IMPROVEMENTS TO HVAC
BROADWAY STATE OFFICE BUILDING
JEFFERSON CITY, MISSOURI

KLINGNER
& ASSOCIATES, P.C.
Engineers • Architects • Surveyors

OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR
OFFICE OF ADMINISTRATION

PROJECT MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DESIGNER: KLINGNER & ASSOCIATES, P.C.

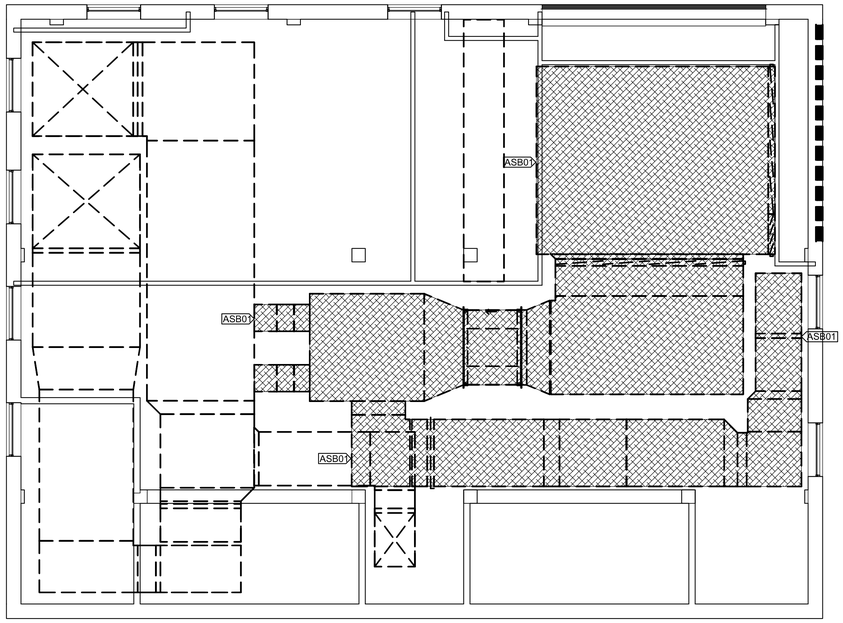
PROJECT NUMBER: O2324-01

SITE NUMBER: 1001 - CAPITOL COMPLEX
ASSET NUMBER: 3101001041 - BROADWAY SOB

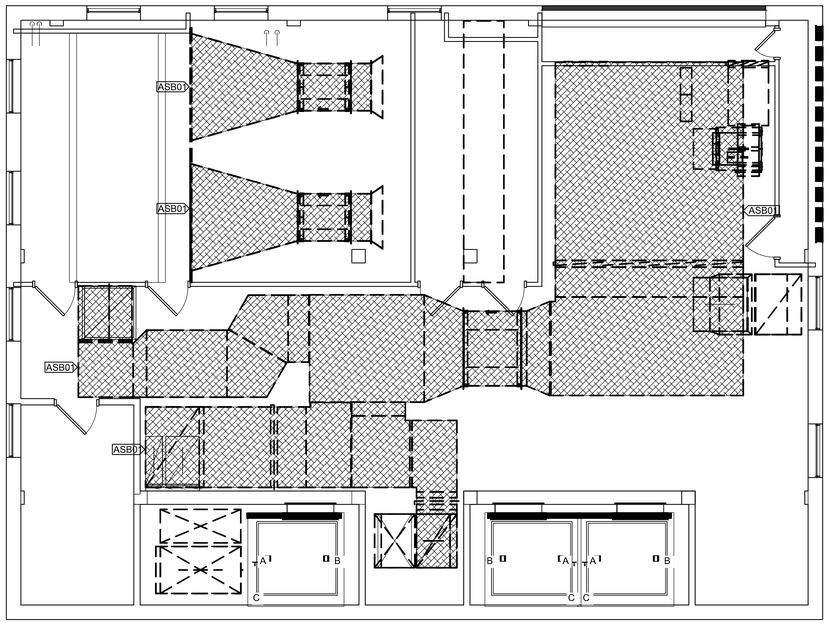
SHEET NUMBER:

G001

MAY 30, 2024



2 ENLARGED PENTHOUSE- UPPER DUCT - ASBESTOS ABATEMENT
3/16" = 1'-0"



1 ENLARGED PENTHOUSE - LOW DUCT - ASBESTOS ABATEMENT
3/16" = 1'-0"

SHEET LEGEND

ASBESTOS CONTAINING CONSTRUCTION MASTIC ON EXTERIOR OF INSULATION - APPROX. 4,000 SF OF INSULATION

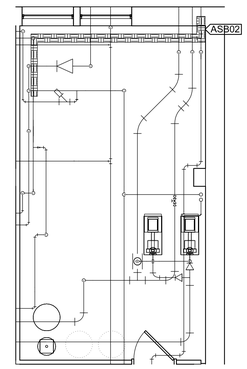
ASBESTOS CONTAINING THERMAL PIPE INSULATION - APPROX. 18 LF OF INSULATION

KEYNOTE LEGEND

VALUE	DESCRIPTION
ASB01	REMOVE ASBESTOS CONTAINING MASTIC ON EXTERIOR INSULATION AND ANY OVERCOAT.
ASB02	REMOVE ASBESTOS CONTAINING INSULATION FROM EXISTING 5 INCH LOW PRESSURE CONDENSATE PIPING FROM TIE-IN POINT TO TUNNEL ENTRANCE. COORDINATE WITH MECHANICAL FOR EXACT TIE-IN LOCATION.

GENERAL SHEET NOTES:

1. ALL ASBESTOS ABATEMENT SHALL BE CONDUCTED ACCORDING TO EPA NESHAP AND OSHA REGULATIONS WHERE APPLICABLE AND AS DESCRIBED IN THE PROJECT MANUAL.
2. ALL ASBESTOS ABATEMENT SHALL BE CONDUCTED IN REGULATED AREAS.
3. PREVENT ACCESS BY THE PUBLIC TO ALL PATHS FOR ASBESTOS ABATEMENT WORKERS AND WASTE LOADOUT BY EITHER A HARD SECURITY BARRIER OR CRITICAL BARRIERS AND LOCKED DOORS AS APPLICABLE.
4. DURING CONSTRUCTION OF SEPARATION BARRIERS AND CONTAINMENTS, THE CONTRACTOR SHALL EXERCISE DUE CAUTION TO PREVENT DISTURBANCE OF ACBM DURING THE PLACEMENT OF THE BARRIERS.
5. ASBESTOS CONTAINING CONSTRUCTION MASTIC MAY BE REMOVED BY REMOVAL OF THE ENTIRE INSULATION SYSTEM.
6. ANY ASBESTOS CONTAINING CONSTRUCTION MASTIC THAT IS ALSO LOCATED ON THE HVAC COMPONENTS SHALL BE PROPERLY REMOVED AND DISPOSED. THIS MAY INCLUDE MASTIC APPLIED TO THE INSULATION BUT OVERLAPPED ON HVAC COMPONENTS DURING APPLICATION.
7. ASBESTOS ABATEMENT CONTRACTOR SHALL PROTECT ALL CONDUITS AND EQUIPMENT TO REMAIN.



3 ENLARGED MECHANICAL ROOM - ASBESTOS ABATEMENT
3/16" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
LANCE L. SCHUETTE
NUMBER PE-2008008674
05-30-24
PROFESSIONAL ENGINEER

LANCE L. SCHUETTE - ENGINEER
MO # - 2008008674

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CHECKED BY: GCS
DESIGNED BY: LLS

SHEET TITLE:

ASBESTOS ABATEMENT PLAN

SHEET NUMBER:

ASB101

GENERAL ELECTRICAL NOTES:

1. APPLICABLE STANDARDS: NFPA-70, NFPA-101, STATE BUILDING CODES, AND THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) OF 1971 AND ALL AMENDMENTS THERETO; EQUIPMENT, DEVICES, APPARATUS, SYSTEMS, AND INSTALLATIONS SHALL BE ENTIRELY SUITABLE AND SAFE FOR EACH INTENDED APPLICATION AND BE IN FULL COMPLIANCE WITH APPLICABLE STANDARDS, REQUIREMENTS, RULES, REGULATIONS, CODES, STATUTES, ORDINANCES, ETC., OF MUNICIPAL, COUNTY, AND STATE GOVERNMENTS, OWNER'S INSURANCE COMPANY, LOCAL UTILITIES, AND LABOR REGULATIONS. NOTHING CONTAINED IN THESE PLANS AND SPECIFICATIONS SHALL BE CONSTRUED TO CONFLICT WITH THESE LAWS, CODES, AND ORDINANCES.
2. DRAWINGS ARE SCHEMATIC AND SHOW APPROXIMATE LOCATIONS OF ELECTRICAL EQUIPMENT. EXACT LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR AND VERIFIED IN THE FIELD PRIOR TO ROUGH-IN.
3. INSTALLATIONS WHICH INCLUDE ELECTRICAL FIXTURES, DEVICES, CONDUIT, SWITCHES, PANELS, HANGERS, WIRE, CABLE, STANDARDS, ETC., MUST BE ENTIRELY SUITABLE FOR TEMPERATURES, HUMIDITY, DAMP AREAS, VOLTAGE, FREQUENCY, AND ALL INSTALLATION CONDITIONS ENCOUNTERED.
4. INSTALLATION MUST BE ENTIRELY SAFE IN EVERY RESPECT, AND MUST NOT CREATE ANY CONDITIONS OF ANY KIND WHICH WILL BE HARMFUL TO ANY OCCUPANT OF THE BUILDING. IF CONTRACTOR BELIEVES THAT INSTALLATION WILL NOT BE SAFE FOR ALL PEOPLE, HE/SHE SHALL SO REPORT IN WRITING TO ENGINEER BEFORE ANY EQUIPMENT IS PURCHASED OR WORK IS INSTALLED, GIVING EXACT RECOMMENDATIONS, AND REASONS FOR THEM.
5. GROUNDING: ALL GROUNDING SHALL BE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC).
6. INSTALLATION OF ELECTRICAL DEVICES SHALL BE COORDINATED WITH OTHER TRADES AS NECESSARY TO PREVENT ANY CONFLICTS DURING CONSTRUCTION.
7. WHERE WALL MOUNTED SENSOR LOCATIONS ARE SHOWN, CONTRACTOR SHALL PROVIDE A RECESSED WALL BOX WITH CONDUIT TO AN ACCESSIBLE LOCATION. IN AREAS WHERE SURFACE MOUNTED BOXES ARE REQUIRED, A SURFACE MOUNTED BOX AND CONDUIT TO 10' AFF SHALL BE PROVIDED (OR TO THE EQUIPMENT LOCATION, WHICHEVER IS CLOSER).
8. LIGHTING: FURNISH AND INSTALL ALL LIGHTING FIXTURES COMPLETE WITH LAMPS IN ACCORDANCE WITH THE LIGHTING FIXTURE SCHEDULE SHOWN ON THE DRAWINGS. ALL UNITS SHALL BE COMPLETE WITH SUSPENSION ACCESSORIES, CANOPIES, SOCKETS, LOUVERS, FRAMES, AND ROUGH-IN BOXES, WIRED AND ASSEMBLES TO FURNISH A COMPLETE WORKABLE SYSTEM.
9. EQUIPMENT GROUNDING CONDUCTORS SHALL BE PULLED WITH ALL BRANCH CIRCUITS. CONDUIT SHALL NOT BE USED AS A GROUND U.N.O.
10. CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS, ACCESSORIES, TOOLS, EQUIPMENT, TRANSPORTATION, LABOR, SERVICES AND OPERATIONS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM.
11. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ARRANGE FOR ALL INSPECTIONS REQUIRED BY STATE OR LOCAL AUTHORITIES.
12. MATERIALS MUST BE NEW, IN FIRST CLASS CONDITION.
13. CONDUIT SHALL BE SEPARATELY HUNG AND ANCHORED, FREE TO EXPAND AND CONTRACT QUIETLY, WITHOUT IMPOSING STRAINS ON STRUCTURE, DEVICES, AND EQUIPMENT. CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES.
14. LISTED MANUFACTURERS ARE BASIS OF DESIGN. SEE SPECIFICATIONS FOR ADDITIONAL APPROVED MANUFACTURERS.

GENERAL HVAC NOTES:

1. ALL MECHANICAL INSTALLATIONS SHALL CONFORM TO NFPA 90A, SMACNA, ASHRAE AND ALL OTHER STATE AND LOCAL CODES.
2. SUPPLY (AS A MINIMUM) FRESH AIR REQUIRED BY ANSI/ASHRAE STANDARD 62-1989 AS NOTED ON PLANS.
3. UPON COMPLETION OF CONSTRUCTION, REPLACE ALL FILTERS.
4. ALL 90 DEGREE BENDS IN AIR DUCTS SHALL HAVE TURNING VANES. VANES SHALL BE SINGLE THICKNESS WITH RADIUS = 4.5" AND SPACING = 2.25".
5. ALL MAIN AND BRANCH DUCTS SHALL BE RECTANGULAR GALV. STEEL SIZED AS NOTED ON THE PLANS. SIZE SHALL REFER TO UNOBSTRUCTED INTERNAL AIRFLOW AREA. DUCTWORK SHALL BE MOUNTED TIGHT TO JOISTS ABOVE OR RUN IN SPACE BETWEEN JOISTS, U.N.O. CLEARANCES FROM FINISH FLOOR SHALL BE MAXIMIZED WHERE POSSIBLE.
6. ALL RUNOUTS TO DIFFUSERS SHALL HAVE A VOLUME CONTROL DAMPER AT THE CONNECTION TO THE BRANCH OR MAIN DUCT.
7. FLEXIBLE DUCT SHALL BE A MAXIMUM OF FIVE (5) FEET IN LENGTH AND SHALL BE ROUTED TO MINIMIZE LENGTH WITH NO KINKS OR SHARP BENDS.
8. A FLEXIBLE CONNECTION BETWEEN MECHANICAL UNITS AND BOTH THE SUPPLY AND RETURN AIR DUCTWORK IS REQUIRED FOR VIBRATION ISOLATION AND NOISE REDUCTION.
9. PROVIDE UP TO TWO (2) ADDITIONAL TEST AND BALANCE VISITS FOR SEASONAL TESTING AND ADJUSTMENTS.
10. INSULATE DUCTWORK AS REQUIRED IN THE SPECIFICATIONS.
11. SERVICE OPENINGS SHALL BE LOCATED IN THE DUCTWORK BEFORE AND AFTER EACH TURNING VANE. SEE SPECIFICATIONS AND NFPA 90A FOR LOCATIONS OF ADDITIONAL ACCESS DOORS AND PANEL REQUIRED THROUGHOUT THE AIR DISTRIBUTION SYSTEM.
12. LISTED MANUFACTURERS ARE BASIS OF DESIGN. SEE SPECIFICATIONS FOR ADDITIONAL APPROVED MANUFACTURERS.

ELECTRICAL SYMBOLS

- SINGLE RECEPTACLE
- STANDARD DUPLEX RECEPTACLE
- EMERGENCY POWER DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE WITH ISOLATED GROUND
- AC — DUPLEX RECEPTACLE INSTALLED ABOVE COUNTER
- 4F — DUPLEX RECEPTACLE INSTALLED AT DISTANCE ABOVE FINISHED FLOOR
- GFCI — DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER
- CLNG — DUPLEX CEILING RECEPTACLE
- WP GFCI — DUPLEX GFCI RECEPTACLE WITH WEATHERPROOF ENCLOSURE
- USB — DUPLEX GFCI RECEPTACLE WITH DUPLEX USB CHARGER
- USB CHARGER OUTLET QUANTITY INDICATED
- FOURPLEX RECEPTACLE
- FOURPLEX EMERGENCY RECEPTACLE
- 208/240 VOLT 2-POLE RECEPTACLE
- FLOOR RECEPTACLE (FOURPLEX SHOWN)
- SPECIAL RECEPTACLE
- RECEPTACLE ON DROP CORD (DUPLEX SHOWN)
- RECEPTACLE ON CORD REEL (DUPLEX SHOWN)
- SINGLE POLE SWITCH
- 3-WAY SWITCH
- 4-WAY SWITCH
- D — DIMMER SWITCH
- K — KEYED SWITCH
- T — TIMER SWITCH
- OCS — OCCUPANCY SENSOR SWITCH
- VS — VACANCY SENSOR SWITCH
- LV — LOW VOLTAGE SWITCH
- LVD — LOW VOLTAGE SWITCH WITH DIMMING
- FSC — FAN SPEED CONTROL SWITCH
- MP — MOTOR HORSEPOWER RATED SWITCH
- HOA — HAND/OFF/AUTO SWITCH
- LPP — LIGHTING CONTROL POWER PACK
- LRC — LIGHTING CONTROL ROOM CONTROLLER
- 4F OCS — WALL MOUNT OCCUPANCY SENSOR AT DISTANCE ABOVE FINISHED FLOOR (SENSOR TYPE UNSPECIFIED)
- PI OCS — WALL MOUNT OCCUPANCY SENSOR PASSIVE INFRARED
- US OCS — WALL MOUNT OCCUPANCY SENSOR PASSIVE INFRARED
- DT OCS — WALL MOUNT OCCUPANCY DUAL TECHNOLOGY
- CEILING MOUNT OCCUPANCY SENSOR
- LIGHT LEVEL SENSOR (TYPE DENOTED)
- PC — PHOTOCELL LIGHT LEVEL SENSOR
- TC — TIME CLOCK
- 5F JBOX — JUNCTION BOX WALL MOUNTED A DISTANCE ABOVE FINISHED FLOOR
- JBOX — JUNCTION BOX CEILING MOUNTED
- JUNCTION BOX RECESSED IN FLOOR
- PB — CONDUIT PULL BOX
- SAFETY DISCONNECT SWITCH (FUSED)
- SAFETY DISCONNECT SWITCH (NON-FUSED)
- CIRCUIT BREAKER PANEL
- MOTOR (SEE SCHEDULE)
- HAND OR HAIR DRYER (TYPE NOTED)
- LOW VOLTAGE POWER CIRCUIT
- LINE VOLTAGE POWER CIRCUIT
- 2"ø EMT — CONDUIT SIZE AND TYPE
- SR — SURFACE MOUNTED RACEWAY
- CONDUIT TRANSITION UP
- CONDUIT TRANSITION DOWN
- BRANCH CIRCUIT HOME RUN
- -UE- UNDERGROUND ELECTRICAL
- -UHVE- UNDERGROUND HIGH VOLTAGE ELECTRICAL
- -UT- UNDERGROUND TELEPHONE
- -UCOM- UNDERGROUND COMMUNICATIONS
- -UTV- UNDERGROUND CABLE TELEVISION (CATV OR CCTV)
- -UFIBR- UNDERGROUND FIBER OPTIC
- -OHE- OVERHEAD ELECTRIC
- -OHT- OVERHEAD TELEPHONE
- DATA RACK
- CABLE TRAY
- DATA RECEPTACLE
- PHONE RECEPTACLE
- DUAL DATA/PHONE RECEPTACLE
- MULTIPLE DATA/PHONE RECEPTACLE
- WIRELESS ACCESS POINT
- CABLE TELEVISION OUTLET
- T — THERMOSTAT
- TS — REMOTE TEMPERATURE SENSOR
- H — HUMIDISTAT
- CO2 — CARBON DIOXIDE SENSOR
- CO — CARBON MONOXIDE SENSOR
- FH — FIRE ALARM HORN/STROBE (WALL MOUNTED)
- F — FIRE ALARM STROBE (WALL MOUNTED)
- FP — FIRE ALARM PULL STATION (WALL MOUNTED)
- FSH — FIRE ALARM SPEAKER STROBE (WALL MOUNTED)
- FSH — FIRE ALARM SPEAKER HORN/STROBE (CEILING MOUNTED)
- FS — FIRE ALARM SPEAKER (CEILING MOUNTED)
- FSH — FIRE ALARM SPEAKER STROBE (CEILING MOUNTED)
- FIRE ALARM CEILING MOUNT SMOKE DETECTOR
- FIRE ALARM CEILING MOUNT HEAT DETECTOR
- FIRE ALARM DUCT MOUNTED SMOKE DETECTOR
- FR — FIRE ALARM SHUT DOWN RELAY
- FIRE ALARM DOOR CLOSER
- FIRE ALARM DOOR CLOSER (WALL MOUNTED)
- FIRE ALARM DOOR CLOSER (FLOOR MOUNTED)
- FIRE ALARM DOOR FLOW SWITCH
- FIRE ALARM CONTROL PANEL
- FA ANNUN — FIRE ALARM REMOTE ANNUNCIATOR PANEL
- ACR — ACCESS CONTROL CARD READER
- ACCESS CONTROL DOOR CONTACT
- ES — ACCESS CONTROL ELECTRIC STRIKE
- EL — ACCESS CONTROL ELECTRIC LATCH
- PS — ACCESS CONTROL POWER SUPPLY
- SECURITY CAMERA (FIXED)
- SECURITY CAMERA (PAN/TILT/ZOOM)
- MASS NOTIFICATION SPEAKER (CEILING MOUNTED)
- MASS NOTIFICATION SPEAKER (WALL MOUNTED)
- MASS NOTIFICATION TRUMPET SPEAKER (WALL MOUNTED)
- CONNECT TO EXISTING

PLUMBING AND PIPING SYMBOLS

- ? — PIPE SIZE TAG (DIAMETER)
- ABOVE GROUND PIPING
- 1/8" / 12" SLOPE — PIPE SLOPE TAG
- BELOW GROUND PIPING
- INV. ELEV:-5' - 0 127/128" — PIPE INVERT ELEVATION TAG
- (E) — EXISTING PIPE TAG
- PIPING BEING DEMOLISHED
- G — NATURAL GAS
- CA — COMPRESSED AIR
- CD — CONDENSATE DRAINAGE
- CW — DOMESTIC COLD WATER
- HW — DOMESTIC HOT WATER
- HWC — DOMESTIC HOT WATER-CIRCULATING
- GV — GREASE VENT
- GW — GREASE WASTE
- -V — SANITARY VENT
- SS — SANITARY SEWER
- SD — STORM DRAINAGE
- OSD — STORM DRAINAGE-OVERFLOW
- PIPE DROP
- PIPE RISE
- PIPE TEE
- CAP
- SS SS SS — PLUG
- SS — REDUCING 45 DEGREE TEE
- 45 DEGREE TEE
- M — DOMESTIC WATER METER
- FLOW MEASURING AND BALANCING DEVICE
- BALL VALVE
- CHECK VALVE
- THREE WAY VALVE
- MOTORIZED CONTROL VALVE
- THREE WAY MOTORIZED CONTROL VALVE
- PRESSURE REDUCING VALVE
- BUTTERFLY VALVE
- CONNECT TO EXISTING

HVAC SYMBOLS

- 16"x8" — SQUARE DUCT SIZE TAG (WIDTH x HEIGHT)
- (E) — EXISTING DUCT TAG
- DUCT BEING DEMOLISHED
- SA — SUPPLY AIR
- OA — OUTSIDE AIR
- RA — RETURN AIR
- EA — EXHAUST AIR
- AIR INLET/OUTLET
- 500 — TYPE (SEE SCHEDULE) GRILLES, REGISTERS, AND DIFFUSERS TAG; CFM
- AHU-8 — MECHANICAL EQUIPMENT
- CARBON DIOXIDE SENSOR — CO2 — TH — TEMPERATURE & HUMIDITY SENSOR
- CARBON MONOXIDE SENSOR — CO — TS — TEMPERATURE SENSOR
- NITROGEN DIOXIDE SENSOR — NO2 — T — THERMOSTAT
- HUMIDITY SENSOR — HS — SW — MANUAL SWITCH
- HUMIDISTAT — H — S — SENSOR
- ACCESS DOOR
- MANUAL BALANCING DAMPER
- 0 CFM — BAROMETRIC DAMPER (BACKDRAFT)
- M — MOTORIZED CONTROL DAMPER (OPPOSED BLADE)
- M — MOTORIZED CONTROL DAMPER (PARALLEL BLADE)
- F — FIRE DAMPER (FUSIBLE LINK)
- F S — SMOKE DAMPER (FIRE ALARM CONNECTION)
- F C — COMBINATION FIRE/SMOKE DAMPER (FUSIBLE LINK AND FIRE ALARM CONNECTION)
- CONNECT TO EXISTING

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI — ANTHONY LOUIS DIEWOLD NUMBER PE-2016000028 — PROFESSIONAL ENGINEER

Expires: 12-31-2024

ANTHONY L. DIEWOLD - ENGINEER
MO # - 2016000028

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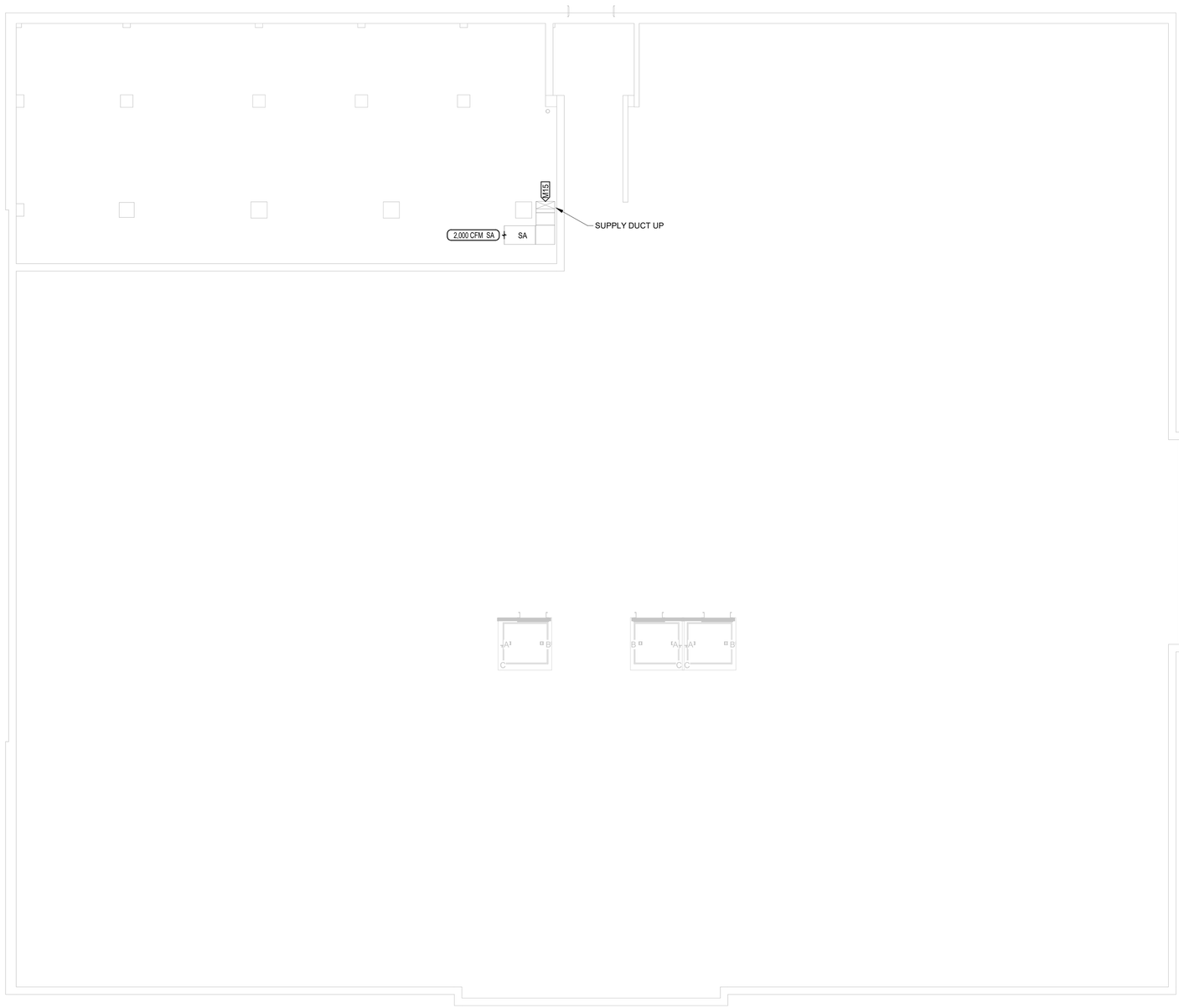
GENERAL NOTES & SYMBOLS

SHEET NUMBER:

MEP001



1 BASEMENT - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M15	REFER TO SHEET M101 FOR BRANCH BALANCE DAMPER LOCATION.

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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BASEMENT - HVAC PLAN

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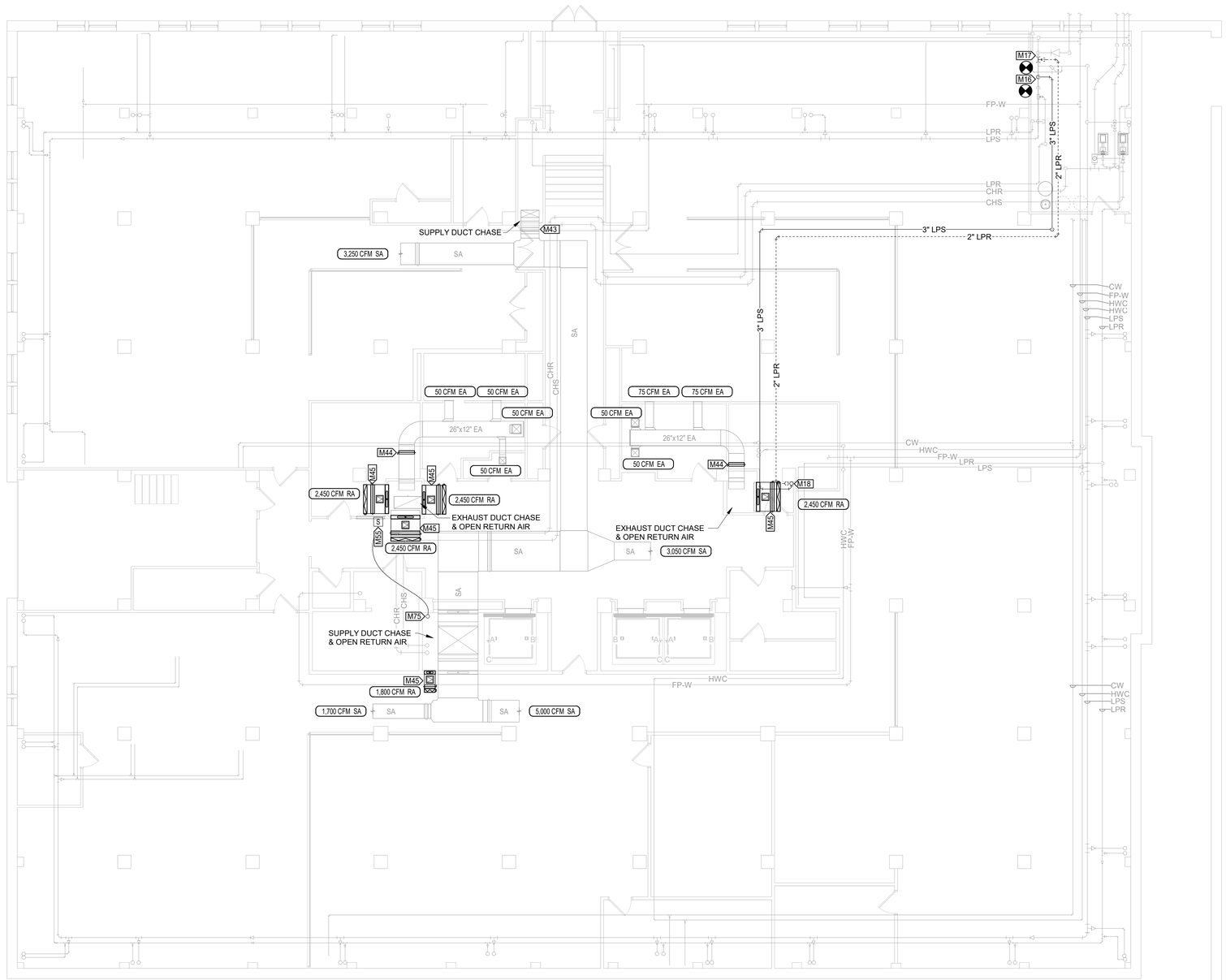
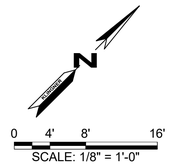
M100



1 FIRST FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND	
VALUE	**DESCRIPTION**
M16	CONNECT 3" LPS TO EXISTING BLIND FLANGE ON STEAM HEADER IN THIS LOCATION. PROVIDE SLOW OPENING ELECTRIC ISOLATION VALVE WITH ONE HOUR STROKE TIME. INTEGRATE TO EXISITING BUILDING AUTOMATION SYSTEM AND COMMAND VALVE OPEN WHEN STEAM IS AVAILABLE AND OUTSIDE AIR TEMPERATURE IS BELOW 45Â°F (ADJ).
M17	CONNECT 2" LPR TO EXISTING LOW PRESSURE STEAM CONDENSATE RETURN PIPING BELOW STEAM HEADER IN THIS LOCATION. PROVIDE GATE ISOLATION VALVE. REINSULATE CONDENSATE MAIN FROM CONNECTION POINT TO TUNNEL ENTRANCE.
M18	ROUTE 3" LPS AND 2" LPR UP ADJACENT TO BUILDING COLUMN.
M43	BASEMENT LEVEL SUPPLY AIR BALANCE DAMPER.
M44	REPLACE EXISTING MANUAL BALANCING DAMPER. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.
M75	PROVIDE 2-1/2" TYPE L COPPER PIPE FOR OUTSIDE STATIC PRESSURE REFERENCE AND ROUTE UP IN CHASE.



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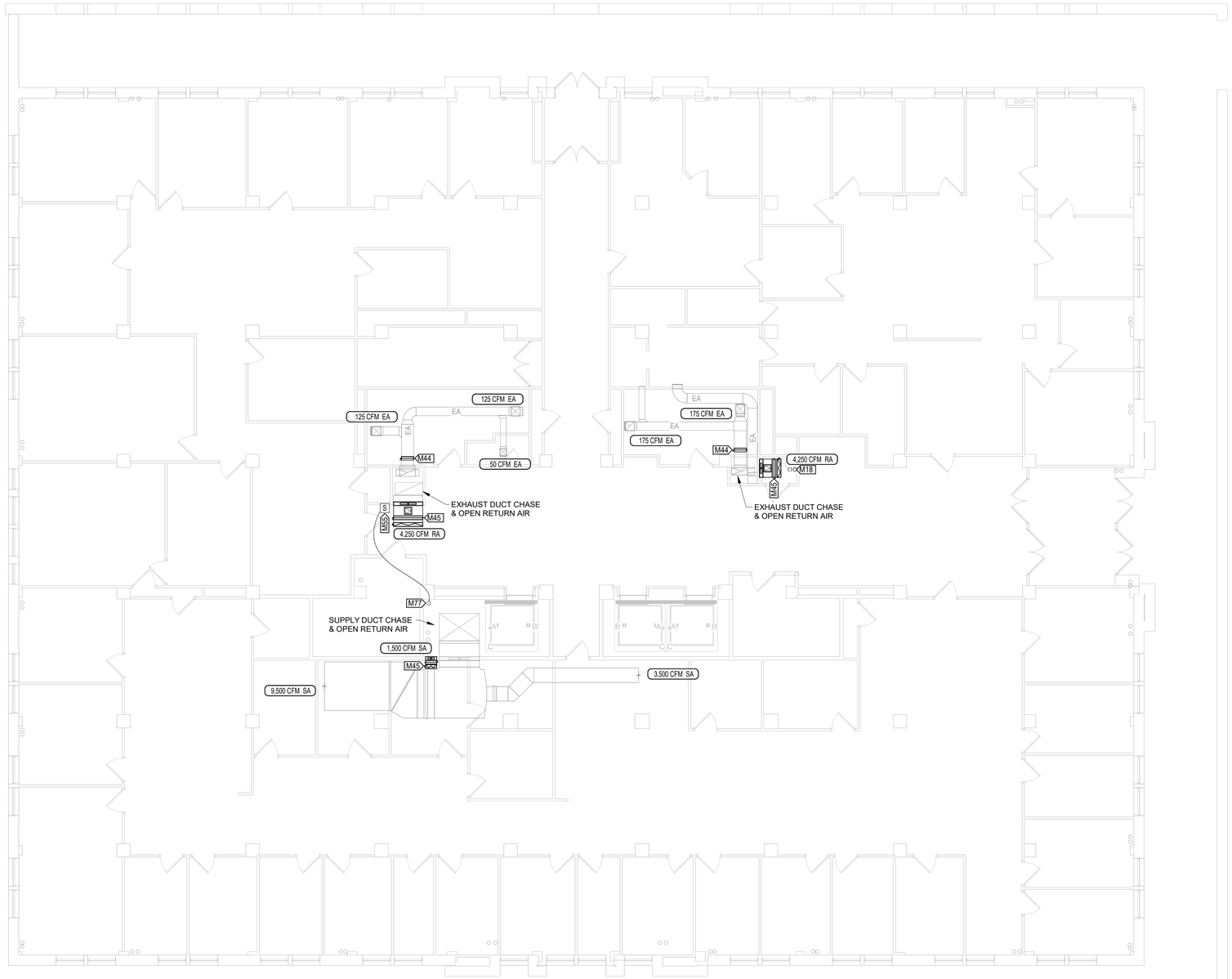
SHEET NUMBER:
M101



1 SECOND FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M18	ROUTE 3" LPS AND 2" LPR UP ADJACENT TO BUILDING COLUMN.
M44	REPLACE EXISTING MANUAL BALANCING DAMPER. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.
M77	PROVIDE 2-1/2" TYPE L COPPER PIPE FOR OUTSIDE STATIC PRESSURE REFERENCE AND ROUTE UP AND DOWN IN CHASE.

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
ANTHONY LOUIS DIEWOLD
NUMBER PE-2016000028
PROFESSIONAL ENGINEER
Expires: 12-31-2024

ANTHONY L. DIEWOLD - ENGINEER
MO # - 2016000028

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DESIGN AND CONSTRUCTION

IMPROVEMENTS TO HVAC

BROADWAY STATE OFFICE BUILDING

221 W. HIGH STREET
JEFFERSON CITY, MISSOURI

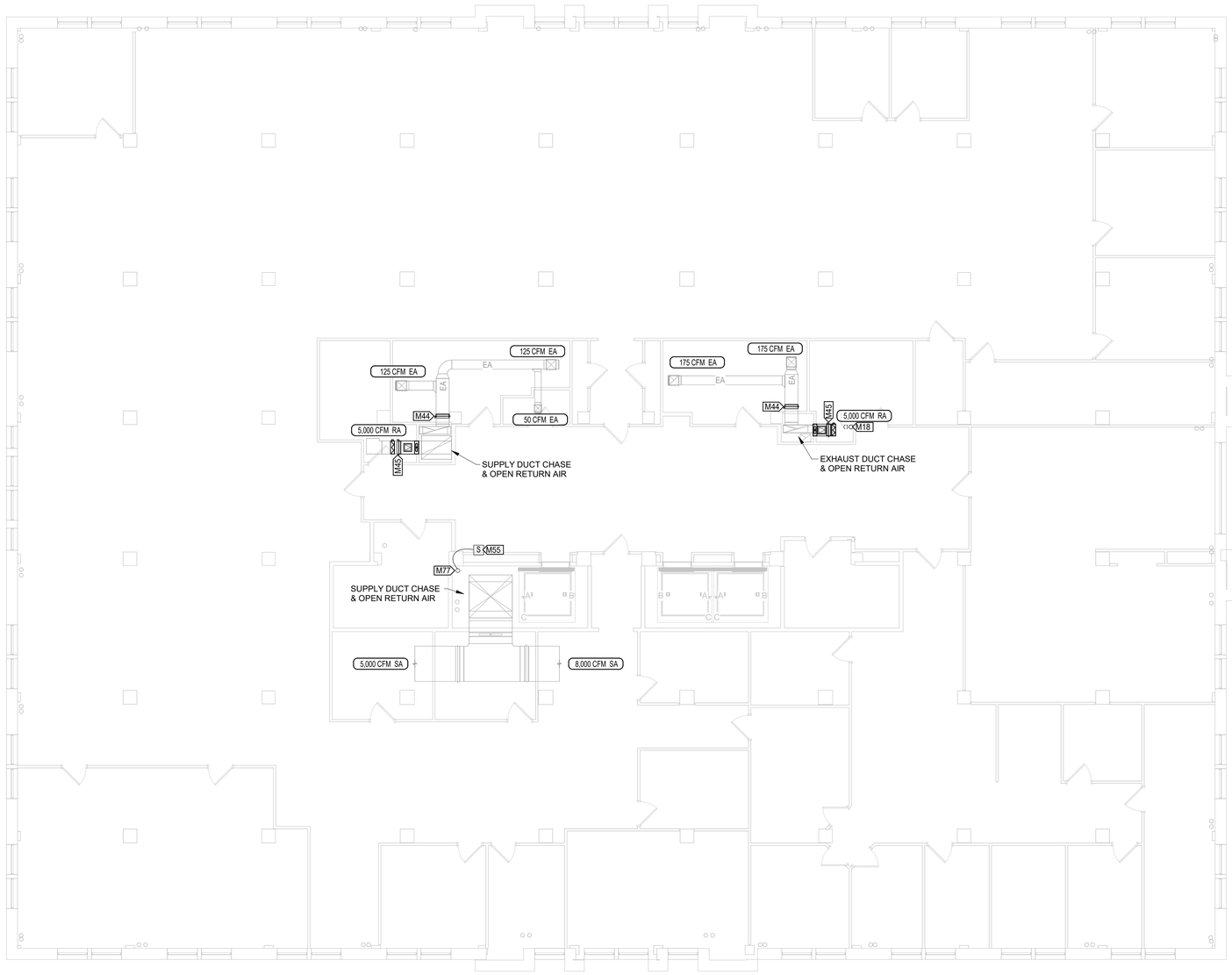
PROJECT # O2324-01
SITE # 1001
ASSET # 3101001041

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:05/30/2024

CAD DWG FILE:
DRAWING BY: ALD
CHECKED BY: GCS
DESIGNED BY: ALD

SHEET TITLE:
SECOND FLOOR - HVAC PLAN

SHEET NUMBER:
M102



1 THIRD FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND	
VALUE	DESCRIPTION
M18	ROUTE 3" LPS AND 2" LPR UP ADJACENT TO BUILDING COLUMN.
M44	REPLACE EXISTING MANUAL BALANCING DAMPER. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.
M77	PROVIDE 2-1/2" TYPE L COPPER PIPE FOR OUTSIDE STATIC PRESSURE REFERENCE AND ROUTE UP AND DOWN IN CHASE.

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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CAD DWG FILE:
DRAWING BY: ALD
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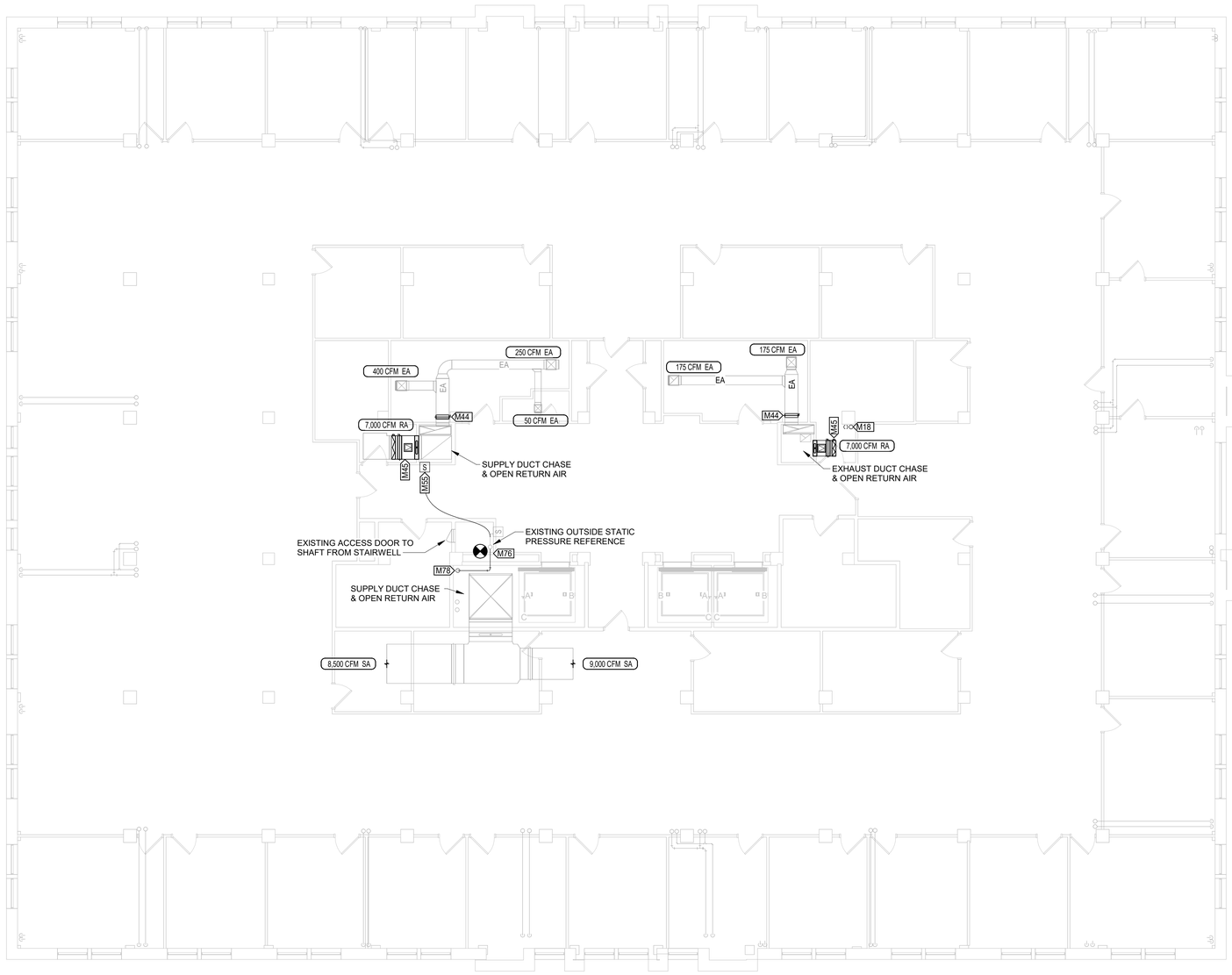
DESIGNED BY: ALD

SHEET TITLE:
THIRD FLOOR - HVAC PLAN

SHEET NUMBER:
M103



1 FOURTH FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M18	ROUTE 3" LPS AND 2" LPR UP ADJACENT TO BUILDING COLUMN.
M44	REPLACE EXISTING MANUAL BALANCING DAMPER. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.
M76	CONNECT TO EXISTING 2.5" OUTSIDE STATIC PRESSURE REFERENCE.
M78	PROVIDE 2-1/2" TYPE L COPPER PIPE FOR OUTSIDE STATIC PRESSURE REFERENCE AND ROUTE DOWN IN CHASE.

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
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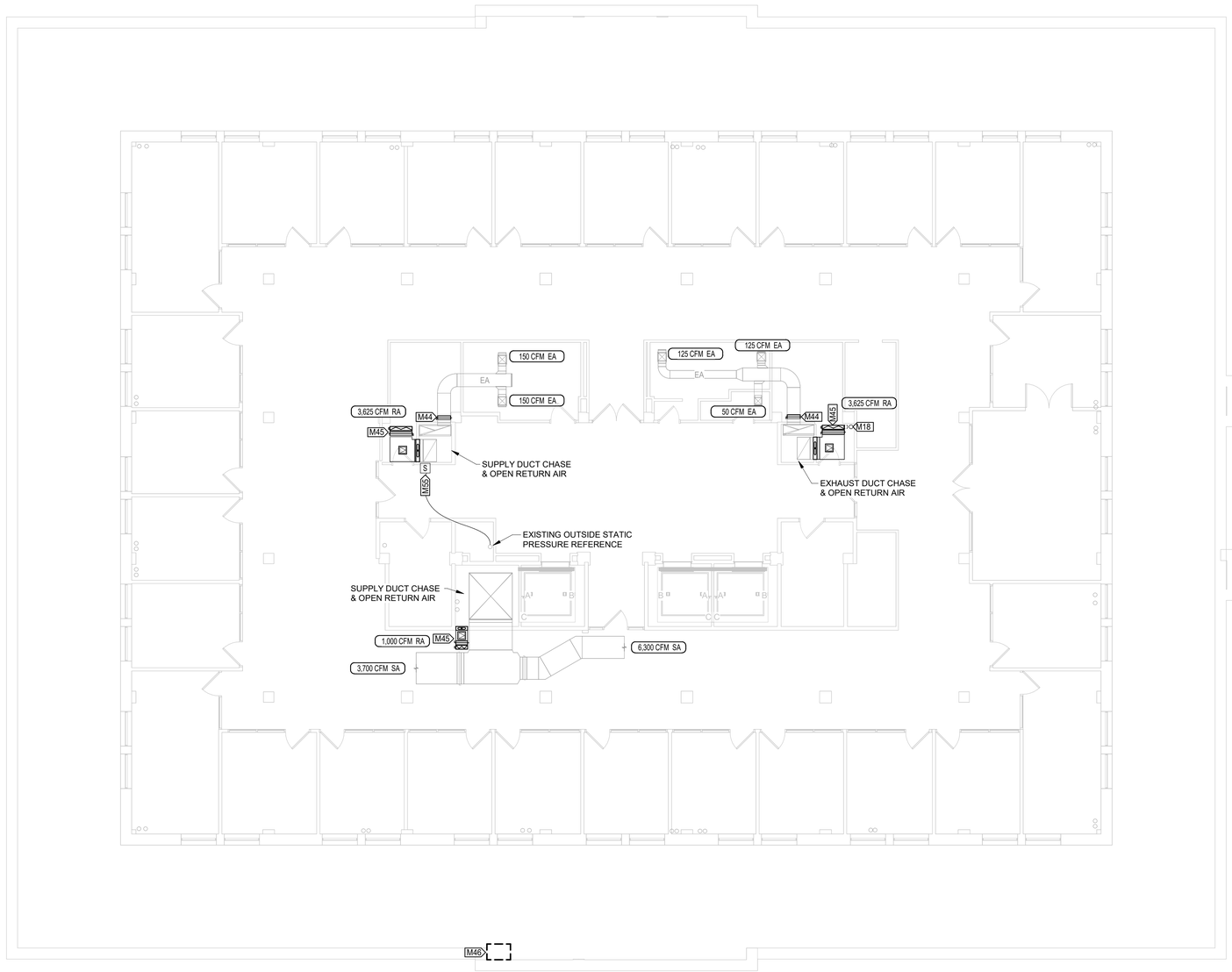
SHEET TITLE:
FOURTH FLOOR - HVAC PLAN

SHEET NUMBER:
M104



1 FIFTH FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND	
VALUE	DESCRIPTION
M18	ROUTE 3" LPS AND 2" LPR UP ADJACENT TO BUILDING COLUMN.
M44	REPLACE EXISTING MANUAL BALANCING DAMPER. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M46	REMOVE EXISTING LOUVER FROM PREVIOUSLY ABANDONED EXHAUST DUCT, INSTALL NEW INSULATED CAP, AND SEAL WATER TIGHT.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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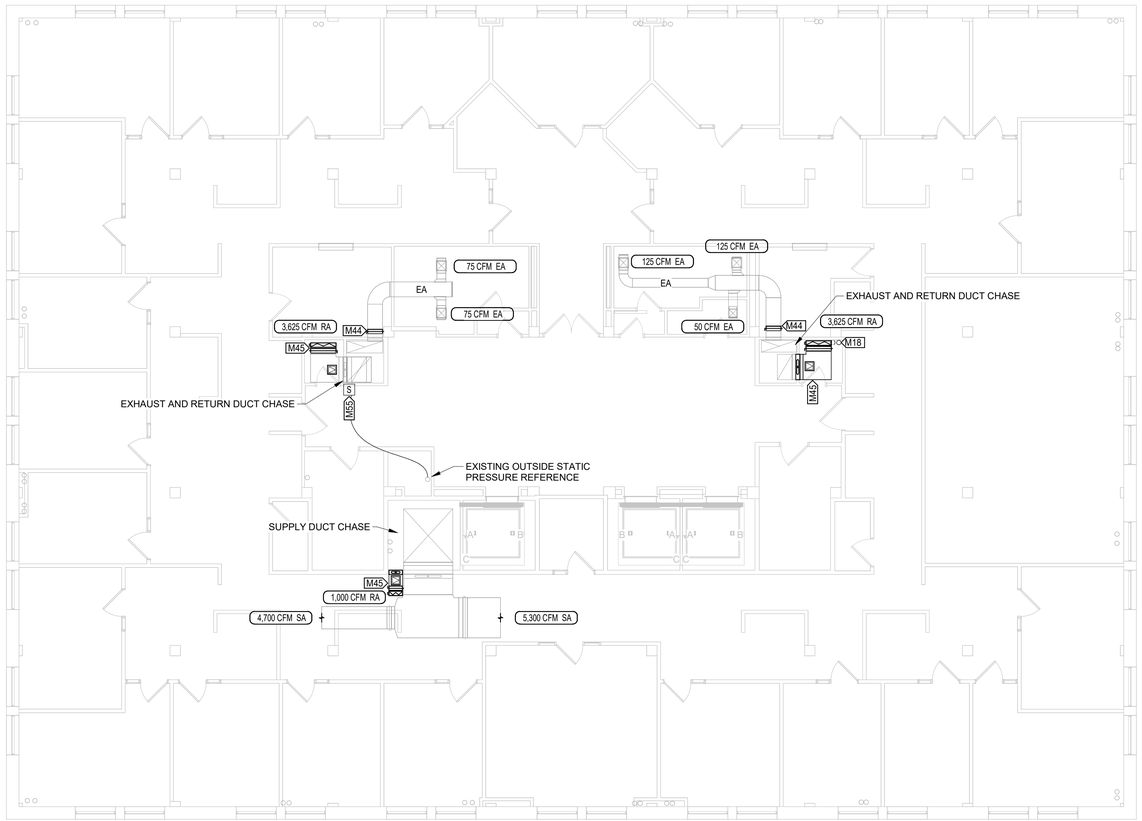
FIFTH FLOOR - HVAC PLAN

SHEET NUMBER:
M105

MAY 30, 2024



1 SIXTH FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M18	ROUTE 3" LPS AND 2" LPR UP ADJACENT TO BUILDING COLUMN.
M44	REPLACE EXISTING MANUAL BALANCING DAMPER. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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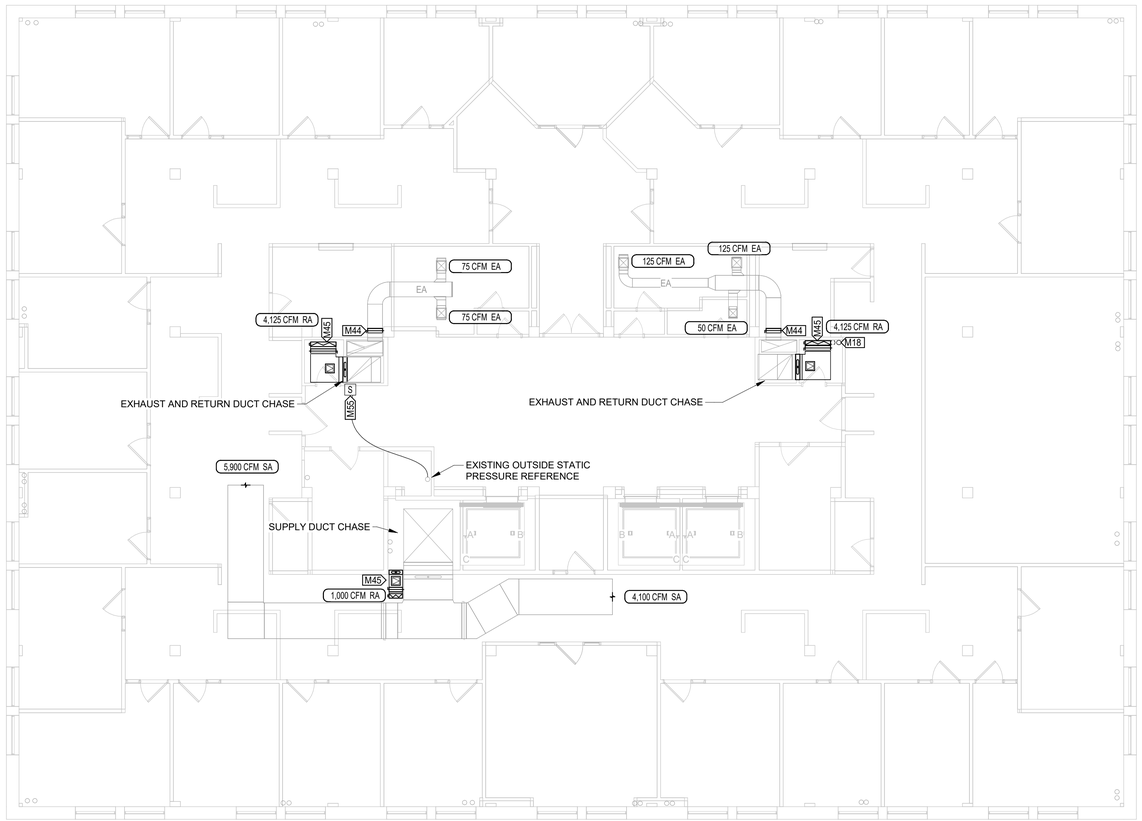
SHEET TITLE:
SIXTH FLOOR - HVAC PLAN

SHEET NUMBER:
M106



1 SEVENTH FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M18	ROUTE 3" LPS AND 2" LPR UP ADJACENT TO BUILDING COLUMN.
M44	REPLACE EXISTING MANUAL BALANCING DAMPER. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
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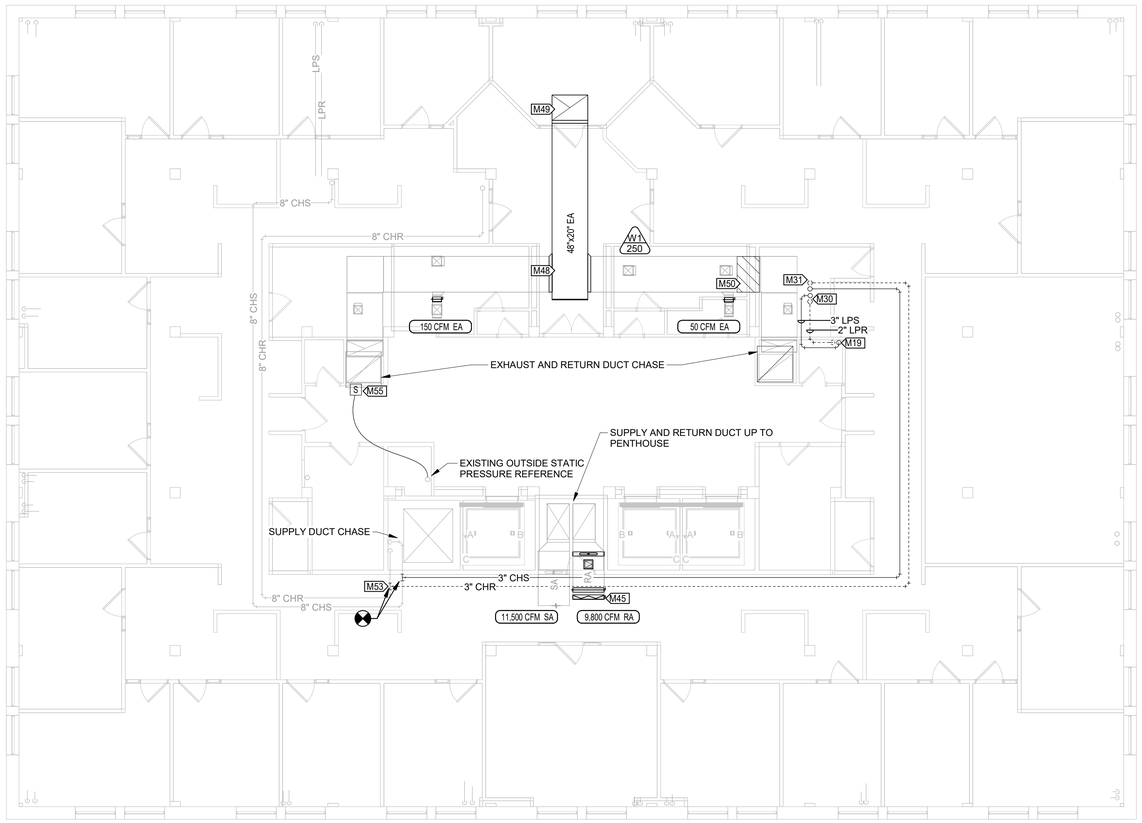
ISSUE DATE:05/30/2024

CAD DWG FILE:
DRAWING BY: ALD
CHECKED BY: GCS
DESIGNED BY: ALD

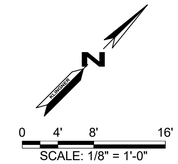
SHEET TITLE:
SEVENTH FLOOR - HVAC PLAN

SHEET NUMBER:
M107



1 EIGHTH FLOOR - HVAC PLAN
1/8" = 1'-0"

KEYNOTE LEGEND	
VALUE	DESCRIPTION
M19	ROUTE 3" LPS AND 2" LPR DOWN ADJACENT TO BUILDING COLUMN.
M30	ROUTE 3" LPS & 2" LPR UP THROUGH PENTHOUSE FLOOR.
M31	ROUTE 3" CHS/CHR UP THROUGH FLOOR IN THIS LOCATION. COORDINATE WITH EQUIPMENT ABOVE.
M45	REMOVE EXISTING FIRE DAMPER AND MANUAL BALANCE DAMPER AND PROVIDE 12"x12" ACCESS DOOR, FIRE DAMPER, MANUAL BALANCE DAMPER, AND AUTOMATIC CONTROL DAMPER.
M48	INTERCEPT EXISTING EXHAUST AIR DUCT AND ROUTE TO NEW ROOF MOUNTED EXHAUST FAN.
M49	COORDINATE FINAL LOCATION OF EXHAUST FAN WITH STRUCTURE. MAKE PENETRATION THROUGH ROOF AND ROUTE DUCT UP TO EXHAUST FAN ABOVE.
M50	CAP EXISTING DUCT UP THROUGH FLOOR.
M53	CONNECT TO EXISTING 8" CHS/R IN THIS LOCATION.
M55	INSTALL FLOOR DIFFERENTIAL PRESSURE SENSOR IN THIS LOCATION AND ROUTE LOW-SIDE TUBE TO OUTSIDE STATIC PRESSURE REFERENCE.



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MICHAEL L. PARSON, GOVERNOR

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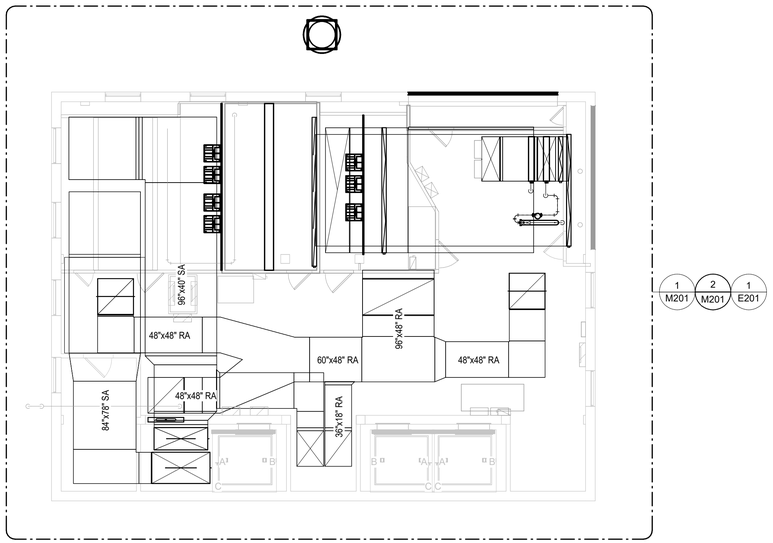
CAD DWG FILE:
DRAWING BY: ALD
CHECKED BY: GCS
DESIGNED BY: ALD

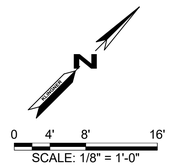
SHEET TITLE:
EIGHTH FLOOR - HVAC PLAN

SHEET NUMBER:
M108

KEYNOTE LEGEND	
VALUE	DESCRIPTION



1 PENTHOUSE - HVAC PLAN
1/8" = 1'-0"



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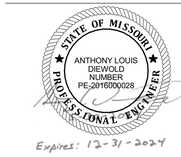

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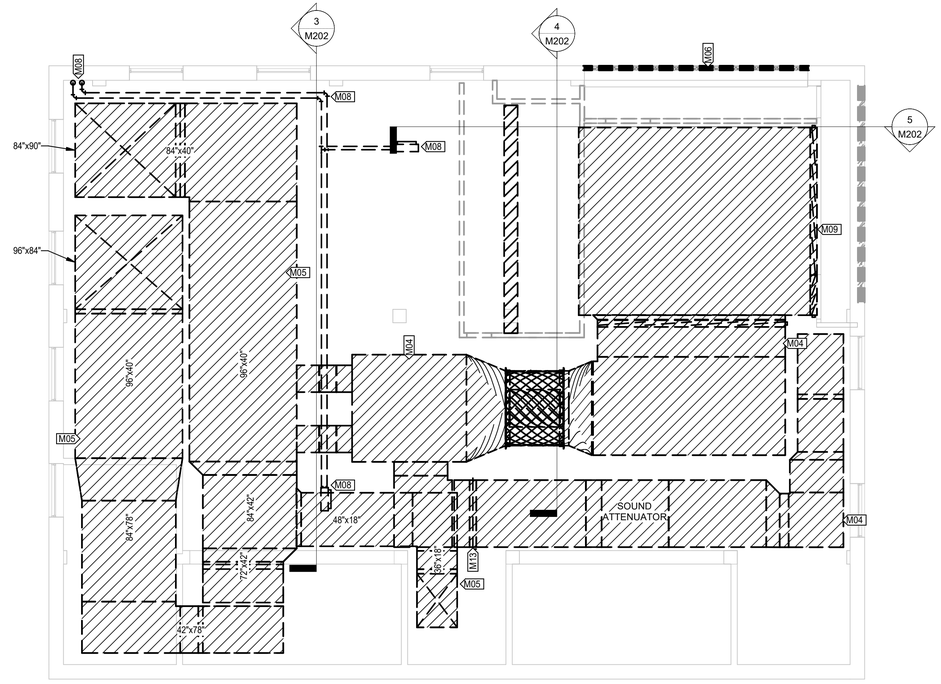
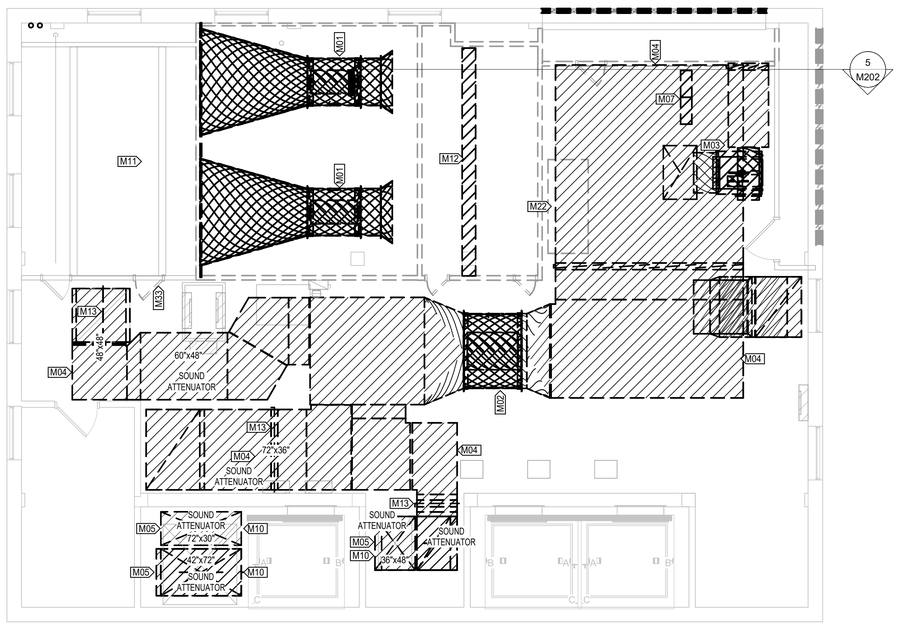
SHEET TITLE:
PENTHOUSE - HVAC PLAN

SHEET NUMBER:
M109

SHEET 13 of 23
MAY 30, 2024



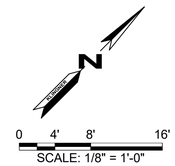
2 ENLARGED PENTHOUSE - HVAC PLAN - UPPER DUCT - DEMOLITION
3/16" = 1'-0"



1 ENLARGED PENTHOUSE - HVAC PLAN - LOW DUCT - DEMOLITION
3/16" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M01	DEMOLISH EXISTING VARIABLE VANE SUPPLY FAN AND DISCHARGE CONE AS WELL AS THE DAMPER AND ASSOCIATED SUPPORT STRUCTURE AND PNEUMATIC CONTROL APPURTENANCES.
M02	DEMOLISH EXISTING TUBEAXIAL RETURN FAN AND ASSOCIATED PNEUMATIC CONTROL APPURTENANCES.
M03	DEMOLISH EXISTING EXHAUST FAN AND ASSOCIATED SUPPORT STRUCTURE AND PENUMATIC CONTROL APPURTENANCES. REMOVE EXHAUST DUCT FROM VERTICAL PENETRATION INTO THE PENTHOUSE AND THROUGH PLENUM WALL INCLUDING EXHAUST AIR DAMPER.
M04	DEMOLISH EXISTING RETURN AIR DUCTWORK TO ALLOW ACCESS TO SUPPLY AIR DUCT ABOVE.
M05	DEMOLISH EXISTING SUPPLY AIR DUCTWORK WITH INTERIOR INSULATION WITHIN THE PENTHOUSE FROM THE AIR HANDLING UNIT CONNECTION TO THE PENTHOUSE FLOOR LEVEL.
M06	REMOVE EXISTING EXHAUST AIR LOUVER TO ALLOW FOR DEMOLITION AND TO ALLOW NEW WORK IN PENTHOUSE. LOUVER TO BE REINSTALLED.
M07	REMOVE AND RELOCATE TWO (2) EXISTING HVAC SYSTEM CONTROL PANELS TO FACILITATE AIR HANDLING UNIT REVISIONS.
M08	DEMOLISH ALL EXISITNG UNIT HEATERS, STEAM, AND CONDENSATE PIPING ABOVE DUCTWORK. DEMOLISH PIPES DOWN TO NEAREST BRANCH CONNECTION AND CAP AT THAT LOCATION.
M09	REMOVE EXISTING OUTDOOR AIR ECONOMIZER AND MINIMUM OUTSIDE AIR DAMPERS AND PREPARE OPENING FOR NEW DAMPERS.
M10	DEMOLISH EXISTING COMBINATION FIRE AND SMOKE DAMPER AND PREPARE FOR INSTALLATION OF NEW FIRE AND SMOKE DAMPER IN SAME LOCATION.
M11	EXISTING COOLING COIL SECTION OF THE AIR HANDLING UNIT CABINET TO REMAIN.
M12	DEMOLISH EXISTING FILTER RACK.
M13	REMOVE EXISTING MANUAL BALANCING DAMPER AND PREPARE DUCTWORK FOR NEW DAMPER INSTALLATION.
M22	RELOCATE EXISTING BUILDING SYSTEMS CONTROL AIR COMPRESSOR AND ALL ASSOCIATED PIPING AND POWER CIRCUITS TO FACILITATE AIR HANDLING UNIT REVISIONS.
M33	REPLACE EXISTING 24" WIDE AIR HANDLING UNIT ACCESS DOOR WITH 36"x60" DOOR WITH UV TINT ON WINDOW TO FACILITATE SUPPLY FAN MOTOR MAINTENANCE AND REPLACEMENT AND ALLOW OBSERVATION OF THE UV LIGHTING IN OPERATION.



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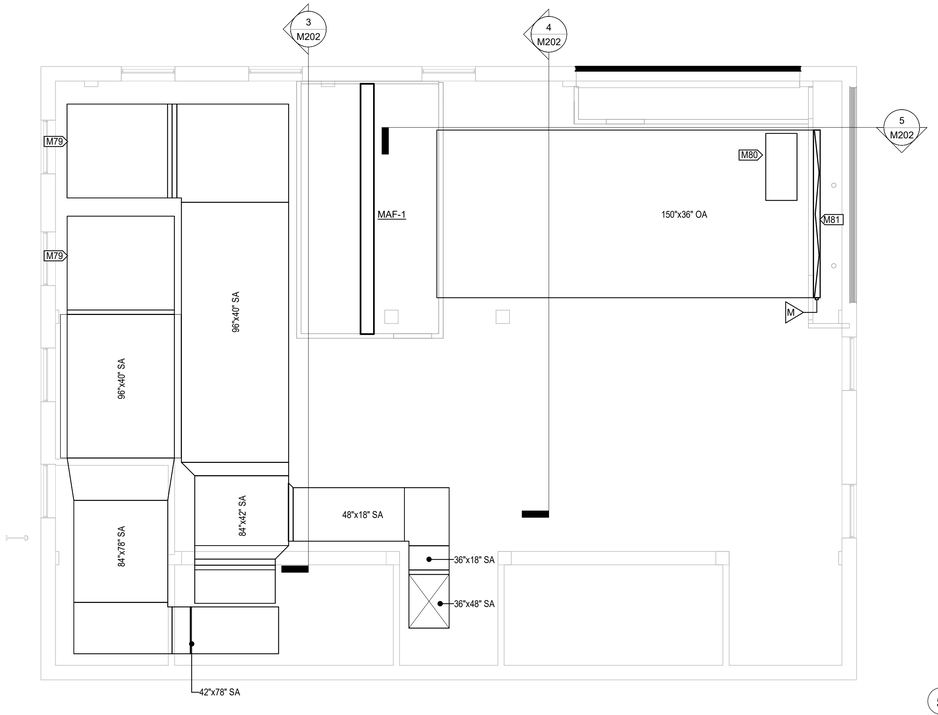
DESIGNED BY: ALD

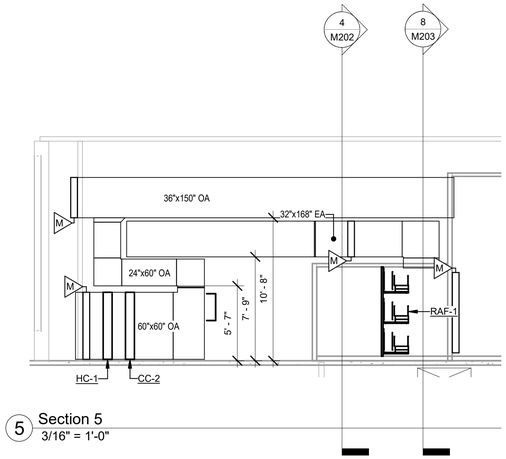
SHEET TITLE:
ENLARGED PENTHOUSE HVAC DEMOLITION PLAN

SHEET NUMBER:
M201

MAY 30, 2024

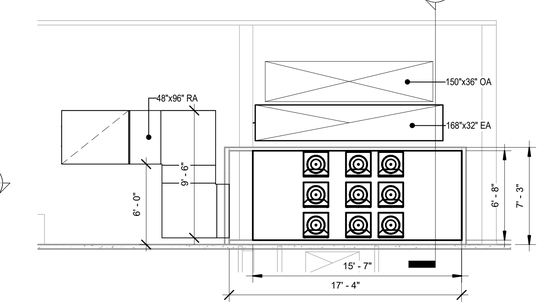


2 PENTHOUSE-HVAC PLAN - UPPER DUCT
3/16" = 1'-0"

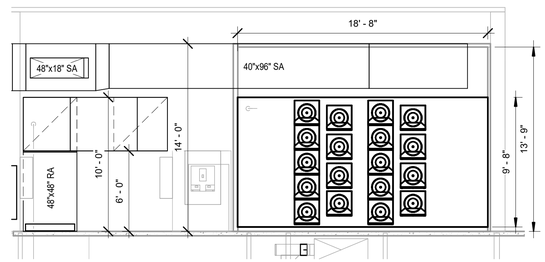


5 Section 5
3/16" = 1'-0"

1 ENLARGED PENTHOUSE - HVAC PLAN - LOW DUCT
3/16" = 1'-0"



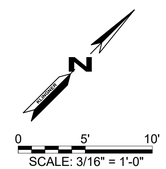
4 Section 4
3/16" = 1'-0"



3 Section 3
3/16" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M11	EXISTING COOLING COIL SECTION OF THE AIR HANDLING UNIT CABINET TO REMAIN.
M14	ROUTE RETURN AIR DUCT DOWN TO CONNECT TO AIR HANDLING UNIT RETURN AIR PLENUM.
M20	MAKE 60"x60 OA PENETRATION THROUGH EXISTING OA PLENUM AND PROVIDE MOTORIZED LOW-LEAK DAMPER.
M21	UPON COMPLETION OF WORK WITHIN EXHAUST AIR PLENUM, REINSTALL EXISTING EXHAUST AIR LOUVER.
M23	NEW LOCATION OF EXISTING BUILDING SYSTEMS CONTROL AIR COMPRESSOR. RELOCATE ALL EXISTING PIPING AND POWER CIRCUITS AS NECESSARY.
M24	REINSTALL TWO (2) EXISTING HVAC SYSTEM CONTROL PANELS IN THIS LOCATION.
M27	INSTALL FAN WALL SUPPORT STRUCTURE WITHIN AIR HANDLING UNIT CABINET PER MANUFACTURER'S INSTRUCTIONS.
M28	EXISTING 8" CHILLED WATER SUPPLY PIPING UP THROUGH FLOOR WITHIN AIR HANDLING UNIT TO CHILLED WATER COIL. PIPING TO REMAIN THROUGHOUT CONSTRUCTION.
M29	EXISTING 8" CHILLED WATER RETURN PIPING UP THROUGH FLOOR WITHIN AIR HANDLING UNIT TO CHILLED WATER COIL. PIPING TO REMAIN THROUGHOUT CONSTRUCTION.
M32	FABRICATE FILTER RACK TO FACILITATE FILTER CHANGES FROM GROUND LEVEL. REFER TO FILTER RACK DETAIL AND SCHEDULE.
M33	REPLACE EXISTING 24" WIDE AIR HANDLING UNIT ACCESS DOOR WITH 36"x60" DOOR WITH UV TINT ON WINDOW TO FACILITATE SUPPLY FAN MOTOR MAINTENANCE AND REPLACEMENT AND ALLOW OBSERVATION OF THE UV LIGHTING IN OPERATION.
M34	30"x60" ACCESS DOOR.
M35	36"x60" ACCESS DOOR.
M36	INSTALL ULTRAVIOLET LIGHTING IN COOLING COIL SECTION BELOW COOLING COIL.
M37	INSTALL ULTRAVIOLET LIGHTING IN COOLING COIL SECTION DOWNSTREAM OF COOLING COIL.
M38	INSTALL ROOF CURB, ISOLATION DAMPER, AND EXHAUST FAN ON EXISTING ROOF. COORDINATE WITH OWNER TO MAINTAIN ROOF WARRANTY.
M39	EXISTING BACKUP AIR COMPRESSOR TO REMAIN OPERATIONAL WHILE MAIN COMPRESSOR IS RELOCATED AND SHALL REMAIN IN CURRENT LOCATION.
M40	EXISTING ELECTRICAL DUCT UP THROUGH FLOOR AS WELL AS PANELBOARDS AND TRANSFER SWITCH TO REMAIN.
M41	SUPPLY FAN ARRAY CONTROL PANEL.
M42	RETURN FAN ARRAY CONTROL PANEL.
M47	PATCH PENETRATION FORMERLY USED AS EXHAUST AIR PATH WITH CONCRETE TO MATCH EXISTING PENTHOUSE FLOOR.
M51	PROVIDE 18"x18" ACCESS DOOR IN OA DUCT WITH 6"x6" LEXAN WINDOW WITH UV TINT TO ALLOW OBSERVATION OF THE UV LIGHTING IN OPERATION.
M52	24"x84" ACCESS DOOR.
M56	REPLACE EXISTING 48"x48" FIRE DAMPER AND RETURN AIR MANUAL BALANCE DAMPER AND RECONNECT TO EXISTING RETURN AIR DUCT DOWN THROUGH FLOOR. FIELD VERIFY DAMPER SIZES PRIOR TO PURCHASING.
M57	REPLACE TWO EXISTING FIRE DAMPERS (44"x15" AND 44"x30") AND TWO RETURN AIR BALANCE DAMPERS. FIELD VERIFY DAMPER SIZES PRIOR TO PURCHASING.
M58	REPLACE EXISTING 48"x48" FIRE DAMPER THROUGH CHASE WALL IN THIS LOCATION. FIELD VERIFY DAMPER SIZE PRIOR TO PURCHASING.
M59	REPLACE EXISTING 72"x30" SUPPLY AIR DUCT AND MANUAL BALANCE DAMPER AND CONNECT TO EXISTING SUPPLY DUCT DOWN IN CHASE. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M60	REPLACE EXISTING 78"x42" SUPPLY AIR DUCT AND MANUAL BALANCE DAMPER AND CONNECT TO EXISTING SUPPLY DUCT DOWN IN CHASE. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M69	REPLACE EXISTING 36"x48" SUPPLY AIR DUCT AND MANUAL BALANCE DAMPER AND CONNECT TO EXISTING SUPPLY DUCT DOWN THROUGH FLOOR. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M70	REPLACE EXISTING 36"x48" RETURN AIR DUCT AND MANUAL BALANCE DAMPER AND CONNECT TO EXISTING RETURN DUCT DOWN THROUGH FLOOR. FIELD VERIFY DUCT SIZE PRIOR TO PURCHASING.
M71	ROUTE 60"x24" OUTDOOR AIR DUCT UP TO CONNECT TO OUTDOOR AIR INTO AIR HANDLING UNIT. REFER TO DETAIL 2 THIS SHEET FOR CONTINUATION.
M72	ROUTE 3" LPS AND 2" LPR DOWN IN THIS LOCATION.
M73	ROUTE 3" CHS AND 3" CHR DOWN IN THIS LOCATION.
M74	ALL HORIZONTAL DUCT AND FITTINGS DOWNSTREAM OF THE COOLING COIL SHALL BE MINIMUM 20 GAUGE STAINLESS STEEL WITH BOTTOM PITCHED TO A 2" NPT DRAIN PORT. PROVIDE P-TRAP AND ROUTE TO NEAREST FLOOR DRAIN.
M79	RECONNECT TO EXISTING SUPPLY AIR DUCT CONNECTION.
M80	CONNECT MINIMUM OUTSIDE AIR DUCT FROM BELOW.
M81	PROVIDE NEW OUTSIDE AIR ECONOMIZER DAMPER IN EXISITNG OUSIDE AIR PLENUM WALL.



SCALE: 3/16" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
ANTHONY LOUIS DIEWOLD
NUMBER PE-2016000028
PROFESSIONAL ENGINEER

Expires: 12-31-2024

ANTHONY L. DIEWOLD - ENGINEER
MO # - 2016000028

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

IMPROVEMENTS TO HVAC

BROADWAY STATE OFFICE BUILDING

221 W. HIGH STREET
JEFFERSON CITY, MISSOURI

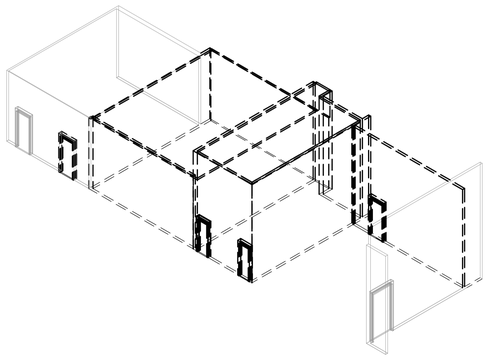
PROJECT # O2324-01
SITE # 1001
ASSET # 3101001041

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:05/30/2024

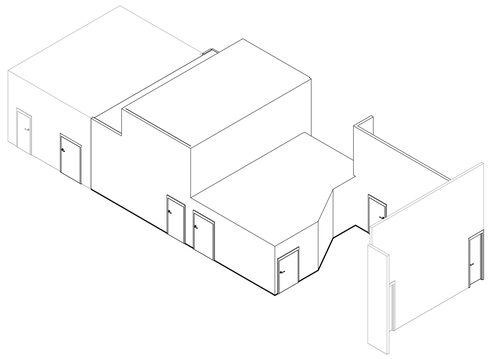
CAD DWG FILE:
DRAWING BY: ALD
CHECKED BY: GCS
DESIGNED BY: ALD

SHEET TITLE:
ENLARGED PENTHOUSE HVAC PLAN

SHEET NUMBER:
M202

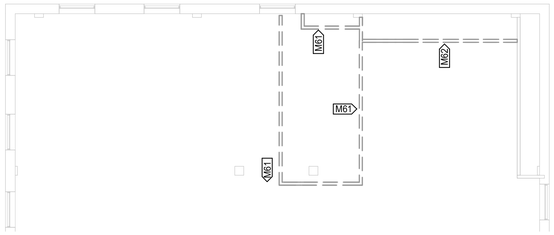


5 AIR HANDLING UNIT 3D-VIEW - DEMOLITION
NTS

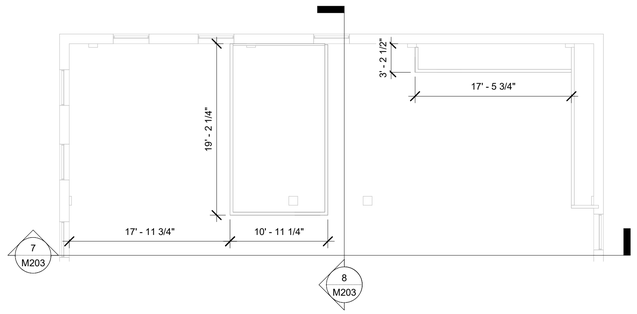


6 AIR HANDLING UNIT 3D-VIEW - NEW WORK
NTS

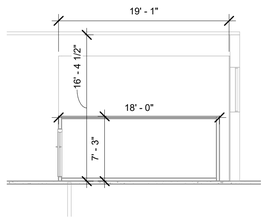
KEYNOTE LEGEND	
VALUE	DESCRIPTION
M33	REPLACE EXISTING 24" WIDE AIR HANDLING UNIT ACCESS DOOR WITH 36"x60" DOOR WITH UV TINT ON WINDOW TO FACILITATE SUPPLY FAN MOTOR MAINTENANCE AND REPLACEMENT AND ALLOW OBSERVATION OF THE UV LIGHTING IN OPERATION.
M61	DEMOLISH EXISTING AIR HANDLING UNIT CABINET TO FACILITATE INSTALLATION OF NEW SUPPLY AND EXHAUST FAN ARRAYS AND FILTER RACK.
M62	DEMOLISH EXISTING EXHAUST AIR PLENUM WALL TO FACILITATE DEMOLITION OF EXISTING DUCTWORK AND EQUIPMENT.
M63	REBUILD AIR HANDLING CABINET IN NEW CONFIGURATION.
M64	EXISTING AIR HANDLING UNIT ACCESS DOOR TO REMAIN.
M66	EXISTING OUTDOOR AIR INTAKE PLENUM ACCESS DOOR TO REMAIN.
M67	REBUILD EXHAUST AIR PLENUM WALL.



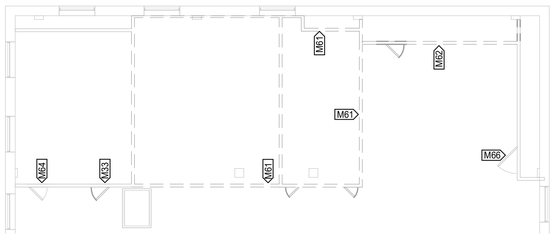
1 AIR HANDLING UNIT UPPER - DEMOLITION
1/8" = 1'-0"



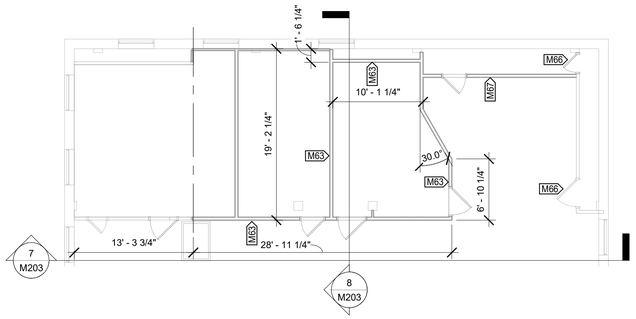
2 AIR HANDLING UNIT UPPER - NEW WORK
1/8" = 1'-0"



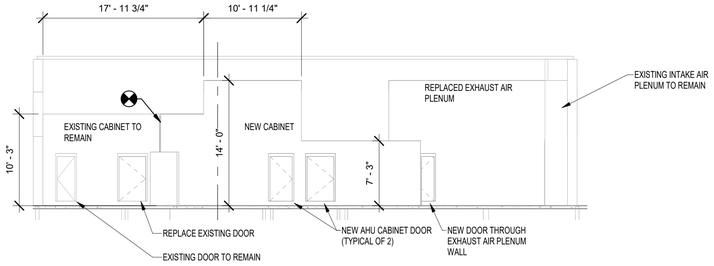
8 Section 8
1/8" = 1'-0"



3 AIR HANDLING UNIT LOWER - DEMOLITION
1/8" = 1'-0"



4 AIR HANDLING UNIT LOWER - NEW WORK
1/8" = 1'-0"



7 Section 7
1/8" = 1'-0"

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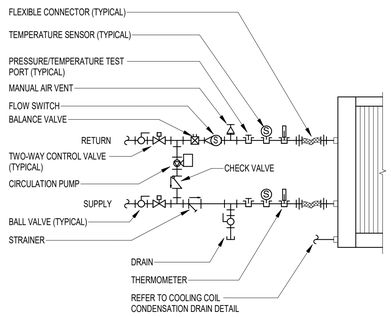
CAD DWG FILE:
DRAWING BY: ALD
CHECKED BY: GCS
DESIGNED BY: ALD

SHEET TITLE:

ENLARGED AIR HANDLING UNIT HOUSING PLANS

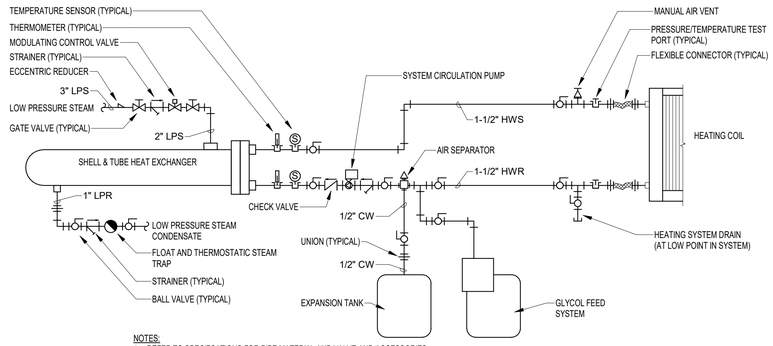
SHEET NUMBER:

M203



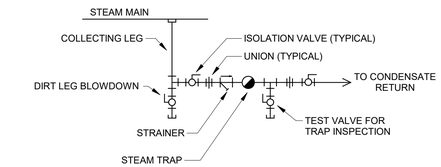
NOTES:
1. REFER TO SPECIFCATIONS FOR PIPE MATERIAL AND VALVE AND ACCESSORIES REQUIREMENTS.

1 COIL CONNECTION DETAIL (WITH PUMP)
NTS



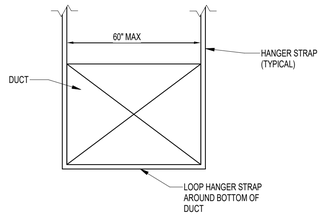
NOTES:
1. REFER TO SPECIFCATIONS FOR PIPE MATERIAL AND VALVE AND ACCESSORIES REQUIREMENTS.
2. SYSTEM SHALL USE PRE-MIXED PROPYLENE GLYCOL SOLUTION. NO WATER CONNECTION REQUIRED.

5 SHELL & TUBE HEAT EXCHANGER DETAIL
NTS



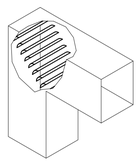
NOTES:
1. REFER TO SPECIFCATIONS FOR PIPE MATERIAL AND VALVE AND ACCESSORIES REQUIREMENTS.

7 DRIP LEG PIPING
NTS



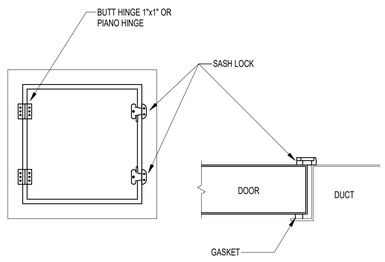
NOTE:
CONTRACTOR SHALL VERIFY ALL LOAD LIMITS ON HANGER AND WEIGHTS OF DUCT TO ASSURE ALLOWABLE LOAD LIMITS ARE NOT EXCEEDED.

2 STRAP HANGER DETAIL
NTS

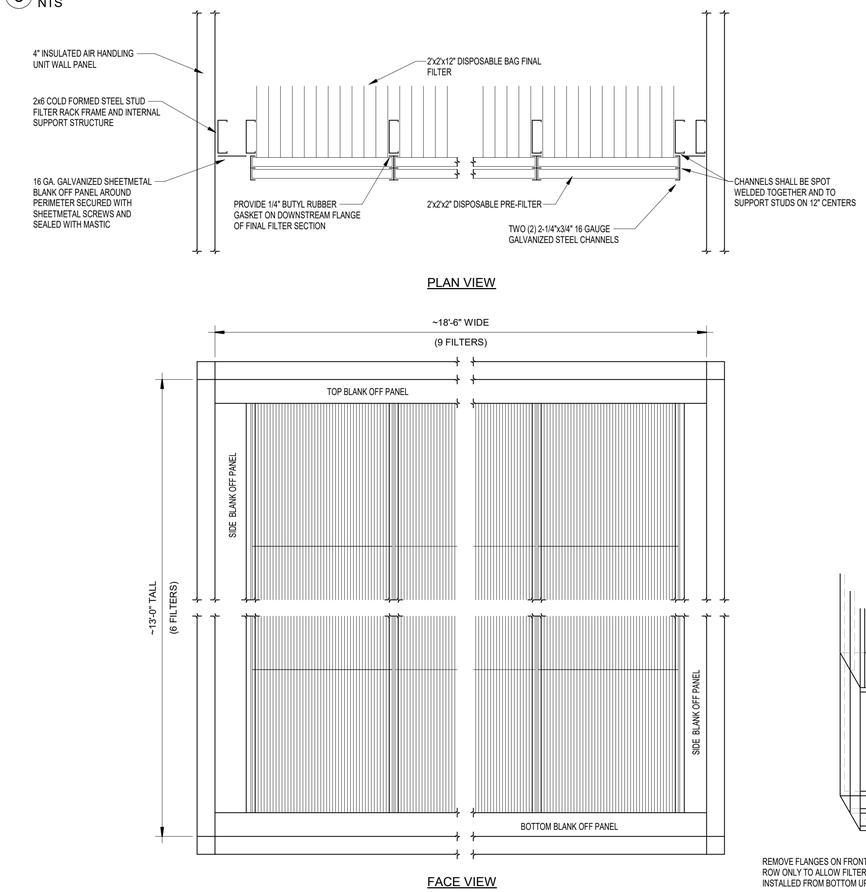


NOTE:
1. ALL DUCT 90° ELBOWS SHALL BE RADIUS ELBOWS (1.5 * DEPTH) UNLESS CLEARANCES REQUIRE A SQUARE RADIUS.
2. ALL SQUARE RADIUS ELBOWS SHALL INCLUDE TURNING VANES PER SPECIFICATIONS.

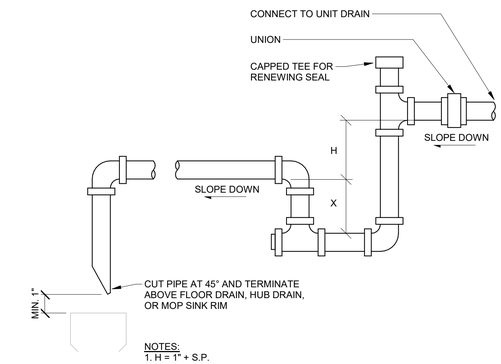
3 TURNING VANE DETAIL
NTS



4 DUCT ACCESS DOOR DETAIL
NTS

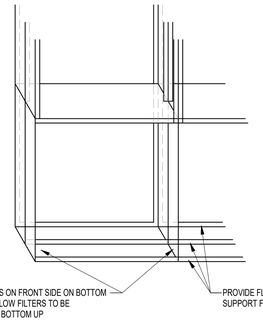


6 FILTER RACK DETAIL
NTS



NOTES:
1. H = 1" + S.P.
2. X = H / 2
3. FOR DRAW-THRU UNITS ONLY.
4. REFER TO SPECIFICATIONS FOR PIPING MATERIAL.

8 COOLING COIL CONDENSATION DRAIN DETAIL
NTS



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ISSUE DATE:05/30/2024

CAD DWG FILE:
DRAWING BY: ALD
CHECKED BY: GCS
DESIGNED BY: ALD

SHEET TITLE:
MECHANICAL DETAILS

SHEET NUMBER:
M501

SHEET 17 of 23
MAY 30, 2024

SHELL AND TUBE HEAT EXCHANGER SCHEDULE

TAG	DESCRIPTION	LENGTH	DIAMETER	STEAM			ANTIFREEZE		WATER					MAKE	MODEL	WEIGHT	REMARKS
				INLET PRESSURE	FLOWRATE	CAPACITY	TYPE	CONCENTRATION	EWT	LWT	P.D.	TUBES	FLOWRATE				
HX-1	SHELL AND TUBE SINGLE PASS	4' - 6"	5"	8.0 ftH2O	612 lb/h	612,000 Btu/h	POLYPROPYLENE GLYCOL	35%	180 °F	140 °F	1.0 psig	12	30.0 GPM	BELL & GOSSETT	QSU-47-2	150 lb	1

1. PROVIDE FLOOR SUPPORT STRUCTURE.

EXHAUST FAN SCHEDULE

TAG	DESCRIPTION	AIRFLOW	E.S.P.	ELECTRICAL					BASIS OF DESIGN			REMARKS
				VOLT	FREQ	PHASE	MCA	MOP	MAKE	MODEL	WEIGHT	
EF-1	BELT DRIVE UPBLAST CENTRIFUGAL ROOF EXHAUST FAN	4,500 CFM	3.00 in-wg	208 V	60 Hz	3	18 A	35 A	GREENHECK	CUBE-300-XP-50	275 lb	1

1. PROVIDE MINIMUM 14" ROOF CURB, ISOLATION DAMPER, VARIABLE FREQUENCY DRIVE, AND DISCONNECT SWITCH

HYDRONIC COIL SCHEDULE

TAG	DESCRIPTION	LENGTH	WIDTH	DEPTH	ROWS	FINS/INCH	AIRFLOW	MAX VELOCITY	AIR P.D.	EAT		LAT		CAPACITY	FLUID		EWT	LWT	FLOWRATE	P.D.	WEIGHT	REMARKS
										DB	WB	DB	WB		TYPE	CONCENTRATION						
CC-2	HYDRONIC COOLING COIL	60 in	60 in	12 in	8	12	10,500 CFM	450 FPM	1.13 in-wg	95.0 °F	78.0 °F	53.5 °F	53.5 °F	925,200 Btu/h	WATER	100%	44 °F	64 °F	92.3 GPM	13.4 ftH2O	650 lb	1
HC-1	HYDRONIC HEATING COIL	60 in	60 in	12 in	1	10	10,500 CFM	450 FPM	0.08 in-wg	0.0 °F	0.0 °F	55.0 °F	38.0 °F	612,500 Btu/h	PROPYLENE GLYCOL	35%	180 °F	140 °F	30.0 GPM	5.0 ftH2O	150 lb	1

1. PROVIDE SUPPORT STRUCTURE FROM FLOOR.

FAN ARRAY SCHEDULE

TAG	DESCRIPTION	MAX AIRFLOW	MIN AIRFLOW	MAX. S.P.	FAN					MAX. CABINET DIMENSIONS		ELECTRICAL				BASIS OF DESIGN			REMARKS
					TYPE	QUANTITY	POWER	SPEED	WHEEL DIA.	LENGTH	HEIGHT	VOLT	FREQ	PHASE	MCA	MOP	MAKE	MODEL	WEIGHT	
RAF-1	RETURN AIR FAN ARRAY	90,000 CFM	20,000 CFM	5.70 in-wg	CENTRIFUGAL PLENUM	9	5 hp	2230	17.7 in	18' - 0"	6' - 8"	480 V	60 Hz	3	45 A	60 A	Q-PAC	FA1700072	1,300 lb	1-3
SAF-1	SUPPLY AIR FAN ARRAY	100,000 CFM	40,000 CFM	3.50 in-wg	CENTRIFUGAL PLENUM	18	5 hp	3900	12.4 in	15' - 7"	10' - 0"	480 V	60 Hz	3	78 A	100 A	Q-PAC	FA1700071	1,500 lb	1-2

1. INSTALL FAN ARRAY BULKHEAD PER MANUFACTURER RECOMMENDATIONS.
2. FAN ARRAY SHALL BE CONTROLLED BASED ON BUILDING STATIC AIR PRESSURE.
3. FAN ARRAY SHALL BE CONTROLLED BASED ON MIXED AIR PLENUM STATIC AIR PRESSURE.

AIR FILTER SCHEDULE

TAG	FILTER SECTION				INDIVIDUAL PRE-FILTERS						PRESSURE DROP		INDIVIDUAL FINAL FILTERS						PRESSURE DROP	
	AIRFLOW	LENGTH	HEIGHT	VELOCITY	DESCRIPTION	EFFICIENCY	QUANTITY	SIZE	THICHNESS	MEDIA AREA	CLEAN	DIRTY	DESCRIPTION	EFFICIENCY	QUANTITY	SIZE	THICKNESS	FACE AREA	CLEAN	DIRTY
MAF-1	100,000 CFM	18' - 0"	12' - 0"	475 FPM	PLEATED DISPOSABLE	MERV 8	54	2'x2'	2' - 0"	12.1 SF	0.25 in-wg	0.75 in-wg	EXTENDED SURFACE HIGH EFFICIENCY	MERV 13	54	2'x2'	1' - 0"	39.2 SF	0.10 in-wg	0.52 in-wg

CIRCULATING PUMP SCHEDULE

TAG	DESCRIPTION	FLOW	HEAD	ELECTRICAL				BASIS OF DESIGN			REMARKS
				VOLT	FREQ	POLES	MOP	MAKE	MODEL	WEIGHT	
CWP-3	CLOSE COUPLED INLINE CIRCULATOR PUMP	92.3 GPM	20.0 ftH2O	208 V	60 Hz	3	15 A	TACO	1935	150 lb	1-2
HWP-1	CLOSE COUPLED INLINE CIRCULATOR PUMP	30.0 GPM	25.0 ftH2O	208 V	60 Hz	3	15 A	TACO	1915	150 lb	1-2

1. PROVIDE VFD WITH INTEGRAL DISCONNECT.
2. SUPPORT PUMP FROM FLOOR AND NOT FROM PIPING.

GLYCOL FEED SYSTEM SCHEDULE

TAG	DESCRIPTION	SYSTEM			TANK				ELECTRICAL				BASIS OF DESIGN				REMARKS
		TYPE	FLUID	CONCENTRATION	LENGTH	WIDTH	HEIGHT	VOLUME	VOLT	FREQ	PHASE	MOP	MAKE	MODEL	WEIGHT	
GFS-1	PACKAGED GLYCOL FEED SYSTEM	SIMPLEX	POLYPROPYLENE GLYCOL	35	1' - 0"	1' - 0"	1' - 6"	6.0 gal	120 V	60 Hz	1	20 A	WESSELLS	G-6	75 lb	1

1. SYSTEM TO BE SET ON FLOOR BELOW HEAT EXCHANGER.

EXPANSION TANK SCHEDULE

TAG	DESCRIPTION	MAX. PRES.	MAX. TEMP.	PRE-CHARGE	TANK VOLUME	ACCEPTANCE VOLUME	BASIS OF DESIGN			REMARKS
							MAKE	MODEL	WEIGHT	
ETK-1	FLOOR MOUNTED BLADDER STYLE	125 psi	240 °F	15 psi	8.0 gal	5.0 gal	TACO	CX30-125	100 lb	1

1. INCLUDE SIGHT GLASS.

STATE OF MISSOURI
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MO # - 2016000028

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BROADWAY STATE OFFICE BUILDING

221 W. HIGH STREET
JEFFERSON CITY, MISSOURI

PROJECT # O2324-01
SITE # 1001
ASSET # 3101001041

REVISION:
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ISSUE DATE:05/30/2024

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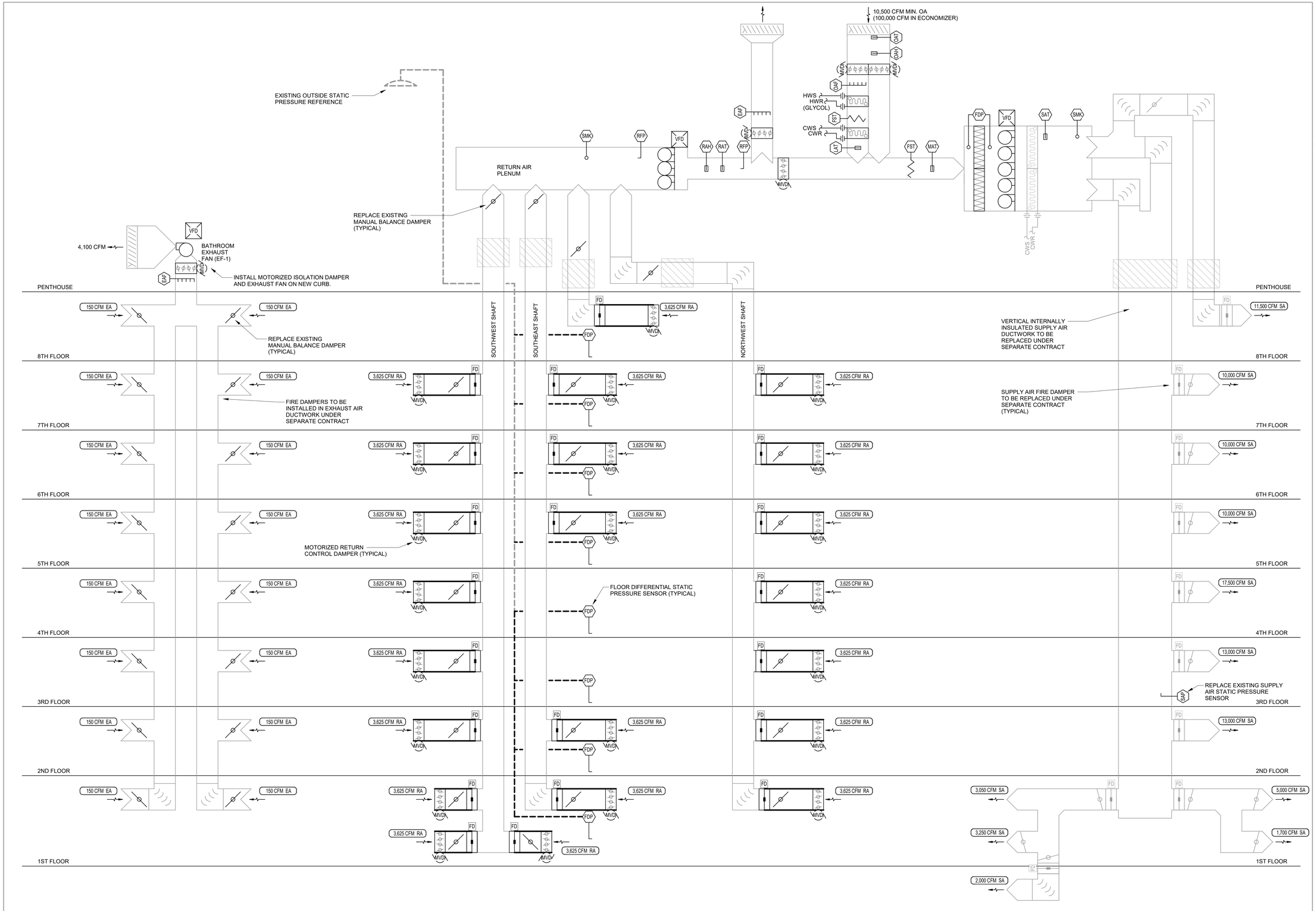
MECHANICAL SCHEDULES

SHEET NUMBER:
M601



1 AHU SYSTEM SCHEMATIC DIAGRAM - PROPOSED
NTS

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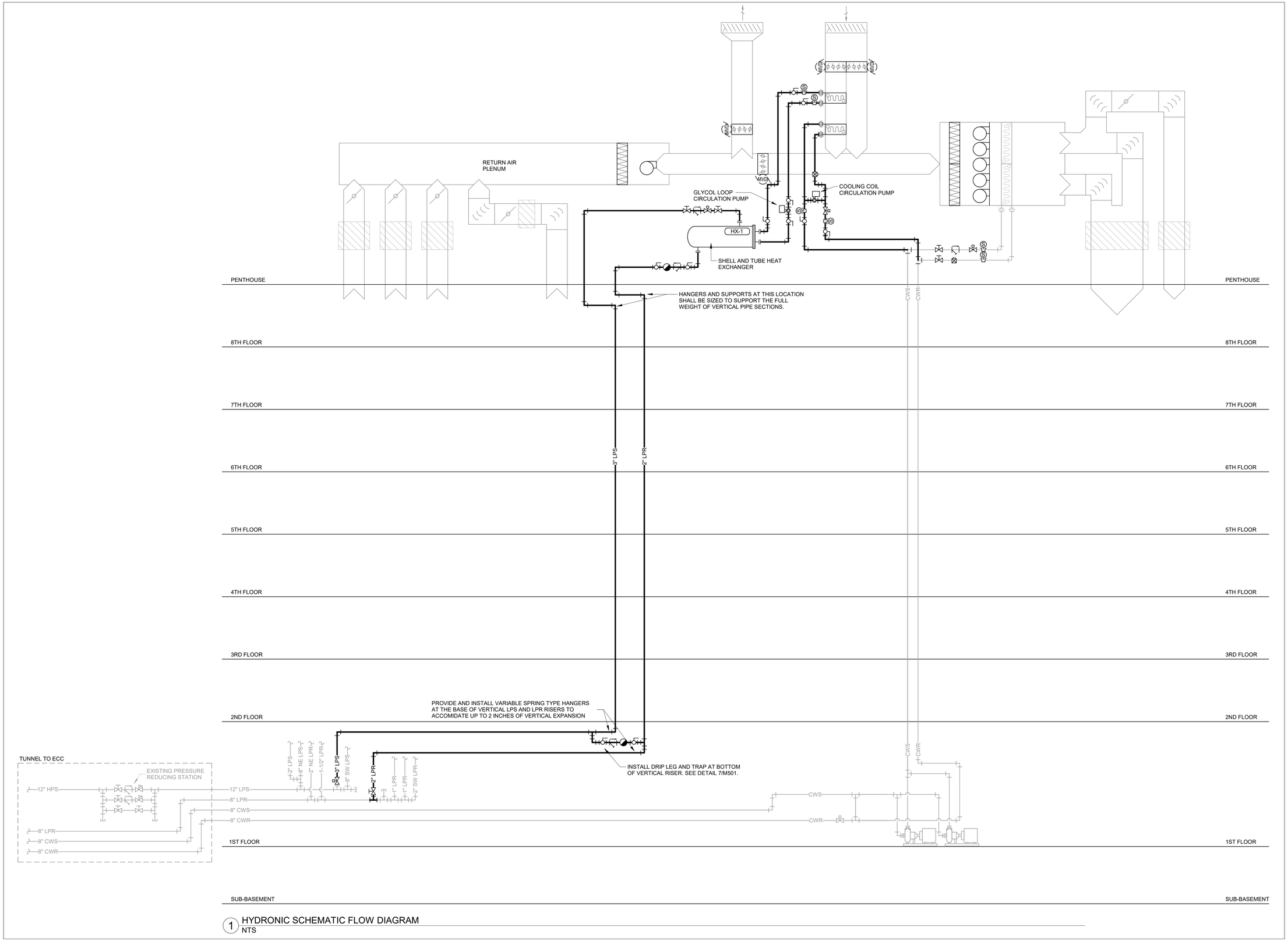
SHEET TITLE:
AIRFLOW CONTROL SCHEMATIC DIAGRAM

SHEET NUMBER:
M701

SHEET 19 of 23
MAY 30, 2024



1 HYDRONIC SCHEMATIC FLOW DIAGRAM
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HYDRONIC SCHEMATIC FLOW DIAGRAM

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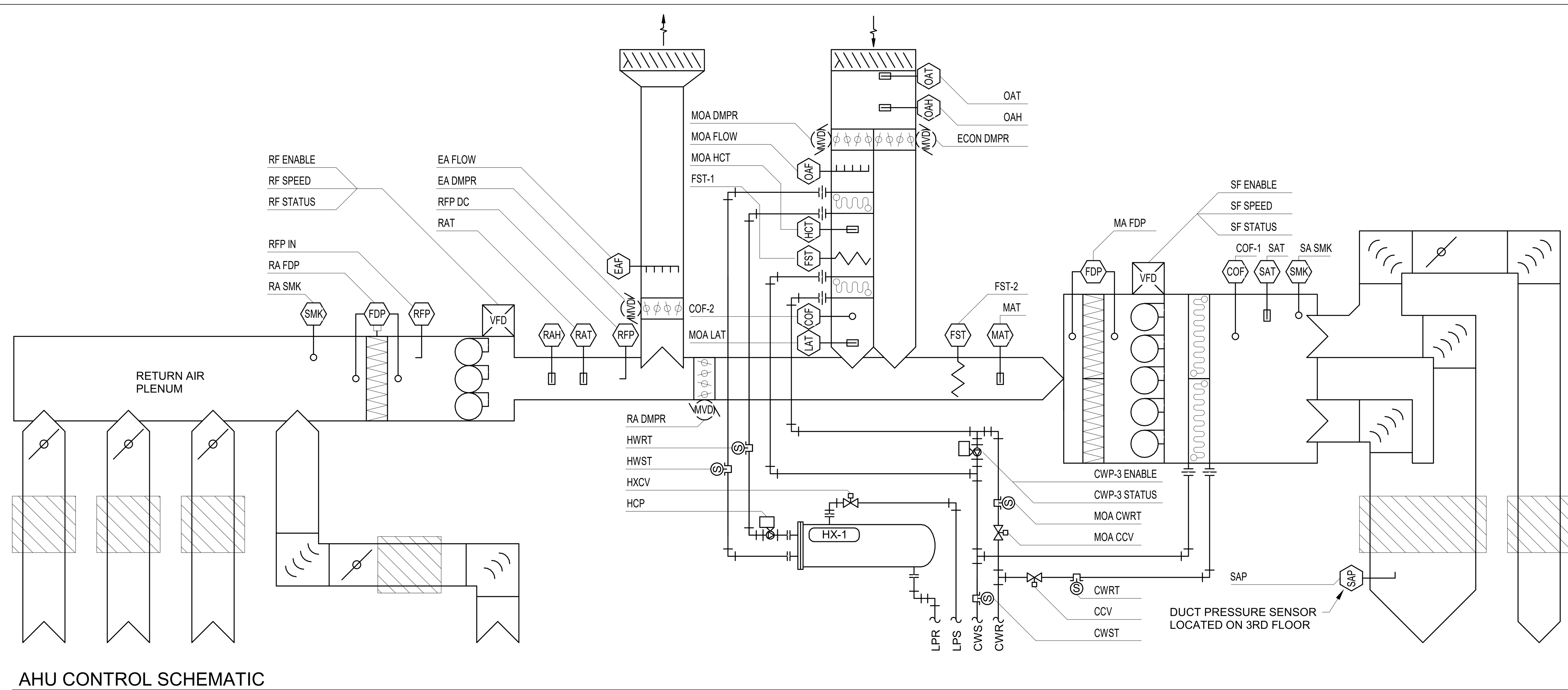
M702

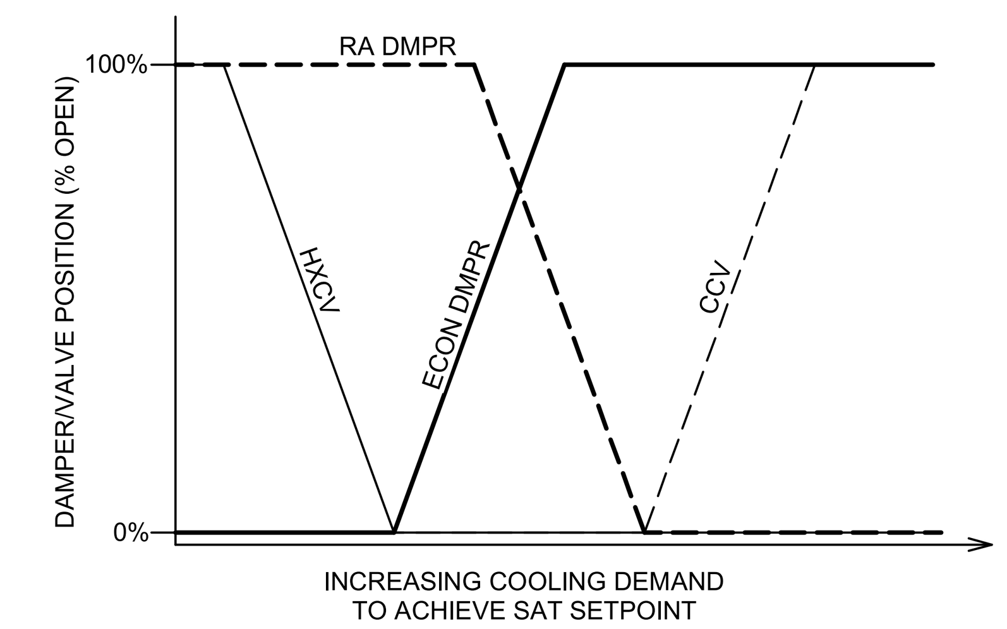
SHEET 20 of 23
MAY 30, 2024



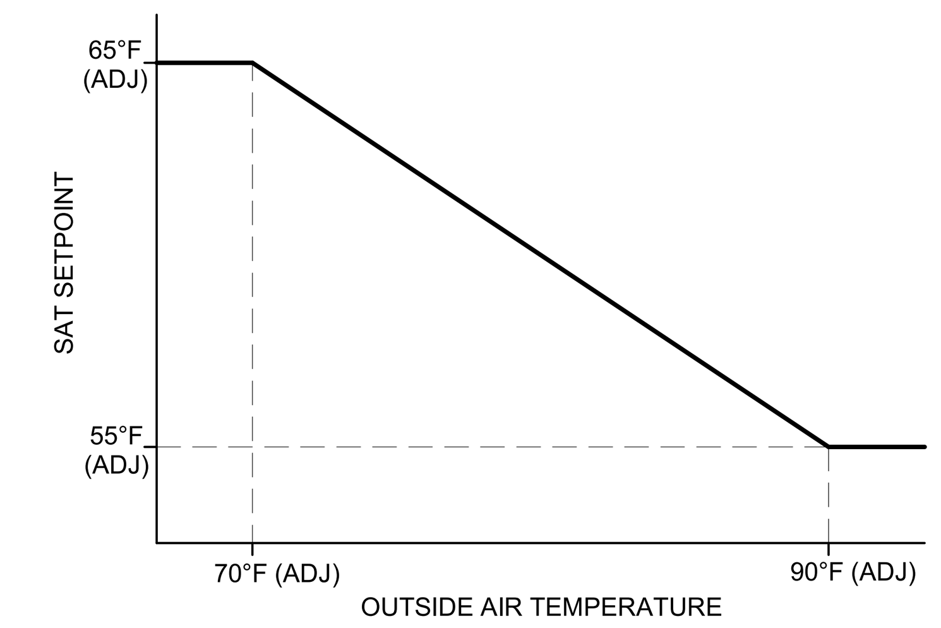
AHU CONTROL SCHEMATIC

GENERAL CONTROLS NOTES:

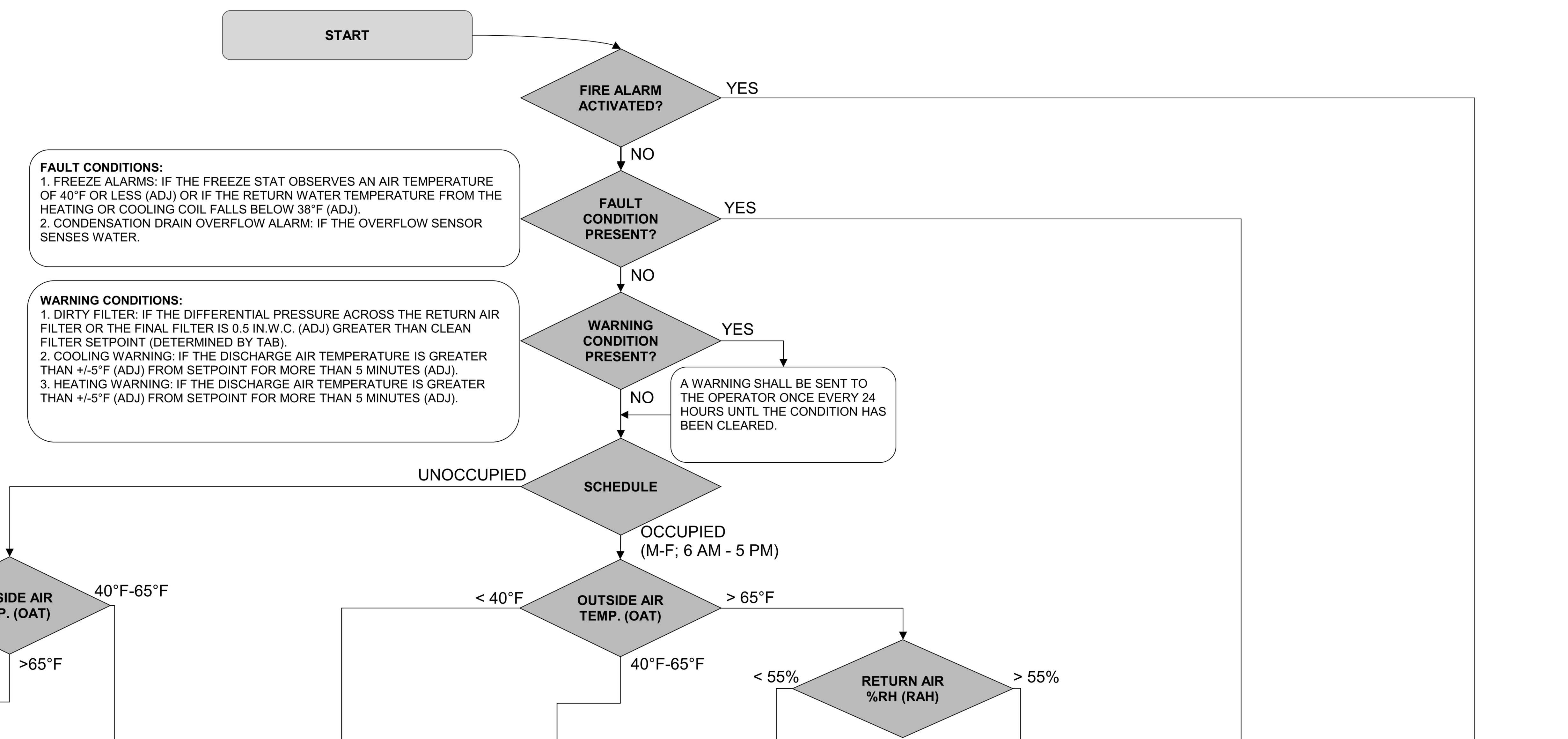
1. THESE SEQUENCES ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONAL RESULT USING DIFFERENT UNDERLYING DETAILED LOGIC WILL BE ACCEPTABLE.
2. THE SPEED SENT TO VFDS SHALL BE CONFIGURED SUCH THAT 0% SPEED CORRESPONDS TO 0 HZ AND 100% SPEED CORRESPONDS TO THE MAXIMUM SPEED CONFIGURED IN THE VFD.
3. TO AVOID ABRUPT CHANGES IN EQUIPMENT OPERATION, THE OUTPUT OF EVERY CONTROL LOOP SHALL BE CAPABLE OF BEING LIMITED BY A MAXIMUM RATE OF CHANGE, WITH A DEFAULT OF 25% PER MINUTE.
4. AIR FLOW MEASURING STATIONS ARE INTENDED TO BE UTILIZED FOR MONITORING PURPOSES ONLY.
5. COORDINATE MINIMUM SPEED SETTINGS FOR FANS WITH THE MOTOR AND VFD SUPPLIER TO ENSURE ADEQUATE MOTOR COOLING WHILE ACHIEVING THE LOWEST POSSIBLE SPEED TO MINIMIZE THE STEP CHANGE THAT OCCURS WHEN FAN STARTS.



ECONOMIZER MODULATION SCHEDULE



SAT RESET SCHEDULE



	UNOCCUPIED	UNOCCUPIED ECONOMIZER	HEATING	ECONOMIZER	COOLING	DEHUMIDIFCATION	FAULT CONDITION	FIRE ALARM
MOA DMPR	CLOSED	CLOSED	MOD TO MAINT SCHEDULED MIN OA (1)	CLOSED	MOD TO MAINT SCHEDULED MIN OA (1)	MOD TO MAINT SCHEDULED MIN OA (1)	CLOSED	CLOSED
HCP STATUS	OFF	OFF	RUN	OFF	OFF	OFF	RUN	DISABLED
HXCV	CLOSED	CLOSED	MODULATE TO MAINT MOA LAT	CLOSED	CLOSED	CLOSED	MODULATE TO MAINT MOA LAT	CLOSED
MOA CCV	CLOSED	CLOSED	CLOSED	CLOSED	MODULATE TO MAINT MOA LAT	MODULATE TO MAINT MOA LAT	CLOSED	CLOSED
MOA LAT	N/A	N/A	40°F	N/A	52°F	52°F	50°F	N/A
ECON DMPR	CLOSED	SEE ECON MOD SCHED	CLOSED	SEE ECON MOD SCHED	CLOSED	CLOSED	CLOSED	CLOSED
EA DMPR	MODULATE TO MAINT 5 (ADJ) FLOOR DP SENSORS ABOVE A SETPOINT OF +0.05 INWG (ADJ)	MODULATE TO MAINT 5 (ADJ) FLOOR DP SENSORS ABOVE A SETPOINT OF +0.05 INWG (ADJ)	MODULATE TO MAINT 5 (ADJ) FLOOR DP SENSORS ABOVE A SETPOINT OF +0.05 INWG (ADJ)	MODULATE TO MAINT 5 (ADJ) FLOOR DP SENSORS ABOVE A SETPOINT OF +0.05 INWG (ADJ)	MODULATE TO MAINT 5 (ADJ) FLOOR DP SENSORS ABOVE A SETPOINT OF +0.05 INWG (ADJ)	MODULATE TO MAINT 5 (ADJ) FLOOR DP SENSORS ABOVE A SETPOINT OF +0.05 INWG (ADJ)	CLOSED	CLOSED
RA DMPR	OPEN	SEE ECON MOD SCHED	MOD TO MAINT SCHEDULED MIN OA (1)	SEE ECON MOD SCHED	MOD TO MAINT SCHEDULED MIN OA (1)	MOD TO MAINT SCHEDULED MIN OA (1)	OPEN	OPEN
CCV	MODULATE TO MAINTAIN SAT	SEE ECON MOD SCHED	CLOSED	SEE ECON MOD SCHED	MODULATE TO MAINTAIN SAT	MODULATE TO MAINTAIN SAT	FULL OPEN	CLOSED
SAT	SEE SAT RESET SCHEDULE	SEE SAT RESET SCHEDULE	N/A	SEE SAT RESET SCHEDULE	SEE SAT RESET SCHEDULE	55°F	N/A	N/A
RF ENABLE	ENABLED	ENABLED	ENABLED	ENABLED	ENABLED	ENABLED	DISABLED	DISABLED
RF SPEED	MODULATE TO MAINTAIN RFP DC PRES SETPOINT (2)	MODULATE TO MAINTAIN RFP DC PRES SETPOINT (2)	MODULATE TO MAINTAIN RFP DC PRES SETPOINT (2)	MODULATE TO MAINTAIN RFP DC PRES SETPOINT (2)	MODULATE TO MAINTAIN RFP DC PRES SETPOINT (2)	MODULATE TO MAINTAIN RFP DC PRES SETPOINT (2)	N/A	N/A
SF ENABLE	ENABLED	ENABLED	ENABLED	ENABLED	ENABLED	ENABLED	DISABLED	DISABLED
SF SPEED	MODULATE TO MAINTAIN SAP AT 1.2 IN WG (4)	MODULATE TO MAINTAIN SAP AT 1.2 IN WG (4)	MODULATE TO MAINTAIN SAP AT 1.2 IN WG (4)	MODULATE TO MAINTAIN SAP AT 1.2 IN WG (4)	MODULATE TO MAINTAIN SAP AT 1.2 IN WG (4)	MODULATE TO MAINTAIN SAP AT 1.2 IN WG (4)	N/A	N/A
CWP-3 ENABLE	OFF	OFF	OFF	OFF	OFF	OFF	RUN	OFF (3)
EF-1	OFF	OFF	RUN	RUN	RUN	RUN	OFF	OFF

NOTES

1. MINIMUM OUTSIDE AIR PROCESS: IN THE OCCUPIED, NON-ECONOMIZER MODE, THE MOA DMPR AND RA DMPR SHALL MODULATE TO MAINTAIN THE SCHEDULED MINIMUM OUTSIDE AIR FLOWRATE. CHARACTERISTIC DATA POINTS (PROVIDED BY TAB) SHALL BE UTILIZED AS OPERATOR-ADJUSTABLE INPUTS TO AN INTERPOLATION ALGORITHM WHICH CONTINUOUSLY ADJUSTS THE RA AND MOA DAMPER POSITIONS AS A FUNCTION OF SF SPEED TO ACHIEVE THE SCHEDULED MINIMUM OUTSIDE AIR FLOWRATE AT FAN SPEEDS BETWEEN OR OUTSIDE OF DATA POINTS PROVIDED. COORDINATE WITH METHODS OUTLINED IN "PROCEDURES FOR MINIMUM OUTSIDE AIR AND RETURN AIR DAMPERS" IN SPECIFICATION SECTION 230593.
2. RETURN FAN PROCESS: RFP DC SETPOINT SHALL RESET PROPORTIONALY FROM INITIAL SETPOINTS OF 0.00 INWC (ADJ) TO +0.2 INWC (ADJ) AS EA DMPR POSITION MOVES FROM 0% TO 5% OPEN. FINAL RFP DC SETPOINTS DETERMINED BY TAB.
3. BAS SHALL CONTINIOUSLY MONITOR FOR FREEZE ALARMS AND ENABLE CWP-3 IF FREEZE ALARMS ARE ACTIVE.
4. FINAL SAP SETPOINT DETERMINED BY TAB.

SEQUENCE OF OPERATIONS

AIR HANDLING UNIT DDC CONTROL SUMMARY

#	TAG	CONTROL POINT	BAS DISPLAY	TREND	ALARM			REMARKS
1	FA STATUS	FIRE ALARM STATUS	●	●	●			1
2	FST-1	MINIMUM OUTSIDE AIR FREEZESTAT	●	●	●			
3	FST-2	MIXED AIR PLENUM FREEZESTAT	●	●	●			
4	OAT	OUTSIDE AIR TEMPERATURE	●	●				
5	OAH	OUTSIDE AIR ENTHALPY	●	●				
6	HWST	HOT WATER SUPPLY TEMPERATURE	●	●				
7	HWRT	HOT WATER RETURN TEMPERATURE	●	●	●			
8	HCP	HEATING WATER CIRCULATION PUMP	●	●				
9	HXCV	HEAT EXCHANGER CONTROL VALVE	●	●				
10	CCV	CHILLED WATER CONTROL VALVE	●	●				
11	MOA CCV	MINIMUM OUTSIDE AIR CHILLED WATER CONTROL VALVE	●	●				
12	MOA LAT	MINIMUM OUTSIDE AIR LEAVING AIR TEMPERATURE	●	●	●			
13	MOA DMPR	MINIMUM OUTSIDE AIR DAMPER	●	●				
14	MOA FLOW	MINIMUM OUTSIDE AIR FLOWRATE	●	●				
15	MOA CWRT	MIN. OA CHILLED WATER RETURN TEMPERATURE	●	●	●			
16	CWRT	CHILLED WATER RETURN TEMPERATURE	●	●	●			
17	CWST	CHILLED WATER SUPPLY TEMPERATURE	●	●				
18	ECON DMPR	ECONOMIZER DAMPER	●	●				
19	EA DMPR	EXHAUST DAMPER	●	●				3
20	EA FLOW	EXHAUST AIR FLOWRATE	●	●				
21	RA DMPR	RETURN AIR DAMPER	●	●				
22	RF ENABLE	RETURN FAN ENABLE	●	●				
23	RF SPEED	RETURN FAN SPEED	●	●				
24	RF STATUS	RETURN FAN STATUS	●	●	●			
25	RAT	RETURN AIR TEMPERATURE	●	●				
26	RAH	RETURN AIR RELATIVE HUMIDITY	●	●				
27	RFP IN	RETURN FAN INLET PRESSURE	●	●				
28	RFP DC	RETURN FAN DISCHARGE PRESSURE	●	●				
29	SF ENABLE	SUPPLY FAN ENABLE	●	●	●			
30	SF SPEED	SUPPLY FAN SPEED	●	●				
31	SF STATUS	SUPPLY FAN STATUS	●	●				
32	SAP	SUPPLY DUCT STATIC PRESSURE	●	●	●			
33	MAT	MIXED AIR TEMPERATURE	●	●				
34	RA FDP	RETURN AIR FILTER DIFFERENTIAL PRESSURE	●	●	●			2
35	MA FDP	MIXED AIR FILTER DIFFERENTIAL PRESSURE	●	●	●			
36	SAT	SUPPLY AIR TEMPERATURE	●	●	●			
37	CWP-3 ENABLE	CHILLED WATER CIRCULATION PUMP #3 ENABLE	●	●				
38	CWP-3 STATUS	CHILLED WATER CIRCULATION PUMP #3 STATUS	●	●	●			
39	EF-1 ENABLE	RESTROOM EXHAUST FAN ENABLE	●	●				
40	EF-1 SPEED	RESTROOM EXHAUST FAN SPEED	●	●				
41	EF-1 STATUS	RESTROOM EXHASUT FAN STATUS	●	●	●			
42	MOA HCT	MINUMUM OUTSIDE AIR HEATING COIL DISHCARGE TEMPERATURE	●	●	●			
43	COF-1	COOLING COIL CONDENSATE OVERFLOW	●		●			5
44	COF-2	MINIMUM OUTSIDE AIR COOLING COIL CONDENSATE OVERFLOW	●		●			5
45	--	--						
46	--	--						
47	--	--						
48	--	--						
49	--	--						
50	--	--						

1. COORDINATE WITH FIRE ALARM CONTRACTOR.
2. SETPOINT TO BE DETERMINED BY TAB CONTRACTOR.
3. RELIEF POSITION TO BE DETERMINED BY TAB CONTRACTOR.
4. TYPICAL FOR FLOORS 1 THROUGH 8.
5. PROVIDE CONDENSATE PUMP AND RELAY. ENERGIZE PUMP ON HIGH LEVEL ALARM.

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HVAC CONTROL DETAILS

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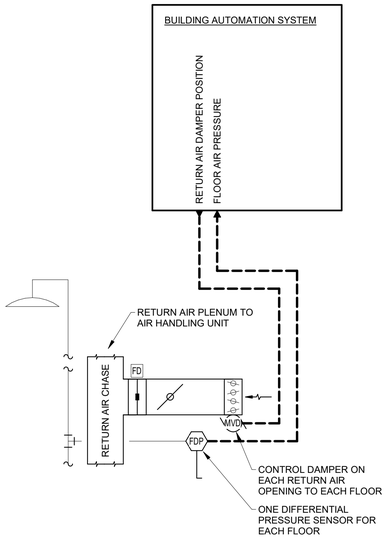


FLOOR PRESSURE DDC CONTROL SUMMARY

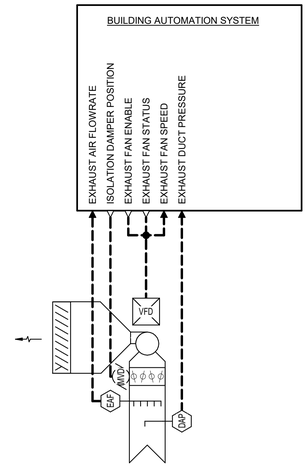
#	CONTROL POINT	LOCAL DISPLAY	BAS DISPLAY	TREND	ALARM			REMARKS
1	RETURN AIR DAMPER POSITION	●	●	●				2
2	FLOOR DIFFERENTIAL PRESSURE	●	●	●	●			1, 2

1. SETPOINT TO BE DETERMINED BY TAB CONTRACTOR.
2. TYPICAL FOR FLOORS 1 THROUGH 8.

FLOOR PRESSURE CONTROL SEQUENCE OF OPERATIONS

1. SAFETY ALARMS & WARNINGS GENERATION:
   A. UNDER ANY OF THE WARNING CONDITIONS LISTED BELOW THE FOLLOWING SHALL OCCUR:
      1. A WARNING SHALL BE SENT TO THE OPERATOR ONCE EVERY 24 HOURS UNTIL THE CONDITION HAS BEEN CLEARED.
   B. WARNING CONDITIONS:
      1. IF THE FLOOR AIR PRESSURE BECOMES NEGATIVE FOR MORE THAN 1 MINUTE (ADJUSTABLE).
      2. IF THE FLOOR AIR PRESSURE EXCEEDS SETPOINT BY MORE THAN 15% (ADJUSTABLE) FOR MORE THAN 1 MINUTE (ADJUSTABLE)
2. RETURN DAMPER POSITION:
   A. THE RETURN DAMPER POSITION ON EACH RETURN AIR PENETRATION TO THE FLOOR SHALL MODULATE SIMULTANEOUSLY TO MAINTAIN FLOOR PRESSURE SETPOINT OF +0.05 IN.W.C. (ADJUSTABLE).
   B. CONTROL SYSTEM SHALL ELECTRONICALLY DAMPEN FLUCTUATIONS IN STATIC PRESSURE SENSORS TO ELIMINATE THE INFLUENCE OF TRANSIENT EFFECTS FROM ELEVATOR CARS, DOOR SWINGS, ETC.

1 FLOOR RETURN PRESSURE CONTROL DETAILS
NTS



RESTROOM EXHAUST FAN DDC CONTROL SUMMARY

#	CONTROL POINT	LOCAL DISPLAY	BAS DISPLAY	TREND	ALARM			REMARKS
1	EXHAUST AIR FLOWRATE	●	●	●				
2	EXHAUST FAN ENABLE	●	●	●				
3	EXHAUST FAN STATUS	●	●	●	●			
4	EXHAUST FAN SPEED	●	●	●				1
5	ISOLATION DAMPER POSITION	●	●	●	●			
6	EXHAUST DUCT PRESSURE	●	●	●	●			

1. SETPOINT TO BE DETERMINED BY TAB CONTRACTOR TO ACHIEVE SCHEDULED FLOWRATE.

RESTROOM EXHAUST FAN CONTROL SEQUENCE OF OPERATIONS

1. SAFETY ALARMS & WARNINGS GENERATION:
   A. UNDER ANY OF THE WARNING CONDITIONS LISTED BELOW THE FOLLOWING SHALL OCCUR:
      1. A WARNING SHALL BE SENT TO THE OPERATOR ONCE EVERY 24 HOURS UNTIL THE CONDITION HAS BEEN CLEARED.
      2. THE FAN SHALL CONTINUE TO OPERATE.
   B. WARNING CONDITIONS:
      1. IF THE EXHAUST DUCT AIR PRESSURE BECOMES POSITIVE.
      2. IF THE EXHAUST FAN STATUS DOES NOT PROVE FAN ACTIVE WITHIN 1 MINUTE OF ENABLE COMMAND.
2. EXHAUST FAN SPEED:
   A. THE ISOLATION DAMPER SHALL BE COMMANDED OPEN WHEN THE BUILDING IS IN OCCUPIED MODE.
   B. THE EXHAUST FAN SHALL BE ENABLED WHEN THE ISOLATION DAMPER IS OPEN.
   C. THE EXHAUST FAN SHALL MODULATE TO MAINTAIN EXHAUST DUCT STATIC PRESSURE AS DETERMINED BY THE BALANCING CONTRACTOR TO MAINTAIN AIRFLOW FROM EACH FLOOR.
   D. EXHAUST AIR FLOWRATE SHALL BE DISPLAYED FOR VIEWING ONLY.

2 RESTROOM EXHAUST FAN CONTROL DETAIL
NTS

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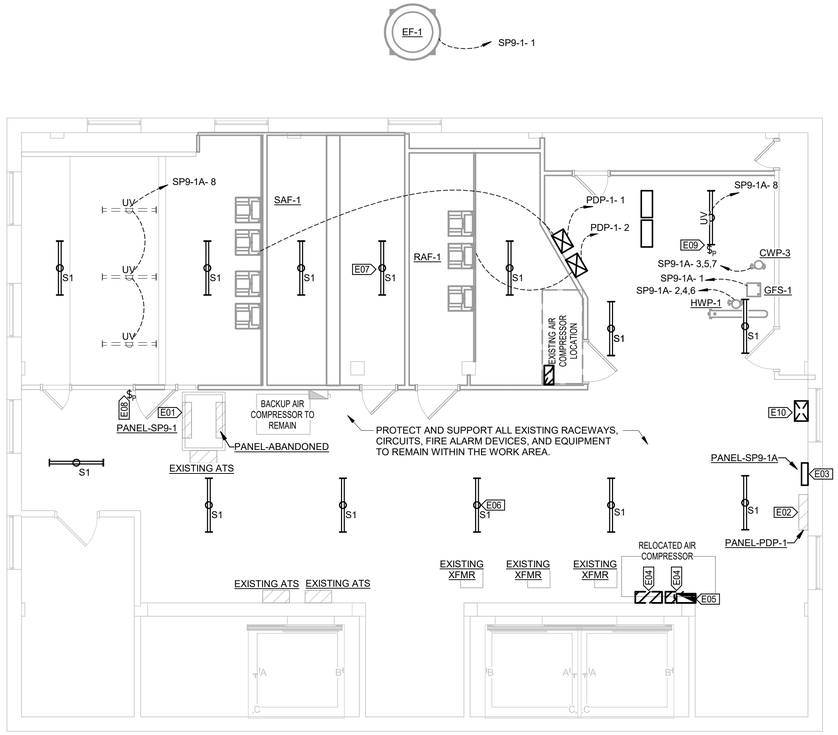
SHEET 22 of 23
MAY 30, 2024

KEYNOTE LEGEND

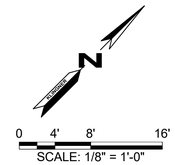
VALUE	DESCRIPTION
E01	PROVIDE NEW FEEDER FROM PANEL SP9-1 TO NEW EXHAUST FAN. REPLACE EXISTING RESTROOM EXHAUST FAN CIRCUIT BREAKER WITH NEW 35A. PROVIDE NEW 60A BREAKER AND FEEDER TO NEW SUB-PANEL SP9-1A.
E02	EXISTING PANEL PDP-1 IS EATON MODEL PRL4F POW-R-LINE C. REPLACE EXISTING 100A SWITCH WITH 60A SWITCH TO FEED RAF-1. USE EXISTING 100A SWITCH TO POWER SAF-1.
E03	DEMOLISH EXISTING RETURN FAN VFD IN THIS LOCATION AND INSTALL NEW PANEL SP9-1A.
E04	DEMOLISH EXISTING SUPPLY FAN VFD IN THIS LOCATION.
E05	RELOCATE EXISTING AIR COMPRESSOR CIRCUIT FROM EXISTING AHU WALL TO THIS LOCATION.
E06	REUSE EXISTING PENTHOUSE LIGHTING CIRCUIT AND SWITCHES AND PROVIDE EIGHT (8) LED STRIP LIGHT FIXTURES MOUNTED AS HIGH AS POSSIBLE.
E07	REUSE EXISTING AIR HANDLING UNIT LIGHT FIXTURE CIRCUIT AND PROVIDE FIVE (5) LED STRIP LIGHT FIXTURES MOUNTED AS HIGH AS POSSIBLE WITHIN AIR HANDLING UNIT CABINET.
E08	PROVIDE DOOR POSITION SWITCH ON EXISTING DOOR. WHEN DOOR IS OPEN UV LIGHTING SHALL BE OFF.
E09	PROVIDE DOOR POSITION SWITCH ON COOLING COIL ACCESS DOOR INTO COOLING COIL SECTION. WHEN DOOR IS OPEN UV LIGHTING SHALL BE OFF.
E10	DEMOLISH EXISTING RETURN FAN VFD IN THIS LOCATION.

LIGHT FIXTURE SCHEDULE

TAG	DESCRIPTION	LAMP OUTPUT	COLOR TEMPERATURE	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL
S1	4' LED STRIPLIGHT	3000 lm	4000 K	LITHONIA	ZL1N L48



1 ENLARGED PENTHOUSE ELECTRICAL PLAN
3/16" = 1'-0"



SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
ANTHONY LOUIS DIEWOLD
NUMBER PE-2016000028
PROFESSIONAL ENGINEER

Expires: 12-31-2024

ANTHONY L. DIEWOLD - ENGINEER
MO # - 2016000028

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MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

IMPROVEMENTS TO HVAC

BROADWAY STATE OFFICE BUILDING

221 W. HIGH STREET
JEFFERSON CITY, MISSOURI

PROJECT # O2324-01
SITE # 1001
ASSET # 3101001041

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:05/30/2024

CAD DWG FILE:
DRAWING BY: ALD
CHECKED BY: GCS
DESIGNED BY: ALD

SHEET TITLE:

ENLARGED PENTHOUSE ELECTRICAL PLAN

SHEET NUMBER:

E201

SHEET 23 of 23
MAY 30, 2024