MECHANICAL SYMBOLS NEW

UP DOWN	SUPPLY - RECTANGULAR RISING or DROPPING
UP DOWN	SUPPLY - ROUND RISING or DROPPING
UP DOWN	RETURN - RECTANGULAR RISING or DROPPING
UP DOWN	EXHAUST - ROUND RISING or DROPPING
UP DOWN	RETURN- RECTANGULAR RISING or DROPPING
UP DOWN	RETURN - ROUND RISING or DROPPING
	90° ELBOW w/TURNING VANES
	SQUARE TO ROUND OR ROUND TO SQUARE TRANSITIONS CONCENTRIC or ECCENTRIC
	TRANSITIONS CONCENTRIC or ECCENTRIC
	BELL-MOUTH TAKE-OFF
	RECTANGULAR BRANCH DUCT w/HEEL OR ROUND BRANCH DUCT w/BEVEL
	ROUND BRANCH DUCT WITH BEVEL IN THE RISE
R D	RISE OR DROP IN DUCT ELEVATION (IN DIRECTION OF AIR FLOW)
	FLEXIBLE DUCT
	PROPORTIONAL SPLIT OR EQUAL SPLIT. ABOVE 8" (200mm) - SQUARE ELBOWS WITH TURNING VANES 8" (200mm) AND BELOW - FULL RADIUS ELBOWS
10" (250 mm) 8 6" (150 mm) 6	PROPORTIONAL SPLIT OR EQUAL SPLIT. ABOVE 8" (200mm) - SQUARE ELBOWS WITH TURNING VANES 8" (200mm) AND BELOW - FULL RADIUS ELBOWS
	DUCT REHEAT COIL
	VARIABLE AIR VOLUME SUPPLY UNIT
	VARIABLE AIR VOLUME SUPPLY UNIT WITH HOT WATER REHEAT COIL
100% ACTIVE AREA	AIR DEVICE (BLOW PATTERN AS SHOWN; EXAMPLE: 3-WAY BLOW)
	SUPPLY DIFFUSERS
	RETURN GRILLE/REGISTER
	EXHAUST GRILLE/REGISTER
	LINEAR DIFFUSER w/PLENUM
	OPPOSED BLADE DAMPER
	PARALLEL BLADE DAMPER
	DANDER FILTER

MECHANICAL SYMBOLS

AHU --	AIR HANDLING UNIT
CUH --	CABINET UNIT HEATER
EAV --	EXHAUST AIR VALVE
EF --	EXHAUST FAN
ET --	EXPANSION TANK
FCU --	FAN COIL UNIT
RHC --	REHEAT COIL
SAT --	SOUND ATTENUATOR
UH --	UNIT HEATER
ZD --	ZONE DAMPER (VVT)
VFD --	VARIABLE FREQUENCY DRIVE
X1 X2/X3 DETAIL TITLE SCALE	DRAWING BLOCK TITLE X1 INDICATES SHEET (X,Y) COORDINATES X2 INDICATES SHEET "TO" REFERENCE X3 INDICATES SHEET "FROM" REFERENCE
X1 X2/X3	DETAIL INDICATOR X1 INDICATES SHEET (X,Y) COORDINATES X2 INDICATES SHEET "TO" REFERENCE X3 INDICATES SHEET "FROM" REFERENCE
X1 X2/X3	SECTION INDICATOR X1 INDICATES SHEET (X,Y) COORDINATES X2 INDICATES SHEET "TO" REFERENCE X3 INDICATES SHEET "FROM" REFERENCE
1	KEYNOTE INDICATOR
X1	CONDUCTOR INDICATOR X1 INDICATES CONDUCTOR TYPE
X1 X2	ROOM TAG X1 INDICATES ROOM NAME X2 INDICATES ROOM NUMBER)
1	REVISION INDICATOR X1 INDICATES REVISION NUMBER
	REVISION CLOUD
X1	"TO-FROM" LOCATION REFERENCE X1 INDICATES LOCATION REFERENCE
	BREAK LINE (SINGLE LINE)
X2 X5 X1 X3 X4	ELEVATION INDICATOR (IN PLAN) X1 INDICATES REFERENCE SHEET NUMBER X2-5 INDICATES REFERENCE SHEET (X,Y) COORDINATES
	CUT LINE
	MATCH LINE
X1 X2	EQUIPMENT TAG X1 INDICATES EQUIPMENT NAME X2 INDICATES EQUIPMENT NUMBER
	INDICATES CONNECTION POINT OF NEW TO EXISTING
	INDICATES DISCONNECTION POINT FROM EXISTING
	BREAK LINE (SINGLE LINE)
	BREAK LINE (DOUBLE LINE DUCTWORK)
	BREAK LINE (DOUBLE LINE PIPING)
	FLOW ARROW

MECHANICAL SYMBOLS EXISTING

UP DOWN	SUPPLY - RECTANGULAR RISING or DROPPING - EXISTING
UP DOWN	SUPPLY - ROUND RISING or DROPPING - EXISTING
UP DOWN	RETURN - RECTANGULAR RISING or DROPPING - EXISTING
UP DOWN	EXHAUST - ROUND RISING or DROPPING - EXISTING
UP DOWN	RETURN- RECTANGULAR RISING or DROPPING -EXISTING
UP DOWN	RETURN - ROUND RISING or DROPPING - EXISTING
	90° ELBOW w/TURNING VANES
	SQUARE TO ROUND OR ROUND TO SQUARE TRANSITIONS CONCENTRIC or ECCENTRIC
	RECTANGULAR BRANCH DUCT w/HEEL OR ROUND BRANCH DUCT w/BEVEL
	SUPPLY DIFFUSERS - EXISTING
	RETURN GRILLE/REGISTER - EXISTING
	EXHAUST GRILLE/REGISTER - EXISTING

MECHANICAL SYMBOLS DEMO

UP DOWN	SUPPLY - RECTANGULAR RISING or DROPPING - DEMO
UP DOWN	SUPPLY - ROUND RISING or DROPPING - DEMO
UP DOWN	RETURN - RECTANGULAR RISING or DROPPING - DEMO
UP DOWN	EXHAUST - ROUND RISING or DROPPING - DEMO
UP DOWN	RETURN- RECTANGULAR RISING or DROPPING -DEMO
UP DOWN	RETURN - ROUND RISING or DROPPING - DEMO
	90° ELBOW w/TURNING VANES
	SQUARE TO ROUND OR ROUND TO SQUARE TRANSITIONS CONCENTRIC or ECCENTRIC
	RECTANGULAR BRANCH DUCT w/HEEL OR ROUND BRANCH DUCT w/BEVEL
	SUPPLY DIFFUSERS - DEMO
	RETURN GRILLE/REGISTER - DEMO
	EXHAUST GRILLE/REGISTER - DEMO

GENERAL NOTE:

EXISTING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.

MECHANICAL GENERAL NOTES

GENERAL NOTES

A. ALL MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL BUILDING CODES. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS FOR MECHANICAL CONSTRUCTION.
B. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES, AND COMPLY WITH ALL NATIONAL, STATE, AND MUNICIPAL LAWS, CODES, AND ORDINANCES RELATING TO BUILDING AND PUBLIC SAFETY.
C. CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR A COMPLETE WORKING AND COORDINATED SYSTEM.
D. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF WALLS WHICH EXTEND TO STRUCTURE. EACH HVAC DUCT OR PIPE PENETRATION THROUGH THESE WALLS SHALL BE INSTALLED AS DETAILED. WHERE FLEXIBLE DUCT WOULD PENETRATE A WALL WHICH EXTENDS TO STRUCTURE, PROVIDE INSULATED RIGID DUCT EXTENDING 12 INCHES ON EITHER SIDE OF THE PARTITION.
E. COORDINATE THE EXACT LOCATION OF MECHANICAL EQUIPMENT WITH THE LOCATIONS OF LIGHT FIXTURES, PIPING, CONDUIT AND OTHER CONSTRUCTION, TO ALLOW FOR PROPER ACCESS TO SERVICE EQUIPMENT.
F. COORDINATE THE LOCATION OF DUCTWORK AND PIPING WITH OTHER TRADES AND PROVIDE OFFSETS IN DUCTWORK AND PIPING AS REQUIRED.
G. IT IS THE INTENT OF THESE DOCUMENTS TO ALLOW ALL CEILING CONSTRUCTION AND HEIGHTS TO BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS. COORDINATE THE LOCATION OF DUCTWORK AND PIPING AND PROVIDE OFFSETS IN DUCTWORK AND PIPING AS REQUIRED TO MEET THIS INTENT.
H. CONDUIT, PIPING, AND DUCTWORK SHALL BE INDEPENDENTLY SUPPORTED, AND EACH SUPPORT SHALL BE INDEPENDENT OF PARTITION AND CEILING SYSTEMS SUPPORTS.
I. REFER TO RISER DIAGRAMS AND FLOW DIAGRAMS FOR PIPE SIZES NOT SHOWN ON THE PLANS.
J. INSTALL ALL FLOOR MOUNTED EQUIPMENT ON PADS AS SPECIFIED. PAD BY GENERAL CONTRACTOR. COORDINATE REQUIREMENTS WITH GENERAL CONTRACTOR.
K. PROTECT EQUIPMENT FROM DAMAGE DURING HANDLING AND INSTALLATION UNTIL COMPLETION OF CONSTRUCTION.
L. REMOVE ALL EXCESS MATERIAL AND DEBRIS AND CLEAN ALL EQUIPMENT UPON COMPLETION OF WORK. TOUCH UP WITH PAINT WHERE REQUIRED.
M. CONTRACTOR SHALL VISIT JOBSITE AND VERIFY SIZE AND LOCATION OF ALL EXISTING ITEMS AND CONDITIONS.
N. ALL CONNECTIONS BETWEEN PIPES OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC UNIONS.
O. ALL EXISTING FACILITIES SHALL BE PROTECTED DURING THE CONSTRUCTION ACTIVITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE AND STORE ITEMS WHICH ARE SUBJECT TO DAMAGE.
P. ARCHITECT SHALL HAVE FINAL APPROVAL OF ALL GRILLE, DIFFUSER, AND THERMOSTAT LOCATIONS.
Q. COORDINATE ALL AIR DEVICE LOCATIONS AND MOUNTING FRAME STYLES WITH LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS. PROVIDE 6'-0" FROM CENTER TO CENTER FROM SUPPLY TO EXHAUST/RETURN GRILLES FOR PROPER AIRFLOW.
R. COORDINATE ALL WALL MOUNTED DEVICE LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS.
S. REFER TO ARCHITECTURAL LIFE SAFETY PLANS FOR COORDINATION OF FIRE, SMOKE, AND COMBINATION FIRE/SMOKE DAMPERS. THE DESIGN INTENT IS TO PROVIDE THE INDICATED DAMPERS IN ACCORDANCE WITH REQUIREMENTS OF THE 2012 INTERNATIONAL BUILDING CODE. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL LIFE SAFETY DAMPERS, INCLUDING FIRE ALARM CONTROL WIRING AND MONITORING REQUIRED BY THE IBC AND LOCAL ORDINANCES AND CODE INTERPRETATIONS.
T. ALL DUCT RUN-OUTS TO VAV TERMINAL BOXES SHALL BE 2" LARGER THAN INLET SIZE IF BOX IS MORE THAN 15 FT. FROM MAIN SUPPLY DUCT.
U. ANY DEVIATIONS FROM SCHEDULED EQUIPMENT RESULTING IN ADDITIONAL COST DUE TO THE LACK OF COORDINATION WITH DIMENSIONS AND WEIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
V. ALL FIRE/SMOKE COMBINATION DAMPERS AND/OR FIRE DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS THAT WERE TESTED AT U.L. LABORATORIES AND U.L. LISTED.
W. EXCEPT AS REQUIRED BY SECTIONS 602.1.1 THROUGH 602.1.5 OF THE 2012 IMC, MATERIALS WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
EXCEPTIONS:
1. RIGID AND FLEXIBLE DUCTS AND CONNECTORS SHALL CONFORM TO SECTION 603 ON THE 2012 IMC.
2. DUCT COVERINGS, LININGS, TAPE AND CONNECTORS SHALL CONFORM TO SECTIONS 603 AND 604 OF THE 2012 IMC.
3. THE SECTION SHALL NOT APPLY TO MATERIALS EXPOSED WITHIN PLENUMS IN ONE AND TWO STORY FAMILY DWELLINGS.
4. THIS SHALL NOT APPLY TO SMOKE DETECTORS.
5. COMBUSTIBLE MATERIALS ENCLOSED IN NON-COMBUSTIBLE RACEWAYS OR ENCLOSURES, APPROVED GYPSUM BOARD ASSEMBLIES OR ENCLOSED IN MATERIALS LISTED AND LABELED FOR SUCH APPLICATIONS.
X. WIRING:
COMBUSTIBLE ELECTRICAL OR ELECTRONIC WIRING METHODS AND MATERIALS, OPTICAL FIBER CABLE, AND OPTICAL FIBER RACEWAYS EXPOSED WITHIN A PLENUM SHALL HAVE A PEAK OPTICAL DENSITY NOT GREATER THAN .50, AN AVERAGE OPTICAL DENSITY NOT GREATER THAN 0.15 AND A FLAME SPREAD NOT GREATER THAN 5 FEET WHEN TESTED IN ACCORDANCE WITH NFPA 262. ONLY TYPE OFNP (PLENUM RATED NON-CONDUCTIVE FIBER CABLE) SHALL BE INSTALLED IN PLENUM-RATED RACEWAYS. WIRING, CABLE, AND RACEWAYS ADDRESSED IN THIS SECTION SHALL BE LISTED AND LABELED AS PLENUM RATED AND SHALL BE INSTALLED IN ACCORDANCE WITH ICC ELECTRICAL CODE.
Y. PROVIDE VOLUME AND BALANCING DAMPERS AS REQUIRED BY 2012 IMC 603.17 FOR EACH BRANCH OR DIFFUSER. REFERENCE CONSTRUCTION DOCUMENT SPECIFICATION SECTIONS 233300 & 230593. PROVIDE LINKAGE VOLUME DAMPERS TO DAMPERS LOCATED ABOVE HARD-LID CEILINGS SIMILAR TO YOUNG REGULATOR MODEL 927C OR EQUIVALENT SOLID LINKAGE DAMPER.
Z. ALL DUCT DETECTORS TO COMPLY WITH 2012 IMC 606.4.1 WHICH REQUIRES VISUAL LED MONITORING AS WELL AS CENTRAL FIRE ALARM & BMS MONITORING OF ALL DUCT DETECTORS. VISUAL MONITORS WILL BE INSTALLED WHERE AVAILABLE. WHERE NOT AVAILABLE, A VISUAL AND AUDIBLE ALARM WILL BE PROVIDED THROUGH THE BMS AND FIRE ALARM SYSTEM TO A CONSTANTLY ATTENDED LOCATION.

MECHANICAL ABBREVIATIONS

A, amp	AMPERES
A/E	ARCHITECT/ENGINEER
AC	ABOVE CEILING
ACC	AIR COOLED CONDENSER
ACV	AIR CONTROL VALVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFS	AIR FLOW STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
APD	AIR PRESSURE DROP
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
B	BOILER
BBD	BOILER BLOW DOWN
BD	BLOW DOWN
BDD	BACKDRAFT DAMPER
BF	BELOW FLOOR, BLIND FLANGE
BFC	BELOW FINISHED CEILING
BFW	BOILER FEED WATER
BG	BELOW GRADE
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BV	BUTTERFLY VALVE
°C	DEGREE CELSIUS
CA	COMPRESSED AIR
CAV	CONSTANT AIR VALVE
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CLG	CEILING
CO	CLEAN-OUT
CONT	CONTINUATION
CRU	CONDENSATE RETURN UNIT
CU	CONDENSING UNIT
CRU	COMPUTER ROOM UNIT
CRU	CONDENSATE RETURN UNIT
CW	CONDENSER WATER
CU	CONDENSING UNIT
dB	DECIBELS
DB	DRY BULB TEMPERATURE
DIA	DIAMETER
DIM	DIMENSION
DI	DIGITAL INPUT
DN	DOWN
DO	DIGITAL OUTPUT
DS	DISCONNECT SWITCH
DWG	DRAWING
E	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EUH	ELECTRIC UNIT HEATER
EF	EXHAUST FAN
ELEC	ELECTRICAL
ELEV	ELEVATION
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EVAP	EVAPORATE
EWT	ENTERING WATER TEMPERATURE
EQUIP	EQUIPMENT
EXIST	EXISTING
°F	DEGREE FAHRENHEIT
FCU	FAN COIL UNIT
FL	FLOOR
FMB	FILTER MIXING BOX
FO	FAIL OPEN
FP	FIRE PROTECTION
FPB	FAN POWERED BOX
FPM	FEET PER MINUTE
ft	FOOT
sf	SQUARE FEET
ft wg	FEET WATER GAUGE
FPI	FINS PER INCH
GC	GENERAL CONTRACTOR
GEF	GENERAL EXHAUST FAN
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HT	HEIGHT
HUM	HUMIDITY
HW	HOT WATER
Hz	HERTZ
in	INCH
in²	SQUARE INCHES
in wg	INCHES WATER GAUGE
kW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
lb	POUND
lb/h	POUND PER HOUR
LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBTUh	THOUSANDS OF BRITISH THERMAL UNITS PER HOUR
MECH	MECHANICAL
MEZZ	MEZZANINE
MIN	MINIMUM
MOD	MOTOR OPERATED DAMPER
MVD	MOTORIZED VOLUME DAMPER
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPSH	NET POSITIVE SUCTION HEAD
NTS	NOT TO SCALE
O/R	OWNER'S REPRESENTATIVE
OAI	OUTDOOR AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFE	OWNER FURNISHED EQUIPMENT
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
P	PUMP
PD	PRESSURE DROP
PERF	PERFORATED
PLBG	PLUMBING
PNEU	PNEUMATIC
PPE	PERSONAL PROTECTIVE EQUIPMENT
PPM	PARTS PER MILLION
PRES	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
P-VAC	VACUUM PUMP
QTY	QUANTITY
R	RELOCATED
RA	RETURN AIR
RCA	RECIRCULATED (RETURN) AIR
RD	ROUND
RET	RETURN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RELIEF AIR
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
sec	SECOND
SECT	SECTION
SF	SUPPLY FAN
SIM	SIMILAR
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SPS	STATIC PRESSURE STATION
SQ	SQUARE
STD	STANDARD
STM	STEAM
STRUCT	STRUCTURAL
STS	STEAM SEPARATOR
SYS	SYSTEM
SV	SAFETY VALVE
TSTAT	THERMOSTAT
TA	TRANSFER AIR
TAB	TEST AND BALANCE
TCOM	TELECOMMUNICATIONS
TEMP	TEMPERATURE
TON	TONS OF REFRIGERATION
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VENT
VAC	VACUUM
VAR	VARIABLE
VAV	VARIABLE AIR VOLUME
VB	BALL VALVE
VC	CHECK VALVE
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VOL	VOLUME
VR	RELIEF VALVE
VS	SHUTOFF VALVE
VX	CONTROL VALVE
W	WATT
WB	WET BULB TEMPERATURE
WG	WATER GAUGE
WH	WATER HEATER
WHP	WATER-SOURCE HEAT PUMP

MECHANICAL SYMBOLS

	TRANSFER AIR
	EXHAUST AIR INLET
	RETURN AIR INLET
	SUPPLY AIR OUTLET
	AIR HANDLING UNIT FAN
	IN-LINE FAN
VIM	PLENUM FAN W/ VARIABLE INLET MODULATOR (VIM)

MECHANICAL SYMBOLS

100 8	AIR DEVICE TYPE AND ROUND NECK SIZE TAG (EXAMPLE: AIR DEVICE TYPE A, 8" dia NECK,100 CFM)
100 12X24	AIR DEVICE TYPE AND RECTANGULAR FACE SIZE TAG (EXAMPLE: AIR DEVICE TYPE A, 12" x 24" FACE,100 CFM)
L	LOUVERED DOOR
U	UNDERCUT DOOR
T	TRANSFER AIR
W x H	DUCT SIZE (INSIDE DIMENSION)
T	DUCT MOUNTED TEMPERATURE SENSOR
FD	FIRE DAMPER
FSD	FIRE SMOKE DAMPER
	VOLUME DAMPER
M	MOTOR OPERATED DAMPER
X X	DUCT MATERIAL CHANGE (X) G = GALVANIZED STEEL S = STAINLESS STEEL A = ALUMINUM B = BLACK STEEL

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PROJECT NORTH

Issue	Date & Description	By
03/18/2025	ISSUED FOR CONSTRUCTION	

Drawn by

Reviewed by

Seal/Signature

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE040126 CHIEN QUOC TU 3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

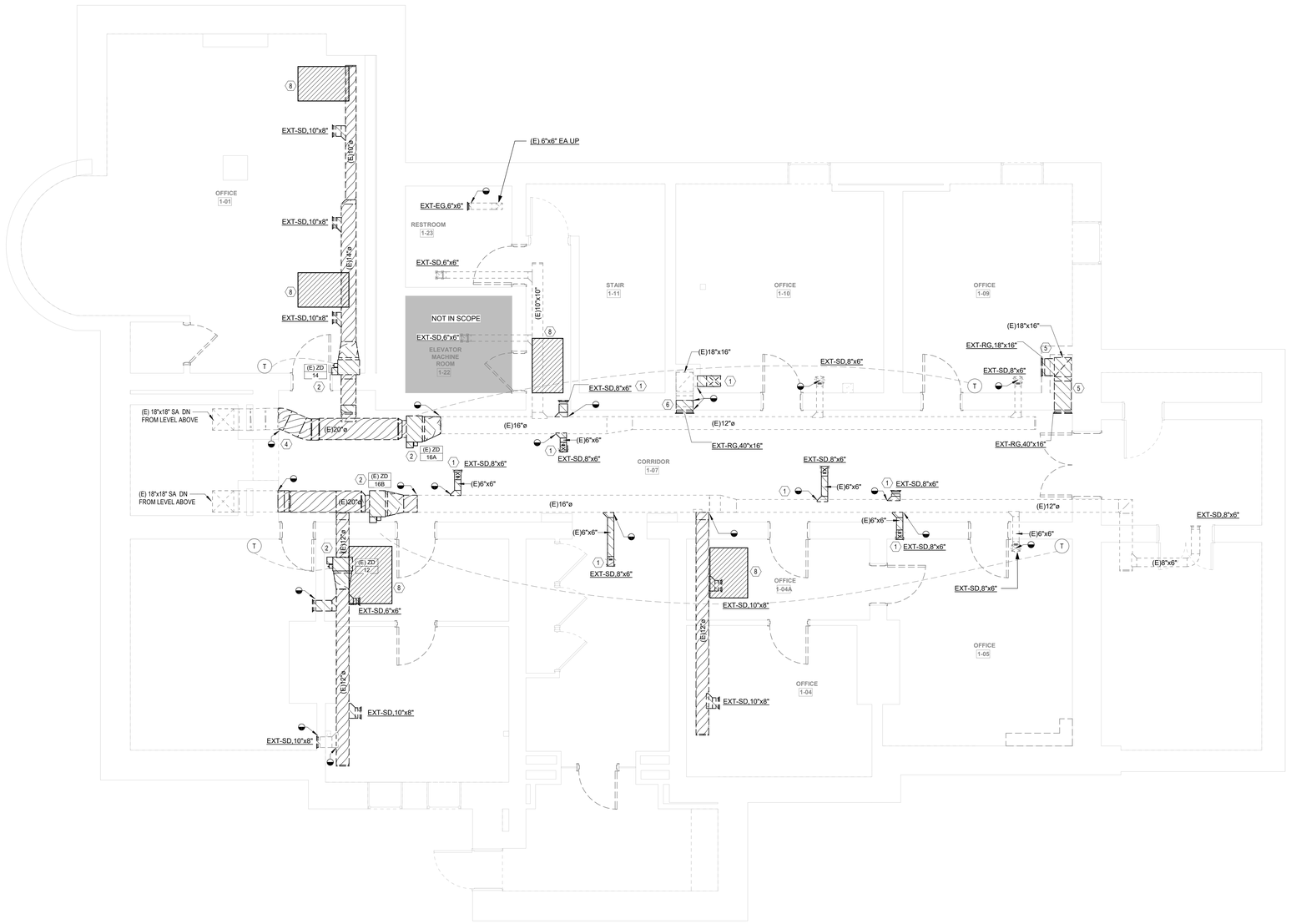
Project Number

Sheet Title
GENERAL INFORMATION SHEET - MECHANICAL

Scale
NOT TO SCALE

Sheet Number

M.000



1 **Level 1 HVAC DEMO**
1/4" = 1'-0"

KEY NOTES

1. REMOVE EXISTING AIR TERMINAL. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
2. REMOVE EXISTING AIR TERMINAL UNIT AND PROVIDE NEW DUCTWORK WITH MANUAL BALANCING DAMPER. PROVIDE ACCESS DOOR FOR FUTURE MAINTENANCE ACCESS.
3. MODIFY EXISTING DUCTWORK TO ACCOMODATE NEW FCU UNIT DUCT ROUTING. CONTRACTOR TO MODIFY EXISTING DUCT IN THESE LOCATIONS FOR NEW AC UNIT INSTALLATION. DUCTWORK CROSS SECTIONAL AREA SHALL BE REDUCED TO THE MINIMUM EXTENT POSSIBLE TO ALLOW FOR FUTURE OUTSIDE AIR FLOW.
4. REMOVE EXISTING DUCTWORK SECTION. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
5. REMOVE EXISTING RETURN GRILL AND CAP DUCT AT CONNECTION TO GRILL. PATCH FLOOR PENETRATION ON LEVEL BELOW TO MAINTAIN FIRE RATING.
6. REMOVE EXISTING RETURN GRILL AND FLOOR FIRE DAMPER.
7. EXISTING SOFFIT VENT TO REMAIN.
8. MODIFY EXISTING DUCTWORK TO ACCOMODATE NEW FCU UNIT DUCT ROUTING.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
2. EXISTING UTILITIES SHOWN ARE BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.

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GEORGIA REGISTERED No. PE040126 PROFESSIONAL ENGINEER CHIEN QUOC TU
3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION
Project Number

Sheet Title
LEVEL 1 HVAC DEMO

Scale
1/4" = 1'-0"

Sheet Number
M.020

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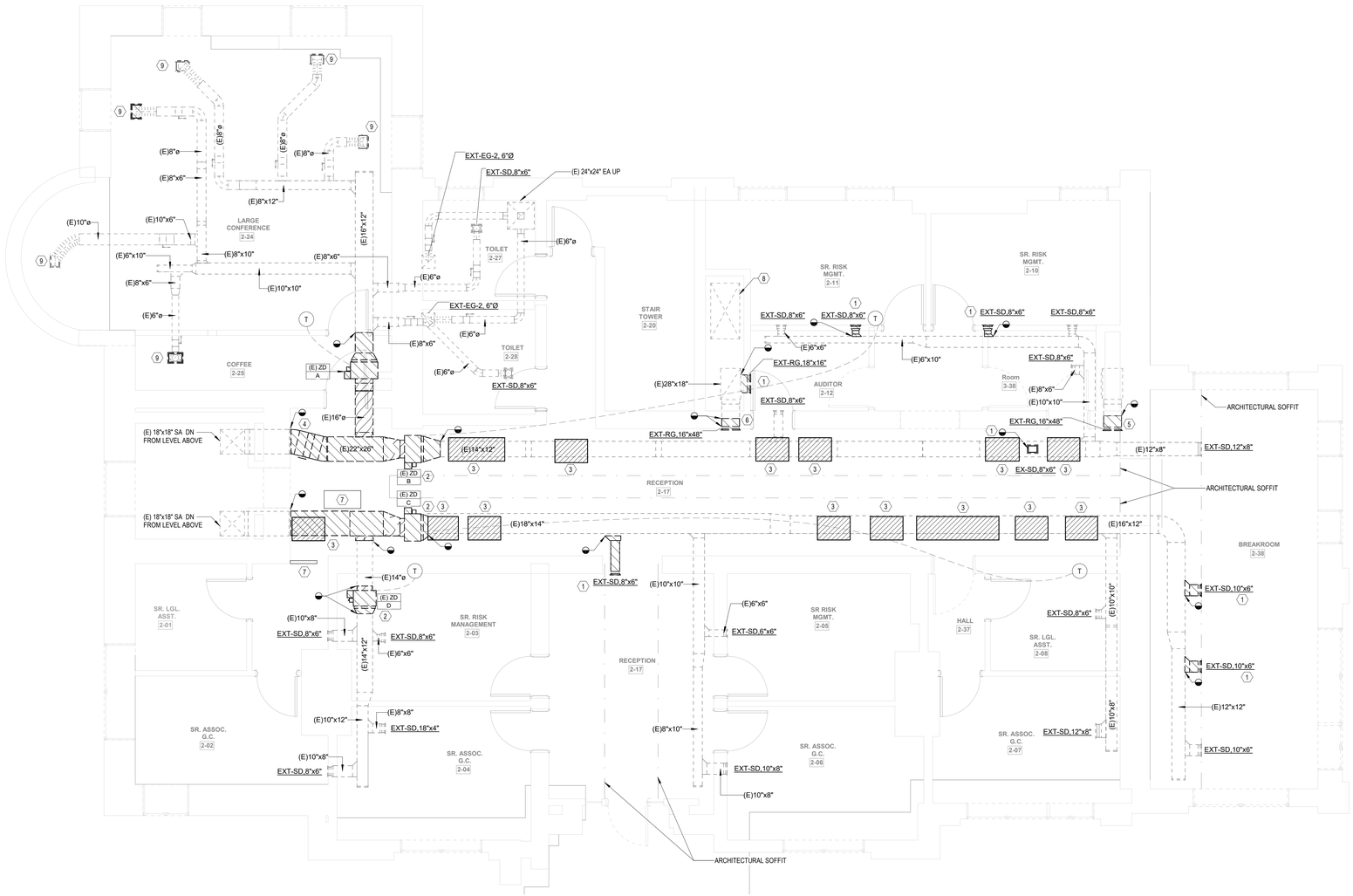

1 **Level 2 HVAC DEMO**
1/4" = 1'-0"

KEY NOTES

1. REMOVE EXISTING AIR TERMINAL. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
2. REMOVE EXISTING AIR TERMINAL UNIT AND PROVIDE NEW DUCTWORK WITH MANUAL BALANCING DAMPER. PROVIDE ACCESS DOOR FOR FUTURE MAINTENANCE ACCESS.
3. MODIFY EXISTING DUCTWORK TO ACCOMODATE NEW FCU UNIT DUCT ROUTING. CONTRACTOR TO MODIFY EXISTING DUCT IN THESE LOCATIONS FOR NEW AC UNIT INSTALLATION. DUCTWORK CROSS SECTIONAL AREA SHALL BE REDUCED TO THE MINIMUM EXTENT POSSIBLE TO ALLOW FOR FUTURE OUTSIDE AIR FLOW.
4. REMOVE EXISTING DUCTWORK SECTION. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
5. REMOVE EXISTING RETURN GRILL AND CAP DUCT AT CONNECTION TO GRILL. PATCH FLOOR PENETRATION ON LEVEL BELOW TO MAINTAIN FIRE RATING.
6. REMOVE EXISTING RETURN GRILL AND FLOOR FIRE DAMPER.
7. EXISTING SOFFIT VENT TO REMAIN.
8. "26"x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.
9. REMOVE EXISTING DIFFUSER.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
2. EXISTING UTILITIES SHOWN ARE BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.

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PROJECT NORTH

Issue	Date & Description	By
03/18/2025	ISSUED FOR CONSTRUCTION	

Drawn by

Reviewed by

Seal/Signature

GEORGIA REGISTERED No. PE040126 PROFESSIONAL ENGINEER CHIEN QUOC TU 3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 2 HVAC DEMO

Scale
1/4" = 1'-0"

Sheet Number
M.021

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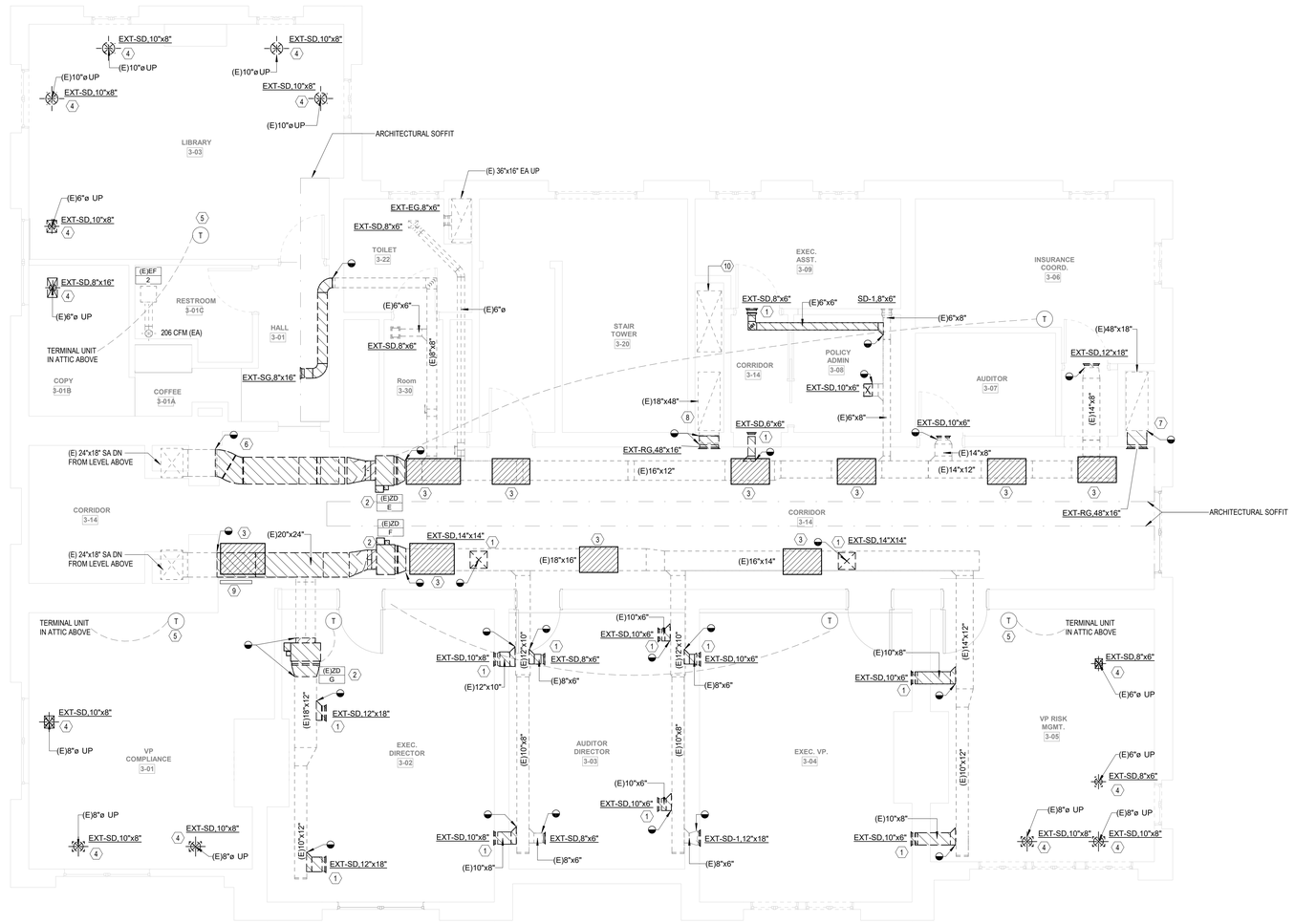

1 Level 3 HVAC DEMO
1/4" = 1'-0"

KEY NOTES

1. REMOVE EXISTING AIR TERMINAL. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
2. REMOVE EXISTING AIR TERMINAL UNIT AND PROVIDE NEW DUCTWORKWITH MANUAL BALANCING DAMPER. PROVIDE ACCESS DOOR FOR FUTURE MAINTENANCE ACCESS.
3. MODIFY EXISTING DUCTWORK TO ACCOMODATE NEW FCU UNIT DUCT ROUTING. CONTRACTOR TO MODIFY EXISTING DUCT IN THESE LOCATIONS FOR NEW AC UNIT INSTALLATION. DUCTWORK CROSS SECTIONAL AREA SHALL BE REDUCED TO THE MINIMUM EXTENT POSSIBLE TO ALLOW FOR FUTURE OUTSIDE AIR FLOW.
4. REMOVE CEILING MOUNTED DIFFUSER AND PATCH CEILING TO MATCH EXISTING.
5. REMOVE EXISTING THERMOSTAT FROM TERMINAL UNIT LOCATED IN ATTIC.
6. REMOVE EXISTING DUCTWORK SECTION. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
7. REMOVE EXISTING RETURN GRILL AND CAP DUCT AT CONNECTION TO GRILL.
8. REMOVE EXISTING RETURN GRILL AND FLOOR FIRE DAMPER.
9. EXISTING SOFFIT VENT TO REMAIN.
10. "26"x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
2. EXISTING UTILITIES SHOWN ARE BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.

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GEORGIA REGISTERED No. PE040126 PROFESSIONAL ENGINEER QUNEN QUOC TU
3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 3 HVAC DEMO

Scale
1/4" = 1'-0"

Sheet Number
M.023

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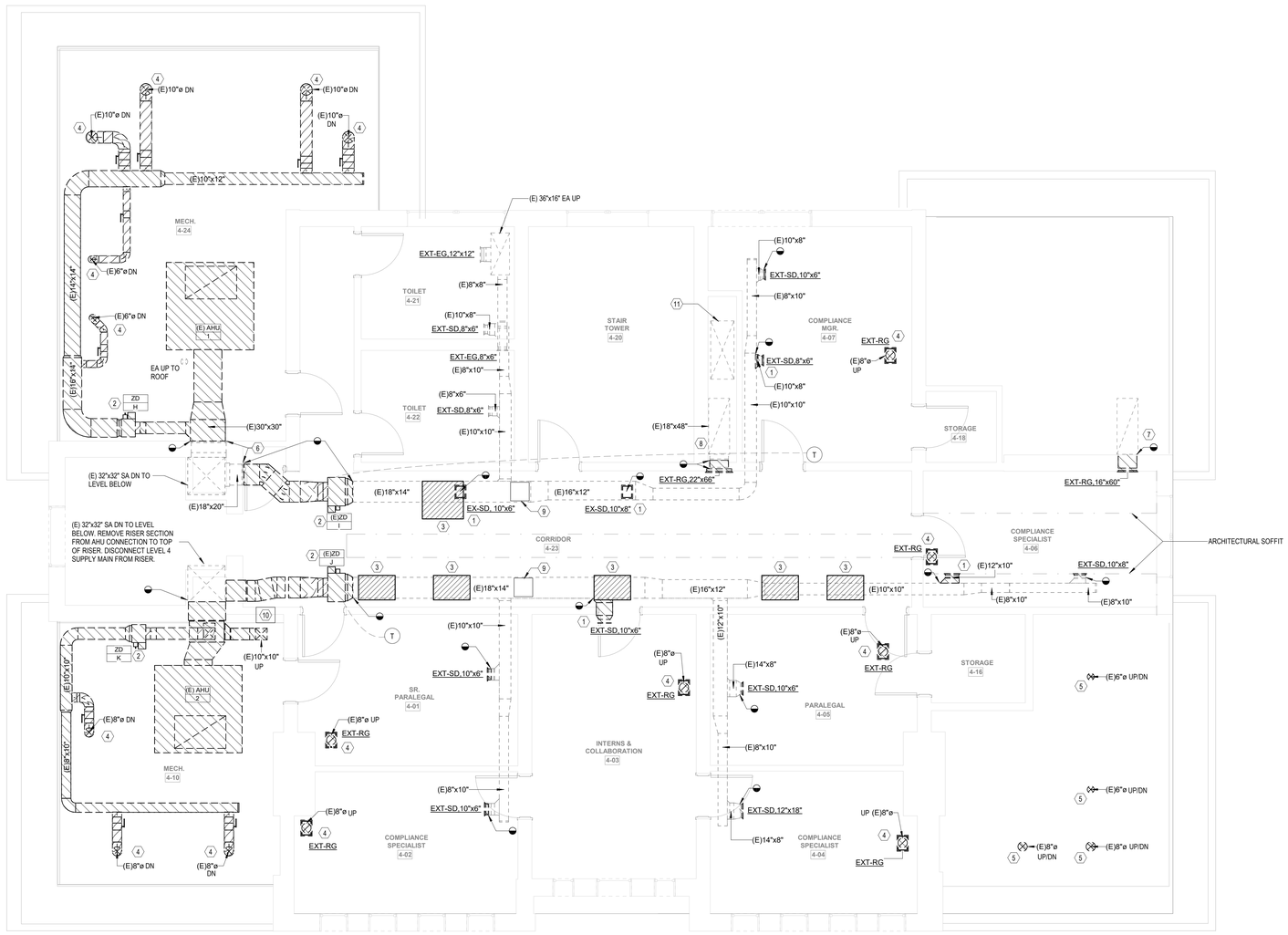

1 Level 4 HVAC DEMO
1/4" = 1'-0"

KEY NOTES

1. REMOVE EXISTING AIR TERMINAL. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
2. REMOVE EXISTING AIR TERMINAL UNIT AND PROVIDE NEW DUCTWORK WITH MANUAL BALANCING DAMPER. PROVIDE ACCESS DOOR FOR FUTURE MAINTENANCE ACCESS.
3. MODIFY EXISTING DUCTWORK TO ACCOMODATE NEW FCU UNIT DUCT ROUTING. CONTRACTOR TO MODIFY EXISTING DUCT IN THESE LOCATIONS FOR NEW AC UNIT INSTALLATION. DUCTWORK CROSS SECTIONAL AREA SHALL BE REDUCED TO THE MINIMUM EXTENT POSSIBLE TO ALLOW FOR FUTURE OUTSIDE AIR FLOW.
4. REMOVE DUCTWORK ROUTED THROUGH FLOOR. PATCH FLOOR TO MATCH FINAL FLOORING.
5. REMOVE CEILING MOUNTED DIFFUSER AND PATCH CEILING TO MATCH EXISTING.
6. REMOVE EXISTING DUCTWORK SECTION. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
7. REMOVE EXISTING RETURN GRILL AND DUCTWORK. PATCH FLOOR PENETRATION TO MAINTAIN FIRE RATING.
8. REMOVE EXISTING RETURN GRILL AND FLOOR FIRE DAMPER
9. EXISTING SOFFIT VENT TO REMAIN.
10. REMOVE EXISTING 24"x24" TRANSFER AIR LOUVER. PATCH WALL TO MATCH EXISTING.
11. "26"x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 4 HVAC DEMO

Scale
1/4" = 1'-0"

Sheet Number
M.025

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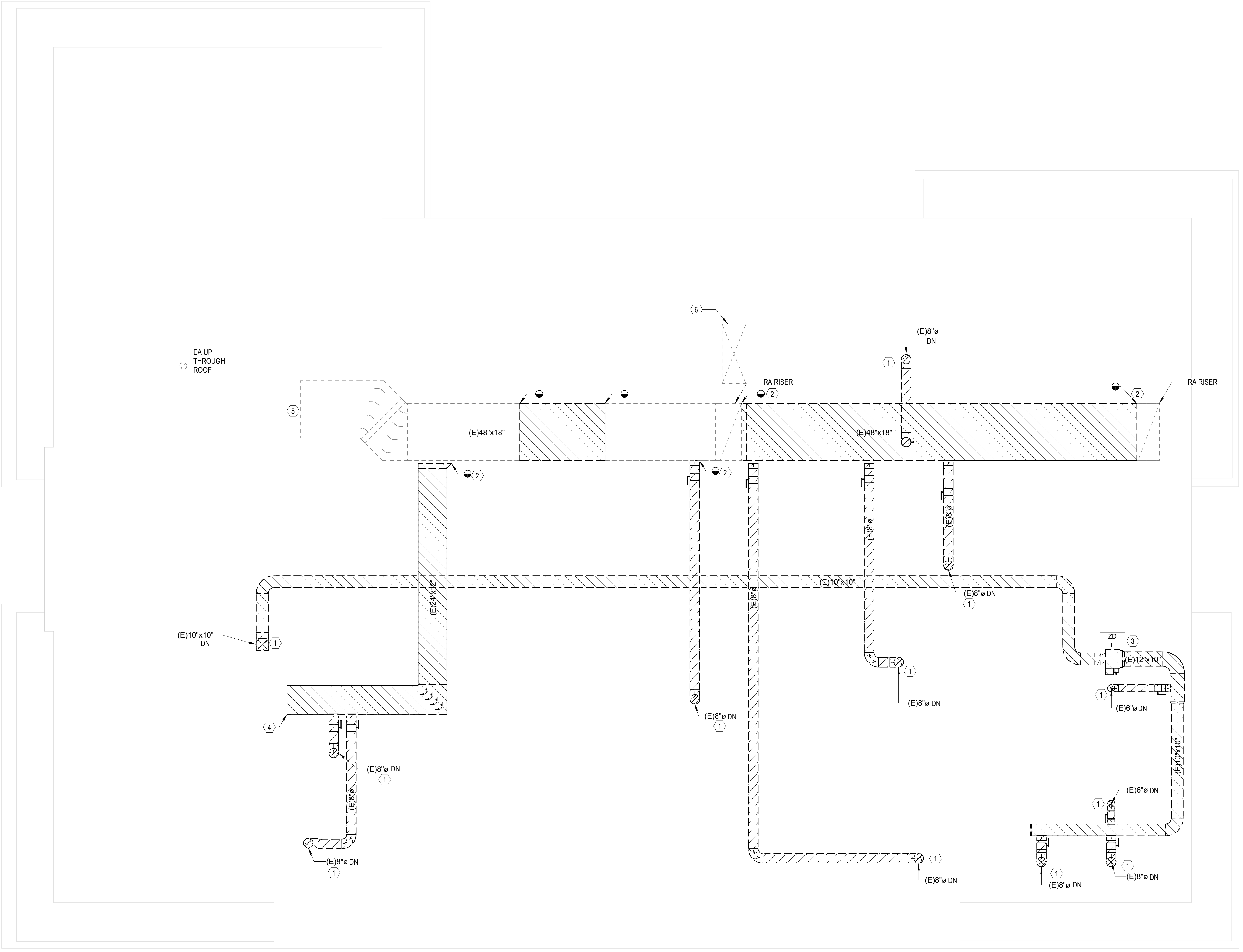

1 ATTIC HVAC DEMO
1/4" = 1'-0"

KEY NOTES

1. REMOVE DUCTWORK ROUTED THROUGH FLOOR. PATCH FLOOR TO MATCH EXISTING FLOORING.
2. REMOVE EXISTING CONNECTION TO MAIN. CUT, CAP, AND SEAL DUCT WORK AT MAIN.
3. REMOVE EXISTING AIR TERMINAL UNIT.
4. CAP OPEN DUCTWORK.
5. DUCTWORK OPEN TO MECH ROOM RETURN PLENUM.
6. "26"x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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QUYEN QUOC TU

3/18/25

Project

GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title

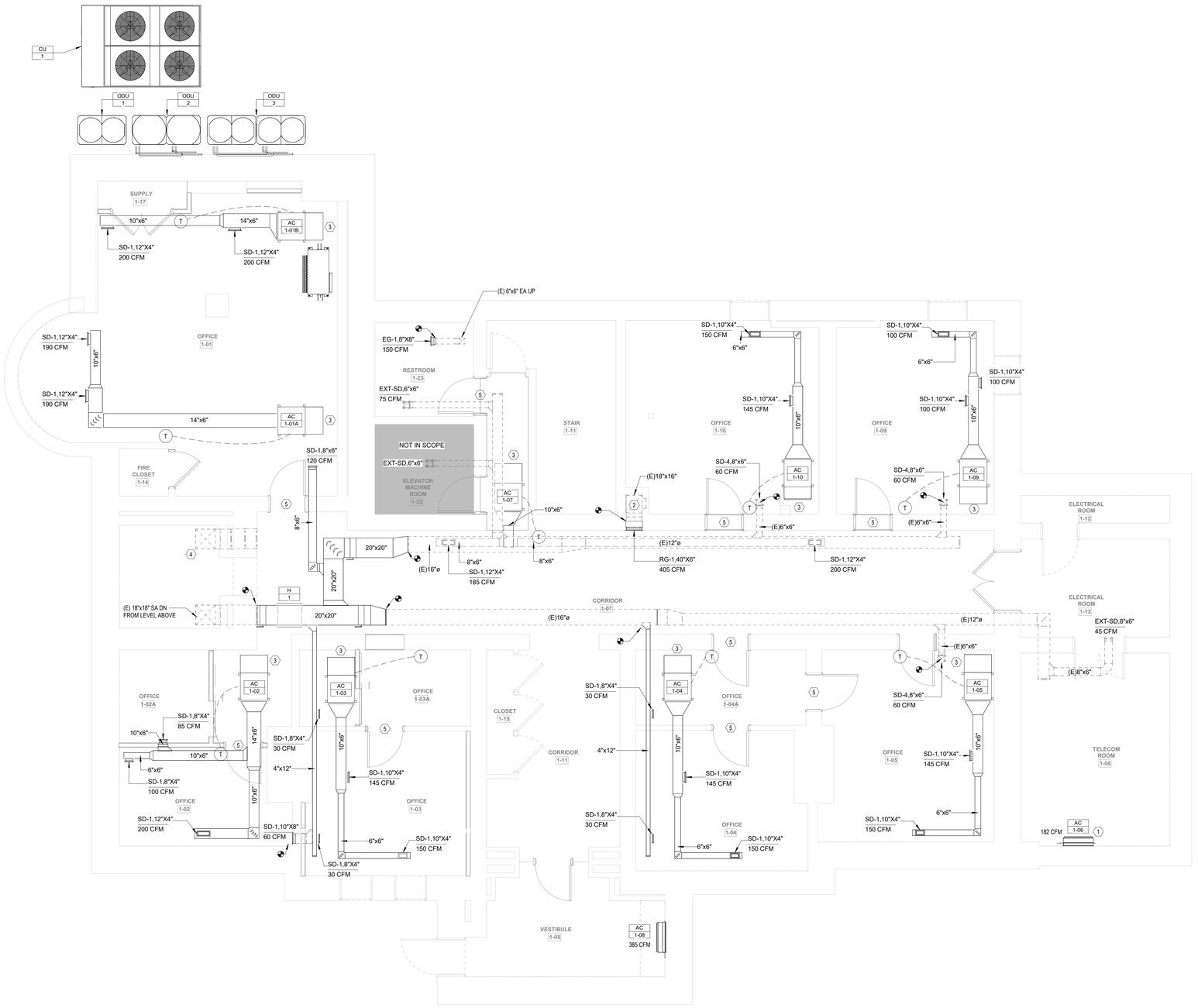
ATTIC HVAC DEMO

Scale

1/4" = 1'-0"

Sheet Number

M.026



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

KEY NOTES

1. AC UNIT AND TAG SHOWN FOR FUTURE LOCATION OF WALL-MOUNTED AC UNIT. PROVIDE PIPING CONNECTION AT CLOSEST BRANCH CIRCUIT CONTROLLER FOR FUTURE CONNECTION.
2. REPLACE EXISTING FLOOR FIRE DAMPER.
3. PROVIDE EGG CRATE TRANSFER RETURN GRILL BENEATH FILTER BOX INTAKE FOR ALL AC UNITS MOUNTED ABOVE CEILING OR SOFFIT. TRANSFER RETURN GRILL TO BE SAME SIZE AS FILTER BOX INTAKE.
4. ABANDONED RISER SHOWN OR REFERENCE ONLY.
5. DOOR SHALL TO HAVE A MINIMUM OF 1" UNDERCUT.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 1 HVAC

Scale
1/4" = 1'-0"

Sheet Number
M.110

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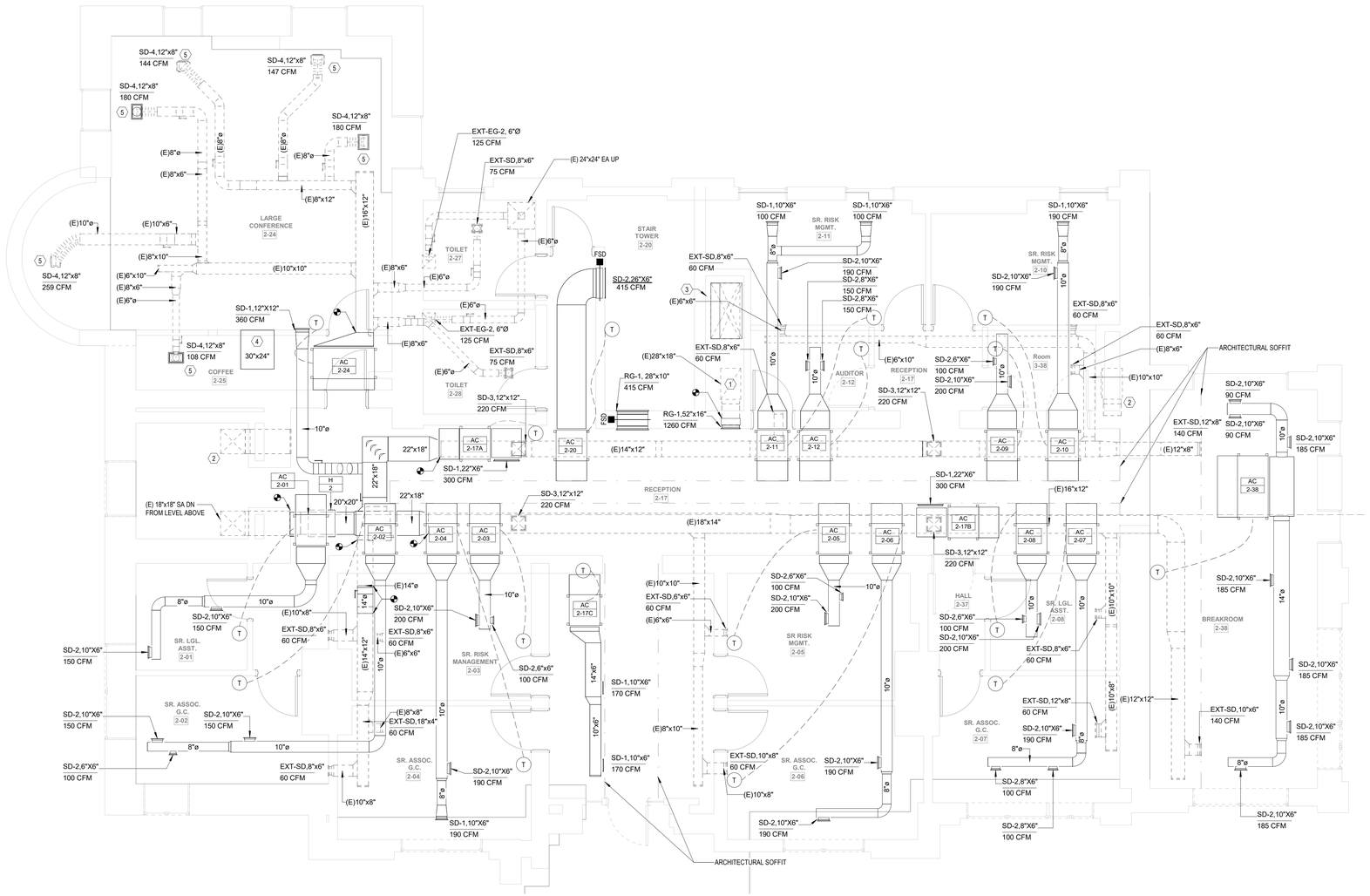

1 Level 2 HVAC PLAN
1/4" = 1'-0"

KEY NOTES

1. REPLACE EXISTING FLOOR FIRE DAMPER.
2. ABANDONED RISER SHOWN FOR REFERENCE ONLY.
3. "26x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.
4. PROVIDE TRANSFER AIR BOOT WITH BOTTOM DISHARGE INTO COFFEE ROOM. REFER TO DETAIL M.125 FOR ADDITONAL BOOT FEATURES.
5. CONNECT NEW DIFFUSER TO EXISTING DUCTWORK.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 2 HVAC

Scale
1/4" = 1'-0"

Sheet Number
M.120

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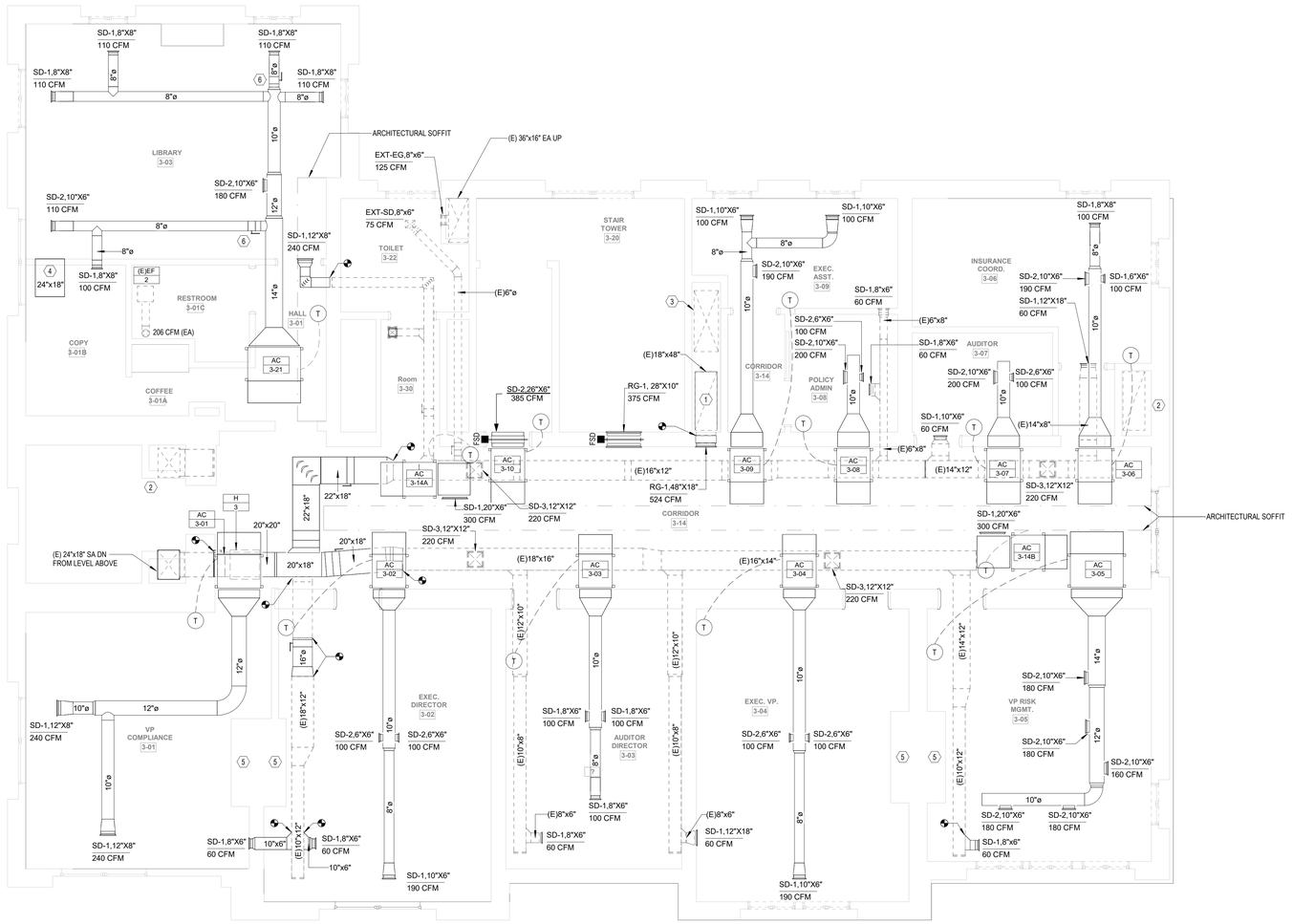

1 Level 3 HVAC PLAN
1/4" = 1'-0"

KEY NOTES

1. REPLACE EXISTING FLOOR FIRE DAMPER.
2. ABANDONED RETURN RISER SHOWN FOR REFERENCE ONLY.
3. "26x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.
4. PROVIDE TRANSFER AIR BOOT WITH BOTTOM DISHARGE INTO COPY ROOM. REFER TO DETAIL M.125 FOR ADDITONAL BOOT FEATURES.
5. OWNER TO COORDINATE PURCHASE AND INSTALLATION WITH CHIMNEY SOLUTIONS. SEE ARCHITECTURE SET FOR CONTACT INFO.
6. PROVIDE MANUAL BALANCING DAMPER WITH SOLID ROD SHAFTS AND LOCKING QUADRANT HANDLES. HANDLE SHALL BE REMOVABLE.CONTRACTOR TO RECORD DAMPER POSITION WITH DISCREET MARKING FOR FUTURE MAINTENANCE.

GENERAL NOTES

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Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 3 HVAC

Scale
1/4" = 1'-0"

Sheet Number

M.121

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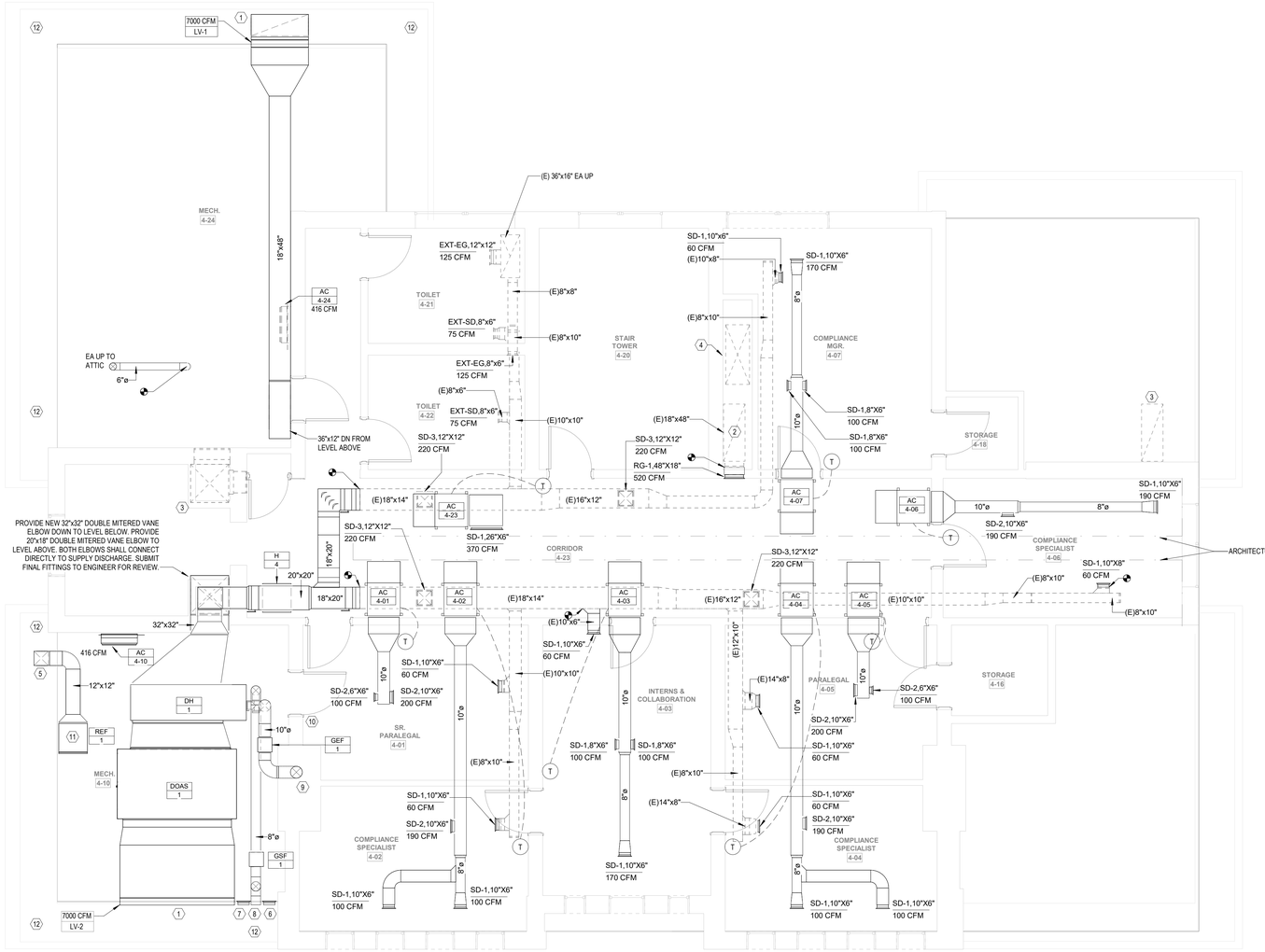

1 Level 4 HVAC PLAN
1/4" = 1'-0"

KEY NOTES

1. DOAS-1 AND EF-1 LOUVER LOCATIONS. SEE DETAIL 10/M.870.
2. REPLACE EXISTING FLOOR FIRE DAMPER.
3. ABANDONED RETURN RISER SHOWN FOR REFERENCE ONLY.
4. "26x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.
5. REF-1 EXHAUST AIR LOUVER LOCATION. SEE DETAIL 10/M.870.
6. REF-1 MINIMUM OUTSIDE AIR DAMPER/LOUVER LOCATION. SEE DETAIL 10/M.870.
7. REF-1 MAXIMUM OUTSIDE AIR DAMPER/LOUVER LOCATION. SEE DETAIL 10/M.870.
8. GSF-1 OUTSIDE AIR DAMPER/LOUVER LOCATION. SEE DETAIL 10/M.870.
9. GEF-1 SHALL ROUTE THROUGH EXISTING CHIMNEY TO LOW PROFILE CHIMNEY VENT. COORDINATE EXHAUST DUCT WITH OFFICE FIREPLACES ON LEVEL BELOW.
10. PROVIDE TAMPER PROOF "ON" SWTICH FOR REF-1. PROVIDE TAMPER PROOF "OFF" SWITCHES FOR DOAS-1 AND GAS FURNACE.
11. INSTALL REF-1 INTAKE NO MORE THAN 6" ABOVE FINISHED FLOOR. PROVIDE 1/4 INCH BIRDSCREEN MESH AT FAN INTAKE.
12. CONTRACTOR SHALL PROVIDE ENGINEER WITH ALL CRITICAL MEASUREMENTS OF TYPCIAL EXISTING SOFFIT LOUVERS.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION
Project Number

Sheet Title
LEVEL 4 HVAC

Scale
1/4" = 1'-0"

Sheet Number
M.122

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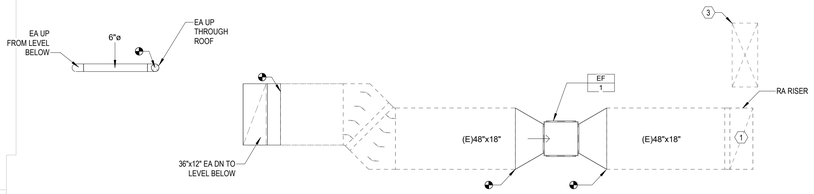

1 ATTIC HVAC PLAN
1/4" = 1'-0"

KEY NOTES

1. REPLACE EXISTING FLOOR FIRE DAMPER.
2. ABANDONED RETURN RISER SHOWN FOR REFERENCE ONLY.
3. "26x50" DN FROM ATTIC STAIR PRESSURIZATION FAN.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
ATTIC HVAC

Scale
1/4" = 1'-0"

Sheet Number
M.123

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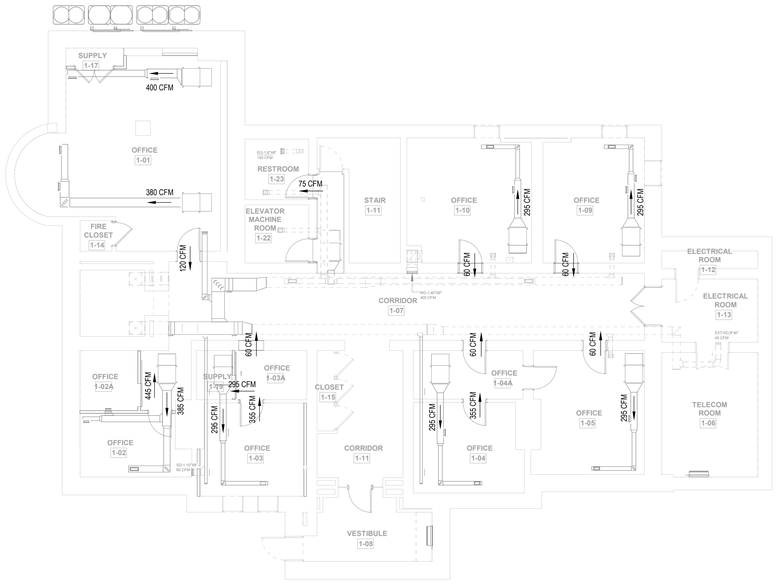
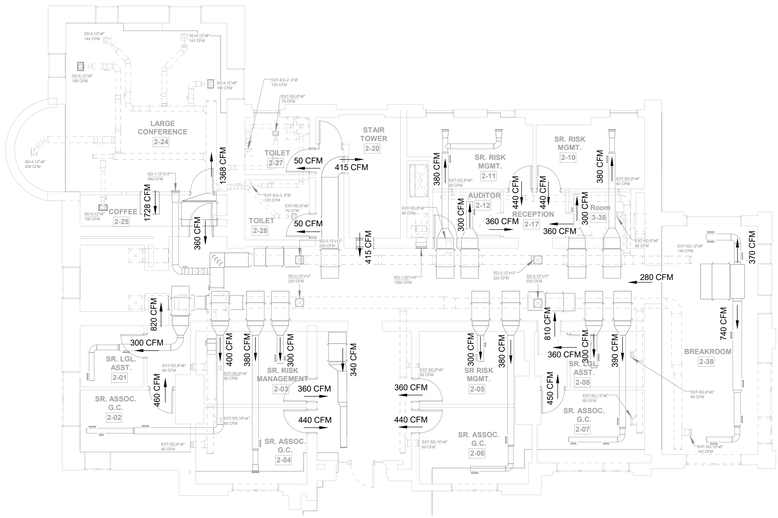


1 **Level 1 HVAC AIR BALANCE PLAN**
1/8" = 1'-0"



2 **Level 2 HVAC AIR BALANCE PLAN**
1/8" = 1'-0"

3 **Level 3 HVAC AIR BALANCE PLAN**
1/8" = 1'-0"

4 **Level 4 HVAC AIR BALANCE PLAN**
1/8" = 1'-0"

KEY NOTES

1. AIR BALANCE PROVIDED FOR POST-CONSTRUCTION TEST AND BALANCE EFFORTS.
2. COORIDOR SUPPLY VALUES ARE NOT SHOWN. CORRIDOR SUPPLY AIRFLOW SHALL BE ADJUSTED TO PROVIDE BUILDING PRESSURIZATION REQUIREMENTS.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
HVAC AIR BALANCE LAYOUT

Scale
1/8" = 1'-0"

Sheet Number

M.124

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BASED ON RECENT TEST AND BALANCE ASSESSMENTS, EXISTING SUPPLY SERVICE HAS BEEN EVALUATED ALONGSIDE NEW SUPPLY AIRLFOW VALUES. SEE KEYNOTES ABOVE FOR ROOM-BY-ROOM EVALUATION.

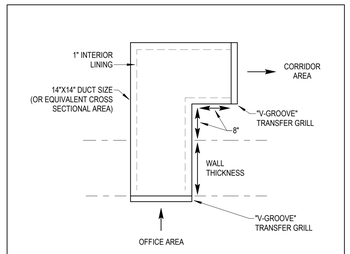
OWNER SHOULD EVALUATE THE PRIVACY REQUIREMENTS FOR EACH OFFICE AND DETERMINE IF TRANSFER GRILL IS REQUIRED. TRANSFER GRILL OPTIONS CAN INCLUDE THE FOLLOWING:

- TRANSFER AIR BOOT (SEE DETAIL)
- "V-GRILL" TRANSFER WALL LOUVER
- TRADITIONAL DOOR LOUVER

INCREASING THE SIZE OF THE DOOR UNDERCUT IS TYPICALLY THE PREFFERED METHOD FOR REDUCING SOUND ISSUES RELATED TO AIRFLOW.

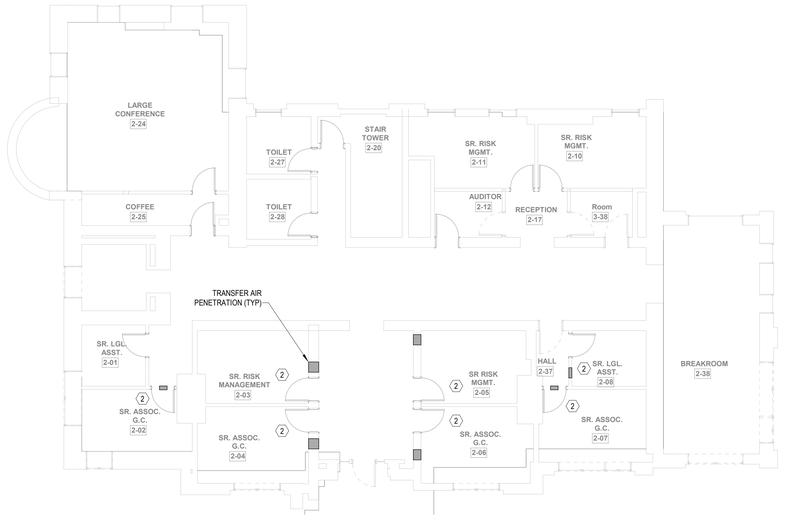
TRANSFER AIR BOOT PROPOSED LOCATIONS HAVE BEEN PROVIDE IN THE FLOOR PLANS ABOVE. COORDINATE WITH STRUCTURAL ENGINEER IF ANY TRANSFER AIR PENETRATIONS ARE TO BE LOCATED WITHIN 16 INCHES OF ADJACENT WALL PENETRATIONS.

"V-GRILL" TRANSFER GRILL SHALL BE ADVANTAGE MECHANICAL SUPPLY MODEL RPCL GRILL LOCATED ON OFFICE AND CORRIDOR SIDES OF TRANSFER DUCT. TRANSFER DUCT SHALL HAVE 1" ACOUSTICAL LINING.



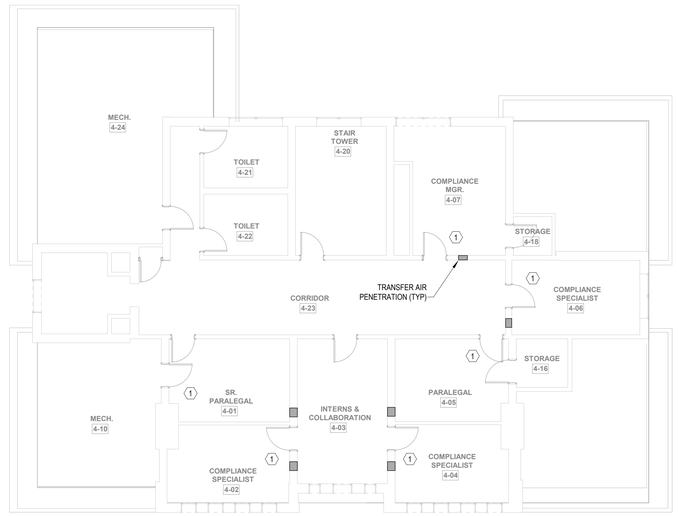
NOTE: DETAIL IS SHOWN IN PLAN VIEW AND SIDE DISCHARGE CONFIGURATION. INSTALL INTAKE GRILL FLUSH WITH OFFICE WALL. BOOT SHALL ONLY BE VISIBLE FROM OUTSIDE THE OFFICE.

TRANSFER AIR BOOT DETAIL



1 **Level 2 HVAC AIR BALANCE PLAN FOR DOOR UNDERCUT**
1/8" = 1'-0"

2 **Level 3 HVAC AIR BALANCE PLAN FOR DOOR UNDERCUT**
1/8" = 1'-0"



3 **Level 4 HVAC AIR BALANCE PLAN FOR DOOR UNDERCUT**
1/8" = 1'-0"

KEY NOTES

1. EXISTING CEILING RETURN SERVICE HAS BEEN MODIFIED TO PROVIDE EXHAUST VIA COORIDOR. NEW SUPPLY AIRFLOW VALUES EXCEED THE EXISTING DOOR UNDERCUT VALUE BY 200 CFM OR GREATER.
2. EXISTING SUPPLY AIRFLOW VALUES ARE WITHIN 200 CFM OF NEW SUPPLY AIRFLOW. NEW SUPPLY AIRFLOW VALUES ARE SIMILAR TO EXISTING DOOR UNDERCUT VALUES.
3. EXISTING SUPPLY AIRFLOW VALUES ARE LESS THAN THE NEW SUPPLY AIRFLOW. NEW SUPPLY AIRFLOW VALUES WILL BE SIGNIFICANTLY LESS THAN EXISTING DOOR UNDERCUT VALUES.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
2. EXISTING UTILITIES SHOWN ARE BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.

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Atlanta, Georgia

PROJECT NORTH

Issue	Date & Description	By
03/18/2025	ISSUED FOR CONSTRUCTION	

Drawn by

Reviewed by

Seal/Signature

GEORGIA REGISTERED No. PE040126 PROFESSIONAL ENGINEER QUYEN QUOC TU 3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
HVAC AIR BALANCE LAYOUT FOR DOOR UNDERCUT

Scale
1/8" = 1'-0"

Sheet Number

M.125

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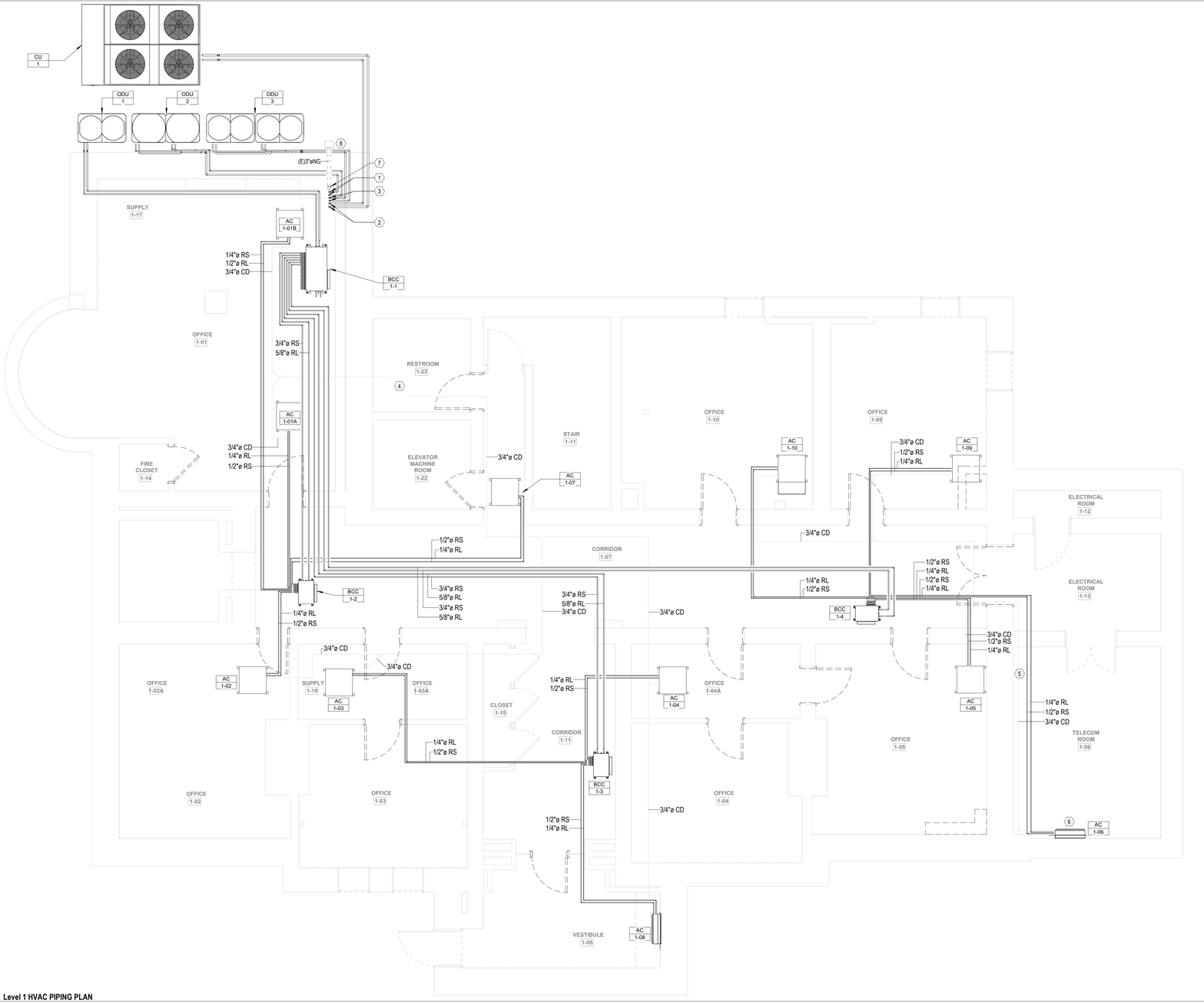

1 **Level 1 HVAC PIPING PLAN**
1/4" = 1'-0"

KEY NOTES

1. 1-3/8" RS & 7/8" RL UP TO BCC-2-1 ON LEVEL-2.
2. REFRIGERANT PIPING UP TO DOAS-1 ON LEVEL-4.
3. 1-3/8" RS & 1-1/8" RL UP TO BCC-3-1 ON LEVEL-3.
4. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN RESTROOM 1-23. COORDINATE FINAL LOCATION WITH ARCHITECT.
5. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN TELECOM ROOM 1-06 OR OTHER ROOM LOCATION WHERE SANITARY DRAIN IS LOCATED FROM BREAKROOM SINK ABOVE, COORDINATE FINAL LOCATION WITH ARCHITECT.
6. AC UNIT AND TAG SHOWN FOR FUTURE LOCATION OF WALL-MOUNTED AC UNIT. PROVIDE PIPING CONNECTION AT CLOSEST BRANCH CIRCUIT CONTROLER FOR FUTURE CONNECTION.
7. EXISTING 3" NATURAL GAS PIPING RISER FROM LEVEL 1 TO LEVEL 4 MECH 4-10.
8. EXISTING NATURAL GAS METER (NOT IN SERVICE). PROVIDE 645 CFH SERVICE TO BUILDING AT 7 PSIG DELIVERY PRESSURE TO BUILDING. NOTIFY ENGINEER IF REQUIRED PRESSURE IS NOT AVAILABLE.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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GEORGIA REGISTERED No. PE040126 PROFESSIONAL ENGINEER CHINEN QUOC TU 3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 1 HVAC PIPING

Scale
1/4" = 1'-0"

Sheet Number
M.210

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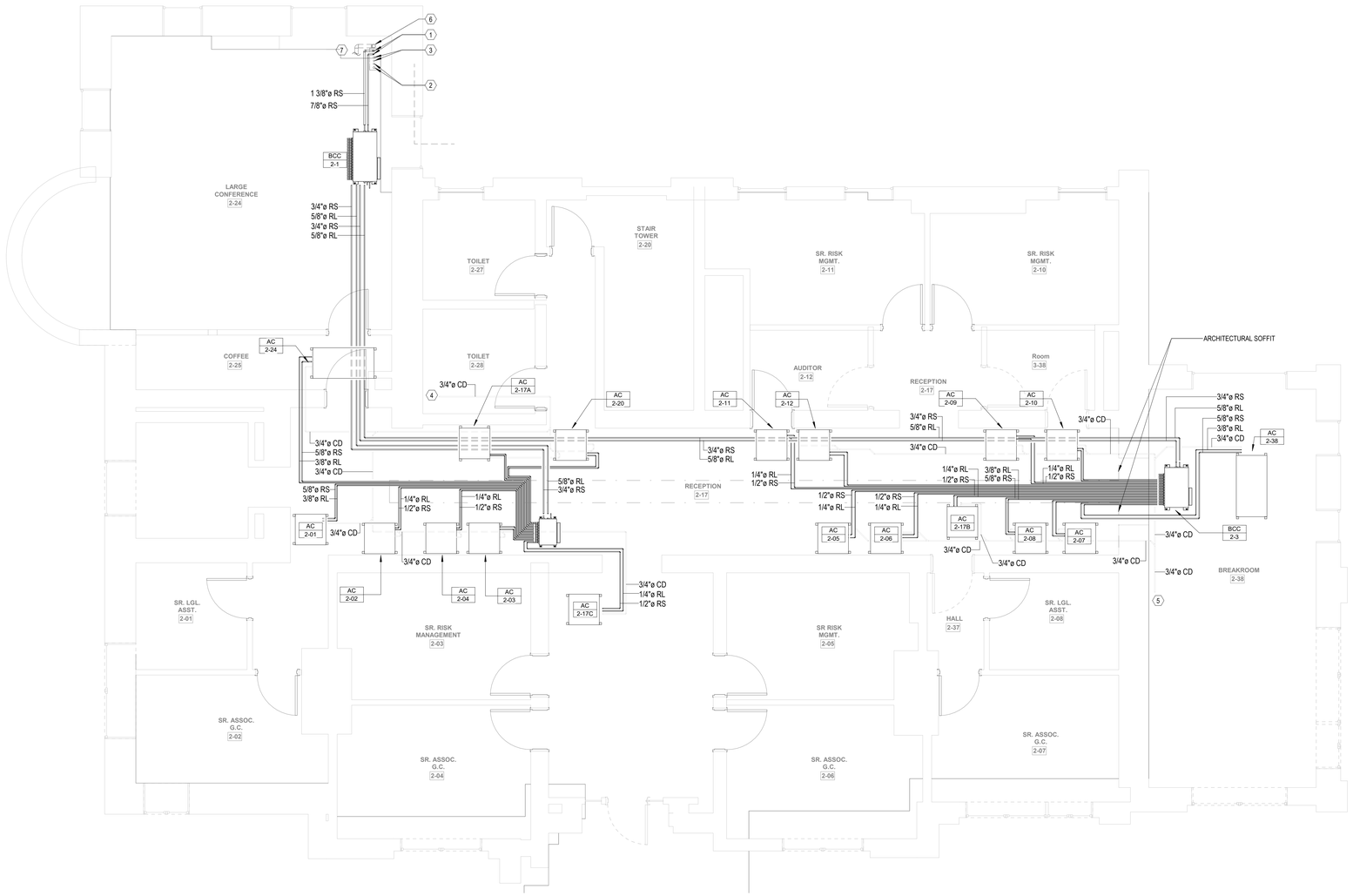

1 **Level 2 HVAC PIPING PLAN**
1/4" = 1'-0"

KEY NOTES

1. 1-3/8" RS & 7/8" RL UP TO BCC-2-1 ON LEVEL-2.
2. REFRIGERANT PIPING UP TO DOAS-1 ON LEVEL-4.
3. 1-3/8" RS & 1-1/8" RL UP TO BCC-3-1 ON LEVEL-3.
4. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN TOILET 2-28. COORDINATE FINAL LOCATION WITH ARCHITECT.
5. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN TELECOM ROOM 1-06 OR OTHER ROOM LOCATION WHERE SANITARY DRAIN IS LOCATED FROM BREAKROOM SINK ABOVE, COORDINATE FINAL LOCATION WITH ARCHITECT
6. EXISTING 3" NATURAL GAS PIPING RISER FROM LEVEL 1 TO LEVEL 4 MECH 4-10.
7. EXISTING BRANCH PIPING TO LEVEL 3 FIREPLACES.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION
Project Number

Sheet Title
LEVEL 2 HVAC PIPING

Scale
1/4" = 1'-0"

Sheet Number
M.211

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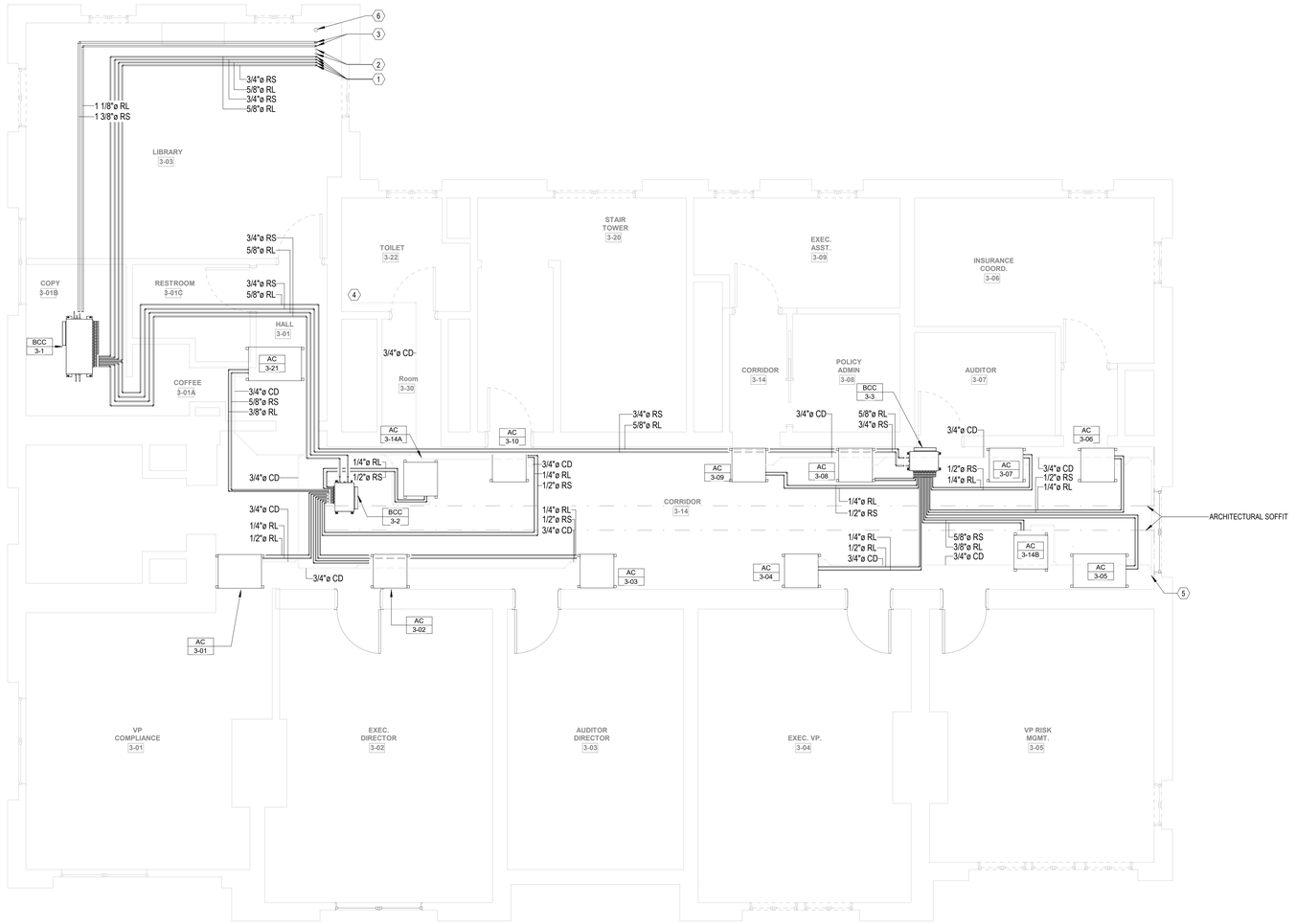

1 **Level 3 HVAC PIPING PLAN**
1/4" = 1'-0"

KEY NOTES

1. (2) 3/4" RS & (2) 5/8" RL UP TO BCC-4-1 & BCC-4-2 ON LEVEL-4.
2. REFRIGERANT PIPING UP TO DOAS-1 ON LEVEL-4 & DN TO CU-1 ON LEVEL-1.
3. 1-3/8" RS & 1-1/8" RL DN TO ODU-3 ON LEVEL-1.
4. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN TOILET 3-22. COORDINATE FINAL LOCATION WITH ARCHITECT.
5. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN TELECOM ROOM 1-06 OR OTHER ROOM LOCATION WHERE SANITARY DRAIN IS LOCATED FROM BREAKROOM SINK ABOVE, COORDINATE FINAL LOCATION WITH ARCHITECT
6. EXISTING 3" NATURAL GAS PIPING RISER FROM LEVEL 1 TO LEVEL 4 MECH 4-10.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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PROJECT NORTH

Issue	Date & Description	By
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GEORGIA REGISTERED No. PE040126 PROFESSIONAL ENGINEER QUYEN QUOC TU 3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
LEVEL 3 HVAC PIPING

Scale
1/4" = 1'-0"

Sheet Number
M.212

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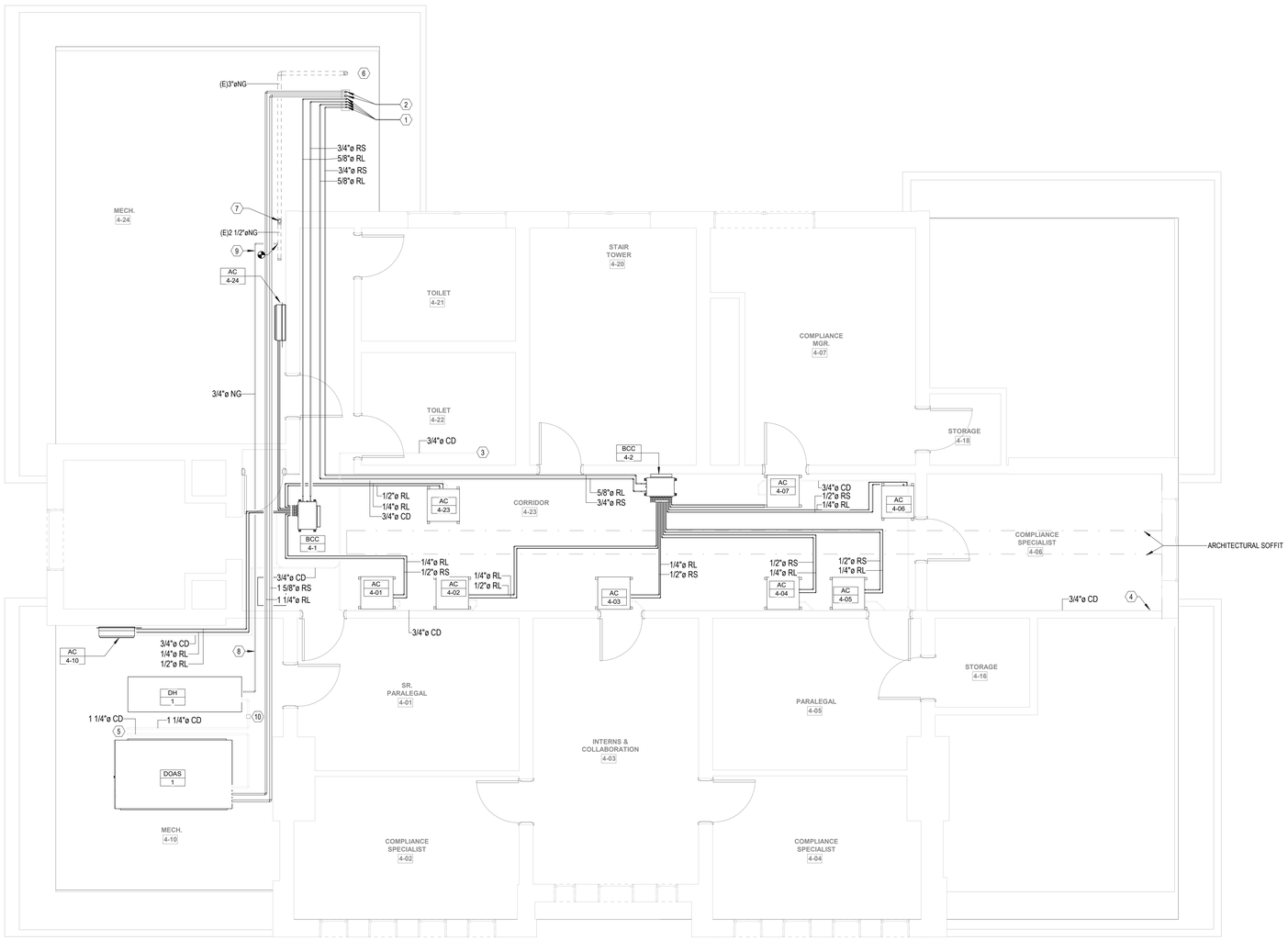

1 **Level 4 HVAC PIPING PLAN**
1/4" = 1'-0"

KEY NOTES

1. (2) 3/4" RS & (2) 5/8" RL DN TO BCC-3-3 ON LEVEL-3.
2. 1-5/8" RS & 1-1/8" RL DN TO CU-1 ON LEVEL-1.
3. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN TOILET 4-22. COORDINATE FINAL LOCATION WITH ARCHITECT.
4. ROUTE 3/4" PUMPED CONDENSATE PIPING FROM AC UNITS TO RECESSED WALL MOUNTED HUB DRAIN LOCATED IN TELECOM ROOM 1-06 OR OTHER ROOM LOCATION WHERE SANITARY DRAIN IS LOCATED FROM BREAKROOM SINK ABOVE, COORDINATE FINAL LOCATION WITH ARCHITECT
5. ROUTE AHU AND DH-1 CONDENSATE TO EXISTING FLOOR CONDENSATE DRAIN PAN. CONTRACTOR TO CONFIRM EXISTING DRAIN PAN AND DRAIN LINE ARE FUNCTIONING PROPERLY.
6. EXISTING 3" NATURAL GAS PIPING RISER FROM LEVEL 1 TO LEVEL 4 ROOM MECH 4-10.
7. EXISTING 2 1/2" BRANCH ROUTED FROM ROOM MECH 4-10 TO BUILDING.
8. PROVIDE POINT-OF-SERVICE REGULATOR FOR DH-1.
9. CONNECT NEW 3/4" PIPING TO EXISTING 2 1/2" PIPING AND ROUTE TO DH-1.
10. PROVIDE 1/2 INCH NPT 304 SS DRAIN PIPING, WITH MANUFACTURER REQUIRED P-TRAP, FROM FURNACE TO NEUTRALIZING TANK. NEUTRALIZING TANK SHALL HAVE 3/4" COPPER DRAIN PIPING ROUTED TO EXISTING CONDENSATE DRAIN.

GENERAL NOTES

1. EXISTING BUILDING CONDITIONS TO REMAIN. ALL NEW WORK INSTALLED TO MEET CURRENT CODE REQUIREMENTS. PRELIMINARY ANNOTATIVE SET WAS REVIEWED WITH CITY OF ATLANTA ON 1/9/2025 BEFORE SUBMITTING FOR PERMIT.
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3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION
Project Number

Sheet Title
LEVEL 4 HVAC PIPING

Scale
1/4" = 1'-0"

Sheet Number
M.213

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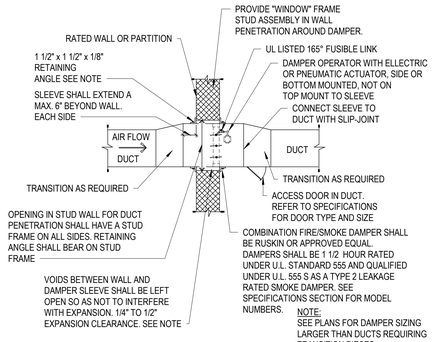
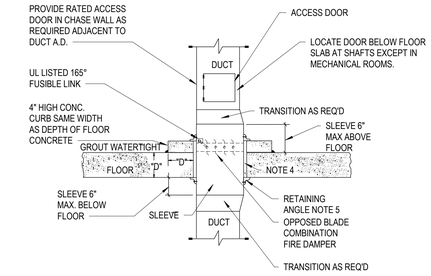


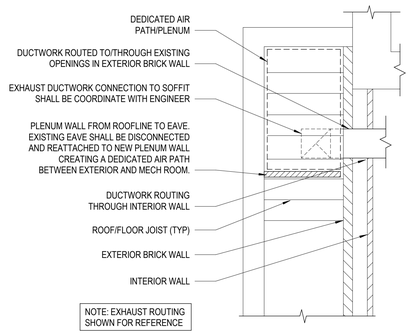
NOTES:
1. PROVIDE U.L. LISTED DAMPER, SLEEVE AND OPERATOR ASSEMBLY IN ACCORDANCE WITH, BOTH U.L. 555. & U.L. 555S.
2. INSTALL DAMPER AND SLEEVE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. PROVIDE MIN. 14 GA. SLEEVE. EXTEND BEYOND WALL MAX. 6 INCHES AND MOUNT OPERATOR ON SLEEVE.
4. PROVIDE EXPANSION SPACE PER MANUFACTURER'S INSTRUCTION, BUT NOT LESS THAN 1/8" PER LINEAR FOOT.
5. PROVIDE MINIMUM 1 1/2" x 1 1/2" x 1/8" RETAINING ANGLE ON TOP, BOTTOM & SIDES. ATTACH ANGLES TO SLEEVE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. DAMPER SHALL BE SELF SUPPORTING, INDEPENDENT OF DUCTWORK, ANGLES SHALL OVERLAP WALL A MINIMUM OF ONE INCH. PROVIDE ANGLES ON EACH SIDE OF WALL.

12 COMBINATION FIRE/SMOKE DAMPER AT RATED WALL
N.T.S

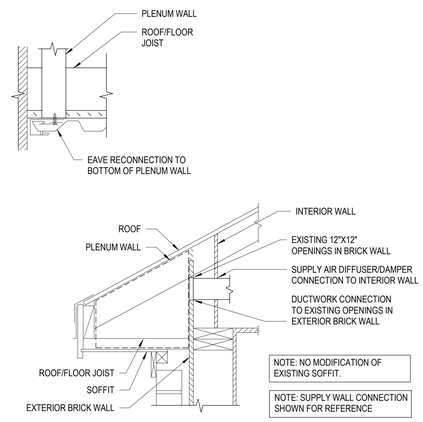


NOTES:
1. PROVIDE U.L. LISTED DAMPER AND SLEEVE ASSEMBLY IN ACCORDANCE WITH U.L. 555.
2. INSTALL DAMPER AND SLEEVE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. PROVIDE MIN. 14 GAUGE SLEEVE. EXTEND ABOVE FLOOR MAX. 6 INCHES, AND MOUNT OPERATOR ON SLEEVE.
4. PROVIDE EXPANSION SPACE PER MANUFACTURER'S INSTRUCTION. BUT NOT LESS THAN 1/8" PER LINEAR FOOT BOTH DIMENSIONS. CONSULT DAMPER MFR. FOR SMOKEPROOFING AROUND SLEEVE.
5. PROVIDE MINIMUM 1 1/2" x 1 1/2" x 1/8" RETAINING ANGLE ABOVE AND BELOW FLOOR SLAB ON EACH SIDE OF SLEEVE. ATTACH ANGLES TO SLEEVE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. DAMPER SHALL BE SELF SUPPORTING, INDEPENDENT OF DUCTWORK. ANGLES SHALL OVERLAP FLOOR OPENING MIN. OF ONE INCH.

11 FIRE DAMPER AT FLOOR PENETRATION
N.T.S

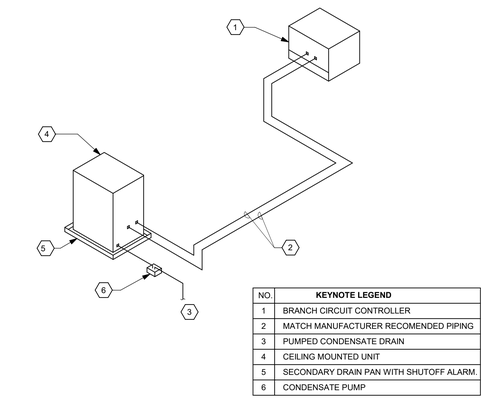


PLAN VIEW



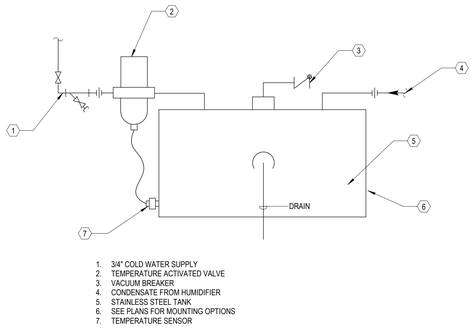
SECTION VIEW

10 ATTIC WALL AND SOFFIT PENETRATION DETAIL
N.T.S



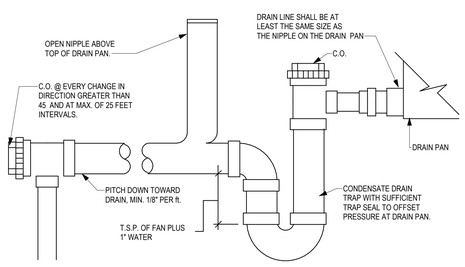
NO.	KEYNOTE LEGEND
1	BRANCH CIRCUIT CONTROLLER
2	MATCH MANUFACTURER RECOMENDED PIPING
3	PUMPED CONDENSATE DRAIN
4	CEILING MOUNTED UNIT
5	SECONDARY DRAIN PAN WITH SHUTOFF ALARM.
6	CONDENSATE PUMP

9 WALL MOUNTED SPLIT SYSTEM
N.T.S.

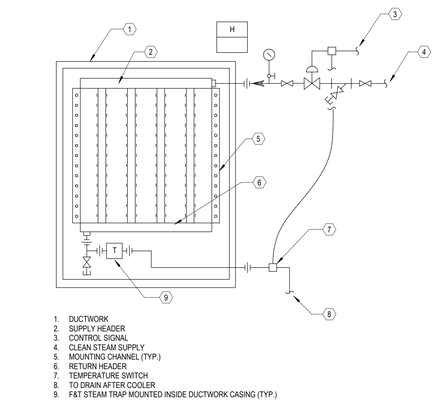


1. 3/4" COLD WATER SUPPLY
2. TEMPERATURE ACTIVATED VALVE
3. VACUUM BREAKER
4. CONDENSATE FROM HUMIDIFIER
5. STAINLESS STEEL TANK
6. SEE PLANS FOR MOUNTING OPTIONS
7. TEMPERATURE SENSOR

8 HUMIDIFIER CONDENSATE AFTERCOOLER PIPING DETAIL
N.T.S

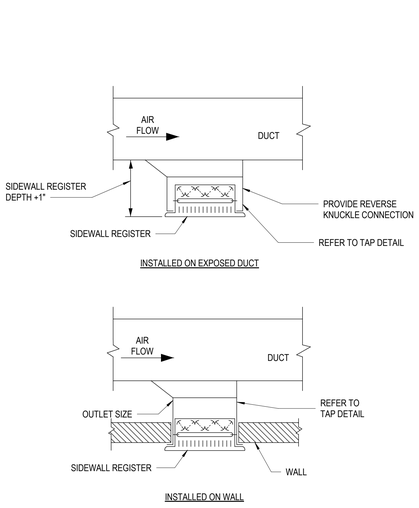


7 CONDENSATE DRAIN TRAP DETAIL
N.T.S

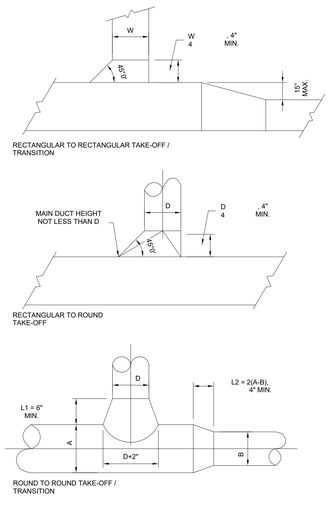


1. DUCTWORK
2. SUPPLY HEADER
3. CONTROL SIGNAL
4. CLEAN STEAM SUPPLY
5. MOUNTING CHANNEL (TYP.)
6. RETURN HEADER
7. TEMPERATURE SWITCH
8. TO DRAIN AFTER COOLER
9. F&T STEAM TRAP MOUNTED INSIDE DUCTWORK CASING (TYP.)

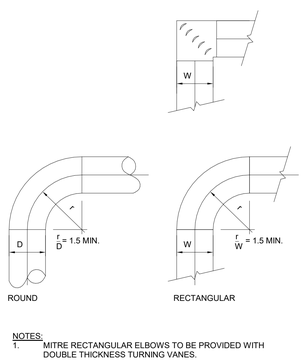
6 STEAM HUMIDIFIER PIPING DETAIL
N.T.S



5 TYPICAL SIDEWALL GRILLE
NOT TO SCALE

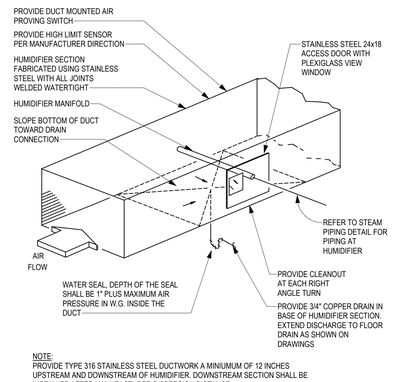


4 Duct Take-off Connection Detail
N.T.S



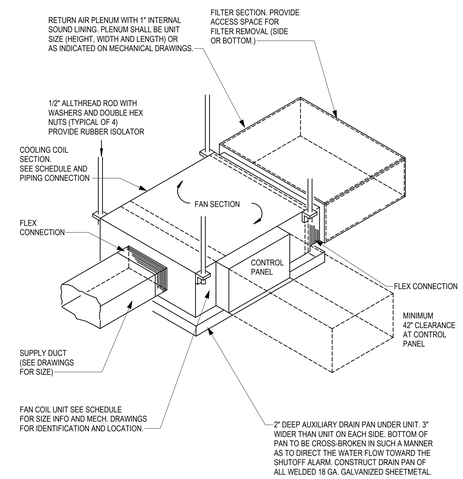
NOTES:
1. MITRE RECTANGULAR ELBOWS TO BE PROVIDED WITH DOUBLE THICKNESS TURNING VANES.

3 Duct Elbow Detail
N.T.S



NOTE:
PROVIDE TYPE 316 STAINLESS STEEL DUCTWORK A MINIMUM OF 12 INCHES UPSTREAM AND DOWNSTREAM OF HUMIDIFIER. DOWNSTREAM SECTION SHALL BE INSTALLED AFTER MANUFACTURER DISPERSION DISTANCE.

2 DUCT MOUNTED HUMIDIFIER
N.T.S



1 DUCT CONNECTION AT FAN COIL UNIT WITH ELECTRIC HEAT
N.T.S

WSP USA Buildings Inc.
3340 Peachtree Road, NE,
Suite 1100
Atlanta, GA 30326
(404) 815-4152
wsp.com

HLGstudio
1401 Peachtree St.
Suite 200
Atlanta, Georgia 30309
404.760.7788
404.760.7787 - Fx.
www.HLGstudio.com

SHEAR STRUCTURAL
931 Monroe Dr.
Suite A102-491
Atlanta, GA 30308
(678) 664-8051
Shearstructural.com

Grady Legal Hall HVAC Modifications and Health Equity Suite Renovation
36 Jesse Hill Jr. Dr. SE
Atlanta, Georgia

PROJECT NORTH

Issue	Date & Description	By
03/18/2025	ISSUED FOR CONSTRUCTION	

Drawn by

Reviewed by

Seal/Signature

GEORGIA REGISTERED No. PE040326 PROFESSIONAL ENGINEER QUYEN QUOC TU
3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
HVAC DETAILS

Scale
As indicated

Sheet Number
M.870

3/18/2025 7:27:15 PM Autodesk Docs://Grady Legal Hall/WSP-Grady Legal Hall-MECH.rvt

DX CONDENSING UNIT SCHEDULE

TAG		SERVICE	SUPPLY AIRFLOW (CFM)	DX COOLING DATA COOLING CAPACITY (MBH)	DB (°F)	WB (°F)	BASIS OF DESIGN	NOTES
CU-1	LEVEL-1	DOAS-1	7,000	555.5	93.7	77.2	AAON CFA-050-D-A-3-GA00K	1,2,3

NOTES:
1. PROVIDE MINIMUM 14" ROOF CURB AND ELASTOMERIC VIBRATION ISOLATION PADS.
2. UNIT TO POWER ASSOCIATED INDOOR UNIT.
3. LOW AMBIENT COOLING.

DEDICATED OUTSIDE AIR HANDLING UNIT SCHEDULE

TAG	LOCATION	SERVICE	SUPPLY FAN					COOLING						MODULATING HOT GAS RE- HEAT				FILTER	DIMENSIONS	WEIGHT	BASIS OF DESIGN	NOTES
			OPER. DESIGN AIRFLOW (cfm)	STATIC PRES. ESP (in.wg)	TSP (in.wg)	MOTOR RPM (rpm)	BHP (bhp)	HP (hp)	ENTERING AIR DB (°F)	ENTERING AIR WB (°F)	LEAVING AIR DB (°F)	LEAVING AIR WB (°F)	SENS. CAP. (MBtuh)	TOTAL CAP. (MBtuh)	ENTERING AIR DB (°F)	LEAVING AIR DB (°F)	LEAVING AIR WB (°F)	TOTAL CAP. (MBtuh)		(in)	(lbs)		
DOAS-1	MECH ROOM 4-24	OUTSIDE AIR	7,000	1.76	1.76	1,760	2.25	-	93.7	77.2	52.8	52.5	299.7	555.5	-	75.0	61.2	162	MERV 8	-	900	AAON H3-ERB-3-0-162C-000	SEE ALL NOTES

NOTES:
1. R454B REFRIGERANT, 10.7 EER.
2. 100% OUTSIDE AIR, CONSTANT VOLUME, VARIABLE SPEED ECM SUPPLY FAN MOTOR.
3. SINGLE POINT ELECTRICAL CONNECTION.
4. MANUFACTURER PROVIDED DISCONNECT.
5. PROVIDE UNIT WITH VARIABLE SPEED COMPRESSOR(S).
6. PROVIDE ACTIVE DEHUMIDIFICATION.

EXHAUST FAN SCHEDULE

TAG	LOCATION	SERVICE	FAN TYPE	MAX. DESIGN AIRFLOW (cfm)	OPER. DESIGN AIRFLOW (cfm)	MIN. DESIGN AIRFLOW (cfm)	TOTAL S.P. (in wg)	RPM (rpm)	MAX. OUTLET VELOCITY (fpm)	FAN DISCHARGE ORIENTATION	MOTOR MAX. BHP (bhp)	MOTOR OPER. BHP (bhp)	MOTOR HP (hp)	MOTOR SCCR (ka)	BASIS OF DESIGN	NOTES
EF-1	ATTIC	GENERAL	INLINE	4,000	4,000	-	2.0	1,824	1,000	EXTERIOR	2.00	2.00	3.00	5	GREENHECK SQ-16-M2-VG	1,2,3
GSF-1	MECH ROOM 4-24	FURNACE	INLINE	805	-	-	2.0	2,545	-	-	-	-	1/10	-	US Draft Co ISAB4	4
GEF-1	MECH ROOM 4-24	FURNACE	INLINE	2,600	-	-	3.5	1,950	-	-	-	-	1/2	-	US Draft Co TRV04	4

NOTES:
1. FAN CONTROLLED BY THERMOSTAT ON WALL.
2. FAN CONTROLLED BY 10 MINUTE TIMER OCCUPANCY SWITCH.
3. ELECTRICAL: 460 V/60 Hz/3 PH.
4. FANS SHALL BE CONTROLLED BY GAS FURNACE CONTROLLER

GRILLE AND DIFFUSER SCHEDULE

TAG	MOUNTING	MODULE SIZE (in. x in.)	FINISH	DESCRIPTION	BASIS OF DESIGN	NOTES
SD-1	SIDEWALL	SEE PLAN	WHITE	SUPPLY DIFFUSER	PRICE 520D	1, 2, 3 ,4 5 ,8
SD-2	SPIRAL DUCT	SEE PLAN	WHITE	SUPPLY DIFFUSER	PRICE 520D-SDF	1, 2, 3 ,4 6 ,8
SD-3	CEILING	SEE PLAN	WHITE	SUPPLY DIFFUSER	PRICE SDCA	1, 2, 3 ,6 7 ,9
SD-4	CEILING	SEE PLAN	WHITE	SUPPLY DIFFUSER	PRICE SDCA	1, 2, 3 ,6 7
RG-1	SIDEWALL	SEE PLAN	WHITE	RETURN GRILLE	PRICE 530D	1, 2, 3 ,6 7 ,8
EG-3	CEILING	SEE PLAN	WHITE	EXHAUST GRILLE	PRICE 520D	1,2, 10

NOTES:
1. REFER MECHANICAL DRAWINGS AIR TERMINAL LOCATIONS AND DIMENSIONS.
2. COORDINATE FINISH WITH ARCHITECT.
3. REFER TO MECHANICAL DRAWINGS FOR DIRECTIONAL AIRFLOW ADJUSTMENTS.
4. PROVIDE DOUBLE DEFLECTION ADJUSTABLE BLADES FOR DIRECTIONAL AIRFLOW.
5. PROVIDE NARROW MOUNTING FRAME (1 INCH) WITH OPPOSED BLADE DAMPER.
6. PROVIDE ADJUSTABLE PATTERN CONTROLLERS FOR DIRECTIONAL AIRFLOW ADJUSTMENTS.
7. PROVIDE INTEGRAL DAMPER.
8. PROVIDE FRONT BLADES PARALLEL TO THE SHORT DIMENSION.
9. PROVIDE 6" TAP AT BOTTOM OF DUCT MAIN.
10. REPLACE EXISTING GRILL WITH SAME DIMENSIONS.

GAS DUCT HEATER SCHEDULE

TAG	LOCATION	SERVICE	AIRSIDE MAX. SUPPLY AIR (cfm)	ENTERING AIR TEMPERATURE (°F)	LEAVING AIR TEMPERATURE (°F)	MIN. HEATING CAPACITY (kW)	MODEL	NOTES
DH-1	MECH ROOM 4-24	DOAS-1	7,000	0	70	600	HEATCO HDB400-F-SFx2-81	1-5

NOTES:
1. FURNACE SHALL BE CAPABLE TO TURNDOWN TO PROVIDE A MINIMUM OF 400 CFM SERVICE.
2. PROVIDE COMPLETE CONTROLLER SYSTEM WITH FURNACE INCLUDING COMBUSION FAN, EXHAUST FAN, AND EXHAUST DUCT THROUGH HISTORICAL CHIMNEY.
3. COODINATE EXHAUST DUCT ROUTING IN CHIMNEY WITH CHIMNEY SOLUTIONS. REFER TO ARCHITECTURE SET FOR CONTACT INFO.
4. EXHAUST DUCTWORK THROUGH CHIMNEY SHALL BE JEREMIAS EXHAUST SYSTEMS MODEL DWGV.
5. PROVIDE LOW PROFILE CHIMNEY VENT THAT SHALL BE COORDINATED WITH EXISTING OFFICE GAS LOG FIREPLACE INFRASTRUCTURE.

VRF BRANCH CONTROLLER SCHEDULE

TAG	SERVICE	LEVEL	TYPE	MAX CAPACITY PER PORT (BTU/h)	VOLTS (V)	MCA (A)	MOCP	MANUFACTURER	MODEL	NOTES
BCC-1-1	ODU-1	LEVEL-1	MAIN	109000	208	0.74	0.87	MITSUBUSHI ELECTRIC	TCMBS0108KB21N4	1
BCC-1-2	-	LEVEL-1	SUB	48,000	208	0.38	0.44	MITSUBUSHI ELECTRIC	TCMBS0104KB21N4	1
BCC-1-3	-	LEVEL-1	SUB	31,000	208	0.38	0.44	MITSUBUSHI ELECTRIC	TCMBS0104KB21N4	1
BCC-1-4	-	LEVEL-1	SUB	30,000	208	0.38	0.44	MITSUBUSHI ELECTRIC	TCMBS0104KB21N4	1
BCC-2-1	ODU-2	LEVEL-2	MAIN	244,000	208	0.74	0.87	MITSUBUSHI ELECTRIC	TCMBS0108KB21N4	1
BCC-2-2	-	LEVEL-2	SUB	116,000	208	0.74	0.87	MITSUBUSHI ELECTRIC	TCMBS0108KB21N4	1
BCC-2-3	-	LEVEL-2	SUB	128,000	208	0.74	0.87	MITSUBUSHI ELECTRIC	TCMBS0108KB21N4	1
BCC-3-1	ODU-3	LEVEL-3	MAIN	270,000	208	0.74	0.87	MITSUBUSHI ELECTRIC	TCMBS0108KB21N4	1
BCC-3-2	-	LEVEL-3	SUB	82,000	208	-	-	MITSUBUSHI ELECTRIC	TCMBS0106KB21N4	1
BCC-3-3	-	LEVEL-3	SUB	80,000	208	-	-	MITSUBUSHI ELECTRIC	TCMBS0108KB21N4	1
BCC-4-1	-	LEVEL-4	SUB	42,000	208	0.38	0.44	MITSUBUSHI ELECTRIC	TCMBS0104KB21N4	1
BCC-4-2	-	LEVEL-4	SUB	66,000	208	0.74	0.87	MITSUBUSHI ELECTRIC	TCMBS0108KB21N4	1

NOTES:
1. INCLUDE DIAMONDBACK BALL VALVES BV-SERIES, 700PSIG WORKING PRESSURE, FULL PORT, 410A RATED.
2. FOR SUB BC CONTROLLER CMB-P-NU-GB1 OR -GB, THE TOTAL CONNECTABLE INDOOR UNIT CAPACITY CAN BE 126,000 BTUS OR LESS.
3. IF TWO SUB BC CONTROLLERS ARE USED, THE TOTAL INDOOR UNIT CAPACITY CONNECTED TO BOTH SUB BC CONTROLLERS ALSO CANNOT EXCEED 126,000 BTUS.
4. FOR SUB BC CONTROLLER CMB-P1016NU-HB1 THE TOTAL CONNECTABLE INDOOR UNIT CAPACITY CAN BE 126,000 BTUS OR LESS.
5. IF TWO SUB CONTROLLERS ARE USED, AND ONE OF THEM IS CMB-1016NU-HB1, THE TOTAL INDOOR UNIT CAPACITY CONNECTED TO BOTH SUB CONTROLLERS MUST NOT EXCEED 168,000 BTUS.
6. PROVIDE REFRIGERATION BALL VALVE-BRAZE/SCHRADER/INSULATED - 3/8" SIZE.
7. PROVIDE REFRIGERATION BALL VALVE-BRAZE/SCHRADER/INSULATED - 5/8" SIZE.
8. REFER TO PIPING FLOOR PLANS FOR ADDITONAL BRANCH PORT REQUIREMENTS.

VRF AIR-COOLED CONDENSING UNIT SCHEDULE

TAG	NOMINAL COOLING CAPACITY (BTU/h)	NOMINAL HEATING CAPACITY (BTU/h)	COOLING DESIGN ENTERING TEMP DB (°F)	HEATING DESIGN ENTERING TEMP DB/WB (°F)	CONNECTED CAPACITY (% of NOM)	COOLING EFFICIENCY (EER / SEETR)	REFRIGERANT TYPE	REFRIGERANT CHARGE FACTORY CHARGE (LBS)	REFRIGERANT CHARGE ADDITIONAL CHARGE (LBS)	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN PART NUMBER	WEIGHT (LBS)
ODU-1	120,000	135,000	95	32 / 31	90.8	22.35 / 10.5	R410A	17	30.3	MITSUBUSHI ELECTRIC	TURYE1203AN41AN	SEE ALL NOTES
ODU-2	224,000	250,000	95	32 / 31	108.9	19.8 / 9.7	R410A	26	62.8	MITSUBUSHI ELECTRIC	TURYE2403AN41AN	SEE ALL NOTES
ODU-3	264,000	295,000	95	32 / 31	102.3	20.25 / 9.6	R410A	40	71.7	MITSUBUSHI ELECTRIC	TURYE2643BN41AN	SEE ALL NOTES

NOTES:
1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB).
2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB).
3. EFFICIENCY VALUES FOR EER, IEER, COP ARE BASED ON AHRI 1230 TEST METHOD FOR MIXTURE OF DUCTED & NON-DUCTED INDOOR UNITS.
4. FOR SYSTEMS WITH MULTIPLE MODULES, REFRIGERANT PIPE DIMENSIONS INDICATE TOTAL SYSTEM COMBINED PIPING DOWNSTREAM OF MODULE TWINNING.
5. ADDED FIELD CHARGE LISTED IS IN ADDITION TO FACTORY CHARGE, THIS MUST BE UPDATED BASED UPON FINAL AS-BUILT PIPING LAYOUT.
6. FACTORY REPRESENTATIVES SHALL REVIEW THE PROJECT PRIOR TO AND THROUGHOUT THE INSTALLATION OF CITY MULTI EQUIPMENT.
7. FACTORY REPRESENTATIVES SHALL STARTUP AND COMMISSION CITY MULTI EQUIPMENT UPON COMPLETION OF EQUIPMENT INSTALLATIONS.
8. FACTORY REPRESENTATIVES SHALL PROVIDE ON-SITE ASSISTANCE FOR THE BMS INTEGRATION OF THE CITY MULTI EQUIPMENT.
9. FACTORY REPRESENTATIVES SHALL PROVIDE END-USER TRAINING ON THE CITY MULTI EQUIPMENT UPON COMPLETION OF THE INSTALLATION OF EQUIPMENT.
10. CONDENSING UNITS MUST HAVE FULLY MODULATING INVERTER COMPRESSORS.
11. CONDENSING UNITS MUST HAVE HAVE AUTO CHANGEOVER FUNCTIONS.
12. DEMAND LIMITING RELAY CONTACT MUST BE PROVIDED.
13. FCU THERMOSTATS MUST PROVIDE +/- 1 DEGREE DEAD-BAND SET-POINT AND CONTROL CAPABILITY.
14. SYSTEM SHALL BE PROVIDED WITH CONTROLLER LOCATED IN THE DOAS-1 MECHANICAL ROOM. CONTROLLER SHALL HAVE WEB BASED SOFTWARE. PC BY OTHERS.

REFRIGERANT EXHAUST FAN SCHEDULE

TAG	LOCATION	SERVICE	FAN TYPE	MAX. DESIGN AIRFLOW (cfm)	OPER. DESIGN AIRFLOW (cfm)	MIN. DESIGN AIRFLOW (cfm)	TOTAL S.P. (in wg)	MOTOR RPM (rpm)	MAX. OUTLET VELOCITY (fpm)	MOTOR MAX. BHP (bhp)	MOTOR OPER. BHP (bhp)	MOTOR HP (hp)	BASIS OF DESIGN	NOTES
REF-1	MECH ROOM 4-10	MECH ROOM 4-10	INLINE	1,600	1,600	200	1.0	1,396	590	0.52	0.52	3/4	GREENHECK SQ-140-VG	SEE ALL NOTES

NOTES:
1. PROVIDE ISOLATORS. SEE SPECIFICATION.
2. PROVIDE INLET AND OUTLET COMPANION FLANGES.
3. DISCONNECT BY EQUIPMENT MANUFACTURER.
4. PROVIDE OSHA SHAFT AND BELT GUARD.
5. BHP IS BASED ON DESIGN PERFORMANCE L/S.
6. HP IS BASED ON POTENTIAL (FUTURE) PERFORMANCE L/S.
7. FLEX DUCT CONNECTOR.
8. SOLID STATE VARIABLE SPEED ADJUSTMENT CONTROL.
9. FAN AND MOTOR TO BE SELECTED FOR VARIABLE SPEED DUTY.
10. PROVIDE ALUMINUM BIRDSCREEN, HINGED CURB CAP, AND CURB SEAL.
11. ALUMINUM WHEEL MATERIAL.
12. NEMA 4 VFD ENCLOSURE
13. PROVIDE MOUNTED AND WIRED JUNCTION BOX.
14. INITIAL BALANCE AIR QUANTITY INCLUDES 3% DUCT LEAKAGE.
15. INITIAL BALANCE AIR QUANTITY INCLUDES 5% DUCT LEAKAGE.
16. PROVIDE WITH STEEL PROP, PROP AND MOTOR GUARD AND DAMPER/WALL OUTLET.
17. BACKDRAFT DAMPER SHALL NOT BE PROVIDED.
18. PROVIDE VARI-GREEN 2-SPEED CONTROLLER WITH INTEGRAL 85-277V TO 24VDC TRANSFORMER MOUNTED AND WIRED.
19. PROVIDENEMA-1 TOGGLE SWITCH SHIPPED WITH UNIT.
20. UL/CUL 705 LISTED - "POWER VENTILATOR"

VRF FAN COIL UNIT SCHEDULE

TAG	SERVICE	NOMINAL COOLING CAPACITY (BTU/h)	NOMINAL HEATING CAPACITY (BTU/h)	COOLING DESIGN EAT DB/WB (°F)	HEATING DESIGN EAT DB/WB (°F)	COOLING TOTAL (BTU/h)	COOLING SENSIBLE (BTU/h)	HEATING CAPACITY (BTU/h)	MAX FAN AIRFLOW (CFM)	OPERATING FAN AIRFLOW (CFM)	MIN FAN AIRFLOW (CFM)	MAX FAN ESP (in. wg.)	ELECTRICAL VOLTAGE (V)	ELECTRICAL PHASE	ELECTRICAL FREQUENCY (Hz)	ELECTRICAL MCA/MOCP	FILTER	O.A. MIN. (CFM)	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	NOTES
AC-1-01A	ODU-1	12,000	13,500	75 / 62	70 / 58	11,211	8,347	9,628	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-1-01B	ODU-1	12,000	13,500	75 / 62	70 / 58	11,211	8,347	9,628	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-1-02	ODU-1	12,000	13,500	75 / 62	70 / 58	11,211	8,347	9,628	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-1-03	ODU-1	8,000	9,000	75 / 62	70 / 58	7,474	6,391	6,419	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-1-04	ODU-1	8,000	9,000	75 / 62	70 / 58	7,474	6,391	6,419	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-1-05	ODU-1	8,000	9,000	75 / 62	70 / 58	7,474	6,391	6,419	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-1-06	ODU-1	6,000	6,700	75 / 62	70 / 58	5,605	4,245	4,779	191	173	141	-	208.0	1.0	60.0	0.24 / 15	-	-	MITSUBUSHI ELECTRIC	TPKFYP006LM140B	1,2,3,4,5
AC-1-07	ODU-1	12,000	13,500	75 / 62	70 / 58	11,211	8,347	9,628	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-1-08	ODU-1	15,000	17,000	75 / 62	70 / 58	14,014	10,140	12,125	388	-	300	-	208.0	1.0	60.0	0.44 / 15	-	-	MITSUBUSHI ELECTRIC	TPFFYP015CS140A	1,2,3,4,5
AC-1-09	ODU-1	8,000	9,000	75 / 62	70 / 58	7,474	6,391	6,419	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-1-10	ODU-1	8,000	9,000	75 / 62	70 / 58	7,474	6,391	6,419	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-2-01	ODU-2	6,000	6,700	75 / 62	70 / 58	5,600	5,600	3,732	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-2-02	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-03	ODU-2	6,000	6,700	75 / 62	70 / 58	5,600	5,600	3,732	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-2-04	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-05	ODU-2	6,000	6,700	75 / 62	70 / 58	5,600	5,600	3,732	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-2-06	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-07	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-08	ODU-2	6,000	6,700	75 / 62	70 / 58	5,600	5,600	3,732	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-2-09	ODU-2	6,000	6,700	75 / 62	70 / 58	5,600	5,600	3,732	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-2-10	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-11	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-12	ODU-2	6,000	6,700	75 / 62	70 / 58	5,600	5,600	3,732	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-2-17A	ODU-2	8,000	9,000	75 / 62	70 / 58	7,467	6,388	5,013	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-2-17B	ODU-2	8,000	9,000	75 / 62	70 / 58	7,467	6,388	5,013	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-2-17C	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-20	ODU-2	12,000	13,500	75 / 62	70 / 58	11,200	8,342	7,520	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-2-24	ODU-2	48,000	54,000	75 / 62	70 / 58	44,799	33,507	30,078	1306	1112	918	0.6	208.0	1.0	60.0	4.38 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP048MA144A	1,2,3,4,5
AC-2-38	ODU-2	48,000	54,000	75 / 62	70 / 58	44,799	33,507	30,078	1306	1112	918	0.6	208.0	1.0	60.0	4.38 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP048MA144A	1,2,3,4,5
AC-3-01	ODU-3	15,000	17,000	75 / 62	70 / 58	13,925	11,278	10,510	494	424	353	0.6	208.0	1.0	60.0	2.88 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP015MA144A	1,2,3,4,5
AC-3-02	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-3-03	ODU-3	8,000	9,000	75 / 62	70 / 58	7,427	6,371	5,564	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-3-04	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-3-05	ODU-3	24,000	27,000	75 / 62	70 / 58	22,281	19,044	16,692	883	742	618	0.6	208.0	1.0	60.0	2.88 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP024MA144A	1,2,3,4,5
AC-3-06	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-3-07	ODU-3	6,000	6,700	75 / 62	70 / 58	5,570	5,570	4,142	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-3-08	ODU-3	6,000	6,700	75 / 62	70 / 58	5,570	5,570	4,142	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-3-09	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-3-10	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-3-14A	ODU-3	8,000	9,000	75 / 62	70 / 58	7,427	6,371	5,564	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-3-14B	ODU-3	8,000	9,000	75 / 62	70 / 58	7,427	6,371	5,564	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP008MA144A	1,2,3,4,5
AC-3-21	ODU-3	27,000	30,000	75 / 62	70 / 58	25,066	20,234	18,547	883	742	618	0.6	208.0	1.0	60.0	2.88 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP027MA144A	1,2,3,4,5
AC-4-01	ODU-3	6,000	6,700	75 / 62	70 / 58	5,570	5,570	4,142	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-4-02	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-4-03	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-4-04	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-4-05	ODU-3	6,000	6,700	75 / 62	70 / 58	5,570	5,570	4,142	300	265	212	0.6	208.0	1.0	60.0	1.75 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP006MA144A	1,2,3,4,5
AC-4-06	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0	2.13 / 15	MERV 8	-	MITSUBUSHI ELECTRIC	TPEFYP012MA144A	1,2,3,4,5
AC-4-07	ODU-3	12,000	13,500	75 / 62	70 / 58	11,140	8,315	8,346	371	318	265	0.6	208.0	1.0	60.0

MECHANICAL SPECIFICATIONS

PART 1:

1. GENERAL CONDITIONS:

A. THE SCOPE OF THE WORK SHALL INCLUDE THE FURNISHING AND INSTALLATION OF THE NECESSARY MATERIAL AND LABOR TO ACCOMPLISH THE WORK INDICATED BY THE DRAWINGS AND HEREIN SPECIFIED. ALL WORK BY THIS CONTRACTOR SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL BUILDING CODES.

B. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE EXISTING CONDITIONS AT THE JOB SITE BEFORE SUBMITTING PROPOSALS. SUBMISSION OF PROPOSALS SHALL BE TAKEN AS EVIDENCE THAT SUCH INSPECTION HAS TAKEN PLACE. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE COMPLETE SET OF CONSTRUCTION DOCUMENTS, AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

C. MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE NEW AND SHALL BEAR THE UL. LABEL WHERE APPLICABLE, UNLESS NOTED OTHERWISE. ALL WORK SHALL BE GUARANTEED AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR AFTER COMPLETION AND ACCEPTANCE BY THE OWNER.

D. CONTRACTOR SHALL INSTALL MECHANICAL SYSTEMS WITHOUT INTERFERENCE AND IN STRICT COORDINATION WITH OTHER TRADES.

E. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND APPLICABLE CODES AND STANDARDS. IN CASE OF DIFFERENCE BETWEEN APPLICABLE CODES AND STANDARDS AND THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ARCHITECT/ENGINEER AND THE OWNER IN WRITING OF SUCH DIFFERENCE. SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF APPLICABLE CODES AND STANDARDS, HE SHALL BEAR ALL COSTS ARISING IN CORRECTING SUCH DEFECTS. APPLICABLE CODES AND STANDARDS SHALL INCLUDE ALL ORDINANCES, UTILITY COMPANY REGULATIONS, AND APPLICABLE REQUIREMENTS OF NATIONALLY ACCEPTED CODES AND STANDARDS. SHOULD THE CONTRACTOR SUPPLY EQUIPMENT DIFFERING FROM THE SPECIFIED ITEMS IN THE CONTRACT DOCUMENTS WITHOUT NOTIFICATION TO THE ENGINEER, HE SHALL BEAR ALL COSTS TO UPGRADE DEFICIENCIES ARISING FROM SUCH.

F. WHERE ONLY ONE MANUFACTURER'S NAME IS LISTED IN THE EQUIPMENT SPECIFICATION, OTHER MANUFACTURERS OF SIMILAR CHARACTERISTICS AND OF EQUAL OR BETTER PERFORMANCE CAPACITIES MAY BE CONSIDERED FOR "OR EQUAL" APPROVAL BY THE ENGINEER. WHERE MORE THAN ONE MANUFACTURER IS LISTED IN THE NOTES AND EQUIPMENT SPECIFICATIONS, ONLY THOSE NAMED MANUFACTURERS WILL BE CONSIDERED FOR APPROVAL.

G. SHOULD A SUBSTITUTION BE ACCEPTED, AND SHOULD THE SUBSTITUTE MATERIAL PROVE DEFECTIVE, OR OTHERWISE UNSATISFACTORY FOR THE SERVICE INTENDED WITHIN THE GUARANTEE PERIOD, THIS MATERIAL OR EQUIPMENT SHALL BE REPLACED WITH THE MATERIAL OR EQUIPMENT SPECIFIED AT NO COST TO THE OWNER.

H. PROVIDE ACCESS, INCLUDING NECESSARY ACCESS DOORS, FOR NEW AND EXISTING EQUIPMENT REQUIRING OPERATION AND/OR MAINTENANCE. RELOCATE EXISTING AND LOCATE ALL NEW EQUIPMENT SUCH THAT OPERATION OR MAINTENANCE IS NOT RESTRICTED.

I. DO NOT RUN PIPING OR DUCTWORK, OR LOCATE EQUIPMENT, WITH RESPECT TO SWITCHBOARDS, PANELBOARDS, POWER PANELS, MOTOR CONTROL CENTERS OR DRY TYPE TRANSFORMERS, WITHIN 42 INCHES IN FRONT OF EQUIPMENT, OVER EQUIPMENT, OR WITHIN 36 INCHES HORIZONTALLY OF SAME SPACE.

J. PROVIDE SNAP-ON OR ADHESIVES LABELS INDICATING CONDENSATE DRAINAGE, DOMESTIC HOT AND COLD WATER, MEDICAL GASES, ETC.

2 MECHANICAL DEMOLITION

A. UNLESS NOTED OTHERWISE, THE MECHANICAL DEMOLITION SHALL BE CARRIED OUT TO THE EXTENT THAT THE FLOORS ARE RETURNED TO THE ORIGINAL BASE BUILDING CONDITIONS. CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS IN ORDER TO ACCURATELY DETERMINE THE EXTENT OF THE WORK UNDER THIS SECTION.

B. UNLESS NOTED OTHERWISE, REMOVE EXISTING INTERIOR DIFFUSERS, GRILLES, AND DUCTWORK AS INDICATED PLANS. EXISTING DIFFUSERS AND GRILLES MAY BE REUSED IF THEY MEET THE SCHEDULED SPECIFICATIONS. EXISTING BASE BUILDING SLOT DIFFUSERS ARE TO REMAIN EXCEPT WHERE INDICATED ON PLANS.

C. WASTE, DOMESTIC WATER, AND VENT PIPING SHALL BE REMOVED BACK TO RISER STACK CONNECTIONS AND CAPPED, UNLESS NOTED OTHERWISE.

D. EXISTING DUCTWORK SHOWN ON PLANS MAY NOT EXACTLY MATCH THE ACTUAL FIELD CONDITIONS. CONTRACTOR SHALL VERIFY EXISTING DUCTWORK ROUTING AND LOCATIONS AND NOTIFY ENGINEER OF EXISTING CONDITIONS BEFORE MAKING ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS WITH NEW DUCTWORK, EQUIPMENT, LIGHT FIXTURES, ETC.

3 PRODUCTS, EQUIPMENT AND EXECUTION:

A. RELIEF AND DRAIN PIPING SHALL BE TYPE "M" COPPER WITH 95/5 SOLDER JOINT FITTINGS OR SCHEDULE 40 BLACK STEEL PIPES WITH SCREWED FITTINGS.

B. REFRIGERANT PIPING SHALL BE TYPE "ACR" COPPER PIPE MANUFACTURED IN ACCORDANCE WITH ASTM B88 AND ANSI BP.1 REFRIGERATION INDUSTRY STANDARDS. FITTINGS SHALL BE WROUGHT COPPER PRESSURE TYPE AND ELBOWS SHALL BE LONG RADIUS TYPE. PIPE AND FITTINGS SHALL BE ASSEMBLED WITH SILVER BRAZING AND PURGED WITH NITROGEN DURING BRAZING. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION; USING OFFSETS, SWING JOINTS, ETC. AS SHOWN AND/OR REQUIRED TO PREVENT UNDUE STRAIN ON THE PIPING.

1. SOLENOID AND HOT GAS BYPASS VALVES SHALL BE R/S FLO-CON SPORLAN.
2. FILTER-DRIERS SHALL BE SPORLAN REPLACEABLE CORE "CATCH-ALLS".
3. SIGHT GLASS SHALL BE SPORLAN "SEE-ALL".
4. AUXILIARY SIDE CONNECTIONS SHALL BE REQUIRED FOR HOT GAS BY-PASS AND SHALL BE SPORLAN, AND INSTALLED BETWEEN THE ORIFICE AND THE DISTRIBUTOR.
5. THERMOSTATIC EXPANSION VALVES WITH 10 DEGREES SUPERHEAT SHALL BE SPORLAN AND SIZED AND SELECTED FOR USE WITH THE EVAPORATOR SERVED AT THE DESIGN OPERATING PRESSURE.
6. SUCTION LINE ACCUMULATORS SHALL BE EQUAL TO MODEL S-7400 AS MANUFACTURED BY AC&R COMPONENTS, INC.
7. SHUT-OFF, CHECK, SOLENOID AND RELIEF VALVES SHALL BE AS MANUFACTURED BY THE HENRY VALVE COMPANY.

C. PIPE, EQUIPMENT, ETC., SHALL BE PROPERLY SUPPORTED FROM STRUCTURE WITH THE USE OF APPROVED TYPE CLEVIS, TRAPEZE HANGERS OR WITH SPACING AS FOLLOWS:

1. STEEL PIPE OR COPPER TUBING - 1-1/2" OR LESS, 6 FOOT INTERVALS.
2. FITTINGS - WITHIN 2'-0" OF EACH CHANGE OF DIRECTION. STEEL PIPE OR COPPER TUBING - 1-1/2" OR LESS, 6 FOOT INTERVALS.
3. ALL EXPOSED DUCTWORK SHALL UTILIZE GRIPLOCK HANGER SYSTEM. GRIP LOCK HANGERS SHALL BE PAINTED TO MATCH DUCTWORK OR CEILING PER COORDINATION WITH THE ARCHITECT. PROVIDE MOCKUP INSTALLATION FOR OWNER

D. INSULATION – PIPE AND DUCTWORK

1. INSULATION SHALL BE PROTECTED AT HANGERS BY A SECTION OF CALCIUM SILICATE PIPE INSULATION AND A 12" LONG HALF-ROUND SHEET METAL SHIELD ON THE OUTSIDE OF THE INSULATION. EXTEND PIPING INSULATION FULL THICKNESS WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PENETRATIONS.
2. PROVIDE AND INSTALL UNIONS AT PROPER POINTS TO PERMIT REMOVAL OF A PIPE, EQUIPMENT, ETC., WITHOUT INJURY TO OTHER PARTS OF THE SYSTEM AND TO PREVENT CORROSION DUE TO ELECTROLYSIS. ALL EQUIPMENT SHALL BE INSTALLED IN A MANNER TO PERMIT ACCESS FOR SERVICE WITHOUT DISASSEMBLY. UNIONS SHALL BE DIELECTRIC WHERE DISSIMILAR MATERIALS OCCUR. PRESSURE RATINGS SAME AS FITTINGS..
3. CONDENSATE DRAIN PIPING, AUXILIARY DRAIN PIPING AND ALL REFRIGERANT PIPING SHALL BE INSULATED WITH 2" THICK OWENS-CORNING FIBERGLASS 25 ASJ/SSL OR EQUAL. AUXILIARY DRAIN PAN SHALL BE INSULATED WITH 3/8" THICK ARMAFLEX SHEET INSULATION.
4. PROVIDE INSULATION PRODUCTS MANUFACTURED BY JOHNS-MANVILLE, OWENS-CORNING, ARMSTRONG AND CERTAINTEED. FIBERGLASS PIPE INSULATION SHALL BE ASTM C547-77, CLASS 1. PROVIDE BANDS, WIRES, AND CEMENT AS RECOMMENDED BY INSULATION MANUFACTURER FOR THE APPLICATIONS INDICATED. FLEXIBLE FIBERGLASS DUCTWORK INSULATION SHALL BE ASTM C553-70, TYPE I, CLASS B3.
5. PROVIDE COMPOSITE INSULATION (INSULATION JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVE) WITH FLAME-SPREAD RATINGS OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM K04 (HFFA 255) METHOD.
6. MAINTAIN INTEGRITY OF VAPOR BARRIER JACKETS ON PIPE AND DUCTWORK INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE. SEAL OPEN ENDS OF INSULATION WITH MASTIC. SECTIONALLY SEAL ALL BUTT ENDS OF CHILLED WATER INSULATION OF FITTINGS WITH WHITE VAPOR BARRIER COATING. EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED. INSTALL PROTECTIVE METAL SHIELDS AND FOAM GLASS INSERTS WHERE PIPE HANGERS BEAR ON OUTSIDE OF INSULATION.

E. RECTANGULAR "LOW PRESSURE" SHEET METAL DUCT SHALL BE FABRICATED OF CONTINUOUS HOT DIP MILL GALVANIZED MINIMUM 26 GAUGE STEEL SHEETS AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS FOR 1.0" W.C. SHALL HAVE AN INTERNAL DUCT LINING EQUAL TO JOHNS-MANVILLE PERMACOTE LINACOUSTIC, 1" THICK, 1.5 LB. DENSITY DUCT LINER.

F. ROUND "LOW PRESSURE" SHEET METAL DUCT SHALL BE SPIRAL DUCTWORK. SPIRAL DUCTWORK SHALL BE FABRICATED OF CONTINUOUS HOT DIP MILL GALVANIZED MINIMUM 26 GAUGE STEEL SHEETS AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS FOR 1.0" W.C. AND SHALL HAVE AN INTERNAL DUCT LINING EQUAL TO JOHNS-MANVILLE PERMACOTE LINACOUSTIC, 1" THICK, 1.5 LB. DENSITY DUCT LINER.

G. ROUND "LOW PRESSURE" DUCT FITTINGS SHALL BE FABRICATED OF CONTINUOUS HOT DIP MILL GALVANIZED MINIMUM 26 GAUGE STEEL SHEETS AND INSTALLED IN ACCORDANCE WITH SMACNA RECOMMENDATIONS FOR 1.0" W.C.

H. RECTANGULAR AND ROUND "PRIMARY AIR" SHEET METAL DUCT AND FITTINGS SHALL BE FABRICATED OF CONTINUOUS HOT DIP MILL GALVANIZED MINIMUM 26 GAUGE STEEL SHEETS AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS FOR 3.0" W.C., AND ROUND OR RECTANGULAR DUCT SHALL HAVE AN INTERNAL DUCT LINING EQUAL TO JOHNS-MANVILLE PERMACOTE LINACOUSTIC, 1" THICK, 1.5 LB. DENSITY DUCT LINER (DUCTS FOR MEDICAL WORK SHALL NOT BE LINED, BUT WILL BE WRAPPED).

CONSTRUCTION METHODS:

1. RECTANGULAR - DUCTMATE SYSTEM
2. ROUND - SPIRAL DUCT SYSTEM

I. CONTRACTOR SHALL BALANCE THE HVAC SYSTEMS FOR DESIGNATED AIR AND WATER QUANTITIES AND SHALL BE N.E.B.B. OR A.A.B.C. APPROVED. SUBMIT REPORT ON NEBB, AABC, OR SMACNA FORMS FOR APPROVAL BY THE ENGINEER. EXTENT OF BALANCING WORK TO INCLUDE REBALANCING OF EXISTING SUPPLY AND EXHAUST SYSTEMS AS REQUIRED TO ACHIEVE DESIGN CFM ON SUBJECT PROJECT.

J. DUCT ACCESS DOORS. PROVIDE RIGID AND CLOSE FITTING DOORS OF GALVANIZED STEEL WITH SEALING GASKETS AND QUICK FASTENING LOCKING DEVICES. FOR INTERNALLY LINED OR INSTALLED DUCTWORK, INSTALL MINIMUM ONE INCH THICK INSULATION WITH SHEET METAL COVER. INSTALL AT EACH FIRE DAMPER. DOORS TO BE EQUAL TO FLEXMASTER " THE INSPECTOR SERIES."

K. FURNISH AND INSTALL SMOKE, FIRE AND/OR FIRE/SMOKE DAMPERS WHERE SHOWN ON THE DRAWINGS, AND REQUIRED BY THE GOVERNING AUTHORITY. DAMPERS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER AND SMACNA AND COMPLY WITH U.L. AND LOCAL ORDINANCES AS REQUIRED BY THE GOVERNING AUTHORITY.

L. DUCTWORK EXPOSED TO WEATHER: ALL EXTERNAL JOINTS ARE TO HAVE SECURE WATERTIGHT MECHANICAL CONNECTIONS. SEAL ALL OPENINGS TO PROVIDE WEATHERPROOF CONSTRUCTION. CONSTRUCT DUCTWORK TO RESIST EXTERNAL LOADS OF WIND, SNOW, ICE, AND OTHER EFFECTS OF WEATHER. PROVIDE NECESSARY SUPPORTING STRUCTURES. DUCTWORK SHALL BE GALVANIZED STEEL. IF DUCT OUTER SURFACE IS UNINSULATED, PROTECT OUTER SURFACE WITH SUITABLE PAINT. WHERE DUCTS HAVE EXTERNAL INSULATION, PROVIDE WEATHERPROOF ALUMINUM JACKET. INSTALL INSULATION ON TOP OF DUCTWORK TO SHED WATER.

PART 2:

1. MOTOR STARTER/DISCONNECT:

A. MOTOR STARTER/DISCONNECT SWITCH FOR 3/4 HP, 3 PHASE MOTORS AND LARGER SHALL BE ACROSS-THE-LINE NON-REVERSING COMBINATION STARTERS WITH FUSIBLE DISCONNECT SWITCH TYPE RATED IN ACCORDANCE WITH NEMA STANDARDS, SIZES AND HORSEPOWER RATINGS. UNITS SHALL BE MOUNTED IN NEMA 1 ENCLOSURES WHERE INSTALLED INDOORS, AND NEMA 4 ENCLOSURES WHERE INSTALLED OUTDOORS. MINIMUM SIZE SHALL BE NEMA SIZE 1.

1. OVERLOAD RELAYS OF THE MELTING ALLOY TYPE SHALL BE PROVIDED IN ALL PHASES. THERMAL UNITS SHALL BE OF ONE-PIECE CONSTRUCTION AND INTERCHANGEABLE.
2. STARTERS SHALL BE EQUIPPED WITH ONE SET OF AUXILIARY CONTACTS AND BE SUITABLE FOR THE ADDITION OF AT LEAST THREE EXTERNAL ELECTRICAL INTERLOCKS OF ANY ARRANGEMENT NORMALLY OPEN OR NORMALLY CLOSED.
3. ALL MAGNETIC STARTERS WITH "HAND-OFF-AUTO" SELECTOR SWITCH AND PILOT LIGHT SHALL BE EQUAL TO SQUARE D CLASS 8538 OR SIEMENS CLASS SCF WITH MELTING ALLOY OVERLOAD RELAYS AND FOR EACH PHASE, AND RED PILOT LIGHT IN COVER OF GENERAL PURPOSE ENCLOSURE. COIL VOLTAGE SHALL BE 120 VOLT AND STARTER SHALL HAVE A CONTROL VOLTAGE TRANSFORMER.
4. PUSH BUTTON STATIONS AND/OR HAND-OFF-AUTOMATIC SWITCHES SHALL BE REMOTE LOCATED AND WIRED UNDER THIS SECTION WHERE SO SHOWN OR SCHEDULED ON THE DRAWINGS.

B. MOTOR STARTER/DISCONNECT SWITCH FOR SINGLE PHASE MOTORS 1 H.P. AND SMALLER SHALL BE COMBINATION STARTER/TOGGLE SWITCH IN ACCORDANCE WITH NEMA STANDARDS. UNITS SHALL BE SUPPLIED WITH HEAVY DUTY POWER RELAYS. ALL UNITS MOUNTED INDOORS SHALL BE IN NEMA 1 ENCLOSURES, AND WHERE INSTALLED OUTDOORS SHALL BE IN NEMA 4 ENCLOSURES. MINIMUM SIZE SHALL BE NEMA SIZE 0.

1. UNITS SHALL BE EQUAL TO SIEMENS CLASS MSF AND TYPE SRD POWER RELAYS WITH ENCLOSURES.

2. SPLIT SYSTEM DX INDOOR UNIT (AC-#) (DX/ELECTRIC):

A. CABINET SHALL BE FABRICATED OF GALVANIZED STEEL WITH REMOVABLE PANELS FOR INSTALLATION AND MAINTENANCE. THE ENTIRE INTERIOR OF THE CABINET SHALL BE INSULATED WITH ONE (1) INCH THICK GLASS FIBER NEOPRENE INSULATION.

B. THE COILS SHALL BE COPPER TUBES WITH ALUMINUM FINS.

C. THE DRAIN PAN SHALL BE GALVANIZED METAL AND FULLY INSULATED TO ELIMINATE CONDENSATE FROM FORMING. PROVIDE AUXILIARY DRAIN PANS UNDER ENTIRE UNIT. PROVIDE DRAIN PAN FLOAT SENSOR THAT WILL PROVIDE AUDIBLE ALARM AND SHUT-DOWN UNIT UPON ACTIVATION. ALARM SHALL REQUIRE A MANUAL RESTART.

D. FAN MOTORS SHALL BE EQUIPPED WITH PSC AND MULTI-SPEED TAPS.

E. FAN-COILS SHALL BE FURNISHED WITH MERV 8 FILTERS.

F. CAPACITY AND LOCATIONS SHALL BE INDICATED ON THE DRAWINGS WITH A MINIMUM OF 0.6" E.S.P. WHICH INCLUDES FILTERS.

G. UNITS SHALL BE DAIKIN, CARRIER, TRANE, YORK OR LENNOX AND EQUAL TO DAIKIN MODEL FSXQ FAN COIL UNITS.

3. SPLIT SYSTEM OUTDOOR CONDENSING UNIT (ODU-#):

A. FURNISH AND INSTALL WHERE INDICATED ON PLANS AIR-COOLED CONDENSING UNITS. THE UNIT SHALL CONTAIN SUFFICIENT REFRIGERANT (R-410A) FOR COMPLETE SYSTEM AND BE EQUIPPED WITH REFRIGERANT LINE FITTINGS WHICH PERMIT MECHANICAL OR SWEAT CONNECTION. BRASS SERVICE VALVES WITH FITTINGS AND GAGE PORTS SHALL BE LOCATED ON EXTERIOR OF UNIT. COMPRESSOR SHALL BE POSITIVE-DISPLACEMENT, DIRECT-DRIVE AND HERMETICALLY SEALED SCROLL COMPRESSOR(S) WITH INVERTER DRIVE AND FULL MODULATION.. UNIT SHALL HAVE INTERNAL VIBRATION ISOLATION AND BE LOCATED IN AN ISOLATED SECTION OF UNIT. WARRANTY SHALL BE STANDARD ONE-YEAR PARTS AND LABOR AND EXTENDED WARRANTY OF FOUR YEARS FOR THE COMPRESSOR.

B. CONTROLS SHALL BE FACTORY WIRED AND PLACED IN A LOCATION READILY ACCESSIBLE FROM TOP OF UNIT. COMPRESSOR MOTOR SHALL HAVE BOTH THERMAL AND CURRENT SENSITIVE OVERLOAD DEVICES.

C. CONDENSER SHALL BE CONSTRUCTED WITH ALUMINUM FINS MECHANICALLY BONDED TO NONFERROUS TUBING. CONDENSER FAN SHALL BE PROPELLER TYPE, DIRECT DRIVEN, AND ARRANGED FOR VERTICAL AIR DISCHARGE. MOTOR SHALL BE FACTORY LUBRICATED, TOTALLY ENCLOSED AND INHERENTLY PROTECTED.

D. UNITS SHALL INCLUDE CRANKCASE HEATER, LOW AMBIENT CONTROL TO 0 DEGREE F, ANTI-CYCLE TIME DELAY RELAY, INDOOR FAN RELAY, THERMOSTAT WITH SUBBASE, LOW-VOLTAGE TRANSFORMER, LIQUID-LINE FILTER DRIER, SUCTION ACCUMULATOR, SUCTION LINE CONNECTION ADAPTER AND SINGLE POINT POWER CONNECTION.

E. CAPACITY OF UNITS SHALL BE AS SCHEDULED ON THE DRAWINGS. UNITS SHALL BE CARRIER, TRANE, YORK, LENNOX, OR DAIKIN.

4. PACKAGED CONDENSING UNIT (CU-1):

A. PACKAGED CONDENSING UNITS SHALL BE WEATHER-PROOFED FACTORY PACKAGED, SELF-CONTAINED, AIR COOLED CONDENSING UNITS EQUAL TO AAON, DAIKIN, TRANE OR YORK.

B. UNITS SHALL BE FACTORY ASSEMBLED WITH A UNIT CASING CONSTRUCTED OF 18 GAUGE ZINC COATED GALVANIZED STEEL ON A HEAVY GAUGE INTEGRAL STEEL BASE WITH ALL INTERCONNECTING REFRIGERANT PIPING, INTERNAL POWER WIRING, CONTROL WIRING, AND THERMAL INSULATION.

C. CONDENSING UNITS SHALL BE COMPLETE WITH HOLDING CHARGE OF R-454B, 1750 RPM MOTOR DRIVEN ACCESSIBLE HERMETIC COMPRESSOR MOUNTED ON RUBBER-IN-SHEAR VIBRATION ISOLATORS, SUCTION AND DISCHARGE VALVES, POSITIVE LUBRICATION SYSTEM, FILTER DRIER, CAPACITY REDUCTION CONTROL, WEATHER RESISTANT STEEL CASINGS, COPPER COIL/ALUMINUM FIN CONDENSER COILS PRESSURE AND LEAK TESTED TO 425 PSIG AIR PRESSURE. DIRECT DRIVEN CONDENSER FANS WITH PERMANENTLY LUBRICATED MOTORS, STANDARD FACTORY CONTROLS INCLUDING ALL MOTOR STARTING EQUIPMENT, HIGH AND LOW PRESSURE CUTOUTS, OIL SAFETY SWITCH, INHERENT MOTOR PROTECTORS, CRANKCASE HEATER, PUMPDOWN CIRCUITRY, CONTROL TRANSFORMER, FAN CONTROL, AND WITH AMBIENT CONTROL FOR SATISFACTORY OPERATION AT TEMPERATURES AS LOW AS 20 DEG. F., AND ANTI-RECYCLE TIMER FOR CONTROL OF THE COMPRESSORS. UNITS SHALL HAVE A SINGLE POINT ELECTRICAL CONNECTION.

D. COMPRESSOR DISCHARGE LINE OF CONDENSING UNIT NO. CU-1 TO BE FITTED WITH "T" STUB FITTING FOR FIELD INSTALLATION OF HOT GAS BY-PASS VALVE PROVIDED BY MANUFACTURER.

E. PROVIDE SPRING ISOLATORS UNDER UNITS TO ADEQUATELY REDUCE TRANSMISSION OF NOISE AND VIBRATION TO THE BUILDING STRUCTURE.

F. PERFORMANCE CAPACITY OF THE CONDENSING UNIT SHALL BE AS SCHEDULED ON THE DRAWINGS.

5. GAS HEATING COILS

A. SPECIAL WARRANTY: MANUFACTURER AGREES TO REPAIR OR REPLACE HEAT EXCHANGER OF GAS-FIRED DUCT HEATER THAT FAILS IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. WARRANTY PERIOD SHALL BE:FIVE YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

B. PRODUCTS
ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION. HEAT EXCHANGER AND BURNER MATERIAL SHALL BE STAINLESS STEEL AND PROVIDED WITH POWER VENTING AND MODULATING CONTROL VALVE.
MANUFACTURED UNITS

1. DESCRIPTION: FACTORY ASSEMBLED, PIPED, AND WIRED; AND COMPLYING WITH ANSI Z83.8/CSA 2.6.
2. FUEL TYPE: DESIGN BURNER FOR NATURAL GAS HAVING CHARACTERISTICS SAME AS THOSE OF GAS AVAILABLE AT PROJECT SITE.
3. POWER VENTER: INTEGRAL, MOTORIZED CENTRIFUGAL FAN INTERLOCKED WITH GAS VALVE.
4. CONTROLS: REGULATED REDUNDANT GAS VALVE CONTAINING PILOT SOLENOID VALVE, ELECTRIC GAS VALVE, PILOT FILTER, PRESSURE REGULATOR, PILOT SHUTOFF, AND MANUAL SHUTOFF ALL IN ONE BODY.
   a. IGNITION: ELECTRONICALLY CONTROLLED ELECTRIC SPARK WITH FLAME SENSOR.
   b. FAN THERMAL SWITCH: OPERATES FAN ON HEAT-EXCHANGER TEMPERATURE.
   c. VENT FLOW VERIFICATION: DIFFERENTIAL PRESSURE SWITCH TO VERIFY OPEN VENT.
   d. CONTROL TRANSFORMER.
   e. HIGH LIMIT: THERMAL SWITCH OR FUSE TO STOP BURNER.

6. DEDICATED OUTSIDE AIR UNIT (DOAS-1):

A. UNIT SHALL BE DESIGNED FOR 100% OUTSIDE AIR APPLICATION.

B. UNIT SHALL BE SINGLE-ZONED CONSTANT AIR VOLUME, DIRECT EXPANSION COOLING, FACTORY FABRICATED CABINET UNITS MANUFACTURED BY DAIKIN, CARRIER, AAON, YORK OR TRANE. THE UNIT SHALL BE COMPLETE WITH DWDI DYNAMICALLY AND STATICALLY BALANCED FANS, MOTORS, COOLING COIL, HEATING COIL, FILTER SECTION. CASING SHALL BE DOUBLE-WALLED AND ACOUSTICALLY AND THERMALLY INSULATED. INTERNAL INSULATION SHALL BE OF SUFFICIENT THICKNESS TO PREVENT CONDENSATION ON THE EXTERIOR OF THE UNIT AND SHALL BE FIRE AND FUNGUS PROOF. DRAIN PANS SHALL BE 304 S.S. AND SHALL EXTEND UNDER THE COOLING COIL SECTION AND SHALL BE INSULATED WITH INSULATION OF SUFFICIENT THICKNESS TO PREVENT ANY CONDENSATION. UNIT CASING SHALL BE OF CORROSION RESISTANT STEEL WITH ANGLE OR TUBULAR STEEL FRAMEWORK. ALL ACCESS DOORS SHALL BE HINGED.

C. REFRIGERANT DX COOLING COILS SHALL BE CONSTRUCTED OF SEAMLESS COPPER TUBES WITH ALUMINUM FINS. COIL SHALL BE LEAK TESTED AT 375 PSIG AND SUITABLE FOR USE WITH R-454B AND SHALL HAVE A SUCTION HEADER AND A LIQUID DISTRIBUTOR DESIGNED TO DISTRIBUTE TO ALL CIRCUITS UNIFORMLY AND EQUALLY. UNIT SHALL BE PROVIDED WITH MODULATING HOT GAS REHEAT DEHUMIDIFICATION CONTROL. COIL SHALL BE ALUMINUM TUBE MICR-CHANNEL TYPE.

D. HEATING COIL SHALL BE GAS TYPE AND SHALL BE CONSTRUCTED AS DESCRIBED IN HEATING COIL SECTION.

E. MOTORS AND DRIVES SHALL BE FACTORY MOUNTED WITH ENTIRE ASSEMBLY BALANCED BEFORE SHIPMENT. FANS SHALL BE DIRECT DRIVE, WITH ECM PREMIUM EFFICIENCY MOTORS.

F. FILTER SECTION SHALL BE SUITABLE FOR 2" THICK FILTERS. THE UNIT SHALL BE EQUIPPED WITH 2" MERV 8 EXTENDED MEDIA THROW-AWAY FILTERS AS MANUFACTURED BY DWYER, FARR OR ENVIRONMENTAL FILTER CORPORATION.. PROVIDE A MAGNAHELIC GAUGE WITH FILTER SECTION .

G. CONDENSING SECTION SHALL BE COMPLETE WITH HOLDING CHARGE OF R-454B, AND TWO (2) HERMETIC COMPRESSORS MOUNTED ON RUBBER-IN-SHEAR VIBRATION ISOLATORS. ONE COMPRESSOR SHALL BE A FIXED SCROLL TYPE AND ONE COMPRESSOR SHALL BE INVERTER SCROLL TYPE. UNITS SHALL HAVE SUCTION AND DISCHARGE VALVES, POSITIVE LUBRICATION SYSTEM, FILTER DRIER, CAPACITY REDUCTION CONTROL, WEATHER RESISTANT STEEL CASINGS, COPPER COIL/ALUMINUM FIN CONDENSER COILS PRESSURE AND LEAK TESTED TO 425 PSIG AIR PRESSURE.CONDENSER FANS SHALL BE DIRECT DRIVE WITH PERMANENTLY LUBRICATED ECM MOTORS, FACTORY CONTROLS INCLUDING ALL MOTOR STARTING EQUIPMENT, HIGH AND LOW PRESSURE CUTOUTS, OIL SAFETY SWITCH, INHERENT MOTOR PROTECTORS, CRANKCASE HEATER, PUMPDOWN CIRCUITRY, CONTROL TRANSFORMER, FAN CONTROL, AND WITH AMBIENT CONTROL FOR SATISFACTORY OPERATION AT TEMPERATURES AS LOW AS 20 DEG. F., AND ANTI-RECYCLE TIMER FOR CONTROL OF THE COMPRESSORS. UNITS SHALL HAVE A SINGLE POINT ELECTRICAL CONNECTION.

H. UNIT SHALL BE PROVIDED WITH THE FOLLOWING:
1. LEAVING COIL/ENTERING FAN TEMPERATURE SENSOR
2. DUCT HIGH LIMIT SWITCH
3. BACNET/MSTP CARD
4. DISCHARGE AIR TEMPERATURE SENSOR – WIRED IN UNIT, MOUNTED IN SUPPLY DUCT
5. MIXED AIR TEMPERATURE SENSOR
6. OUTSIDE AIR ENTHALPY SENSOR
7. DIRTY FILTER ON/OFF SWITCH
8. SUPPLY FAN AIR PROVING VIA MODBUS
9. BUILDING STATIC PRESSURE SENSOR
10. HUMIDITY SENSOR FOR FIELD INSTALLATION

I. UNIT SHALL BE PROVIDED WITH A BACnet/MSTP CARD FACTORY INSTALLED IN THE MICROTECH III CONTROLLER.

7. SPECIAL GAS VENT SYSTEM (CATEGORIES II, III, AND IV)

A. DOUBLE WALL OPTION - PREFABRICATED SYSTEM LISTED TO UL-1738, STANDARD FOR VENTING SYSTEMS FOR GAS-BURNING APPLIANCES, CATEGORIES II, III, AND IV MADE WITH AL29-4C, 444 STAINLESS, OR 316L STEEL INNER LINER, 1" INSULATING AIR SPACE, AND 304 STAINLESS STEEL OUTER JACKET. VENT SHALL BE DESIGNED FOR MAXIMUM 550°F AND POSITIVE PRESSURE OF 15" W.C.

B. STAINLESS STEEL VENT MANUFACTURERS: JEREMIAS MODEL DWGV/DWFL.

C. COMPLETE WITH: FACTORY APPLIANCE FLUE CONNECTOR, BOOT TEES, DRAIN CAPS OR INLINE DRAINS, STACK SUPPORTS, ROOF FLASHINGS, AND TERMINATION. ALL ITEMS SPECIFICALLY REQUIRED BY APPLIANCE AND GAS VENT MANUFACTURERS INSTALLATION INSTRUCTIONS.

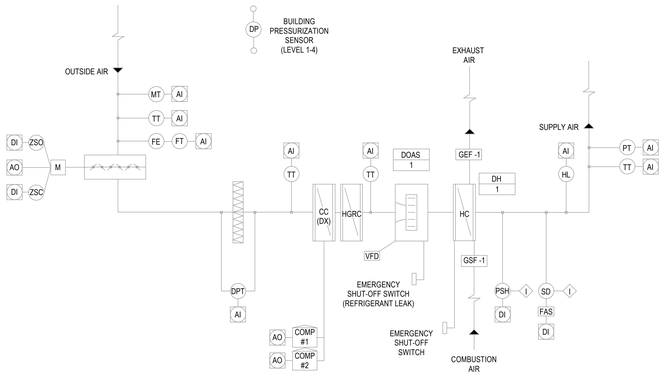
D. SUBMIT AUTOCAD DRAWINGS WITH DRAFT CALCULATIONS SHOWING THAT THE VENT SYSTEM IS IN COMPLETE COMPLIANCE WITH BOTH THE APPLIANCE AND VENT MANUFACTURERS' INSTALLATION INSTRUCTIONS.

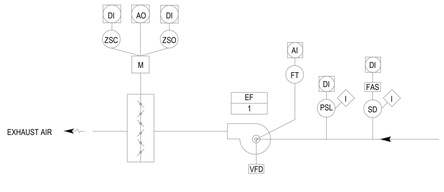
E. FULLY MODULATING DRAFT CONTROL DAMPER SYSTEM

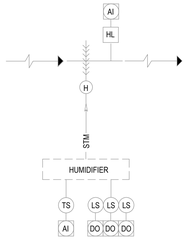
1. VENTING MANUFACTURER SHALL PROVIDE AUTOMATIC DRAFT CONTROL DAMPER AT EACH APPLIANCE' FLUE OUTLET OR EXHAUST CONNECTOR TO PREVENT FLUE GAS RECIRCULATION IN THE IDLE APPLIANCES. DAMPER SYSTEM SHALL PROVIDE STEADY/CONSTANT PRESSURE FOR EACH APPLIANCE CONNECTED TO THE COMMON BREECHING/MANIFOLD. UL LISTING SHALL INCLUDE:
   a. UL-378 STANDARD FOR DRAFT EQUIPMENT

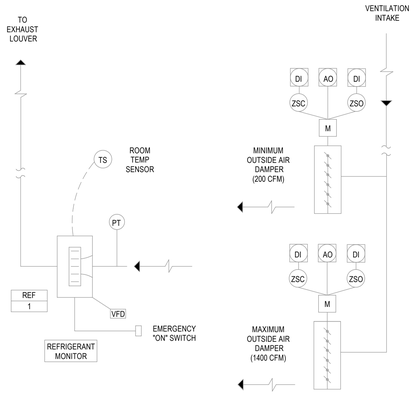
F. CONSTRUCTION – DAMPER ASSEMBLY

1. DETAILED MANUFACTURER'S SUBMITTAL DRAWINGS SHALL BE PROVIDED FOR APPROVAL PRIOR TO INSTALLATION OF THE VENT SYSTEM.
2. THE INTEGRATED ON/OFF AND MODULATING CONNECTOR DRAFT DAMPER SYSTEM SHALL BE ALL-STAINLESS STEEL. THE MATERIALS AND CONSTRUCTION OF THE SYSTEM SHALL BE AS SPECIFIED BY THE TERMS OF THE PRODUCT'S UL LISTINGS
   a. TYPE 444 OR 316L STAINLESS STEEL CONSTRUCTION.
   b. ½" GRAPHITE SEALED









BUILDING MODE OF OPERATION

THE DOAS-1 AND EF-1 SHALL RUN CONTINUOSLY TO PROVIDE AT MINIMUM THE OUTSIDE AIR SHOWN IN THE DRAWINGS.

DOAS-1 SHALL SUPPLY ADDITIONAL OUTSIDE AIR TO BE DETERMINED BY T.A.B. AFTER BUILDING PRESSURIZATION HAS BEEN EVALUATED VIA POST-CONSTRUCTION TAB ASSESSMENT.

REF-1 SHALL RUN CONTINUOUSLY TO PROVIDE THE MINIMUM EXHAUST AIRFLOW.

GENERAL ALARMS

PROVIDE A SOFTWARE I/O POINT WHICH INDICATES "GENERAL MECHANICAL ALARM", "GENERAL ELECTRICAL ALARM", AND "GENERAL BMS ALARM". BMS SYSTEM SHALL BE PROVIDED WITH CONNECTION TO GRADY HOSPITAL FACILITIES ENGINEERING BMS MONITORING STATION.

THE "GENERAL MECHANICAL ALARM" SHALL BE COMMANDED "ON" AND AN ALARM SHALL BE ANNUNCIATED ON THE BMS, IN THE EVENT ANY OF THE FOLLOWING ARE TRUE:
- ANY SUPPLY OR EXHAUST FAN ALARM EXISTS.
- REFRIGERENT LEAK DETECTOR ALARM EXISTS.
- GAS DUCT FURNACE ALARM EXISTS.

THE "GENERAL ELECTRICAL ALARM" SHALL BE COMMANDED "ON" AND AN ALARM SHALL BE ANNUNCIATED ON THE BMS, IN THE EVENT ANY OF THE FOLLOWING ARE TRUE:

- ANY VFD FAULT ALARM EXISTS.

THE "GENERAL BMS ALARM" SHALL BE COMMANDED "ON" AND AN ALARM SHALL BE ANNUNCIATED ON THE BMS, IN THE EVENT ANY OF THE FOLLOWING ARE TRUE:
- ANY CONTROLLER FAILURE.
- ANY SENSOR FAILURE.
- ANY LOSS OF COMMUNICATION ON THE BMS.

GENERAL

- DOAS-1 IS VARIABLE VOLUME WITH INTEGRAL SUPPLY FANS AND SHALL BE INTERLOCKED WITH EXHAUST FANS EF-1 AND REF-1.
- DOAS-1 SHALL BE PROVIDED WITH A DEDICATED PROGRAMMABLE CONTROLLER.
- THIS SYSTEM IS INTENDED TO OPERATE ACCORDING TO THE BUILDING MODE OF OPERATION SPECIFIED ABOVE.

SUPPLY AIR FAN (DOAS-1)

SUPPLY AIR FAN SHALL BE ENERGIZED/DE-ENERGIZED FROM THE VFD IN HAND POSITION OR THE DDC SYSTEM WHEN IN AUTO MODE. THE DDC CONTROL SYSTEM SHALL SENSE WHEN THE FAN IS IN HAND POSITION BY THE FAN STATUS VERIFICATION AND INITIATE THE DOAS-1 CONTROL SEQUENCE. OUTSIDE DAMPER AND EF-1 SHALL BE INTERLOCKED WITH DOAS-1 FOR THE SEQUENCES CONTAINED HEREIN.

SUPPLY FAN SPEED CONTROL

THE SUPPLY FAN VARIABLE FREQUENCY DRIVE (VFD) SHALL BE CONTROLLED BY A DUCT MOUNTED DIFFERENTIAL STATIC PRESSURE TRANSMITTER MODULATING THE VFD TO MAINTAIN A SUPPLY DUCT STATIC PRESSURE SETPOINT (REFER TO SUPPLY FAN STATIC PRESSURE RESET BELOW). FOR MULTIPLE STATIC PRESSURE TRANSMITTERS, OUTPUT THE % FULL SPEED TO THE DDC SYSTEM BY THE NETWORK INTERFACE AND ALARM THE DDC SYSTEM IF THE MEASURED PRESSURE IS TOO HIGH OR TOO LOW.

HIGH-LIMIT SHALL SHUTDOWN THE FAN WHENEVER IT SENSES A HIGH STATIC PRESSURE, ALARM THE DDC SYSTEM, AND REQUIRE A LOCAL MANUAL RESET TO RESTART THE FAN. LOW LIMIT SHALL SHUTDOWN THE FAN WHENEVER IT SENSES A LOW STATIC PRESSURE, ALARM THE DDC SYSTEM, AND REQUIRE A LOCAL MANUAL RESET TO RESTART THE FAN.

SUPPLY FAN STATIC PRESSURE RESET

THE CONTROL SYSTEM SHALL MONITOR THE DUCT MOUNTED DIFFERENTIAL STATIC PRESSURE TRANSMITTERS SERVED BY THE DOAS-1 UNIT. THE T.A.B. CONTRACTOR SHALL DETERMINE THE MAXIMUM AND MINIMUM LIMIT OF THE STATIC PRESSURE SET POINT. AT AN ADJUSTABLE TIME INTERVAL (5 MINUTES) THE CONTROL SYSTEM SHALL POLL THE STATIC PRESSURE TRANSMITTERS AND DETERMINE THE STATIC PRESSURE TRANSMITTER THAT IS CURRENTLY THE FARTHEST FROM ASSOCIATED SETPOINT. IF PRESSURE TRANSMITTER IS MORE THAN 110% OF THE ASSOCIATED SETPOINT, THE SUPPLY FAN STATIC PRESSURE SET POINT SHALL BE ADJUSTED DOWN BY 0.1 IN W.G. IF THE DAMPER IS LESS THAN 90% OF THE ASSOCIATED SETPOINT, THE SUPPLY FAN STATIC PRESSURE SETPOINT SHALL BE ADJUSTED UP BY 0.1 IN. W.G. THE SUPPLY FAN STATIC PRESSURE SET POINT SHALL NOT BE ADJUSTED HIGHER THAN THE MAXIMUM LIMIT OR LOWER THAN THE MINIMUM LIMIT.

OUTSIDE AIR

THE OUTSIDE AIR DAMPER WILL BE MODULATED IN ORDER TO MAINTAIN THE REQUIRED MINIMUM FLOW OF OUTSIDE AIR TO SUPPLY AIR. DAMPER POSITIONS TO BE DETERMINED BY T.A.B. AFTER BUILDING PRESSURIZATION HAS BEEN EVALUATED VIA POST-CONSTRUCTION TAB ASSESSMENT. DOAS-1 OUTSIDE AIR SERVICE TO OCCUPIED AREAS SHALL BE EQUAL TO OR GREATER THAN VALUES SHOWN ON DRAWINGS.

UNIT DISCHARGE TEMPERATURE SET POINT AND RESET

THE UNIT DISCHARGE AIR TEMPERATURE (70° F, ADJUSTABLE) SHALL BE RESET BASED ON THE COOLING LOOP OUTPUT OF THE DUCT MOUNTED TEMPERATURE SENSORS. SENSORS SHALL BE LOCATED AT THE END OF THE COORDIOR DUCT RUNS ON EACH LEVEL OF THE BUILDING. THERE SHALL BE A MAXIMUM LIMIT (75 F) AND A MINIMUM LIMIT (65 F) THAT THE UNIT DISCHARGE TEMPERATURE SET POINT CAN BE ADJUSTED WITHIN. AT AN ADJUSTABLE TIME INTERVAL (15 MINUTES) THE CONTROL SYSTEM SHALL POLL THE COOLING LOOP OUTPUT OF THE DUCT MOUNTED TEMPERATURE SENSORS AND DETERMINE DUCT MOUNTED TEMPERATURE SENSOR WITH HIGHEST COOLING LOOP OUTPUT. IF THE COOLING LOOP OUTPUT IS LESS THAN 80%, THE DISCHARGE TEMPERATURE SET POINT SHALL BE ADJUSTED UP BY 0.5 DEGREES F. IF THE COOLING LOOP OUTPUT IS GREATER THAN 95% THE DISCHARGE AIR TEMPERATURE SET POINT SHALL BE ADJUSTED DOWN BY 0.5 DEGREES F.

START UP/RESTART

REF-1 SHALL BE PROVEN ON AND SUPPLYING THE MINIMUM EXHAUST AIR.

THE OUTSIDE AIR DAMPER SHALL BE MODULATED AS DEFINED BY T.A.B.

ON INITIAL START UP, THE SUPPLY FAN SHALL START. THE DOAS-1 UNIT SHALL RESTART AUTOMATICALLY AFTER A MOMENTARY POWER FAILURE, OR AFTER TRANSFER TO AN ALTERNATE POWER SOURCE, AND SHALL OPERATE IN THE SAME STATE IT WAS IN PRIOR TO THE POWER FAILURE OR TRANSFER OF POWER. THE DOAS-1 UNIT SHALL RESTART AUTOMATICALLY AFTER THE FIRE ALARM IS RESET. WHEN THE UNIT RESTARTS FROM A FIRE ALARM RESET OR WHEN THE FANS ARE STARTED AFTER A SHUTDOWN OTHER THAN MOMENTARY, IT SHALL BE STARTED AS INITIAL START UP.

OPERATING STATE - FULL COOLING COIL

THE COOLING COIL COMPRESSORS SHALL BE CONTROLLED BY A CONTROL LOOP WITH THE DISCHARGE TEMPERATURE TRANSMITTER AS THE INPUT, AND A SETPOINT EQUAL TO THE DISCHARGE AIR SETPOINT. DISCHARGE TEMPERATURE TRANSMITTER SHALL ALARM THE DDC SYSTEM WHENEVER THE DISCHARGE TEMPERATURE IS TOO HIGH OR LOW. THE COOLING COIL CONTROL LOOP SHALL CONTROL THE LEAVING AIR TEMPERATURE WITHIN +/- 0.5 DEGREE °F.

WHEN THERE IS NO DEHUMIDIFICATION REQUIREMENT THE REHEAT COIL IS BYPASSED.

HOT GAS REHEAT DEHUMIDIFICATION

SUB COOLING

WHEN COOLING AND DEHUMIDIFICATION ARE REQUIRED, THE LIQUID REFRIGERANT LEAVING THE CONDENSER IS ROUTED THROUGH THE REHEAT COIL AND THEN THROUGH THE COOLING COIL.

NO COOLING

WHEN ONLY DEHUMIDIFICATION IS REQUIRED, THE HOT GAS FROM THE COMPRESSOR BYPASSES THE CONDENSER COIL AND IS FED INTO THE LIQUID LINE. THE TWO-PHASE MIXTURE THEN PASSES THROUGH THE REHEAT COIL AND THEN THROUGH THE COOLING COIL.

FILTERS
ALL FILTERS SHALL HAVE A DIFFERENTIAL PRESSURE SWITCH MEASURING THE PRESSURE DROP ACROSS THE FILTER BANK. EACH SHALL ALARM THE DDC SYSTEM WHENEVER THE PRESSURE DROP ACROSS THE FILTER IS EXCESSIVE (DIRTY FILTER) (ADJ.).

OPERATING STATE - FULL HEATING

THE GAS DUCT FURNACE SHALL BE PROVIDED WITH SELF CONTAINED CONTROLLERS UTILIZING A CONTROL LOOP WITH THE DISCHARGE TEMPERATURE TRANSMITTER AS THE INPUT, AND A SETPOINT EQUAL TO THE DISCHARGE AIR SETPOINT OF 70°F (ADJUSTABLE). DISCHARGE TEMPERATURE TRANSMITTER SHALL ALARM THE DDC SYSTEM WHENEVER THE DISCHARGE TEMPERATURE IS TOO HIGH OR LOW. THE GAS FURNACE HEATING CONTROL LOOP SHALL CONTROL THE LEAVING AIR TEMPERATURE WITHIN +/- 0.5 DEGREE °F.

GAS FURNACE CONTROLS SHALL BE ENABLED/DISABLED BY THE BMS.

GAS FURNACE STARTUP CHECK

THE GAS FURNACE SHALL START AFTER THE COMBUSTION AIR DAMPER PROVES OPEN AND COMBUSTION AIR FAN GSF-1 STARTS.

COMBUSTION AIR CONTROL

COMBUSTION AIR DAMPER AND COMBUSTION AIR FAN GSF-1 SHALL BE HARDWIRE INTERLOCKED TO THE GAS FURNACE'S CONTROL PANEL.

GAS FURNACE SYSTEM SHUTDOWN

IN THE EVENT THE GAS FURNACES ARE COMMANDED "OFF" BY THE BMS, THE COMBUSTION AIR FAN GSF-1 SHALL BE COMMANDED OFF, AND THE COMBUSTION AIR DAMPER SHALL CLOSE. THE GAS FURNACE CONTROL SYSTEM SHALL CONTROL THE OPERATION OF THE GAS EXHUAST FAN GEF-1.

GAS FURNACE EMERGENCY SHUTDOWN

THE BMS CONTRACTOR SHALL PROVIDE AN EMERGENCY SHUTDOWN PUSH BUTTON AT THE ENTRANCE TO THE MECHANICAL ROOM. THE PUSH BUTTONS SHALL BE HARDWIRE INTERLOCKED TO THE GAS FURNACE. IN THE EVENT THAT THE PUSH BUTTON IS PRESSED, THE GAS FURNACE SHALL BE SHUTDOWN PER THE SEQUENCE ABOVE AND THE BMS SHALL BE ALARMED.

EXHUAST AIR FAN (EF-1)

EXHUAST FAN SPEED CONTROL

THE EXHAUST FAN VARIABLE FREQUENCY DRIVE (VFD) SHALL BE CONTROLLED BY A DUCT MOUNTED DIFFERENTIAL STATIC PRESSURE TRANSMITTER MODULATING THE VFD TO MAINTAIN AN EXHAUST DUCT STATIC PRESSURE SETPOINT (REFER TO SUPPLY FAN STATIC PRESSURE RESET ABOVE), AND ALARM THE DDC SYSTEM IF THE MEASURED PRESSURE IS TOO LOW.

LOW LIMIT SHALL SHUTDOWN THE FAN WHENEVER IT SENSES A LOW STATIC PRESSURE, ALARM THE DDC SYSTEM, AND REQUIRE A LOCAL MANUAL RESET TO RESTART THE FAN.

EXHAUST AIR

EXHAUST WILL BE PROVIDED BY EF-1. EXHAUST FAN AIRFLOW SHALL BE EQUAL TO THE OUTSIDE AIR FLOW SHOWN ON THE DRAWINGS. THE EXHAUST AIR DAMPER WILL BE MODULATED IN ORDER TO MAINTAIN THE REQUIRED MINIMUM FLOW OF EXHAUST AIR TO THE BUILDING. DAMPER POSITIONS TO BE DETERMINED BY T.A.B. VIA POST-CONSTRUCTION TAB ASSESSMENT.

HUMIDIFIER

THE HUMIDIFIER CONTROLS SHALL BE ACTIVE ANY TIME THE SUPPLY FAN IS RUNNING AND THE OUTSIDE AIR IS BELOW 50°F. HUMIDIFIERS SHALL BE LOCATED AT THE FLOOR BRANCH CONNECTIONS TO THE SUPPLY AIR RISER.

HEATING
THE CONTROLLER USES SCR CONTROL TO MODULATE THE HEATING ELEMENTS WITHIN THE HUMIDIFIER EVAPORATING CHAMBER TO MODULATE BETWEEN 0-100% OF THE HUMIDIFIER OUTPUT (CAPACITY) TO MAINTAIN RELATIVE HUMIDITY SETPOINT.

WATER LEVEL
THE FILL VALVE IS ENERGIZED AS THE WATER LEVEL FALLS FROM STEAM PRODUCTION. AFTER 5 CONTINUOUS SECONDS OF REACHING THE HIGH LEVEL THE FILL VALVE IS CLOSED. IF THERE IS LOW OR NO WATER IN THE TANK THEN THE HEATERS ARE DE-ENERGIZED AND WILL REMAIN OFF.

DRAIN

BY DEFAULT, THE HUMIDIFIER BEGINS COUNTING RUN TIME WHENEVER THE HUMIDIFIER OUTPUT IS GREATER THAN 0. WHEN THE DRAIN INTERVAL TIME IS REACHED, THE HUMIDIFIER WILL ENTER THE COOL DOWN PHASE WHERE THE FILL VALVE TURNS ON FOR A SPECIFIED AMOUNT OF TIME OR UNTIL A CERTAIN TANK TEMPERATURE IS REACHED.

WHEN THE COOL DOWN PHASE ENDS THE DRAIN VALVE IS ENERGIZED AND WILL REMAIN ENERGIZED FOR THE DRAIN DURATION. WHEN 3/4 OF THE DRAIN DURATION TIME HAS EXPIRED, THE FILL VALVE WILL TURN ON TO STIR THE MINERALS ON THE TANK BOTTOM. WHEN THE DRAIN DURATION TIME ELAPSES, THE DRAIN VALVE WILL TURN OFF AND THE FILL VALVE WILL REMAIN ON UNTIL THE TANK IS REFILLED.

HUMIDIFICATION

A SUPPLY AIR MODULATING HIGH-LIMIT SENSOR CONTROL LOOP SHOULD BE SET TO REACT QUICKLY TO PREVENT THE SUPPLY AIR FROM BEING SATURATED WHILE STILL ALLOWING REDUCED MODULATION OF THE HUMIDIFIER.

WHENEVER THE DISCHARGE AIR HUMIDITY IS ABOVE THE CONTROLLING LIMIT SET POINT (80% ADJ.) AS SENSED BY THE HIGH LIMIT HUMIDISTAT THE HUMIDIFIER VALVE SHALL BE MODULATED CLOSED TO MAINTAIN THE CONTROLLING LIMIT SET POINT.

WHENEVER THE DISCHARGE AIR HUMIDITY IS ABOVE THE HIGH LIMIT SET POINT, 95% ADJUSTABLE, AS SENSED BY THE SUPPLY AIR HUMIDISTAT, THE DDC SYSTEM SHALL DISABLE THE HUMIDIFIER AND AN ALARM SHALL BE SENT TO THE OPERATOR WHICH MUST BE ACKNOWLEDGED AND RESET TO RE-ENABLE THE HUMIDIFIER.

FIRE ALARM SHUTDOWN

FIRE/SMOKE CONDITION

DUCT OR UNIT MOUNTED SMOKE DETECTORS SHALL BE PROVIDED ON THE SUPPLY SIDE OF DOAS-1 AND EXHAUST SIDE OF EF-1. DETECTOR INTERLOCKS SHALL BE HARDWIRED SUCH THAT, ON DETECTION OF PRODUCTS OF COMBUSTION, A SIGNAL IS SENT TO THE FIRE ALARM CONTROL PANEL AND DOAS-1 UNIT IS SHUT DOWN. CONTROLS CONTRACTOR SHALL COORDINATE SHUTDOWN OF EF-1 WITH EXISTING STAIR PRESSURIZATION CONTROL SYSTEM.

HARDWIRED SAFETIES

A HIGH STATIC PRESSURE CONDITION DOWNSTREAM OF DOAS-1 SUPPLY FANS OR LOW STATIC PRESSURE CONDITION UPSTREAM OF EF-1 SHALL CAUSE THE FAN TO BE DE-ENERGIZED AND AN ALARM GENERATED.

HARDWIRE HIGH STATIC PRESSURE OVERRIDES TO SUPPLY FAN VFD CONTROL CIRCUIT TO SHUTDOWN FAN. THE HIGH STATIC PRESSURE SET POINT SHALL BE 1.0 INCH W.C. (ADJUSTABLE) GREATER THAN THE EXTERNAL STATIC PRESSURE PRODUCED BY THE RESPECTIVE FAN. THE SWITCH SHALL BE A MANUAL RESET TYPE.

HARDWIRE LOW STATIC PRESSURE OVERRIDES TO EXHUAST FAN VFD CONTROL CIRCUIT TO SHUTDOWN FAN. THE LOW STATIC PRESSURE SET POINT SHALL BE 1.0 INCH W.C. (ADJUSTABLE) GREATER THAN THE EXTERNAL STATIC PRESSURE PRODUCED BY THE RESPECTIVE FAN. THE SWITCH SHALL BE A MANUAL RESET TYPE AND LOCATED IN THE DOAS-1 MECHANICAL ROOM.

SAFETY DEVICES SHALL BE HARDWIRED TO THE RESPECTIVE FANS' VFD. HARDWIRED SAFETY DEVICES MUST BE ACTIVE IN "HAND" AND "AUTO" POSITIONS. WHEN A SAFETY IS ACTIVATED, THE SYSTEM SHALL SHUTDOWN IN A CONTROLLED MANNER AND AN ALARM SHALL BE ANNUNCIATED ON THE BMS.

GENERAL FIRE ALARM
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A GENERAL ALARM FROM FIRE ALARM SYSTEM.

EXHAUST AIR SMOKE DETECTION
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A EXHAUST AIR SMOKE DETECTOR STATUS.

SUPPLY AIR SMOKE DETECTION
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

SMOKE OR ISOLATION DAMPER END SWITCH
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A CLOSED STATUS FROM AN ASSOCIATED PRIMARY ISOLATION OR SMOKE CONTROL DAMPER.

UNIT SHUTDOWN

IN THE EVENT THE AIR HANDLER IS DISABLED THROUGH THE BMS OR THROUGH A HARDWIRE INTERLOCK SAFETY, THE FOLLOWING SHALL OCCUR:

- THE DOAS-1 SUPPLY FAN AND EF-1 SHALL BE DE-ENERGIZED AND THE OUTSIDE AIR DAMPER, THE EXHAUST AIR DAMPER SHALL CLOSE.

- THE BMS SHALL DECELERATE FAN SPEED TO MINIMUM AND DISABLE CONTROL LOOPS WHEN DOAS-1 SHUTS DOWN. DURING SHUTDOWN, EACH OUTSIDE AIR AND EXHAUST AIR DAMPER SHALL GRADUALLY CLOSE TO PREVENT A HIGH STATIC PRESSURE CONDITION IN THE UNIT OR DUCT.

- ALL ALARMS IN SPACES SERVED BY THIS UNIT INCLUDING TEMPERATURE SHALL BE DISABLED. THE ALARMS SHALL BE ENABLED 10 MINUTES AFTER EF-1 AND DOAS-1 FANS PROVE "ON".

REFRIGERANT LEAK EXHAUST AIR (REF-1)

START UP

REF-1 MINIMUM OUTSIDE AIR DAMPER SHALL PROVE OPEN BEFORE START OF REF-1.

REF-1 SHALL RUN CONTINUOUSLY UPON INSTALLATION OF DOAS-1.

BMS SHALL PROVE REF-1 IS ENABLED BEFORE START-UP OF DOAS-1.

NORMAL OPERATION MODE

DURING NORMAL OPERATION, REF-1 SHALL PROVIDE A MINIMUM OF 200 CFM EXHAUST SERVICE TO THE MECHANICAL ROOM.

EMERGENCY OPERATION MODE

IN THE EVENT OF A DETECTED LEAK EXCEEDING 250 PPM, THE FOLLOWING SHALL OCCUR:

- REFRIGERANT MONITORING SYSTEM SHALL ALARM THE BMS.

- REF-1 MAXIMUM OUTSIDE AIR DAMPER SHALL OPEN.

- REF-1 SHALL INCREASE SPEED TO PROVIDE 1600 CFM EXHAUST SERVICE TO THE MECHANICAL ROOM.

- REF-1 SHALL MODULATE SPEED TO MAINTAIN A ROOM TEMP SETPOINT BETWEEN 45 - 110°F.

- REF-1 SHALL REQUIRE MANUAL SHUT-OFF.

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PROJECT NORTH

Issue	Date & Description	By
03/18/2025	ISSUED FOR CONSTRUCTION	

Drawn by

Reviewed by

Seal/Signature

GEORGIA REGISTERED No. PE040126 PROFESSIONAL ENGINEER QUNEN DUOC TU 3/18/25

Project
GRADY LEGAL HALL HVAC MODIFICATIONS AND HEALTH EQUITY SUITE RENOVATION

Project Number

Sheet Title
HVAC CONTROLS

Scale
NOT TO SCALE

Sheet Number
M.901

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