

SECTION 23 00 00 - MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

- 1. THE TERM "TENANT," "TENANT'S CONSTRUCTION MANAGER," "OWNER," OR "OWNER'S CONSTRUCTION MANAGER" SHALL REFER TO SWEETGREEN.
2. THE GENERAL CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR AS REQUIRED TO PROVIDE A COMPLETE WORKING SYSTEM AND AS DESCRIBED IN THESE DRAWINGS.
3. THE GENERAL CONTRACTOR SHALL REVIEW A COMPLETE SET OF THE CONSTRUCTION DOCUMENTS. EACH SUB-CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF DRAWINGS ON SITE DURING THE CONSTRUCTION PROCESS.
4. COORDINATE WORK AS REQUIRED WITH THE LANDLORD. THE GENERAL CONTRACTOR SHALL UNLESS LANDLORD-REQUIRED CONTRACTORS AT THE GENERAL CONTRACTOR'S EXPENSE.

PART 2 - PRODUCTS

- 1. PRODUCTS SHALL BE AS DESCRIBED IN THE DRAWINGS AND AS REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM.

PART 3 - EXECUTION

- 1. UNLESS DIMENSIONS HAVE BEEN PROVIDED, THE DRAWINGS ARE DIAGRAMMATIC IN NATURE, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT AND REQUIRED EQUIPMENT. THEY SHALL NOT BE SCALED. COORDINATE WITH THE ARCHITECTURAL DRAWINGS, TENANT VENDORS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CUTSHEETS AS REQUIRED.
2. COMPLETE ALL WORK IN COMPLIANCE WITH THE CODES LISTED ON SHEET G-001 INCLUDING ALL LOCAL AMENDMENTS, ALL RELEVANT NFPA CODES AND STANDARDS AND SMACNA STANDARDS.
3. COORDINATE WITH THE LOCAL AUTHORITY HAVING JURISDICTION AND ARRANGE ALL INSPECTIONS AS REQUIRED.
4. MAINTAIN A CLEAN CONSTRUCTION SITE DURING CONSTRUCTION. CLEAN SCRAP MATERIAL AND REMOVE FROM SITE DAILY AND MAINTAIN WORKING AREA IN AN ORDERLY FASHION.
5. PROVIDE SUBMITTALS AS NOTED IN THESE SPECIFICATIONS AND AS REQUESTED BY THE TENANT'S CONSTRUCTION MANAGER.
6. ALL SHOP DRAWINGS SHALL BE REVIEWED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE TENANT'S CONSTRUCTION MANAGER.
7. SHOP DRAWINGS SHALL BE SUBMITTED TO ALLOW FOR FIVE BUSINESS DAYS OF REVIEW TIME WITHOUT IMPACT TO THE PROJECT SCHEDULE.
8. PROVIDE REQUESTS FOR INFORMATION TO THE TENANT'S CONSTRUCTION MANAGER.
9. REQUESTS FOR INFORMATION SHALL PROVIDE A DETAILED DESCRIPTION OF THE SITE CONDITION OR DISCREPANCY AND THE CONTRACTORS PROPOSED REMEDY.
10. REQUESTS FOR INFORMATION SHALL BE SUBMITTED TO ALLOW FOR FIVE BUSINESS DAYS OF REVIEW TIME.
11. UPON COMPLETION OF WORK, THE GENERAL CONTRACTOR SHALL PROVIDE THE TENANT'S CONSTRUCTION MANAGER WITH A BOUND RECORD OF ALL MECHANICAL EQUIPMENT UTILIZED IN THE JOB. THE GENERAL CONTRACTOR SHALL PROVIDE THE SAME INFORMATION IN AN ELECTRONIC FORMAT AS DIRECTED BY THE OWNER. THE BINDER SHALL CONTAIN:
A. COVER SHEET INDICATING THE PROJECT NAME, ADDRESS AND TURNOVER DATE.
B. COMPANY NAME AND CONTACT INFORMATION OF THE CONTRACTORS UTILIZED FOR THE MECHANICAL SCOPE OF WORK.
C. CUTSHEETS, INSTALLATION MANUALS AND MAINTENANCE REQUIREMENTS FOR ALL MECHANICAL EQUIPMENT.
12. UPON COMPLETION OF WORK, THE GENERAL CONTRACTOR SHALL PROVIDE THE TENANT'S CONSTRUCTION MANAGER A FULL SET OF DRAWINGS WITH ANY DEVIATIONS FROM THE DRAWINGS INDICATED IN RED INK.

(END OF SECTION 23 00 00)

SECTION 23 05 93 - TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 - GENERAL

- 1. QUALITY ASSURANCE: ALL TESTING AND BALANCING WORK SHALL BE COMPLETED BY AN INDEPENDENT CONTRACTOR AT THE GENERAL CONTRACTOR'S EXPENSE, CERTIFIED BY NEBB OR TABB AS A TAB TECHNICIAN. BALANCE THE SYSTEM IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS.

PART 2 - PRODUCTS: NA

PART 3 - EXECUTION

- 1. AIR SYSTEMS
A. PROVIDE ALL LABOR AND MATERIALS REQUIRED TO BALANCE THE SYSTEM AS NOTED ON THE PLANS.
B. FAN SYSTEMS SHALL BE ADJUSTED SUCH THAT THE LOWEST FAN SPEED IS UTILIZED TO DELIVER THE REQUIRED CFM TO THE AIR TERMINALS.
C. ADJUST DAMPERS AS REQUIRED TO BALANCE THE SUPPLY, RETURN AND EXHAUST DEVICES TO 10% OF THE DESIGN RATES. ADJUST THE OUTSIDE AIR DAMPER AS REQUIRED TO OBTAIN THE MINIMUM OUTSIDE AIR REQUIREMENTS AS NOTED IN THE SCHEDULES.
D. RECORD THE OPERATING VOLTAGE, AMPACITY, SUPPLY/RETURN SYSTEM STATIC PRESSURES, SUPPLY/RETURN AIR TEMPERATURES (BOTH HEATING AND COOLING) AND FINAL FAN RPM.
E. VERIFY SYSTEM CONTROLS ARE FUNCTIONING AS INTENDED.
2. REPORTING
A. THE TEST AND BALANCE AGENT SHALL PREPARE A REPORT INCLUDING THE FINAL VALUES OF THE AIR AND WATER SYSTEM BALANCING, SYSTEM DIAGRAMS, AND SYSTEM NOTES.
B. THE GENERAL CONTRACTOR SHALL REVIEW THE FINAL BALANCE REPORT PRIOR TO SENDING TO THE TENANT'S CONSTRUCTION MANAGER.
C. PROVIDE TAB REPORT TO THE LANDLORD AND THE AUTHORITY HAVING JURISDICTION AS REQUIRED.

(END OF SECTION 23 05 93)

SECTION 23 07 13 - DUCT INSULATION

PART 1 - GENERAL

- 1. INSULATION SHALL BE PROVIDED ON THE FOLLOWING DUCT SERVICES:
A. INDOOR CONCEALED SUPPLY AND OUTDOOR AIR.
B. INDOOR CONCEALED RETURN.
C. INDOOR CONCEALED OVERHEAD WAREHOUSE EXHAUST FROM AIR TERMINAL TO PENETRATION OF BUILDING EXTERIOR.
D. INDOOR CONCEALED GENERAL EXHAUST FROM AIR TERMINAL TO PENETRATION OF BUILDING EXTERIOR.
E. OUTDOOR SUPPLY AND RETURN.
2. QUALITY ASSURANCE
A. INSULATION INSTALLED INDOORS SHALL HAVE A FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS.
B. INSULATION INSTALLED OUTDOORS SHALL HAVE A FLAME-SPREAD INDEX OF 75 OR LESS, AND SMOKE-DEVELOPED INDEX OF 150 OR LESS.

PART 2 - PRODUCTS

- 1. INTERIOR DUCTWORK SHALL HAVE FLEXIBLE FIBERGLASS DUCT WRAP LAMINATED TO FOIL REINFORCED KRAFT VAPOR BARRIER FACING WITH 2" STAPLING FLANGE AND AN INSTALLED THICKNESS OF 1/2" WITH AN R-VALUE OF 6.0.
2. EXTERIOR DUCTWORK SHALL BE INSULATED WITH 2" THICK RIGID INSULATION WITH A MINIMUM R-VALUE OF 12.0, PROTECTED WITH ROOFING MEMBRANE.

PART 3 - EXECUTION

- 1. PREPARATION: CLEAN AND DRY SURFACES. REMOVE MATERIALS THAT WILL ADVERSELY AFFECT INSULATION APPLICATION.
2. GENERAL INSTALLATION REQUIREMENTS:
A. INSTALL INSULATION ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
B. INSTALL INSULATION AND ACCESSORIES AND FINISHES WITH SMOOTH, STRAIGHT AND EVEN SURFACES; FREE OF VOIDS THROUGHOUT THE LENGTH OF DUCT AND FITTINGS.
C. INSTALL ACCESSORIES COMPATIBLE WITH INSULATION MATERIALS AND SUITABLE FOR THE SERVICE. ACCESSORIES SHALL NOT CORRODE, SOFTEN OR OTHERWISE ATTACK INSULATION OR JACKET IN EITHER WET OR DRY STATE.
D. INSTALL INSULATION WITH LONGITUDINAL SEAMS AT TOP OF HORIZONTAL RUNS, LONGITUDINAL SEAMS AND END JOINTS SHALL BE TIGHT, BOND SEAMS AND JOINTS WITH ADHESIVE RECOMMENDED BY INSULATION MANUFACTURER TO MAINTAIN VAPOR BARRIER INTEGRITY.
E. APPLY ADHESIVES, MASTICS AND SEALANTS AT MANUFACTURER'S RECOMMENDED COVERAGE RATE.
F. CUT INSULATION IN A MANNER TO AVOID COMPRESSING INSULATION MORE THAN 75 PERCENT ITS NOMINAL THICKNESS.
3. PENETRATIONS
A. ROOF PENETRATIONS: INSTALL INSULATION CONTINUOUSLY THROUGH ROOF PENETRATIONS. FOR APPLICATIONS REQUIRING ONLY INDOOR INSULATION, TERMINATE INSULATION ABOVE ROOF SURFACE AND SEAL WITH JOINT SEALANT. FOR APPLICATIONS REQUIRING INDOOR AND OUTDOOR INSULATION, INSTALL INSULATION FOR OUTDOOR APPLICATIONS TIGHTLY JOINED TO INDOOR INSULATION ENDS. SEAL JOINT WITH JOINT SEALANT.
B. WALL PENETRATIONS: INSTALL INSULATION CONTINUOUSLY THROUGH WALL PENETRATIONS. FOR APPLICATIONS REQUIRING ONLY INDOOR INSULATION, TERMINATE INSULATION OUTSIDE OF WALL SURFACE AND SEAL WITH JOINT SEALANT. FOR APPLICATIONS REQUIRING INDOOR AND OUTDOOR INSULATION, INSTALL INSULATION FOR OUTDOOR APPLICATIONS TIGHTLY JOINED TO INDOOR INSULATION ENDS. SEAL JOINT WITH JOINT SEALANT.
C. INTERIOR WALLS: INSTALL INSULATION CONTINUOUSLY THROUGH WALLS AND PARTITIONS THAT ARE NOT FIRE RATED. TERMINATE INSULATION AT FIRE DAMPER SLEEVES FOR FIRE-RATED WALL AND PARTITION PENETRATIONS. EXTERNALLY INSULATE THE DAMPER SLEEVES TO MATCH ADJACENT INSULATION AND OVERLAP DUCT INSULATION AT LEAST 2 INCHES.

(END OF SECTION 23 07 13)

SECTION 23 31 13 - METAL DUCTS

PART 1 - GENERAL

- 1. SECTION INCLUDES
A. RECTANGULAR DUCTS AND FITTINGS
B. ROUND DUCTS AND FITTINGS
C. SHEET METAL MATERIALS
D. SEALANTS AND GASKETS
E. HANGERS AND SUPPORTS
2. PERFORMANCE REQUIREMENTS
A. DUCT CONSTRUCTION, INCLUDING SHEET METAL THICKNESS, SEAM AND JOINT CONSTRUCTION, REINFORCEMENTS AND HANGERS/SUPPORTS SHALL COMPLY WITH THE LATEST VERSION OF SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
B. DUCT HANGERS AND SUPPORTS SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS UNDER CONDITIONS DESCRIBED IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
C. SURFACES IN CONTACT WITH THE AIRSTREAM SHALL COMPLY WITH REQUIREMENTS IN ANSI/AISHRAE 62.1.
3. SECTION REQUIREMENTS
A. SUBMITTALS: NONE REQUIRED.

PART 2 - PRODUCTS

- 1. RECTANGULAR DUCTS AND FITTINGS:
A. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" BASED ON INDICATED STATIC-PRESSURE CLASS UNLESS NOTED OTHERWISE.
B. TRANSVERSE JOINTS: SELECT JOINT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-1 FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT SUPPORT INTERVALS AND OTHER PROVISIONS AS REQUIRED.
C. LONGITUDINAL SEAMS: SELECT SEAM TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-2 FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT SUPPORT INTERVALS AND OTHER PROVISIONS AS REQUIRED.
D. ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER DUCT CONSTRUCTION: SELECT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," CHAPTER 4 FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT SUPPORT INTERVALS AND OTHER PROVISIONS AS REQUIRED.
2. ROUND DUCTS AND FITTINGS:
A. SPIRAL LOCK SEAM, WITHOUT INSULATION.
B. BASIS OF DESIGN: LINDAB SAFE SINGLE WALL DUCTS AND FITTINGS; ALTERNATES BY MCGILL AIRFLOW. ALL DUCTWORK SHALL BE PREPPED AND READY TO RECEIVE PAINT.
4. MATERIALS: GALVANIZED SHEET STEEL, COMPLY WITH ASTM A 653/A 653M, G90 COATING DESIGNATION.
5. SEALANTS AND GASKETS:
A. MAXIMUM FLAME-SPREAD INDEX: 25 (WHEN TESTED ACCORDING TO UL 723).
B. MAXIMUM SMOKE-DEVELOPED INDEX: 50 (WHEN TESTED ACCORDING TO UL 723).
C. TWO-PART TAPE SEALING SYSTEM: PROVIDE 3" TAPE CONSTRUCTED OF WOVEN COTTON FIBER IMPREGNATED WITH MINERAL GYPSUM AND MODIFIED ACRYLSILICONE TO FORM A HARD, DURABLE AIRTIGHT SEAL. SEALANT SHALL BE A MODIFIED STYRENE ACRYLIC, COMPATIBLE WITH GALVANIZED SHEET STEEL, WATER, MOLD AND MILDEW RESISTANT, VOC CONTENT OF 200g/L OR LESS.
D. WATER BASED JOINT AND SEAM SEALANT: BRUSH ON WITH MINIMUM OF 65% SOLIDS CONTENT, MINIMUM SHORE A HARDNESS OF 20, COMPATIBLE WITH GALVANIZED SHEET STEEL, WATER, MOLD AND MILDEW RESISTANT, VOC CONTENT OF 75g/L (LESS WATER).
6. HANGERS AND SUPPORTS:
A. RECTANGULAR DUCTWORK: HANGER RODS SHALL BE CADMIUM-PLATED STEEL RODS AND NUTS. STRAP AND ROD SIZE SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," TABLE 5-1. SECURE TO DUCT WITH SHEET METAL SCREWS COMPATIBLE WITH DUCT MATERIALS.
B. ROUND DUCTWORK: SUPPORT WITH AIRCRAFT CABLES COMPLYING WITH ASTM A 303, CONNECT ENDS WITH CADMIUM-PLATED STEEL ASSEMBLIES WITH BRACKETS, S/WEL AND BOLTS DESIGNED FOR DUCT HANGER SERVICE.
C. EXTERIOR DUCTWORK SHALL BE PROVIDED WITH DUCT SUPPORTS, SPACED PER THE MANUFACTURER'S RECOMMENDATIONS.

PART 3 - EXECUTION

- 1. INSTALLATION
A. DRAWING PLANS, SCHEMATICS AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF DUCTWORK ROUTING. COORDINATE INSTALLATION WITH WORK OF ALL OTHER TRADES AND EXISTING CONDITIONS. ACCOMMODATE DUCT HANGER, RODS, INSULATION AND OTHER REQUIREMENTS AS REQUIRED.
B. INSTALL DUCTS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" IN MAXIMUM PRACTICAL LENGTHS WITH FEWEST POSSIBLE JOINTS.
C. UNLESS NOTED OTHERWISE, INSTALL DUCTS PARALLEL AND PERPENDICULAR TO BUILDING LINES.
D. INSTALL DUCTS WITH CLEARANCES AS REQUIRED TO ACCOMMODATE THE INSTALLATION OF INSULATION.
E. INSTALLATION OF EXPOSED DUCTWORK: PROTECT DUCTWORK FROM DAMAGE. REPAIR/REPLACE ALL DAMAGED SECTIONS AND FINISHED WORK. TRIM SEALANTS FLUSH WITH METAL. CREATE A SMOOTH AND UNIFORM EXPOSED BEAD. DO NOT USE TWO-PART TAPING SYSTEM. MAINTAIN CONSISTENCY, SYMMETRY AND UNIFORMITY IN THE INSTALLATION.
2. DUCT SEALING: CONSTRUCT DUCTS WITH 2 INCH POSITIVE AND NEGATIVE DUCT PRESSURE CLASSIFICATIONS.
3. HANGER AND SUPPORT INSTALLATION: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," CHAPTER 5. HANGERS EXPOSED TO VIEW SHALL BE AIRCRAFT IN ACCORDANCE WITH THE MECHANICAL DETAILS.
4. CONNECTIONS: MAKE CONNECTIONS TO EQUIPMENT WITH FLEXIBLE CONNECTORS COMPLYING WITH SECTION 23 33 00 "AIR DUCT ACCESSORIES." COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR BRANCH, OUTLET AND INLET, AND TERMINAL UNIT CONNECTIONS.
5. CLEANING: CLEAN ALL EXISTING DUCTWORK TO REMAIN PRIOR TO TESTING, ADJUSTING AND BALANCING. REMOVE ALL SURFACE CONTAMINANTS AND DEPOSITS ON AIR OUTLETS AND INLETS PRIOR TO PUNCH.
6. PROVIDE AIR BALANCE IN ACCORDANCE WITH SECTION 23 05 93 "TESTING, ADJUSTING, AND BALANCING FOR HVAC."
7. DUCT ELBOWS
A. RECTANGULAR: PROVIDE HOLLOW-FORMED, DOUBLE-THICKNESS TURNING VANES OR RADIIUSED ELBOWS WITH INSIDE RADIUS NO SMALLER THAN 1/2 OF THE DUCT WIDTH.
B. ROUND DUCT ELBOWS: PROVIDE RADIIUSED ELBOWS WITH AN INSIDE RADIUS NO SMALLER THAN 1/2 OF THE DUCT WIDTH.
8. BRANCH CONFIGURATION
A. RECTANGULAR: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 4-6. RECTANGULAR MAIN TO RECTANGULAR BRANCH SHALL BE A 45-DEGREE ENTRY. RECTANGULAR MAIN TO ROUND BRANCH SHALL BE A SPIN-IN FITTING.
B. ROUND: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-5 AND FIGURE 3-6. PROVIDE 90 DEGREE TAP.

(END OF SECTION 23 31 13)

SECTION 23 33 00 - AIR DUCT ACCESSORIES

PART 1 - GENERAL

- 1. SECTION INCLUDES
A. BACKDRAFT AND PRESSURE RELIEF DAMPERS
B. MANUAL VOLUME DAMPERS
C. CONTROL DAMPERS
D. TURNING VANES
E. FLEXIBLE CONNECTORS
F. DUCT ACCESSORY HARDWARE
2. SECTION REQUIREMENTS
A. SUBMITTALS: NONE REQUIRED.

PART 2 - PRODUCTS

- 1. COMPLY WITH NFPA 90A AND WITH NFPA 90B.
2. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, THICKNESS AND DUCT CONSTRUCTION METHODS UNLESS NOTED OTHERWISE. SHEET METAL MATERIALS SHALL BE FREE FROM PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS AND OTHER IMPERFECTIONS.
3. GALVANIZED SHEET STEEL, COMPLY WITH ASTM A 653/A 653M, G90 COATING DESIGNATION.
4. BACKDRAFT AND PRESSURE RELIEF DAMPERS: GRAVITY BAIENCED, AS SPECIFIED ON THE PLANS.
5. MANUAL VOLUME DAMPERS: STANDARD LEAKAGE RATING WITH LINKAGE OUTSIDE OF AIRFRAME, SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS
A. FRAME: HAT SHAPED WITH MITERED AND WELDED CORNERS. FLANGELESS FRAMES FOR INSTALLING IN DUCTS.
B. BLADES: RECTANGULAR DAMPERS SHALL BE MULTIPLE BLADES WITH OPPOSED-BLADE DESIGN. ROUND DAMPERS SHALL BE SINGLE BLADE.
C. BLADE AXLES: GALVANIZED STEEL.
D. BEARINGS: MOLDED SYNTHETIC.
E. THE BARS AND BRACKETS: GALVANIZED STEEL.
F. JACKSHAFT: 1/2" DIAMETER CONSTRUCTED OF GALVANIZED STEEL WITH PIPE-BEARING ASSEMBLY WITH SUPPORTS. LENGTH AND NUMBER OF MOUNTINGS AS REQUIRED.
G. HARDWARE: ZINC-PLATED, DIE CAST CORE WITH DIAL HANDLE AND A LOCKING NUT.
6. CONTROL DAMPERS
A. FRAME: HAT SHAPED WITH MITERED AND WELDED CORNERS. FLANGELESS FRAMES FOR INSTALLING IN DUCTS.
B. BLADES: RECTANGULAR DAMPERS SHALL BE MULTIPLE BLADES WITH OPPOSED-BLADE DESIGN. ROUND DAMPERS SHALL BE SINGLE BLADE. BLADE EDGING SHALL BE REPLACEABLE.
C. RUBBER SEALS: AS NOTED.
D. BLADE AXLES: 1/2" DIAMETER. BLADE LINKAGE HARDWARE OF ZINC-PLATED STEEL AND BRASS; ENDS SEALED AGAINST BLADE BEARING.
E. BEARINGS: MOLDED SYNTHETIC.
7. TURNING VANES: CURVED BLADES OF GALVANIZED SHEET STEEL. PROVIDED WITH SUPPORT BARS PERPENDICULAR TO BLADE SET SUITABLE FOR DUCT MOUNTING. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." SINGLE WALL CONSTRUCTION.
8. FLEXIBLE CONNECTORS: CONSTRUCTED OF FLAME-RETARDANT OR NONCOMBUSTIBLE FABRIC. FABRIC SHALL BE A GLASS FABRIC, DOUBLE COATED WITH NEOPRENE. COMPLY WITH UL 181 CLASS 1, FACTORY-FABRICATED WITH A FABRIC STRIP 3-1/2 INCHES WIDE ATTACHED TO TWO STRIPS OF 2-3/4 INCH THICK GALVANIZED SHEET STEEL.
9. INSTALLATION
A. INSTALL DUCT ACCESSORIES ACCORDING TO APPLICABLE DETAILS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE."
B. INSTALL VOLUME DAMPERS AT POINTS NOTED ON PLANS AND AS REQUIRED FOR SYSTEM BALANCING. WHERE DAMPERS ARE INSTALLED IN DUCTS WITH DUCT LINER, INSTALL DAMPERS WITH HAT CHANNELS OF SAME DEPTH AS LINER AND TERMINATE LINER WITH NOSING AT HAT CHANNEL.
C. WHERE DAMPERS ARE INSTALLED IN WRAPPED DUCT, PROVIDE INSULATION STAND-OFFS AS REQUIRED.
D. SET DAMPERS TO FULLY OPEN POSITION BEFORE TESTING, ADJUSTING AND BALANCING.
E. INSTALL TEST HOLES AT FAN INLETS AND OUTLETS AND WHERE REQUIRED FOR TESTING AND BALANCING PURPOSES.
F. INSTALL FIRE DAMPERS ACCORDING TO UL LISTING.
G. INSTALL FLEXIBLE CONNECTORS TO CONNECT DUCTS TO EQUIPMENT.
2. TESTS AND INSPECTIONS
A. OPERATE DAMPERS TO VERIFY FULL RANGE OF MOVEMENT.
B. OPERATE FIRE DAMPERS TO VERIFY FULL RANGE OF MOVEMENT AND VERIFY THAT PROPER HEAT-RESPONSE DEVICE IS INSTALLED.
C. INSPECT TURNING VANES FOR PROPER AND SECURE INSTALLATION.

(END OF SECTION 23 33 00)

SECTION 23 33 46 - FLEXIBLE DUCTS

PART 1 - GENERAL

- 1. SECTION REQUIREMENTS
A. SUBMITTALS: NONE REQUIRED.

PART 2 - PRODUCTS

- 1. COMPLY WITH NFPA 90A AND NFPA 90B.
2. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESS AND DUCT CONSTRUCTION METHODS UNLESS NOTED OTHERWISE.
3. COMPLY WITH ASTM E 866 90A.
4. INSULATED, FLEXIBLE DUCT UL 181, CLASS 1, FACTORY FABRICATED AND INSULATED. PROVIDED WITH INTERIOR LINER, FIBROUS-GLASS INSULATION AND VAPOR-BARRIER FILM.
A. PRESSURE RATING: 10" W.G. POSITIVE.
B. MAXIMUM VELOCITY: 4,000 FPM
C. INSULATION R-VALUE: R10
5. FLEXIBLE DUCT CONNECTORS SHALL BE NYLON STRAPS IN SIZES 3 THROUGH 18 INCHES TO SUIT DUCT SIZE.

PART 3 - EXECUTION

- 1. INSTALLATION
A. INSTALL FLEXIBLE DUCTS ACCORDING TO APPLICABLE DETAILS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
B. INSTALL IN INDOOR APPLICATIONS ONLY. FLEXIBLE DUCTWORK IS ONLY PERMITTED TO CONNECT TO SUPPLY AIR GRILLES, REGISTERS AND DIFFUSERS. MAXIMUM LENGTH SHALL BE 60 INCHES.
C. CONNECT FLEXIBLE DUCTS TO METAL DUCTS WITH DRAW BANDS AND TAPE.
D. INSTALL DUCTS FULLY EXTENDED.
E. DO NOT BEND DUCTS ACROSS SHARP CORNERS.
F. BENDS OF FLEXIBLE DUCTING SHALL NOT EXCEED A MINIMUM OF ONE DUCT DIAMETER.
G. AVOID CONTACT WITH METAL FIXTURES, WATER LINES, PIPES, ADJACENT DUCTWORK OR CONDUIT.
H. INSTALL FLEXIBLE DUCTS IN A DIRECT LINE, WITHOUT SAGS, TWISTS OR TURNS.
I. SUSPEND FLEXIBLE DUCTS WITH BANDS 1-1/2 INCHES WIDE AND SPACED A MAXIMUM OF 48 INCHES APART. PROVIDE ADDITIONAL SUPPORT AT BENDS. DUCTS MAY REST ON CEILING JOISTS OR TRUSS SUPPORTS. SPACING BETWEEN THESE ELEMENTS SHALL NOT EXCEED 48 INCHES.

(END OF SECTION 23 33 46)

SECTION 23 34 00 - SQUARE INLINE FANS

PART 1 - GENERAL

- 1. SECTION REQUIREMENTS
A. SUBMITTALS: PROVIDE SHOP DRAWINGS INDICATING THE DIMENSIONS, WEIGHTS, REQUIRED CLEARANCES, COMPONENTS, ELECTRICAL CHARACTERISTICS, CFM, STATIC PRESSURE AND FAN CURVE.
B. WARRANTY: SUBMIT A WRITTEN WARRANTY, SIGNED BY THE MANUFACTURER AGREEING TO REPAIR OR REPLACE COMPONENTS OF FANS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN THE MANUFACTURER'S STANDARD WARRANTY PERIOD.

PART 2 - PRODUCTS

- 1. DESCRIPTION
A. INLINE TYPE FAN WITH SQUARE INLET AND OUTLET DESIGNED FOR FLOOR-MOUNTING OR HUNG INSTALLATIONS IN-LINE WITH DUCTWORK WITH CENTRIFUGAL OR MIXED-FLOW WHEEL.
2. MANUFACTURERS: AS NOTED IN THE MECHANICAL SCHEDULES. NO SUBSTITUTIONS SHALL BE PERMITTED.
3. CHARACTERISTICS: PROVIDED WITH:
A. FAN: CONSTRUCTED OF CORROSION RESISTANT STEEL, DIRECT DRIVEN, SQUARE INLINE BLOWER.
B. HOUSING: CONSTRUCTED OF HEAVY-GAUGE GALVANIZED STEEL OR STAINLESS STEEL FOR UL762 LISTED FANS. SIDE PANELS SHALL BE REMOVABLE FOR SERVICE ACCESS.
C. WHEEL: BACKWARD INCLINED, NON-OVERLOADING, ALL-ALUMINUM WHEEL, BALANCED IN ACCORDANCE WITH AMCA STANDARD 204-96.
D. MOTOR: VOLTAGE AS NOTED IN THE MECHANICAL SCHEDULES. MOTOR SHALL HAVE PERMANENTLY LUBRICATED BALL BEARINGS, SUPPLIED WITH A MOTOR COVER.
E. ACCESSORIES: AS NOTED ON THE MECHANICAL SCHEDULES.

PART 3 - EXECUTION

- 1. INSTALLATION
A. AFTER INSTALLING FANS, TEST UNITS FOR COMPLIANCE WITH REQUIREMENTS.
B. CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATIONS.
C. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATION.
2. CONNECTIONS
A. COMPLY WITH DUCT INSTALLATION REQUIREMENTS SPECIFIED IN OTHER HVAC SECTIONS. DRAWINGS INDICATE GENERAL ARRANGEMENTS OF DUCTS.
B. WHERE INSTALLING ADJACENT TO OTHER BUILDING SYSTEMS, ALLOW SPACE FOR SERVICE AND MAINTENANCE.
C. CONNECT DUCTWORK TO FAN WITH FLEXIBLE DUCT CONNECTORS.
D. CONNECT ELECTRICAL WIRING IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS.
E. GROUND EQUIPMENT IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS.
3. FIELD QUALITY CONTROL
A. AFTER INSTALLING FANS, TEST UNITS FOR COMPLIANCE WITH REQUIREMENTS.
B. CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATIONS.
C. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATION.

(END OF SECTION 23 34 00)

HVAC GENERAL NOTES

- A. GENERAL NOTES APPLY TO ALL HVAC SHEETS.
B. WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE AUTHORITY HAVING JURISDICTION, INCLUDING APPLICABLE SECTIONS OF NFPA, THE MECHANICAL CODE, AND ANY INTERIM AMENDMENTS AT THE TIME OF THE PROPOSAL. PURCHASE PERMITS ASSOCIATED WITH THE WORK. OBTAIN INSPECTIONS REQUIRED BY CODE. SEE SHEET G-001 FOR THE PREVAILING CODES.
C. CONTRACTOR AND SUBCONTRACTORS SHALL REVIEW A COMPLETE SET OF THE CONSTRUCTION DOCUMENTS.
D. COORDINATE WORK WITH THE WORK OF OTHER TRADES, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND OF THE EXISTING CONDITIONS AT THE PROJECT SITE.
E. DRAWINGS FOR THE MECHANICAL WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWING SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, OFFSETS, ACCESSORIES, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.
F. DUCT DIMENSIONS ON PLANS INDICATE DIMENSIONS OF INTERNAL FREE AREA.
G. PERFORATED CEILING DIFFUSERS SHALL BE 4-WAY UNLESS NOTED OTHERWISE.
H. COORDINATE ROOF WORK WITH THE LANDLORD AND THE OWNER'S CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION. UTILIZE THE LANDLORD'S ROOFING CONTRACTOR AT THE GENERAL CONTRACTOR'S EXPENSE WHEN REQUIRED.
I. UNLESS NOTED OTHERWISE RECTANGULAR DUCT ELBOWS SHALL BE MITERED ELBOWS WITH DOUBLE-THICKNESS TURNING VANES.
J. REPLACE AIR FILTERS WITH NEW, CLEAN MERV8 FILTERS AT TURNOVER.
K. THE TERM "FURNISH" OR "SUPPLY" MEANS SUPPLY AND DELIVER TO THE PROJECT SITE, INCLUDING FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS. THE TERM "INSTALL" DESCRIBES THE OPERATIONS AT THE PROJECT SITE READING THE ACTUAL UNLOADING, UNPACKING, ASSEMBLY, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS. THE TERM "PROVIDE" MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.
L. A FINAL REPORT FOR THE TESTING AND ADJUSTMENTS OF ALL NEW SYSTEMS FROM ALL DISCIPLINES SHALL BE COMPLETED WITH FINAL APPROVAL BY THE FIELD INSPECTOR. THIS REPORT SHALL BE SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.
M. TESTING AND BALANCING OF THE MECHANICAL SYSTEMS TO BE COMPLETED BY NATIONAL TAB AT THE GENERAL CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL CONTACT WITH SCHEDULE AND SUPERVISE/ASSIST NATIONAL TAB AS REQUIRED. REFER TO THE COVER SHEET, OR CONTACT SWEETGREEN'S CONSTRUCTION MANAGER FOR CONTACT INFORMATION.
N. ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, OR SHEET METAL UNTIL THE FINAL START UP OF THE HEATING, COOLING, AND VENTILATION EQUIPMENT.
O. REFER TO THE TRANE NATIONAL ACCOUNT INFORMATION BLOCKS FOR REPRESENTATIVE CONTACT INFORMATION.
P. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY UNIT CONFIGURATIONS, COORDINATE DELIVERY WITH TRANE, RECEIVE AND UNLOAD EQUIPMENT, INSPECT EQUIPMENT AND PROPERLY INSTALL EQUIPMENT INCLUDING FIELD-INSTALLED ITEMS. PROVIDE EQUIPMENT STARTUP AND 1ST YEAR LABOR WARRANTY AND ADMINISTRATION.
Q. PROVIDE LABELING FOR ALL HVAC EQUIPMENT USING ENGRAVED PHENOLIC PLATES OR AS REQUIRED BY THE LANDLORD.



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ENGINEER OF RECORD:



EVERJ ENGINEERING, INC. 1509 BUCK TRAIL LANE WORTHINGTON, OH 43085 240-519-0922 www.everjengineering.com

STAMP:

CONSTRUCTION ISSUE SET

03/17/2023

PROJECT INFORMATION: BROOKFIELD

PROJECT INFORMATION: 20350 WEST LORD STREET, SUITE G117

PROJECT INFORMATION: BROOKFIELD, WI 53045

DRAWN BY: JAE
CHECKED BY: MK
PROJECT MANAGER: JAE
SG DESIGN MANAGER: DZ
SG CONSTR. MANAGER: JB
PROJECT NO: 220027
TEMPLATE VERSION: 05/20/2022

REV. DATE DESCRIPTION

MECHANICAL SPECIFICATIONS

M-010

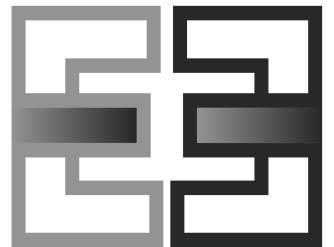


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REVIEWS  
REV. DATE DESCRIPTION

MECHANICAL  
SPECIFICATIONS

M-011

### SECTION 23 34 33 - AIR CURTAINS

#### PART 1 - GENERAL

##### 1. SECTION REQUIREMENTS

- A. SUBMITTALS: PROVIDE SHOP DRAWINGS INDICATING THE HEATING WATTAGE, ELECTRICAL CHARACTERISTICS, AIRFLOW CHARACTERISTICS, DIMENSIONS, WEIGHTS AND ACCESSORIES.
- B. WARRANTY: PROVIDE MANUFACTURER'S WARRANTY EFFECTIVE FOR FIVE YEARS FOR UNHEATED UNITS, AND TWO YEARS FOR HEATED UNITS. THE GENERAL CONTRACTOR SHALL PROVIDE A 12 MONTH WARRANTY ON ALL WORKMANSHIP.

#### PART 2 - PRODUCTS

##### 1. MANUFACTURERS: AS NOTED IN THE MECHANICAL SCHEDULES.

##### 2. CHARACTERISTICS: PROVIDED WITH:

- A. CABINET: ALUMINIZED STEEL CABINET WITH STAINLESS STEEL RIVETED CONSTRUCTION AND WHITE POWDER COATED FINISH.
- B. MOUNTING: PROVIDE WALL OR SUSPENDED MOUNTING AS REQUIRED.
- C. SERVICE ACCESS: REMOVABLE SCREEN AND REMOVABLE BOTTOM ACCESS PANEL.
- D. MOTORS: DIRECT DRIVE, RESILIENT MOUNTED, RATED FOR CONTINUOUS DUTY WITH INTERNAL THERMAL-OVERLOAD PROTECTION AND PERMANENTLY LUBRICATED SEALED BALL BEARINGS.
- E. FANS: BALANCED, FORWARD-CURVED CROSS FLOW MADE OF ALUMINUM.
- F. DISCHARGE NOZZLES: PROVIDE UNIFORM VELOCITY ACROSS WIDTH OF AIR CURTAIN.
- G. INLET: PROVIDED WITH PERFORATED PATTERN SCREEN.
- H. HEATING ELEMENTS (WHEN NOTED ON PLANS): UL-APPROVED, FACTORY-MOUNTED, FACTORY WIRED, THERMALLY PROTECTED, IN GALVANIZED STEEL FRAME. HELICAL COIL DESIGN WITH THERMAL CUTOFF.
- I. PROVIDE ALL ACCESSORIES AS NOTED IN THE SCHEDULES.

##### 3. CONTROLS:

- A. MANUAL SWITCH: FACTORY INSTALLED "FAN-OFF-FAN & HEAT" AND "HIGH-LOW" SWITCHES.
- B. CONTROL PACKAGE: AIR CURTAIN SHALL TURN ON WHEN DOOR IS OPENED AND SHUT OFF WHEN DOOR IS CLOSED.
- C. OUTDOOR AIR TEMPERATURE SENSOR (WHEN PROVIDED WITH A HEATING ELEMENT AND INDICATED ON PLANS).

#### PART 3 - EXECUTION

- 1. INSTALLATION
  - A. INSTALL AIR CURTAIN WHERE INDICATED ON DRAWINGS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE CLEARANCE TO PERMIT SERVICING AND MAINTENANCE.
  - B. INSTALL LEVEL, PLUMB AND AS CLOSE AS PRACTICAL TO TOP OF OPENING AND FACE OF WALL.
  - C. INSTALL ALL ACCESSORIES.

##### 2. CONNECTIONS

- A. CONNECT ELECTRICAL WIRING IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS.
- B. GROUND EQUIPMENT IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS.

##### 3. FIELD QUALITY AND CONTROL

- A. TEST AND OPERATE AIR CURTAIN TO VERIFY PERFORMANCE AS INDICATED.

##### 4. ADJUSTING

- A. ADJUST MOTOR AND FAN SPEED TO PERFORM AS INDICATED.
- B. ADJUST NOZZLES TO DEFLECT AIR OUTWARD UNLESS NOTED OTHERWISE.

(END OF SECTION 23 34 33)

### SECTION 23 37 13 - GRILLES, REGISTERS & DIFFUSERS

#### PART 1 - GENERAL

##### 1. SECTION REQUIREMENTS

- A. SUBMITTALS: NONE REQUIRED.

#### PART 2 - PRODUCTS

- 1. GRILLES: MANUFACTURER, MODEL, MATERIAL, FINISH, MOUNTING AND ACCESSORIES SHALL BE AS NOTED IN THE MECHANICAL SCHEDULES. NO SUBSTITUTIONS SHALL BE PERMITTED.
- 2. REGISTERS: MANUFACTURER, MODEL, MATERIAL, FINISH, MOUNTING AND ACCESSORIES SHALL BE AS NOTED IN THE MECHANICAL SCHEDULES. NO SUBSTITUTIONS SHALL BE PERMITTED.
- 3. DIFFUSERS: MANUFACTURER, MODEL, MATERIAL, FINISH, MOUNTING AND ACCESSORIES SHALL BE AS NOTED IN THE MECHANICAL SCHEDULES. NO SUBSTITUTIONS SHALL BE PERMITTED.

#### PART 3 - EXECUTION

- 1. INSTALLATION
  - A. INSTALL GRILLES, REGISTERS & DIFFUSERS LEVEL AND PLUMB.
  - B. INSTALL GRILLES, REGISTERS & DIFFUSERS AS INDICATED. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION.
  - C. INSTALL GRILLES, REGISTERS & DIFFUSERS WITH AIRTIGHT CONNECTIONS TO DUCTS AND TO ALLOW SERVICE AND MAINTENANCE OF DAMPERS, EXTRACTORS AND OTHER ACCESSORIES.
  - D. WHEN INDICATED ON THE PLANS, PAINT THE GRILLES, REGISTERS & DIFFUSERS PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS WITH AN ENAMEL PAINT, COLOR AS INDICATED.
  - E. AFTER INSTALLATION, ADJUST REGISTERS & DIFFUSERS TO AIR PATTERNS (IF NOTED) OR AS DIRECTED BY THE TENANT'S CONSTRUCTION MANAGER PRIOR TO STARTING AIR BALANCING.

(END OF SECTION 23 37 13)

### SECTION 23 81 26 - SPLIT-SYSTEM AIR-CONDITIONERS

#### PART 1 - GENERAL

##### 1. SECTION REQUIREMENTS

- A. SUBMITTALS: PROVIDE SHOP DRAWINGS INDICATING THE DIMENSIONS, WEIGHTS, REQUIRED CLEARANCES, COMPONENTS, EFFICIENCIES, CAPACITIES, ELECTRICAL CHARACTERISTICS AND LOCATION AND SIZE OF EACH FIELD CONNECTION FOR EACH SPLIT SYSTEM.
- B. WARRANTY: SUBMIT A WRITTEN WARRANTY, SIGNED BY THE MANUFACTURER AGREEING TO REPAIR OR REPLACE COMPONENTS OF RTUs THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN 5 YEARS OF SUBSTANTIAL COMPLETION.

#### PART 2 - PRODUCTS

- 1. DESCRIPTION
  - A. SPLIT-SYSTEM AIR-CONDITIONING AND HEAT-PUMP UNITS CONSISTING OF SEPARATE EVAPORATOR-FAN AND COMPRESSOR-CONDENSER COMPONENTS.
  - B. SEIRAE COMPLIANCE: COMPLY WITH ASHRAE 15 FOR REFRIGERATION SAFETY.
  - C. ENERGY COMPLIANCE: COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE ENERGY CODE LISTED ON THE COVER SHEET.
  - D. ELECTRICAL COMPONENTS, DEVICES AND ACCESSORIES SHALL BE LABELED AND LISTED AS DEFINED IN NFPA 70 BY A QUALIFIED TESTING AGENCY.

##### 2. AIR-HANDLING UNITS

- A. REFER TO DRAWINGS FOR CONFIGURATION.
- B. REFRIGERANT COIL SHALL BE COPPER TUBE WITH MECHANICALLY BONDED ALUMINUM FINS AND THERMAL EXPANSION VALVE.
- C. ELECTRIC COIL (WHEN SPECIFIED) SHALL BE HELICAL, NICKEL-CHROME, RESISTANCE WIRE HEATING ELEMENTS; WITH FACTORY SUPPORT BUSHINGS, AUTOMATIC-RESET THERMAL CUTOFF, BUILT-IN MAGNETIC CONTACTORS, MANUAL-RESET THERMAL CUTOFF, AIRFLOW PROVING DEVICE AND ONE-TIME FUSES IN TERMINAL BOX. REFER TO SCHEDULE FOR NUMBER OF STAGES.
- D. FAN SHALL BE FORWARD-CURVED, DOUBLE-WIDTH WHEEL, MOTOR SHALL BE PERMANENTLY LUBRICATED, BALL-BEARING TYPE WITH BUILT-IN THERMAL-OVERLOAD PROTECTION. REFER TO SCHEDULE FOR MOTOR TYPE.
- E. FILTERS SHALL BE A MINIMUM OF 1 INCH THICK WITH A MERV RATING AS REQUIRED PER CODE. SUFFICIENT SPACE SHALL BE PROVIDED TO ACCOMMODATE FILTER CHANGES.
- F. PROVIDE GALVANIZED STEEL CONDENSATE DRAIN PAN UNDER UNIT WITH DRAIN CONNECTION AT LOWEST POINT TO PREVENT OVERFLOW.

##### 3. CONDENSING UNITS

- A. COMPRESSOR SHALL BE HERMETICALLY SEALED WITH CRANKCASE HEATER AND MOUNTED ON VIBRATION ISOLATION DEVICE. COMPRESSOR MOTOR SHALL HAVE THERMAL AND CURRENT-SENSITIVE OVERLOAD DEVICES, START CAPACITOR, RELAY AND CONTACTOR.
- B. REFRIGERANT COIL SHALL BE COPPER TUBE WITH MECHANICALLY BONDED ALUMINUM FINS AND LIQUID SUBCOOLER.
- C. HEAT PUMPS SHALL BE PROVIDED WITH A REVERSING VALVE AND LOW-TEMPERATURE AIR CUTOFF THERMOSTAT.
- D. FAN SHALL BE ALUMINUM-PROPELLER TYPE, DIRECTLY CONNECTED TO A PERMANENTLY LUBRICATED MOTOR WITH INTEGRAL THERMAL-OVERLOAD PROTECTION.

##### 4. PROVIDE WITH ACCESSORIES AS NOTED IN THE SCHEDULE.

#### PART 3 - EXECUTION

- 1. INSTALLATION
  - A. INSTALL UNITS LEVEL AND PLUMB.
  - B. INSTALL AIR HANDLING UNITS WITH VIBRATION ISOLATORS AND AS NOTED IN THE STRUCTURAL DRAWINGS.
  - C. INSTALL CONDENSING UNITS ON RAILS AND AS NOTED IN THE STRUCTURAL DRAWINGS.
  - D. INSTALL AND CONNECT PRECHARGED REFRIGERANT TUBING TO COMPONENTS QUICK-CONNECT FITTINGS. INSTALL TUBING TO ALLOW ACCESS TO UNIT.
  - E. INSTALL CONDENSATE PIPING WITH TRAP AND PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE AS NOTED ON THE PLANS.
- 2. CONNECTIONS
  - A. CONNECT SUPPLY AND RETURN AIR DUCTS WITH FLEXIBLE DUCT CONNECTORS.
  - B. MAKE ALL ELECTRICAL AND CONTROLS CONNECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND IN COMPLIANCE WITH NFPA 70.
- 3. CLEANING AND PROTECTION
  - A. INSTALL TEMPORARY FILTERS DURING CONSTRUCTION. REPLACE FILTERS PRIOR TO BALANCING, AND AGAIN AT SUBSTANTIAL COMPLETION.
  - B. DO NOT OPERATE AIR-HANDLING UNITS UNTIL DUCTWORK IS CLEAN, FILTERS ARE IN PLACE AND FAN HAS BEEN RUN UNDER OBSERVATION.

(END OF SECTION 23 81 26)

### SECTION 23 90 00 - LOUVERS

#### PART 1 - GENERAL

##### 1. SECTION INCLUDES

- A. EXTRUDED ALUMINUM LOUVERS
- B. LOUVERS SHALL BEAR THE AMCA CERTIFIED RATINGS SEAL, LISTED FOR BASE PROTECTION.

##### 2. PERFORMANCE REQUIREMENTS

- A. UL CLASSIFIED FOR WIND RESISTANT BUILDING COMPONENTS IN ACCORDANCE WITH ASTM E330-02 FOR +/- FSF WINDLOAD.

##### 3. SECTION REQUIREMENTS

- A. SUBMITTALS: PROVIDE SHOP DRAWINGS INDICATING SIZE, FACE AREA, FREE AREA, AIRFLOW, PRESSURE DROP, MATERIAL, FINISH AND FURNISHED ACCESSORIES.
- B. WARRANTY: SUBMIT A WRITTEN WARRANTY, SIGNED BY THE MANUFACTURER INDICATING THAT THE PRODUCT WILL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF 5-YEARS AS OF THE DATE OF DELIVERY TO THE DELIVERY LOCATION.

#### PART 2 - PRODUCTS

##### 1. DESCRIPTION

- A. LOUVERS SHALL BE STATIONARY DRAINABLE TYPE WITH DRAIN GUTTERS IN EACH BLADE AND DOWNSPOUTS IN JAMBS AND MULLIONS.
- B. STATIONARY DRAINABLE BLADES SHALL BE CONTAINED WITHIN A FRAME.
- C. LOUVER COMPONENTS (HEADS, JAMBS, SILLS, BLADES & MULLIONS) SHALL BE FACTORY ASSEMBLED BY THE MANUFACTURER.
- D. LOUVER SIZES TOO LARGE FOR SHIPPING SHALL BE BUILT-UP BY THE CONTRACTOR FROM FACTORY-ASSEMBLED SECTIONS.
- E. LOUVERS SHALL BE FURNISHED WITH A FATTENED ALUMINUM BIRD SCREEN IN REMOVABLE FRAME.
- F. FINISH SHALL BE AS NOTED IN THE MATERIAL SCHEDULES.

##### 2. MANUFACTURERS: AS NOTED IN THE MECHANICAL SCHEDULES. ALTERNATES BY GREENHECK AND NAILOR.

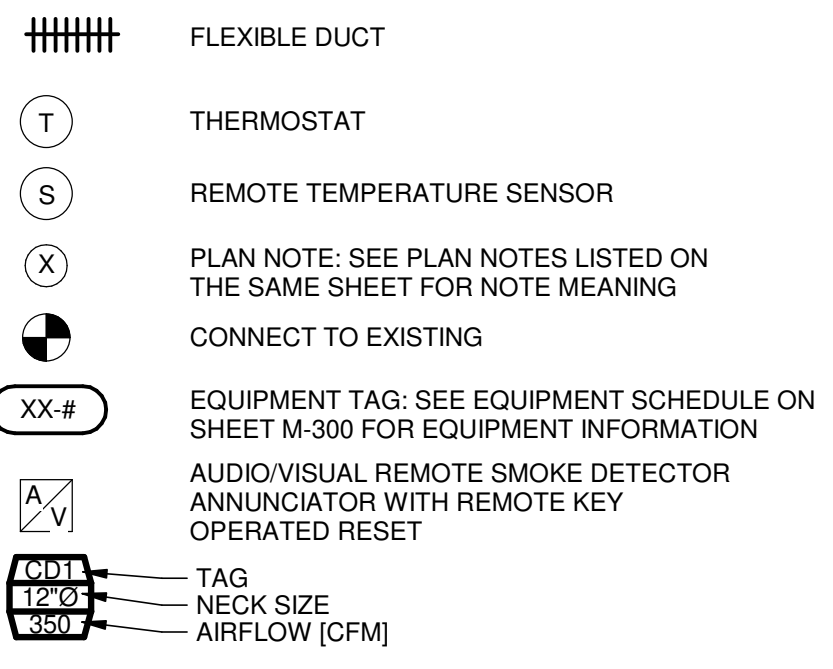
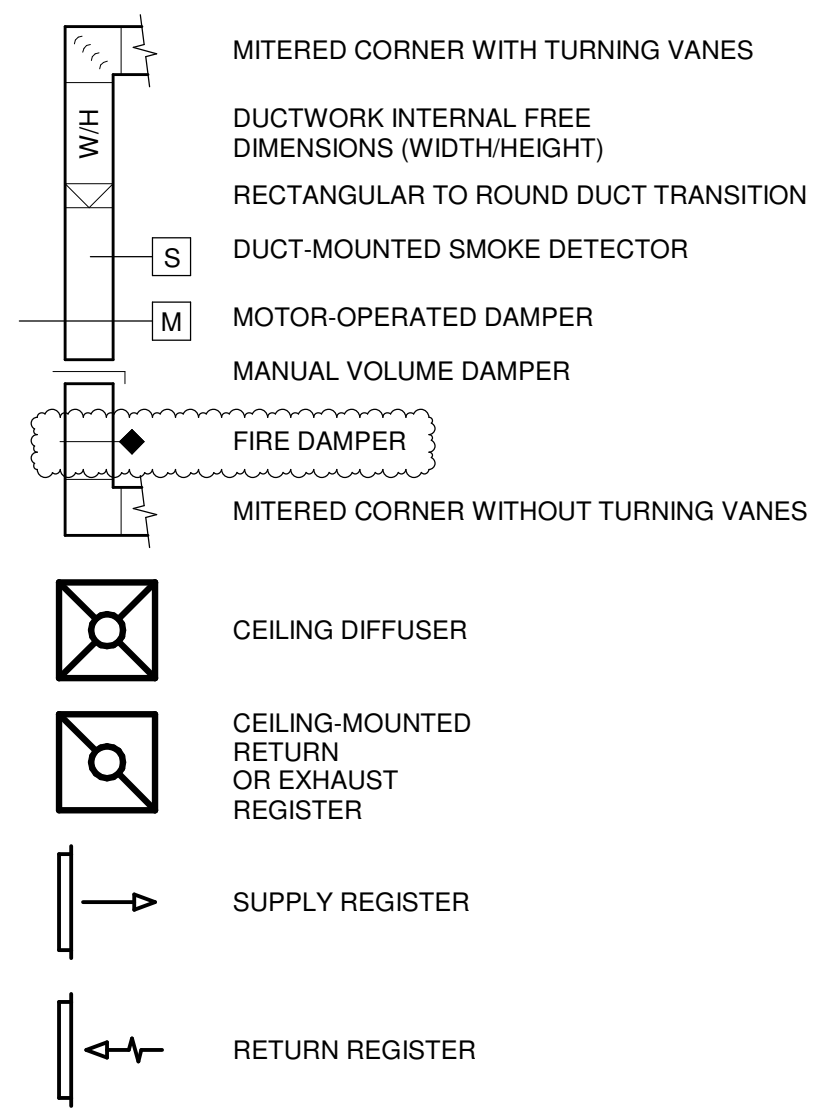
#### PART 3 - EXECUTION

- 1. INSTALLATION
  - A. INSPECT AREAS TO RECEIVE LOUVERS. NOTIFY THE ARCHITECT OF CONDITIONS THAT WOULD ADVERSELY AFFECT THE INSTALLATION OR UTILIZATION OF THE LOUVERS.
  - B. CLEAN OPENING THOROUGHLY PRIOR TO INSTALLATION AND PREPARE SURFACES USING THE METHODS RECOMMENDED BY THE MANUFACTURER.
  - C. INSTALL LOUVERS AT LOCATIONS INDICATED AND IN ACCORDANCE WITH THE STRUCTURAL DETAILS AND MANUFACTURER'S INSTRUCTIONS.
  - D. INSTALL LOUVERS LEVEL, PLUMB, IN PLANE OF WALL AND IN ALIGNMENT WITH ANY ADJACENT WORK.
  - E. INSTALL JOINT SEALANTS AS REQUIRED.
- 2. FIELD QUALITY CONTROL
  - A. CLEAN LOUVER SURFACES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
  - B. TOUCH-UP, REPAIR OR REPLACE DAMAGED PRODUCTS.

(END OF SECTION 23 90 00)

**SYMBOLS & ABBREVIATIONS**

**HVAC SYMBOLS**



**HVAC ABBREVIATIONS**

(E)	EXISTING	(R)	RELOCATED
AFG	ABOVE FINISHED FLOOR	AHU	AIR HANDLING UNIT
BC	BLOWER COIL	CD	CEILING DIFFUSER
CU	CONDENSING UNIT	EF	EXHAUST FAN
ER	EXHAUST REGISTER	EXTG	EXISTING
GC	GENERAL CONTRACTOR	HES	TENANT'S HVAC EQUIPMENT SUPPLIER
KES	TENANT'S KITCHEN EQUIPMENT SUPPLIER	OB	BLADE DAMPER
PL	PLENUM	RG	RETURN GRILLE
RTU	ROOFTOP UNIT	SD	SLOT DIFFUSER
SR	SUPPLY REGISTER	VSC	VARIABLE SPEED CONTROL
WSHP	WATER SOURCE HEAT PUMP		

**CODED NOTES**

- INSTALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTION AND PER THE STRUCTURAL DETAILS.
- COORDINATE MOUNTING LOCATION FOR WALK-IN COOLER CONDENSING UNIT, CU-5 ON TOP OF THE WALK-IN COOLER WITH THE KITCHEN EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. ENSURE ALL CLEARANCE REQUIREMENTS FOR THE UNIT ARE MAINTAINED THROUGH CONSTRUCTION. KITCHEN EQUIPMENT SUPPLIER SHALL PROVIDE LINESET, SPECIALTIES AND MAKE ALL FINAL CONNECTIONS BETWEEN THE CONDENSING UNIT AND EVAPORATOR COIL.
- PROVIDE SUPPLY DIFFUSER CONNECTION PER DETAIL 1/SHEET M-400.
- REFER TO THE ARCHITECTURAL RCP FOR CEILING MOUNTED EQUIPMENT LOCATION, TYPICAL.
- PROVIDE AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET. WIRE A UNIT BACK TO EACH SMOKE DETECTOR. MOUNT UNIT 60" AFF. TYPICAL.
- PROVIDE HONEYWELL TH8321R1001 THERMOSTATS WITH LOCKABLE COVERS (HONEYWELL CG511A1000 OR EQUAL) FOR THE MECHANICAL EQUIPMENT AT THIS LOCATION AT 48" AFF. COORDINATE WITH ELECTRICAL SWITCHING IN THE AREA AND EXTEND WIRING TO REMOTE TEMPERATURE SENSOR AND UNITS. LABEL EACH THERMOSTAT ACCORDINGLY. COORDINATE THERMOSTAT LOCATION WITH WALL-MOUNTED EQUIPMENT SO THAT THE THERMOSTATS ARE NOT BLOCKED BY SHELVING, COAT RACKS OR DOORS.
- INSTALL THE TEMPERATURE SENSOR FOR THE HVAC EQUIPMENT NOTED AT THIS LOCATION AT 5'-6" AFF. COORDINATION LOCATION WITH EQUIPMENT AND WALL-MOUNTED FIXTURES AS REQUIRED SUCH THAT THE SENSOR IS NOT BLOCKED.
- REFER TO DETAIL 2/SHEET M-400 FOR AIR HANDLER INSTALLATION DETAILS.
- THE GENERAL CONTRACTOR SHALL FURNISH A REME HALO AIR PURIFICATION SYSTEM AND REQUIRED TRANSFORMER, PURCHASED THROUGH SWEETGREEN'S VENDOR (NATIONAL TAB) AND INSTALL SYSTEM IN THE SUPPLY AIR DUCTWORK AND PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ADJUST AS REQUIRED FOR THE SUPPLY AIRFLOW.
- THE GENERAL CONTRACTOR SHALL PROVIDE A DUCT-MOUNTED SMOKE DETECTOR IN THE RETURN AIR STREAM. UPON DETECTION OF SMOKE, THE SUPPLY AIR FAN SHALL DE-ENERGIZE. COORDINATE ALL REQUIREMENTS WITH THE LANDLORD AND ALARM PROVIDER.
- MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ZONES. NO DUCTWORK, PIPING, CONDUIT OR OTHER SYSTEMS SHALL BE PERMITTED IN THIS AREA. COORDINATE WITH SITE CONDITIONS AND WORK OF OTHER TRADES AS REQUIRED. TYPICAL.
- PROVIDE A RUSKIN CBDZ COUNTERBALANCED BACKDRAFT DAMPER IN THE RELIEF AIR STREAM AS SHOWN. DAMPER SHALL BE BALANCED TO PERMIT THE REQUIRED AIRFLOW TO EXIT DURING ECONOMICIZATION CONDITIONS. INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- INSTALL THE TYPE II HOOD, HD-2 IN LOCATION SHOWN. SUPPORT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL HOOD ACCORDING TO THE REQUIREMENTS OF IT'S LISTING, THE BUILDING CODE, ALL NFPA REQUIREMENTS AND THE LOCAL AUTHORITY HAVING JURISDICTIONS REQUIREMENTS.
- RELOCATE THE EXISTING AIR-HANDLING UNIT TO LOCATION SHOWN. THE GENERAL CONTRACTOR SHALL CHEMICALLY CLEAN COILS AND VERIFY HEAT FUNCTION. PRIOR TO RE-ROUTING THE LINESET, THE GENERAL CONTRACTOR SHALL EVACUATE THE REFRIGERANT LINES PER THE MANUFACTURER'S INSTRUCTIONS AND STORE. RE-ROUTE THE LINESET AND PROVIDE ADDITIONAL PIPING AS REQUIRED. RE-CHARGE THE LINES UTILIZING THE STORED REFRIGERANT AND PROVIDE ADDITIONAL REFRIGERANT AS REQUIRED. REPAIR/REPLACE FAN BELTS, BALANCE FAN BLADES AS NECESSARY. GREASE BEARINGS AND VERIFY MOTOR FUNCTION/ROTATION. REPLACE EXISTING AIR FILTERS AT START OF CONSTRUCTION AND IMMEDIATELY PRIOR TO AIR-BALANCE. REPAIR/REPLACE ALL DEFECTIVE PARTS AS REQUIRED TO RETURN THE UNIT TO WORKING ORDER. REBALANCE THE UNIT AS NOTED IN THE SCHEDULES. INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- EXISTING CONDENSING UNIT TO REMAIN. THE GENERAL CONTRACTOR SHALL CLEAN THE EXTERIOR CABINET AND STRAIGHTEN BENT CONDENSER FINS AS REQUIRED. REPAIR/REPLACE FAN BELTS, BALANCE FAN BLADES AS NECESSARY, GREASE BEARINGS AND VERIFY MOTOR FUNCTION/ROTATION. REPAIR/REPLACE ALL DEFECTIVE PARTS AS REQUIRED TO RETURN THE UNIT TO WORKING ORDER.
- PROVIDE A BELIMO ZIP ECONOMIZER FOR MECHANICAL EQUIPMENT. PROVIDE 24V FULLY-MODULATING DAMPERS, SENSORS AND WIRING AS REQUIRED FOR A FULLY FUNCTIONING ENTHALPY ECONOMIZER SYSTEM. INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- PROVIDE AN ACCESS PANEL TO FACILITATE ACCESS TO THE BACKDRAFT DAMPER. COORDINATE EXACT SIZE AND LOCATION WITH FIELD-CONDITIONS AS NECESSARY.
- PROVIDE A DYNAMIC, TYPE A FIRE DAMPER IN AN ACCESSIBLE LOCATION IN THE PRESSURE-RELIEF DUCT IN THE LOCATION SHOWN. COORDINATE REQUIRED RATING WITH THE LANDLORD'S WALL PRIOR TO ROUGH-IN. INSTALL IN ACCORDANCE WITH DETAIL 7/SHEET M-400, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS REQUIRED BY THE LOCAL AHJ.
- CONNECT TO THE EXISTING PRESSURE-RELIEF LOUVER IN THE LANDLORD'S CORRIDOR. FIELD-VERIFY EXACT DUCTWORK ROUTING, SIZES AND ALL OTHER REQUIREMENTS WITH LANDLORD'S REPRESENTATIVE PRIOR TO ROUGH-IN.



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ENGINEER OF RECORD:  
  
EVERJ ENGINEERING, INC.  
1509 BUCK TRAIL LANE  
WORTHINGTON, OH 43085  
240-319-0822  
www.everjengineering.com

STAMP:  
**CONSTRUCTION ISSUE SET**

03/17/2023

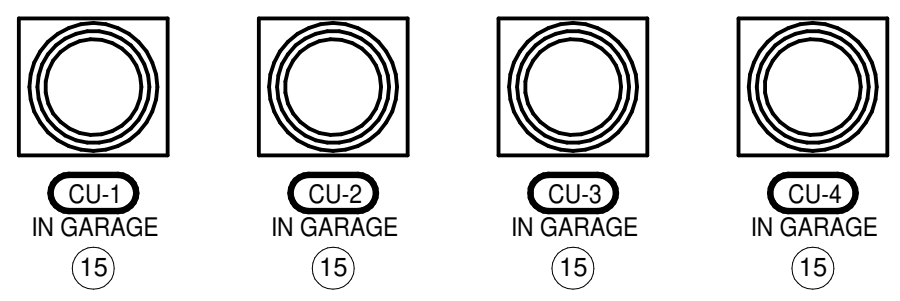
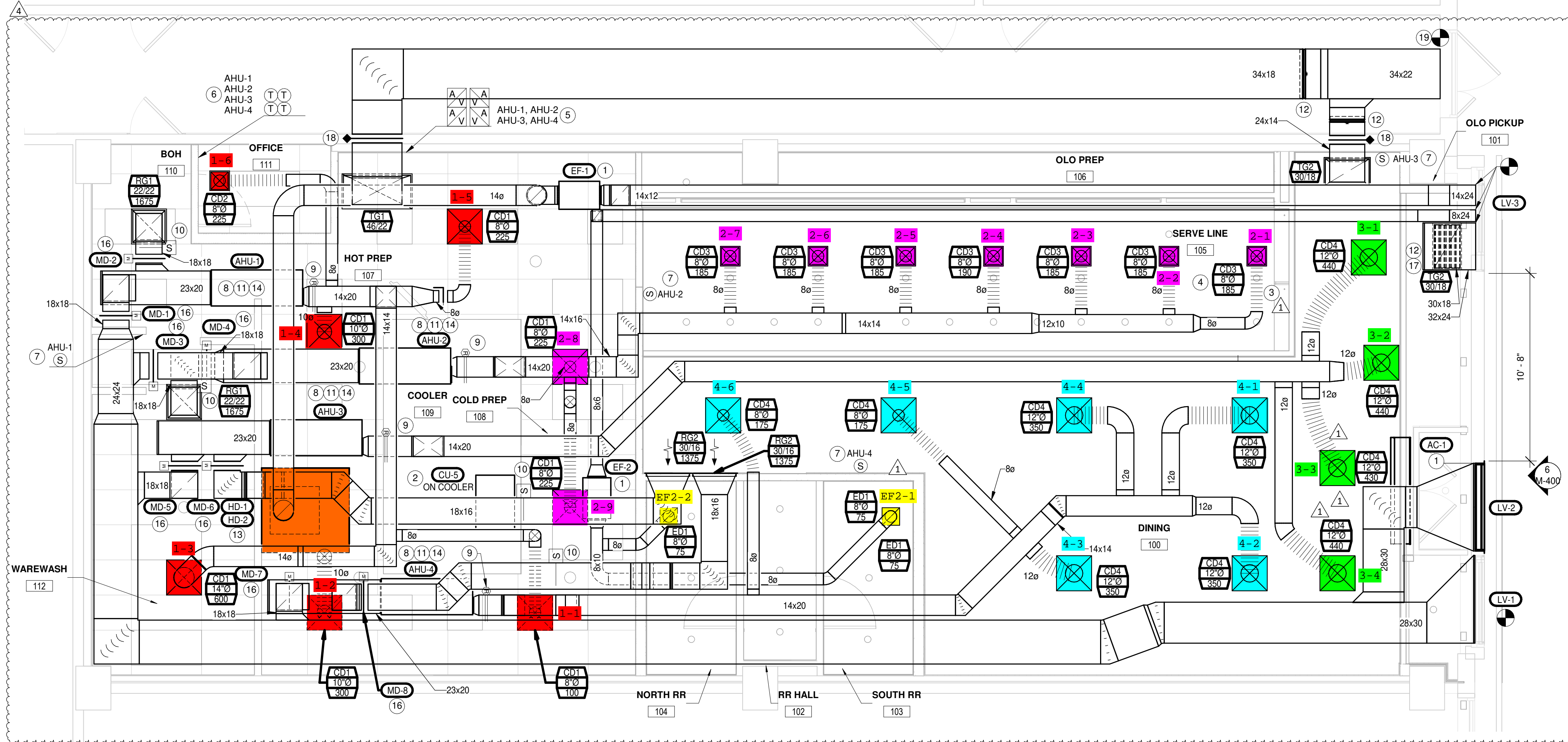
PROJECT INFORMATION:  
**BROOKFIELD**  
20350 WEST LORD STREET,  
SUITE G117  
BROOKFIELD, WI 53045

DRAWN BY: JAE  
CHECKED BY: MK  
PROJECT MANAGER: JAE  
SG DESIGN MANAGER: DZ  
SG CONSTR. MANAGER: JB  
PROJECT NO: 220027  
TEMPLATE VERSION: 05/20/2022

REVISIONS  
REV. DATE DESCRIPTION  
1 01/16/2023 OWNER/PLAN REVIEW COMMENTS  
4 03/09/2023 PT SLAB REVISIONS

**HVAC PLAN**

**M-100**



**HVAC PLAN**  
1/4" = 1'-0"  
TRUE NORTH  
PLAN NORTH

**SYMBOLS & ABBREVIATIONS**

**HVAC PIPING SYMBOLS**

- ELBOW UP
- ELBOW DOWN
- CONDENSER WATER SUPPLY
- CONDENSER WATER RETURN
- CHILLED WATER SUPPLY
- CHILLED WATER RETURN
- HOT WATER SUPPLY
- HOT WATER RETURN
- CONDENSATE DRAIN
- PLAN NOTE: SEE KEYNOTES LISTED ON THE SAME SHEET FOR NOTE MEANING
- CONNECT TO EXISTING
- REDUCED PRESSURE ZONE BACKFLOW PREVENTER
- EQUIPMENT TAG: SEE EQUIPMENT SCHEDULE ON SHEET M-300 FOR EQUIPMENT INFORMATION
- VALVE
- SOLENOID-OPERATED VALVE
- CHECK VALVE
- CIRCUIT-SETTER BALANCE VALVE RATED FOR POTABLE WATER
- BTU METER

**HVAC PIPING ABBREVIATIONS**

- AFF ABOVE FINISHED FLOOR
- AFG ABOVE FINISHED GRADE
- AHU AIR HANDLING UNIT
- BC BLOWER COIL
- CD CONDENSATE DRAIN
- CHWR CHILLED WATER RETURN
- CHWS CHILLED WATER SUPPLY
- CWR CONDENSER WATER RETURN
- CWS CONDENSER WATER SUPPLY
- EXTG EXISTING
- GC GENERAL CONTRACTOR
- HES TENANT'S HVAC EQUIPMENT SUPPLIER
- HWR HOT WATER RETURN
- HWS HOT WATER SUPPLY
- KES TENANT'S KITCHEN EQUIPMENT SUPPLIER
- RTU ROOFTOP UNIT
- WSHP WATER SOURCE HEAT PUMP

**CODED NOTES**

- 1 PROVIDE CONDENSATE DRAIN FROM THE AIR-HANDLING UNIT AS SHOWN, PER DETAIL 2/SHEET M-400 AND PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE INDIRECT DRAIN PER DETAIL 5/SHEET P-400. ALL DRAIN PIPING SHALL BE CONCEALED ABOVE CEILINGS AND WITHIN FRAMED WALLS UNLESS OTHERWISE NOTED.
- 2 REFER TO SANITARY WASTE AND VENT PLAN FOR WALK-IN COOLER CONDENSATE DRAIN ROUTING.
- 3 PROVIDE CLEANOUTS IN THE DRAIN LINE AS SHOWN AND AS REQUIRED TO PERMIT THE CLEARING OF BLOCKAGES AND FOR MAINTENANCE WITHOUT REQUIRING THE DRAIN LINE TO BE CUT. TYPICAL. REFER TO SANITARY WASTE AND VENT PLAN FOR WALK-IN COOLER CONDENSATE DRAIN ROUTING.



**sweetgreen**

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LOS ANGELES, CALIFORNIA 90018

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PROJECT INFORMATION:  
**BROOKFIELD**

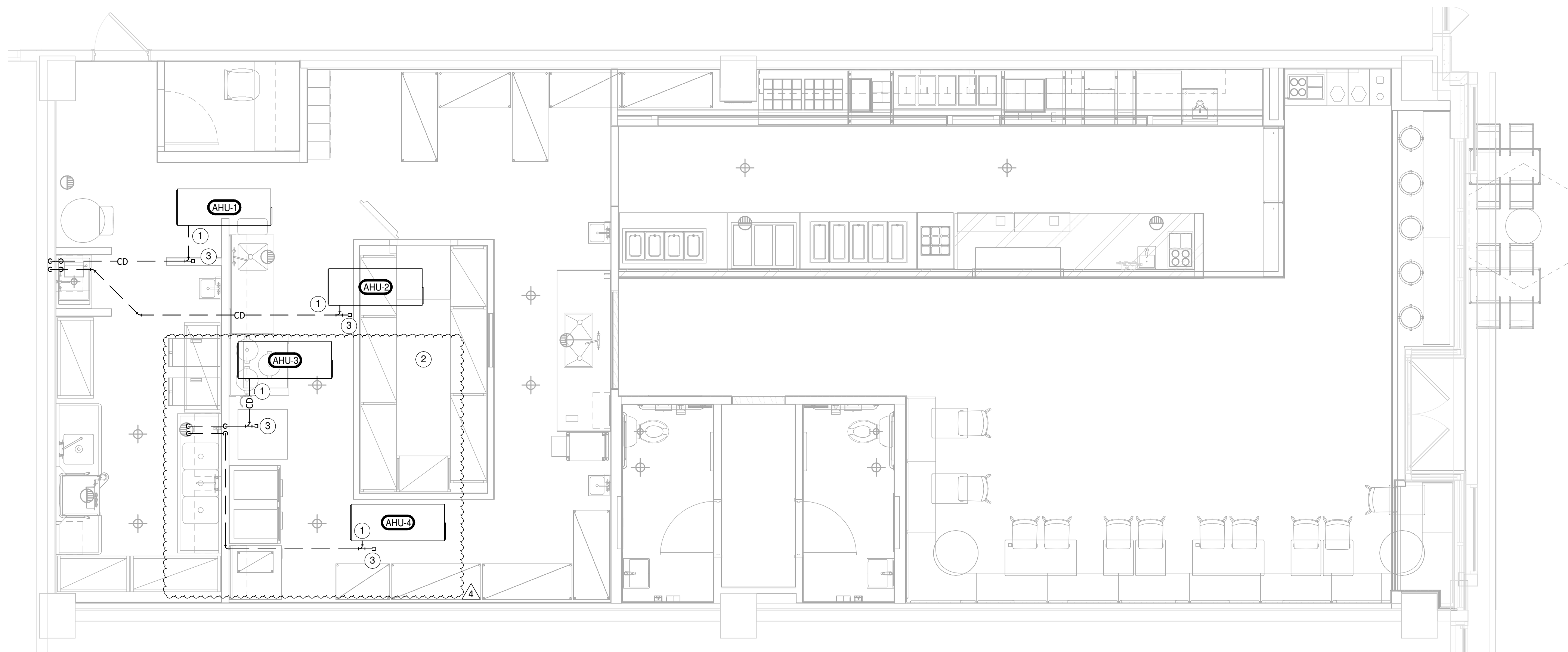
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SUITE G117  
BROOKFIELD, WI 53045**

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PROJECT NO: 220027  
TEMPLATE VERSION: 05/20/2022

REVISIONS  
REV. DATE DESCRIPTION  
4 03/09/2023 PT SLAB REVISIONS

**HVAC PIPING PLAN**

**M-200**



**1 HVAC PIPING PLAN**  
1/4" = 1'-0"

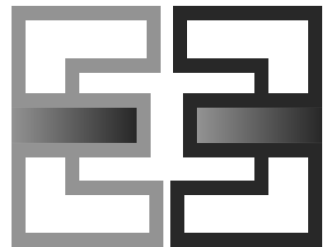


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DRAWN BY: JAE CHECKED BY: MK PROJECT MANAGER: JAE SG DESIGN MANAGER: DZ SG CONSTR. MANAGER: JB PROJECT NO: 220027 TEMPLATE VERSION: 05/20/2022

REVISIONS REV. DATE DESCRIPTION 4 03/09/2023 PT SLAB REVISIONS

HVAC SCHEDULES

M-300

VENTILATION SCHEDULE

PER TABLE 403.3.1.1 OF THE 2015 INTERNATIONAL MECHANICAL CODE

Table with columns: CATEGORY, OCCUPANT DENSITY, AREA, OCCUPANCY BY AREA, AIR RATE (CFM), VENTILATION REQUIRED (CFM), EFFECTIVENESS, VENTILATION REQUIRED (CFM), VENTILATION PROVIDED (CFM). Rows include DINING ROOM, OFFICE, RESTROOM CORRIDOR, and TOTAL.

EXHAUST SCHEDULE

PER TABLE 403.3.1.1 OF THE 2015 INTERNATIONAL MECHANICAL CODE

Table with columns: CATEGORY, AREA (SF), NUMBER OF FIXTURES, AIR RATE (CFM), EXHAUST REQUIRED (CFM), EXHAUST PROVIDED (CFM). Rows include KITCHEN, RESTROOM CORRIDOR, and RESTROOMS.

AIR BALANCE SCHEDULE

Table with columns: TAG, SUPPLY AIRFLOW (CFM), RETURN AIRFLOW (CFM), OUTSIDE AIRFLOW (CFM), EXHAUST AIRFLOW (CFM), SUBTOTAL (CFM). Rows include AHU-1 through AHU-4, EF-1, and EF-2.

MATERIAL SCHEDULE

Table with columns: CATEGORY, APPLICATION, ALLOWABLE MATERIAL. Rows include DUCT (EXPOSED, CONCEALED) and PIPING (HYDRONIC, CONDENSATE DRAINS).

MOTORIZED DAMPER SCHEDULE

Table with columns: TAG, OPERATION, FAIL POSITION, SPRING RETURN, VOLTAGE, REMARKS. Rows include MD-1 through MD-8.

GRILLS, REGISTERS, AND DIFFUSERS SCHEDULE

Table with columns: TAG, DESCRIPTION, FACE SIZE, MATERIAL, FINISH, MOUNTING, SUPPLIER, INSTALLER, MANUFACTURER, MODEL, REMARKS. Rows include CD1-CD3, ED1, RG1-RG2, TG1-TG2.

RECIRCULATING HOOD SCHEDULE

Table with columns: TAG, DESCRIPTION, MAX COOKING TEMP., EXHAUST PLENUM AIRFLOW (CFM), APPROXIMATE WEIGHT (lbs), SUPPLIER, INSTALLER, ELECTRICAL DATA (WATTS, V/P/H), BASIS FOR DESIGN, MODEL, REMARKS.

FAN SCHEDULE

Table with columns: TAG, EXHAUST AIRFLOW (CFM), E.S.P. (IN. W.C.), DRIVE TYPE, MOTOR POWER (HP), WEIGHT (LB), ELECTRICAL (MCA, MOCP, V/P/H), SUPPLIER, INSTALLER, MANUFACTURER, MODEL, REMARKS.

TYPE II HOOD SCHEDULE

Table with columns: TAG, DESCRIPTION, HOOD CONSTRUCTION (WIDTH, DEPTH, MATERIAL), MAXIMUM COOKING TEMPERATURE (DEG. F), EXHAUST COLLARS (AIRFLOW, DIAMETER, PRESSURE DROP), WEIGHT (LB), SUPPLIER, INSTALLER, MANUFACTURER, MODEL, REMARKS.

LOUVER SCHEDULE

Table with columns: TAG, DESCRIPTION, SIZE (FACE SIZE, FACE AREA, FREE AREA), AIRFLOW (TOTAL, PRESSURE DROP), MATERIAL, FINISH, SUPPLIER, INSTALLER, MANUFACTURER, MODEL, SPECIAL REMARKS.

HEATED AIR CURTAIN SCHEDULE

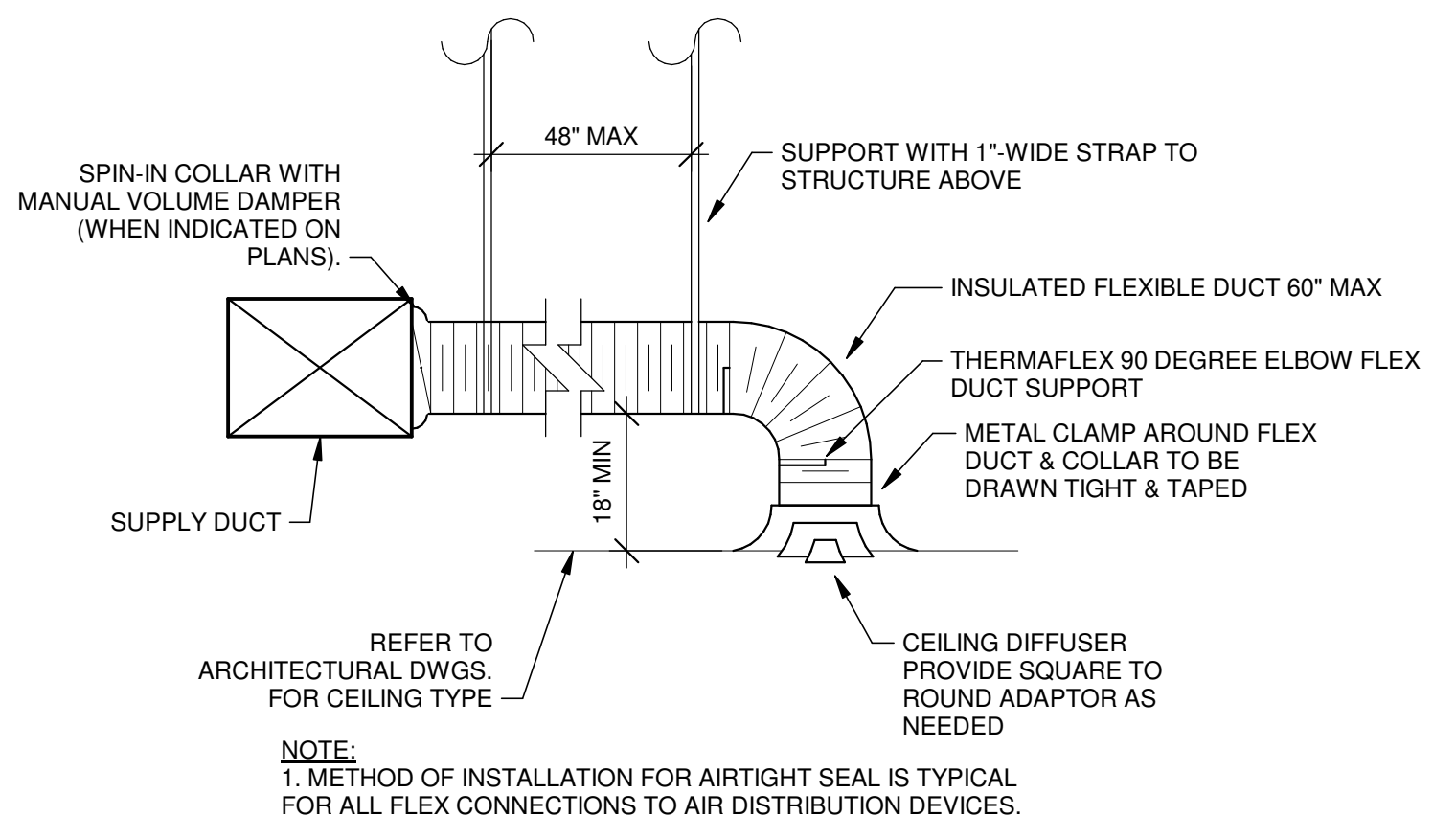
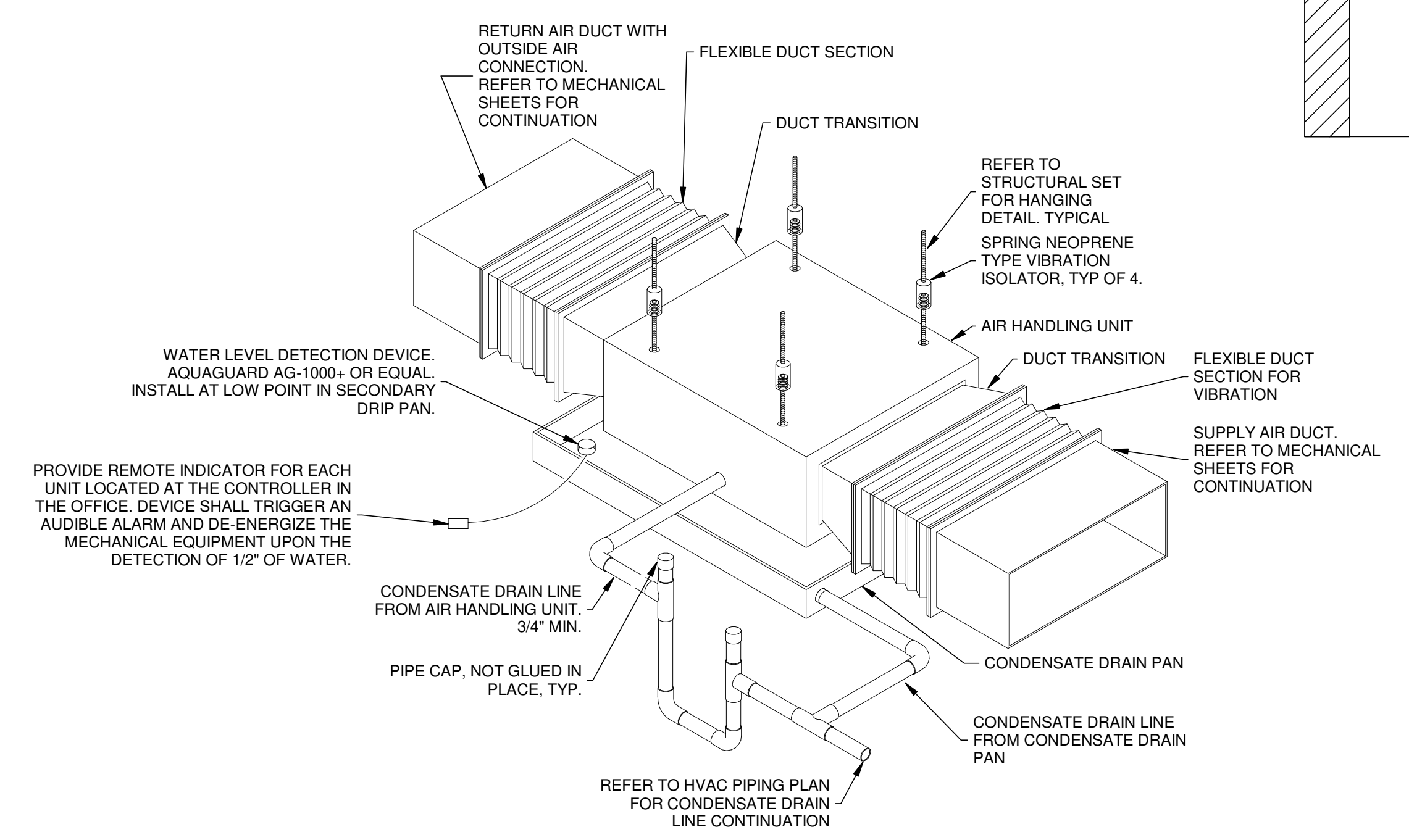
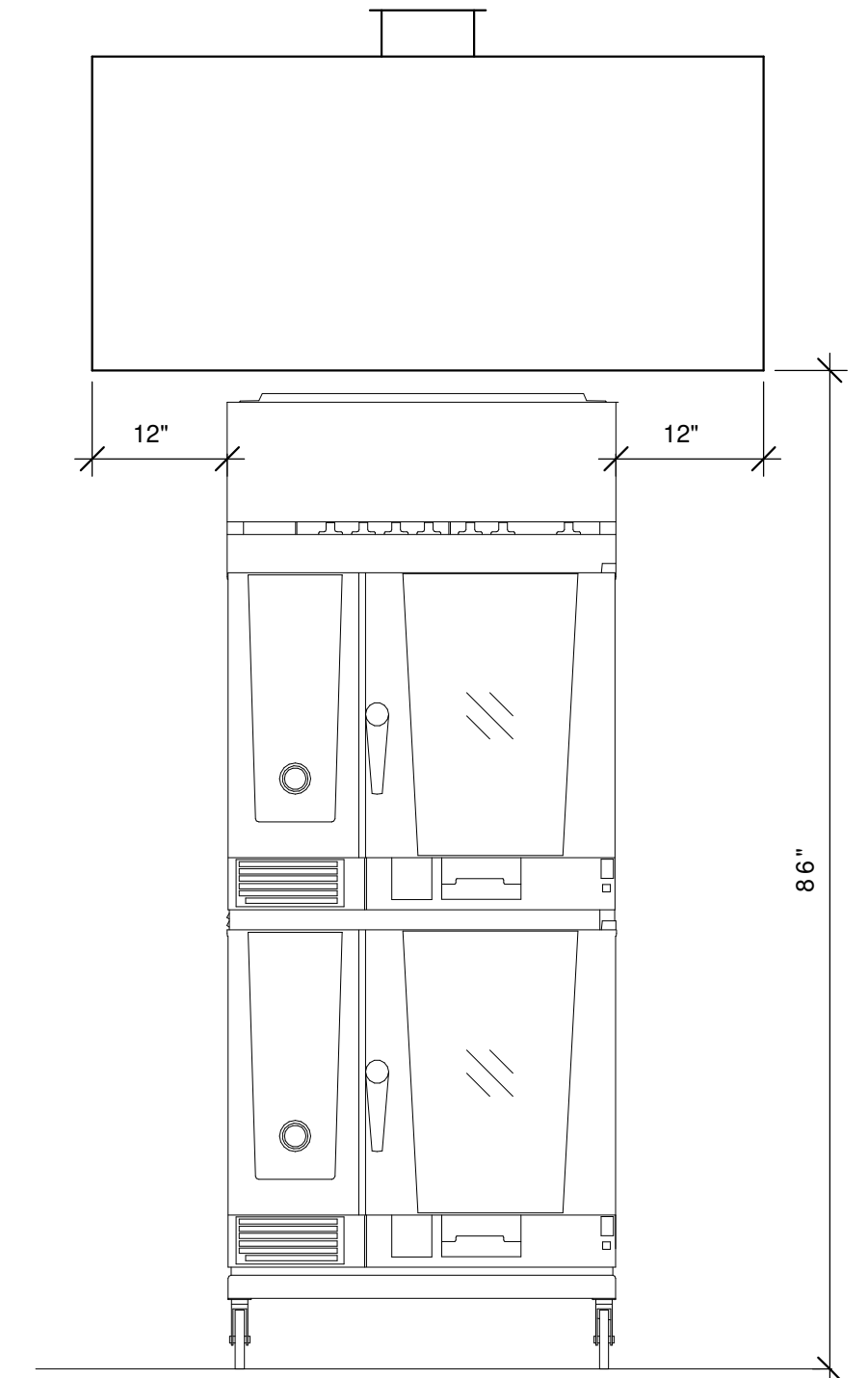
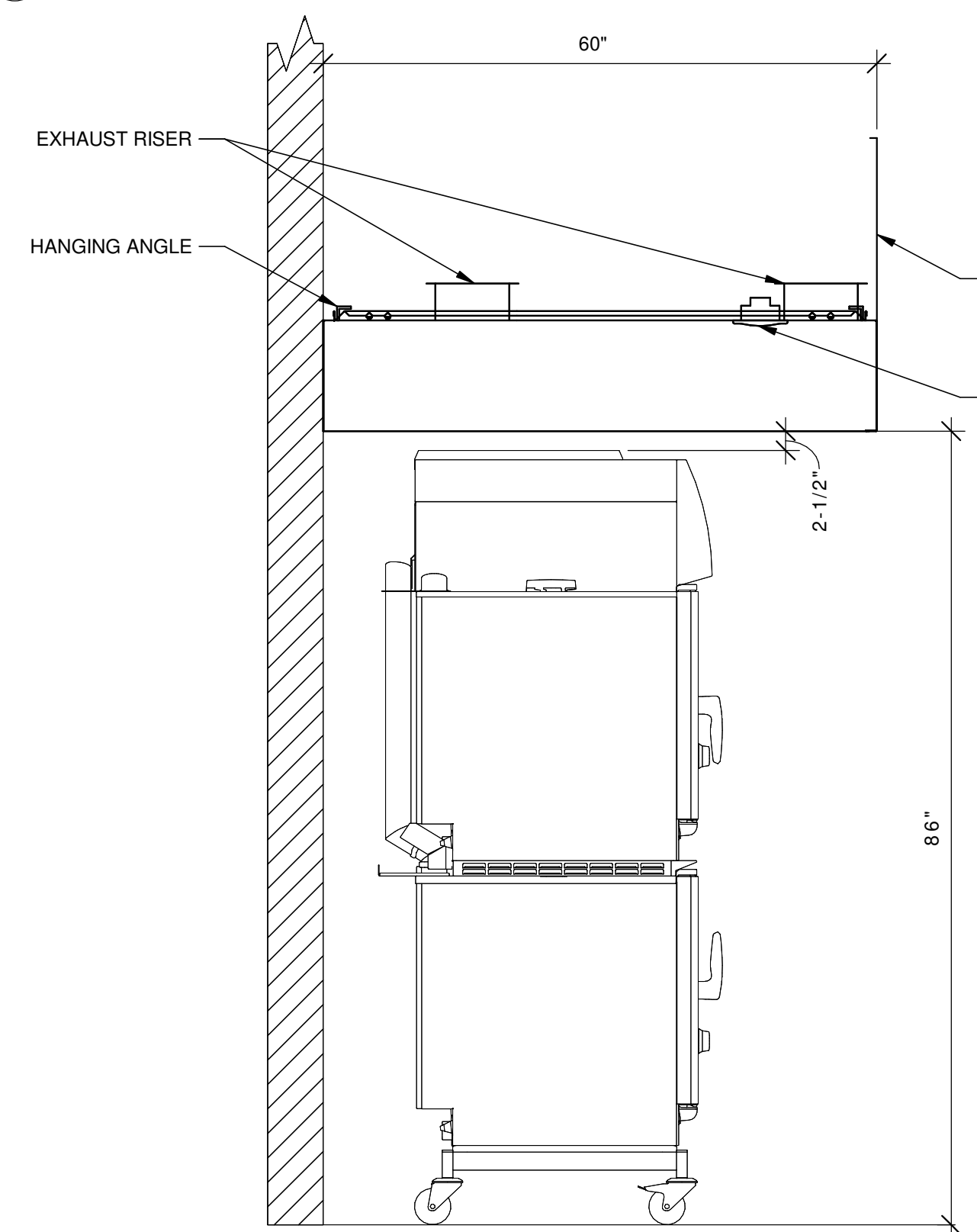
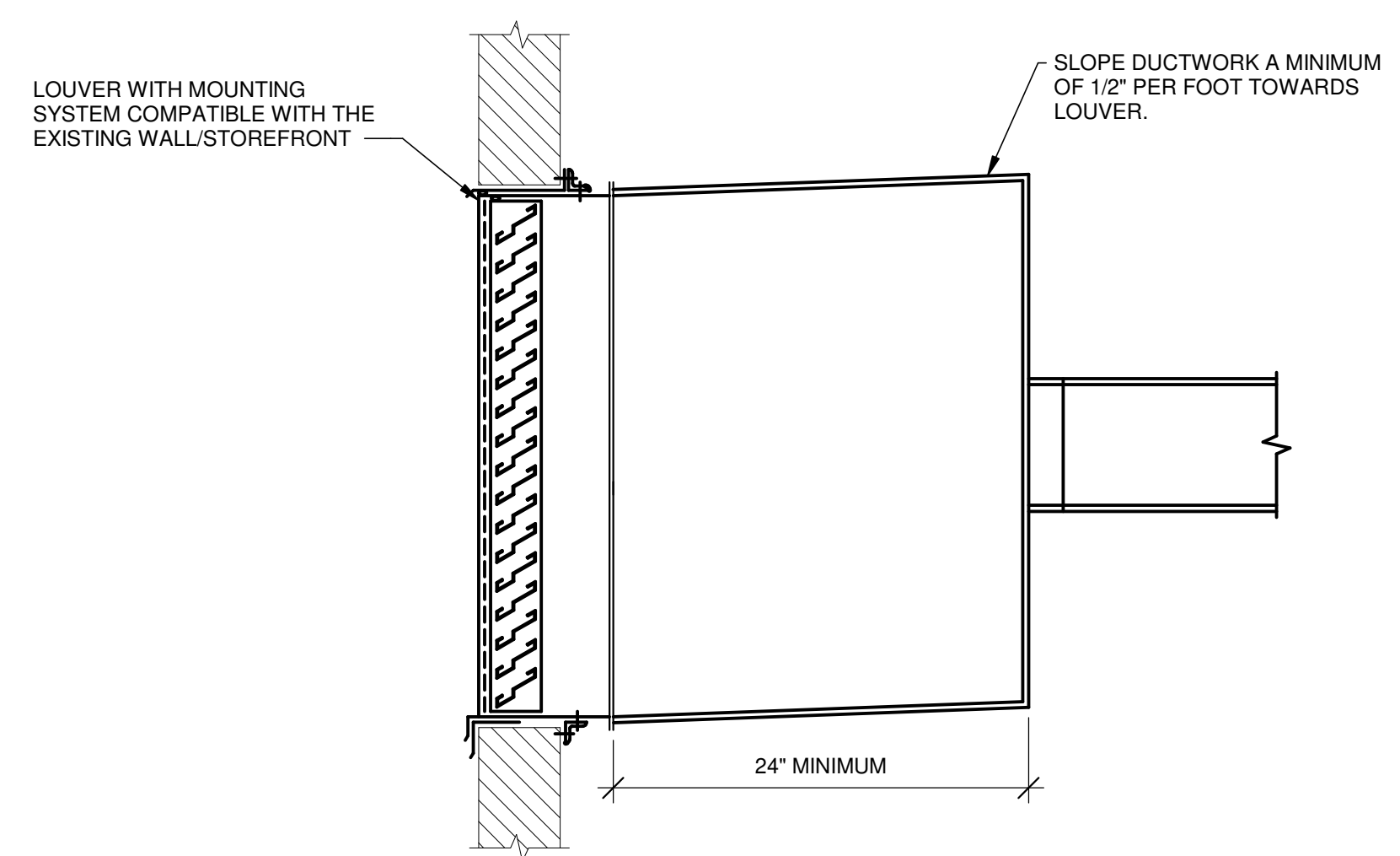
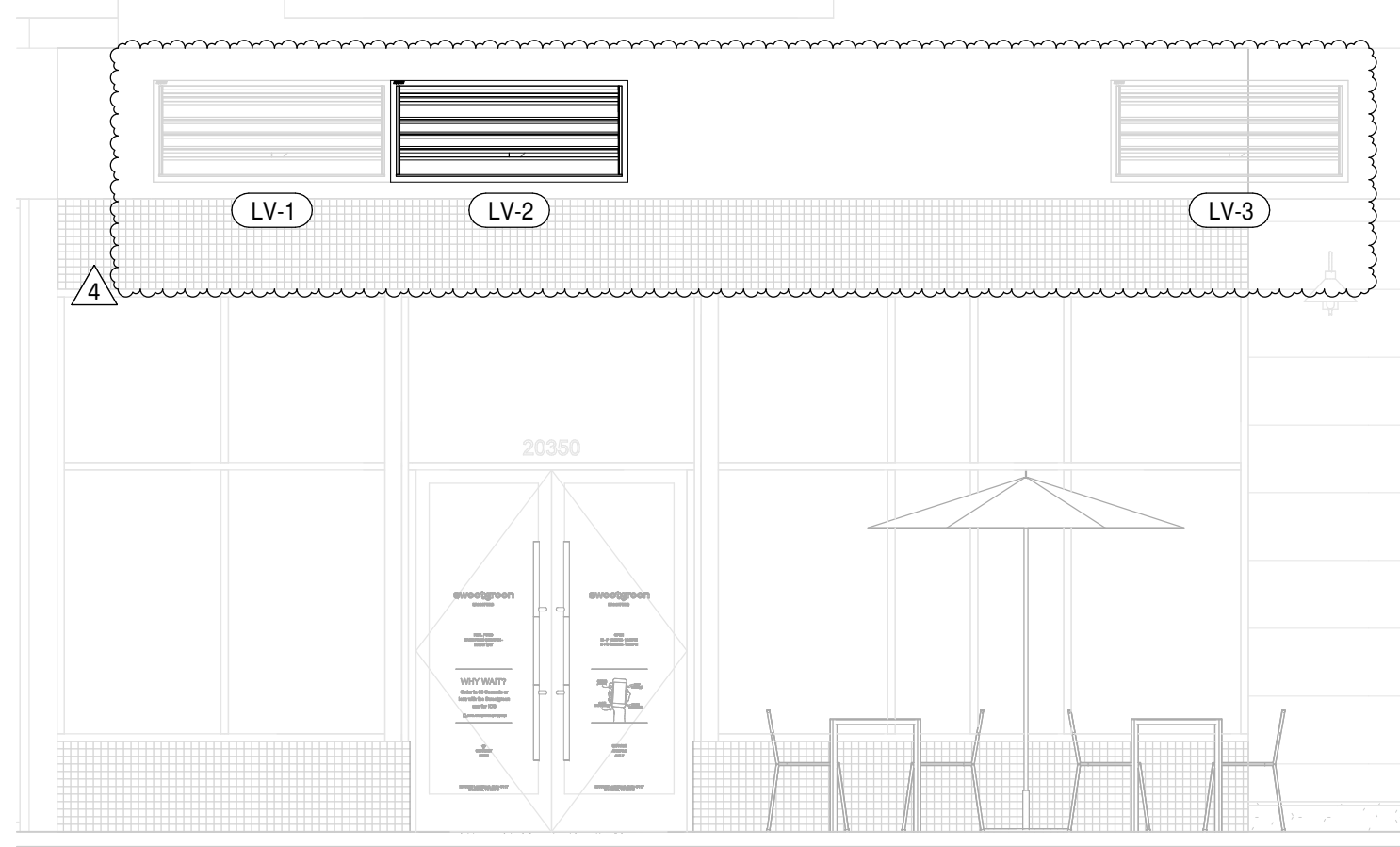
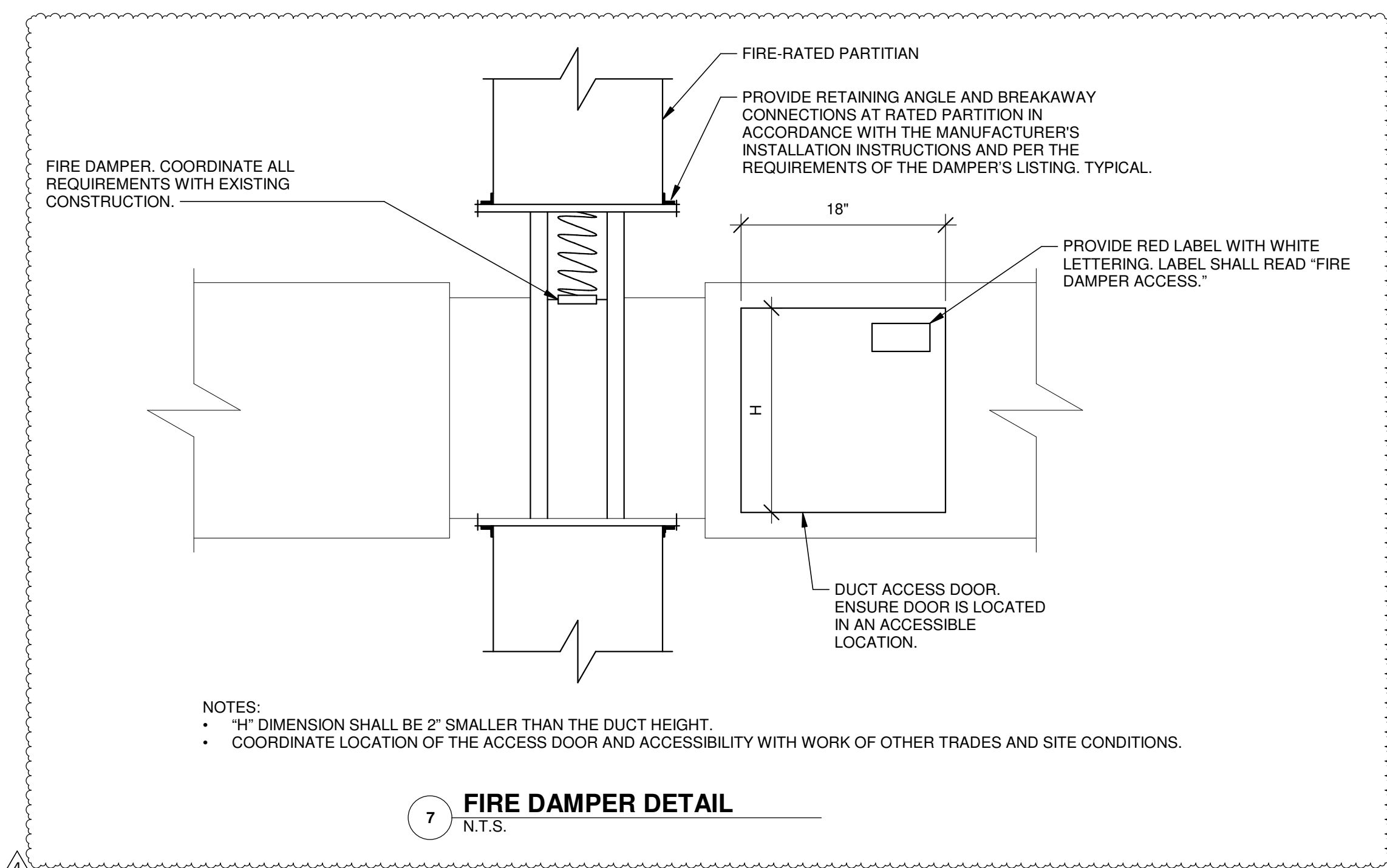
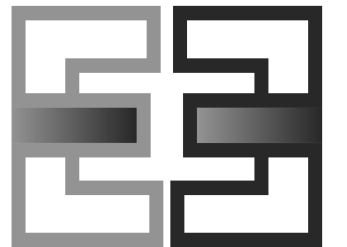
Table with columns: TAG, DESCRIPTION, OPENING WIDTH, AIRFLOW (MAX VELOCITY, AVERAGE VELOCITY, AIRFLOW), HEATING KW, ELECTRICAL (MOCP, MCA, V/P/H), SUPPLIER, INSTALLER, MANUFACTURER, MODEL, REMARKS.

CONDENSING UNIT SCHEDULE

Table with columns: TAG, DESCRIPTION, PAIRED WITH, NOMINAL CAPACITY (TONS), NUMBER OF COMPRESSORS, REFRIGERANT TYPE, WEIGHT (LB), ELECTRICAL (MOCP, MCA, V/P/H), SUPPLIER, INSTALLER, MANUFACTURER, MODEL, REMARKS.

AIR HANDLING UNIT SCHEDULE - ELECTRIC HEAT

Table with columns: TAG, DESCRIPTION, COOLING CAPACITY (TONS), EER, AIRFLOW (TOTAL, RETURN, OA), COOLING (EAT, DB, WB), HEATING (EAT, HEATING CAPACITY, LAT), WEIGHT (LB), ELECTRICAL (MOCP, MCA, V/P/H), SUPPLIER, INSTALLER, MANUFACTURER, MODEL, REMARKS.



**SEQUENCE OF OPERATIONS  
AHU-1 THRU AHU-4**

**OCCUPIED MODE:**  
**FAN OPERATION/OUTSIDE AIR DAMPER:** WHEN SCHEDULED BY THE TIME CLOCK TO BE IN OCCUPIED MODE, THE AIR HANDLER FAN SHALL START AND RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPERS SHALL POWER TO THE MINIMUM POSITION.  
**HEATING:** ON A FALL IN SPACE TEMPERATURE BELOW THE SETPOINT OF 70 DEGREES (ADJUSTABLE) THE ELECTRIC HEAT SHALL BE ENERGIZED TO MAINTAIN THE SETPOINT.  
**COOLING:** ON A RISE IN SPACE TEMPERATURE ABOVE THE SETPOINT OF 72 DEGREES (ADJUSTABLE), WHEN THE ENTHALPY OF THE OUTSIDE AIR IS FAVORABLE, THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN UP TO 100% TO PROVIDE COOLING FOR THE SPACE. WHEN THE ENTHALPY OF THE OUTSIDE AIR IS NOT FAVORABLE, OR THERE IS A SUDDEN DEMAND FOR SPACE COOLING, THE OUTSIDE AIR DAMPER SHALL MODULATE TO THE MINIMUM POSITION AND THE COOLING SHALL BE ENERGIZED AS REQUIRED TO MAINTAIN THE SETPOINT.

**UNOCCUPIED MODE:**  
**FAN OPERATION/OUTSIDE AIR DAMPER:** WHEN SCHEDULED BY THE TIME CLOCK TO BE IN UNOCCUPIED MODE, THE AIR HANDLER FANS ARE TO BE OFF AND THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED.  
**HEATING:** ON A FALL IN SPACE TEMPERATURE BELOW THE SETPOINT OF 65 DEGREES (ADJUSTABLE) THE AIR HANDLING UNIT FAN SHALL START AND THE ELECTRIC HEAT SHALL BE ENERGIZED TO MAINTAIN THE SETPOINT.  
**COOLING:** ON A RISE IN SPACE TEMPERATURE ABOVE THE SETPOINT OF 65 DEGREES (ADJUSTABLE) THE AIR HANDLING UNIT FAN SHALL WHEN THE ENTHALPY OF THE OUTSIDE AIR IS FAVORABLE, THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN UP TO 100% TO PROVIDE COOLING FOR THE SPACE. WHEN THE ENTHALPY OF THE OUTSIDE AIR IS NOT FAVORABLE, OR THERE IS A SUDDEN DEMAND FOR SPACE COOLING, THE OUTSIDE AIR DAMPER SHALL MODULATE TO THE MINIMUM POSITION AND THE COOLING SHALL BE ENERGIZED AS REQUIRED TO MAINTAIN THE SETPOINT.

**EMERGENCY MODE:**  
**FAN OPERATION/OUTSIDE AIR DAMPER:** UPON A SIGNAL FROM THE FIRE ALARM SYSTEM, THE FAN SHALL STOP AND THE OUTSIDE AIR DAMPER SHALL CLOSE

**SEQUENCE OF OPERATIONS  
EF-1 & EF-2**

**OCCUPIED MODE:**  
**FAN OPERATION:** WHEN SCHEDULED BY THE TIME CLOCK TO BE IN OCCUPIED MODE, THE EXHAUST FAN IS TO START AND RUN CONTINUOUSLY.

**UNOCCUPIED MODE:**  
**FAN OPERATION:** WHEN SCHEDULED BY THE TIME CLOCK TO BE IN UNOCCUPIED MODE, THE EXHAUST FAN SHALL REMAIN OFF.

**EMERGENCY MODE:**  
**FAN OPERATION/OUTSIDE AIR DAMPER:** UPON A SIGNAL FROM THE FIRE ALARM SYSTEM, THE FAN SHALL STOP.

**3 SEQUENCE OF OPERATIONS  
N.T.S.**

**2 AIR HANDLING UNIT INSTALLATION DETAIL  
N.T.S.**

**1 DIFFUSER CONNECTION  
N.T.S.**