

HVAC DUCTWORK SYMBOL LIST

	DUCT SIZE (FIRST FIGURE INDICATES HORIZONTAL SIZE)
	ROUND DUCT DIAMETER
	ACOUSTIC LINING IN DUCT
	ACCESS DOOR IN DUCT
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT
	VOLUME DAMPER
	FIRE DAMPER W/ DUCT ACCESS DOOR
	MOTORIZED DAMPER W/DUCT ACCESS DOOR
	SUPPLY REGISTER
	RETURN OR EXHAUST REGISTER OR GRILLE
	SUPPLY CEILING DIFFUSER (4-WAY BLOW)
	SUPPLY CEILING DIFFUSER (3-WAY BLOW)
	SUPPLY CEILING DIFFUSER (2-WAY BLOW)
	SUPPLY CEILING DIFFUSER (1-WAY BLOW)
B(500)	DIFFUSER TYPE AND CFM (CUBIC FEET PER MINUTE). REFER TO SCHEDULE.
	RETURN CEILING GRILLE OR REGISTER
	SUPPLY LINEAR DIFFUSER W/ PLENUM
	RETURN LINEAR DIFFUSER W/ PLENUM
	SLOPING RISE IN DUCT IN DIRECTION OF ARROW
	SLOPING DROP IN DUCT IN DIRECTION OF ARROW
	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	RETURN OR EXHAUST DUCT UP
	RETURN OR EXHAUST DUCT DOWN
	ELBOW WITH TURNING VANES
	RADIUS ELBOW
	DUCT SPLIT OR BRANCH TAKEOFF
	DOOR LOUVER
	UNDERCUT DOOR
	FIN TUBE RADIATION
	COIL HC=HEATING COIL CC=COOLING COIL COIL PHC=PREHEAT COIL
	TRANSFER GRILLES ON BOTH SIDES OF WALL/PARTITION AND SQ. FT. OPENING SIZE
	CONTINUATION FOR DUCTWORK
	TRANSFER OPENING IN WALL/PARTITION AND SQ. FT. OPENING SIZE

HVAC DUCTWORK SYMBOL LIST (CONTINUED)

	FAN (RISER)
	CEILING MOUNTED INLINE EXHAUST FAN
	DUCT SIZE (FIRST FIGURE INDICATES HORIZONTAL SIZE)
	ROUND DUCT DIAMETER
	ACCESS DOOR IN DUCT
	GRADUAL RISE IN DUCT
	GRADUAL DRIP IN DUCT
	ELBOW WITH TURNING VANES
	RADIUS ELBOW
	DUCT SPLIT
	BRANCH TAKEOFF
	DOUBLE LINE DUCTWORK CONTINUATION
	NEW DUCT WORK
	DUCTWORK WITH ACOUSTIC LINING
	CEILING DIFFUSER (SUPPLY)
	CEILING REGISTER/CEILING GRILLE (RETURN OR EXHAUST)
	REGISTER (SUPPLY)
	REGISTER RETURN OR EXHAUST
	VOLUME DAMPER
	FIRE DAMPER W/DUCT ACCESS DOOR (FD/AD)
	MOTORIZED DAMPER W/DUCT ACCESS DOOR
	COMBINATION FIRE/SMOKE DAMPER W/DUCT ACCESS DOOR
	SMOKE DAMPER W/DUCT ACCESS DOOR
	FLEXIBLE CONNECTION

HVAC PIPING SYMBOL LIST

	DRAIN LINE (GRAVITY)
	REFRIGERANT DISCHARGE
	REFRIGERANT LIQUID
	REFRIGERANT SUCTION
	REFRIGERANT-SAFETY VALVE RELIEF LINE
	CONDENSATE PUMP (SEE SCHEDULES FOR TYPE)

MECHANICAL DRAWING LIST

Sheet Title	Sheet Description
M-001.00	MECHANICAL NOTES, SYMBOLS & ABBREVIATIONS
M-002.00	MECHANICAL SPECIFICATIONS
M-003.00	MECHANICAL SPECIFICATIONS
M-004.00	MECHANICAL SPECIFICATIONS
M-005.00	MECHANICAL SPECIFICATIONS
M-006.00	MECHANICAL SPECIFICATIONS
M-101.00	MECHANICAL RCP
M-501.00	MECHANICAL DETAILS
M-502.00	MECHANICAL DETAILS
M-701.00	MECHANICAL SCHEDULES



CLIENT



CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
27 W 20TH ST, NEW YORK, NY 10011
P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
1342 OCEAN PARKWAY
BROOKLYN, NY 11230
P: 347-860-1416

LANDLORD:

NY UNIVERSITY

ISSUES

DATE	DESCRIPTION
07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
NEW YORK, NY 10003

SHEET NAME

MECHANICAL NOTES,
SYMBOLS &
ABBREVIATIONS

SEAL / SIGNATURE

FILE INFORMATION

PROJECT NO: 2024.112

DATE: 11.01.24

SCALE: AS NOTED

DWG NO:

M-001.00

PAGE NO: 1 OF 10

M01198476-S1





IDEAL CONSULTING GROUP

CLIENT



CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
27 W 20TH ST, NEW YORK, NY 10011
P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
1342 OCEAN PARKWAY
BROOKLYN, NY 11230
P: 347-860-1416

LANDLORD:

NY UNIVERSITY

ISSUES

DATE	DESCRIPTION
07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
NEW YORK, NY 10003

SHEET NAME

MECHANICAL
SPECIFICATIONS

SEAL / SIGNATURE

FILE INFORMATION

PROJECT NO: 2024.112
DATE: 11.01.24
SCALE: AS NOTED

DWG NO:
M-002.00

PAGE NO: 2 OF 10

M01198476-S1



HVAC DRAWING NOTATIONS

#	DRAWING NOTE TAG
	SECTION DESIGNATION ON DRAWING WHERE SECTION IS CUT A - SECTION DESIGNATION B - DRAWING NO.
	POINT OF NEW CONNECTION TO EXISTING WORK
	REMOVE AND PATCH EXISTING WORK
	REVISION SYMBOL

HVAC LINE REPRESENTATION

	NEW PIPING, DUCTWORK OR EQUIPMENT
	NEW EQUIPMENT

MISCELLANEOUS HVAC SYMBOLS

	THERMOSTAT, SELF CONTAINED TO BE WALL OR DUCT MOUNTED. REFER TO PLANS FOR LOCATION.
	SMOKE DETECTOR
	DUCT MOUNTED SMOKE DETECTOR
	THERMOSTAT/SENSOR WIRING FROM SENSING DEVICE TO CONTROLLED DEVICE
	STARTER / DISCONNECT SWITCH
	STARTER
	DISCONNECT
	TEMPERATURE SENSOR

HVAC ABBREVIATIONS

AD	ACCESS DOOR	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MBH	THOUSAND BTU PER HOUR
AHU	AIR HANDLING UNIT	MCA	MINIMUM CIRCUIT AMPS
AL	ACOUSTIC LINING	MD	MOTORIZED DAMPER
B(500)	DIFFUSER TYPE (CFM)	MIN	MINIMUM
BHP	BRAKE HORSEPOWER	NC	NORMALLY CLOSED
BMS	BUILDING MANAGEMENT SYSTEM	NIC	NOT IN CONTRACT
BTU	BRITISH THERMAL UNIT	NK	NECK SIZE
BTUH	BRITISH THERMAL UNIT PER HOUR	NO	NORMALLY OPEN
CC	COOLING COIL	NTS	NOT TO SCALE
CD	CEILING DIFFUSER	OED	OPEN END DUCT
CFM	CUBIC FEET PER MINUTE	PH	PHASE
CG	CEILING GRILLE	PR	PANEL RADIATOR
CR	CEILING REGISTER	PSI	POUND PER SQUARE INCH
CV	CONSTANT VOLUME	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
DN	DOWN	PSIG	POUNDS PER SQUARE INCH GAUGE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EBB	ELECTRIC BASE BOARD HEATER	RPM	REVOLUTIONS PER MINUTE
EFF	EFFICIENCY	SA	SUPPLY AIR
EG	EXHAUST GRILLE	SD	SMOKE DETECTOR
ER	EXISTING TO BE RELOCATED	SF	SUPPLY FAN
EXIST	EXISTING	TF	TRANSFER FAN
FC	FLEXIBLE CONNECTION	TO	TRANSFER OPENING
FD	FIRE DAMPER WITH ACCESS DOOR	TX	TOILET EXHAUST
FLA	FULL LOAD AMPS	TYP	TYPICAL
FSD	COMBINATION FIRE/SMOKE DAMPER WITH ACCESS DOOR	V	VOLTS
FTR	FINNED TUBE RADIATION	VD	VOLUME DAMPER
HZ	HERTZ	WG	WATER GAUGE
KW	KILOWATT	WMS	WIRE MESH SCREEN
LAT	LEAVING AIR TEMPERATURE		
LD	LINEAR DIFFUSER		

BUILDING DEPARTMENT NOTES, MECHANICAL

1. ALL WORK SHALL COMPLY WITH THE APPLICABLE SECTIONS OF THE BUILDING CODE, CITY OF NEW YORK, EFFECTIVE 2022 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

2. *REFER TO THE TABLE BELOW FOR MATERIALS AND EQUIPMENT SUBJECT TO SPECIAL AND PROGRESS INSPECTIONS.

THE FOLLOWING IS A LIST OF ALL REQUIRED MECHANICAL SPECIAL INSPECTIONS:

- A. MECHANICAL SYSTEMS BC 1704.15
- B. TENANT PROTECTION PLAN INSPECTION

THE FOLLOWING IS A LIST OF ALL REQUIRED PROGRESS INSPECTIONS:

IIB3 - HVAC AND SERVICE WATER HEATING EQUIPMENT ECC C403.2, C404.2, C404.7, C404.6.2

IIB4 - HVAC AND SERVICE WATER HEATING SYSTEM CONTROLS. ECC C403.2.4, C403.2.5.1, C403.2.11, C403.3, C403.4, C404.3

IIB5 - HVAC INSULATION AND SEALING ECC C403.2.7, C403.2.8, C404.5

IID1 - MAINTENANCE INFORMATION ECC C303.3, C408.2.5.2

*THE CONTRACTOR SHALL INCLUDE IN THE COST OF HIS OR HER WORK, THE COST OF REQUIRED SPECIAL AND PROGRESS INSPECTIONS, AS PERFORMED BY ACCEPTABLE NYC DOB REGISTERED ENGINEER OR TESTING COMPANY.

3. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE FOLLOWING CODE CHAPTER AND SUB-SECTION.

- A. STANDARDS OF HEATING CHAPTER 3, MC-312
- B. HEATING CAPACITY CHAPTER 3, MC-312.
- C. DUCT CONSTRUCTION, SUPPORTS, AIR INTAKES, EXHAUSTS AND RELIEFS. CHAPTER 5, 6 AND 7.
- D. AIR FILTERS, FANS, AIR COOLING AND HEATING EQUIPMENT CHAPTER 6.
- E. ELECTRIC WIRING NYC ELECTRIC CODE.

4. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 70°F WITH AN OUTDOOR TEMPERATURE OF 5°F, WITH A 15 MPH WIND.

5. THE VENTILATION INDEX FOR ALL AREAS COMPLIES WITH THE MINIMUM CODE REQUIREMENTS PER CHAPTER 4 AND ALL SUBSECTIONS. ALL TOILET ROOMS TO BE VENTILATED IN ACCORDANCE WITH CHAPTER 4, SUB-SECTION MC-403.

6. UPON COMPLETION OF THIS VENTILATION SYSTEM, A TEST SHALL BE CONDUCTED IN THE PRESENCE OF AND UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT QUALIFIED TO CONDUCT SUCH TESTS. FOR SYSTEMS OF LESS THAN 5,000 CFM THE INSPECTION MAY BE BY A PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING INSTALLATION OF VENTILATING SYSTEMS. THE CONTRACTOR WILL BE REQUIRED TO RETAIN THE SERVICES OF THE PROPER PERSON TO CONDUCT THE TEST. THE TESTS SHALL SHOW COMPLIANCE WITH THE CODE REQUIREMENTS FOR VENTILATION AND THE PROPER FUNCTIONING OF ALL SMOKE DETECTION, FIRE PROTECTION AND OPERATING DEVICES BEFORE THE SYSTEM IS APPROVED. THE LICENSED PROFESSIONAL ENGINEER OF REGISTERED ARCHITECT SHO CONDUCTS THE TESTS SHALL FILE A CERTIFICATE AS TO WHETHER THE SYSTEM COMPLIES WITH THE APPLICABLE LAWS. HE SHALL ALSO FILE WITH THIS CERTIFICATION A REPORT OF THE TEST. THE TEST AND REPORT SHALL BE MADE IN A MANNER SATISFACTORY TO THE SUPERINTENDENT.

7. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATING SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY CODE.

8. ALL VENTILATING AND AIR CONDITIONING DUCTWORK, BOTH LOW AND HIGH VELOCITY, TO BE CONSTRUCTED IN ACCORDANCE WITH THE DUCT MANUALS OF SMACNA, 1995.

9. DUCT SUPPORT SHALL BE IN ACCORDANCE WITH CHAPTER 6, SECTION MC-603. ALL DUCTWORK SHALL BE CONSTRUCTED OF ANY OF THE FOLLOWING: IRON, STEEL, ALUMINUM, COPPER, CONCRETE, MASONRY OR CLAY TILE.

10. FIRE DAMPERS SHALL BE PROVIDED AT ALL FRESH AIR INTAKES AS PER CHAPTER 4, SECTION 401.5.1 AND IN ALL DUCTS PENETRATING FIRE RATED PARTITIONS AS PER CHAPTER 6.

11. ALL FIRE DAMPERS SHALL BE APPROVED BY THE NEW YORK CITY BOARD OF STANDARDS AND APPEALS AND SHLL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555 (1995), STANDARD FOR FIRE DAMPERS AND CEILING DAMPERS.

12. SMOKE DETECTORS AND SMOKE DAMPERS SHALL BE INSTALLED AS REQUIRED IN CHAPTER 4, SECTION 401.5.1 AND CHAPTER 6. DAMPER OPERATION SHALL CONFORM WITH CHAPTER 5 AND 6.

13. SMOKE DAMPERS SHALL BE APPROVED BY THE NEW YORK CITY BOARD OF STANDARDS

AND APPEALS AND SHALL BE MANUFACTURED AND INSTALLED WITH UL 555S (1983) STANDARD FOR LEAKAGE RATED DAMPERS FOR USE IN SMOKE CONTROL SYSTEMS, FIRST EDITION.

14. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALL LOCATIONS AND RATED CONSTRUCTION.

15. TESTS OF SOUND POWER LEVEL OF MECHANICAL EQUIPMENT SHALL BE CONDUCTED AND RESULTS SUBMITTED AS REQUIRED AS PER CHAPTER 9, SECTION MC-926. NOISE CRITERIA LEVEL AND TEST PROCEDURES FOR SOUND POWER LEVEL SHALL COMPLY WITH CHAPTER 9, SECTION MC-926.

COMMERCIAL.

1. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 70°F WITH AN OUTDOOR TEMPERATURE OF 5°F, WITH A 15 MPH WIND.

2. THE VENTILATION INDEX FOR ALL AREAS COMPLIES WITH THE MINIMUM CODE REQUIREMENTS PER CHAPTER 4 AND ALL SUBSECTIONS. ALL TOILET ROOMS TO BE VENTILATED IN ACCORDANCE WITH CHAPTER 4, SUB-SECTION MC-403.

3. UPON COMPLETION OF THIS VENTILATION SYSTEM, A TEST SHALL BE CONDUCTED IN THE PRESENCE OF AND UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT QUALIFIED TO CONDUCT SUCH TESTS. FOR SYSTEMS OF LESS THAN 5,000 CFM THE INSPECTION MAY BE BY A PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING INSTALLATION OF VENTILATING SYSTEMS. THE CONTRACTOR WILL BE REQUIRED TO RETAIN THE SERVICES OF THE PROPER PERSON TO CONDUCT THE TEST. THE TESTS SHALL SHOW COMPLIANCE WITH THE CODE REQUIREMENTS FOR VENTILATION AND THE PROPER FUNCTIONING OF ALL SMOKE DETECTION, FIRE PROTECTION AND OPERATING DEVICES BEFORE THE SYSTEM IS APPROVED. THE LICENSED PROFESSIONAL ENGINEER OF REGISTERED ARCHITECT SHO CONDUCTS THE TESTS SHALL FILE A CERTIFICATE AS TO WHETHER THE SYSTEM COMPLIES WITH THE APPLICABLE LAWS. HE SHALL ALSO FILE WITH THIS CERTIFICATION A REPORT OF THE TEST. THE TEST AND REPORT SHALL BE MADE IN A MANNER SATISFACTORY TO THE SUPERINTENDENT.

4. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATING SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY CODE.

5. ALL VENTILATING AND AIR CONDITIONING DUCTWORK, BOTH LOW AND HIGH VELOCITY, TO BE CONSTRUCTED IN ACCORDANCE WITH THE DUCT MANUALS OF SMACNA, 2005.

6. DUCT SUPPORT SHALL BE IN ACCORDANCE WITH CHAPTER 6, SECTION MC-603. ALL DUCTWORK SHALL BE CONSTRUCTED OF ANY OF THE FOLLOWING: IRON, STEEL, ALUMINUM, COPPER, CONCRETE, MASONRY OR CLAY TILE.

7. FIRE DAMPERS SHALL BE PROVIDED AT ALL FRESH AIR INTAKES AS PER CHAPTER 4, SECTION 401.5.1 AND IN ALL DUCTS PENETRATING FIRE RATED PARTITIONS AS PER CHAPTER 6.

8. ALL FIRE DAMPERS SHALL BE APPROVED BY THE NEW YORK CITY BOARD OF STANDARDS AND APPEALS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555 (2006), STANDARD FOR FIRE DAMPERS AND CEILING DAMPERS.

9. SMOKE DETECTORS AND SMOKE DAMPERS SHALL BE INSTALLED AS REQUIRED IN CHAPTER 4, SECTION 401.4.1 AND CHAPTER 6. DAMPER OPERATION SHALL CONFORM WITH CHAPTER 5 AND 6.

10. SMOKE DAMPERS SHALL BE APPROVED BY THE NEW YORK CITY BOARD OF STANDARDS AND APPEALS AND SHALL BE MANUFACTURED AND INSTALLED WITH UL 555S (1999) STANDARD FOR LEAKAGE RATED DAMPERS FOR USE IN SMOKE CONTROL SYSTEMS, FIRST EDITION.

11. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALL LOCATIONS AND RATED CONSTRUCTION.

12. TESTS OF SOUND POWER LEVEL OF MECHANICAL EQUIPMENT SHALL BE CONDUCTED AND RESULTS SUBMITTED AS REQUIRED AS PER CHAPTER 9, SECTION MC-928. NOISE CRITERIA LEVEL AND TEST PROCEDURES FOR SOUND POWER LEVEL SHALL COMPLY WITH CHAPTER 9, SECTION MC-928.

MECHANICAL SPECIFICATIONS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. INSTALL ALL NEW WORK IN A NEAT WORKMANLIKE MANNER READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR.

B. CODES, PERMITS AND INSPECTIONS:

- ALL WORK SHALL COMPLY WITH REQUIREMENTS OF NYC BUILDING CODE, NYC BUILDING DEPARTMENT, BUILDING MANAGEMENT, AND ALL AUTHORITIES HAVING JURISDICTION AND APPLICABLE NATIONAL, STATE AND LOCAL CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK SHALL BE INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS. CONTRACTOR IS TO INFORM ENGINEER OF ANY EXISTING WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE BY THIS CONTRACTOR AND AT NO EXPENSE TO THE OWNER.
- THIS CONTRACTOR SHALL OBTAIN ALL EQUIPMENT APPROVALS AS REQUIRED BY STATE AND LOCAL AUTHORITIES. PERMITS SHALL BE TURNED OVER TO OWNER AT JOB COMPLETION.

C. SITE VERIFICATION:

- PRIOR TO SUBMISSION OF THE BID, THIS CONTRACTOR SHALL VISIT THE JOB SITE TO ASCERTAIN THE ACTUAL FIELD CONDITIONS AS THEY RELATE TO THE WORK INDICATED ON THE DRAWINGS AND DESCRIBED HEREIN. DISCREPANCIES, IF ANY, SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO SUBMISSION OF THE BID, AND IF NOT RESOLVED TO SATISFACTION, SHALL BE SUBMITTED AS A WRITTEN QUALIFICATION OF THE BID. SUBMISSION OF A BID SHALL BE EVIDENCE THAT SITE VERIFICATION HAS BEEN PERFORMED AS DESCRIBED ABOVE.

D. CONTRACT DOCUMENTS:

- PRIOR TO SUBMISSION OF A FORMAL BID, THIS CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THE ENTIRE PROJECT INCLUDING GENERAL CONSTRUCTION, DEMOLITION, ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND SPRINKLER AND SHALL INCLUDE ANY WORK REQUIRED IN THE BID WHICH IS INDICATED OR IMPLIED TO BE PERFORMED BY THIS TRADE IN OTHER SECTIONS OF THE WORK.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND APPROXIMATE LOCATION OF EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS AND COORDINATE FINAL LOCATIONS OF DIFFUSERS, GRILLES, REGISTERS, THERMOSTATS, SENSORS, SWITCHES AND ANY WALL MOUNTED DEVICES. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT.
- IF A CONFLICT OCCURS IN THE SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.

E. GUARANTEE:

- ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE MECHANICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER, AND IS UNDER CARE, CUSTODY, AND CONTROL OF THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP AND OPERATION OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNER'S PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE SYSTEM.
- THE CONTRACTOR SHALL GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN THE GUARANTEE PERIOD. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL INCLUDE RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THIS CONTRACTOR.
- THIS CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF ALL SYSTEMS UNTIL THE FINAL ACCEPTANCE OF THE WORK.
- ALL AIR CONDITIONING UNIT COMPRESSORS AND REFRIGERATION COMPONENTS SHALL HAVE A 5-YEAR WARRANTY.

F. THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION AIA DOCUMENT A201, LATEST EDITION, OR AS REQUIRED BY THE ARCHITECT'S DOCUMENTS, AND/OR THE STRUCTURAL ENGINEER'S DOCUMENTS, AS APPLICABLE, ARE PART OF THIS CONTRACT.

1.02 SCOPE OF WORK

A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND CONTRACTOR'S SERVICES NECESSARY FOR COMPLETE, SAFE INSTALLATION OF ALL MECHANICAL WORK. THE SCOPE OF WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

- DEMOLITION AND REMOVAL OF ITEMS AS REQUIRED.
- DUCTWORK AND DUCTWORK ACCESSORIES.
- AIR DISTRIBUTION SYSTEM (AIR OUTLETS, VAV BOXES, FAN POWERED BOXES, ETC.).
- PIPING AND PIPING ACCESSORIES INCLUDING ALL VALVING.
- EQUIPMENT -INCLUDING BUT NOT LIMITED TO, PUMPS, AIR CONDITIONING UNITS, FANS, VARIABLE FREQUENCY DRIVES, ETC.
- INSULATION OF PIPING, EQUIPMENT AND DUCTWORK.
- AUTOMATIC TEMPERATURE CONTROLS.
- TESTING AND BALANCING.
- CUTTING AND PATCHING.
- SHOP DRAWINGS.
- AS-BUILT DRAWINGS.
- OPERATING AND MAINTENANCE MANUALS.
- FULL COORDINATION WITH OTHER TRADES.
- WARRANTY AND GUARANTY.
- PHASING AS REQUIRED BY OWNER, CONSTRUCTION MANAGER, GENERAL CONTRACTOR OR BUILDING MANAGEMENT.
- PREMIUM TIME FOR WORK TO BE PERFORMED AFTER-HOURS AS REQUIRED BY BUILDING MANAGEMENT AND/OR OWNER.
- FILING, PERMITS, SPECIAL INSPECTIONS.
- FULL TESTING AND STARTUP OF ALL SYSTEMS.

B. SECURE CERTIFICATES, PAY ALL FEES AND CHARGES FOR ALL WORK INSTALLED, CERTIFYING COMPLIANCE WITH ALL AUTHORITIES. CONTRACTOR TO COORDINATE WITH OWNER FOR REQUIRED SPECIAL INSPECTIONS AND OBTAIN ALL APPROVALS. DELIVER CERTIFICATES TO OWNER FOR SIGNING BEFORE FILING.

1.03 COORDINATION WITH BUILDING MANAGEMENT

A. THIS CONTRACTOR IS TO OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS PRIOR TO BID SUBMISSION TO DETERMINE THE REQUIREMENTS AND THE EXTENT OF PREMIUM TIME WORK REQUIRED BY THE BUILDING.

B. COORDINATE WITH BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS, OR CONTRACTOR TO PROVIDE A MINIMUM OF TWO (2) DAYS NOTICE PRIOR TO ANY WORK BEING PERFORMED, WHICHEVER IS THE MORE STRINGENT. CONTRACTOR IS TO PERFORM WORK ON PREMIUM TIME, IF SO DIRECTED BY BUILDING OWNER, SO AS NOT TO DISTURB EXISTING TENANTS ON OTHER FLOORS.

1.04 SHOP DRAWINGS

A. SUBMIT SHOP DRAWINGS CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN COMPLETED. SUBMIT ALL CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS AND AUTOMATIC TEMPERATURE CONTROL REQUIREMENTS. SHOP DRAWINGS SUBMISSION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

- DUCTWORK - PROVIDE DUCT SHOP STANDARDS AND LEAKAGE TEST CERTIFICATION, AS REQUIRED, AND 3/8 SCALE DUCT LAYOUT.
- PIPING LAYOUT AND APPURTENANCES - PSHOP STANDARDS AND 3/8 SCALE PIPING LAYOUT WITH ALL VALVING.
- INSULATION FOR DUCTWORK, PIPING AND EQUIPMENT.
- EQUIPMENT CATALOG CUTS FOR ALL ITEMS TO BE UTILIZED ON PROJECT (FANS, PUMPS, AC UNITS, VARIABLE FREQUENCY DRIVES, VAV BOXES, ETC.).
- AIR OUTLETS (DIFFUSERS, REGISTERS, GRILLES, ETC.).
- AUTOMATIC TEMPERATURE CONTROL DIAGRAMS, DEVICES AND SEQUENCE OF OPERATION.
- CERTIFIED AIR BALANCING REPORT.
- AS-BUILT DRAWINGS AT PROJECT COMPLETION OF THE INSTALLED CONDITION OF WORK.

1.05 MAINTENANCE MANUALS

A. SUBMIT FOUR (4) LOOSE-LEAF BOUND OPERATING AND MAINTENANCE MANUALS WITH INDEX AND INDEX TABS TO INCLUDE THE FOLLOWING:

- OPERATING AND MAINTENANCE INSTRUCTIONS ON ALL SYSTEMS.
- MANUFACTURERS= CATALOG CUTS ON ALL EQUIPMENT.
- AUTOMATIC TEMPERATURE CONTROL SYSTEMS WITH SEQUENCE OF OPERATIONS, CATALOG CUTS OF ALL DEVICES AND POINT-TO-POINT WIRING DIAGRAMS.
- CERTIFIED FINAL AIR AND WATER BALANCING REPORT.
- DUCT AND PIPING AS-BUILT DRAWINGS WITH VALVE CHART AND KEY PLAN DRAWINGS INSERTED IN BINDER.
- ALL ITEMS SUBMITTED FOR REVIEW IN SHOP DRAWING SECTION.

1.06 AS-BUILT DRAWINGS

A. CONTRACTOR SHALL MAINTAIN RECORD DRAWING PRINTS ON JOB SITE AND RECORD, AT TIME OF OCCURRENCE, DEVIATIONS FROM CONTRACT DOCUMENTS DUE TO FIELD COORDINATION, BULLETINS, OR ADDENDA.

B. CONTRACTOR SHALL REVISE SHOP DRAWINGS TO CONFORM TO RECORD DRAWINGS AND SUBMIT AS-BUILT CONDITION (PIPING AND DUCTWORK) DRAWINGS UPON COMPLETION OF THE PROJECT. FINAL SUBMISSION OF REPRODUCIBLE AS-BUILT DRAWINGS ARE TO BE SIGNED AND CERTIFIED BY THE INSTALLING CONTRACTOR THAT THIS IS THE AS-BUILT CONDITION OF THE WORK.

1.07 SUBSTITUTIONS

A. NO SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER WHICH INCLUDES ALL DIMENSIONAL, PERFORMANCE AND MATERIAL SPECIFICATIONS. ANY CHANGES IN LAYOUT, ELECTRICAL CHARACTERISTICS, STRUCTURAL REQUIREMENTS, OR DESIGN DUE TO THE USE OF A SUBSTITUTION SHALL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM SUBSTITUTION. ALL ITEMS SHALL BE SUBMITTED FOR REVIEW IN CONJUNCTION WITH THE SUBMITTAL OF THE SUBSTITUTION. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN EXPLANATION AS TO WHY A SUBSTITUTION IS BEING UTILIZED. IF THE SUBSTITUTED ITEM DEVIATES FROM THE SPECIFIED ITEM, THOSE DEVIATIONS ARE TO BE IDENTIFIED ON A LINE-BY-LINE BASIS. IF THE SUBSTITUTE IS BEING UTILIZED FOR FINANCIAL REASONS, THE ASSOCIATED CREDIT MUST BE SIMULTANEOUSLY SUBMITTED.

1.08 ACCESS DOORS IN GENERAL CONSTRUCTION

A. THIS CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL A PLAN INDICATING THE SIZE AND LOCATION OF ALL ACCESS DOORS REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT, DEVICES, VALVES, DAMPERS AND CONTROLS. CONTRACTOR SHALL ARRANGE FOR FURNISHING AND INSTALLATION OF ALL ACCESS DOORS IN FINISHED CONSTRUCTION AND INCLUDE COSTS IN THE BID. ACCESS DOORS SHALL BE OF ADEQUATE SIZE TO PROVIDE ACCESS TO CONCEALED ITEMS FOR OPERATION AND MAINTENANCE, WITH A MINIMUM SIZE OF 18" X 18".

PART 2 - PRODUCTS/APPLICATIONS

2.01 DUCTWORK AND ACCESSORIES

A. ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, LATEST EDITION, SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL, LATEST EDITION, NFPA 90A LATEST EDITION, AND 2022 NEW YORK CITY BUILDING CODE. THE MORE STRINGENT REQUIREMENT OF ANY CODES SHALL APPLY.

B. PROVIDE ALL SUPPORTING AND HANGING DEVICES IN ACCORDANCE WITH NEW YORK CITY BUILDING CODE AND SMACNA.

C. DUCTWORK LAYOUT AND ROUTING IS SCHEMATIC AND THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL DUCT SIZE CHANGES AND RELOCATIONS TO ACCOMMODATE SPACE AND STRUCTURAL CONDITIONS. OFFSETS AND TRANSFORMATIONS SHALL PRESERVE THE FULL INSIDE CROSS-SECTIONAL AREA OF DUCTWORK SHOWN ON THE DRAWINGS.

D. DUCTWORK (NEW AND EXISTING TO BE REUSED) SHALL HAVE PRESSURE CLASSIFICATION, SEALING REQUIREMENTS AND LEAKAGE TESTING IN ACCORDANCE WITH SMACNA AND AS LISTED BELOW UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS.

- 3" CLASS: ALL SUCTION AND DISCHARGE OF KITCHEN HOOD, AND SMOKE EXHAUST DUCTWORK. SEAL CLASS B, LEAKAGE CLASS 12 (RECTANGULAR) OR CLASS 6 (ROUND).
- 2" CLASS: ALL OTHER LOW PRESSURE DUCTWORK. SEAL CLASS C, LEAKAGE CLASS 24 (RECTANGULAR) OR CLASS 12 (ROUND).

A. MATERIALS:

- SHEETMETAL: UNLESS OTHERWISE SPECIFIED OR INDICATED, DUCTS SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED SHEETMETAL WITH 60 COMMERCIAL COATING ACCORDING TO ASTM 653 AND A924.
- FLEXIBLE CONNECTIONS AT FANS SHALL BE NEOPRENE COATED, FLAME RETARDANT GLASS FABRIC (COMPLYING WITH NFPA 90 AND 96), 30 OZ./SQ. YD. WITH SOWN AND CEMENTED SEAMS.
- FLEXIBLE DUCTWORK SHALL NOT BE USED ON THIS PROJECT.

B. FABRICATION:

- CONFORM TO SMACNA REQUIREMENTS FOR METAL THICKNESS, REINFORCING, JOINTS, AND SEALING FOR MAXIMUM STATIC PRESSURES INVOLVED. ALL SEAMS AND JOINTS SHALL BE SEALED AND TAPED.
- ELBOWS SHALL CONFORM TO SMACNA REQUIREMENTS AND THE FOLLOWING:
 - PROVIDE LONG RADIUS TYPE WITH CENTERLINE RADIUS MINIMUM 1.5 TIMES DUCT WIDTH. PROVIDE SHORT RADIUS OR SQUARE ELBOWS WHERE INDICATED OR WHERE REQUIRED TO FIT RESTRICTED SPACES. PROVIDE DOUBLE THICKNESS TURNING VANES ON ALL SHORT RADIUS AND MITERED ELBOWS. CONFORM TO SMACNA FOR THE NUMBER OF VANES FOR FITTINGS.
- BRANCH CONNECTIONS: PROVIDE 45 DEGREE ENTRY OR CONICAL TAPS. PROVIDE RADIUS TYPE FITTINGS FOR DIVIDED FLOW BRANCHES.

C. VOLUME DAMPERS:

- GALVANIZED STEEL OR SAME AS DUCT CONSTRUCTION. CONFORM TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 1995 OR LATEST EDITION, OPPOSED BLADE TYPE. PROVIDE BEARING AT BOTH ENDS OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCKSCREW, AT ONE END. INSTALL WITH LEVERS ACCESSIBLE THROUGH INSULATION. SPLITTER DAMPER OR AIR EXTRACTORS SHALL NOT BE USED ON THIS PROJECT.
 - LOW PRESSURE: ALL SUPPLY AIR MAIN BRANCHES FROM TRUNK, EACH SPLIT, AND ALL SUB-BRANCHES FROM MAINS SHALL BE PROVIDED WITH BALANCING DAMPERS.
- OPERATING AND MAINTENANCE INSTRUCTIONS ON ALL SYSTEMS.
- MANUFACTURERS= CATALOG CUTS ON ALL EQUIPMENT.
- AUTOMATIC TEMPERATURE CONTROL SYSTEMS WITH SEQUENCE OF OPERATIONS, CATALOG CUTS OF ALL DEVICES AND POINT-TO-POINT WIRING DIAGRAMS.
- CERTIFIED FINAL AIR AND WATER BALANCING REPORT.
- DUCT AND PIPING AS-BUILT DRAWINGS WITH VALVE CHART AND KEY PLAN DRAWINGS INSERTED IN BINDER.
- ALL ITEMS SUBMITTED FOR REVIEW IN SHOP DRAWING SECTION.

D. DUCT ACCESS DOORS:

- CONFORM TO SMACNA WITH PIANO HINGES, TWO SASH LOCKS AND DOOR GASKETS. SCREWED ACCESS PANELS ARE NOT PERMITTED. PROVIDE REMOVABLE ACCESS DOORS WHERE DOOR SWING CANNOT BE ACCOMMODATED.
 - SIZE: MINIMUM 20"x14" EXCEPT DUCTS LESS THAN 16", ONE DIMENSION 20" AND THE OTHER DIMENSION, 2" LESS THAN THE DUCT WIDTH.
 - PROVIDE ACCESS DOORS: AT ENTERING AND LEAVING SIDES OF COILS IN DUCTS; AUTOMATIC DAMPERS ON LINKAGE SIDE, MANUAL VOLUME DAMPERS 2 SQ. FT. AND LARGER, FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS, SMOKE DETECTION HEADS, FAN BEARINGS ENCLOSED IN DUCTS, SUCTION AND DISCHARGE SIDES OF CEILING MOUNTED FANS, FILTERS, REHEAT COILS, AT ALL EQUIPMENT REQUIRING ACCESS AND AS INDICATED ON DRAWINGS
- E. AUTOMATIC CONTROL DAMPERS:
- PROVIDE DAMPERS WITH PARALLEL BLADES FOR 2-POSITION CONTROL, OR OPPOSED BLADES FOR MODULATING CONTROL OF CONSTANT OR VARIABLE VOLUME SYSTEM.
 - AUTOMATIC DAMPERS TO BE VERY LOW LEAKING TYPE WITH JAMB AND BLADE SEALS RATED FOR SMOKE DAMPER APPLICATION. CONSTRUCT BLADES OF 16 GAUGE GALVANIZED STEEL. PROVIDE HEAVY-DUTY MOLDED SELF-LUBRICATING NYLON BEARINGS, 1/2" DIAMETER STEEL AXLES SPACED ON 9" CENTERS, BLADES TO BE MAXIMUM 10" HIGH. FRAME SHALL BE CONSTRUCTED OF 16 GAUGE X 4-3/8" GALVANIZED HAT SHAPED STEEL PROPERLY BRACED WITH GALVANIZED STEEL FINISH AND ALUMINUM TOUCH-UP.
 - DAMPERS TO BE MANUFACTURED BY IMPERIAL OR APPROVED EQUAL

F. SEAL OPENINGS AROUND DUCTS THROUGH WALLS WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL. SEAL ALL DUCT PENETRATIONS THROUGH WALLS AIRTIGHT.
 G. ALL DUCTS EXPOSE TO MOISTURE SHALL BE ALUMINUM, SLOPED AND DRAINED AND SHALL NOT BE INTERNALLY LINED.
 H. EXPOSED DUCTWORK

- WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS, INCLUDING PITTINGS, SEAM MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS. PROVIDE FINISHES WHICH WILL ALLOW PAINTING. PROVIDE FLAT TYPE SEAMS AND JOINTS FOR ALL EXPOSED DUCT CONSTRUCTION.



CLIENT



CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
 27 W 20TH ST, NEW YORK, NY 10011
 P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
 1342 OCEAN PARKWAY
 BROOKLYN, NY 11230
 P: 347-860-1416

LANDLORD:

NY UNIVERSITY

ISSUES

07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
 NEW YORK, NY 10003

SHEET NAME

MECHANICAL
 SPECIFICATIONS

SEAL / SIGNATURE

FILE INFORMATION

PROJECT NO: 2024.112
 DATE: 11.01.24
 SCALE: AS NOTED

DWG NO:

M-003.00

PAGE NO: 3 OF 10

M01198476-S1



2.02 PIPING AND ACCESSORIES

- A. PROVIDE ALL PIPING, FITTINGS, VALVES, SPECIALTIES, THERMOMETERS, AND PRESSURE GAUGES REQUIRED FOR THE OPERATING AND MAXIMUM PRESSURE AND TEMPERATURE OF THE PIPING SYSTEMS.
- B. ALL PIPING SHALL BE NEW, STANDARD SIZE, FREE FROM SCALE OR RUST WITH ENDS CAPPED FOR DELIVERY AND STORAGE. EACH LENGTH OF PIPING SHALL BE PROPERLY MARKED AT THE MILL FOR PROPER IDENTIFICATION WITH NAME OR SYMBOL OF MANUFACTURER.

C. PIPE APPLICATION SCHEDULE:

COLD CONDENSATE DRAINS MISCELLANEOUS DRAINS AND OVERFLOWS	ALL	HARD COPPER	TYPE L	ASTM A88	BRAZE OR SLIVER SOLDER
	2-1/2" & LARGER	GALV. STEEL	SCHEDULE 40	ASTM A53 SEAMLESS GRADE	WELDED
REFRIGERANT (AIR COOLED AND COMMERCIAL REFRIGERATION)	ALL	HARD COPPER	TYPE ACR REFRIGERANT OR TYPE L	ASTM B280 OR ASTM B-88	BRAZE OR SOLDER
CHILLED WATER, SECONDARY WATER (DUAL TYPE), GLYCOL SYSTEM TO 220°F, HOT WATER TO 220°F	2" & BELOW	BLACK STEEL	SCHEDULE 40	ASTM A53 OR SOCKET A106 SEAMLESS WELD GRADE B	
	2-1/2" TO 10"	BLACK STEEL	SCHEDULE 40	ASTM A53 OR WELDED A106 SEAMLESS GRADE B	

D. FITTING MATERIALS AND APPLICATION SCHEDULE:

- 1. ALL FITTING JOINT TYPE SHALL BE THE SAME AS THE PIPING JOINT TYPE REQUIRED FOR SERVICE, BASED ON THE PIPING APPLICATION SCHEDULE.
- 2. FITTING CLASS SHALL MEET THE PRESSURE AND TEMPERATURE REQUIREMENT OF THE PIPING SYSTEM BASED ON ITS MAXIMUM OPERATING PRESSURE AND TEMPERATURE OR TEST PRESSURE, WHICHEVER IF MORE STRINGENT. PRESSURE AND TEMPERATURE RATINGS OF A FITTING SHALL BE DETERMINED BY ITS CLASS AND THE CORRESPONDING ANSI STANDARD.
- 3. FITTING APPLICATION TABLE:

PIPE MATERIAL CLASS	PIPE SIZE (INCHES)	JOINT TYPE	FITTING MATERIAL	FITTINGS
COPPER TUBING HARD DRAWN	4" & SMALLER	SOLDER 95-5 TINANTIMONY ASTM B32 GR 95 TA	WROUGHT COPPER OR CAST COPPER	300 PSIG AT 100EF, 150 PSIG @ 250EF
		SILVER SOLDER ASTM B32 GR 95TS		
		BRAZING	WROUGHT COPPER	450 PSIG AT 100EF TO 200EF, 150 PSIG @ 250EF
COPPER TUBING HARD DRAWN REFRIGERANT SYSTEMS TYPE ACR	4" & SMALLER	SOLDER 15-5-80 SILVER PHOSPHOROUS COPPER AWS A5.8 OR BRAZING	WROUGHT COPPER	STANDARD
RED BRASS 250	ALL SIZES	THREADED	CAST BRONZE	125 AND

PROVIDE DIELECTRIC FITTING AT ALL PIPING CONNECTIONS JOINING DISSIMILAR METALS, SUCH AS STEEL AND COPPER.

E. VALVES

- 1. VALVES SHALL HAVE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY A SINGLE MANUFACTURER. VALVES LOCATED 7 FEET OR MORE ABOVE OPERATING FLOOR OR PLATFORM SHALL BE PROVIDED WITH CHAIN OPERATED HANDWHEELS, RUSTPROOF CHAIN AND CHAIN GUIDE. GASKETS AND PACKINGS SHALL NOT CONTAIN ASBESTOS.
- 2. ALL VALVING AND VALVE MATERIALS SHALL BE SUITABLE FOR THE OPERATING TEST AND MAXIMUM PRESSURE AND TEMPERATURE REQUIREMENTS OF THE PIPING SYSTEM FOR WHICH THEY ARE BEING UTILIZED.

F. REFRIGERANT SYSTEMS:

- 1. PROVIDE ALL REFRIGERANT PIPING REQUIRED FOR A COMPLETE REFRIGERATION SYSTEM, WITH ALL VALVES, FITTINGS AND SPECIALTIES NECESSARY FOR SATISFACTORY OPERATION IN ACCORDANCE WITH ASHRAE STANDARD 15-1994 OR LATEST EDITION AND ALL AUTHORITIES HAVING JURISDICTION. REFRIGERATION SYSTEM SHALL INCLUDE ALL REQUIRED ITEMS FOR CHARGING, DRAINING AND PURGING THE SYSTEM.
- 2. JOINTS IN REFRIGERATION PIPING SHALL BE BRAZED. REFRIGERANT PIPING SHALL BE OF THE SIZE RECOMMENDED BY THE MANUFACTURER AND AS APPROVED BY THE ENGINEER.
- 3. HORIZONTAL PIPING OF THE COMPRESSOR SUCTION AND DISCHARGE LINES AND THE

CONDENSER DISCHARGE LINES SHALL BE PITCHED A MINIMUM OF 1/2" IN 10', IN THE DIRECTION OF REFRIGERANT FLOW. EACH SUCTION GAS VERTICAL RISER SHALL BE TRAPPED AT ITS EVAPORATOR WITH A TRAP AS RECOMMENDED BY THE COMPRESSOR MANUFACTURER.

- 4. INSTALL REFRIGERANT PIPING TO PREVENT EXCESSIVE OIL FROM BEING TRAPPED IN THE SYSTEM. ANY ADDITIONAL RISERS OR EQUALIZER LINES REQUIRED BY THE MANUFACTURER OF EQUIPMENT FOR THE PROPER SYSTEM OPERATION SHALL BE INSTALLED AS PART OF THIS CONTRACT. PROVIDE A FULLY PIPED OIL SEPARATOR FOR EACH REFRIGERANT SYSTEM AS PER MANUFACTURER'S RECOMMENDATIONS.
- 5. VALVES SHALL BE DESIGNED FOR REFRIGERANT SERVICE. SHUTOFF VALVES SHALL BE BRASS PACKLESS TYPE. UNIONS, FLANGED VALVES OR FITTINGS SHALL BE PROVIDED FOR DISCONNECTING EQUIPMENT, CONTROLS, ETC., FOR MAKING REPAIRS. PIPING SHALL BE RUN IN A SINGLE LAYER, WITH EACH LINE ISOLATED FROM ANOTHER TO PREVENT RUBBING. PROVISION SHALL BE MADE FOR EXPANSION AND CONTRACTION OF PIPING. ALL PIPING PASSING THROUGH WALLS, PARTITIONS, ETC. SHALL BE FURNISHED WITH SLEEVES AS REQUIRED.
- 6. REFRIGERANT PIPING PASSING THROUGH RATED FLOORS OR DEMISING WALLS SHALL BE ENCLOSED IN A RIGID AND GAS-TIGHT CONTINUOUS FIRE-RESISTING PIPE DUCT OR SHAFT VENTED TO THE OUTSIDE, IN ACCORDANCE WITH ASHRAE STANDARD 15-1994 OR LATEST EDITION. PIPE CONDUIT SHALL BE COPPER TUBE TYPE L WITH SOLDERED FITTINGS.
- 7. REFRIGERANT PIPING: TEST REFRIGERANT PIPING FOR TIGHTNESS AND LEAKS UNDER PRESSURE OR VACUUM. THE DURATION OF EACH SHALL BE TWENTY-FOUR (24) HOURS. TEST JOINTS IN ACCORDANCE WITH ASHRAE 15-1994. THERE SHALL BE NO OBSERVABLE LEAKS OR CHANGES IN PRESSURE. IF EITHER IS OBSERVED, SEAL LEAKS, AND REPEAT TEST PROCEDURES.

G. ALL INSTRUMENTAL (PRESSURE GAUGES AND THERMOMETERS) SHALL BE RATED FOR THE SAME PRESSURE AND TEMPERATURE AS PIPING SYSTEM AND RATED SPECIFICALLY FOR THE SAME SERVICE AS THE PIPING. PRESSURE GAUGES ARE TO BE LIQUID FILLED WITH 1% ACCURACY. SELECT GAUGES AND THERMOMETERS SO THAT THE MIDPOINT IS AT THE WORKING PRESSURE AND TEMPERATURE. INSTRUMENTS TO BE MANUFACTURED BY WEISS INSTRUMENTS OR APPROVED EQUAL.

H. ALL PIPING TO BE VENTED AT HIGH POINTS AND PROVIDED WITH ASSOCIATED DRAIN VALVES AT LOW POINTS. PROVIDE AUTOMATIC AIR VENTS WITH GATE VALVES PIPED TO DISCHARGE TO THE NEAREST DRAIN UNLESS DRAWINGS INDICATE MANUAL AIR VENTS.

I. PROVIDE CORE DRILLED OPENINGS WITH PIPE SLEEVES AT ALL SLAB AND SHAFT PENETRATIONS. PROVIDE FIREPROOFING AS REQUIRED TO MAINTAIN WALL, SHAFT AND SLAB FIRE RATINGS.

J. PROVIDE WATERPROOF SLEEVES (LINK SEAL (LS TYPE) AT ALL EXTERIOR WALL, FLOOR PENETRATIONS AND AS REQUIRED OR AS NOTED ON PLANS.

K. PROVIDE LABELING OF ALL PIPING (BOTH EXPOSED AND CONCEALED) IN ACCORDANCE WITH ANSI STANDARDS AND COLOR CODED AS PER BUILDING MANAGEMENT STANDARDS. LABELS TO BE SECURELY FASTENED TO PIPING WITH LETTERING OF SUFFICIENT SIZE FOR EASY IDENTIFICATION BY OPERATING PERSONNEL.

L. ALL PIPING TO BE MAINTAINED AT THE HIGHEST ELEVATIONS POSSIBLE SO AS NOT TO INTERFERE WITH EXISTING OPERATIONS AND SERVICE/MAINTENANCE REQUIREMENTS.

M. HANGERS AND SUPPORTS:

- 1. PROVIDE ALL PIPE HANGERS, HANGAR RODS SUPPORTS, INSERTS, ATTACHMENTS, CLAMPS, GUIDES, SUPPLEMENTAL STEEL AND ANCHORS AS REQUIRED TO INSTALL PIPING SYSTEM SIZED TO ACCOMMODATE THE SYSTEM LOADS. HANGERS AND SUPPORTS ARE TO BE IN ACCORDANCE WITH MSS RECOMMENDATIONS AND TO BE MANUFACTURED BY GRINNELL OR APPROVED EQUAL.
- 2. PROVIDE INSULATED PROTECTIVE SADDLES FOR INSULATED PIPING.
- 3. PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH RECOMMENDATIONS OF MSS SP-69 AND ALL APPLICABLE CODES. ALL THREADED ROD IS TO BE GALVANIZED. PROVIDE 2" VERTICAL ADJUSTMENT FOR ALL HANGERS. PROVIDE ADDITIONAL SUPPORTS AT CHANGES IN DIRECTION, BRANCH PIPING OVER 5 FEET, AND CONCENTRATED LOADS DUE TO VALVES, STRAINERS AND OTHER ACCESSORIES.

N. EXPANSION COMPENSATION:

- 1. ALL PIPING SHALL BE INSTALLED TO COMPENSATE FOR EXPANSION TO PROTECT THE BUILDING, EQUIPMENT AND PIPING SYSTEMS. PROVIDE ALL GUIDES, ANCHORS, EXPANSION LOOPS, SUPPLEMENTAL STEEL AND APPROVED TYPE EXPANSION JOINTS AS INDICATED OR REQUIRED FOR CONTROL OF EXPANSION.

O. HYDRSTATIC PIPE TESTING:

- 1. GENERAL
 - A) TESTS SHALL BE CONDUCTED AFTER COMPLETION AND ASSEMBLY OF PIPING SYSTEM, BEFORE ANY INSULATION OR PAINT IS APPLIED TO JOINTS, INCLUDING WELDS AND PRIOR TO MAKING THE SYSTEM OPERABLE. INSULATION MATERIALS INSTALLED PRIOR TO THE TESTS SHALL BE REMOVED.
 - B) THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY PIPING CONNECTIONS, TEES, VALVES, EQUIPMENT, AND LABOR TO PRESSURE TEST PIPING AND EQUIPMENT.
 - C) EQUIPMENT THAT IS NOT SUBJECTED TO THE PRESSURE TEST SHALL BE EITHER DISCONNECTED FROM THE SYSTEM OR ISOLATED BY A BLANK OR SIMILAR MEANS. VALVES MAY BE USED FOR THIS PURPOSE PROVIDED THAT VALVE CLOSURE IS SUITABLE FOR THE PROPOSED TEST PRESSURE.
 - D) SUBMIT TO THE ENGINEER AND OWNER REPRESENTATIVE A RECORD OF TEST PRESSURE APPLIED TO EACH PIPING SYSTEM.
- 2. REFRIGERANT PIPING
 - B) THE REFRIGERANT PIPING FOR TIGHTNESS AND LEAKS UNDER PRESSURE OR VACUUM. THE DURATION OF EACH TEST SHALL BE TWENTY-FOUR (24) HOURS.
 - C) TEST JOINTS IN ACCORDANCE WITH ASHRAE 15-1994. THERE SHALL BE NO OBSERVABLE LEAKS OR CHANGES IN PRESSURE. IF EITHER IS OBSERVED, SEAL LEAKS, AND REPEAT TEST PROCEDURES.

2.03 INSULATION

A. ALL INSULATION SHALL MEET THE REQUIREMENTS OF ASTM, NFPA, 2020 NEW YORK STATE ENERGY CODE AND ALL AUTHORITIES HAVING JURISDICTION. ALL MECHANICAL INSULATION (JACKETING, COVERINGS, ADHESIVES, MASTICS, FACINGS, TAPES, ETC.), SHALL HAVE RATINGS NOT EXCEEDING A AFLAME SPREAD OF 25 OR LESS AND SMOKE DEVELOPED INDEX OF 50 OR LESS.

B. BEFORE APPLYING INSULATION, ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED. FURNISH AND INSTALL AS PER MANUFACTURERS REQUIREMENTS.

C. INSULATION FOR FITTINGS OR ACCESSORIES REQUIRING SERVICING OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

D. PIPE INSULATION:

18. FIBERGLASS PIPE INSULATION: ONE-PIECE MOLDED SECTIONAL FIBERGLASS INSULATION, CONFORMING TO ASTM C-547, CLASS 1, 2, 3 TO 850EF WITH 4 LB./CU. FT. DENSITY WITH A THERMAL CONDUCTIVITY OF NOT OVER 0.23 AT 75EF MEAN. PROVIDE WITH FACTORY-APPLIED ALL SERVICE JACKET AND DOUBLE ADHESIVE SELF-SEALING LAP. COLD WATER PIPE INSULATION JACKET SHALL BE OF THE CONTINUOUS VAPOR BARRIER TYPE. THE INSULATION SHALL BE SIMILAR TO OWENS-CORNING FIBERGLASS ASJ/SSL-II PIPE INSULATION.

19. INSULATION FOR FITTINGS, FLANGES, AND VALVES: PROVIDE INSULATION FOR FITTINGS, FLANGES, AND VALVES PREMOLDED, PRECUT, OR JOB FABRICATED OF THE SAME THICKNESS AND CONDUCTIVITY AS USED ON ADJACENT PIPING.

20. PROVIDE INSULATION FOR PIPING, FITTINGS, FLANGES AND VALVES OF THE THICKNESS LISTED BELOW:

INSULATION THICKNESS FOR PIPE SIZES (INCHES)

1" & 1-1/4" 2" 4" 8" OR

SERVICE	MATERIAL	LESS	TO 1-1/2"	TO 3" TO 6" LARGER
REFRIGERANT (BELOW 40EF)	FIBERGLASS	1-1/2" 1-1/2"	1-1/2" 1-1/2" 1-1/2"	
COLD WATER DRAINS	FIBERGLASS	1-1/2" 1-1/2"	1-1/2" 1-1/2" 1-1/2"	

E. DUCT INSULATION:

1. GENERAL

A) INSULATION SHALL BE APPLIED WITH MASTICS, ADHESIVES, COATINGS, WITH COVERS, WEATHER-PROTECTION AND OTHER WORK AS REQUIRED BY MANUFACTURER'S RECOMMENDATIONS. DO NOT INSULATE SOUND LINED DUCTWORK. MATERIALS SHALL MEET REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMACNA.

B) REFER TO M-003.00: "MINIMUM DUCT AND PLENUM INSULATION THICKNESS" SCHEDULE FOR R VALUES AND EXCEPTIONS.

2.04 ELECTRICAL WORK

A. GENERAL

1. ELECTRICAL POWER WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACT; CONTROL WIRING SHALL BE BY THE HVAC CONTRACT. CONTROL WIRING SHALL BE DEFINED AS ANY 12V, 24V, OR 120V WIRING INSTALLED FOR PURPOSES OTHER THAN PROVIDING PRIMARY ELECTRICAL POWER TO EQUIPMENT.

2. MOTOR STARTERS AND VARIABLE FREQUENCY DRIVES (VFD) SHALL BE FURNISHED BY THE HVAC CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. REFER TO THE EQUIPMENT SECTION FOR VARIABLE FREQUENCY DRIVE SPECIFICATIONS.

3. DUCT MOUNTED SMOKE DETECTORS, WHERE REQUIRED, SHALL BE PROVIDED BY AD WIRED BY THE ELECTRICAL CONTRACTOR, AND MOUNTED BY THE HVAC CONTRACTOR.

4. ALL ELECTRICAL CONTROL WIRING SHALL COMPLY WITH LOCAL ELECTRICAL CODE, ALL AUTHORITIES HAVING JURISDICTION AND THE PROJECT ELECTRICAL SPECIFICATIONS.

5. MECHANICAL CONTRACTOR TO OBTAIN QUANTITY OF CONTROLLERS REQUIRED AND COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR ALL OPERATING REQUIREMENTS, INTERLOCKS AND CONNECTIONS FOR STARTERS.

6. THE MECHANICAL CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL POINT-TO-POINT, COMPLETELY COORDINATED WIRING DIAGRAMS AND INDICATE ALL SOURCE POWER REQUIREMENTS AND ALL FIELD WIRING TO BE PERFORMED BY THE ELECTRICAL CONTRACTOR.

B. MOTORS:

1. MOTORS SHALL HAVE THE ELECTRICAL CHARACTERISTICS AS LISTED ON THE DRAWINGS. COORDINATE ALL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR. ALL MOTORS SHALL COMPLY WITH NEMA MG-1 STANDARD AND SHALL BE OF THE HIGH EFFICIENCY TYPE AND MEET THE 1992 EPA ENERGY EFFICIENCY ACT AND UTILITY COMPANY REBATE REQUIREMENTS.

2. MOTORS FOR VARIABLE FREQUENCY DRIVES (VFD) SHALL BE SUITABLE FOR USE WITH VARIABLE FREQUENCY DRIVES AND COMPLY WITH NEMA MG-1 PART 31.40.4.2. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS OF THE MOTOR AND VFD MANUFACTURER.

3. IF CONTRACTOR ELECTS TO SUBSTITUTE OR INCREASE MOTOR HORSEPOWER OVER THAT WHICH IS SPECIFIED, THE COST OF MOTOR AND ELECTRICAL CHANGES SHALL BE BORNE BY THIS CONTRACTOR.

C. STARTERS:

3. EACH MOTOR EXCEPT AS NOTED, SHALL BE PROVIDED WITH A COMBINATION FUSED



CLIENT



CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
27 W 20TH ST, NEW YORK, NY 10011
P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
1342 OCEAN PARKWAY
BROOKLYN, NY 11230
P: 347-860-1416

LANDLORD:

NY UNIVERSITY

ISSUES

DATE	DESCRIPTION
07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
NEW YORK, NY 10003

SHEET NAME

MECHANICAL
SPECIFICATIONS

SEAL / SIGNATURE

FILE INFORMATION

PROJECT NO: 2024.112

DATE: 11.01.24

SCALE: AS NOTED

DWG NO:

M-004.00

PAGE NO:

4 OF 10

M01198476-S1



CLIENT



CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
27 W 20TH ST, NEW YORK, NY 10011
P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
1342 OCEAN PARKWAY
BROOKLYN, NY 11230
P: 347-860-1416

LANDLORD:

NY UNIVERSITY

ISSUES

DATE	DESCRIPTION
07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
NEW YORK, NY 10003

SHEET NAME

MECHANICAL
SPECIFICATIONS

SEAL / SIGNATURE

FILE INFORMATION

PROJECT NO: | 2024.112

DATE: | 11.01.24

SCALE: | AS NOTED

DWG NO:

M-005.00

PAGE NO: | 5 OF 10

M01198476-S1



- DISCONNECT AND ACROSS-THE-LINE MAGNETIC STARTER WITH PUSHBUTTON STATIONS MOUNTED ON THE COVER. COORDINATE REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR. FOR AUTOMATICALLY OR REMOTELY CONTROLLED MOTORS, FURNISH HAND OFF AUTO (HOA) SELECTOR SWITCHES IN PLACE OF THE PUSH BUTTONS.
- FURNISH MANUALLY OPERATED MOTOR STARTERS OF THE PROPER SIZE FOR ALL MOTORS LESS THAN 1/2 HP WHICH ARE NOT AUTOMATICALLY CONTROLLED. STARTERS FOR MOTORS 175 WATTS OR LESS SHALL CONSIST OF A SNAP SWITCH WITH THERMAL OVERLOAD PROTECTION WHERE SUCH PROTECTION IS NOT AN INTEGRAL PART OF THE MOTOR.
- COMBINATION MAGNETIC STARTERS FOR ALL MOTORS SHALL HAVE THERMAL OVERLOAD, PILOT LIGHT, LOW VOLTAGE PROTECTION IN ALL THREE PHASES. INCLUDE A CONTROL TRANSFORMER FOR EACH MAGNETIC STARTER TO PROVIDE 120 VOLT CONTROL POWER WITH THREE (3) SETS OF SPARE NORMALLY CLOSED OR NORMALLY OPEN CONTACTS.
- ALL STARTERS SHALL BE ASSEMBLED AND INTERNALLY WIRED WITH ALL DEVICES IN CONFORMANCE WITH NEMA STANDARDS.
- DISCONNECT SWITCHES ARE PROVIDED BY THE ELECTRICAL CONTRACTOR IF NOT INTEGRAL WITH EQUIPMENT.

D. ENCLOSURES:

- PROVIDE ENCLOSURES FOR STARTERS AND VFD'S SUITABLE FOR OPERATING ENVIRONMENT. ENCLOSURES SHALL BE NEMA 1 VENTILATED SHEETMETAL FOR INDOOR APPLICATION, NEMA 3R WITH ADDITIONAL GASKETING WEATHERPROOF RAIN TIGHT ENCLOSURE OR EXPOSED OUTDOOR SERVICE OR INDOOR SERVICE EXPOSED TO MOISTURE. PROVIDE DISCONNECT SWITCH ON ENCLOSURE AS REQUIRED FOR SERVICE.

2.05 VIBRATION ISOLATION PRODUCTS

- A. FURNISH AND INSTALL ALL NECESSARY VIBRATION ISOLATORS, VIBRATION HANGERS, MOUNTING PADS, RAILS, ETC., TO ISOLATE VIBRATION AND SOUND FROM BEING TRANSMITTED TO THE BUILDING CONSTRUCTION. ALL VIBRATION ISOLATION PRODUCTS SHALL BE SPECIFICALLY DESIGNED FOR THEIR INTENDED USE.

- B. MANUFACTURER OF VIBRATION ISOLATION EQUIPMENT SHALL HAVE THE FOLLOWING RESPONSIBILITIES:

- DETERMINE VIBRATION ISOLATOR SIZES AND LOCATIONS.
- PROVIDE SUITABLE PIPING AND EQUIPMENT VIBRATION ISOLATION SYSTEMS.
- GUARANTEE SPECIFIED ISOLATION SYSTEM ATTENUATION AND DEFLECTION.
- PROVIDE INSTALLATION INSTRUCTIONS, DRAWINGS AND FIELD SUPERVISION TO ASSURE PROPER INSTALLATION AND PERFORMANCE. STARTERS SHALL BE SELECTED TO SUIT MOTOR RUNNING AND STARTING CHARACTERISTICS.
 - ISOLATION SYSTEMS SHALL BE MANUFACTURED BY MASON INDUSTRIES OR APPROVED EQUAL BY THE ENGINEER.
 - MOUNTING TYPES:

- STATIC DEFLECTION OF ISOLATORS SHALL BE A MINIMUM OF 90% EFFICIENCY. PROVIDE CORROSION PROTECTION FOR EQUIPMENT MOUNTED OUTDOORS.
- MOUNTING OF CEILING-SUPPORTED FANS, IN-LINE PUMPS, HEAT EXCHANGERS, AND AIR HANDLING UNITS - SPRING ISOLATORS - (TYPE DNHS).
- FLOOR MOUNTING OF PACKAGED AIR CONDITIONING UNIT WITH INTERNAL ISOLATION FOR COMPRESSORS - NEOPRENE IN SHEAR - TYPE SUPER W.
- PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL FANS AND DUCTWORK (REFER TO DUCTWORK SECTION FOR SPECIFICATIONS).

2.07 TESTING AND BALANCING

A. GENERAL:

- TESTING AND BALANCING WORK SHALL BE PERFORMED BY AN INDEPENDENT COMPANY (NOT ASSOCIATED WITH THE HVAC CONTRACTOR), AABC CERTIFIED OR AS APPROVED BY THE ENGINEER BEFORE COMMENCEMENT OF WORK. APPROVED COMPANIES INCLUDE MERENDINO ASSOCIATES, R.H. McDERMOTT, INTERNATIONAL TESTING AND BALANCING OR AS APPROVED BY THE ENGINEER AND BUILDING MANAGEMENT.
- AFTER ALL PROJECT HVAC WORK IS COMPLETE, TESTED, AND IN FULL WORKING ORDER, THE AGENCY SHALL PERFORM THE BALANCING AND TESTING OF THE PROJECT HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS.
- UPON THE COMPLETION OF THE AIR CONDITIONING SYSTEM, THE BALANCING AGENCY SHALL PERFORM TESTING AND BALANCING AND COMPILER ALL TEST DATA IN A CERTIFIED REPORT AND SUBMIT FOUR (4) COPIES FOR REVIEW AND APPROVAL TO THE ENGINEER.
- THE REPORT SHALL INCLUDE DESIGN AND ACTUAL READINGS FOR ALL EQUIPMENT AND LOCATION PLAN INDICATING WHERE ALL WORK HAS BEEN PERFORMED, AND METHODS OF BALANCING AND DETAILS OF INSTRUMENTS USED.
- IF DISCREPANCIES EXIST IN THE REPORT THAT REQUIRE FIELD VERIFICATION, THE TESTING AND BALANCING COMPANY IN THE PRESENCE OF THE ENGINEER SHALL VISIT THE JOBSITE FOR FIELD VERIFICATION OF THE REPORT.
- AFTER SUBMISSION OF THE FIELD VERIFIED BALANCING REPORT, THE AIR BALANCING COMPANY SHALL RETURN TO THE JOB SITE TO PERFORM TWO (2) OCCUPANT COMFORT BALANCES AS DIRECTED BY THE OWNER OR ENGINEER.
- THE FINAL REPORT AFTER THE COMFORT BALANCE IS TO BE INCLUDED IN PROJECT OPERATING AND MAINTENANCE MANUAL.
- THE TESTING AND BALANCING AGENCY SHALL INCLUDE AS PART OF THEIR WORK AN EXTENDED WARRANTY OF 90 DAYS AFTER COMPLETION OF TEST AND BALANCE WORK. THE ENGINEER AT HIS DISCRETION DURING THE WARRANTY PERIOD MAY REQUEST A RECHECK OR RESETTING OF ANY EQUIPMENT. THE MECHANICAL CONTRACTOR AND THE BALANCING CONTRACTOR SHALL PROVIDE THE NECESSARY TECHNICIANS TO FACILITATE THIS WORK.
- THE BALANCING AGENCY SHALL PERMANENTLY MARK ALL ADJUSTMENT DEVICES (VALVES, DAMPERS, ETC.) TO ENABLE THE SETTING TO BE RESTORED.
- AIR TESTING SHALL MEET THE NYCECC 2020 CODE.

- DUCT TIGHTNESS TESTING RESULT OF <=4 CFM/100FT^2 ACCROSS THE SYSTEM OR =3 CFM/100 ^4FT WITHOUT AIR HANDLER AT @ 25 PA FOR UNITS IN UNCONDITIONED SPACES. DUCTS IN UNCONDITIONED SPACES ARE PRESSURE TESTED TO DETERMINE AIR LEAKAGE WITH EITHER: ROUGH-IN TEST: TOTAL LEAKAGE MEASURED WITH A PRESSURE DIFFERENTIAL OF 0.1 INCH W.G. ACROSS THE SYSTEM INCLUDING THE MANUFACTURER'S AIR HANDLER ENCLOSURE IF INSTALLED AT TIME OF TEST. POSTCONSTRUCTION TEST: TOTAL LEAKAGE MEASURED WITH A PRESSURE DIFFERENTIAL OF 0.1 INCH W.G. ACROSS THE ENTIRE SYSTEM INCLUDING THE MANUFACTURER'S AIR HANDLER ENCLOSURE.

B. AIR BALANCING

- HVAC CONTRACTOR SHALL ENSURE THAT A FIRST SET OF AIR FILTERS ARE IN PLACE, WHENEVER FANS ARE RUNNING AND REPLACED WITH A NEW CLEAN SET OF FILTERS BEFORE TESTING IS COMMENCED.
- TEST, ADJUST, REPLACE SHEAVES, AND BALANCE ALL EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE AIR QUANTITIES INDICATED ON PLANS WITHIN PLUS OR MINUS 5 PERCENT.
- TEST REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
 - FLOW, LEAKAGE CLASS, TEMPERATURE, STATIC PRESSURE OF AIR AT ALL TRUNK DUCTS SERVING AREAS OF WORK.
 - TEMPERATURE OF AIR LEAVING OUTLETS AT TWO (2) TYPICAL AIR OUTLETS.
 - QUANTITY OF AIR AT EACH AIR INLET AND OUTLET AFTER BALANCING.
 - PROVIDE FOR ALL FANS, FAN MOTOR HP, AMPS, VOLTS, FAN RPM, CFM, INLET AND DISCHARGE STATIC PRESSURE, SHEAVE POSITION.
 - PROVIDE FOR ALL AIR CONDITIONING UNITS, SUPPLY CFM, OUTSIDE AIR CFM, RETURN AIR CFM, MIXED AIR CFM. PROVIDE OUTSIDE AIR, MIXED AIR AND SUPPLY AIR TEMPERATURES (DRY BULB - COOLING AND HEATING, WET-BULB-COOLING). INDICATE UNIT OPERATING MODE DURING TEST.
 - CALIBRATE ALL NEW AND EXISTING TO BE REUSED TERMINAL BOXES (VAV, FAN POWERED OR DUAL DUCT)AS REQUIRED TO MEET SPECIFIED MINIMUM/MAXIMUM CFM.
 - LISTING OF DESIGN AND ACTUAL READINGS AS WELL AS ALL MANUFACTURER'S DATA FOR EQUIPMENT.

2.09 EQUIPMENT

- A. PROVIDE ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS.
- B. INSTALL EQUIPMENT IN ACCORDANCE WITH APPROVED SHOP DRAWINGS, MANUFACTURER'S RECOMMENDATIONS, INSTRUCTIONS, AND ALL AUTHORITIES HAVING JURISDICTION.
- C. PROVIDE EQUIPMENT SUPPORTS AND/OR MOUNTINGS AS INDICATED ON THE DRAWING, IN VIBRATION SPECIFICATION AND AS FOLLOWS:
- ROOF MOUNTED EQUIPMENT - PROVIDE PRE-FABRICATED ISOLATED ROOF CURB WITH INTEGRAL VIBRATION ISOLATORS.
 - CEILING MOUNTED EQUIPMENT - PROVIDE SUPPORTS WITH APPROVED SUITABLE ANCHORS SUSPENDED DIRECTLY FROM BUILDING STEEL STRUCTURE.
 - PROVIDE SUPPLEMENTAL STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE EQUIPMENT LOAD.
- D. EQUIPMENT SHALL BE INSTALLED WITH VIBRATION ISOLATION, REFER TO VIBRATION ISOLATION SECTION.
- F. DIFFUSERS, GRILLES AND REGISTERS

1. GENERAL

- GRILLES, REGISTERS AND DIFFUSERS SHALL BE TESTED IN ACCORDANCE WITH ASHRAE STANDARD 70-1991 OR LATEST EDITION. THE MANUFACTURER SHALL PROVIDE PUBLISHED PERFORMANCE DATA FOR ALL AIR INLETS AND OUTLETS TO BE USED ON PROJECT AS PART OF THE SUBMISSION.
 - THE MECHANICAL CONTRACTOR TO COORDINATE THE LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH OTHER TRADES AND WITH CEILING AND WALL CONSTRUCTION. THE MECHANICAL CONTRACTOR IS TO VERIFY THAT ALL DIFFUSERS, GRILLES AND REGISTERS ARE COMPATIBLE WITH CEILING CONSTRUCTION TO WHICH THEY ARE TO BE INSTALLED.
 - COORDINATE ALL WORK WITH THE GENERAL CONTRACTOR AND REFER TO THE ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATION, LENGTHS AND FOR FRAMING AND MITERING ARRANGEMENTS THAT MAY DIFFER FROM THOSE SHOWN ON HVAC DRAWINGS. PROVIDE ALL REQUIRED GENERAL CONSTRUCTION, FRAMING, BLOCKING, PLASTERING AND SUPPORTS TO MATCH CEILING, SOFFIT OR WALL CONSTRUCTION AS PART OF THE PROJECT.
 - ALL AIR INLETS AND OUTLETS TO BE STEEL OR ALUMINUM IF EXPOSED TO MOISTURE UNLESS OTHERWISE INDICATED. FINISHES TO BE SELECTED BY THE ARCHITECT.
 - DIFFUSERS, GRILLES AND REGISTERS SHALL BE MANUFACTURED BY TITUS, ANEMOSTAT OR APPROVED EQUAL.
- AIR INLET AND OUTLET DEVICES:
 - PROVIDE DIFFUSERS, GRILLES AND REGISTERS FOR SUPPLY, RETURN AND EXHAUST INLETS AND OUTLETS, OF THE SIZE, TYPE AND DESIGN INDICATED ON DRAWINGS.
 - ALL SUPPLY RETURN AND EXHAUST AIR INLETS AND OUTLETS SHALL BE PROVIDED WITH AN OPPOSED BLADE DAMPER AND GRID (ADJUSTABLE THROUGH THE FACE) FOR TRIM BALANCING.
 - SUPPLY REGISTERS SHALL HAVE TWO SETS OF DIRECTIONAL CONTROL BLADES.
 - ONLY 4-WAY DIFFUSERS SHALL BE USED. PROVIDE BLANK-OFF SHEETMETAL BAFFLE FOR ALL 1-WAY, 2-WAY AND 3-WAY DIFFUSERS.

- E) ALL LINEAR DIFFUSERS SHALL BE PROVIDED WITH CABLE OPERATED OPPOSED BLADE DAMPER ADJUSTABLE THROUGH THE FACE OF THE DIFFUSER. DAMPERS AND PLENUM TAPS SHALL BE SPACED AT A MAXIMUM OF 4 FEET ON CENTER. PROVIDE DIFFUSERS WITH ADJUSTABLE AIR PATTERN CONTROL VALVES.

2.09 AUTOMATIC TEMPERATURE CONTROLS

A. GENERAL:

- FURNISH AND INSTALL AS HEREIN SPECIFIED, A COMPLETE AUTOMATIC TEMPERATURE CONTROL SYSTEM OF THE (DDC) AS REQUIRED AND MANUFACTURED BY LG VM3 OR APPROVED EQUAL BY THE ENGINEER. MANUFACTURER SHALL BE APPROVED BY ENGINEER BEFORE COMMENCING WORK. LG BMS SHALL BE NIAGARA BASED.
- ALL TEMPERATURE CONTROL SYSTEMS AND COMPONENTS UNDER THIS SUBCONTRACT ARE TO BE FULLY MODULATING TYPE, EXCEPT WHERE NOTED OTHERWISE. THE SYSTEM SHALL BE COMPLETE IN ALL RESPECTS INCLUDING ALL ASSOCIATED CONTROL EQUIPMENT, THERMOSTATS, CONTROL VALVES, VALVE ACTUATORS, DAMPER OPERATORS, RELAYS, PILOT POSITIONERS, CONTROL WIRING, CONTROL AIR PIPING, SWITCHES, INTERLOCK WIRING, ELECTRICAL OR PNEUMATIC CONTROL COMPONENTS AND ASSOCIATED PIPING OR WIRING, APPURTENANCES, ETC., TO PROVIDE THE FUNCTIONS DESCRIBED IN THESE SPECIFICATIONS AND PLANS, REGARDLESS OF WHETHER OR NOT SAID DEVICE RELAY, ETC. IS SPECIFICALLY MENTIONED HEREFTER.
- THE SYSTEM SHALL BE SUPERVISED AND CHECKED OUT COMPLETELY IN ALL RESPECTS BY COMPETENT MECHANICS, REGULARLY EMPLOYED BY THE MANUFACTURER.
- ALL CONTROLS MUST BE THE PRODUCT OF ONE MANUFACTURER. ALL AUTOMATIC CONTROL VALVES, SENSORS AND DAMPER OPERATORS SHALL BE MANUFACTURED BY THE TEMPERATURE CONTROL MANUFACTURER.

A. ELECTRIC WIRING:

- ALL ELECTRICAL WORK (EXCEPT FOR MOTOR FEEDERS, WIRING BETWEEN MOTORS, MOTOR CONTROLLERS, FEEDER PANELS, FUSES, CIRCUIT BREAKERS AND BUS BARS) REQUIRED FOR THE AUTOMATIC TEMPERATURE CONTROL SYSTEM SHALL BE PROVIDED BY THIS CONTRACTOR. WORK SHALL INCLUDE BUT NOT BE LIMITED TO TIME SWITCHES, DAMPER MOTORS, DAMPER SWITCHES, ELECTRIC THERMOSTATS, ELECTRIC RELAYS, E/P SWITCHES, INTERLOCKING WIRING, WIRE, CONDUIT, ETC.
- ALL 115 VOLT POWER REQUIRED FOR CONTROL PURPOSES SHALL BE PROVIDED BY THE CONTROL CONTRACTOR FROM A SOURCE ESTABLISHED BY THE ELECTRICAL CONTRACTOR.
- THE CONTROL MANUFACTURER SHALL INCLUDE WIRING DIAGRAMS IN HIS SHOP DRAWINGS SUBMITTALS FULLY COORDINATED WITH THE ELECTRICAL CONTRACTOR'S WORK. IT SHALL BE THE AUTOMATIC TEMPERATURE CONTROL CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL WIRING AND CONDUIT AS REQUIRED TO ACHIEVE THE FUNCTION CALLED FOR IN THESE SPECIFICATIONS. CONFORMING WITH LOCAL CODES FOR MATERIAL AND INSTALLATION. THE ELECTRICAL SPECIFICATION FOR THE PROJECT'S ELECTRICAL WORK IS TO BE FOLLOWED.
- FURNISH A CERTIFICATE INDICATING THE METHOD OF WIRING COMPLIANCE WITH LOCAL CODES AS PART OF THE FIRST SHOP DRAWING SUBMITTAL.

C. ROOM THERMOSTAT AND SWITCH LOCATIONS:

- ALL ROOM THERMOSTATS AND SWITCH LOCATIONS (WHETHER SHOWN ON PLANS OR NOT) SHALL BE SELECTED AND SUBMITTED BY THE TEMPERATURE CONTROL MANUFACTURER FOR APPROVAL BY THE ARCHITECT AND ENGINEER PRIOR TO ACTUAL INSTALLATION.
- THERMOSTAT: FURNISH AND INSTALL A SMART, SMARTPHONE LINKED TEMPERATURE CONTROL SYSTEM: NEST THERMOSTATS (THROUGH LG'S THERMOSTAT CONVERTER OPTION) OR LG'S NATIVE CONTROLS.

E. AUTOMATIC DAMPERS:

- PROVIDE CONTROLS FOR ALL THE AUTOMATIC DAMPERS, AS SPECIFIED IN THE DUCTWORK SECTION, AND SHOWN ON THE DRAWINGS.
- CONTROL MOTORS OR ACTUATORS SHALL BE OF THE ELECTRONIC OR PNEUMATIC TYPE, UNLESS OTHERWISE NOTED, OR APPROPRIATE SIZE AND QUANTITIES TO PROVIDE TWO-POSITION OR PROPORTIONING CONTROL ACTION AS SPECIFIED. PROPORTIONING TYPE SHALL BE EQUIPPED WITH PILOT TYPE POSITIONERS. PILOT POSITIONERS SHALL BE SELECTED FOR VARIED SPRING RANGES AND ADJUSTABLE WITHOUT DISMANTLING POSITIONER AND CONTROL MOTOR.
- AUTOMATIC DAMPERS EXPOSED TO THE ELEMENTS SHALL HAVE ELECTRIC ACTUATORS WITH ALL REQUIRED ACCESSORIES.

F. CONTROL PANELS:

- FURNISH AND INSTALL IN THE MECHANICAL ROOM, AS HEREIN SPECIFIED, CONTROL PANELS OF STEEL, WITH WELDED ANGLE IRON BRACKETS, FOR WALL OR FLOOR MOUNTING.
- THE BASIC BACKGROUND COLOR OF THE PANEL SHALL BE AS APPROVED BY THE ARCHITECT AND ENGINEER.
- PANELS SHOULD BE FULLY ENCLOSED WITH HINGED LOCKING FRONT DOOR FOR EACH PANEL. THE PANEL SHALL CONTAIN ALL CONTROLLERS, RELAYS, SWITCHES, ETC. PROVIDE ENGRAVED NAMEPLATES TO LABEL THE CONTROLLED EQUIPMENT AND FOR EACH PANEL MOUNTED CONTROL DEVICE. PLASTIC LAMINATED CONTROL SCHEMATIC DRAWINGS FOR THE SYSTEM SHALL BE HUNG AT EACH LOCAL CONTROL PANEL.
- DETAILS OF EACH OF THESE PANELS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION. LOCATIONS OF EACH PANEL ARE TO BE CONVENIENT FOR ADJUSTMENT AND SERVICE AND ALL SUCH LOCATIONS ARE TO BE APPROVED PRIOR TO INSTALLATION.

G. SEQUENCE OF OPERATIONS:

- ALL AIR CONDITIONING UNITS SHALL OPERATE USING THE MANUFACTURERS BUILT IN CONTROLS. EACH INDOOR AC UNIT SHALL HAVE A THERMOSTAT, WHICH WILL BE USED TO CONTROL EACH ZONE.

G. SEQUENCE OF OPERATIONS (CONTINUED):

CLIENT

Popup Bagels

CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
27 W 20TH ST, NEW YORK, NY 10011
P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
1342 OCEAN PARKWAY
BROOKLYN, NY 11230
P: 347-860-1416

LANDLORD:

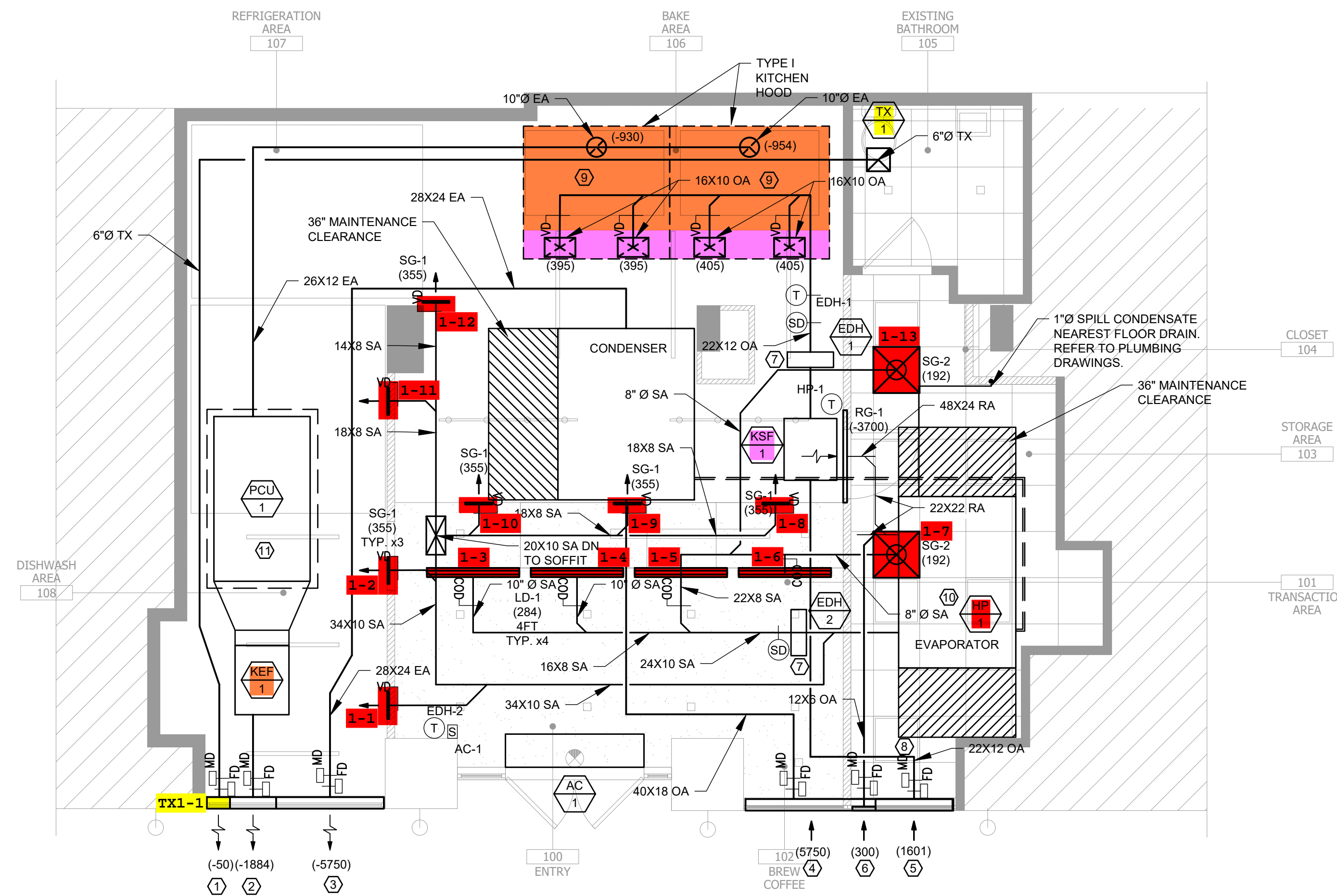
NY UNIVERSITY

GENERAL NOTES:

- 1- FOR REFRIGERANT PIPING SIZING, REFER TO EQUIPMENT SCHEDULES. ALL PIPING SIZES TO BE CONFIRMED BY MANUFACTURER.
- 2- ALL CONDENSATE DRAINS SHALL BE 1"Ø, AND TERMINATE TO THE CLOSEST DOUBLE TRAP FUNNEL DRAIN, LOCATED INSIDE THE BATHROOM SINK CABINET OR TREATMENT ROOM SINK CABINET. OTHERWISE, THE CONDENSATE DRAIN SHALL TERMINATE AT THE CLOSEST FLOOR DRAIN. ALL CONDENSATE DRAINS SHALL PITCH 1/8" FOR EVERY LINEAR FOOT.
- 3- FINAL THERMOSTAT LOCATIONS TO BE CONFIRMED BY OWNER.
- 4- FURNISH AND INSTALL VOLUME DAMPERS TO ALL DUCT BRANCHES LEADING TO TERMINAL DIFFUSERS.
- 5- ALL SUPPLY AIR, RETURN AIR TO BE INTERNALLY LINED WITH 1" LINING AS DELINEATED IN SPECIFICATIONS SECTION. ALL FLEXIBLE DUCTWORK TO BE INSULATED. ALL OUTDOOR AIR PLENUMS, EVAPORATOR INTAKES, AND OUTDOOR AIR DUCTWORK FROM PLENUMS TO AC UNITS SHALL BE INSULATED AS INDICATED ON THE SCHEDULE SHEETS.
- 6- ALL EXPOSED DUCTWORK SHALL BE PAINTED. COORDINATE WITH ARCHITECTURALS.
- 7- REFER TO ARCHITECTURAL RCP FOR EXACT LOCATIONS OF GRILLE, DIFFUSERS, ETC PRIOR TO INSTALLATION.
- 8- ALL DUCTWORK SHALL BE INSTALLED AT MAXIMUM HEIGHTS OR AS REQUIRED TO CLEAR NEW CEILING. DUCTWORK SHALL BE OFFSET AS REQUIRED TO AVOID CONFLICTS.
- 9- CONTRACTOR SHALL INSTALL ALL HVAC EQUIPMENT AS REQUIRED TO ALLOW FOR PROPER SERVICE ACCESS.
- 10- ALL EXTERIOR LOUVERED PLENUMS SHALL BE SLOPPED TOWARDS EXTERIOR AND PROVIDED WITH A PLUGGED DRAIN.
- 11- EXTERIOR LOUVER FINISH SHALL BE SPECIFIED BY THE ARCHITECT.
- 12- ALL DUCTWORK DESIGNED TO OPERATE AT A STATIC PRESSURE GREATER THAN 3 IN. WATER GAGE, KITCHEN EXHAUST AND ALL OUTDOOR DUCTWORK SHALL BE PRESSURE TESTED.
- 13- ALL DUCTWORK DIMENSIONS INDICATED ON THE PLANS ARE CLEAR INTERIOR DIMENSIONS UNLESS OTHERWISE NOTED.

KEYNOTES:

- ① PROVIDE 12X32 TOILET EXHAUST LOUVER WITH 41% FREE AREA. GREENHECK MODEL ESD-635-12X32 WITH 11X16 BLANK OFF FROM THE BOTTOM OF THE LOUVER. CONFIRM FINISH WITH ARCHITECT/CLIENT.
- ② PROVIDE 24X32 KITCHEN EXHAUST LOUVER WITH 52% FREE AREA. GREENHECK MODEL ESD-635-24X32. CONFIRM FINISH WITH ARCHITECT/CLIENT.
- ③ PROVIDE 56X32 CONDENSER EXHAUST LOUVER WITH 54% FREE AREA. GREENHECK MODEL ESD-635-56X32. CONFIRM FINISH WITH ARCHITECT/CLIENT.
- ④ PROVIDE 108X28 CONDENSER INTAKE LOUVER WITH 53% FREE AREA. GREENHECK MODEL ESD-635-108X28. CONFIRM FINISH WITH ARCHITECT/CLIENT.
- ⑤ PROVIDE 40X24 KITCHEN MAKE UP AIR LOUVER WITH 49% FREE AREA. GREENHECK MODEL ESD-635-40X24. INSTALL BELOW CONDENSER INTAKE. CONFIRM FINISH WITH ARCHITECT/CLIENT.
- ⑥ PROVIDE 15X24 INTAKE LOUVER WITH 30% FREE AREA. GREENHECK MODEL ESD-202-15X24. INSTALL BELOW CONDENSER INTAKE. CONFIRM FINISH WITH ARCHITECT/CLIENT.
- ⑦ ELECTRIC DUCT HEATER TO HAVE 4' STRAIGHT DUCT RUN BEFORE AND AFTER HEATER.
- ⑧ INSTALL MERV 9 PLEATED FILTER.
- ⑨ PROVIDE 1" CONDENSATE DRAIN LINE FROM TYPE 2 KITCHEN HOOD TO NEAREST FLOOR DRAIN.
- ⑩ AC UNIT HAS BUILT IN AIR SIDE ECONOMIZER CONTROLS.
- ⑪ CONTRACTOR TO PROVIDE ALTERNATE PRICE TO LOCATE PCU-1 AND KEF-1 ABOVE WALK-IN FRIDGE AND FREEZER AND WALK-IN CONDENSERS AT CURRENT LOCATION OF PCU-1. PROVIDE FEE IN FORM OF RFI TO PRESENT TO ENGINEER AND CLIENT TO REVIEW.



① **MECHANICAL DUCT RCP**
Scale: 1/4"=1' 0"

ISSUES

DATE	DESCRIPTION
07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
NEW YORK, NY 10003

SHEET NAME

MECHANICAL RCP

SEAL / SIGNATURE

(Signature area)

FILE INFORMATION

PROJECT NO: 2024.112
DATE: 11.01.24
SCALE: AS NOTED
DWG NO:
M-101.00
PAGE NO: 7 OF 10

M01198476-S1



CLIENT

PopUp Bagels

CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
27 W 20TH ST, NEW YORK, NY 10011
P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
1342 OCEAN PARKWAY
BROOKLYN, NY 11230
P: 347-860-1416

LANDLORD:

NY UNIVERSITY

ISSUES

DATE	DESCRIPTION
07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
NEW YORK, NY 10003

SHEET NAME

MECHANICAL DETAILS

SEAL / SIGNATURE

FILE INFORMATION

PROJECT NO: 2024.112

DATE: 11.01.24

SCALE: AS NOTED

DWG NO:

M-501.00

PAGE NO:

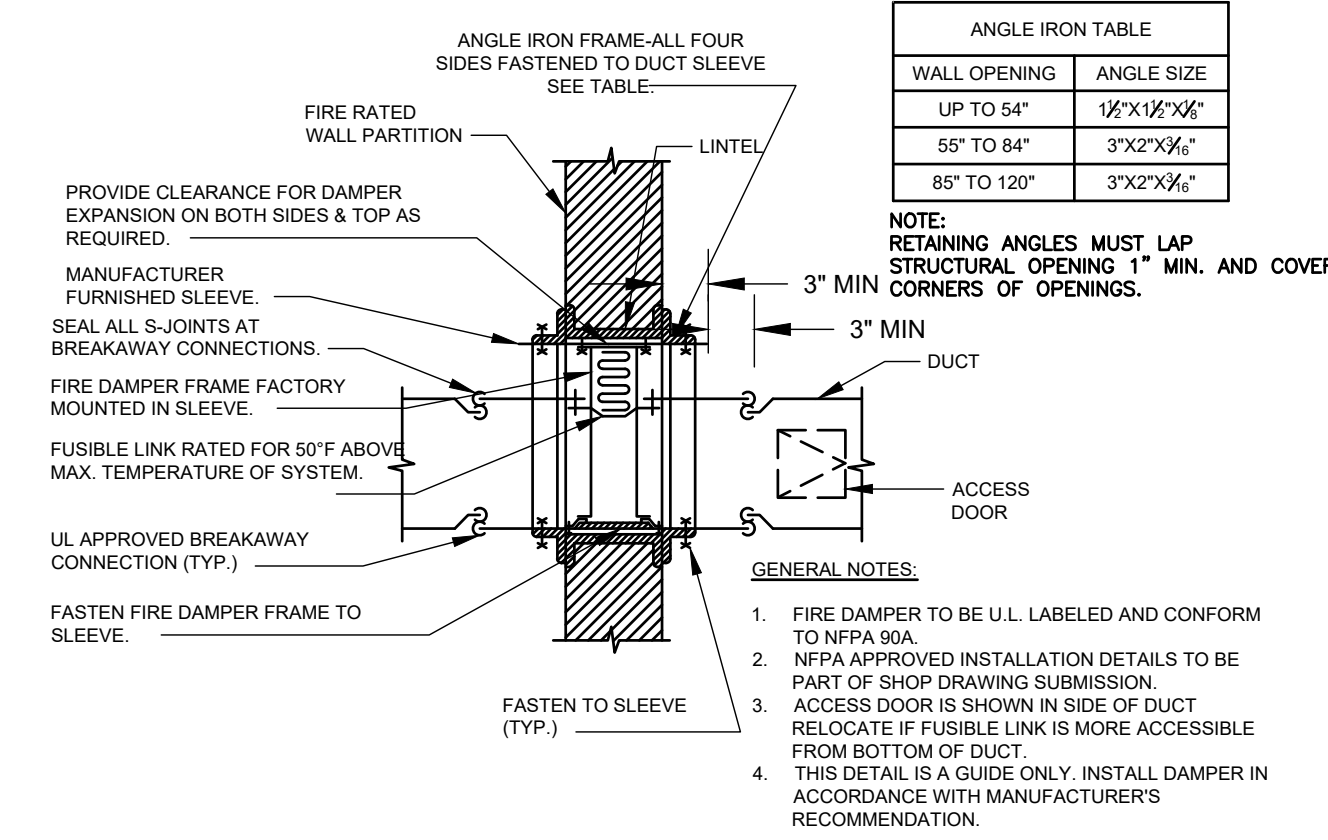
8 OF 10

M01198476-S1

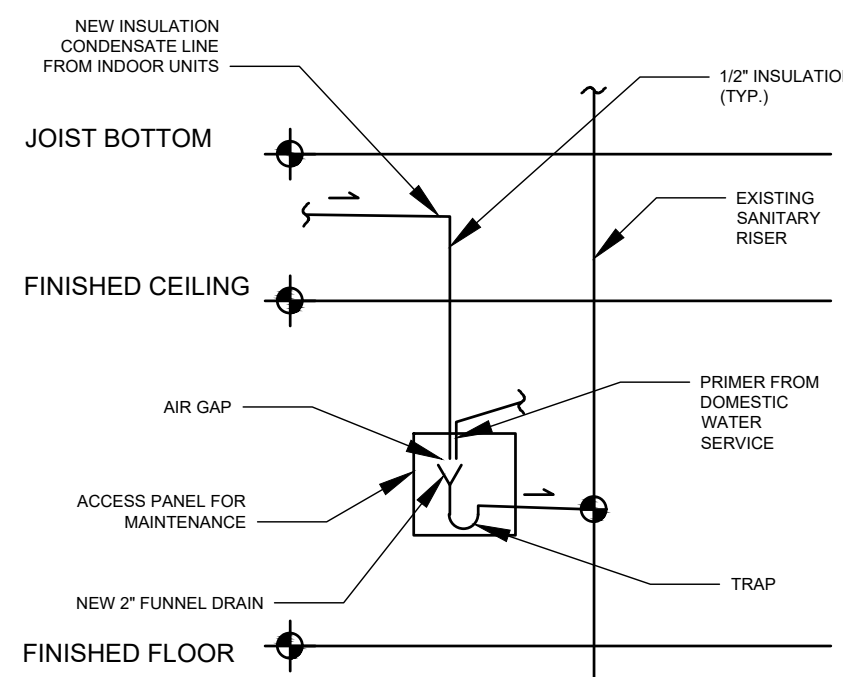


CHECKLIST:

- VERIFY LOCATION OF ACCESS DOORS
- VERIFY WHETHER FIRE DAMPER OR FIRE SMOKE DAMPER IS REQUIRED.



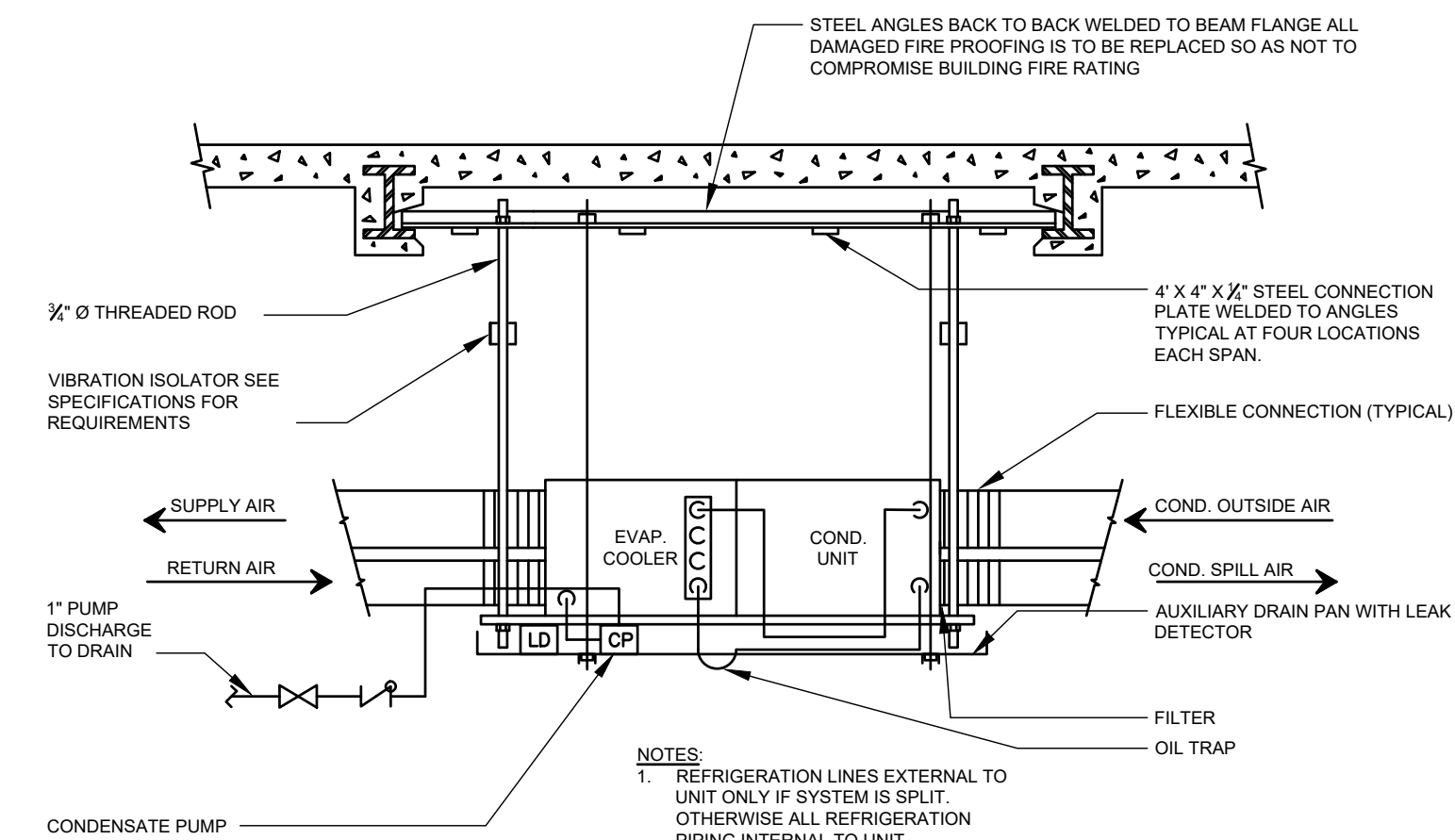
VERTICLE FIRE DAMPER DETAIL TYPE "B" (OUT OF AIR STREAM)
NOT TO SCALE



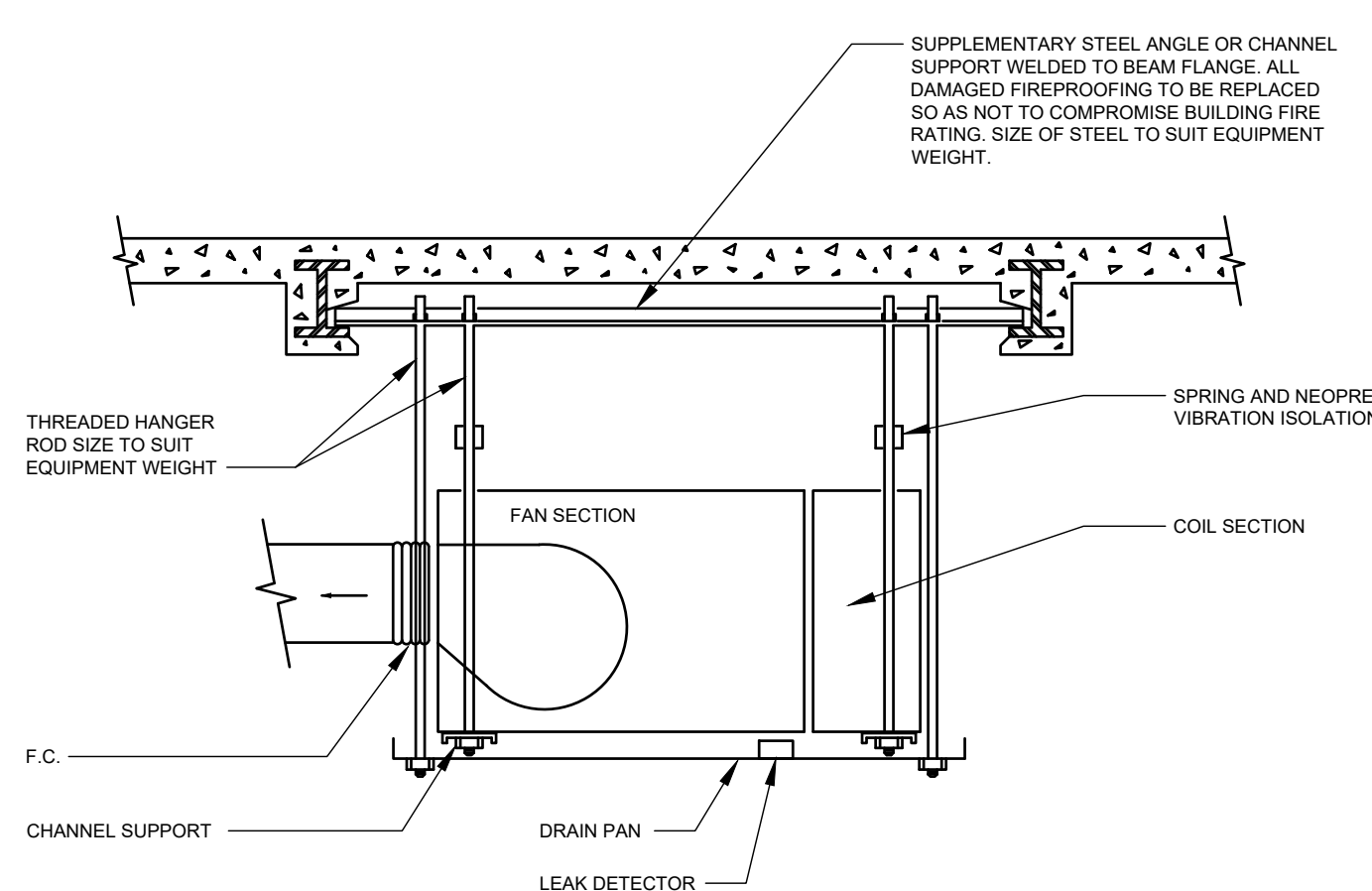
CONDENSATE RISER DRAIN SIZING

EQUIPMENT CAPACITY	INSULATION THICKNESS	DRAIN PIPE NOMINAL DIAMETER RANGE
UP TO 20-TONS OF REF.	1/2"	3/4" INCH
OVER TO 20-TONS TO 40-TONS OF REF.	1/2"	1 INCH
OVER TO 40-TONS TO 80-TONS OF REF.	1/2"	1-1/4 INCH
OVER TO 80-TONS TO 125-TONS OF REF.	1/2"	1-1/2 INCH
OVER TO 125-TONS TO 250-TONS OF REF.	1/2"	2 INCH

CONDENSATE CONNECTION DETAIL
NOT TO SCALE



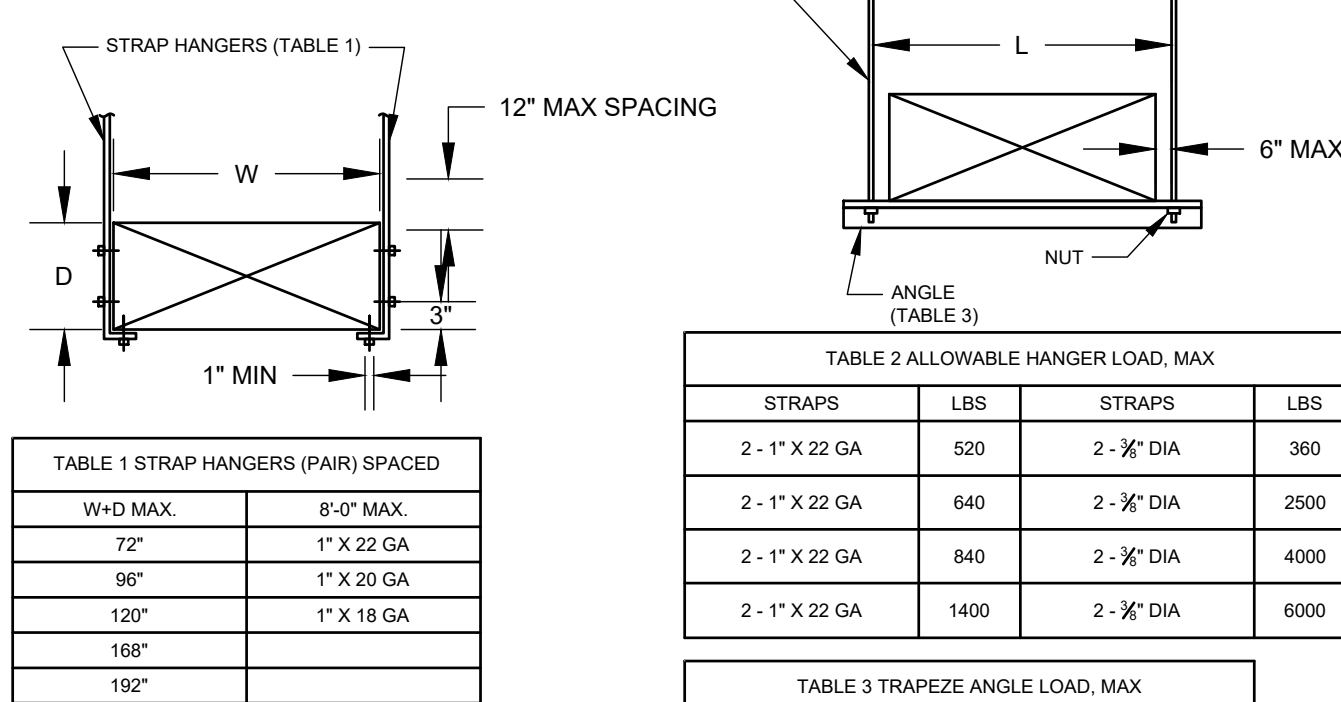
CEILING HUNG PACKAGED AIR COOLED A.C. UNIT DETAIL
NOT TO SCALE



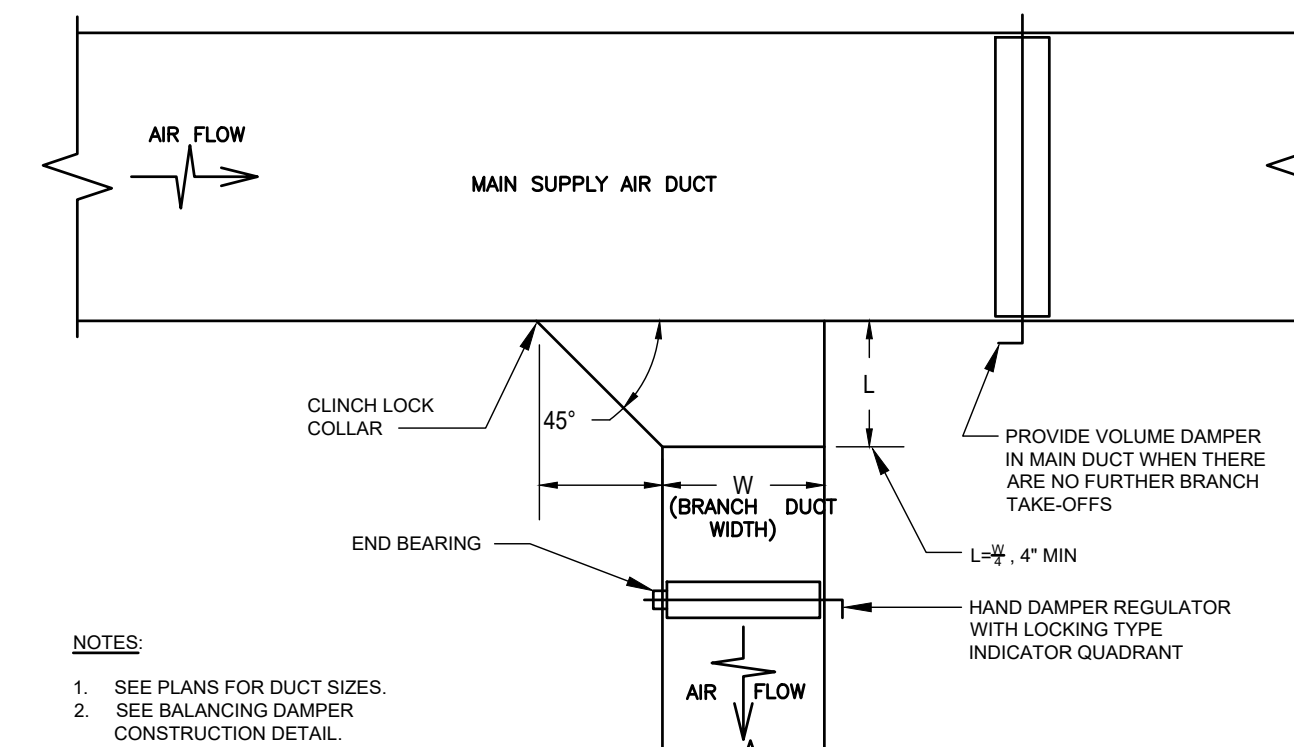
HVAC EQUIPMENT HANGING DETAIL
NOT TO SCALE

CHECKLIST:

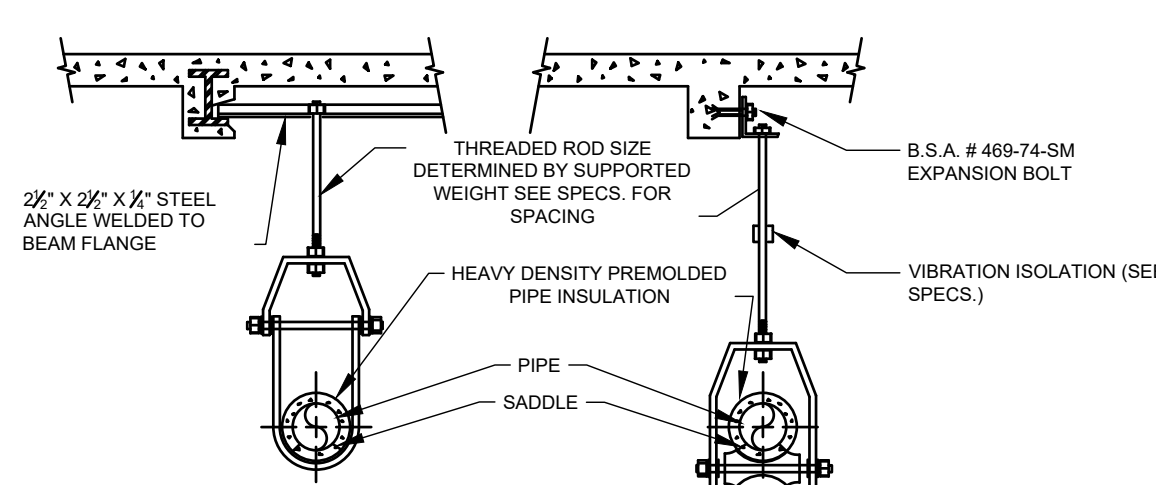
- COORDINATE WITH CEILING HEIGHTS



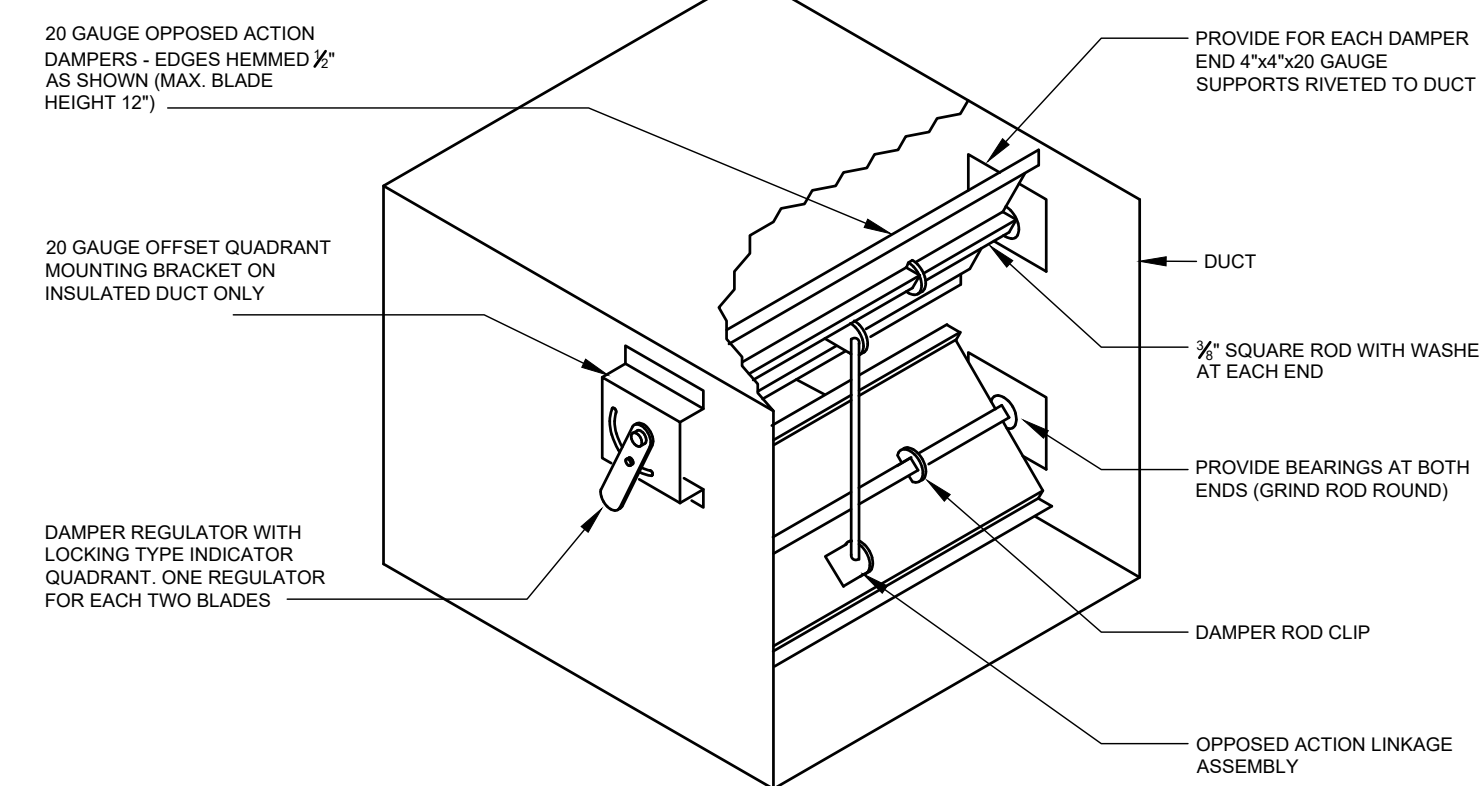
RECTANGULAR DUCT HANGERS
NOT TO SCALE



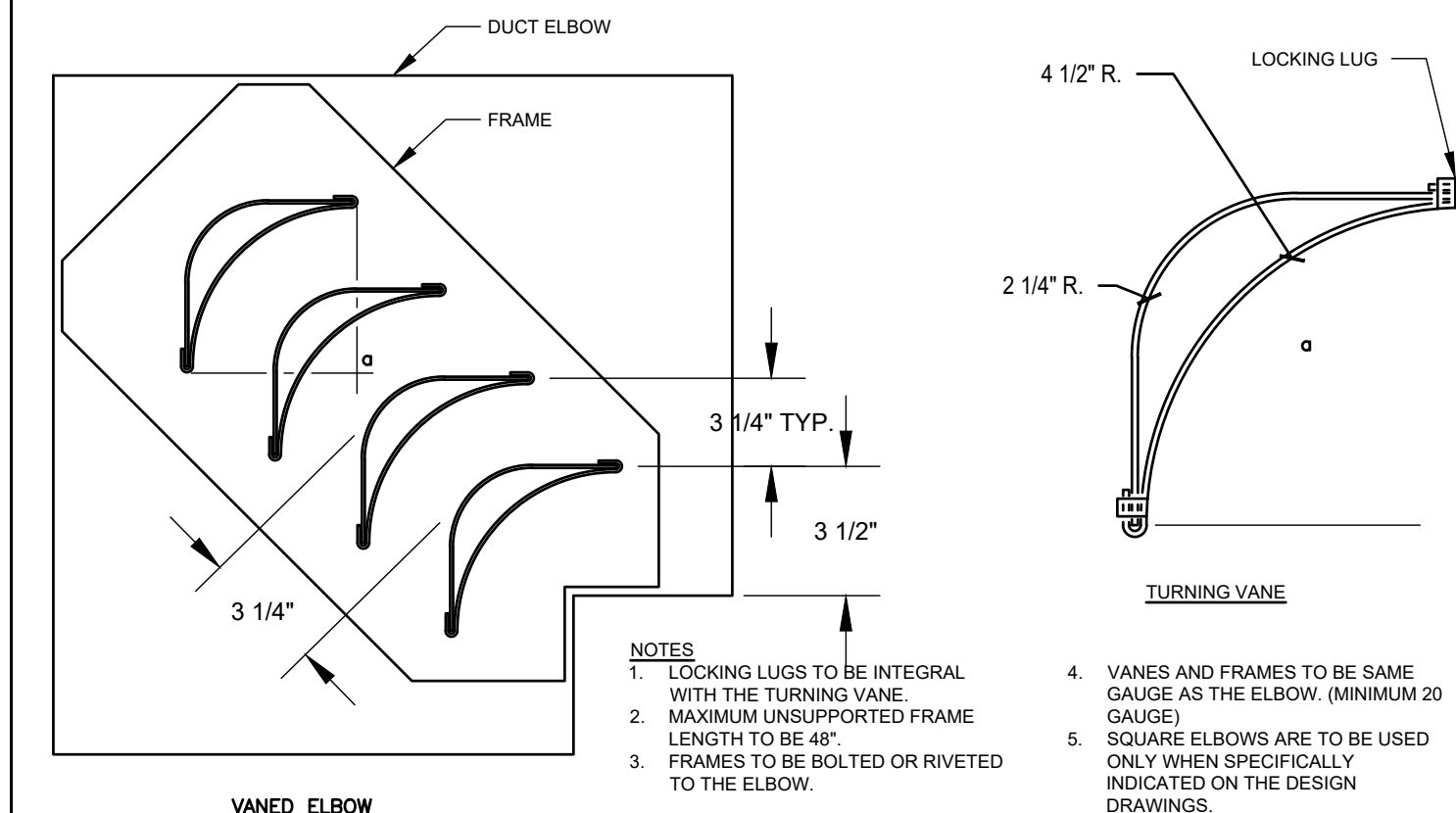
TYPICAL DETAIL OF RECTANGULAR SUPPLY AIR DUCT TAP (WITH VOLUME DAMPER)
NOT TO SCALE



TYPICAL PIPE HANGING DETAIL
NOT TO SCALE



LOW PRESSURE BALANCING DAMPER
NOT TO SCALE



DOUBLE THICKNESS TURNING VANES FOR MITERED ELBOWS
NOT TO SCALE

CLIENT

**PopUp
Bagels**

CONSULTANTS

ENGINEER:



COLLECTIF ENGINEERING
27 W 20TH ST, NEW YORK, NY 10011
P: 646-610-0343

EXPEDITOR:

AHT ENGINEERING
1342 OCEAN PARKWAY
BROOKLYN, NY 11230
P: 347-860-1416

LANDLORD:

NY UNIVERSITY

ISSUES

DATE	DESCRIPTION
07.15.25	ADDENDUM #01
06.06.26	ISSUED FOR CONSTRUCTION
02.14.25	ISSUED FOR BID + DOB FILING
12.22.24	ISSUED FOR LANDLORD REVIEW
12.06.24	ISSUED FOR REVISED BACKGROUNDS
11.15.24	ISSUED FOR PRELIMINARY LANDLORD REVIEW
11.13.24	APPROVED TEST-FIT
06.18.24	EXISTING CONDITIONS SURVEY

PROJECT NAME & ADDRESS

20 EAST 16TH ST
NEW YORK, NY 10003

SHEET NAME

MECHANICAL DETAILS

SEAL / SIGNATURE

FILE INFORMATION

PROJECT NO: 2024.112

DATE: 11.01.24

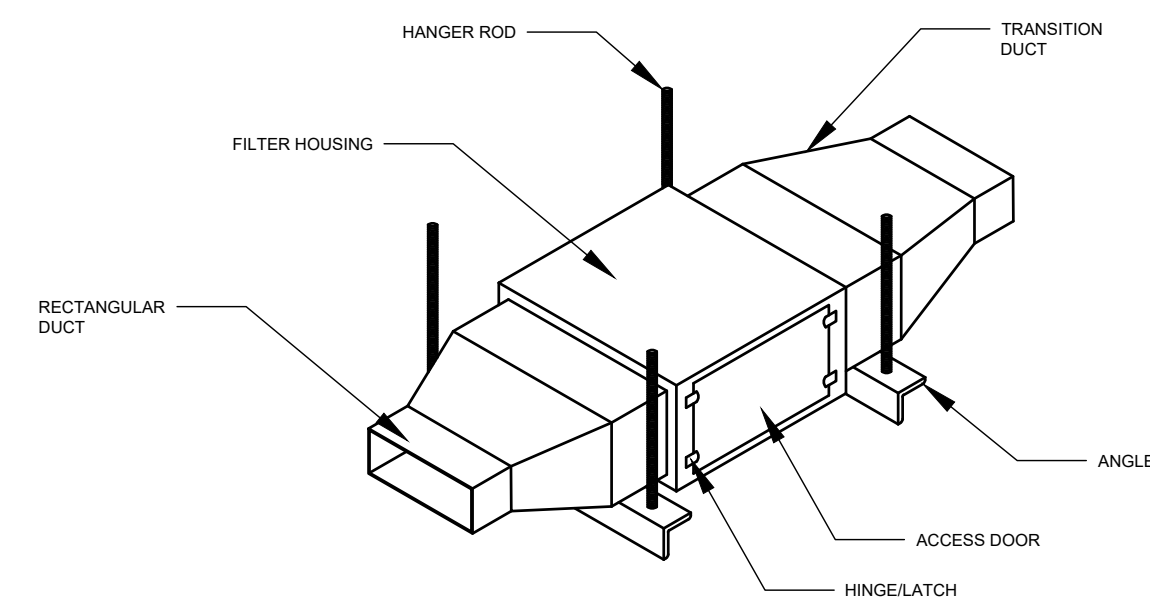
SCALE: AS NOTED

DWG NO:

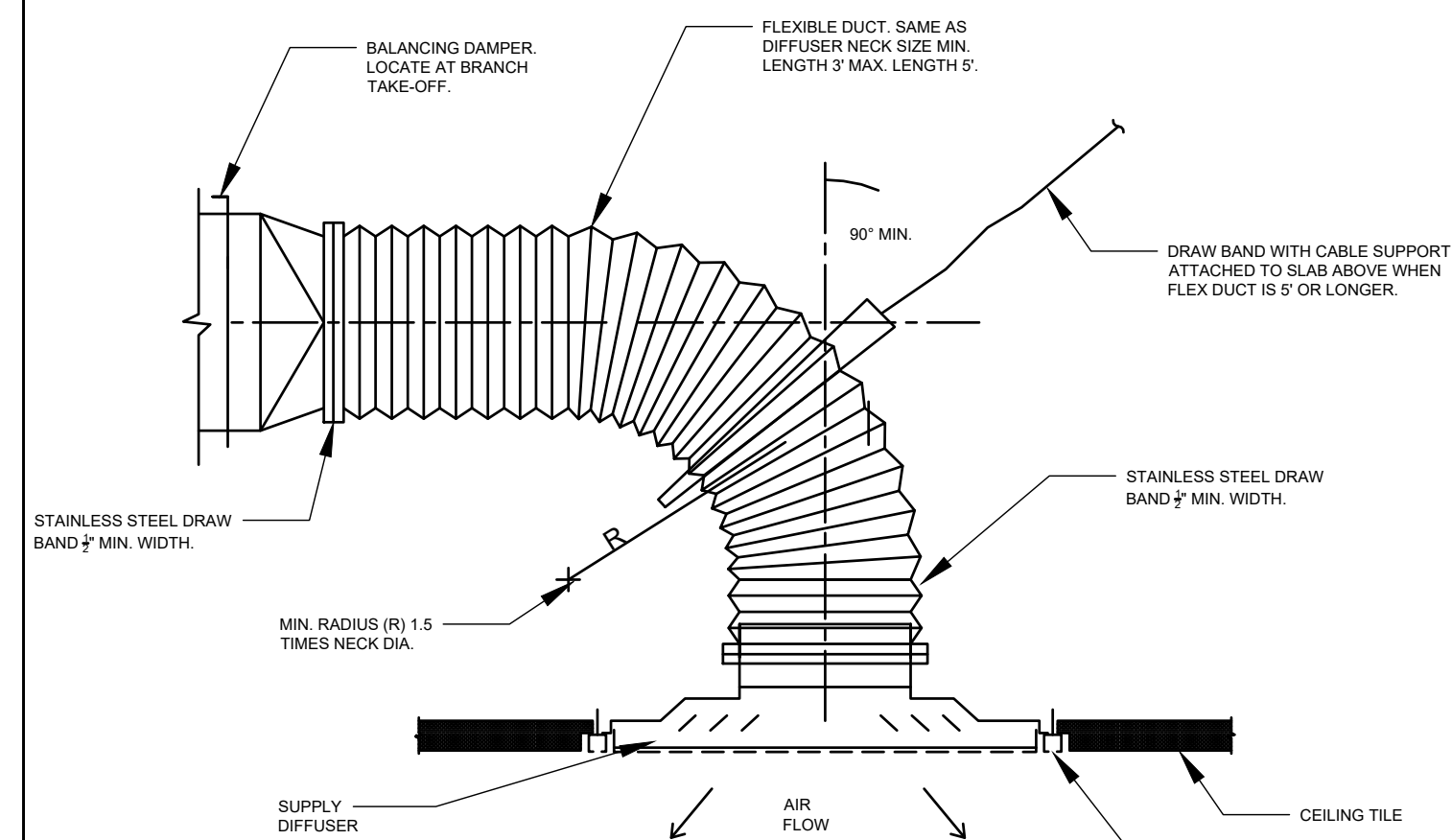
M-501.00

PAGE NO: 9 OF 10

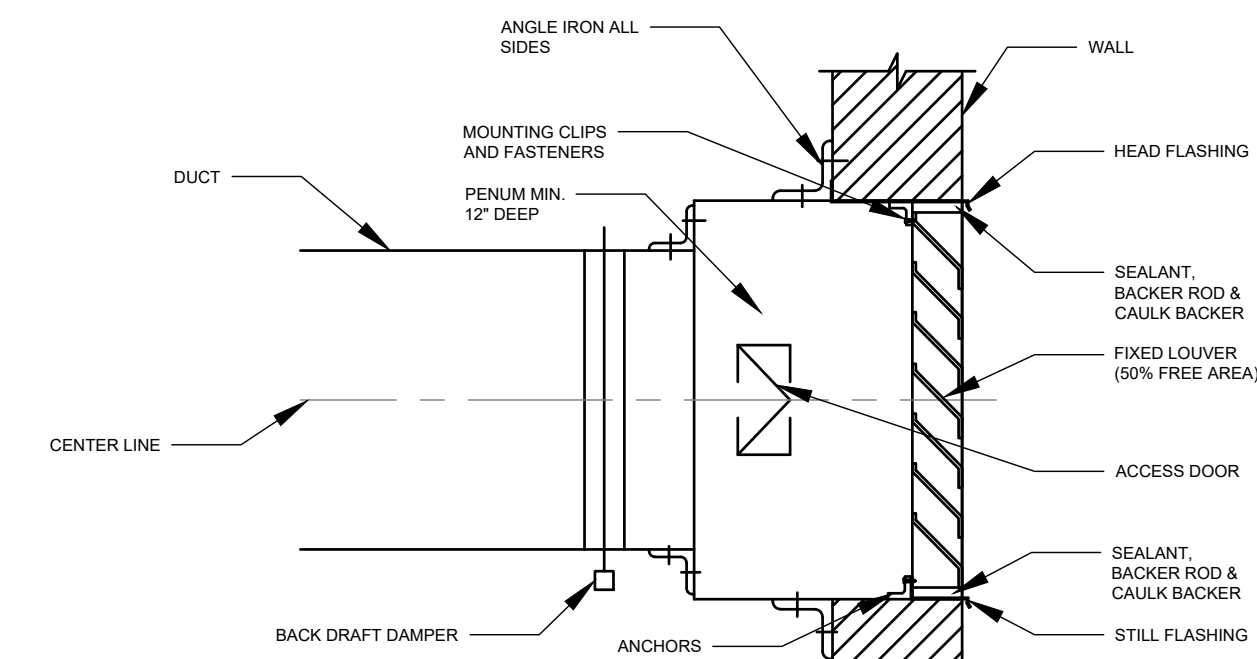
M01198476-S1



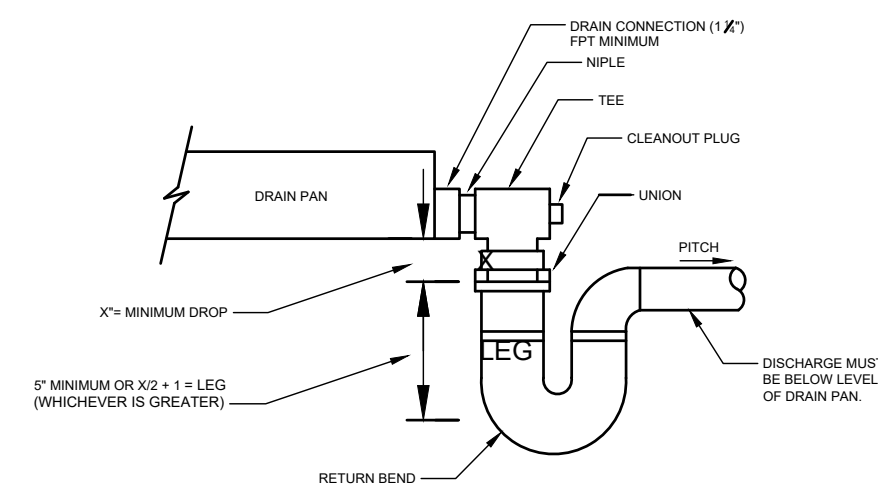
THREE STAGE FILTER HOUSING DETAIL
NOT TO SCALE



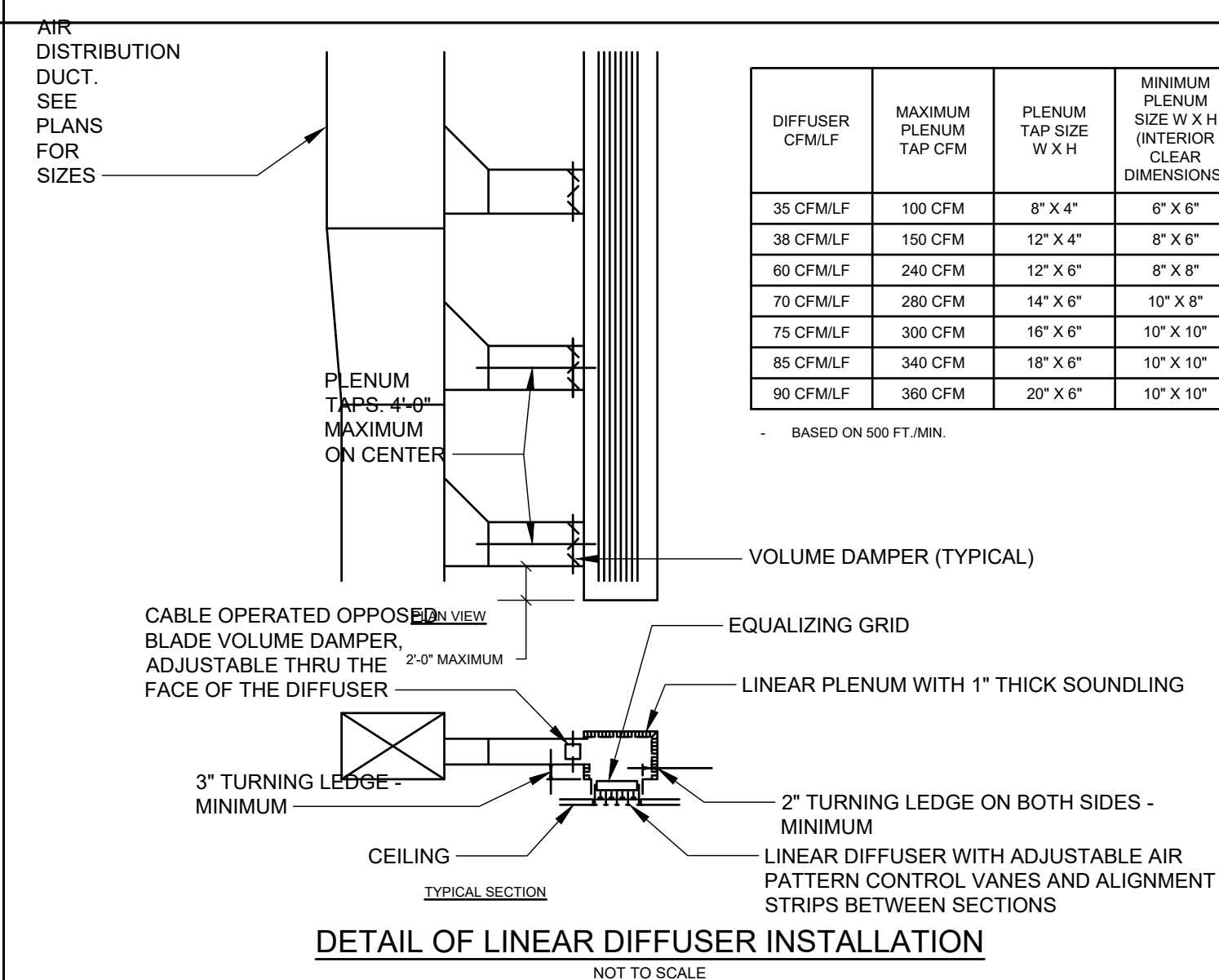
DIFFUSER CONNECTION DETAIL
NOT TO SCALE



TYPICAL LOUVER DETAIL
NOT TO SCALE



DETAIL OF DRAIN PAN WATER SEAL PIPING
NOT TO SCALE



DETAIL OF LINEAR DIFFUSER INSTALLATION
NOT TO SCALE



**PRISTINE
AIR-CONDITIONING CORP.**

*HVAC-R Maintenance & Sheet Metal Contractor
HVAC-R Construction Design & Management*

37-22 55th St.
Woodside
NY 11377
O: 347.732.4678

Letter of Transmittal

To: Cuan Contracting Corp - Donnchadh Reilly
5811 37th Ave. Woodside, NY 11377

Transmittal #: 10R1
Date: 8/6/2025
Job: Union Square Pop up Bagels
20 East 16th St.
New York, NY 10003

Subject: SM SHOP DRAWINGS per the Teams meeting

WE ARE SENDING YOU

- | | | |
|--|---------------------------------------|---|
| <input type="checkbox"/> Attached | <input type="checkbox"/> Plans | <input type="checkbox"/> Specifications |
| <input checked="" type="checkbox"/> Shop drawings | <input type="checkbox"/> Prints | <input type="checkbox"/> Submittals |
| <input type="checkbox"/> Copy of letter | <input type="checkbox"/> Change order | |
| <input type="checkbox"/> Under separate cover via the following items: | | |

Document Type	Copies	Date	No.	Description
SHOP DRAWINGS	1	8/6/2025	25-0129UB	SM SHOP DRAWINGS

THESE ARE TRANSMITTED as checked below:

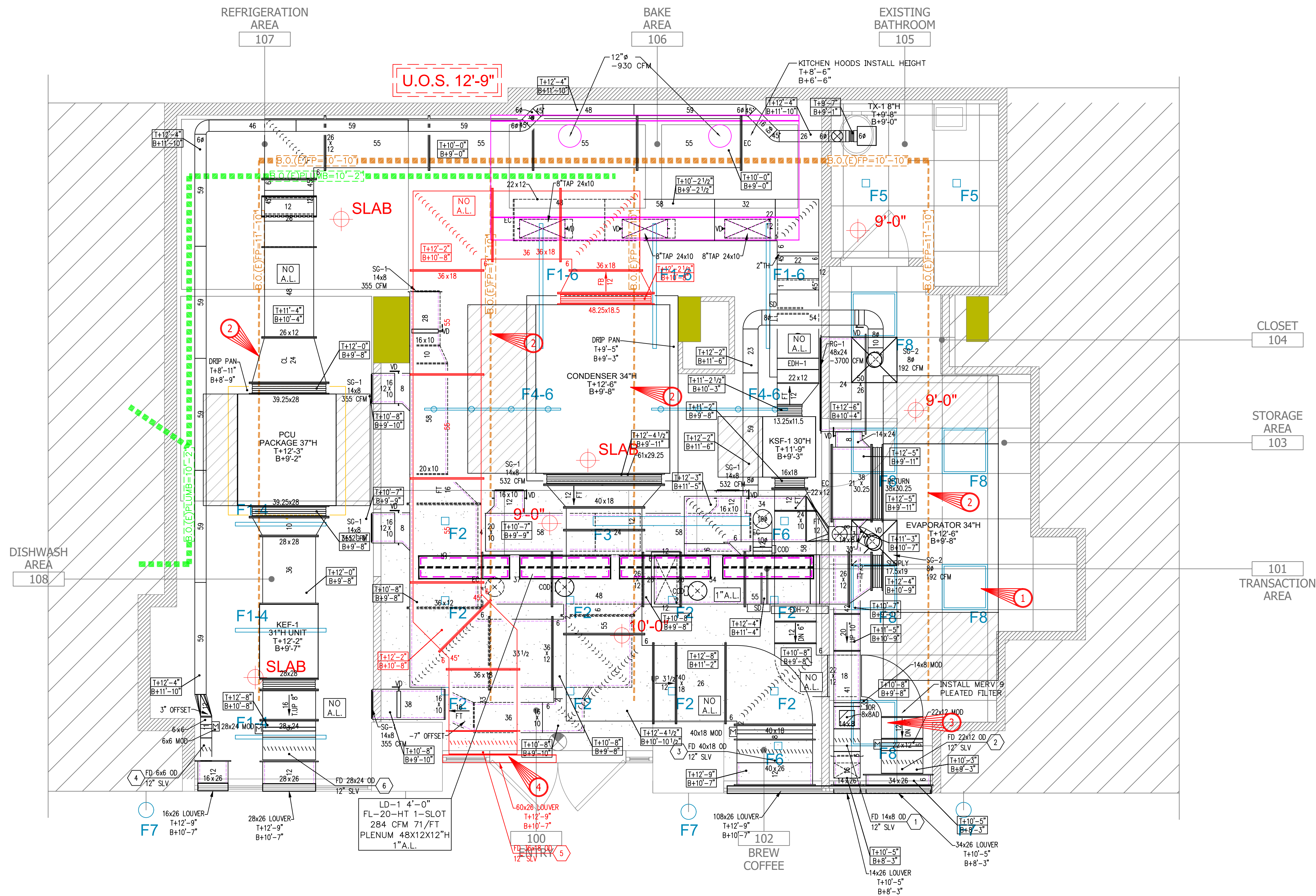
- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> For approval | <input type="checkbox"/> Approved as submitted | <input type="checkbox"/> Resubmit ___ copies for approval |
| <input type="checkbox"/> For your use | <input type="checkbox"/> Approved as noted | <input type="checkbox"/> Submit ___ copies for distribution |
| <input checked="" type="checkbox"/> As requested | <input type="checkbox"/> Returned for corrections | <input type="checkbox"/> Return ___ corrected prints |
| <input checked="" type="checkbox"/> For review and comment | <input type="checkbox"/> Other | |
| <input type="checkbox"/> FOR BIDS DUE | <input type="checkbox"/> PRINTS RETURNED AFTER LOAN TO US | |

Remarks: SM SHOP DRAWINGS per the Teams meeting

Copy to:

From: Pristine Air Conditioning Corp.

Signature: 



ARCH/ENG NOTES

ALL BOTTOM OF DUCTWORK
ELEVATION FROM THEORETICAL TOP
OF FLOOR SLAB

CONFLICT TAGS

THIS SYMBOL DESIGNATES A QUESTION
REQUIRING AN ANSWER FROM ARCHITECT
AND/OR ENGINEER. IF THE CONFLICT
FLAG IS NOT ADDRESSED IT WILL BE
CONSIDERED APPROVED FOR
INSTALLATION AS SHOWN.

- 1 DRIP PAN IN CONFLICT WITH LIGHT
FIXTURE
- 2 ALL SPRINKLER BRANCH IN CONFLICT
WITH NEW UNIT AND DUCT
- 3 DUCT IN CONFLICT WITH CEILING HEIGHT
AND LIGHT FIXTURE
- 4 COORDINATE HEIGHT AND LOCATION OF
PROPOSE CONDENSER EXHAUST LOUVER

No.	Date	Revision	BY	ISSUED
0	07.21.25	INITIAL SHOP DRAWING	JL	FOR APPROVAL
			JL	FOR RE-SUBMISSION
			JL	FOR RECORD
			JL	FOR FABRICATION

SKETCHER

DRAFTSMAN
GROUP

718-838-4141
JEFFREY@DRAFTSMANGROUP.COM

CONTRACTOR

PRISTINE
MECHANICAL

37-22 55TH ST.,
WOODSIDE, NY 11377

DRAWING TITLE

POPUP BAGELS
20 E 16TH ST
NEW YORK, NY 10003
SHEETMETAL OVERHEAD
GROUND FLOOR

SCALE 3/8" = 1'-0"	DRAWN JL
PROJECT NO. -	REVISION NO. 0
DRAWING NO. SM-1	CONTRACTOR'S SHOP DRAWING

HOOD INFORMATION - JOB#7321106

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	RDW
1	HD 1	5424 EX-2-PSP-F	ECON-AIR	13' 7"	600 DEG	I	HEAVY	155	2100			4'	12'	1050	1337	-0.514'	1785	430 SS 100%	ALONE	ALONE
												4'	12'	1050	1337	-0.514'				

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

HOOD INFORMATION

HOOD NO	TAG	FILTER(S)				LIGHT(S)				FIRE SYSTEM GUARD	HOOD HANGING WEIGHT
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE		
1	HD 1	CAPRATE SOLID FILTER	10	16"	16"	85% SEE FILTER SPEC	6	L55 SERIES E26	NO	YES	719 LBS

HOOD OPTIONS

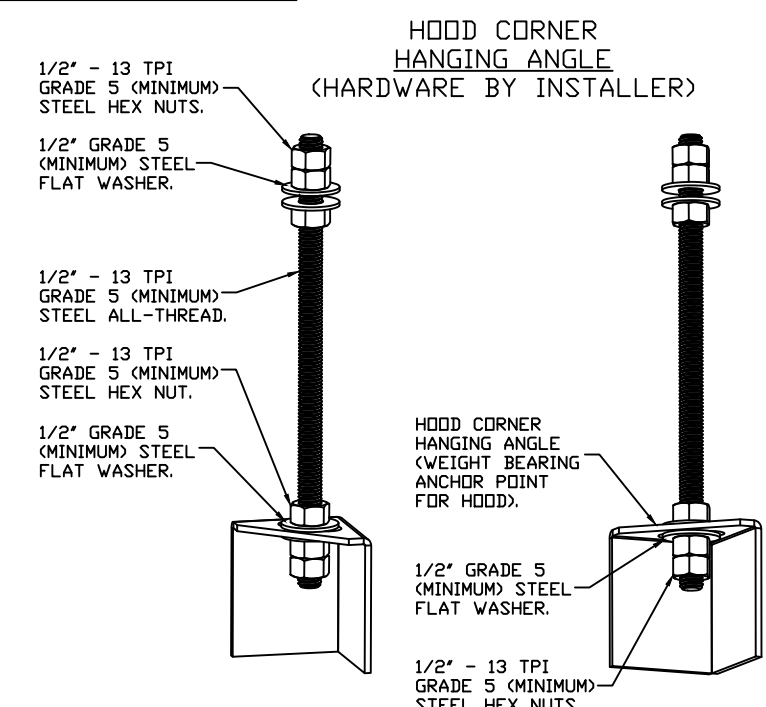
HOOD NO	TAG	OPTION
1	HD 1	FIELD WRAPPER 11.00" HIGH FRONT, LEFT. BACKSPLASH 78.00" HIGH X 163.00" LONG 430 SS VERTICAL. BACKSPLASH 108.00" HIGH X 18.00" LONG 430 SS VERTICAL. BACKSPLASH 108.00" HIGH X 18.00" LONG 430 SS VERTICAL. RIGHT SIDESPLASH 78.00" HIGH X 54.00" LONG 430 SS VERTICAL. RIGHT QUARTER END PANEL 23' TOP WIDTH, 0' BOTTOM WIDTH, 23' HIGH 430 SS. LEFT QUARTER END PANEL 23' TOP WIDTH, 0' BOTTOM WIDTH, 23' HIGH 430 SS. STRUCTURAL FRONT PANEL. SENSOR-CV.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	PDS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)			
							WIDTH	LENG	CFM	SP
1	HD 1	Front	163'	12'	6'	MUA	10'	24'	595	0.164'
						MUA	10'	24'	595	0.164'
						MUA	10'	24'	595	0.164'

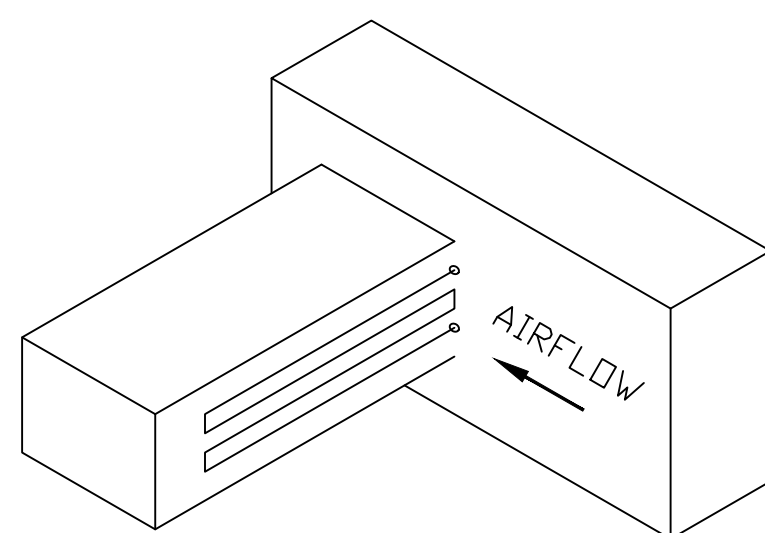
WALL-MOUNT UTILITY CABINET

HOOD NO	LOCATION	SIZE	UTILITY CABINET(S)		WEIGHT
			TYPE	SIZE	
1	WALL MNT	12"x54"x30"	TANK FS	4.0/4.0	300.00 LBS
1	WALL MNT	12"x42"x30"	PCU TANK	4.0	200.00 LBS



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.



ELECTRIC DUCT

ELECTRIC DUCT INSERT HEATER (INLINE), 1750 CFM, 208 VOLT, 3 PHASE, 15 KW, 2-STAGE HEATER, 42 AMPS AT FLA. FLOW SWITCH, AND DUCT THERMOSTAT. SYSTEM TO HEAT AIR AN ADDITIONAL 40 DEGREES MAX (DELTA). ELECTRICIAN ALSO TO PROVIDE EXTERNAL DISCONNECT IF REQUIRED BY LOCAL CODE OFFICIALS.

SPECIFICATION: CAPRATE® GREASE-STOP® SOLID FILTER

THE CAPRATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

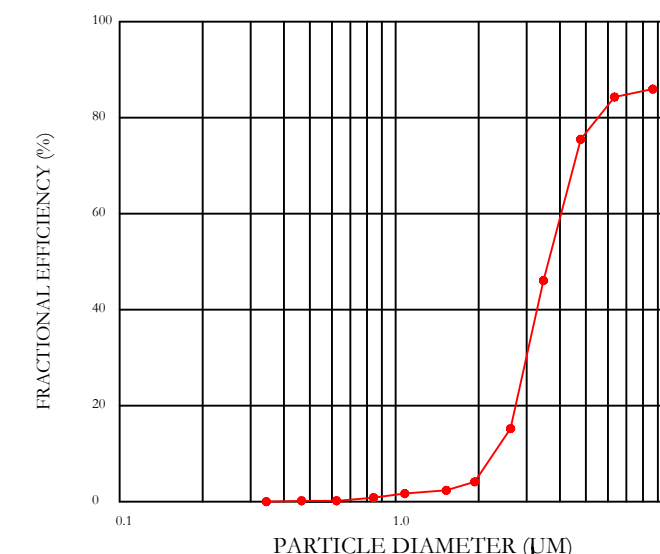
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

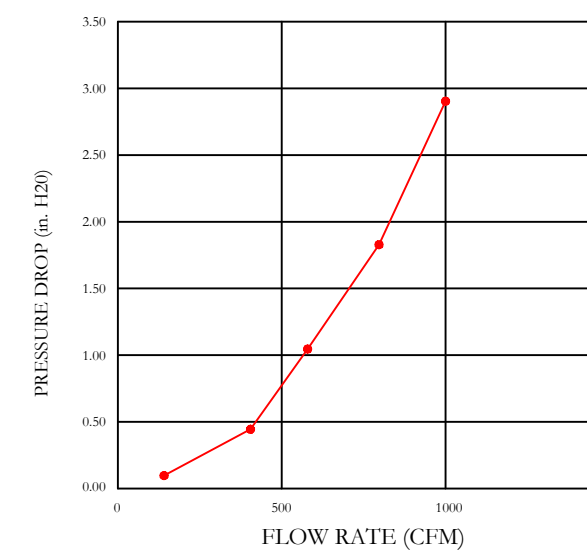
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPRATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

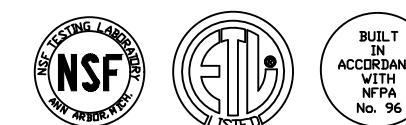
EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE



CAPRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.



HVAC DISTRIBUTION NOTE

HIGH VELOCITY DIFFUSERS OR HVAC RETURNS SHOULD NOT BE PLACED WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

CAPTIVEAIRE SYSTEMS RECOMMENDS THE USE OF LISTED, PRE-FABRICATED ROUND GREASE EXHAUST DUCT TO REDUCE STATIC PRESSURE IN THE SYSTEM, MINIMIZE INSTALLATION AND INSPECTION TIMES, AND ENSURE DUCT IS LIQUID TIGHT

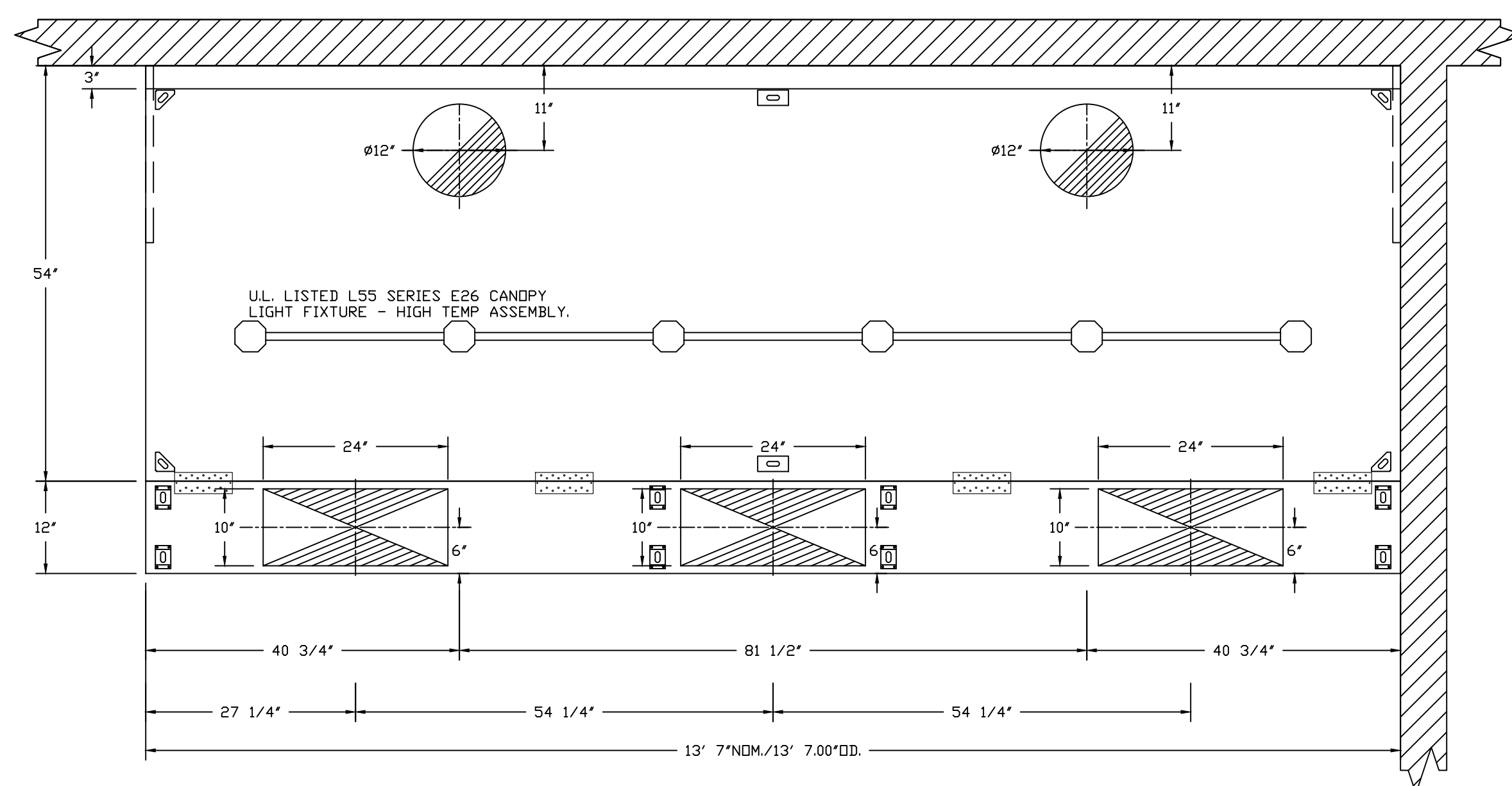
***** NOTE *****
FOR REFERENCE ONLY - CONTACT REG120@CAPTIVEAIRE.COM FOR QUESTIONS.
CAPTIVEAIRE EQUIPMENT TO BE OWNER PROVIDED, OR BY OWNER REPRESENTATIVE.
CAPTIVE-AIRE REGION 120 TO PROVIDE TECHNICAL SUPPORT TO OTHER TRADES RESPONSIBLE AS FOLLOWS:
-GENERAL CONTRACTOR OR OWNER REPRESENTATIVE: SCHEDULING
-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 SDD & BUILDING PRESSURES. PROVIDE CERTIFIED REPORT.

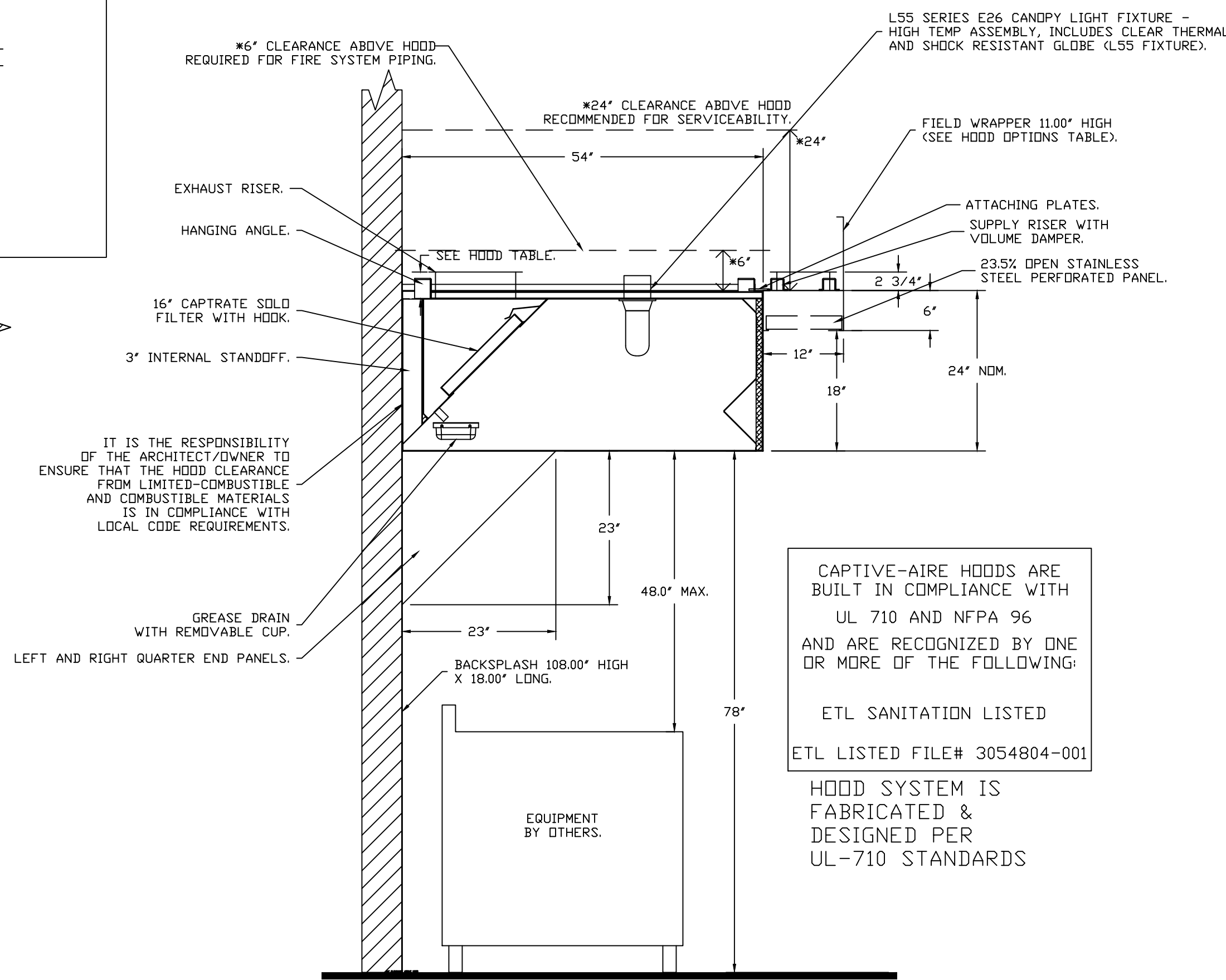
CLEARANCE TO COMBUSTIBLES

HOODS #	SURFACE	*CLEARANCE
1	TOP	18"
	FRONT	0"
	BACK	18"
	LEFT	18"
	RIGHT	18"

* 0" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL710 STANDARD.



PLAN VIEW - HOOD #1 (HD 1)
13' 7.00" LONG 5424EX-2-PSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12" AND LONGER.



CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH UL 710 AND NFPA 96 AND ARE RECOGNIZED BY ONE OR MORE OF THE FOLLOWING:
ETL SANITATION LISTED
ETL LISTED FILE# 3054804-001
HOOD SYSTEM IS FABRICATED & DESIGNED PER UL-710 STANDARDS

REVISIONS

NO.	DESCRIPTION	DATE

econair
www.econair.com
Air Solutions
1329 East Kemper Rd., Ste. 4210, Cincinnati, OH, 45246 PHONE: (513) 860 - 5555 EMAIL: reg120@econair.com

PopUp Bagels - 20 E 16th St (NY, NY)
20 East 16th Street,
New York, NY, 10003

DATE: 8/1/2025
DWG.#: 7321106
DRAWN BY: BCF
SCALE: N/A
MASTER DRAWING

SHEET NO. 1

EXHAUST FAN INFORMATION - JOB#7321106

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	EASIF20DD	ECDN-AIR	2100	2.200	1455	TEFC, PREMIUM	3.000	1.6420	3	208	9.4	437	18.4

MUA FAN INFORMATION - JOB#7321106

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-G10	G10D	INLINE.1	-	1785	0.500	1022	TEAD-ECM	1.000	0.8180	1	230	6.5	8.7A	15A	153	10.9

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF1	1	SIF - STAINLESS STEEL HOUSING CONSTRUCTION
		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 (HSA200)
		1	OPPOSITE SIDE CONTROLS- SIF
		1	SIF20 - STRAIGHT DISCHARGE FOR SIF 20. SQUARE DUCT CONNECTION
		1	SIF20 - INLET - SQUARE DUCT CONNECTION
		1	2 YEAR PARTS WARRANTY
2	KSF1	1	INLINE1 INDOOR HANGING OPTION - INCLUDES 2 HSA125 HANGING SPRING ISOLATORS PER UNI-STRUT
		1	ECM WIRING PACKAGE-SUPPLY - PWM SIGNAL FROM ECPM03 PREWIRE (TELCD MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY

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			

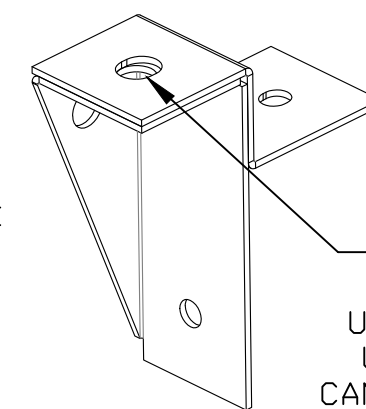
FAN #1 EASIF20DD-HESS-UL762 - EXHAUST FAN (KEF1)

FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- TWO ACCESS DOORS FOR EASY ACCESS.
- BACKWARD INCLINED NON-OVERLOADING WHEELS.
- UL762 LISTING.
- AMCA AIR & SOUND CERTIFIED.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- NEMA 3R SAFETY DISCONNECT SWITCH.
- DRAIN MUST BE CONNECTED TO OPTIONAL GREASE BOX OR PIPED TO GREASE RESERVOIR (RECOMMENDED).

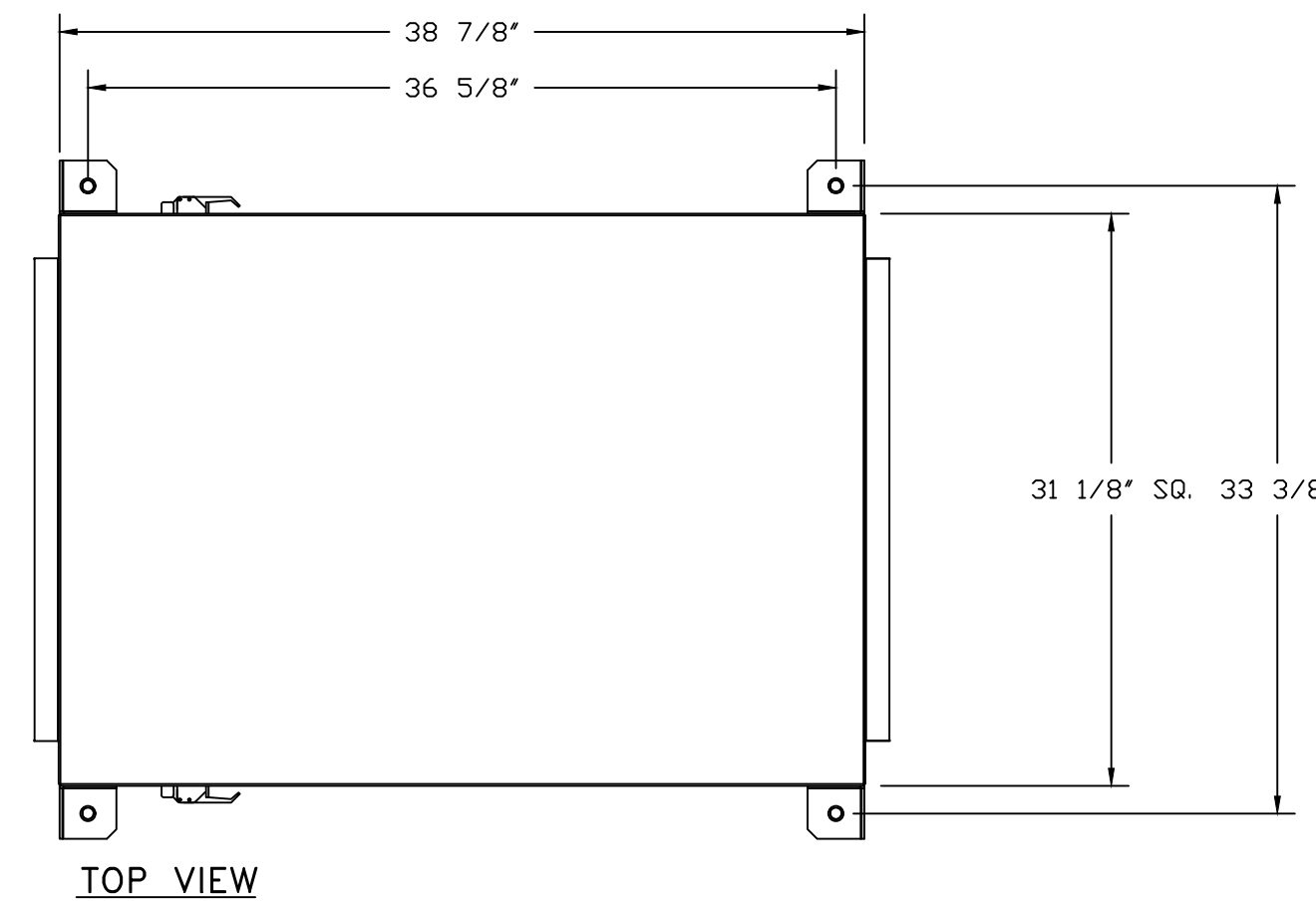
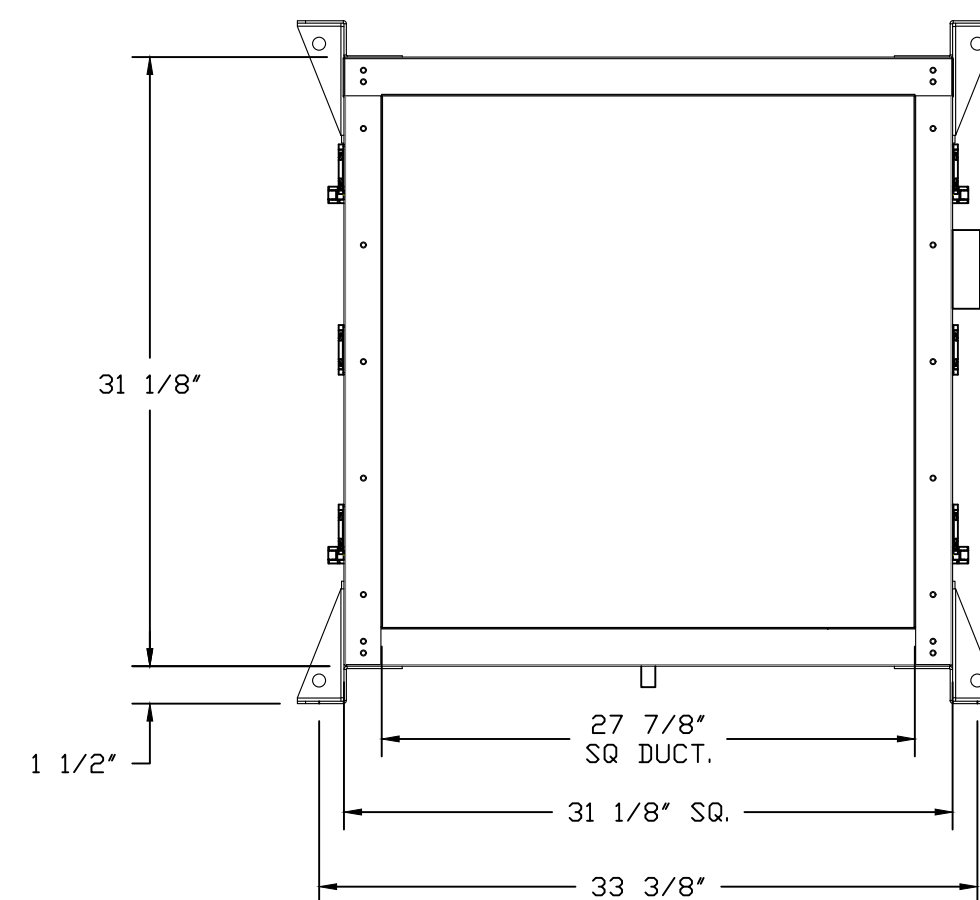
OPTIONS

- SIF - STAINLESS STEEL HOUSING CONSTRUCTION.
- 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 (HSA200).
- OPPOSITE SIDE CONTROLS- SIF.
- SIF20 - STRAIGHT DISCHARGE FOR SIF 20. SQUARE DUCT CONNECTION.
- SIF20 - INLET - SQUARE DUCT CONNECTION.
- 2 YEAR PARTS WARRANTY.

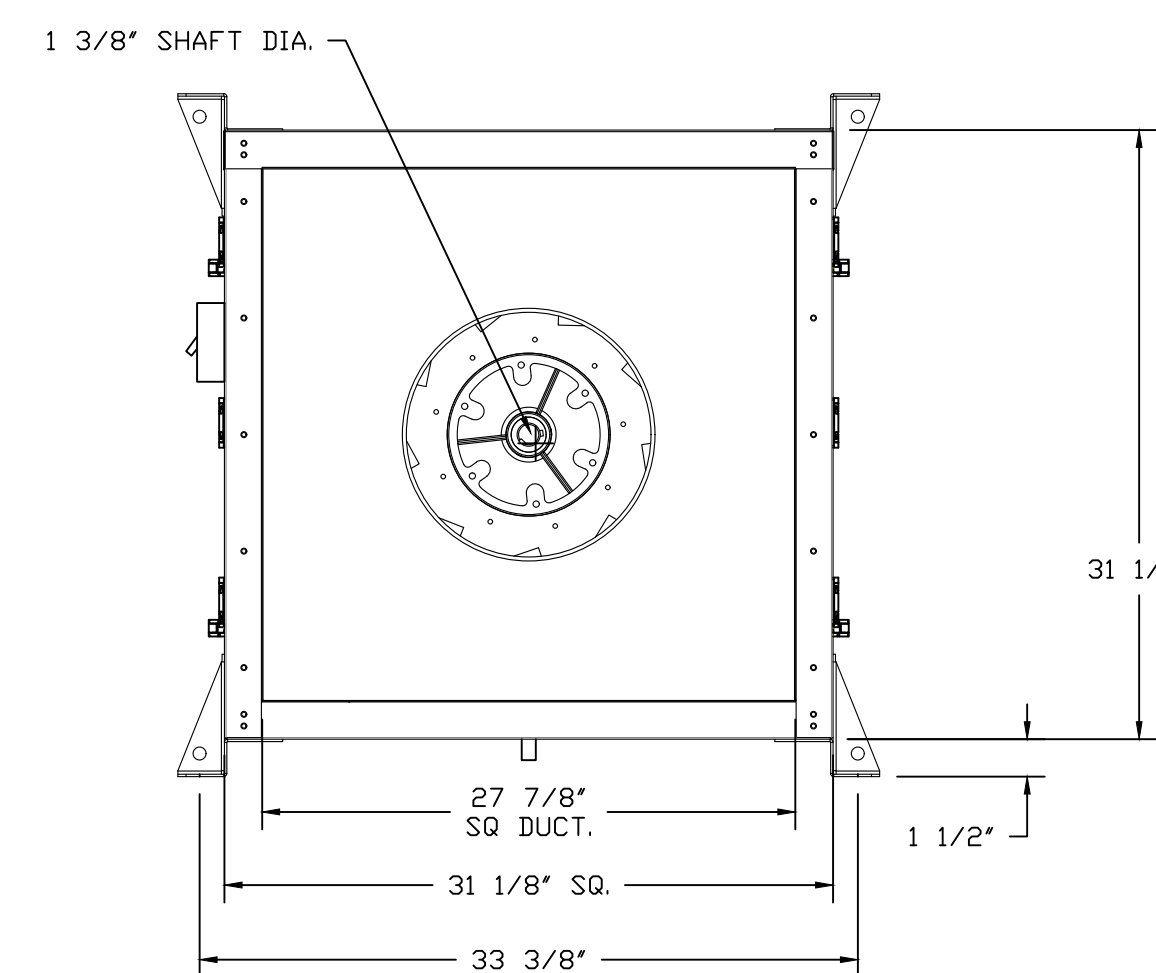
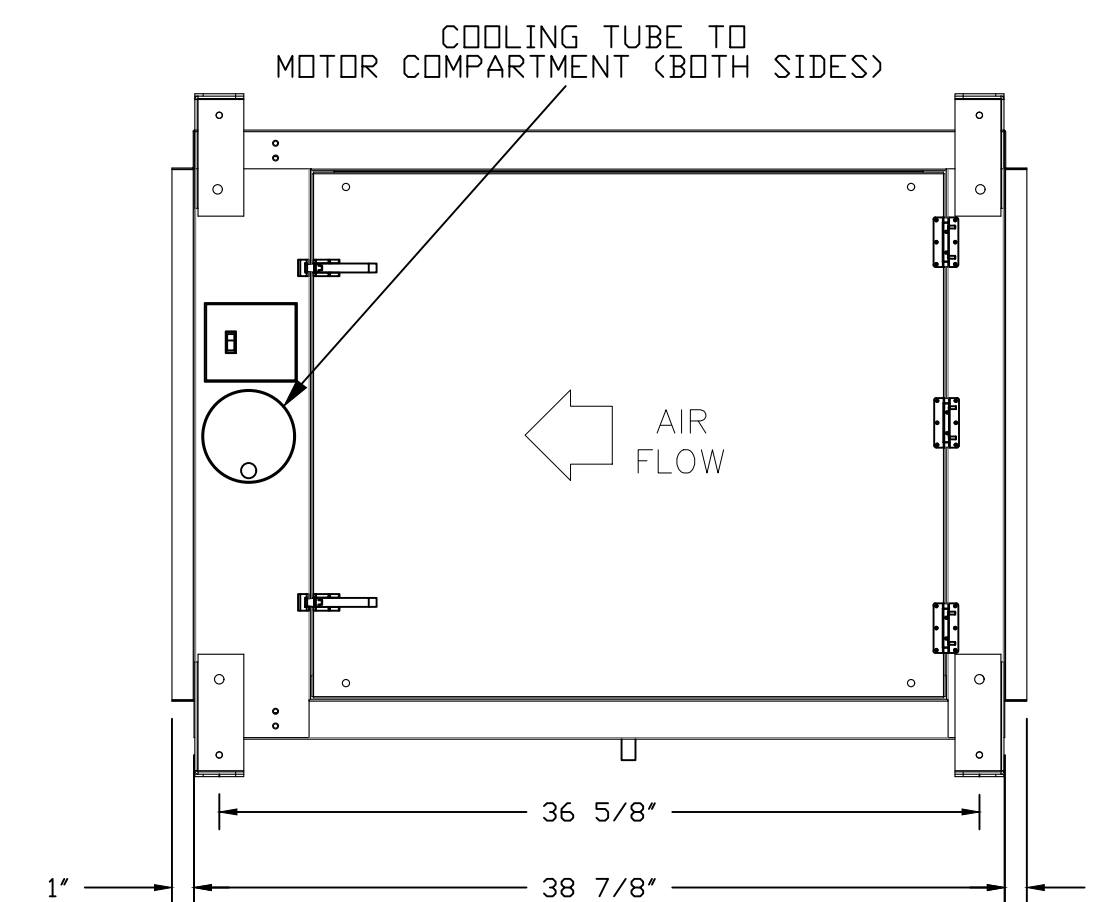


UNIVERSAL MOUNTING BRACKET

1/2" DIA. THREADED ROD ONLY
5/6" DIA. MOUNTING HOLES.
USED WITH CEILING VIBRATION ISOLATORS.
USED WITH FLOOR VIBRATION ISOLATORS.
CAN BE RELOCATED IN THE FIELD AS NEEDED.



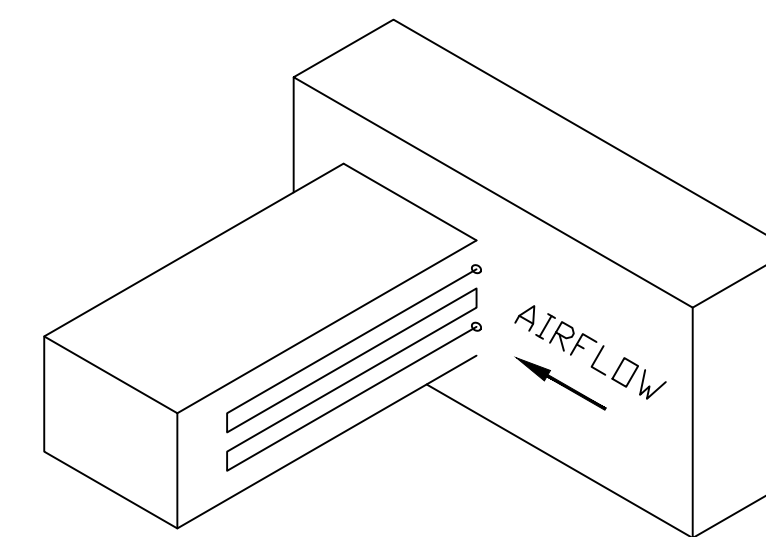
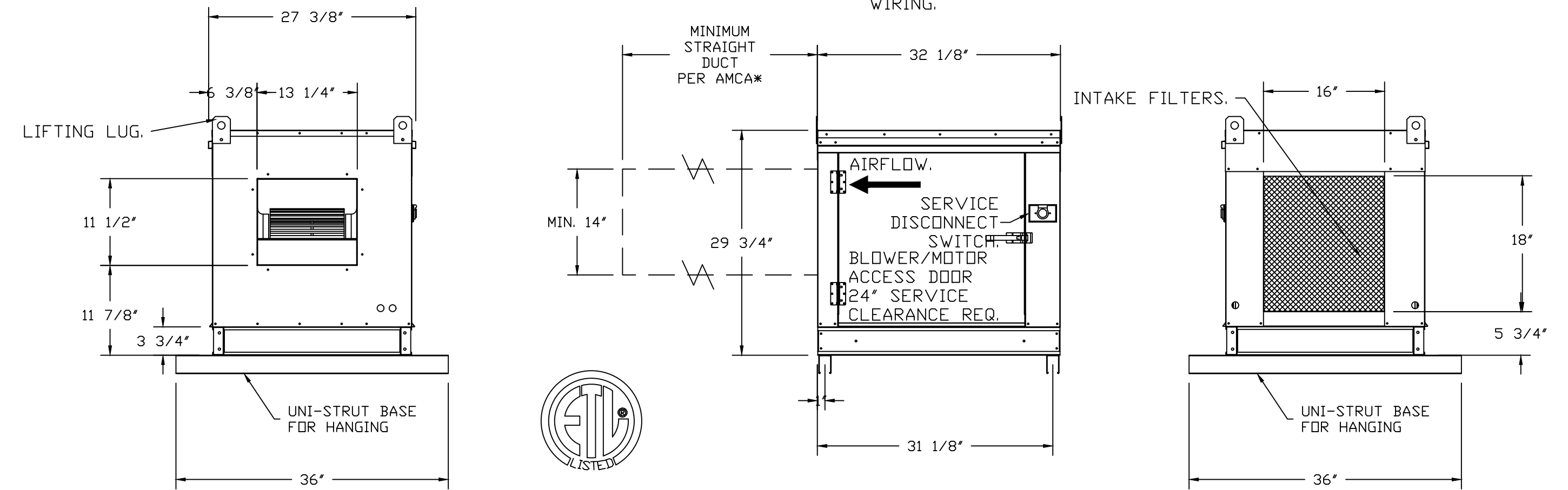
TOP VIEW



FAN #2 ETA1-G10D - SUPPLY FAN (KSF1)

1. DIRECT DRIVE INLINE SUPPLY UNIT W/ 10" BLOWER IN SIZE #1 HOUSING WITH SPEED CONTROL, DISCONNECT SWITCH. INSULATED HOUSING.
2. SIDE DISCHARGE - AIR FLOW RIGHT -> LEFT.
3. INDOOR HANGING CRADLE FOR THE SIZE 1 UNTEMPERED 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 DOOR 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 14" x 14".



ELECTRIC DUCT

ELECTRIC DUCT INSERT HEATER (INLINE), 1750 CFM, 208 VOLT, 3 PHASE, 15 KW, 2-STAGE HEATER, 42 AMPS AT FLA. FLOW SWITCH, AND DUCT THERMOSTAT. SYSTEM TO HEAT AIR AN ADDITIONAL 40 DEGREES MAX (DELTA). ELECTRICIAN ALSO TO PROVIDE EXTERNAL DISCONNECT IF REQUIRED BY LOCAL CODE OFFICIALS.

REVISIONS

DESCRIPTION	DATE:

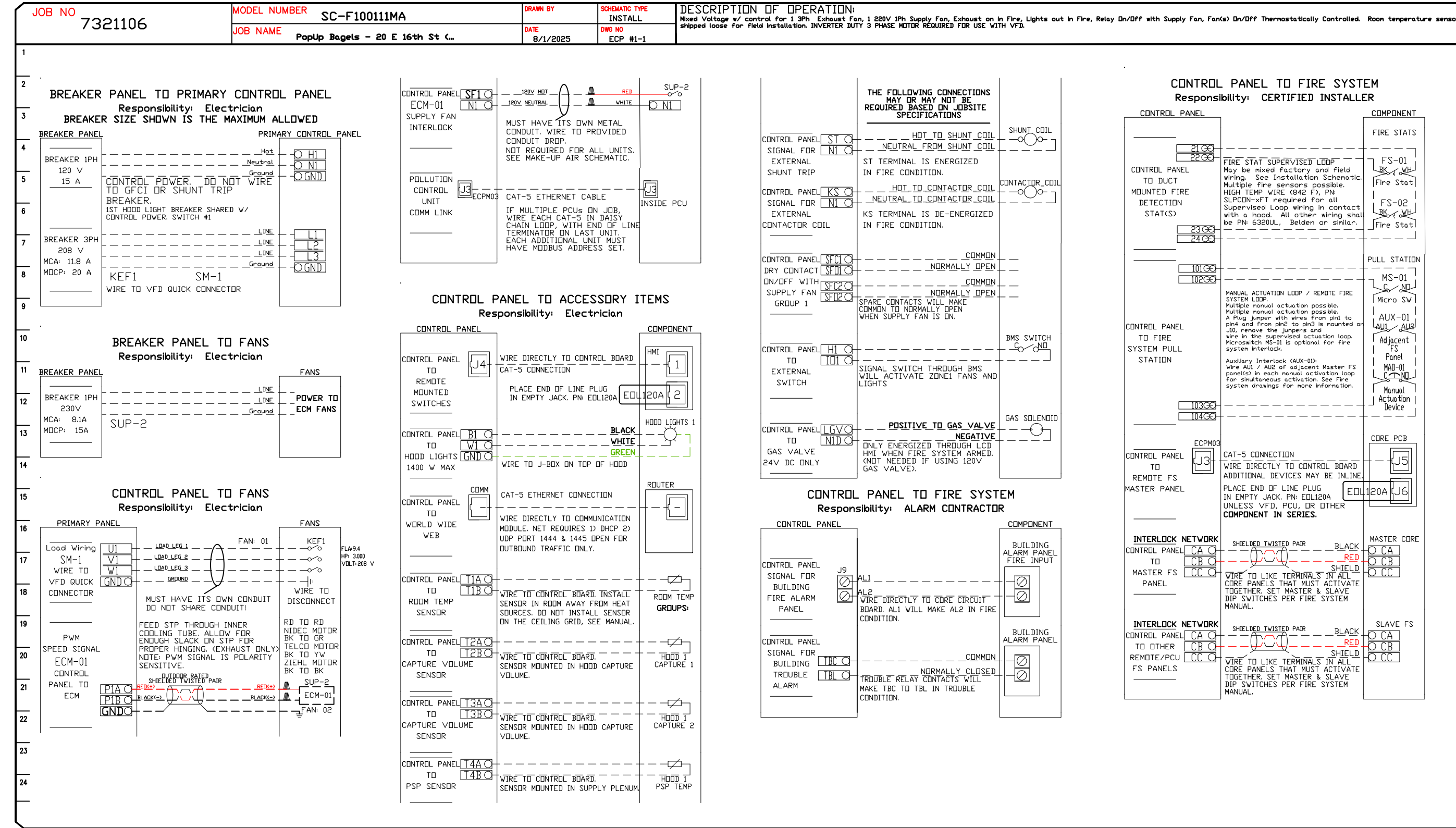
recon-air
www.reconair.com

Air Solutions
1329 East Kemper Rd., Ste. 4210, Cincinnati, OH, 45246 PHONE: (613) 860 - 5555 EMAIL: reg120@reconair.com

PopUp Bagels - 20 E 16th St (NY, NY)
20 East 16th Street,
New York, NY, 10003

DATE: 8/1/2025
DWG.#: 7321106
DRAWN BY: BCF
SCALE: N/A
MASTER DRAWING

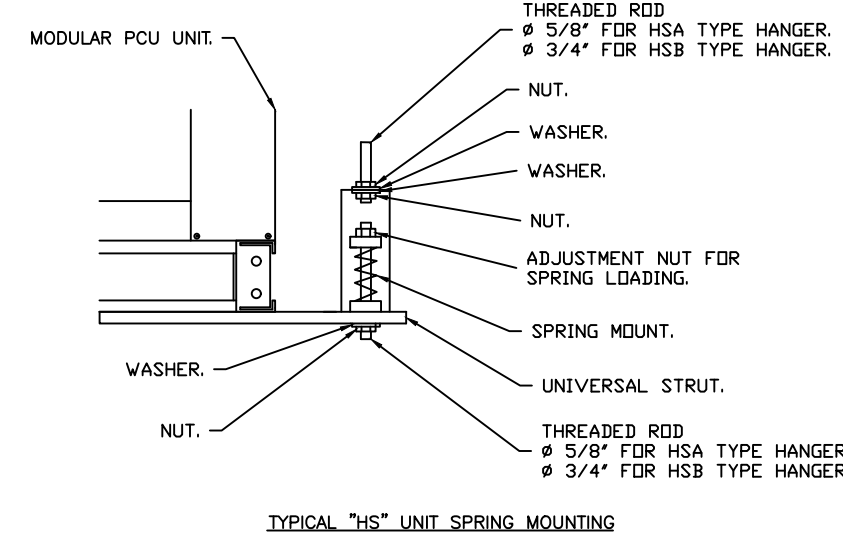
NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1	EP1	SC-F10011MA	WALL MOUNT IN SS BOX	FACE MOUNT RIGHT SIDE OF HOOD HOOD # 1	1 LIGHT 1 FAN	SMART CONTROLS THERMOSTATIC CONTROL V/ RELAY ON/OFF WITH SUPPLY	KEF1	EXHAUST	3	3.000	208	9.4
							KSF1	SUPPLY	1	1.000	230	6.5



PCU #1 PCU-HE-DC-REFS-2

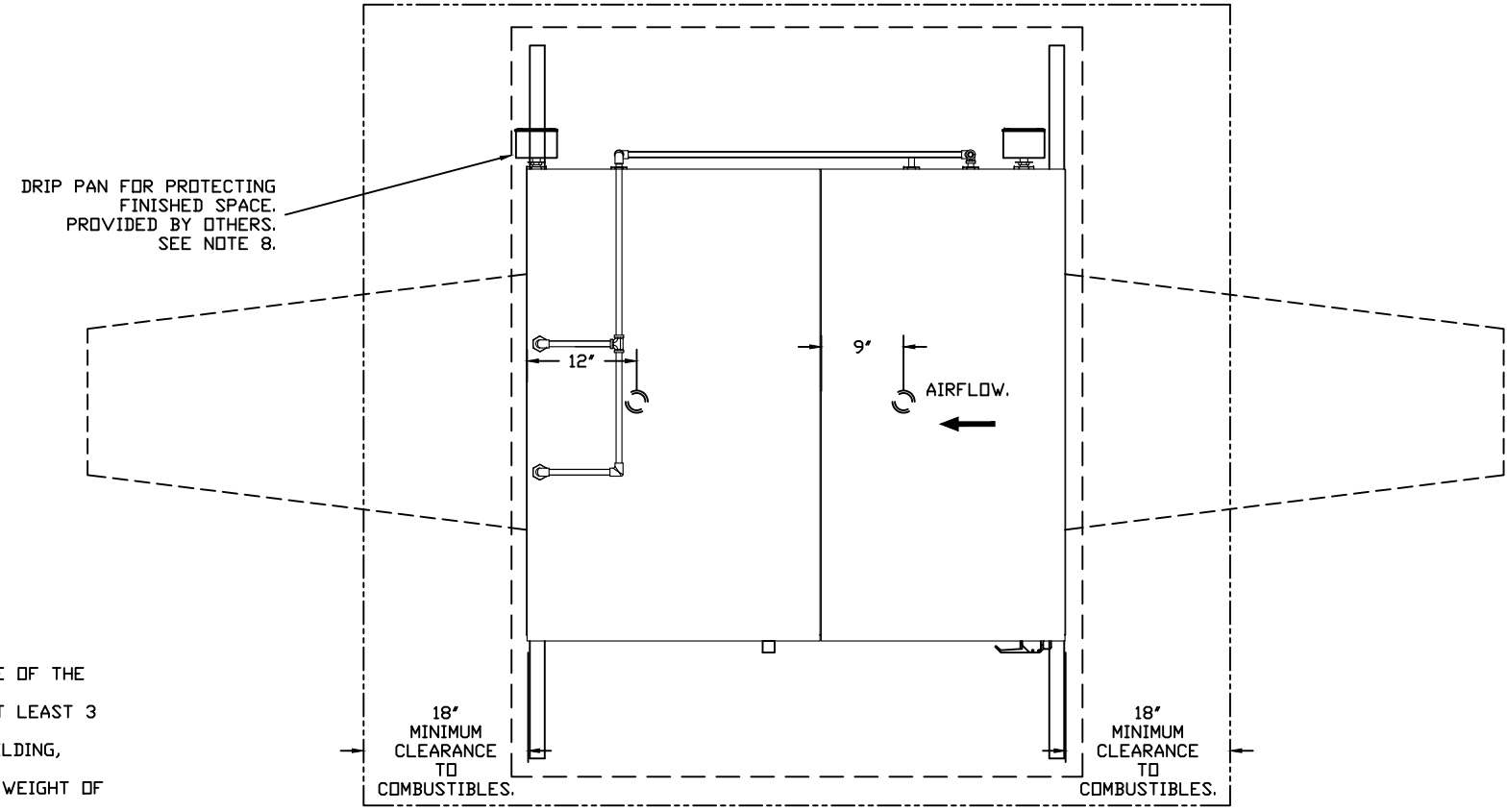
PCU WEIGHT = 433LBS
 PCU LOCATION: INDOOR (CONDITIONED SPACE).

NOTE: TWO HANGERS PER UNIVERSAL STRUT.



INLET NOTES:
 1. LENGTH OF STRAIGHT DUCT ON INLET OF PCU TO BE 3 TIMES THE EQUIVALENT DUCT DIAMETER TO AVOID SYSTEM EFFECT.
 2. MAX INLET DUCT VELOCITY TO BE 1000 FPM INTO THE PCU. DUCTWORK SHOULD BE SIZED APPROPRIATELY.
 3. DUCT MUST BE GRADUALLY TRANSITIONED TO THE INLET OPENING OF THE PCU TO SPREAD AIR OUT ON ALL PCU FILTERS. FAILURE TO DO THIS WILL RESULT IN ODOR AND SMOKE BYPASS.

-A SERVICE PLATFORM MUST BE INSTALLED ON THE FILTER SIDE OF THE UNIT FOR PROPER FILTER MAINTENANCE.
 -THE PLATFORM MUST BE THE SAME LENGTH AS THE PCU AND AT LEAST 3 FEET WIDE.
 -THE PLATFORM MUST BE STRUCTURALLY SUPPORTED BY THE BUILDING, INDEPENDENT OF THE PCU.
 -THE PLATFORM MUST BE DESIGNED TO PROPERLY SUPPORT THE WEIGHT OF ALL PCU FILTERS AND MAINTENANCE PERSONNEL.
 -HANDRAILS MUST BE INSTALLED ON THE SERVICE PLATFORM TO PROTECT MAINTENANCE PERSONNEL.

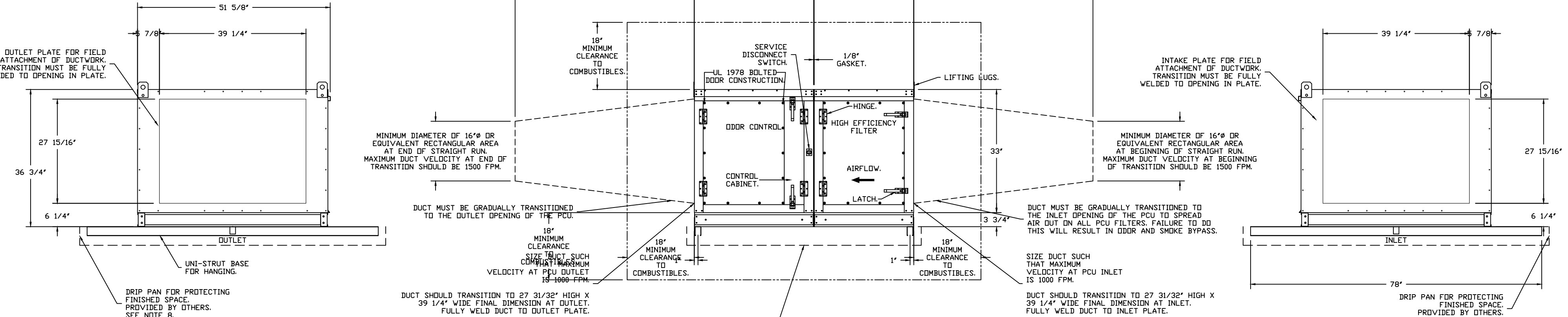


PCU FILTER SPECIFICATIONS					
DESIGN CFM - 2100					
MODULE	FILTER TYPE	FILTER EFFICIENCY	QTY	SIZE	SP(CLEAN) (in WC)
1	HIGH EFFICIENCY	MERV 15	6	20X25X4	0.135
2	DC 100% CARBON	N/A	6	20X25X4	0.433
					0.568

PCU DESCRIPTION:
 PCU #1 - PCU-HE-DC-REFS-2 - POLLUTION CONTROL UNIT WITH FIRE SYSTEM PIPING AND DETECTION INSTALLED. INCLUDES HIGH EFFICIENCY MERV 15 FILTER MODULE AND ODOR CONTROL MODULE PREPARED WITH DOWNSTREAM PROTECTION. ELECTRIC FIRE DETECTOR AND NOZZLES ARE INCLUDED.

NOTES:
 1. ALL DIMENSIONS ARE NOMINAL AND GIVEN IN INCHES.
 2. C/US UL710 LISTED FOR GREASE DUCT INSTALLATION.
 3. WHEN USED IN KITCHEN GREASE DUCT, UNIT MUST BE INSTALLED DOWNSTREAM OF A LISTED HOOD ASSEMBLY OR A UL710 LISTED HOOD ASSEMBLY OR A NFPA 96 COMPLIANT HOOD AS LONG AS IT IS INSTALLED WITH A FIRE SUPPRESSION SYSTEM THAT IS INTERLOCKED WITH THE NFPA 96 COMPLIANT HOOD FIRE SYSTEM.
 4. CLEARANCE ON FILTER ACCESS SIDE OF THE PCU SHOULD BE A MINIMUM OF 36" FOR PROPER SERVICE OF THE UNIT. ALL OTHER SIDES SHOULD FOLLOW CLEARANCE TO COMBUSTIBLE GUIDELINES PER CODE.
 5. UNIT CONTAINS PRESSURE MONITORING SWITCH REFER TO ELECTRICAL SCHEMATIC OR OPERATION MANUAL FOR MORE INFORMATION.
 6. 1.5" NPT DRAIN SUPPLIED IN EACH MODULE BASE. CONNECT INDIVIDUAL DRAINS TO A COMMON 2" 1/2" DRAIN AND ROUTE TO GREASE INTERCEPTOR.
 7. FIRE SYSTEM TO BE INSTALLED INDOORS OR IN A WEATHERTIGHT ENCLOSURE MAINTAINED BETWEEN 50° AND 130° F. THIS ENCLOSURE IS PROVIDED BY OTHERS.
 8. WHEN THE PCU IS INSTALLED ABOVE OR NEAR A FINISHED SPACE, THE INSTALLING CONTRACTOR MUST PROTECT THE FINISHED SPACE TO PREVENT WATER DAMAGE IN THE EVENT OF A FIRE SYSTEM DISCHARGE OR WHEN REGULAR CLEANING IS PERFORMED ON THE UNIT.
 9. POLLUTION CONTROL UNIT IS RATED FOR INDOOR USE WHEN INSTALLED IN ACCORDANCE WITH THE S06-32.4 INCLUDING THE USE OF A FIRE RATED ENCLOSURE AS APPLICABLE.

PCU OPTIONS:
 - PCU ADVANCED FILTER MONITORING SYSTEM- SIZE 2.
 - UL-1978/UL-9789 CONSTRUCTION FOR PCU-BOLTED HOOD DESIGN- SIZE 2.
 - INDOOR HANGING ASSEMBLY FOR SIZE 2 POLLUTION CONTROL UNIT. 4 PIECES OF UNI-STRUT, 78 INCHES LONG EACH 2 HSA200 HANGING ISOLATORS PER UNI-STRUT INCLUDED.
 - POLLUTION CONTROL UNIT DUCTWORK CONNECTION FOR SIZE 2. FACTORY INSTALLED INTAKE PLATE FOR FIELD WELDED DUCTWORK.
 - POLLUTION CONTROL UNIT DUCTWORK CONNECTION FOR SIZE 2. FACTORY INSTALLED OUTLET PLATE FOR FIELD WELDED DUCTWORK.



REVISIONS

DESCRIPTION	DATE

www.econair.com
reg120@econair.com
5555 EMAIL - 5555
613) 860 - 5555 PHONE
1329 East Kemper Rd., Ste. 4210, Cincinnati, OH

econair

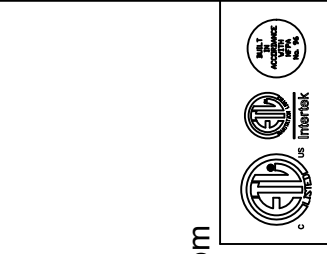
Air Solutions

PopUp Bagels - 20 E 16th St (NY, NY)
 20 East 16th Street,
 New York, NY, 10003

DATE: 8/1/2025
DWG.#: 7321106
DRAWN BY: BCF
SCALE: N/A
MASTER DRAWING

REVISIONS

DESCRIPTION	DATE



Eiconair
Air Solutions
www.eiconair.com
1329 East Kemper Rd., Ste. 4210, Cincinnati, OH 45246 PHONE: (613) 860-5555 EMAIL: reg120@eiconair.com

PopUp Bagels - 20 E 16th St (NY, NY)
20 East 16th Street,
New York, NY, 10003

DATE: 8/1/2025

DWG.#: 7321106

DRAWN BY: BCF
SCALE: N/A

MASTER DRAWING

SHEET NO. 4

NOTES
- FIELD PIPE DROPS AS SHOWN
- PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
- IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.
- THIS PRE-ENGINEERED FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS
JOB #: 7321106.
JOB NAME: POPUP BAGELS - 20 E 16TH ST (NY, NY).

SYSTEM SIZE: TANK-SP-2-WC DESIGN FP: 36. MAXIMUM FP: 40.
HOOD # 1 13' 7.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 12" DIA.
RISER # 2 SIZE: 12" DIA.
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAY IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

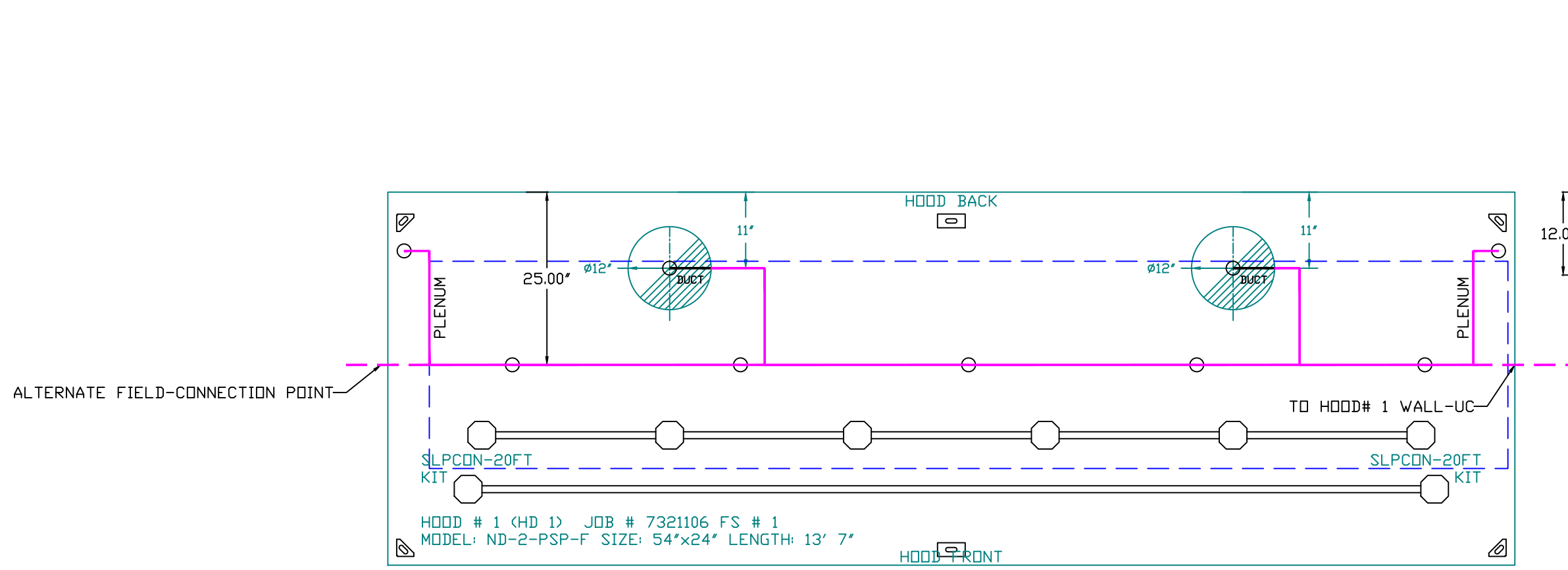
PIPE SECTION	MAX PIPE LENGTH (FT)
MAX SUPPLY LINE TO FIRST OVERLAPPING NOZZLE	42
OVERLAPPING NOZZLE APPLIANCE BRANCH	10
DEDICATED NOZZLE APPLIANCE BRANCH	10

INCLUDES: FIELD INSTALLATION AND HOOKUP DURING NORMAL BUSINESS HOURS BY CERTIFIED INSTALLERS ONLY IN THE LOCATION NOTED ABOVE. TWO SITE VISITS ONLY (ONE VISIT TO SET PULL STATION & SYSTEM HOOKUP AND ONE VISIT FOR ONE TEST). ADDITIONAL VISITS WILL RESULT IN ADDITIONAL CHARGES. ONE MECHANICAL OR ELECTRICAL GAS VALVE PER SYSTEM AT A MAXIMUM SIZE OF 2", PERMIT, AND SYSTEM TEST.
EXCLUDES: UNION LABOR & PREVAILING WAGE (LABOR & WAGES WILL BE ADDED IF APPLICABLE), GAS VALVE INSTALLATION, ELECTRICAL HOOKUP AND CONNECTIONS, HANGING OF FIRE CABINET, SHUNT TRIP, HANDHELD EXTINGUISHER(S), ON-SITE RE-PIPING DUE TO EQUIPMENT LAYOUT CHANGES.

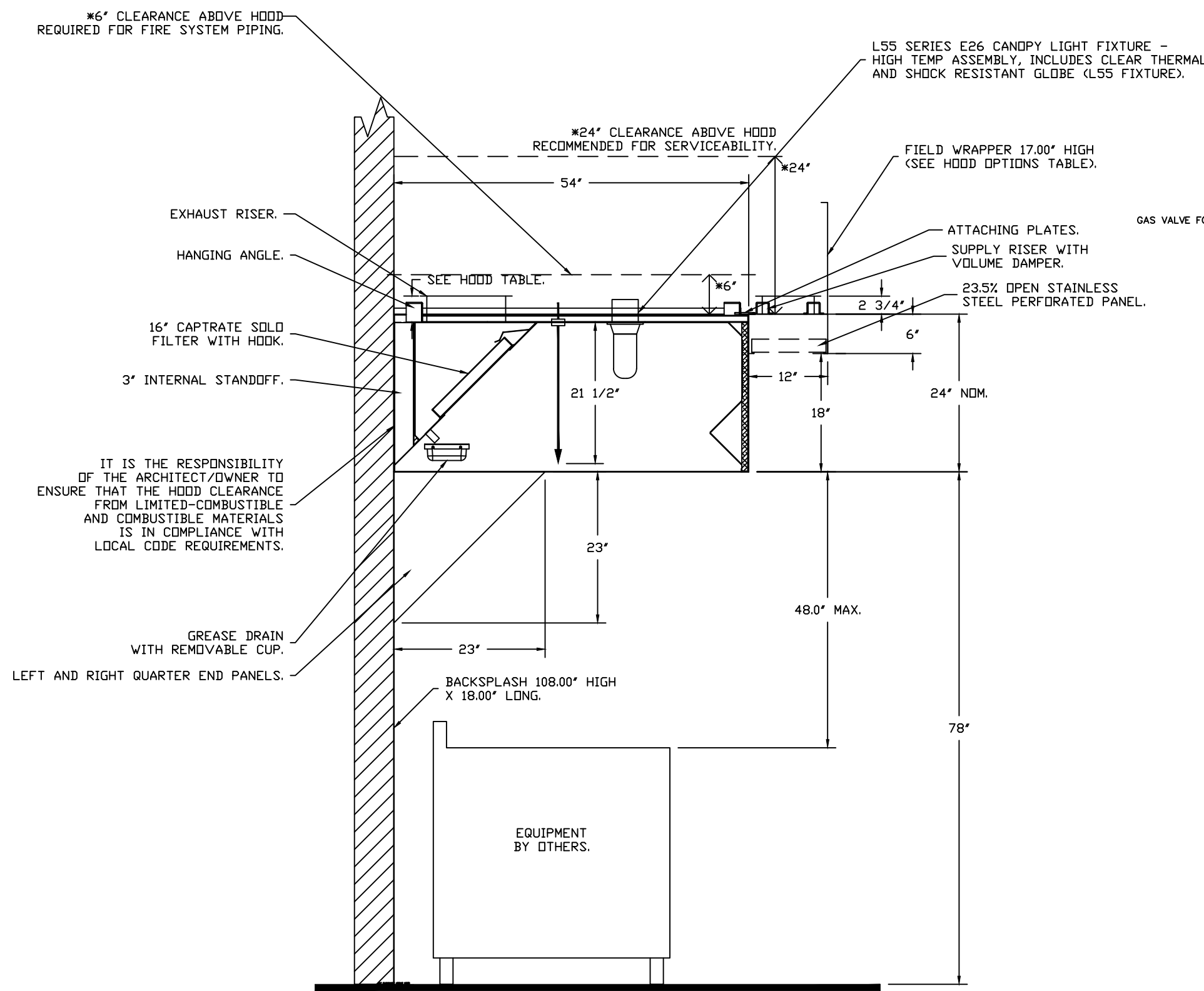
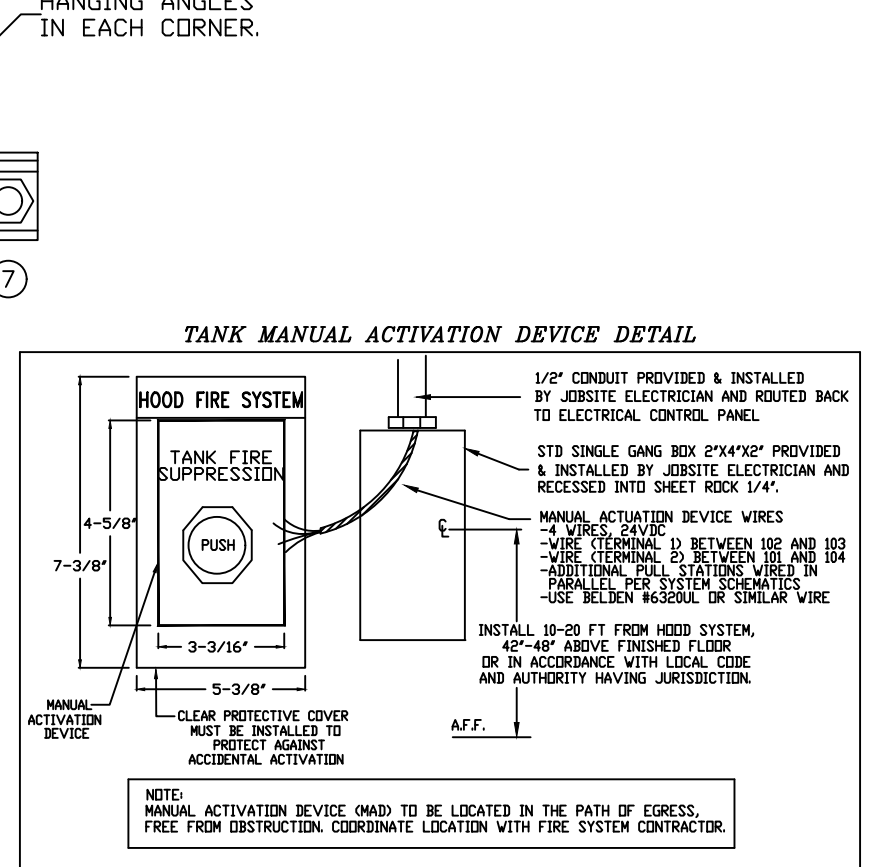
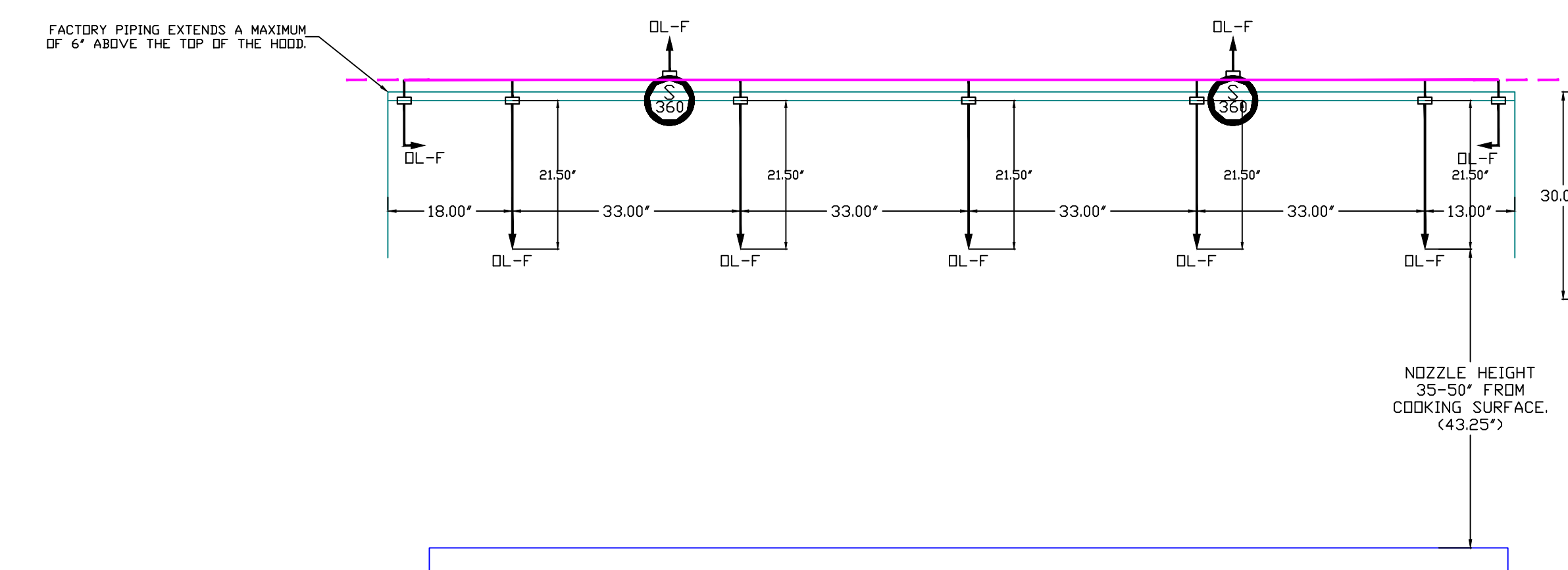
FIRE SYSTEM NO.	TAG	TYPE	SIZE	MAX FP	DESIGN FP	INSTALLATION	
						SYSTEM	LOCATION ON HOOD
1	FSI	TANK FS	4.0/4.0	40	36	WALL UTILITY CABINET RIGHT	N/A
2	PCU-FIRE	PCU TANK	4.0	12	12	WALL UTILITY CABINET LEFT	N/A

FIRE SYSTEM TAG	TYPE	SIZE	SUPPLIED BY
1	FSI	SC ELECTRICAL	1500
			ECON-AIR

FIRE SYSTEM TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1	0 - 0 - TANK FIRE SUPPRESSION PIST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
	0 - 0 - TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
	0 - 0 - 12-F88021-32144-01-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO. (CLOSE DN TEMP RISE AT 360°F. (40034310).	2	0
	0 - 0 - 32-00005 QUICK SEAL - 1/2" (UL).	2	0
	0 - 0 - 361091 3/8" BRASS PLUG.	3	0
	0 - 0 - 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.	2	0
	0 - 0 - 4429K422 1/2" X 1/4" BRASS REDUCING BUSHING.	1	0
	0 - 0 - 79425 3/8" NPT FEMALE TO 1/2" MALE PROGRESS ADAPTER.	3	0
	0 - 0 - 79525 1/2" 90 PRO-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.	1	0
	0 - 0 - 79580 1/2" X 1/2" PRO-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.	2	0
	0 - 0 - 87-120042-001 SECONDARY ACTUATOR VALVE (SVA) - SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	1	0
	0 - 0 - 87-120045-001 HOSE, SECONDARY ACTUATOR HOSE, 7.5' BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	1	0
	0 - 0 - 87-30001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	2	0
	0 - 0 - 87-30003-001 PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
	0 - 0 - 87-30033-001 DIN CONNECTOR, CANFIELD PART #5.9560-201-EUOA, TANK FIRE SUPPRESSION, SUBMINATURE SOLENOID CONNECTION (CED VENDOR 30377).	1	0
	0 - 0 - 87-30052-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	8	0
	0 - 0 - 9095455PC PRO PRESS 1/2 PRESS X PRESS 90 ELBOW LD.	6	0
	0 - 0 - 9097200PC PRO PRESS PC611 1/2 PRESS TEE LD.	9	0
	0 - 0 - 986944115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	4	0
	0 - 0 - A003432 JUNCTION BOX FOR MANUAL PULL STATION 15" DEEP BACK BOX, RED COLOR.	1	0
	0 - 0 - A31484 1/4" NPT SCHRAEDER VALVE AND CAP, JB INDUSTRIES 1/4" FLARE X 1/4" NPT HALF UNID. USED IN TANK SERVICE PORT.	1	0
	0 - 0 - B145 3/8" BLACK IRON 90 ELL.	4	0
	0 - 0 - DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
	0 - 0 - SLP-CON-20FT SUPERVISED LDDP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LDDP BETWEEN HOODS WITH UP TO 19' GAP. KIT CONTAINS 22 FEET OF BLACK MG WIRE, 22 FEET OF TAN MG WIRE, 20 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	2	0
	0 - 0 - TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.	6	0
	0 - 0 - TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
	0 - 0 - WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	2	0
	16 - 16 - 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	9	0
	16 - 16 - DL-F NOZZLE - TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).	9	0
	26 - 26 - QSA-3/8 QUICK SEAL - 3/8" (UL).	9	0
	34 - 34 - A003433 RED COLOR - 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT.	1	0
	0 - 0 - 87-30001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	1	0
	0 - 0 - 87-30003-001 PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
	0 - 0 - 87-30033-001 DIN CONNECTOR, CANFIELD PART #5.9560-201-EUOA, TANK FIRE SUPPRESSION, SUBMINATURE SOLENOID CONNECTION (CED VENDOR 30377).	1	0
	0 - 0 - 87-30052-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	2	0
	0 - 0 - TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.	3	0
0 - 0 - TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	1	0	
0 - 0 - WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	1	0	

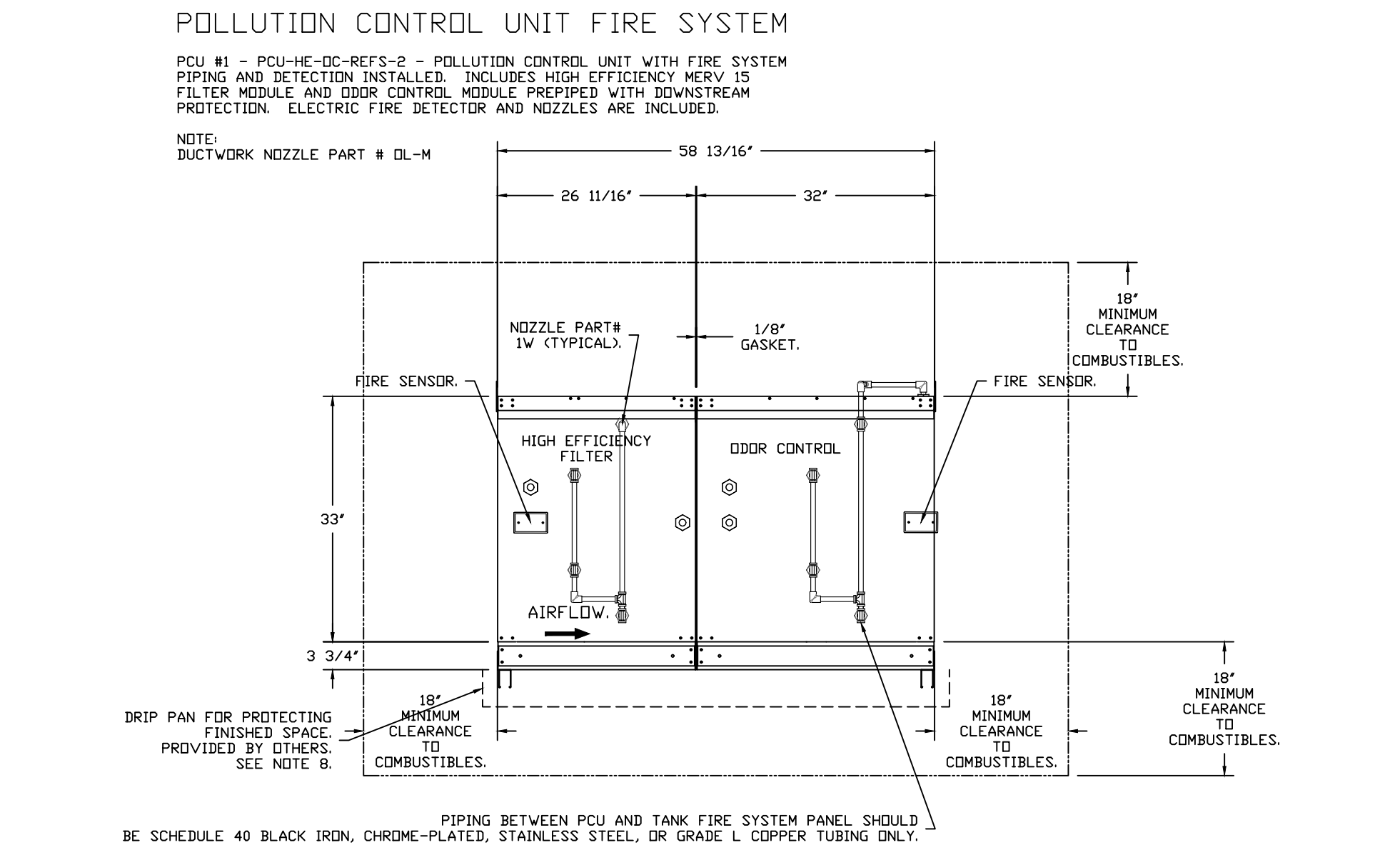


- LEGEND - FIRE CABINET TANK SYSTEM**
- 1 4 GALLON TANK.
 - 2 PRIMARY ACTUATOR RELEASE.
 - 3 SECONDARY ACTUATOR RELEASE.
 - 4 PRESSURE SUPERVISION SWITCH.
 - 5 PRIMARY HOSE ASSEMBLY.
 - 6 SECONDARY HOSE ASSEMBLY.
 - 7 REMOTE MANUAL ACTUATION DEVICE.



SECTION VIEW - MODEL 5424EX-2-PSP-F HOOD - #1

TYPE	SIZE	VOLTAGE	MIN. INLET PRESSURE	MAX. INLET PRESSURE	FLOW AT 1 IN.W.C. DROP NATURAL GAS	FLOW AT 1 IN.W.C. DROP PROPANE	DIMENSIONS				PIPE ORIENTATION	GAS VALVE PART NUMBER	STRAINER PART NUMBER	GAS VALVE/STRAINER KIT		
							DIM "A"	DIM "B"	DIM "C"	DIM "D"						
ELECTRICAL	1-1/2"	24 VDC	0 PSI (0 IN.W.C.)	5 PSI (1.38 IN.W.C.)	2,400,000 BTU/HR	1,561,218 BTU/HR	7-5/8"	6-3/8"	5-3/4"	6-3/16"	14-1/8"	12-5/16"	HORIZONTAL	824278-24VDC	447967	(SC)CEDV-1/2-24



PIPING BETWEEN PCU AND TANK FIRE SYSTEM PANEL SHOULD BE SCHEDULE 40 BLACK IRON, CHROME-PLATED, STAINLESS STEEL, OR GRADE L COPPER TUBING ONLY.