

GENERAL NOTES AND SPECIFICATIONS

- GENERAL**
- THE CONTRACTOR SHALL PROVIDE THE WORK SHOWN ON THE DRAWINGS. THE WORD "WORK" SHALL MEAN ALL LABOR, TRANSPORTATION, MATERIAL, EQUIPMENT, TOOLS, INSTALLATION, SUPERVISION, AND ANY OTHER INCIDENTAL ITEMS OR SERVICES OBVIOUSLY NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE COMPLETE SYSTEMS, WHICH SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY MENTIONED OR SHOWN.
 - ALL GENERAL CONDITIONS, SPECIAL REQUIREMENTS OR GENERAL REQUIREMENTS OF THE GENERAL CONSTRUCTION SPECIFICATION ARE PART OF THIS SPECIFICATION AND HAVE THE SAME FORCE AND EFFECT AS IF PRINTED HERE IN FULL.
 - THE WORD "PROVIDE" SHALL MEAN FURNISH AND INSTALL, MAKE ALL FINAL CONNECTIONS, AND LEAVE IN AN APPROVED OPERATING CONDITION.
 - ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE APPLICABLE BUILDING, MECHANICAL, PLUMBING, AND ELECTRICAL CODES, AND FEDERAL, STATE, AND LOCAL REGULATIONS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR WORKMEN'S IDENTIFICATION AND SAFETY, FIRE PROTECTION, CONTRACTOR'S LIABILITY INSURANCE, SAFETY BARRICADES, WARNING SIGNS, AND TRASH REMOVAL.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING ALL FEES AND OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR THE WORK.
 - THE CONTRACTOR SHALL CAREFULLY EXAMINE ALL DRAWINGS FOR THE BUILDING, AND FOR OTHER TRADES, AND SHALL COORDINATE THE WORK WITH ALL OTHER TRADES, INCLUDING, BUT NOT LIMITED TO, THE CONSTRUCTION DOCUMENTS, SHOP DRAWINGS, ETC. FOR ALL GENERAL CONSTRUCTION, STRUCTURAL, MECHANICAL, AND ELECTRICAL AND SPECIALTY CONTRACTOR WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FITTING OF MATERIALS AND EQUIPMENT, JOINED, WITHOUT INTERFERENCE WITH OTHER WORK, AND SHALL MAKE REASONABLE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH OTHER TRADES, TO PROVIDE ACCESS AND FOR THE PROPER EXECUTION OF THE WORK.
 - DRAWINGS ARE DIAGRAMMATIC, SMALL IN SCALE, AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED, CERTAIN COMPONENTS, APPURTENANCES, AND RELATED SPECIALTIES ARE NOT SHOWN, AND SHALL BE PROVIDED. IT IS THE INTENT OF THE DRAWING AND SPECIFICATION TO CALL FOR THE FINISHED WORK, TESTED AND READY FOR OPERATION. DO NOT SCALE DRAWINGS. ARRANGEMENT OF EQUIPMENT AND ROUTING OF PIPES AND DUCTWORK, ETC. INDICATED ON DRAWINGS MAY REQUIRE MODIFICATION DUE TO UNFORESEEN CONDITIONS AND REQUIRED ON SITE REVISIONS DURING CONSTRUCTION.
 - 2D DRAWINGS WILL BE DERIVED FROM 3D MODEL DATA OR NON-MODEL, COMPUTER-ASSISTED DESIGN DATA (CAD) OR OTHER NON-COMPUTERIZED SOURCES. IF THERE IS A CONFLICT BETWEEN A MODEL CONTRIBUTION AND A PORTION OF THE DESIGN GENERATED IN A 2-DIMENSIONAL MEDIUM THEN DIMENSIONS CALLED FOR IN THE DRAWINGS SHALL TAKE PRECEDENCE OVER A MODEL CONTRIBUTION.
 - ALL WORK REQUIRED FOR IDENTICAL ITEMS SHOWN ON THE DRAWINGS SHALL BE PROVIDED ALTHOUGH EACH SPECIFIC IDENTICAL ITEM MAY NOT BE SHOWN IN DETAIL OR CALLED OUT.
 - THE CONTRACTOR SHALL PROVIDE ELECTRONIC COPIES OF SUBMITTALS AT ONE TIME, ARRANGED IN A NEAT & ORDERLY MANNER. PARTIAL OR UNMARKED SUBMITTALS WILL NOT BE ACCEPTED. SUBMITTALS SHALL INCLUDE ALL EQUIPMENT, MATERIALS, AND DEVICES FOR REVIEW BY THE ENGINEER. WORK SHALL NOT START UNTIL ALL REVIEWS HAVE BEEN COMPLETED AND THE ITEMS TO BE PROVIDED ARE ACCEPTABLE. ALL MATERIALS AND EQUIPMENT SHALL BE COMMONLY USED ACCEPTABLE GRADES IN THE CONSTRUCTION INDUSTRY AND SHALL BEAR THE UL, ASME, AMCA, OR OTHER LABEL WHEN APPLICABLE.
 - UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL SUPPLY THE ARCHITECT WITH COMPLETE SETS OF AS-BUILT DOCUMENTS ACCURATELY SHOWING THE MATERIALS AND EQUIPMENT AS INSTALLED.
 - ALL MATERIALS AND WORKMANSHIP TO BE GUARANTEED FOR A MINIMUM OF ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER. REFRIGERATION COMPRESSORS SHALL BE GUARANTEED FOR A MINIMUM OF FIVE YEARS FROM DATE OF OWNER'S ACCEPTANCE. IN ADDITION, THE CONTRACTOR SHALL GUARANTEE THAT THE INSTALLATION, WHEN OPERATED IN ACCORDANCE WITH THE ACO, COVOTR'S INSTRUCTIONS, WILL DEVELOP CAPACITY AND CHARACTERISTICS INDICATED OR SPECIFIED AND WILL FULFILL EACH AND EVERY REQUIREMENT OF THE DRAWINGS AND SPECIFICATIONS, AND SHOULD THE INSTALLATION IN ANY WAY FAIL TO DO SO, THE CONTRACTOR WILL, WITHOUT DELAY AND WITHOUT COST TO THE OWNER, PROVIDE WHATEVER ADDITIONAL EQUIPMENT, MATERIAL, AND LABOR IS NECESSARY TO CORRECT THE FAULT AND COMPLY WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.
 - CONTRACTOR SHALL CHECK AND VERIFY ALL SIZES, DIMENSIONS, AND CONDITIONS BEFORE STARTING ANY WORK. ANY DEVIATIONS OR PROBLEMS SHALL BE TRANSMITTED TO THE ENGINEER FOR REVIEW.
 - PROVIDE BASE AND COUNTER FLASHING FOR ITEMS PENETRATING THE ROOF. COORDINATE WITH ARCHITECTURAL REQUIREMENTS.
 - CONTRACTOR TO FURNISH AND INSTALL ALL STARTERS, WIRING, CONTROLS, DEVICES AND ALL CONDUIT, FOR A COMPLETE AND OPERABLE SYSTEM.
 - ALL WORK SHOWN IS NEW, UNLESS NOTED AS EXISTING.
 - MAINTAIN OCCUPANCY AND FIREWALL SEPARATION INTEGRITY AS REQUIRED. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF ALL OCCUPANCY/FIREWALL SEPARATIONS AND SPECIFIC DETAILS FOR CONSTRUCTION. PROVIDE ALL NECESSARY FIRE DAMPERS, ACCESS DOORS, AND CAULKING, ETC. FOR APPROVED INSTALLATION.
 - SUBMISSION OF A BID PROPOSAL, DIRECTLY OR INDIRECTLY BY THE CONTRACTOR FOR THIS WORK, SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE AND UNDERSTANDS THE CONDITIONS THAT MAY AFFECT THE PERFORMANCE OF THE WORK. CONTRACTOR IS EXPECTED TO CONTACT ARCHITECT FOR ANY PARTICULAR PROBLEMS AND CLEAR UP ANY POSSIBLE MISUNDERSTANDING BEFORE BID IS SUBMITTED. NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR ANY ALLEGED MISUNDERSTANDING OF THE CONTRACT DOCUMENTS AND THE WORK TO BE ACCOMPLISHED.
 - ALTERNATIVES TO NAMED ITEMS MAY BE ACCEPTABLE IF SUFFICIENT TECHNICAL INFORMATION DEMONSTRATING EQUALITY IS PROVIDED.
 - THE CONTRACTOR SHALL PROVIDE ALL SLEEVES, OPENINGS, CUTTING, AND PATCHING NECESSARY FOR THE INSTALLATION OF THE WORK. CUTTING AND PATCHING SHALL BE DONE BY WORKMEN SKILLED IN THE TRADES REQUIRED AND PAID BY THE CONTRACTOR REQUIRING THE WORK COMPLETE.
 - THE CONTRACTOR SHALL PROVIDE ALL RIGGING, HANDLING OF MATERIALS AND EQUIPMENT, AND THE NECESSARY PROTECTION FOR MATERIALS AND EQUIPMENT.
 - TOOLS AND EQUIPMENT WILL BE STORED IN OWNER DESIGNATED AREAS ONLY.
 - THE CONTRACTOR WILL PROTECT THE WORK AND MATERIAL AGAINST DIRT, THEFT, INJURY, OR DAMAGE UNTIL ACCEPTED BY OWNER. ALL WORK SHALL BE TURNED OVER TO OWNER CLEAN AND IN PERFECT CONDITION, READY FOR SATISFACTORY SERVICE.
 - PIPES AND/OR CONDUITS PASSING THROUGH WALL, FLOORS, AND PARTITIONS SHALL BE PROVIDED WITH SLEEVES, EXCEPT AS PROHIBITED BY UL LISTING. SLEEVES PASSING THROUGH WATER PROOFING OR DAMP PROOFING SHALL BE WATER TIGHT. PENETRATIONS THROUGH FIRE RATED CONSTRUCTION SHALL BE FIRE PROOFED WITH MATERIAL APPROVED AND AS DEFINED FOR THE RATING OF THE STRUCTURE AND UL LISTED.
 - EACH CONTRACTOR SHALL PROVIDE ALL FOUNDATIONS, HANGERS, AND SUPPORTS FOR ALL EQUIPMENT SUPPLIED AND/OR INSTALLED UNDER HIS WORK. ANY EQUIPMENT WITH MOVING PARTS SHALL BE PROVIDED WITH VIBRATION ISOLATION.
 - ALL EQUIPMENT SHALL BE PROVIDED WITH FACTORY FINISH. ALL REQUIRED PAINTING WILL BE PERFORMED UNDER THE GENERAL CONSTRUCTION SECTION OF THE SPECIFICATIONS
 - WHERE PIPES OR CONDUITS PASS THROUGH WALLS, FLOORS, OR CEILINGS IN FINISHED AREAS, THEY SHALL BE FURNISHED WITH CHROME PLATED ESCUTCHEON PLATES.
 - AT THE CONCLUSION OF THE JOB, EACH PIECE OF EQUIPMENT, VALVE, SWITCH, STARTER, PANEL, PIPE LINE, CONDUIT, ETC., SHALL BE CLEARLY IDENTIFIED WHETHER EXPOSED OR CONCEALED, COVERED OR UNCOVERED, IN ACCORDANCE WITH OSHA AND ANSI REGULATIONS. IDENTIFY PIPES NEAR EACH VALVE WITH "BRANDY-PERMA CODE PIPE TAPE" OR T & B, WESTLINE "TEL-A-PIPE" INDICATING DIRECTION OF FLOW, SERVICE ZONE, AND SIZE. TAPE SHALL BE APPLIED TO PIPE, CONDUIT, OR COVERING. VALVES, CONTROLS, AND DAMPERS SHALL BE IDENTIFIED BY 2-INCH LACQUERED BRASS TAGS WITH STAMPED LETTERS FASTENED WITH "S" HOOKS OR CHAINS. EQUIPMENT IS TO BE IDENTIFIED AS TO FUNCTION AND PURPOSE BY MEANS OF PERMANENTLY ATTACHED LAMINATED PHENOLIC NAMEPLATES WITH BEVELED EDGES AND WHITE LETTERS ON BLACK BACKGROUND.
 - AT THE CONCLUSION OF THE WORK, ALL EQUIPMENT AND SYSTEMS SHALL BE CAREFULLY BALANCED, ADJUSTED, AND TESTED TO PROVIDE BALANCED, QUIET-OPERATING, STABLE AND SAFE SYSTEMS. DEMONSTRATE OPERATION OF ALL SYSTEMS TO THE OWNER'S DESIGNATED REPRESENTATIVE.

- PRODUCTS**
- THIS IS A PERFORMANCE SPECIFICATION. ITEMS NAMED IN SCHEDULES OR ON THE DRAWINGS ARE INTENDED TO DEFINE THE MINIMUM PERFORMANCE AND CONSTRUCTION STANDARD OF THE ITEM CITED. SUBCONTRACTOR SHALL ONLY CONSIDER SUBSTITUTING 'EQUAL' ITEMS. THE DECISION WHETHER SUBSTITUTIONS ARE TRULY EQUAL LIES SOLELY WITH THE ENGINEER.
 - ALL MOTORIZED AIR MOVING AND FLUID MOVING EQUIPMENT PIECE SHALL BE PROVIDED WITH VIBRATION ISOLATION MOUNTING OR SUPPORTS.
 - PAD-TYPE ISOLATORS SHALL BE NEOPRENE IN-SHEAR ISOLATION PADS WITH CROSSED DOUBLE RIBS. A STEEL SHIM PLATE SHALL BE PROVIDED BETWEEN THE TWO LAYERS. PADS SHALL BE MOLDED USING OIL RESISTANT 25,000 PSI TENSILE STRENGTH NEOPRENE.
 - HANGING ISOLATORS FOR ITEMS 300 LBS OR LESS SHALL BE BRIDGE-BEARING NEOPRENE MOUNTINGS AND SHALL HAVE A MINIMUM STATIC DEFLECTION OF 0.2" AND ALL DIRECTIONAL SEISMIC CAPABILITY. THE ELEMENTS SHALL PREVENT THE CENTRAL THREADED SLEEVE AND ATTACHMENT BOLT FROM CONTACTING THE CASTING DURING NORMAL OPERATION. THE SHOCK ABSORBING NEOPRENE MATERIALS SHALL BE COMPOUNDED TO BRIDGE-BEARING SPECIFICATIONS. MASON HD, KINETICS
 - HANGING ISOLATORS FOR EQUIPMENT ABOVE 300 LBS SHALL BE STEEL SPRING-TYPE INCORPORATING STEEL HOUSING, NEOPRENE OR LDS RUBBER SPRING CUP SIZED FOR 1" DEFLECTION. INSTALL SPRING IN PLUMB CONFIGURATION WITH MAXIMUM 1" DEFLECTION FROM ANY HORIZONTAL DISTORTION. THE ELEMENTS SHALL PREVENT THE CENTRAL THREADED SLEEVE AND ATTACHMENT BOLT FROM CONTACTING THE CASTING DURING NORMAL OPERATION. CONTRACTOR SHALL SELECT SPRING COLOR/RATING BASED ON EQUIPMENT WEIGHT. AMBER BOOTH SH, KINETICS SH, MASON 30 OR EQUIVALENT.
 - ALL AIR CONDITIONING DUCTWORK SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE SMACNA MANUAL ENTITLED "HANGING DUCTWORK STANDARDS, METAL AND FLEXIBLE". SUPPLY AND RETURN AIR DUCTWORK SHALL BE GALVANIZED METAL EXCEPT WHERE OTHERWISE INDICATED. ALL ELBOWS SHALL BE FULL INSIDE RADIUS THROAT. WHERE SQUARE ELBOWS ARE REQUIRED DUE TO CONSTRUCTION LIMITS, ELBOWS SHALL BE FITTED WITH DOUBLE- FACED TURNING VANES.
 - RIGID, SQUARE DUCTWORK SHALL BE CONSTRUCTED OF LOCK FORMING QUALITY GALVANIZED STEEL SHEETS PER ASTM A653 AND ASTM A924. GALVANIZED COATING SHALL BE NOT LESS THAN 0.90 OZ/100 FT. TOTAL FOR BOTH SIDES PER SQUARE FOOT EXCEPT DUCTWORK SHALL BE CLASSIFIED AND CONSTRUCTED SMACNA PRESSURE CLASSES: +2 FOR SUPPLY AND -2 FOR RETURN AND EXHAUST. DUCTWORK GAUGE SHALL BE 26 GAUGE UP TO 30" AND 22 GAUGE ABOVE 30" IN CROSS SECTIONAL HEIGHT, WIDTH, OR DIAMETER.
 - ALL EXPOSED DUCTWORK SHALL BE SINGLE WALL LINED SPIRAL DUCT. MANUFACTURED FROM GRADE 6060/900 GALVANIZED STEEL CONFORMING TO ASTM A90, A568, A653, AND A924. ALL DUCTWORK SHALL BE CURRENTLY MANUFACTURED IN A 2-DIMENSIONAL MEDIUM THEN BE INTERNALLY LINED WITH 1" OF ACOUSTIC AND INSULATING LINER TESTED IN ACCORDANCE WITH ASTM C 1071 AND ASTM G21 AND G22. DUCTWORK GAUGE SHALL BE 26 GAUGE UP TO 30" AND 22 GAUGE ABOVE 30" IN DIAMETER.
 - DUCT SEALANT SHALL BE POLYMERIC RUBBER BASE MASTIC, MINERAL IMPREGNATED WOVEN FIBER TAPE WITH ADHESIVE, OR HEAT SHRINK WITH ADHESIVE. TAPE THICKNESS UP TO 10" = 2"; UP TO 20" = 3"; OVER 20" = 4"
 - SPIN-IN COLLARS SHALL BE GALVANIZED STEEL FOR USE WITH RECTANGULAR OR SQUARE SHEET METAL DUCTWORK. SPIN-IN COLLARS SHALL HAVE AIR SCOOP (FOR SUPPLY DUCTS) AND DAMPER (SUPPLY AND RETURN).
 - DAMPERS SHALL BE SINGLE BLADE BUTTERFLY TYPE IN DUCTS UP TO AND INCLUDING 18" X 12" SIZES. FOR DUCTS LARGER THAN 18" X 12" IN EITHER OR BOTH DIMENSIONS, THE DAMPERS SHALL BE THE MULTI-BLADE TYPE. SINGLE BLADE BUTTERFLY DAMPER SHALL BE CONSTRUCTED OF NOT LESS THAN 16 GAUGE GALVANIZED STEEL BLADE MOUNTED IN A GALVANIZED STEEL FRAME. FOR RECTANGULAR DAMPERS, THE TOP AND BOTTOM EDGES OF THE BLADE SHALL BE CRIMPED TO STIFFEN THE BLADE. DAMPER SHALL BE PROVIDED WITH AN EXTENDED ROD TO PERMIT INSTALLATION OF A DAMPER REGULATOR.
 - MULTI-BLADE DAMPERS SHALL BE THE OPPOSED BLADE TYPE. CONSTRUCTED OF NOT LESS THAN 16 GAUGE GALVANIZED STEEL BLADES MOUNTED IN GALVANIZED STEEL CHANNEL FRAME. BLADE SPACING SHALL NOT EXCEED 6 INCHES AND THE TOP AND BOTTOM EDGES OF THE BLADES SHALL BE CRIMPED TO STIFFEN THE BLADES. DAMPER BLADES SHALL BE INTERCONNECTED BY RODS AND LINKAGES TO PROVIDE SIMULTANEOUS OPERATION OF ALL BLADES. DAMPERS SHALL BE PROVIDED WITH EXTENDED RODS TO PERMIT INSTALLATION OF DAMPER OPERATORS.
 - DUCT MOUNTED DIAL REGULATORS WITH OPERATING HANDLE SHALL BE PROVIDED FOR DAMPERS WHICH ARE LOCATED ABOVE HARD CEILINGS OR INACCESSIBLE LOCATIONS. CONCEALED CEILING MOUNTED DIAL REGULATORS SHALL BE PROVIDED ON VOLUME CONTROL DAMPERS WHICH ARE LOCATED ABOVE HARD CEILINGS. CONCEALED REGULATORS SHALL BE PROVIDED WITHIN DIFFUSER FACE WITH SCREW ADJUSTMENT.
 - FIRE DAMPERS SHALL BE THE FOLDING BLADE FUSIBLE LINK TYPE CONFORMING TO UL 555 AND LABELED FOR USE IN FIRE RATED WALLS AND FLOORS. IN FIRE RATED DAMPERS, THE DAMPERS SHALL HAVE SPRING OPERATOR. DAMPERS, EXCEPT FOR LOWER SECTIONS OF A MULTIPLE SECTION ASSEMBLY, AND THOSE INSTALLED BEHIND GRILLES AND REGISTERS, SHALL HAVE BLADES OUT OF THE AIR STREAM WHEN DAMPER IS IN THE OPEN POSITION. DAMPERS IN WALLS OR FLOORS RATED 2 HOURS OR LESS SHALL BE RATED FOR 1.5 HOURS; DAMPERS IN WALLS RATED 3 OR 4 HOUR SHALL BE RATED FOR 3 HOURS. DAMPERS SHALL BE CONSTRUCTED OF GALVANIZED STEEL. PROVIDE AT EACH FIRE RATED WALL PENETRATION (REFER TO ARCH. DRAWINGS)
 - DUCT INSULATION SHALL BE BLANKET TYPE FIBERGLASS INSULATION WITH AVERAGE THERMAL CONDUCTIVITY NOT EXCEEDING 0.29 BTU .IN. PER SQFT PER DEG F PER HOUR AT MEAN TEMPERATURE OF 75 DEG F. WITH A MINIMUM DENSITY OF 1 LB/CUFT. 2" THICK MINIMUM AND FOIL INSULATION FACE. PROVIDE FIRE RETARDANT ADHESIVE OR FOIL REINFORCED KRAFT TAPE, 3" WIDE AT ALL SEAMS. SECURE INSULATION TO DUCT WITH 18 GAUGE TIE-WIRE OR 1/2" X 0.015" GALVANIZED STEEL STRAPS. PROVIDE COMPLETE AIR-TIGHT VAPOR BARRIER FOR ALL DUCTWORK. STAPLES SHALL NOT BE PERMITTED FOR ANY INSULATION ATTACHMENT. PROVIDE GRAY SEALER FOR SEALING JOINTS, PENETRATION AND PUNCTURES.
 - CONTINUE INSULATION THROUGH WALL AND CEILING OPENINGS AND SLEEVES, EXCEPT TERMINATE DUCT INSULATION AT FIRE DAMPERS AND AT FLEXIBLE DUCT CONNECTIONS AT AIR HANDLING UNITS.
 - DUCT LINER: INSTALL INSIDE OF DUCT WITH FULL ADHESIVE COVERAGE ATTACHMENT TO THE SURFACE TO WHICH IT IS APPLIED; 1" FOR INDOOR AND 1-1/2" FOR OUTDOOR. R-VALUES SHALL BE R-4.2 FOR 1" AND R-6.2 FOR 1-1/2". FIBERGLASS DUCT LINER SHALL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES. PROVIDE WITH ANTIMICROBIAL PROTECTION. PROVIDE MASTIC AT ALL INTERIOR SEAMS FOR CONTINUOUS VAPOR BARRIER. PROVIDE DUCT LINER AT FIRST FIVE FEET OF SUPPLY AND RETURN DUCT FOR REFRIGERATION/COOLING AIR HANDLING EQUIPMENT, UPSIZING INDICATED DUCT SIZE TO ACCOUNT FOR INSULATION THICKNESS. PROVIDE DUCT LINER FOR ALL TRANSFER DUCTS, UPSIZING INDICATED DUCT SIZE TO ACCOUNT FOR INSULATION THICKNESS. FIBERGLASS DUCT LINER OR DUCT BOARD SHALL NOT BE PERMITTED
 - INSULATED FLEXIBLE DUCT SHALL BE CLASS 1 AIR DUCT IN ACCORDANCE WITH UL 181 AND SHALL COMPLY WITH NFPA 90A AND 90B. INSULATED FLEXIBLE DUCT SHALL CONSIST OF AN INNER FILM LAYER FOR MINIMUM WORKING PRESSURE OF 6" WATER GAUGE BONDED TO A STEEL OR ALUMINUM SPRING WIRE HELIX, FIBERGLASS INSULATION, AND A VAPOR BARRIER JACKET. INSULATION SHALL HAVE A MAXIMUM U-VALUE OF 0.23 BTU/HR/SQFT/DEG F AT 75 DEG F MEAN TEMPERATURE. VAPOR BARRIER JACKET SHALL HAVE A MAXIMUM VAPOR TRANSMISSION RATE OF 0.1 GRAINS/SQFT/HR/INCH HG (PERM). THE ASSEMBLY SHALL HAVE A MAXIMUM FLAME AND SMOKE RATING OF 25/50 PER ASTM E84 AND NFPA 255.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL ITEMS NECESSARY FOR THE IMPLEMENTATION OF THE SEQUENCE OF OPERATIONS.

- EXECUTION**
- COORDINATE EXACT LOCATIONS OF EQUIPMENT ON ROOF. PROVIDE DUCTED OUTSIDE AIR INTAKE DUCTS TO MAINTAIN 10'-0" CLEARANCE FROM EXHAUST OR FLUE DISCHARGE OPENINGS.
 - ROOF MOUNTED EQUIPMENT MUST BE LOCATED AT LEAST 10 FEET FROM THE EDGE OF THE ROOF.
 - THIS CONTRACTOR SHALL PROVIDE & INSTALL ALL MISCELLANEOUS STEEL AS REQUIRED FOR INSTALLATION OF ALL MECHANICAL ITEMS.
 - DUCT HANGERS AND SUPPORTS SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS. IN ADDITION, HANGERS SHALL BE SPACED NOT OVER 8'-0" ON CENTERS. FOR RECTANGULAR DUCTS, WITH LONGEST DIMENSIONS UP THROUGH 60" HANGERS, THE HANGERS SHALL BE GALVANIZED STEEL STRAP TYPE, WITH LONGEST DIMENSION 61" AND LARGER, HANGERS SHALL BE TRAPEZE TYPE CONSTRUCTED OF GALVANIZED STEEL ANGLES WITH ROUND HANGERS RODS. SIZES FOR STRAP HANGERS AND TRAPEZE ANGLES AND RODS SHALL BE BASED ON DUCT SIZE AS SCHEDULED IN THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
 - PROVIDE OPPOSED BLADE BALANCING DAMPERS AT EACH SUPPLY AIR CONNECTING TO MAIN DUCTS, DIFFUSER TAKE OFFS, AND WHEREVER NECESSARY TO FACILITATE AIR BALANCING OF THE DUCT SYSTEM.
 - INSTALL FIRE DAMPERS AS REQUIRED WHENEVER NEW OR EXISTING DUCTWORK PASSES THROUGH FIRE RATED WALLS OR FLOORS. RETURN AIR OPENING IN FIRE RATED WALLS SHALL BE EQUIPPED WITH FIRE DAMPERS. SEE ARCH. DRAWINGS FOR RATED WALLS.
 - ALL EQUIPMENT, DAMPERS AND VALVES MUST BE ACCESSIBLE. IF LOCATED ABOVE DRYWALL CEILING OR BEHIND FINISHED WALLS, PROVIDE ACCESS DOOR. COORDINATE ALL ACCESS DOOR LOCATIONS WITH ARCHITECT.
 - SEAL ALL DUCT PENETRATIONS THROUGH WALLS, FLOOR, AND ROOF. SEAL ALL TRANSVERSE DUCT SEAMS WITH APPROVED MASTIC. DUCT TAPES SHALL NOT BE ALLOWED FOR RIGID DUCTWORK.
 - ALL DUCTWORK SIZES SHOWN ARE FREE AREA INSIDE DIMENSIONS. INCREASE SIZE WHERE REQUIRED TO INCLUDE INTERNAL INSULATION.
 - ALL SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED WITH FOIL FACED, LOW DENSITY DUCT WRAP. WRAP SHALL BE 2" THICK WITH A REINFORCED FOIL KRAFT VAPOR BARRIER FACING. MIN R-6 INSTALLED. INSTALL PER MANUFACTURER'S INSTRUCTIONS. EXHAUST DUCTWORK SHALL BE UNINSULATED. DUCTWORK INTERIOR BEHIND DEVICES SHALL BE PAINTED FLAT BLACK.
 - PROTECT INSULATION FROM PHYSICAL DAMAGE AT POINTS OF SUPPORT WHERE INSULATION MUST CARRY LOAD IMPOSED BY SUPPORT. COORDINATE THIS REQUIREMENT WITH TYPES OF HANGER AND SUPPORT USED. HANGERS THAT PENETRATE INSULATION SHALL BE SEALED WITH MASTIC TO PRESERVE CONTINUOUS VAPOR BARRIER.
 - FLEXIBLE DUCTS SHALL BE INSTALLED IN AN EXTENDED CONDITION FREE OF SAGS AND KINKS, USING ONLY THE MINIMUM LENGTH REQUIRED TO MAKE THE CONNECTION. ABRUPT BENDS AND TURNS THAT CRIMP THE DUCT AND RESTRICT AIR FLOW SHALL NOT BE PERMITTED. HORIZONTAL SUPPORTS SHALL BE 3/4" WIDE, 22 GAUGE FLAT GALVANIZED STEEL SHEET BANDING MATERIAL. FLEXIBLE DUCTS SHALL BE SUPPORTED ON 36" CENTERS. MAXIMUM LENGTH OF FLEXIBLE DUCT IN PRESSURE CLASS 2" AND BELOW SHALL BE 6 FEET. FLEXIBLE DUCT SHALL NOT BE USED ABOVE INACCESSIBLE CEILINGS.
 - PROVIDE FLEXIBLE DUCT CONNECTORS ON INLET AND OUTLET OF ALL AIR MOVING EQUIPMENT, INCLUDING EXHAUST FANS AND FAN COIL UNITS.
 - DURING CONSTRUCTION, PROVIDE COVERS FOR ALL SUPPLY, RETURN AND EXHAUST DUCTWORK OPENINGS TO PREVENT CONSTRUCTION DUST FROM ENTERING THE DUCTWORK. IF DUST COLLECTS INSIDE DUCTWORK, DUCTWORK MUST BE CLEANED PRIOR TO PROJECT TURNOVER.
 - DUCTWORK SHALL BE PRESSURE TESTED AS INDICATED IN THE SPECIFICATIONS. IF A SECTION OF DUCTWORK FAILS THE TEST, THE SECTION SHALL BE SEALED AND RETESTED UNTIL IT PASSES.
 - BALANCE ALL EQUIPMENT, DIFFUSERS, AND GRILLES TO OBTAIN THE AIR QUANTITIES AS SHOWN ON PLANS. A CERTIFIED TEST & BALANCE CONTRACTOR SHALL PROVIDE REPORT WITH FORMS CONTAINING INFORMATION INDICATED IN SCHEDULES. SUBMIT REPORT TO ARCHITECT/ENGINEER FOR REVIEW PRIOR TO PROJECT CLOSEOUT.
 - PROVIDE SEISMIC FITTINGS AND SUPPORTS AS REQUIRED BY THE LOCAL BUILDING CODE AND SEISMIC CHARACTERISTICS FOR THE CONSTRUCTION LOCATION.

MECHANICAL ABBREVIATIONS

ABV	ABOVE
A/C	ABOVE CEILING
AFF	ABOVE FINISHED FLOOR
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
A/S	AT STRUCTURE
ATC	AUTOMATIC TEMPERATURE CONTROL
BAS	BUILDING AUTOMATIC SYSTEM
BDD	BACK DRAFT DAMPER
B/G	BELOW GRADE / GROUND
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BTU	BRITISH THERMAL UNIT
BTU/H	BRITISH THERMAL UNITS PER HOUR
CAP	CAPACITY
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CLG	CEILING OR COOLING
CO2	CARBON DIOXIDE
CU	CONDENSING UNIT
CUFT	CUBIC FEET
DB	DRY BULB
DIA	DIAMETER
DEG	DEGREE(S)
DF	DESTRATIFICATION FAN
DN	DOWN
DWP	DEW POINT
DWG	DRAWING
DX	DIRECT EXPANSION
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EH	ELECTRIC HEATER
EQUIP	EQUIPMENT
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EXH	EXHAUST
F	FAHRENHEIT
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FM	FROM OR FACTORY MUTUAL
FT	FOOT/FEET
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FPT	FAN POWERED TERMINAL UNIT
F/SO	COMBINATION FIRE SMOKE DAMPER
G	GAS
GA	GAUGE
GALV	GALVANIZED
GV	GRAVITY VENTILATOR
HORIZ	HORIZONTAL
HP	HORSE POWER
HR	HUMIDITY RATIO
HTG	HEATING
HVAC	HEATING, VENTILATION, & AIR CONDITIONING
IH	INTAKE HOOD
IN	INCH
INT	INTERNAL
KW	KILOWATT
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LD	LINEAR DIFFUSER
LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LF	LINEAR FEET
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MCOB	MEAN COINCIDENT DRY BULB
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
N/A	NOT APPLICABLE
NG	NATURAL GAS
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OC	ON CENTER
OPNG	OPENING
PD	PRESSURE DROP
PH	PHASE
PLBG	PLUMBING
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
QTY	QUANTITY
RA	RETURN AIR
REQ'D	REQUIRED
REV	REVISION
RG	RETURN GRILLE
RH	RELATIVE HUMIDITY
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SMD	SMOKE DAMPER
SD	SUPPLY DIFFUSER
SP	SUPPLY FAN OR SQUARE FEET
SPEC	STATIC PRESSURE (INCHES OF WATER)
SQFT	SPECIFY OR SPECIFICATION SQUARE FEET
TBD	TO BE DETERMINED
TOT	TOTAL
TSTAT	THERMOSTAT
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
USGBC	US GREEN BUILDING COUNCIL
V	VOLT(S)
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
W	WATT(S)
WB	WET BULB TEMPERATURE
WC	WATER COLUMN

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PRIMUS
BUILDERS, INC.
8294 Highway 92, Suite 210
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A NEW
REFRIGERATED
WAREHOUSE
FACILITY FOR



187 RALEIGH STREET
WILMINGTON, NC 28412

12/12/2022	ISSUED FOR PERMIT
11/29/2022	60% PROGRESS ISSUE
date	description

d r a w i n g s t a t u s

project no. 20-086

seal



MECHANICAL
COVER SHEET

sheet

M0.1

MECHANICAL SHEET LIST	
NO.	NAME
M0.1	MECHANICAL COVER SHEET
M0.2	MECHANICAL SCHEDULES
M0.3	COMCHECK
M1.0	OVERALL MECHANICAL PLAN
M1.1	UNIT 1 OFFICE MECHANICAL PLAN
M1.2	UNIT 1 MEZZANINE MECHANICAL PLAN
M1.3	UNIT 1 BATT. CHARGING MECHANICAL PLAN
M1.4	UNIT 2 OFFICE MECHANICAL PLAN
M1.5	UNIT 2 MEZZANINE LEVEL MECHANICAL PLAN
M1.6	UNIT 2 BATT. CHARGING MECHANICAL PLAN
M1.7	UNIT 3 OFFICE MECHANICAL PLAN
M1.8	UNIT 3 MEZZANINE LEVEL MECHANICAL PLAN
M1.9	UNIT 3 BATT. CHARGING MECHANICAL PLAN
M1.10	UNIT 4 OFFICE MECHANICAL PLAN
M1.11	UNIT 4 MEZZANINE LEVEL MECHANICAL PLAN
M1.12	UNIT 4 BATT. CHARGING MECHANICAL PLAN
M2.1	MECHANICAL DETAILS

TAG	MODEL	MANUFACTURER	AREA SERVED	SUPPLY AIR (CFM)	OUTDOOR AIR (CFM)	E.S.P. (IN W.C.)	COOLING CAPACITY		EFFICIENCY		HEATING CAPACITY (KW)	WEIGHT (LBS)	ELECTRICAL		NOTES
							TOTAL (MBH)	SENS. (MBH)	EER	SEER			V	PH	
RTU-1	50FC-A05	CARRIER	T1 OFFICE	1,600	320	1.0	48.4	34.3	11.8	14.0	14.0	835	460	3	1 2 3 4 5 6 7 8 9 10 11
RTU-2	50FC-M16	CARRIER	T1 OFFICE	6,000	1,200	1.0	183.1	136.1	11.0	---	50.0	1,819	460	3	1 2 3 4 5 6 7 8 9 10 12
RTU-3	50FC-A04	CARRIER	T2 OFFICE	1,200	240	1.0	35.1	25.4	11.7	14.0	11.5	759	460	3	1 2 3 4 5 6 7 8 9 10 11
RTU-4	50FC-M12	CARRIER	T2 OFFICE	4,000	800	1.0	125.8	96.2	11.2	---	33.0	1,218	460	3	1 2 3 4 5 6 7 8 9 10 12
RTU-5	50FC-A04	CARRIER	T2 OFFICE	1,200	240	1.0	35.1	25.4	11.7	14.0	11.5	759	460	3	1 2 3 4 5 6 7 8 9 10 11
RTU-6	50FC-M12	CARRIER	T3 OFFICE	4,000	800	1.0	125.8	96.2	11.2	---	33.0	1,218	460	3	1 2 3 4 5 6 7 8 9 10 12
RTU-7	50FC-A05	CARRIER	T4 OFFICE	1,600	320	1.0	48.4	34.3	11.8	14.0	14.0	835	460	3	1 2 3 4 5 6 7 8 9 10 11
RTU-8	50FC-M16	CARRIER	T4 OFFICE	6,000	1,200	1.0	183.1	136.1	11.0	---	50.0	1,819	460	3	1 2 3 4 5 6 7 8 9 10 12

- NOTES:

- EQUAL PRODUCTS BY: DAIKIN, JCI, TRANE

TAG	MODEL	MANUFACTURER	AREA SERVED	CFM	E.S.P. (IN W.C.)	MOTOR HP	FAN RPM	DRIVE TYPE	WEIGHT (LBS)	ELECTRICAL		NOTES
										V	PH	
EF-1	GB-300	GREENHECK	UNIT 1 BATT. CHARGING	11,500	0.25	5	773	BELT	248	460	3	1 2 3 4 5 6 8 9
EF-2	GB-099	GREENHECK	UNIT 1 OFFICE	1,000	0.375	1/4	1,683	BELT	76	115	1	1 2 3 4 5 7
EF-3	GB-220	GREENHECK	UNIT 2 BATT. CHARGING	7,000	0.25	2	985	BELT	179	460	3	1 2 3 4 5 6 8 9
EF-4	GB-099	GREENHECK	UNIT 2 OFFICE	950	0.375	1/4	1,624	BELT	76	115	1	1 2 3 4 5 7
EF-5	GB-220	GREENHECK	UNIT 3 BATT. CHARGING	7,000	0.25	2	985	BELT	179	460	3	1 2 3 4 5 6 8 9
EF-6	GB-099	GREENHECK	UNIT 3 OFFICE	950	0.375	1/4	1,624	BELT	76	115	1	1 2 3 4 5 7
EF-7	GB-300	GREENHECK	UNIT 4 BATT. CHARGING	11,500	0.25	5	773	BELT	248	460	3	1 2 3 4 5 6 8 9
EF-8	GB-099	GREENHECK	UNIT 4 OFFICE	1,000	0.375	1/4	1,683	BELT	76	115	1	1 2 3 4 5 7
EF-9	SBE-3H30	GREENHECK	FIRE PUMP HOUSE	12,000	0.25	3	1,391	BELT	357	460	3	1 2 4 5 8 10
SF-1	RSF-200	GREENHECK	UNIT 1 BATT. CHARGING	11,500	0.25	5	542	BELT	811	460	3	1 2 3 4 5 11
SF-2	RSF-180	GREENHECK	UNIT 2 BATT. CHARGING	7,000	0.25	2	528	BELT	561	460	3	1 2 3 4 5 12
SF-3	RSF-180	GREENHECK	UNIT 3 BATT. CHARGING	7,000	0.25	2	528	BELT	561	460	3	1 2 3 4 5 13
SF-4	RSF-200	GREENHECK	UNIT 4 BATT. CHARGING	11,500	0.25	6	542	BELT	811	460	3	1 2 3 4 5 14

- EQUAL PRODUCTS BY: JCI, LOREN COOK, TWIN CITY

TAG	MODEL (INDOOR / OUTDOOR)	MANUFACTURER	AREA SERVED	SUPPLY AIR (CFM)	COOLING CAPACITY (MBH)	EFFICIENCY		HEATING CAPACITY (MBH)	ELECTRICAL		NOTES
						EER	SEER		V	PH	
FCU-1 / CU-1	40MBDQ24 / 38MARBQ24	CARRIER	T1 MEZZ. OFFICES	955	27.8	12.5	20.6	32.2	208	1	1 2 3 4 5

- NOTES:

- EQUAL PRODUCTS BY: DAIKIN, JCI, TRANE

TAG	MODEL	MANUFACTURER	TYPE	AREA SERVED	MOUNTING	CFM	KW	STAGES	ELECTRICAL		NOTES
									V	PH	
EH-1	MUH	QMARK	UNIT	UNIT 1 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-2	MUH	QMARK	UNIT	UNIT 1 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-3	MUH	QMARK	UNIT	UNIT 1 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-4	MUH	QMARK	UNIT	UNIT 1 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-5	MUH	QMARK	UNIT	UNIT 2 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-6	MUH	QMARK	UNIT	UNIT 2 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-7	MUH	QMARK	UNIT	UNIT 2 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-8	MUH	QMARK	UNIT	UNIT 3 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-9	MUH	QMARK	UNIT	UNIT 3 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-10	MUH	QMARK	UNIT	UNIT 3 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-11	MUH	QMARK	UNIT	UNIT 4 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-12	MUH	QMARK	UNIT	UNIT 4 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-13	MUH	QMARK	UNIT	UNIT 4 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-14	MUH	QMARK	UNIT	UNIT 4 BATT. CHARGING	WALL	650	10.0	2	480	3	1 2 3 4 6
EH-15	MUH	QMARK	UNIT	RISER ROOM	WALL	350	3.0	1	480	3	1 2 3 4 6
EH-16	MUH	QMARK	UNIT	RISER ROOM	WALL	350	3.0	1	480	3	1 2 3 4 6
EH-17	MUH	QMARK	UNIT	RISER ROOM	WALL	350	3.0	1	480	3	1 2 3 4 6
EH-18	MUH	QMARK	UNIT	RISER ROOM	WALL	350	3.0	1	480	3	1 2 3 4 6
EH-19	MUH	QMARK	UNIT	RISER ROOM	WALL	350	3.0	1	480	3	1 2 3 4 6
EH-20	MUH	QMARK	UNIT	FIRE PUMP HOUSE	WALL	350	5.0	1	480	3	1 2 3 4 6

- EQUAL PRODUCTS BY: BERKO, INDEECO, TRANE

TAG	MODEL	MANUFACTURER	AREA SERVED	SIZE WxH (IN)	MIN. FREE AREA (SQ FT)	CFM	MAX. PRESSURE DROP (IN W.C.)	INTERLOCK	FRAME MATERIAL	NOTES
L-1	ESD-635	GREENHECK	FIRE PUMP ROOM	60" x 72"	18.39	12,000	0.10"	SEE NOTE	ALUMINUM	1 2 3 4

- NOTES:

- EQUAL PRODUCTS BY: ARROW, POTTORFF, RUSKIN

TAG	MODEL	MANUFACTURER	FUNCTION	FACE SIZE (IN)	NECK SIZE (IN)	COUNT	MATERIAL	DAMPER (Y/N)	TYPE	NOTES
EG-1	8F	TITUS	EXHAUST	24" x 24"	---	24	ALUMINUM	Y	CEILING	1
EG-2	350RS	TITUS	EXHAUST	24"x24"	---	8	STEEL	Y	DUCT	2
EG-3	350RS	TITUS	EXHAUST	20"x20"	---	8	STEEL	Y	DUCT	2
RG-1	8F	TITUS	RETURN	24" x 24"	---	19	ALUMINUM	N	CEILING	---
SD-1	TMSA-AA	TITUS	SUPPLY	24" x 24"	6"Ø	2	ALUMINUM	Y	CEILING	1
SD-2	TMSA-AA	TITUS	SUPPLY	24" x 24"	8"Ø	28	ALUMINUM	Y	CEILING	1
SG-1	S300FL	TITUS	SUPPLY	14" x 6"	---	4	ALUMINUM	Y	DUCT	3
SG-2	S300FL	TITUS	SUPPLY	16" x 6"	---	66	ALUMINUM	Y	DUCT	3

- NOTES:

- EQUAL PRODUCTS BY: KRUEGER, NAILOR, PRICE

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A NEW REFRIGERATED WAREHOUSE FACILITY FOR

**187 RALEIGH STREET
WILMINGTON, NC 28412**

[illegible]

drawing status

project no.	20-086
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seal



title
**MECHANICAL
SCHEDULES**

sheet

M0.2



COMcheck Software Version 4.1.5.5
Mechanical Compliance Certificate

Project Information

Energy Code: 2015 IECC
Project Title: COLD SUMMIT DEVELOPMENT
Location: Wilmington, North Carolina
Climate Zone: 3a
Project Type: New Construction

Construction Site: 187 RALEIGH STREET WILMINGTON, NC 28412
Owner/Agent: COLD SUMMIT DEVELOPMENT 187 RALEIGH STREET WILMINGTON, NC 28412
Designer/Contractor: TIMOTHY M. TAYLOR P.E. PRIMUS DESIGN SERVICES 8294 HIGHWAY 52 WOODSTOCK, GA 30189 770.928.7120 ttaylor@primusds.com

Additional Efficiency Package(s)

Credits: 1.0 Required 0.0 Proposed

Mechanical Systems List

Quantity	System Type & Description
1	RTU-1 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 48 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 48 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER Fan System: RTU-1 AND RTU-7 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 1600 CFM, 1.5 motor nameplate hp, 0.0 fan efficiency grade
1	RTU-2 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 171 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 183 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.00 EER, Required Efficiency: 11.00 EER + 12.4 IEER Fan System: RTU-2 AND RTU-8 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 6000 CFM, 5.0 motor nameplate hp, 0.0 fan efficiency grade
1	RTU-3 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 39 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 35 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER Fan System: RTU-3 AND RTU-5 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 1200 CFM, 1.0 motor nameplate hp, 0.0 fan efficiency grade
1	RTU-4 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 113 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 126 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.20 EER, Required Efficiency: 11.20 EER + 12.8 IEER Fan System: RTU-4 AND RTU-6 VARIOUS -- Compliance (Motor nameplate HP method) : Passes

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Quantity System Type & Description

1	EH-19 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 10 kBtu/h No minimum efficiency requirement applies Fan System: EH-15 THRU EH-19 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 350 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-20 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 17 kBtu/h No minimum efficiency requirement applies Fan System: EH-20 FIRE PUMP HOUSE -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 350 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EW4-1: Electric Storage Water Heater, Capacity: 120 gallons w/ Circulation Pump Proposed Efficiency: 0.53 SL, %/h (if > 12 kW), Required Efficiency: 0.53 SL, %/h (if > 12 kW)
1	EW4-2: Electric Storage Water Heater, Capacity: 120 gallons w/ Circulation Pump Proposed Efficiency: 0.53 SL, %/h (if > 12 kW), Required Efficiency: 0.53 SL, %/h (if > 12 kW)
1	EW4-3: Electric Storage Water Heater, Capacity: 120 gallons w/ Circulation Pump Proposed Efficiency: 0.53 SL, %/h (if > 12 kW), Required Efficiency: 0.53 SL, %/h (if > 12 kW)
1	EW4-4: Electric Storage Water Heater, Capacity: 120 gallons w/ Circulation Pump Proposed Efficiency: 0.53 SL, %/h (if > 12 kW), Required Efficiency: 0.53 SL, %/h (if > 12 kW)
1	IWH-1: Electric Instantaneous Water Heater, Capacity: 0 gallons Proposed Efficiency: 1.00 SL, %/h (if > 12 kW), Required Efficiency: 1.00 SL, %/h (if > 12 kW)

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2015 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

ROBERT LANE - MECHANICAL DESIGNER
Name - Title
Signature
12/12/2022
Date

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Quantity System Type & Description

	Fans: SUPPLY Supply, Constant Volume, 4000 CFM, 3.0 motor nameplate hp, 0.0 fan efficiency grade
1	RTU-5 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 39 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 35 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER Fan System: RTU-3 AND RTU-5 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 1200 CFM, 1.0 motor nameplate hp, 0.0 fan efficiency grade
1	RTU-6 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 113 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 126 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.20 EER, Required Efficiency: 11.20 EER + 12.8 IEER Fan System: RTU-4 AND RTU-6 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 4000 CFM, 3.0 motor nameplate hp, 0.0 fan efficiency grade
1	RTU-7 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 48 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 48 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER Fan System: RTU-1 AND RTU-7 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 1600 CFM, 1.5 motor nameplate hp, 0.0 fan efficiency grade
1	RTU-8 (Single Zone): Heating: 1 each - Central Furnace, Electric, Capacity = 171 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - Single Package DX Unit, Capacity = 183 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.00 EER, Required Efficiency: 11.00 EER + 12.4 IEER Fan System: RTU-2 AND RTU-8 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 6000 CFM, 5.0 motor nameplate hp, 0.0 fan efficiency grade
1	FCU-1 / CU-1 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 32 kBtu/h, Proposed Efficiency = 12.60 HSPF, Required Efficiency = 8.20 HSPF Cooling Mode: Capacity = 28 kBtu/h, Proposed Efficiency = 20.60 SEER, Required Efficiency: 14.00 SEER Fan System: FCU-1 MEZZANINE OFFICES -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 955 CFM, 0.3 motor nameplate hp, 0.0 fan efficiency grade
1	EH-1 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-2 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies

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Quantity System Type & Description

	Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-3 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-4 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-5 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-6 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-7 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-8 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-9 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-10 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes

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Quantity System Type & Description

	Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-11 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-12 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-13 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-14 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies Fan System: EH-1 THRU EH-14 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 650 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-15 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 10 kBtu/h No minimum efficiency requirement applies Fan System: EH-15 THRU EH-19 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 350 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-16 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 10 kBtu/h No minimum efficiency requirement applies Fan System: EH-15 THRU EH-19 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 350 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-17 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 10 kBtu/h No minimum efficiency requirement applies Fan System: EH-15 THRU EH-19 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 350 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade
1	EH-18 (Single Zone): Heating: 1 each - Unit Heater, Electric, Capacity = 10 kBtu/h No minimum efficiency requirement applies Fan System: EH-15 THRU EH-19 VARIOUS -- Compliance (Motor nameplate HP method) : Passes Fans: SUPPLY Supply, Constant Volume, 350 CFM, 0.0 motor nameplate hp, 0.0 fan efficiency grade

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timothy m. taylor, PE
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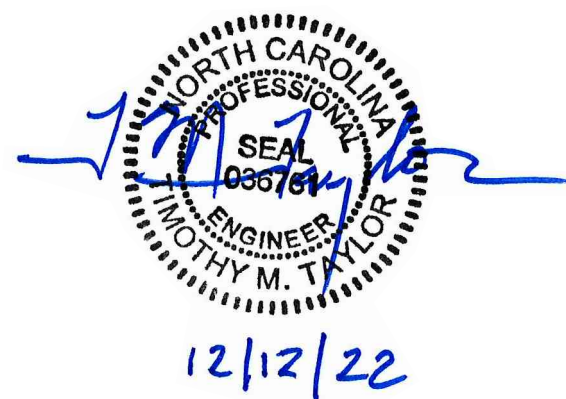
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12/12/2022
date
ISSUED FOR PERMIT
description

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project no. 20-086

seal



title
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sheet

M0.3

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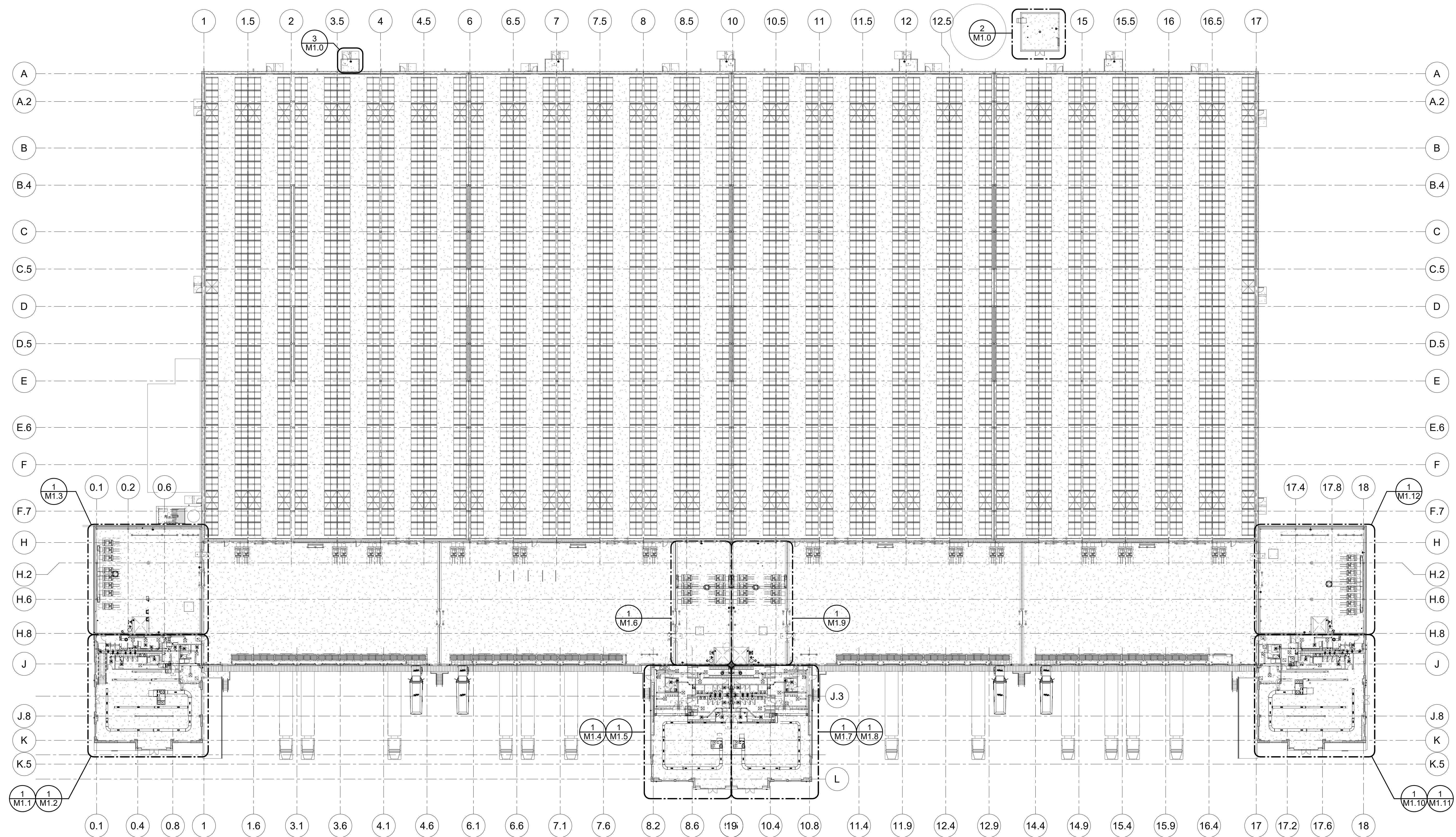
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project no. 20-086



M1.0

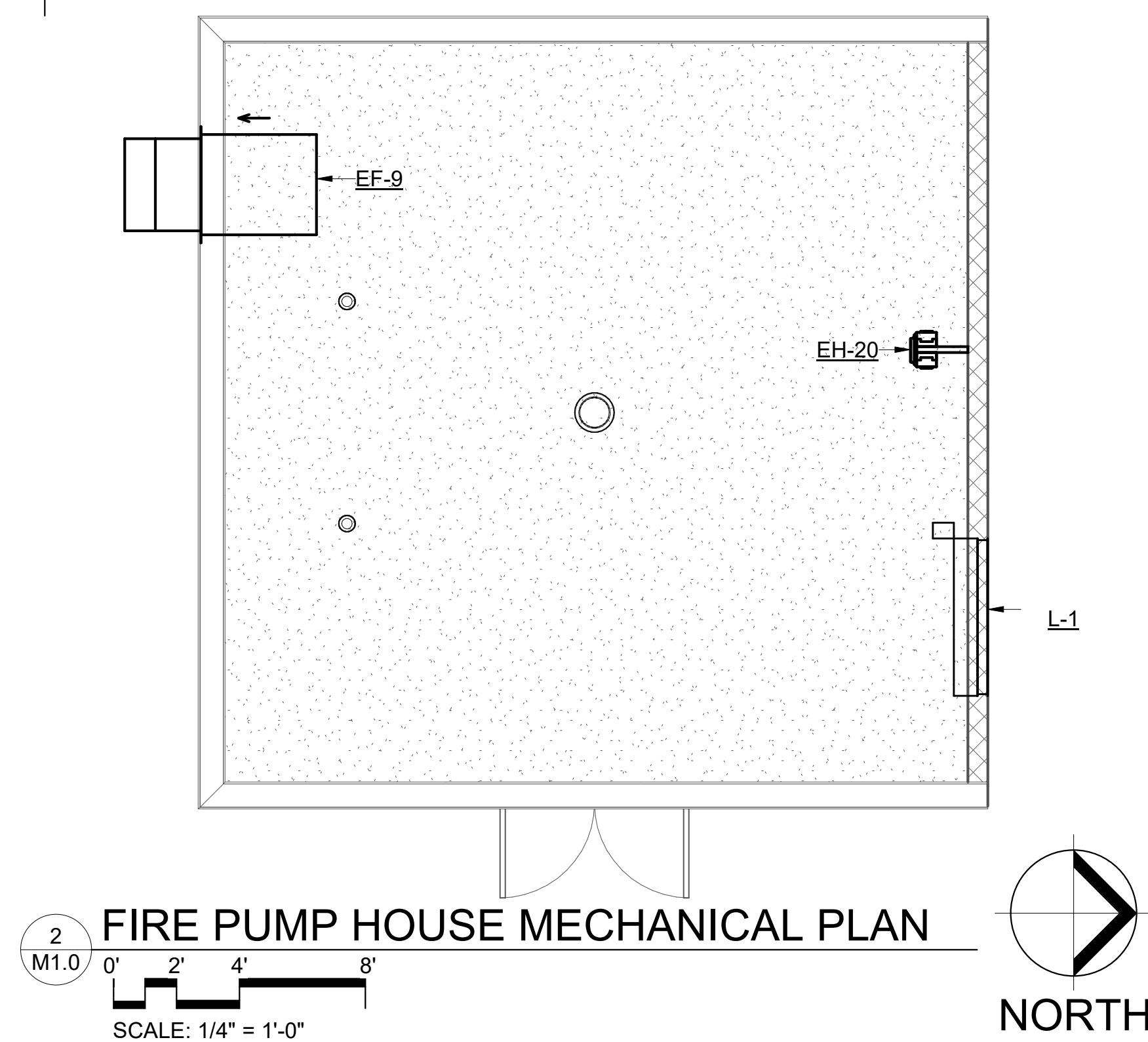
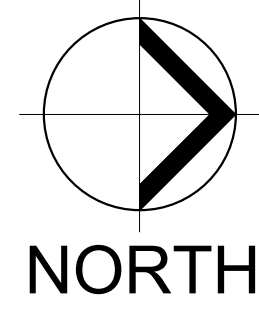


OVERALL MECHANICAL PLAN

1
M1.0

0' 15' 30' 60' 90' 120'

SCALE: 1" = 30'-0"



3
M1.0

TYPICAL RISER ROOM MECHANICAL ROOM

0' 2' 4' 8'

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

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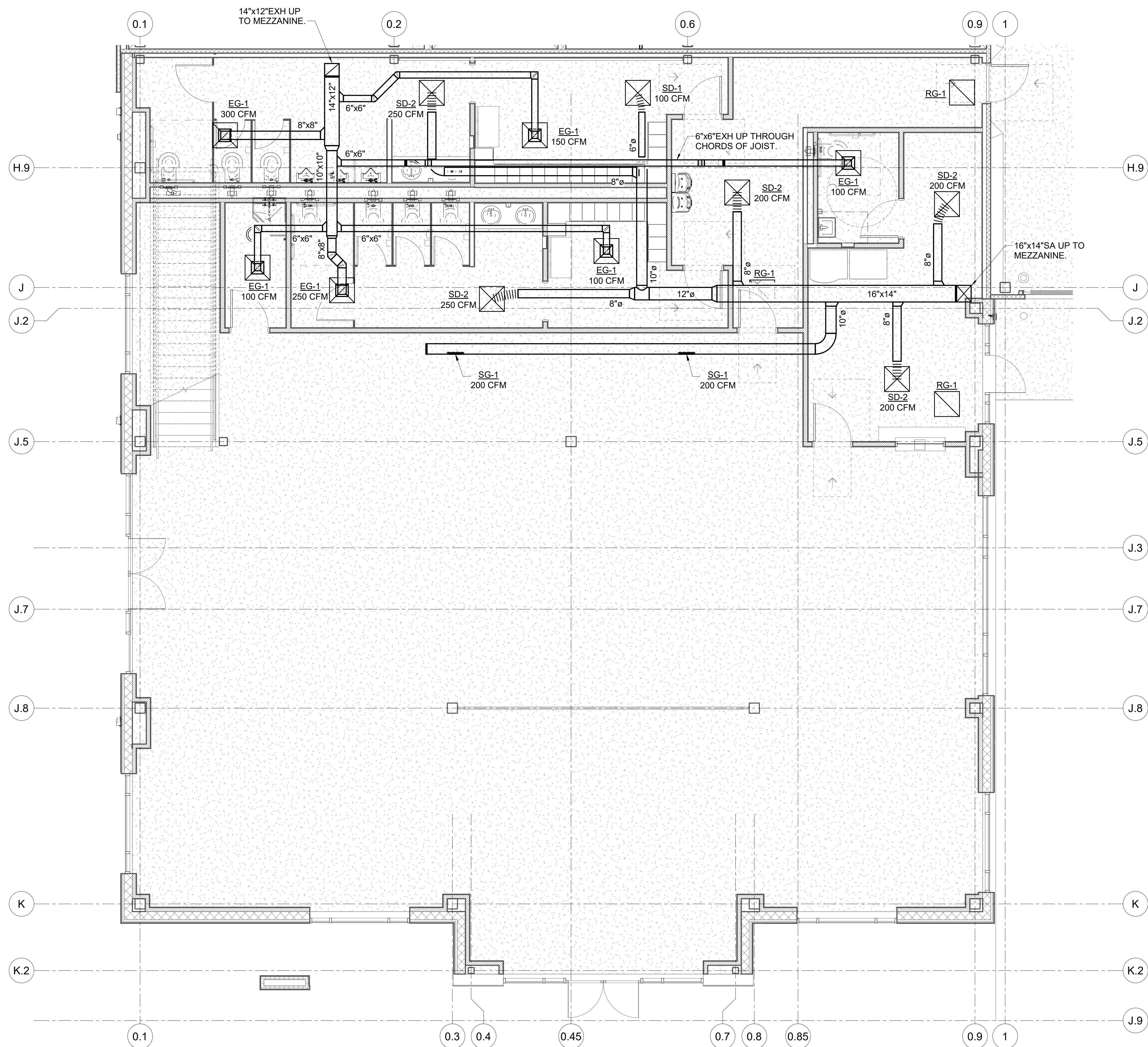
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Project no. 20-086

deal



M1.1

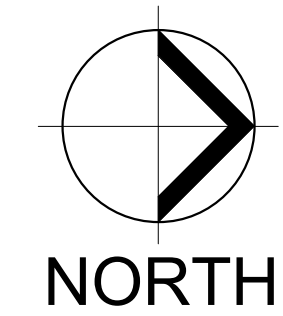


1
M1.1

UNIT 1 OFFICE MECHANICAL PLAN

0' 2' 4' 8'

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



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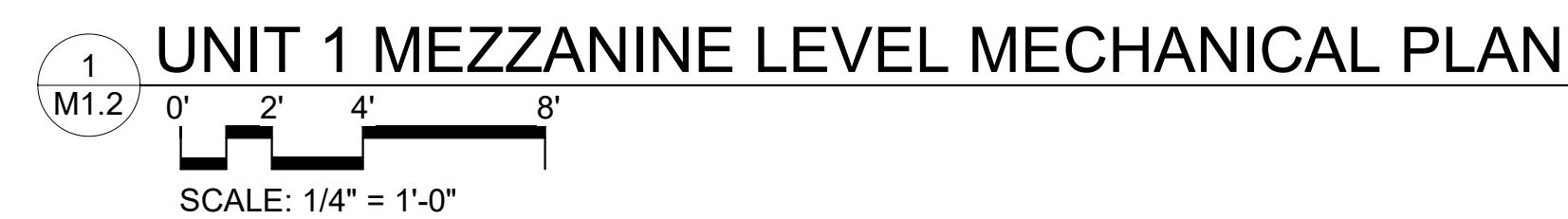


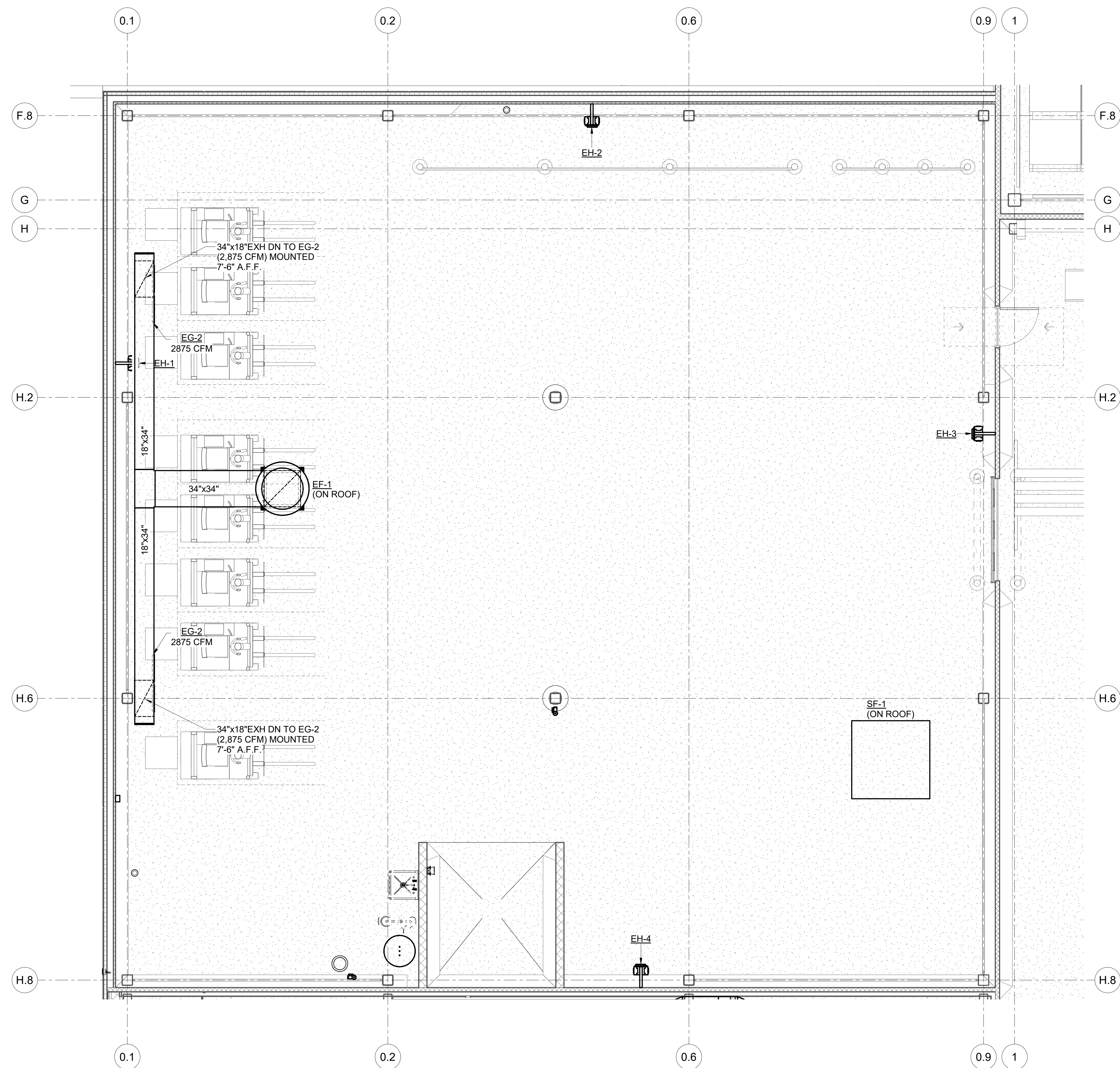
drawing status	
project no.	20-086

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M1.2



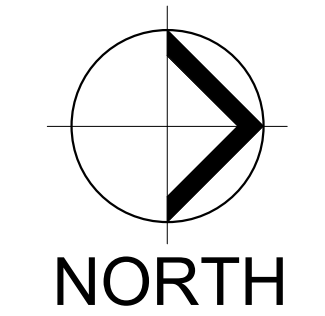


1
M1.3

UNIT 1 BATT. CHARGING MECHANICAL PLAN

0' 2' 4' 8'

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



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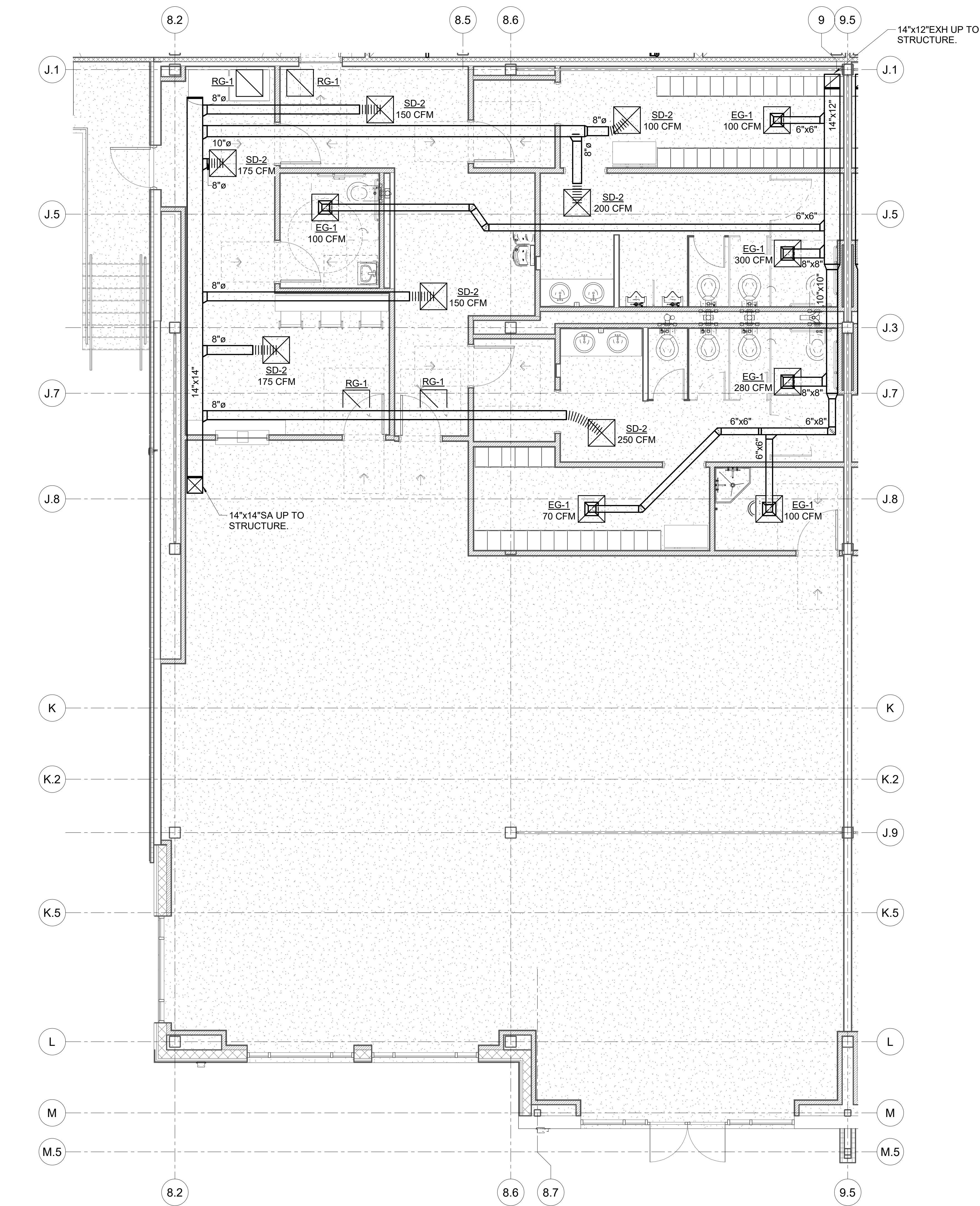
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title	UNIT 1 BATT. CHARGING MECHANICAL PLAN
sheet	M1.3

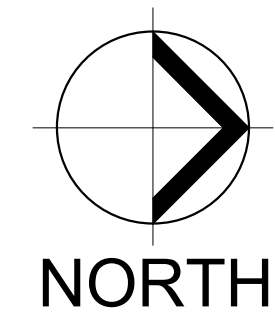


1
M1.4

UNIT 2 OFFICE MECHANICAL PLAN

0' 2' 4' 8'

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



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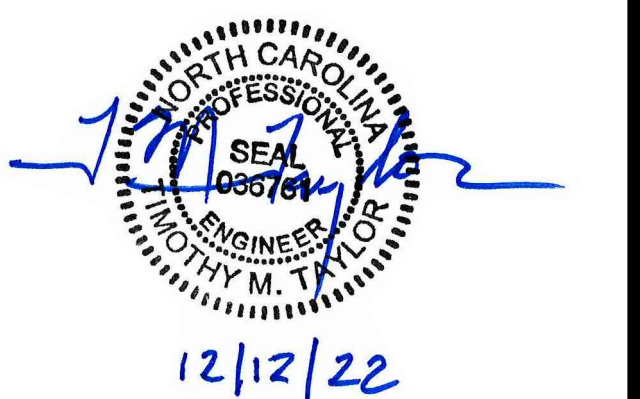
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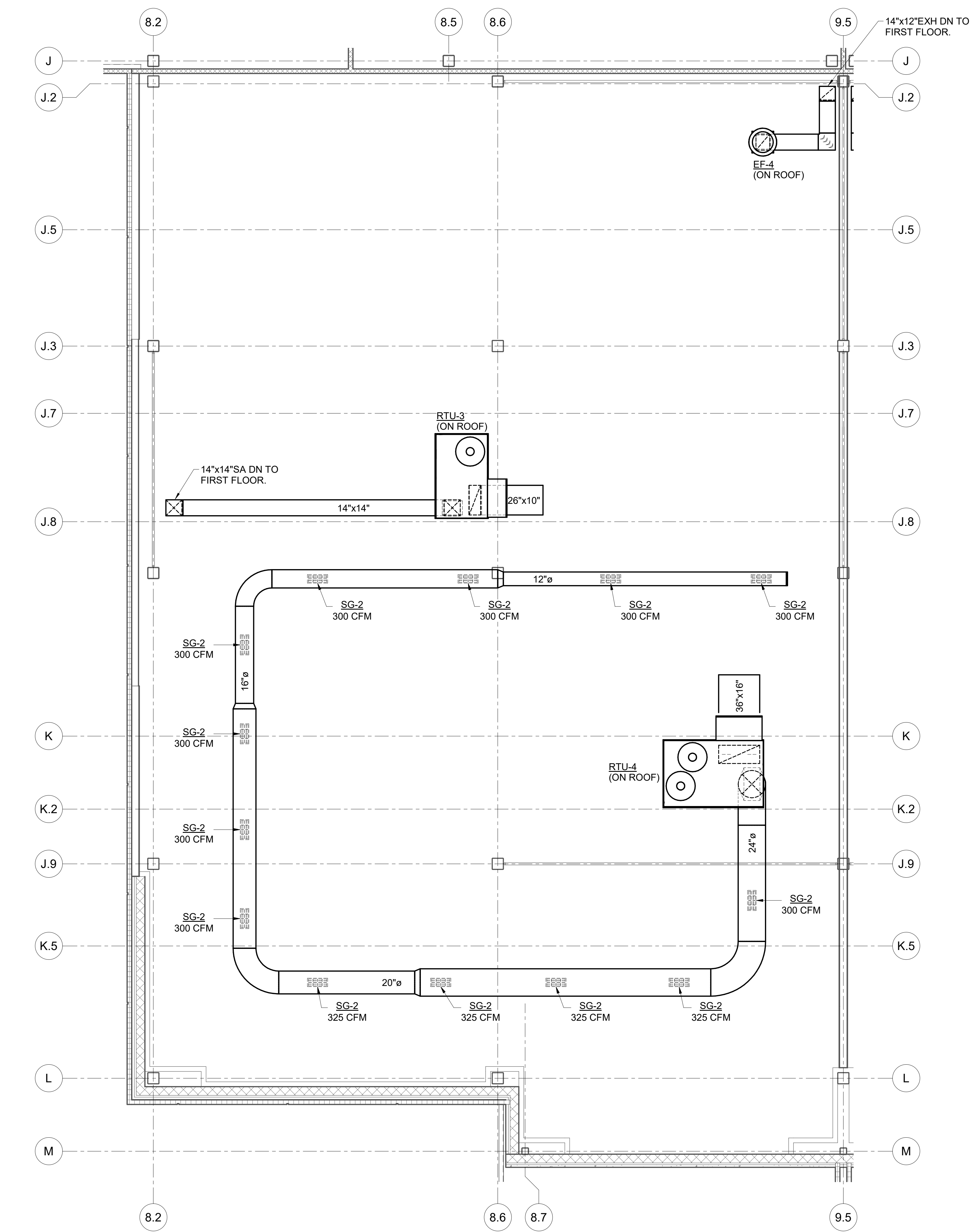
project no. 20-086

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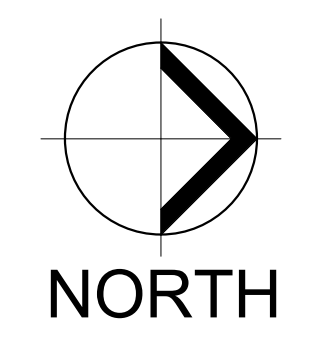


title
UNIT 2 OFFICE
MECHANICAL PLAN

sheet
M1.4



1 UNIT 2 MEZZANINE LEVEL MECHANICAL PLAN
SCALE: 1/4" = 1'-0"



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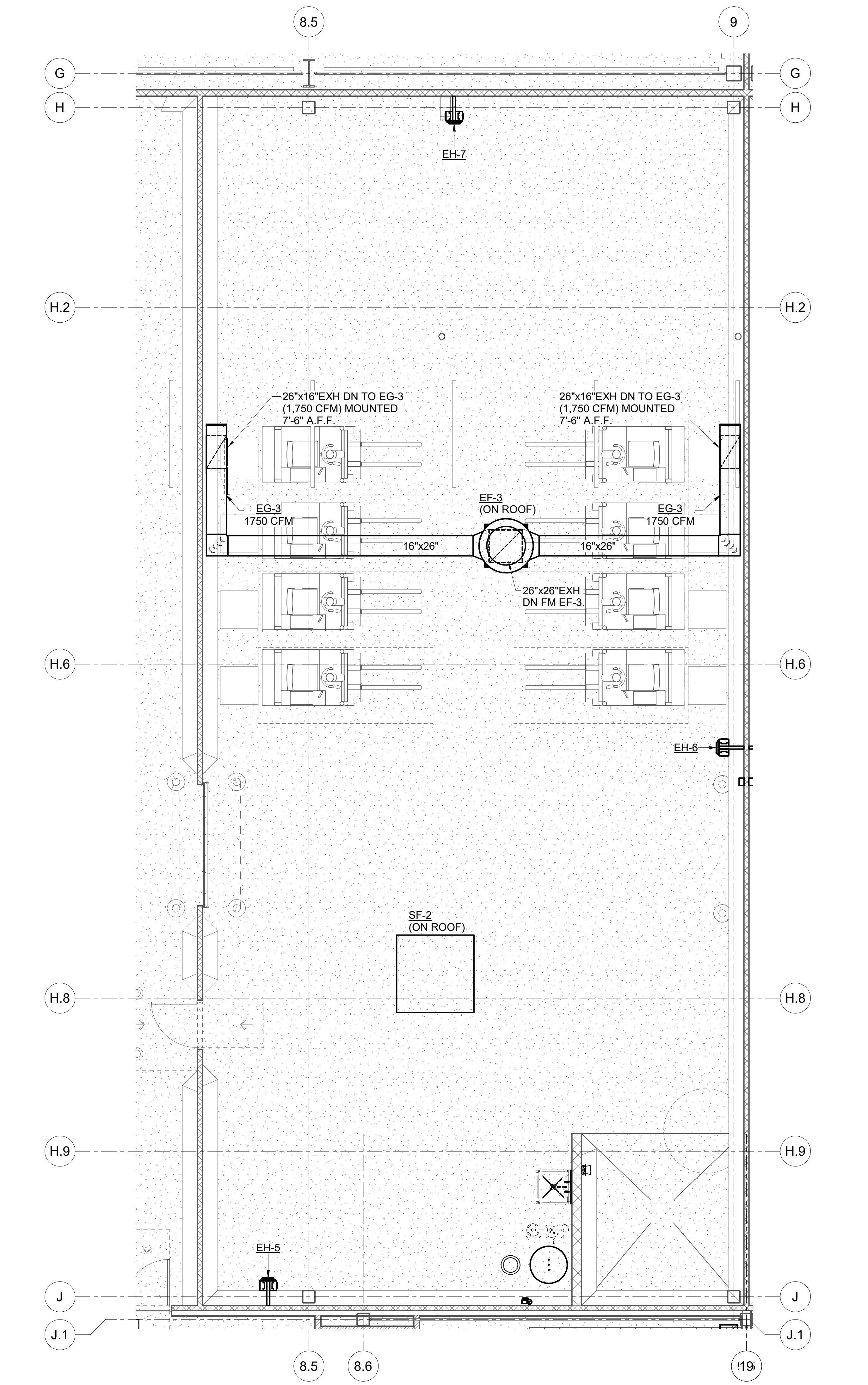
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title
UNIT 2 MEZZANINE LEVEL MECHANICAL PLAN

sheet
M1.5



1 M1.6
UNIT 2 BATT. CHARGING MECHANICAL PLAN
SCALE: 1/4" = 1'-0"
NORTH

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title
UNIT 2 BATT.
CHARGING
MECHANICAL PLAN

sheet
M1.6

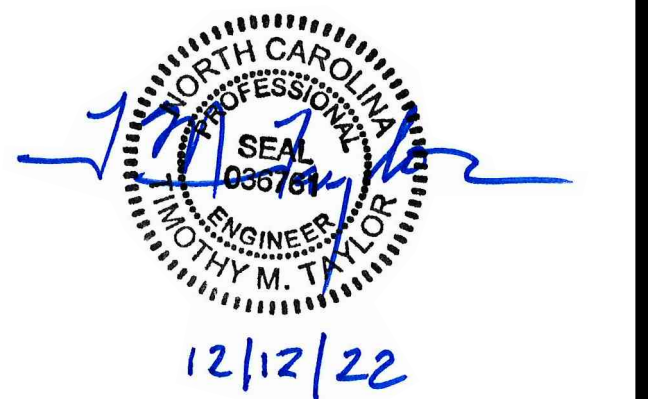
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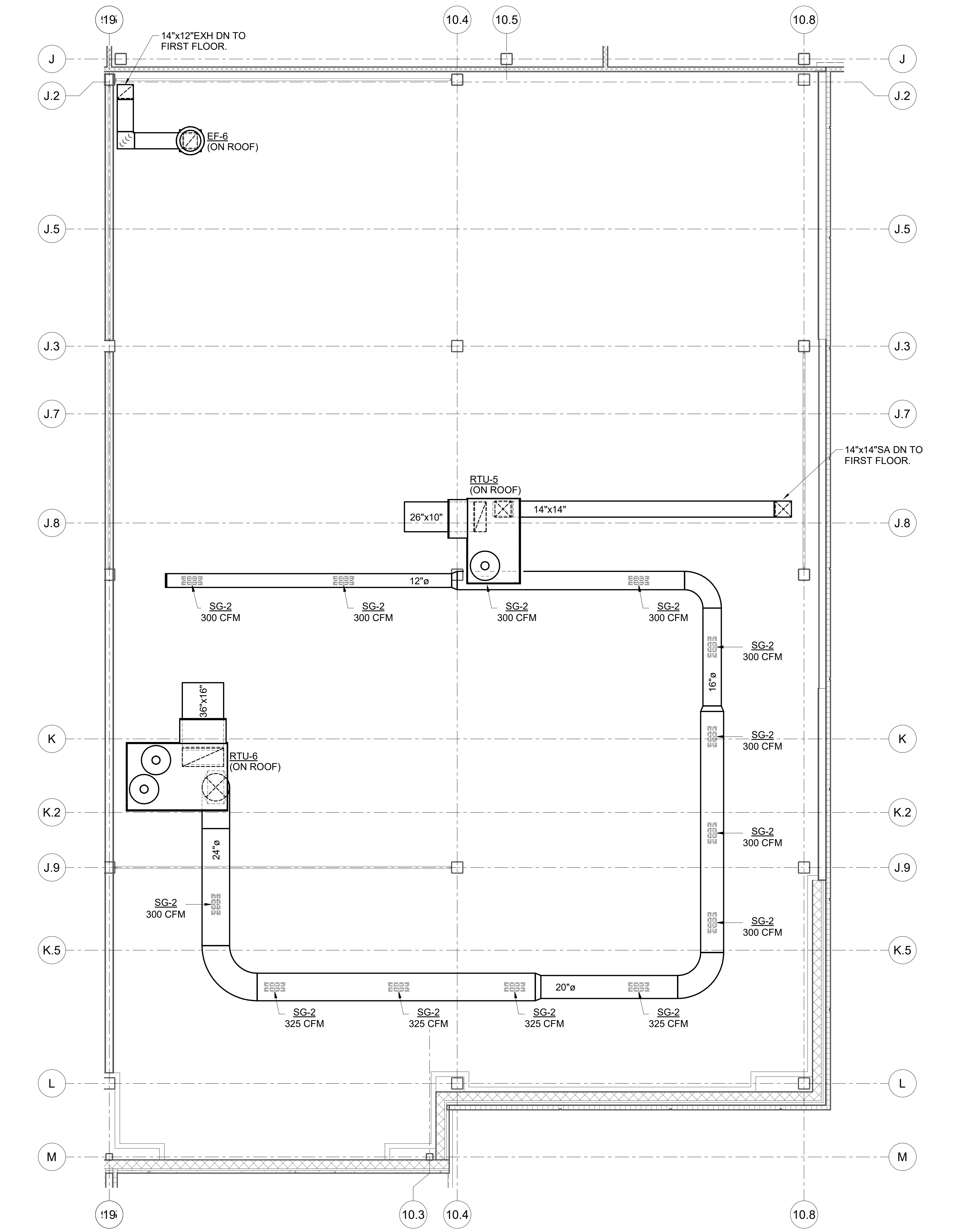
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project no.	20-086
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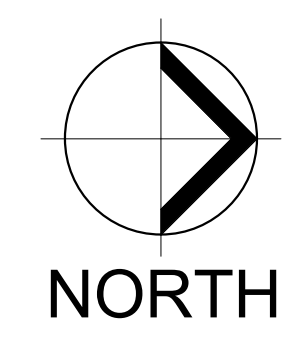
seal



M1.7



1 UNIT 3 MEZZANINE LEVEL MECHANICAL PLAN
M1.8
SCALE: 1/4" = 1'-0"



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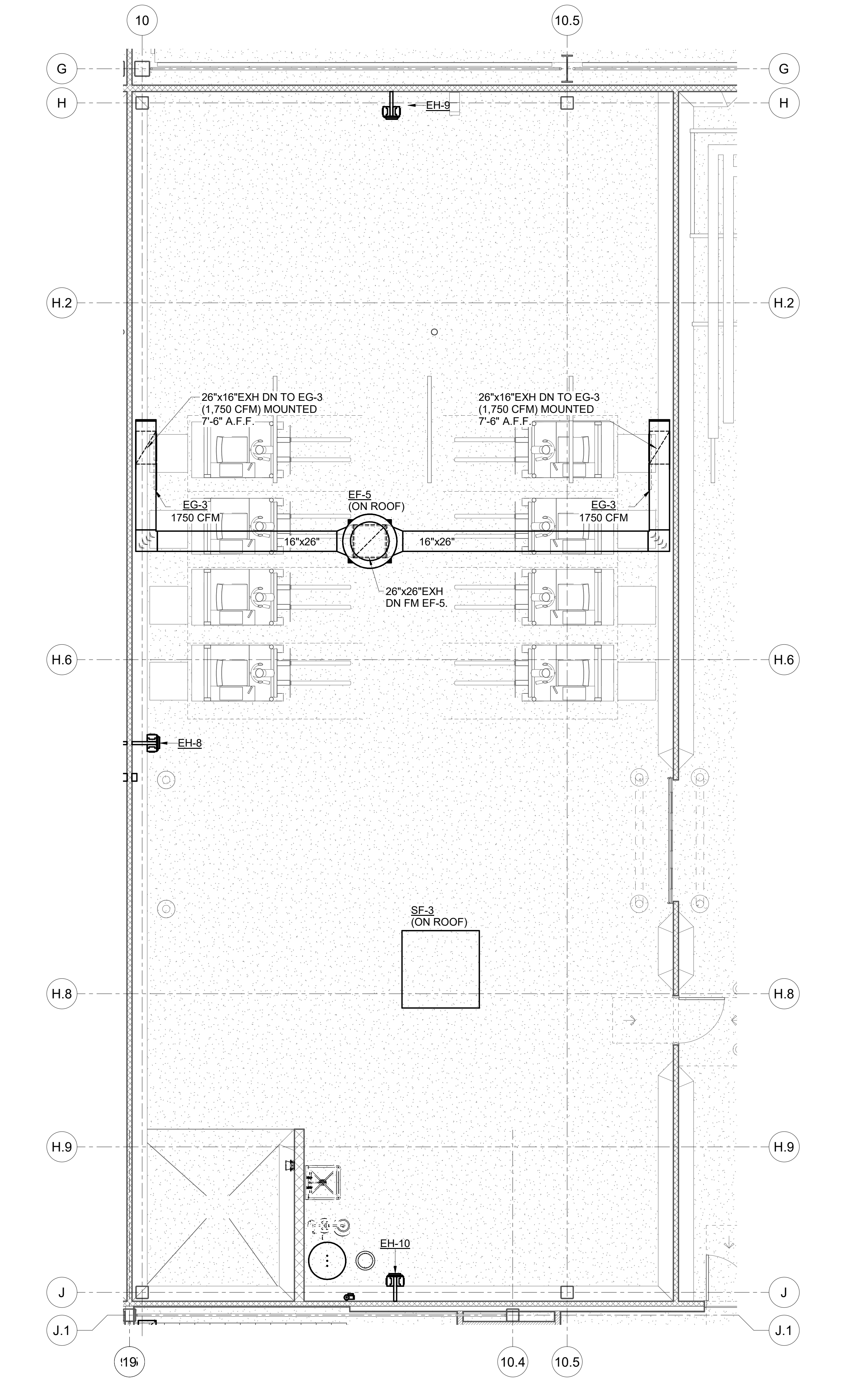
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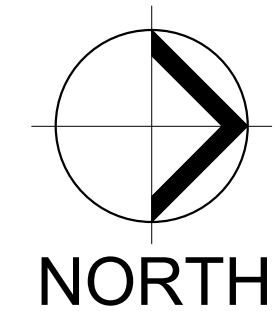
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project no.	20-086
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title	UNIT 3 MEZZANINE LEVEL MECHANICAL PLAN
sheet	M1.8



1 M1.9
UNIT 3 BATT. CHARGING MECHANICAL PLAN
SCALE: 1/4" = 1'-0"



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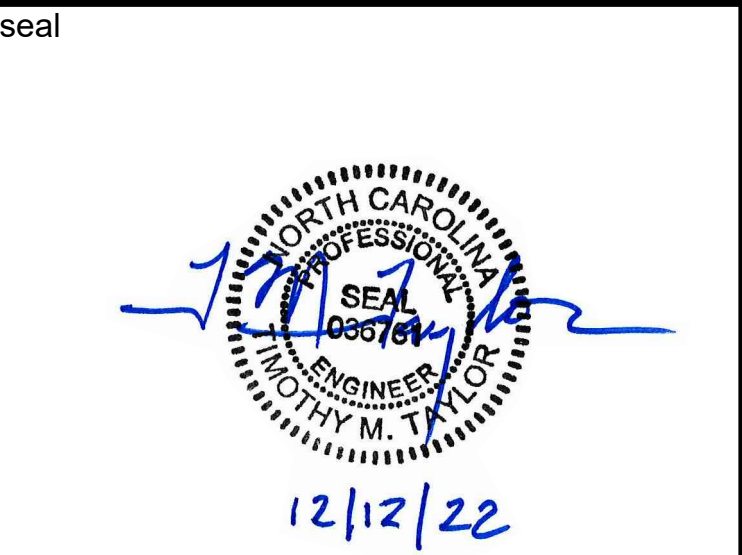
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date	description
drawing status	

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title
UNIT 3 BATT.
CHARGING
MECHANICAL PLAN

sheet
M1.9

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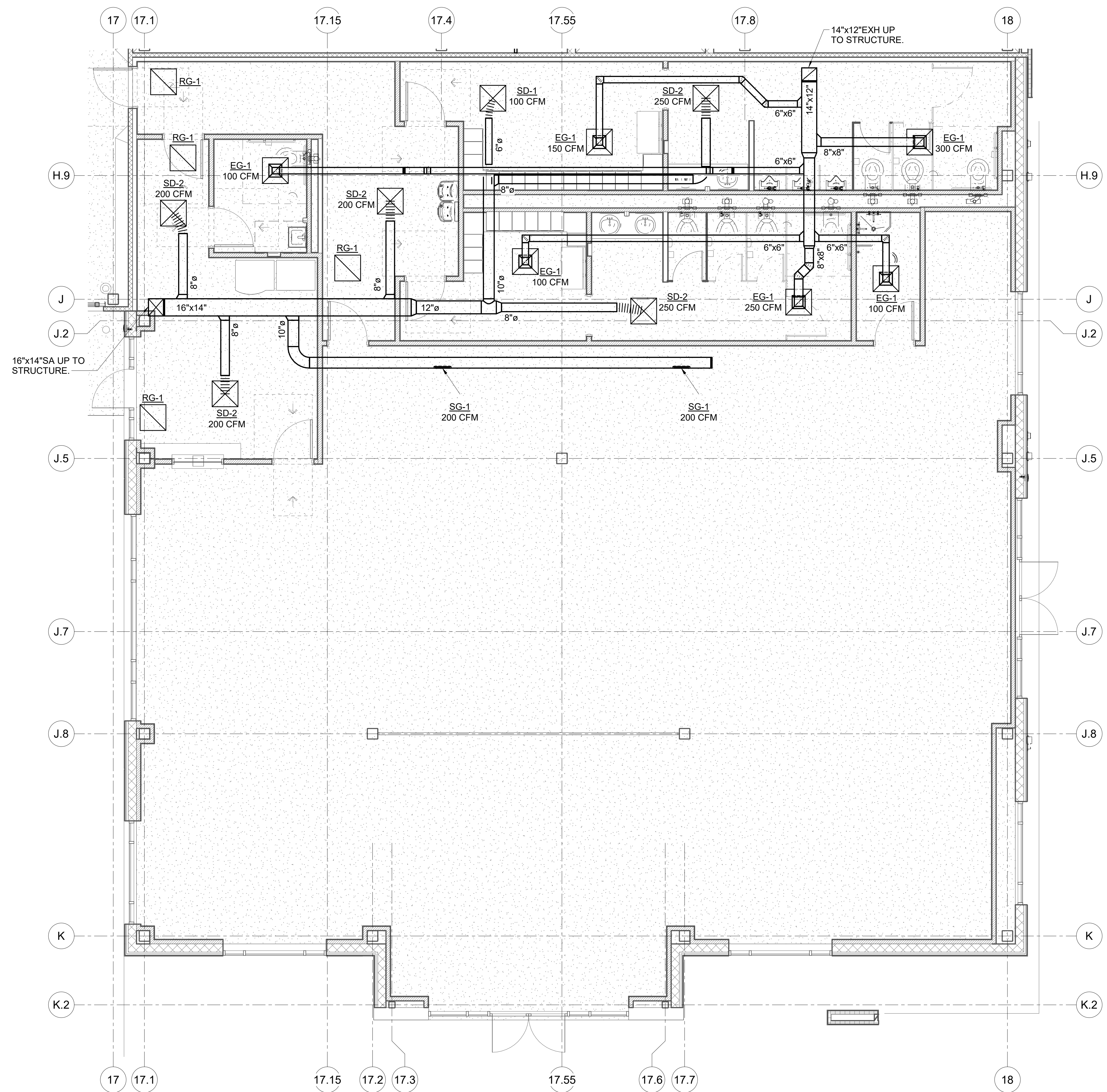
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M1.10

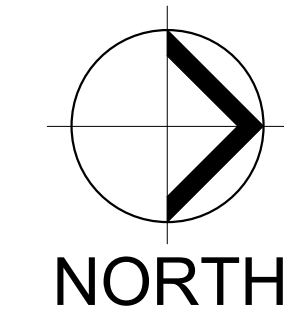


1
M1.10

UNIT 4 OFFICE MECHANICAL PLAN

0' 2' 4' 8'

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



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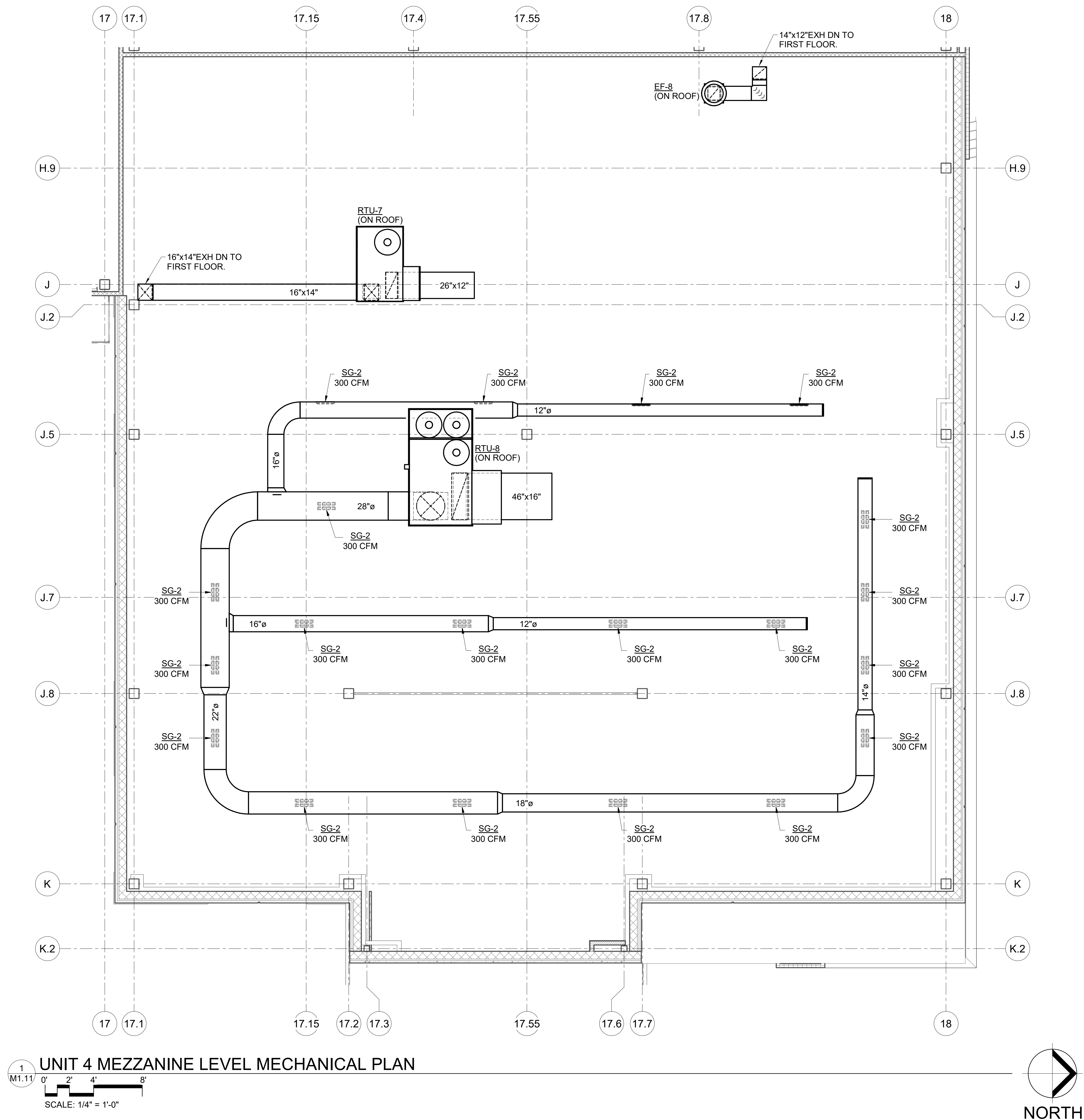
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seal



sheet

M1.11



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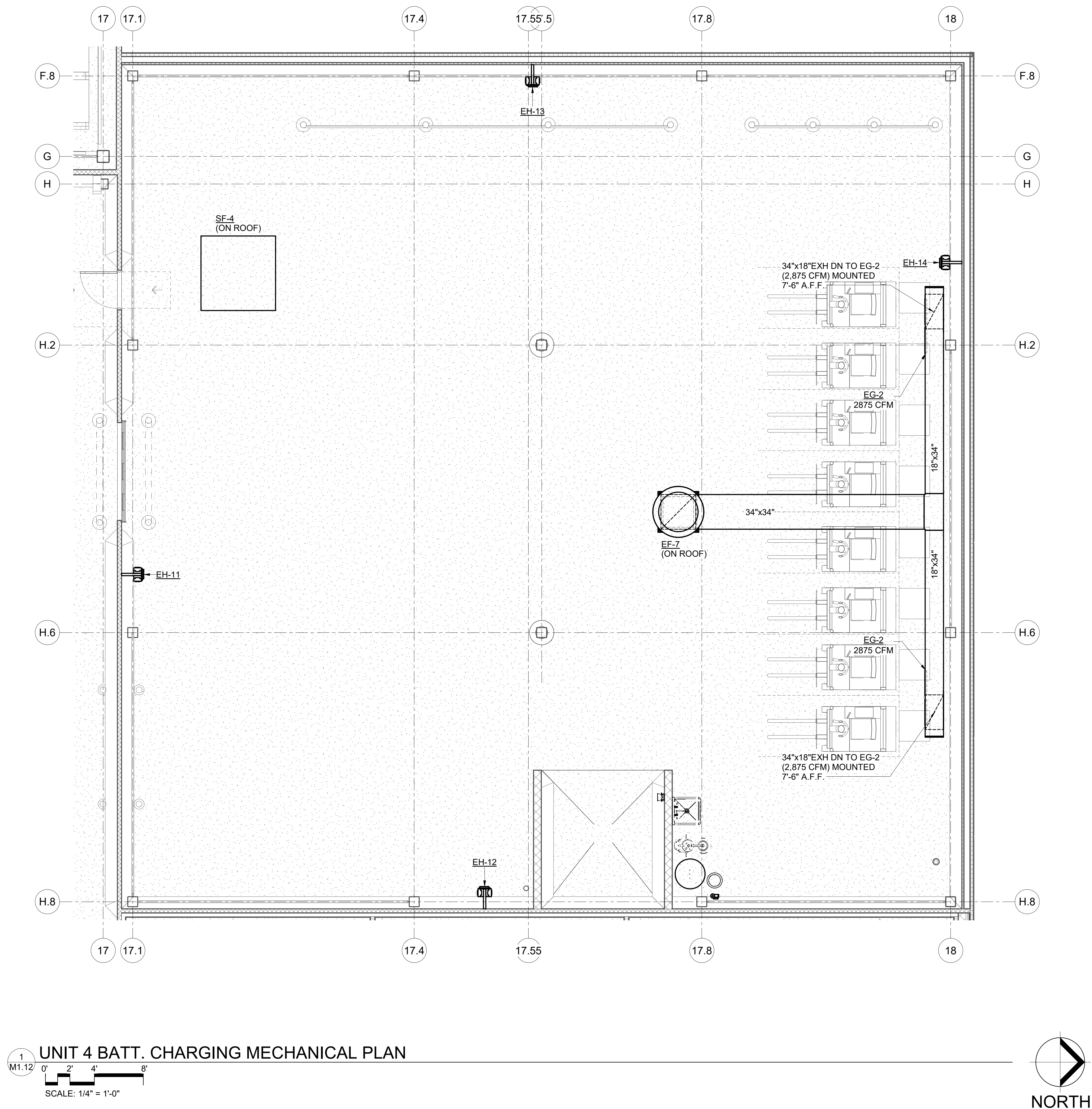
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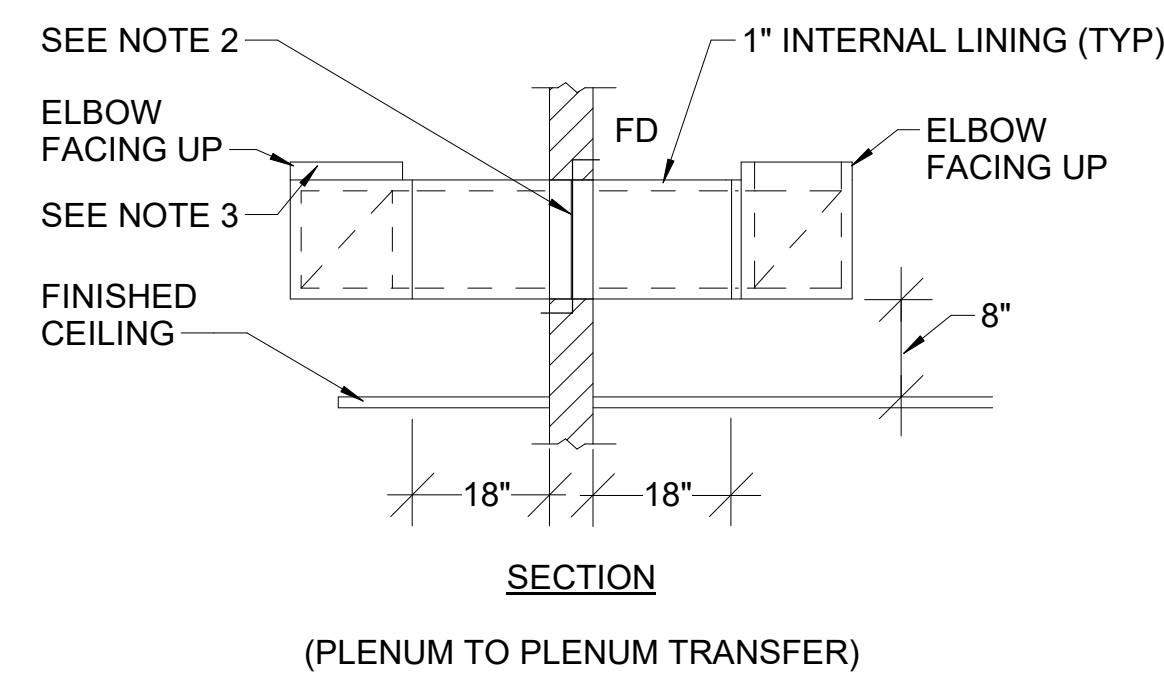
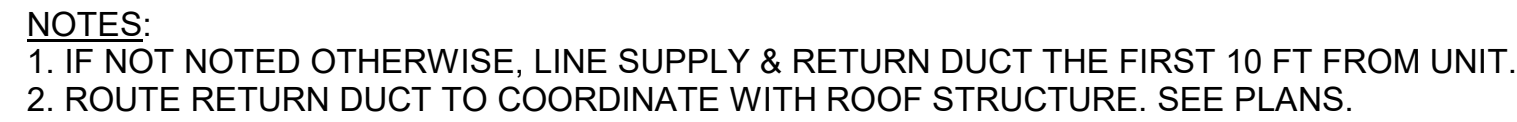
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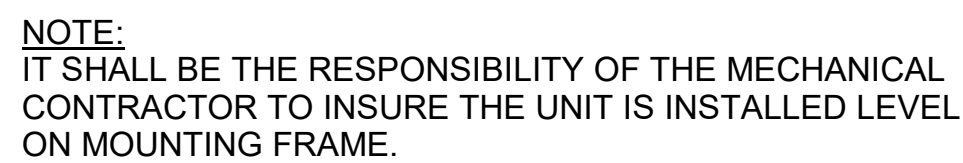
UNIT 4 BATT. CHARGING MECHANICAL PLAN

M1.12

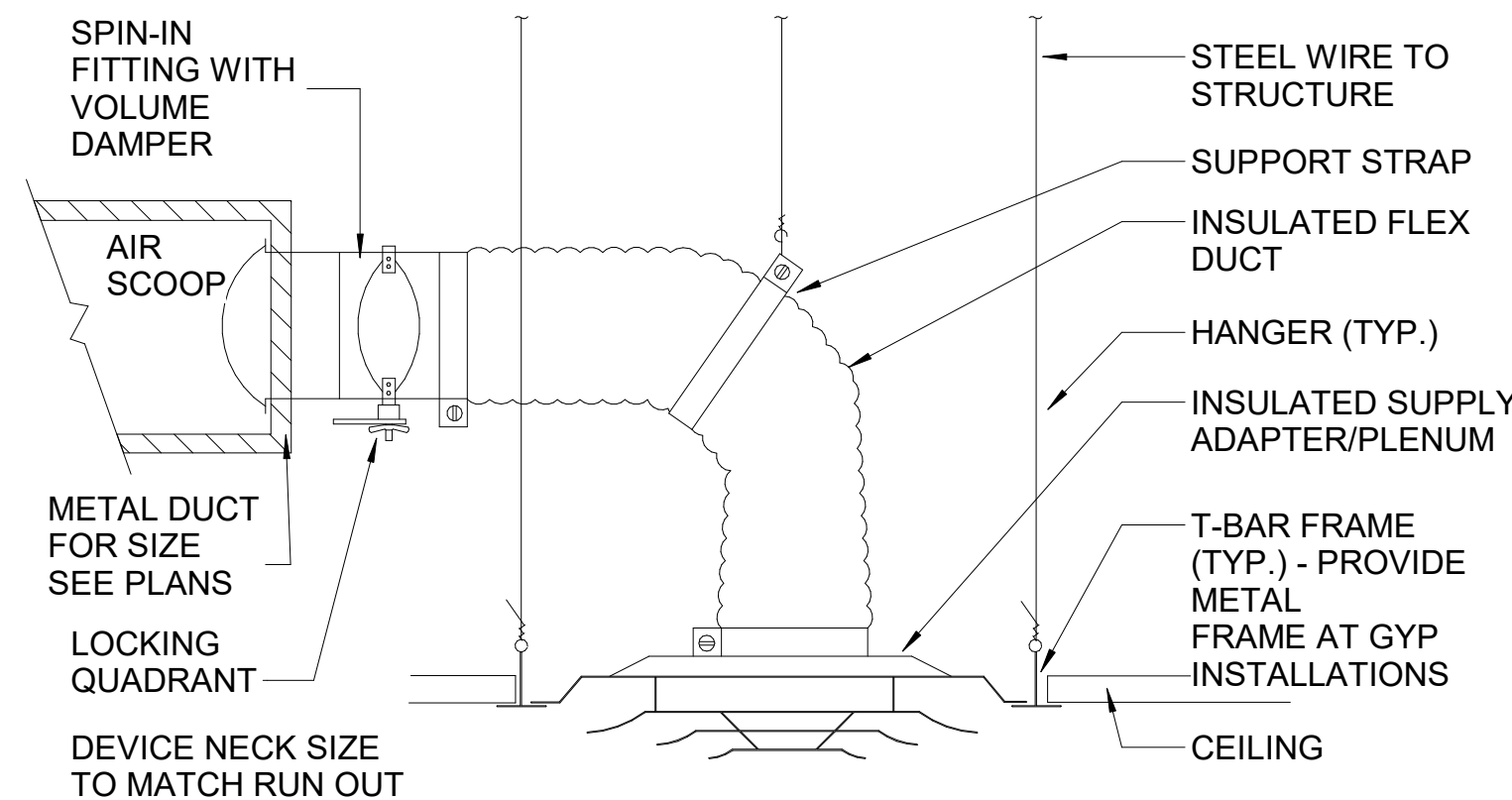




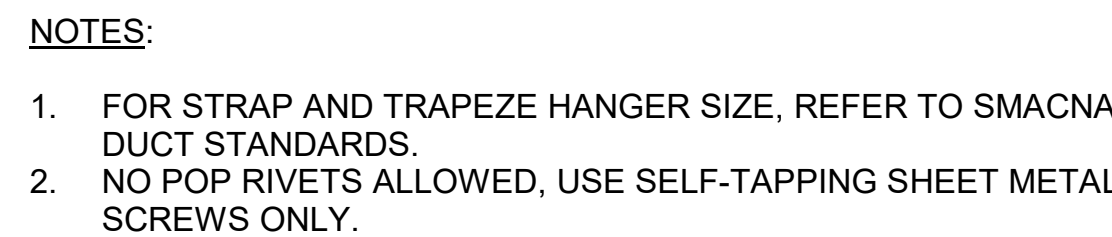
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CFM	DUCT SIZE
0 - 250	10"x8"
251 - 500	12"x12"
501 - 700	18"x12"
701 - 1000	24"x14"
1001 - 1300	30"x14"



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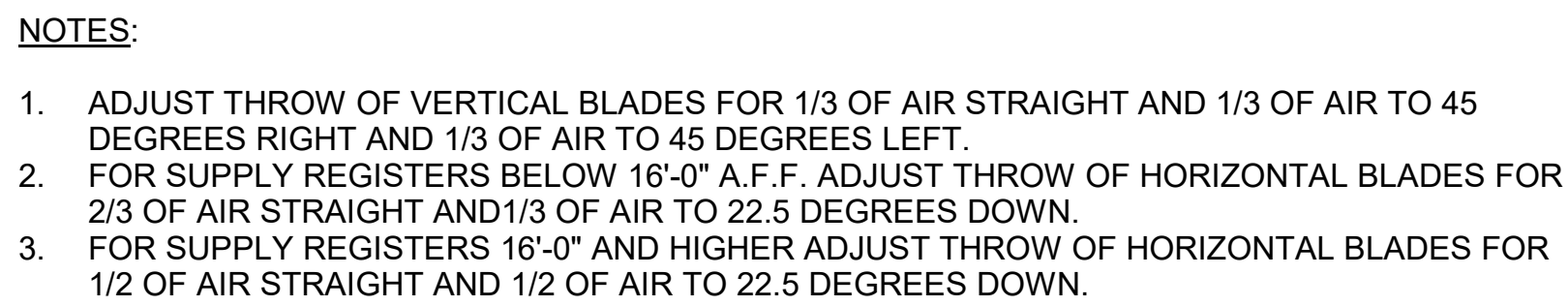


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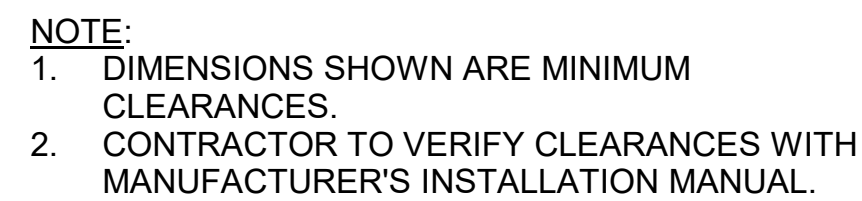


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M2.1	N.T.S.

4	RO
M2.1	N.T.S.



5	SU
M2.1	N.T.S.



6	DU
M2.1	N.T.S

7	SIL
M2.1	N.T.S.

8	VVF
M2.1	N.T.S.