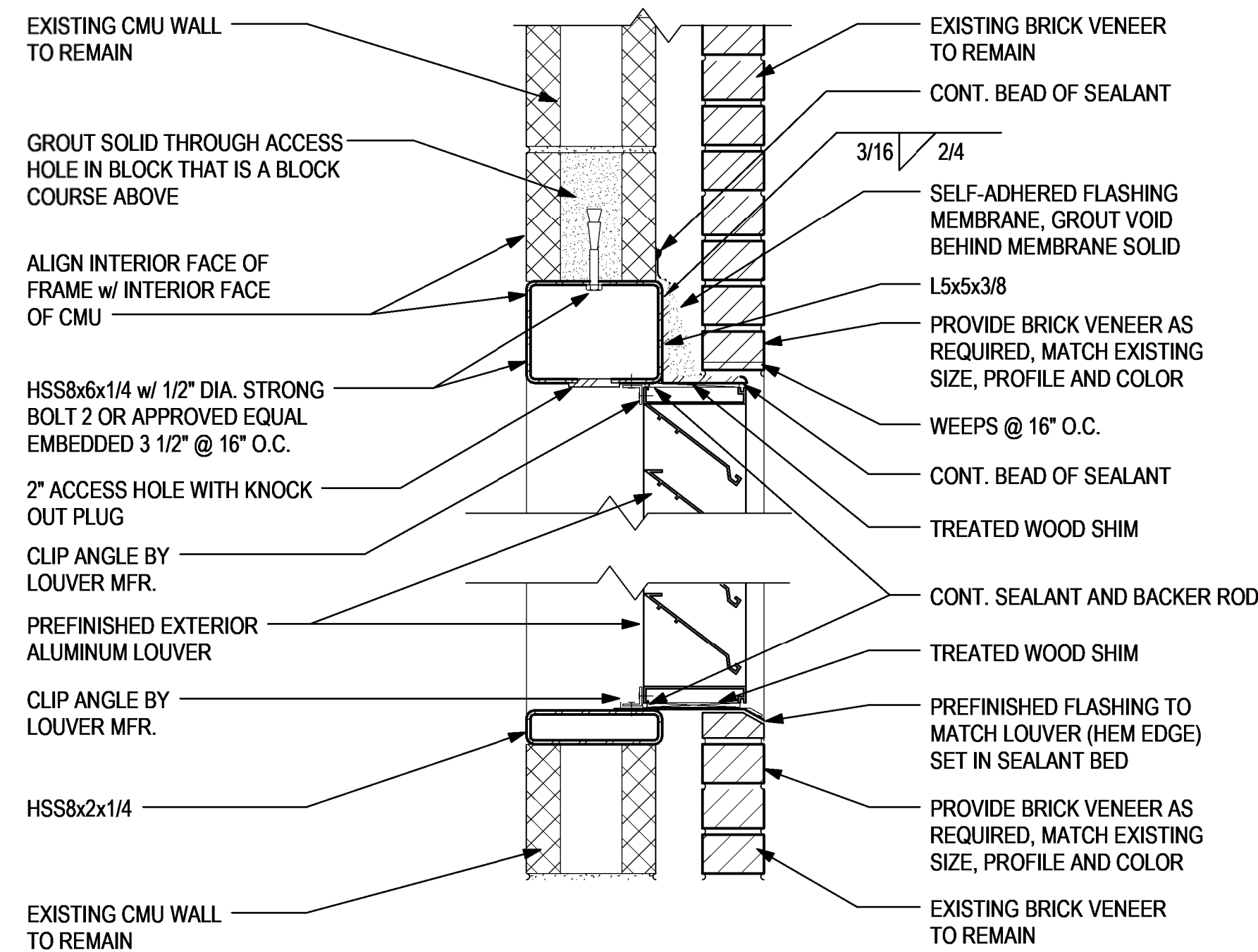
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1 DOWNBLAST EXHAUST FAN  
NO SCALE

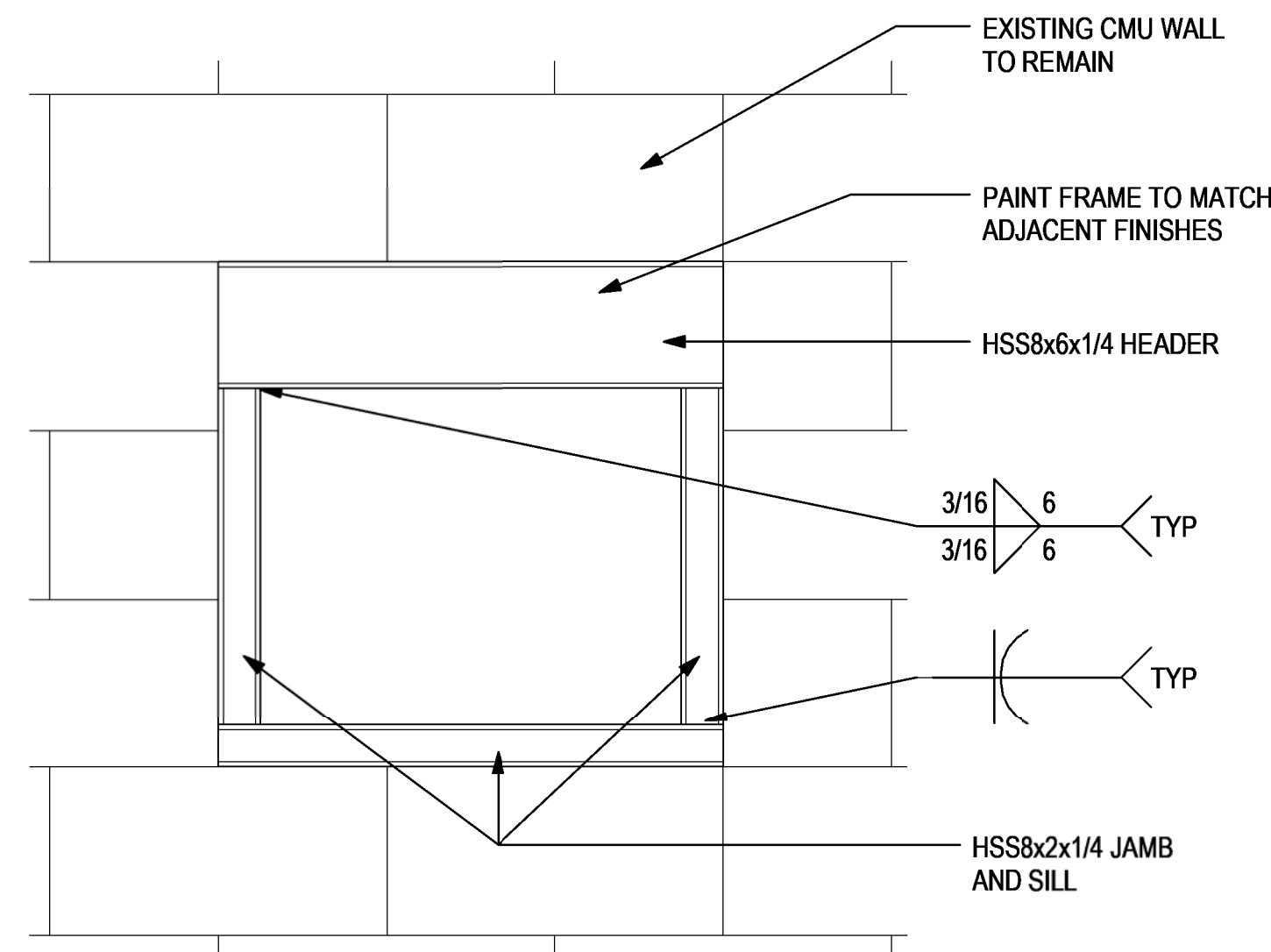


2 VEHICLE EXHAUST FAN  
NO SCALE

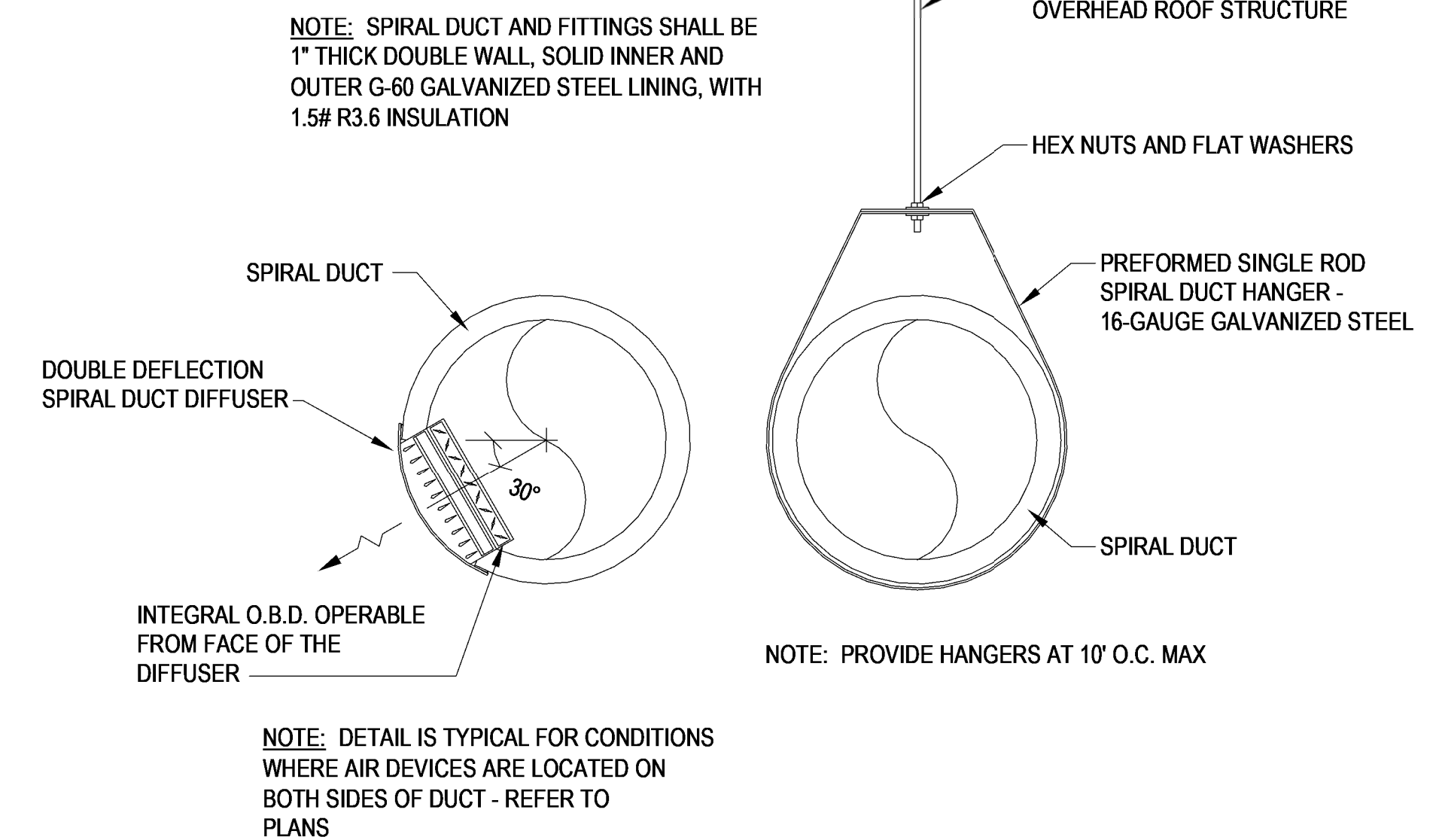


LOUVER SECTION, SEE SCHEDULE FOR LOUVER SIZE

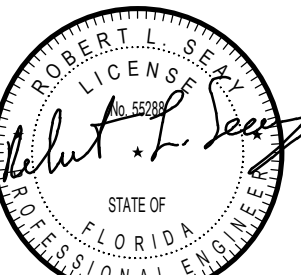
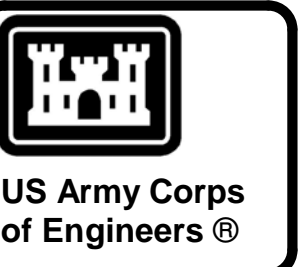
3 LOUVER INSTALLATION IN EXISTING WALL  
NO SCALE



LOUVER CMU SUPPORT FRAME ELEVATION



4 SPIRAL DUCT HANGER AND GRILLE  
NO SCALE



06-20-2022

MARK	DESCRIPTION	DATE

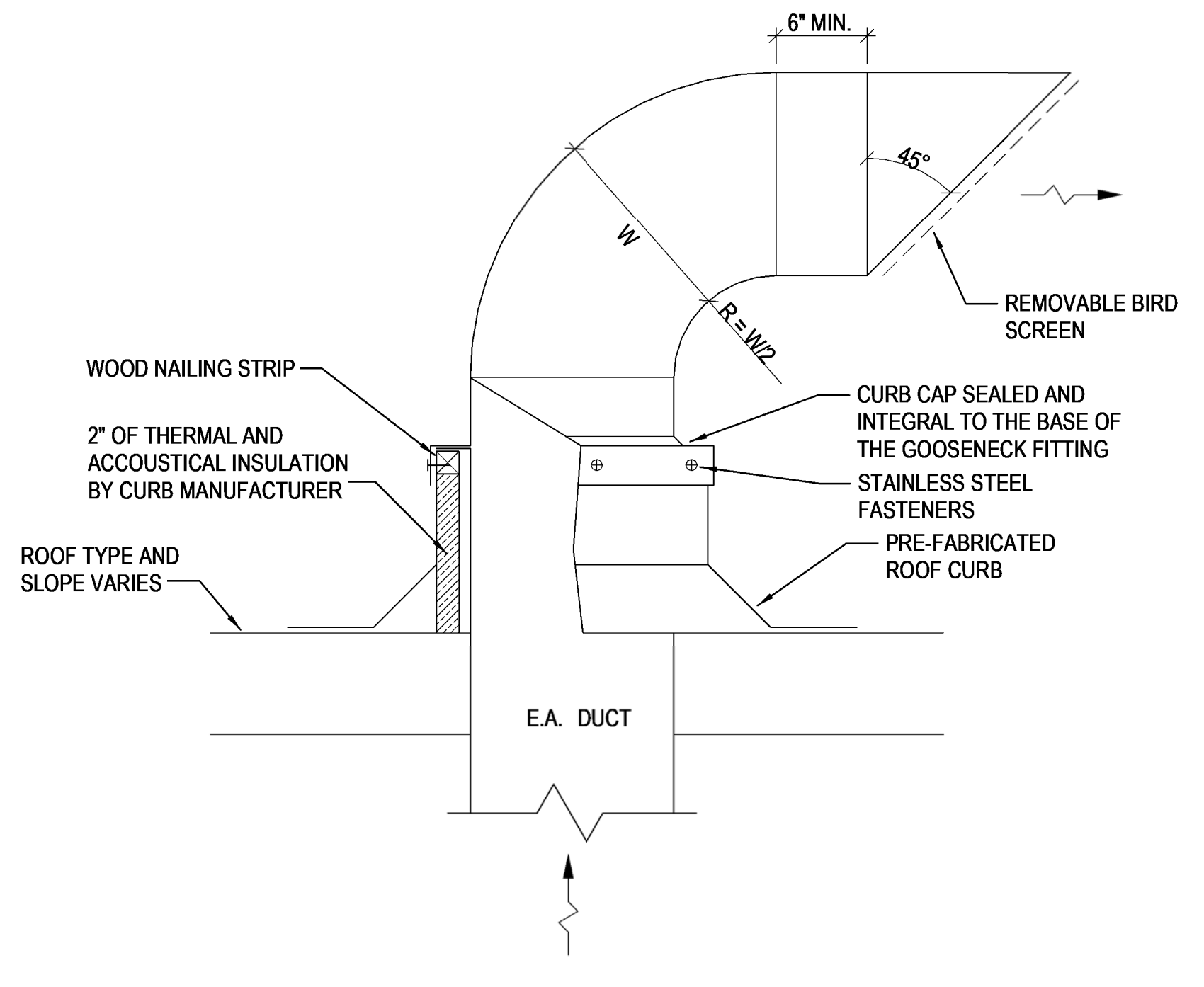
DESIGNED BY: J/LG	ISSUE DATE: 20 JUN 2022
DRAWN BY: J/LG	SOLICITATION NO.:
CHECKED BY: R/S	CONTRACT NO.:
SUBMITTED BY: CROMWELL A/E	
1300 East 6th Street Little Rock, AR 72202 501.872.2900 cromwell.com LANSD	

FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
HVAC DETAILS

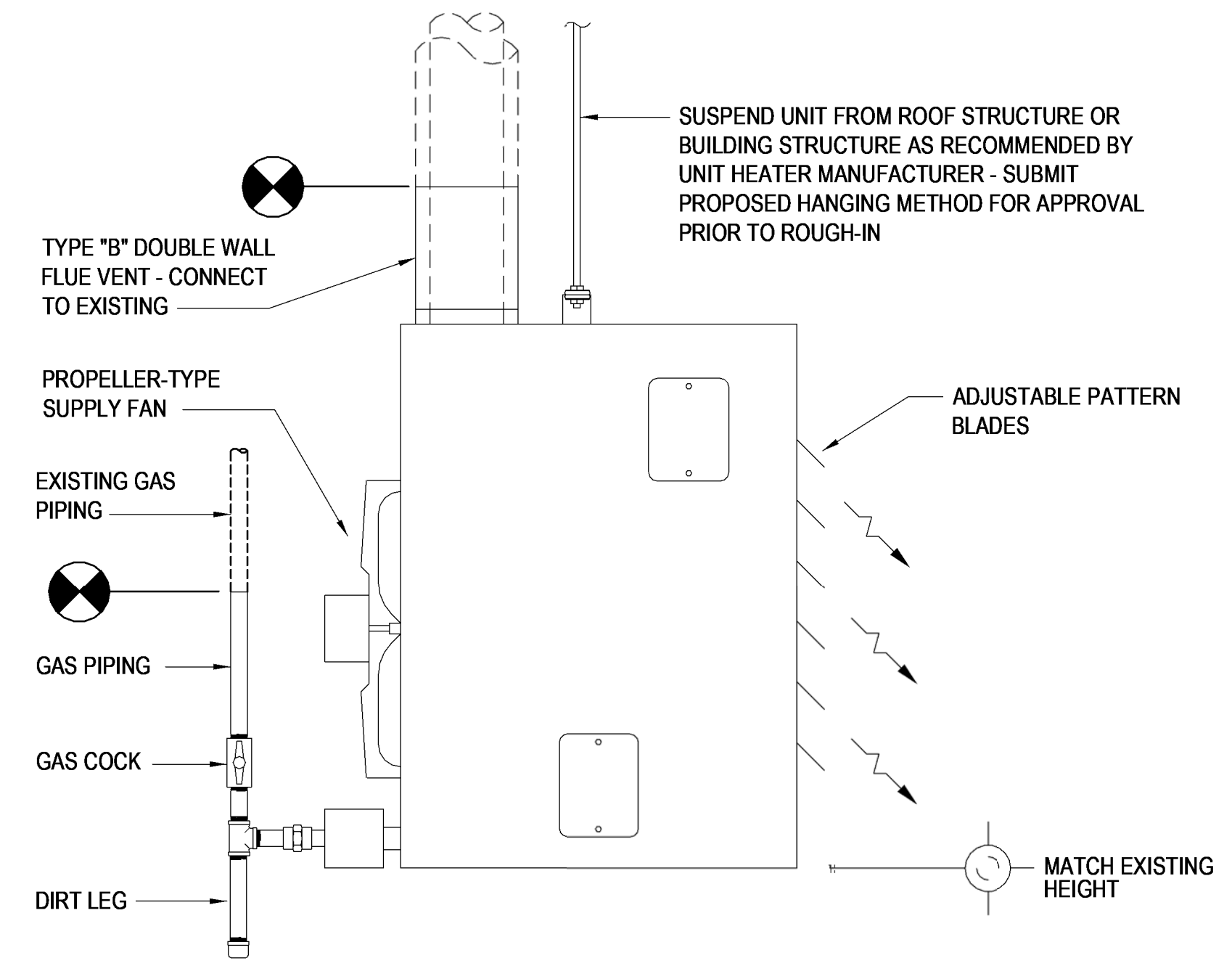
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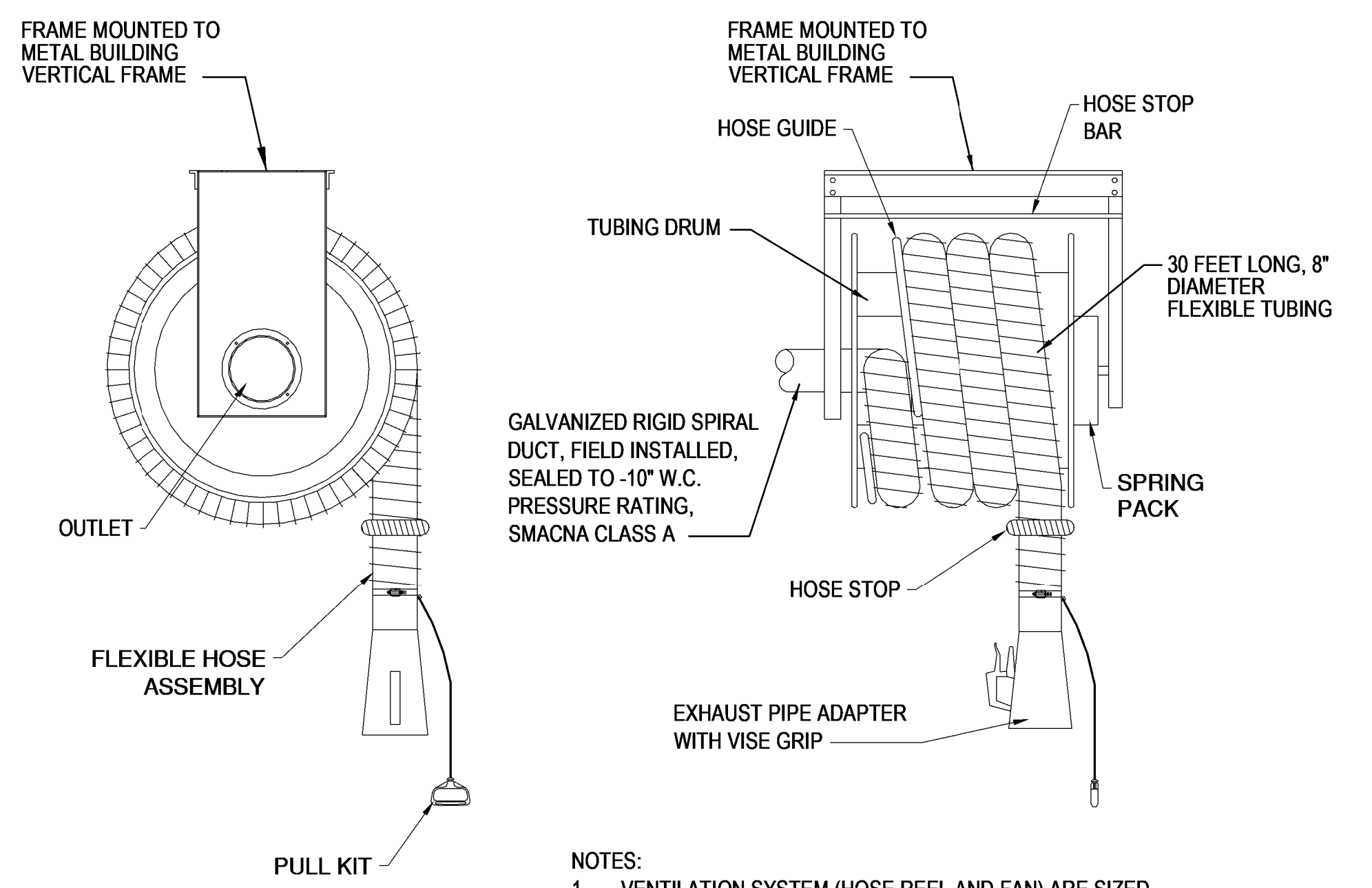
WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.



**1 ROOFTOP GOOSENECK EXHAUST TERMINATION**  
NO SCALE

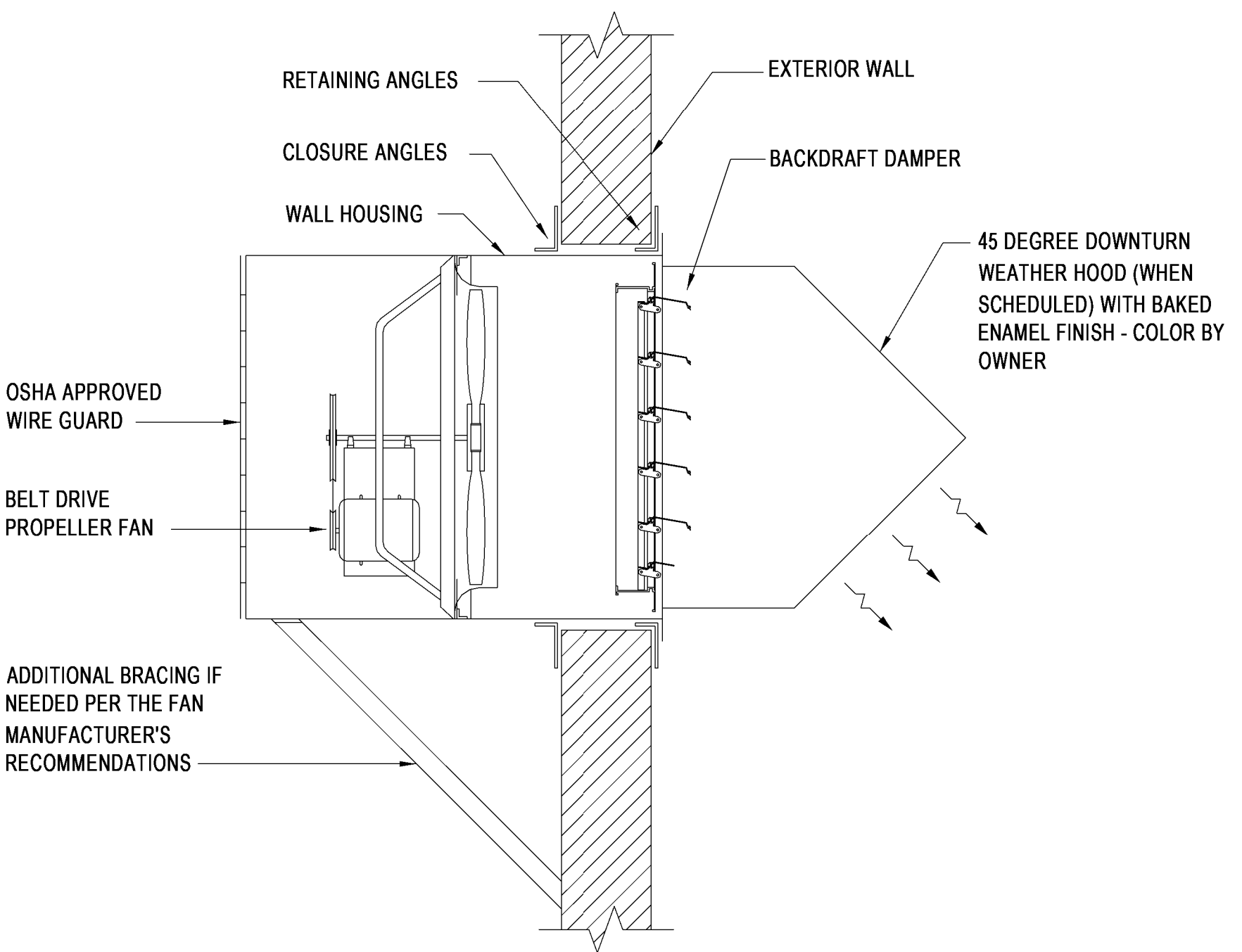


**2 GAS-FIRED UNIT HEATER**  
NO SCALE

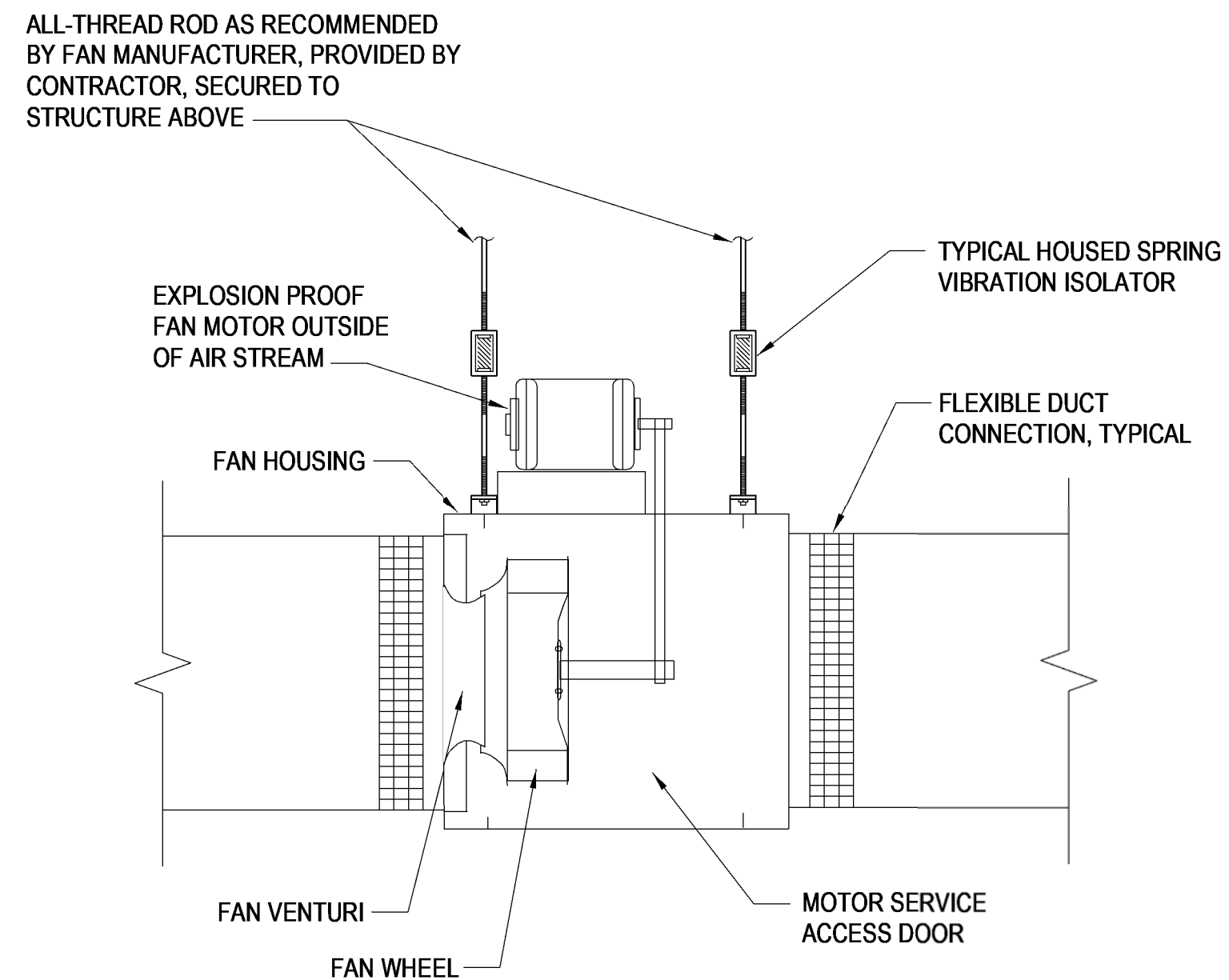


NOTES:  
1. VENTILATION SYSTEM (HOSE REEL AND FAN) ARE SIZED FOR AN OSHKOSH HEMTT A4 FUEL SERVICING  
2. ORIGINAL CONTRACTOR TO PROVIDE MOUNTING HARDWARE AND CONNECT TO STRUCTURE AS REQUIRED.

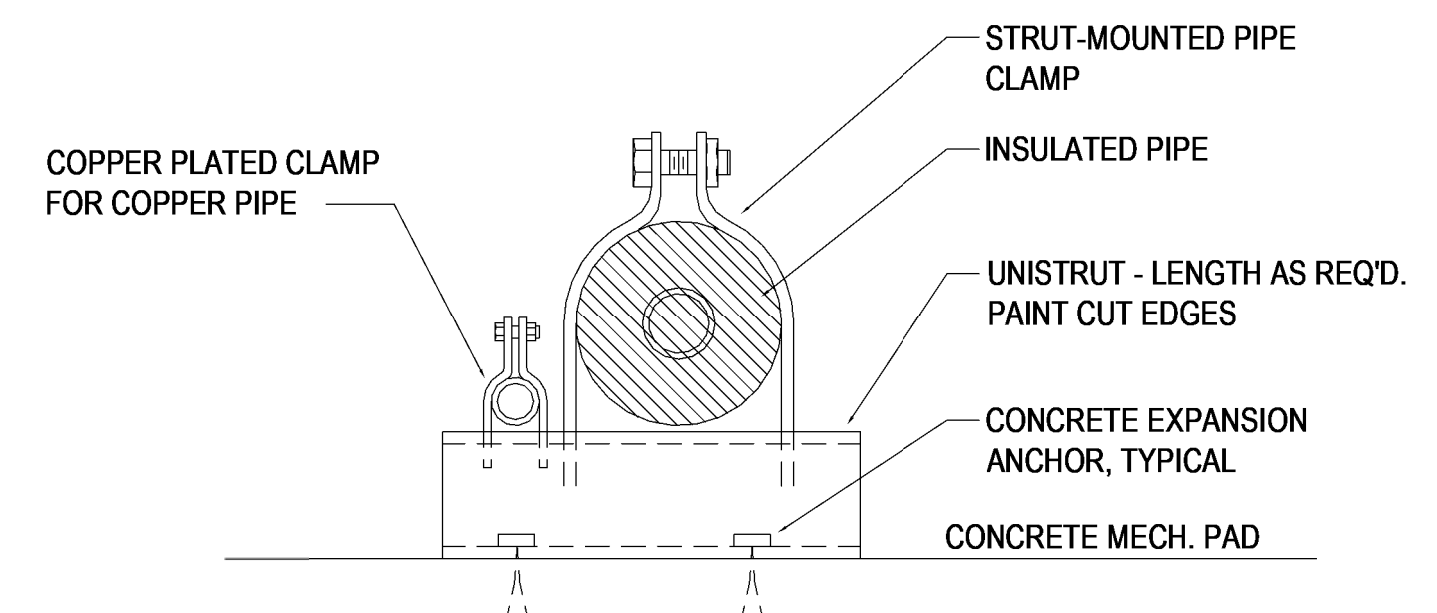
**3 VEHICLE EXHAUST HOSE REEL**  
NO SCALE



**4 SIDEWALL PROPELLER EXHAUST FAN**  
NO SCALE

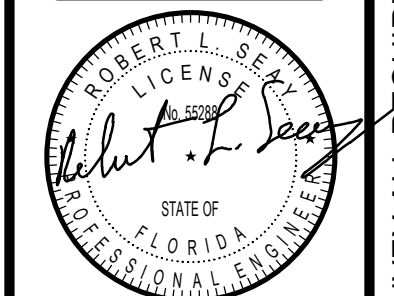
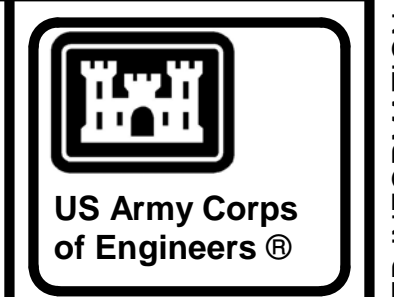


**5 IN-LINE FAN WITH EXP. PROOF MOTOR**  
NO SCALE



NOTES:  
1. SUPPORT VERTICAL PIPING ROUTED ALONG BUILDING EXTERIOR WALLS IN A SIMILAR FASHION.  
2. PROVIDE SUPPORTS AT 5' O.C.  
3. PROVIDE (2) COATS U.V. MASTIC OVER ALL INSULATION LOCATED ON THE BUILDING EXTERIOR.

**6 REFRIGERANT PIPE CLAMP/SUPPORT**  
NO SCALE



MARK	DESCRIPTION	DATE

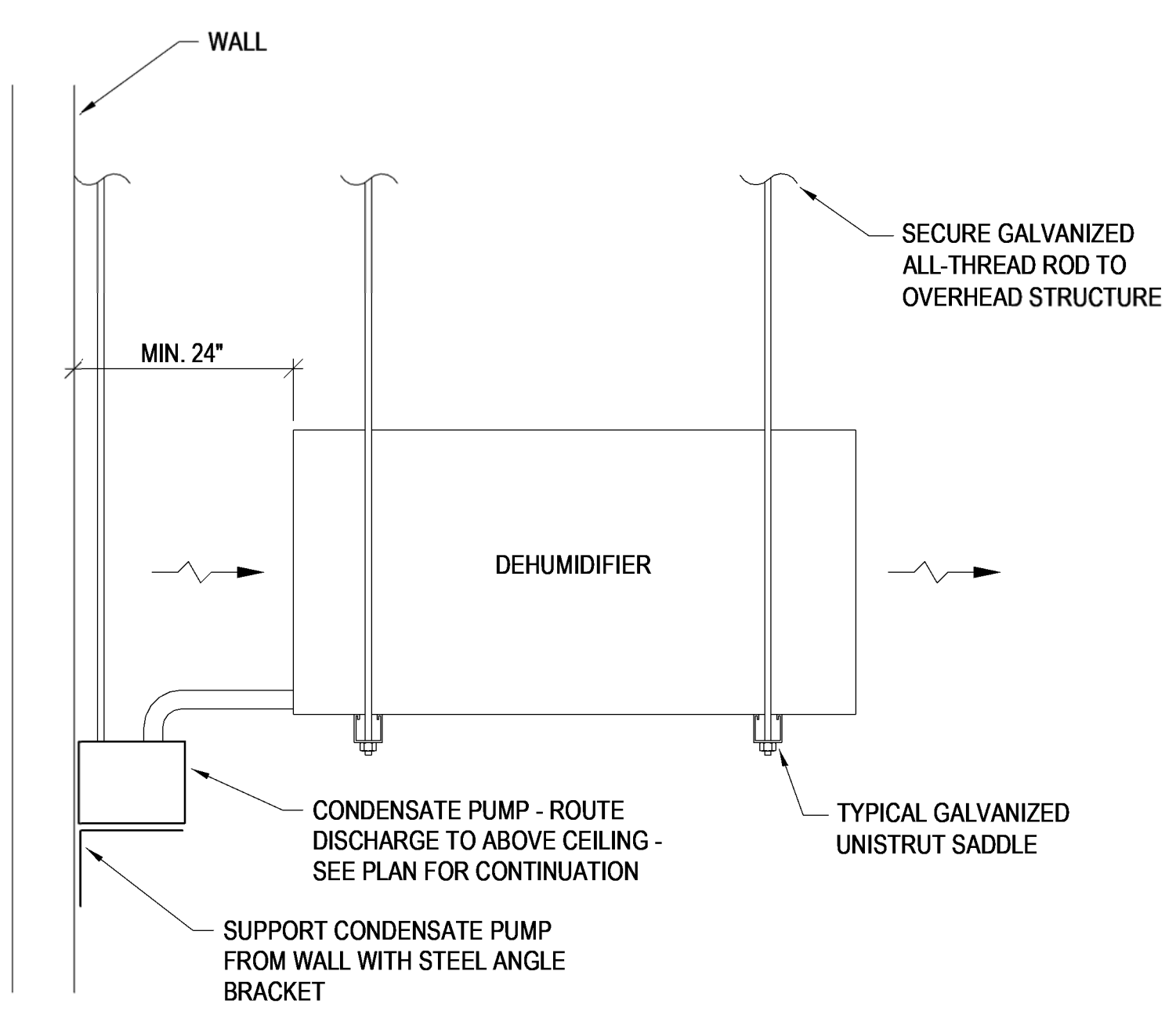
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DRAWN BY: JLG	SOLICITATION NO.:
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SUBMITTED BY: CROMWELL A/E	
SIZE: ANSI D	
1300 East 6th Street Little Rock, AR 72202 501.872.2900 cromwell@aec.com	

FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
HVAC DETAILS

SHEET ID  
M-503

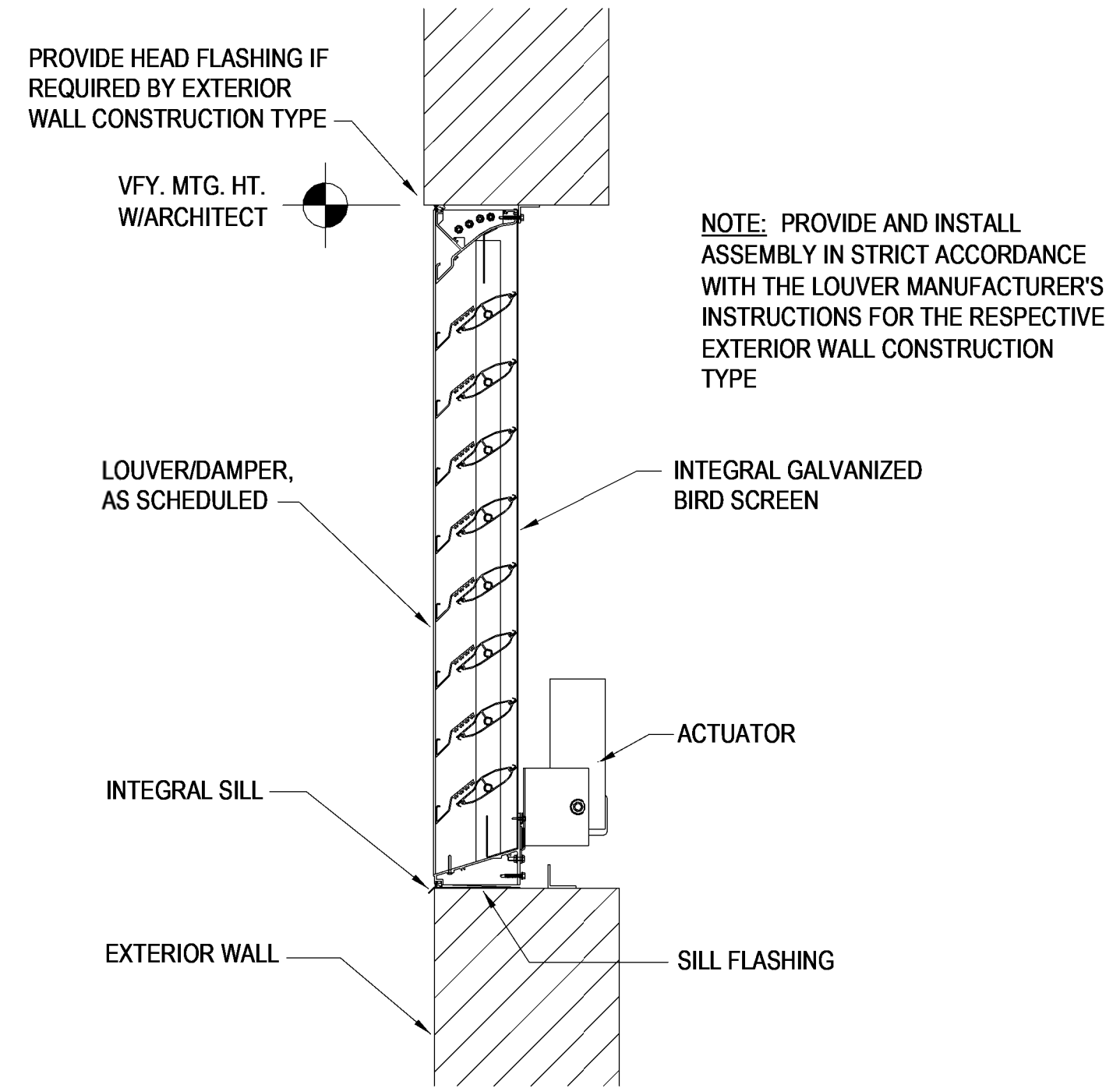
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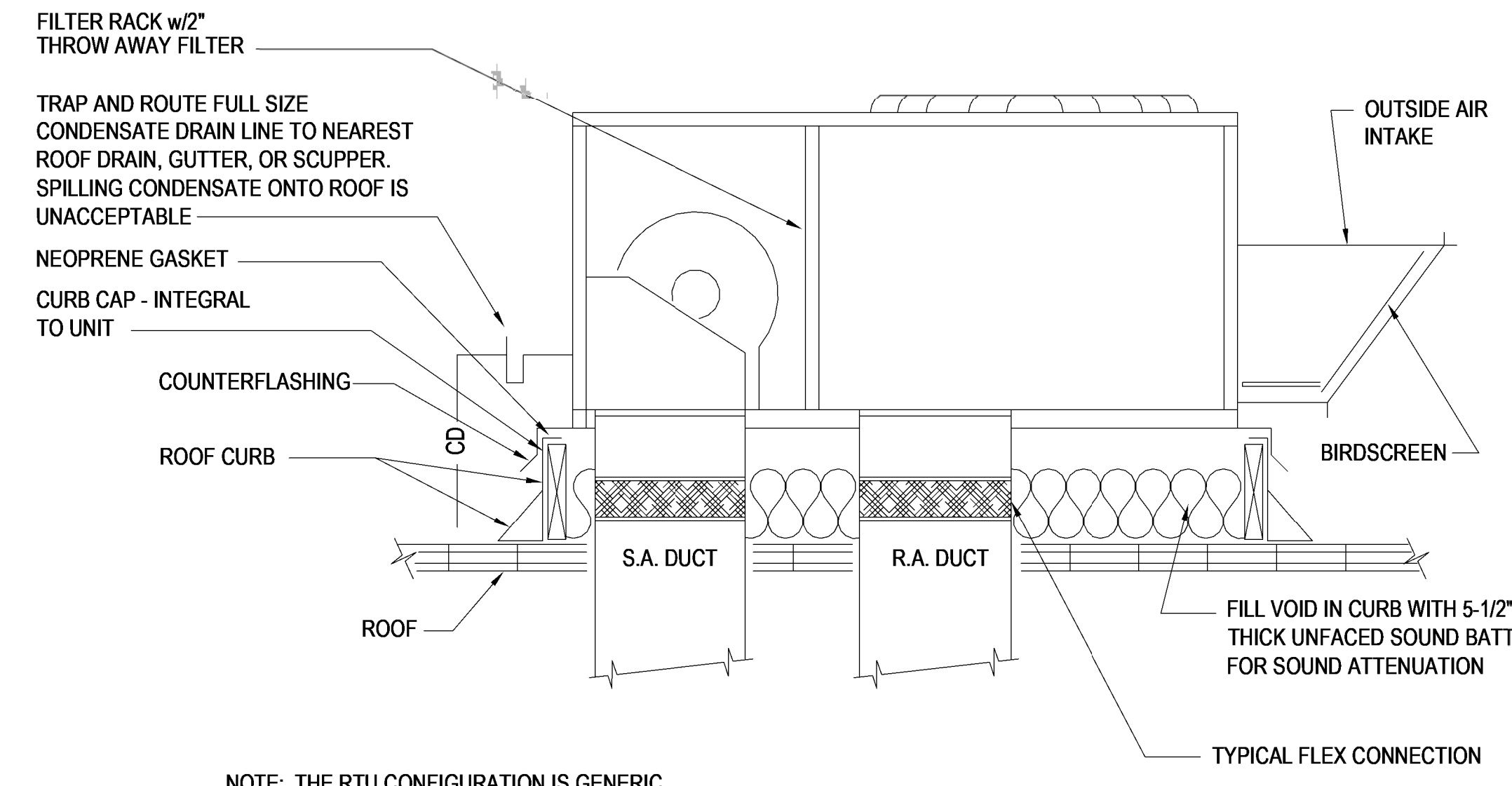
NOTE: INSTALL COMPLETE AND OPERATIVE IN STRICT ACCORDANCE WITH THE DEHUMIDIFIER MANUFACTURER'S INSTRUCTIONS.

1 DEHUMIDIFIER  
NONE



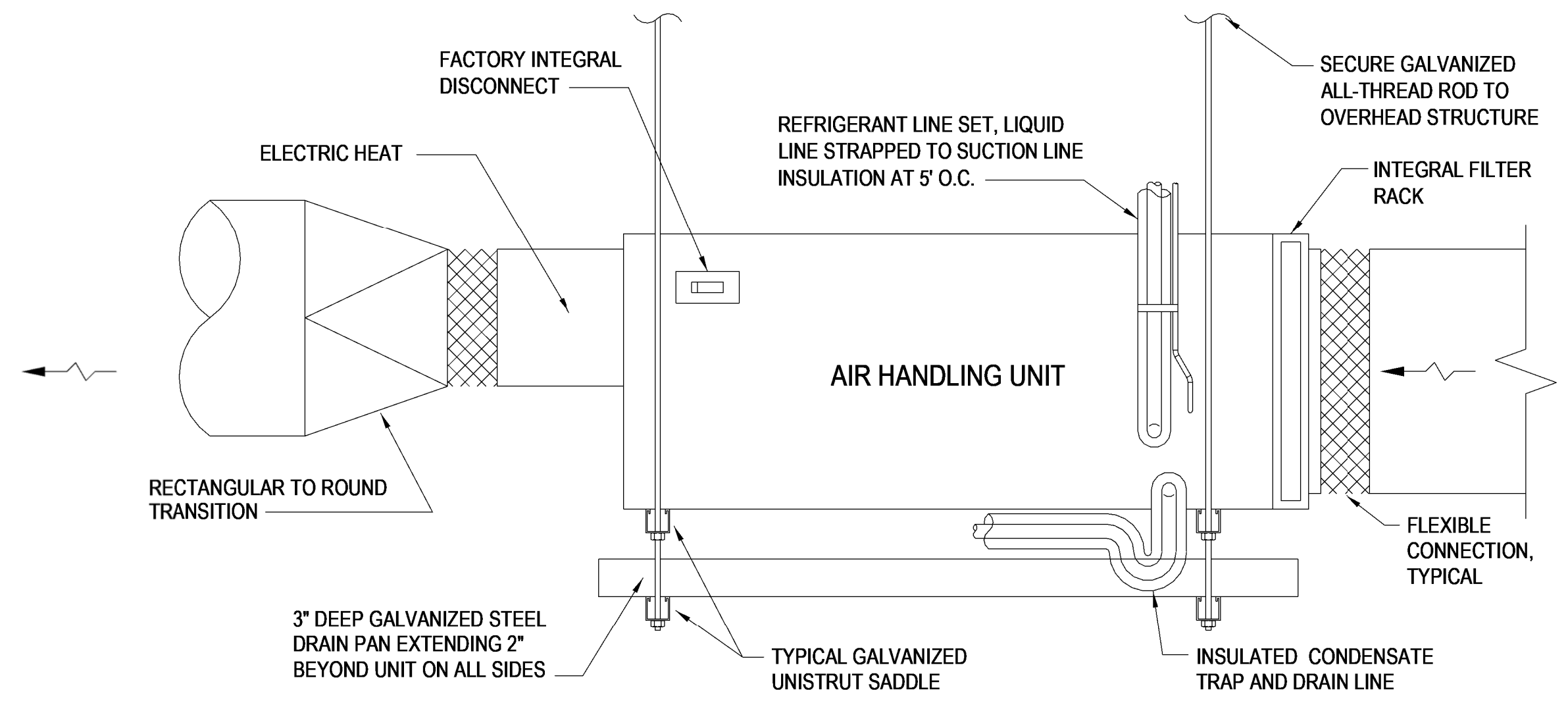
NOTE: PROVIDE AND INSTALL ASSEMBLY IN STRICT ACCORDANCE WITH THE LOUVER MANUFACTURER'S INSTRUCTIONS FOR THE RESPECTIVE EXTERIOR WALL CONSTRUCTION TYPE

2 COMBINATION LOUVER/DAMPER  
NONE



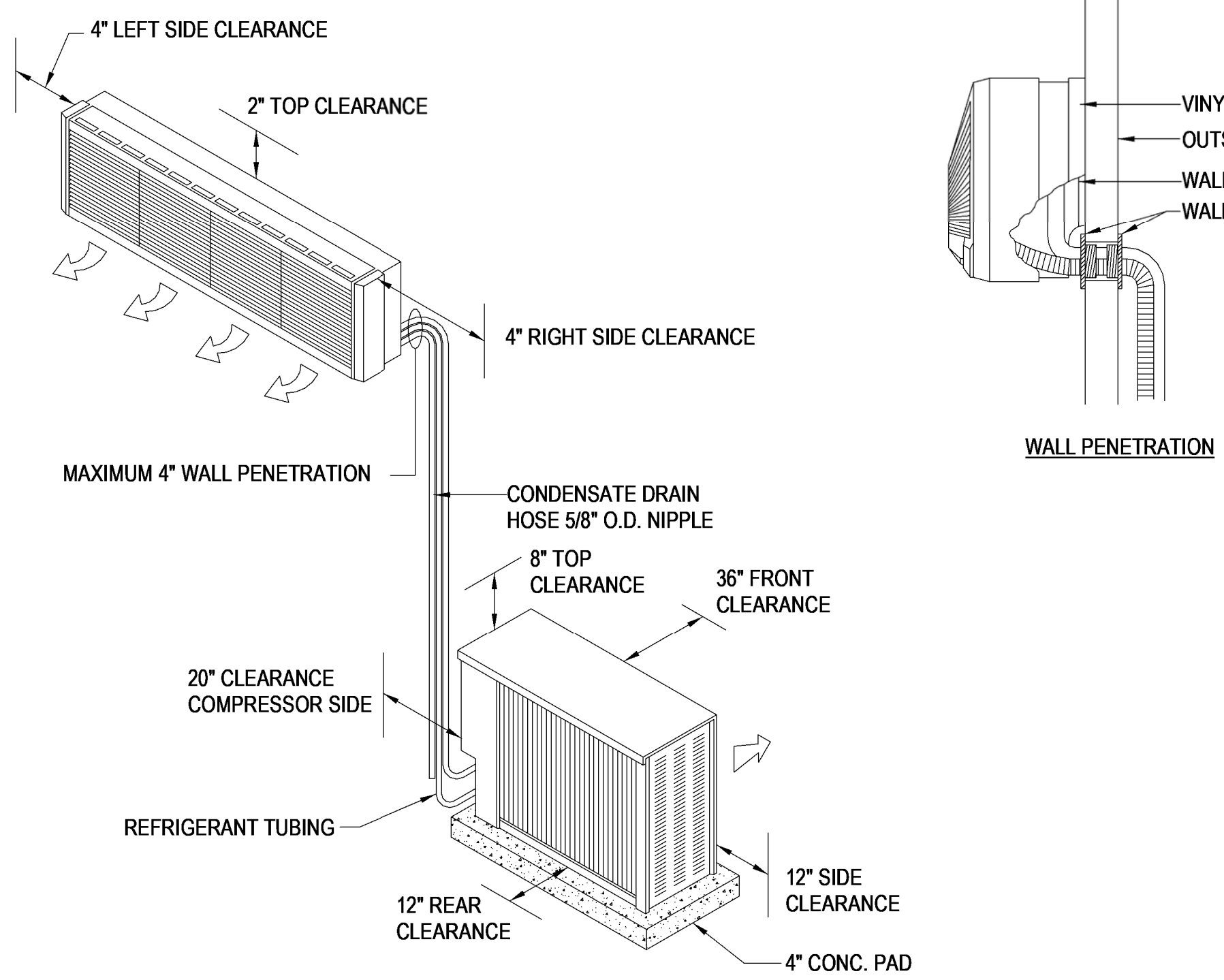
NOTE: THE RTU CONFIGURATION IS GENERIC IN NATURE AND WILL VARY BASED ON THE MANUFACTURER/MODEL INSTALLED.

3 ROOFTOP UNIT  
NONE



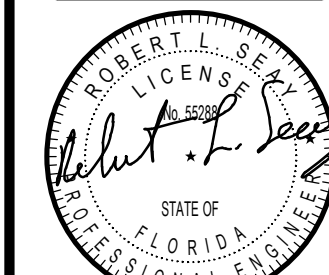
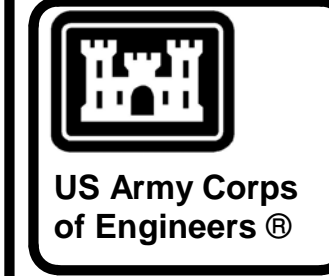
NOTES:  
1. INSTALL THE FAN COIL UNIT COMPLETE AND OPERATIVE IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.  
2. THE DETAIL IS INTENDED TO BE GENERIC, THEREFORE THE PIPING CONNECTIONS SHOWN WILL VARY FROM INSTALLATION TO INSTALLATION. PROVIDE REFRIGERANT PIPING AND CONDENSATE PIPING IN ACCORDANCE WITH THE AIR HANDLING UNIT MANUFACTURER'S RECOMMENDATIONS.  
3. PROVIDE BLOCKING OF SUFFICIENT HEIGHT TO ALLOW FOR PROPER CONDENSATE TRAP AND DRAIN INSTALLATION.  
4. PROVIDE AN INSERTION STYLE FLOAT SWITCH IN THE AUXILIARY DRAIN CONNECTION AT THE AHU. THE FLOAT SWITCH SHALL BE WIRED NORMALLY CLOSED, WITH OPEN CIRCUIT ACTIVATION.  
5. AUXILIARY DRAIN PAN WILL BE PIPED TO THE BUILDING EXTERIOR AS INDICATED IN THE PLANS. PROVIDE REMOVABLE BUG SCREEN OVER THE EXTERIOR PIPE TERMINATION.

4 HORIZONTAL AIR HANDLING UNIT AND DUCTED FAN COILS  
NONE



NOTES:  
1. INSTALLATION CLEARANCES NOTED ARE MINIMUM REQUIRED. PROVIDE LARGER CLEARANCES IF REQUIRED BY THE MANUFACTURER.  
2. TYPICALLY ROUTE PIPING CONCEALED IN WALL CAVITY AND OUT TO EXTERIOR AT 6" A.F.F. THE EXPOSED PIPE RISER SHOWN IS TO BE USED ONLY IF ROUTING CONCEALED IS NOT POSSIBLE AND PRIOR APPROVAL IS RECEIVED BY THE ENGINEER OF RECORD.  
3. CONDENSATE SHALL TERMINATE PER THE PLANS

5 DUCTLESS MINI-SPLIT  
NONE



06-20-2022

MARK	DESCRIPTION	DATE

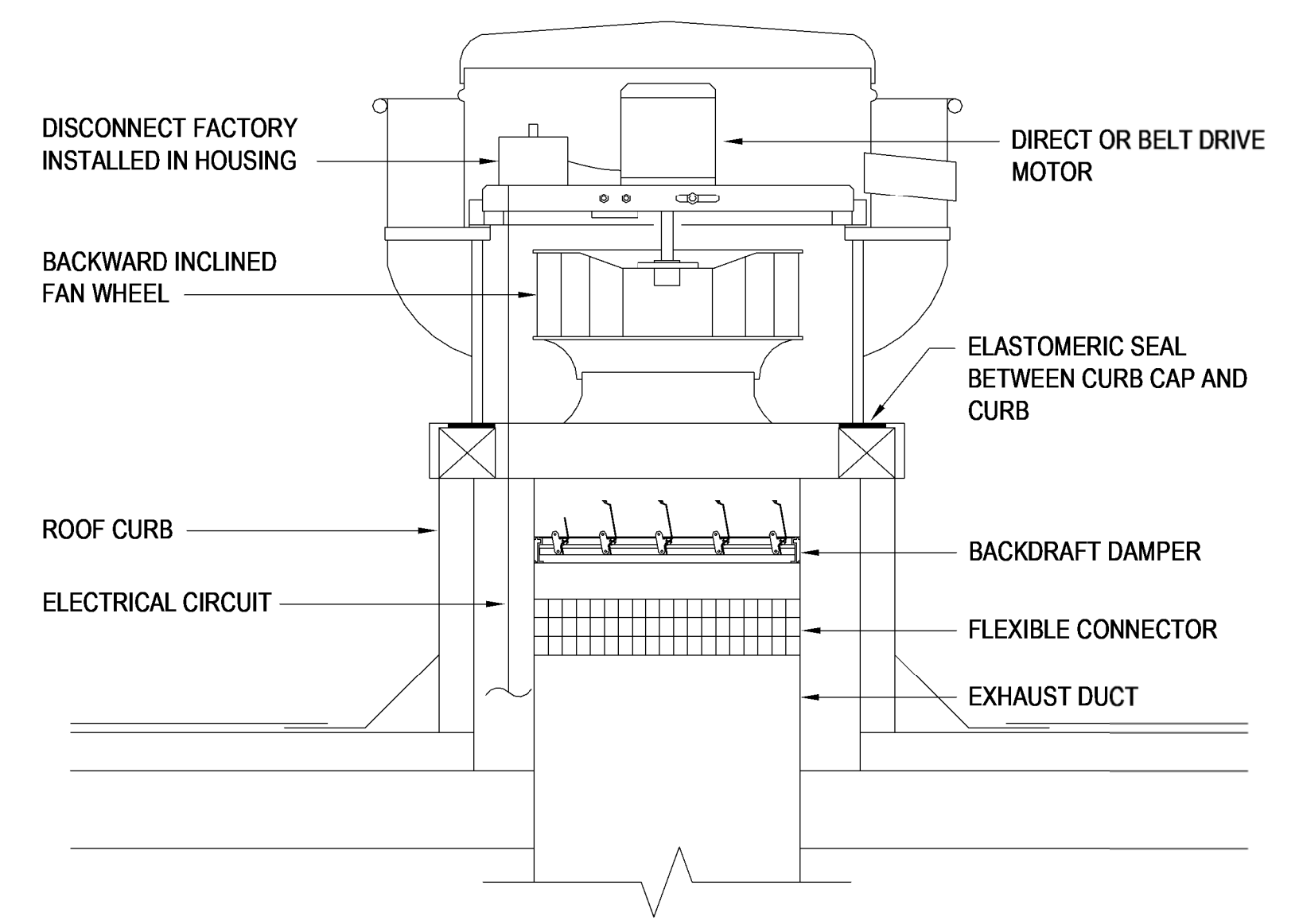
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DRAWN BY: JLG	SOLICITATION NO.:
CHECKED BY: RLS	CONTRACT NO.:
SUBMITTED BY: CROMWELL A/E	
1300 East 6th Street Little Rock, AR 72202 501.872.2900 cromwell@com.lansid	

FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
HVAC DETAILS

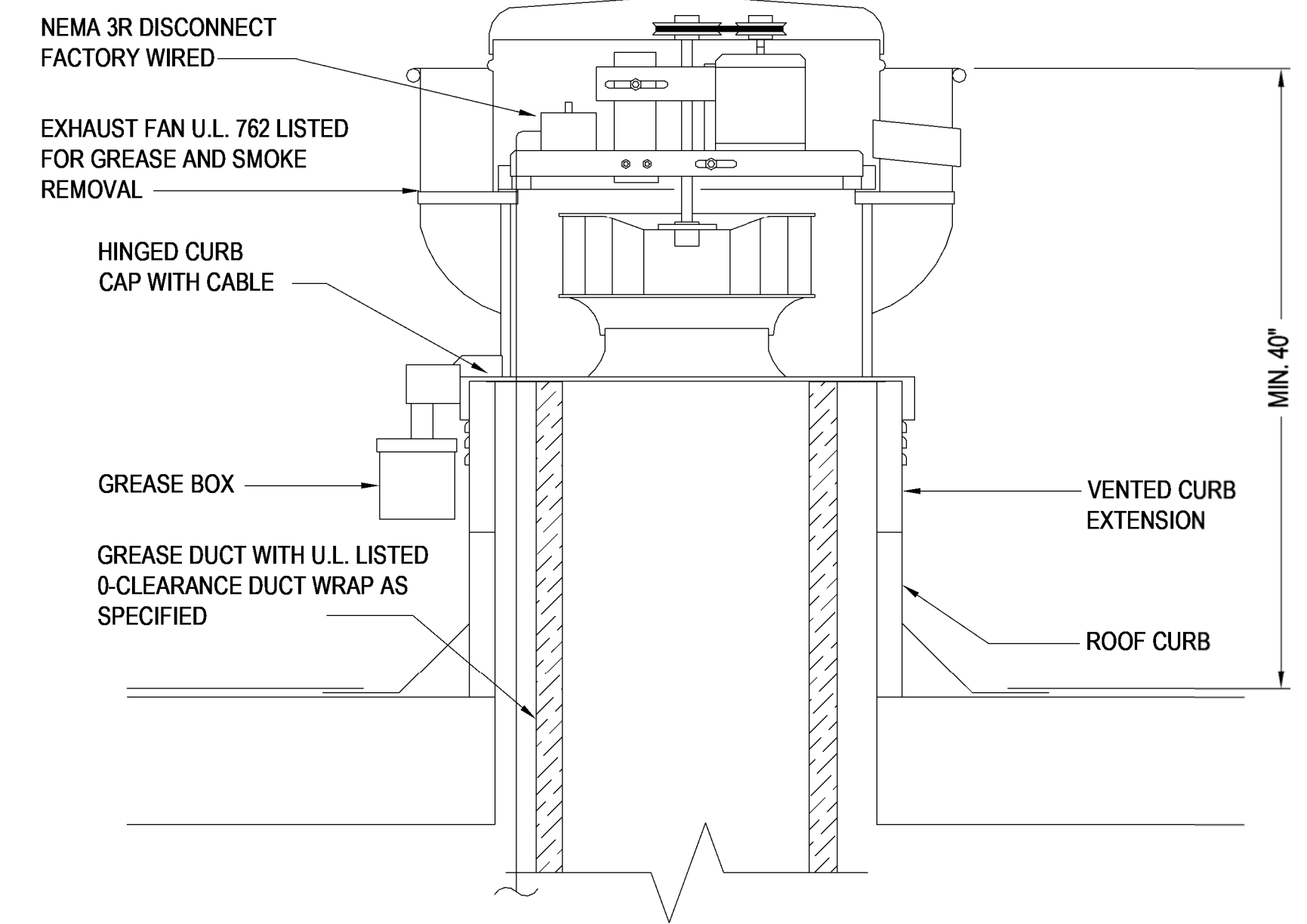
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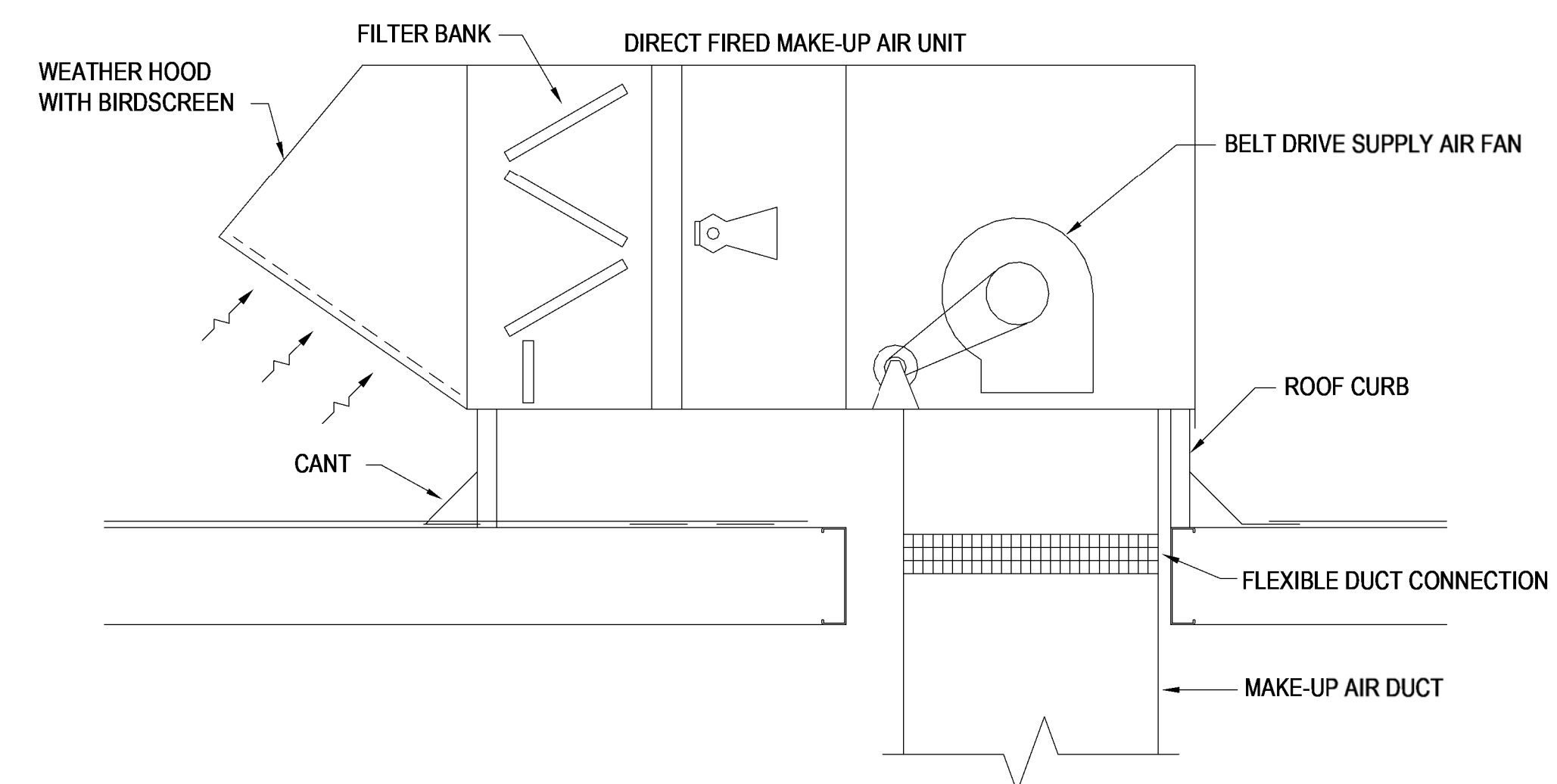
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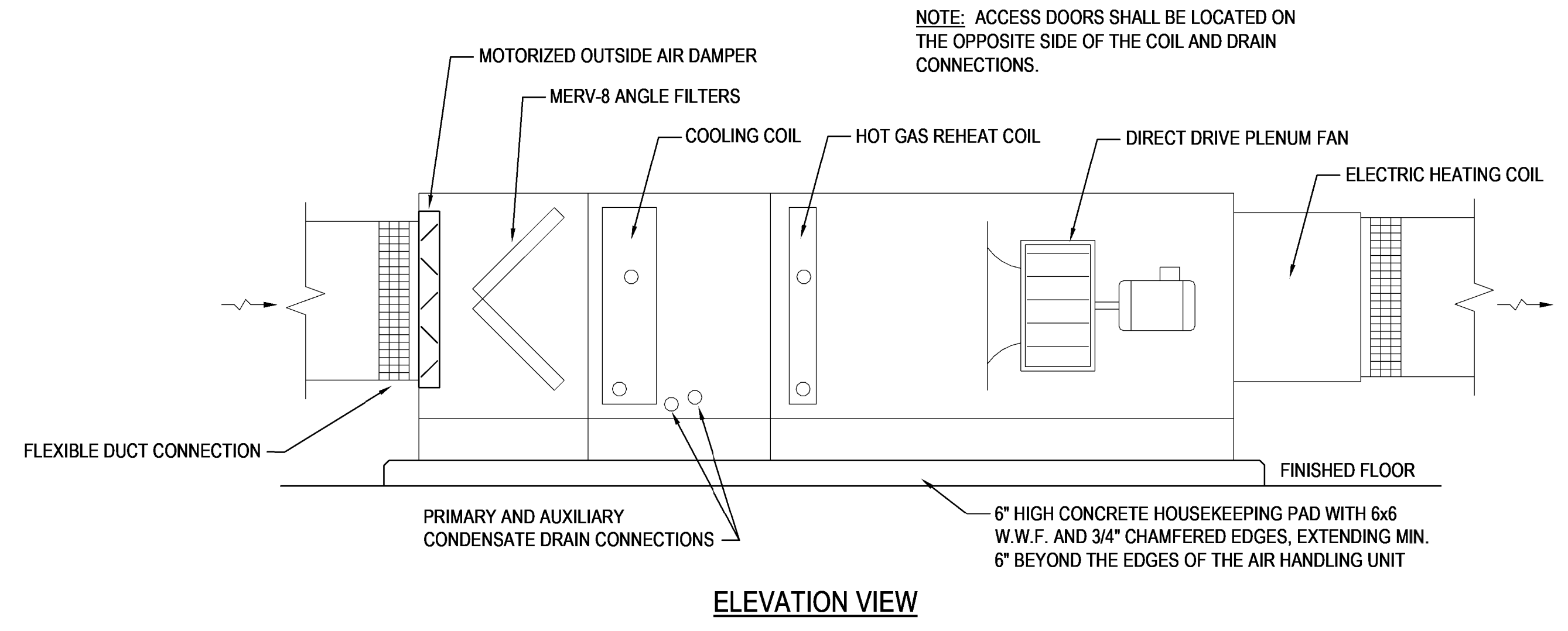
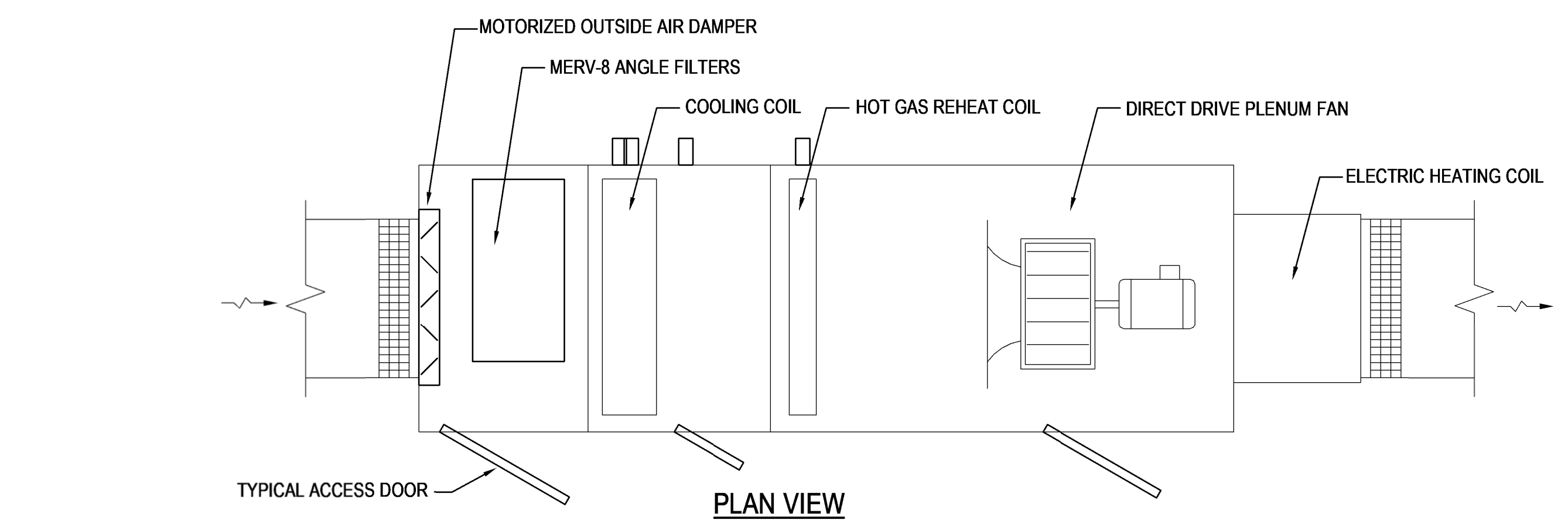
**1** ROOFTOP UPBLAST EXHAUST FAN - HEAT/VAPOR HOOD SERVICE  
NONE



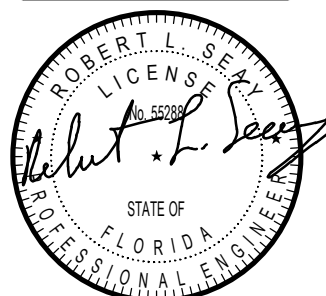
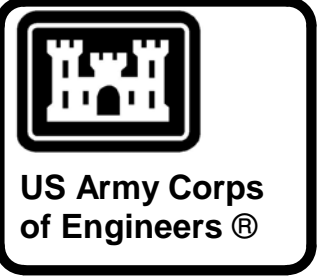
**2** ROOFTOP UPBLAST EXHAUST FAN - GREASE HOOD SERVICE  
NONE



**3** DIRECT FIRED MAKE-UP AIR UNIT  
NONE



**4** 100% OUTSIDE AIR HANDLING UNIT "OAHU-1"  
NONE



06-20-2022

MARK	DESCRIPTION	DATE

DESIGNED BY: J/LG	ISSUE DATE: 20 JUN 2022
DRAWN BY: J/LG	SOLICITATION NO.:
CHECKED BY: R/L	CONTRACT NO.:
SUBMITTED BY:	
SIZE: ANSI D	

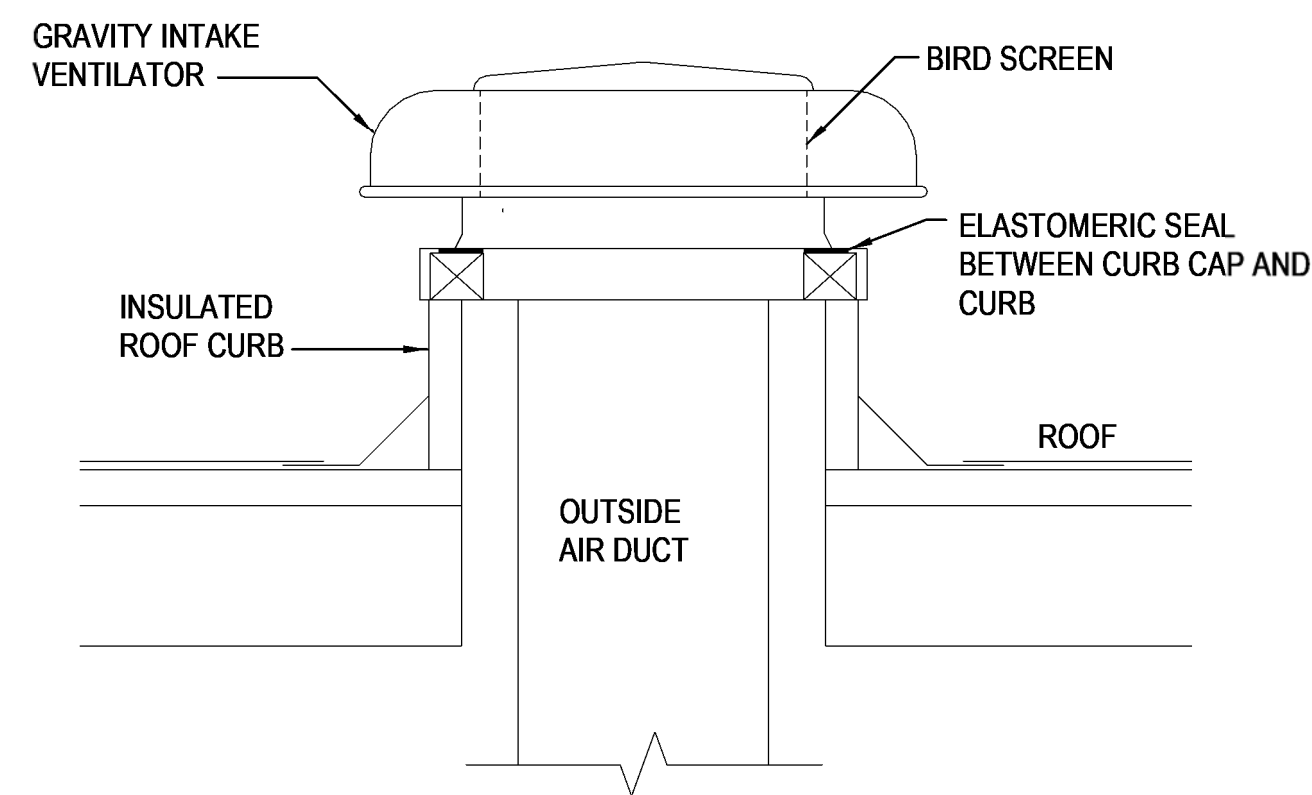
US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

**CROMWELL**  
1300 East 6th Street Little Rock, AR 72202  
501.872.2900 cromwell@conr.army.mil

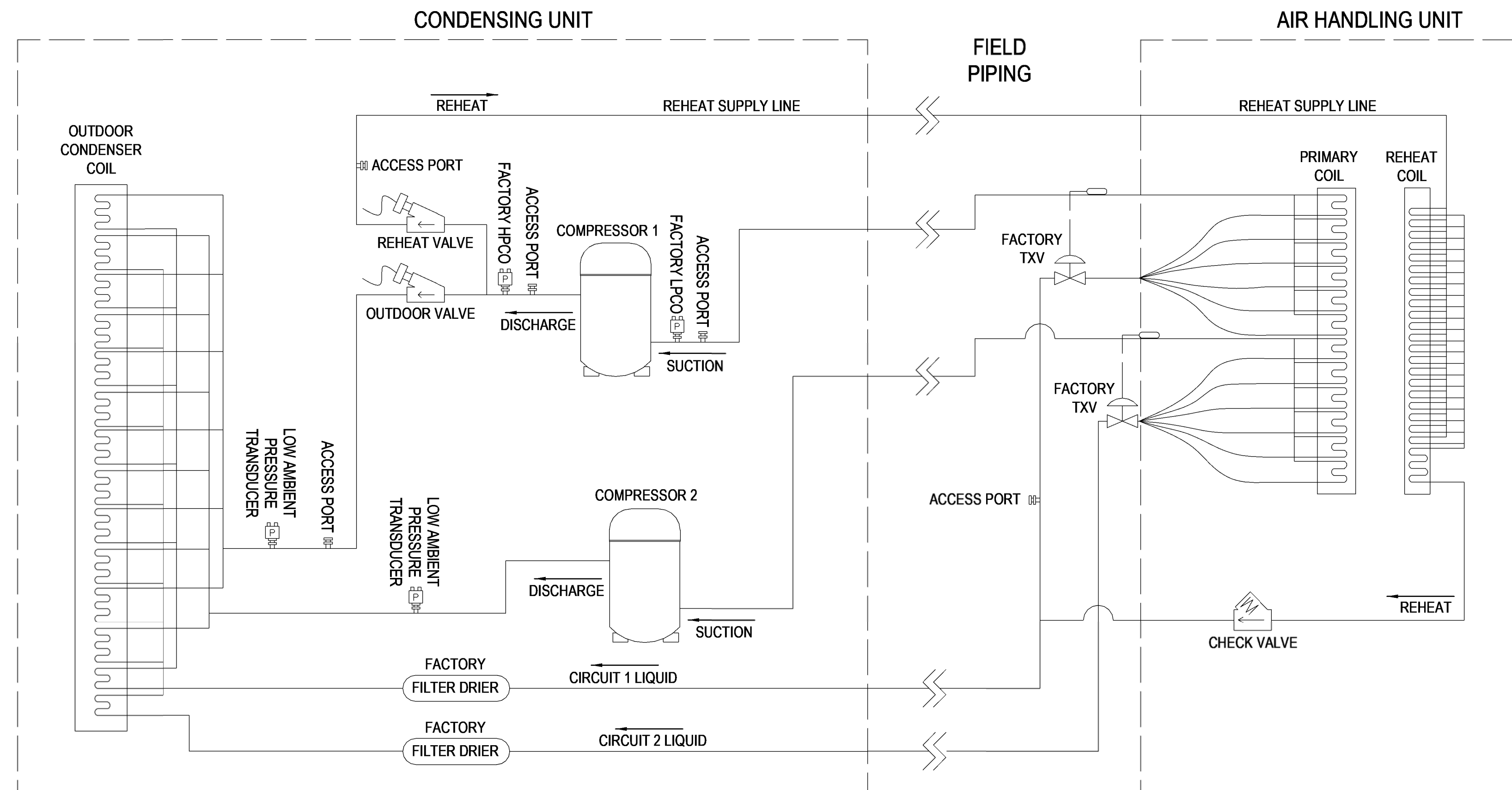
FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
HVAC DETAILS

SHEET ID  
**M-505**

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.

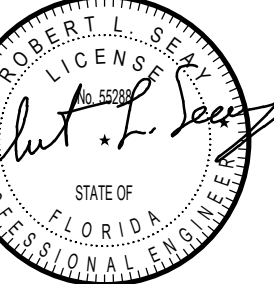


**1 GRAVITY INTAKE VENTILATOR**  
NONE



- NOTES:**
1. EVAPORATOR LAYOUT IS A GENERAL ILLUSTRATION. FIELD PROVIDED REFRIGERATION SPECIALTIES NOT SHOWN. REFER TO THE MANUFACTURER'S IOM AND APPLICATION GUIDE FOR COMPONENT AND PIPING REQUIREMENTS.
  2. REHEAT LIQUID LINE TO TEE INTO CONDENSER LIQUID LINE UPSTREAM OF TXV.

**2 OAHU-1/CU-1 REFRIGERANT PIPING DIAGRAM**  
NONE



06-20-2022

MARK	DESCRIPTION	DATE

DESIGNED BY: JLG	ISSUE DATE: 20 JUN 2022
DRAWN BY: JLG	SOLICITATION NO.:
CHECKED BY: RLS	CONTRACT NO.:
SUBMITTED BY:	
SIZE: 501.87x2.900	

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

**CROMWELL**

1300 East 6th Street Little Rock, AR 72202  
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FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
HVAC DETAILS

SHEET ID  
M-506

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.

### FANS

MARK	BLDG SERVED	SERVES	TYPE	SERVICE	TYPE	DRIVE/MOTOR	FAN DATA			MOTOR DATA			MAX SONES LEVEL	WEIGHT (LBS.)	CONTROL	REMARKS
							CFM	ESP	RPM	POWER	VOLTS	PH				
EF-1	PAL01	MENS LATRINE AND SHOWERS	ROOF DOWNBLAST	EXHAUST	CENTRIFUGAL	DIRECT / EC	520	0.25"	1,368	1/10 HP	120	1	5.9	50	BAS - TIME OF DAY	NOTES 1,7,8
EF-2	PAL01	WOMENS LATRINE AND SHOWERS / JAN	ROOF DOWNBLAST	EXHAUST	CENTRIFUGAL	DIRECT / EC	380	0.25"	1,556	1/10 HP	120	1	7.3	50	BAS - TIME OF DAY	NOTES 1,8
EF-3	PAL01	VAULT	ROOF DOWNBLAST	EXHAUST	CENTRIFUGAL	DIRECT / EC	150	0.125"	1,452	1/15 HP	120	1	3.3	50	BAS - THERMOSTAT	NOTES 1,8
EF-4	PAL01	MECHANICAL 17	ROOF DOWNBLAST	EXHAUST	PROPELLER	DIRECT / PSC	500	0.25"	1,267	1/4 HP	120	1	8.2	50	BAS - THERMOSTAT	NOTES 2,8
KEF-1	PAL01	KITCHEN GREASE HOOD	REFER TO THE KITCHEN VENTILATION EQUIPMENT SCHEDULES AND DETAILS ON SHEET M-605													
KEF-2	PAL01	KITCHEN HEAT/VAPOR HOOD	REFER TO THE KITCHEN VENTILATION EQUIPMENT SCHEDULES AND DETAILS ON SHEET M-606													
KEF-3	PAL01	SCULLERY DISHWASHER HOOD	REFER TO THE KITCHEN VENTILATION EQUIPMENT SCHEDULES AND DETAILS ON SHEET M-607													
PAL02-EF-1	PAL02	VEHICLE TAILPIPE EXHAUST SYSTEM	UTILITY SET BLOWER	EXHAUST	CENTRIFUGAL	BELT / PSC	1,600	4.0"	2,490	2 HP	208	3	34.0	200	WALL-MOUNTED STARTER	NOTES 3,6
PAL02-EF-2	PAL02	WORK BAY GENERAL EXHAUST	SIDEWALL PROPELLER	EXHAUST	PROPELLER	BELT / PSC	10,000	0.25"	748	1-1/2 HP	208	3	19.7	350	WALL-MOUNTED STARTER	NOTES 4,6
PAL02-EF-3	PAL02	BATTERY STORAGE	IN-LINE CABINET	EXHAUST	CENTRIFUGAL	BELT / PSC	200	0.25"	1,280	1/4 HP	120	1	4.2	25	CONTINUOUS OPERATION	NOTE 5

**NOTES:**

- BACKWARD INCLINED CENTRIFUGAL ALUMINUM WHEEL, ELECTRONICALLY COMMUTATED MOTOR, SPEED CONTROLLED BY EITHER A POTENTIOMETER DIAL MOUNTED AT THE MOTOR OR BY A 0-10 VDC SIGNAL; HEAVY GAUGE ALUMINUM MOTOR COVER, SHROUD, CURB CAP, AND LOWER WINDBAND; SHROUD SHALL BE DOWNBLAST, CURB CAP SHALL HAVE PRE-PUNCHED MOUNTING HOLES; DRIVE FRAME ASSEMBLIES SHALL BE MOUNTED ON VIBRATION ISOLATORS; INTEGRAL NEMA 4X DISCONNECT, FACTORY WIRED FROM FAN MOTOR TO JUNCTION BOX; INTEGRAL GALVANIZED STEEL BIRD SCREEN; 2-POSITION MOTORIZED BACKDRAFT DAMPER WITH MAXIMUM LEAKAGE RATE OF 3 CFM/SQ FT @ 1" ESP; 14" HIGH ROOF CURB.
- WHEEL TO BE DIE FORMED ALUMINUM BLADES RIVETED TO A STEEL HUB; MOTORS ARE PERMANENTLY LUBRICATED MOTOR, OPEN DRIP PROOF, HEAVY DUTY BALL BEARING TYPE MOUNTED ON VIBRATION ISOLATORS IN THE AIRSTREAM; ALUMINUM HOUSING/HOOD WITH RIGID INTERNAL SUPPORT STRUCTURE AND A BIRDSCREEN; FAN SHROUD CONSTRUCTED OF HEAVY GAUGE ALUMINUM, DOWNBLAST CONFIGURATION; VIBRATION ISOLATORS; ALUMINUM PRE-PUNCHED CURB CAP; INTEGRAL NEMA 4X DISCONNECT FOR POSITIVE ELECTRICAL SHUT-OFF, FACTORY WIRED FROM FAN MOTOR TO JUNCTION BOX; 2-POSITION MOTORIZED BACKDRAFT DAMPER WITH MAXIMUM LEAKAGE RATE OF 3 CFM/SQ FT @ 1" ESP; AND 14" HIGH ROOF CURB.
- POWDER COATED STEEL HOUSING, HOUSING AND BEARING SUPPORT CONSTRUCTED OF BOLTED FRAMEWORK, WITH OSHA COMPLIANT BELT GUARD OVER THE MOTOR PULLEY AND BELT(S); SINGLE WIDTH BACKWARD INCLINED CENTRIFUGAL TYPE FAN WHEEL; MOTOR TO BE NEMA T-FRAME, OPEN DRIP PROOF (ODP), DRIVE BELTS AND SHEAVES, MOVABLE MOTOR PLATE WITH ADJUSTMENT SCREWS FOR BELT TENSIONING OPERATIONS, FAN SHAFT BEARINGS SHALL BE HEAVY-DUTY GREASE LUBRICATED WITH GREASE FITTINGS; 2-POSITION MOTORIZED BACKDRAFT DAMPER WITH MAXIMUM LEAKAGE RATE OF 3 CFM/SQ FT @ 1" ESP.
- OPEN DRIP PROOF MOTOR, HEAVY DUTY BALL BEARING TYPE; FAN SHAFT SHALL BE GROUND AND POLISHED SOLID STEEL WITH CAST IRON PILLOW BLOCK BEARINGS WITH GREASE FITTINGS; GALVANIZED STEEL DRIVE FRAME; NEMA 1 DISCONNECT SWITCH FACTORY PRE-WIRED FROM MOTOR TO JUNCTION BOX; FULLY MACHINED CAST IRON PULLEY WITH STATIC FREE AND OIL RESISTANT BELT; FLUSH EXTERIOR WALL HOUSING CONSTRUCTED OF GALVANIZED STEEL TO INCLUDE OSHA APPROVED MOTOR GUARD; 2-POSITION MOTORIZED BACKDRAFT DAMPER WITH MAXIMUM LEAKAGE RATE OF 3 CFM/SQ FT @ 1" ESP; 45-DEGREE GALVANIZED STEEL TURNDOWN HOOD WITH BIRD SCREEN.
- BACKWARD INCLINED ALUMINUM CENTRIFUGAL WHEEL; EXPLOSION RESISTANT ENCLOSURE MOTOR, PERMANENTLY LUBRICATED, HEAVY DUTY BALL BEARING TYPE; SQUARE HOUSING DESIGN CONSTRUCTED OF HEAVY GAUGE GALVANIZED STEEL TO INCLUDE SQUARE DUCT MOUNTING COLLAR; HOUSING AND BEARING SUPPORTS SHALL BE CONSTRUCTED OF HEAVY GAUGE BOLTED AND WELDED STEEL; HOUSING SUPPORTS WILL BE CONSTRUCTED OF STRUCTURAL STEEL WITH FORMED FLANGES; DRIVE FRAME IS WELDED STEEL AND PIVOTING MOTOR PLATE WITH ADJUSTING SCREWS FOR BELT TENSIONING OPERATIONS; NEMA 1 DISCONNECT WIRED FROM FAN MOTOR TO JUNCTION BOX INSTALLED WITHIN MOTOR COMPARTMENT; CAST TYPE, KEYED PULLEY, SECURELY ATTACHED TO WHEEL AND MOTOR SHAFTS, ADJUSTABLE FOR FINAL SYSTEM BALANCING; STATIC FREE AND OIL RESISTANT GRIP NOTCH BELT; TWO SIDED ACCESS PANELS, LOCATED PERPENDICULAR TO THE MOTOR MOUNTING PANEL; THREE-SIDED FABRICATED STEEL BELT GUARD COVERS DRIVE AND MOTOR; EXTENDED LUBE LINES; AND RESTRAINED SPRING MOUNTED ISOLATORS.
- MAGNETIC MOTOR STARTERS FOR 3 PHASE MOTORS SHALL BE ENCLOSED IN A 16 GAUGE STEEL, INDUSTRIAL POLYURETHANE COATED ENCLOSURE WITH THE APPROPRIATE ENVIRONMENTAL RATING. STARTERS SHALL CONSIST OF A HORSEPOWER RATED MAGNETIC CONTACTOR, A MINIMUM OF ONE NORMALLY OPEN AND ONE NORMALLY CLOSED AUXILIARY CONTROL CONTACTS AND SOLID-STATE ELECTRONIC OVERLOAD RELAY. OVERLOAD RELAY SHALL PROTECT ALL THREE PHASES WITH AN ADJUSTABLE CURRENT SETTING OF 1-40 AMPS TO ALLOW FIELD ADJUSTMENT FOR SPECIFIC MOTOR FULL LOAD AMPS (FLA). OVERLOAD RELAY SHALL PROVIDE PHASE FAILURE, PHASE LOSS, CYCLE FAULT AND STALL PROTECTION. OVERLOAD MUST ALSO MONITOR MOTOR INRUSH CURRENT ON STARTUP AND IF DETECTED FLA DOES NOT REACH NOMINAL RUNNING AMPS WITHIN 10 SECONDS, TRIP AND STOP THE MOTOR. PROVIDE FIELD SELECTABLE MANUAL OR AUTOMATIC RESET OF OVERLOAD AS WELL AS RESET PUSHBUTTON ON THE STARTER COVER TO RESTORE NORMAL OPERATION AFTER A TRIP OR FAULT CONDITION. IN THE EVENT OF A POWER FAILURE, STARTER SHALL RESTART IN LAST KNOWN OPERATING MODE. PROVIDE HAND-OFF-AUTO OPERATION SWITCH WITH LED PILOT LIGHT INDICATORS FOR HAND, OFF, AUTO, RUN AND OVERLOAD CONDITIONS. ALL PILOT DEVICES SHALL BE WATER TIGHT AND DUST TIGHT. ALL STARTERS MUST BE PROVIDED WITH A UNIVERSAL POWER SUPPLY CAPABLE OF A 200 TO 600 VOLT INPUT RANGE. ENCLOSED COMBINATION STARTERS SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE. EACH DISCONNECT SHALL BE OF THE MOTOR CIRCUIT PROTECTOR TYPE. ALL DISCONNECTS SHALL INCLUDE A LOCK-OUT MECHANISM WHEN IN THE OFF POSITION. DAMPER INTERLOCK AND 24VDC ACTUATOR CONTROL MUST BE AVAILABLE WITHIN THE STARTER ENCLOSURE. THE STARTER MUST BE ABLE TO PROVIDE A VOLTAGE OUTPUT TO OPERATE THE ACTUATOR TO OPEN THE DAMPER OR VALVE WITHOUT CLOSING THE MOTOR CIRCUIT. THE STARTER WILL ONLY CLOSE THE MOTOR CIRCUIT AND START THE MOTOR AFTER IT HAS RECEIVED A CONTACT CLOSURE FROM A LIMIT OR END SWITCH CONFIRMING THE DAMPER POSITION. IN THE EVENT OF A POWER FAILURE, STARTER SHALL ALSO BE CAPABLE OF RESTART WITH 10 SECOND DELAY, OR RESTART IN "OFF" MODE. STARTER MUST CONTAIN A NORMALLY OPEN CONTACT WHICH CLOSES WHEN AN OVERLOAD TRIP CONDITION OCCURS. THE STARTER SHALL BE UL LISTED.
- PROVIDE A TRANSITION CURB WHERE THE CURB CAP ON THE NEW FAN IS SMALLER THAN THE EXISTING CURB OR GREATER THAN 1/2" LARGER IN EITHER DIMENSION THAN THE EXISTING CURB. TRANSITION CURB WILL BE FACTORY FABRICATED AND INSULATED. TRANSITION CURB SHOP DRAWINGS SHALL BE SUBMITTED WITH EACH FAN WHERE THEY ARE REQUIRED.
- PROVIDE MANUFACTURER'S RECOMMENDED HIGH WIND CONSTRUCTION AND ACCESSORIES. SUBMIT DETAILS WITH SHOP DRAWINGS.

### UNIT HEATERS - GAS

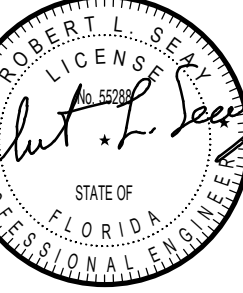
MARK	BLDG SERVED	LOCATION	FAN TYPE	CFM	MOTOR (HP)	FUEL	INPUT (MBH)	OUTPUT (MBH)	ELECTRICAL		REMARKS
									VOLTS	PH	
PAL02-GUH-1	PAL02	MAINT. BAY	PROP.	1,345	1/30	NAT. GAS	105.00	87.15	120	1	SEE NOTES
PAL02-GUH-2	PAL02	MAINT. BAY	PROP.	1,345	1/30	NAT. GAS	105.00	87.15	120	1	SEE NOTES

**NOTES:**

- ALUMINIZED STEEL HEAT EXCHANGER
- ALUMINIZED STEEL BURNER RACK WITH STAINLESS STEEL INSERT
- SPARK IGNITED, INTERMITTENT SAFETY PILOT WITH ELECTRONIC FLAME SUPERVISION WITH TIMED LOCKOUT
- SINGLE-STAGE COMBINATION GAS VALVE
- INTERNAL OVERLOAD FAN MOTOR PROTECTION
- FAN AND LIMIT SAFETY CONTROLS
- BLOCKED VENT SHUT-OFF SAFETY
- 24V CONTROL TRANSFORMER WITH 24V TERMINAL STRIP
- INDIVIDUALLY ADJUSTABLE HORIZONTAL LOUVERS
- FULL FAN SAFETY GUARD
- BOTTOM BURNER ACCESS
- HORIZONTAL OR VERTICAL VENT OUTLET
- 10-YEAR NON-PRORATED WARRANTY ON HEAT EXCHANGERS, BURNERS, AND FLUE COLLECTION BOX
- 5-YEAR NON-PRORATED WARRANTY ON ALL MECHANICAL AND ELECTRICAL COMPONENTS
- SUSPEND FROM ROOF STRUCTURE IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS
- PROVIDE TYPE-B LISTED FLUE AND CONNECT TO THE EXISTING FLUE PIPING.



US Army Corps of Engineers®



06-20-2022

MARK	DESCRIPTION	DATE
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MARK	DESCRIPTION	DATE
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DESIGNED BY: JLG	ISSUE DATE: 20 JUN 2022
DRAWN BY: JLG	SOLICITATION NO.:
CHECKED BY: RLS	CONTRACT NO.:
SUBMITTED BY: CROMWELL A/E	

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

1300 East 6th Street Little Rock, AR 72202  
501.872.2900  
cromwell.com LANSID

FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
HVAC SCHEDULES

SHEET ID  
M-601

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.

LOUVERS

Table with columns: MARK, EXISTING/NEW, BLDG. SERVED, SERVES, DESCRIPTION, TYPE, CFM, FREE AREA (SQ FT), FREE AREA (%), VELOCITY AT DESIGN CFM (FPM), BPWP (FPM), MAX. S.P., SIZE W/H (IN), MATERIAL, FINISH, REMARKS. Includes rows L-1, L-2, PAL02-L-1, PAL02-L-2, PAL02-L-3 and a NOTES section.

GRAVITY VENTILATORS

Table with columns: MARK, BLDG. SERVED, SERVES, TYPE, CFM, S.P., THROAT DIA (IN), MATERIAL, FINISH, REMARKS. Includes row GIV-1 and a NOTES section.

AIR HANDLING UNITS

Table with columns: MARK, BLDG. SERVED, SERVES, DRIVE, S.A. (CFM), O.A. (CFM), ESP, FAN HP, TOT. CAP. (BTUH), SENS. CAP. (BTUH), EDB (F), EWB (F), AMB (F), LDB (F), LWB (F), CAPACITY (BTUH), AMB (F), AUX. HEAT (KW @ 208V), VOLTAGE, MCA, BKR, REMARKS. Includes row AHU-1 and a detailed NOTES section.

HEAT PUMP UNITS

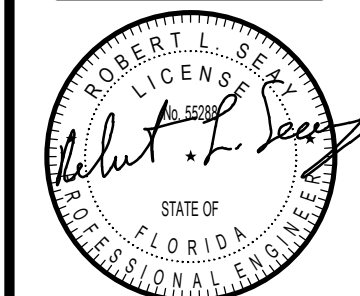
Table with columns: MARK, BLDG. SERVED, SERVES, TOT. CAP. (BTUH), SENS. CAP. (BTUH), AMB (F), EER, TOT. CAP. (BTUH), AMB (F), COP, VOLTAGE, MCA, BKR, REMARKS. Includes row HP-1 and a detailed NOTES section.

CONDENSING UNITS

Table with columns: MARK, BLDG. SERVED, SERVES, TOT. CAP. (BTUH), SENS. CAP. (BTUH), AMB (F), EER, VOLTAGE, MCA, BKR, REMARKS. Includes row CU-1 and a detailed NOTES section.

AIR DEVICE

Table with columns: MARK, DESCRIPTION, SIZE, MOUNTING, MATERIAL, FINISH, REMARKS. Includes rows A-F and 1-9, and a NOTES section. Includes a diagram of an air device with labels A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.



06-20-2022

Table with columns: MARK, DESCRIPTION, DATE. Includes a vertical scale on the right side.

Professional information block including: DESIGNED BY, DRAWN BY, CHECKED BY, SUBMITTED BY, ISSUE DATE, SOLICITATION NO., CONTRACT NO., US ARMY CORPS OF ENGINEERS, CHARLESTON DISTRICT, CHARLESTON, SOUTH CAROLINA, CROMWELL, 1300 East 6th Street, Little Rock, AR 72202, 501.872.2900, cromwell@con.lansib

Project information block including: FLO27 HVAC-ELEC-PLUMB RESET, PALATKA, FL, HVAC SCHEDULES

SHEET ID M-602

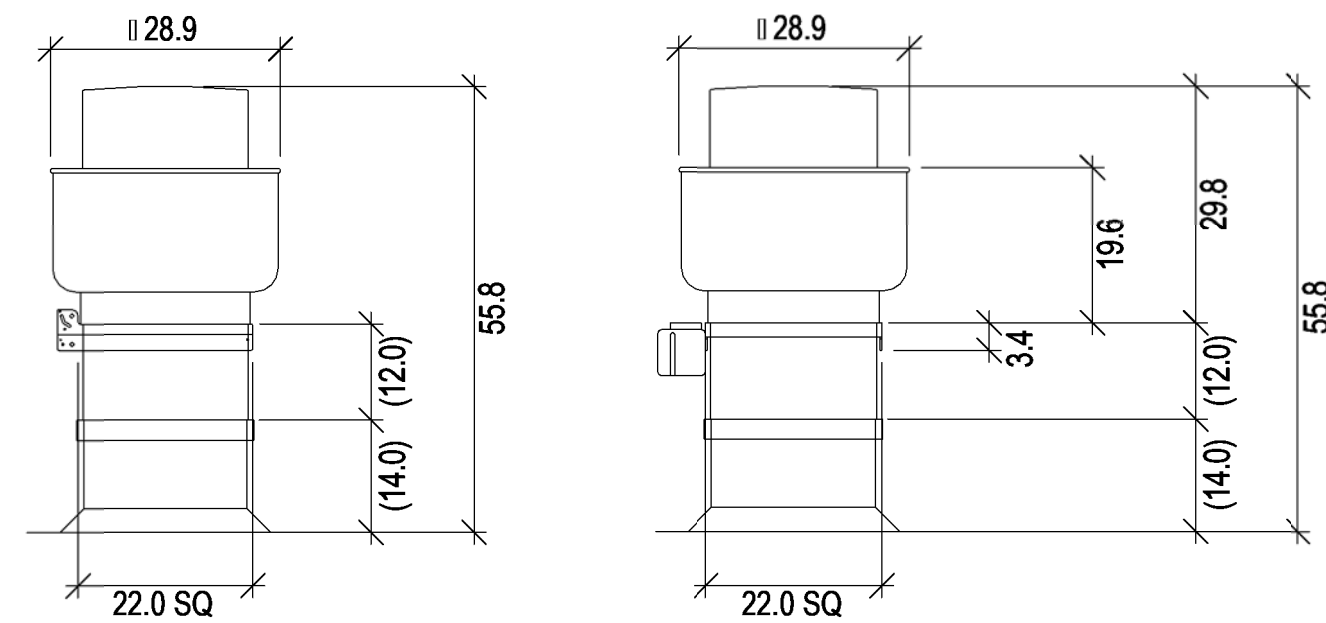
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FAN INFORMATION						MOTOR INFORMATION					
MARK	VOLUME (CFM)	TOTAL EXTERNAL SP (IN WG)	FAN RPM	OPERATING POWER (HP)	WEIGHT (LB.)	SIZE (HP)	VIC/P	ENCLOSURE	MOTOR RPM	WINDINGS	FLA
KEF-1	1,750	0.788	1,014	0.42	105	0.5	208/60/1	OP	1725	1	5.4

KEF-1: SELECTED OPTIONS AND ACCESSORIES
Standard Curb Cap Size - 22 Square
UL/cUL 705 Listed - "Power Ventilators" Switch, NEMA-1, Toggle, Shipped with Unit
Roof Curb and Curb Extension-Galv.
Hinge, Factory Installed
Hinge Latch, Factory Installed
Foam Curb Seal (Factory Applied)
Hood Hasps
Grease Trap



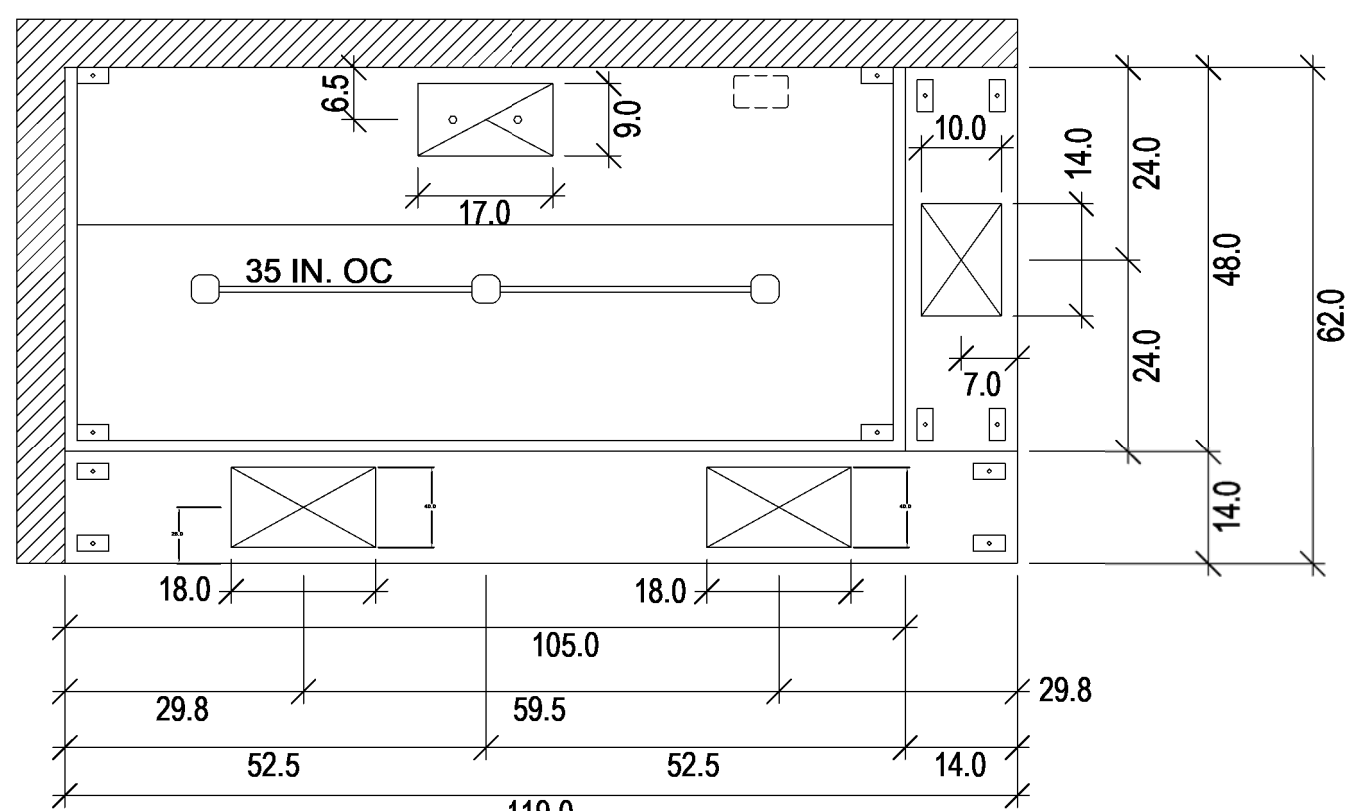
HOOD NO.	MARK	HOOD DIMENSIONS (IN.)			HOOD CONSTR.	COOKING LOAD / DUTY RATING	EXHAUST COLLAR(S)				MUA CFM	TOTAL WEIGHT LBS.	
		LENGTH	WIDTH	HEIGHT			WIDTH	LENGTH	CFM	S.P.			
1	KH-1 (GREASE HOOD)	105	48	24	430 SS WHERE EXPOSED	HEAVY	1750	9	17	1750	0.538	1650	290.99

HOOD NO.	MARK	LIGHTING DETAILS			GREASE FILTRATION DETAILS			UTILITY CABINET(S)					
		FIXTURE TYPE BULB / LAMP INFO	QTY	FOOT CANDLES	TYPE / MATERIAL	QTY	SIZE (IN.)	LOCATION	FIRE SYSTEM				
1	KH-1 (GREASE HOOD)	INCANDESCENT (GLOBE) 100W A19 (BULBS NOT INCL.)	3	41.76	EXTRACTOR STAINLESS STEEL	4	16	20	WALL	WET CHEMICAL TYPE	2.75		

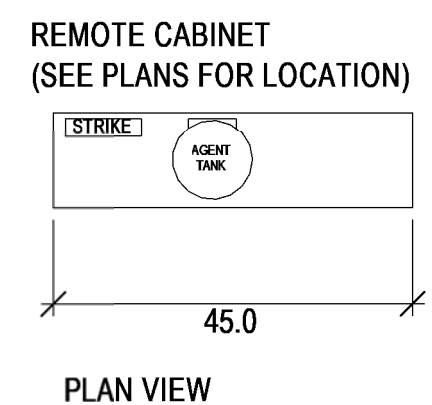
HOOD NO.	MARK	POS.	TYPE	SIZE (IN.)			INSULATED	DAMPER(S)	TOTAL CFM	COLLARS							
				L	W	H				TYPE	MOUNTING	QTY	W	L	CFM	S.P.	VEL.
1	KH-1 (GREASE HOOD)	FRONT	ASP	119	14	10	NO	NO	1200	MUA	FACTORY	2	10	18	600	0.07	480
1	KH-1 (GREASE HOOD)	RIGHT	ASP	48	14	10	NO	NO	450	MUA	FACTORY	1	10	14	450	0.06	463

**HOOD OPTIONS**

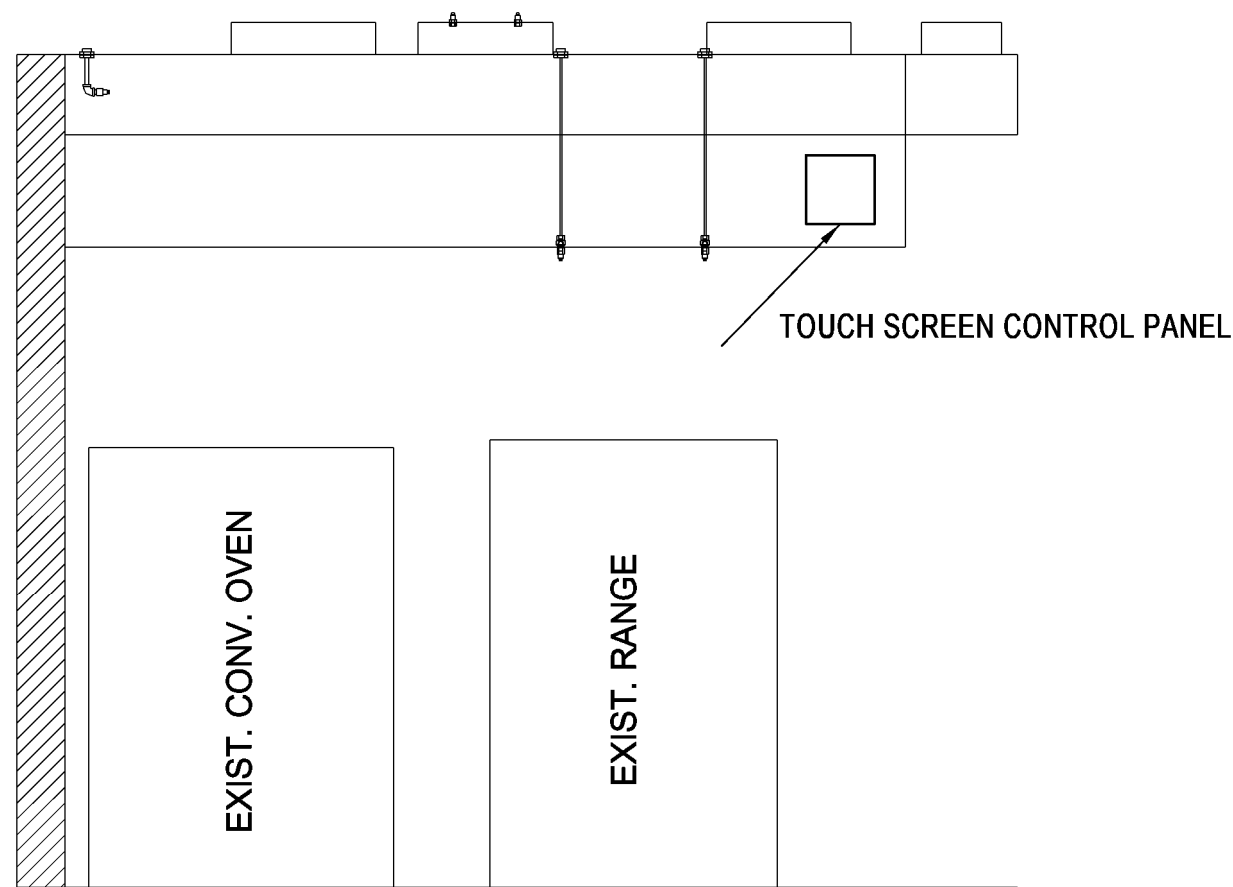
- UL 710 LISTED W/ OUT EXHAUST FIRE DAMPER - UL #MH11726
- FACTORY MOUNTED EXHAUST COLLAR(S)
- WALL UTILITY CABINET 24 IN HIGH 45 IN LONG 12 IN WIDE
- PERFORMANCE ENHANCING LIP (PEL) TECHNOLOGY
- STANDING SEAM CONSTRUCTION
- VARIABLE VOLUME CONTROL WITH AUTO-ON OPERATION VIA FACTORY SUPPLIED SENSORS
- HOOD VENTILATION (KEF-1 AND MAU-1) CONTROL SHALL INCLUDE BACNET INTEGRATION FOR EMERGENCY STOP. REFER TO CONTROLS DRAWINGS.



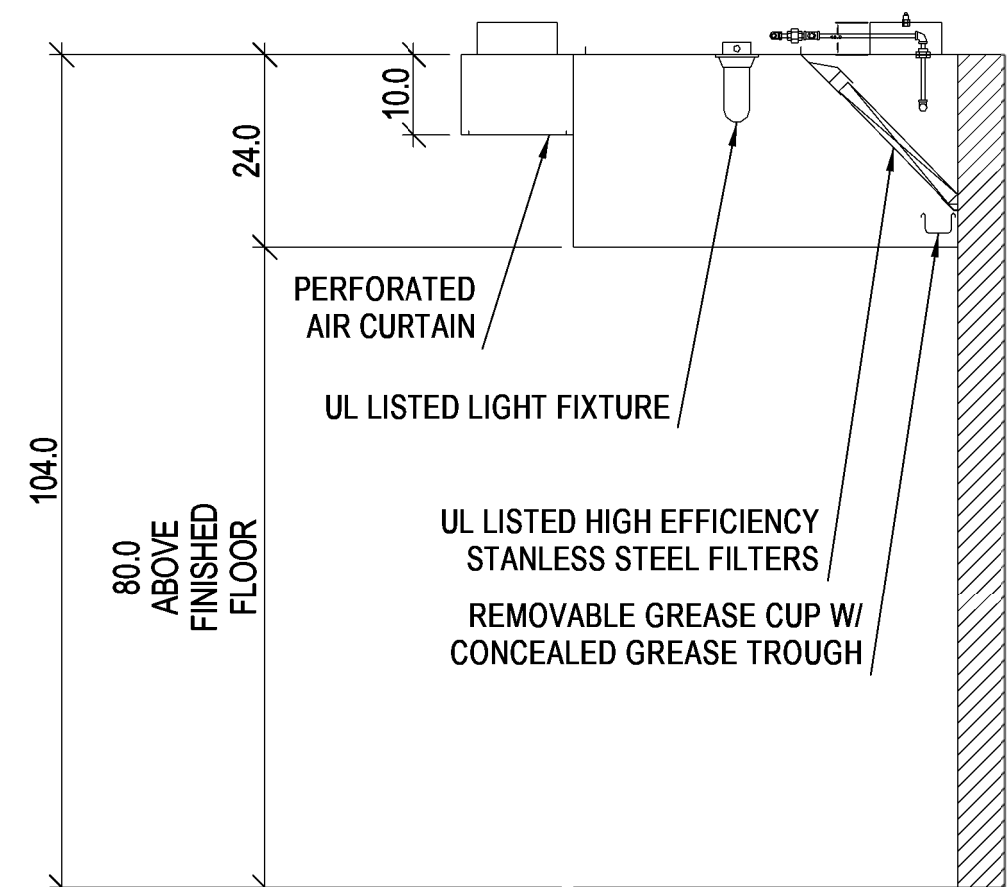
MARK: KH-1 (GREASE HOOD) - SECTION 1  
PLAN VIEW



PLAN VIEW



MARK: KH-1 (GREASE HOOD) - SECTION 1  
ELEVATION VIEW

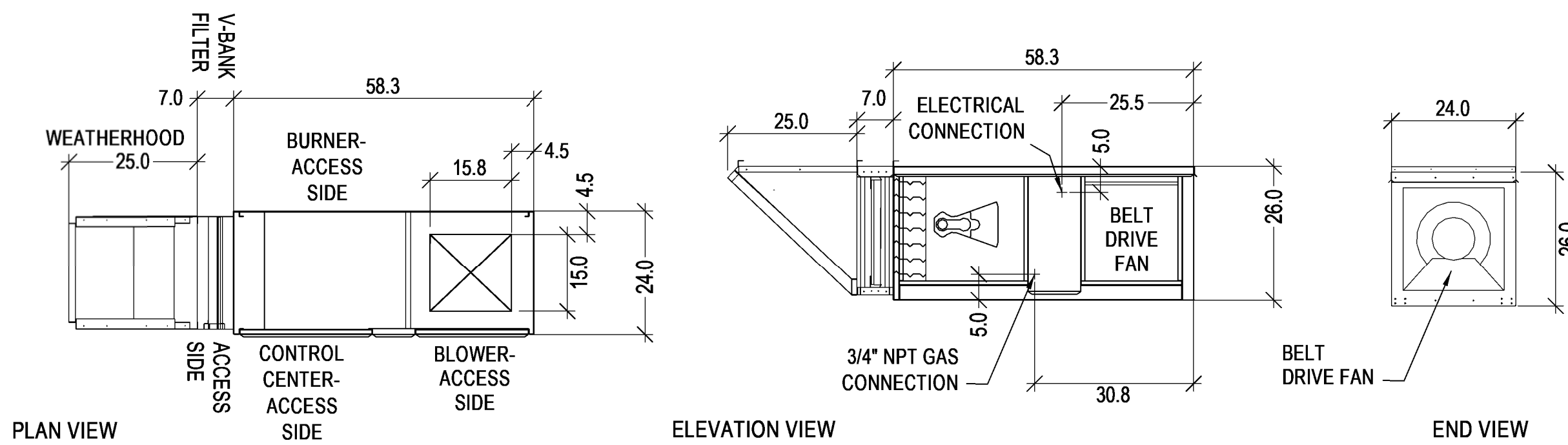


MARK: KH-1 (GREASE HOOD)  
SECTION VIEW

Tempered Make-Up Air Unit											Mark: MAU-1		
Volume	External SP	Total SP	FRPM	Operating Power	Weight								
1,650 CFM	0.57 in. wg	1.691 in. wg	1685	0.97 hp	448 lb								
Motor Information				MCA		MOP							
Size	VIC/P	Enclosure	Motor with Shaft Grounding	Motor RPM	Windings								
1 1/2 hp	208/60/3	ODP	No	1725	1	8.9		15					
Heating													
Type	Gas Type	Temperature			Energy			Connection Gas	Gas Pressure	Control Access			
		Winter DB	Max Δ	Max LAT	Input	Output	Efficiency						
Direct Gas	Natural	33.0 F	37.0 F	70.0 F	71.7 MBH	65.9 MBH	92%	3/4"	1/2 PSI	11a			
Outlet Sound Power By Octave Band													
62.5	125	250	500	1000	2000	4000	8000	LwA		dBa	Sones		
79.1	77.4	81	75.5	64.7	55.8	49.8	48.8	76.1		65.1	13.1		

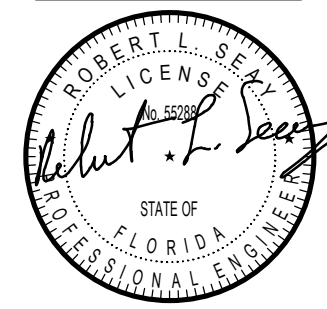
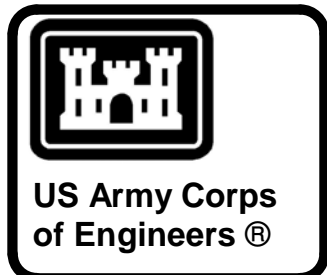
**OPTIONS AND ACCESSORIES**

- Air Flow Arrangement: Outdoor Air Only
- Weatherhood: Aluminum Mesh, 16x20x2 - (2)
- Filter Section: MERV 8, 20x20x2 - (1)
- Damper: Inlet
- Outdoor Air Intake Position: End
- Discharge Position: Bottom
- Coating: Baked Enamel
- Insulation: Double Wall - Heat Source On
- Supply Fan Control: VFD
- VFD Control: Variable Volume
- Access Side: Right-Hand
- Control Center
- Heat Inlet Air Sensor
- Dirty Filter Switch
- Remote Panel: Kitchen (ships loose)
- Unit Controls: Remote Panel
- Temperature Control: Discharge
- Direct gas - 25:1 modulating, stainless steel hx
- Approvals: ETL
- FM Compliant
- Flame Sensing: Flame Rod
- Insulated Roof Curb



1 KITCHEN VENTILATION SYSTEM - "KH-1", "KEF-1", AND "MAU-1"

NONE



06-20-2022

DATE	DESCRIPTION

ISSUE DATE: 20 JUN 2022	SOLICITATION NO.:	CONTRACT NO.:
DESIGNED BY: JLG	DRAWN BY: JLG	CHECKED BY: RLS
SUBMITTED BY:		SIZE: 501.87x2.900

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

**CROMWELL**

1300 East 6th Street Little Rock, AR 72202  
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FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL

KITCHEN VENTILATION SCHEDULES AND DETAILS

SHEET ID  
M-605

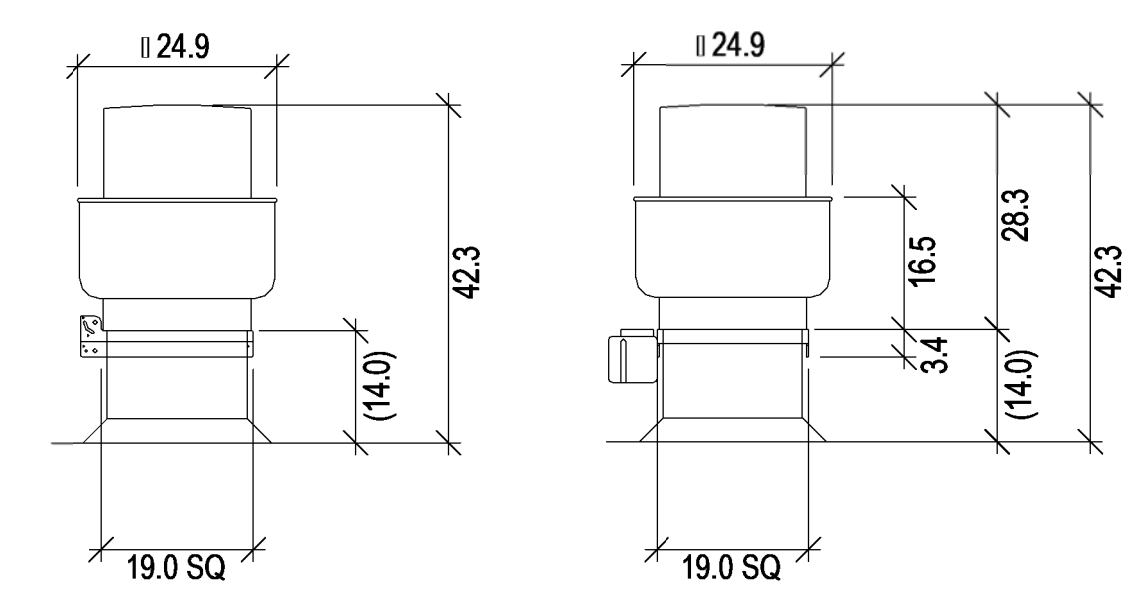
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**Belt Drive Upblast Centrifugal Roof Exhaust Fan**

MARK INFORMATION		FAN INFORMATION					MOTOR INFORMATION					
MARK	VOLUME (CFM)	TOTAL EXTERNAL SP (IN WG)	FAN RPM	OPERATING POWER (HP)	WEIGHT (LB.)	SIZE (HP)	V/C/P	ENCLOSURE	MOTOR RPM	WINDINGS	FLA	
KEF-2	1,275	0.535	1,346	0.25	75	0.25	208/60/1	OP	1725	1	3.2	

**KEF-2 : SELECTED OPTIONS AND ACCESSORIES**

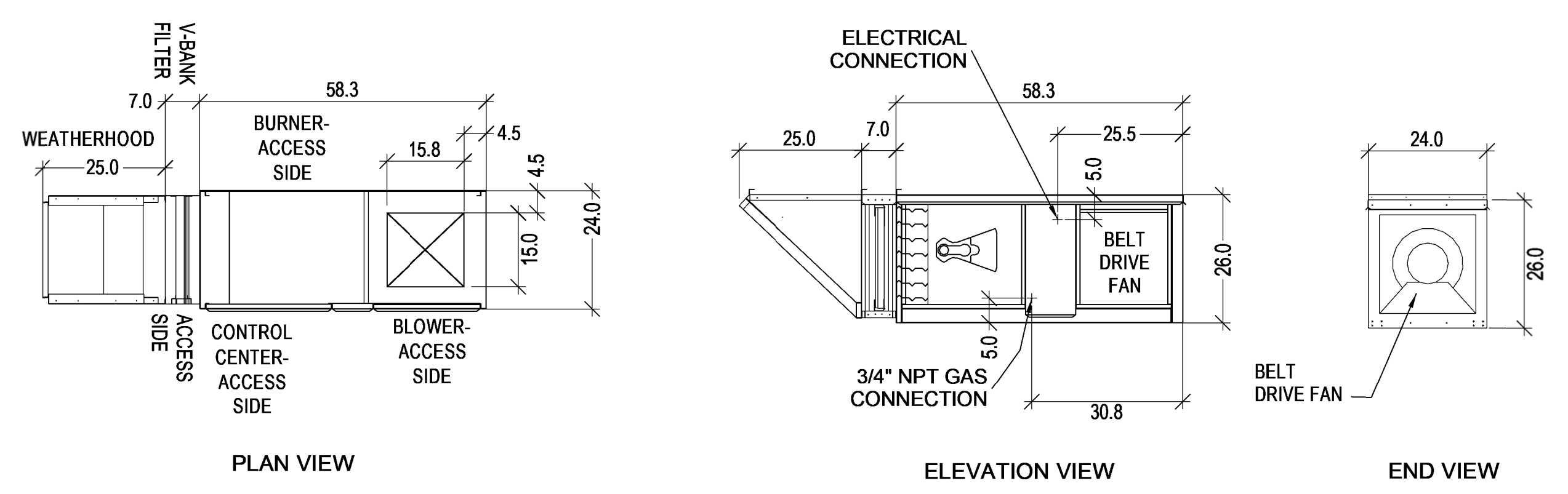
- Standard Curb Cap Size - 19 Square
- UL/cUL 705 Listed - "Power Ventilators"
- Switch, NEMA-1, Toggle, Shipped with Unit
- Hinge, Factory Installed
- Hinge Latch, Factory Installed
- Foam Curb Seal (Factory Applied)
- Hood Hasps
- Grease Trap
- Roof Curb



EQUIPMENT SCHEDULE										
<b>Tempered Make-Up Air Unit</b>					<b>Mark: MAU-2</b>					
Volume		External SP		Total SP		FRPM		Operating Power		Weight
1,200 CFM		0.59 in. wg		1.48 in. wg		1574		0.65 hp		448 lb
<b>Motor Information</b>										
Size	V/C/P	Enclosure	Motor with Shaft Grounding	Motor RPM	Windings	MCA		MOP		
1 hp	115/60/1	ODP	No	1725	1	21.3		35		
<b>Heating</b>										
Type	Gas Type	Temperature			Energy			Connection Gas	Building Gas Pressure	Control Access
		Winter DB	Max Δ	Max LAT	Input	Output	Efficiency			
Direct Gas	Natural	33.0 F	37.0 F	70.0 F	52.1 MBH	47.9 MBH	92%	3/4"	1/2 PSI	11a

**OPTIONS AND ACCESSORIES**

- Air Flow Arrangement: Outdoor Air Only
- Weatherhood: Aluminum Mesh, 16x20x2 - (2)
- Filter Section: MERV 8, 20x20x2 - (1)
- Damper: Inlet
- Outdoor Air Intake Position: End
- Discharge Position: Bottom
- Coating: Baked Enamel
- Insulation: Double Wall - Heat Source On
- Supply Fan Control: Vari-Green ECM
- Vari-Green Control: Dial on Motor
- Access Side: Right-Hand Control Center
- Heat Inlet Air Sensor
- Dirty Filter Switch
- Unit Controls: Terminal Strip
- Temperature Control: Discharge
- Direct Gas - 25:1 Modulating, stainless steel hx
- Approvals: ETL
- FM Compliant
- Flame Sensing: Flame Rod
- Ignition Control: Pilot
- Insulated Roof Curb



**HOOD INFORMATION**

HOOD NO.	MARK	HOOD DIMENSIONS (IN.)			HOOD CONSTR.	TOTAL CFM	EXHAUST COLLAR(S)				MUA CFM	TOTAL WEIGHT LBS.	SECTION LOCATION
		LENGTH	WIDTH	HEIGHT			WIDTH	LENGTH	CFM	S.P.			
1	KH-2 (HOT WELLS)	102.0	36	24	430 SS 100%	1275	12	16	1275	0.35	1200	144	SINGLE

**HOOD INFORMATION**

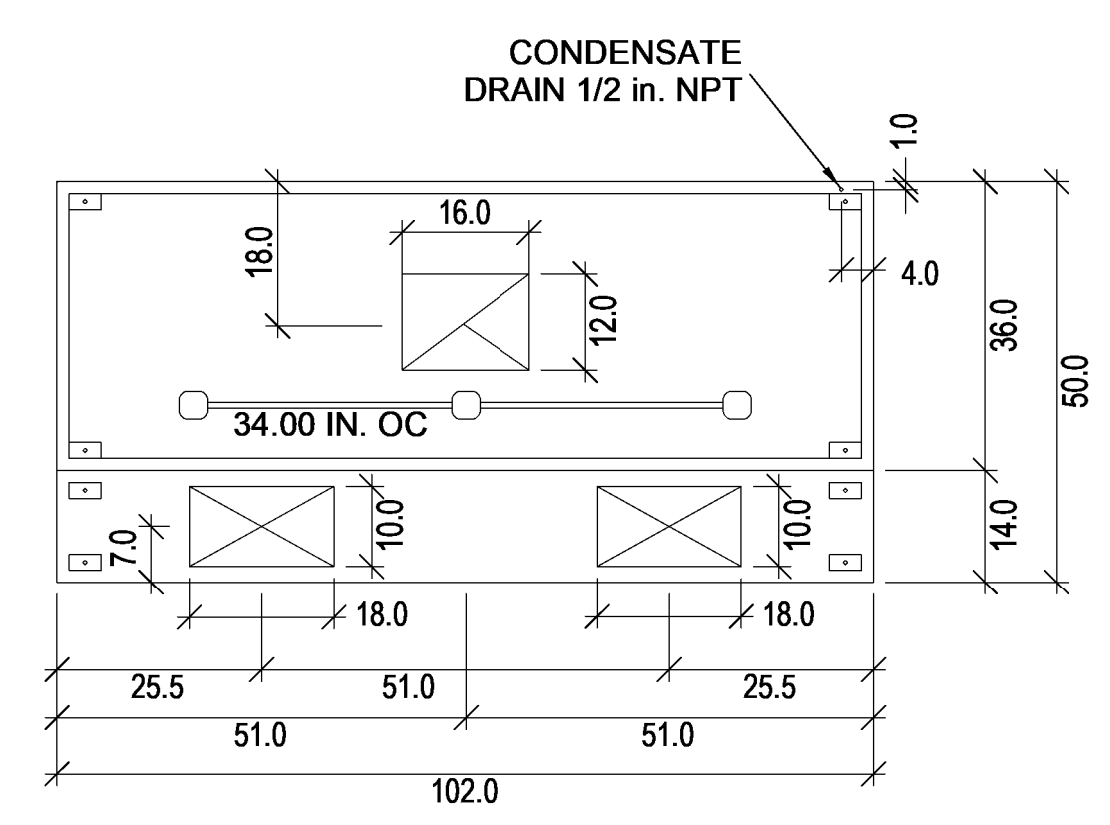
HOOD NO.	MARK	LIGHTING DETAILS		
		FIXTURE TYPE BULB / LAMP INFO	QTY	FOOT CANDLES
1	KH-2 (HOT WELLS)	INCANDESCENT (GLOBE) 100W A19 (BULBS NOT INCL.)	3	41.85

**SUPPLY PLENUM INFORMATION**

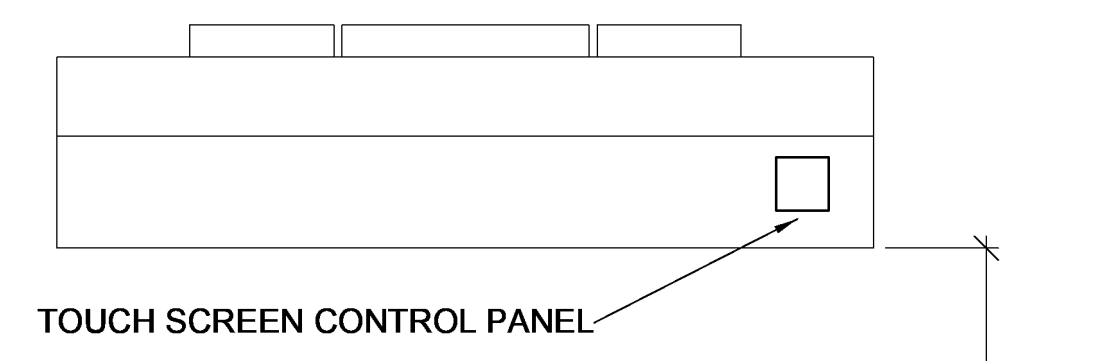
HOOD NO.	MARK	POS.	TYPE	SIZE (IN.)			TOTAL CFM	COLLARS							
				L	W	H		TYPE	MOUNTING	QTY	W	L	CFM	S.P.	VEL.
1	KH-2 (HOT WELLS)	FRONT	ASP	102	14	10	1200	MUA	FACTORY	2	10	18	600	0.09	480

**HOOD OPTIONS**

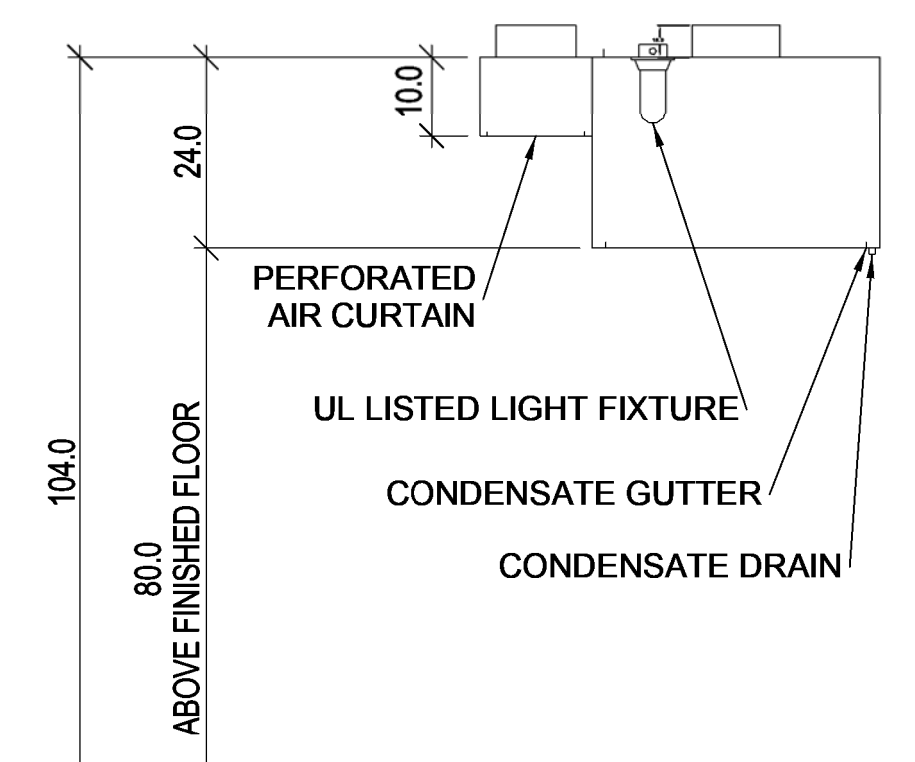
- FACTORY MOUNTED EXHAUST COLLAR(S)
- STANDING SEAM CONSTRUCTION
- HOOD VENTILATION (KEF-2 AND MAU-2) CONTROL SHALL INCLUDE BACNET INTEGRATION FOR EMERGENCY STOP. REFER TO CONTROLS DRAWINGS.



MARK: KH-2 (HOT WELLS) - SECTION 1 PLAN VIEW



MARK: KH-2 (HOT WELLS) - SECTION 1 ELEVATION VIEW



MARK: KH-2 (HOT WELLS) SECTION VIEW

**US Army Corps of Engineers**

ROBERT L. L. SEAN  
LICENSED PROFESSIONAL ENGINEER  
STATE OF FLORIDA  
06-20-2022

ISSUE DATE:	SOLUTION NO.:	CONTRACT NO.:
20 JUN 2022		

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUBMITTED BY:
JLG	JLG	RLS	ANS/D

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

**CROMWELL**  
1300 East 6th Street Little Rock, AR 72202  
501.872.2900

**FLO27 HVAC-ELEC-PLUMB RESET**  
PALATKA, FL

KITCHEN VENTILATION SCHEDULES AND DETAILS

SHEET ID

**M-606**

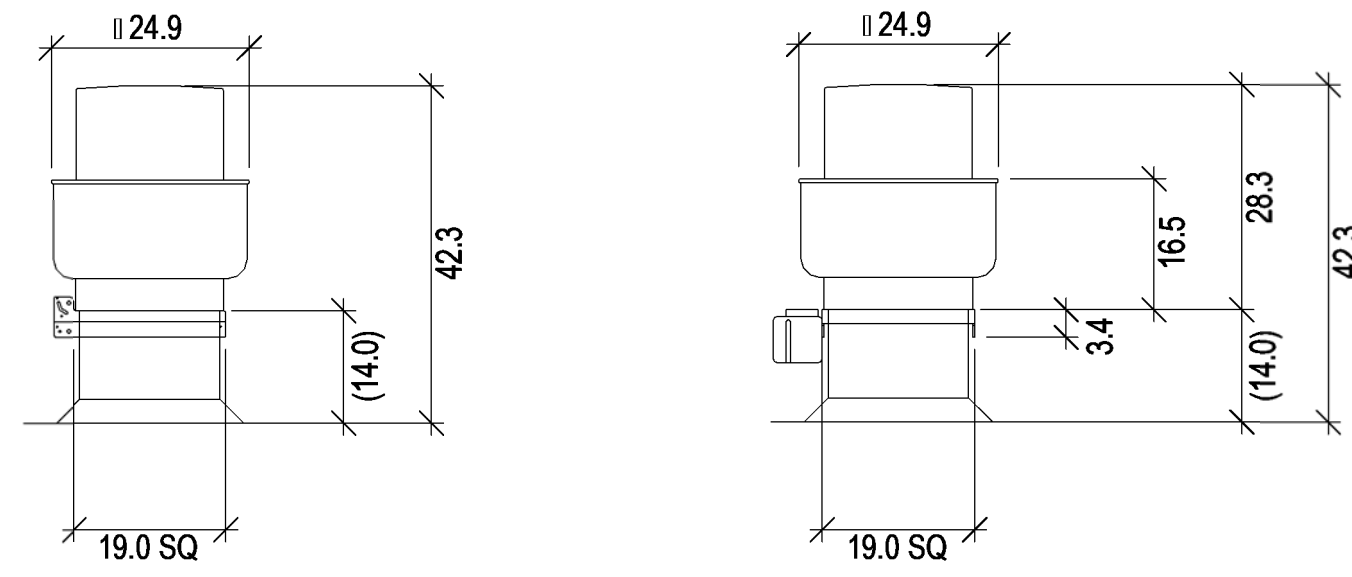
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Belt Drive Upblast Centrifugal Roof Exhaust Fan

MARK INFORMATION		FAN INFORMATION					MOTOR INFORMATION					
MARK	VOLUME (CFM)	TOTAL EXTERNAL SP (IN WG)	FAN RPM	OPERATING POWER (HP)	WEIGHT (LB.)	SIZE (HP)	V/C/P	ENCLOSURE	MOTOR RPM	WINDINGS	FLA	
KEF-3	450	0.534	1,200	0.1	74	0.25	208/60/1	OP	1725	1	3.2	

KEF-3 : SELECTED OPTIONS AND ACCESSORIES

- Standard Curb Cap Size - 19 Square
- UL/cUL 705 Listed - "Power Ventilators"
- Switch, NEMA-1, Toggle, Shipped with Unit
- Hinge, Factory Installed
- Hinge Latch, Factory Installed
- Foam Curb Seal (Factory Applied)
- Hood Hasps
- Grease Trap
- Roof Curb and Curb Extension-Galv.

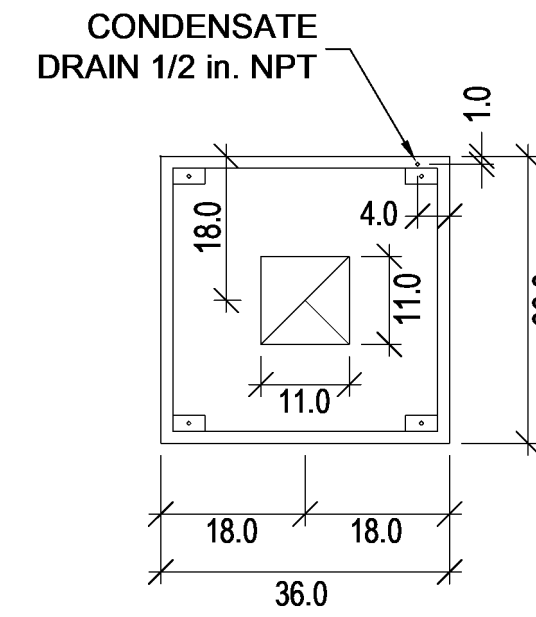


HOOD INFORMATION

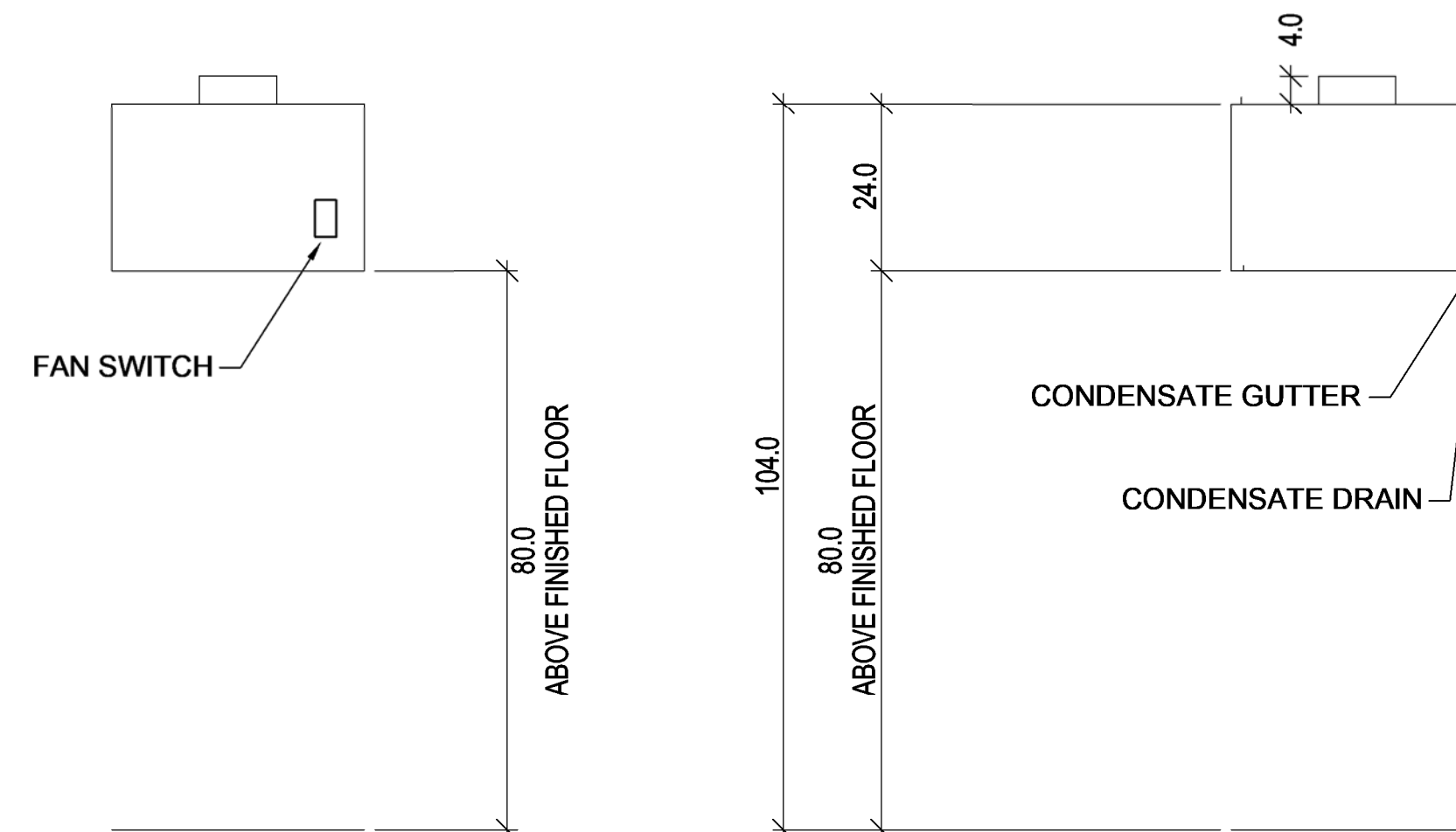
HOOD NO.	MARK	HOOD DIMENSIONS (IN.)			HOOD CONSTR.	TOTAL CFM	EXHAUST COLLAR(S)				TOTAL WEIGHT LBS.	SECTION LOCATION
		LENGTH	WIDTH	HEIGHT			WIDTH	LENGTH	CFM	S.P.		
1	KH-3 (DISH HOOD)	36.0	36	24	430 SS 100%	450	11	11	450	0.34	67	SINGLE

HOOD OPTIONS

- FACTORY MOUNTED EXHAUST COLLAR(S)
- STANDING SEAM CONSTRUCTION
- HOOD VENTILATION (KEF-3) CONTROL SHALL INCLUDE BACNET INTEGRATION FOR EMERGENCY STOP. REFER TO CONTROLS DRAWINGS.



MARK: KH-3 (DISH HOOD) - SECTION 1  
PLAN VIEW

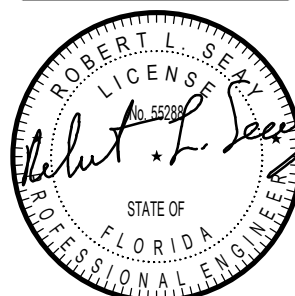


MARK: KH-3 (DISH HOOD) - SECTION 1  
ELEVATION VIEW

MARK: KH-3 (DISH HOOD)  
SECTION VIEW



US Army Corps of Engineers®



06-20-2022

DATE

DESCRIPTION

MARK

ISSUE DATE: 20 JUN 2022

SOLICITATION NO.:

CONTRACT NO.:

DESIGNED BY: JLG

DRAWN BY: JLG

CHECKED BY: RLS

SUBMITTED BY:

SIZE: 501.87x2.900

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA



1300 East 6th Street Little Rock, AR 72202  
cromwell.com LANSID

FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL

KITCHEN VENTILATION SCHEDULES AND DETAILS

SHEET ID

M-607

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.

**CONTROL ABBREVIATIONS / SYMBOLS**

P	ADJ	ADJUSTABLE	OA / OAT / OAH	OUTSIDE AIR / OA TEMP. / OA HUMIDITY
	AFMS	AIRFLOW MEASURING STATION	PC	PERSONAL COMPUTER
	ARNET	ARMY RESERVE NETWORK	PPM	PARTS PER MILLION
	BAS	BUILDING AUTOMATION SYSTEM	RA / RAT / RAH	RETURN AIR / RA TEMP. / RA HUMIDITY
	CT	CURRENT TRANSDUCER	SA / SAT / SAH	SUPPLY AIR / SA TEMP. / SA HUMIDITY
	DD	DIRECT DRIVE	SD	SMOKE DETECTOR
	DPT	DIFFERENTIAL PRESSURE TRANSMITTER	STG	STAGE
N	DSP	DUCT STATIC PRESSURE	TLL	TEMPERATURE LOW LIMIT
	EC / ESC	ELECTRICAL SUBCONTRACTOR	UV / UVGI	ULTRAVIOLET GERMICIDAL IRRADIATION
	ECM	ELECTRONICALLY COMMUTATED MOTOR	VAC	VOLTS OF ALTERNATING CURRENT
	F	FAHRENHEIT	VFD	VARIABLE FREQUENCY DRIVE
	HSL	HIGH STATIC LIMIT	Vo2	CURRENT REQUIRED O.A. FOR THE ZONE
	HZ	HERTZ	(AI)	ANALOG INPUT
	IP	INTERNET PROTOCOL	(AO)	ANALOG OUTPUT
M	JACE	JAVA APPLICATIONS CONTROL ENGINE (TRIDIUM BUILDING AUTOMATION CONTROL)	(DI)	DIGITAL INPUT
	MSTP	MASTER SLAVE TOKEN PASSING	(DO)	DIGITAL OUTPUT
	NC	NORMALLY CLOSED		
	NO	NORMALLY OPEN		

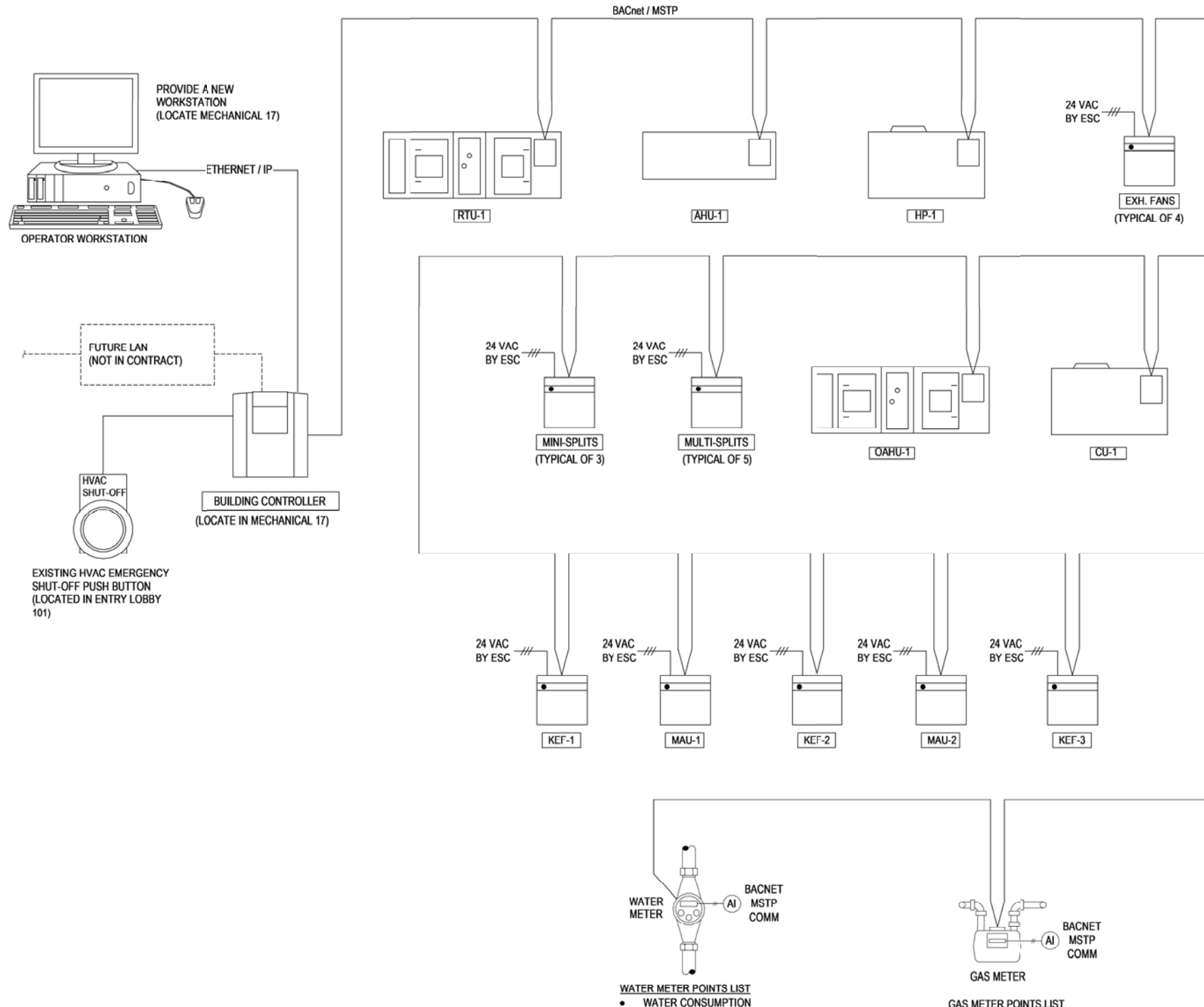
**DDC CONTROL SYSTEM NOTES**

1. PROVIDE A COMPLETE NEW NETWORKED DDC SYSTEM FOR STAND-ALONE CONTROL IN COMPLIANCE WITH THE LATEST REVISION OF THE ASHRAE 135 BACNET STANDARD.
2. THE NEW DDC SYSTEM SHALL BE A SINGLE, COMPLETE, NON-PROPRIETARY DDC SYSTEM AND SHALL BE BASED ON AN OPEN IMPLEMENTATION OF THE BACnet PROTOCOL PER ASHRAE STANDARD 135.
3. THE CONTROL SYSTEM SHALL BE CAPABLE OF A FUTURE UPGRADE ENABLING ACCESS VIA ARNET (BY OTHERS) VIA A SECOND JACE, WHICH WILL BE BROUGHT IN AND CONNECTED TO THE INITIAL JACE OF THE CONTROL SYSTEM. THE CONTROLS CONTRACTOR SHALL ADD LEVELS OF ACCESS TO LIMIT A USER'S ABILITY TO CHANGE THE SET POINTS BASED OFF OF THE USER'S PERMISSIONS. THE 81ST RFOS SHALL BE RESPONSIBLE FOR DICTATING USER ACCESS LEVEL.
4. THE CONTROL SYSTEM SHALL CONSIST OF A HIGH-SPEED, PEER-TO-PEER NETWORK OF DDC CONTROLLERS, A CONTROL SYSTEM SERVER, AND A WEB-BASED OPERATOR INTERFACE. SYSTEM SOFTWARE SHALL BE BASED ON A SERVER/THIN CLIENT ARCHITECTURE, DESIGNED AROUND THE OPEN STANDARDS OF WEB TECHNOLOGY. THE CONTROL SYSTEM SERVER SHALL BE ACCESSED USING A WEB BROWSER OVER THE CONTROL SYSTEM NETWORK, THE OWNER'S LOCAL AREA NETWORK, AND FUTURE ACCESS OVER THE INTERNET. THE INTENT OF THE THIN-CLIENT ARCHITECTURE IS TO PROVIDE OPERATORS COMPLETE ACCESS TO THE CONTROL SYSTEM VIA A WEB BROWSER. NO SPECIAL SOFTWARE OTHER THAN A WEB BROWSER SHALL BE REQUIRED TO ACCESS GRAPHICS, POINT DISPLAYS, ALARMS, AND TRENDS AS WELL AS CONFIGURE TRENDS, SCHEDULING, POINTS, AND CONTROLLERS, OR TO DOWNLOAD PROGRAMMING INTO THE CONTROLLERS. PROVIDE NOT LESS THAN 2 LEVELS OF PASSWORD-PROTECTED ACCESS TO THE SYSTEM.
5. THE SYSTEM SHALL USE THE BACnet PROTOCOL FOR COMMUNICATION TO THE OPERATOR WORKSTATION OR WEB SERVER AND FOR COMMUNICATION BETWEEN CONTROL MODULES. I/O POINTS, SCHEDULES, SETPOINTS, TRENDS AND ALARMS SHALL BE BACnet OBJECTS. INCLUDE ALL PROGRAMMING, OBJECTS, AND SERVICES REQUIRED TO MEET THE SEQUENCE OF CONTROL.
6. PROVIDE BACnet COMMUNICATIONS BETWEEN THE DDC SYSTEM AND NATIVE BACnet DEVICES FURNISHED WITH ALL HVAC EQUIPMENT INCLUDING BUT NOT LIMITED TO AIR CONDITIONING UNITS, BOILERS, CHILLERS, AND VARIABLE FREQUENCY DRIVES. PROVIDE ALL NEW ACTUATORS, SENSORS, CONTROL WIRING, AND ANY OTHER COMPONENTS NECESSARY TO PROVIDE A COMPLETE AND FUNCTIONAL DDC SYSTEM.
7. PROVIDE AN OPERATOR WORKSTATION WITH COMPLETE INTERFACE SOFTWARE CAPABLE OF PROGRAMMING, CONFIGURING, AND MONITORING THE DIGITAL CONTROLLERS.
8. PROVIDE SURGE PROTECTION AND A 72 HOUR UPS AT THE BUILDING CONTROLLER.
9. UNLESS OTHERWISE NOTED, VARIABLE FREQUENCY DRIVES NOT PROVIDED WITH EQUIPMENT SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR. VFD'S SHALL PROVIDE FOR INTEGRAL EQUIPMENT DISCONNECTING MEANS. VFD'S SHALL HAVE A BYPASS FUNCTION. VFD ENCLOSURES SHALL HAVE A NEMA RATING AS SPECIFIED.

**GENERAL CONTROL NOTES**

1. THE HVAC SYSTEMS IN BUILDING PAL02 (OMS) SHALL OPERATE UNDER STAND-ALONE CONTROLS AND SHALL NOT BE CONNECTED TO THE BAS IN PAL01.
2. INSTALL THE ELECTRICAL EQUIPMENT, CONDUCTORS, AND ALL OTHER RELATED ITEMS ACCORDANCE WITH NFPA 70.
3. INSTALL ANY FIRE ALARM DEVICES AND RELATED EQUIPMENT IN ACCORDANCE WITH NFPA 72, NFPA 90A, NFPA 101, SBCCI, AND ANY APPLICABLE ANSI STANDARDS.
4. HOUSE ALL WIRE SPLICES NOT CONNECTED TO A DEVICE WITHIN A 4"x4"x2-1/8" JUNCTION BOX.
5. PROVIDE ALL NECESSARY: CONTROL POWER, CONTROL POWER WIRING, VALVES, ACTUATORS, CONDUIT, WIRING, CONTROLLERS, INTERFACE, SWITCHES, CIRCUIT BOARDS, THERMOSTATS, LABOR, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM. MAKE FINAL CONNECTION TO BAS DRY CONTACTS AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
6. ALL CONTROL VALVES SHALL HAVE MODULATING ACTUATORS. WHERE 2-POSITION VALVES MAY BE INDICATED, THIS IS A STATEMENT OF INTENT OF OPERATION, NOT VALVE ACTUATOR TYPE.

**1 CONTROL RISER DIAGRAM**  
NO SCALE



**WATER METER POINTS LIST**

- WATER CONSUMPTION

**GAS METER POINTS LIST**

- GAS CONSUMPTION

- NOTES:**
1. BAS METER TO BE INDEPENDENT AND SEPARATE FROM THE UTILITY OWNED METER.
  2. LOCATE IN THE MAIN 2-1/2" DOMESTIC WATER SERVICE ENTRY OUTSIDE OF SUPPLY ROOM
  3. THE METER SHALL BE A POSITIVE DISPLACEMENT WATER FLOW METER. THE FLOW METER MUST BE A DIRECT READING, GEROTOR, ROTATING DISC OR VANE TYPE DISPLACEMENT DEVICE RATED FOR LIQUID SERVICE AS INDICATED. A COUNTER MUST BE MOUNTED ON TOP OF THE METER, AND MUST CONSIST OF A NON-RESETTABLE MECHANICAL TOTALIZER FOR LOCAL READING, AND A PULSE TRANSMITTER FOR REMOTE READING. THE TOTALIZER MUST HAVE A SIX DIGIT REGISTER TO INDICATE THE VOLUME PASSED THROUGH THE METER IN GALLONS, AND A SWEEP-HAND DIAL TO INDICATE DOWN TO 0.25 GALLONS. THE PULSE TRANSMITTER MUST HAVE A HERMETICALLY SEALED REED SWITCH WHICH IS ACTIVATED BY MAGNETS FIXED ON GEARS OF THE COUNTER. THE METER MUST HAVE A BRONZE BODY WITH THREADED OR FLANGED CONNECTIONS AS REQUIRED FOR THE APPLICATION. OUTPUT ACCURACY MUST BE PLUS OR MINUS 2 PERCENT OF THE FLOW RANGE. THE MAXIMUM PRESSURE DROP AT FULL FLOW MUST BE 5 PSIG.
  6. REFER TO PLANS FOR LOCATION

- NOTES:**
1. BAS METER TO BE INDEPENDENT AND SEPARATE FROM THE UTILITY OWNED METER.
  2. BAS METER TO BE LOCATED DOWNSTREAM OF THE UTILITY REGULATOR/METER ASSEMBLY. REFER TO PLANS FOR LOCATION.
  3. THE GAS FLOW METER MUST BE DIAPHRAGM OR BELLOWS TYPE (GAS POSITIVE DISPLACEMENT METERS) FOR FLOWS UP TO 2500 SCFH AND AXIAL FLOW TURBINE TYPE FOR FLOWS ABOVE 2500 SCFH, DESIGNED SPECIFICALLY FOR NATURAL GAS SUPPLY METERING, AND RATED FOR THE PRESSURE, TEMPERATURE, AND FLOW RATES OF THE INSTALLATION. METER MUST HAVE A MINIMUM TURNDOWN RATIO OF 10 TO 1 WITH AN ACCURACY OF PLUS OR MINUS 1 PERCENT OF ACTUAL FLOW RATE. THE METER INDEX MUST INCLUDE A DIRECT READING MECHANICAL TOTALIZING REGISTER AND ELECTRICAL IMPULSE DRY CONTACT OUTPUT FOR REMOTE MONITORING. THE ELECTRICAL IMPULSE DRY CONTACT OUTPUT MUST NOT REQUIRE FIELD ADJUSTMENT OR CALIBRATION. THE ELECTRICAL IMPULSE DRY CONTACT OUTPUT MUST HAVE A MINIMUM RESOLUTION OF 3 CUBIC METERS 100 CUBIC FEET OF GAS PER PULSE AND MUST NOT EXCEED 15 PULSES PER SECOND AT THE DESIGN FLOW.



06-20-2022

MARK	DESCRIPTION	DATE

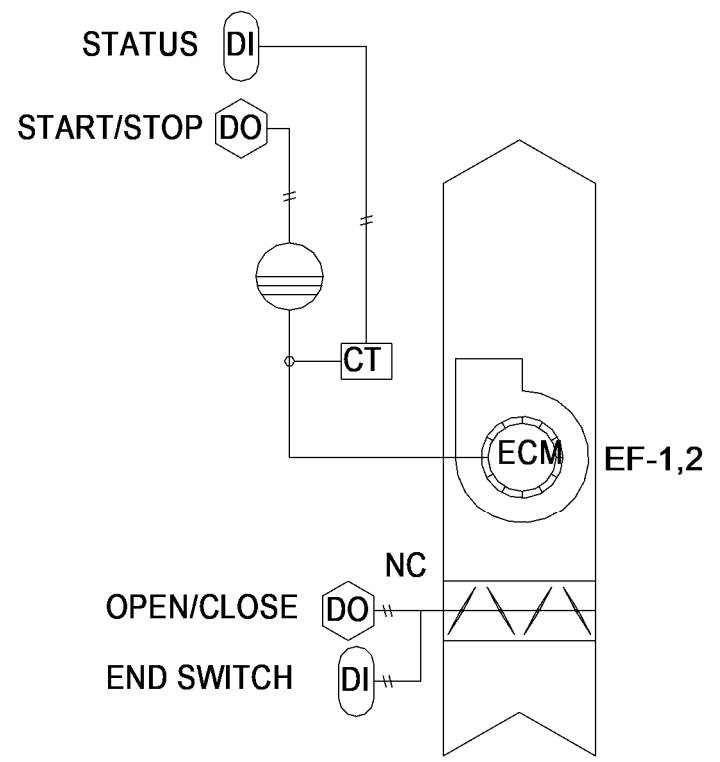
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SUBMITTED BY: CHOMWELL, A.E.	
1300 East 6th Street Little Rock, AR 72202	
501.872.2900	
<b>CROMWELL</b>	
US ARMY CORPS OF ENGINEERS	
CHARLESTON DISTRICT	
CHARLESTON, SOUTH CAROLINA	

FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
MECHANICAL CONTROLS

SHEET ID  
**M-701**

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**SEQUENCE OF OPERATION: EXHAUST FAN (SCHEDULED)**

**BUILDING AUTOMATION SYSTEM INTERFACE:**

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER AN OCCUPIED OR UNOCCUPIED COMMAND. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS, THE CONTROLLER SHALL OPERATE IN THE OCCUPIED MODE.

**OCCUPIED:**

DURING OCCUPIED PERIODS, THE DAMPER WILL OPEN, AND UPON A SIGNAL FROM THE DAMPER END SWITCH, THE EXHAUST FAN SHALL START AND RUN CONTINUOUSLY. FAILURE OF THE DAMPER TO OPEN WILL INITIATE AN ALARM THROUGH THE BAS.

**UNOCCUPIED:**

DURING UNOCCUPIED PERIODS THE EXHAUST FAN SHALL BE DISABLED AND THE DAMPER SHALL BE CLOSED.

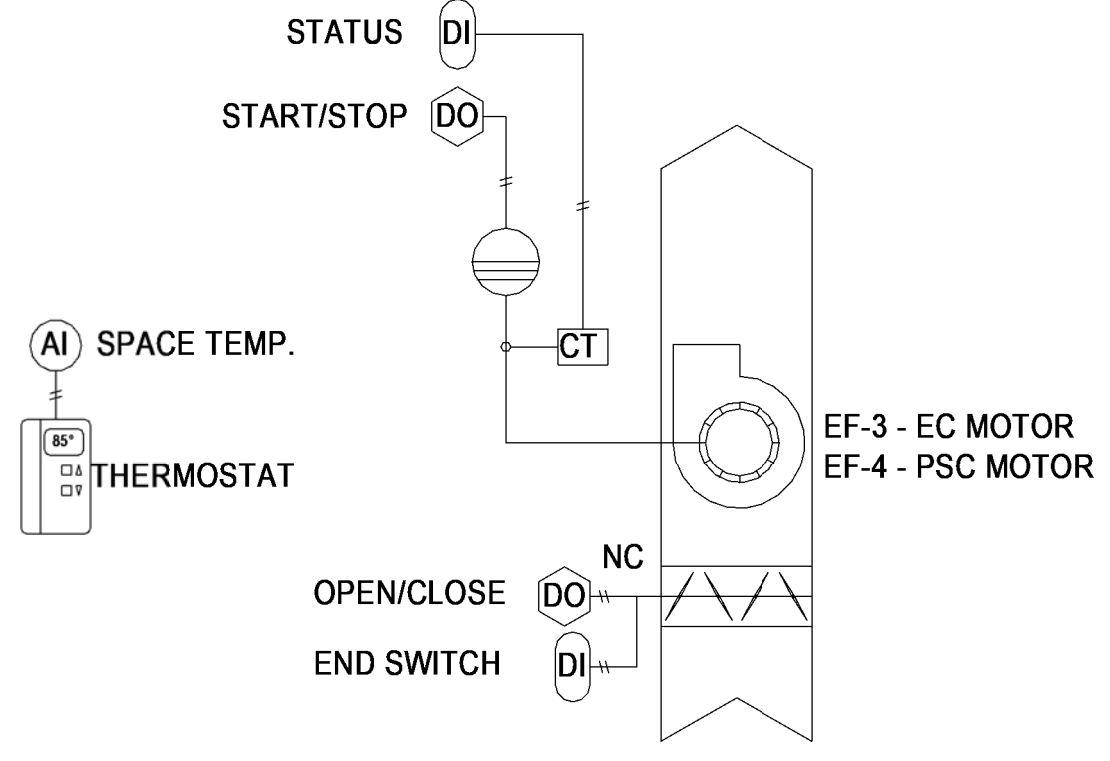
**FAN STATUS:**

THE FAN STATUS SHALL BE MONITORED BY A CURRENT SENSING SWITCH. IF THE FAN IS SIGNALLED TO START, AND STATUS IS NOT PROVEN WITHIN 20 SECONDS (ADJ.), AN ALARM SHALL ANNUNCIATE AT THE BAS.

**EMERGENCY VENTILATION SHUTDOWN:**

IF A BUILDING EMERGENCY VENTILATION SHUTDOWN BUTTON IS PUSHED, THE FAN SHALL SHUT DOWN AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

**1 EXHAUST FAN (SCHEDULED) - CONTROL DIAGRAM**  
NO SCALE



**SEQUENCE OF OPERATION: EXHAUST FAN (THERMOSTAT)**

**BUILDING AUTOMATION SYSTEM INTERFACE:**

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL ALSO SEND TEMPERATURES, SETPOINTS AND OTHER APPLICABLE INFORMATION TO THE CONTROLLER. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS, THE CONTROLLER SHALL OPERATE USING ITS DEFAULT SETPOINTS.

**OPERATION:**

THE EXHAUST FAN SHALL BE CONTROL TO MAINTAIN THE ACTIVE SPACE TEMPERATURE SETPOINT 85°F (ADJ.). UPON RISE IN TEMPERATURE ABOVE SPACE SETPOINT, THE INTAKE DAMPER SHALL OPEN AND THE EXHAUST FAN START. THE DAMPER END SWITCH SHALL PROVE FULLY OPEN PRIOR TO FAN START. WHEN THE EXHAUST FAN IS DISABLED, THE INTAKE AIR DAMPER SHALL CLOSE. IF THE SPACE TEMPERATURE SENSOR FAILS, THE FAN SHALL REMAIN ON AND AN ALARM SHALL ANNUNCIATE AT THE BAS.

THE INTAKE AIR DAMPER SHALL BE NORMALLY CLOSED.

**FAN STATUS:**

THE FAN STATUS SHALL BE MONITORED BY A CURRENT SENSING SWITCH. IF THE FAN IS SIGNALLED TO START, AND STATUS IS NOT PROVEN WITHIN 20 SECONDS (ADJ.), AN ALARM SHALL ANNUNCIATE AT THE BAS.

**EMERGENCY VENTILATION SHUTDOWN:**

IF A BUILDING EMERGENCY VENTILATION SHUTDOWN BUTTON IS PUSHED, THE FAN SHALL SHUT DOWN AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

**2 EXHAUST FAN (THERMOSTAT) - CONTROL DIAGRAM**  
NO SCALE

**SPLIT SYSTEM HEAT PUMP SEQUENCE OF OPERATION:**

**BUILDING AUTOMATION SYSTEM INTERFACE**

THE BUILDING AUTOMATION SYSTEM (BAS) WILL MONITOR AND ADJUST THE SPACE TEMPERATURE SETPOINTS AND SCHEDULES AT THE THERMOSTAT. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS, THE THERMOSTAT WILL OPERATE USING ITS LOCAL SETPOINTS AND SCHEDULES.

**SPACE TEMPERATURE CONTROL**

THE COOLING SPACE TEMPERATURE SHALL BE MAINTAINED AT THE FOLLOWING:

- OCCUPIED COOLING SETPOINT (75°F ADJ.)
- UNOCCUPIED COOLING SETPOINT (80°F ADJ.)

THE THERMOSTAT SHALL CYCLE THE CONDENSING UNIT COMPRESSORS (2 EACH SINGLE STAGE SCROLL) AND EVAPORATOR FAN ON AND OFF IN RESPONSE TO A NEED FOR COOLING. IN THE EVENT THE SPACE TEMPERATURE RISES ABOVE THE THERMOSTAT COOLING SETPOINT, THE CONDENSING UNIT AND THE EVAPORATOR FAN SHALL ENERGIZE TO MAINTAIN SETPOINT. UPON SATISFYING THE THERMOSTAT SETPOINT THE CONDENSING UNIT AND EVAPORATOR FAN SHALL DE-ENERGIZE. PROVIDE A 2 DEGREES F (ADJUSTABLE) DEADBAND.

THE HEATING SPACE TEMPERATURE SHALL BE MAINTAINED AT THE FOLLOWING :

- OCCUPIED HEATING SETPOINT (70°F ADJ.)
- UNOCCUPIED HEATING SETPOINT (65°F ADJ.)

THE THERMOSTAT SHALL MODULATE THE REVERSING VALVE, CONDENSING UNIT, AND EVAPORATOR FAN ON AND OFF IN RESPONSE TO A NEED FOR HEATING. IN THE EVENT THE SPACE TEMPERATURE FALLS BELOW THE THERMOSTAT HEATING SETPOINT, THE REVERSING VALVE, CONDENSING UNIT, AND THE FAN SHALL ENERGIZE TO MAINTAIN SETPOINT. UPON SATISFYING THE THERMOSTAT SETPOINT THE REVERSING VALVE, CONDENSING UNIT, AND EVAPORATOR FAN SHALL DE-ENERGIZE. PROVIDE A 2 DEGREES F (ADJUSTABLE) DEADBAND.

THE AUXILIARY ELECTRIC HEAT SHALL BE LOCKED OUT AT OUTSIDE AIR TEMPERATURES ABOVE 40-DEGREES. WHEN THE OUTSIDE AIR TEMPERATURE IS 40-DEGREES OR LESS AND THE SPACE TEMPERATURE FALLS BELOW THE HEATING SETPOINT, THE AUXILIARY HEAT WILL BE ENERGIZED TO MAINTAIN SPACE TEMPERATURE.

**OUTSIDE AIR CONTROL:**

DURING OCCUPIED MODES, OR DURING TIMED LOCAL OVERRIDE PERIODS, THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS SET POSITION. SET POSITION IS 400 CFM (ADJ.)

DURING UNOCCUPIED MODES, OR DURING SETBACK TEMPERATURE CONTROL PERIODS, THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

**INDOOR AIR QUALITY AIR CLEANING:**

WHEN THE SUPPLY FAN IS ON IN COOLING MODE, THE ULTRA VIOLET GERMICIDAL IRRADIATION AIR CLEANING LAMPS SHALL BE ENABLED.

**INDOOR AIR QUALITY AIR CLEANING:**

WHEN THE SUPPLY FAN IS ON DURING THE COOLING CYCLE, THE ULTRA VIOLET GERMICIDAL IRRADIATION AIR CLEANING LAMPS SHALL BE ENABLED.

**SAFETIES:**

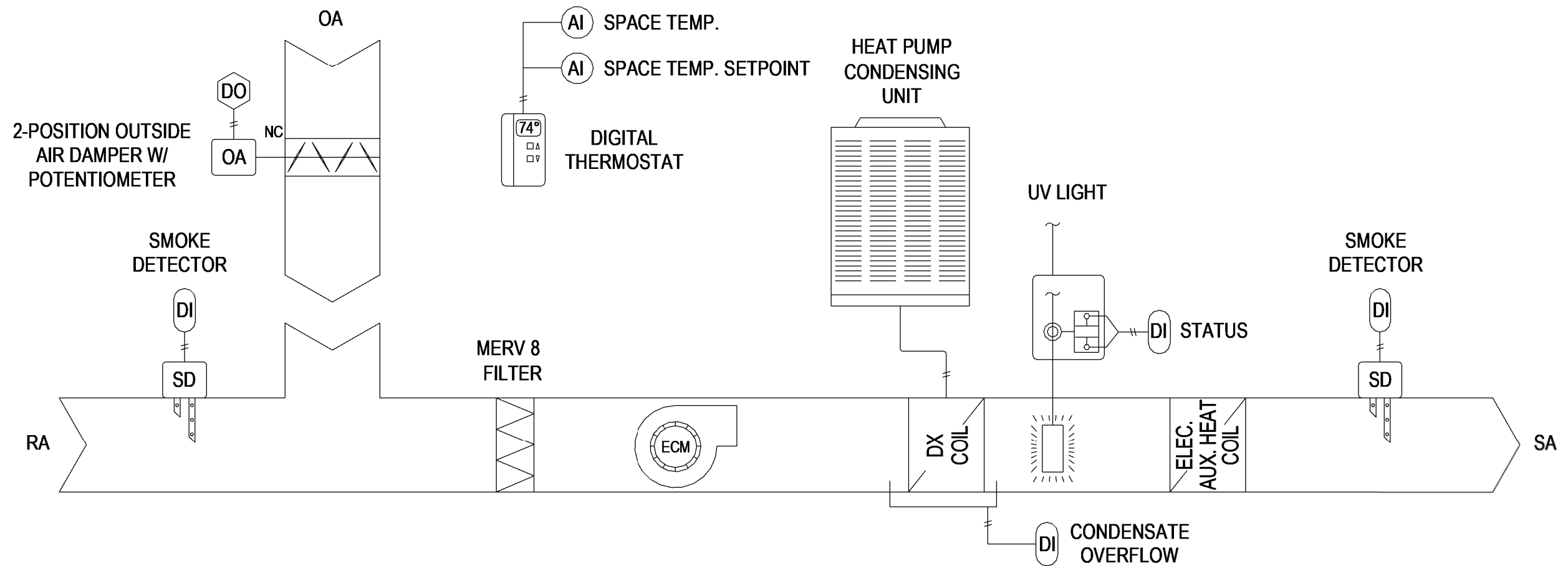
THE SYSTEM SHALL SHUT DOWN UPON DETECTION OF SMOKE BY SMOKE DETECTORS LOCATED IN THE SUPPLY OR RETURN AIRSTREAMS AND NOTIFY THE FIRE ALARM SYSTEM. THE SYSTEM SHALL SHUT DOWN UPON ALARM FROM FIRE ALARM SYSTEM.

**CONDENSATE OVERFLOW MONITORING:**

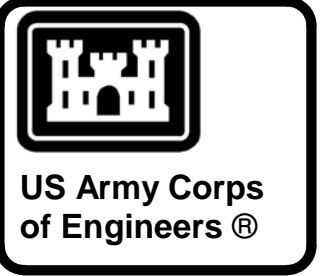
IF THE CONDENSATE LEVEL REACHES THE TRIP POINT, A CONDENSATE OVERFLOW DIAGNOSTIC SHALL ANNUNCIATE AT THE BAS. TO PREVENT THE CONDENSATE DRAIN PAN FROM OVERFLOWING AND CAUSING WATER DAMAGE TO THE BUILDING THE FAN AND CONDENSING UNIT SHALL BE DISABLED.

**EMERGENCY VENTILATION SHUTDOWN:**

IF A BUILDING EMERGENCY VENTILATION SHUTDOWN BUTTON IS PUSHED, THE UNIT SHALL SHUT DOWN AND THE OUTSIDE AIR DAMPER SHALL CLOSE.



**3 AHU-1/HP-1 HEAT PUMP SPLIT SYSTEM - CONTROL DIAGRAM**  
NO SCALE



06-20-2022

DATE	DESCRIPTION	MARK

DESIGNED BY: JLG	ISSUE DATE: 20 JUN 2022	SOLICITATION NO.:	CONTRACT NO.:
DRAWN BY: JLG	CHECKED BY: RLS	DATE:	SIZE:
SUBMITTED BY: JLG	DATE:	SIZE:	ANSI D

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

**CROWELL**  
1300 East 6th Street Little Rock, AR 72202  
501.872.2900  
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FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
MECHANICAL CONTROLS

SHEET ID  
**M-702**

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.

**SPLIT SYSTEM WITH DX COOLING / GAS HEATING SEQUENCE OF OPERATION:**

**BUILDING AUTOMATION SYSTEM INTERFACE**

THE BUILDING AUTOMATION SYSTEM (BAS) WILL MONITOR AND ADJUST THE SPACE TEMPERATURE SETPOINTS AND SCHEDULES AT THE THERMOSTAT. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS, THE THERMOSTAT WILL OPERATE USING ITS LOCAL SETPOINTS AND SCHEDULES.

**SPACE TEMPERATURE CONTROL**

THE SPACE TEMPERATURE SHALL BE MAINTAINED AT THE FOLLOWING:

- OCCUPIED COOLING SETPOINT (75°F ADJ).
- UNOCCUPIED COOLING SETPOINT (80°F ADJ).

THE THERMOSTAT SHALL CYCLE THE CONDENSING UNIT AND EVAPORATOR FAN ON AND OFF IN RESPONSE TO A NEED FOR COOLING.

IN THE EVENT THE SPACE TEMPERATURE RISES ABOVE THE THERMOSTAT COOLING SETPOINT, THE CONDENSING UNIT COMPRESSORS (2 EACH SINGLE STAGE SCROLL COMPRESSORS) AND THE EVAPORATOR FAN SHALL ENERGIZE TO MAINTAIN SETPOINT AND OPERATE UNDER THE UNIT'S INTERNAL CONTROLS. STAGING WILL BE:

- STAGE 1: COMPRESSOR 1 ON (1/3 CAPACITY), COMPRESSOR 2 OFF
- STAGE 2: COMPRESSOR 1 OFF, COMPRESSOR 2 ON (2/3 CAPACITY)
- STAGE 3: COMPRESSOR 1 ON, COMPRESSOR 2 ON

UPON SATISFYING THE THERMOSTAT SETPOINT THE CONDENSING UNIT AND EVAPORATOR FAN SHALL DE-ENERGIZE. PROVIDE A 2 DEGREES F (ADJUSTABLE) DEADBAND.

THE SPACE TEMPERATURE SHALL BE MAINTAINED AT THE FOLLOWING :

- OCCUPIED HEATING SETPOINT (70°F ADJ).
- UNOCCUPIED HEATING SETPOINT (65°F ADJ).

THE THERMOSTAT SHALL MODULATE THE GAS BURNER AND EVAPORATOR FAN ON AND OFF IN RESPONSE TO A NEED FOR HEATING.

IN THE EVENT THE SPACE TEMPERATURE FALLS BELOW THE THERMOSTAT HEATING SETPOINT, THE GAS BURNER AND THE FAN SHALL ENERGIZE TO MAINTAIN SETPOINT. UPON SATISFYING THE THERMOSTAT SETPOINT THE GAS HEAT BURNER AND EVAPORATOR FAN SHALL DE-ENERGIZE. PROVIDE A 2 DEGREES F (ADJUSTABLE) DEADBAND.

**INDOOR AIR QUALITY AIR CLEANING:**

WHEN THE SUPPLY FAN IS ON IN COOLING MODE, THE ULTRA VIOLET GERMICIDAL IRRADIATION AIR CLEANING LAMPS SHALL BE ENABLED.

**OUTSIDE AIR CONTROL:**

DURING OCCUPIED MODES, THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS SET POSITION. SET POSITION SHALL BE 600 CFM (ADJ.)

DURING UNOCCUPIED MODES, THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

**SAFETIES:**

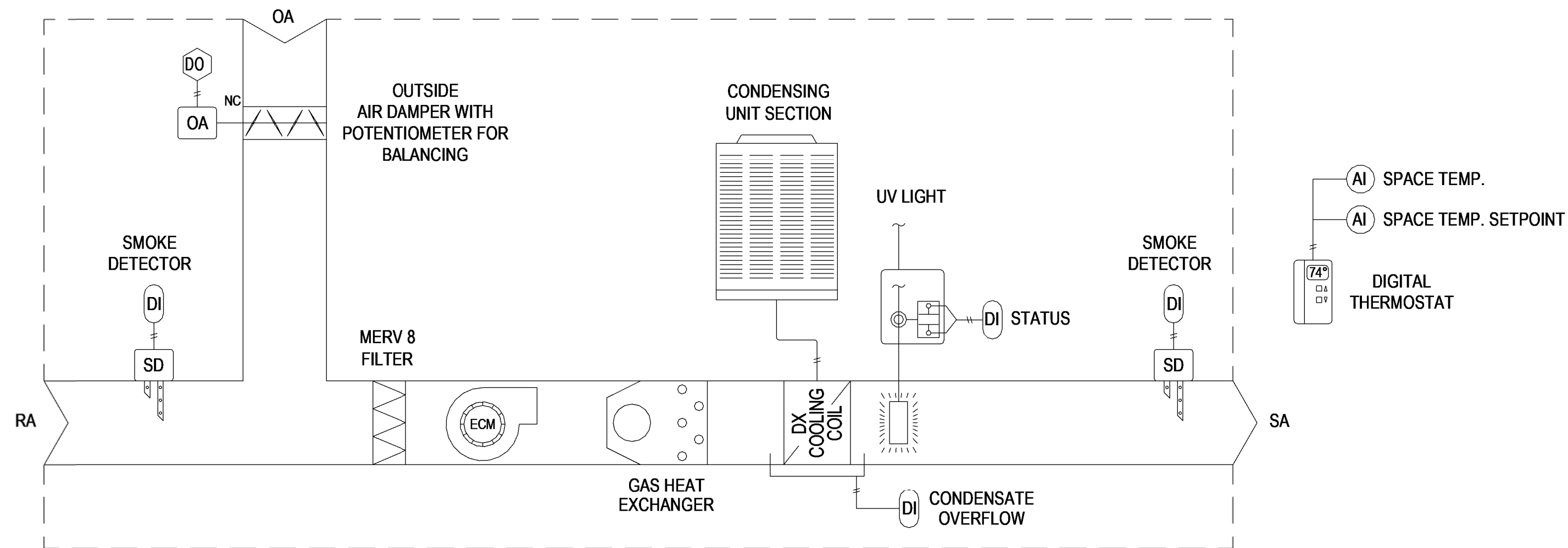
THE SYSTEM SHALL SHUT DOWN UPON DETECTION OF SMOKE BY SMOKE DETECTORS LOCATED IN THE SUPPLY OR RETURN AIRSTREAMS AND NOTIFY THE FIRE ALARM SYSTEM. THE SYSTEM SHALL SHUT DOWN UPON ALARM FROM FIRE ALARM SYSTEM.

**CONDENSATE OVERFLOW MONITORING:**

IF THE CONDENSATE LEVEL REACHES THE TRIP POINT, A CONDENSATE OVERFLOW DIAGNOSTIC SHALL ANNUNCIATE AT THE BAS. TO PREVENT THE CONDENSATE DRAIN PAN FROM OVERFLOWING AND CAUSING WATER DAMAGE TO THE BUILDING THE FAN AND CONDENSING UNIT SHALL BE DISABLED.

**EMERGENCY VENTILATION SHUTDOWN:**

IF A BUILDING EMERGENCY VENTILATION SHUTDOWN BUTTON IS PUSHED, THE UNIT SHALL SHUT DOWN AND THE OUTSIDE AIR DAMPER SHALL CLOSE.



**1 RTU-1 DX/GAS ROOFTOP UNIT - CONTROL DIAGRAM**  
NO SCALE

**100% OUTSIDE AIR SPLIT SYSTEM SEQUENCE OF OPERATION:**

**BUILDING AUTOMATION SYSTEM INTERFACE**

THE BUILDING AUTOMATION SYSTEM (BAS) WILL MONITOR AND ADJUST THE SUPPLY AIR SETPOINT AND SCHEDULES THROUGH THE BAS USER INTERFACE. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS, THE THERMOSTAT WILL OPERATE USING ITS LOCAL SETPOINT AND SCHEDULES.

THE 100% OUTSIDE AIR SYSTEM WILL OPERATE UNDER ITS ON-BOARD CONTROLS UTILIZING THE COOLING SYSTEM, HOT GAS REHEAT CONTROL FOR DEHUMIDIFICATION, AND ELECTRIC HEAT FOR PREHEAT CONTROL TO PROVIDE 68°F DB / 50% RH LEAVING AIR YEAR ROUND.

COOLING OPERATION WILL BE PROVIDED BY A LEAD DIGITAL SCROLL COMPRESSOR WITH 10:1 MODULATION AND A CONSTANT SPEED LAG COMPRESSOR, EACH PROVIDING 50% OF THE TOTAL UNIT CAPACITY AS FOLLOWS:

- 0 TO 50% STAGING CONTROL: LEAD DIGITAL SCROLL MODULATES FROM 10% TO 100% IN 10:1 STEPS.
- 60% TO 100% STAGING CONTROL: LAG COMPRESSOR ON, LEAD DIGITAL SCROLL MODULATES FROM 10% TO 100% IN 10:1 STEPS.

MODULATING HOT GAS REHEAT WILL BE PROVIDED TO ENSURE A 50% (ADJ.) LEAVING RELATIVE HUMIDITY.

ELECTRIC HEAT WILL BE SSR TYPE AND WILL MODULATE AS REQUIRED TO PROVIDE 68-DEGREE LAT WHEN THE ENTERING AIR TEMPERATURE IS LESS THAN 65-DEGREES.

**INDOOR AIR QUALITY AIR CLEANING:**

WHEN THE SUPPLY FAN IS ON IN COOLING MODE, THE ULTRA VIOLET GERMICIDAL IRRADIATION AIR CLEANING LAMPS SHALL BE ENABLED.

**OUTSIDE AIR CONTROL:**

DURING OCCUPIED MODES, OR DURING TIMED LOCAL OVERRIDE PERIODS, THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS SET POSITION. SET POSITION SHALL BE 1,310 CFM (ADJ.)

DURING UNOCCUPIED MODES, OR DURING SETBACK TEMPERATURE CONTROL PERIODS, THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

**SAFETIES:**

THE SYSTEM SHALL SHUT DOWN UPON DETECTION OF SMOKE BY SMOKE DETECTORS LOCATED IN THE SUPPLY OR RETURN AIRSTREAMS AND NOTIFY THE FIRE ALARM SYSTEM. THE SYSTEM SHALL SHUT DOWN UPON ALARM FROM FIRE ALARM SYSTEM.

**CONDENSATE OVERFLOW MONITORING:**

IF THE CONDENSATE LEVEL REACHES THE TRIP POINT, A CONDENSATE OVERFLOW DIAGNOSTIC SHALL ANNUNCIATE AT THE BAS. TO PREVENT THE CONDENSATE DRAIN PAN FROM OVERFLOWING AND CAUSING WATER DAMAGE TO THE BUILDING THE FAN AND CONDENSING UNIT SHALL BE DISABLED.

**EMERGENCY VENTILATION SHUTDOWN:**

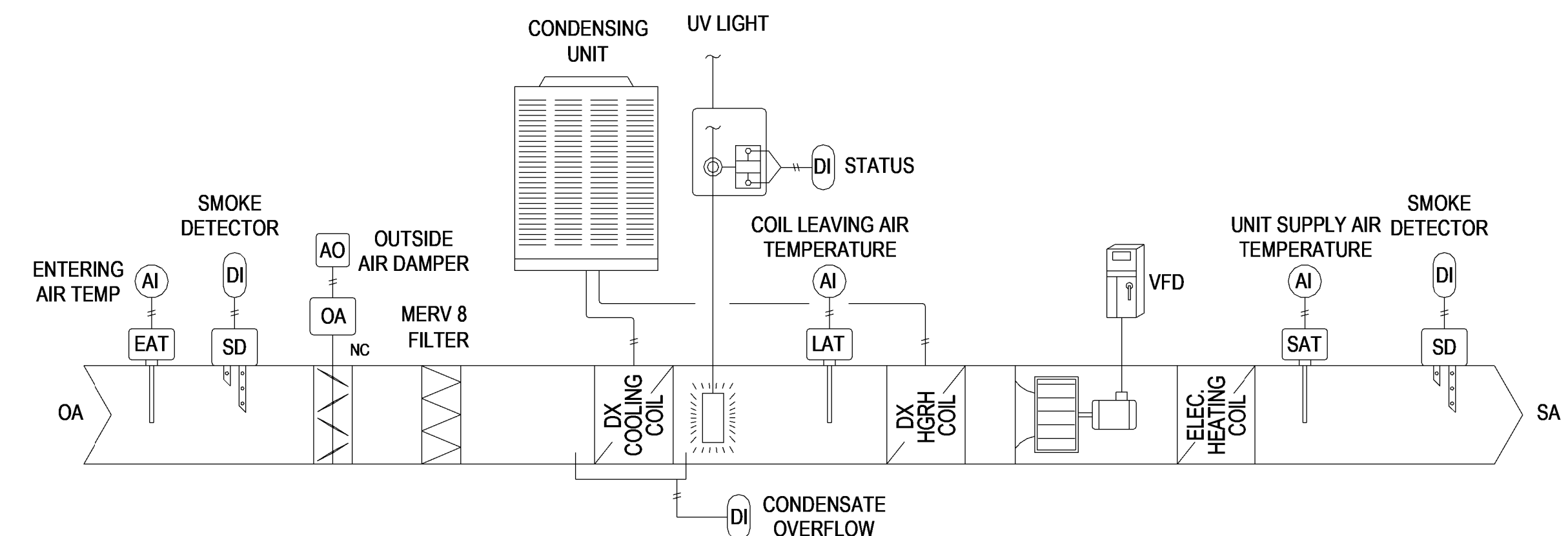
IF A BUILDING EMERGENCY VENTILATION SHUTDOWN BUTTON IS PUSHED, THE UNIT SHALL SHUT DOWN AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

**LEAVING AIR MONITORING:**

IF THE LEAVING AIR TEMPERATURE IS ABOVE 75°F DB (ADJUSTABLE) FOR MORE THAN 60 SECONDS (ADJUSTABLE), AN ALARM WILL ANNUNCIATE AT THE BAS.

IF THE LEAVING AIR TEMPERATURE IS BELOW 60°F DB (ADJUSTABLE) FOR MORE THAN 60 SECONDS (ADJUSTABLE), AN ALARM WILL ANNUNCIATE AT THE BAS.

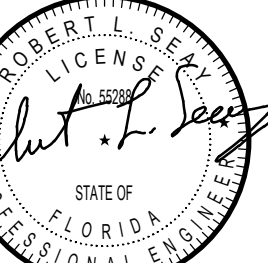
IF THE LEAVING AIR RELATIVE HUMIDITY IS GREATER THAN 60% (ADJUSTABLE) FOR MORE THAN 60 SECONDS (ADJUSTABLE), AN ALARM WILL ANNUNCIATE AT THE BAS.



**2 OAHU-1/CU-1 100% OUTSIDE AIR SPLIT SYSTEM - CONTROL DIAGRAM**  
NO SCALE



US Army Corps of Engineers



06-20-2022

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ISSUE DATE: 20 JUN 2022

SOLICITATION NO.:

CONTRACT NO.:

DESIGNED BY: JLG

DRAWN BY: JLG

CHECKED BY: RLS

SUBMITTED BY: JLG

SIZE: 1300 East 6th Street Little Rock, AR 72202

501.872.2500

US ARMY CORPS OF ENGINEERS

CHARLESTON DISTRICT

CHARLESTON, SOUTH CAROLINA

CROMWELL

PALATKA, FL

FLO27 HVAC-ELEC-PLUMB RESET

MECHANICAL CONTROLS

SHEET ID

M-703

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE/GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.

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**SINGLE-ZONE AND MULTI-ZONE MINI-SPLIT SYSTEMS:**

EACH MINI-SPLIT SYSTEM SHALL BE PROVIDE WITH A BACNET DIRECT DIGITAL CONTROL NETWORK CARD SO THAT THE SYSTEM CAN BE COMMANDED "ON" THROUGH THE BAS TIME OF DAY SCHEDULE. WHEN COMMANDED "ON", THE SYSTEM SHALL OPERATE BY A STAND-ALONE, WIRED ROOM THERMOSTAT.

CONDENSATE OVERFLOW MONITORING: IF THE CONDENSATE LEVEL REACHES THE TRIP POINT AS DETECTED BY THE FLOAT SWITCH IN THE AUXILIARY DRAIN PAN, A CONDENSATE OVERFLOW DIAGNOSTIC SHALL ANNUNCIATE AT THE BAS. TO PREVENT THE CONDENSATE DRAIN PAN FROM OVERFLOWING AND CAUSING WATER DAMAGE TO THE BUILDING. THE SYSTEM SHALL BE DISABLED.

**KITCHEN GREASE HOOD VENTILATION SYSTEMS (KH-1 / KEF-1 / MAU-1)**

EXCEPT FOR BAS EMERGENCY STOP, KITCHEN VENTILATION SYSTEM CONTROL SHALL BE STAND-ALONE. EXHAUST FAN AND MAKE-UP AIR FAN NORMAL OPERATION SHALL BE INTERLOCKED TO AND OPERATE AND VARY SPEED SIMULTANEOUSLY. THE FANS SHALL BE STARTED BY THE HOOD CONTROLLER. SEE "VARIABLE VOLUME KITCHEN HOOD CONTROL SYSTEMS" THIS SHEET FOR MORE INFORMATION REGARDING VARIABLE SPEED CONTROLS.

ON A DETECTION OF FIRE BY THE HOOD CONTROLS, THE EXHAUST FAN SHALL RUN, THE GAS SOLENOID SHUT-OFF VALVE FOR KITCHEN EQUIPMENT UNDER THE HOOD SHALL CLOSE. ACTIVATION OF THE BAS BUILDING EMERGENCY STOP SHALL DE-ENERGIZE ALL KITCHEN VENTILATION SYSTEMS.

**KITCHEN HEAT/VAPOR HOOD VENTILATION SYSTEMS (KH-2 / KEF-2 / MAU-2)**

EXCEPT FOR BAS EMERGENCY STOP, KITCHEN VENTILATION SYSTEM CONTROL SHALL BE STAND-ALONE. EXHAUST FAN AND MAKE-UP AIR FAN NORMAL OPERATION SHALL BE INTERLOCKED TO AND OPERATE AND VARY SPEED SIMULTANEOUSLY. THE FANS SHALL BE STARTED BY THE HOOD CONTROLLER. SEE "VARIABLE VOLUME KITCHEN HOOD CONTROL SYSTEMS" THIS SHEET FOR MORE INFORMATION REGARDING VARIABLE SPEED CONTROLS.

ACTIVATION OF THE BAS BUILDING EMERGENCY STOP SHALL DE-ENERGIZE ALL KITCHEN VENTILATION SYSTEMS.

**DISHWASHER HEAT/VAPOR HOOD VENTILATION SYSTEMS (KH-3/KEF-3)**

EXCEPT FOR BAS EMERGENCY STOP, KITCHEN VENTILATION SYSTEM CONTROL SHALL BE STAND-ALONE. EXHAUST FAN FAN NORMAL OPERATION SHALL BE STARTED BY A HOOD MOUNTED TOGGLE SWITCH.

ACTIVATION OF THE BAS BUILDING EMERGENCY STOP SHALL DE-ENERGIZE ALL KITCHEN VENTILATION SYSTEMS.

**1 STAND-ALONE SYSTEMS**  
NO SCALE

**THE KITCHEN CONTROL SYSTEM**

THE KITCHEN CONTROL SYSTEM SHALL BE A UL LISTED OUTLET CENTER WHICH SHALL CONSIST OF A NEMA-1 STAINLESS STEEL ENCLOSURE WITHIN A STAINLESS STEEL ENCLOSURE PANEL, PRINTED CIRCUIT BOARD (PCB), USER INTERFACE, HOOD, AUDIBLE ALARM, SENSOR(S) AND VARIABLE FREQUENCY DRIVE(S) (VFD) OR MOTOR STARTERS, WITH ROOM TEMPERATURE SENSORS AND FAN CONTROL THROUGH RELAYS OR 0-10 VDC SIGNALS. THE PCB SHALL BE CAPABLE OF CONTROLLING MULTIPLE EXHAUST AND SUPPLY FANS VIA VFDS OR ANALOG SIGNALS. THE CONTROL SYSTEM SHALL UTILIZE A COMBINED CONTROL PANEL AND HOOD LIGHT POWER CONNECTION WITH OPTIONS FOR 110-120V / 50-60HZ / 1PH INPUT VOLTAGE OR 220-240V / 50-60HZ / 1PH INPUT VOLTAGE, TO BE PROTECTED BY A 15 AMP BREAKER. THE CONTROL SYSTEM SHALL BE EQUIPPED WITH EITHER MODBUS OR BACNET MSTP BUILDING MANAGEMENT INTERFACING, AND ALSO BE ABLE TO CONTROL UP TO 8 DIFFERENT ECM FANS, ALONGSIDE A 3-PHASE MAKEUP AIR UNIT, WITHOUT THE NEED FOR ADDED EXPANSION BOARDS OR CONTROLLERS. STANDARD KITCHEN CONTROL ENCLOSURE FITTED WITH HANDLED, QUARTER-TURN, SLOTTED LATCHED DOORS, OR OPTIONAL PRISON PACKAGE CONFIGURATION WITH HANDLED, TAMPER-PROOF QUARTER TURN LATCHED DOORS.

THE USER INTERFACE SHALL BE A FULL COLOR TOUCH SCREEN WITH FAN AND LIGHT CONTROL, GAS VALVE RESET (OPTIONAL), AND BALANCING INTERFACING FOR PROPER KITCHEN FAN BALANCING. THE TOUCHSCREEN SHALL HAVE THE CAPABILITY TO SIMULTANEOUSLY CONTROL ALL FANS AND LIGHTS CONNECTED TO THE CONTROL PANEL WITH A SINGLE BUTTON. THE TOUCH SCREEN SHALL BE CONFIGURED TO PUSH FIT INTO A JUNCTION BOX, WITH NO VISIBLE/EXPOSED SCREWS.

IN THE EVENT OF THE FAILURE CONSISTING OF, BUT NOT LIMITED TO TEMPERATURE SENSOR(S), VFD(S) AND FIRE, THE TOUCH SCREEN WILL AUTOMATICALLY GO TO A FAULT PAGE, WHICH WILL DESCRIBE THE CURRENT FAULT. THE FAULT WILL REMAIN UNTIL THE FAILURE IS CORRECTED.

THE TOUCHSCREEN SHALL BE LIGHTED, FULL COLOR, AND UTILIZE SIMPLE PLUG AND PLAY CONNECTIONS. TOUCHSCREEN SHALL BE MOUNTED ON THE EXHAUST HOOD, A UTILITY CABINET ON THE HOOD OR WALL, OR SHIPPED LOOSE FOR REMOTE MOUNTING. IF TOUCHSCREEN IS SHIPPED LOOSE FOR REMOTE MOUNTING, IT SHALL BE PROVIDED ALONGSIDE OPTIONAL 50FT OR 100FT PLUG AND PLAY CAT5E CABLE FOR CONNECTION TO MAIN CONTROL PCB. ALL TOUCHSCREEN MOUNTING OPTIONS WILL SET THE FULL COLOR TOUCHSCREEN CENTERED ON A STAINLESS-STEEL FACEPLATE, WITH NO VISIBLE SCREWS OR FASTENERS ON THE FACEPLATE.

**VARIABLE VOLUME SYSTEM OPERATION**

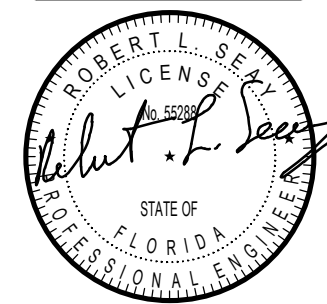
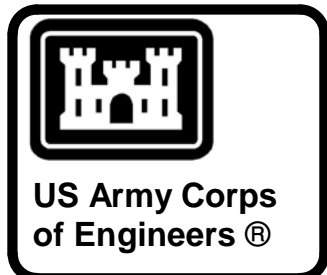
THE VARIABLE VOLUME KITCHEN CONTROLS SHALL UTILIZE RESISTIVE TYPE TEMPERATURE SENSORS THAT ARE MOUNTED IN THE CAPTURE TANK OF THE HOOD TO MONITOR EXHAUST AIR TEMPERATURES, AND AN OPTIONAL ROOM TEMPERATURE SENSOR, SHIPPED LOOSE, TO BE INSTALLED TO DETECT AMBIENT AIR TEMPERATURES IN THE KITCHEN SPACE. TEMPERATURE SENSORS SHALL BE MADE OF STAINLESS STEEL AND SHALL BE INSTALLED IN A UL APPROVED COUPLING.

THE SYSTEM SHALL BE CAPABLE OF SERVING AS A CODE COMPLIANT AUTO START-UP CONTROL TO AUTOMATICALLY START THE FANS DURING COOKING OPERATIONS. AUTO START-UP OPERATION IS CONTROLLED BY THE MEASUREMENT OF AN EXCESS OFFSET TEMPERATURE BETWEEN THE EXHAUST TEMPERATURE CAUSED BY COOKING AND THE AMBIENT ROOM TEMPERATURE IN THE KITCHEN (DEFAULT OFFSET TEMPERATURE: 10°F, ADJUSTABLE). IF NOT EQUIPPED WITH A ROOM TEMPERATURE SENSOR, AUTO START-UP OPERATION SHALL BE CONTROLLED BY THE MEASUREMENT OF AN EXCESS OFFSET TEMPERATURE BETWEEN THE EXHAUST TEMPERATURE CAUSED BY COOKING AND THE CONSTANT, PRESET ROOM TEMPERATURE (DEFAULT PRESET ROOM TEMPERATURE SET POINT: 75°F, ADJUSTABLE. DEFAULT OFFSET TEMPERATURE: 10°F, ADJUSTABLE. DEFAULT AUTO START-UP INITIATES AT 85°F AS MEASURED BY THE HOOD TEMPERATURE SENSOR(S)). IF ANY FAN(S) ARE ACTIVATED THROUGH THE AUTO START-UP OPERATION, THE FAN(S) WILL NOT SHUT OFF AUTOMATICALLY UNTIL THE MEASURED HOOD TEMPERATURE(S) REMAIN 5° F (ADJUSTABLE) BELOW THE ROOM TEMPERATURE (PRESET OR ACTUAL) FOR THE LENGTH OF THE HYSTERESIS TIMER OF 5 MINUTES (ADJUSTABLE).

AFTER FAN INITIATION IS TRIGGERED, EITHER MANUALLY, THROUGH THE TOUCHSCREEN, OR THROUGH THE AUTO START-UP OPERATION, THE CONTROLLER SHALL MODULATE THE SPEED OF THE FANS VIA VFD(S) OR ANALOG SIGNAL(S), FROM MAXIMUM SPEED DOWN TO A MINIMUM SPEED PERCENTAGE (MINIMUM SPEED TO BE DETERMINED BY BUILDING TEST AND BALANCE, MINIMUM SPEED IS FACTORY DEFAULTED TO 50%). AFTER FAN INITIATION IS TRIGGERED, THE INITIAL ACTIVATION TEMPERATURE IS RECORDED AS THE ROOM TEMPERATURE AT ACTIVATION PLUS THE OFFSET TEMPERATURE OF 10°F (ADJUSTABLE). IF NOT EQUIPPED WITH A ROOM TEMPERATURE SENSOR, THE ACTIVATION TEMPERATURE SHALL BE RECORDED AS THE PRESET ROOM TEMPERATURE PLUS THE OFFSET TEMPERATURE (DEFAULT PRESET ROOM TEMPERATURE SET POINT: 75°F (ADJUSTABLE). DEFAULT ACTIVATION TEMPERATURE SHALL BE 85°F AS MEASURED BY THE HOOD TEMPERATURE SENSOR(S)). SPEED MODULATION OF THE FANS SHALL BE CONTROLLED THROUGH THE DIFFERENCE BETWEEN ACTIVATION TEMPERATURE AND THE HIGHEST CURRENT TEMPERATURE RECORDED AT THE HOOD TEMPERATURE SENSOR(S). MINIMUM FAN SPEED SHALL OCCUR WHEN THE CURRENT HOOD TEMPERATURE EQUALS THE ACTIVATION TEMPERATURE, AND MAXIMUM FAN SPEED SHALL OCCUR WHEN THE CURRENT HOOD TEMPERATURE IS EQUAL TO OR EXCEEDS THE ACTIVATION TEMPERATURE PLUS THE MODULATION TEMP RANGE (MODULATION TEMP RANGE DEFAULT: 30°F, ADJUSTABLE). SPEED CONTROL SHALL BE CONTROLLED THROUGH VFD(S) OR ANALOG SIGNAL(S) SHALL ALLOW MODULATION OF THE FAN SPEEDS. THE CONTROLLER MUST BE COMPATIBLE WITH MODULATING TURNDOWN OF UP TO 50% OF MAXIMUM FAN SPEED. UPON PRESSING THE "MAX FAN" BUTTON, EXHAUST FAN SPEEDS SHALL GO TO MAXIMUM SPEED FOR 10 MINUTES (ADJUSTABLE), OR UNTIL THE "MAX FAN" BUTTON IS PRESSED AGAIN, WHICH SHALL RETURN THE SYSTEM TO FULL TEMPERATURE CONTROL.

VARIABLE FREQUENCY DRIVES SHALL BE MOUNTED IN THE CONTROL ENCLOSURE, A UTILITY CABINET, OR AT THE EXHAUST/SUPPLY FAN ITSELF. IF VARIABLE FREQUENCY DRIVES ARE MOUNTED WITHIN THE CONTROL ENCLOSURE, ENCLOSURE SHALL BE EQUIPPED WITH A COOLING FAN AND LOUVER TO FACILITATE VENTILATION FOR THE VARIABLE FREQUENCY DRIVES. VARIABLE DRIVES SHALL PROVIDE THERMAL OVERLOAD PROTECTION TO FANS AND ELIMINATE THE NEED FOR MAGNETIC STARTERS FOR 3 PHASE MOTORS. TO ENSURE PROPER BUILDING PRESSURIZATION, THE SUPPLY FANS SHALL RESPOND TO CHANGES IN THE EXHAUST FANS SPEEDS. THE SPEED OF THE ASSOCIATED SUPPLY FAN(S) IS EITHER DETERMINED BY THE WEIGHTED AVERAGE PERCENT SPEED OF THAT SUPPLY FAN(S) ASSOCIATED EXHAUST FAN(S) (DEFAULT) OR IS CONTROLLED BY MAINTAINING THE ORIGINAL DESIGN EXHAUST/SUPPLY CFM DIFFERENTIAL.

**2 VARIABLE VOLUME KITCHEN HOOD CONTROL SYSTEM**  
NO SCALE



06-20-2022

MARK	DESCRIPTION	DATE

DESIGNED BY: JLG	ISSUE DATE: 20 JUN 2022
DRAWN BY: JLG	SOLICITATION NO.:
CHECKED BY: RLS	CONTRACT NO.:
SUBMITTED BY:	
SIZE: ANSI D	

US ARMY CORPS OF ENGINEERS  
CHARLESTON DISTRICT  
CHARLESTON, SOUTH CAROLINA

**CROMWELL**

1300 East 6th Street Little Rock, AR 72202  
501.572.2500 cromwell@con.usace.army.mil

**FLO27 HVAC-ELEC-PLUMB RESET**  
PALATKA, FL

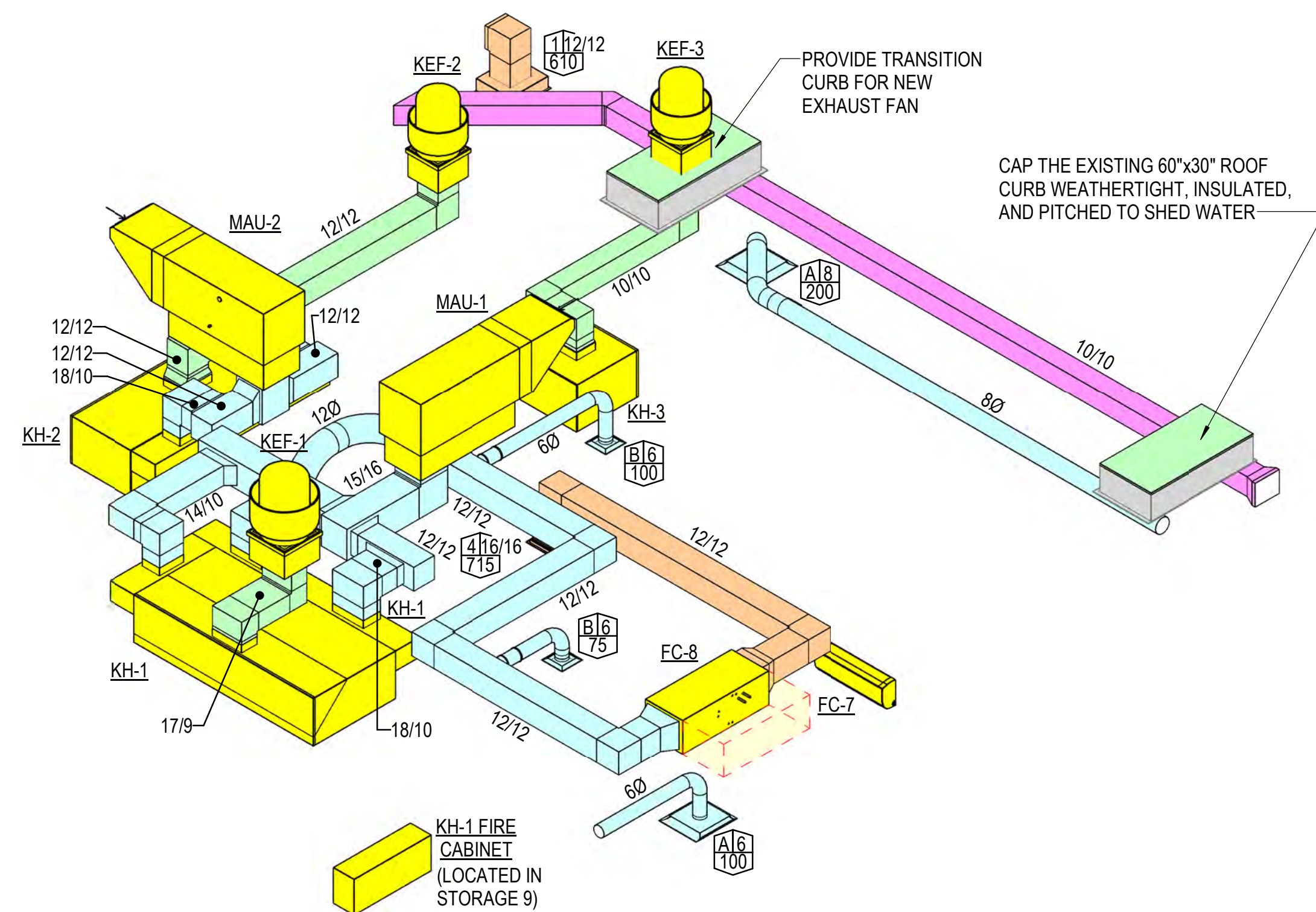
**MECHANICAL CONTROLS**

SHEET ID

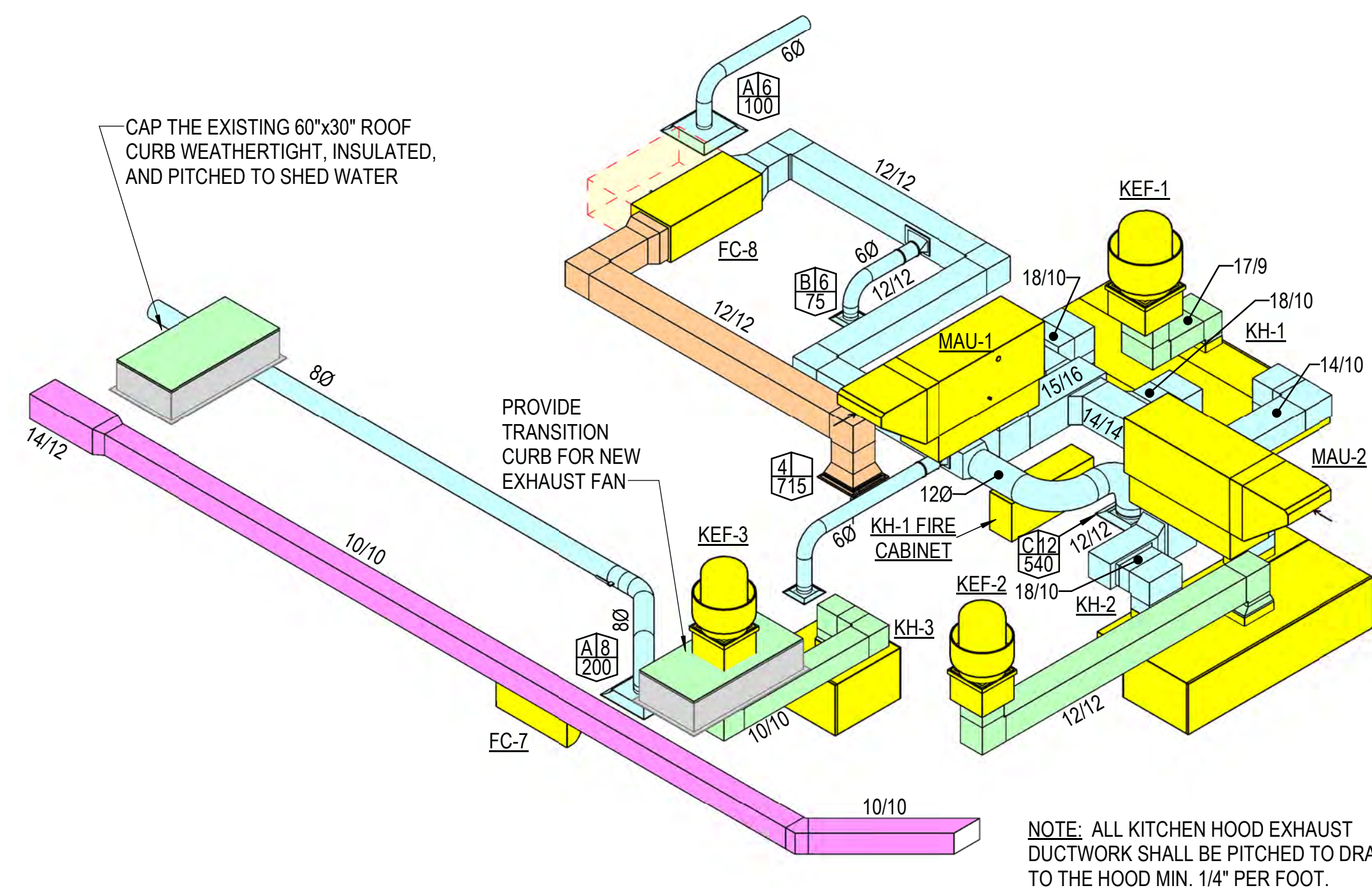
**M-704**

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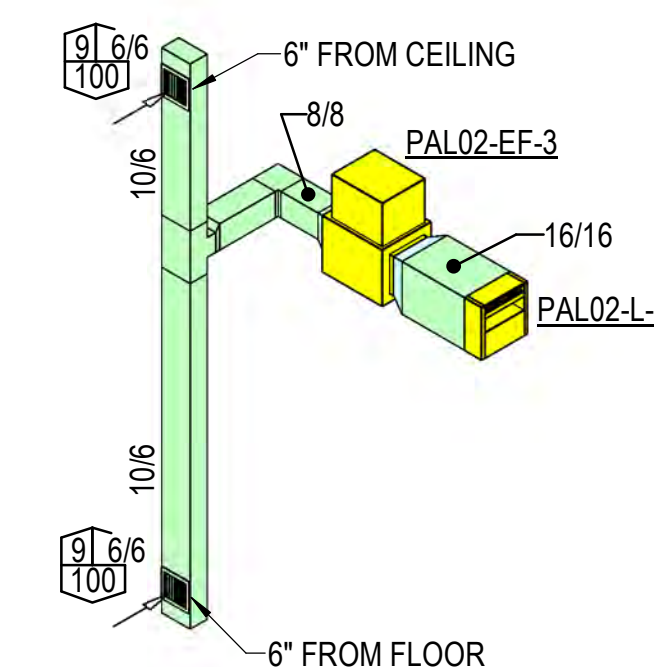
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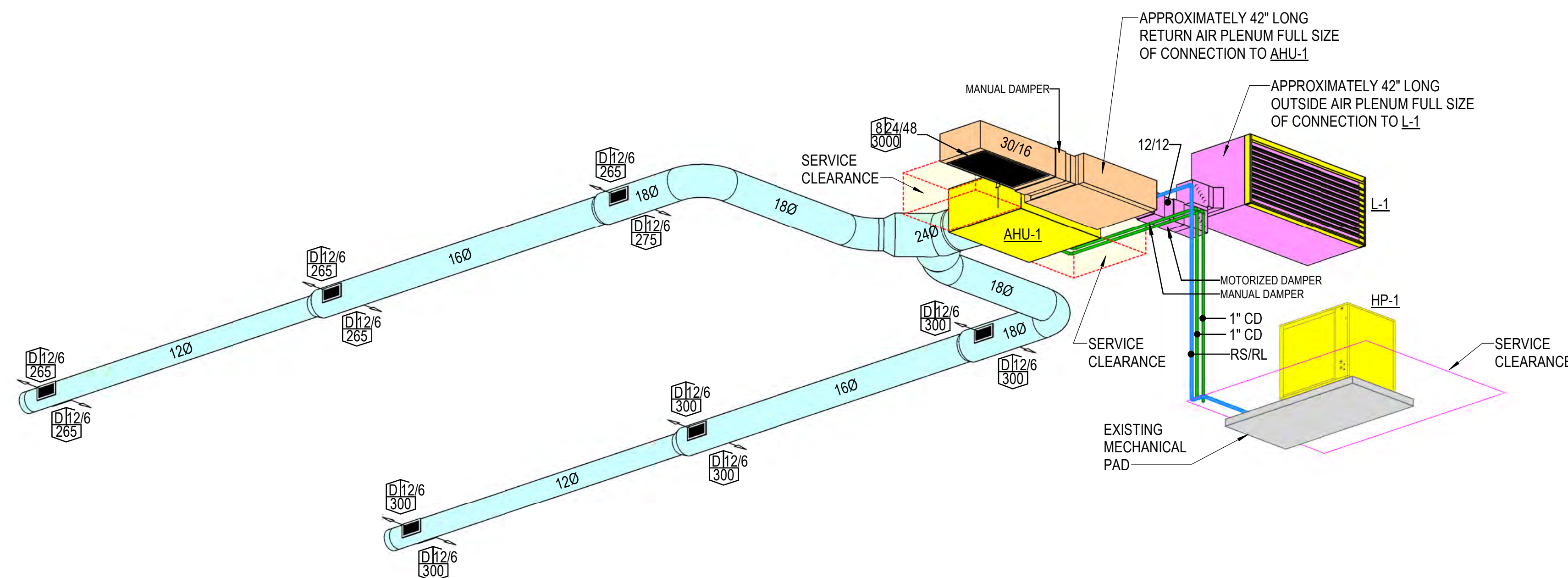
1 HVAC ISOMETRIC 1 - KITCHEN AREA  
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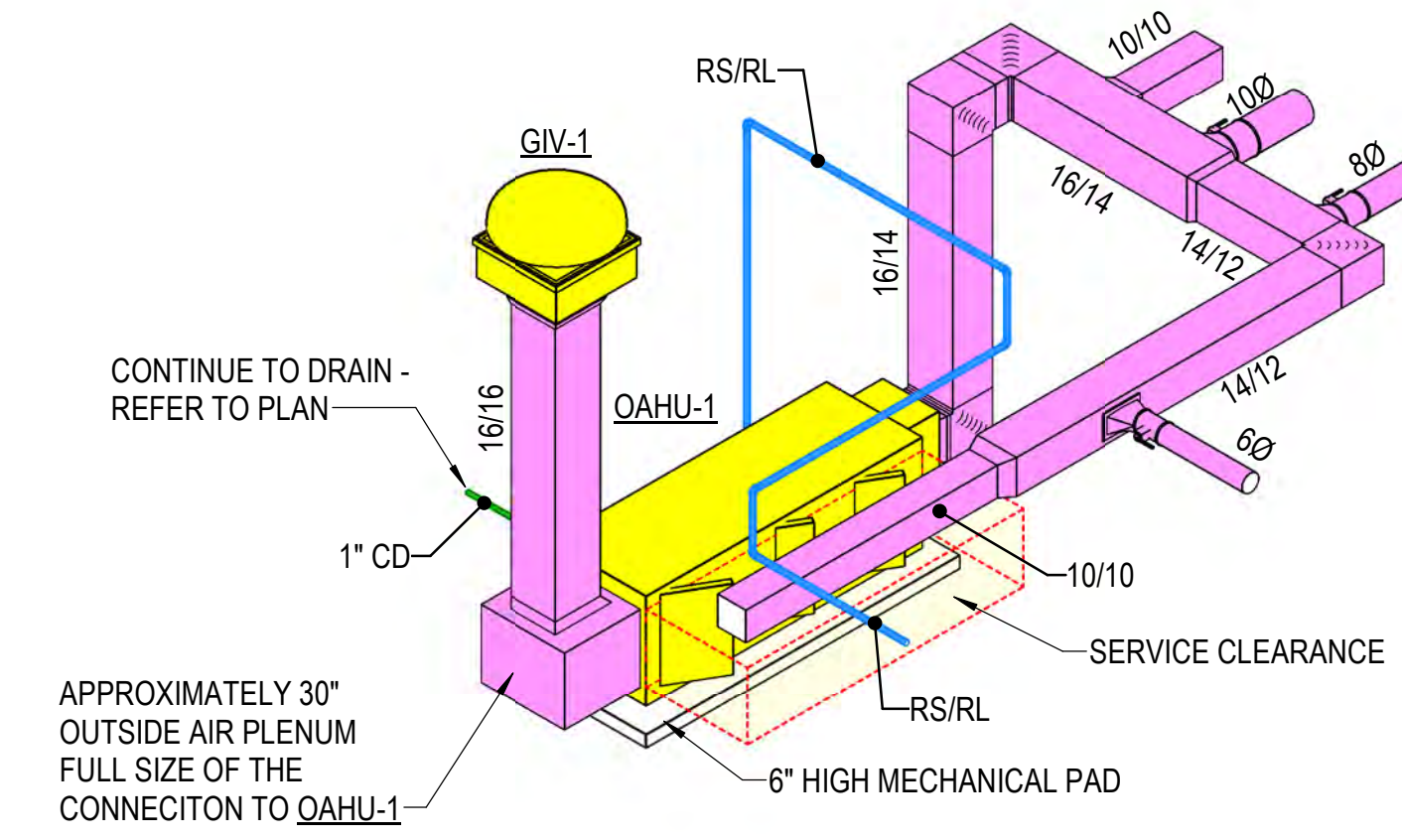
2 HVAC ISOMETRIC 2 - KITCHEN AREA  
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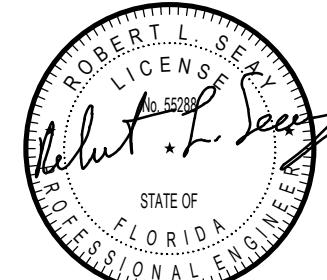
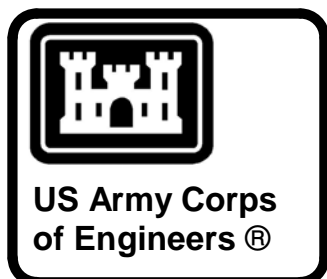
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4 AHU-1 DUCT RISER  
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5 OAHU-1 DUCT RISER  
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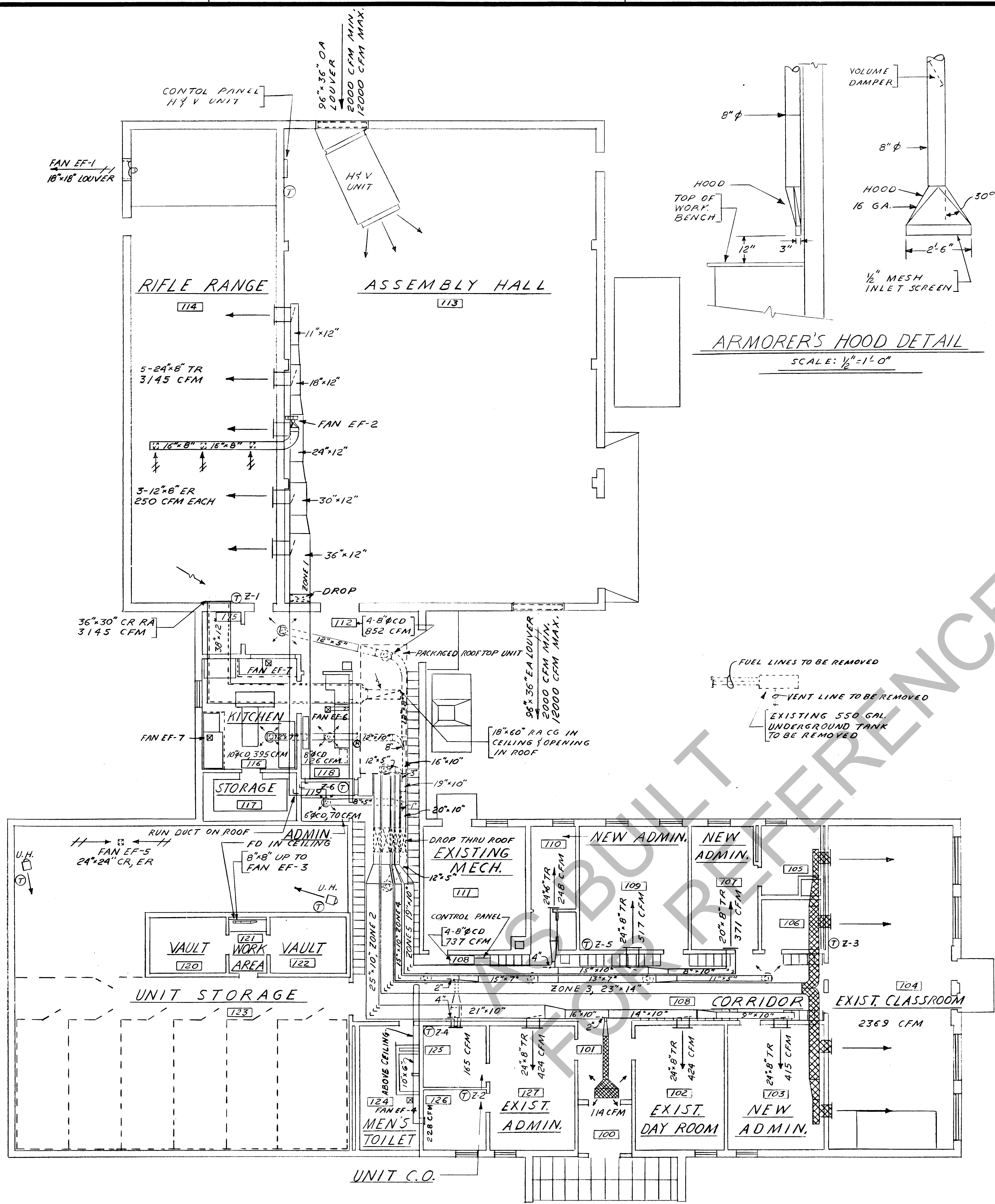
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DESIGNED BY: JLG	ISSUE DATE: 20 JUN 2022	SOLICITATION NO.:	CONTRACT NO.:
DRAWN BY: JLG	CHECKED BY: RLS	CHARLESTON DISTRICT CHARLESTON, SOUTH CAROLINA	CHARLESTON DISTRICT CHARLESTON, SOUTH CAROLINA
		SUBMITTED BY: CROMWELL, A.E. 1300 East 6th Street Little Rock, AR 72202 501.872.2900 cromwell.com LANSD	

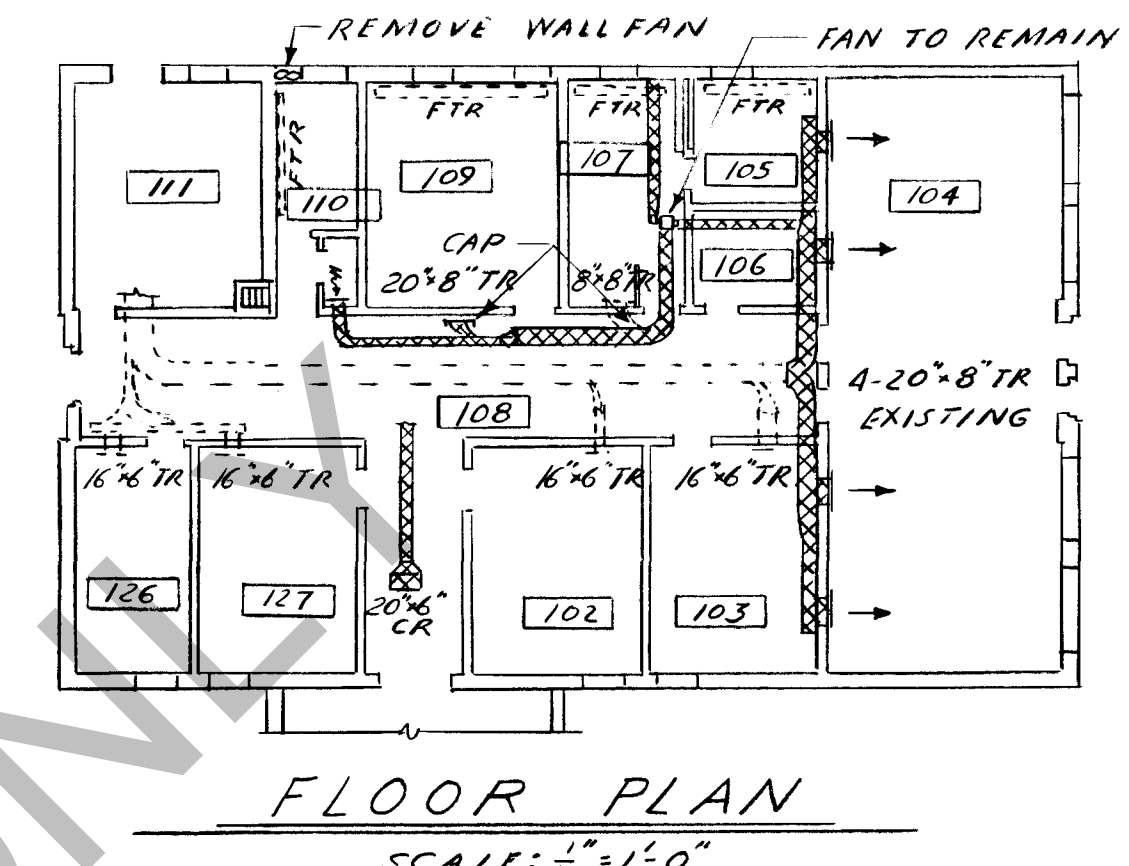
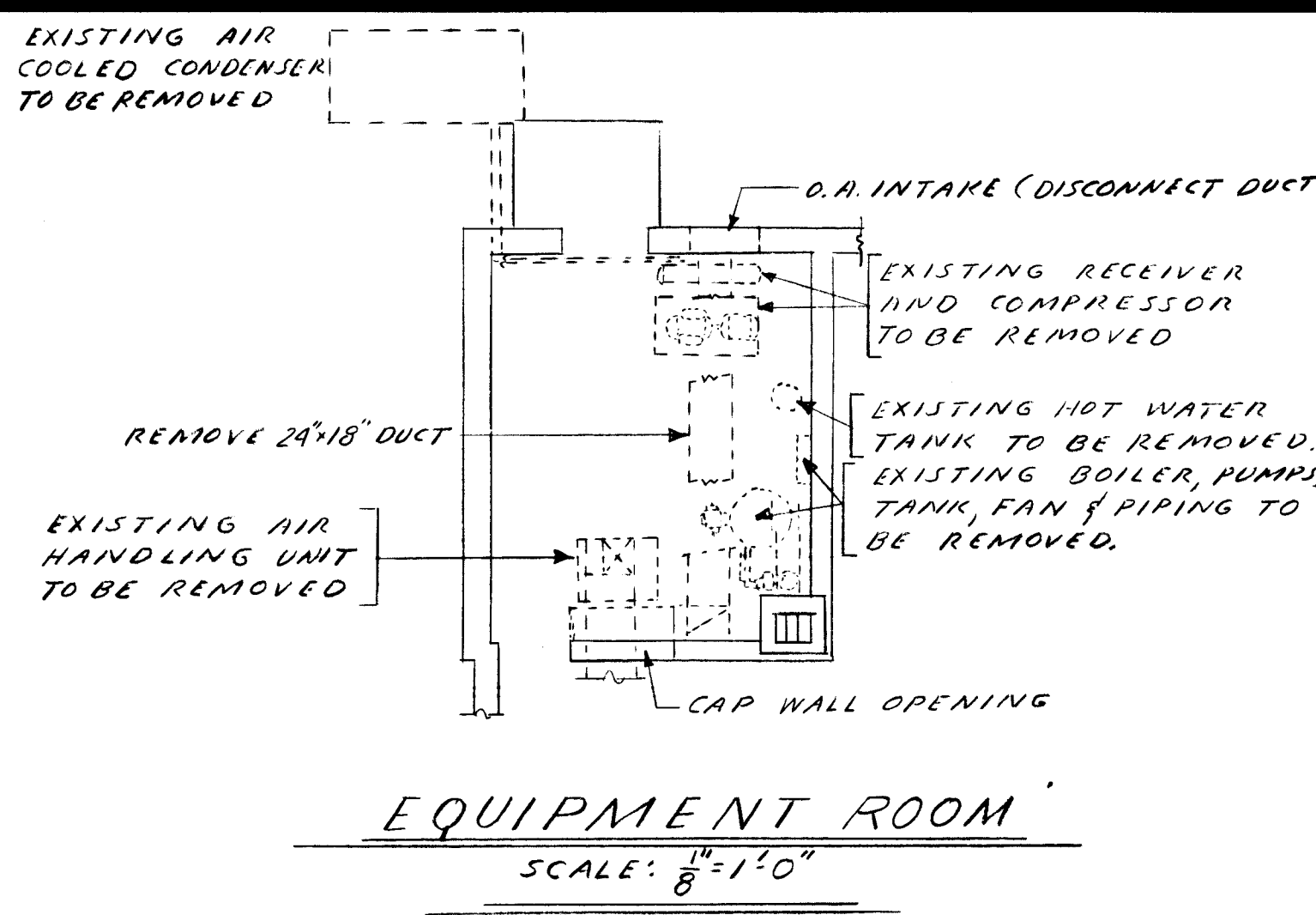
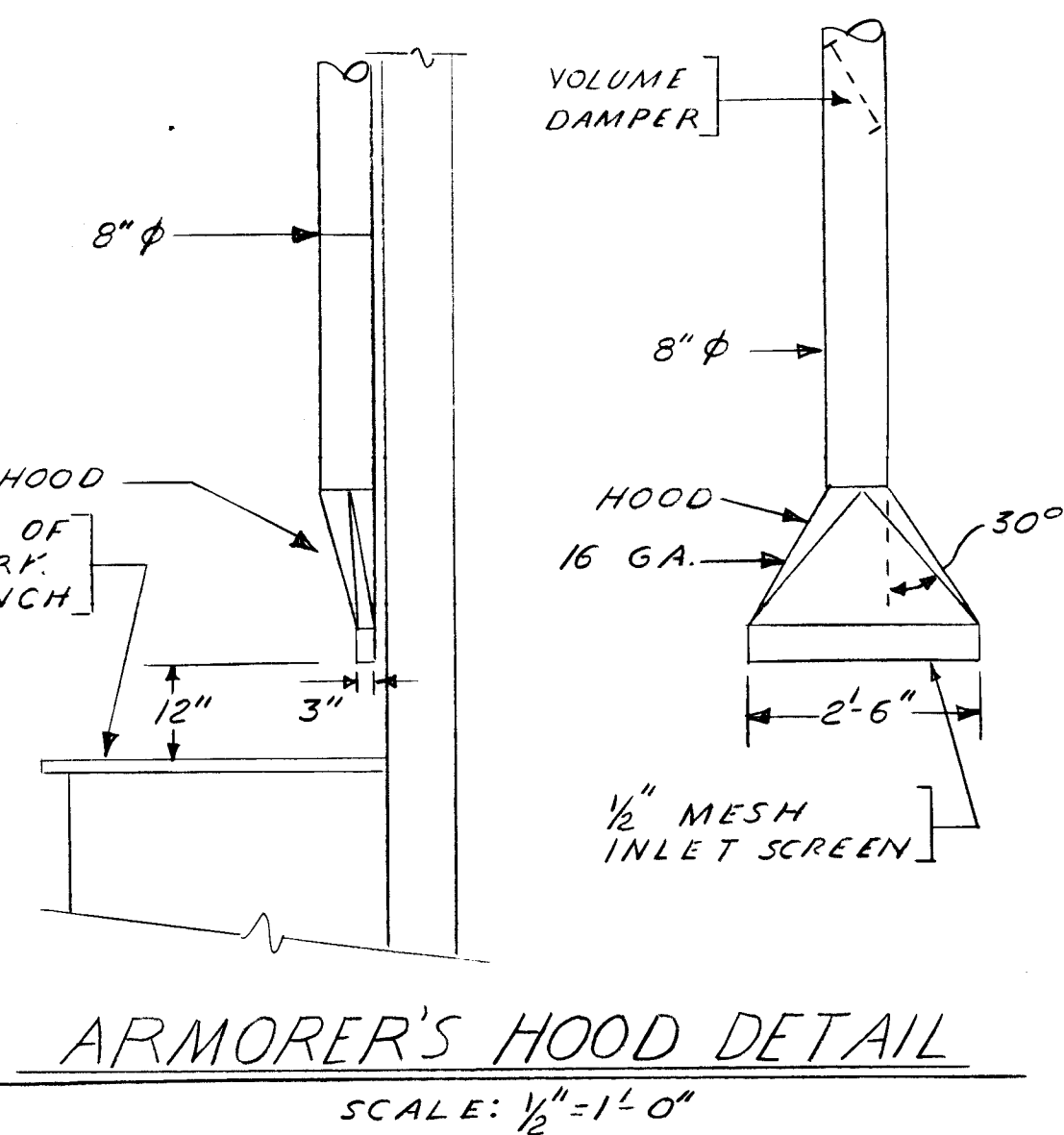
FLO27 HVAC-ELEC-PLUMB RESET  
PALATKA, FL  
MECHANICAL ISOMETRICS

SHEET ID  
M-901

WHILE THESE DRAWINGS ARE BEST VIEWED AND PRINTED IN FULL COLOR, A BLACK AND WHITE GRAY SCALE PRINT WILL STILL CONVEY ALL REQUIRED INFORMATION.



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



REVISIONS					
SYM.	ZONE	DESCRIPTION	DATE	APPROVED	
		REV. BY BUILT CONTRACT DCA01-72-C-0116	RESIDENT ENG	7/17/72	[Signature]

**LEGEND**

- HAER EXHAUST AIR INLET, EXHAUST REG.
- TR TOP REGISTER OR GRILLE
- TC CEILING REGISTER OR GRILLE
- CR RETURN INLET
- ⊙ Z THERMOSTAT, ZONE
- ⊞ VOLUME DAMPER
- ⊞ CANVAS CONNECTION
- ⊞ SPLITTER DAMPER
- ⊞ CEILING DIFFUSER
- ⊞ WALL LOUVER
- ⊞ MANUAL DAMPER OR MOTORIZED OUTLET WITH AIR DEFLECTOR
- ⊞ DUCT TURNING VANES
- ⊞ ACOUSTICAL LINED DUCT (CRA)
- ⊞ FIRE DAMPER
- ⊞ EXISTING DUCT TO BE REMOVED
- ⊞ EXISTING DUCT TO REMAIN
- ⊞ FIN TUBE RADIATOR (TO BE REMOVED)

ROOF-TOP PACKAGED MULTI-ZONE UNIT															
COIL CFM	OA CFM	APPROX. EXT. S.P.	FILTER FPM	NO. OF ZONES	COOLING COIL SECTION				CAPACITY BTU/HR 25.1 TONS	REFRIG. COIL TEMP. °F	ELECTRIC HEAT. COIL CAPACITY KW	ELECTRIC HEAT. COIL SECTION			
					ENTERING DB°F	LEAVING WB°F	ENTERING DB°F	LEAVING WB°F				LEAV. CAPACITY BTU/HR			
10600	1000	0.50"	440	6	79.5	66.4	58.0	56.0	348 687	44	600	50 KW	66.7	81.3	167,140

CONDENSING SECTION		ELECTRICAL	
AMBIENT TEMP. °F DB	SUCTION TEMP. °F	208V-3Ø-60~	
95	42	COMPRESSOR	35 HP
		SUPPLY FAN	15 HP
		EXHAUST FAN	1 HP
		CONDENSER FAN	2-2 HP

\* SYSTEM SIZED FOR 100% O.A. CAPABILITY  
 ZONE 1 3145 CFM, ZONE 2 1605 CFM, ZONE 3 2389 CFM  
 ZONE 4 902 CFM, ZONES 1136 CFM, ZONE 6 1493 CFM

FAN SCHEDULE					
SYMBOL	CFM	APPROX. EXT. S.P. IN.	TYPE FAN	ELECTRICAL	REMARKS
EF-1	750	0.250	PROPELLER	1 HP 120V-1Ø-60~	MAX. DB 69 DB
EF-2	750	0.375	ROOF CENTRIFUGAL	1 HP 120V-1Ø-60~	MAX. T.S. 3500 FPM
EF-3	200	0.375	"	"	"
EF-4	300	0.125	"	"	"
EF-5	500	0.125	"	"	"
EF-6	100	0.125	"	"	"
EF-7	230	0.250	"	"	"

**GENERAL NOTES**

1. HORSEPOWER RATINGS AND STATIC PRESSURES SHOWN ARE BASED ON EQUIPMENT USED FOR DESIGN PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO RECALCULATE THESE VALUES BASED ON THE EQUIPMENT ACTUALLY FURNISHED.
2. EXISTING DUCTWORK TO BE LEFT IN PLACE.
3. PACKAGED MULTI-ZONE UNIT TO BE MOUNTED ON VIBRATION ISOLATORS ON 24" COLUMNS.
4. LOCATION OF ROOF OPENING TO BE DETERMINED BY UNIT SUPPLIED.
5. PROVIDE MULTI-LOUVER OPPOSED-BLADE MANUAL BALANCE DAMPER FOR EACH DUCT LEAVING PACKAGED M.Z. UNIT.
6. ALL DUCT CONNECTIONS TO MULTI-ZONE UNIT TO HAVE CANVAS CONNECTIONS. ALL DUCTS ARE BELOW ROOF EXCEPT ZONE 1 WHICH IS ON ROOF OVER ROOMS 112 & 118.

ELECTRIC HEATING & VENTILATING UNIT*									
CFM	OA		APPROX. EXT. S.P.	ENT. AIR °F	LEAV. AIR °F	FILTER VELOCITY FPM	ELECTRIC COIL HEATER	CAPACITY BTU/HR	ELECTRICAL 208V-3Ø-60~
	MIN.	MAX.							
12000	2000	12000	0.20"	64.1	74.0	400	40 KW	128,500	5 HP

\* HORIZONTAL CEILING MOUNTED

SUBMITTED BY: [Signature]

APPROVED: [Signature]

SH. REF. NO. M-1

U.S. ARMY ENGINEER DISTRICT, MOBILE CORPS OF ENGINEERS MOBILE, ALA.

UNITED STATES ARMY RESERVE U.S. ARMY RESERVE CENTER PALATKA, FLORIDA

50-MAN UNIT EXPANDED TO 200 MAN MECHANICAL

SPEC. NO. DCA01-72-B-004B

FILE NO. ORC-1450

DRAWING NO. 29-06-59

SCALE AS SHOWN DATE MARCH 1972 SHEET 21