CONTROLS LEGEND:

- PLENUM FAN
- CENTRIFUGAL FAN
- C/C — COOLING COIL
- H/C — HEATING COIL
- H/C — HOT GAS REHEAT COIL
- H/X — NATURAL GAS HEAT EXCHANGER
- AIR FILTER
- OPPOSED BLADE DAMPER
- PARALLEL BLADE DAMPER
- AIR BLENDER
- AFS — AIR FLOW STATION
- CONTROL POWER TRANSFORMER
- AS — AIR FLOW SWITCH
- BR — BAROMETRIC RELIEF DAMPER
- CTRL — CONTROLLER
- CT — CURRENT TRANSDUCER
- DPS — DIFFERENTIAL PRESSURE SENSOR
- DX — DIRECT EXPANSION SYSTEM
- HS — HUMIDITY SENSOR
- HSHL — HUMIDITY SENSOR – HIGH LIMIT
- LTC — LOW TEMPERATURE CONTROLLER (FREEZESTAT)
- NG — NATURAL GAS FIRED BURNER
- M — MOTOR–DRIVEN ACTUATOR
- M — TWO–WAY CONTROL VALVE
- OS — OCCUPANCY SENSOR
- SD — SMOKE DETECTOR
- SPC — STATIC PRESSURE CONTROLLER (HIGH LIMIT)
- SPS — STATIC PRESSURE SENSOR
- T — THERMOSTAT
- TS — ZONE TEMPERATURE SENSOR
- TS — INSERTION TEMPERATURE SENSOR
- TS — AVERAGING TEMPERATURE SENSOR
- VFD — VARIABLE FREQUENCY DRIVE
- POWER WIRING
- CONTROL WIRING
- COMMUNICATIONS CABLING
- – — CONTROL POINT TAG

LINETYPES LEGEND:

- NEW
- NEW – ON ROOF
- EXISTING
- EXISTING – ON ROOF
- DEMOLITION

DUCTWORK LEGEND:

- DUCT (SINGLE LINE)
- DUCT (DOUBLE LINE)
- 20" — ROUND O/A OR S/A DOWN
- 20" — ROUND O/A OR S/A UP
- 20" — ROUND E/A OR R/A DOWN
- 20" — ROUND E/A OR R/A UP
- 20"×10" — RECTANGULAR O/A OR S/A DOWN
- 20"×10" — RECTANGULAR O/A OR S/A UP
- 20"×10" — RECTANGULAR E/A OR R/A DOWN
- 20"×10" — RECTANGULAR E/A OR R/A UP
- O/A OR S/A DIFFUSER
- E/A OR R/A GRILLE
- AIR DEVICE WITH FLEX DUCT CONNECTION
- 20"Ø — AIR DEVICE WITH HARD DUCT CONNECTION
- FLEXIBLE CONNECTION TO EQUIPMENT
- DUCT BREAK/CONTINUATION
- MANUAL BALANCING DAMPER
- M — MOTOR–OPERATED DAMPER
- BD — BACKDRAFT DAMPER
- F — FIRE DAMPER
- FS — FIRE/SMOKE DAMPER
- S — SMOKE DAMPER
- T — THERMOSTAT

ANNOTATION LEGEND:

- ABC–1 — EQUIPMENT / FIXTURE TAG
- PLAN NOTE
- CONNECT TO EXISTING
- AIR FLOW DIRECTION
- S–1 / 8ø — G/R/D TAG / NECK SIZE
- 300 — AIR FLOW (CFM)

PIPING LEGEND:

- ELBOW DOWN
- ELBOW UP
- P–TRAP
- TEE DOWN
- ELBOW UP
- SHUT–OFF VALVE (GENERIC)
- BALL — BALL VALVE
- GLOBE — GLOBE VALVE
- BFLY — BUTTERFLY VALVE
- GATE — GATE VALVE
- CHECK VALVE
- BAL — BALANCING VALVE
- PRESSURE REDUCING VALVE
- GAS COCK
- WYE–STRAINER
- UNION
- FLANGE
- ST — STEAM TRAP (GENERIC)
- ST FT — FLOAT & THERMOSTATIC STEAM TRAP
- ST IB — INVERTED BUCKET STEAM TRAP
- ST OR — ORIFICE STEAM TRAP
- M — TWO–WAY CONTROL VALVE
- S — TWO–WAY SOLENOID VALVE
- M — THREE–WAY CONTROL VALVE
- RELIEF VALVE
- M/A — AIR VENT (MANUAL / AUTOMATIC)
- PRESSURE & TEMPERATURE TEST PORT
- PG — PRESSURE GAUGE
- T — THERMOMETER
- FLOW DIRECTION
- PIPE BREAK / CONTINUATION

ABBREVIATIONS LEGEND:

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
BAS	BUILDING AUTOMATION SYSTEM
CAV	CONSTANT AIR VOLUME
CFM	CUBIC FEET PER MINUTE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CU	CONDENSING UNIT
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DDC	DIRECT DIGITAL CONTROL
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
FCU	FAN COIL UNIT
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FPM	FEET PER MINUTE
FT.WG	FEET WATER GAUGE
GPM	GALLONS PER MINUTE
HC	HEATING CAPACITY
HP	HORSEPOWER
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
IN.WG	INCHES WATER GAUGE
LAT	LEAVING AIR TEMPERATURE
LPC	LOW PRESSURE CONDENSATE (<15 PSIG)
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	1,000 BTUH
MIN	MINIMUM
NC	NOISE CRITERIA
OA	OUTDOOR AIR
QTY	QUANTITY
RA	RETURN AIR
REA	RELIEF AIR
REFR	REFRIGERANT
RF	RETURN FAN
RG	RETURN GRILLE
SA	SUPPLY AIR
SC	SENSIBLE COOLING CAPACITY
SD	SUPPLY DIFFUSER
TC	TOTAL COOLING CAPACITY
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TRA	TO ROOF ABOVE
TSP	TOTAL STATIC PRESSURE
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
WPD	WATER PRESSURE DROP

MECHANICAL GENERAL NOTES:

- DRAWINGS ARE SCHEMATIC IN NATURE AND BASED ON PRELIMINARY SITE OBSERVATION AND ORIGINAL DESIGN DRAWINGS (WHEN AVAILABLE). CONTRACTOR SHALL INVESTIGATE THE PROJECT SITE AND BECOME FULLY AWARE OF ALL FIELD CONDITIONS, CURRENT SYSTEM OPERATION, AS WELL AS COORDINATION REQUIREMENTS. COORDINATE ALL MECHANICAL WORK WITH ARCHITECTURAL DRAWINGS, EXISTING CONDITIONS, AND OTHER TRADES PRIOR TO START OF WORK.
- MECHANICAL WORK SHALL CONFORM TO APPLICABLE CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- COORDINATE WITH ELECTRICAL CONTRACTOR FOR REQUIRED ELECTRICAL POWER WIRING AND ROUGH–IN FOR LOW–VOLTAGE CONTROL WIRING. PROVIDE ALL CONTROL WIRING AND FINAL CONTROL DEVICE (E.G. THERMOSTATS).
- FABRICATE AND INSTALL DUCTWORK PER SMACNA RECOMMENDATIONS FOR THE PRESSURE CLASSIFICATIONS ENCOUNTERED.
  - •• MEDIUM PRESSURE SUPPLY AIR (UPSTREAM OF VAV TERMINAL UNITS): +6.0 IN.WG
  - •• LOW PRESSURE SUPPLY AIR (DOWNSTREAM OF VAV TERMINAL UNITS): +2.0 IN.WG
  - •• RETURN AIR: –2.0 IN.WG
- PROVIDE MITERED ELBOWS AT CHANGES IN DIRECTION IN RECTANGULAR DUCTWORK. PROVIDE TURNING VANES IN ALL ELBOWS WHERE AIRFLOW CHANGES DIRECTION AT ANGLES 45° AND GREATER, EXCEPT FOR RETURN AIR TRANSFER DUCTS.
- PROVIDE ALL CONDENSATE DRAINS FOR EQUIPMENT THAT GENERATES CONDENSATE. COORDINATE WITH PLUMBING CONTRACTOR.
- PROVIDE DUCT WRAP INSULATION FOR ALL ROUND AND RECTANGULAR SUPPLY AIR DUCTWORK. DUCT WRAP INSULATION SHALL BE 2" THICK, MINIMUM R–6.0 FIBERGLASS DUCT WRAP WITH VAPOR BARRIER.
- CONTRACTOR OPTION: PROVIDE INTERNAL LINER INSULATION FOR SUPPLY AIR DUCTWORK. INTERNAL LINER INSULATION SHALL BE 1" THICK, 2 LB/FT^3 ACOUSTICAL DUCT LINER INSULATION WITH MINIMUM R–6.0.
- PROVIDE INTERNAL LINER INSULATION FOR ALL RECTANGULAR RETURN AIR TRANSFER DUCTWORK. INTERNAL LINER INSULATION SHALL BE 1" THICK, 2 LB/FT^3 ACOUSTICAL DUCT LINER INSULATION.
- ALL LOW PRESSURE BRANCH DUCTWORK SERVING DIFFUSERS, REGISTERS AND GRILLES (GRD) SHALL BE THE SAME SIZE AS THE GRD'S NECK SIZE UNLESS NOTED OTHERWISE.
- ALL MEDIUM PRESSURE BRANCH DUCTWORK SERVING AIR TERMINAL UNITS (VAV BOXES) SHALL BE ONE NOMINAL SIZE LARGER THAN THE AIR TERMINAL UNIT INLET SIZE UNLESS NOTED OTHERWISE.
- DUCT DIMENSIONS SHOWN ON THE PLANS INDICATE THE FREE AREA DIMENSIONS. INCREASE SHEET METAL DIMENSIONS AS REQUIRED TO MEET FREE AREA DIMENSIONS WITH LINER INSTALLED.
- FLEXIBLE DUCTWORK SHALL HAVE 2" THICK, MINIMUM R–6.0 INSULATION. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'–0" IN LENGTH FOR SUPPLY AIR APPLICATIONS AND 3'–0" IN LENGTH FOR RETURN AIR AND EXHAUST AIR APPLICATIONS.
- PROVIDE BALANCING DAMPERS IN DUCT TAKE–OFFS TO AIR DEVICES IN LAY–IN CEILINGS, IN THE NECKS OF AIR DEVICES IN GYP BOARD CEILINGS, AND IN THE NECKS OF SIDE WALL AIR DEVICES FOR PROPER AIR BALANCING.
- COORDINATE ALL REQUIRED ROOF PENETRATIONS WITH ROOFING CONTRACTOR TO AVOID ROOF WARRANTY CONFLICTS.
- VERIFY AVAILABLE SPACE ABOVE ALL CEILINGS PRIOR TO FABRICATION OR INSTALLATION OF ANY DUCTWORK. COORDINATE DUCT INSTALLATION WITH OTHER TRADES.
- ALL DIMENSIONS SHOWN ON PLAN ARE IN INCHES, UNLESS EXPLICITLY LABELED OTHERWISE.
- PROVIDE A COMPLETE TEST AND BALANCE OF ALL NEW EQUIPMENT AND SYSTEMS, AND OF EXISTING SYSTEMS AS NOTED ON THE DRAWINGS. FINAL SYSTEM TESTING, BALANCING, AND ADJUSTMENTS SHALL BE PERFORMED BY A CONTRACTOR CERTIFIED BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). PERFORM TAB AS REQUIRED BY NEBB STANDARDS. BALANCE AIR SYSTEMS TO WITHIN ±10% FOR TERMINAL DEVICES AND BRANCH LINES, AND ±5% FOR MAIN DUCTS AND AIR HANDLING EQUIPMENT OF THE AMOUNT OF AIR SHOWN ON THE DRAWINGS. BALANCE WATER SYSTEMS TO WITHIN ±5% OF FLOW SPECIFIED ON DRAWINGS OR AS REQUIRED FOR PROPER SYSTEM OPERATION. SUBMIT FINAL TAB REPORT TO ENGINEER REVIEW.
- TEST AND BALANCE SHALL BE PROVIDED BY ONE OF THE FOLLOWING TEST AND BALANCE AGENCIES:
  - •• PRECISIONAIRE OF THE MIDWEST, INC.
  - •• DOYLE FIELD SERVICES
  - •• ACCUTEC SERVICES, INC.
  - •• US ENGINEERING TEST AND BALANCE
- PROVIDE ACCESS PANELS AND ADEQUATE CLEARANCE FOR ACCESS TO ALL EQUIPMENT, VALVES, DAMPERS AND DEVICES.
- INSPECT ALL EXISTING MECHANICAL EQUIPMENT TO REMAIN. REPORT ANY DEFICIENCIES TO OWNER PRIOR TO START OF WORK.
- LABEL ALL DUCTWORK, PIPING, MAINTENANCE DEVICES, AND EQUIPMENT WITH MANUFACTURER STANDARD LABELING SYSTEMS. COORDINATE WITH OWNER FOR FINAL EQUIPMENT DESIGNATIONS.
- PROVIDE O&M MANUAL TO OWNER UPON COMPLETION OF PROJECT.

MECHANICAL GENERAL NOTES:

HYDRONIC PIPING, INSULATION, VALVES, & SPECIALS

- PIPING INSULATION: PROVIDE IN PRE–MOLDED SECTIONS WITH A WHITE FIBERGLASS REINFORCED FOIL LAMINATE ALL–SERVICE JACKET. INSULATION SHALL CONFORM TO ASTM C547 WITH TYPE I VAPOR BARRIER JACKET CONFORMING TO ASTM C 1136. INSULATE FITTINGS AND VALVES AND COVER WITH ZESTON TYPE PREMOLDED PVC COVERINGS.
  - •• CHILLED WATER PIPING: FOR PIPING SMALLER THAN 2", INSULATE WITH 1" THICK FIBERGLASS. FOR PIPING 2" AND LARGER, INSULATE WITH 1–1/2" FIBERGLASS.
  - •• HEATING WATER PIPING: FOR PIPING SMALLER THAN 2", INSULATE WITH 1" THICK FIBERGLASS. FOR PIPING 2" AND LARGER, INSULATE WITH 2" FIBERGLASS.
- HYDRONIC PIPING: FOR 2" AND SMALLER, PROVIDE TYPE 'L' HARD COPPER, ASTM B–88 WITH WROUGHT COPPER FITTINGS, ANSI B16.22 WITH 95–5 SWEAT JOINTS. AT CONTRACTORS OPTION, SCHEDULE 40 BLACK STEEL WITH WELDED OR SCREWED FITTINGS MAY BE USED. FOR 2–1/2" AND LARGER, PROVIDE ASTM A53, SCHEDULE 40, BLACK STEEL PIPING WITH WELDED JOINTS AND FITTINGS.
- INSTALL DIELECTRIC UNIONS WHEREVER DISSIMILAR PIPING IS JOINED.
- SUPPORT AND ANCHOR PIPING AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION, AND TO PREVENT THE TRANSMISSION OF NOISE AND VIBRATION.
- ARRANGE WATER SYSTEMS SO THAT THE ENTIRE BUILDING CAN BE DRAINED. PROVIDE A 3/4" DRAIN VALVE WITH HOSE END CONNECTION AT EACH LOW POINT.
- INSTALL VALVES WHERE SHOWN AND WHERE NECESSARY FOR SHUT–OFF, FOR BALANCING, AND FOR CONTROL.
- PROVIDE HANGER RODS SUSPENDED FROM STRUCTURE. PIPE ATTACHMENTS SHALL BE COPPER–PLATED OR HAVE NONMETALLIC COATING FOR ELECTROLYTIC PROTECTION WHERE ATTACHMENTS ARE IN DIRECT CONTACT WITH COPPER TUBING. INSTALL INSULATION SHIELDS AT HANGER AND PIPE LOCATIONS WITH INSULATION INSERTS ON PIPING OF 1" OR GREATER TO PROTECT THE INSULATION AND VAPOR BARRIER JACKET. PROVIDE CLEVIS TYPE HANGERS AND SPACE ON 6'–0" CENTERS FOR PIPE UP TO 1–1/2" AND ON 10'–0" CENTERS FOR 2" PIPE AND GREATER. INSTALL A SUPPORT WITHIN 1'–0" OF EACH CHANGE OF DIRECTION.
- PROVIDE SHUTOFF VALVES 2" AND SMALLER WITH THREADED ENDS AND BRONZE BODY CONSTRUCTION. PROVIDE VALVES LARGER THAN 2" WITH FLANGED ENDS AND CAST IRON BODY CONSTRUCTION. VALVES SHALL BE CLASS 125 FOR CHECK AND GLOBE VALVES, CLASS 150 FOR BALL VALVES, AND CLASS 200 FOR BUTTERFLY VALVES. VALVES SHALL MEET MSS SPECIFICATIONS.
- GATE VALVES SHALL NOT BE UTILIZED FOR HYDRONIC SERVICE APPLICATIONS.
- SIZE THE CONTROL VALVES TO PRODUCE THE REQUIRED CAPACITY AT A PRESSURE LOSS NOT EXCEEDING 4 PSI. NOMINAL BODY RATING SHALL BE NOT LESS THAN 125 PSI. PROVIDE TWO–WAY MODULATING VALVES WITH CHARACTERIZED BALL. CLOSE–OFF RATINGS SHALL EXCEED THE MAXIMUM PRESSURE DIFFERENCE, AT ANY LOAD CONDITION, BETWEEN THE OUTLET AND INLET.
- CONTROLS CONTRACTOR SHALL PROVIDE CONTROL VALVE ACTUATORS. PROVIDE VALVE OPERATORS FOR EACH AUTOMATIC VALVE WITH SUFFICIENT CAPACITY TO OPERATE THE VALVE UNDER ALL CONDITIONS AND TO GUARANTEE TIGHT CLOSE–OFF AGAINST SYSTEM PRESSURE ENCOUNTERED. PROVIDE OPERATORS WITH FAIL OPEN, FAIL CLOSED, OR FAIL IN PLACE CAPABILITY AS INDICATED ON THE DRAWINGS.
- PROVIDE BALANCING VALVES RATED FOR 125 PSIG WATER WORKING PRESSURE, 250°F MAXIMUM OPERATING TEMPERATURE AND SHALL BE BRONZE BODY WITH PLUG, GLOBE, OR BALL STYLE VALVE AND CALIBRATED ORIFICE OR VENTURI. PROVIDE WITH CONNECTIONS FOR PORTABLE DIFFERENTIAL PRESSURE METER WITH INTEGRAL CHECK VALVES AND SEALS. VALVE SHALL HAVE POSITION INDICATION READOUT AND BUILT–IN MEMORY STOP FOR REPEATABLE REGULATION AND CONTROL.
- PROVIDE Y–TYPE STRAINERS RATED FOR 125 PSIG WORKING PRESSURE AND WITH PERFORATED TYPE 304 STAINLESS STEEL BASKET AND BOTTOM DRAIN CONNECTION.
- PROVIDE THERMOMETERS (GENERAL) WITH ACCURACY OF ±1% OF RANGE SPAN OR ±1 SCALE DIVISION TO MAXIMUM OF 1.5% OF RANGE SPAN. TEMPERATURE RANGE FOR CHILLED WATER SERVICE SHALL BE 30–240°F WITH 2° SCALE DIVISIONS; HEATING WATER SHALL BE 30–300°F WITH 2° SCALE DIVISIONS.
- PROVIDE BRASS OR STAINLESS STEEL THERMOWELLS, PRESSURE RATED TO MATCH PIPING SYSTEM DESIGN PRESSURE, WITH 2" EXTENSION FOR INSULATED PIPING AND THREADED CAP NUT WITH CHAIN PERMANENTLY FASTENED TO WELL AND CAP. INSTALL IN PIPING TEE WHERE THERMOMETERS ARE INDICATED, IN VERTICAL POSITION. FILL WELL WITH OIL OR GRAPHITE AND SECURE CAP.
- PROVIDE LIQUID–FILLED PRESSURE GAUGES, ASME B40.1, GRADE A, PHOSPHOR BRONZE BOURDON–TUBE TYPE, BOTTOM CONNECTION; CASE OF DRAWN STEEL OR BRASS, GLASS LENS, 4–1/2" DIAMETER; CONNECTOR OF BRASS, 1/4" NPS; SCALE SHALL BE WHITE COATED ALUMINUM, WITH PERMANENTLY ETCHED MARKINGS; ACCURACY OF ±1% OF RANGE SPAN, 2x OPERATING PRESSURE; SYPHON OF 1/4" NPS STRAIGHT COIL CONSTRUCTED OF BRASS TUBING WITH THREADS ON EACH END; SNUBBER OF 1/4" NPS BRASS BUSHING WITH CORROSION–RESISTANT POROUS METAL DISC. DISC MATERIAL SHALL BE SUITABLE FOR FLUID SERVED AND RATED PRESSURE.
- PROVIDE TEST PLUGS WITH NICKEL–PLATED BRASS BODY, NEOPRENE CORE MATERIAL, 1/2" NPS FITTING, AND TWO SELF–SEALING VALVE–TYPE CORE INSERTS, SUITABLE FOR INSERTING A 1/8" O.D. PROBE ASSEMBLY FROM A DIAL–TYPE THERMOMETER OR PRESSURE GAUGE. TEST PLUG SHALL HAVE GASKETED AND THREADED CAP WITH RETENTION CHAIN AND BODY OF LENGTH TO EXTEND BEYOND INSULATION. PRESSURE RATING SHALL BE 500 PSIG.

MECHANICAL GENERAL NOTES:

STEAM PIPING, INSULATION, VALVES, & SPECIALS

- PIPING INSULATION: PROVIDE IN PRE–MOLDED SECTIONS WITH A WHITE FIBERGLASS REINFORCED FOIL LAMINATE ALL–SERVICE JACKET. INSULATION SHALL CONFORM TO ASTM C547 WITH TYPE I VAPOR BARRIER JACKET CONFORMING TO ASTM C 1136. INSULATE FITTINGS AND VALVES AND COVER WITH ZESTON TYPE PREMOLDED PVC COVERINGS.
  - •• STEAM AND STEAM CONDENSATE PIPING: FOR PIPING SMALLER THAN 2", INSULATE WITH 1–1/2" THICK FIBERGLASS. FOR PIPING 2" AND LARGER, INSULATE WITH 3" FIBERGLASS.
- STEAM AND STEAM CONDENSATE PIPING: PROVIDE ASTM A 53, ERW, BLACK STEEL PIPE. LOW PRESSURE STEAM (<15 PSIG) PIPING SHALL BE SCHEDULE 40. ALL OTHER STEAM AND STEAM CONDENSATE PIPING SCHEDULE 80. THREADED FITTINGS SHALL BE ANSI B16.4, CLASS 125, STANDARD PATTERN OR MALLEABLE IRON ANSI B16.3, CLASS 150, STANDARD PATTERN. WELDED FITTINGS SHALL BE ASTM A234, SEAMLESS OR WELDED.
- VALVES FOR STEAM AND STEAM CONDENSATE SHALL BE CLASS 150 FOR GATE, CHECK, AND GLOBE VALVES 2" AND SMALLER, AND CLASS 125 FOR GATE, CHECK, AND GLOBE VALVES LARGER THAN 2".
- FOR LOW PRESSURE (<15 PSIG) STEAM AND STEAM CONDENSATE APPLICATIONS, PROVIDE BALL VALVES WITH STAINLESS STEEL BALL AND STEM FOR SHUT–OFF DUTY. FOR MEDIUM PRESSURE (16–30 PSIG) AND HIGH PRESSURE (31–60 PSIG) STEAM AND STEAM CONDENSATE APPLICATIONS, PROVIDE GATE VALVES FOR SHUT–OFF DUTY.
- PROVIDE FLOAT AND THERMOSTATIC (F&T) OR INVERTED BUCKET (IB) TYPE STEAM TRAPS CONFORMING TO ASTM A 278 WITH CAST IRON BODY AND BOLTED CAP. PROVIDE TRAPS WITH STAINLESS STEEL INTERNAL PARTS AND WITH PRESSURE RATING OF 250 PSIG.
- PROVIDE Y–TYPE STRAINERS WITH BOLTED COVER, PERFORATED TYPE 304 STAINLESS STEEL BASKET, AND BOTTOM DRAIN CONNECTION.
- PROVIDE HANGERS WITH RODS SUSPENDED FROM STRUCTURE. INSTALL INSULATION SADDLES AT HANGER AND PIPE LOCATIONS ON PIPING OF 1" OR GREATER TO PROTECT THE INSULATION. PROVIDE CLEVIS TYPE HANGERS AND SPACE ON 7'–0" CENTERS FOR STEEL PIPE UP TO 1–1/2", ON 10'–0" CENTERS FOR 2" TO 4" PIPE, AND 15'–0" CENTERS FOR PIPING GREATER THAN 4". INSTALL A SUPPORT WITHIN 1'–0" OF EACH CHANGE OF DIRECTION.
- SUPPORT AND ANCHOR PIPING AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION, AND TO PREVENT THE TRANSMISSION OF NOISE AND VIBRATION.
- ARRANGE STEAM AND STEAM CONDENSATE SYSTEMS SO THAT THE ENTIRE BUILDING CAN BE DRAINED. PROVIDE A 3/4" DRAIN VALVE WITH HOSE END CONNECTION AT EACH LOW POINT.

MECHANICAL GENERAL DEMOLITION NOTES:

- COORDINATE ALL DEMOLITION WITH WHAT IS SHOWN ON ARCHITECTURAL PLANS. NOTIFY ARCHITECT OF ANY DISCREPANCIES.
- PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW GENERAL NOTES, SPECIFICATIONS, AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER, OR OWNER, AS DEFINED IN BID DOCUMENTS, OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
- OWNER RETAINS RIGHTS OF SALVAGE FOR EQUIPMENT AND FIXTURES TO BE REMOVED. COORDINATE WITH OWNER THE EQUIPMENT AND FIXTURES TO BE SALVAGED AND THE LOCATION FOR STORAGE. AVOID DAMAGE TO SALVAGED EQUIPMENT, FIXTURES, AND DEVICES DURING DEMOLITION WORK AND DURING TRANSPORT TO OWNER'S DESIGNATED STORAGE LOCATION.
- REMOVE ITEMS SHOWN HEAVY–LINED DASHED AND/OR NOTED TO BE REMOVED.
- AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION. REPAIR DAMAGE CAUSED DURING WORK AT NO EXTRA COST TO THE OWNER.
- SEAL PENETRATIONS THROUGH FLOORS, WALLS, CEILINGS AND ROOFS WHERE MECHANICAL COMPONENTS ARE REMOVED AND WHERE THE EXISTING PENETRATION IS NOT USED FOR THE NEW INSTALLATION. REPAIR DAMAGED SURFACES TO MATCH ADJACENT AREAS OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
- REMOVE HANGERS AND SUPPORTS WHERE DUCTWORK, PIPING AND/OR EQUIPMENT ARE REMOVED AND THE EXISTING HANGERS AND SUPPORTS ARE NOT USED FOR THE NEW INSTALLATION.
- INSTALL PERMANENT CAPS WHERE DUCTWORK AND PIPING IS REMOVED AND THE EXISTING TAPS ARE NOT USED FOR THE NEW INSTALLATION. WHERE DUCTWORK AND PIPING ARE REMOVED AND THE EXISTING TAPS WILL BE USED FOR THE NEW INSTALLATION, INSTALL TEMPORARY CAPS TO PROTECT THE INTERIOR SURFACES UNTIL NEW DUCTWORK AND PIPING ARE INSTALLED.
- INSPECT EXISTING EQUIPMENT TO REMAIN TO VERIFY THAT EQUIPMENT IS OPERATING PROPERLY. NOTIFY OWNER OF DAMAGED AND/OR MALFUNCTIONING COMPONENTS.
- WHERE SHUTDOWN OF EXISTING SYSTEMS IS REQUIRED DURING DEMOLITION, COORDINATE SHUTDOWN TIME AND DURATION WITH OWNER TO MINIMIZE DOWNTIME. NOTIFY OWNER SEVEN (7) DAYS PRIOR TO INTERRUPTION OF SERVICE.

CONTROLS GENERAL NOTES:

- ALL POWER WIRING (120 VOLTS AND HIGHER) AND ALL COMMUNICATION WIRE TO DDC PANELS SHALL BE INSTALLED IN CONDUIT. ALL CONTROL AND COMMUNICATION WIRE SHALL BE INSTALLED IN CONDUIT WHEN LOCATED IN OCCUPIED SPACES, MECHANICAL AND ELECTRICAL ROOMS, OR WALL CAVITIES.
- CONDUIT AND WIRING SHALL BE LABELED AND IDENTIFIED PER FACILITY STANDARDS.
- CONTROLS CONTRACTOR SHALL COORDINATE WITH ALL NEW AND EXISTING EQUIPMENT MANUFACTURERS AND SUPPLY ALL CONTROL COMPONENTS REQUIRED FOR A COMPLETE CONTROL SYSTEM, AND AS REQUIRED TO ACHIEVE THE SEQUENCES OF OPERATION. METHODS OF CONNECTION TO THE NEW AND EXISTING EQUIPMENT AND CONTROLS SHALL BE CLEARLY INDICATED IN THE CONTROLS SUBMITTALS.
- CONTROLS CONTRACTOR SHALL COORDINATE INSTALLATION OF PIPE WELLS AND PRESSURE GAUGE TAPS WITH MECHANICAL CONTRACTOR. THE ENTIRE TEMPERATURE SENSING ELEMENT SHALL BE IN THE FLOW STREAM.
- ALL CONTROL SET POINTS, ALARM LIMITS AND PRIORITIES, PASSWORD ACCESS, EQUIPMENT NAMES AND IDENTIFICATION, TAGGING, AND EQUIPMENT SCHEDULES SHALL BE VERIFIED WITH OWNER PRIOR TO PROGRAMMING SOFTWARE.
- ALL DDC PANELS SHALL BE LOCATED IN MECHANICAL OR ELECTRICAL ROOMS, UNLESS OTHER LOCATIONS ARE SPECIFICALLY INDICATED ON THE DRAWINGS.
- CONTROLS CONTRACTOR SHALL REMOVE ALL EXISTING CONTROLS MADE OBSOLETE BY WORK PERFORMED UNDER THIS CONTRACT. REMOVAL SHALL INCLUDE WIRING, CONDUIT, TUBING, PANELS, SUPPORTS, AND ALL RELATED CONTROL COMPONENTS. INCLUDE ALL NECESSARY SOFTWARE AND PROGRAMMING MODIFICATIONS TO PROPERLY ADDRESS REMOVAL OF CONTROL COMPONENTS.
- ALL PNEUMATIC TUBING REMOVED OR MADE OBSOLETE SHALL BE REMOVED BACK TO A MAIN LINE AND CAPPED.
- EXISTING BUILDING AUTOMATION SYSTEM INDICATED ON THESE DRAWINGS ARE BASED ON INFORMATION AVAILABLE TO THE ENGINEER. EXISTING SYSTEM SHALL BE EXPANDED OR REPLACED AS INDICATED ON THE DRAWINGS. CONTROLS CONTRACTOR SHALL PROVIDE ALL WORK (HARDWARE, SOFTWARE, PROGRAMMING, CONTROL COMPONENTS, WIRE, CONDUIT, ETC.) NECESSARY TO PROVIDE A COMPLETE SYSTEM AND TO ACHIEVE THE NEW SEQUENCES OF OPERATION. CONTROLS CONTRACTOR SHALL FIELD VERIFY EXISTING CONTROLS AND NOTIFY ENGINEER OF ALL DISCREPANCIES.
- ALL EXISTING BAS CONTROL COMPONENTS NOT INDICATED TO BE REMOVED OR REPLACED SHALL REMAIN FULLY FUNCTIONAL, WHETHER OR NOT SUCH EXISTING BAS CONTROL POINTS ARE SHOWN ON THE DRAWINGS.
- CONTROLS CONTRACTOR SHALL PROVIDE THE OWNER WITH A NEW SET OF AS–BUILT DRAWINGS, SHOWING ALL NEW AND ALL EXISTING BAS CONTROL COMPONENTS.
- PROVIDE GRAPHIC SCREENS FOR EACH NEW MECHANICAL SYSTEM SHOWN ON THE CONTROL DRAWINGS.
- ALL CONTROL VALVES SHALL BE BALL TYPE WITH A MAXIMUM PRESSURE DROP OF 5 PSI AT DESIGN FLOW.
- CONTROLS CONTRACTOR SHALL INCLUDE IN THEIR SCOPE OF WORK A MEETING WITH THE OWNER AND ENGINEER TO REVIEW SYSTEMS OPERATION, GATHER FEEDBACK, AND ADJUST PROGRAMMING ACCORDINGLY.
- THE TEMPERATURE CONTROL SYSTEM SHALL HAVE THE ABILITY FOR THE USER TO SEE AND MODIFY CONTROL SYSTEM PARAMETERS REMOTELY THROUGH REMOTE CONNECTION OR A BROWSER BASED INTERFACE. COORDINATE EXACT REQUIREMENTS WITH OWNER AND ENGINEER PRIOR TO GENERATING SUBMITTALS.
- PROVIDE MINIMUM 90–SECOND BATTERY BACKUP VIA UPS FOR ALL NEW BAS CONTROL PANELS. UPS SHALL BE PROVIDED WITH BYPASS FOR MAINTENANCE PURPOSES.
- INCLUDE A GRAPHICS PACKAGE AS PART OF THE USER INTERFACE THAT INCLUDES ALL POINTS AND DIAGRAMS AS SHOWN ON THIS SET OF CONSTRUCTION DOCUMENTS. AS PART OF THE TEMPERATURE CONTROL SUBMITTAL, INCLUDE ALL GRAPHIC SCREENS REQUIRED FOR REVIEW BY THE ENGINEER AND OWNER PRIOR TO APPROVAL. ONCE THE CONTROL SYSTEM IS FULLY FUNCTIONAL AND IN OPERATION, MAKE ADJUSTMENTS TO THE GRAPHICS AND/OR DATA DISPLAYED PER ENGINEER AND/OR OWNER COMMENTS.
- CRITICAL ALARMS SHALL SEND A PHONE AND EMAIL NOTIFICATION TO THE APPROPRIATE OWNER REPRESENTATIVE INDICATING PROBLEMS WITH THE HVAC SYSTEM WHILE THE FACILITY IS UNOCCUPIED. COORDINATE WITH THE OWNER ON REQUIREMENTS OF REMOTE NOTIFICATION OF ALARMS.

5 BY 5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-889-9449
contact@5by5eng.com
5by5eng.com

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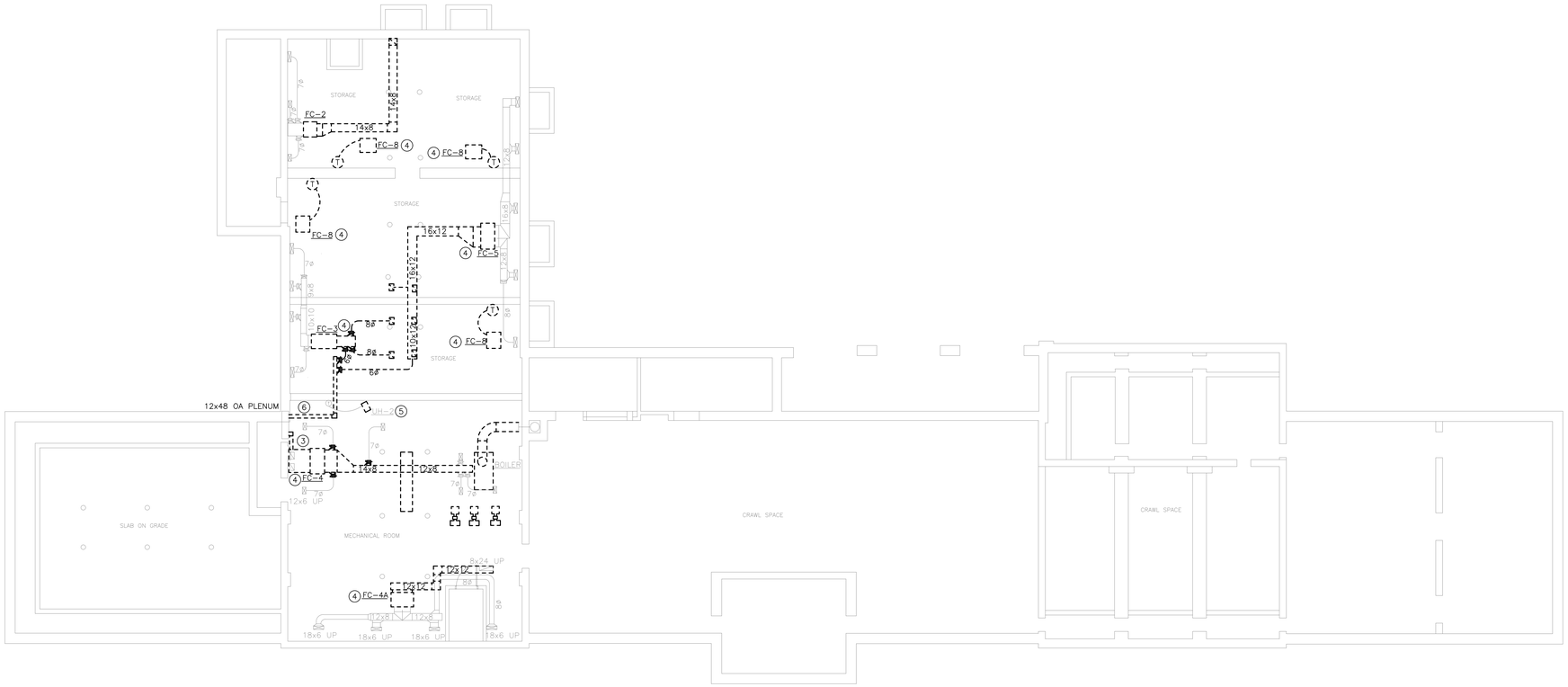
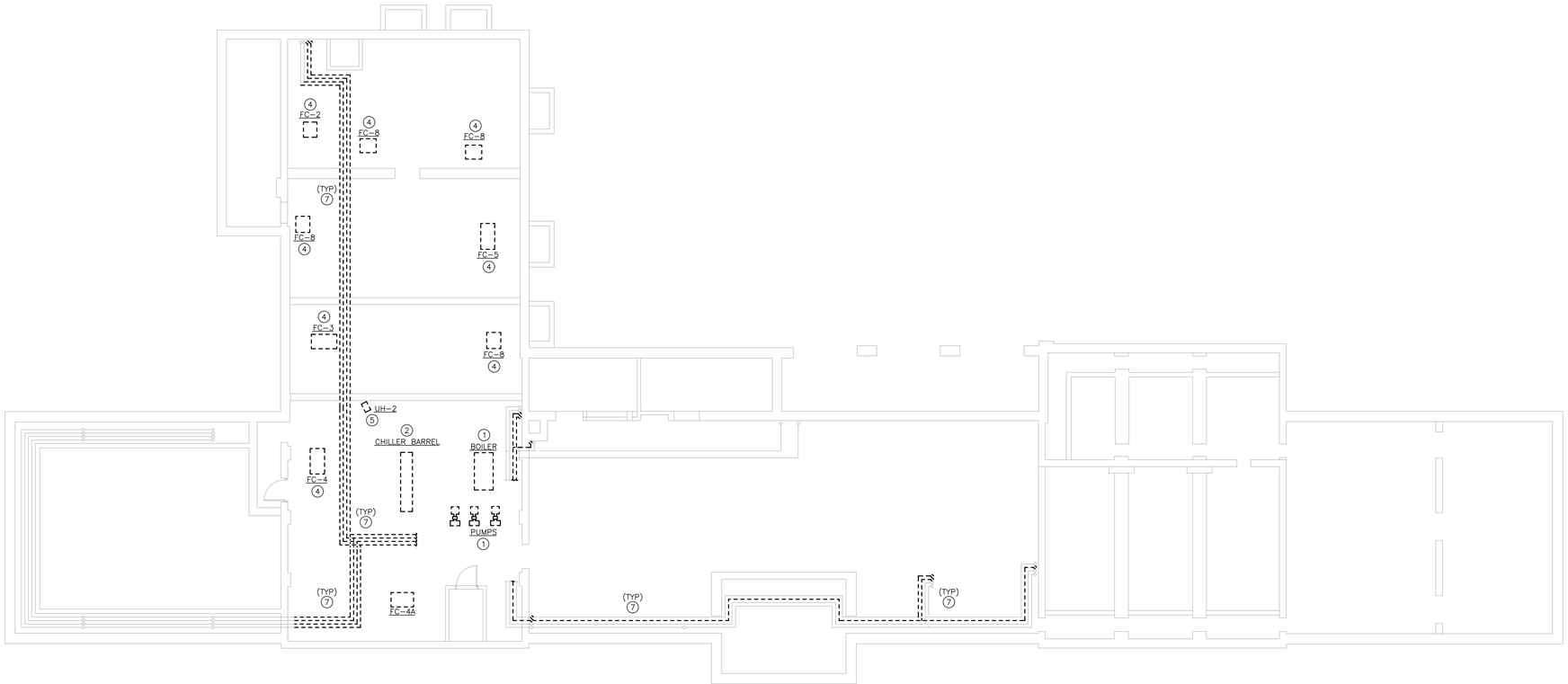
ISSUE DATES

M0.0

MECHANICAL LEGEND AND GENERAL NOTES



1 BASEMENT MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 BASEMENT HYDRONIC DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

MECHANICAL DEMO NOTES:

1. REMOVE EXISTING BOILER AND ASSOCIATED PUMPS. REMOVE ANY EXISTING HOT WATER PIPING REQUIRED TO FACILITATE EQUIPMENT REMOVAL. PREPARE FOR NEW WORK.
2. REMOVE EXISTING CHILLER BARREL FROM LOCATION SHOWN AND ASSOCIATED PUMPS. REMOVE ANY EXISTING CHILLED WATER AND REFRIGERANT PIPING REQUIRED TO FACILITATE EQUIPMENT REMOVAL. PREPARE FOR NEW WORK.
3. REMOVE SUPPLY AIR DUCT INDICATED BACK TO LOCATION INDICATED. REMOVE ASSOCIATED BRANCH DUCTWORK NOT USED FOR NEW WORK. PREPARE FOR NEW WORK.
4. REMOVE FAN COIL UNIT AND ANY ASSOCIATED RETURN AIR DUCTWORK, CONTROLS AND CONTROL WIRING, AND HYDRONIC PIPING. REFER TO HYDRONIC DEMO PLAN FOR SCOPE OF HYDRONIC REMOVAL.
5. REMOVE UNIT HEATER AND ASSOCIATED HYDRONIC PIPING AND CONTROLS.
6. REMOVE OUTDOOR AIR DUCTWORK AS INDICATED BACK TO OUTDOOR AIR LOUVER. PREPARE FOR NEW WORK.
7. REMOVE ALL CHILLED WATER PIPING AS INDICATED. REFER TO NEW WORK PLAN FOR ADDITIONAL INFORMATION.

5BY5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-688-9449
contact@5by5eng.com
5by5eng.com

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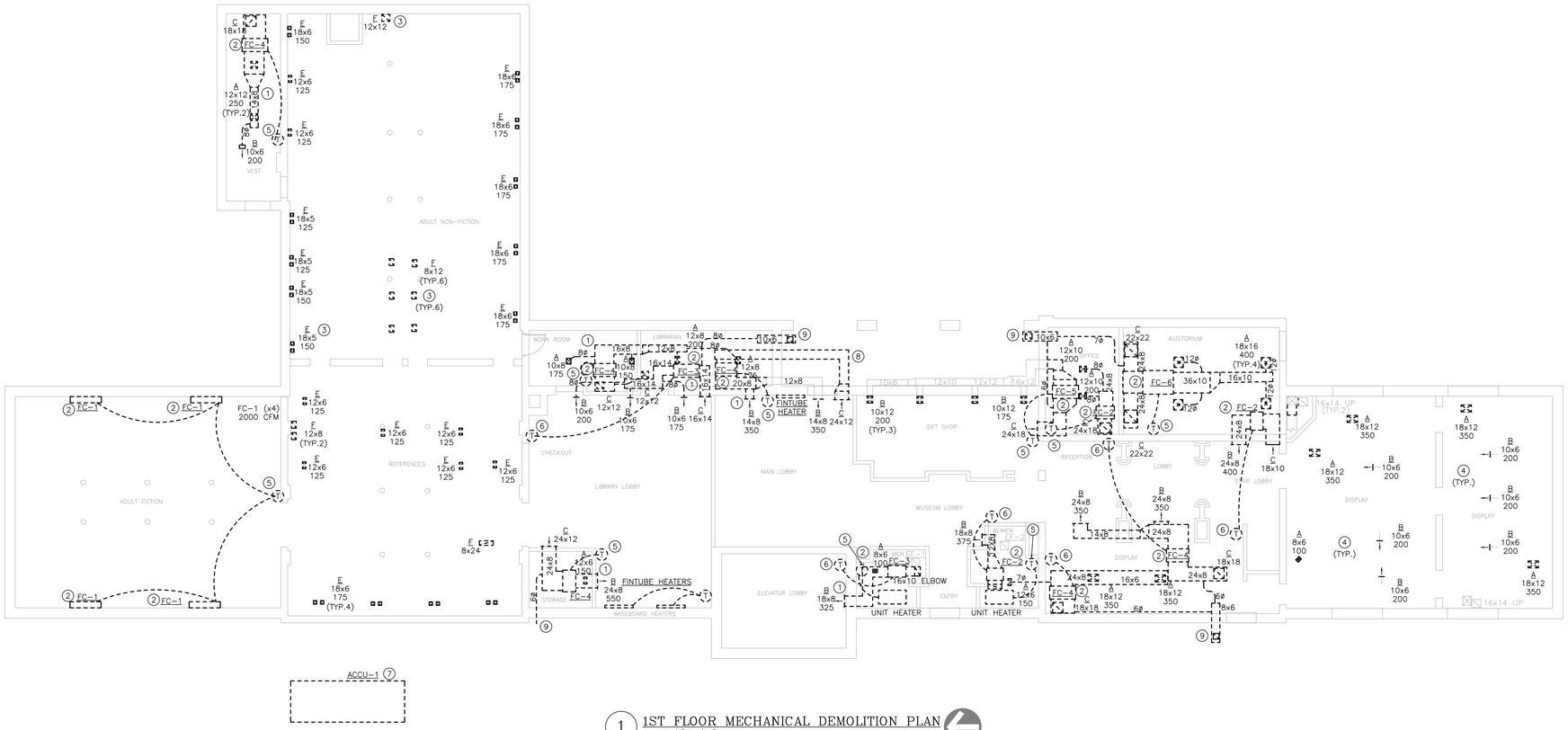
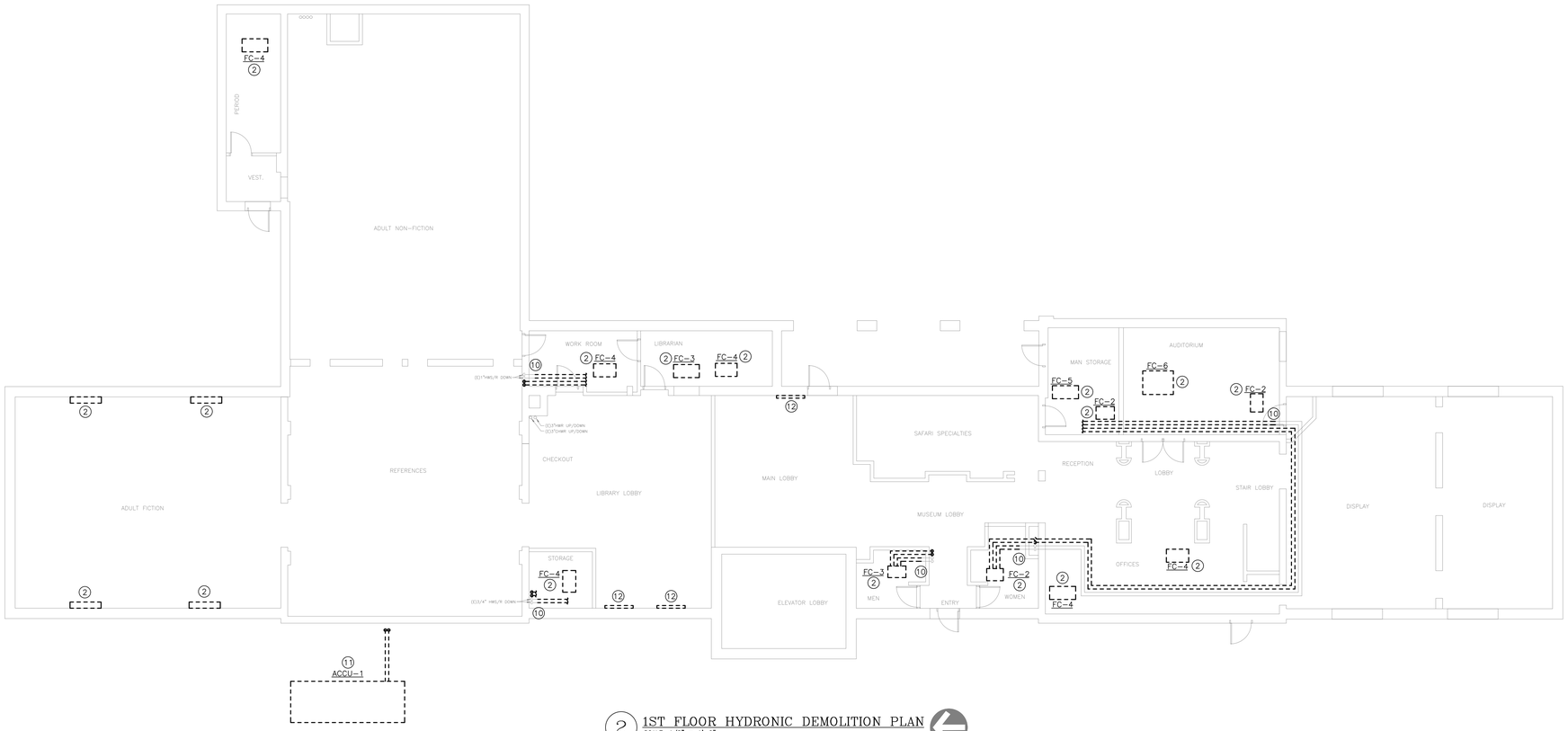
ISSUE DATES

MD1.0

BASEMENT
MECHANICAL
DEMOLITION PLAN



1 1ST FLOOR MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 1ST FLOOR HYDRONIC DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

MECHANICAL DEMO NOTES:

1. REMOVE SUPPLY AIR DUCT INDICATED BACK TO LOCATION INDICATED. REMOVE ASSOCIATED BRANCH DUCTWORK NOT USED FOR NEW WORK. PREPARE FOR NEW WORK.
2. REMOVE FAN COIL UNIT AND ASSOCIATED HYDRONIC PIPING, VALVES, AND SPECIALTIES. REMOVE HYDRONIC PIPING BACK TO MAIN AND CAP.
3. PATCH OPENINGS IN FLOOR WHERE FLOOR-MOUNTED RETURN AIR GRILLES WERE REMOVED.
4. VERIFY SUPPLY AND RETURN AIR DUCTWORK ROUTING IN DISPLAY AREA.
5. REMOVE EXISTING THERMOSTAT AND REPAIR OPENING FOR INSTALLATION OF NEW THERMOSTAT UNDER NEW WORK.
6. REMOVE EXISTING THERMOSTAT AND INFILL ABANDONED OPENING TO MATCH EXISTING SURFACES.
7. REMOVE EXISTING AIR COOLED CONDENSING UNIT FROM LOCATION SHOWN. REFER TO HYDRONIC DEMO PLAN FOR SCOPE OF REMOVAL. PREPARE FOR NEW WORK.
8. REMOVE EXTERIOR RETURN AIR DUCTWORK AND ASSOCIATED AIR DEVICE. PATCH ALL OPENINGS TO EXTERIOR AND SEAL WEATHERTIGHT.
9. REMOVE OUTDOOR AIR DUCTWORK AS INDICATED. PATCH OPENING TO EXTERIOR AND SEAL WEATHERTIGHT.
10. REMOVE HYDRONIC PIPING INDICATED BACK TO LOCATION INDICATED AND CAP. REMOVE HYDRONIC PIPING BACK TO MAIN AND CAP.
11. REMOVE EXISTING AIR COOLED CONDENSING UNIT FROM LOCATION SHOWN. REMOVE ASSOCIATED REFRIGERANT PIPING. PREPARE FOR NEW WORK.
12. REMOVE EXISTING FIN TUBE HEATER INDICATED. REMOVE ALL CONTROL VALVES, CONTROL WIRING, ETC. ASSOCIATED WITH HEATER. DISCONNECT FROM PIPING IN WALL AND PREPARE FOR NEW WORK.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-889-9449
contact@5by5eng.com
5by5eng.com

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ISSUE DATES

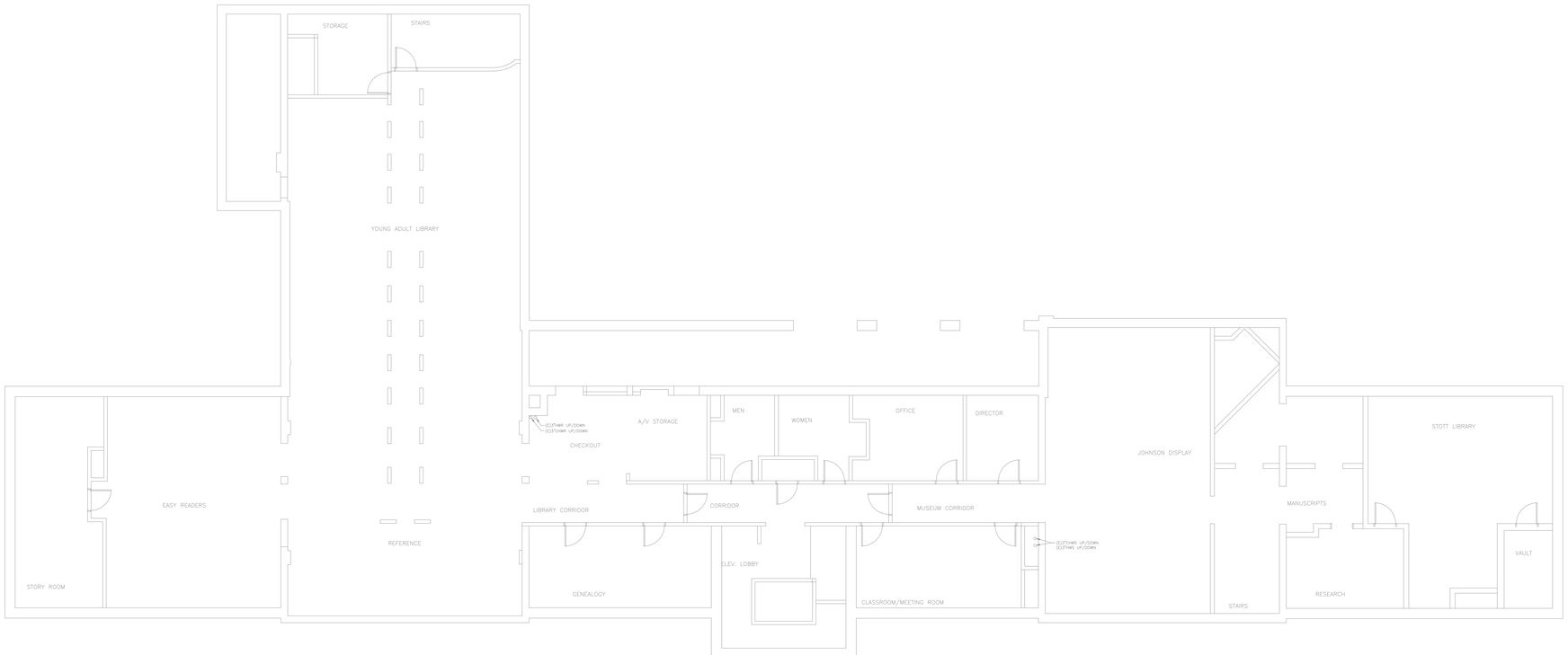
MD1.1

1ST FLOOR MECHANICAL DEMOLITION PLAN

MECHANICAL DEMO NOTES:

1. REMOVE EXISTING THERMOSTAT ASSOCIATED TO EXISTING FAN COIL UNITS IN ATTIC.
2. REMOVE EXISTING HUMIDISTAT FROM LOCATION SHOWN.
3. REMOVE HYDRONIC PIPING INDICATED.

1 2ND FLOOR MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 2ND FLOOR MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

MECHANICAL SHEET METAL DEMO NOTES:

1. REMOVE EXISTING THERMOSTAT ASSOCIATED TO EXISTING FAN COIL UNITS IN ATTIC.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5byeng.com
5byeng.com

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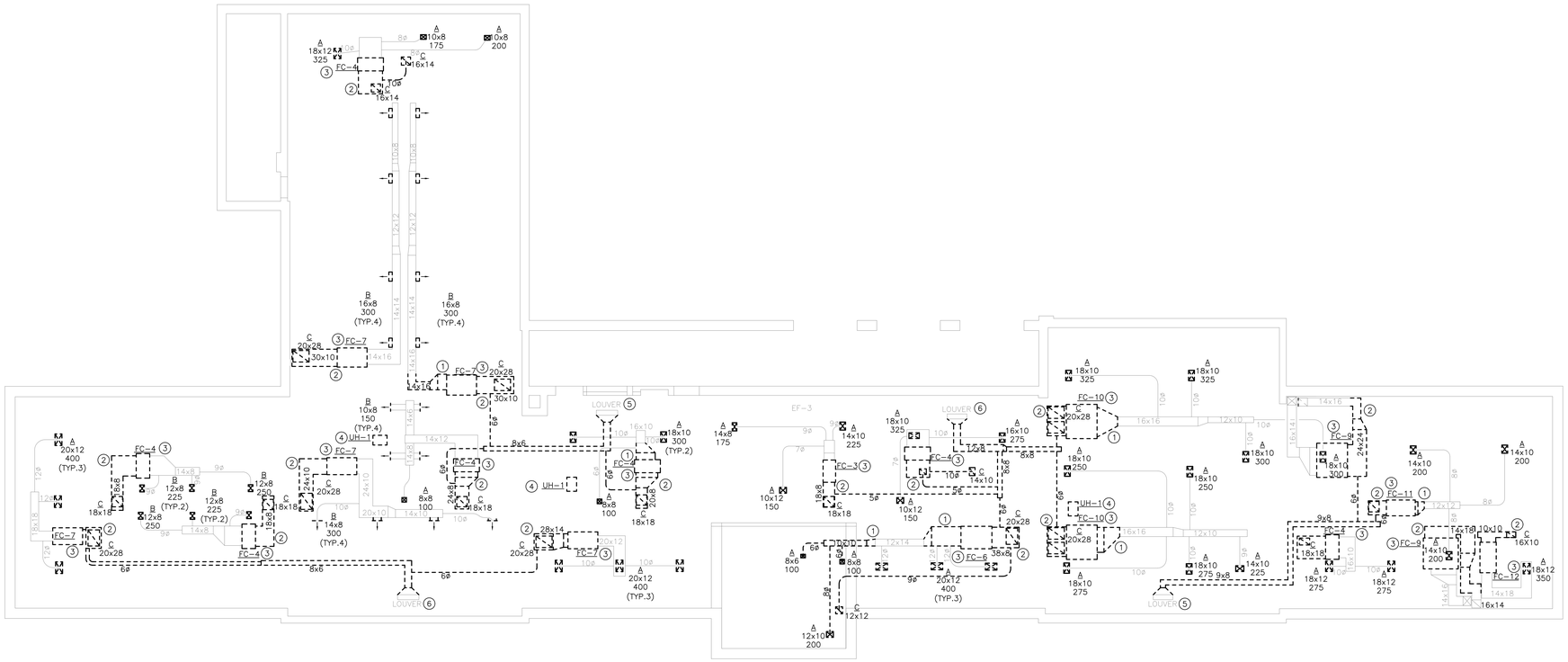
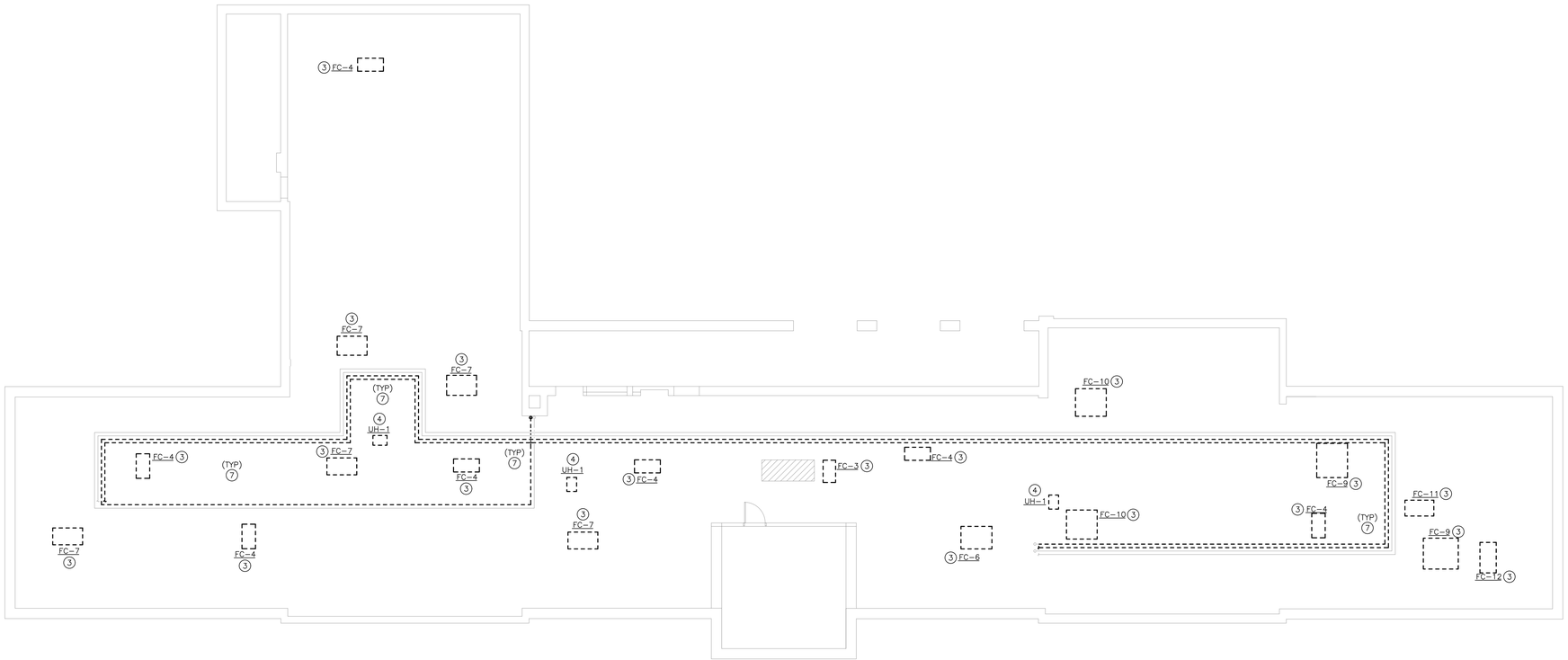
ISSUE DATES

MD1.2

2ND FLOOR MECHANICAL DEMOLITION PLAN



1 ATTIC MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 ATTIC MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

MECHANICAL DEMO NOTES:

1. REMOVE SUPPLY AIR DUCT INDICATED BACK TO LOCATION INDICATED. REMOVE ASSOCIATED BRANCH DUCTWORK NOT USED FOR NEW WORK. PREPARE FOR NEW WORK.
2. REMOVE RETURN AIR DUCTWORK BACK TO LOCATION SHOWN.
3. REMOVE FAN COIL UNIT AND ANY ASSOCIATED OUTDOOR AIR DUCTWORK, CONTROLS AND CONTROL WIRING, AND HYDRONIC PIPING. REMOVE ALL HOT WATER HYDRONIC PIPING BACK TO MAIN AND CAP.
4. EXISTING UNIT HEATER TO BE REPLACED. REMOVE CONTROLS, WIRING AND BRANCH HYDRONIC PIPING SERVING UNIT HEATER. REFER TO NEW WORK PLANS FOR ADDITIONAL INFORMATION.
5. EXISTING LOUVER TO REMAIN FOR NEW OUTDOOR INTAKE SERVICE. REMOVE DUCTWORK INDICATED AND PREPARE FOR NEW WORK.
6. EXISTING LOUVER TO BE ABANDONED IN PLACE. BLANK OFF AND INSULATE.
7. REMOVE ALL CHILLED WATER PIPING IN ATTIC. REFER TO NEW WORK PLANS FOR ADDITIONAL INFORMATION.

5BY5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-888-9449
contact@5by5eng.com
5by5eng.com

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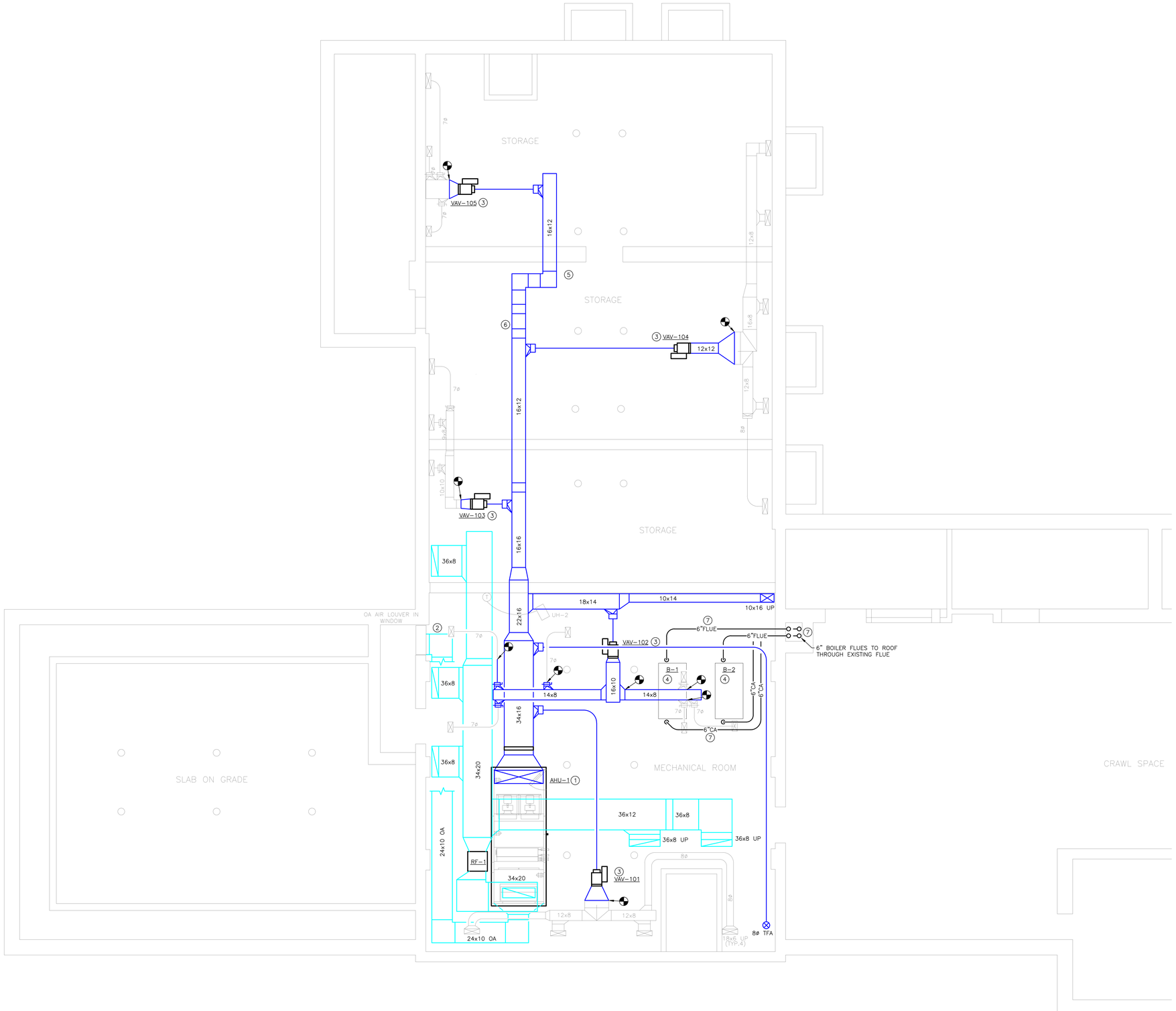
ISSUE DATES

MD1.3

ATTIC MECHANICAL DEMOLITION PLAN



1 BASEMENT MECHANICAL PLAN – AREA A
SCALE: 1/4" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. INSTALL AHU PER MANUFACTURERS RECOMMENDATIONS. PROVIDE WITH 4" HOUSEKEEPING PAD ROUTE CONDENSATE TO BUILDING EXTERIOR. COORDINATE WITH PLUMBING ENGINEER.
2. ROUTE OUTDOOR AIR DUCT THROUGH EXISTING OUTDOOR AIR INTAKE LOUVER. INSULATE ALL OUTSIDE AIR DUCT PER GENERAL MECHANICAL NOTES
3. PROVIDE NEW HOT WATER VAV BOX WHERE INDICATED. PROVIDE VALVES AND SPECIALTIES AS NEEDED. REFER TO HYDRONIC PLANS FOR EXACT DETAILS.
4. PROVIDE NEW HOT WATER BOILER FOR BUILDING HOT WATER SYSTEM. INSTALL ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE WITH 4" HOUSEKEEPING PAD
5. OFFSET SUPPLY AIR DUCTWORK IN BASEMENT TO ACCOMMODATE EXISTING ELECTRICAL SERVICE. CENTER DUCTWORK BETWEEN DOOR AND STRUCTURAL BEAM.
6. JOG NEW SUPPLY AIR DUCTWORK DOWN IN APPROXIMATE LOCATION SHOWN TO AVOID STRUCTURAL MEMBER. COORDINATE EXACT LOCATION IN FIELD.
7. ROUTE NEW 6"ø FLUE AND COMBUSTION AIR INTAKE AS SHOWN FROM BOILERS TO EXISTING CHIMNEY AND UP TO ROOF. TERMINATE WITH BOILER MANUFACTURER'S APPROVED CONCENTRIC VENT AND INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

5 BY 5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
5by5eng.com

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Tenant Improvements for:
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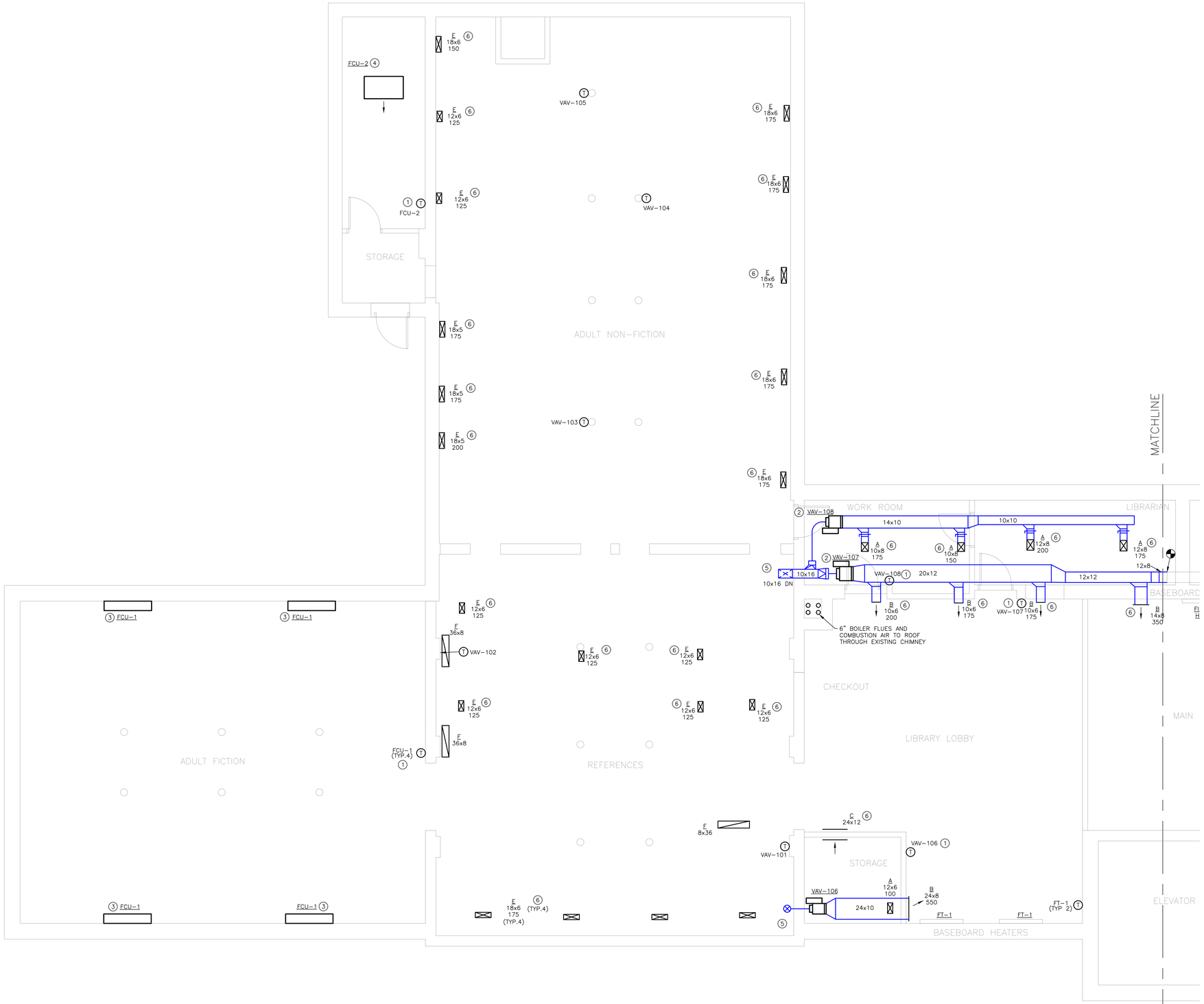
ISSUE DATES

M1.0A

BASEMENT MECHANICAL PLAN - AREA A



1 1ST FLOOR MECHANICAL PLAN – AREA A
SCALE: 1/4" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. PROVIDE THERMOSTAT WHERE SHOWN. MATCH LOCATION WHERE OLD THERMOSTAT WAS REMOVED.
2. PROVIDE NEW HOT WATER VAV BOX WHERE INDICATED. PROVIDE VALVES AND SPECIALTIES AS NEEDED. REFER TO HYDRONIC PLANS FOR EXACT DETAILS.
3. INSTALL NEW FAN COIL UNIT IN LOCATION WHERE OLD WAS REMOVED. TIE THERMOSTAT CONTROLS TOGETHER AS SHOWN AND INTERLOCK OPERATION WITH OTHER FAN COIL UNITS SERVING SPACE.
4. INSTALL CEILING MOUNTED FAN COIL UNIT IN LOCATION SHOWN. INSTALL ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. REFER TO DETAIL FOR DUCTWORK AND SHAFT MODIFICATIONS.
6. REPLACE EXISTING SUPPLY AND RETURN AIR DEVICES WITH NEW. REFER TO TO GRD SCHEDULE FOR MANUFACTURER AND MODEL. VERIFY EXACT SIZE PRIOR TO PURCHASE.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
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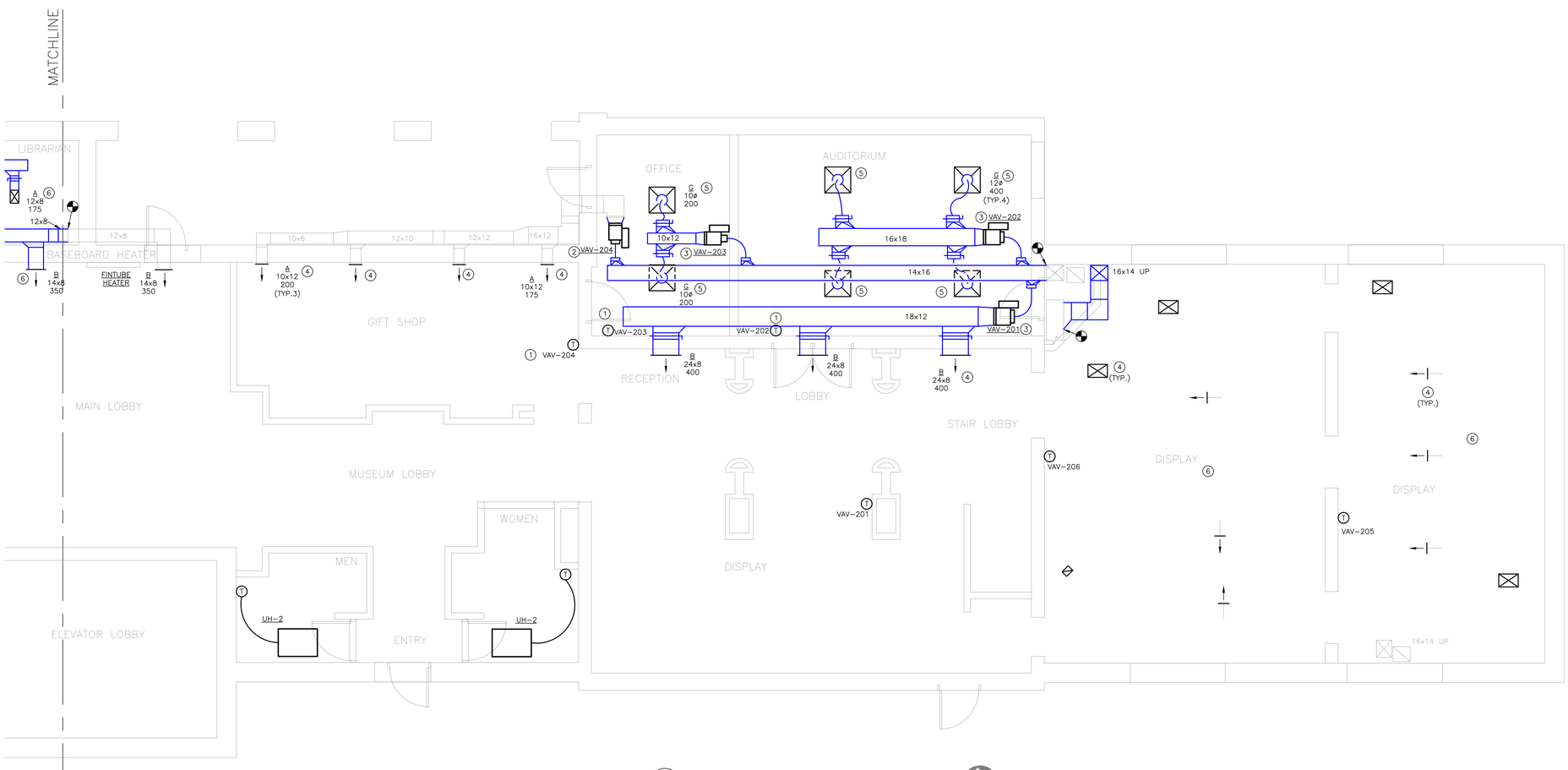
ISSUE DATES

M1.1A

1ST FLOOR
MECHANICAL PLAN
- AREA A

MECHANICAL NEW PLAN NOTES:

1. PROVIDE THERMOSTAT WHERE SHOWN. MATCH LOCATION WHERE OLD THERMOSTAT WAS REMOVED.
2. PROVIDE NEW HOT WATER VAV BOX WHERE INDICATED CONNECT TO EXISTING MEDIUM PRESSURE SUPPLY DUCT AS INDICATED. VERIFY EXACT LOCATION IN THE FIELD.
3. PROVIDE NEW HOT WATER VAV BOX WHERE INDICATED. PROVIDE VALVES AND SPECIALTIES AS NEEDED. REFER TO HYDRONIC PLANS FOR EXACT DETAILS.
4. REPLACE EXISTING SUPPLY AND RETURN AIR DEVICES WITH NEW. REFER TO TO GRD SCHEDULE FOR MANUFACTURER AND MODEL. VERIFY EXACT SIZE PRIOR TO PURCHASE.
5. INSTALL NEW 24"×24" CEILING MOUNTED SUPPLY GRILLES IN AREA INDICATED. COORDINATE WITH EXISTING CEILING GRID FOR EXACT PLACEMENT.
6. DUCTWORK INFORMATION IN DISPLAY AREA NOT AVAILABLE FROM AS-BUILTS. CONTRACTOR TO REVIEW EXISTING CONDITIONS IN FIELD AND REPORT ANY DEFICIENCIES TO ENGINEER PRIOR TO START OF WORK.



1 1ST FLOOR MECHANICAL PLAN – AREA B
SCALE: 1/8" = 1'-0"

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
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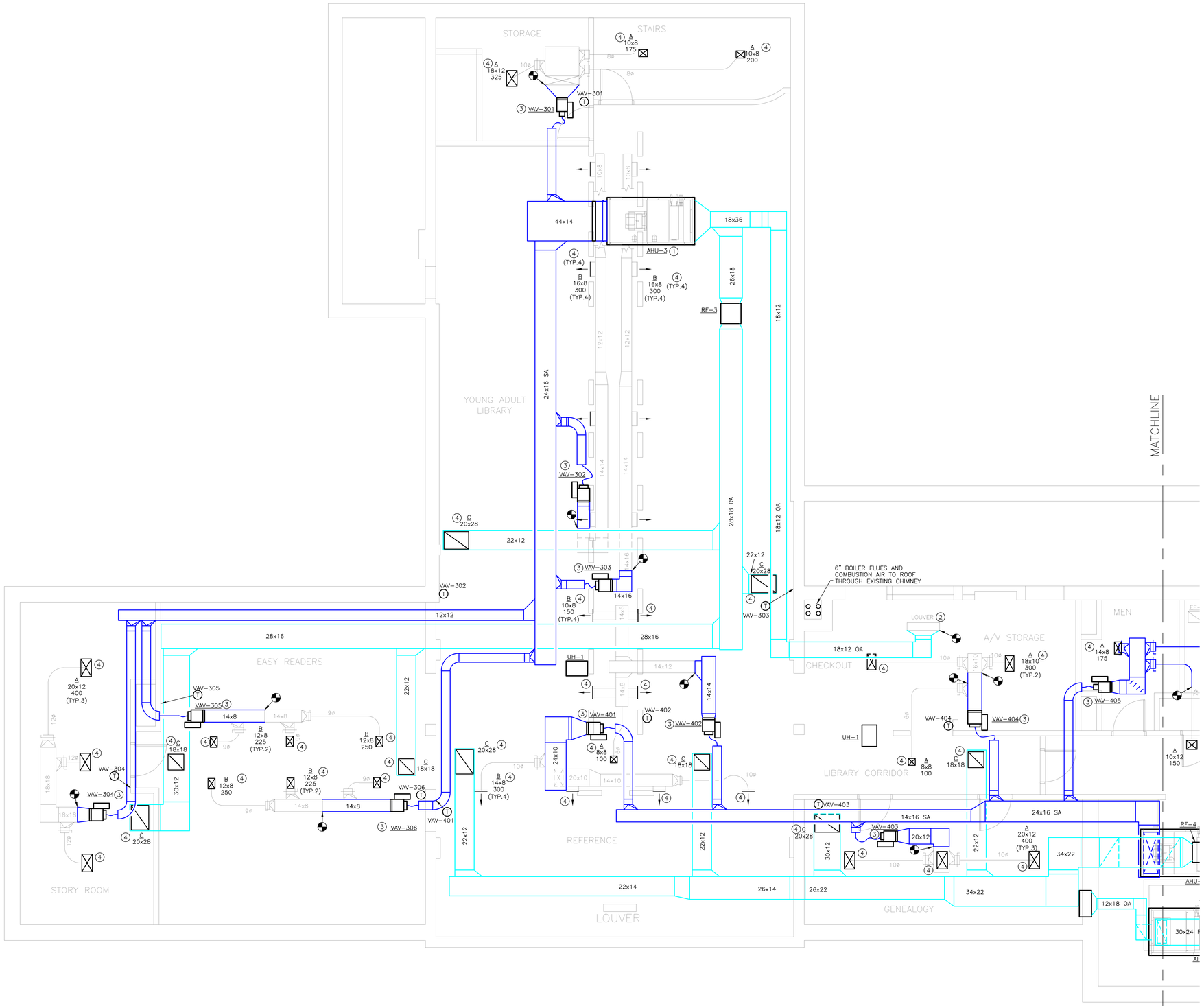
ISSUE DATES

M1.1B

1ST FLOOR
MECHANICAL PLAN
- AREA B



1 2ND FLOOR MECHANICAL PLAN – AREA A
SCALE: 1/8" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. LOCATE AHU WHERE SHOWN. INSTALL PER MANUFACTURERS RECOMMENDATIONS. ROUTE CONDENSATE TO LOCATION INDICATED ON HYDRONIC PLANS.
2. ROUTE OUTDOOR AIR DUCT THROUGH EXISTING OUTDOOR AIR INTAKE LOUVER. MATCH LOUVER DIMENSIONS. INSULATE ALL OUTSIDE AIR DUCT PER GENERAL MECHANICAL NOTES
3. PROVIDE NEW HOT WATER VAV BOX WHERE INDICATED. PROVIDE VALVES AND SPECIALTIES AS NEEDED. REFER TO HYDRONIC PLANS FOR EXACT DETAILS.
4. REPLACE EXISTING SUPPLY AND RETURN AIR DEVICES WITH NEW. REFER TO GRD SCHEDULE FOR MANUFACTURER AND MODEL. VERIFY EXACT SIZE PRIOR TO PURCHASE.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
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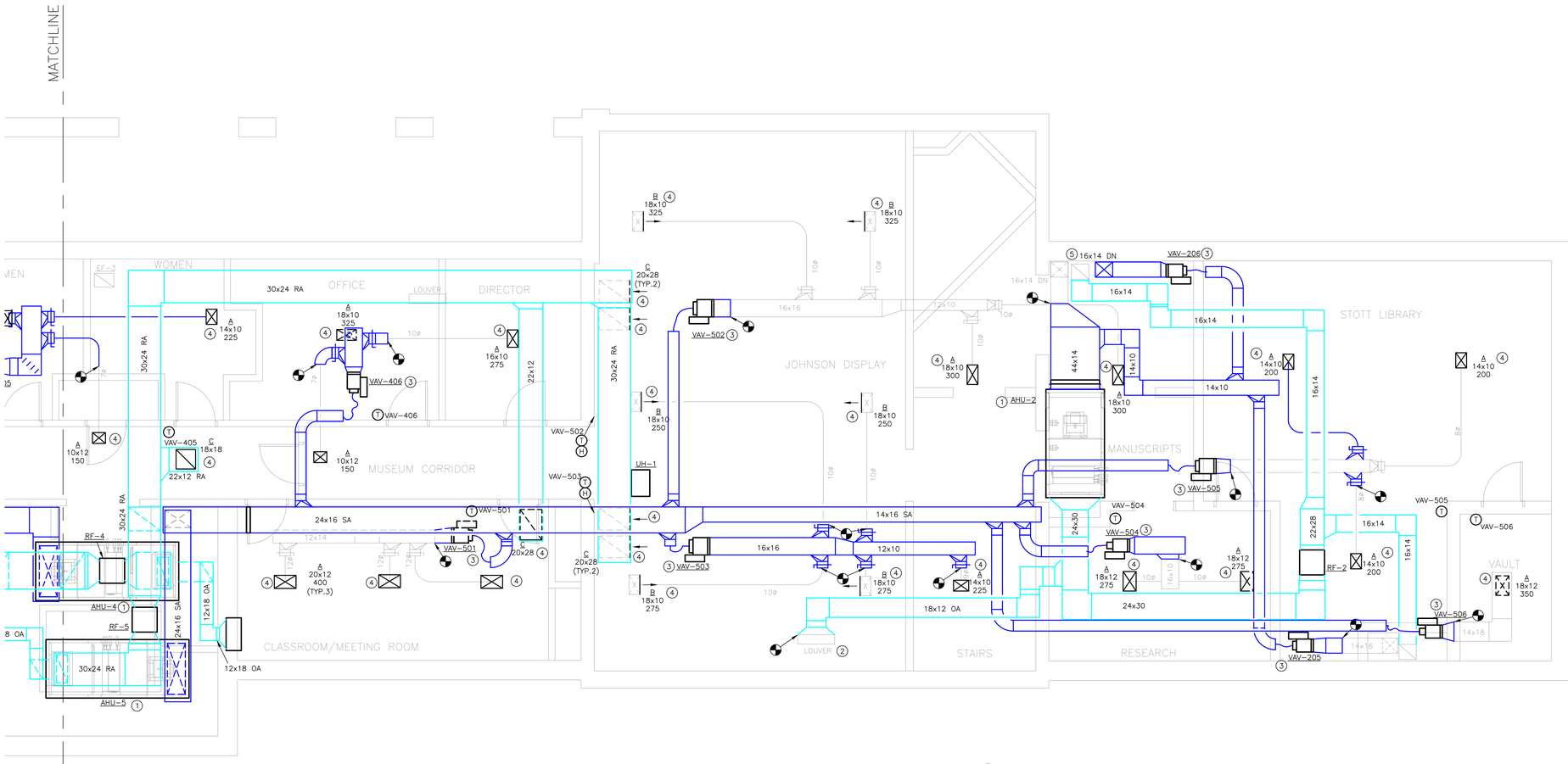
ISSUE DATES

M1.2A

2ND FLOOR MECHANICAL PLAN - AREA A

MECHANICAL NEW PLAN NOTES:

1. LOCATE AHU WHERE SHOWN. INSTALL PER MANUFACTURERS RECOMMENDATIONS. ROUTE CONDENSATE TO LOCATION INDICATED ON HYDRONIC PLANS.
2. ROUTE OUTDOOR AIR DUCT THROUGH EXISTING OUTDOOR AIR INTAKE LOUVER. MATCH LOUVER DIMENSIONS. INSULATE ALL OUTSIDE AIR DUCT PER GENERAL MECHANICAL NOTES
3. PROVIDE NEW HOT WATER VAV BOX WHERE INDICATED. PROVIDE VALVES AND SPECIALTIES AS NEEDED. REFER TO HYDRONIC PLANS FOR EXACT DETAILS.
4. REPLACE EXISTING SUPPLY AND RETURN AIR DEVICES WITH NEW. REFER TO GRD SCHEDULE FOR MANUFACTURER AND MODEL. VERIFY EXACT SIZE PRIOR TO PURCHASE.
5. COORDINATE WITH ARCHITECTURAL TO PROVIDE NEW DUCTWORK SHAFT OR MODIFY EXISTING SHAFT.



1 2ND FLOOR MECHANICAL PLAN – AREA B
SCALE: 1/4" = 1'-0"

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Kansas City, MO 64105
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913-689-9449
contact@5byseng.com
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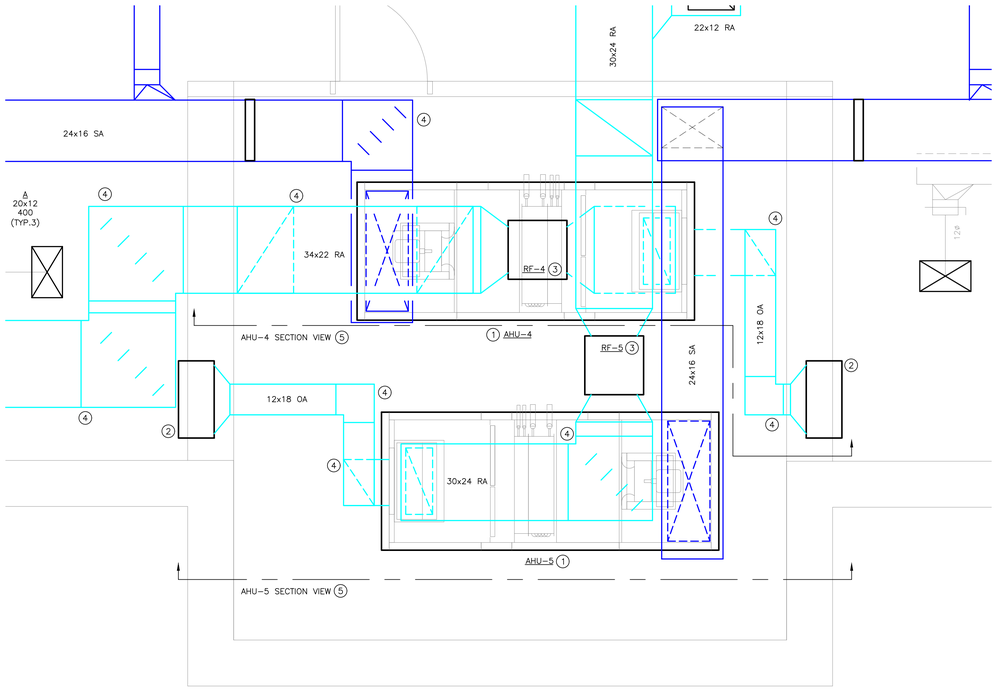
ISSUE DATES

M1.2B

2ND FLOOR MECHANICAL PLAN - AREA B



1 CROW'S NEST – MECHANICAL PLAN
SCALE: 1/2" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. LOCATE AHU WHERE SHOWN. INSTALL PER MANUFACTURERS RECOMMENDATIONS. COORDINATE WITH STRUCTURAL ENGINEER FOR ADDITIONAL SUPPORT FOR AHU AND MOUNTING SUPPORTS.
2. ROUTE OUTDOOR AIR DUCT THROUGH NEW OUTDOOR AIR INTAKE LOUVER. MATCH LOUVER SIZE TO EXISTING WINDOW DIMENSIONS. INSULATE ALL OUTSIDE AIR DUCT PER GENERAL MECHANICAL NOTES.
3. SUSPEND RETURN FAN IN LOCATION SHOWN.
4. PROVIDE MITERED ELBOWS AND TURNING VANES WHERE INDICATED.
5. REFER TO SHEET M1.3 B FOR SECTION VIEW ELEVATIONS.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
5by5eng.com

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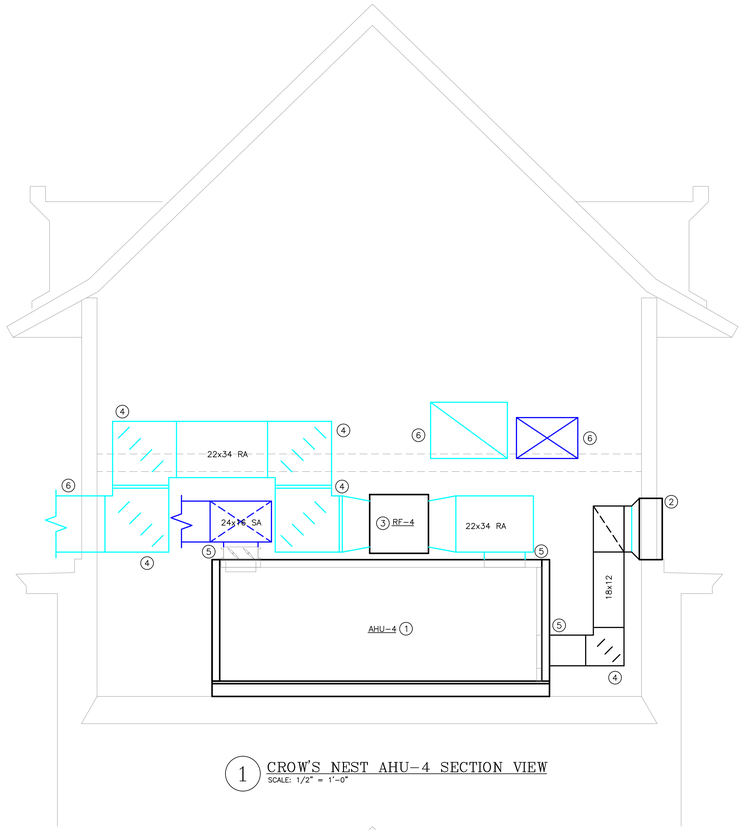
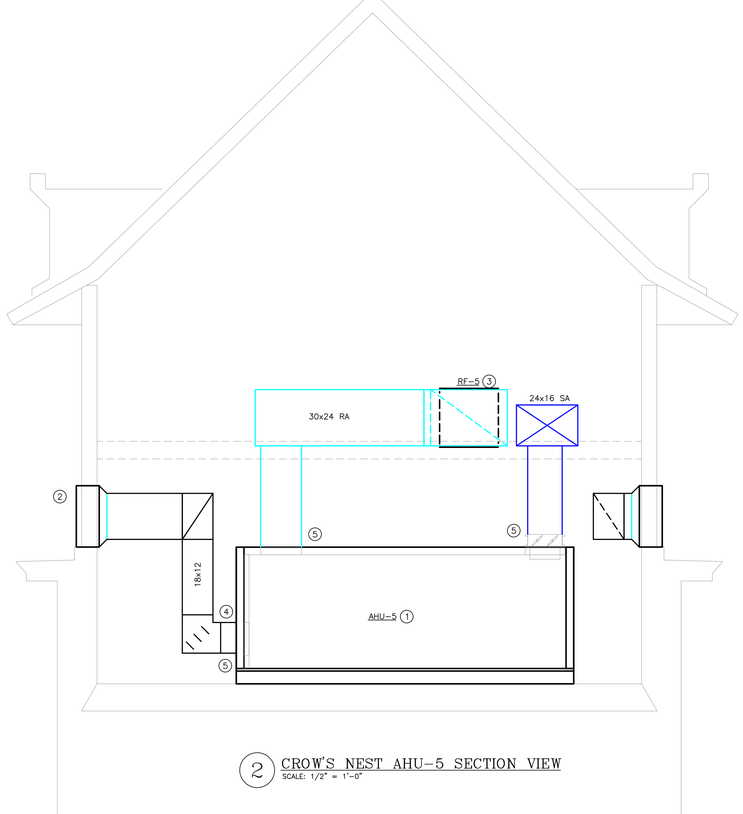
ISSUE DATES

M1.3

MECHANICAL
ENLARGED PLANS



1 CROW'S NEST AHU-4 SECTION VIEW
SCALE: 1/2" = 1'-0"



2 CROW'S NEST AHU-5 SECTION VIEW
SCALE: 1/2" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. LOCATE AHU WHERE SHOWN. INSTALL PER MANUFACTURERS RECOMMENDATIONS. COORDINATE WITH STRUCTURAL ENGINEER FOR ADDITIONAL SUPPORT FOR AHU AND MOUNTING SUPPORTS.
2. ROUTE OUTDOOR AIR DUCT THROUGH NEW OUTDOOR AIR INTAKE LOUVER. MATCH LOUVER SIZE TO EXISTING WINDOW DIMENSIONS. INSULATE ALL OUTSIDE AIR DUCT PER GENERAL MECHANICAL NOTES.
3. SUSPEND RETURN FAN IN LOCATION SHOWN.
4. PROVIDE MITERED ELBOWS AND TURNING VANES WHERE INDICATED.
5. PROVIDE DUCT EXTENSION FULL SIZE OF CONNECTION AT UNIT AND CONNECT TO DUCTWORK AS INDICATED.
6. ROUTE SUPPLY AND RETURN AIR DUCTWORK TO CROW'S NEST EXTERIOR IN LOCATION SHOWN, BELOW ROOFLINE. COORDINATE WITH STRUCTURAL ENGINEER TO ENLARGE EXISTING PENETRATIONS OR TO CREATE NEW PENETRATIONS AS REQUIRED.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
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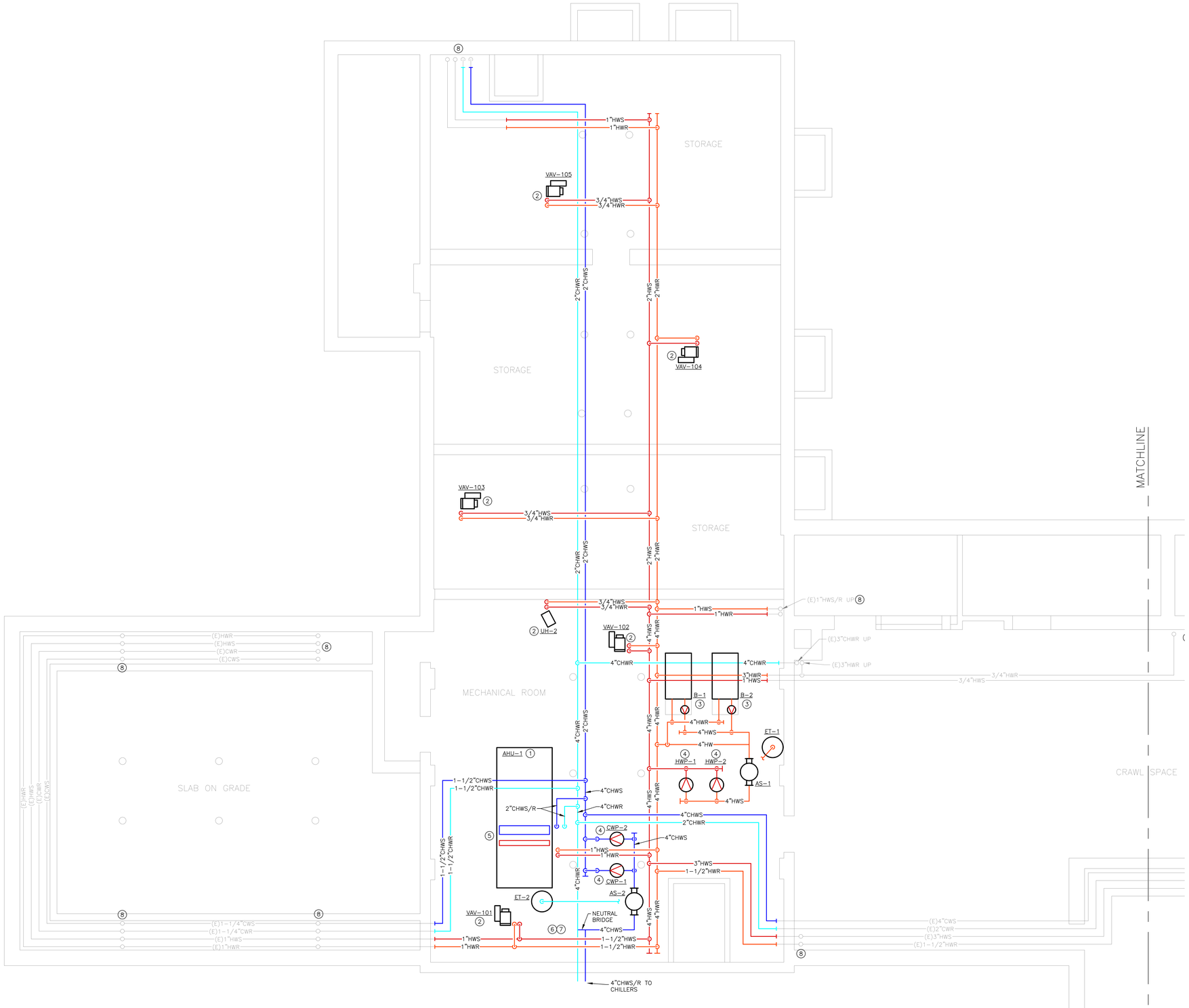
ISSUE DATES

M1.4

MECHANICAL
ELEVATIONS



1 BASEMENT HYDRONICS PLAN – AREA A
SCALE: 1/4" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. LOCATE AHU WHERE SHOWN. CONNECT CHILLED WATER AND HOT WATER TO NEW AIR HANDLING UNIT AS SHOWN. REFER TO PIPING CONNECTION DETAILS FOR ADDITIONAL INFORMATION.
2. CONNECT HWS/R TO VAV BOX SIZED AS INDICATED TO NEAREST HOT WATER SYSTEM MAINS. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION AND VALVE TYPE TO MATCH EXISTING.
3. PROVIDE NEW BOILERS FOR BUILDING HOT WATER SYSTEM. INSTALL IN LOCATION WHERE OLD BOILER WAS REMOVED. INSTALL ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE WITH NEW CONCRETE HOUSEKEEPING PAD AS REQUIRED. COORDINATE EXACT PAD SIZE WITH NEW EQUIPMENT LAYOUT, EXISTING CONDITIONS AND OTHER TRADES.
4. LOCATE NEW PUMPS WHERE SHOWN. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PIPING DETAILS ON DETAIL SHEETS.
5. PROVIDE LITTLE GIANT CONDENSATE PUMP, MODEL VCMA-20ULS-C-PRO OR EQUIVALENT, IN LOCATION SHOWN. ROUTE CONDENSATE TIGHT TO STRUCTURE AND DISCHARGE AS SHOWN. CONNECT CONDENSATE PUMP TO BUILDING AUTOMATION SYSTEM SUCH THAT WHEN CONDENSATE PUMP FAILS OR OVERFLOWS AN ALARM IS SENT.
6. PROVIDE BUFFER TANK ON CHILLED WATER SERVICE, 200 GALLON CAPACITY BY LAARS OR EQUAL, IN LOCATION SHOWN.
7. PROVIDE GLYCOL FEEDER, AXIOM STANDARD 55 GALLON OR EQUAL, IN LOCATION SHOWN.
8. EXISTING CHILLED AND HOT WATER PIPING UP TO SERVE EQUIPMENT ABOVE. REFER TO 1ST FLOOR PLAN FOR CONTINUATION.

5 BY 5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
5by5eng.com

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Tenant Improvements for:
CHANUTE SANTA FE DEPOT HVAC IMPROVEMENTS

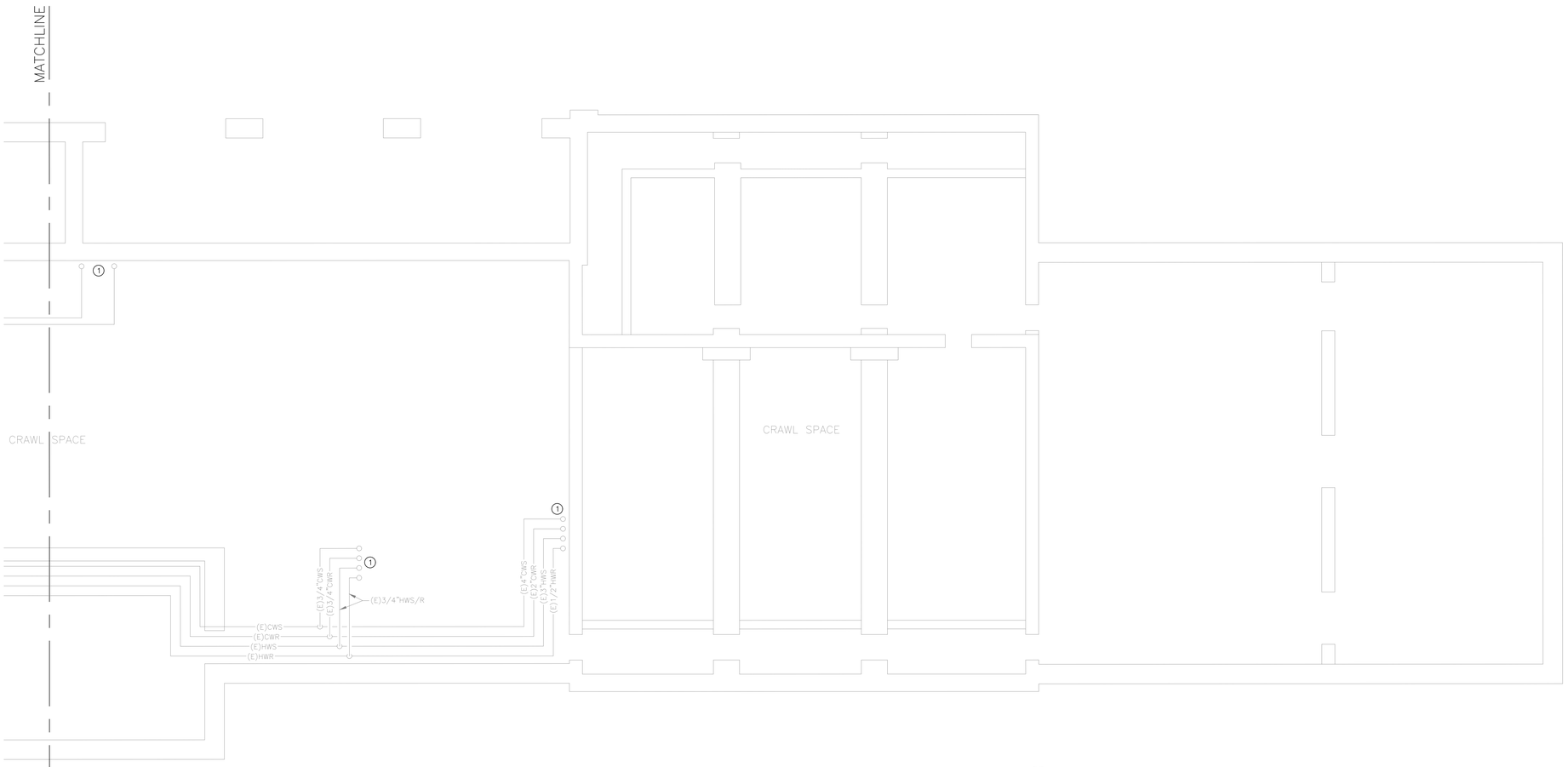
ISSUE DATES

M2.0A

BASEMENT HYDRONICS PLAN - AREA A

MECHANICAL NEW PLAN NOTES:

1. EXISTING CHILLED AND HOT WATER PIPING UP TO SERVE EQUIPMENT ABOVE. REFER TO 1ST FLOOR PLAN FOR CONTINUATION.



1 BASEMENT MECHANICAL PLAN – AREA B
SCALE: 1/4" = 1'-0"

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Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
5by5eng.com

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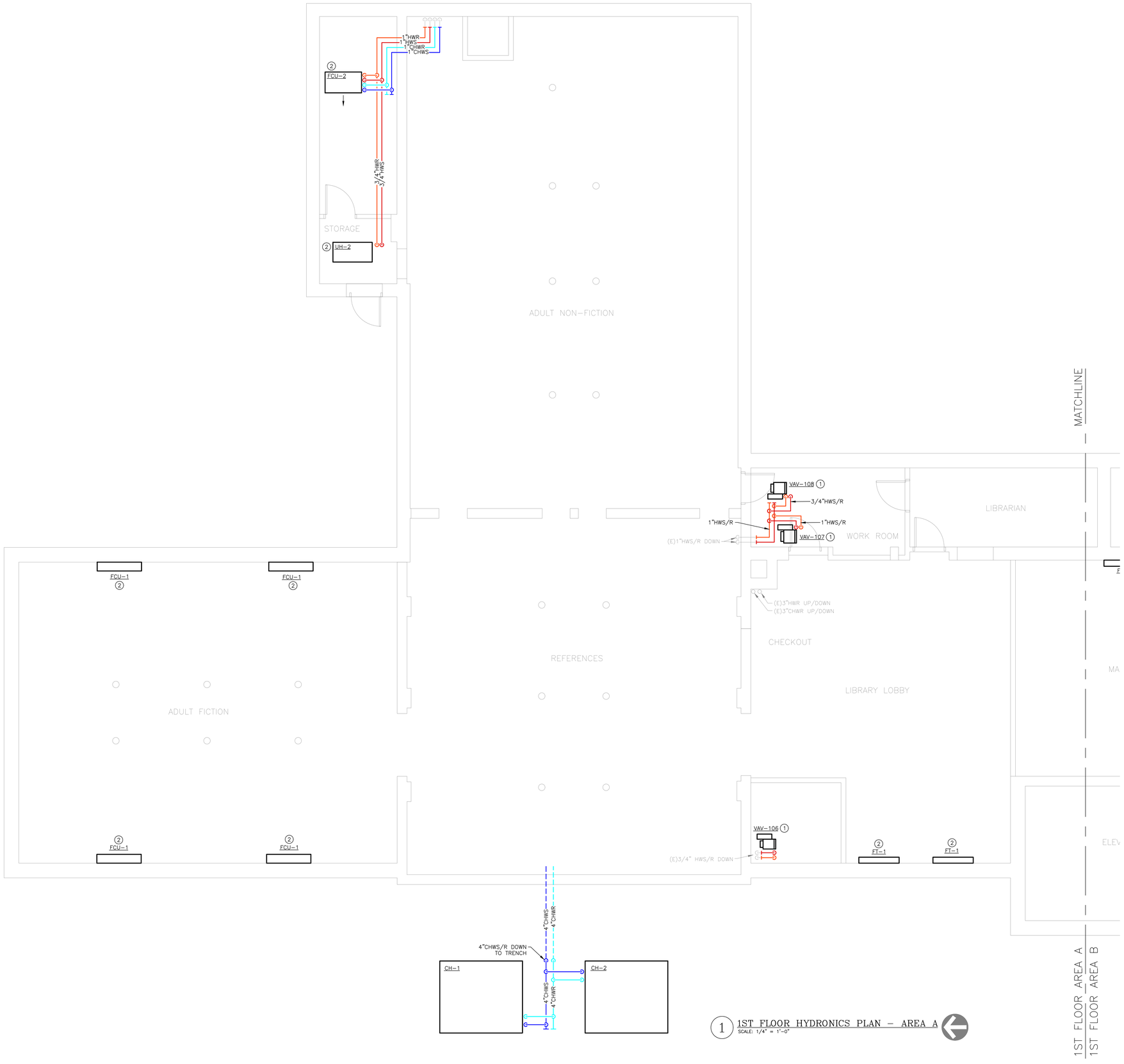
M2.0B

BASEMENT HYDRONICS PLAN - AREA B



1 1ST FLOOR HYDRONICS PLAN – AREA A
SCALE: 1/4" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. CONNECT HWS/R TO VAV BOX SIZED AS INDICATED TO NEAREST HOT WATER SYSTEM MAINS. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION AND VALVE TYPE TO MATCH EXISTING.
2. CONNECT HWS/R AND CHWS/R TO NEW FAN COIL UNIT OF FIN TUBE HEATER AS INDICATED. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE WITH EXISTING CONDITIONS AND OTHER TRADES.
3. INSTALL NEW CHILLERS WITH INTEGRAL PUMPS AT LOCATION OF EXISTING CHILLER. MAKE PIPING CONNECTIONS PER CHILLER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND DETAILS ON DETAILS SHEETS. ROUTE PRIMARY CHILLED WATER PIPING DOWN BELOW SLAB AND INTO BASEMENT AS INDICATED. INSULATE CHILLED WATER PIPING PER SPECIFICATIONS AND ENLARGE EXISTING TRENCH AS REQUIRED.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
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ISSUE DATES

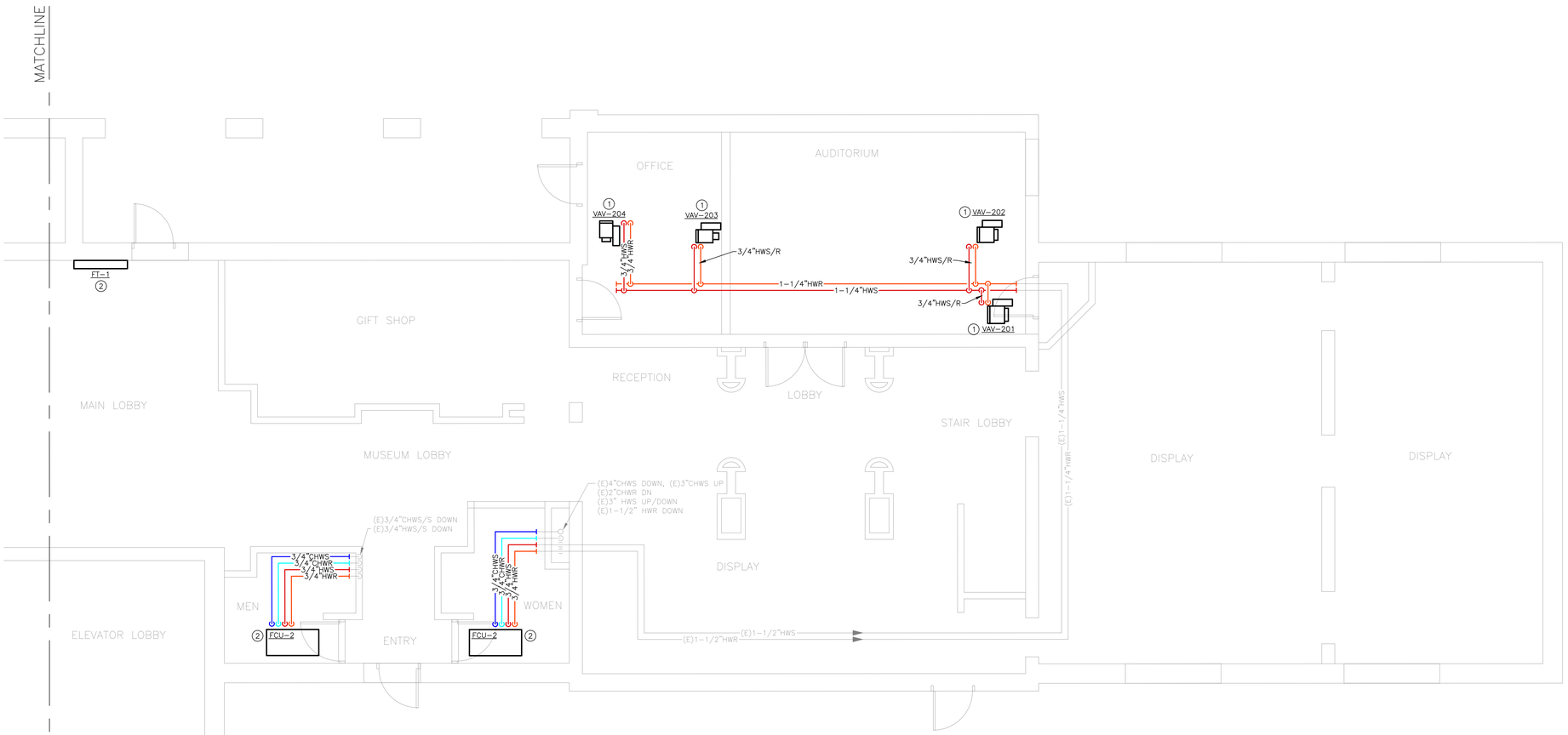
M2.1A

1ST FLOOR HYDRONICS PLAN - AREA A

MECHANICAL NEW PLAN NOTES:

1. CONNECT HWS/R TO VAV BOX SIZED AS INDICATED TO NEAREST HOT WATER SYSTEM MAINS. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION AND VALVE TYPE TO MATCH EXISTING.

2. CONNECT HWS/R AND CHWS/R TO NEW FAN COIL UNIT OF FIN TUBE HEATER AS INDICATED. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE WITH EXISTING CONDITIONS AND OTHER TRADES.



1 1ST FLOOR HYDRONICS PLAN – AREA B
SCALE: 1/4" = 1'-0"

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5byeng.com
5byeng.com

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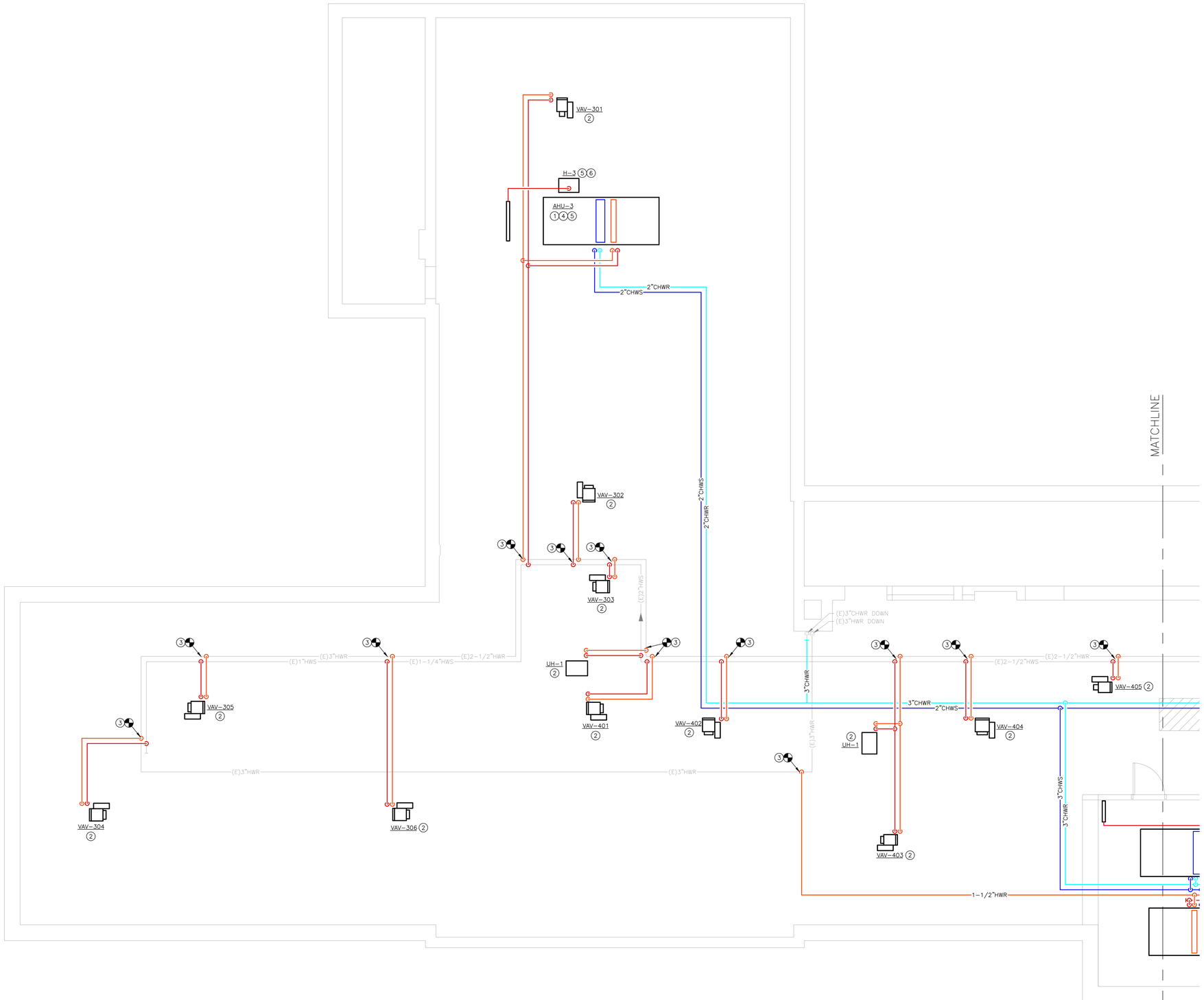
ISSUE DATES

M2.1B

1ST FLOOR HYDRONICS PLAN - AREA B



1 ATTIC HYDRONICS PLAN – AREA A
SCALE: 1/4" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. LOCATE AHU WHERE SHOWN. CONNECT CHILLED WATER AND HOT WATER TO NEW AIR HANDLING UNIT AS SHOWN. REFER TO PIPING CONNECTION DETAILS FOR ADDITIONAL INFORMATION.
2. CONNECT HWS/R TO VAV BOX SIZED AS INDICATED TO NEAREST HOT WATER SYSTEM MAINS. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION AND VALVE TYPE TO MATCH EXISTING.
3. CONNECT HWS/R SIZED AS INDICATED TO NEAREST HOT WATER SYSTEM MAINS. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION AND VALVE TYPE TO MATCH EXISTING.
4. PROVIDE LITTLE GIANT CONDENSATE PUMP, MODEL VCMA-20ULS-C-PRO OR EQUIVALENT, IN LOCATION SHOWN. ROUTE CONDENSATE TIGHT TO STRUCTURE AND DISCHARGE AS SHOWN. CONNECT CONDENSATE PUMP TO BUILDING AUTOMATION SYSTEM SUCH THAT WHEN CONDENSATE PUMP FAILS OR OVERFLOWS AN ALARM IS SENT.
5. PROVIDE STAINLESS STEEL DRAIN PAN BELOW AHUS AND HUMIDIFIERS TO PREVENT WATER LEAKAGE INTO CEILING BELOW. INSTALL WATER SENSORS IN DRAIN PANS TO AUTOMATICALLY SHUT DOWN EQUIPMENT IN THE EVENT OF A DETECTION OF WATER. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL INFORMATION.
6. INSTALL HUMIDIFIER WHERE INDICATED. COORDINATE EXACT LOCATION WITH EXISTING CONDITIONS AND OTHER WORK. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE ALL DRAIN PIPING TO NEAREST APPROVED RECEPTACLE AND TERMINATE WITH AIR GAP PER CODE.

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1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
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contact@5byseng.com
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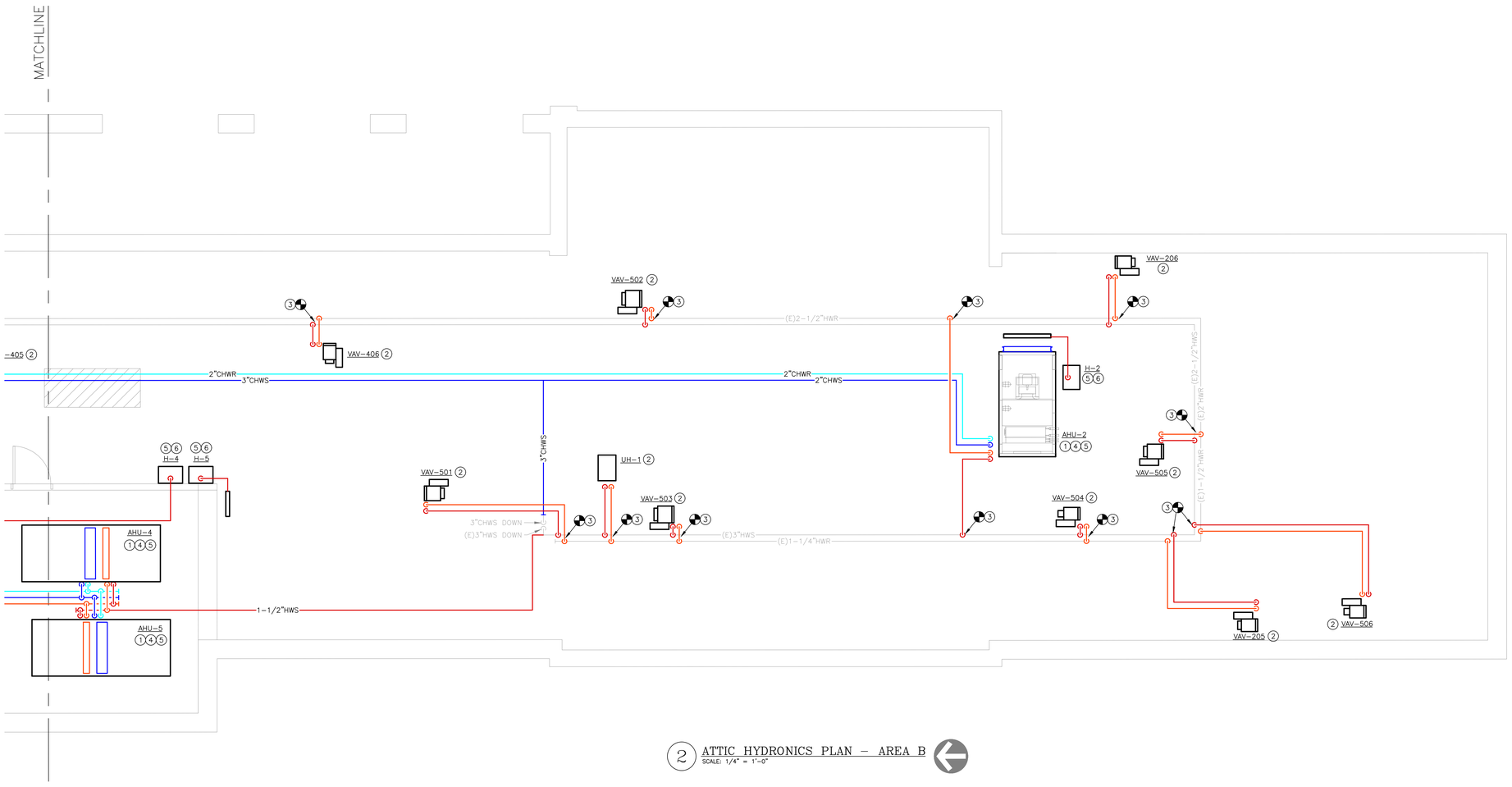
ISSUE DATES

M2.3A

ATTIC HYDRONICS PLAN - AREA A



2 ATTIC HYDRONICS PLAN – AREA B
SCALE: 1/4" = 1'-0"

MECHANICAL NEW PLAN NOTES:

1. LOCATE AHU WHERE SHOWN. CONNECT CHILLED WATER AND HOT WATER TO NEW AIR HANDLING UNIT AS SHOWN. REFER TO PIPING CONNECTION DETAILS FOR ADDITIONAL INFORMATION.
2. CONNECT HWS/R TO VAV BOX SIZED AS INDICATED TO NEAREST HOT WATER SYSTEM MAINS. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION AND VALVE TYPE TO MATCH EXISTING.
3. CONNECT HWS/R SIZED AS INDICATED TO NEAREST HOT WATER SYSTEM MAINS. CONNECT WITH ISOLATION VALVES AND CONTROL VALVES INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION AND VALVE TYPE TO MATCH EXISTING.
4. PROVIDE LITTLE GIANT CONDENSATE PUMP, MODEL VCMA-20ULS-C-PRO OR EQUIVALENT, IN LOCATION SHOWN. ROUTE CONDENSATE TIGHT TO STRUCTURE AND DISCHARGE AS SHOWN. CONNECT CONDENSATE PUMP TO BUILDING AUTOMATION SYSTEM SUCH THAT WHEN CONDENSATE PUMP FAILS OR OVERFLOWS AN ALARM IS SENT.
5. PROVIDE STAINLESS STEEL DRAIN PAN BELOW AHUS AND HUMIDIFIERS TO PREVENT WATER LEAKAGE INTO CEILING BELOW. INSTALL WATER SENSORS IN DRAIN PANS TO AUTOMATICALLY SHUT DOWN EQUIPMENT IN THE EVENT OF A DETECTION OF WATER. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL INFORMATION.
6. INSTALL HUMIDIFIER WHERE INDICATED. COORDINATE EXACT LOCATION WITH EXISTING CONDITIONS AND OTHER WORK. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE ALL DRAIN PIPING TO NEAREST APPROVED RECEPTACLE AND TERMINATE WITH AIR GAP PER CODE.

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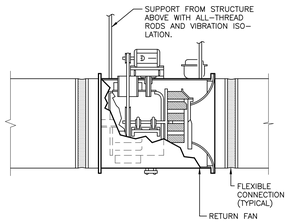
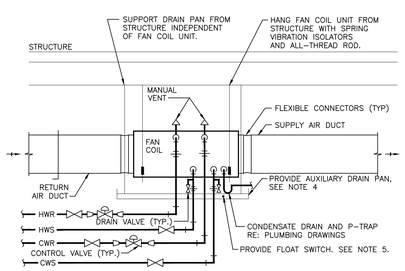
ISSUE DATES

M2.3B

ATTIC HYDRONICS PLAN - AREA B

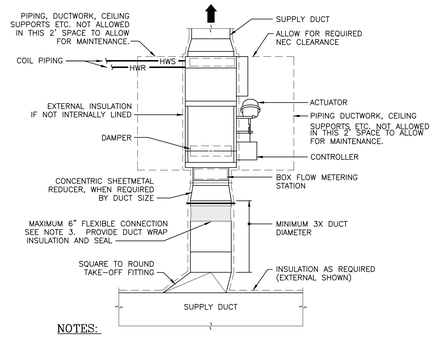


4 IN-LINE RETURN FAN
SCALE: NTS



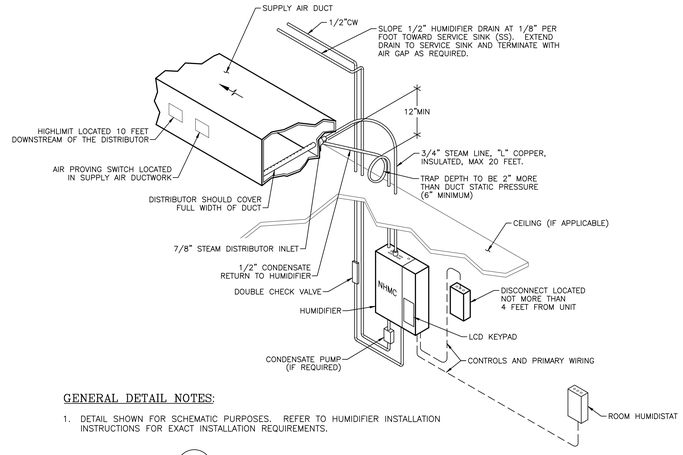
NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS OR MEET LOCAL CODE REQUIREMENTS.
2. SIZE CONTROL VALVE FOR MAXIMUM PRESSURE DROP OF 5 PSIG BUT NOT LESS THAN 1/2 INCH.
3. BALANCE OUTSIDE AIR TO FAN COIL UNIT TO SCHEDULED AIRFLOW PER THE FAN COIL UNIT SCHEDULE.
4. EXTEND AUXILIARY DRAIN PAN MINIMUM 3" BEYOND UNIT ON ALL SIDES.
5. PROVIDE FLOAT SWITCH IN 1/2" COUPLING 1" ABOVE BOTTOM OF DRAIN PAN. INTERLOCK FLOAT SWITCH TO TURN OFF UNIT WHEN WATER IS PRESENT.

3 FOUR-PIPE COIL UNIT DETAIL
NOT TO SCALE



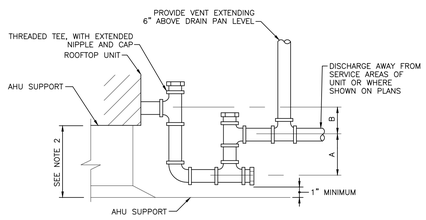
NOTES:
1. SUPPORT AIR TERMINAL UNIT, BOTH ENDS WITH MINIMUM 2" WIDE GALVANIZED 22-GAUGE HANGER STRAPS.
2. INSTALL BOX NOT MORE THAN 3 FEET ABOVE THE CEILING TO ENABLE ACCESS FOR MAINTENANCE.
3. FLEXIBLE CONNECTION SHALL BE ATCO MODEL UPC# 017. OR DURO-DYNE INSULFLEX.

2 VAV BOX WITH HYDRONIC REHEAT COIL DETAIL
SCALE: NTS



GENERAL DETAIL NOTES:
1. DETAIL SHOWN FOR SCHEMATIC PURPOSES. REFER TO HUMIDIFIER INSTALLATION INSTRUCTIONS FOR EXACT INSTALLATION REQUIREMENTS.

1 HUMIDIFIER INSTALLATION DETAIL
SCALE: NTS

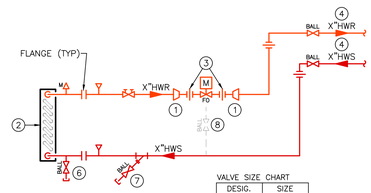


A = GREATER OF 4" OR 1/2" PLUS AIR HANDLING UNIT TOTAL PRESSURE IN INCHES-WATER COLUMN

DRAWTHRU:
B = 5" MINIMUM

NOTES:
1. 1"ø MINIMUM PIPE SIZE OR SIZE PER DRAIN TAP IN AIR HANDLING UNIT.

8 AHU CONDENSATE DRAIN TRAP
NOT TO SCALE

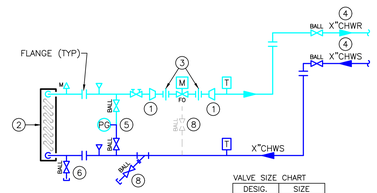


VALVE SIZE CHART

DESIG.	SIZE
X	SIZE

DETAIL NOTES:
1. PROVIDE CONCENTRIC REDUCERS ON BOTH SIDES OF CONTROL VALVE(S) AS REQUIRED (TYP.2).
2. PIPING ACCESSORIES SHOWN AT COIL TYPICAL FOR ALL COILS IN COIL BANK.
3. INSTALL CONTROL VALVE(S) BETWEEN UNIONS OR FLANGES (TYP.2). PROVIDE DUAL VALVES UNLESS NOTED OTHERWISE. SIZE EACH VALVE FOR 50% CAPACITY.
4. PROVIDE MANUAL AIR VENT AT HIGH POINT OF BRANCH PIPING IF TAPPED INTO TOP OF MAINS.
5. NOT USED.
6. PROVIDE 3/4" DRAIN WITH VALVE AND THREADED CAP AT LOW POINT OF COIL AND BRANCH PIPING (TYP).
7. PROVIDE 3/4" BLOWDOWN WITH VALVE AND THREADED CAP.
8. PROVIDE BYPASS VALVE WITH CIRCUIT SETTER AND BALL VALVE FOR 3-WAY CONTROL VALVES WHERE CALLED FOR ON PLANS.

7 VAV BOX REHEAT HOT WATER COIL PIPING DETAIL
SCALE: NTS

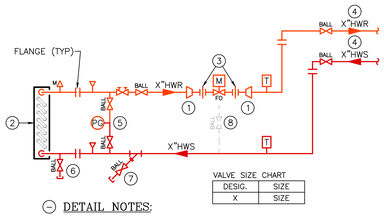


VALVE SIZE CHART

DESIG.	SIZE
X	SIZE

DETAIL NOTES:
1. PROVIDE CONCENTRIC REDUCERS ON BOTH SIDES OF CONTROL VALVE AS REQUIRED.
2. PIPING ACCESSORIES SHOWN AT COIL TYPICAL FOR ALL COILS IN COIL BANK.
3. INSTALL CONTROL VALVE BETWEEN UNIONS OR FLANGES.
4. PROVIDE MANUAL AIR VENT AT HIGH POINT OF BRANCH PIPING IF TAPPED INTO TOP OF MAINS.
5. ALL PIPING AND VALVES FOR PRESSURE GAUGES SHALL BE 1/2" COPPER AND INSULATED.
6. PROVIDE 3/4" DRAIN WITH VALVE AND THREADED CAP AT LOW POINT OF COIL AND BRANCH PIPING.
7. PROVIDE 3/4" BLOWDOWN WITH VALVE AND THREADED CAP.
8. PROVIDE BYPASS VALVE WITH CIRCUIT SETTER AND BALL VALVE FOR 3-WAY CONTROL VALVES WHERE CALLED FOR ON PLANS.

6 AIR HANDLING UNIT WITH SINGLE CHILLED WATER COIL PIPING DETAIL
SCALE: NTS



VALVE SIZE CHART

DESIG.	SIZE
X	SIZE

DETAIL NOTES:
1. PROVIDE CONCENTRIC REDUCERS ON BOTH SIDES OF CONTROL VALVE(S) AS REQUIRED (TYP.2).
2. PIPING ACCESSORIES SHOWN AT COIL TYPICAL FOR ALL COILS IN COIL BANK.
3. INSTALL CONTROL VALVE(S) BETWEEN UNIONS OR FLANGES (TYP.2). PROVIDE DUAL VALVES UNLESS NOTED OTHERWISE. SIZE EACH VALVE FOR 50% CAPACITY.
4. PROVIDE MANUAL AIR VENT AT HIGH POINT OF BRANCH PIPING IF TAPPED INTO TOP OF MAINS.
5. ALL PIPING AND VALVES FOR PRESSURE GAUGES SHALL BE 1/2" COPPER AND INSULATED (TYP).
6. PROVIDE 3/4" DRAIN WITH VALVE AND THREADED CAP AT LOW POINT OF COIL AND BRANCH PIPING (TYP).
7. PROVIDE 3/4" BLOWDOWN WITH VALVE AND THREADED CAP.
8. PROVIDE BYPASS VALVE WITH CIRCUIT SETTER AND BALL VALVE FOR 3-WAY CONTROL VALVES WHERE CALLED FOR ON PLANS.

5 AIR HANDLING UNIT HOT WATER COIL PIPING DETAIL
SCALE: NTS

5 BY 5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
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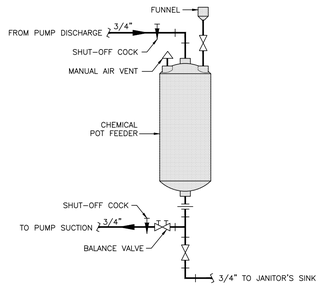
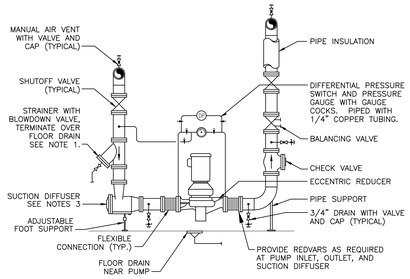
M3.0

MECHANICAL DETAILS



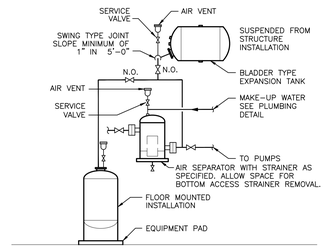
4 CHEMICAL POT FEEDER DETAIL
SCALE: NTS



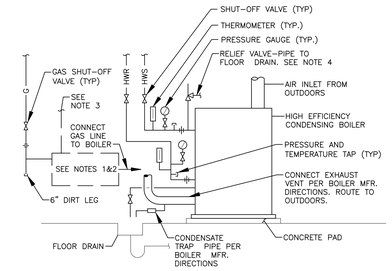
NOTES:

1. OMIT STRAINER IF A STRAINER IS FURNISHED WITH THE SUCTION DIFFUSER.
2. CONTRACTOR HAS OPTION OF PROVIDING A TRIPLE DUTY VALVE IN THE PUMP DISCHARGE LINE IN LIEU OF THE CHECK, BALANCE AND SHUTOFF VALVES.
3. MAINTAIN MINIMUM 18" CLEARANCE IN FRONT OF SUCTION DIFFUSER FOR REMOVAL OF STRAINER. IF STRAINER IS PROVIDED WITH SUCTION DIFFUSER.

3 HORIZONTAL IN-LINE PUMP DETAIL
SCALE: NTS



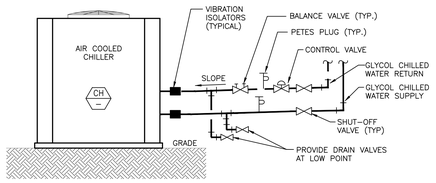
2 BLADDER TYPE EXPANSION TANK WITH AIR SEPARATOR PIPING DETAIL
SCALE: NTS



NOTES:

1. GAS TRAIN FOR NATURAL GAS PROVIDED BY BOILER MANUFACTURER.
2. FUEL TRAIN SHALL INCLUDE ALL OPERATING AND SAFETY DEVICES REQUIRED BY LOCAL CODE.
3. ROUTE VENT(S) FROM GAS TRAIN DEVICE(S) TO OUTDOORS PER LOCAL CODE.
4. RELIEF LINE TO FLOOR DRAIN FULL SIZE OF RELIEF VALVE OUTLET

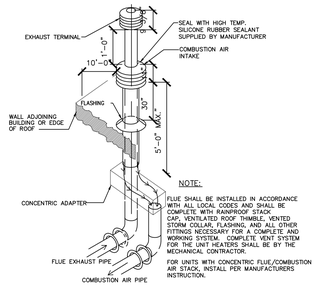
1 GAS-FIRED CONDENSING HOT WATER BOILER PIPING DETAIL
SCALE: NTS



GENERAL DETAIL NOTES:

1. DETAIL SHOWN FOR SCHEMATIC PURPOSES. REFER TO HUMIDIFIER INSTALLATION INSTRUCTIONS FOR EXACT INSTALLATION REQUIREMENTS.

7 CHILLED WATER CONNECTION AT AIR COOLED CHILLER
SCALE: NTS

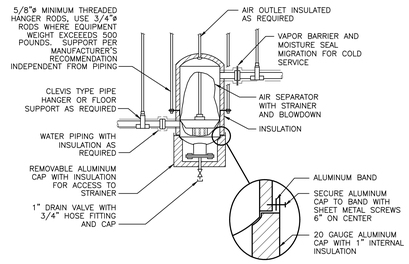


NOTE:

FLUE SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL CODES AND SHALL BE COMPLETE WITH RAINPROOF STACK CAP, VENTILATED ROOF THIMBLE, VENTED STORM COLLAR, FLASHING, AND ALL OTHER FITTINGS NECESSARY FOR A COMPLETE AND WORKING SYSTEM. COMPLETE VENT SYSTEM FOR THE UNIT HEATERS SHALL BE BY THE MECHANICAL CONTRACTOR.

FOR UNITS WITH CONCENTRIC FLUE/COMBUSTION AIR STACK, INSTALL PER MANUFACTURERS INSTRUCTION.

6 CONCENTRIC EXHAUST FLUE COMBUSTION AIR DETAIL
SCALE: NTS



NOTES:

1. SET AIR SEPARATOR LEVEL, ALL DIRECTIONS.
2. AFTER SYSTEM HAS BEEN FLUSHED AND CHANGED, REMOVE AND CLEAN STRAINER AT REQUIRED INTERVALS.

5 INSULATION FOR AIR SEPARATOR
SCALE: NTS

5 BY 5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5byeng.com
5byeng.com

NOT FOR CONSTRUCTION

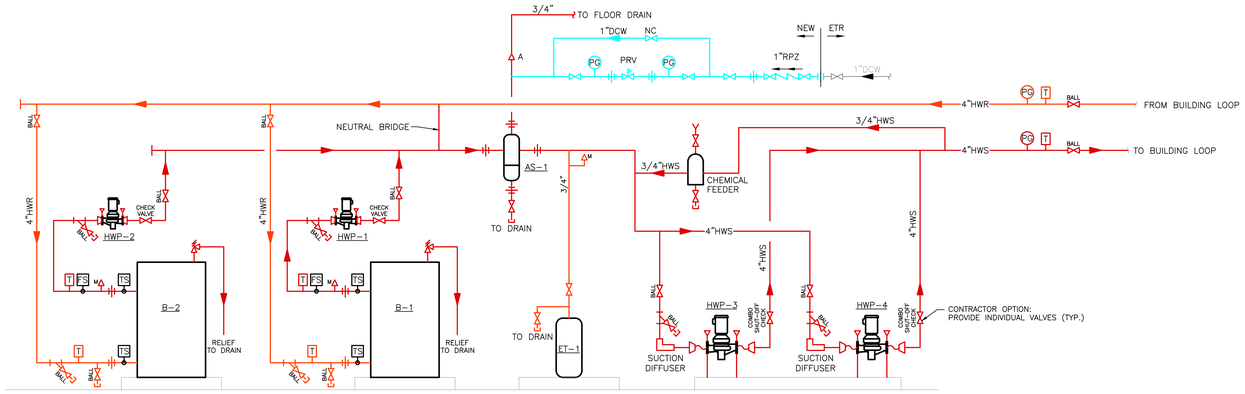
LICENSE #: 20022
BROCK CENTLIVRE, LICENSED ENGINEER

Tenant Improvements for:
CHANUTE SANTA FE DEPOT HVAC IMPROVEMENTS

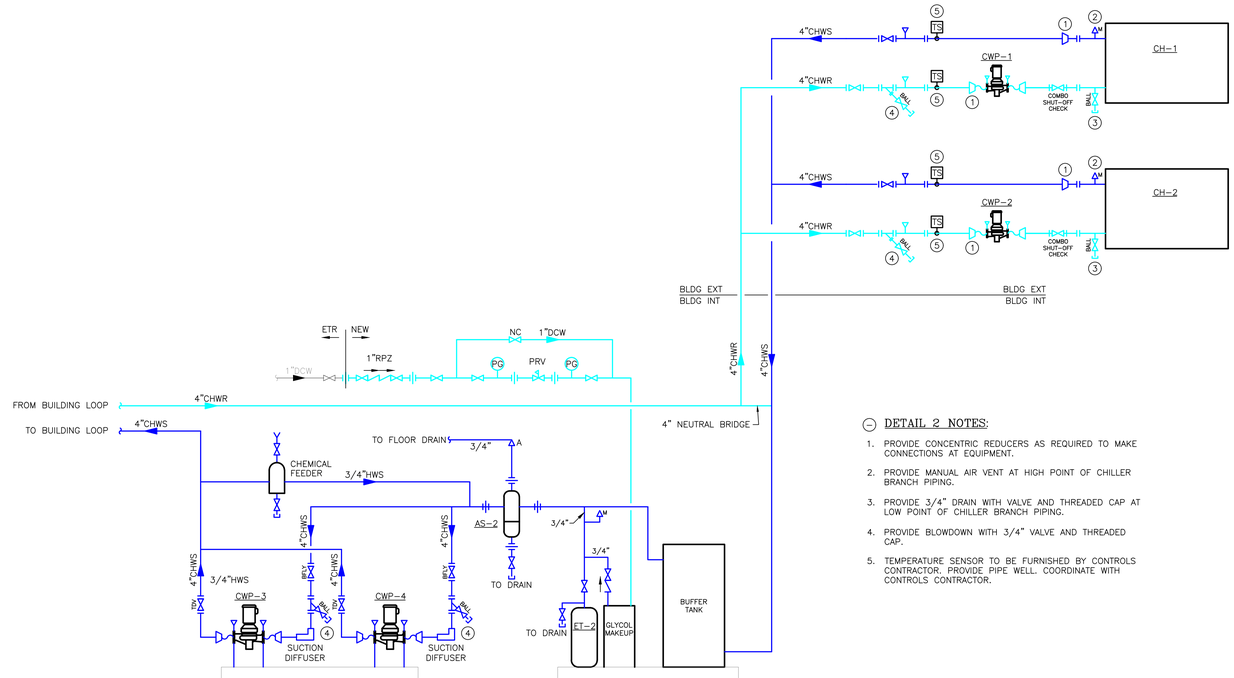
ISSUE DATES

M3.1

MECHANICAL DETAILS



1 HEATING WATER PLANT PIPING DIAGRAM
SCALE: NTS



2 CHILLED WATER PLANT PIPING DIAGRAM
SCALE: NTS

DETAIL 2 NOTES:

1. PROVIDE CONCENTRIC REDUCERS AS REQUIRED TO MAKE CONNECTIONS AT EQUIPMENT.
2. PROVIDE MANUAL AIR VENT AT HIGH POINT OF CHILLER BRANCH PIPING.
3. PROVIDE 3/4" DRAIN WITH VALVE AND THREADED CAP AT LOW POINT OF CHILLER BRANCH PIPING.
4. PROVIDE BLOWDOWN WITH 3/4" VALVE AND THREADED CAP.
5. TEMPERATURE SENSOR TO BE FURNISHED BY CONTROLS CONTRACTOR. PROVIDE PIPE WELL. COORDINATE WITH CONTROLS CONTRACTOR.

5BY5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-889-9449
contact@5by5eng.com
5by5eng.com

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CHANUTE SANTA FE DEPOT HVAC IMPROVEMENTS

ISSUE DATES

M4.0

MECHANICAL
PIPING DIAGRAMS

AIR HANDLING UNIT SCHEDULE

TAG	AREAS SERVED	MANUF	MODEL	SUPPLY FAN ARRAY														OUTDOOR AIR		COOLING														HEATING														FILTERS			MAX	NOTES
				FANS		MIN AIR	AIR FLOW	ESP	TSP	MOTORS				VFD'S				DESIGN	AIR FLOW	FLUID	TC	SC	EAT		LAT		AIR VEL	APD	FLUID FLOW	EWT	LWT	WPD	VALVE	ROWS	FPI	AIRFLOW	OUTSIDE	OA DESIGN	COIL	TH	EAT	LAT	MAX AIR	MAX APD	EWT	LWT	VALVE	FLUID FLOW	THICKNESS	EFF	DIRTY APD	WEIGHT	
				(TYPE)	(QTY)	FLOW	(CFM)	(IN.WG)	(IN.WG)	(QTY)	(HP EACH)	(HP TOTAL)	(Y/N)	(QTY)	VOLTAGE/PHASE	HP	CONDITION	(CFM)		(MBH)	(MBH)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	(FPM)	(IN.WG)	(GPM)	(°F)	(°F)	(FT.WG)	TYPE				AIR CFM	TEMP	TYPE	(MBH)	(°F DB)	(°F DB)	VEL (FPM)	(IN.WG)	(°F)	(°F)	TYPE	(GPM)	(IN)	(MERV)	(IN.WG)	(LBS)	
AHU-1	BASEMENT, 1ST FLOOR LIBRARY	TEMTROL		PLENUM	2	3,000	6,000	2.00	3.9	2	3.75	7	Y	2	208/3	7.5	DESIGN	900	30% GLOCOL	234	159	76.5	65.0	52.0	51.8	466	0.69	39	42	54	10	2 WAY	5	10	3,000	900	-10	HW	66	44.6	65.0	500	0.1	160	140	2 WAY	7	2	8	0.50	4,400	ALL
AHU-2	1ST FLOOR MUSEUM	TEMTROL		PLENUM	1	2,250	4,500	2.00	4.07	1	4.5	4.5	Y	1	208/3	5	DESIGN	1,000	30% GLOCOL	197	124	77.4	66.5	52.0	51.8	477	0.74	33	42	54	13.5	2 WAY	5	10	2,250	1,000	-10	HW	77	33.3	65.0	500	0.1	160	140	3 WAY	8	2	8	0.50	3,200	ALL
AHU-3	2ND FLOOR LIBRARY EAST	TEMTROL		PLENUM	1	2,250	4,500	2.00	3.54	1	4.5	4.5	Y	1	208/3	5	DESIGN	800	30% GLOCOL	170	118	76.2	64.6	52.0	51.8	381	0.37	28	42	54	10.7	3 WAY	5	10	2,250	800	-10	HW	60	40.3	65.0	500	0.1	160	140	3 WAY	6	2	8	0.50	3,200	ALL
AHU-4	2ND FLOOR LIBRARY WEST	TEMTROL		PLENUM	1	2,250	4,500	2.00	3.8	1	4.5	4.5	Y	1	208/3	5	DESIGN	500	30% GLOCOL	170	118	76.2	64.6	52.0	51.8	480	0.70	28	42	54	12.2	2 WAY	5	10	2,250	500	-10	HW	35	50.7	65.0	500	0.1	160	140	3 WAY	3	2	8	0.50	3,200	ALL
AHU-5	2ND FLOOR MUSUEM	TEMTROL		PLENUM	1	2,250	4,500	2.00	3.8	1	4.5	4.5	Y	1	208/3	5	DESIGN	900	30% GLOCOL	197	124	77.4	66.5	52.0	51.8	480	0.70	33	42	54	12.2	3 WAY	5	10	2,250	900	-10	HW	69	36.8	65.0	500	0.1	160	140	3 WAY	7	2	8	0.50	3,200	ALL

NOTES:
A. PROVIDE UNIT WITH SUPPLY AIR MOTOR CONTROL PANELS, EQUIPPED WITH FACTORY-INSTALLED VARIABLE FREQUENCY DRIVES.
B. FAN ARRAY(S) SHALL BE ELECTRICALLY CIRCUITED BY MANUFACTURER FOR POWER AND CONTROLS. PROVIDE N+1 REDUNDANCY.
C. COORDINATE WITH FIRE ALARM CONTRACTOR FOR SMOKE DETECTORS IN SUPPLY AIR AND RETURN AIR DUCTS.
D. MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER SHALL COORDINATE WITH CONTROLS CONTRACTOR AND ELECTRICAL CONTRACTOR FOR ADDITIONAL ELECTRICAL REQUIREMENTS.
E. SCHEDULED EXTERNAL STATIC PRESSURE (ESP) INCLUDES DIRTY FILTER LOSSES.
F. PROVIDE AIR HANDLING UNIT WITH REMOTE CONDENSING UNIT TO MEET COOLING PERFORMANCE INDICATED.

FAN COIL UNIT SCHEDULE

TAG	MANUFACTURER	MODEL	SUPPLY FAN				COOLING							HEATING				MOTOR ELEC		NOTES
		FURNACE	S/A FLOW (CFM)	ESP (IN.WG)	MOTOR (HP)	FAN CONTROL	NOM TONS	REFR TYPE	ROWS	TC (MBH)	SC (MBH)	EAT (DB/WB)	LAT (DB/WB)	GPM	WPD (FT.WG)	VALVE TYPE	ROWS	OUTPUT (MBH)	GPM	WPD (FT.WG)	VALVE TYPE	V/PH	POWER (WATTS)	
FCU-1	KRUEGER	KVFS04	425	N/A	1/4	CAV	1.0	CHILLED WATER	3.0	10.6	8.1	75/63	55/54	2.4	3.05	2 WAY	2	25.0	1.3	1.22	2 WAY	120/1	49.0	A,B,C,D,E,F,G
FCU-2	KRUEGER	KHFE04	375	N/A	1/4	CAV	1.0	CHILLED WATER	3.0	12.5	8.8	75/63	55/54	2.8	12.4	3 WAY	2	19.2	1	3.07	2 WAY	120/1	56.0	A,B,D,E,F,H

APPROVED MANUFACTURERS: CARRIER, DAIKIN, LENNOX, TRANE, AND YORK.

NOTES:
A. PROVIDE WITH FILTER HOUSING AT UNIT RETURN AND 1" PLEATED THROWAWAY FILTERS (MERV 8).
B. EQUIPMENT SIZED FOR 105 DEGF AMBIENT.
C. PROVIDE WITH MANUFACTURER'S STANDARD SUBBASE.
D. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT. SUPPLY FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED HOURS AND SHALL CYCLE DURING UNOCCUPIED HOURS.
E. PROVIDE WITH MANUFACTURER'S STANDARD DISCONNECT SWITCH.
F. PROVIDE WITH ELECTRICALLY COMMUTATED MOTOR.
G. MULTIPLE INSTANCES OF UNIT. REFER TO MECHANICAL PLANS FOR EXACT QUANTITY.
H. PROVIDE WITH MANUFACTURER'S STANDARD HANGING KIT.

UNIT HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	MOUNTING	OUTPUT	WATTS	FLOW	WATER PRESSURE DROP	NOTES
UH-1	REZNOR	WS44	STRUCTURE	32 MBH	12.9 KW	3.23 GPM	0.23 FT.WG.	A,B,C
UH-2	REZNOR	WS18	STRUCTURE	13 MBH	5.3 KW	1.92 GPM	0.11 FT.WG.	A,B,C

NOTES:
A. PROVIDE WITH UNIT MOUNTED THERMOSTAT AND DISCONNECT SWITCH.
B. PROVIDE WITH HANGING KIT FOR MOUNTING FROM STRUCTURE.
C. MULTIPLE INSTANCES OF UH-1 ON PLAN. REFER TO MECHANICAL PLANS FOR EXACT QUANTITY.

GRILLES, REGISTERS AND DIFFUSERS

TAG	MANUFACTURER	MODEL	SERVICE	MOUNTING	BORDER	FACE SIZE	MAX NC	NOTES
A	KRUEGER	80	SUPPLY	CEILING	SURFACE MOUNT	SEE PLAN	30	A,B,C,D
B	KRUEGER	80	SUPPLY	WALL	WALL MOUNT	SEE PLAN	30	A,B,C,D
C	KRUEGER	S80	RETURN	CEILING/WALL	SURFACE MOUNT	SEE PLAN	30	B,C
E	KRUEGER	1800	SUPPLY	FLOOR	SURFACE MOUNT	SEE PLAN	30	A,B,C
F	KRUEGER	1800	RETURN	FLOOR	SURFACE MOUNT	SEE PLAN	30	B,C
G	KRUEGER	1400	SUPPLY	CEILING	LAY-IN	24x24	30	C

NOTES:
A. BALANCE TO AIRFLOW INDICATED ON PLAN.
B. AT OWNERS OPTION, REPLACE, MATCH TYPE, SIZE, AND CAPACITY.
C. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
D. PROVIDE OPPOSED BLADE DAMPER THAT IS ADJUSTABLE FROM THE FACE OF THE DEVICE.

VAV BOX SCHEDULE

TAG	MANUFACTURER	MODEL	AREA SERVED	INLET SIZE (IN)	VALVE TYPE	COOLING MAX CFM	COOLING MIN CFM	HEATING MAX CFM	HEATING MIN CFM	HEATING COIL (HOT WATER)						NOTES
										BTUH	EAT	LAT	EWT	LWT	GPM	
VAV-101	KRUEGER	LMHS-VP	REFERENCES	8	2 WAY	750	350	350	350	15.2	55	95	180	160	1.52	A-H
VAV-102	KRUEGER	LMHS-VP	REFERENCES	8	2 WAY	750	350	350	350	15.2	55	95	180	160	1.52	A-H
VAV-103	KRUEGER	LMHS-VP	ADULT NON-FICTION	8	2 WAY	600	250	250	250	10.9	55	95	180	160	1.09	A-H
VAV-104	KRUEGER	LMHS-VP	ADULT NON-FICTION	10	2 WAY	900	350	350	350	15.2	55	95	180	160	1.52	A-H
VAV-105	KRUEGER	LMHS-VP	ADULT NON-FICTION	8	2 WAY	500	250	250	250	10.9	55	95	180	160	1.09	A-H
VAV-106	KRUEGER	LMHS-VP	MAIN LOBBY, STORAGE	8	2 WAY	700	300	700	300	30.4	55	95	180	160	3.04	A-H
VAV-107	KRUEGER	LMHS-VP	LIBRARY LOBBY	12	2 WAY	1250	600	1250	600	54.3	55	95	180	160	5.43	A-H
VAV-108	KRUEGER	LMHS-VP	WORK ROOM, LIBRARIAN	10	2 WAY	800	400	400	400	17.4	55	95	180	160	1.74	A-H
VAV-201	KRUEGER	LMHS-VP	LOBBY, DISPLAY	12	2 WAY	1200	600	600	600	26.0	55	95	180	160	2.60	A-H
VAV-202	KRUEGER	LMHS-VP	AUDITORIUM	10	2 WAY	850	400	400	400	17.4	55	95	180	160	1.74	A-H
VAV-203	KRUEGER	LMHS-VP	OFFICE	6	3 WAY	400	200	200	200	8.7	55	95	180	160	0.87	A-H
VAV-204	KRUEGER	LMHS-VP	GIFT SHOP	8	3 WAY	750	350	750	350	32.6	55	95	180	160	3.26	A-H
VAV-205	KRUEGER	LMHS-VP	DISPLAY	8	2 WAY	650	300	300	300	13.0	55	95	180	160	1.30	A-H
VAV-206	KRUEGER	LMHS-VP	DISPLAY	8	2 WAY	650	300	300	300	13.0	55	95	180	160	1.30	A-H
VAV-301	KRUEGER	LMHS-VP	STORAGE	6	2 WAY	400	200	300	200	13.0	55	95	180	160	1.30	A-H
VAV-302	KRUEGER	LMHS-VP	YOUNG ADULT LIBRARY	10	2 WAY	800	400	600	400	26.0	55	95	180	160	2.60	A-H
VAV-303	KRUEGER	LMHS-VP	YOUNG ADULT LIBRARY	10	2 WAY	800	400	600	400	26.0	55	95	180	160	2.60	A-H
VAV-304	KRUEGER	LMHS-VP	STORY ROOM	10	2 WAY	900	400	650	400	28.2	55	95	180	160	2.82	A-H
VAV-305	KRUEGER	LMHS-VP	EASY READERS	10	2 WAY	800	400	600	400	26.0	55	95	180	160	2.60	A-H
VAV-306	KRUEGER	LMHS-VP	EASY READERS	10	2 WAY	800	400	600	400	26.0	55	95	180	160	2.60	A-H
VAV-401	KRUEGER	LMHS-VP	YOUNG ADULT LIBRARY	10	2 WAY	850	400	650	400	28.2	55	95	180	160	2.82	A-H
VAV-402	KRUEGER	LMHS-VP	YOUNG ADULT LIBRARY	10	2 WAY	850	400	650	400	28.2	55	95	180	160	2.82	A-H
VAV-403	KRUEGER	LMHS-VP	GENEALOGY	8	2 WAY	650	300	500	300	21.7	55	95	180	160	2.17	A-H
VAV-404	KRUEGER	LMHS-VP	A/V STORAGE, CHECKOUT, CORRIDOR	12	2 WAY	1200	600	900	600	39.1	55	95	180	160	3.91	A-H
VAV-405	KRUEGER	LMHS-VP	MEN, WOMEN, CORRIDOR	6	2 WAY	300	150	225	150	9.8	55	95	180	160	0.98	A-H
VAV-406	KRUEGER	LMHS-VP	MUSEUM CORRIDOR, OFFICE, DIRECTOR	8	2 WAY	650	300	450	300	19.5	55	95	180	160	1.95	A-H
VAV-501	KRUEGER	LMHS-VP	CLASSROOM/MEETING ROOM	10	2 WAY	800	400	400	400	17.4	55	95	180	160	1.74	A-H
VAV-502	KRUEGER	LMHS-VP	JOHNSON DISPLAY	12	2 WAY	1100	500	500	500	21.7	55	95	180	160	2.17	A-H
VAV-503	KRUEGER	LMHS-VP	JOHNSON DISPLAY, MANUSCRIPTS	12	2 WAY	1100	500	500	500	21.7	55	95	180	160	2.17	A-H
VAV-504	KRUEGER	LMHS-VP	RESEARCH	6	2 WAY	300	150	150	150	6.5	55	95	180	160	0.65	A-H
VAV-505	KRUEGER	LMHS-VP	STOTT LIBRARY	10	2 WAY	850	400	400	400	17.4	55	95	180	160	1.74	A-H
VAV-506	KRUEGER	LMHS-VP	VAULT	6	2 WAY	350	150	150	150	6.5	55	95	180	160	0.65	A-H

NOTES:
A. PROVIDE WITH MANUFACTURER'S STANDARD HANGING KIT.
B. PROVIDE WITH DISCONNECT SWITCH.
C. INSTALL FLEXIBLE DUCT CONNECTOR AT INLET CONNECTION.
D. PROVIDE FACTORY INSTALLED, PRESSURE INDEPENDENT, DDC CONTROL PACKAGE. PROVIDE FACTORY INSTALLED CONTROL POWER TRANSFORMER.
E. HEATING COIL BASED ON 55 DEGF ENTERING AIR TEMPERATURE AND MAX 95 DEGF LEAVING AIR TEMPERATURE.
F. PROVIDE WITH MANUFACTURER'S RECOMMENDED VALVE PACKAGE INCLUDING SHUT-OFF VALVES, CONTROL VALVE, PETE'S PLUGS, ETC.
G. PROVIDE WITH MANUFACTURER'S STANDARD CLOSED CELL, FIBRE-FREE INSULATION. FIBERGLASS INSULATION IS NOT ALLOWED.
H. PROVIDE CONTROL TRANSFORMER AT VAV BOX CONTROLLER AS NEEDED. COORDINATE EXACT VOLTAGE WITH ELECTRICAL CONTRACTOR AND TEMPERATURE CONTROLS CONTRACTOR.

RETURN FAN SCHEDULE

TAG	AIR HANDLING UNIT SERVED	MANUFACTURER	MODEL	MOUNTING	AIR FLOW (CFM)	ESP (IN.WG)	MOTOR POWER	DRIVE TYPE	V/PH	NOTES
RF-1	AHU-1	LOREN-COOK	180 SQND	INLINE	5200	0.5	3 HP	DIRECT	208/3	ALL
RF-2	AHU-2	LOREN-COOK	150 SQN-D GALV	INLINE	3500	0.5	1.5 HP	DIRECT	208/3	ALL
RF-3	AHU-3	LOREN-COOK	165 SQN-D GALV	INLINE	4200	0.5	2 HP	DIRECT	208/3	ALL
RF-4	AHU-4	LOREN-COOK	150 SQN-D GALV	INLINE	3800	0.5	2 HP	DIRECT	208/3	ALL
RF-5	AHU-5	LOREN-COOK	150 SQN-D GALV	INLINE	3550	0.5	1.5 HP	DIRECT	208/3	ALL

NOTES:
A. PROVIDE WITH MANUFACTURER'S STANDARD HANGING KIT.
B. PROVIDE WITH DISCONNECT SWITCH.
C. PROVIDE WITH BACKDRAFT DAMPER.
D. PROVIDE WITH MANUFACTURER'S STANDARD ELECTRICALLY COMMUTED MOTOR.
E. INTERLOCK FAN WITH BUILDING TIMECLOCK TO OPERATE CONTINUOUSLY DURING OCCUPIED HOURS.

OUTDOOR AIR CALCULATIONS (MECHANICAL VENTILATION)

TAG	OCCUPANCY CLASSIFICATION	AREA (FT^2)	OCCUPANTS (QTY)	R_p (CFM/PERSON)	MIN OCCUPANT O/A FLOW (CFM)	R_a (CFM/FT^2)	MIN AREA O/A FLOW (CFM)	MIN REQ'D O/A FLOW (CFM)	PROVIDED MIN O/A FLOW (CFM)	NOTES
AHU-1	LIBRARY	3,570	36	5	180	0.12	429	775	900	ALL
	OFFICE	284	2	5	10	0.06	18			ALL
	LOBBY	1,205	13	5	65	0.06	73			ALL
AHU-2	RETAIL	313	5	7.5	37.5	0.12	38	825	1000	ALL
	OFFICE	159	1	5	5	0.06	10			
	LOBBY	1,018	11	5	55	0.06	62			ALL
	CLASSROOM	350	23	7.5	172.5	0.06	21			
	DISPLAY	1,167	47	7.5	352.5	0.06	71			
AHU-3	LIBRARY	2,976	45	7.5	337.5	0.12	358	696	800	ALL
AHU-4	LIBRARY	740	12	7.5	90	0.12	89	362	450	ALL
	OFFICE	626	4	5	20	0.06	38			
	MEETING ROOM	313	16	5	80	0.06	19			ALL
	CORRIDOR	418	--	--	--	0.06	26			
AHU-5	MEETING ROOM	284	15	5	75	0.06	18	804	900	ALL
	DISPLAY	1,810	73	7.5	547.5	0.06	109			ALL
	STORAGE	727	2	5	10	0.06	44			

NOTES:
A. R_p REPRESENTS PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE PER TABLE 403.3.
B. R_a REPRESENTS AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE PER TABLE 403.3.

5 BY 5 ENGINEERS
1100 Main Street, 4th Floor
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contact@5by5eng.com
5by5eng.com

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BROCK CENTLIVRE, LICENSED ENGINEER

Tenant Improvements for:
CHANUTE SANTA FE DEPOT HVAC IMPROVEMENTS

ISSUE DATES

M5.0

MECHANICAL SCHEDULES

BOILER SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL	FUEL TYPE	TURNDOWN	INPUT (MBH)	OUTPUT (MBH)	EFFICIENCY	GPM	EWT (DEGF)	LWT (DEGF)	ELECTRICAL V/PH/HZ	ELECTRICAL MCA	ELECTRICAL MOCP	NOTES
B-1	HEATING WATER	LAARS	CFH1000	NATURAL GAS	15:1	999	950	95%	95	160	180	120/1/60	6.2	15	A,B,C,D,E,F,G
B-2	HEATING WATER	LAARS	CFH1000	NATURAL GAS	15:1	999	950	95%	95	160	180	120/1/60	6.2	15	A,B,C,D,E,F,G

NOTES:
A. PROVIDE WITH AIR/DIRT SEPARATOR AND EXPANSION TANK AS SCHEDULED IN THE HYDRONICS SPECIALTIES SCHEDULE.
B. PROVIDE WITH BOILER CONTROLS AND BACNET COMMUNICATION CARD FOR CONNECTION TO THE BUILDING AUTOMATION SYSTEM. COORDINATE EXACT REQUIREMENTS WITH TEMPERATURE CONTROLS CONTRACTOR.
C. PROVIDE WITH MANUFACTURER'S FLUE KIT.
D. PROVIDE WITH INTEGRAL BOILER CONTROLS, ADJUSTABLE HIGH LIMIT AND MANUAL RESET.
E. PROVIDE WITH LOW AIR PRESSURE SWITCH, FLOW SWITCH AND COMBUSTION AIR FILTRATION.
F. PROVIDE WITH MANUFACTURER'S STANDARD CONTROLLER, DATA LOGGING FEATURES AND BUILDING MANAGEMENT SYSTEM INTEGRATION.
G. PROVIDE WITH CONDENSATE NEUTRALIZER AND PUMP FOR REMOVAL OF CONDENSATE

AIR COOLED CHILLER SCHEDULE

TAG	MANUF	MODEL	SERIES	TYPE	REQUIRED TONS	NOMINAL TONS	REFRIGERANT	EWT	LWT	DESIGN GPM	BALANCE D GPM	IPLV (EER)	ELECTRICAL VOLTAGE	ELECTRICAL MCA	ELECTRICAL MOCP	WEIGHT (LBS)	NOTES
CH-1	YORK	YLAA0048HJ	YLAA	SCROLL	45	50	R-454B	55	45	115	111	9.4	208/3/60	235	250	4000	ALL
CH-2	YORK	YLAA0048HJ	YLAA	SCROLL	45	50	R-454B	55	45	115	111	9.4	208/3/60	235	250	4000	ALL

NOTES:
A. PROVIDE WITH VFD, LINE REACTORS, CONTROL BOX HEATERS AND OTHER REQUIRED ACCESSORIES FOR LOW AMBIENT OPERATION (DOWN TO -10 DEGF).
B. EQUIPMENT SIZED FOR 100 DEGF AMBIENT.
C. PROVIDE WITH INTEGRAL HOT GAS BYPASS (OR OTHER ACCEPTABLE METHOD) FOR MODULATING CONTROL DOWN TO 10% OF TOTAL CAPACITY.
D. SIZE EQUIPMENT FOR USE WITH 30% PROPYLENE GLYCOL CONCENTRATION.
E. PROVIDE WITH PHASE LOSS UNDER/OVER VOLTAGE PROTECTION.
F. PROVIDE WITH CONDENSER COIL HAIL GUARDS/PROTECTION & LOUVERED PROTECTION PANELS FOR THE FULL UNIT.
G. PROVIDE WITH SINGLE POINT POWER CONNECTION AND INTEGRAL DISCONNECT SWITCH.
H. PROVIDE WITH WATER FLOW SWITCH AND WATER STRAINER.
I. PROVIDE WITH RAPID RESTART FEATURES SUCH THAT CHILLER CAN BE OPERATIONAL UP TO 80% OF TOTAL LOAD IN LESS THAN 5 MIN AFTER RESTART.
J. DESIGN GPM IS INTENDED TO IDENTIFY FLOW CAPACITY OF THE CHILLER. BALANCED GPM IS INTENDED TO IDENTIFY INITIAL BALANCED GPM OF THE CHILLER.
K. PROVIDE WITH BACNET CARD FOR INTEGRATION TO THE BUILDING AUTOMATION SYSTEM.
L. PROVIDE WITH INTEGRAL CHILLED WATER PUMP MOUNTED IN THE CHILLER CABINET. REFER TO PUMP SCHEDULE AND PIPING DETAILS FOR ADDITINOAL REQUIREMENTS.

PUMP SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL / SERIES	MOUNTING	DESIGN FLOW (GPM)	BALANCED FLOW (GPM)	HEAD (FT)	MIN HP	V/PH/HZ	VFD	NOTES
CWP-1	PRIMARY PUMP	BY CHILLER MANUF		VERTICAL INLINE	120	110	40	3	208/3/60	Y	C,D,F
CWP-2	PRIMARY PUMP	BY CHILLER MANUF		VERTICAL INLINE	120	110	40	3	208/3/60	Y	C,D,F
CWP-3	SECONDARY PUMP	ARMSTRONG	4380 DEPM	VERTICAL INLINE	180	170	80	5	208/3/60	Y	A,B,C,D
CWP-4	SECONDARY PUMP	ARMSTRONG	4380 DEPM	VERTICAL INLINE	180	170	80	5	208/3/60	Y	A,B,C,D
HWP-1	PRIMARY PUMP	BY BOILER MANUF		VERTICAL INLINE	100	95	15	1	208/3/60	Y	C,D,E
HWP-2	PRIMARY PUMP	BY BOILER MANUF		VERTICAL INLINE	100	95	15	1	208/3/60	Y	C,D,E
HWP-3	SECONDARY PUMP	ARMSTRONG	4380 DEPM	VERTICAL INLINE	110	100	70	3	208/3/60	Y	A,B,C,D
HWP-4	SECONDARY PUMP	ARMSTRONG	4380 DEPM	VERTICAL INLINE	110	100	70	3	208/3/60	Y	A,B,C,D

NOTES:
A. PROVIDE WITH AIR SEPARATOR AND EXPANSION TANK AS SCHEDULED.
B. SUPPORT PUMP FROM FLOOR WITH VERTICAL SUPPORTS INDEPENDENT FROM PIPING.
C. PROVIDE WITH INTEGRAL VFD FOR VARIABLE SPEED CONTROL. COORDINATE WITH ELECTRICAL CONTRACTOR AND TEMPERATURE CONTROLS CONTRACTOR.
D. PUMP MOTOR SHALL BE NON-OVERLOADING THROUGHOUT THE FULL RANGE OF THE PUMP CURVE.
E. PUMP SHALL BE APPROVED BY BOILER MANUFACTURER AND SIZED ACCORDINGLY. INSTALL PUMP PER BOILER MANUFACTURER'S RECOMMENDATIONS AND DETAILS ON DRAWINGS.
F. PUMP SHALL BE PROVIDED WITH ASSOCIATED CHILLER AND SIZED ACCORDINGLY. INSTALL PUMP AND CHILLER PER CHILLER MANUFACTURER'S RECOMMENDATIONS AND DETAILS ON DRAWINGS.

HYDRONIC SPECIALTIES SCHEDULE

SYSTEM	OPERATING TEMP	SYSTEM FLOW (GPM)	SYSTEM OPERATING PRESSURE	AIR/DIRT SEPARATOR TAG	AIR/DIRT SEPARATOR MANUFACTURER	AIR/DIRT SEPARATOR MODEL	AIR/DIRT SEPARATOR CONNECTION SIZE	AIR/DIRT SEPARATOR PRESSURE DROP (FT)	AIR/DIRT SEPARATOR NOTES	EXPANSION TANK TAG	EXPANSION TANK MANUFACTURER	EXPANSION TANK MODEL	EXPANSION TANK TANK VOLUME	EXPANSION TANK ACCEPTANCE VOLUME	EXPANSION TANK NOTES
HEATING WATER	140 - 180 DEGF	190	50 PSI	AS-1	ARMSTRONG	DAS-R-4	4"	2 (MAX)	A,D,E,F	ET-1	ARMSTRONG	AS00-L	132	132	A,B,C,G,H
CHILLED WATER	45 - 60 DEGF	260	50 PSI	AS-2	ARMSTRONG	DAS-R-4	4"	2 (MAX)	A,D,E,F	ET-2	ARMSTRONG	AS00-L	132	132	A,B,C,G,H

NOTES:
A. CONSTRUCTED IN ACCORDANCE WITH ASME SECTION VIII, DIVISION I, LATEST EDITION.
B. PROVIDE WITH FULLY ADJUSTABLE FIELD AIR CHARGING AND PRIMED EXTERIOR.
C. PROVIDE WITH "BULLS EYE" SIGHT GLASS.
D. PROVIDE WITH HANGING BRACKETS AND ALL-THREAD HANGING RODS FOR MOUNTING FROM STRUCTURE.
E. PROVIDE WITH REMOVABLE COVER AND BLOW-DOWN VALVE.
F. AIR/DIRT SEPARATOR SHALL BE RATED TO 150 PSI.
G. EXPANSION TANK SHALL BE SIZED ASSUMING SYSTEM WILL BE OFF DURING OFF-SEASON MONTHS. SYSTEM WATER TEMPERATURE WILL NORMALIZE TO 70 DEGF WHEN SYSTEM IS OFF.
H. PROVIDE WITH VIBRATION ISOLATORS FOR MOUNTING ON GROUND PAD.

HUMIDIFIER SCHEDULE

TAG	SERVICE	MANUFACTURER	MIN CAPACITY (LBS/HR)	RATED CAPACITY (LBS/HR)	STEAM GENERATOR MODEL	STEAM GENERATOR INPUT (KW)	STEAM GENERATOR TURNDOWN	DISPERSION MANIFOLD AIR FLOW (CFM)	ENTERING S/A (°F DB)	ENTERING S/A (% RH)	LEAVING S/A (°F DB)	LEAVING S/A (% RH)	ZONE DESIGN (°F DB)	ZONE DESIGN (% RH)	AIR TUNNEL SIZE (W" x H")	MANIFOLD SIZE (W" x H")	TUBES (QTY)	MAX VAPOR TRAIL (IN)	ELECTRICAL KW	ELECTRICAL V/PH	ELECTRICAL MCA	ELECTRICAL MOCP	NOTES
HUM-1	AHU-1	CONDAIR	22.5	29.0	RS SERIES	9.8	MOD 5:1	6,000	55.0	39%	55.0	48%	70.0	30%	SEE PLANS	TBD	TBD	14.0	9.8	208/3/60	27.2	35.0	ALL
HUM-2	AHU-2	CONDAIR	22.5	29.0	RS SERIES	9.8	MOD 5:1	4,500	55.0	39%	55.0	51%	70.0	30%	SEE PLANS	TBD	TBD	14.0	9.8	208/3/60	27.2	35.0	ALL
HUM-3	AHU-3	CONDAIR	22.5	29.0	RS SERIES	9.8	MOD 5:1	4,500	55.0	39%	55.0	51%	70.0	30%	SEE PLANS	TBD	TBD	14.0	9.8	208/3/60	27.2	35.0	ALL
HUM-4	AHU-4	CONDAIR	22.5	29.0	RS SERIES	9.8	MOD 5:1	4,500	55.0	39%	55.0	51%	70.0	30%	SEE PLANS	TBD	TBD	14.0	9.8	208/3/60	27.2	35.0	ALL
HUM-5	AHU-5	CONDAIR	22.5	29.0	RS SERIES	9.8	MOD 5:1	4,500	55.0	39%	55.0	51%	70.0	30%	SEE PLANS	TBD	TBD	14.0	9.8	208/3/60	27.2	35.0	ALL

APPROVED MANUFACTURERS: ARMSTRONG, CAREL, CONDAIR, DRISTEEM, NEPTRONIC.

NOTES:
1. PROVIDE WITH INSULATED DISPERSION MANIFOLD AND TUBES.
2. PROVIDE WITH 1'-8" TALL STAND FOR MANIFOLD TO ALLOW FOR INSTALLATION OF PIPING WITHIN AIR TUNNEL.
3. PROVIDE WITH DRAINAGE PIPING PIPED AS SHOWN ON DRAWINGS. ALL PIPING SHALL BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. SIZE MANAFOLD AND TUBE QUANTITY FOR DISPERSION MANIFOLD PER MANUFACTURER'S RECOMMENDATIONS BASED ON DUCT SYSTEM PARAMETERS AND SIZE. COORDINATE WITH EXISTING CONDITIONS AND OTHER TRADES.
5. PROVIDE BACNET INTERFACE AND ASSOCIATED CONTROL POINTS FOR CONNECTION TO THE BUILDING AUTOMATION SYSTEM. OEPRATE HUMIDIFIER PER AHU SEQUENCE OF OPERATION.

5 BY 5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
Kansas COA: E-2361
913-689-9449
contact@5by5eng.com
5by5eng.com

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Tenant Improvements for:
CHANUTE SANTA FE DEPOT HVAC IMPROVEMENTS

ISSUE DATES

M5.1

MECHANICAL SCHEDULES