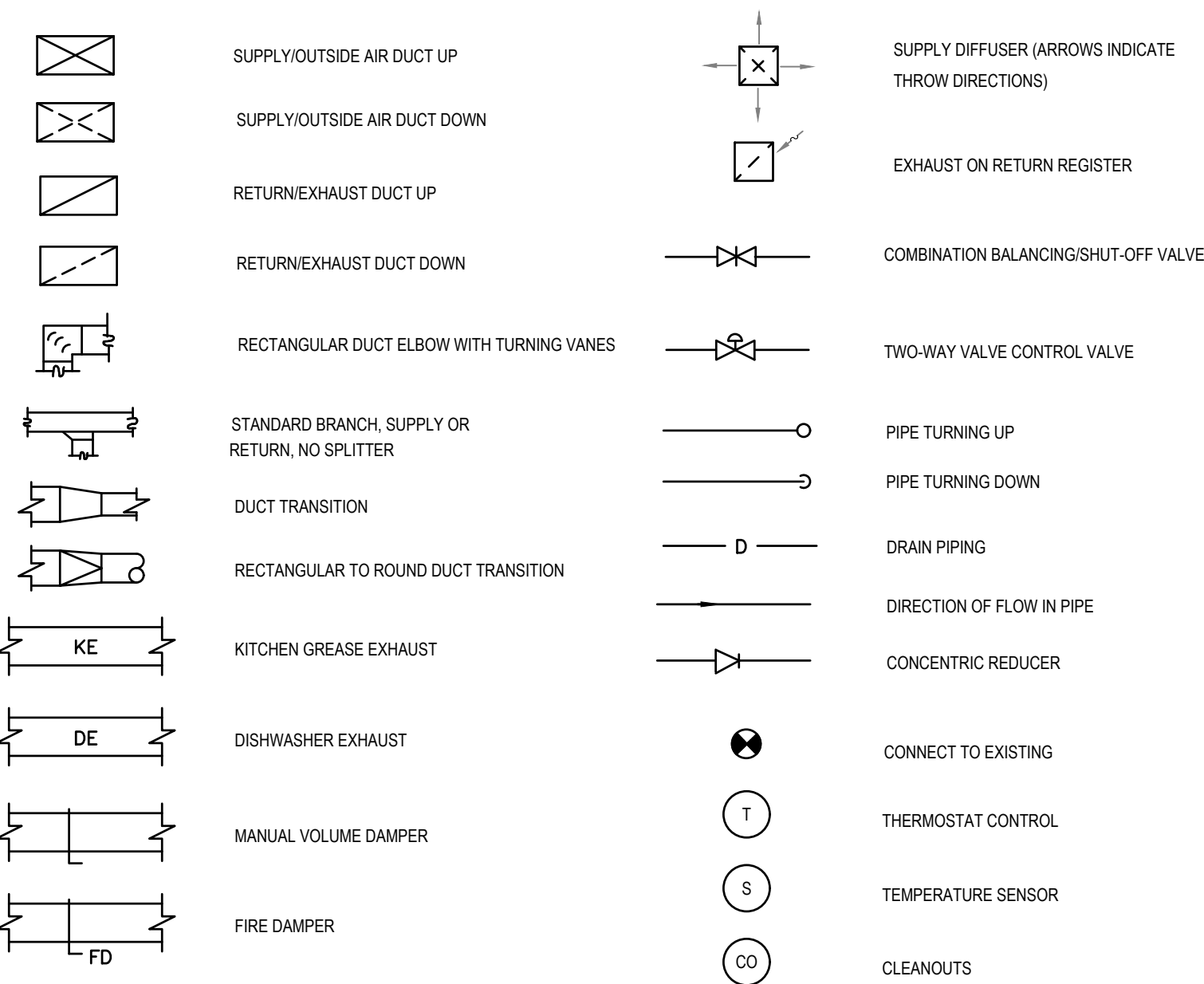




HVAC ABBREVIATIONS

AFF = ABOVE FINISHED FLOOR	LD = LINEAR DIFFUSER
AMP = AMPERE	LPC = LOW PRESSURE CONDENSATE
APD = AIR PRESSURE DROP	LPS = LOW PRESSURE STEAM
ATC = AUTOMATIC TEMPERATURE CONTROL	LRA = LOCKED ROTOR AMPS
AV = AIRVENT	LVG = LEAVING
BTU = BRITISH THERMAL UNIT	LWT = LEAVING WATER TEMPERATURE
BTUH = BTU PER HOUR	MBH = THOUSAND BTUH
CFM = CUBIC FEET PER MINUTE	NTS = NOT TO SCALE
CO = CLEAN OUT	OA = OUTSIDE AIR
DB = DRY BULB	PH = PHASE (ELECTRICAL)
DEG = DEGREE	R = RETURN
DIA = DIAMETER	RA = RETURN AIR
DIFF = DIFFERENCE OR DELTA	RG = RETURN GRILLE
DN = DOWN	RR = RETURN AIR REGISTER
DW = DISHWASHER	RLA = RUNNING LOAD AMPS
EA = EACH	RPM = REVOLUTIONS PER MINUTE
EAT = ENTERING AIR TEMPERATURE	SA = SUPPLY AIR
ESP = EXTERNAL STATIC PRESSURE	SD = SUPPLY AIR DIFFUSER
EWT = ENTERING WATER TEMPERATURE	SEN = SENSIBLE
EX = EXISTING	SP = STATIC PRESSURE
F = FAHRENHEIT	SR = SUPPLY REGISTER
FC = FLEXIBLE CONNECTOR	TA = TRANSFER AIR
FFM = FEET PER MINUTE	TR = TRANSFER REGISTER
FPS = FEET PER SECOND	TSP = TOTAL STATIC PRESSURE
FT = FEET	TYP = TYPICAL
FTR = FIN TUBE RADIATION	VAV = VARIABLE AIR VOLUME TERMINAL UNIT
GA = GAGE	VD = MANUAL VOLUME DAMPER
HP = HORSEPOWER	W = WATT OR WIDE
HWR = HOT WATER RETURN	WB = WET BULB
HWS = HOT WATER SUPPLY	WC = WATER COLUMN
HZ = FREQUENCY (CYCLES PER SECOND)	WG = WATER GAUGE
IN = INCH	
KH = KITCHEN HOOD	
LAT = LATENT OR LEAVING AIR TEMPERATURE	

HVAC LEGEND



HVAC GENERAL NOTES

1. THE PIPING AND DUCTWORK SHOWN IS DIAGRAMMATIC ONLY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION ON SITE TO DETERMINE THE EXACT LOCATION. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR APPROVAL BEFORE COMMENCING WITH FABRICATION.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR NEW CONSTRUCTION DETAILS.
3. REVIEW ALL DRAWINGS BEFORE STARTING WORK TO BECOME FAMILIAR WITH THE DETAILS OF CONSTRUCTION AND COORDINATE WITH OTHER TRADES TO ELIMINATE ANY CONFLICTS.
4. OBTAIN ALL REQUIRED PERMITS AND PAY ALL FEES RELATED TO SAME.
5. PROVIDE ALL NECESSARY PIPING, EQUIPMENT, AND SUPPORTS AS WELL AS ANY ADDITIONAL EQUIPMENT, ETC. NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT NECESSARY TO PROVIDE COMPLETE AND WORKABLE SYSTEMS.
6. PROVIDE ACCESS TO ALL EQUIPMENT REQUIRING SERVICE AND MAINTENANCE.
7. INSTALL ALL WORK IN ACCORDANCE WITH STATE AND LOCAL CODES.
8. DO NOT SCALE THESE DRAWINGS. TAKE ALL MEASUREMENTS IN THE FILED IN COORDINATION WITH ALL EQUIPMENT AS APPROVED AND WITH ALL OTHER TRADES.
9. ALL DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA.
10. ALL PIPING HIGH POINTS SHALL HAVE 3/4 INCH VENTS AND ALL LOW POINTS SHALL HAVE 3/4 INCH DRAINS.
11. ALL ROTATING EQUIPMENT SHALL HAVE FLEXIBLE PIPE ON DUCT CONNECTIONS AND APPROVED VIBRATION ISOLATORS.
12. DETAILS SHOWN ON SHEETS H2.0 AND H3.0 ARE APPLICABLE TO ALL EQUIPMENT EXCEPT WHERE INDICATED.
13. PROVIDE AIRTIGHT ACCESS DOOR FOR INSPECTION OF FIRE DAMPERS, FILTERS, COILS, ETC.
14. CONTRACTOR SHALL VERIFY DUCTWORK, PIPING, AND EQUIPMENT LOCATIONS FOR INTERFERENCES BEFORE INSTALLATION.
15. COORDINATE AIR OUTLET AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
16. PROVIDE SUPPORTS FOR PIPING AT THE MAXIMUM INTERVALS PER SMACNA AND IMC.
17. SEQUENCES OF CONTROLS SHALL BE IN ACCORDANCE WITH DRAWING H4.0.

HVAC DEMOLITION NOTES

1. CONTRACTOR SHALL VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVERS.
2. PRIOR TO COMMENCING WORK OF THIS SECTION, EXAMINE SITE AND CONDITIONS UNDER WHICH WORK WILL BE PERFORMED. DETERMINE EXACT LOCATIONS OF EXISTING EQUIPMENT, PIPING AND CONTROLS. REPORT TO OWNER ANY CONDITIONS THAT MIGHT ADVERSELY AFFECT WORK. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.
3. ABANDONING OF DUCTWORK, PIPING OR EQUIPMENT IN PLACE SHALL NOT BE ALLOWED. COMPLETE REMOVAL REQUIRED UNLESS NOTED OTHERWISE.
4. PIPING TO BE REMOVED: REMOVE PORTION OF PIPING INDICATED TO BE REMOVED AND CAP REMAINING PIPING WITH SAME OR COMPATIBLE PIPING MATERIAL.
5. DUCTS TO BE REMOVED: REMOVE PORTION OF DUCTS INDICATED TO BE REMOVED AND CAP REMAINING DUCTS WITH SAME OR COMPATIBLE DUCTWORK MATERIAL.
6. EQUIPMENT TO BE REMOVED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT.
7. EQUIPMENT TO BE REMOVED AND SALVAGED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT AND DELIVER TO OWNER.
8. COMPLY WITH ALL STATE AND LOCAL CODES AS TO REMOVAL AND DISPOSAL OF EQUIPMENT REMOVED FROM THE SITE.
9. COMPLY WITH GOVERNING EPA NOTIFICATION REGULATIONS BEFORE BEGINNING SELECTIVE DEMOLITION.
10. REMOVE PREVIOUSLY ABANDONED WORK IN THE WAY OF EXISTING CONSTRUCTION, OR AS NOTED.
11. COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
12. COMPLY WITH ANSI A10.6 AND NFPA 241.
13. PERMITS: GIVE ALL REQUIRED NOTICES, FILE ALL REQUIRED PLANS AND SPECIFICATIONS RELATING TO THE WORK OF THIS SECTION WITH THE PROPER AUTHORITIES AND PAY FOR ANY REQUIRED PERMITS.
14. ALL AIR-CONDITIONING EQUIPMENT AND SYSTEMS SHALL BE REMOVED DEMOLISHED WITHOUT RELEASING REFRIGERANTS. REFRIGERANT RECOVERY IS TO BE PERFORMED BY A REFRIGERANT RECOVERY TECHNICAL CERTIFIED BY AN EPA-APPROVED CERTIFICATION PROGRAM.
15. ALL EQUIPMENT AND SYSTEMS TO BE REMOVED OR DEMOLISHED UNDER THIS SECTION AND NOT DESIRED BY OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL REMOVE ALL SUCH EQUIPMENT FROM THE SITE PROMPTLY AFTER DETACHMENT FROM BUILDING STRUCTURE.
16. STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE IS NOT PERMITTED.
17. IT IS UNKNOWN WHETHER HAZARDOUS MATERIALS WILL BE ENCOUNTERED IN THE WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB. IMMEDIATELY NOTIFY ARCHITECT AND OWNER.
18. EXISTING PIPING SHOWN ON DRAWINGS DOES NOT INDICATE FULL EXTENT OF PIPING DEMOLITION. FIELD VERIFICATIONS REQUIRED.
19. EXISTING DUCTWORK SHOWN ON DRAWINGS DOES NOT INDICATE FULL EXTENT OF DUCT DEMOLITION. FIELD VERIFICATIONS REQUIRED.
20. AN INDEPENDENT TESTING AND BALANCING (TAB) CONTRACTOR SHALL TEST AND VERIFY EXISTING CONDITIONS AS INDICATED ON THIS DRAWING.
21. THE TAB CONTRACTOR SHALL PROVIDE A DETAILED REPORT AND MARKED UP DRAWING(S) WHICH CLEARLY INDICATE ALL DUCTWORK TRAVERSE LOCATIONS, CTMS, DUCTWORK SIZES, ETC.
22. THE TAB CONTRACTOR SHALL NOTE AND INCLUDE ANY DEFICIENCIES DISCOVERED DURING TAB PERFORMANCE PROCEDURES IN THE FINAL REPORT.
23. AFTER TESTING AND BALANCING, THE CONTRACTOR SHALL CLOSE ALL PROBE HOLES AND PATCH INSULATION AS REQUIRED.
24. THE CONTRACTOR SHALL COOPERATE WITH THE OWNER TO MINIMIZE CONFLICTS WITH BUILDING OPERATIONS. CONTRACTOR SHALL PROVIDE THE OWNER WITH 7 DAYS NOTICE TO INCLUDE SCHEDULED TEST DATES AND TIMES.

HVAC SPECIFICATIONS

PART 1 - GENERAL

- 1.01 WORK INCLUDED:
- A. THE WORK UNDER THIS SECTION SHALL INCLUDE THE FURNISHING OF ALL MATERIALS, LABOR, EQUIPMENT AND SUPPLIES AND THE PERFORMANCE OF ALL OPERATIONS TO PROVIDE COMPLETE WORKING SYSTEMS AS INDICATED ON THE CONTRACT DRAWINGS.
 - B. FURNISH, SET UP AND MAINTAIN ALL DERRICKS, HOISTING MACHINERY, SCAFFOLDS, STAGING AND PLANKING AS REQUIRED FOR THE WORK.
- 1.02 CODES, ORDINANCES, AND PERMITS: INSTALLATION OF SYSTEMS AND EQUIPMENT PROVIDED UNDER THIS SECTION SHALL BE DONE IN STRICT ACCORDANCE WITH MASSACHUSETTS DEPARTMENT OF PUBLIC SAFETY CODES, MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION, MASSACHUSETTS STATE BUILDING CODE AND TOWN REGULATIONS HAVING JURISDICTION.
- 1.04 RECORD DRAWINGS: FURNISH UPON COMPLETION OF ALL WORK, RECORD DRAWINGS OF THE WORK OF THIS SECTION.
- 1.05 SHOP DRAWINGS: FURNISH SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL OF ALL EQUIPMENT, MATERIALS SPECIFIED AND AUTOMATIC TEMPERATURE CONTROLS.
- 1.06 OPERATING AND MAINTENANCE INSTRUCTIONS: FURNISH UPON COMPLETION OF ALL WORK, OPERATION AND MAINTENANCE DATA FOR ALL EQUIPMENT PROVIDED UNDER THIS SECTION.
- 1.07 CUTTING AND PATCHING: ALL CUTTING AND PATCHING NECESSARY FOR THE PROPER INSTALLATION OF WORK TO BE PERFORMED UNDER THIS SECTION AND SUBSECTIONS SHALL BE PERFORMED BY THE CONTRACTOR.
- 1.08 SEISMIC RESTRAINT REQUIREMENTS: ALL WORK INDICATED ON THESE DRAWINGS SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE MASSACHUSETTS STATE BUILDING CODE AND REFERENCED REQUIREMENTS OF NFPA.
- 1.09 CONSTRUCTION: CONTRACTOR TO PROVIDE WRITTEN OR GRAPHIC DIAGRAM OF ALL PLUMBING, MECHANICAL, ELECTRICAL, AND LOW VOLTAGE ROUTINGS, CUT OUTS, PENETRATIONS BEYOND TENANT SPACE THRU FLOORS, AND THRU WALLS TO LANDLORD APPROVAL. CONTRACTOR TO REFER TO FIRE RATINGS AND DETAIL PROVIDED BY ARCHITECT.

PART 2 - PRODUCTS

- 2.01 SHEET METAL WORK
- A. GALVANIZED SHEET METAL - ALL SUPPLY, RETURN, OUTDOOR, AND EXHAUST (SA, RA, OA, EA)
 1. ALL DUCTS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA. ALL DUCTWORK SHALL BE GALVANIZED STEEL. SEAL ALL LOW PRESSURE DUCT JOINTS (CLASS B). EXCESS SEALANT MUST BE REMOVED IMMEDIATELY TO PROVIDE A NEAT APPEARANCE.
 2. ALL LOW PRESSURE DUCTS SHALL BE FABRICATED FOR 2 INCHES WATER GAUGE PRESSURE.
 3. PROVIDE 2" THICK ACOUSTIC LINING FOR ALL RETURN AIR DUCTWORK.
 4. ALL EXPOSED DUCTWORK SHALL BE PAINTED AS PER THE ARCHITECTURAL DRAWINGS.
 - B. GREASE EXHAUST DUCT (KE)
 1. INTERIOR DUCTWORK SHALL BE CONSTRUCTED OF MINIMUM 16 GAUGE BLACK STEEL OR 18 GAUGE STAINLESS STEEL. ALL EXTERNAL JOINTS AND SEAMS SHALL BE WELDED LIQUID-TIGHT. DUCT CONNECTION TO THE HOOD SHALL BE WELDED LIQUID-TIGHT.
 2. PROVIDE HORIZONTAL CLEANOUTS IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS MINIMUM EVERY 12 FEET AND AT EACH CHANGE IN DIRECTION.
 3. PROVIDE GREASE COLLECTOR AT BASE OF VERTICAL RISE TO ROOF EXHAUST FAN IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS.
 4. DUCTWORK SHALL BE INSTALLED WITH A 1/4:12 (2%) SLOPE IF 75 FEET HORIZONTAL RUN OR LESS; 1:12 (8.3%) SLOPE IF OVER 75 FEET.
 - C. GREASE DUCT TEST
 1. PRIOR TO THE USE OR CONCEALMENT OF ANY PORTION OF A GREASE DUCT SYSTEM, A LEAKAGE TEST SHALL BE PERFORMED. DUCTS SHALL BE CONSIDERED TO BE CONCEALED WHERE INSTALLED IN SHAFTS OR COVERED BY COATINGS OR WRAPS THAT PREVENT THE DUCTWORK FROM BEING VISUALLY INSPECTED ON ALL SIDES. THE PERMIT HOLDER SHALL BE RESPONSIBLE TO PROVIDE THE NECESSARY EQUIPMENT AND PERFORM THE GREASE DUCT LEAKAGE TEST. A LIGHT TEST SHALL BE PERFORMED TO DETERMINE THAT ALL WELDED AND BRAZED JOINTS ARE LIQUID TIGHT.
 2. A LIGHT TEST SHALL BE PERFORMED BY PASSING A LAMP HAVING A POWER RATING OF NOT LESS THAN 100 WATTS THROUGH THE ENTIRE SECTION OF DUCTWORK TO BE TESTED. THE LAMP SHALL BE OPEN SO AS TO EMIT LIGHT EQUALLY IN ALL DIRECTIONS PERPENDICULAR TO THE DUCT WALLS. A TEST SHALL BE PERFORMED FOR THE ENTIRE DUCT SYSTEM, INCLUDING THE HOOD-TO-DUCT CONNECTION. THE DUCT WORK SHALL BE PERMITTED TO BE TESTED IN SECTIONS, PROVIDED THAT EVERY JOINT IS TESTED. FOR LISTED FACTORY-BUILT GREASE DUCTS, THIS TEST SHALL BE LIMITED TO DUCT JOINTS ASSEMBLED IN THE FIELD AND SHALL EXCLUDE FACTORY WELDS.
 - D. DISHWASHER EXHAUST DUCT (DE)
 1. DUCTWORK SHALL BE CONSTRUCTED OF 18 GAUGE STAINLESS STEEL. ALL EXTERNAL JOINTS AND SEAMS SHALL BE WELDED LIQUID-TIGHT. DUCT CONNECTION TO THE HOOD SHALL BE WELDED LIQUID-TIGHT. CONTRACTOR SHALL PROVIDE PRICES FOR WELDED GALVANIZED, STAINLESS STEEL, AND ALUMINUM FOR THE OWNER TO CHOOSE.

2.02 DUCTWORK ACCESSORIES

- A. MANUAL VOLUME DAMPERS: MANUAL VOLUME DAMPERS SHALL BE PROVIDED WHERE SHOWN ON THE DRAWINGS AND AT EVERY BRANCH TAKE OFF FROM THE MAIN DUCT.
- B. FLEXIBLE DUCT SHALL NOT EXCEED 5 FEET IN TOTAL LENGTH AND SHALL HAVE A MINIMUM INSULATING VALUE OF R-6.

2.03 ACOUSTIC LINING

- A. PROVIDE 2" THICK ACOUSTIC LINING ON ALL RETURN AIR DUCTWORK.
- B. PROVIDE 2" THICK ACOUSTIC LINING ON SUPPLY AIR DUCTWORK FOR 10' AFTER ROOFTOP UNITS.

2.04 AIR OUTLETS

- A. PROVIDE ALL AIR OUTLETS AS SHOWN ON PLANS AND SPECIFIED UNDER THE MECHANICAL SCHEDULE.
- B. ALL REGISTERS, GRILLES, AND DIFFUSERS SHALL BE PAINTED AS PER THE ARCHITECTURAL DRAWINGS.

2.05 INSULATION

- A. PROVIDE DUCTWORK INSULATION PER INSULATION SCHEDULE.
- B. PROVIDE PIPING INSULATION PER INSULATION SCHEDULE.

2.06 EQUIPMENT

- A. PROVIDE ALL EQUIPMENT WITH ACCESSORIES AS SCHEDULED.

2.07 PIPING

- A. PROVIDE ALL REFRIGERANT & CONDENSATE PIPING, SIZING AND ACCESSORIES AS SCHEDULED.
- B. CONTRACTOR TO CLEAN AND PRE-TREAT ALL TENANTS PIPING THOROUGHLY AND SUBMIT RECORD TO BUILDING MANAGER PRIOR TO CONDUCTING ANY TESTING.
- C. ALL TENANT SYSTEMS SHALL BE ISOLATED FROM BASE BUILDING SYSTEM DURING CLEANING, PRETREATMENT AND HYDROSTATICALLY.
- D. PROVIDE FIRE STOPPING FOR ALL PENETRATIONS THROUGH ALL FLOORS, FIRE WALLS AND FIRE RATED SEPARATIONS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR THESE AREAS AND PROVIDE LINK SEAL FIRE STOPPING KITS. PIPING THRU RATED GYPSUM WALL SHALL COMPLY TO UL-WL-1054. PIPING THRU CONCRETE WALLS/FLOORS SHALL COMPLY TO UL C-AJ-1291.

2.08 AUTOMATIC TEMPERATURE CONTROL

- A. PROVIDE CONTROL COMPONENTS AND LOW VOLTAGE WIRING FOR EACH SYSTEM AS REQUIRED FOR THE SEQUENCE OF OPERATION INDICATED. PROVIDE ALL CONTROL COMPONENTS FOR NEW SEQUENCES OF CONTROL, INCLUDING REQUIRED INTERCONNECTING WIRING AND APPURTENANCES TO PROVIDE A COMPLETE AND OPERABLE SYSTEM.
- B. PROVIDE AND INSTALL A SPACE MOUNTED SENSOR FOR EACH ZONE AS INDICATED ON THE PLANS. THE SPACE SENSORS SHALL HAVE THE ABILITY TO BE HARD-WIRED OR WIRELESS.
- C. THE HVAC CONTRACTOR SHALL ENGAGE THE SERVICES OF A COMMISSIONING AGENT TO FULLY COMMISSION HVAC SYSTEMS. THE COMMISSIONING AGENT SHALL PROVIDE A FULL REPORT FOR THE ENGINEER TO REVIEW.

PART 3 - EXECUTION

3.01 GENERAL

- A. INSTALL ALL ITEMS SPECIFIED UNDER PART 2 - PRODUCTS, ACCORDING TO THE APPLICABLE MANUFACTURER'S RECOMMENDATIONS AND SHOP DRAWINGS, THE DETAILS SHOWN ON THE DRAWINGS AND AS SPECIFIED UNDER THIS SECTION. PROVIDE ALL REQUIRED HANGERS AND SUPPORTS.
- B. THE PIPING AND DUCTWORK SHOWN IS DIAGRAMMATIC ONLY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION ON SITE TO DETERMINE THE EXACT LOCATION. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR APPROVAL BEFORE COMMENCING WITH FABRICATION.

3.02 EQUIPMENT

- A. EQUIPMENT SHALL BE INSTALLED COMPLETE WITH ALL REQUIRED HANGERS AND SUPPORTS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- B. FURNISH AND INSTALL ALL STEEL STRUCTURAL SUPPORT MEMBERS FOR PROPER HANGING AND SUPPORT OF EQUIPMENT. PROVIDE VIBRATION ISOLATION ON ALL HANGERS.
- C. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT CONFORMANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS.

3.03 MISCELLANEOUS IRON AND STEEL: PROVIDE STEEL SUPPORTS AND HANGERS REQUIRED TO SUPPORT EQUIPMENT, DUCTWORK, AND OTHER EQUIPMENT OR MATERIALS. SUBMIT DETAILS OF STEEL SUPPORTS AND METHOD OF FABRICATION FOR APPROVAL.

3.04 BALANCING & COMMISSIONING:

- A. THE HVAC CONTRACTOR SHALL ENGAGE THE SERVICES OF AN INDEPENDENT FIRM TO PERFORM ADJUSTING AND BALANCING OF THE HVAC SYSTEMS (AIR). SYSTEMS SHALL BE ADJUSTED AND BALANCED SO THAT AIR QUANTITIES ARE AS INDICATED ON THE DRAWINGS AND SO THAT THE DISTRIBUTION FROM SUPPLY OUTLETS IS FREE FROM DRAFTS, AND UNIFORM OVER THE FACE OF EACH OUTLET. AFTER COMPLETION OF THE TESTING, BALANCING AND ADJUSTING OF THE AIR SYSTEMS, A BALANCING REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. PRIOR TO BALANCING A SAMPLE REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. REPORT SHALL INCLUDE:
 - A.A. OUTDOOR AIR
 - A.B. RETURN AIR
 - A.C. SUPPLY AIR
 - A.D. GENERAL EXHAUST
 - A.E. KITCHEN HOOD EXHAUST
 - A.F. MAKE-UP AIR
- B. THE HVAC CONTRACTOR SHALL ENGAGE THE SERVICES OF AN INDEPENDENT FIRM TO FULLY COMMISSION THE HVAC SYSTEMS. AFTER COMPLETION OF THE COMMISSIONING, A REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

Date: June 30, 2025

REVISION:

No.	Date	Description
1	6.30.25	PERMIT

Scale: As Shown

Legend, Notes, & Specifications

H0.1

HVAC SCHEDULES

EXHAUST FAN INFORMATION (OWNER PURCHASED, CONTRACTOR INSTALLED)

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	WEIGHT (LBS)	SONES
1	KEF1	1	EASIF150D	ECON-AIR	1,920	1,000	1,319	TEAO-ECM	1,000	0.7640	1	208	6.9	192	12.3

MUA FAN INFORMATION (OWNER PURCHASED, CONTRACTOR INSTALLED)

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
2	KSF1	1	ETA1-15D	15MF-1-MOD	INLINE.1	1,530	0.300	1536	TEAO-ECM	1,000	0.5740	1	208	6.9	9.3A	15A	210	8.9

FAN OPTIONS (OWNER PURCHASED, CONTRACTOR INSTALLED)

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF1	1	SIF15 - INLET - STANDARD 16" DUCT CONNECTION
		1	SIF - HORIZONTAL OVERHEAD MOUNT - PRE-INSTALLED MOUNTS (11-36)
		1	HANGING SPRING VIBRATION ISOLATORS (SET OF 4), FOR INDOOR OR OUTDOOR USE WITH SQUARE INLINE FANS (HSA125)
		1	SIF15 - STRAIGHT DISCHARGE FOR SIF 15, STANDARD 16" DUCT CONNECTION
		1	ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION
2	KSF1	1	2 YEAR PARTS WARRANTY
		1	INLINE1 INDOOR HANGING OPTION - INCLUDES 2 HSA125 HANGING SPRING ISOLATORS PER UNI-STRUT
2	KSF1	1	ECM WIRING PACKAGE - DD SUPPLY - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR)
		1	2 YEAR PARTS WARRANTY

VRF HEAT PUMP SCHEDULE

TAG No.	SPACE(S) SERVED	MANUFACTURER	MODEL No.	TYPE	REFRIG.	MBH		MODULE	MODEL No.	ELECTRICAL DATA				WEIGHT	REMARKS
						COOL	HEAT			VOLTS	PHASE	MCA	MOCP		
HP-1	BASEMENT (FC-1A/B)	mitsubishi	MXZ-SM36NL	AIR COOLED HEAT PUMP	R-454	36.0	41.0	1	MXZ-SM36NL	208	1	36	--	--	PROVIDE 18" HIGH EQUIPMENT STAND, ELECTRICAL DISCONNECT, LOW AMBIENT COOLING KIT, WIND BAFFLES, LINE-SET ENCLOSURES FOR ALL EXTERIOR REFRIGERANT PIPING, REFRIGERANT ISOLATION VALVES AT HP LINESET CONNECTIONS
EX_HP	FIRST FLOOR (FC-2A/B)	mitsubishi	PUHY-P96TKMU-A	AIR COOLED HEAT PUMP	R-410A	96.0	108.0	1	PUHY-P96TKMU-A	208	3	34	50	--	EXISTING TO REMAIN, PROVIDE LOW AMBIENT COOLING, PROVIDE NEW REFRIGERANT PIPING.

VRF FAN COIL UNIT SCHEDULE

TAG No.	LOCATION(S) SERVED	MANUFACTURER	MODEL #	TYPE	DESIGN CFM	O.A. CFM	ESP	MBH		ELECTRICAL DATA				WEIGHT (LBS)	REMARKS
								COOLING	HEATING	VOLTS	PHASE	MCA	MOCP		
FC-1A/B	BASEMENT	mitsubishi	PKFY-L18NLMU-A	WALL MOUNTED	435	--	--	18.0	20.0	208	1	0.24	15.0	--	SEE BELOW.
FC-2A	FIRST FLOOR	mitsubishi	PLFY-EP48NEMJ1-E-TH	CEILING CASSETTE	1,235	--	--	48.0	54.0	208	1	1.27	15.0	55.0	SEE BELOW.
FC-2B	FIRST FLOOR	mitsubishi	PLFY-EP48NEMJ1-E-TH	CEILING CASSETTE	1,235	200	--	48.0	54.0	208	1	1.27	15.0	55.0	SEE BELOW.

NOTES:

- PROVIDE WITH DISCONNECT SWITCH.
- PROVIDE VIBRATION ISOLATION.
- PROVIDE DRAIN PAN SENSOR OR SWITCH.
- PROVIDE THERMOSTAT.
- PROVIDE HANGING BRACKETS.
- PROVIDE LITTLE GIANT CONDENSATE PUMP (CP-1); MODEL VCC-20ULS, 120/1/60. AS SHOWN ON THE MECHANICAL PLANS.
- INDIRECT WASTE CONDENSATE, REFER TO PLUMBING DRAWINGS FOR LOCATION.
- PROVIDE VENTILATION INTAKE KIT FOR FC-2B.

FAN SCHEDULE

TAG NO.	MANUFACTURER (AS STANDARD)	MODEL NO. (AS STANDARD)	TYPE	LOCATIONS SERVED	FAN DATA			ELECTRICAL DATA				REMARKS
					AIRFLOW (CFM)	RPM	ESP (IN. W.C.)	VOLTS	PHASE	HZ	MOTOR HP	
EF-1	GREENHECK	SO-90-VG	INLINE	BASEMENT	400	1520	0.50"	115	1	60	0.1	PROVIDE DISCONNECT, HANGING BRACKETS, VIBRATION ISOLATION, VARI-GREEN MOTOR, & TIME CLOCK.
SF-1	GREENHECK	SO-90-VG	INLINE	FIRST FLOOR / BASEMENT	335	1520	0.50"	115	1	60	0.1	PROVIDE DISCONNECT, HANGING BRACKETS, VIBRATION ISOLATION, VARI-GREEN MOTOR, & TIME CLOCK.

ELECTRIC HEATING COIL SCHEDULE

TAG No.	LOCATION(S) SERVED	MANUFACTURER (AS STANDARD)	MODEL No. (AS STANDARD)	WIDTH X HEIGHT	CFM	KW	MBH	DELTA T (°F)	ELECTRICAL DATA			REMARKS
									VOLTS	PHASE	HZ	
EHC-1	SF-1	GREENHECK	IDHE	10"X10"	335	6.0	20.5	56	208	3	60	PROVIDE DISCONNECT, CONTROLS, SAFETY FLOW SWITCH, FREEZE STAT
EHC-2	KSF-1	TUTCO	EDHS	22"X12"	1,530	28.0	95.6	58	208	3	60	OWNER PURCHASED / CONTRACTOR INSTALLED. PROVIDE FREEZE STAT

HVAC POWER EQUIPMENT SCHEDULE

TAG	DESCRIPTION	LOCATION	MANUFACTURER (AS STANDARD)	SERVING EQUIPMENT TAG	FIRE ALARM CONNECTION	ELECTRICAL DATA			REMARKS
						VOLTS	PHASE	HZ	
CP	CONDENSATE PUMP	REFER TO DWGS	LITTLE GIANT	FCUS	NO	120	1	60	--
M	MOTORIZED DAMPER	REFER TO DWGS	GREENHECK	OA/EA	NO	120	1	60	POWER WIRING BY HVAC/ATC CONTRACTOR PER SPEC SECTION 230000. CONTROL WIRING BY HVAC/ATC CONTRACTOR PER SPEC SECTION 230000. PROVIDE MODULATING OPERATION ACTUATORS (0-10 V).
FD	FIRE DAMPER	REFER TO DWGS	RUSKIN	OA/EA	NO	-	-	-	--

REGISTER, GRILLE & DIFFUSER SCHEDULE

TAG	SERVICE	CFM	NECK SIZE	FRAME TYPE	MOUNTING	DAMPER	MATERIAL	FINISH	MANUFACTURER & MODEL No.
SD	SUPPLY	SEE PLANS	SEE PLANS	SQUARE	CEILING	NO	AL	PER ARCHITECT.	PRICE AMD
SDG	SUPPLY	SEE PLANS	SEE PLANS	RECT.	SPIRAL DUCT	YES	AL	WHITE	PRICE SDG
RG	RETURN	SEE PLANS	SEE PLANS	RECT.	CEILING	NO	AL	PER ARCHITECT.	PRICE 630
EG	EXHAUST	SEE PLANS	SEE PLANS	RECT.	SIDEWALL/DUCT	YES	AL	PER ARCHITECT.	PRICE 630

NOTES:

- COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL REFLECTED CEILING PLANS.
- PROVIDE FRAME SUITABLE FOR SURFACE MOUNTING, CEILING OR SIDEWALL.
- REFER TO DRAWINGS FOR NECK SIZES AND CFM UNLESS NOTED ABOVE; PROVIDE SQUARE TO ROUND TRANSITIONS WHERE REQUIRED.
- AIR VELOCITY TO REGISTER/GRILLE/DIFFUSER TO BE 400 FPM OR BELOW.
- PROVIDE CABLE OPERATED VOLUME DAMPERS FOR ALL LINEAR DIFFUSERS AND DIFFUSERS LOCATED ABOVE A HARD CEILING.

AIR BALANCE SCHEDULE

OUTDOOR AIR BALANCE	EXHAUST AIR BALANCE	TOTAL AIR BALANCE
SF-1 + 335	KEF-1 - 1,912	OUTDOOR AIR + 1,865
KSF-1 + 1,530	EF-1 - 400	EXHAUST AIR - 2,312
TOTAL + 1,865	TOTAL - 2,312	TOTAL - 447

PIPE INSULATION SCHEDULE

SYSTEM/SERVICE	INSULATION TYPE	FITTINGS INSULATION TYPE	INSULATION WALL THICKNESS (IN.)			
			PIPE DIAMETER (IN.)	Ø<1	1<Ø<4	4<Ø<6
CONDENSATE PIPING (CD)	ELASTOMERIC	ELASTOMERIC	1/2"	1/2"	3/4"	3/4"
REFRIGERANT PIPING	ELASTOMERIC	ELASTOMERIC	1"	1"	1-1/2"	1-1/2"

PIPE MATERIAL TABLE

SYSTEM/SERVICE	LOCATION	PIPING	FITTINGS	JOINTS
CONDENSATE DRAIN (CD)	ABOVE GRADE	TYPE 'L' COPPER	WROUGHT COPPER, NO LEAD	95/5 NO-LEAD SOLDER
REFRIGERANT PIPING RLL & RLS	ABOVE GRADE	COPPER-ARC	COPPER, NO LEAD	BRAZED

DUCTWORK INSULATION SCHEDULE

LOCATION	INSULATION TYPE	FITTING INSULATION TYPE	FOR PIPE DIA. (INCHES)		
			RUNOUTS	< 1 1/2"	2'-2 1/2"
SUPPLY, RETURN & OUTSIDE AIR DUCT INSULATION	2" FIBERGLASS DUCT WRAP WITH FSK FACING		MIN. R-6	→	
EXPOSED SPIRAL SUPPLY AIR	1.5" DOUBLE WALL / INTERNALLY LINED		MIN. R-6	→	
GENERAL EXHAUST DUCT INSULATION			NONE	→	



Architect:

Boston Urban Places, LLC
PO Box 990227
Boston, Massachusetts 02199
617.797.8646

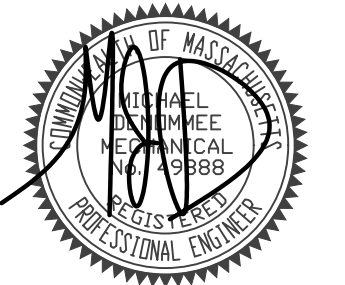
Client:

PopUp Bagels
Tenant Improvements

1440 Massachusetts Ave
Cambridge, MA 02138



BLW Engineers, Inc.
311 Great Road, Post Office Box 1551
Littleton, Massachusetts 01460
t: 978.486.4301 f: 978.428.0067
www.blwengineers.com
BLW Job #: XXXXX
HVAC Electrical Plumbing Fire Protection



Date: June 30, 2025

REVISION:

No.	Date	Description
1	6.30.25	PERMIT

Scale: As Shown

Schedules

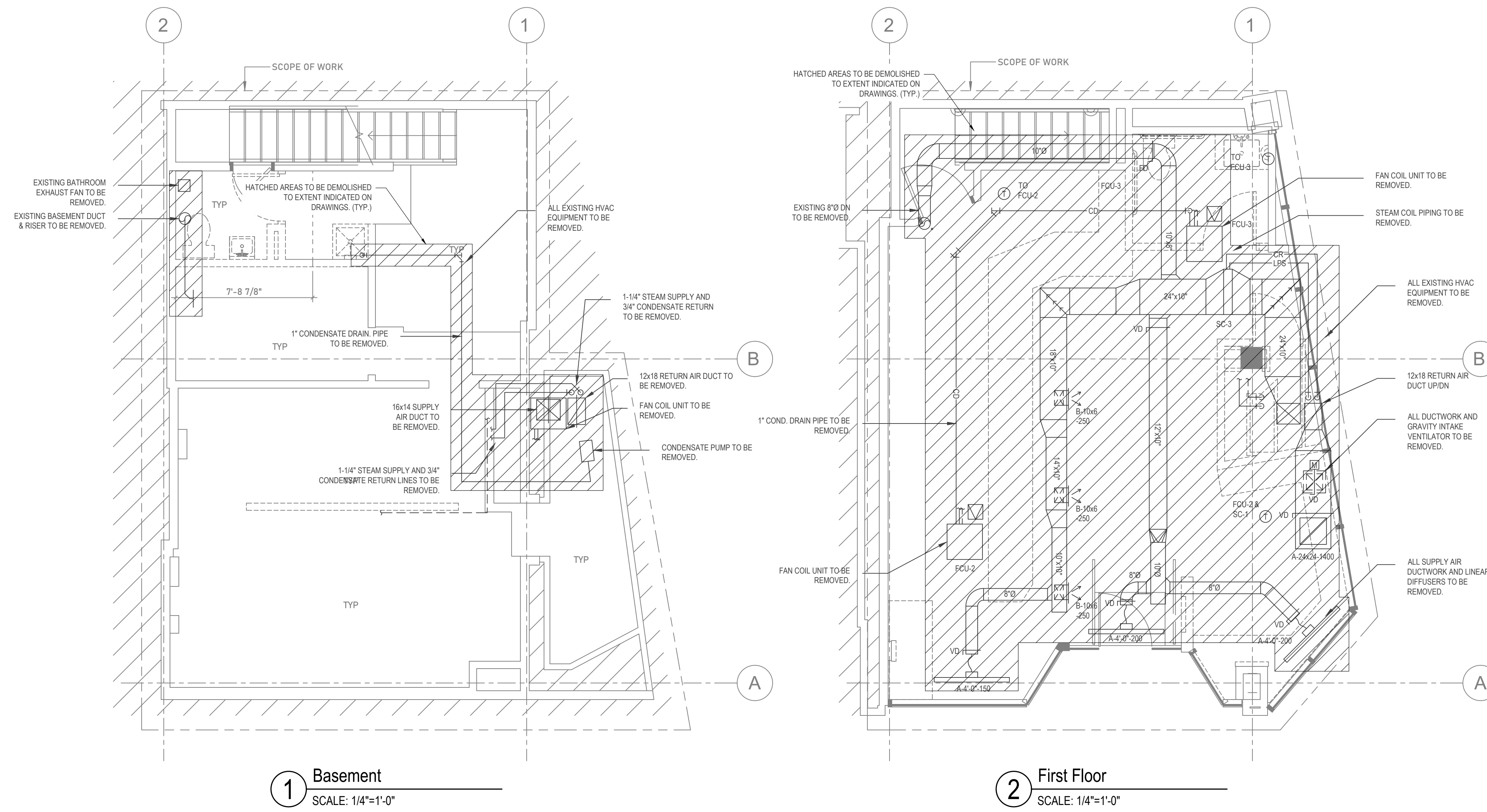
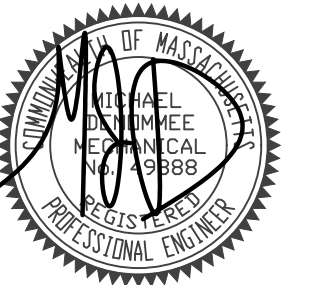
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PopUp Bagels
 Tenant Improvements

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 Littleton, Massachusetts 01460
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 BLW Job #: XXXXX
 HVAC • Electrical • Plumbing • Fire Protection



1 Basement
 SCALE: 1/4"=1'-0"

2 First Floor
 SCALE: 1/4"=1'-0"

Date: June 30, 2025

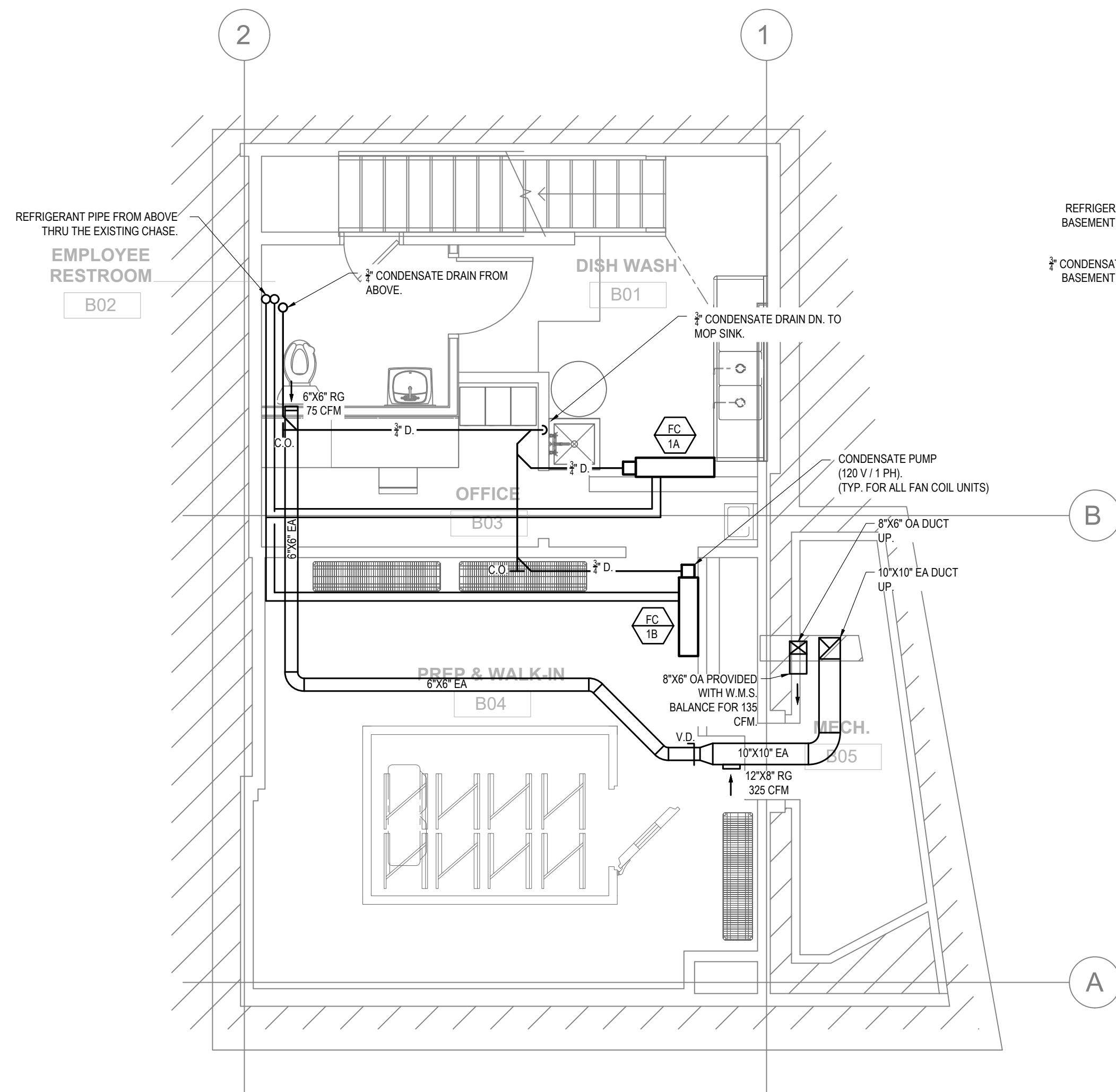
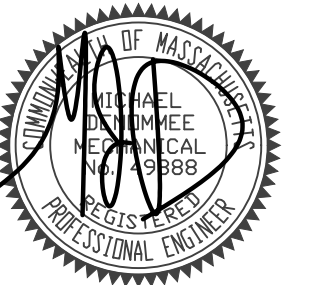
REVISION:

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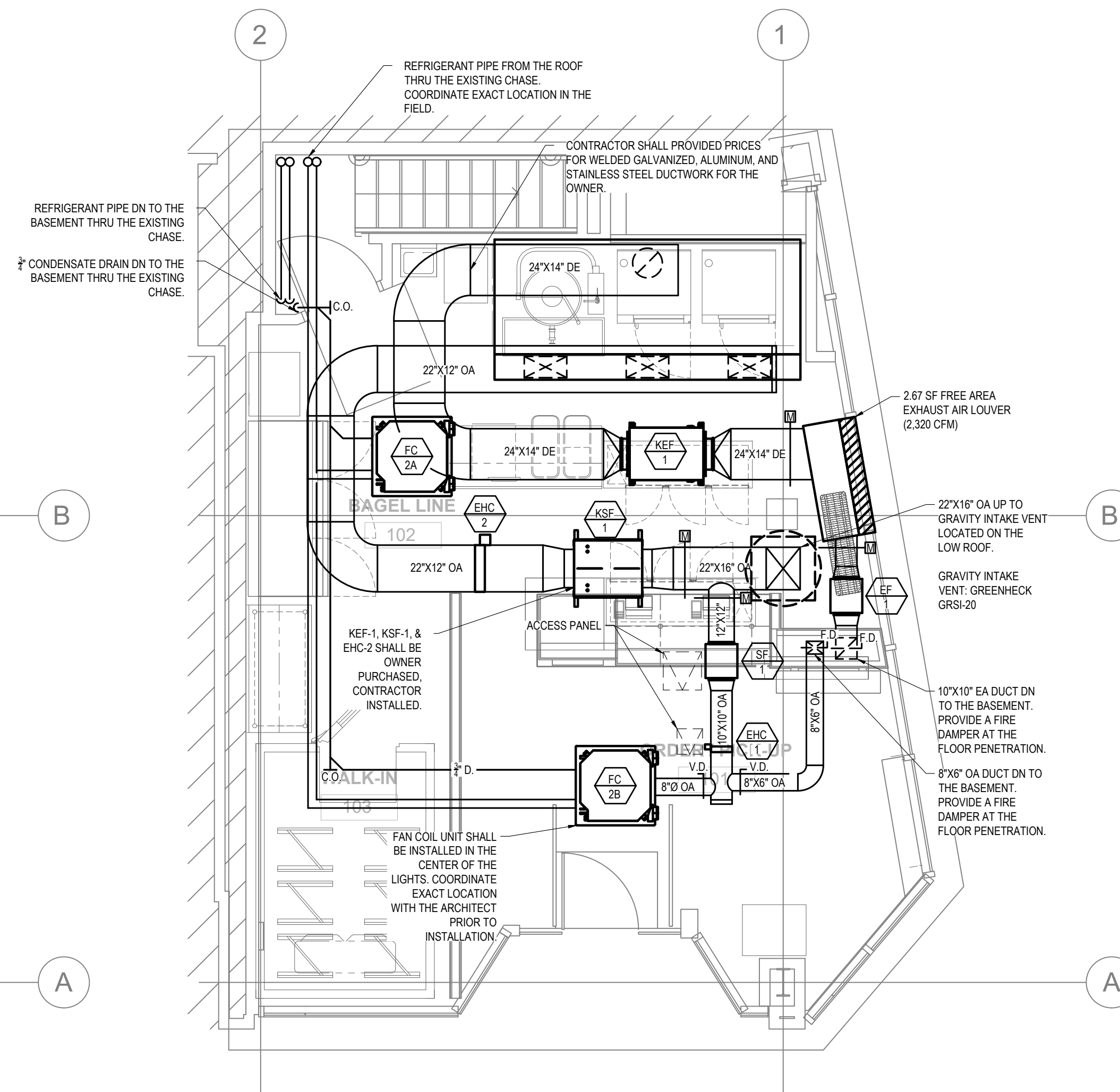
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**Basement &
 First Floor
 Demolition
 Plans**

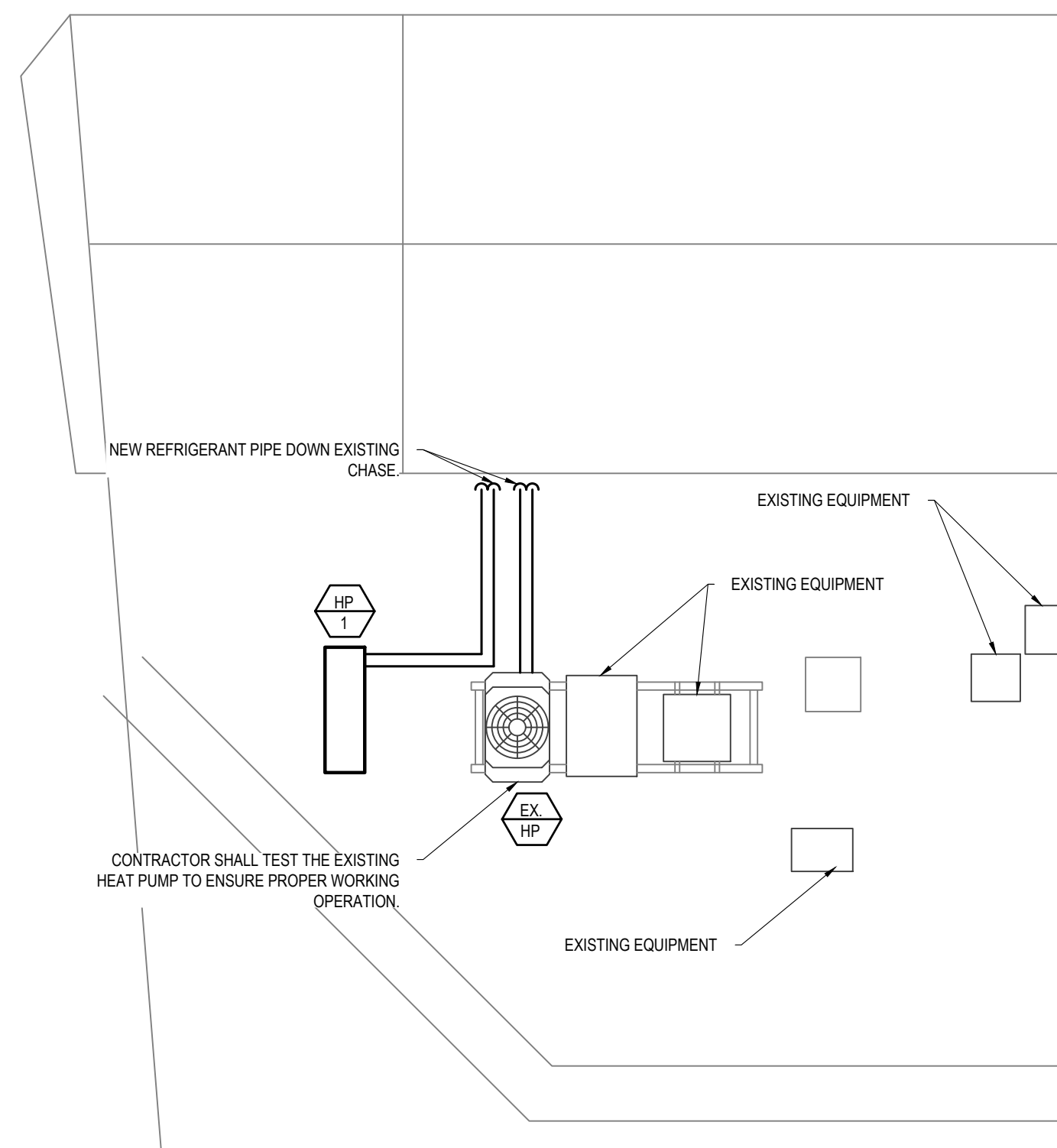
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1 Basement
 SCALE: 1/4"=1'-0"



2 First Floor
 SCALE: 1/4"=1'-0"



3 Roof
 SCALE: 1/4"=1'-0"

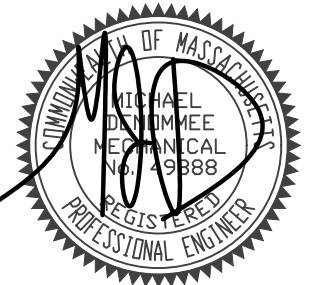
Date: June 30, 2025

REVISION:

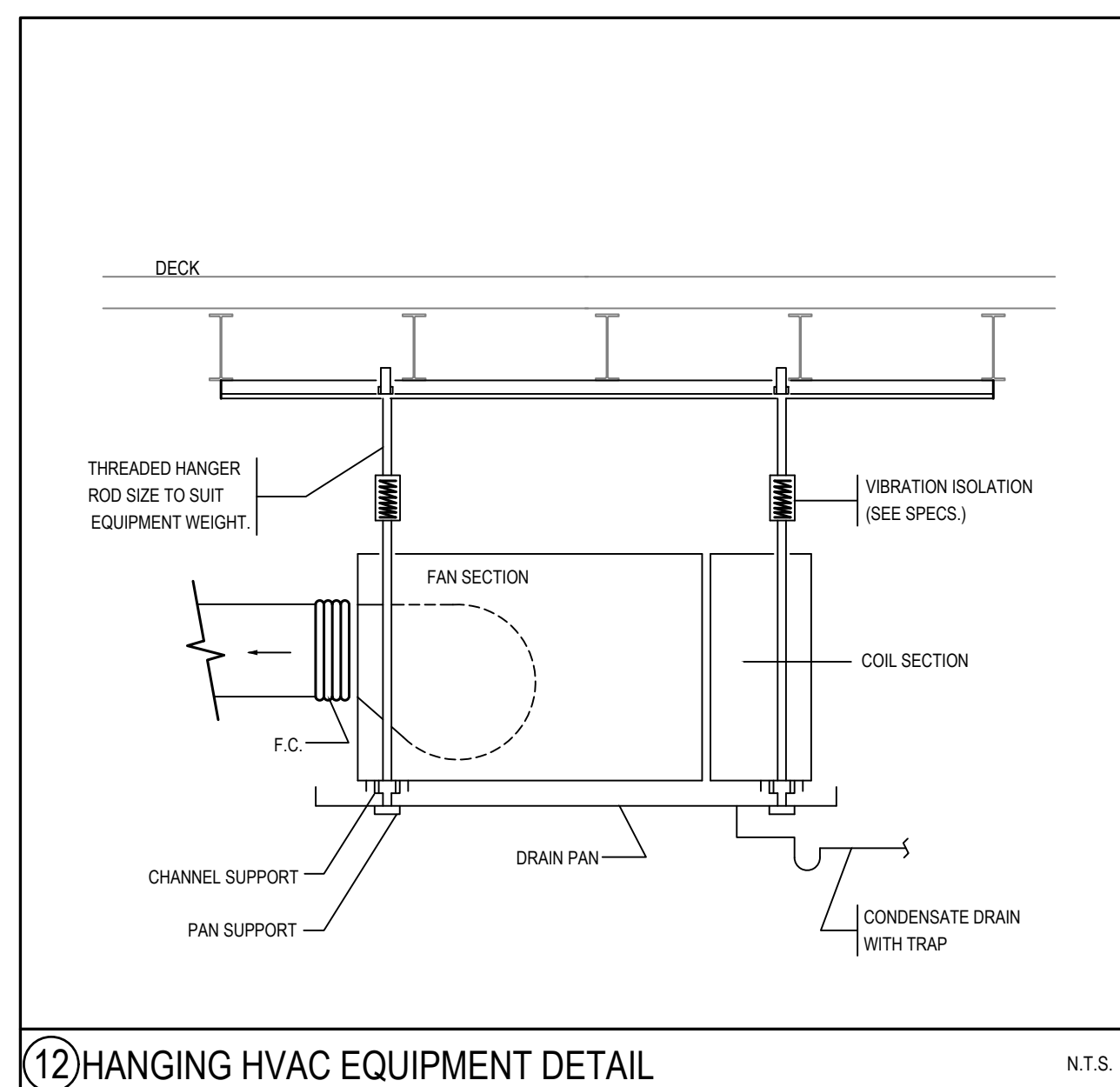
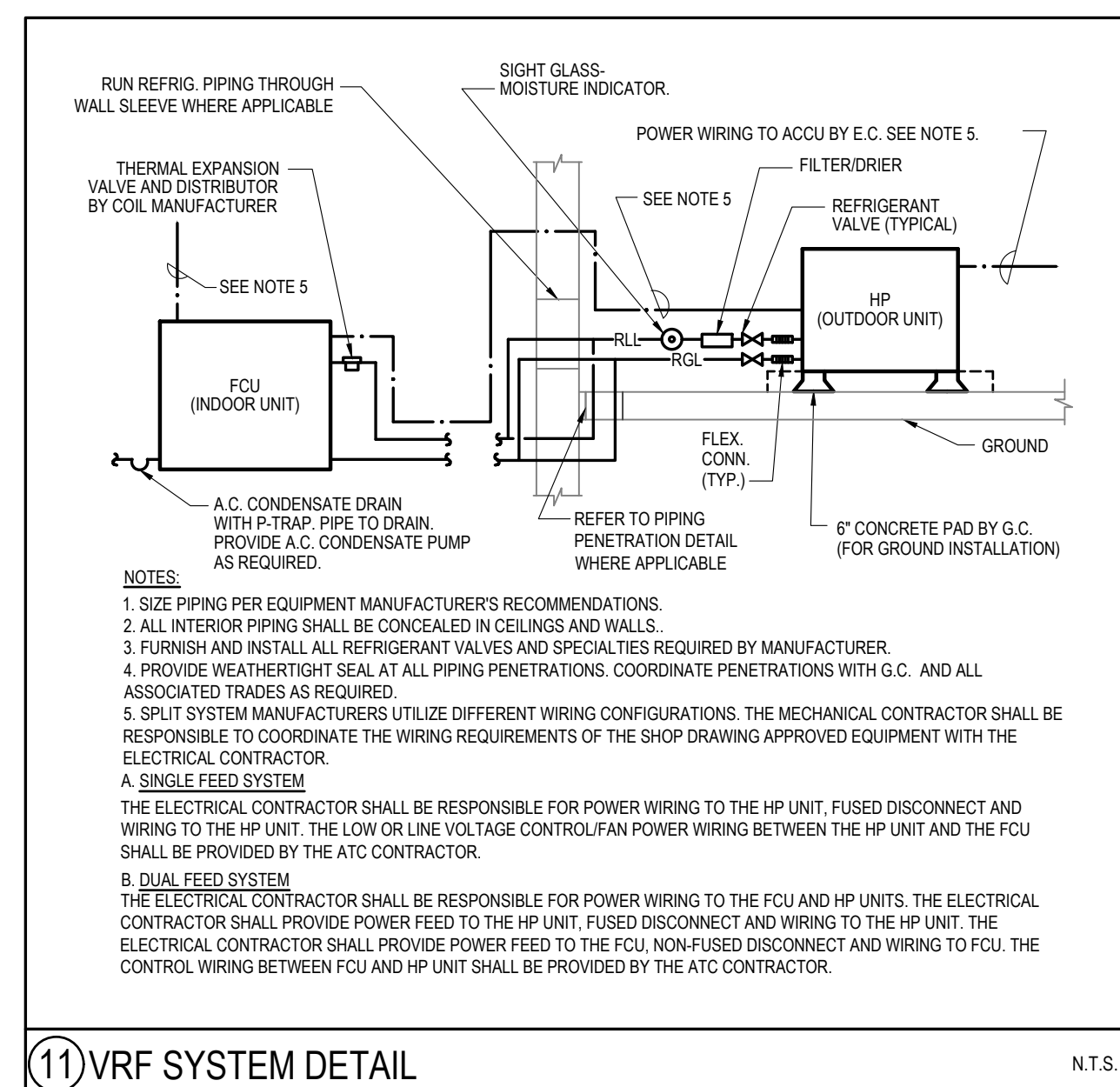
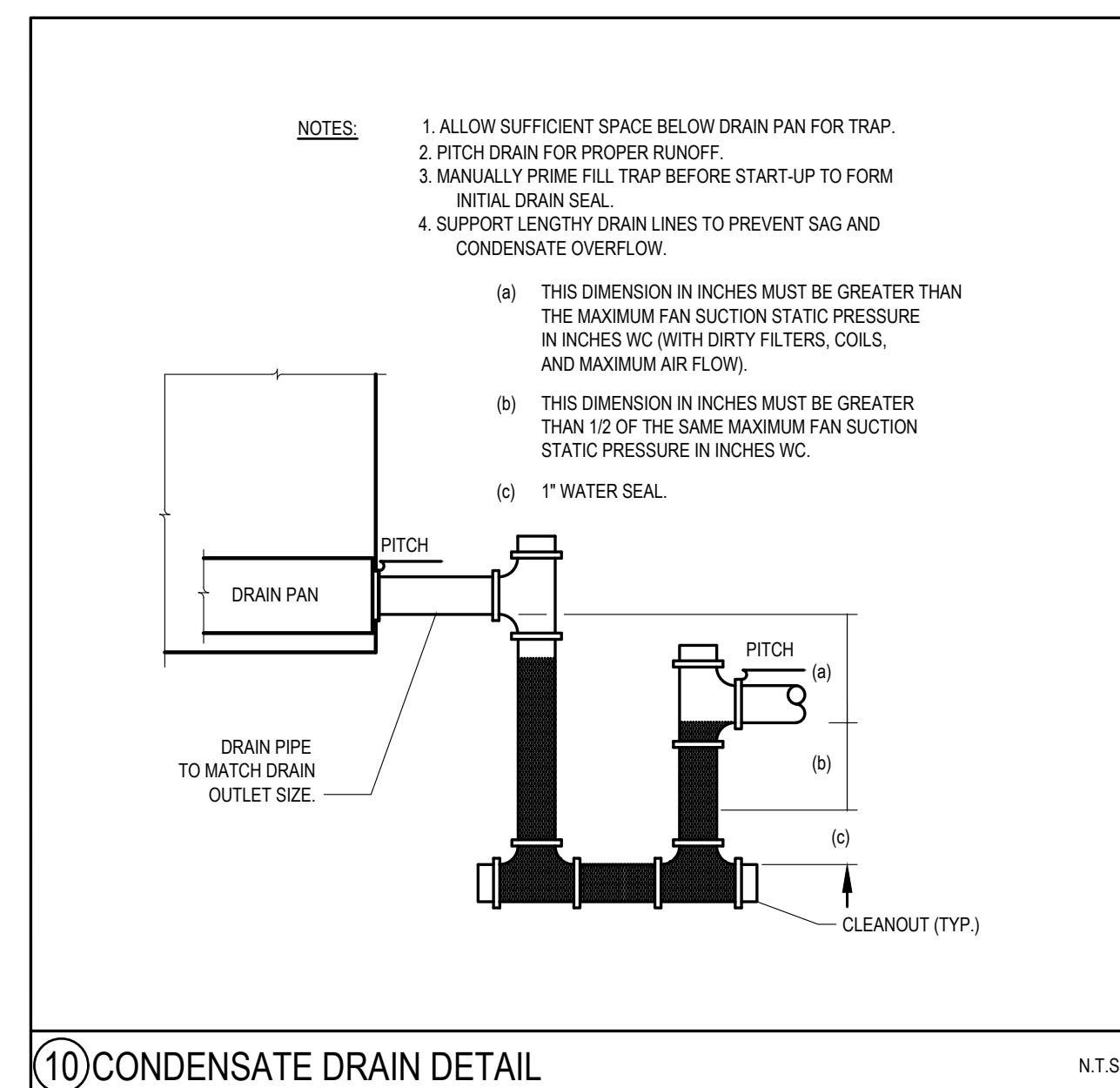
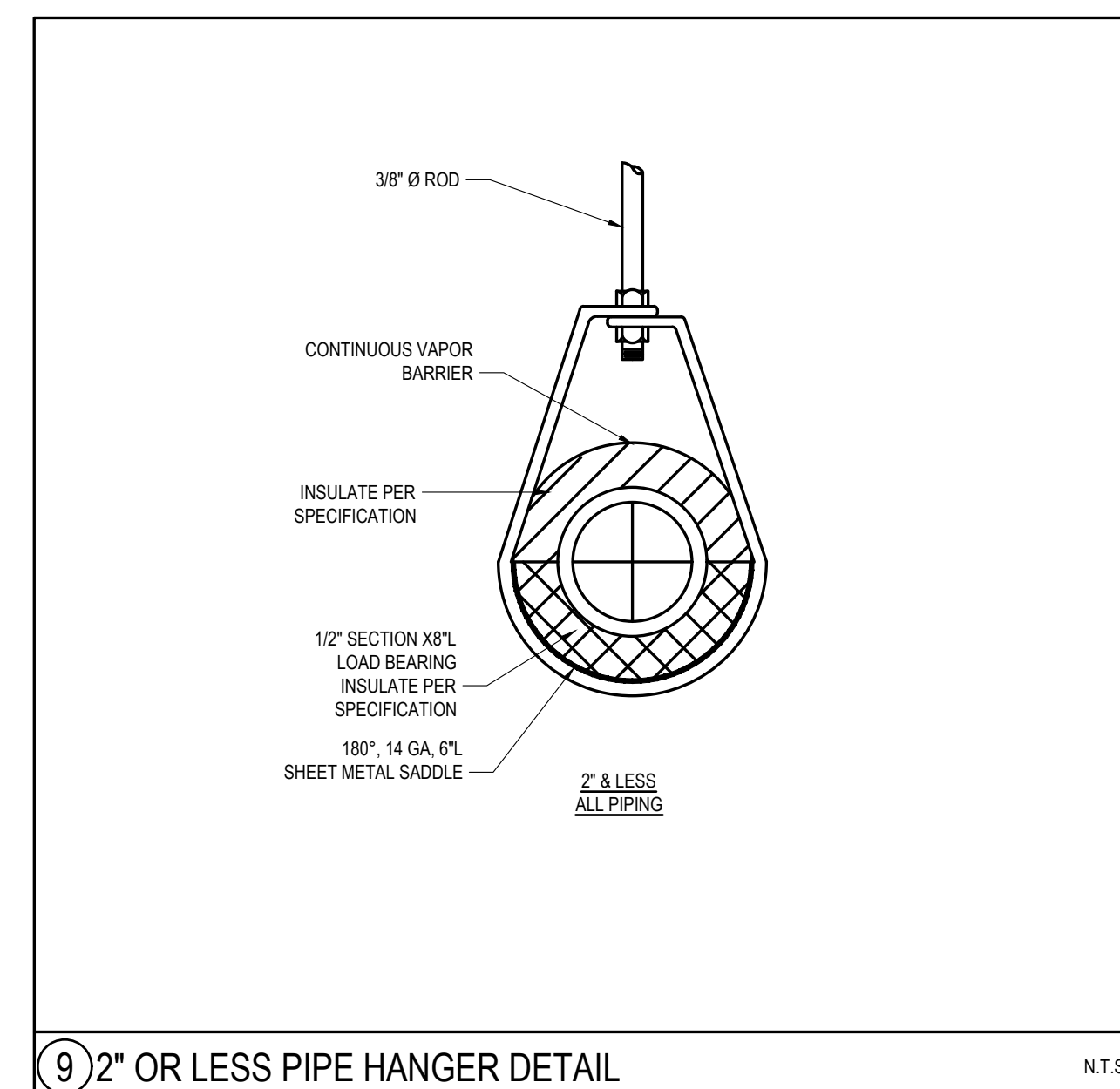
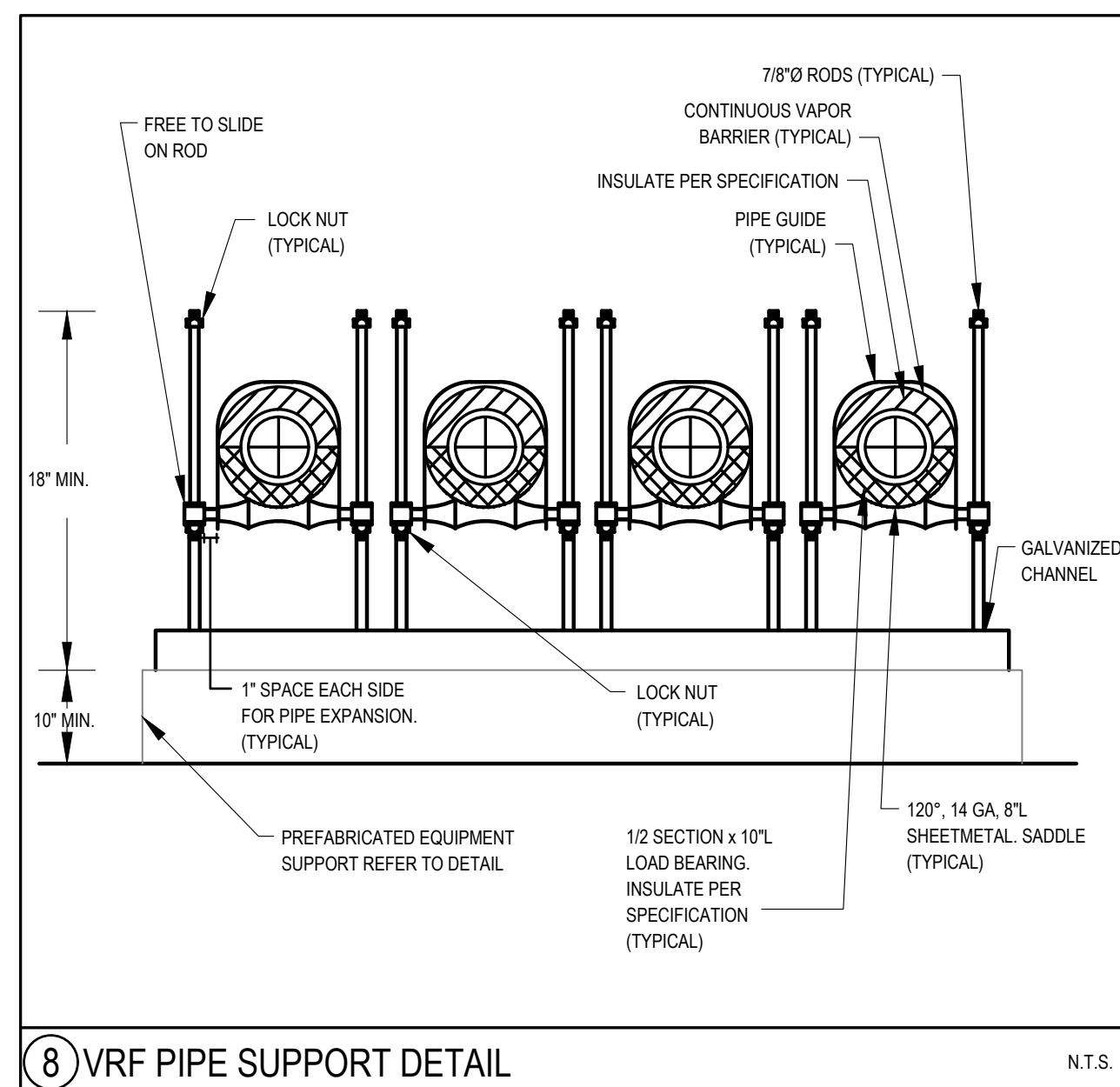
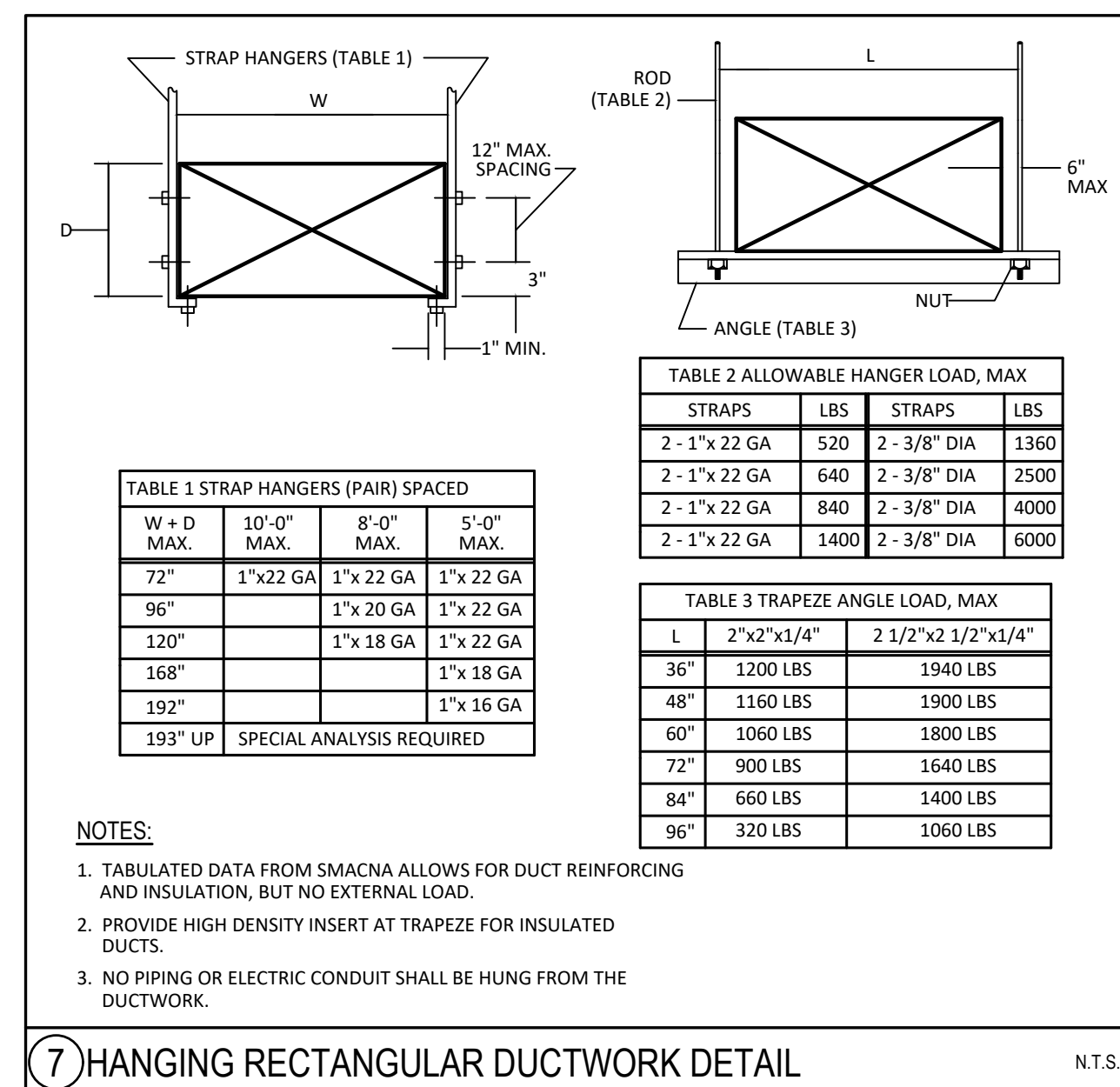
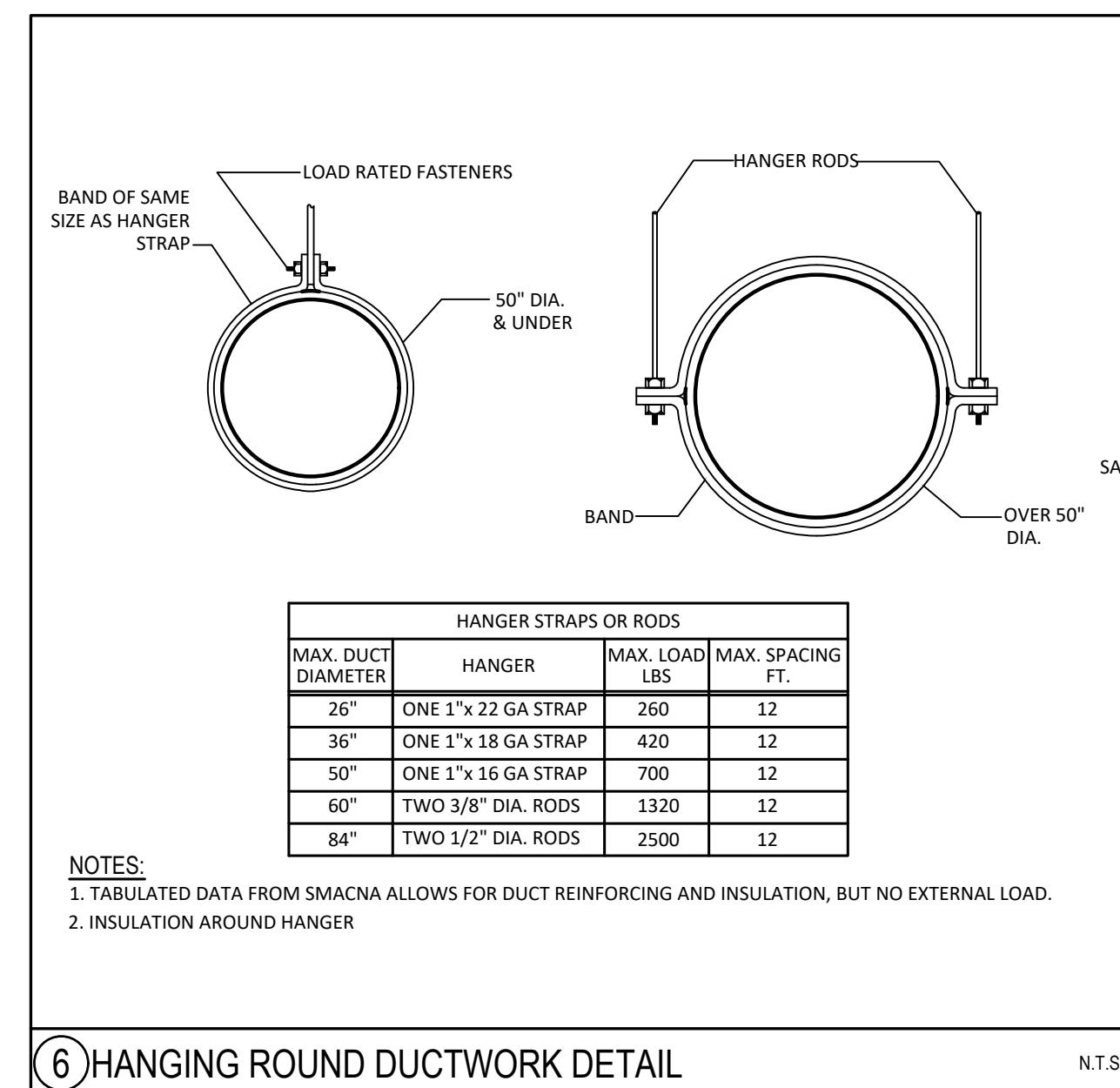
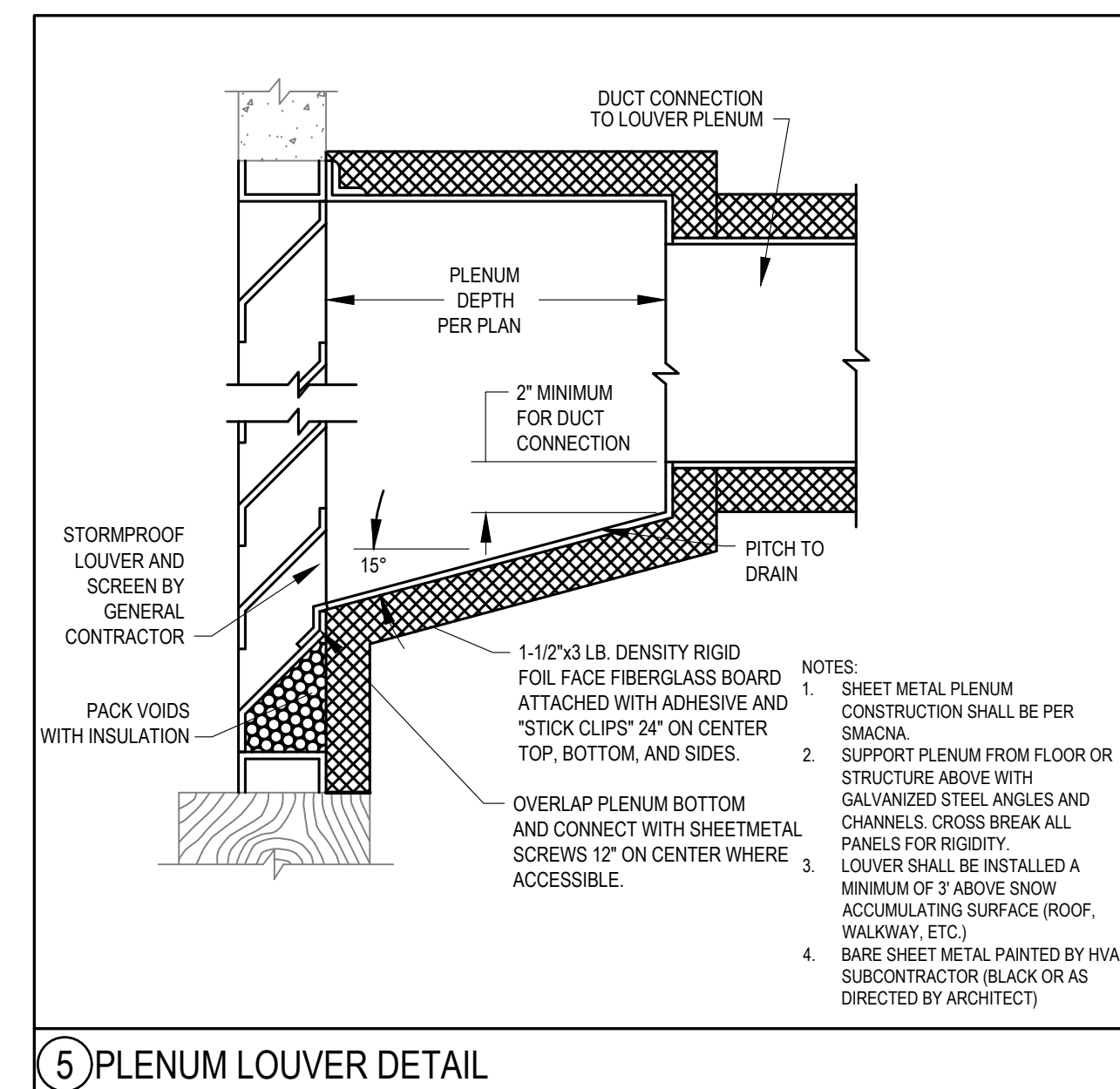
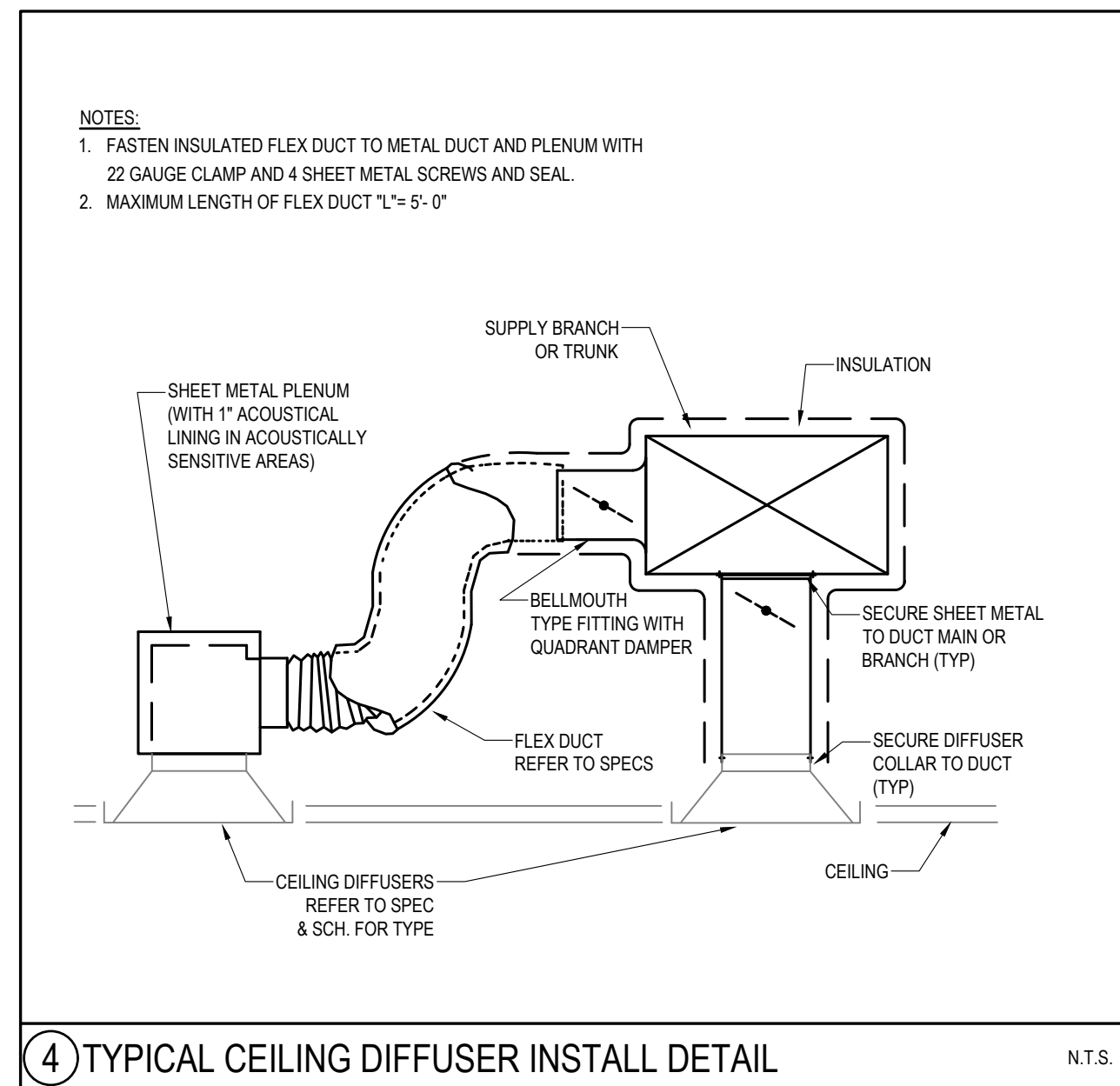
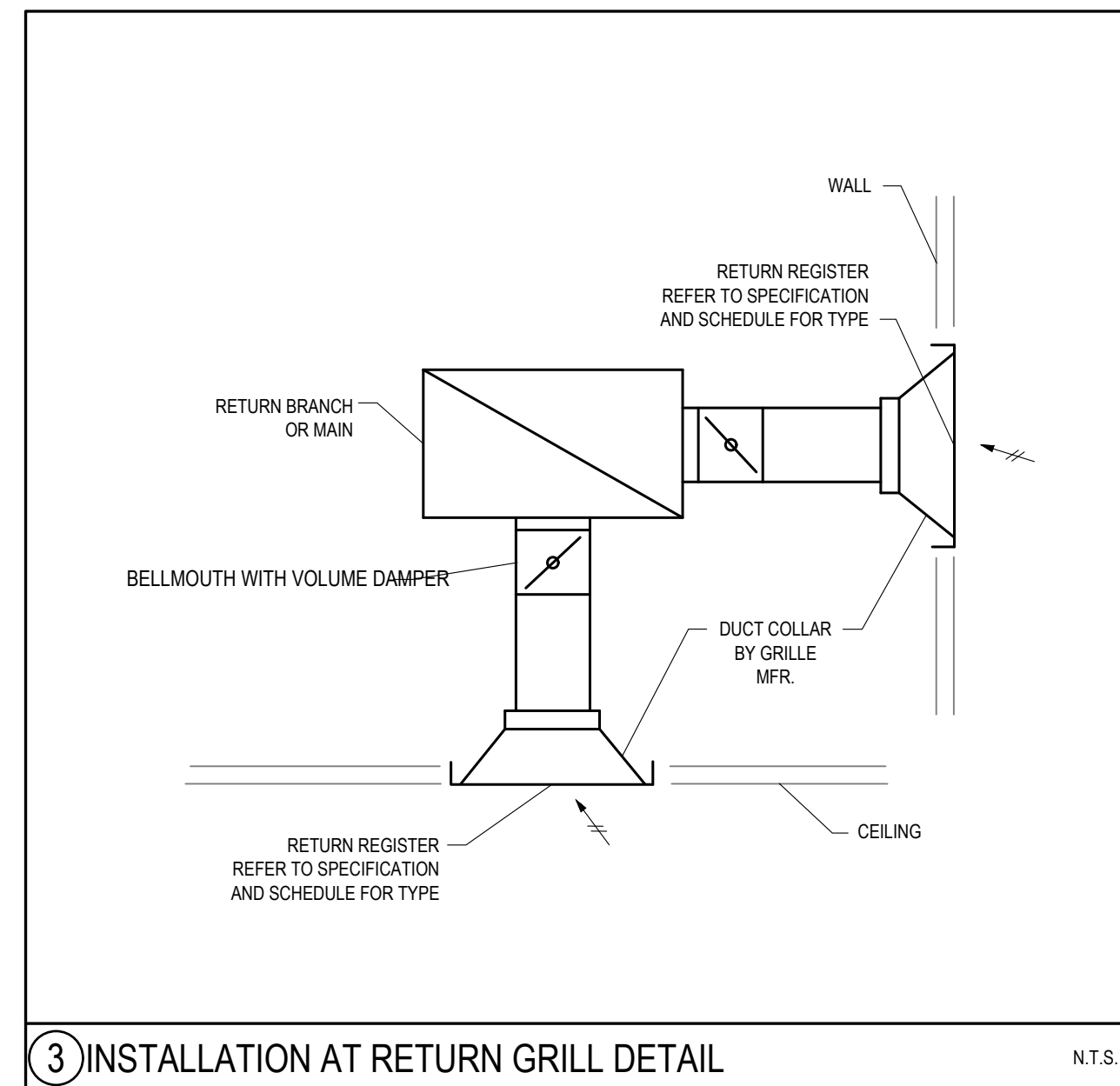
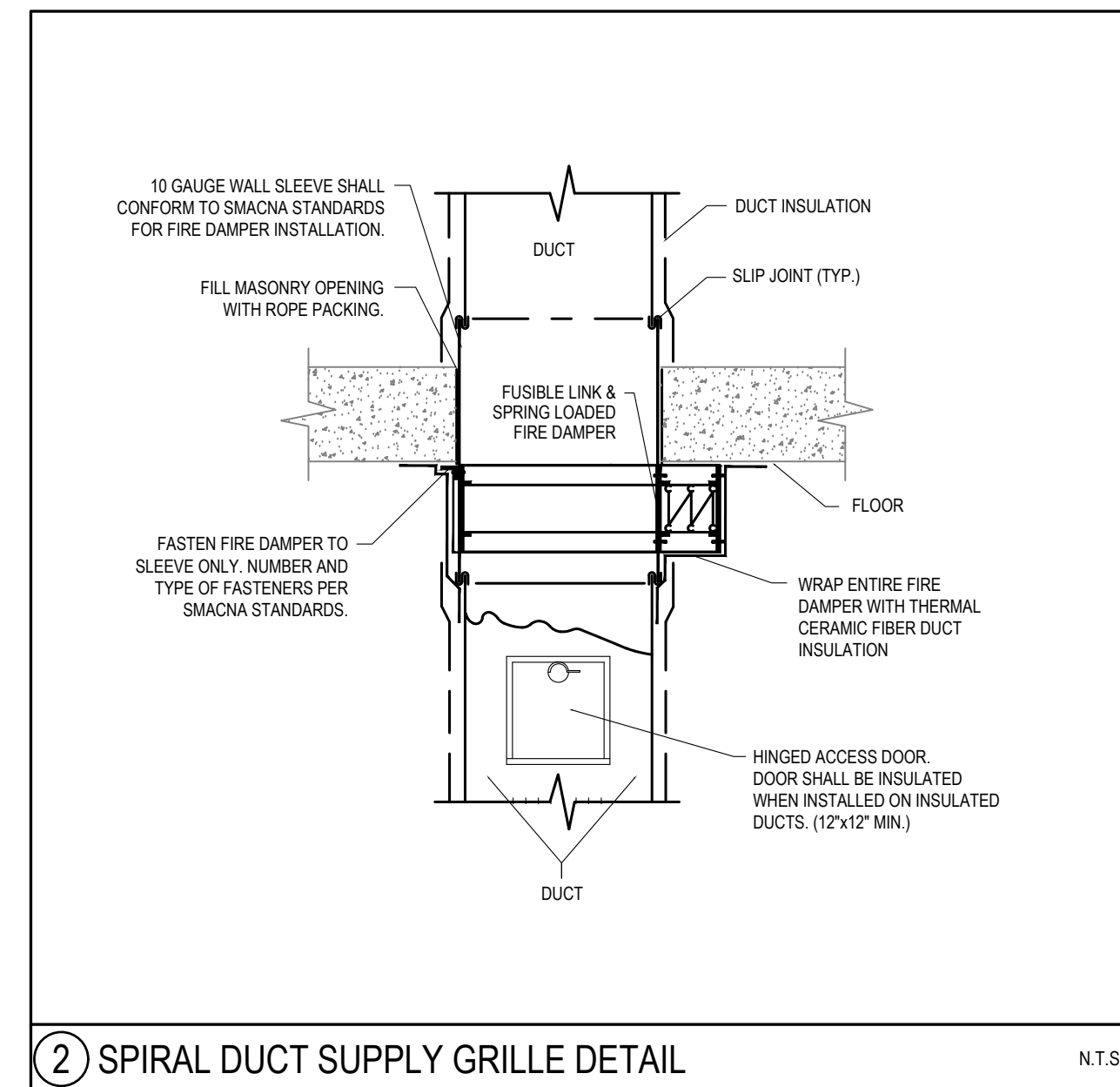
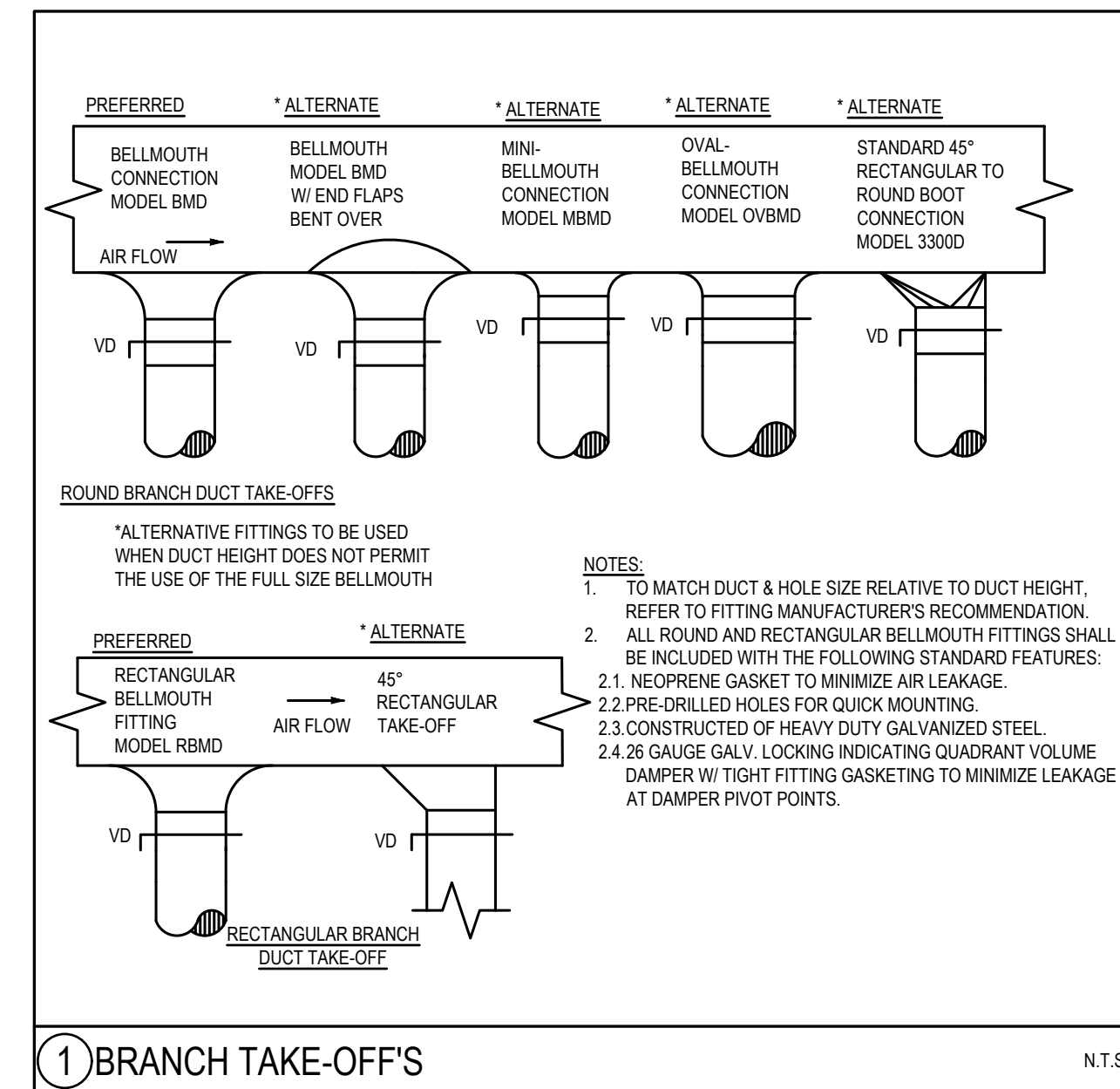
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**Basement, First Floor, & Roof
 New Work Plans**



HVAC DETAILS



HVAC DETAILS



Date: June 30, 2025

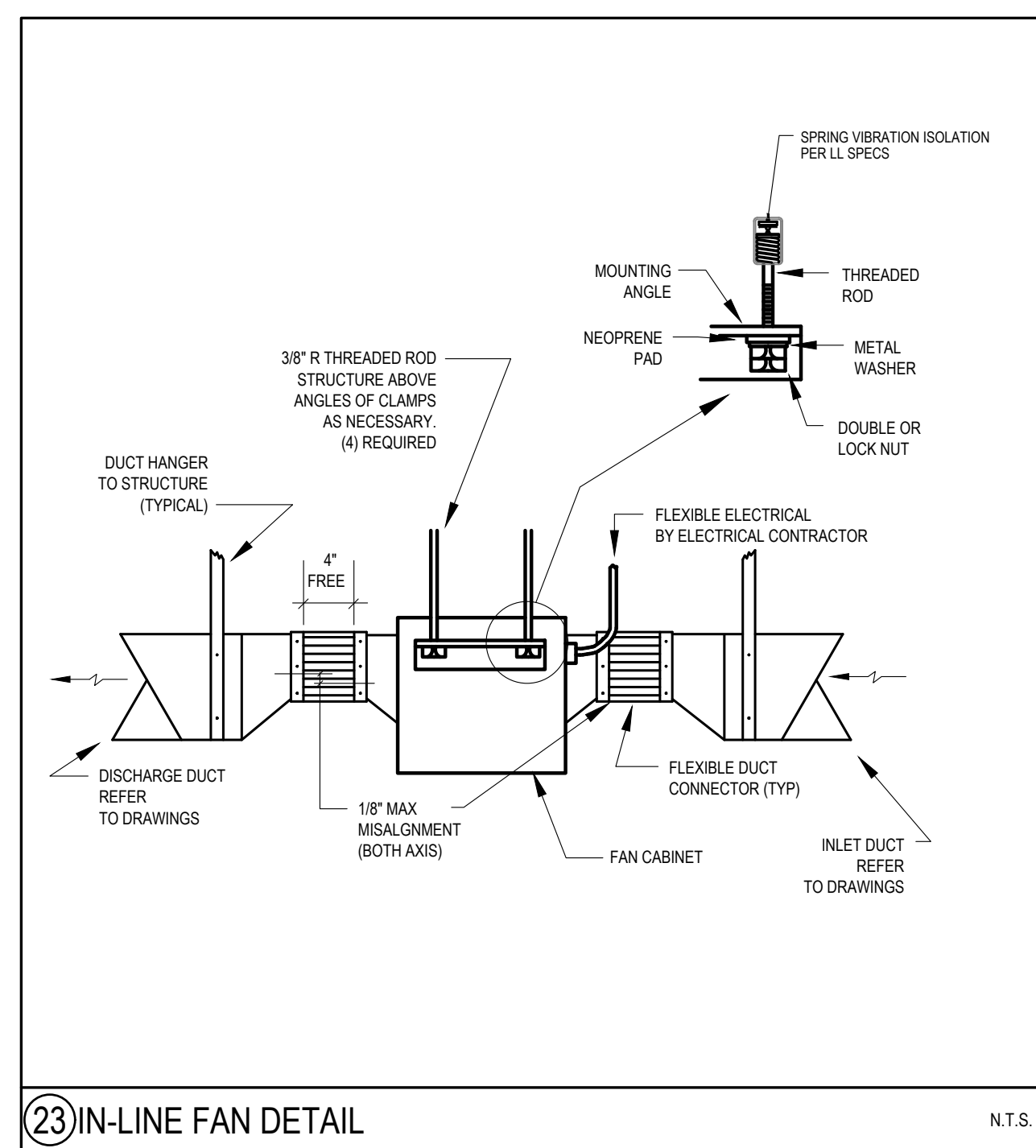
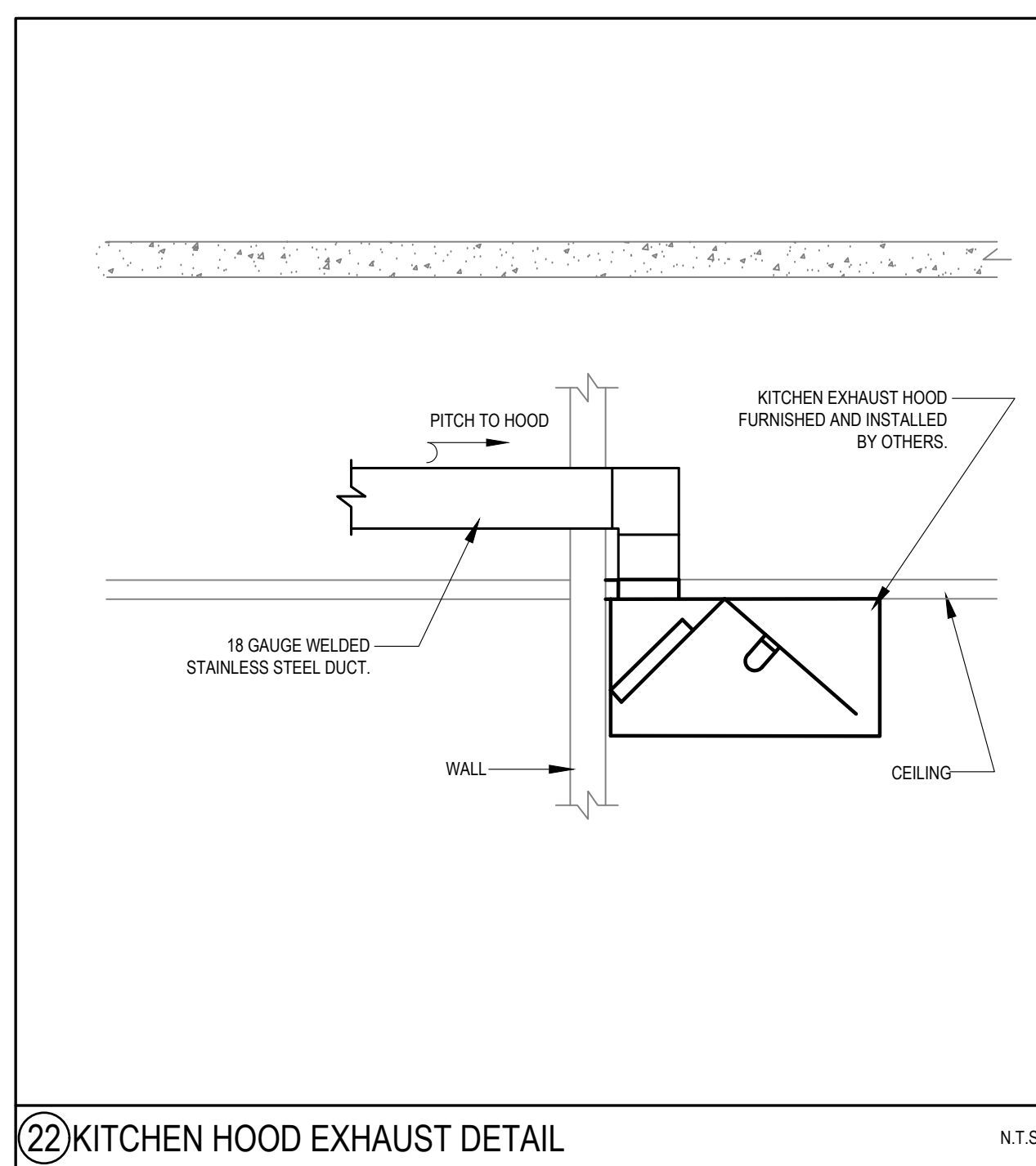
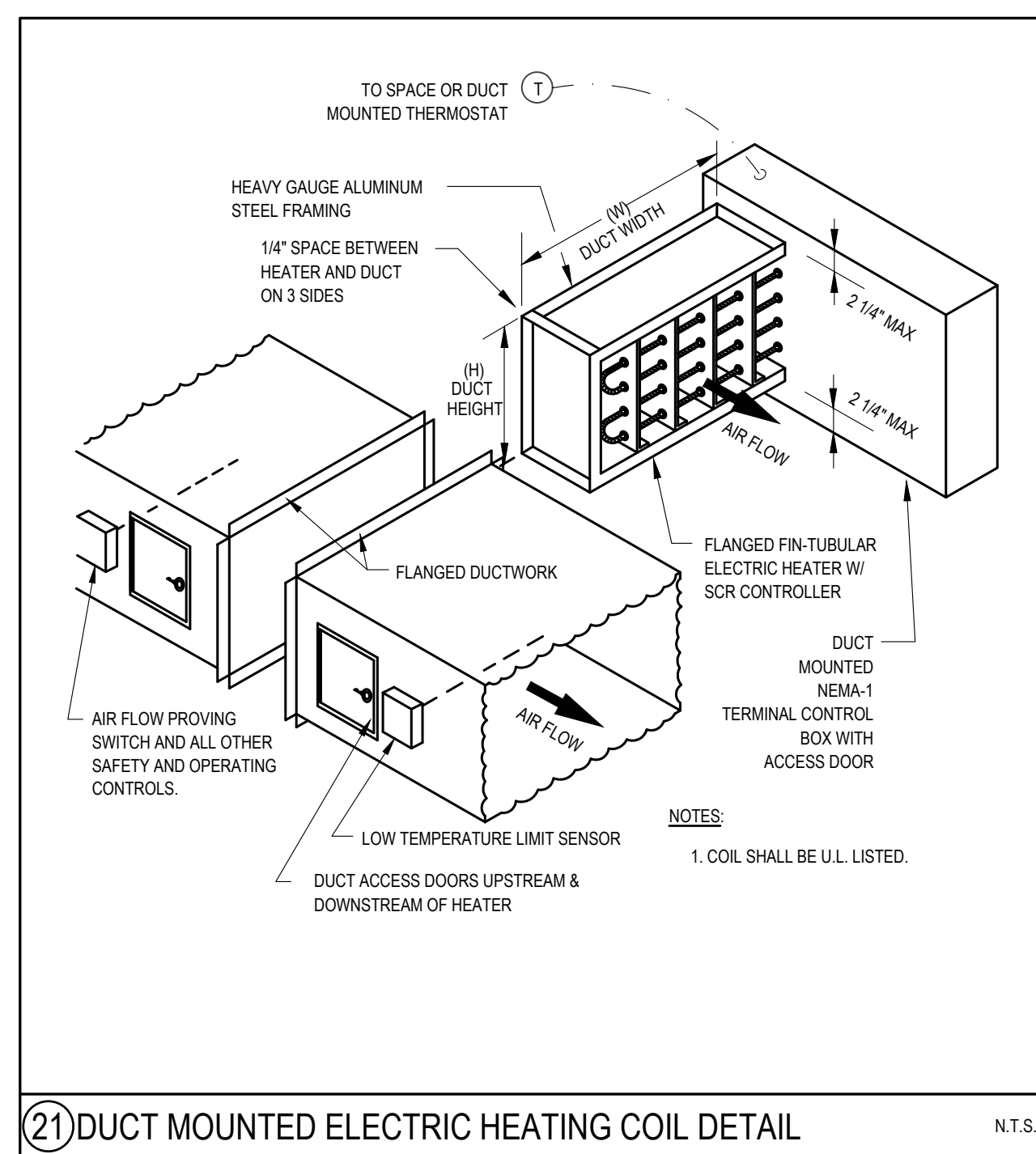
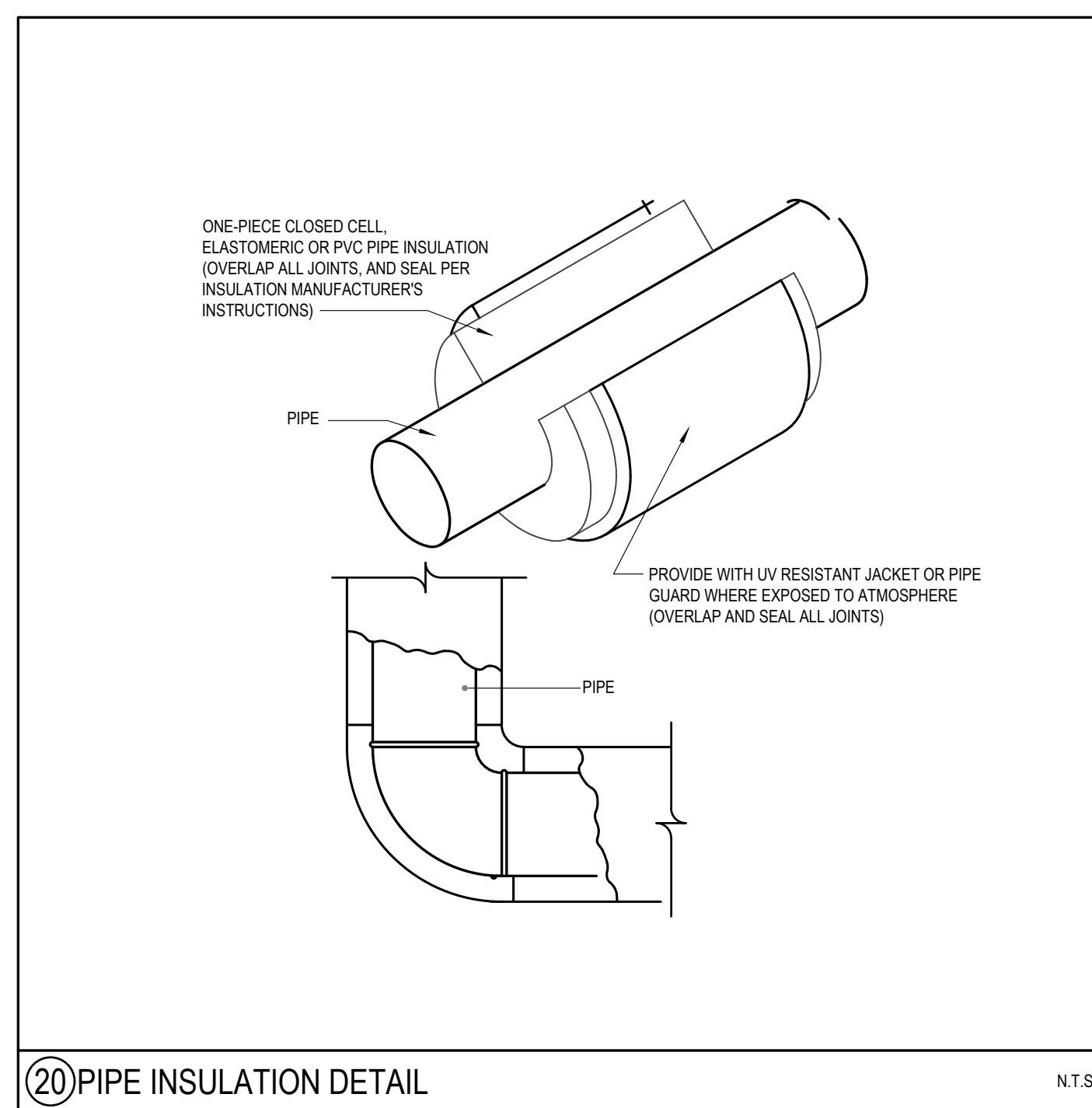
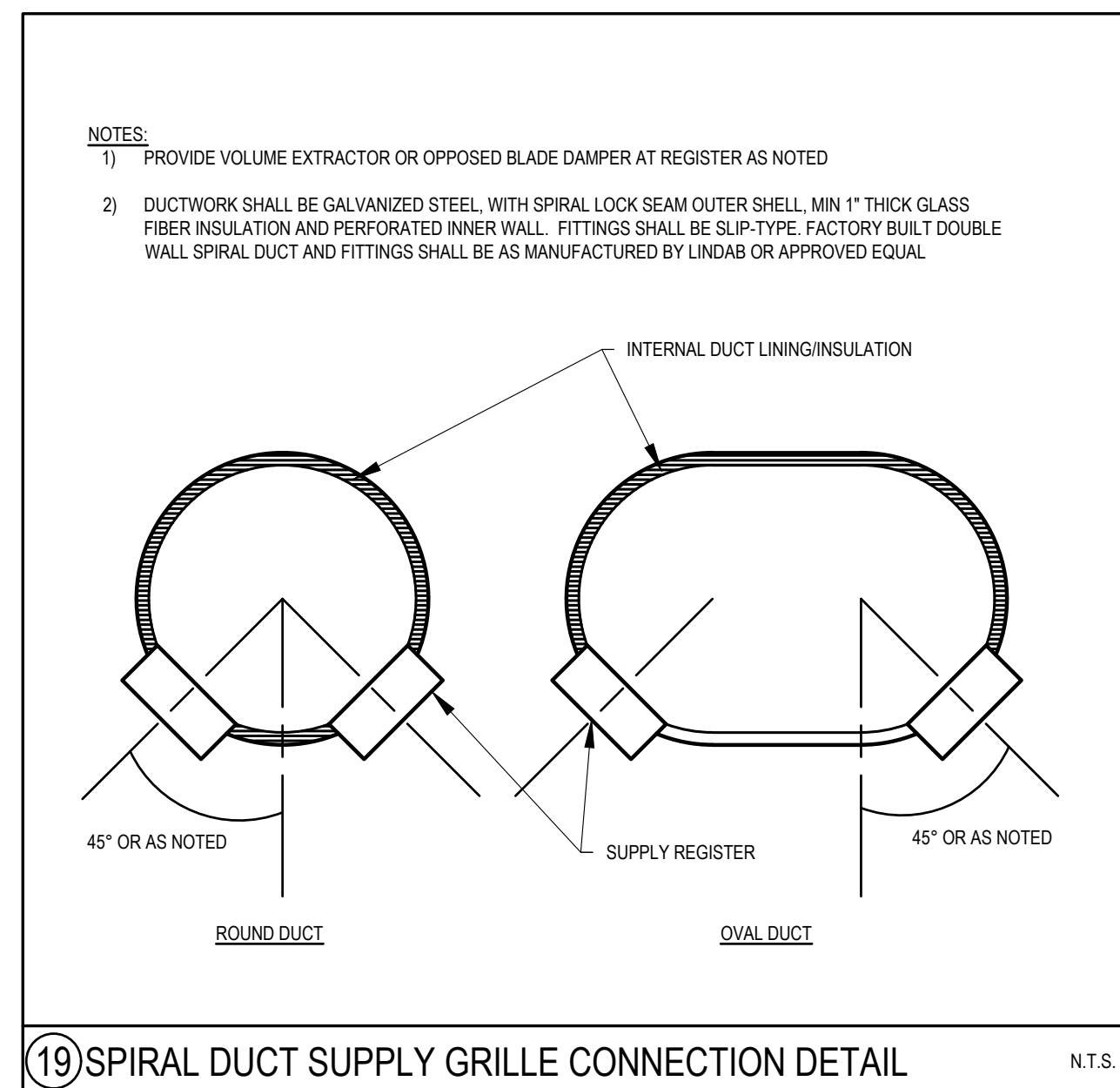
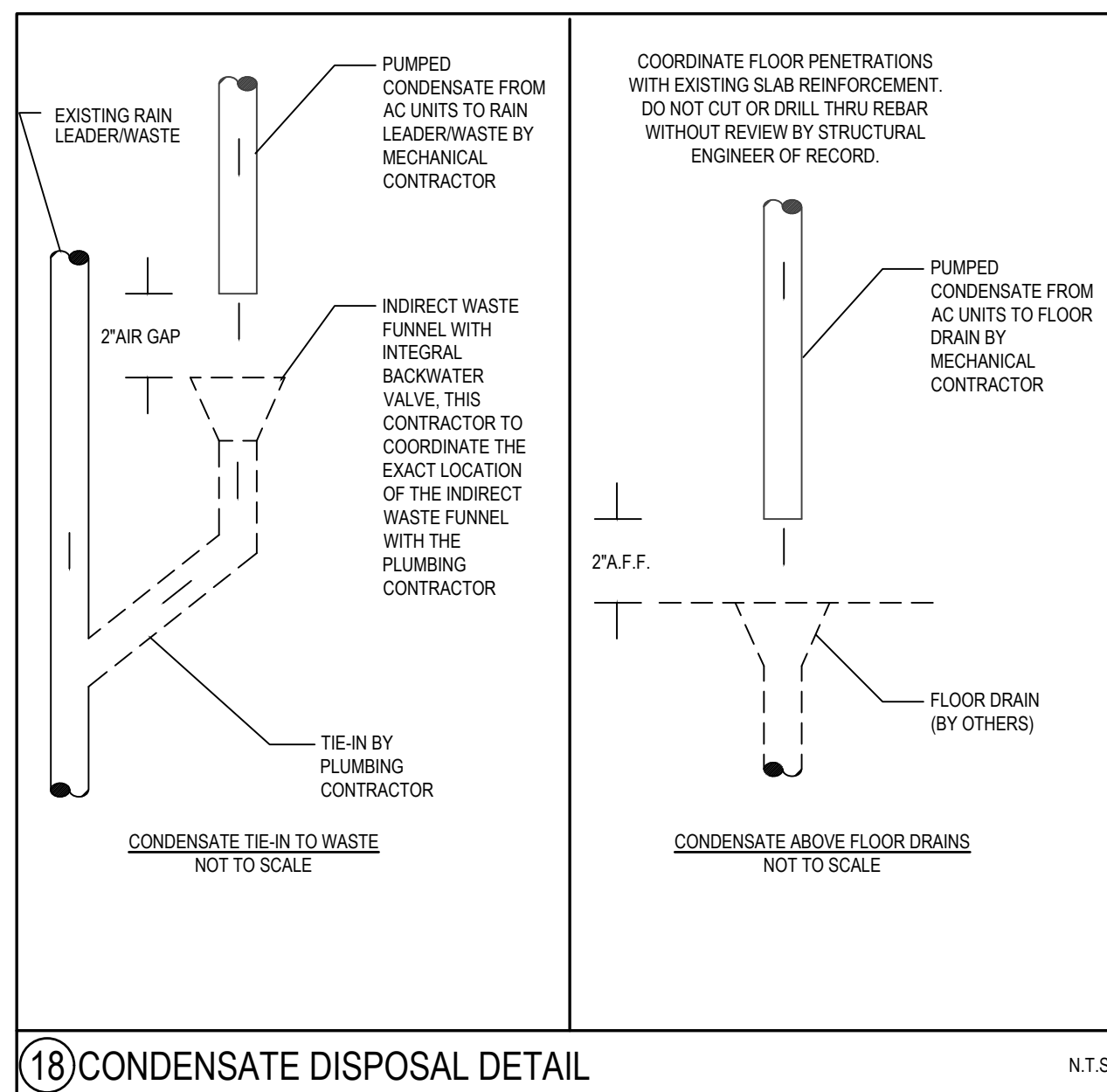
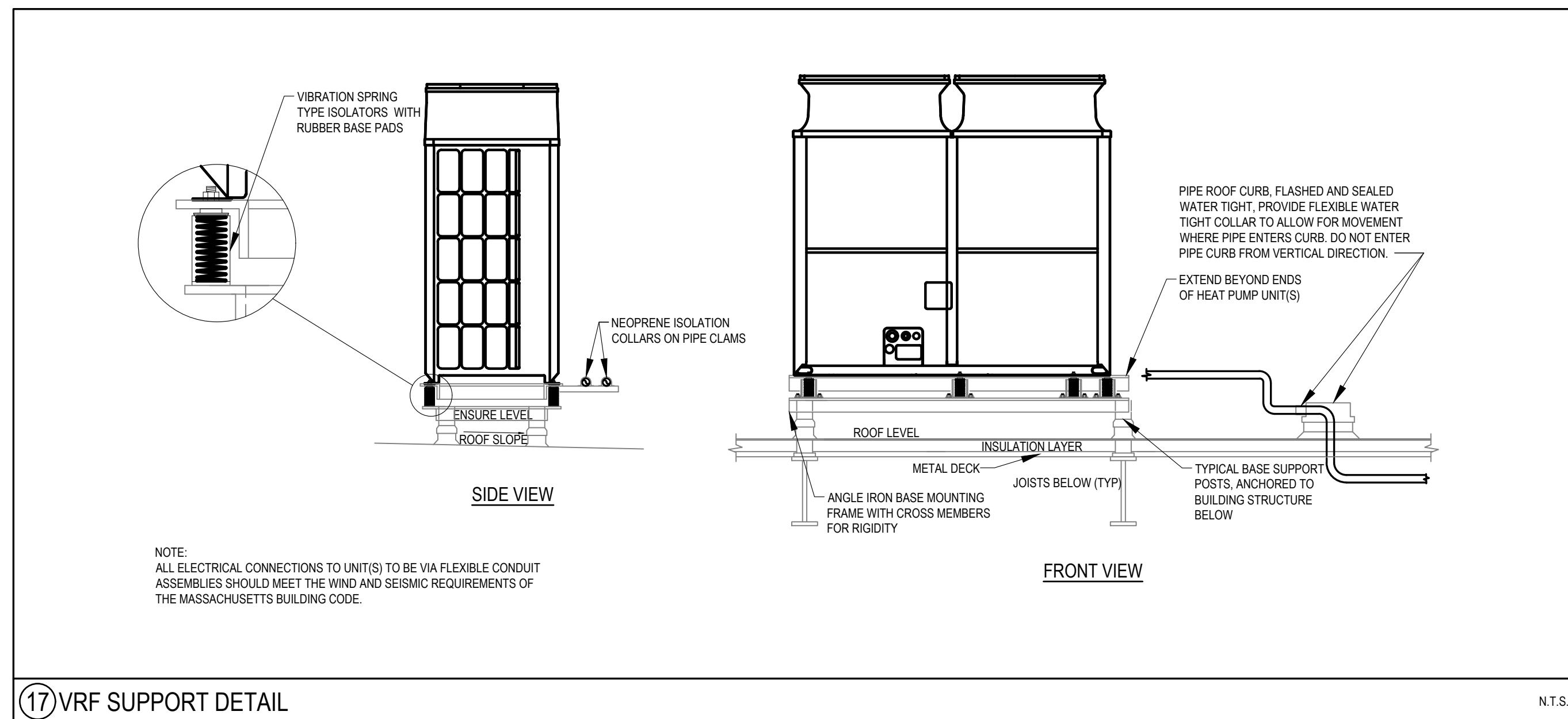
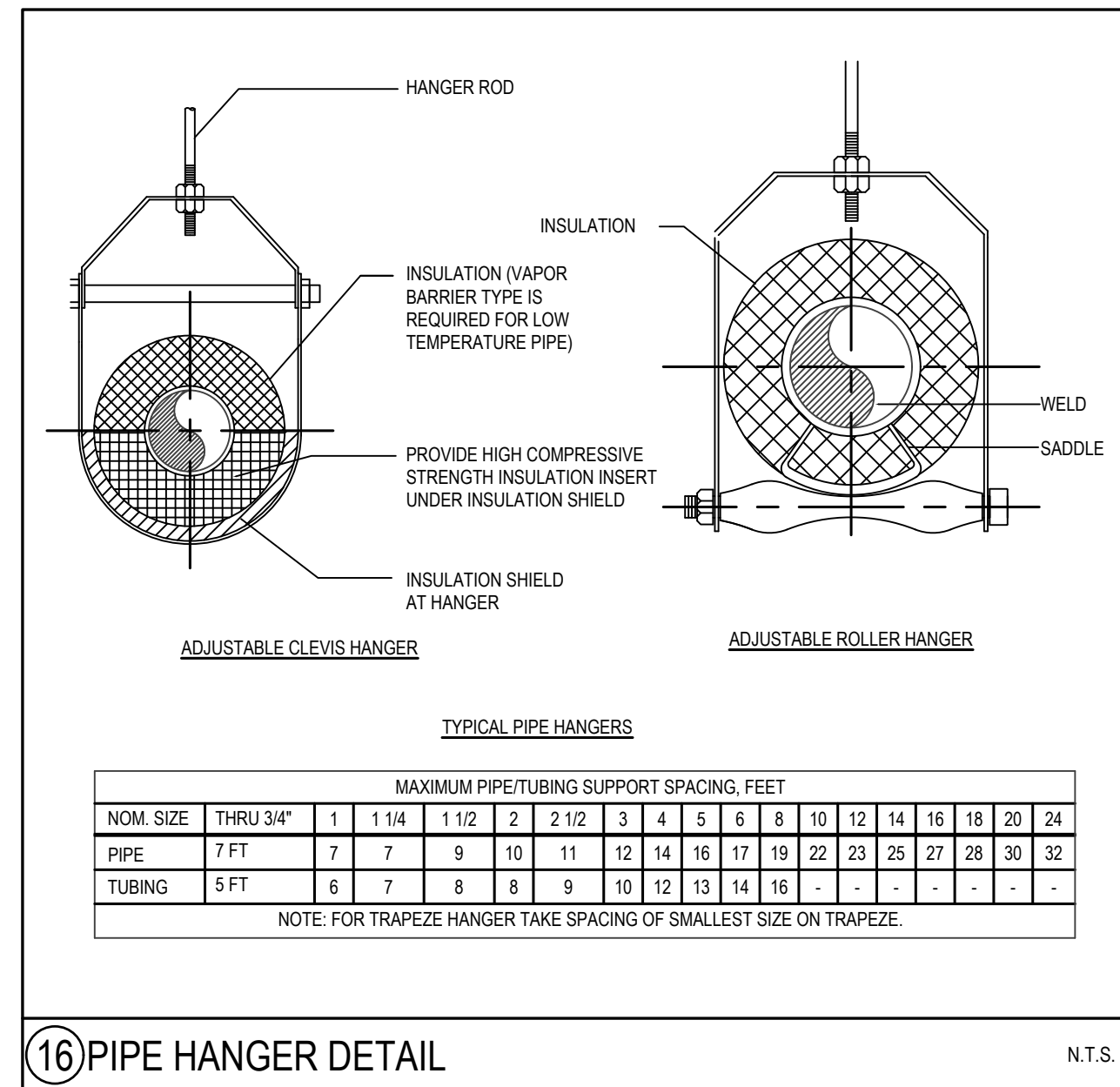
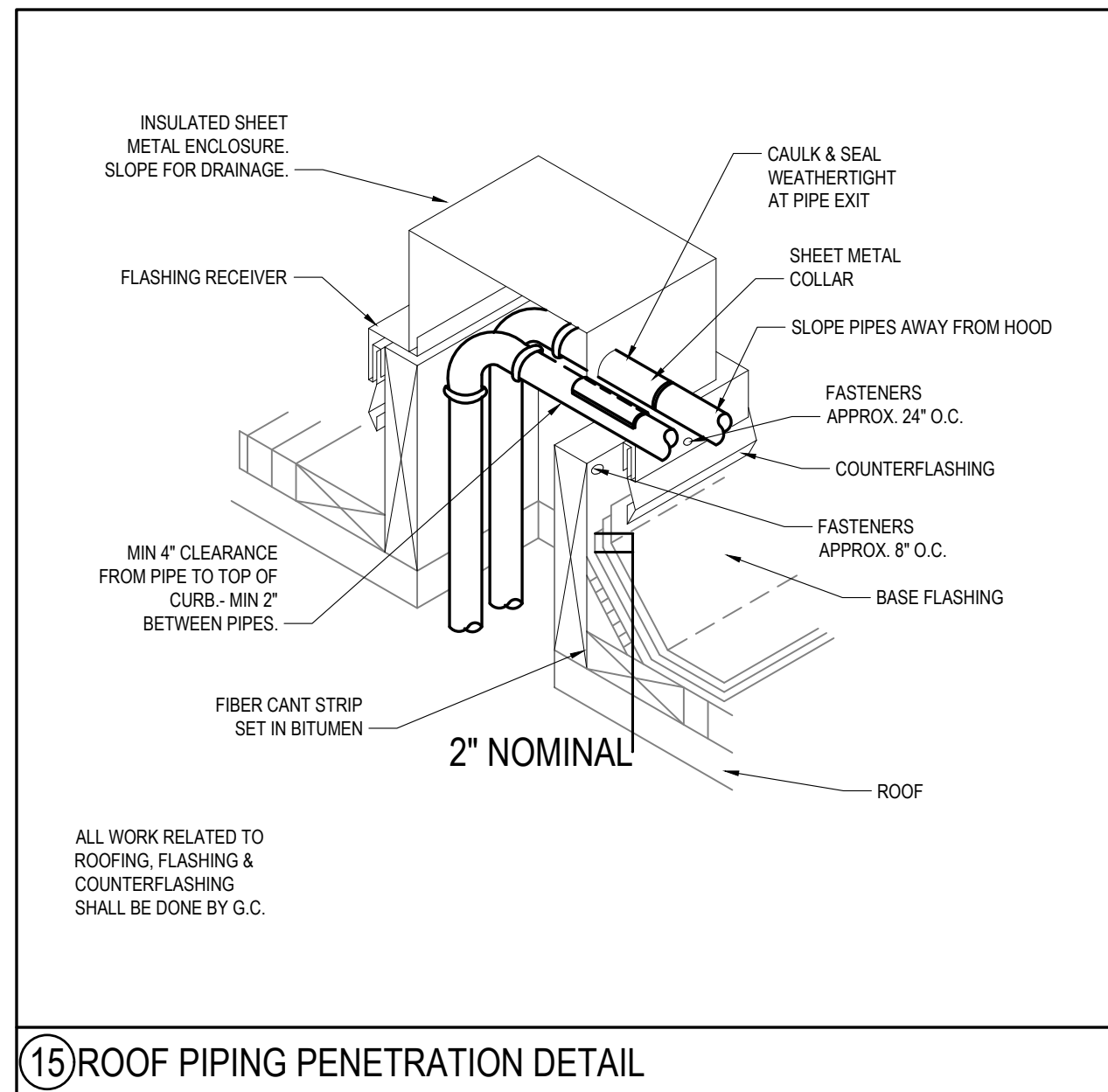
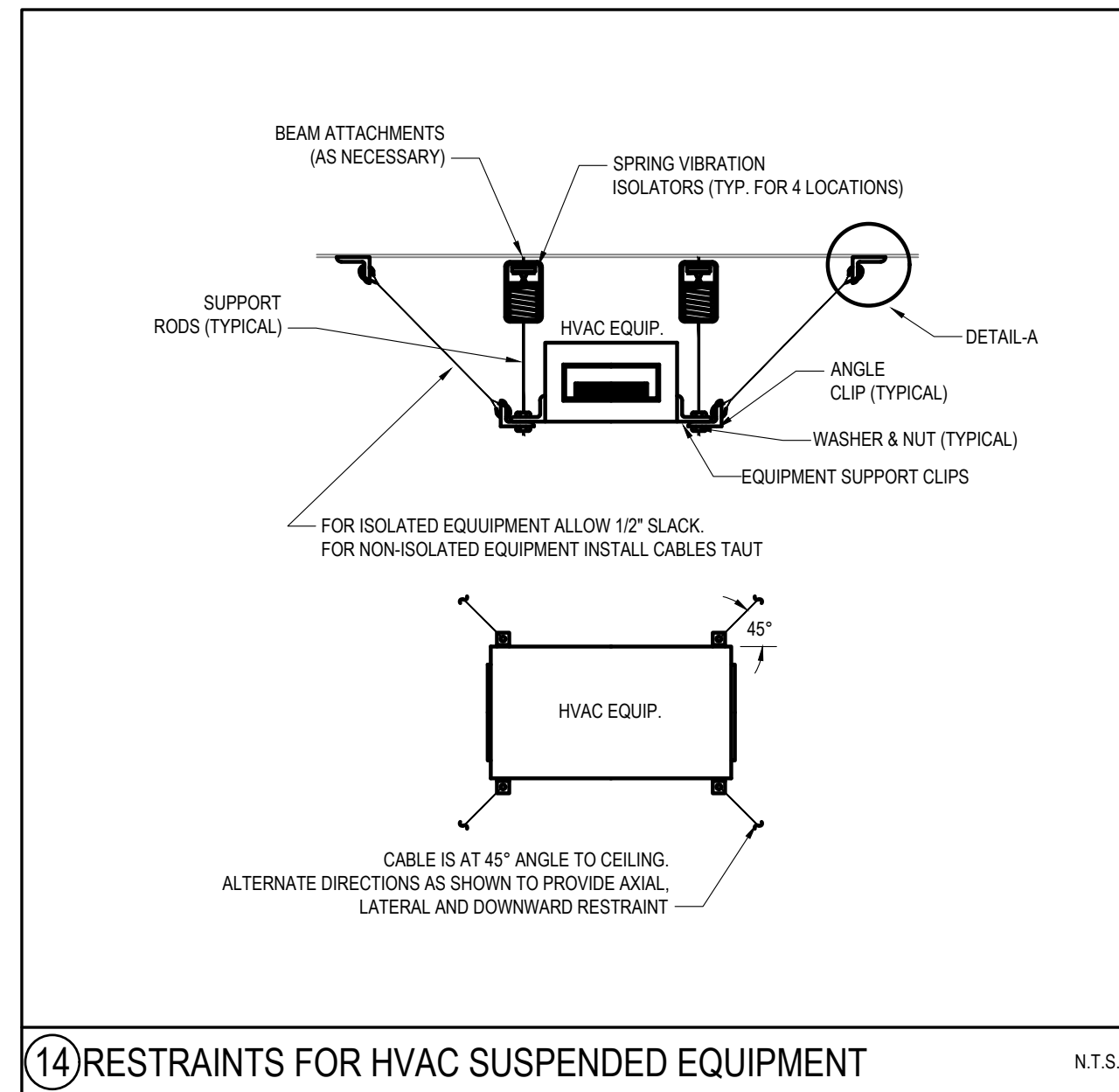
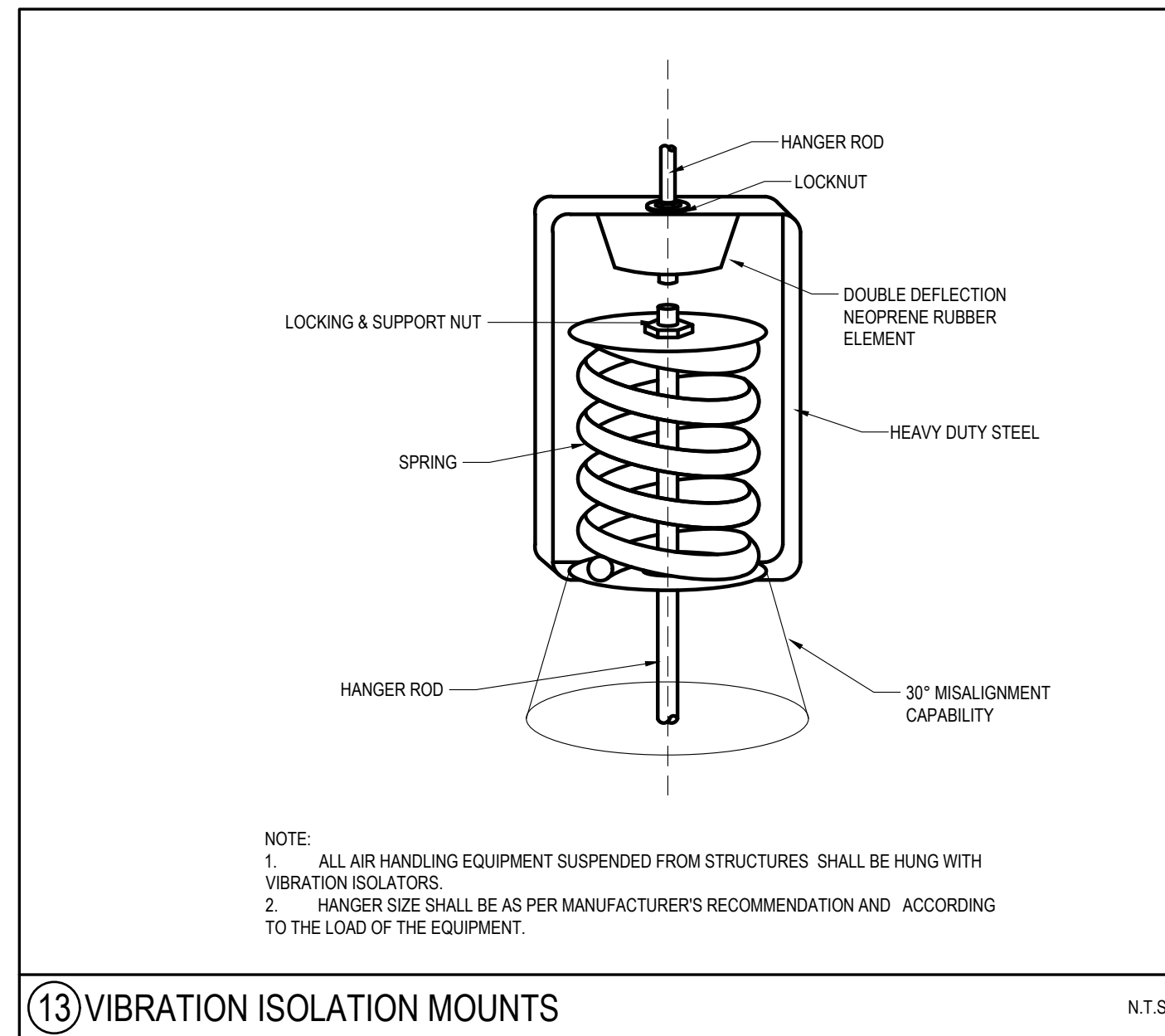
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No.	Date	Description
1	6.30.25	PERMIT

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Details

H4.0



HVAC CONTROLS:

Architect:

Boston Urban Places, LLC
 PO Box 990227
 Boston, Massachusetts 02199
 617.797.8646

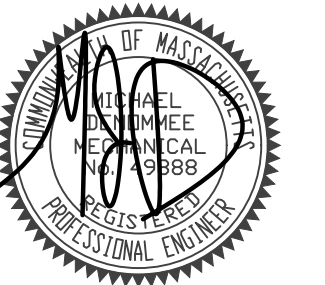
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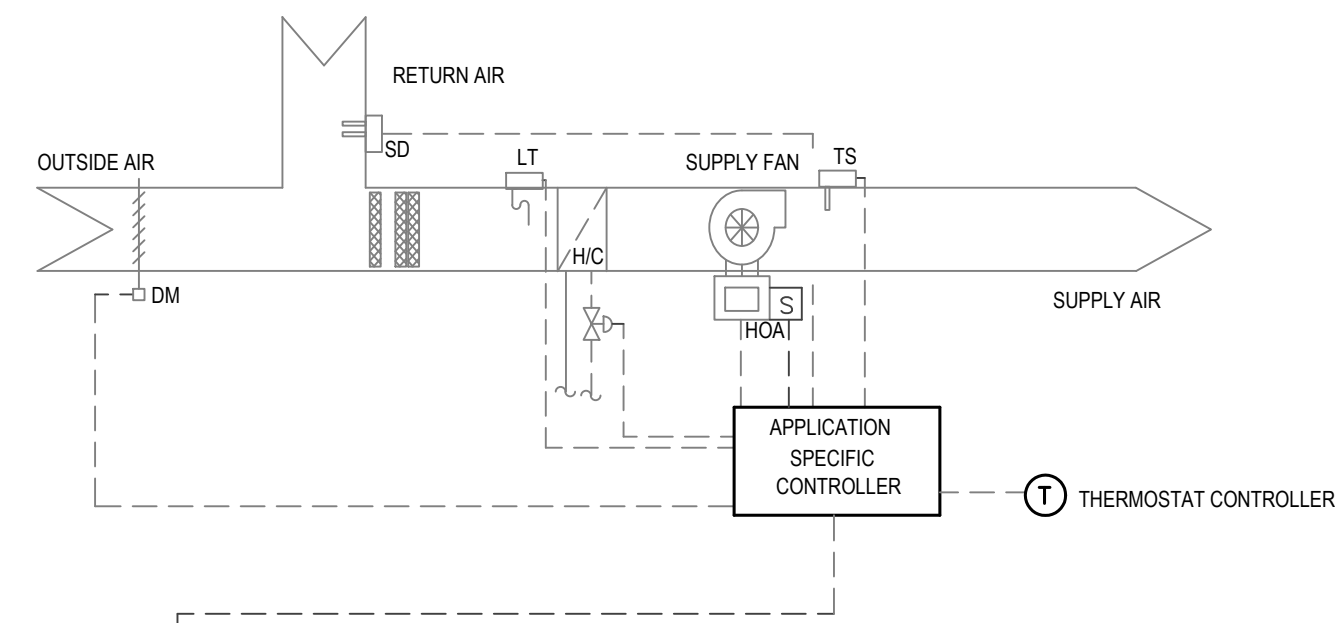
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Controls

H5.0



APPLICATION TABLE	
HEAT PUMP	FAN COILS
EX. HP	FC-2B

HEAT PUMP & FAN COIL UNITS SEQUENCE OF OPERATION

THE INDIVIDUAL FAN COIL UNITS SHALL BE CONTROLLED THROUGH THE CORRESPONDING SPACE THERMOSTATS. THE HEAT PUMP UNIT SHALL BE CONTROLLED THROUGH THE MASTER CONTROL UNIT. THE SEQUENCE LISTED BELOW IS REVERSIBLE UNLESS OTHERWISE NOTED.

OCCUPIED MODE:
 THE HEAT PUMP UNIT SHALL ENERGIZE AND OPERATE PER THE MANUFACTURER'S SEQUENCES. THE FAN COIL UNIT SUPPLY FAN SHALL ENERGIZE TO LOW SPEED AND OPERATE CONTINUOUSLY. THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN (SCHEDULED AIRFLOW).

UPON A CALL FOR HEAT FROM THE SPACE THERMOSTAT, THE FAN COIL UNIT SHALL OPERATE PER THE MANUFACTURER'S SEQUENCE TO MAINTAIN THE SPACE TEMPERATURE SET POINT OF 70°F (ADJ.). UPON A FURTHER CALL FOR HEAT, THE UNIT'S FAN SPEED SHALL BE INCREASED FROM LOW TO MEDIUM AND MEDIUM TO HIGH, AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SET POINT.

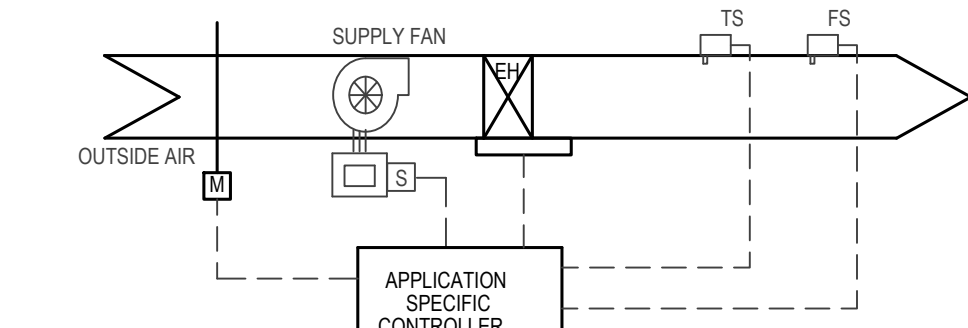
UPON A CALL FOR COOLING FROM THE SPACE THERMOSTAT, THE FAN COIL UNIT SHALL OPERATE PER THE MANUFACTURER'S SEQUENCE TO MAINTAIN THE SPACE TEMPERATURE SET POINT OF 75°F (ADJ.).

UNOCCUPIED MODE:

THE HEAT PUMP UNIT AND FAN COIL UNIT SHALL BE DE-ENERGIZED, THE ROOM HEATING SET POINT SHALL BE RESET TO 65°F (ADJ.), AND COOLING SHALL BE LOCKED OUT.

UPON A CALL FOR HEAT FROM THE SPACE THERMOSTAT, THE HEAT PUMP UNIT SHALL ENERGIZE AND OPERATE PER MANUFACTURER'S SEQUENCE. THE FAN COIL UNIT SUPPLY FAN SHALL BE ENERGIZED TO HIGH SPEED UTILIZING 100% RETURN AIR AND THE UNIT SHALL OPERATE TO MAINTAIN SPACE TEMPERATURE SET POINT. UPON SATISFYING THE CALL FOR HEAT, THE HEAT PUMP AND FAN COIL SHALL BE DE-ENERGIZED.

UPON LOSS OF POWER TO THE UNIT OR FAN STATUS FAILURE, THE APPROPRIATE ALARM SIGNAL SHALL BE TRANSMITTED TO THE MAIN SYSTEM CONTROLLER.



APPLICATION TABLE	
OUTDOOR AIR SUPPLY FAN	
SF-1 / EHC-1	

SUPPLY FAN SEQUENCE OF OPERATION

THE SUPPLY FAN AND ELECTRIC HEATER COIL SHALL BE OPERATED THROUGH THE APPLICATION SPECIFIC CONTROLLER. THE SEQUENCE LISTED BELOW IS REVERSIBLE UNLESS OTHERWISE NOTED.

CONTROL:

THE SUPPLY FAN SHALL BE CONTROLLED VIA 24/7 PROGRAMMABLE TIME CLOCK.

OCCUPIED CONTROL:

DURING OCCUPIED HOURS (PROGRAMMED PER OWNER'S APPROVED OCCUPANCY SCHEDULE), FAN SHALL ENERGIZE AND RUN CONTINUOUSLY. PRIOR TO ENERGIZING, ASSOCIATED END SWITCH AT INTAKE LOUVER SHALL PROVE OPEN.

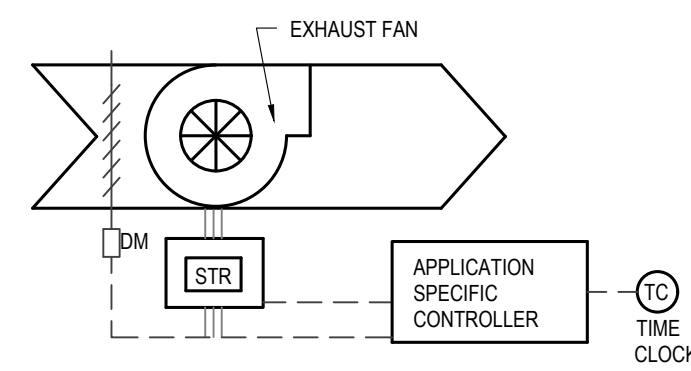
UNOCCUPIED CONTROL:

FAN SHALL BE OFF, ASSOCIATED DAMPER CLOSED.

HEATING:

THE ELECTRIC HEATING COIL SHALL OPERATE TO MAINTAIN A DISCHARGE TEMPERATURE SET POINT OF 40°F (ADJUSTABLE)

FREEZE STAT. ON A SENSE OF COLD TEMPERATURE, THE SUPPLY FAN AND OUTDOOR AIR DAMPER SHALL CLOSE.



APPLICATION TABLE	
EXHAUST FAN	
EF-1	

EXHAUST FAN SEQUENCE OF OPERATION

THE EXHAUST FAN SHALL BE OPERATED THROUGH THE APPLICATION SPECIFIC CONTROLLER. THE SEQUENCE LISTED BELOW IS REVERSIBLE UNLESS OTHERWISE NOTED.

CONTROL:

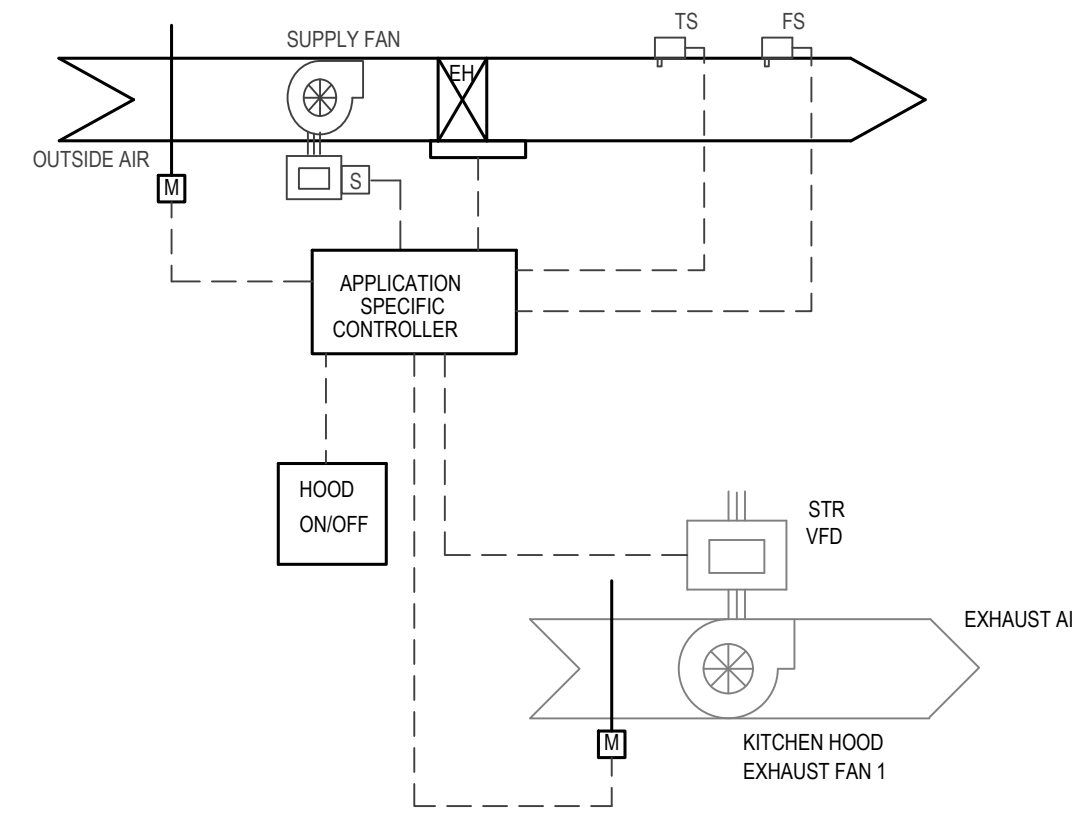
THE EXHAUST FAN SHALL BE CONTROLLED VIA 24/7 PROGRAMMABLE TIME CLOCK.

OCCUPIED CONTROL:

DURING OCCUPIED HOURS (PROGRAMMED PER OWNER'S APPROVED OCCUPANCY SCHEDULE), FAN SHALL ENERGIZE AND RUN CONTINUOUSLY. PRIOR TO ENERGIZING, ASSOCIATED END SWITCH AT EXHAUST LOUVER SHALL PROVE OPEN.

UNOCCUPIED CONTROL:

FAN SHALL BE OFF, ASSOCIATED DAMPER CLOSED.



APPLICATION TABLE	
EXHAUST FAN & MAKE-UP AIR UNIT	
KEF-1, KSF-1, & EHC-2	

MAKE-UP AIR UNIT AND EXHAUST FAN SEQUENCE OF OPERATION

THE MAKE-UP AIR UNIT AND EXHAUST FAN SHALL BE OPERATED THROUGH THE KITCHEN EXHAUST HOOD ON/OFF SWITCH.

EXHAUST FAN:

WHEN THE SWITCH IS IN THE ON POSITION, THE MOTORIZED DAMPER SHALL OPEN AND THE EXHAUST FAN SHALL BE ENERGIZED.

WHEN THE SWITCH IS IN THE OFF POSITION, THE MOTORIZED DAMPER SHALL CLOSE AND THE EXHAUST FAN SHALL BE DE-ENERGIZED.

MAKE-UP AIR UNIT:

WHEN THE SWITCH IS IN THE ON POSITION, THE MOTORIZED DAMPER SHALL OPEN AND THE EXHAUST FAN SHALL BE ENERGIZED.

WHEN THE SWITCH IS IN THE OFF POSITION, THE MOTORIZED DAMPER SHALL CLOSE AND THE EXHAUST FAN SHALL BE DE-ENERGIZED.

HEATING:

THE ELECTRIC HEATING COIL SHALL OPERATE TO MAINTAIN A DISCHARGE TEMPERATURE SET POINT OF 65°F (ADJUSTABLE)

FREEZE STAT. ON A SENSE OF COLD TEMPERATURE, THE SUPPLY FAN AND OUTDOOR AIR DAMPER SHALL CLOSE.

HOOD INFORMATION – JOB#7569763

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)				TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG				
										WIDTH	LENG	HEIGHT	DIA			CFM	VEL	SP	END TO END	ROW
1	HD 1	5424 EX-2-PSP-F	ECON-AIR	11' 10"	450 DEG	II	N/A	153	1810			4'	14'	1810	1693	-0.337"	1430	430 SS 100%	ALONE	ALONE

PATENT NUMBERS

AC-PSP (UNITED STATES) – US PATENT 7963830 B2.
 AC-PSP WALL (CANADA) – CA PATENT 2820509.
 AC-PSP ISLAND (CANADA) – CA PATENT 2520330.

FOR QUESTIONS, CALL THE
 Air Solutions
 REGION 120
 PHONE: (513) 860 - 5555
 EMAIL: reg120@econair.com

HOOD INFORMATION

HOOD NO	TAG	TYPE	FILTER(S)			LIGHT(S)			FIRE SYSTEM PIPING	HOOD HANGING WEIGHT	
			QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE			WIRE GUARD
1	HD 1	CONDENSATE BAFFLE	8	16"	16"	N/A	5	L55 SERIES E26	NO	NO	636 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	HD 1	FIELD WRAPPER 4.00" HIGH FRONT, LEFT. RIGHT SIDESPLASH 80.00" HIGH X 54.00" LONG 430 SS VERTICAL. BACKSPLASH - OUTSIDE CORNER 120.00" HIGH X 2.00" LEG LENGTH 430 SS VERTICAL. RIGHT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. LEFT WIDE VERTICAL END PANEL 42" TOP WIDTH, 36" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.

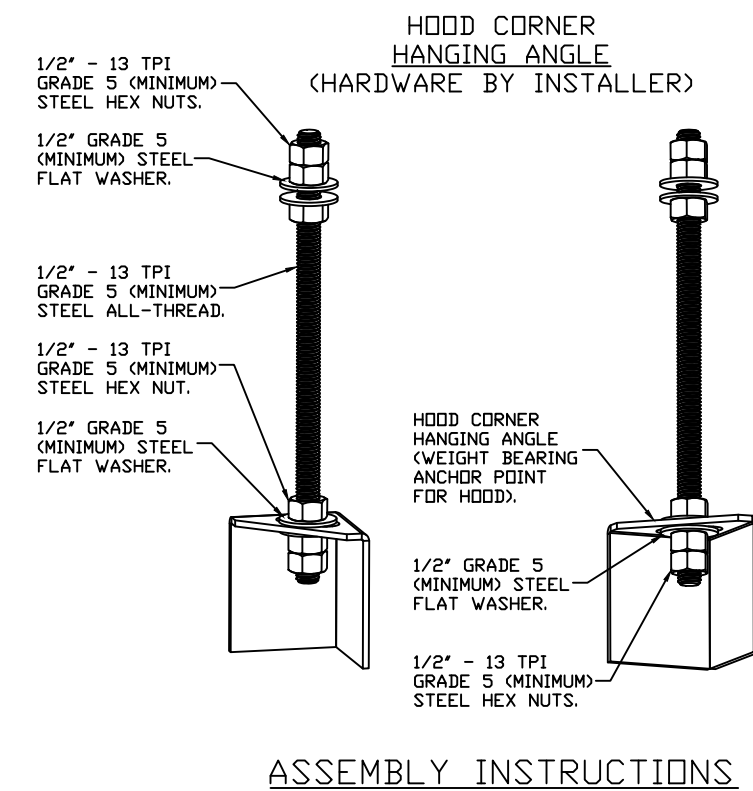
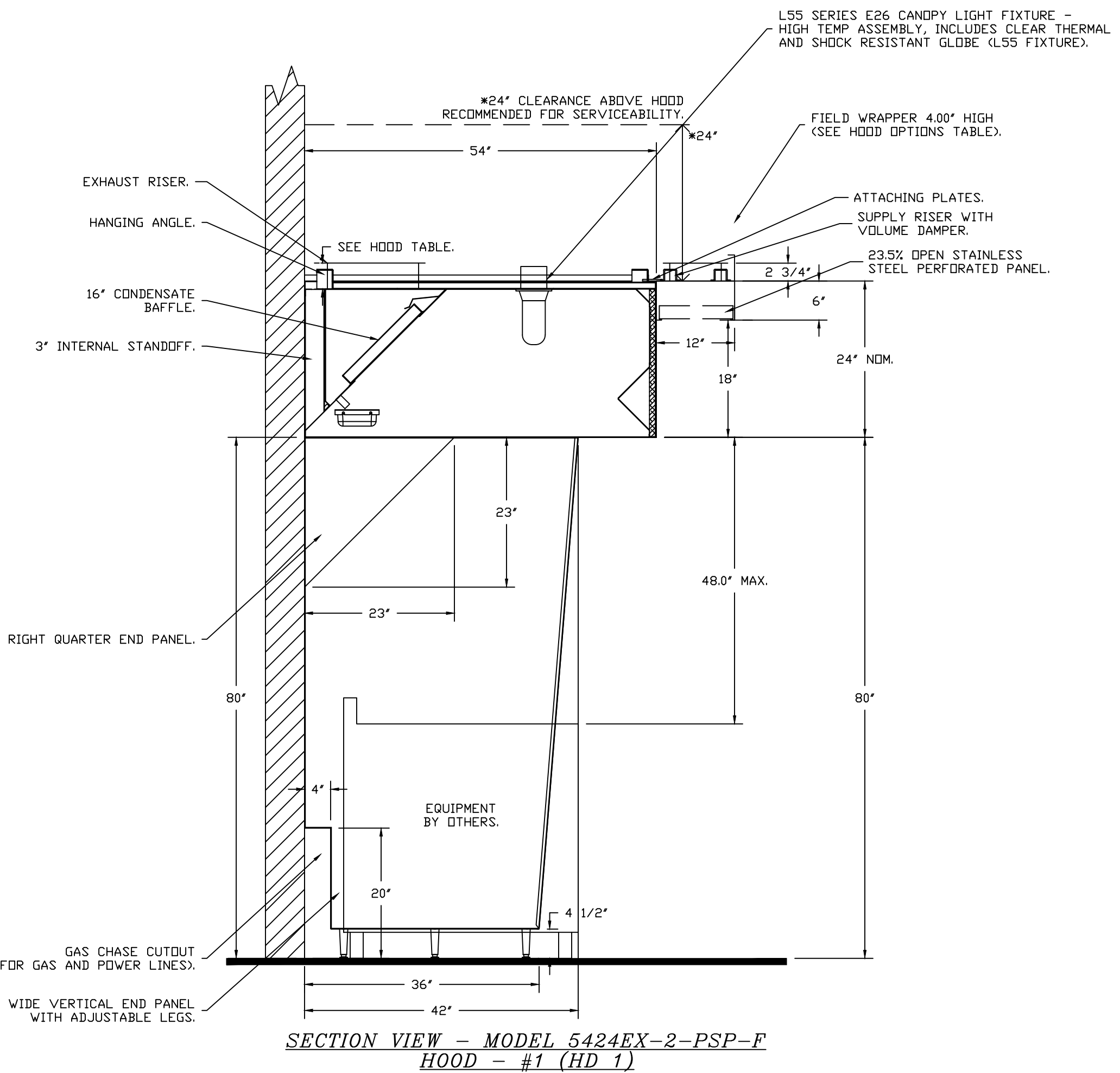
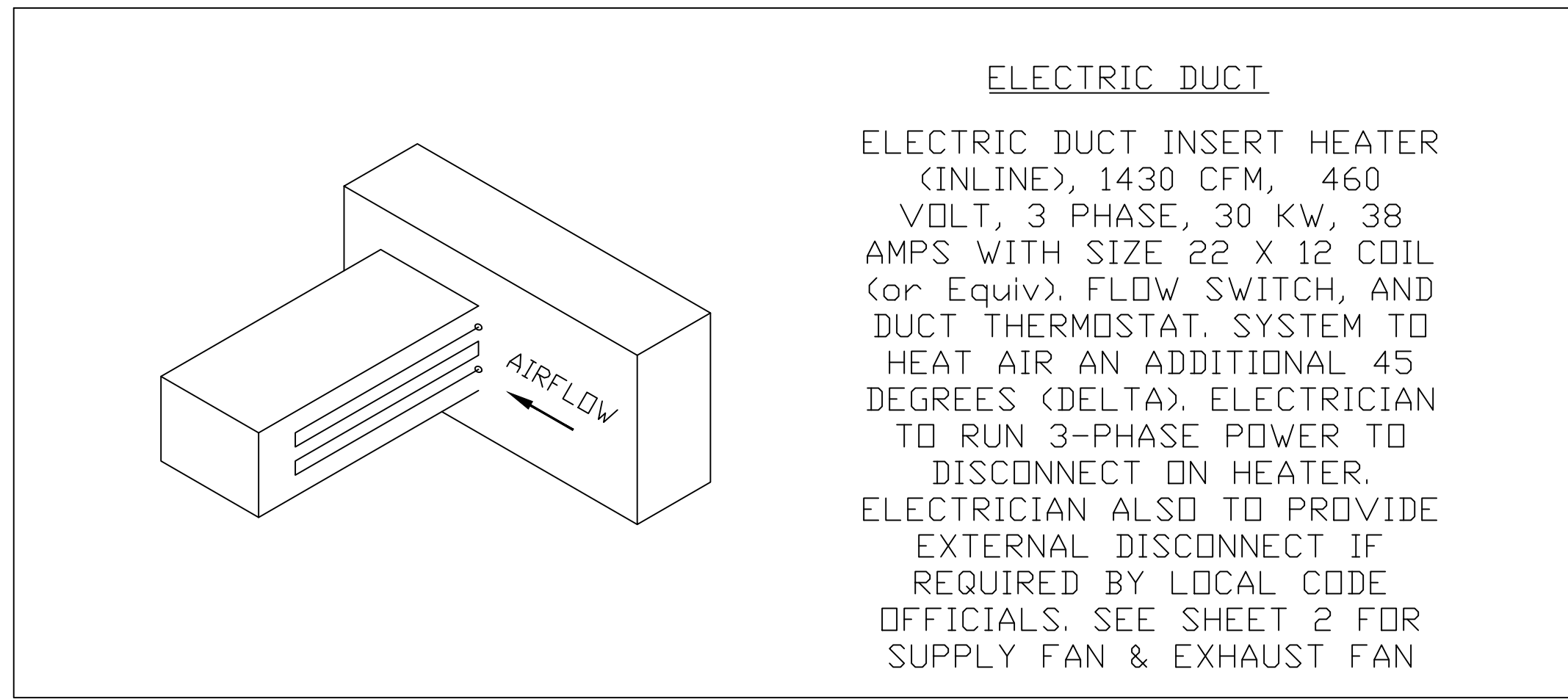
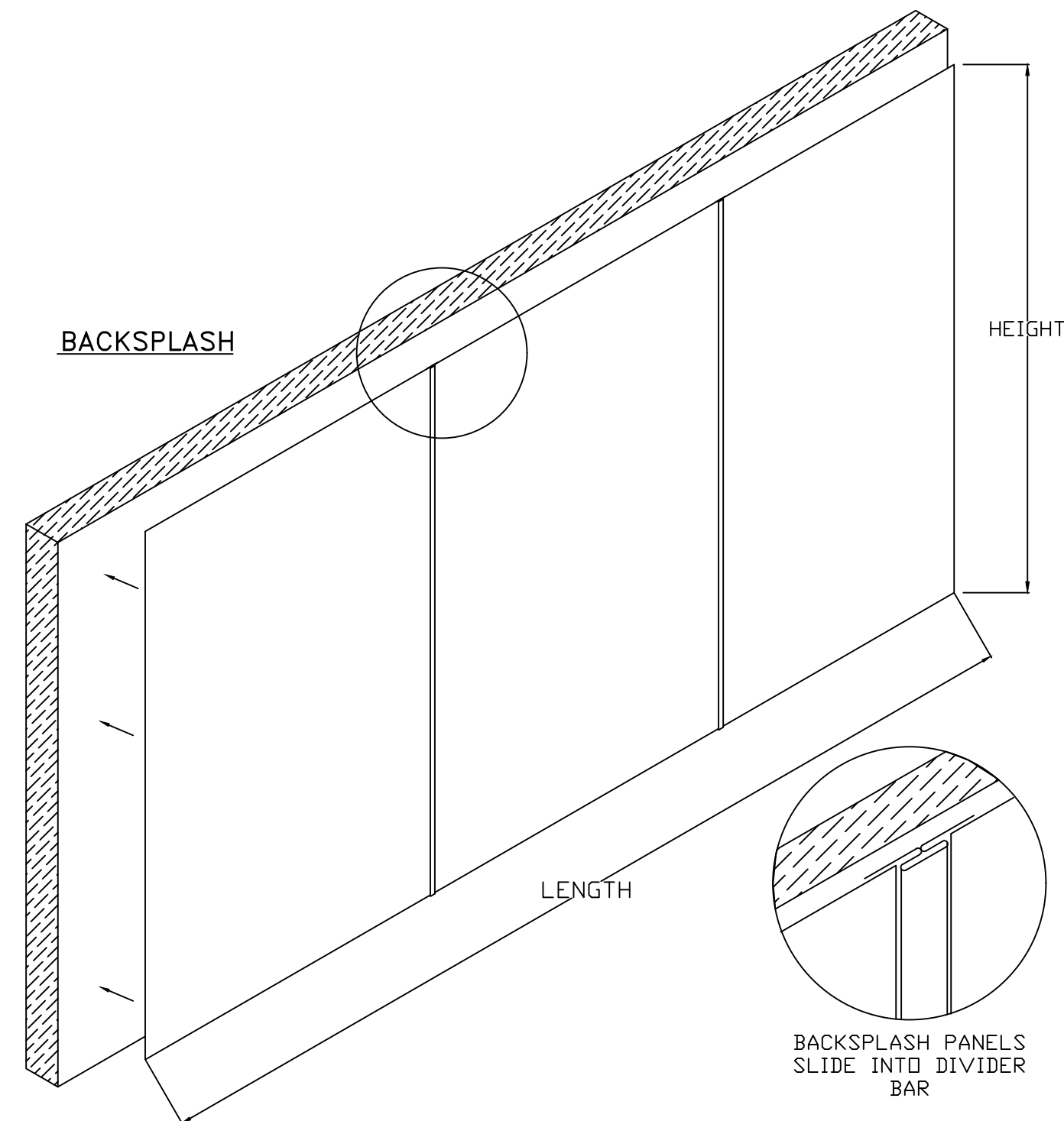
PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)			
							WIDTH	LENG	CFM	SP
1	HD 1	Front	142"	12"	6"	MUA	10"	28"	715	0.187"
						MUA	10"	28"	715	0.187"

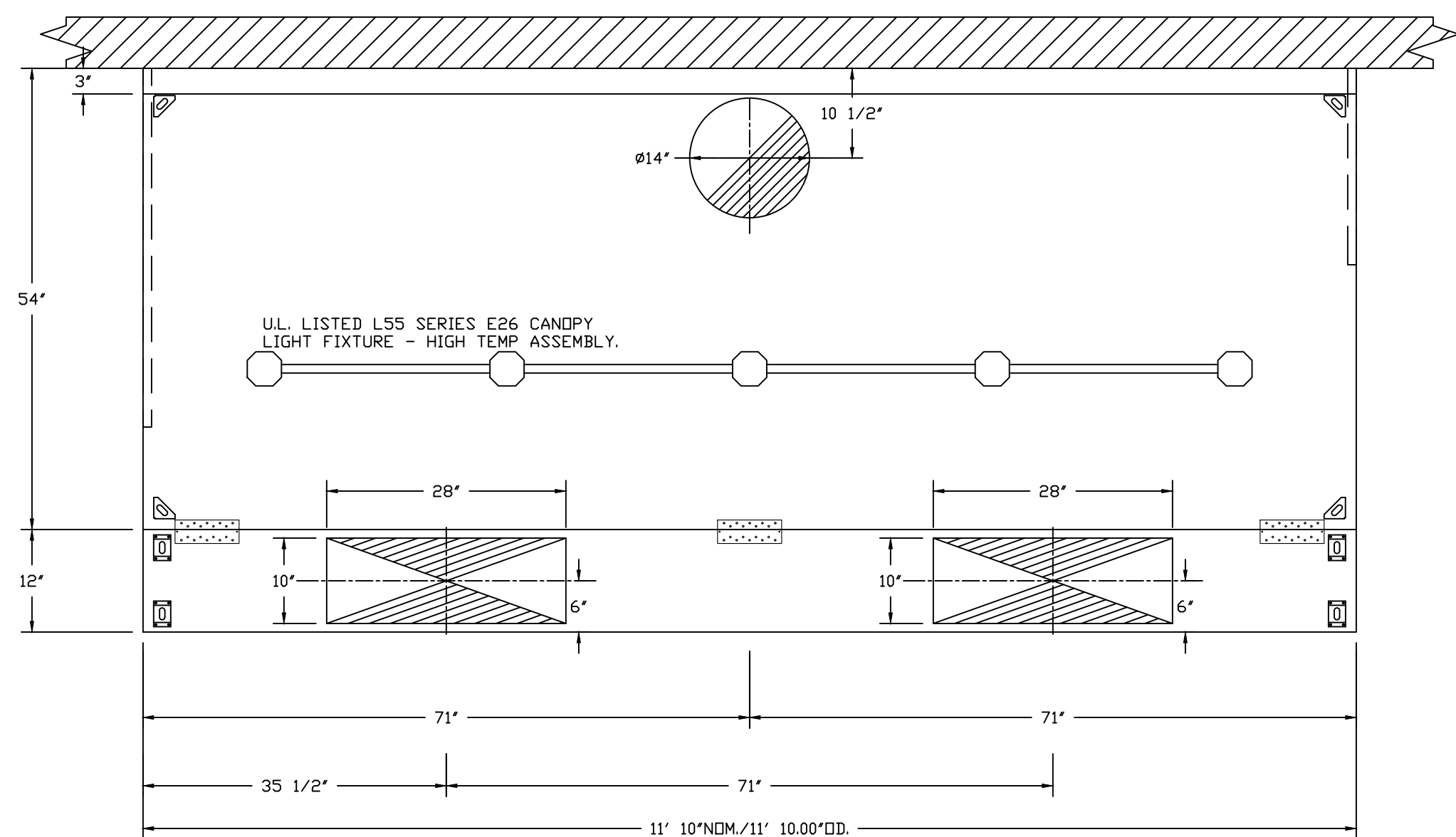
***** NOTE *****
 FOR REFERENCE ONLY - CONTACT REG120@CAPTIVEAIRE.COM FOR QUESTIONS.
 CAPTIVEAIRE EQUIPMENT TO BE OWNER PROVIDED, OR BY OWNER REPRESENTATIVE.
 CAPTIVE-AIRE REGION 120 TO PROVIDE TECHNICAL SUPPORT TO OTHER TRADES RESPONSIBLE AS FOLLOWS:
 -GENERAL CONTRACTOR OR OWNER REPRESENTATIVE: SCHEDULING
 -MECHANICAL CONTRACTOR: RECEIVING, UNLOADING, & INSTALLING
 -ELECTRICAL CONTRACTOR: HIGH VOLTAGE & CONTROL WIRING
 -PLUMBING CONTRACTOR: GAS LINE REQUIREMENTS
 -CAS SERVICE: SDV STARTUP SCHEDULING
 -TAB CONTRACTOR: CONTROLS & TAB SETUP

NEBB CERTIFIED TAB PERFORMED BY NATIONAL TAB FOR HVAC UNITS & ASSOCIATED AIR DIFFUSERS WITHIN THE SPACE. PROVIDE ASSISTANCE TO CAS SDV GROUP WHEN DOING DOAS STARTUPS. BALANCE OUT ALL HOOD SYSTEMS. VERIFY SOO & BUILDING PRESSURES. PROVIDE CERTIFIED REPORT.

HOOD SYSTEM IS TYPE II APPLICATION (HEAT, ODOR, & FUMES ONLY). HOOD SUPPLIED WITH CONDENSATE BAFFLES TO ASSIST WITH SATISFACTORY FILTER VELOCITY ALONG ENTIRE LENGTH OF HOOD SYSTEM.



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



PLAN VIEW - HOOD #1 (HD 1)
 11' 10.00" LONG 5424EX-2-PSP-F

REVISIONS

DESCRIPTION	DATE

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 Air Solutions
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 EMAIL: reg120@econair.com

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 EMAIL: reg120@econair.com

PopUp Bagels (Cambridge, MA)
 1440 Massachusetts Avenue,
 Cambridge, MA, 02138

DATE: 6/6/2025
DWG.#: 7569763
DRAWN BY: BCF
SCALE: N/A
MASTER DRAWING

SHEET NO.
 1

EXHAUST FAN INFORMATION - JOB#7569763

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	WEIGHT (LBS)	SONES
1	KEF1	1	EASIF15DD	ECDN-AIR	1810	1.000	1285	TEAD-ECM	1.000	0.7070	1	277	5.2	192	11.7

MUA FAN INFORMATION - JOB#7569763

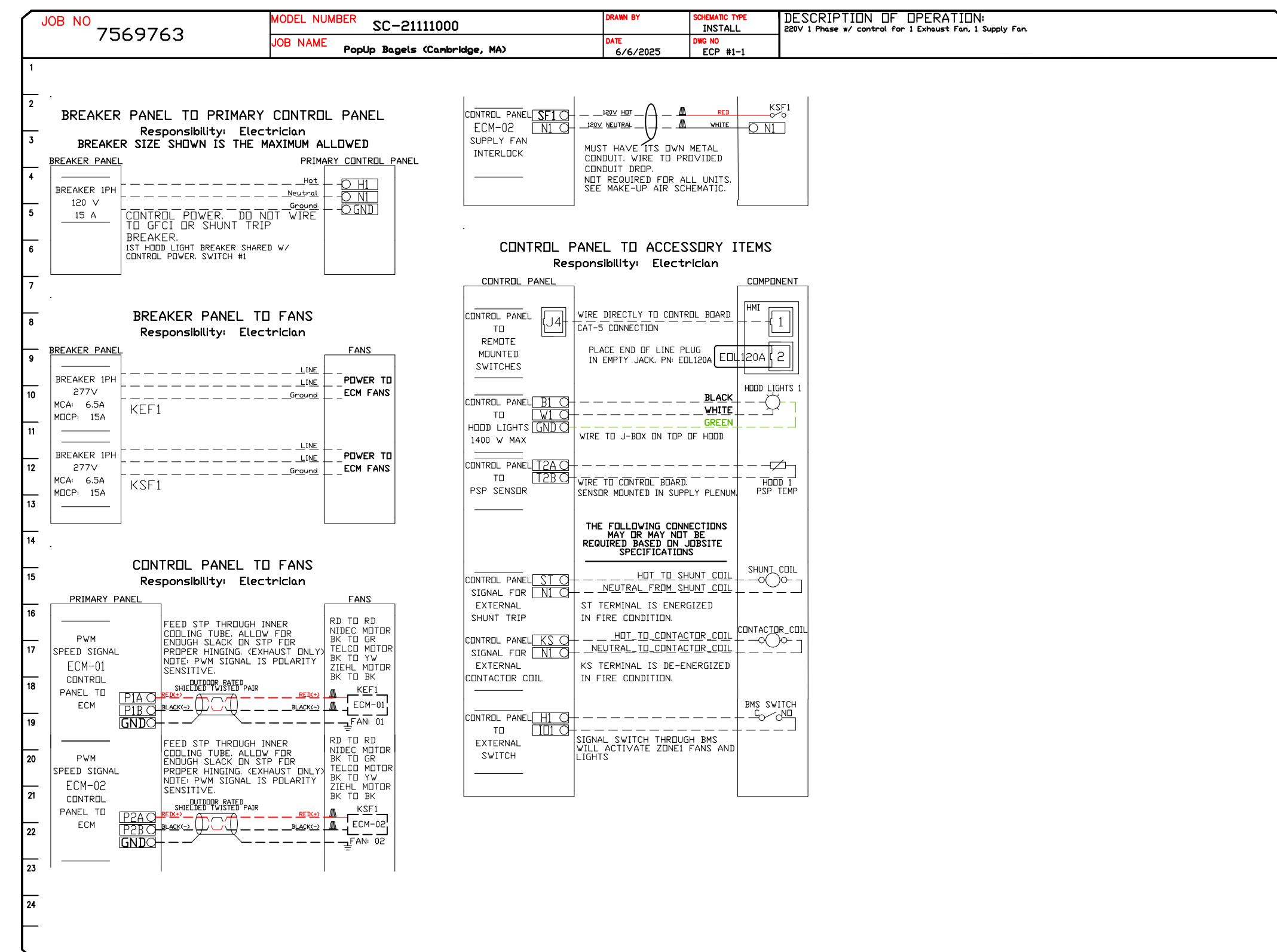
FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MDCP	WEIGHT (LBS)	SONES
2	KSF1	1	ETA1-15D	15MF-1-MOD	INLINE.1	-	1430	0.300	1459	TEAD-ECM	1.000	0.4890	1	277	5.2	7A	15A	210	8.1

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST				SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT	
1	KEF1								
2	KSF1				YES				

ELECTRICAL PACKAGE - JOB#7569763

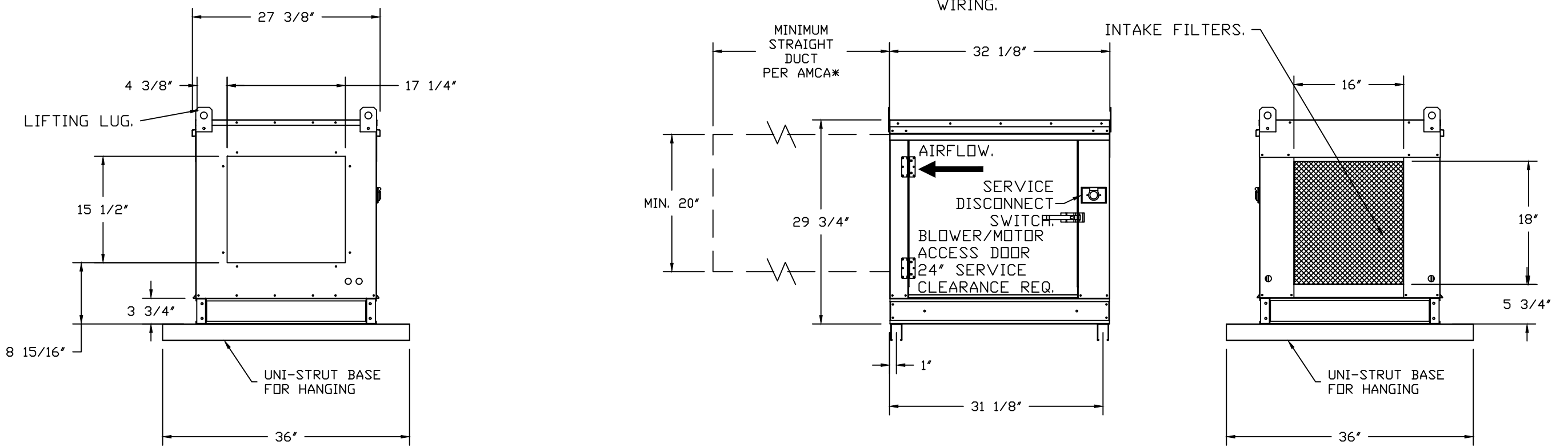
NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	HP	VOLT	FLA	
1	ECP 1	SC-21111000	WALL MOUNT IN SS BDX	FACE MOUNT LEFT SIDE OF HOOD	1 LIGHT	SMART CONTROLS BASIC	KEF1	EXHAUST	1	1.000	277	5.2
				HOOD # 1	1 FAN		KSF1	SUPPLY	1	1.000	277	5.2



FAN #2 ETA1-15D - SUPPLY FAN (KSF1)

1. INLINE SUPPLY UNIT W/ 15' DIRECT DRIVE FAN IN SIZE #1 HOUSING. INSULATED HOUSING.
2. SIDE DISCHARGE - AIR FLOW RIGHT -> LEFT.
3. INDOOR HANGING CRADLE FOR THE SIZE 1 UNITEMPERED INLINE UNIT. 2 HSA125 HANGING ISOLATORS PER UNI-STRUT INCLUDED.
4. ECM WIRING PACKAGE FOR SUPPLY MOTORS WITH PWM SIGNAL FROM ECPM03 PREWIRE.
5. HINGED DOUBLE WALL INSULATED DDCR ASSEMBLY (BURNER/BLOWER SECTION).
6. 2 YEAR PARTS WARRANTY.

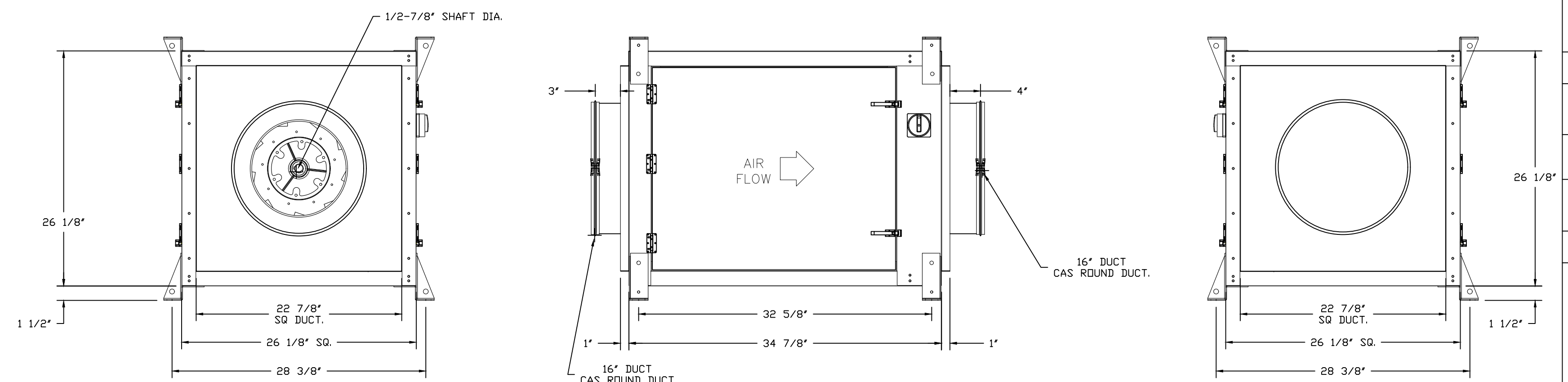
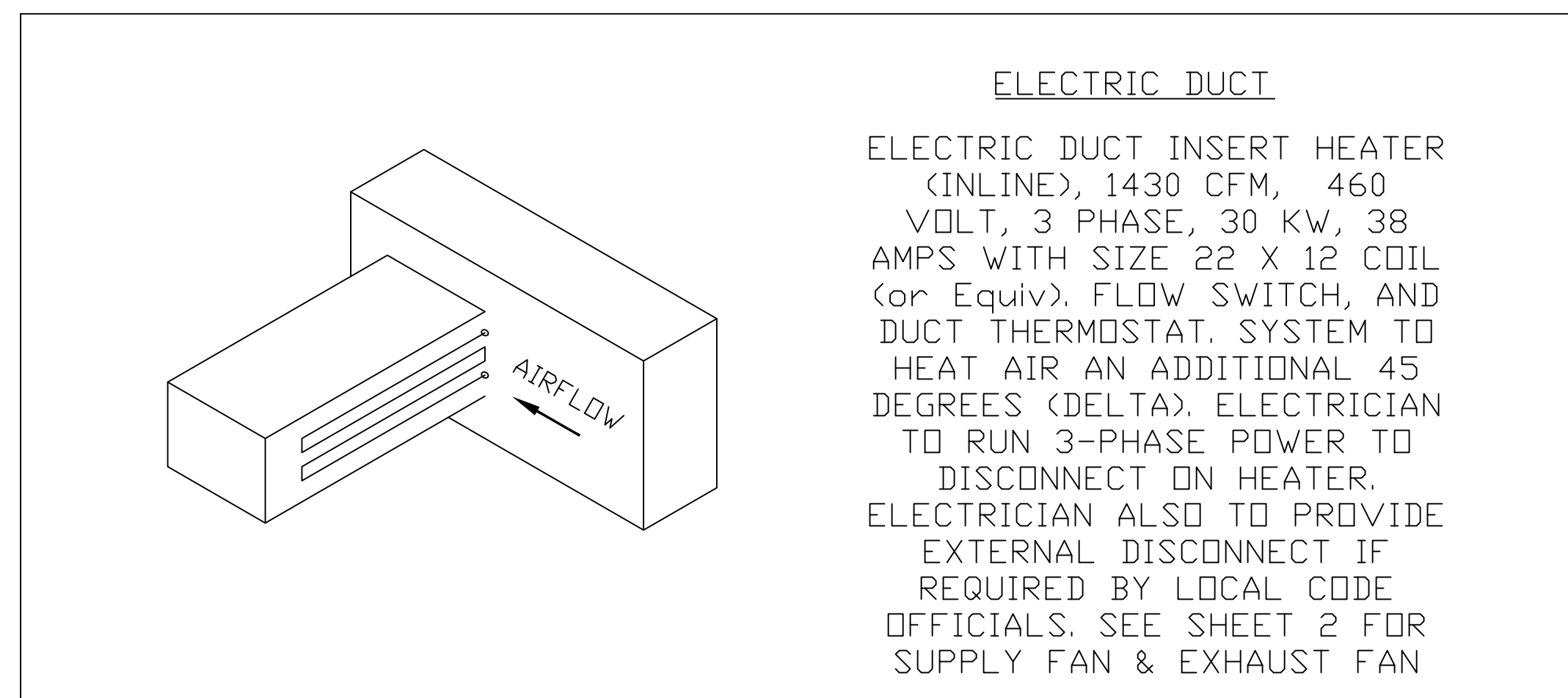
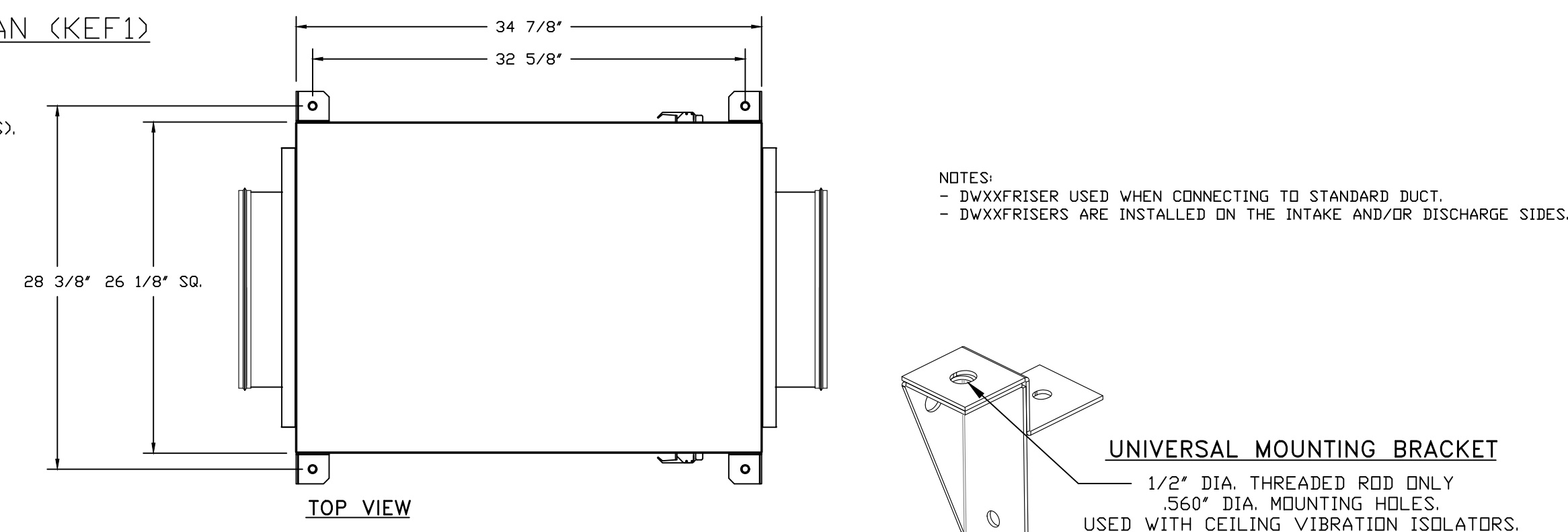
*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 20" x 20".



FAN #1 EASIF15DD - EXHAUST FAN (KEF1)

- FEATURES:**
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
 - TWD ACCESS DOORS FOR EASY ACCESS.
 - BACKWARD INCLINED NON-OVERLOADING WHEELS.
 - UL705 LISTING.
 - AMCA AIR & SOUND CERTIFIED.
 - THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
 - NEMA 3R SAFETY DISCONNECT SWITCH.

- OPTIONS**
- SIF15 - INLET - STANDARD 16" DUCT CONNECTION.
 - SIF - HORIZONTAL OVERHEAD MOUNT - PRE-INSTALLED MOUNTS (11-36).
 - HANGING SPRING VIBRATION ISOLATORS (SET OF 4), FOR INDOOR OR OUTDOOR USE WITH SQUARE INLINE FANS (HSA125).
 - SIF15 - STRAIGHT DISCHARGE FOR SIF 15. STANDARD 16" DUCT CONNECTION.
 - ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCD MOTOR), CCW ROTATION.
 - 2 YEAR PARTS WARRANTY.



REVISIONS

DESCRIPTION	DATE

econ-air
www.econair.com

Air Solutions
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PopUp Bagels (Cambridge, MA)
1440 Massachusetts Avenue,
Cambridge, MA, 02138

DATE: 6/6/2025
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SHEET NO.
2