

Date:	4/1/2022	IFC SET	9/17/2021	PLAN REVIEW	IFC SET
Proj. No:	10036	MGA	4.1.2021	IFC SET	IFC SET
Drawn By:	MGA	JIT			
Chkd By:	MGA				
Dsgn By:	MGA				
Acad File:					

PORTLAND OREGON
**NORTH 18
 NW 18TH AVE**
MECHANICAL FLOOR PLAN - LEVEL 1



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 FAX: (503) 234-0677
 WWW.MFA-ENG.COM

SHEET

M201



Caliber Mechanical.com

- KEY NOTES:**
- (A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING - TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART BELOW.
 - (B) 12X12 RATED AND LOCKABLE ACCESS HATCH INTO SUB-DUCT SHAFT, SEE (1) M601
 - (C) FOR TYPICAL VHP DETAIL, SEE (3) M602 FOR BEDROOMS CONTAINING VTAC CLOSETS, GO TO UNDERCUT DOOR TO LIVING ROOM.
 - (D) 4" DRYER EXHAUST ROUTED TO SUB DUCT SYSTEM OR (1) M601 (3) M603 EXTERIOR WALL TERMINATION
 - (E) DWELLING UNIT ERV PROVIDED THE ASHRAE 62.2 VENTILATION QUANTITY, ALL ERV DUCTWORK TO BE 5", ERV 2 BEDROOM EXHAUST DUCTWORK TO BE 4".
 - (F) FOR TYPICAL F/S INSTALLATION, AND CONTROLS, SEE (1) M602 AT LEAST 15' OF DUCT PAST FIRE DAMPERS SHOULD BE LINED WITH 1" INTERNAL DUCT LINING.
 - (G) AC PORT DETAIL SEE ARCH FOR LOCATION, SEE (4) M603
 - (H) 6" HOOD DUCT TO SUB DUCT SHAFT OR EXTERIOR WALL TERMINATION. BACK DRAFT DAMPER INTEGRAL TO HOOD. HOOD FAN TO OPERATE INTERMITTENTLY.
 - (I) FOR 6" & 10" FIRE PENETRATION DETAILS, SEE (1) M603 (2) M603
 - (J) DUCTED FAN COIL DETAIL, SEE (5) M601
 - (K) EXTERIOR EXHAUST PLENUM - SEE (4) M602 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
 - (L) 1.5KW WALL HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY. IF PLACED WITHIN CORRIDOR OR DEMISING WALL, PROVIDE A 2 LAYER 5/8" GWB CAULKED BACK BOX, SEALED AIRTIGHT BEHIND THE CADET HEATER.
 - (M) X" OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES. DAMPER TO BE LOW LEAK CLASS 1 DAMPER.
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 - (Q) HIGH SIDEWALL SUPPLY, LOW SIDEWALL RETURN.
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SHAFT DUCT SIZES

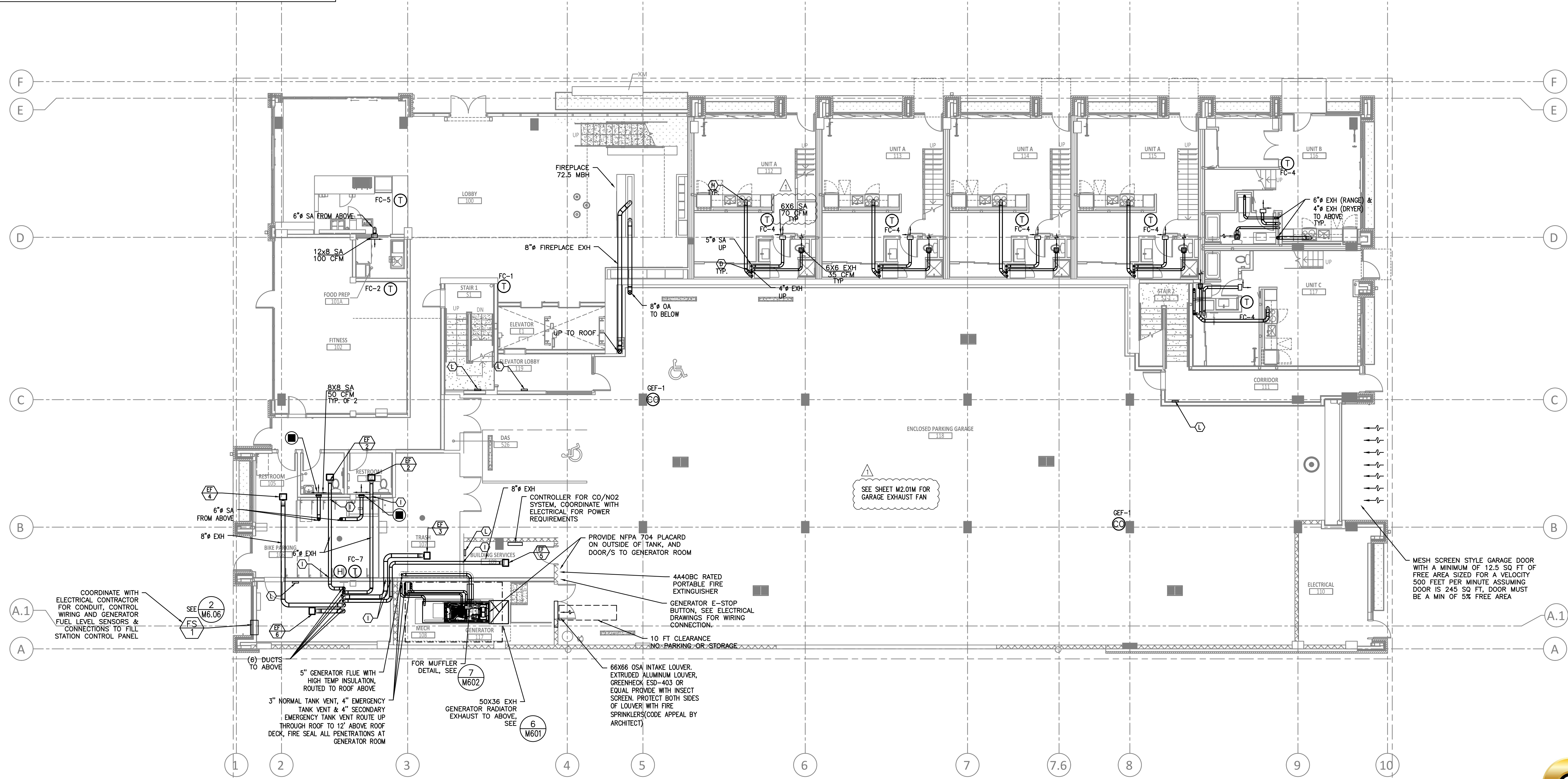
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VENTILATION CALCULATIONS:

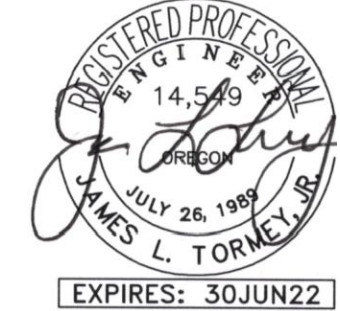
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1 MECHANICAL FLOOR PLAN - LEVEL 1
 M201 SCALE: 1/8" = 1'-0"



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GARAGE EXHAUST CALCULATIONS:

7,968 sq ft x 0.05 cfm/sq ft = 398 CFM
 7,968 sq ft x 0.75 cfm/sq ft = 5,976 CFM

SEQUENCE OF OPERATIONS CO & NO2 SENSORS:

PROVIDE A COMBINATION ELECTROCHEMICAL CARBON MONOXIDE & NITROGEN DIOXIDE SENSOR (SYSTEM) TO OPERATE GEF-X (VFD HIGH SPEED SETTING) WHENEVER SPACE CO & NO2 LEVELS RISE ABOVE SET POINT.
 SYSTEM TO BE SET TO FAIL WITH THE FAN IN THE "HIGH SPEED" SETTING. SET SENSORS AT 60'AFF.
 PROVIDE X SENSOR(S) AS SHOWN ON THE PLAN, AND WIRE TO A CENTRAL CONTROLLER TO OPERATE GEF-X ON HIGH SPEED WHENEVER ANY SENSOR(S) CALLS FOR OPERATION.
 SENSORS TO BE RATED FOR MIN 50' RADIUS

SO2:

- GEF-X TO OPERATE CONTINUOUSLY AT LOW SPEED VFD SET POINT
- TRIP POINT - ENGAGE VFD HIGH SPEED WHEN CO LEVELS RISE ABOVE 35 PPM AND NO2 LEVELS RISE ABOVE 2.0 PPM
- FALLING TRIP POINT - DISENGAGE VFD HIGH SPEED WHEN CO LEVELS DROP TO 15 PPM AND NO2 LEVELS DROP TO 1.0 PPM
- PROVIDE WITH AUDIBLE ALARM WHEN CO LEVELS RISE ABOVE 50 PPM AND NO2 LEVELS RISE ABOVE 2.8 PPM.

SHAFT DUCT SIZES

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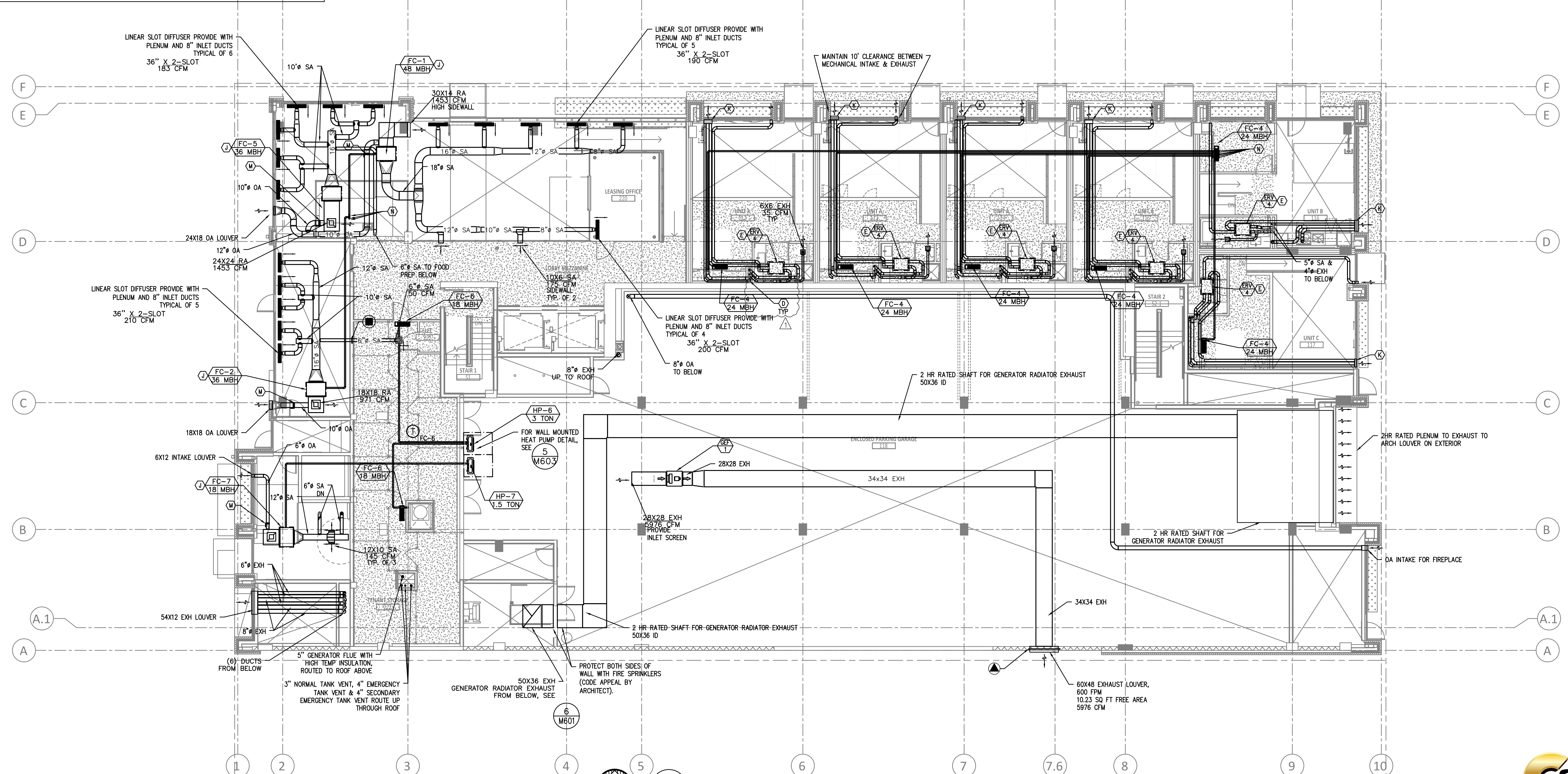
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MECHANICAL FLOOR PLAN - LEVEL 2
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OREGON
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 MECHANICAL FLOOR PLAN - LEVEL 3
 PORTLAND

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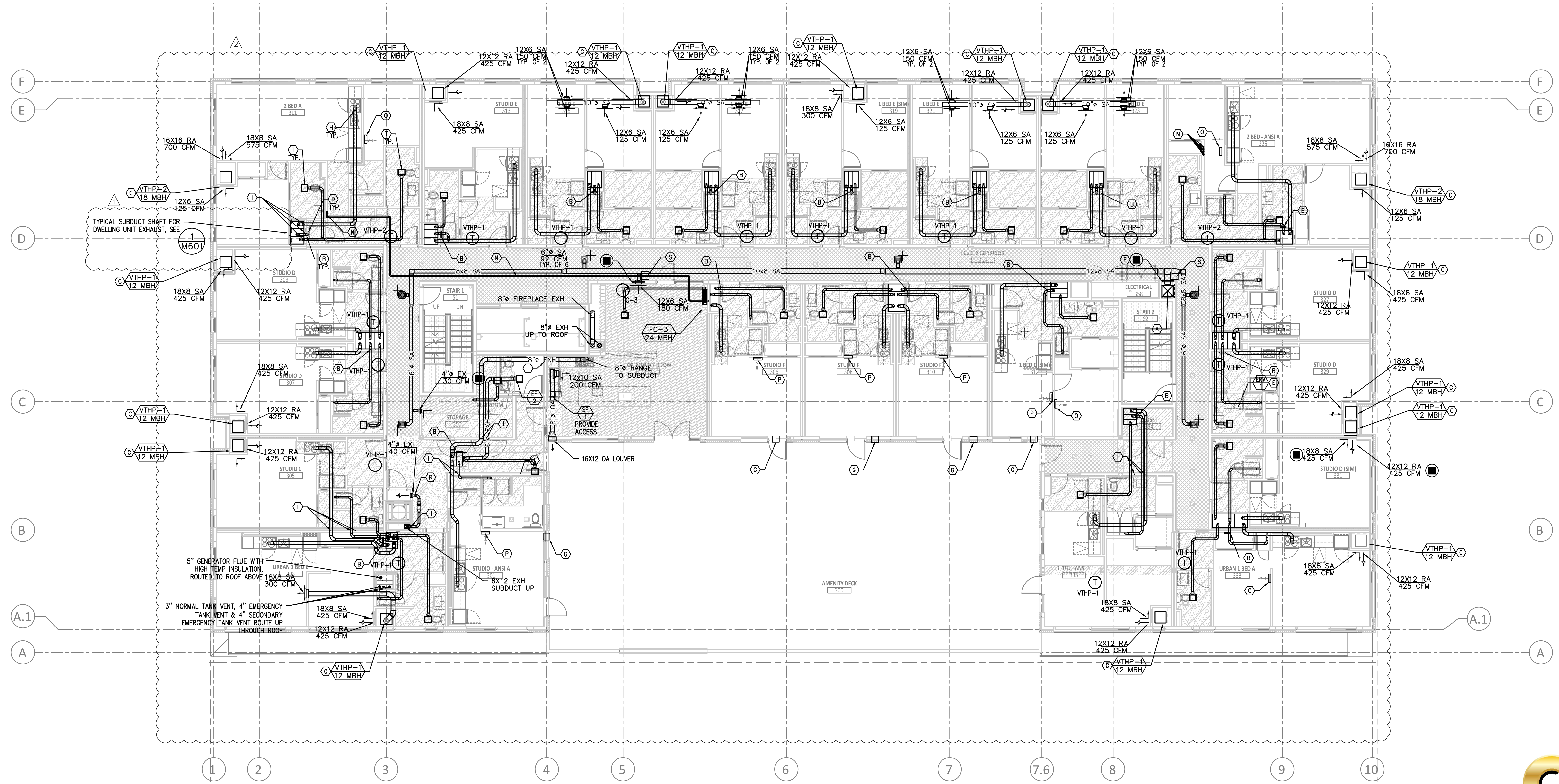
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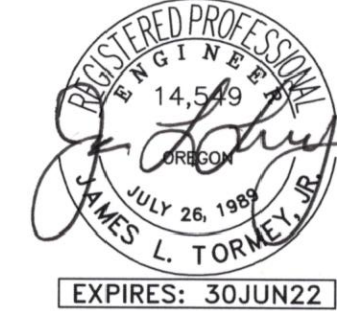
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1
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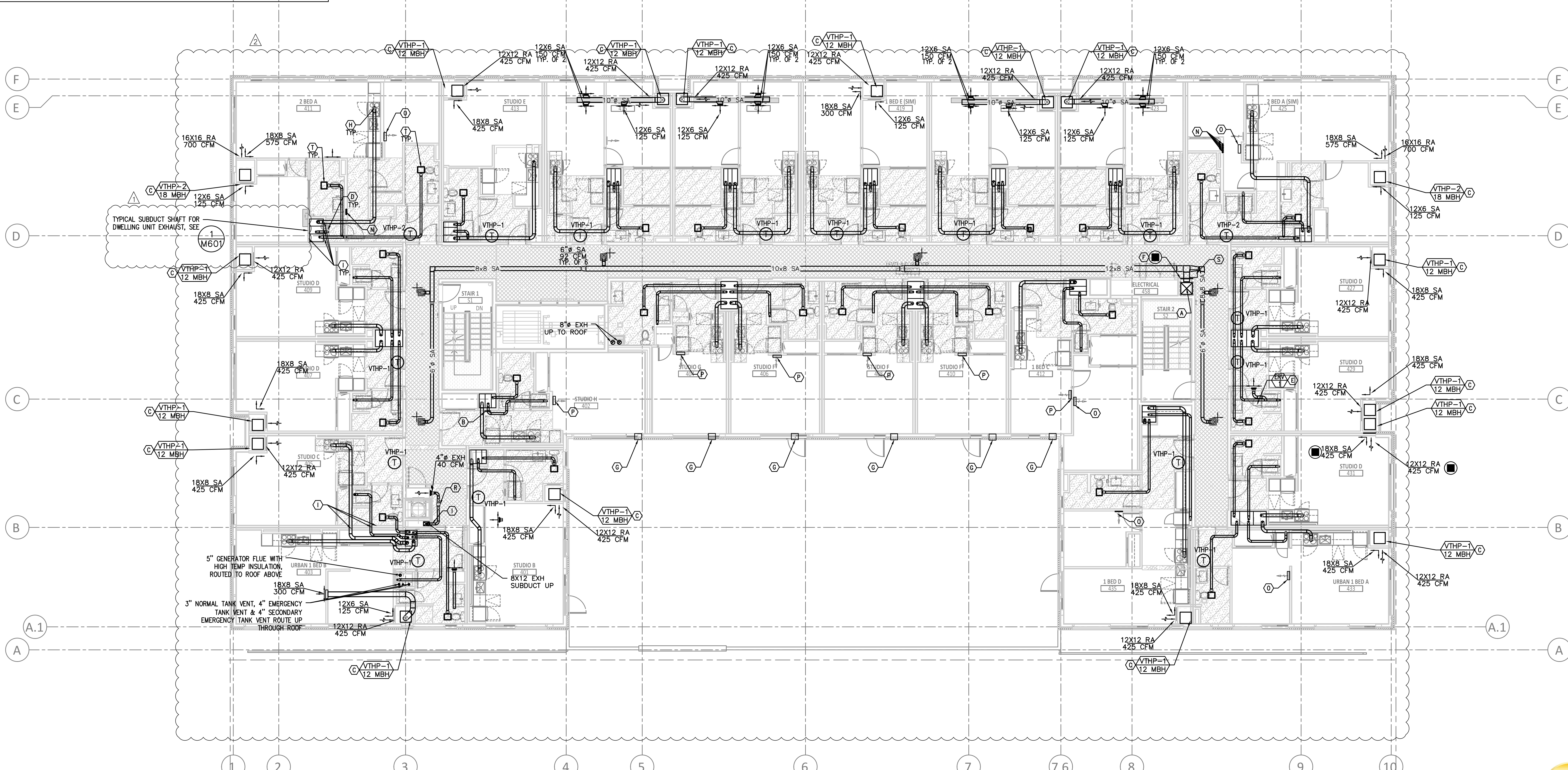
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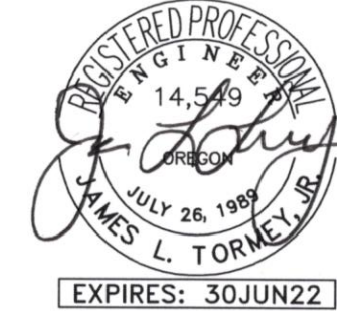
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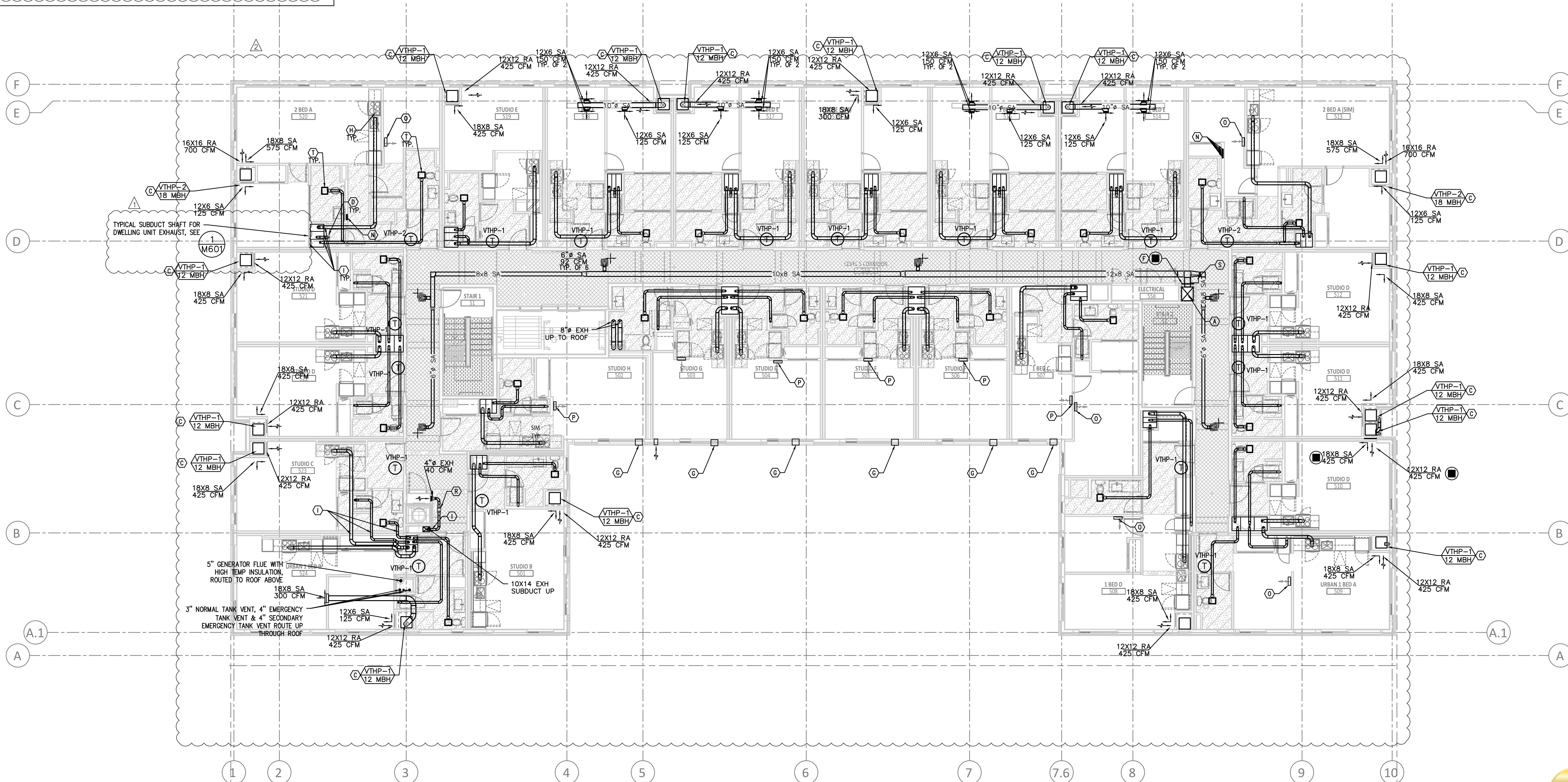
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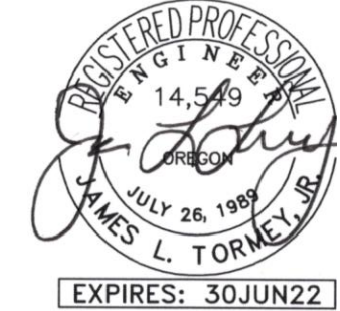
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COMMON SPACES AND HALLWAYS ARE VENTILATED BY PACKAGED ROOF TOP UNITS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER UNITS



1 MECHANICAL FLOOR PLAN - LEVEL 5 TO 7
 M205 SCALE: 1/8" = 1'-0"



Date:	4/1/2022	IPC SET	9/17/2021	PLAN REVIEW	IPC SET
Proj. No:	10035	MGA	4.1.2021	IPC SET	IPC SET
Drawn By:	MGA	JIT			
Chkd By:	MGA				
DSGN By:					
Acad File:					

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 MECHANICAL FLOOR PLAN - ROOF
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M206



- KEY NOTES:**
- (A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING - TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART BELOW.
 - (B) 12X12 RATED AND LOCKABLE ACCESS HATCH INTO SUB-DUCT SHAFT, SEE (1) M601
 - (C) FOR TYPICAL VHP DETAIL, SEE (3) M602 FOR BEDROOMS CONTAINING VTAC CLOSETS, GO TO UNDERCUT DOOR TO LIVING ROOM.
 - (D) 4" DRYER EXHAUST ROUTED TO SUB DUCT SYSTEM OR EXTERIOR WALL TERMINATION (1) M601 (3) M603
 - (E) DWELLING UNIT ERV PROVIDED THE ASHRAE 62.2 VENTILATION QUANTITY, ALL ERV DUCTWORK TO BE 5", ERV 2 BEDROOM EXHAUST DUCTWORK TO BE 4".
 - (F) FOR TYPICAL F/S INSTALLATION, AND CONTROLS, SEE (1) M602 AT LEAST 15' OF DUCT PAST FIRE DAMPERS SHOULD BE LINED WITH 1" INTERNAL DUCT LINING.
 - (G) AC PORT DETAIL SEE ARCH FOR LOCATION, SEE (4) M603
 - (H) 6" HOOD DUCT TO SUB DUCT SHAFT OR EXTERIOR WALL TERMINATION. BACK DRAFT DAMPER INTEGRAL TO HOOD. HOOD FAN TO OPERATE INTERMITTENTLY.
 - (I) FOR 6" & 10" FIRE PENETRATION DETAILS, SEE (1) M603 (2) M603
 - (J) DUCTED FAN COIL DETAIL, SEE (5) M601
 - (K) EXTERIOR EXHAUST PLENUM - SEE (4) M602 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
 - (L) 1.5KW WALL HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY. IF PLACED WITHIN CORRIDOR OR DEMISING WALL, PROVIDE A 2 LAYER 5/8" GWB CAULKED BACK BOX, SEALED AIRTIGHT BEHIND THE CADET HEATER.
 - (M) X" OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES. DAMPER TO BE LOW LEAK CLASS 1 DAMPER.
 - (N) REFRIGERANT LINESETS FROM CONDENSERS ON ROOF TO FAN COILS ON LEVELS 1&2.
 - (O) 1.5KW CADET HEATER FOR LIVING UNIT BEDROOM.
 - (P) 2.5KW CADET HEATER FOR LIVING UNIT WITH AC PORT.
 - (Q) HIGH SIDEWALL SUPPLY, LOW SIDEWALL RETURN.
 - (R) 4" EXH TO SUBDUCT SHAFT. FOR CAR DAMPER, SEE (6) M602
 - (S) 16X16 RATED ACCESS PANEL FOR FSD.
 - (T) PANASONIC WHISPERGREEN CEILING FAN WITH 4" DUCT TO SUBDUCT VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE (2) M601

SHAFT DUCT SIZES

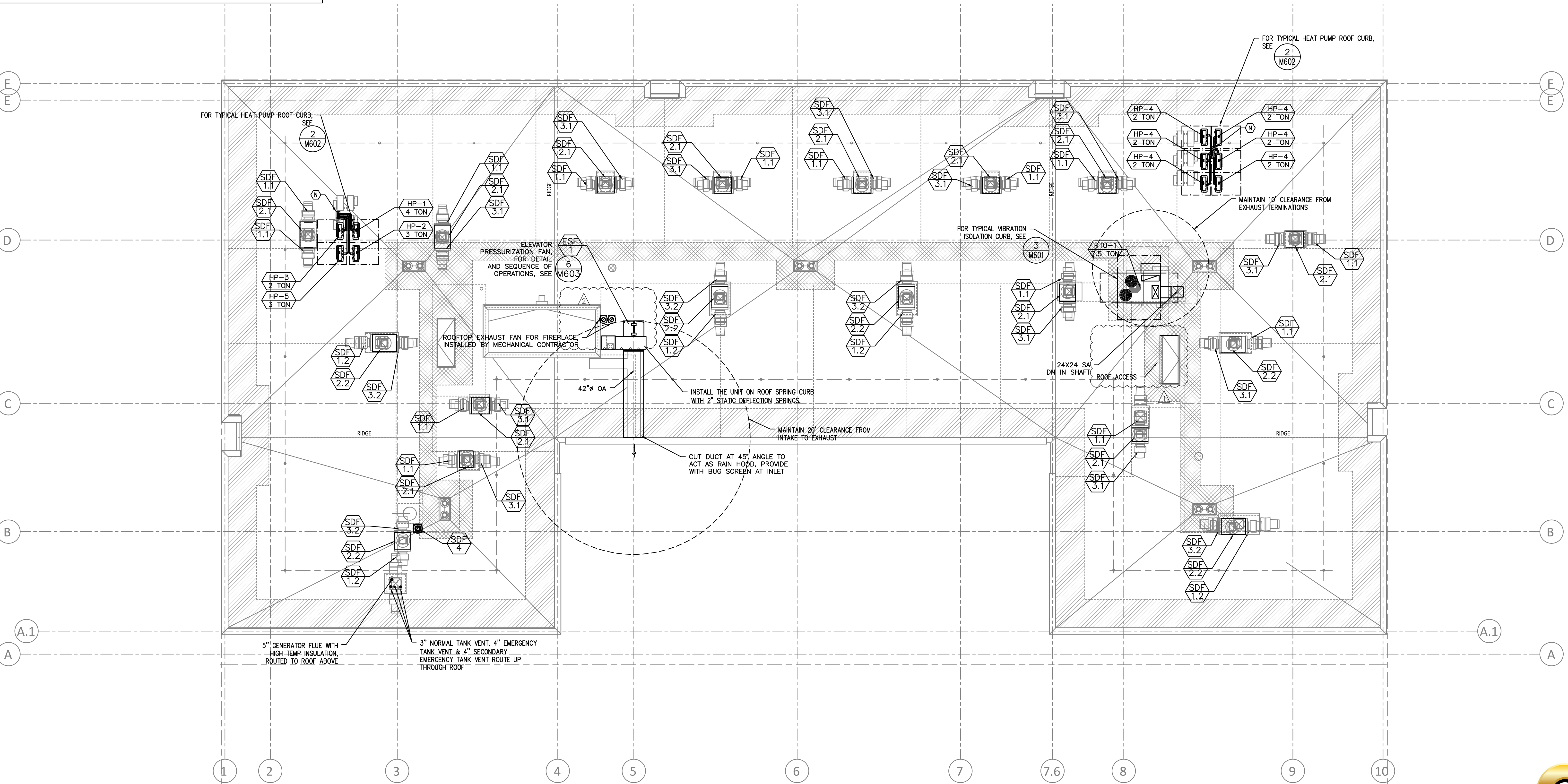
FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	24 X 24	3000	NA	NA	RTU-1
6TH	24 X 24	3000	NA	NA	RTU-1
5TH	24 X 22	2400	NA	NA	RTU-1
4TH	22 X 18	1800	NA	NA	RTU-1
3RD	22 X 16	1200	NA	NA	RTU-1
2ND	16 X 12	600	NA	NA	RTU-1

VENTILATION CALCULATIONS:

ALL DWELLING UNITS ARE VENTILATED BY PTHP's & NATURAL VENTILATION, (SIZED PER ASHRAE 62.2).

COMMON SPACES AND HALLWAYS ARE VENTILATED BY PACKAGED ROOF TOP UNITS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER UNITS



1 MECHANICAL FLOOR PLAN - ROOF
 M206 SCALE: 1/8" = 1'-0"

MECHANICAL LEGEND

MECHANICAL LEGEND table with symbols and descriptions for various mechanical components like diffusers, valves, dampers, and piping.

INDOOR UNITS - *

Table of Indoor Units listing systems like LOBBY, FITNESS, COMMUNITY, etc., with columns for efficiency, capacity, and other technical specifications.

* - PROVIDE ALL UNITS THAT CANNOT BE DRAINED BY GRAVITY WITH CONDENSATE PUMP, ROUTE ALL CONDENSATE LINES HIDDEN WITHIN STRUCTURE TO AN APPROVED LOCATION PROVIDED BY THE PLUMBER.

OUTDOOR UNITS - SPLIT SYSTEM HP

Table of Outdoor Units listing systems like LOBBY/MAIL/OFFICE, FITNESS, COMMUNITY, etc., with columns for cooling capacity, efficiency, and refrigerant details.

** - ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

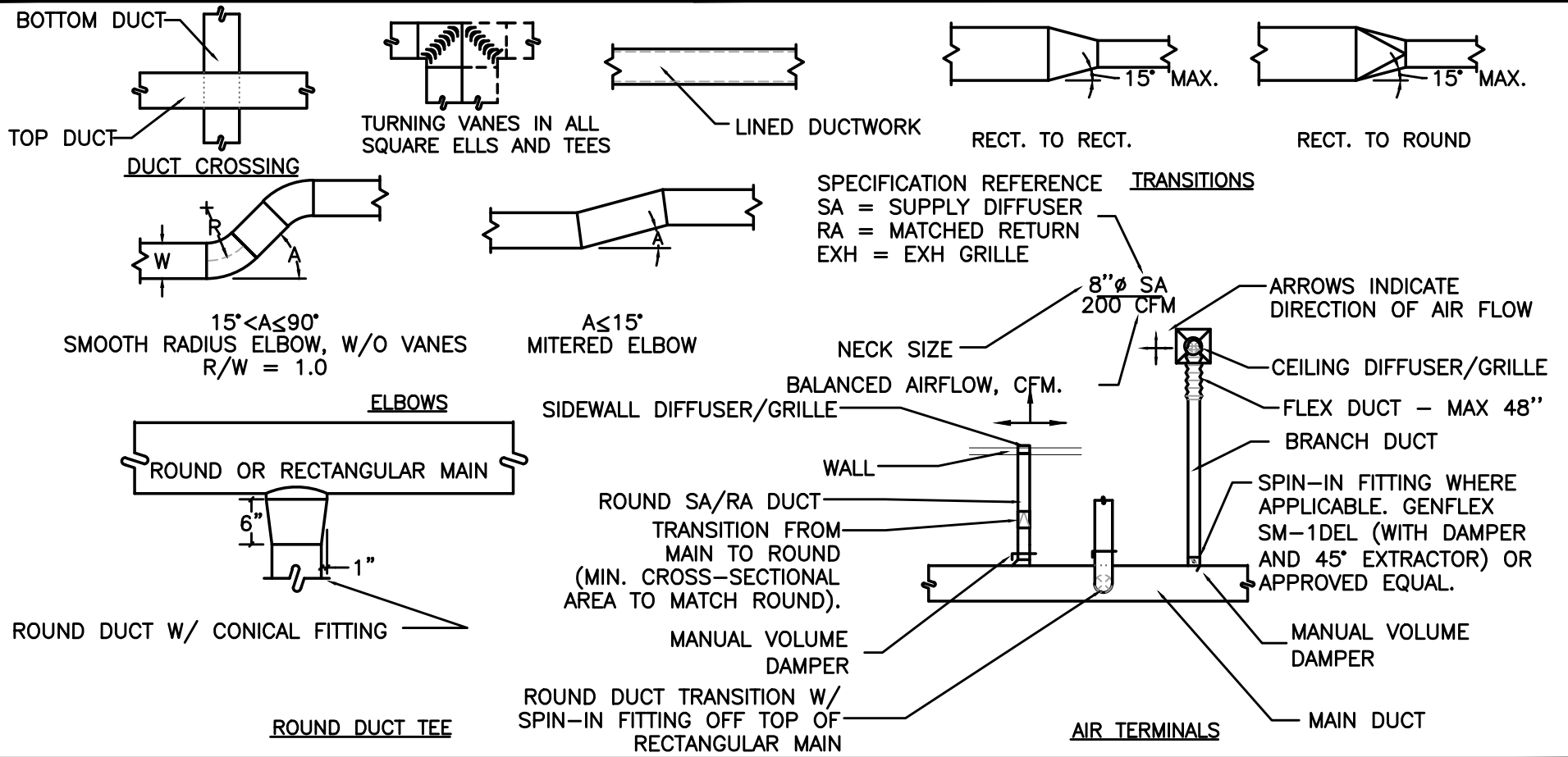
- NOTE: 1. THE RTU FOR COMMON AREAS AND FRESH AIR SHOULD BE MOUNTED ON AN ISOLATION CURB (MASON RSC CURB WITH 2" STATIC DEFLECTION) IF ON THE ROOF, OR RAILS WITH SPRING ISOLATORS WITH 2" MINIMUM STATIC DEFLECTION.

VERTICAL TERMINAL HEAT PUMP

Table for Vertical Terminal Heat Pump showing details for Studio/1-Bed and 2-Bed units, including capacity, efficiency, and design parameters.

** - CONDENSATE DRAIN KIT PROVIDED BY MECHANICAL CONTRACTOR, ALL CONDENSATE PIPING TO BE PROVIDED AND INSTALLED BY PLUMBING CONTRACTOR.

AIR DISTRIBUTION DETAILS



SUB-DUCT SYSTEM

Table of Sub-Duct System listing systems like SUB-DUCT KITCHEN HOOD, SUB-DUCT LAUNDRY, SUB-DUCT BATHROOM, etc., with columns for capacity, pressure, and interlock details.

***- ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

EXHAUST FANS

Table of Exhaust Fans listing systems like CEILING CABINET, RESTROOM, COMM. TRASH, etc., with columns for capacity, speed, and interlock details.

***- FAN TO RUN AT LOW SPEED CONTINUOUSLY, AND INCREASE TO HIGH SPEED UPON ACTIVATION OF THE MOTION SENSOR.

VENTILATION AIR SCHEDULE - FC-1

Ventilation Air Schedule table for FC-1 showing room details, occupant load, and air flow requirements for various rooms like LOBBY 100 and LEASING OFFICE 120.

VENTILATION AIR SCHEDULE - FC-3

Ventilation Air Schedule table for FC-3 showing room details and air flow requirements for COMMUNITY ROOM 202.

VENTILATION AIR SCHEDULE - FC-2

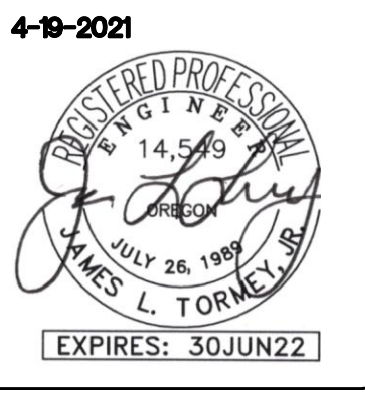
Ventilation Air Schedule table for FC-2 showing room details and air flow requirements for FITNESS 102.

VENTILATION AIR SCHEDULE - FC-5

Ventilation Air Schedule table for FC-5 showing room details and air flow requirements for COFFEE SHOP 101.

ELECTRIC DUCT HEATER

Table for Electric Duct Heater showing specifications like size, power, and design basis.



Project information table including Date (4/1/2022), Project No. (10035), Drawn By (MGA), and other details.

NORTH 18 NW 18TH AVE MECHANICAL SCHEDULES

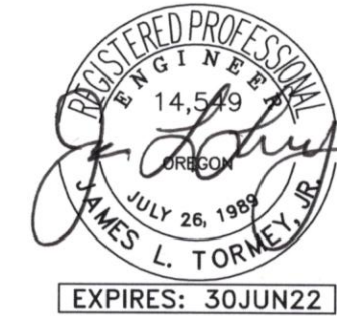
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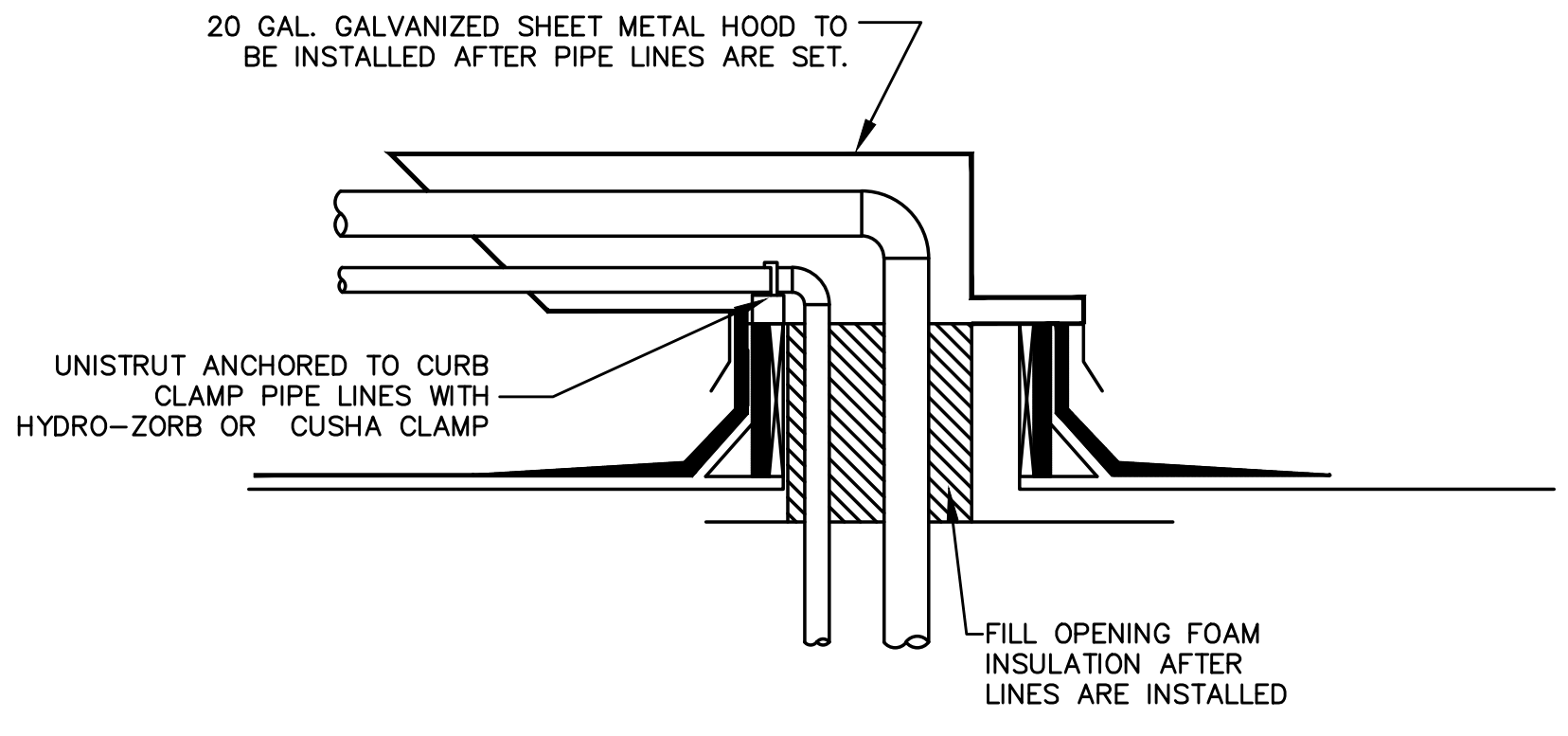
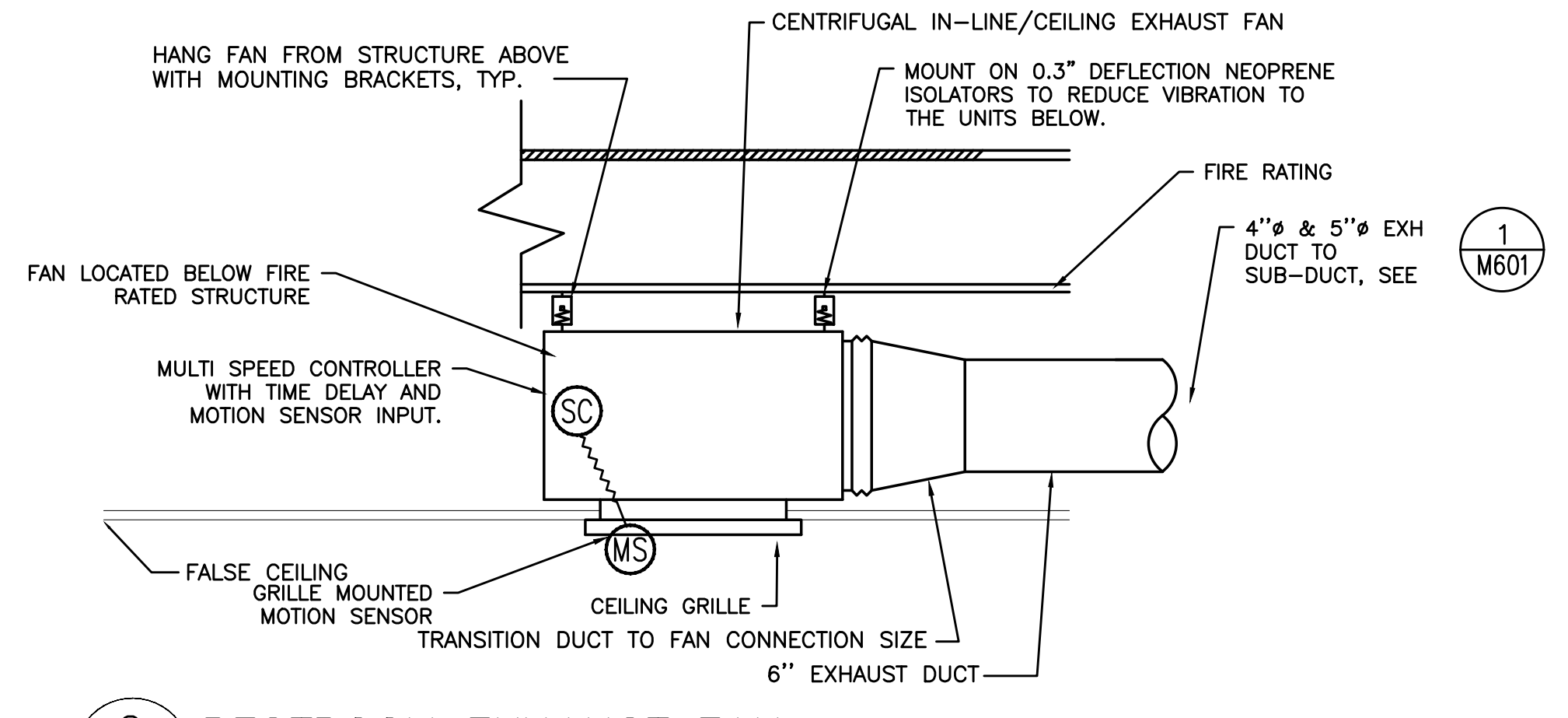
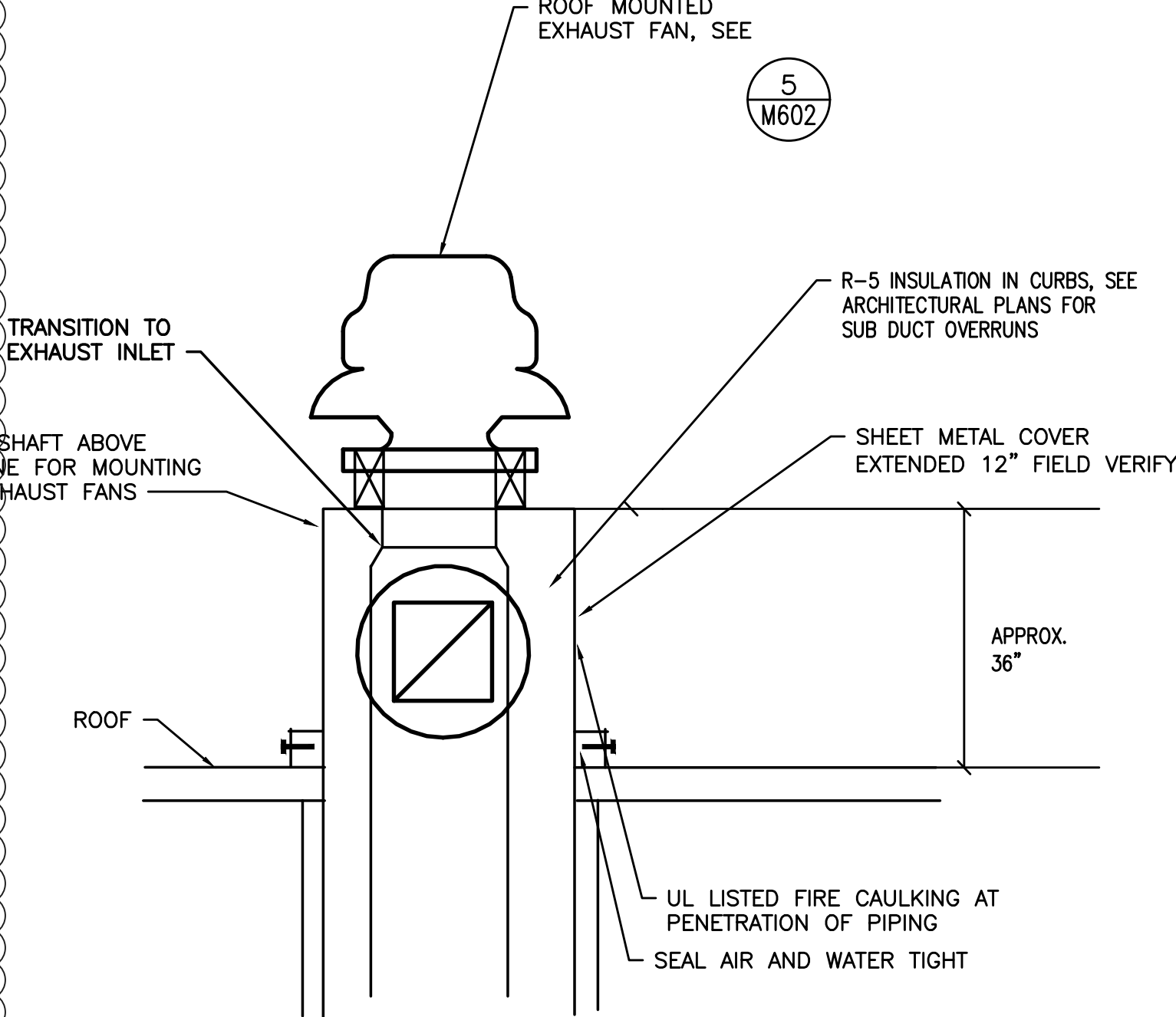
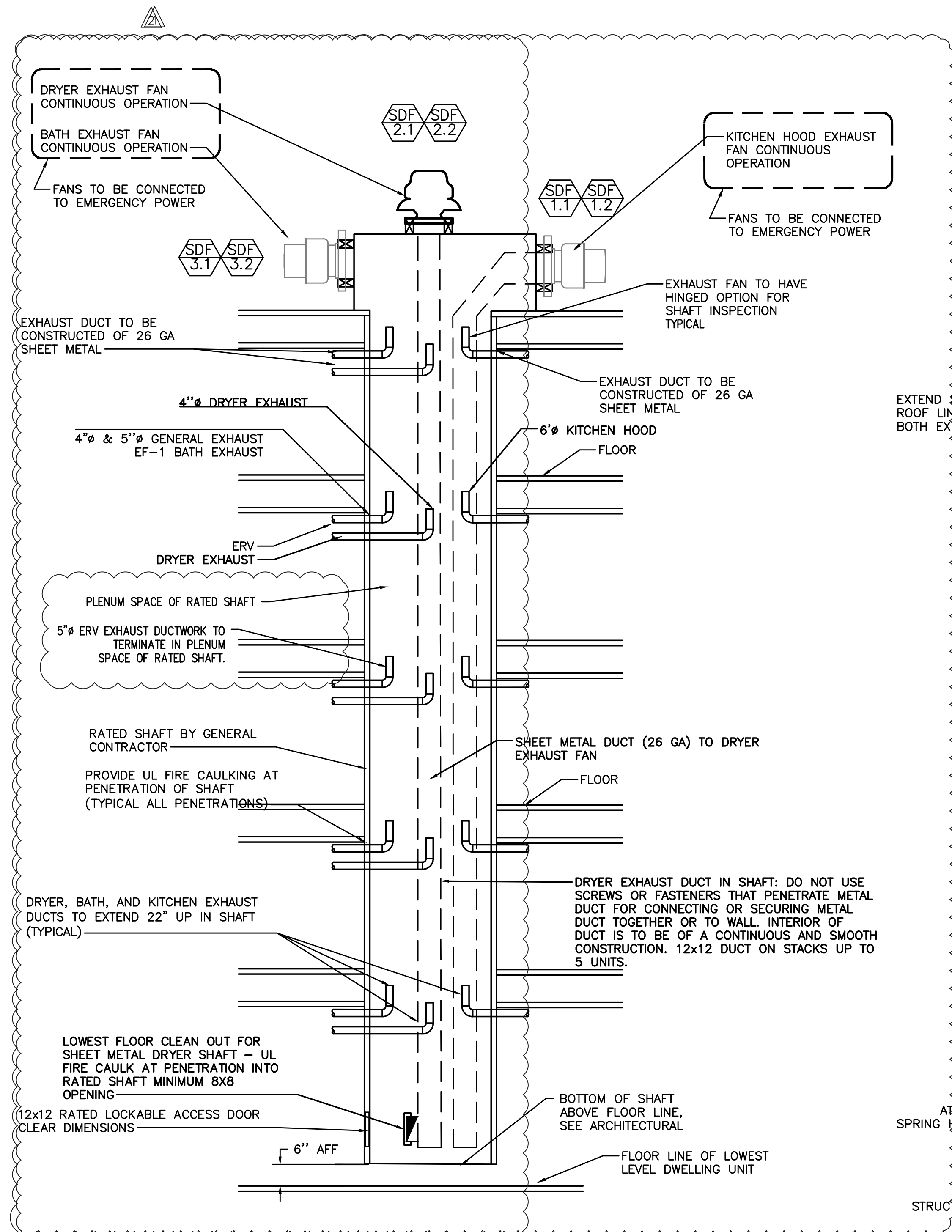
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Caliber Plumbing & Mechanical Inc. logo and contact information including phone number 503-206-7591 and website CaliberMechanical.com



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Chkd By:	JIT	
DSGN By:	MGA	
Acad File:		

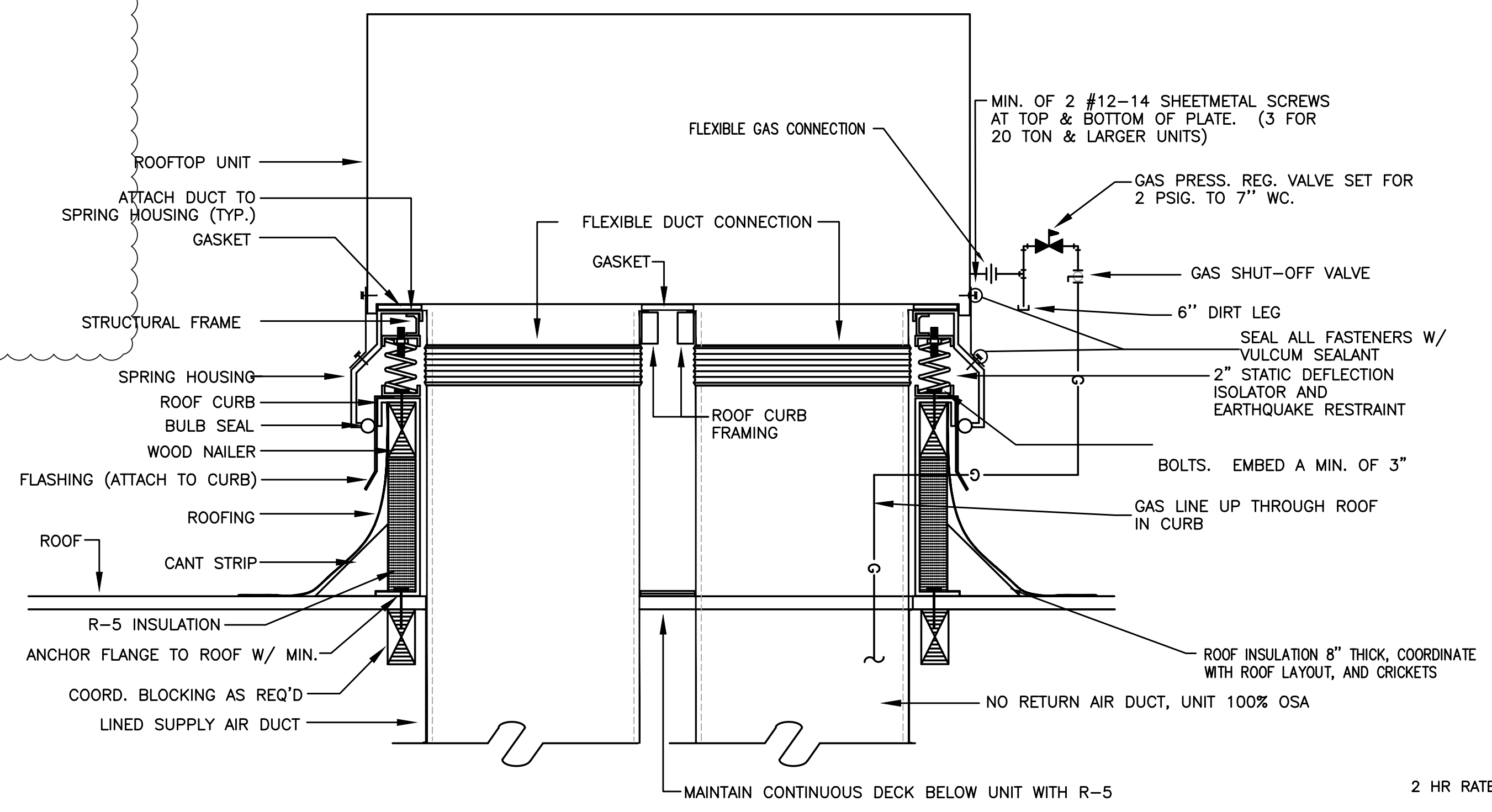


1 BATH, DRYER & RANGE SUBDUCT SHAFT DETAIL
M601 SCALE: DETAIL

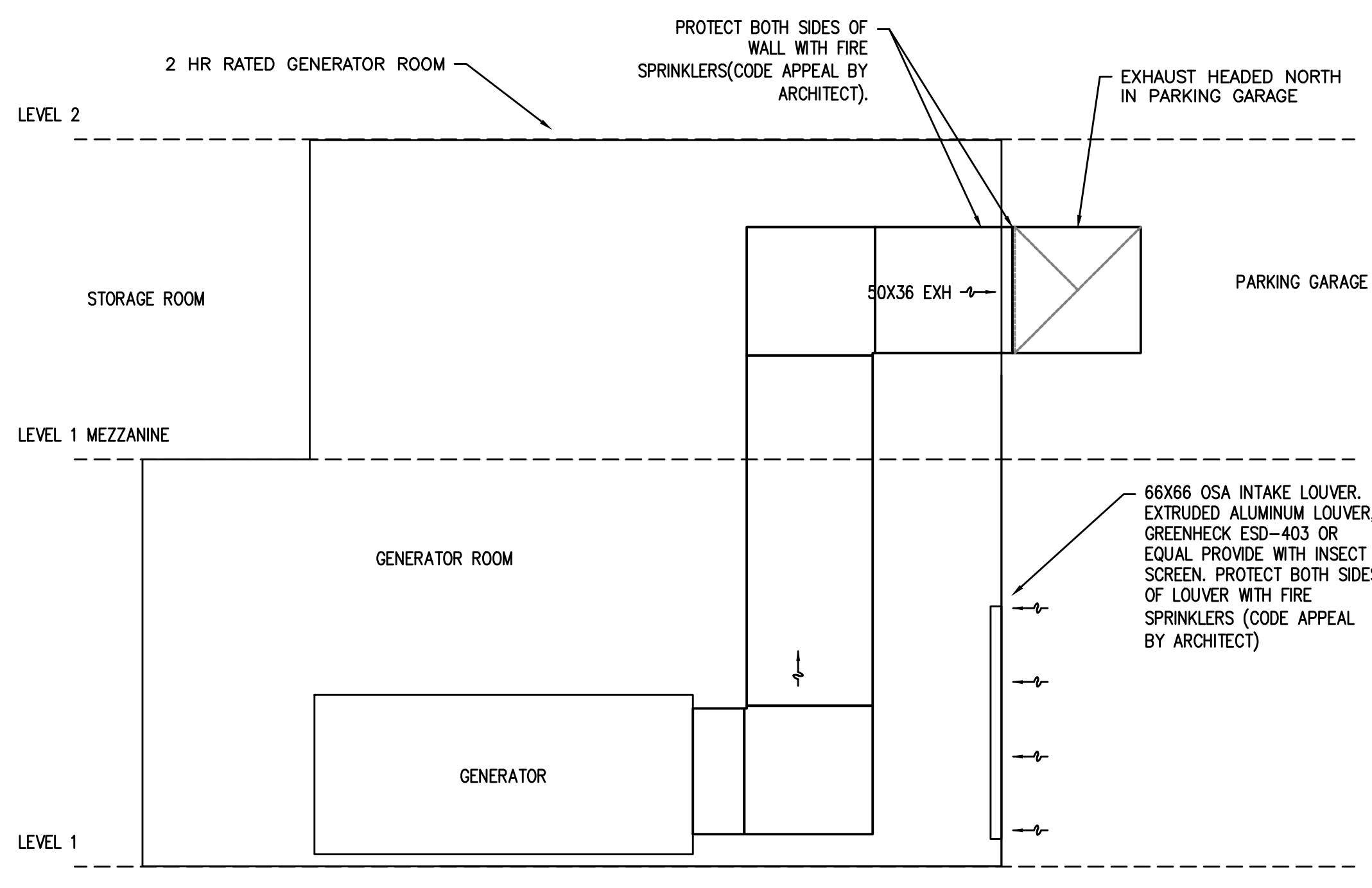
2 RESTROOM EXHAUST FAN
M601 SCALE: DETAIL

4 REFRIGERANT ROOF PENETRATIONS
M601 DETAIL

5 DUCTED FAN COIL
M601 SCALE: DETAIL



3 ROOF TOP UNIT W/ VIBRATION ISOLATION CURB
M601 SCALE: DETAIL



6 GENERATOR RADIATOR INTAKE/EXHAUST
M601 SCALE: DETAIL

ROOFTOP HVAC UNITS	
MARK NUMBER	RTU-1 7.5 TON
SYSTEM	CORRIDOR
TYPE	SZVAV **
DISCHARGE	HORIZONTAL
TOTAL CFM	3000
ECONOMIZER	YES
MIN. OSA	3000
MAX OSA (FULL OCCUPANCY)	NA
CO2 CONTROL	NA
EXTERNAL SP. (H2O)	1.0
TOTAL SP. (H2O)	---
RPM	936
WHEEL TYPE/ SIZE	F.C. --- (DIRECT)
MOTOR HP.	2.4 BHP
POWER EXH FAN/ACCESSORY	NONE
MIN FILTER SIZE	2-16X25
FILTER TYPE	2" - 30%
GAS INPUT/OUTPUT (MBH)	224 / 184
EFF. (AFUE)	80.0%
STAGES/TYP	2-S.S. HIGH HEAT
TOTAL CLG. (TONS)	7.5
NET CLG. (MBH)	89.5
ENT. EVAP AIR TEMP (DB/WB.)	90/67
LVG. EVAP AIR TEMP (DB/WB.)	55/54
AMBIENT AIR (F)	95
EER/IEER	12/13
REFRIGERANT	410A
REFRIGERANT CHARGE	XX
DESIGN WEIGHT (LBS.)	1050
SMOKE DETECTOR (SUPPLY DUCT)	YES
SPRING ISOLATION ROOF CURB	YES
CONVENIENCE OUTLET - ALWAYS POWERED	NO
VOLTAGE/PHASE - ***	208/3
MCA/MOCP - ***	45/50
BASIS OF DESIGN - CARRIER MODEL	48HCT08A2A5

GARAGE EXHAUST FANS	
MARK NUMBER	GEF
TYPE	SQ IN-LINE BELT DRIVE
SYSTEM	GARAGE
CFM	5,976
TOTAL SP. (IN H2O)	0.5
RPM	1196
TIP SPEED (FPM)	6,543
MOTOR WATTS OR HP	2 HP
CONTROLLED BY	CO/NO2
INTERLOCK WITH	NONE
FAN SPEED CONTROLLER	NO
WHEEL TYPE	BI
BACK DRAFT DAMPER	NONE
ISOLATION	SPRING
DESIGN WEIGHT (LBS)	250
MAX. SONES OR dBA	21 SONES
MAX AMPS - ***	7.5 FLA
POWER (VOLTS/PHASE/HZ) - ***	208/60/3
BASIS OF DESIGN:	GREENHECK BSQ-200-20

MINIMUM VENTILATION FOR DWELLING UNITS PER ASHRAE 62.2				
STUDIO	30 CFM			
1 BEDROOM	45 CFM			
2 BEDROOM	70 CFM			

ENERGY RECOVERY VENTILATOR - ERV *				
MARK NUMBER	ERV 1	ERV 2	ERV 3	ERV 4
SYSTEM	STUDIO	1-BEDR	2-BEDR	LOFT
OUTSIDE AIR/SUPPLY AIR	50 CFM	50	70 CFM	70 CFM
RETURN AIR/EXHAUST AIR	50 CFM	50	70 CFM	70 CFM
ESP	0.35	0.25	0.25	0.25
SENSIBLE RECOVERY EFFICIENCY	81%	75%	75%	75%
WATTS - UNIT ELECTRICAL	29	68	68	68
VOLT/PHASE - UNIT ELECTRICAL	120	120-1	120-1	120-1
WEIGHT (LBS)	50	50	50	50
BASIS OF DESIGN:	PANASONIC FV-10VE1	PANASONIC FV-10VE2	PANASONIC FV-10VE2	PANASONIC FV-10VE2

* - UNIT TO RUN CONTINUOUSLY
 ** - PROVIDE VFD DISPLAY KIT, SET VFD TO 100%
 *** - MOTORIZED DAMPERS TO BE FIELD INSTALLED.

* PROVIDE ACCESS PANEL.

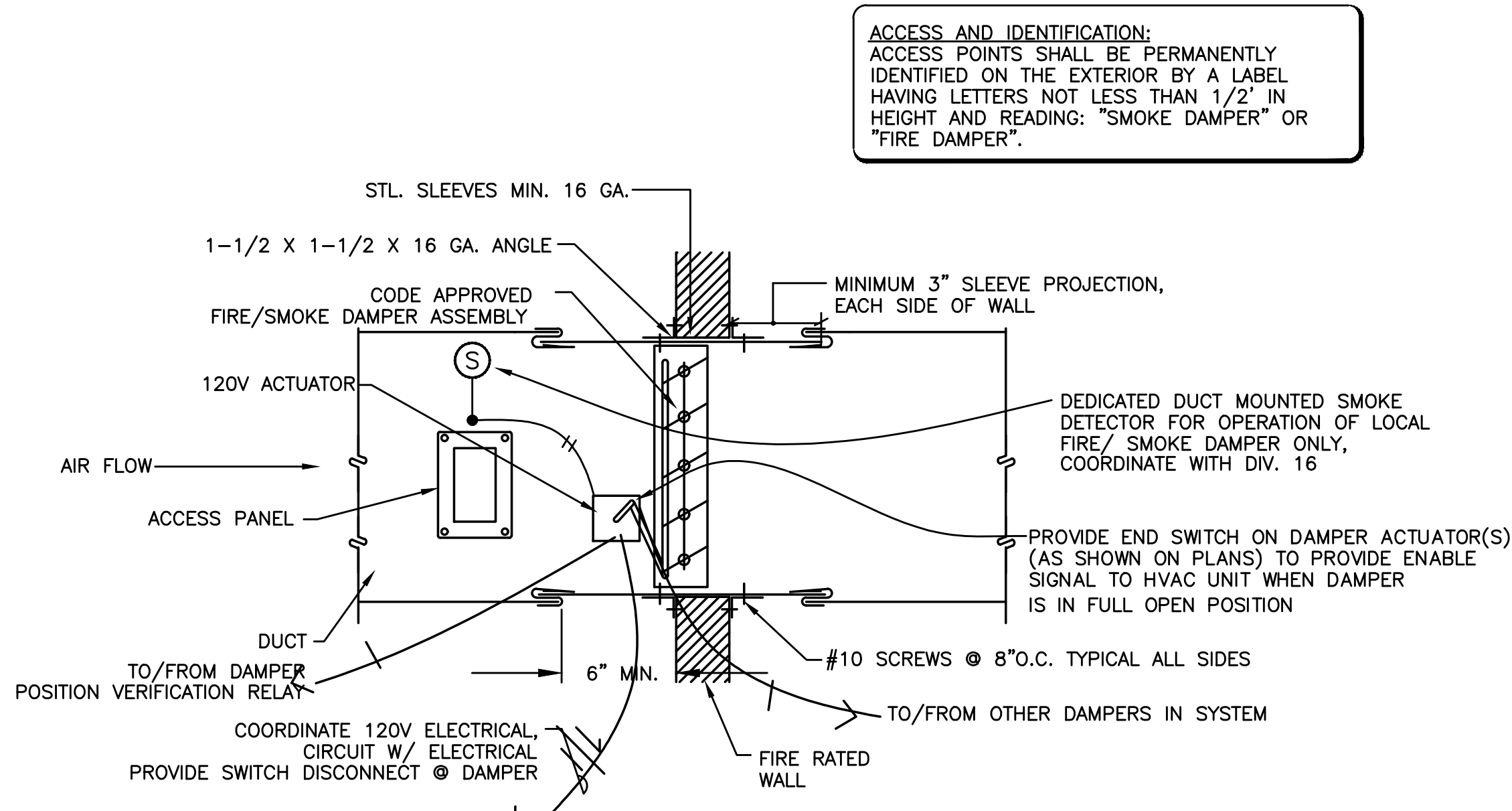
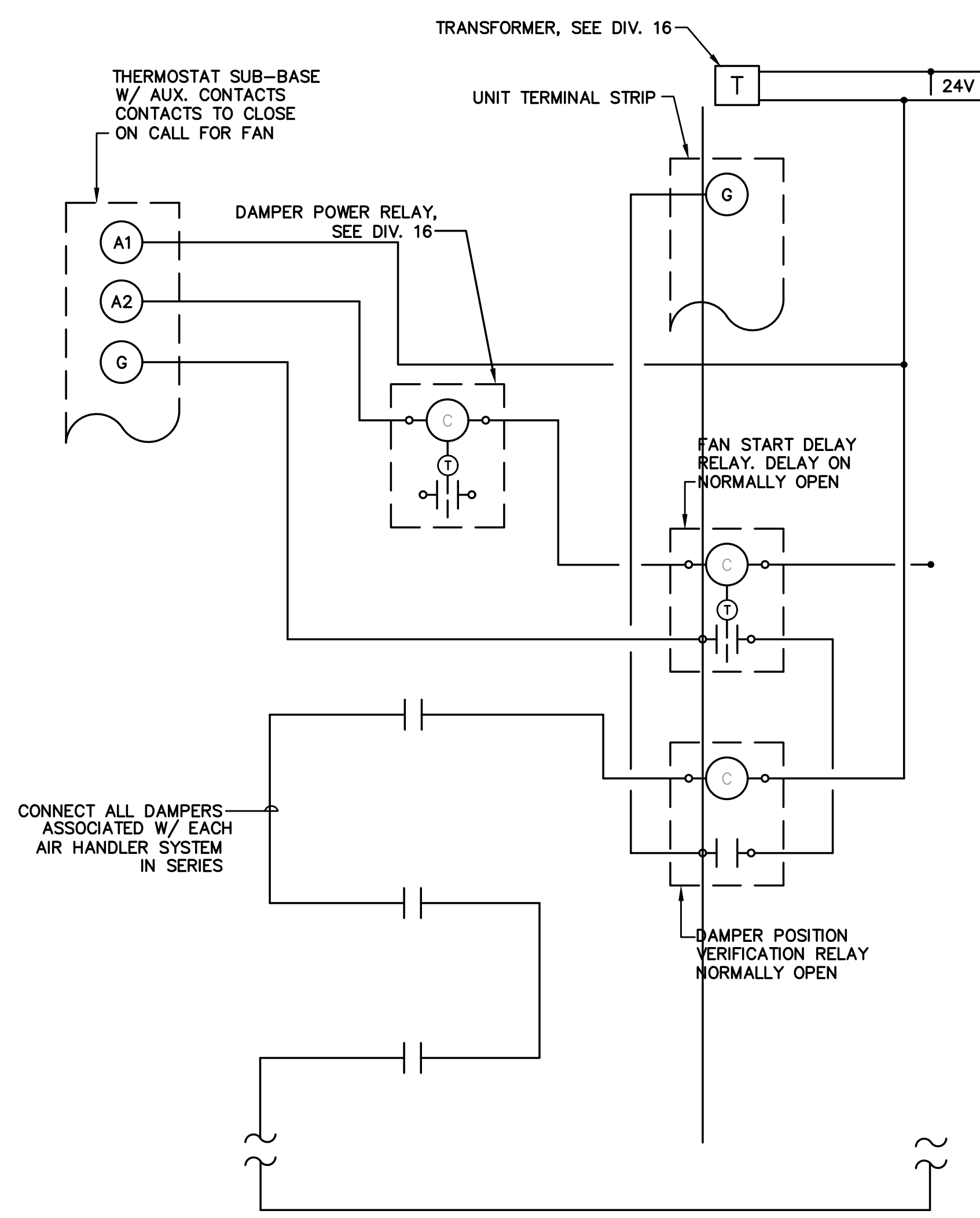
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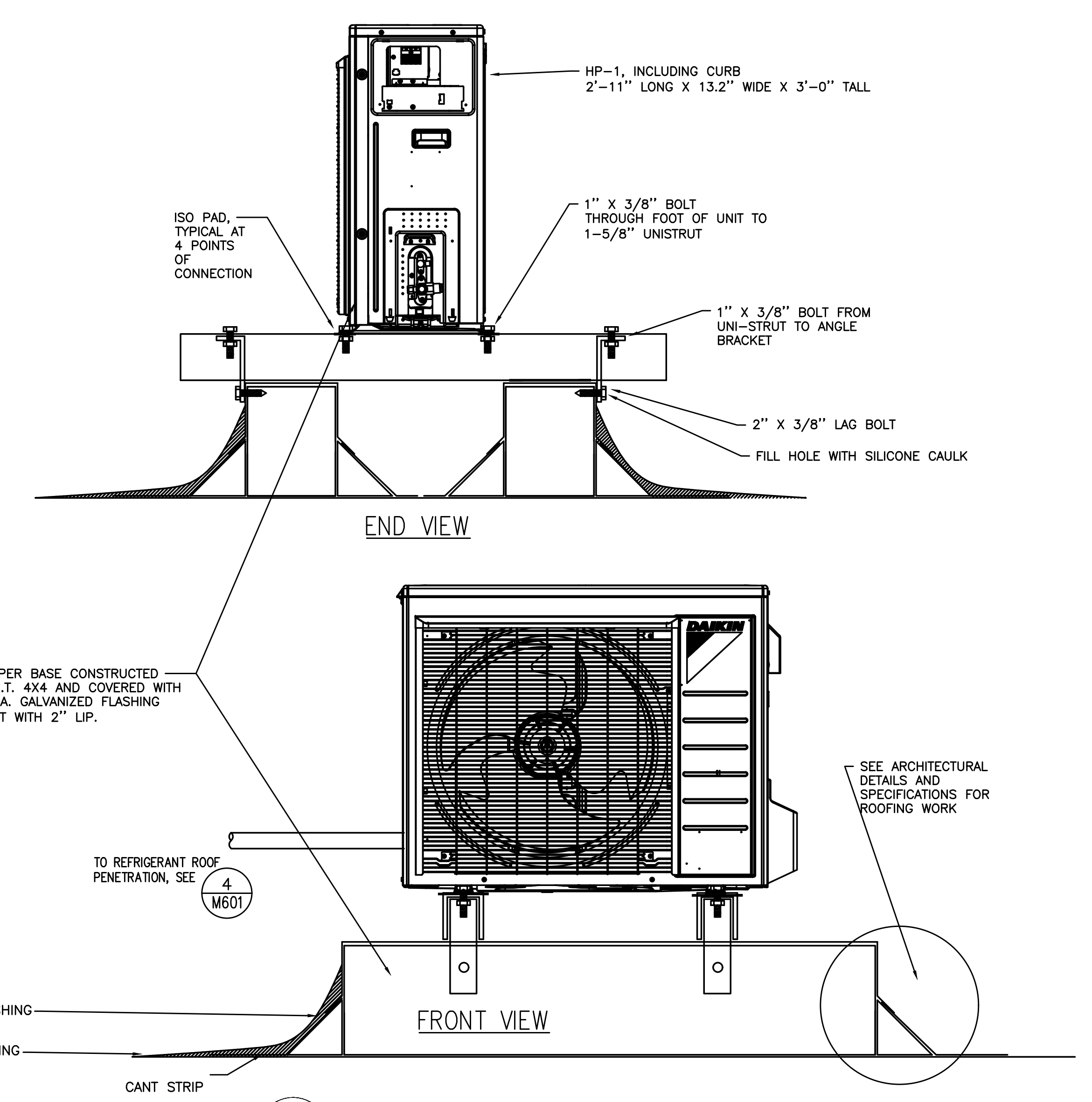
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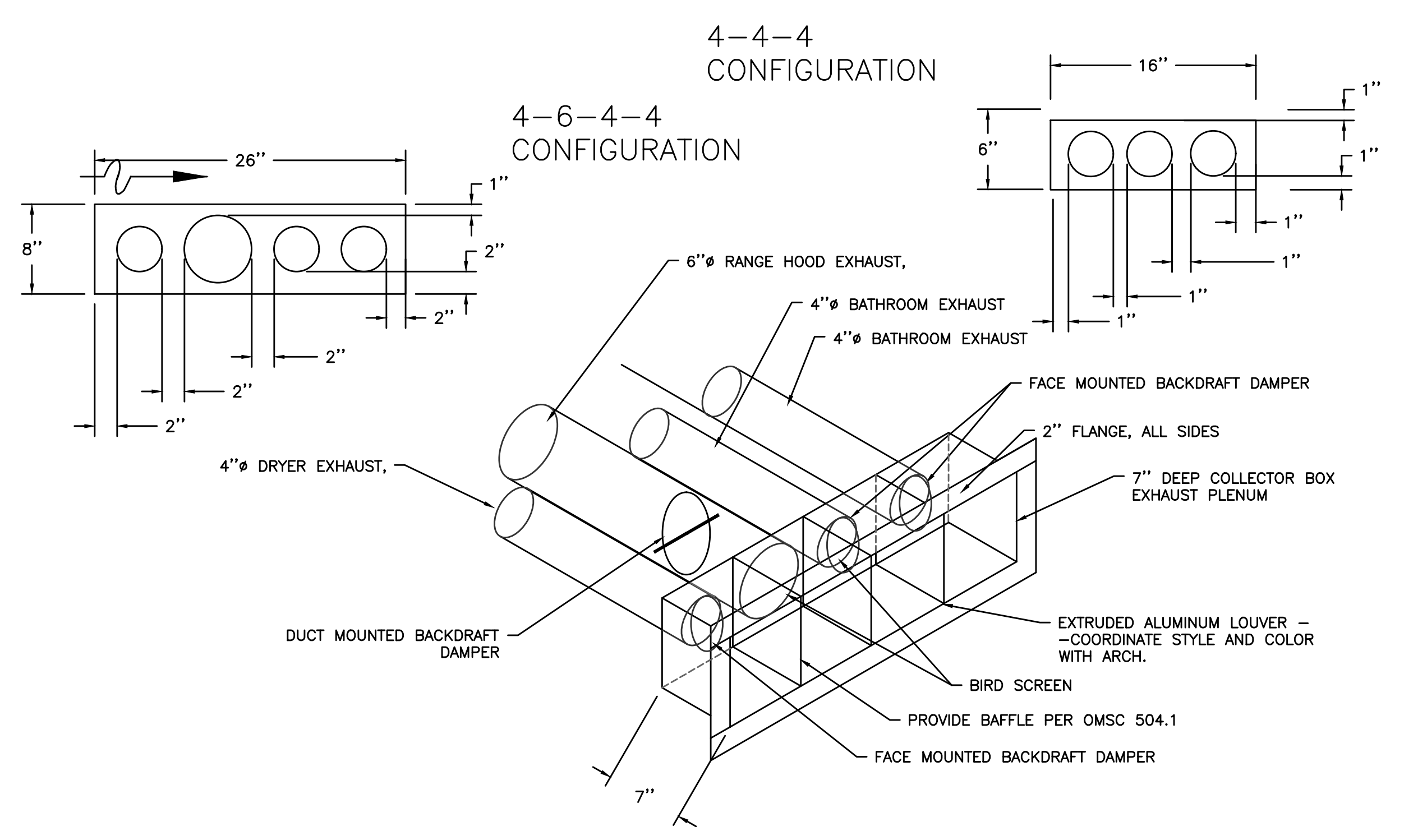
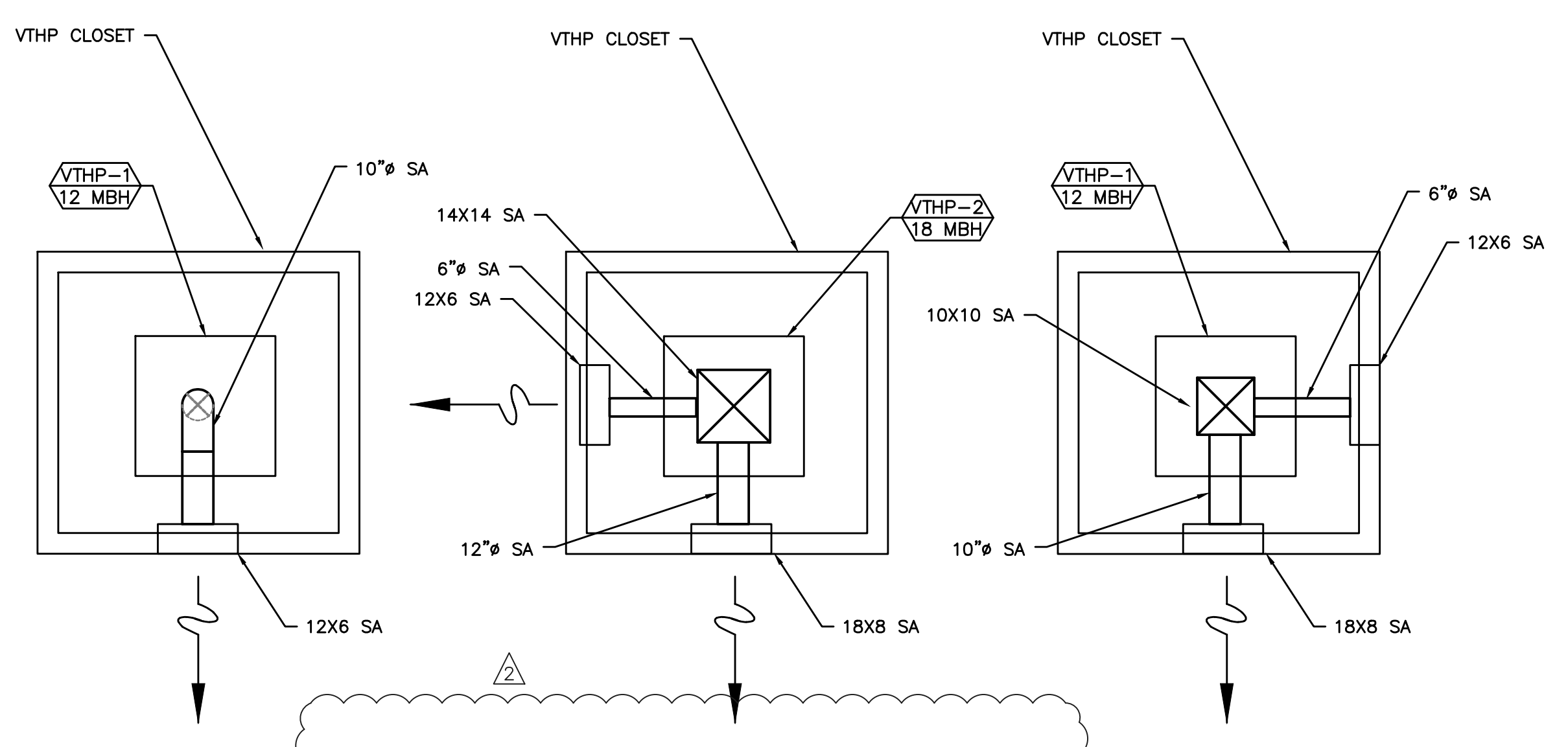
1 FIRE/SMOKE DAMPER W/SMOKE DETECTOR
M602 NOT TO SCALE

NOTE:
PROVIDE ALL REQUIRED CONTROL WIRING TO ACCOMPLISH:
FIRE/SMOKE DAMPER - FIRE/SMOKE DAMPER TO CLOSE UPON ACTIVATION OF LOCAL SMOKE DETECTOR
EXHAUST DUCTS/FANS - FIRE/SMOKE DAMPER TO CLOSE UPON SHUTDOWN OF ASSOCIATED EXHAUST FAN.
SUPPLY OR RETURN DUCTS/FANS - FIRE/SMOKE DAMPER TO CLOSE UPON SHUTDOWN OF ASSOCIATED AIR HANDLING UNIT.

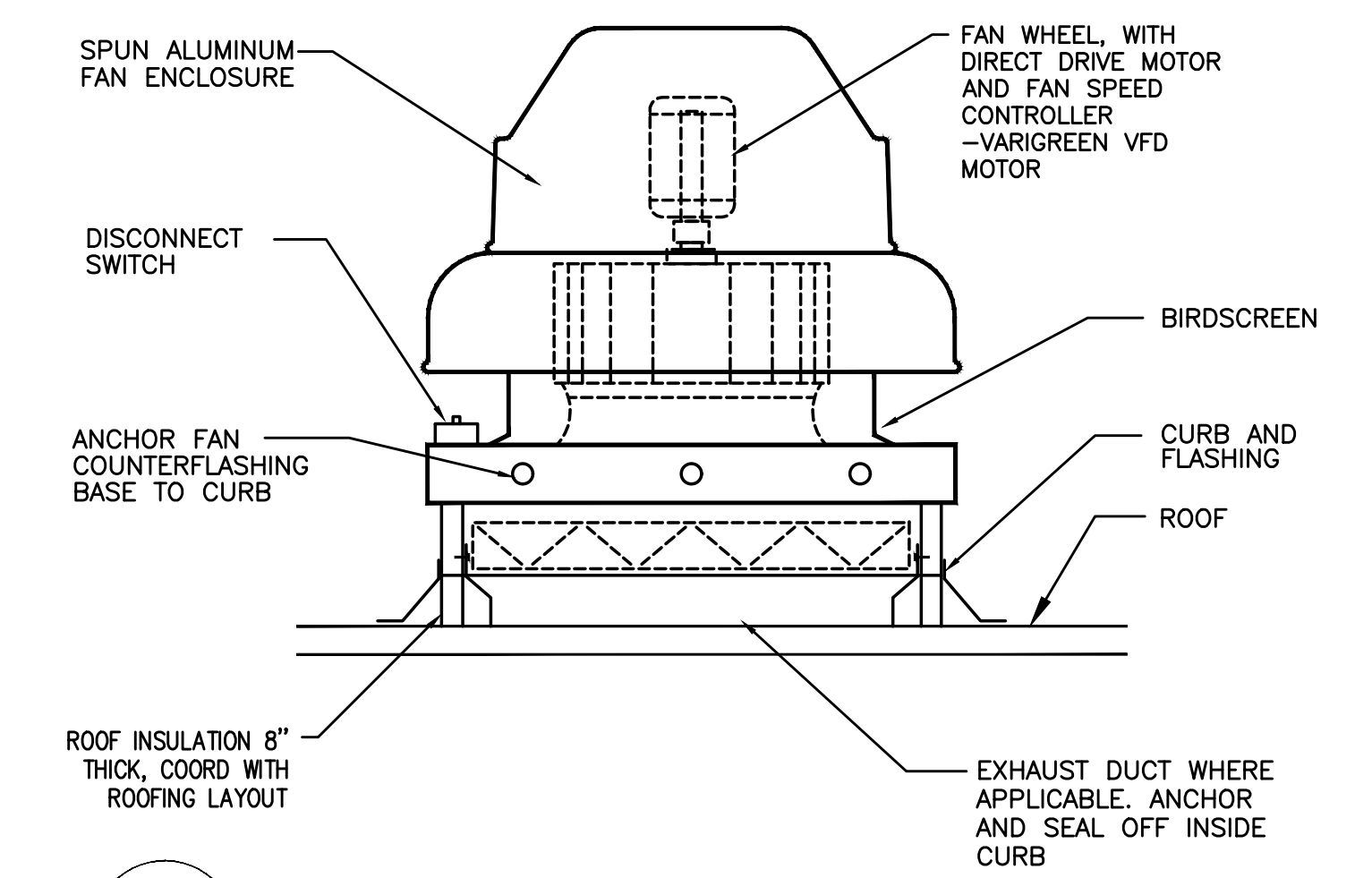
GENERAL NOTES:
PROVIDE ACCESS IN CEILING OR WALL FOR DAMPER AND SMOKE DETECTOR
SEE ELECTRICAL DRAWINGS FOR WIRING INSTALLATION



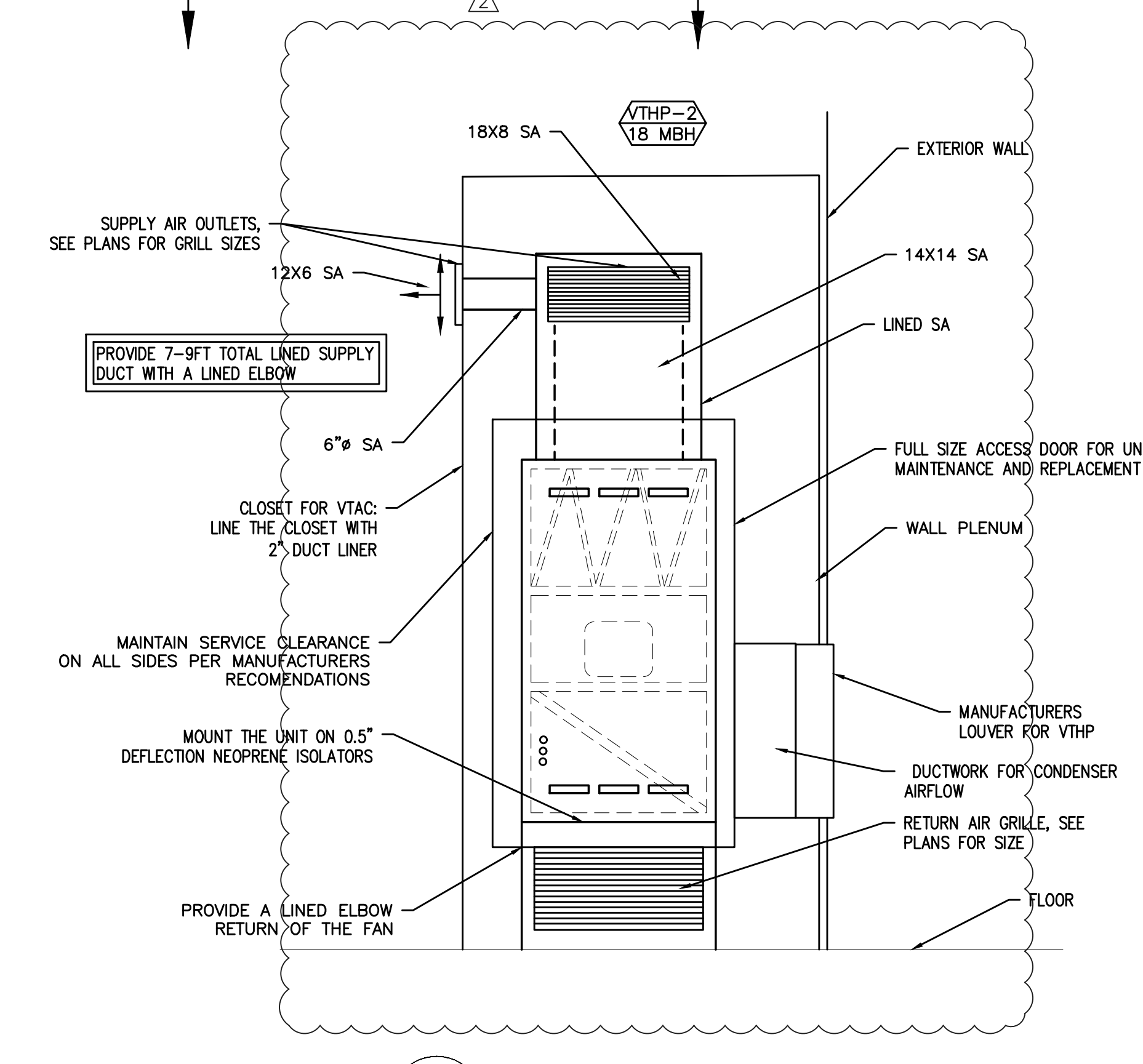
2 HEAT PUMP CURB
M602 SCALE: DETAIL



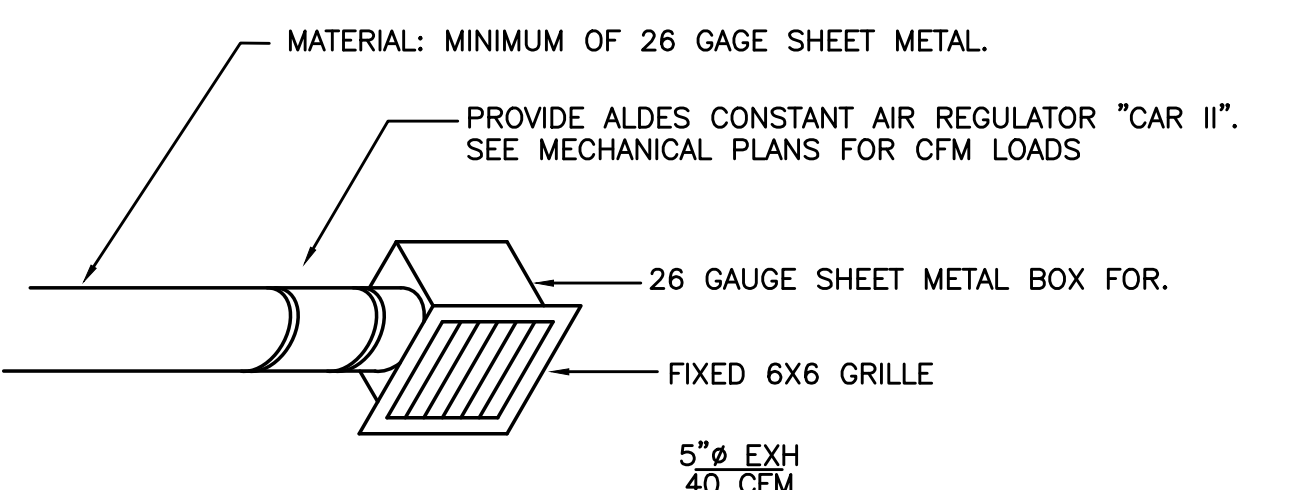
4 SIDE WALL DWELLING UNIT VENTING
M602 NOT TO SCALE



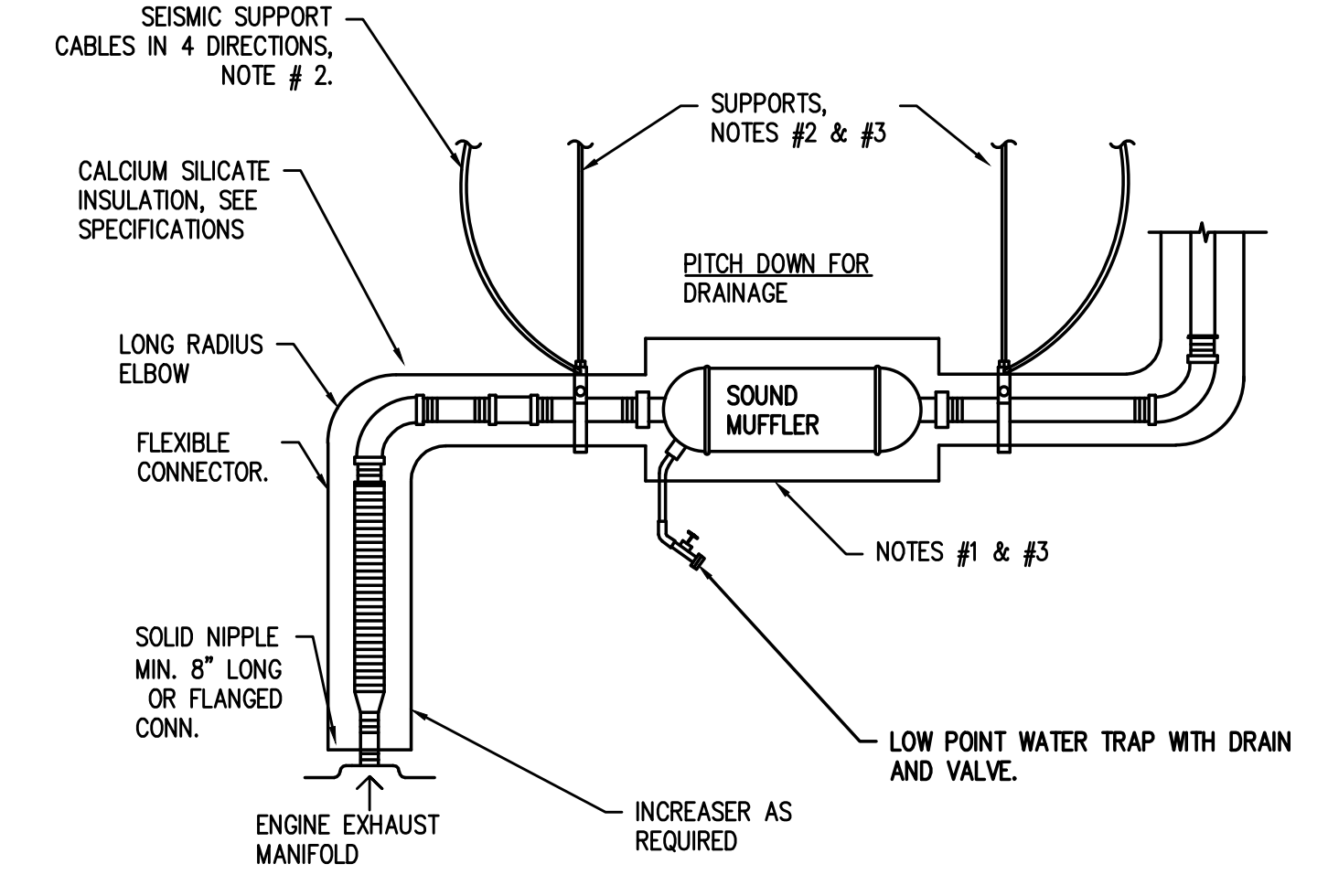
5 ROOF EXHAUST FAN
M602 DETAIL



3 VTAC DETAIL
M602 SCALE: DETAIL



6 CONSTANT AIR REGULATOR (CAR) - SIDEWALL
M602 NOT TO SCALE



7 GENERATOR ENGINE EXHAUST
M602 SCALE: DETAIL

NOTE:
1. MUFFLER MAY BE PROVIDED BY DIVISION 16 & INSTALLED BY DIVISION 15.
2. ALL SUPPORTS SHALL BE REVIEWED BY STRUCTURAL ENGINEER.
3. ALL VIBRATION ISOLATION & ACOUSTICAL TREATMENTS SHALL BE AS SPECIFIED BY ACOUSTICAL CONSULTANT.

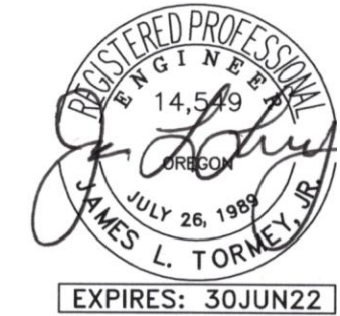
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M603



System No. W-L-7018

ANSIUL1479 (ASTM E814)	CANULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 1/2 Hr	FT Rating — 1-1/2 Hr
	FH Rating — 2 Hr
	FTH Rating — 1-1/2 Hr

W-L-7018

SECTION A-A

1. Wall Assembly — The 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
 B. Gypsum Board — Two layers of nom 5/8 in. (16 mm) thick gypsum wallboard as specified in the individual Wall and Partition Design No. Max diam of opening is 9 in. (229 mm).
 2. Metallic Sleeve — Cylindrical sleeve fabricated from min 0.016 in. (0.40 mm) thick (No. 28 gauge) galv steel sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of sleeve to be 18 in. (3 mm) less than thickness of wall. Sleeve to be installed by coiling the sheet metal to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.

Hilti Firestop Systems
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Page: 1 of 2

System No. W-L-7018

3. Steel Duct — Nom 6 in. (152 mm) diam (or smaller) No. 28 gauge (or heavier) galv steel duct to be installed concentrically within the firestop system. Duct to be rigidly supported on both sides of the wall assembly.
 4. Pipe Covering* — Nom 1 in. (25 mm) thick hollow cylindrical heavy density (3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the steel sleeve shall be min 0 in. (point contact) to max 1 in. (25 mm).
 See Pipe Equipment Covering — Materials — (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
 5. Fill, Void or Cavity Material* — Sealant — Min 1-1/4 in. (32 mm) depth of sealant applied within the annulus, flush with each surface of the wall assembly. At the point contact location between insulated pipe and wall, a min 1/2 in. (13 mm) diam bead of sealant shall be applied on both surfaces of wall, lapping 1/4 in. (6 mm) beyond the periphery of the opening.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

W-L-7018

SECTION A-A

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1 FIRE PENETRATION DETAIL — 6" DUCTS
M603 DETAIL

System No. W-L-7042

ANSIUL1479 (ASTM E814)	CANULC S115
F Ratings - 1 and 2 Hr (See Items 1 and 3)	F Rating - 1 and 2 Hr
T Rating - 0 Hr	FT Rating - 0 Hr
	FH Rating - 1 and 2 Hr (See Items 1 and 3)
	FTH Rating - 0 Hr

W-L-7042

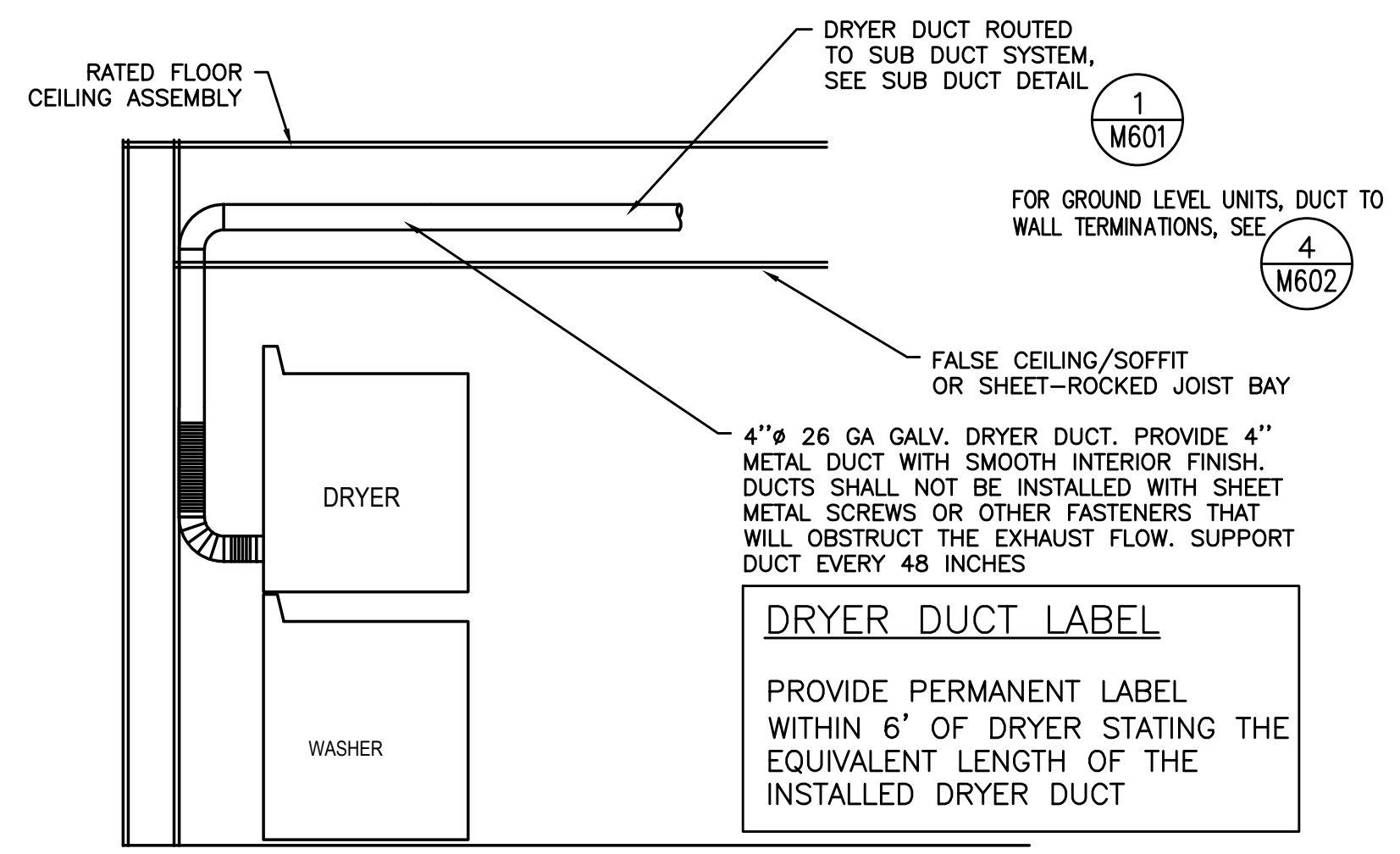
SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire rated wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced 24 in. (610 mm) OC.
 B. Gypsum Board* — For 1 hr assembly, one layer of min 5/8 in. (16 mm) thick wallboard as required in the individual Wall and Partition Design. For 2 hr assembly, two layers of min 5/8 in. (16 mm) thick wallboard as required in the individual Wall and Partition Design. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls and 21-3/4 in. (552 mm) for steel stud walls.
 The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
 2. Through Penetrant — Galv steel duct to be installed concentrically or eccentrically within the firestop system. The annular space between the duct and periphery of opening shall be 0 in. (0 mm, point contact) and max 1-1/2 in. (64 mm) Duct to be rigidly supported on both sides of wall assembly.
 A. Spiral Wound HVAC Duct — Nom 20 in. (502 mm) diam (or smaller) No. 24 MSG (or heavier) galv steel spiral wound duct.
 B. Sheet Metal Duct — Nom 12 in. (305 mm) diam (or smaller) No. 28 MSG (or heavier) galv steel sheet metal duct.
 3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) and 1-1/4 in. (32 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly for 1 or 2 hr rated walls, respectively. At the point contact location between duct and wallboard, a min 1/2 in. (13 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP6015 Elastomeric Firestop Sealant, FS-ONE Sealant, FS-ONE MAX Intumescent Sealant or CP606 Flexible Firestop Sealant

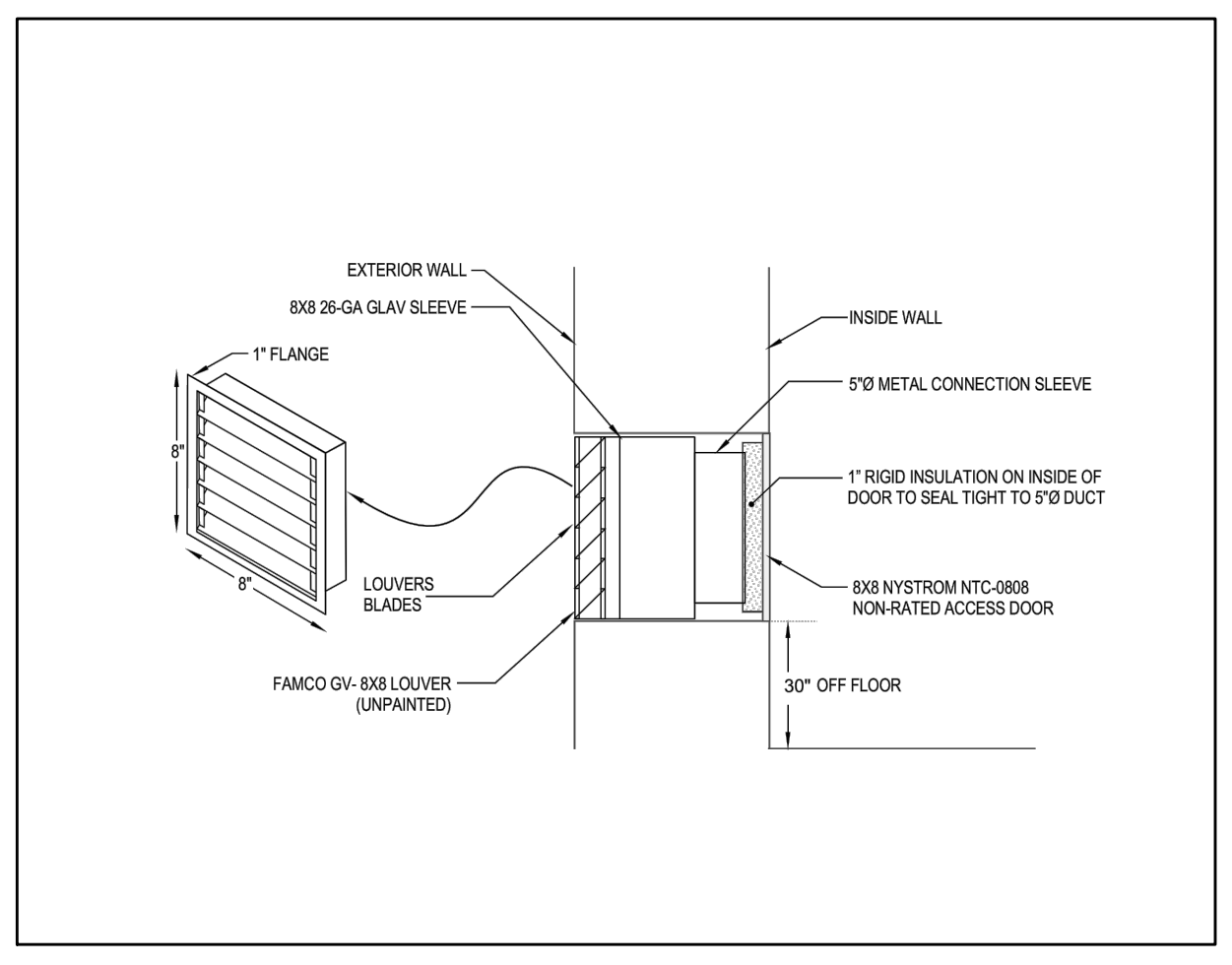
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems
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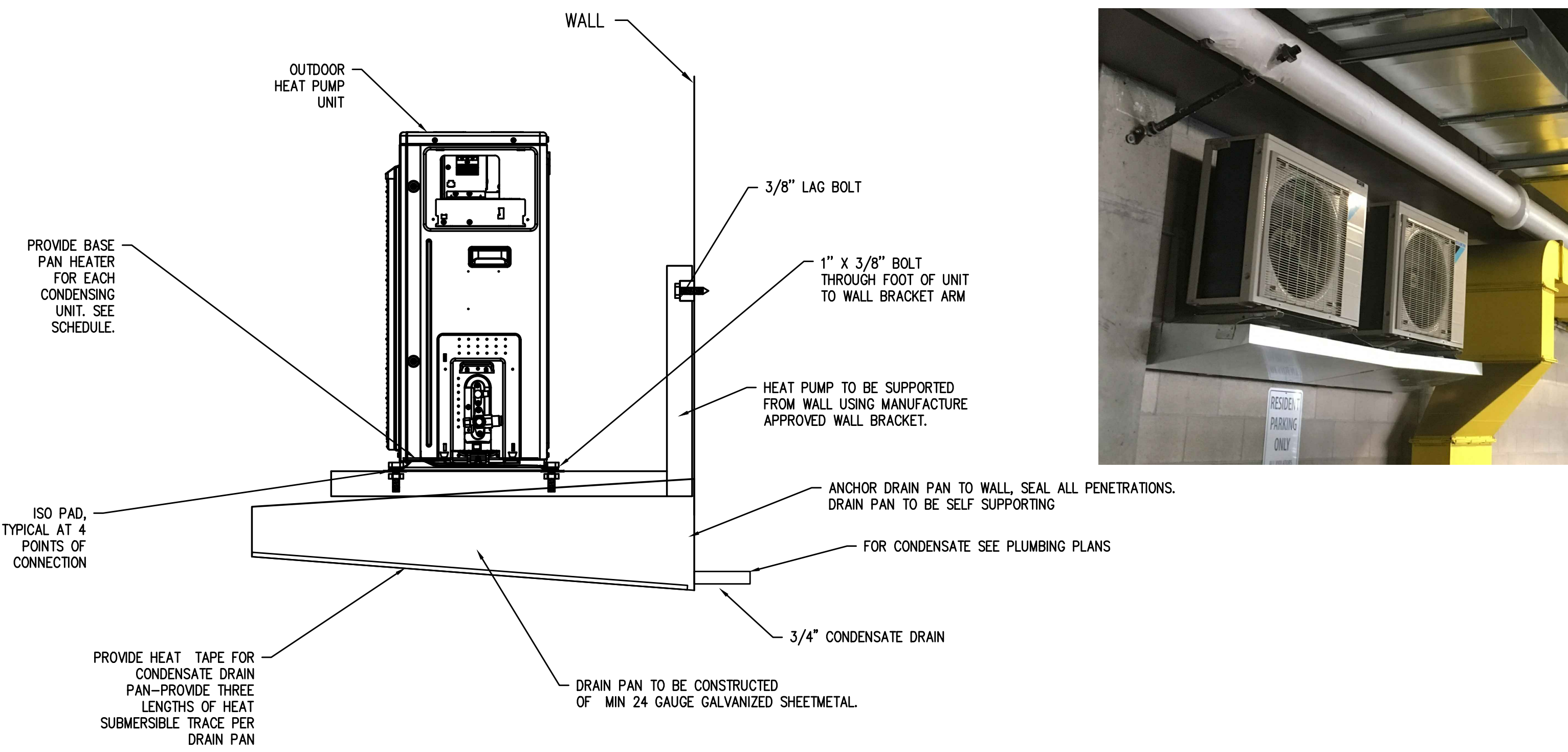
2 FIRE PENETRATION DETAIL — 10" DUCTS
M603 DETAIL



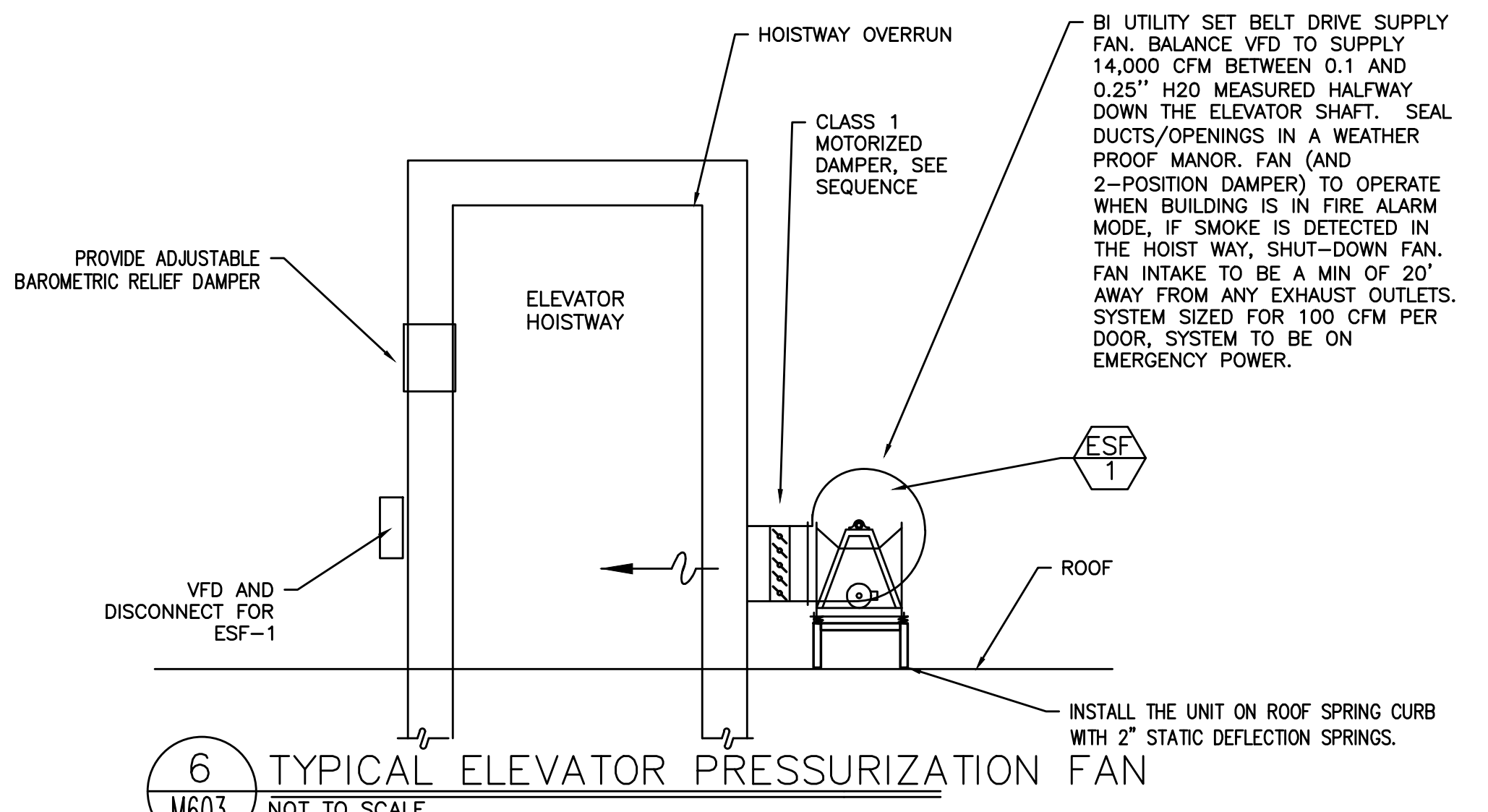
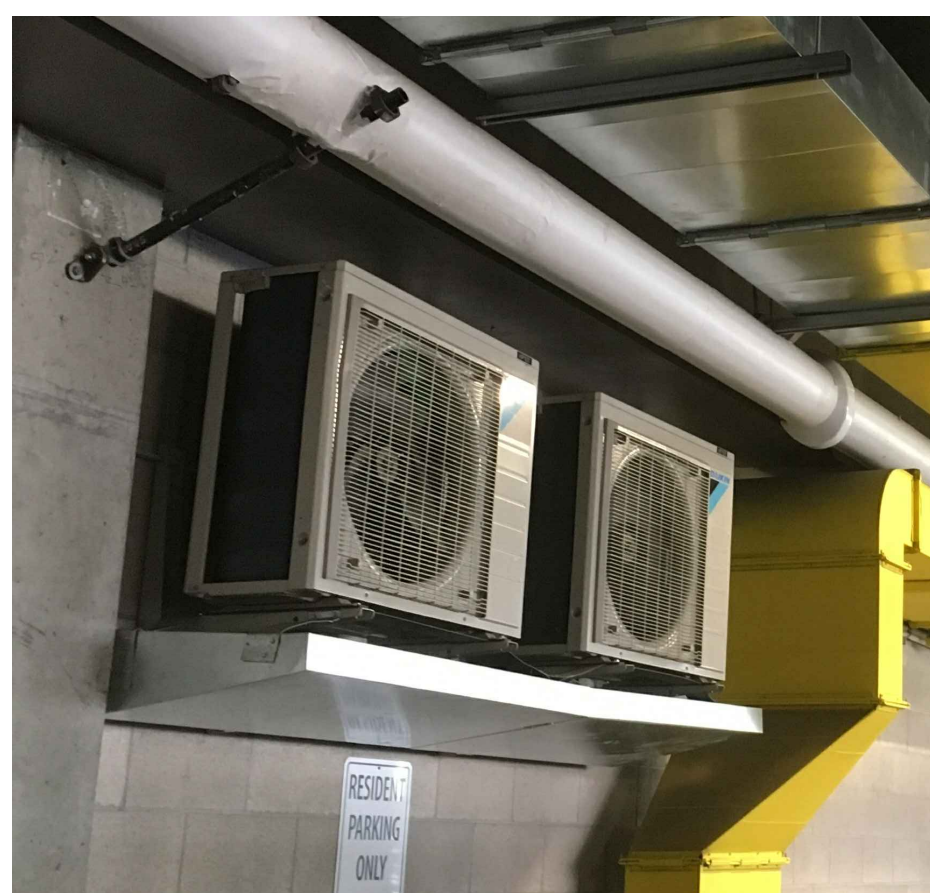
3 TYPICAL DRYER INSTALLATION
M603 NOT TO SCALE



4 AC VENT PORT WITH ACCESS DOOR
M603 NOT TO SCALE



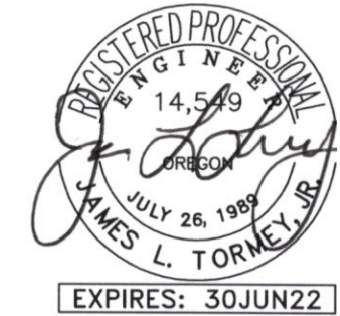
5 HEAT PUMP WALL BRACKET
M603 SCALE: DETAIL



6 TYPICAL ELEVATOR PRESSURIZATION FAN
M603 NOT TO SCALE

ELEVATOR SUPPLY FAN	
MARK NUMBER	ESP 1
TYPE	BI UTILITY SET BELT DRIVE
SYSTEM	ELEVATOR
CFM	14,000
TOTAL SP. (IN H2O)	1.755 - *
RPM	887
TIP SPEED (FPM)	7661
MOTOR POWER —**	8.19 BHP/10 HP
CONTROLLED BY	FIRE ALARM
INTERLOCK WITH	
FAN SPEED CONTROLLER	VFD
WHEEL TYPE	BI
BACK DRAFT DAMPER — ***	2-POSITION
ISOLATION	SPRING ISOLATOR
DESIGN WEIGHT (LBS)	1200
MAX. SONES	31.0
HOOD SIZE	---
DAMPER SIZE	TO FIT FAN
VOLTS/PHASE	208/3
AMPS (FLA)	28
BASIS OF DESIGN GREENCHECK	USF-333-10-BI-CCW

* — TOTAL STATIC PRESSURE INCLUDES .414 FOR DAMPER AND SYSTEM EFFECTS.
 ** — FAN AND DAMPER TO BE SUPPLIED WITH STAND-BY POWER SOURCE. ELECTRICAL DATA LISTED FOR REFERENCE ONLY. SEE ELECTRICAL DRAWINGS FOR REQUIREMENTS.
 *** — DAMPER TO BE 208 V POWER AND BE CONTROLLED BY STARTED PROVIDED BY MECHANICAL CONTRACTOR.
 **** — FAN RATED FOR SMOKE CONTROL. PROVIDE FAN WITH FLEX DUCT CONNECTION, INLET SCREEN SEISMIC SPRING ISOLATORS, INVERTER DUTY MOTORS, 1.15 MOTOR SERVICE FACTOR AND 1.5 TIMES THE REQUIRED BELTS (50% REDUNDANCY WITH A MIN OF 2 BELTS).



DESIGN CRITERIA-GENERATOR FUEL TANK	
Tank Volume	404 gal
Tank Size	214.1"x67.9"x15"
Wetted Area	159.7 sq ft
Vapor Flow Rate	168,000 CFH
Normal Vent	2"
Primary E Vent	4"
Secondary E Vent	4"
Fill Rate	40 GPM (MAX 65)
Empty Rate	26.5 GPH
MAWP (Tank Pressure)	5.0 psig
E-vent Pressure	2.5 psig
Normal Vent Pres	1.0 psig
Vacuum pressure	0.5 psig
EQ Vent Pipe Length	115 ft

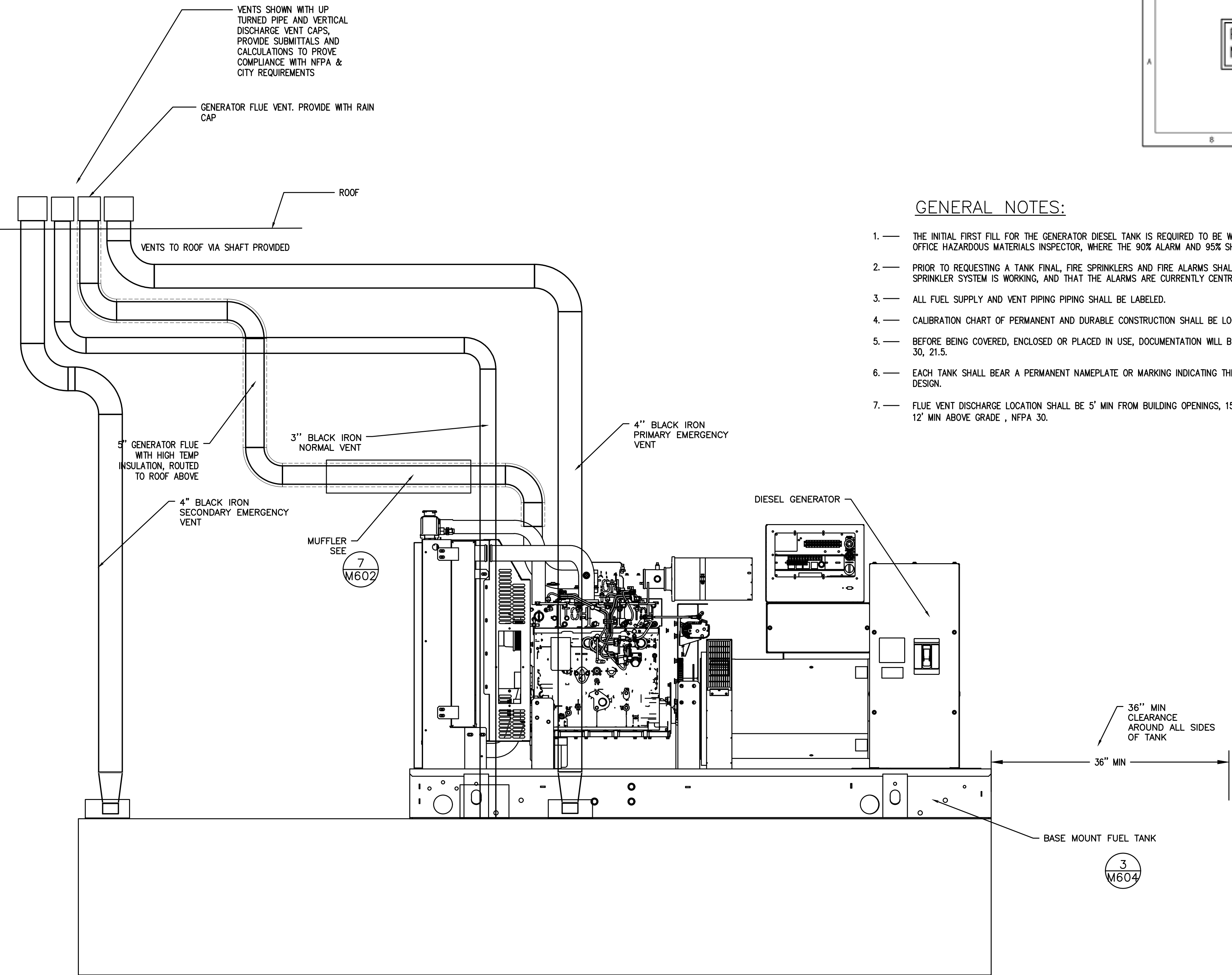
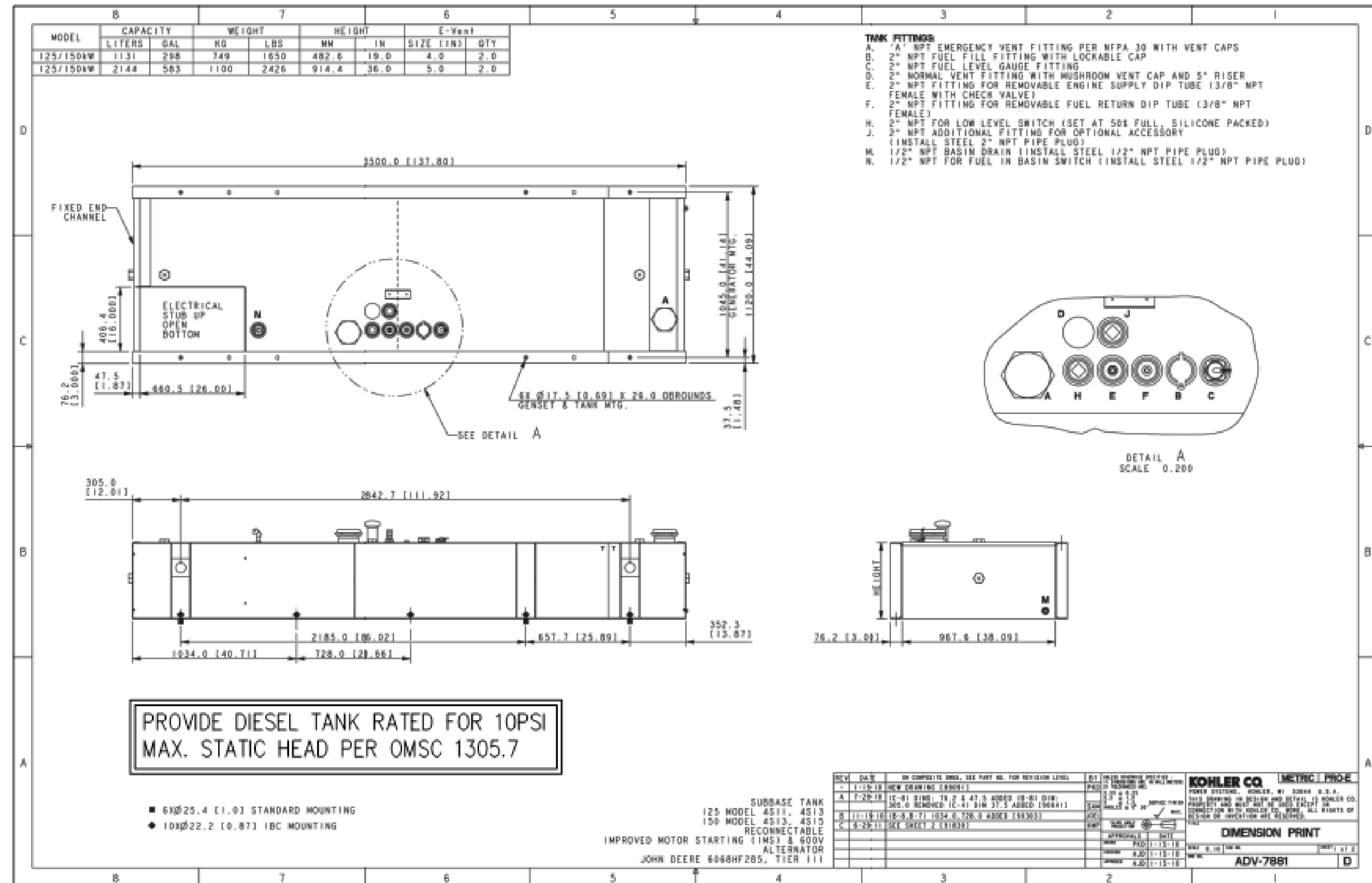
Conservation Breather Vent	
System	Normal Vent
Type	Pipe Away Breather Vent
Size	3"
Material	Ductile Iron
Pressure Set Point	1.0 psig
Vacuum Set Point	0.5 psig
Exh Flow Rate	35,000 CFH
Intake Flow Rate	17,500 CFH
Basis of Design	Protectoseal
Model	C18543D3
Quantity	1
Valve Pressure Drop	0.105 PSI
Vac Pressure Drop	0.107 PSI

Pressure Relief Vent (E-vent)	
System	Emergency Vent
Type	Pipe Away Relief Vent
Size	6"
Material	Ductile Iron
Pressure Set Point	2.5 psig
Exh Flow Rate	133,000 CFH
Basis of Design	Protectoseal
Model	C17806H6
Quantity	2
Valve Pressure drop	0.086 psi

Vent Pipe Pressure Drops	
System	Normal Vent
Size	4"
Vapor Flow Rate	35,000 CFH
Vapor Flow Rate	583 CFM
EQ Pipe Length	40 ft
Pressure Drop	0.827 psig

System-Tank Pressures	
System	Normal Vent
Pipe Pressure drop	0.827 PSI
Breather valve	0.105 PSI
Defligration valve	0.201 PSI
Set point	1.000 PSI
Total Tank Pressure	2.133 PSI

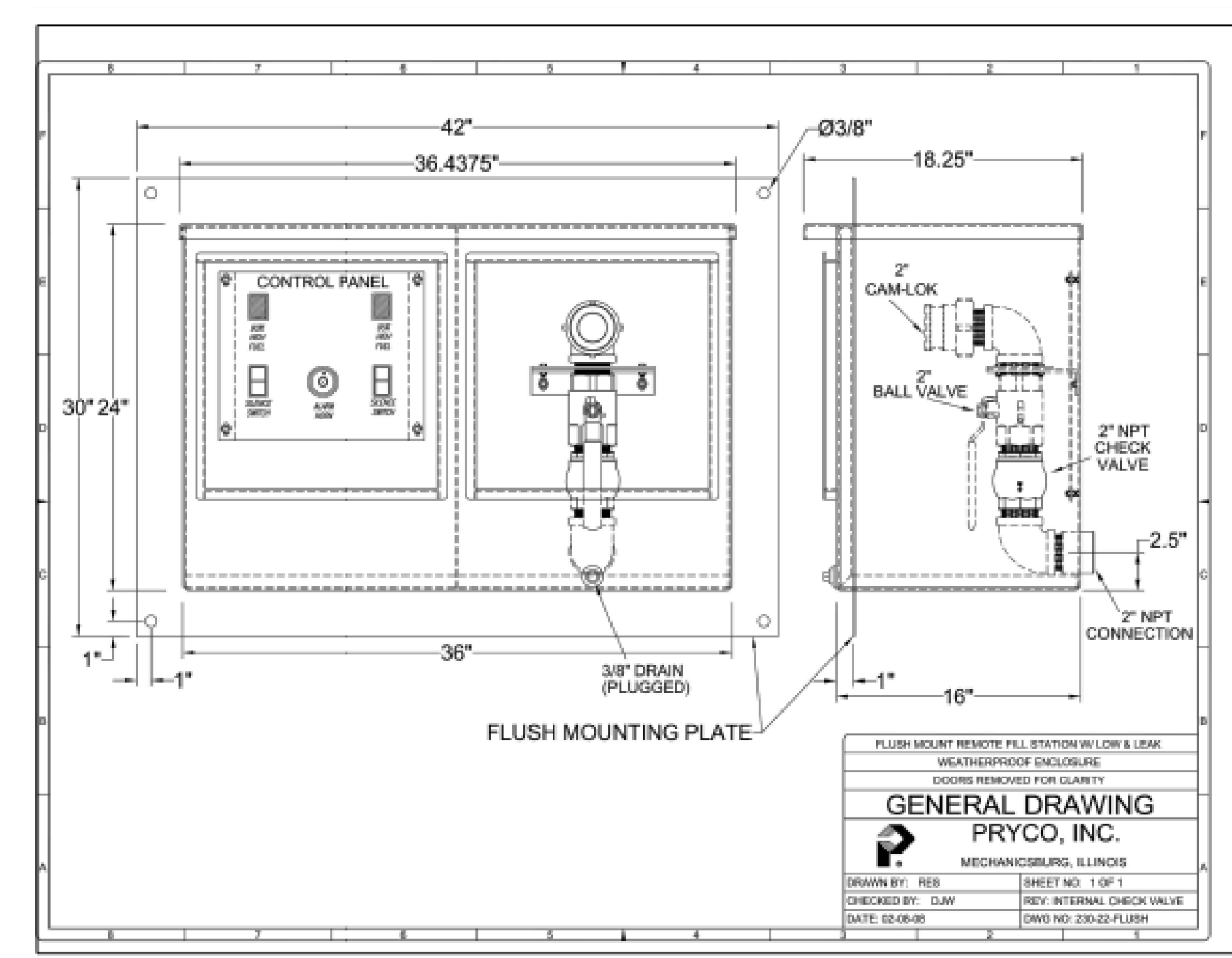
System-Tank Pressures	
System	Emergency
Pipe Pressure drop	1.37 PSI
Breather valve	0.086 PSI
Defligration valve	0.769 PSI
Set point	2.500 PSI
Total Tank Pressure	4.725 PSI



1 GENERATOR FUEL TANK PIPING SCHEMATIC
M604 SCALE:DETAIL

- GENERAL NOTES:**
- THE INITIAL FIRST FILL FOR THE GENERATOR DIESEL TANK IS REQUIRED TO BE WITNESSED BY THE FIRE MARSHAL'S OFFICE HAZARDOUS MATERIALS INSPECTOR, WHERE THE 90X ALARM AND 95X SHUT-OFF WILL BE VERIFIED.
 - PRIOR TO REQUESTING A TANK FINAL, FIRE SPRINKLERS AND FIRE ALARMS SHALL BE FINALED OR THAT THE FIRE SPRINKLER SYSTEM IS WORKING, AND THAT THE ALARMS ARE CURRENTLY CENTRALLY MONITORED.
 - ALL FUEL SUPPLY AND VENT PIPING SHALL BE LABELED.
 - CALIBRATION CHART OF PERMANENT AND DURABLE CONSTRUCTION SHALL BE LOCATED AT THE REMOTE FILL.
 - BEFORE BEING COVERED, ENCLOSED OR PLACED IN USE, DOCUMENTATION WILL BE PROVIDED IN ACCORDANCE WITH NFPA 30, 21.5.
 - EACH TANK SHALL BEAR A PERMANENT NAMEPLATE OR MARKING INDICATING THE STANDARD USED AS THE BASIS OF DESIGN.
 - FLUE VENT DISCHARGE LOCATION SHALL BE 5' MIN FROM BUILDING OPENINGS, 15' MIN FROM OUTSIDE AIRINTAKES, AND 12' MIN ABOVE GRADE, NFPA 30.

3 BASE MOUNT FUEL TANK
M604 SCALE:DETAIL



2 GENERATOR FUEL FILL STATION
M604 SCALE:DETAIL

FUEL FILL STATION	
MARK NUMBER	FS 1
TYPE	WALL FLUSH MOUNT
INLET/OUTLET	2"Ø
CONTROL PANEL	SIDE MOUNT
ELECTRIC SHUT OFF	YES
CHECK VALVE	YES
QUICK CONNECT HOSE COUPLING	YES
MANUAL BALL VALVE	YES
OUTLET LOCATION	REAR
CONTROL POWER	115/1/60 -EMERGENCY
SPILL CONTAINMENT	7.5 GALLONS
CONTAINMENT SUMP DRAIN	YES
WEIGHT	325 LBS
HIGH LEVEL ALARM	90% TANK LEVEL
EMERGENCY SHUT-OFF	95% TANK LEVEL
BASIS OF DESIGN - PRYCO	230-22 AUTOMATIC

Date:	4/1/2022	IPC SET
Proj. No:	10036	
Drawn By:	MGA	
Chkd By:	JIT	
DSGN By:	MGA	
Acad File:		

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NW 18TH AVE
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SHEET