THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT 30 SHEETS ORIGINAL PLOT SIZE

STANDARD ABBREVIATIONS

A		
A	A	AMPS
A	A/E	ARCHITECT/ENGINEER
A	ACH	AIR CHANGES PER HOUR
A	ACS	AIR CONDITIONING SYSTEM
A	AD	ACCESS DOOR
A	AF	AFTER FILTER
A	AFF	ABOVE FINISHED FLOOR
A	AFG	ABOVE FINISHED GRADE
A	AFMD	AIR FLOW MEASURING DEVICE
A	AHU	AIR HANDLING UNIT
A	AL	ACOUSTIC LINING
A	ALD	AUTOMATIC LOUVER DAMPER
A	ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
A	AP	ACCESS PANEL
A	APD	AIR PRESSURE DROP
A	ARCH	ARCHITECT
A	ARI	AIR CONDITIONING AND REFRIGERATIONS
A	AS	AIR SEPARATOR
A	ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
B		
B	B	BOILER
B	BDD	BACKDRAFT DAMPER
B	BHP	BRAKE HORSEPOWER
B	BLDG	BUILDING
B	BRD	BAROMETRIC RELIEF DAMPER
B	BTUH	BRITISH THERMAL UNIT PER HOUR
C		
C	C	CENTIGRADE (CELSIUS)
C	C	CONVERTER
C	CC	COOLING COIL
C	CCD	COOLING COIL CONDENSATE DRAIN
C	CD	CEILING DIFFUSER
C	CFM	CUBIC FEET PER MINUTE
C	CFS	CUBIC FEET PER SECOND
C	CH	CHILLER
C	CHR	CHILLED WATER RETURN
C	CHS	CHILLED WATER SUPPLY
C	COD	CABLE OPERATED DAMPER
C	CT	COOLING TOWER
C	CV	CONSTANT VOLUME
C	CVR	CONSTANT VOLUME RETURN
C	CVS	CONSTANT VOLUME SUPPLY
D		
D	DA	DENTAL AIR
D	DB	DRY BULB
D	dB	DECIBELS
D	DC	DIRECT CURRENT
D	DDC	DIRECT DIGITAL CONTROLS
D	DEG	DEGREE
D	DEMO	DEMOLITION
D	DF	DIFFUSER
D	DIA	DIAMETER
D	DIAG	DIAGONAL DIAGRAM OR DIAGRAM DIAGONAL
D	DIM	DIMENSION
D	DIST	DISTANCE
D	DIV	DIVIDE OR DIVISION
D	DN	SET OR TURN DOWN
D	DP	DEWPOINT
D	DPS	DIFFERENTIAL PRESSURE SENSOR
D	DWDI	DOUBLE WIDTH DOUBLE INLET
D	DWG	DRAWING
E		
E	EA	EXHAUST AIR
E	EAT	ENTERING AIR TEMPERATURE
E	EF	EXHAUST FAN
E	EG	EXHAUST GRILLE
E	EL	ELEVATION
E	ELEC	ELECTRIC, ELECTRICAL
E	ELEVS	ELEVATIONS
E	EMR	ELEVATOR MACHINE ROOM
E	ENGR	ENGINEER
E	ENT	ENTERING
E	EQ	EQUAL
E	EQUIP	EQUIPMENT
E	EQUIV	EQUIVALENT
E	ERD	EXISTING ROOF DRAIN
E	ESMT	EASEMENT
E	ESP	EXTERNAL STATIC PRESSURE
E	ET	EXPANSION TANK
E	ETC	AND SO FORTH OR ET CETERA
E	EWT	ENTERING WATER TEMPERATURE
E	EX	EXISTING
E	EXH	EXHAUST
E	EXIST	EXISTING
F		
F	F	FAHRENHEIT OR FEMALE
F	FA	FREE AREA
F	FC	FLEXIBLE CONNECTION
F	FD	FLOOR DRAIN OR FIRE DAMPER
F	FM	FLOW METER
F	FP	FIRE PROTECTION OR FIREPROOF
F	FPB	FAN-POWERED BOX
F	FPM	FEET PER MINUTE
F	FPS	FEET PER SECOND
F	FR	FIRE RATING, FIRE RESISTANT, OR FRAME
F	FREQ	FREQUENCY
F	FS	FLOW SWITCH
F	FSD	COMBINATION FIRE SMOKE DAMPER
F	FSTAT	FREEZESTAT
F	FT	FEET OR FOOT
F	FTST	FLOAT & THERMOSTATIC STEAM TRAP
G		
G	GA	GAUGE
G	GAL	GALLON
G	GALV	GALVANIC OR GALVANIZED
G	GC	GENERAL CONTRACTOR
G	GS	GALVANIZED STEEL
G	GYP BD	GYPSUM BOARD
H		
H	HAC	HOUSEKEEPING AID CLOSET
H	HC	HEATING COIL
H	HD	HEAD
H	HEPA	HIGH EFFICIENCY PARTICULATE AIR (FILTER)
H	HOA	HAND/OFF/AUTOMATIC
H	HORIZ	HORIZONTAL
H	HP	HORSEPOWER
H	HWP	HOT WATER PUMP
H	HWR	HOT WATER RETURN
H	HWS	HOT WATER SUPPLY
H	HX	HEAT EXCHANGER
H	HZ	HERTZ
I		
I	I/O	INPUT/OUTPUT
I	IBST	INVERT BUCKET STEAM TRAP
I	ID	INSIDE DIAMETER
I	IN	INCHES
I	IN WG	INCHES WATER GAUGE
I	IN-LB	INCH-POUND
K		
K	kg	KILOGRAM
K	kPa	KILOPASCAL
K	KPL	KICKPLATE
K	kW	KILOWATT
K	kWh	KILOWATT HOUR
K	KX	KITCHEN EXHAUST
L		
L	LAT	LEAVING AIR TEMPERATURE
L	LBS	POUND
L	LBS/HR	POUNDS PER HOUR
L	LF	LINEAR FOOT (FEET)
L	LWT	LEAVING WATER TEMPERATURE
M		
M	M	METER OR MOTOR
M	MA	MIXED AIR
M	MAINT	MAINTAIN, MAINTENANCE
M	MAN	MANUAL
M	MAT	MIXED AIR TEMPERATURE
M	MAX	MAXIMUM
M	MBH	1000 BTUH
M	MCA	MINIMUM CIRCUIT AMPACITY
M	ME	MECHANICAL ENGINEER
M	MEAS	MEASURE
M	MECH	MECHANICAL
M	MECH RM	MECHANICAL ROOM
M	MER	MECHANICAL EQUIPMENT ROOM
M	MERV	MINIMUM EFFICIENCY REPORTING VALUE
M	MEZZ	MEZZANINE
M	MFG	MANUFACTURING
M	MFR	MANUFACTURER
M	MFR REC	MANUFACTURER'S RECOMMENDATION
M	MH	MANHOLE
M	MIN	MINIMUM
M	MISC	MISCELLANEOUS
M	MM	MILLIMETER
M	MTD	MOUNTED
M	MTG	MOUNTING
M	MVD	MANUAL VOLUME DAMPER
N		
N	NA	NOT APPLICABLE
N	NATL	NATIONAL
N	NC	NOISE CRITERIA
N	NC	NORMALLY CLOSED
N	NE	NORTH EAST
N	NEC	NATIONAL ELECTRICAL CODE
N	NEG	NEGATIVE
N	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N	NO	NORMALLY OPEN
N	NOM	NOMINAL
N	NPSH	NET POSITIVE SUCTION HEAD
N	NRCA	NATIONAL ROOFING CONTRACTORS ASSOCIATION
N	NS	NARROW STILE
N	NTS	NOT TO SCALE
N	NW	NORTH WEST
O		
O	OA/OSA	OUTSIDE AIR
O	OAI	OUTSIDE AIR INTAKE
O	OBD	OPPOSED BLADE DAMPER
O	OD	OUTSIDE DIAMETER OR OUTSIDE DIMENSION
O	OV	OXYGEN VACUUM
P		
P	P	PUMP
P	PA	PASCAL
P	PC	PUMPED CONDENSATE
P	PD	PRESSURE DROP
P	PF	PENETRATE
P	PFHX	PLATE AND FRAME HET EXCHANGER
P	PG	PENDANT
P	PLBG	PLUMBING
P	PNEU	PNEUMATIC
P	PRESS	PRESSURE
P	PRV	PRESSURE REGULATING VALVE
P	PSF	POUNDS PER SQUARE FOOT
P	PSI	POUNDS PER SQUARE INCH
P	PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
P	PSIG	POUNDS PER SQUARE INCH - GAUGE
R		
R	RA	RETURN AIR
R	RAT	RETURN AIR TEMPERATURE
R	RD	REFRIGERANT DISCHARGE
R	RET	RETURN
R	RG	RETURN GRILLE
R	RH	RELATIVE HUMIDITY
R	RLA	RUN LOAD AMPERE
R	RP	RADIANT CEILING PANEL
R	RPM	REVOLUTIONS PER MINUTE
S		
S	SA	SUPPLY AIR
S	SAD	SUPPLY AIR DIFFUSER
S	SAG	SUPPLY AIR GRILLE
S	SAR	SUPPLY AIR REGISTER
S	SAT	SUPPLY AIR TEMPERATURE
S	SD	SMOKE DETECTOR
S	SDPR	SMOKE DAMPER
S	SE	SOUTH EAST
S	SENS	SENSIBLE HEAT
S	SF	SQUARE FOOT (FEET)
S	SF	SUPPLY FAN
S	SP	STATIC PRESSURE
S	SP GR	SPECIFIC GRAVITY
S	SPEC	SPECIFICATION
S	SPS	STATIC PRESSURE SENSOR
S	SQ	SQUARE
S	SQ FT	SQUARE FOOT (FEET)
S	SQ IN	SQUARE INCH
S	SS	STAINLESS STEEL
S	STHX	SHELL AND TUBE HEAT EXCHANGER
S	STL	STEEL
S	STRUCT	STRUCTURAL
S	SW	SOUTH WEST
S	SWSI	SINGLE WIDTH SINGLE INLET
S	SYS	SYSTEM
T		
T	TAB	TESTING, ADJUSTING, BALANCE
T	TD	TRANSFER DUCT
T	TEMP	TEMPERATURE OR TEMPORARY
T	TF	TRANSFER FAN
T	TG	TRANSFER GRILLE
T	THERM	THERMAL
T	THK	THICKNESS
T	THRU	THROUGH
T	TP	TRAP
T	TSP	TOTAL STATIC PRESSURE
T	TSTAT	THERMOSTAT
T	TU	TERMINAL UNIT
T	TX	TOILET EXHAUST
T	TYP	TYPICAL
U		
U	U.N.O.	UNLESS NOTED OTHERWISE
U	U.O.N.	UNLESS OTHERWISE NOTED
U	UH	UNIT HEATER
U	UP	SET OR TURN UP
V		
V	V	VALVE
V	VAV	VARIABLE AIR VOLUME
V	VENT	VENTILATION
V	VERT	VERTICAL
V	VFD	VARIABLE FREQUENCY DRIVE
V	VI	VIBRATION ISOLATOR
V	VP	VELOCITY PRESSURE
V	VSD	VARIABLE SPEED DRIVE
W		
W	WB	WET BULB
W	WMS	WIRE MESH SCREEN

DUCTWORK SYMBOLS

- STANDARD BRANCH SUPPLY OR RETURN, HIDDEN LINES
- 45° SUPPLY — STANDARD BRANCH SUPPLY OR RETURN, NO SPLITTER (45° TAP)
- 45° RETURN
- FC — FLEXIBLE CONNECTION, EQUIPMENT, VIBRATION, OR SEISMIC
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
- STANDARD RADIUS ELBOW (LONG RADIUS)
- 10x8 — NEW DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
- 10x8 — EXISTING DUCT TO REMAIN (INSIDE DIMENSIONS: WIDTH x DEPTH)
- 10x8 — EXISTING DUCT TO BE DEMOLISHED (INSIDE DIMENSIONS: WIDTH x DEPTH)
- SUPPLY TOP REGISTER OR GRILLE (WALL TYPE)
- EXHAUST OR RETURN CEILING REGISTER OR GRILLE
- EXHAUST OR RETURN BOTTOM REGISTER OR GRILLE (WALL TYPE)
- EXHAUST OR RETURN REGISTER OR TOP GRILLE (WALL TYPE)
- VANED ELBOW & AIR SPLIT TYPE DUCT TAKE-OFF
- R — INCLINED RISE, IN DIRECTION OF AIR FLOW
- D — INCLINED DROP, IN DIRECTION OF AIR FLOW
- M — MANUAL VOLUME/BALANCING DAMPER (MBD)
- M — MOTORIZED DAMPER WITH ACCESS DOOR
- SD — DUCT MOUNTED SMOKE DETECTOR WITH ACCESS DOOR
- ACCESS DEVICE - SEE SPECIFICATIONS
- COMBINATION FIRE/SMOKE DAMPER
- FIRE DAMPER
- FLEXIBLE DUCT CONNECTION (EQUIPMENT)
- SUPPLY DUCT TURNING UP
- RETURN DUCT TURNING UP
- EXHAUST DUCT TURNING UP
- SUPPLY DUCT TURNING DOWN
- RETURN DUCT TURNING DOWN
- EXHAUST DUCT TURNING DOWN
- ROUND DUCT TURNING UP
- ROUND DUCT TURNING DOWN
- SUPPLY DIFFUSER (4-WAY)
- SUPPLY DIFFUSER (3-WAY)
- SUPPLY DIFFUSER (2-WAY, ADJACENT)
- SUPPLY DIFFUSER (2-WAY, OPPOSITE)
- SUPPLY DIFFUSER (1-WAY)
- RETURN/TRANSFER GRILLE
- EXHAUST GRILLE
- SP — STATIC PRESSURE TRANSMITTER
- ACOUSTICALLY LINED DUCT
- FLEXIBLE DUCT

GENERAL PIPING SYMBOLS

- DIRECTION OF PIPE PITCH (DOWN)
- DIRECTION OF FLOW
- ANCHOR
- REDUCER OR INCREASER
- ECCENTRIC REDUCER
- TOP CONNECTION, 45° OR 90°
- BOTTOM CONNECTION, 45° OR 90°
- SIDE CONNECTION
- CAPPED OUTLET
- RISE OR DROP IN PIPE
- UNION
- PIPE UP
- PIPE DOWN
- INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
- FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
- THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
- THERMOMETER
- PRESSURE GAGE
- FLOW ELEMENT
- REFRIGERANT SIGHT GLASS
- TEST PLUG (PRESSURE/TEMPERATURE)
- AUTOMATIC AIR VENT
- MANUAL AIR VENT
- TEST PLUG (PRESSURE/TEMPERATURE)
- QUICK-COUPLE HOSE CONNECTOR
- P — DIFFERENTIAL PRESSURE SENSOR
- PRESSURE REDUCING STATION
- EXISTING PIPING
- EXISTING PIPING TO BE DEMOLISHED
- HWS — HOT WATER HEATING SUPPLY
- HWR — HOT WATER HEATING RETURN
- RL — REFRIGERANT LIQUID LINE
- RS — REFRIGERANT SUCTION LINE
- MPS — MEDIUM PRESSURE STEAM
- MPR — MEDIUM PRESSURE STEAM CONDENSATE RETURN
- LPS — LOW PRESSURE STEAM (15 PSIG AND BELOW)
- LPR — LOW PRESSURE STEAM CONDENSATE RETURN
- CHS — CHILLED WATER SUPPLY
- CHR — CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- PUMPED CONDENSATE
- PUMP

CONTRACTOR COORDINATION

THE GENERAL CONTRACTOR SHALL TAKE THE LEAD IN PREPARING COORDINATION DRAWINGS. SUCH DRAWINGS SHALL BE ARRANGED AND DESIGNED THROUGH AND FROM COORDINATION WITH ALL OTHER MAJOR AND MINOR SUBCONTRACTORS. PROVIDE PLAN VIEWS, SECTIONS, AND ELEVATIONS AS REQUIRED TO FULLY COORDINATE ALL NEW WORK. DRAW TO SCALE (AT NOT LESS THAN 3/8"=1'0"). DRAWINGS SHALL SHOW, BUT NOT BE LIMITED TO: ALL WALL RATINGS, DUCTWORK, AIR DISTRIBUTION, MECHANICAL EQUIPMENT, MECHANICAL PIPING, FIRE PROTECTION PIPING, PLUMBING PIPING, CABLE TRAYS, LIGHTING FIXTURES, CEILING GRID, CEILING HEIGHT, MAJOR BEAMS AND JOISTS (WITH ELEVATIONS MARKED), FIRE, SAFETY, AND SECURITY ALARM DEVICES (WHERE CEILING MOUNTED), ELECTRICAL CONDUITS LARGER THAN 2 INCH DIAMETER, ELECTRICAL BUSWAY AND REQUIRED CLEARANCES, AND ANY EQUIPMENT PROVIDED BY OTHERS THAT PROTRUDE INTO THE CEILING CAVITIES OR IMPEDE THE LOCATION OR ACCESS TO ABOVE CEILING PIPING, DUCTWORK, OR OTHER EQUIPMENT. SECTIONS SHALL BE CUT THROUGH AREAS SHOWING MATERIALS AND SYSTEMS OF ALL CONTRACTS. IT IS IMPORTANT TO NOTE THAT FABRICATION CANNOT BEGIN UNTIL COORDINATION DRAWINGS HAVE BEEN APPROVED.

THE CONTRACTOR SHALL OBTAIN A COPY OF THE FINAL SITE LATEST VENDOR DRAWINGS PRIOR TO PROCURING OR INSTALLING ANY EQUIPMENT. ANY REWORK REQUIRED BY THE CONTRACTOR'S FAILURE TO OBTAIN THESE DRAWINGS SHALL BE AT THE CONTRACTOR'S EXPENSE AND SHALL NOT RESULT IN ANY ADDITIONAL TIME TO THE PROJECT. THE CONTRACTOR SHALL MEET THE REPRESENTATIVE OF THE VENDOR PRIOR TO THE START OF WORK. ALL WORK SHALL COMPLY WITH ALL VENDOR REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK SHOWN ON THESE DRAWINGS AND ALL WORK SHOWN ON THE VENDOR DRAWINGS. THE PHRASE "SUPPLIED BY CUSTOMER" (OR DERIVATIVES) MEANS "PROVIDED BY CONTRACTOR."

VALVE SYMBOLS

- M — MOTORIZED SHUT-OFF VALVE
- BALANCING VALVE
- SHUT-OFF VALVE - NORMALLY CLOSED
- SHUT-OFF VALVE - SEE SPECIFICATIONS
- GLOBE VALVE
- GATE VALVE WITH 3/4 " HOSE ADAPTER
- GATE VALVE
- CHECK VALVE
- ANGLE GLOBE VALVE
- BUTTERFLY VALVE
- BALL VALVE
- CIRCUIT SETTER
- STRAIGHT-THRU MODULATING CONTROL VALVE
- STRAIGHT-THRU TWO POSITION CONTROL VALVE
- THREE-WAY MODULATING CONTROL VALVE
- AUTOMATIC FLOW CONTROL VALVE
- SAFETY OR PRESSURE RELIEF VALVE
- PRESSURE REDUCING VALVE
- MANUAL AIR VENT
- TEST PLUG (PRESSURE/TEMPERATURE)
- STEAM TRAP (MEDIUM/HIGH PRESSURE)
- CIRCUIT SETTER (METERING AND BALANCING)
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- PA — PIPE ANCHOR
- PIPE GUIDES
- FLEXIBLE CONNECTION
- WYE STRAINER (WITH BALL VALVE & HOSE CONNECTION)

MECHANICAL SYMBOLS

- CONNECT TO EXISTING
- POINT OF DISCONNECT
- T — THERMOSTAT
- T — TEMPERATURE SENSOR (DUCT MOUNTED)
- S — SWITCH
- H — HUMIDITY SENSOR
- S — SMOKE DETECTOR
- P — DIFFERENTIAL PRESSURE MONITOR
- P — DIFFERENTIAL PRESSURE SENSOR

GENERAL NOTES

1. COORDINATE ALL WORK WITH OTHER TRADES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES, PERMITS AND LICENSES FOR THE COMPLETE INSTALLATION OF THEIR WORK.
3. ALL DUCTWORK RUNS SHOWN ARE REPRESENTATIVE ONLY, CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CONDITIONS IN THE FIELD (EXISTING, OR PREDICATED BY LOCATION OF NEW EQUIPMENT) THAT MAKE NECESSARY ALTERNATE ROUTING OF DUCTWORK.
4. ALL PIPING RUNS SHOWN ARE REPRESENTATIVE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CONDITIONS IN THE FIELD THAT MAKE NECESSARY ALTERNATE ROUTING OF PIPING.
5. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL AND CONTROLS CONTRACTORS TO PROVIDING POWER CONNECTIONS AND DDC CONTROLS FOR ALL EQUIPMENT.
6. ALL DIFFUSERS NOT SHOWN AS A FULL CEILING MODULE (24"X24") SHALL BE A MINIMUM OF 12"X12".
7. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY ARCHITECTURAL WORK (INCLUDING, BUT NOT LIMITED TO: FLOORING, CEILING TILE AND GRID, SMOKE PARTITIONS ABOVE CEILING, GYPSUM WALL BOARD AND PAINTING, PLASTER, ETC.) THAT IS DAMAGED, DISTURBED, OR REMOVED INCIDENTAL TO THIS WORK.
8. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN A FURRED CHASE OR ABOVE THE SUSPENDED CEILING.
9. THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED.
10. ACCESS PANELS ARE REQUIRED FOR ALL VALVES, TRAPS, DAMPERS, CLEANOUTS, CONTROLS, ETC. THAT ARE LOCATED ABOVE HARD CEILINGS OR BEHIND WALLS. ACCESS PANELS SHALL BE FURNISHED AND INSTALLED UNDER THE ARCHITECTURAL SPECIFICATIONS.
11. TOTAL STATIC PRESSURE NOTED IN THE SCHEDULES INCLUDES DUCT SYSTEM, TERMINAL UNITS, FILTERS, COILS, ETC.
12. FOR TYPICAL WATER PIPING CONNECTIONS TO EQUIPMENT SEE STANDARD EQUIPMENT DETAILS.
13. DIFFUSER, REGISTER AND GRILLE SIZES SHOWN ON FLOOR PLANS ARE NECK SIZES.
14. PROVIDE INSULATED SUPPLY DIFFUSERS AND GRILLES.
15. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF CEILING DIFFUSERS, REGISTERS, AND GRILLES.
16. PROVIDE NEW DDC SYSTEM TO ACCOUNT FOR NEW ROOMS, THERMOSTATS AND VAV TERMINAL UNITS. PRIOR TO CONTROLS PROGRAMMING, MECHANICAL CONTRACTOR SHALL PROVIDE TO CONTROLS VENDOR THE ACTUAL ROOM NUMBERS, AS DETERMINED BY THE ARCHITECT AND OWNER.
17. MECHANICAL CONTRACTOR SHALL ENSURE THAT THE FLEXIBLE DUCTWORK IS FREE OF BENDS THAT WOULD RESTRICT AIRFLOW. PROVIDE HANGERS AND SUPPORTS TO ENSURE BENDS ARE SMOOTH RADIUS.
18. WHERE CONFLICTS WITH OTHER UTILITIES OR CONSTRUCTION OCCUR, CONTRACTOR SHALL PROVIDE DUCT TRANSITIONS (AND CHANGES IN DIMENSIONS) PER SMACNA GUIDELINES AS REQUIRED TO AVOID CONFLICT. DUCT OF DIFFERING SIZE TO THAT SHOWN ON PLANS SHALL HAVE A HYDRAULIC AREA EQUAL TO THE DUCT SIZE LISTED ON PLANS.
19. ALL AIR DISTRIBUTION DEVICES SHALL BE PROVIDED WITH MANUAL VOLUME DAMPERS FOR BALANCING PURPOSES. SEE DETAILS AND SPECIFICATIONS FOR MORE REQUIREMENTS, WHETHER SHOWN ON THE DRAWINGS OR NOT.

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CMC CONWAY MEDICAL CENTER
CMC 22-90 Hand FSED

6601 SC-90
CONWAY, SC 29526

PROJECT NUMBER: 3024097.00 HDG PROJECT NUMBER: 24020

Δ	DATE	DESCRIPTION

SOUTH CAROLINA HARRELL DESIGN GROUP, PC No. C02713 CERTIFICATE OF AUTHORIZATION

NOT FOR CONSTRUCTION

ORIG SUBMISSION: 08.22.2025

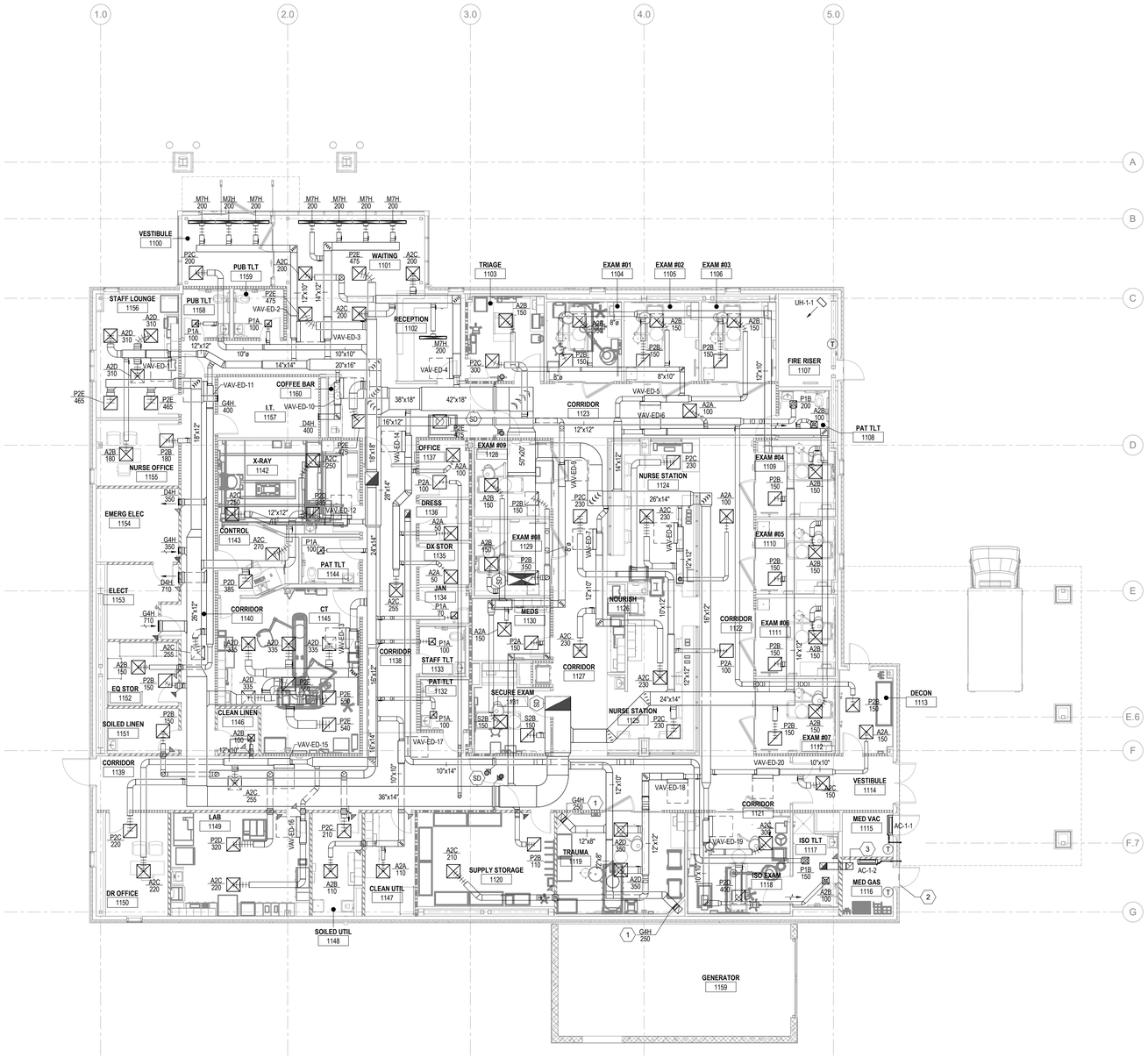
CURRENT:

SHEET TITLE AND NUMBER:

M0.01

GENERAL NOTES & LEGENDS

THE LINE SHOWN ABOVE IS EXACTLY ONE HORIZONTAL INCH ON ORIGINAL ARCHITECT'S DRAWINGS



1 **MECHANICAL DUCTWORK PLAN - LEVEL 1**
1/8" = 1'-0"

GENERAL NOTES

A. EACH TERMINAL BOX SHALL BE PROVIDED WITH A THERMOSTAT MOUNTED AT 54" A.F.F.

SHEET KEYNOTES

1. 10"x10" GRILLE MOUNTED 12" A.F.F.
2. PROVIDE 30"x12" INTAKE LOUVER INSTALLED ABOVE DOOR FOR MAKE UP AIR. LOUVER SHALL BE BASED ON GREENHECK EVH-501D OR EQUIVALENT AND HAVE A MINIMUM FREE AREA 0.81 SQUARE FEET.
3. PROVIDE A LOW WALL EXHAUST INTAKE 12" A.F.F.

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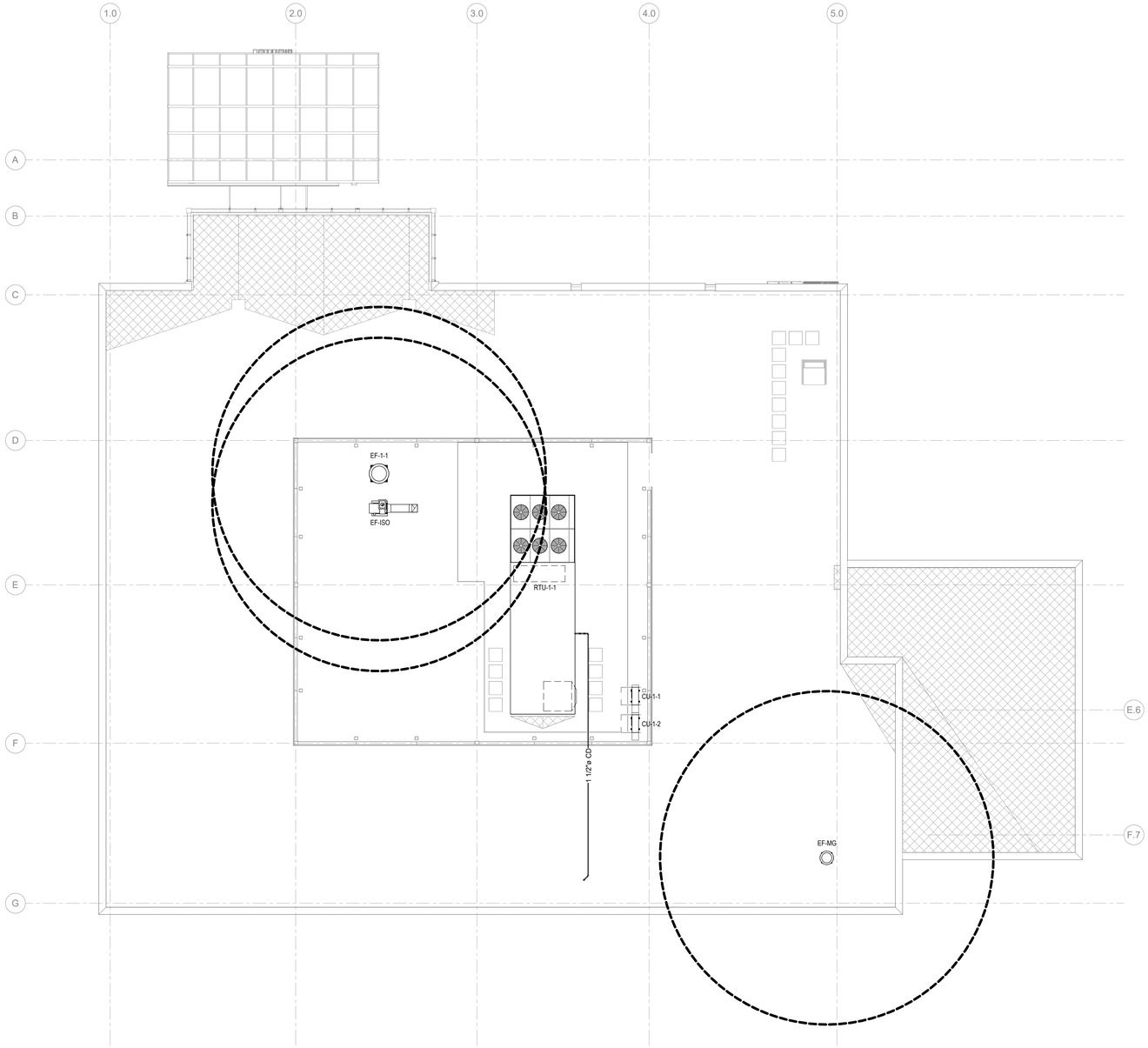
MECHANICAL DUCTWORK PLAN - LEVEL 1

THE LINE SHOWN ABOVE IS EXACTLY ONE HOUR AT ALL SHEETS ORIGINAL PLOT SIZE



1 **MECHANICAL ROOF PLAN**
1/8" = 1'-0"

TRUE NORTH

0 4' 8' 16'

GENERAL NOTES

A. ROUTE RTU CONDENSATE DRAINS TO NEAREST ROOF DRAIN. PROVIDE PIPE SUPPORT ON DRAIN EVERY 4' AND SLOOP DRAIN AT 1/4" PER FOOT.

B. RTU CONDENSATE DRAINS SHALL BE A MINIMUM OF 1-1/4" IN DIAMETER AND BE "TYPE L" COPPER WITH SOLDERED JOINTS.

SHEET KEYNOTES

ENVIRONMENTS FOR HEALTH ARCHITECTURE
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888.781.8441 817.226.1917 501 Elm St., Ste 500, Dallas, TX 75202 e4harchitecture.com

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CMC
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with Novant Health

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MYRTLE BEACH, SC 29577
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MEDICAL EQUIPMENT PLANNER
MAZZETTI+GBA
615.376.3108

CMC CONWAY MEDICAL CENTER
CMC 22-90 Hand FSED
6601 SC-90
CONWAY, SC 29526

PROJECT NUMBER: 3024097.00 **HDG PROJECT NUMBER:** 24020

Δ	DATE	DESCRIPTION

SOUTH CAROLINA
HARRELL DESIGN GROUP, PC
No. C02713
CERTIFICATE OF AUTHORIZATION

NOT FOR CONSTRUCTION

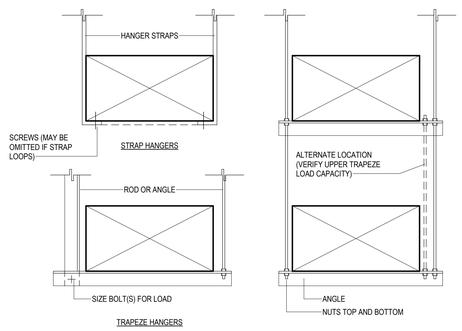
ORIG SUBMISSION: 08.22.2025
CURRENT:

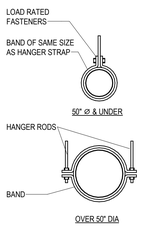
SHEET TITLE AND NUMBER:

M1.02

MECHANICAL ROOF PLAN

THE LINE SHOWN ABOVE IS EXACTLY ONE HOUR AT ALL SHEETS ORIGINAL PLOT SIZE

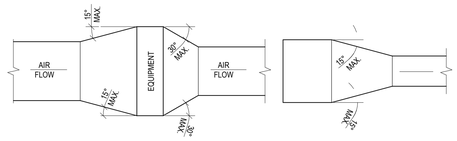




HANGER STRAPS OR RODS FOR ROUND DUCT			
MAX. DUCT Ø IN	QUANTITY/SIZE IN	MAX. LOAD LBS	MAX. SPACING IN
26	ONE 1 x 22 GA STRAP	260	144
36	ONE 1 x 18 GA STRAP	420	144
50	ONE 1 x 16 GA STRAP	700	144
60	TWO 3/8 Ø RODS	1320	144
84	TWO 1/2 Ø RODS	2500	144

NOTE:
TABULATED DATA FROM SMACNA ALLOWS FOR DUCT REINFORCING AND INSULATION, BUT NO EXTERNAL LOAD.

13 DUCT HANGERS
NOT TO SCALE

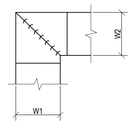


TYPICAL DUCTWORK TRANSITION WITH EQUIPMENT MOUNTED IN DUCT PLAN OR SIDE VIEW

TYPICAL DUCTWORK TRANSITION PLAN OR SIDE VIEW

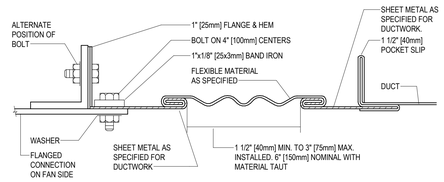
NOTES:
UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.

9 DUCTWORK TRANSITIONS (WITH EQUIPMENT MOUNTED IN DUCTS)
NOT TO SCALE

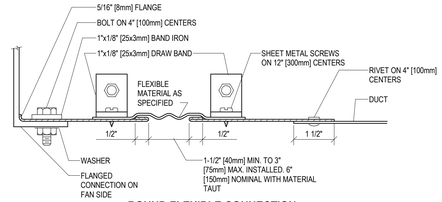


NOTES:
1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

10 DUCTWORK SQUARE VANE ELBOWS
NOT TO SCALE

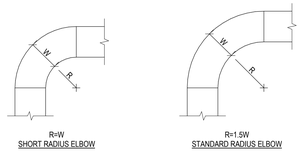


RECTANGULAR FLEXIBLE CONNECTION



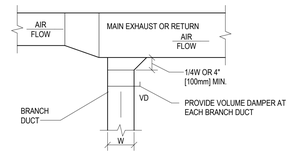
ROUND FLEXIBLE CONNECTION

5 FLEXIBLE DUCT CONNECTIONS
NOT TO SCALE



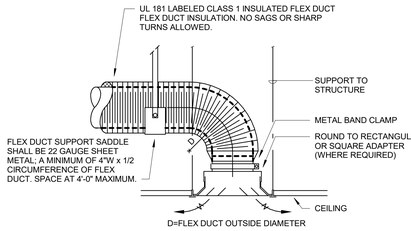
NOTES:
1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

6 DUCTWORK RADIUS ELBOWS
NOT TO SCALE

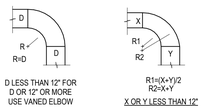


PLAN VIEW

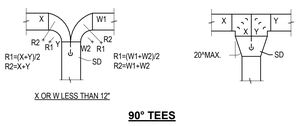
1 EXHAUST OR RETURN BRANCH DUCTWORK
NOT TO SCALE



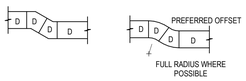
2 PREFERRED DIFFUSER DUCTING
12" = 1'-0"



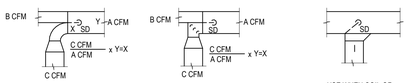
90° RADIUS ELBOWS

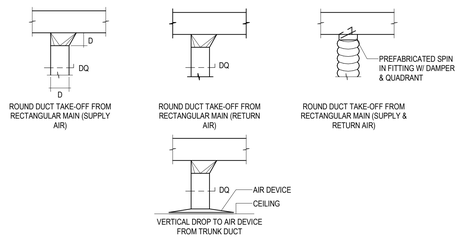


90° TEES



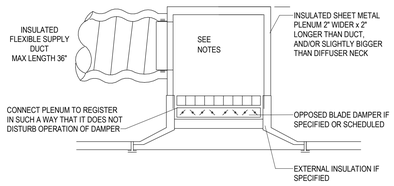
OFFSETS





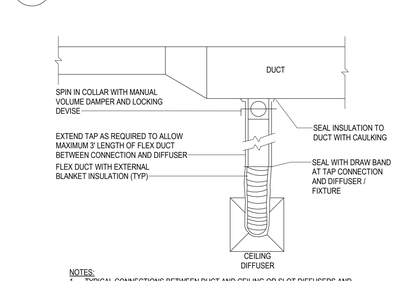
BRANCH TAKE-OFFS

14 LOW PRESSURE DUCT FITTINGS
NOT TO SCALE



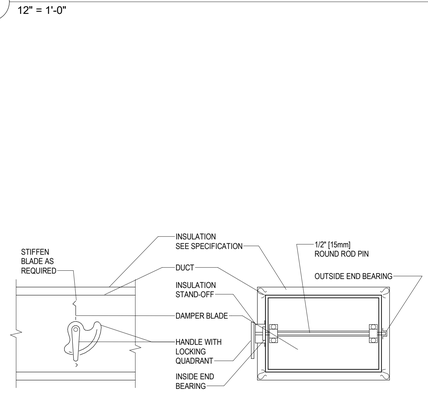
NOTES:
1. INSULATION REQUIRED ON SUPPLY ONLY.
2. INLET PLENUM HEIGHT SHALL BE AS REQUIRED BY INLET DUCT & FIELD CONDITIONS (GENERALLY 2" HIGHER THAN INLET DUCT Ø, BUT HIGHER IF REQUIRED. BY LIGHTS, ETC.)

11 LIMITED CLEARANCE DIFFUSER DUCTING
NOT TO SCALE



NOTES:
1. TYPICAL CONNECTIONS BETWEEN DUCT AND CEILING OR SLOT DIFFUSERS AND SINGLE OR DOUBLE SIDED SADDLE BOOT LIGHT FIXTURES AS SHOWN ON PLAN OR INDICATED IN SCHEDULE.
2. ONLY ONE 90° TURN ALLOWED IN FLEX DUCT WITH TURN R/D > 1.0; DUCT MUST BE PROPERLY SUPPORTED TO PREVENT KINKING.

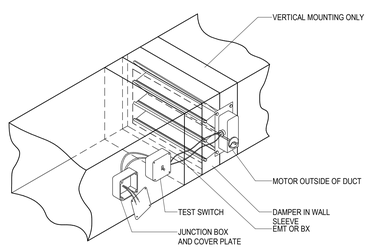
7 TYPICAL DIFFUSER RUNOUT DETAIL
NOT TO SCALE



SIDE ELEVATION **SECTION**

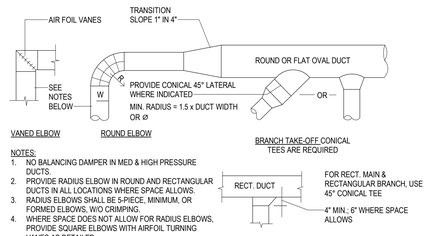
NOTES:
1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

3 VOLUME DAMPER DETAIL
NOT TO SCALE



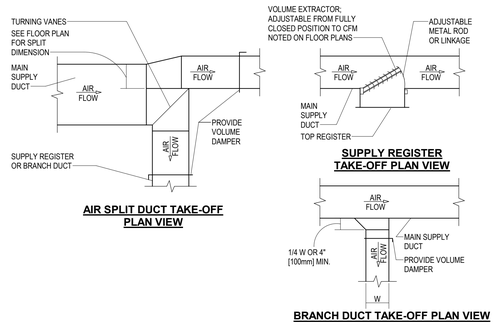
NOTES:
1. ALL MOTORS SHALL BE 115V, 60Hz, FACTORY-MOUNTED, UL APPROVED.
2. ALL ELECTRICAL CONNECTIONS MUST COMPLY WITH THE LOCAL CODE REQUIREMENT.
3. MOTOR SHALL BE FIELD REPLACEABLE WITHOUT DISTURBING PULLEY-CABLE DAMPER SYSTEM.
4. MOTORS SHALL BE WIRED THROUGH EMT OR GREENFIELD TO A STANDARD JUNCTION BOX LOCATED ON THE OUTSIDE OF THE DUCT.
5. FIELD WIRE AND INSTALL AS REQUIRED. PROVIDE TEST SWITCH AND PERFORM OPERATING TEST AFTER INSTALLATION.
6. MOTOR SHALL BE LOCATED TO PROVIDE ACCESS FOR MAINTENANCE.
7. PROVIDE ACCESS DOOR IN DUCTWORK IN ACCESSIBLE LOCATION TO MAINTAIN DAMPER.

12 DYNAMIC COMBINATION FIRE/ SMOKE DAMPER
NOT TO SCALE



NOTES:
1. NO BALANCING DAMPER IN MED & HIGH PRESSURE DUCTS.
2. PROVIDE RADIUS ELBOW IN ROUND AND RECTANGULAR DUCTS IN ALL LOCATIONS WHERE SPACE ALLOWS.
3. RADIUS ELBOWS SHALL BE 5-PIECE, MINIMUM, OR FORMED ELBOWS, W/O CRIMPING.
4. WHERE SPACE DOES NOT ALLOW FOR RADIUS ELBOWS, PROVIDE SQUARE ELBOWS WITH AIRFOIL TURNING VANES AS DETAILED.

8 MEDIUM AND HIGH PRESSURE DUCT FITTINGS
NOT TO SCALE



AIR SPLIT DUCT TAKE-OFF PLAN VIEW

SUPPLY REGISTER TAKE-OFF PLAN VIEW

BRANCH DUCT TAKE-OFF PLAN VIEW

4 SUPPLY DUCTWORK TAKE-OFFS
NOT TO SCALE

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CONWAY, SC 29526

PROJECT NUMBER: 3024097.00 HDG PROJECT NUMBER: 24020

Δ	DATE	DESCRIPTION

NORTH CAROLINA HARRELL DESIGN GROUP, PC No. C02713 CERTIFICATE OF AUTHORIZATION

NOT FOR CONSTRUCTION

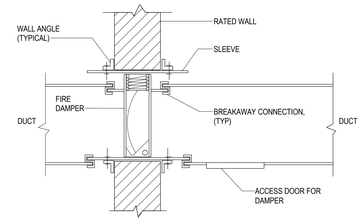
ORIG SUBMISSION: 08.22.2025
CURRENT:

SHEET TITLE AND NUMBER:

M5.01

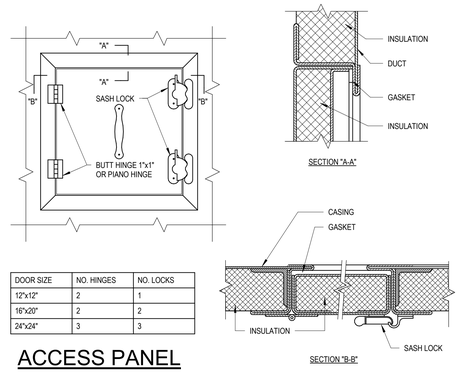
DETAILS

THE LINE SHOWN ABOVE IS EXACTLY ONE HORIZONTAL INCH ON ORIGINAL ARCHITECT'S DRAWINGS



NOTE:
FIRE DAMPER SHALL BE RUSKIN TYPE DIBD2, STYLE 'B' CURTAIN TYPE DYNAMIC FIRE DAMPER OR EQUAL, 1-1/2 HOUR RATING, UL 555 CLASSIFIED, INSTALLED IN ACCORDANCE WITH NFPA STANDARD 90A, SMACNA INSTALLATION GUIDE "FIRE, SMOKE AND RADIATION DAMPER INSTALLATION GUIDE FOR HVAC SYSTEMS", AND MANUFACTURER'S INSTALLATION INSTRUCTIONS. ACCESS DOOR SHALL BE RUSKIN MODEL ADC22 LOCATED ON ACCESSIBLE CEILING SIDE OF WALL. IF ACCESSIBLE CEILING IS NOT AVAILABLE, THE MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING (OR WALL) TO MATCH FINISH COLOR. DAMPER SHALL BE EQUIPPED FOR HORIZONTAL OR VERTICAL MOUNTING AS REQUIRED. WHERE ROUND DUCTS REQUIRE A DAMPER, AN ENCLOSURE WITH ROUND DUCT CONNECTION WILL BE REQUIRED WITH TYPE 'B' DAMPER INSIDE. ALL MODELS ARE RUSKIN (OR APPROVED EQUAL).

4 LOW PRESSURE FIRE DAMPER
NOT TO SCALE

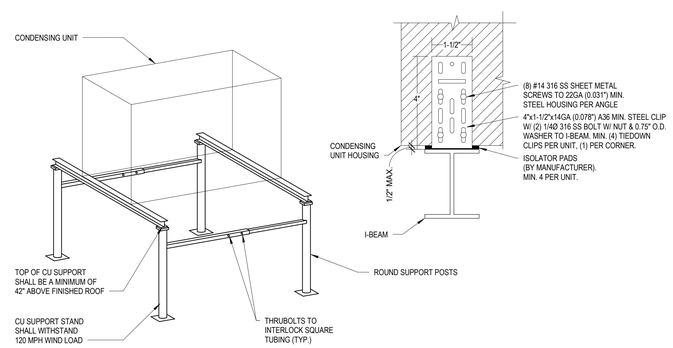


DOOR SIZE	NO. HINGES	NO. LOCKS
12"x12"	2	1
16"x20"	2	2
24"x24"	3	3

ACCESS PANEL

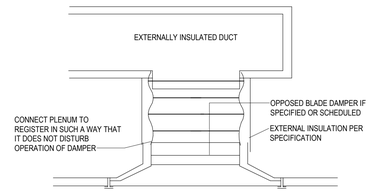
NOTES:
1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.

5 ACCESS PANEL DETAIL
NOT TO SCALE

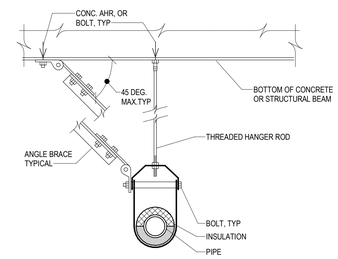


6 CONDENSING UNIT STAND DETAIL
NOT TO SCALE

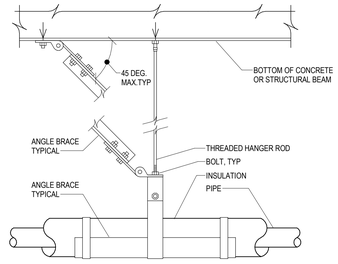
NOTE:
MAXIMUM DUCT VELOCITY = 1200 FPM



1 DIFFUSER/REGISTER BOTTOM TAP
NOT TO SCALE



TRANSVERSE BRACE DETAIL

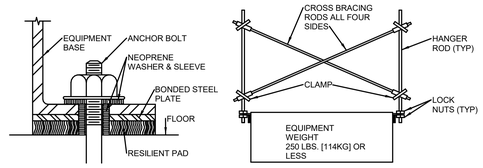


LONGITUDINAL BRACE DETAIL

NOTES:

A. DETAILS SHOWN ARE FOR PIPE BRACING, OTHER EQUIPMENT BRACING SHALL BE SIMILAR.
B. BRACE SIZES, SPACINGS, LOCATIONS, AND ATTACHMENTS SHALL BE AS SPECIFIED. BRACES SHALL BE FULLY COORDINATED WITH STRUCTURAL FRAMING AND WITH ALL OTHER BUILDING MATERIALS AND SERVICES.
C. TRANSVERSE AND LONGITUDINAL BRACES MAY BE COMBINED WHERE REQUIRED TO RESIST MOTIONS IN BOTH DIRECTIONS AT THE SAME TIME.
D. INSTALL ROLLER TYPE HANGERS FOR STEAM PIPING. SEE PIPE HANGERS DETAIL.

2 SEISMIC BRACING DETAIL
NOT TO SCALE



FLOOR MOUNT EQUIPMENT RESTRAINED BY RESILIENT PADS (TYPE DS)

SEISMIC BRACING FOR LIGHT SUSPENDED EQUIPMENT

NOTE:
NOT REQUIRED FOR AIR TERMINAL UNITS.

3 SEISMIC BRACING FOR EQUIPMENT
NOT TO SCALE

ENVIRONMENTS FOR HEALTH ARCHITECTURE
e4h
888.781.8441 817.226.1917 501 Elm St., Ste 500, Dallas, TX 75202 e4harchitecture.com

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CONWAY, SC 29526

PROJECT NUMBER: 3024097.00 HDG PROJECT NUMBER: 24020

Δ	DATE	DESCRIPTION

SOUTH CAROLINA
HARRELL DESIGN GROUP, PC
No. C02713
CERTIFICATE OF AUTHORITY NO.

NOT FOR CONSTRUCTION

ORIG SUBMISSION: 08.22.2025
CURRENT:

SHEET TITLE AND NUMBER:

M5.02

DETAILS

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT FULL SCALE

AIR HANDLING UNIT SCHEDULE

UNIT NO.	SERVICE	CFM	OA CFM	ESP (IN. W.G.)		EVAPORATOR				ELECTRICAL														BASIS OF DESIGN								NOTES
													CONDENSER SECTION						COMPRESSOR SECTION													
				SUPPLY FAN	RETURN FAN	SENSIBLE CAPACITY (MBH)	TOTAL CAPACITY (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	V	PH	FREQ	FAN 1 FLA	FAN 2 FLA	FAN 3 FLA	FAN 4 FLA	FAN 5 FLA	FAN 6 FLA	COMP 1 RLA	COMP 2 RLA	COMP 3 RLA	COMP 4 RLA	MCA	MOP	EER	IEER	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	WEIGHT (LBS)	MANUFACTURER	MODEL	
RTU-1-1	EXAM / ADMIN	16,000	4,700	3.0	1.5	492.05	810.28	77.6 / 66.7	50.0 / 49.9	460	3	60	1.5	2.2	2.2	1.5	2.2	2.2	27.4	27.4	25.0	34.9	278	300	9.9	16.0	394.5	119.0	87.25	11,022.7	TRANE	INTELLIPAK	1-4

NOTES:

1. PROVIDE FACTORY MOUNTED VFD WITH INTEGRAL DISCONNECT IN NEMA 4X ENCLOSURE.
2. PROVIDE MANUFACTURER'S ROOF CURB.
3. ROUTE CONDENSATE TO NEAREST ROOF DRAIN.
4. UNIT SHALL BE EQUIPPED WITH INTERIOR LIGHTING FOR SERVICE. COORDINATE WITH DIVISION 26 FOR CIRCUIT POWER.

HEAT PUMP SPLIT SYSTEM SCHEDULE

INDOOR UNIT									OUTDOOR UNIT													NOTES
UNIT NO.	SERVICE	COOLING (BTU/H)	HEATING (BTU/H @ 47°F)	CFM_{RECT} (MIN/MAX)	CFM_{HEAT} (MIN/MAX)	WEIGHT (LBS)	MANUFACTURER	MODEL	UNIT NO.	SEER2	GAS LINE OD (IN)	LIQ. LINE OD (IN)	WEIGHT (LBS)	FAN FLA	COMP RLA	V	PH	MCA	MOCP	MANUFACTURER	MODEL	
AC-1-1	MED GAS 1129	12,000	12,200	134/364	170/406	22	MITSUBISHI	MSZ-HM12NA	CU-1-1	20.0	3/8	1/4	73	0.5	6.2	208	1	9.0	15	MITSUBISHI	MUZ-HM12NA	1-4
AC-1-2	MED VAC 1128	12,000	12,200	134/364	170/406	22	MITSUBISHI	MSZ-HM12NA	CU-1-2	20.0	3/8	1/4	73	0.5	6.2	208	1	9.0	15	MITSUBISHI	MUZ-HM12NA	1-4

NOTES:

1. INDOOR UNIT SHALL BE POWERED FROM THE OUTDOOR UNIT.
2. PROVIDE UNIT WITH CONDENSATE PUMP AND RESERVOIR, MANUFACTURER PART NUMBER X87-721.
3. PROVIDE UNIT WIITH WATER-LEVEL SENSING DEVICE IN CONDENSATE DRAIN THAT WILL DE-ENERGIZE EQUIPMENT IN THE EVENT OF CONDENSATE ACCUMULATION, DEVICE SHALL CONFORM TO REQUIREMENTS PER SOUTH CAROLINA MECHANICAL CODE SECTION 307.2.3.4.
4. UNIT SHALL BE PROVIDED WITH FUSED DISCONNECT, DIVISION 26 SHALL PROVIDE AND INSTALL DISCONNECT.

FAN SCHEDULE

UNIT NO.	FAN SERVICE	FAN TYPE	DRIVE TYPE	WHEEL TYPE	CFM	ESP (IN. W.G.)	MOTOR RPM	FAN RPM	TIP SPEED	HP	V	PH	HZ	SELECTION BASED ON		NOTES
														MANUFACTURER	MODEL	
EF-1-1	EXAM / ADMIN	DOWNBLAST	DIRECT	-	4,065	1.0	1,325	1,278	6,188	2	460	3	60	GREENHECK	G-180-VG	1-5, 7
EF-ISO	ISOLATION EXAM	UTILITY SET	DIRECT	-	540	0.5	1,770	1,475	4,318	1/4	208	3	60	GREENHECK	USF-4	1-6
EF-MG	MEDICAL GAS	DOWNBLAST	DIRECT	-	500	0.75	1,725	1,535	4,496	1/4	120	1	60	GREENHECK	G-098-VG	1-5, 7

NOTES:

1. PROVIDE WITH BACKDRAFT DAMPER, MOTOR GUARD, VFD AND DISCONNECT SWITCH. STARTER AND DISCONNECT PROVIDED BY DIVISION 23. FINAL CONNECTIONS BY DIVISION 26.
2. PROVIDE WITH VIBRATION ISOLATORS.
3. PROVIDE WITH THERMAL OVERLOAD PROTECTION. FINAL CONNECTIONS BY DIVISION 26.
4. FAN SHALL BE SEISMIC RATED.
5. FAN SHALL BE HIGH WIND RATED.
6. PROVIDE FAN WITH DUCTED DISCHARGE FOR HIGH PLUME DISCHARGE.
7. PROVIDE FAN WITH MANUFACTURER'S 14" ROOF CURB.

UNIT HEATER SCHEDULE

UNIT NO.	SERVICE	TYPE	CAPACITY (kW)	CFM	RPM	HP	ΔT (°F)	WEIGHT (LBS)	V	PH	HZ	AMPS	SELECTION BASED ON		NOTES
													MANUFACTURER	MODEL	
UH-1-1	RISER ROOM	CABINET	10	850	1,725	1/4	38	110	208	3	60	30	INDEECO	ULTRA SAFE EXP	1-3

NOTES:

1. UNIT SHALL BE SUSPENDED FROM WALL IN RISER ROOM. UNIT SHALL BE MOUNTED NOT LESS THAN 12" OFF OF WALL PER MANUFACTURER'S INSTALLATION INSTRUCTION.
2. PROVIDE UNIT WITH MANUFACTURER'S CORROSION RESISTANT WALL MOUNTING KIT.
3. PROVIDE UNIT WITH THERMOSTAT MOUNTED 54" A.F.F. AND ON AN INTERIOR WALL.

DUCT HEATER SCHEDULE

UNIT NO.	SERVICE	TYPE	CAPACITY (kW)	DUCT SIZE (IN x IN)	ΔT (°F)	V	PH	HZ	SELECTION BASED ON		NOTES
									MANUFACTURER	MODEL	
DH-1-1-1	RTU-1-1	DUCT MOUNTED	80	50 x 20	15	480	3	60	GREENHECK	IDHE-O	1-2

NOTES:

1. PROVIDE UNIT WITH MANUFACTURER'S SCR CONTROLLER AND DISCONNECT SWITCH. DISCONNECT SWITCH SHALL BE INSTALLED BY DIVISION 26.
2. UNIT SHALL BE INTEGRATED INTO BUILDING CONTROLS AND STAGED ON/OFF BASED ON THE AHU SUPPLY AIR TEMPERATURE. REFER TO M7.01.

VAV/CAV AIR TERMINAL UNIT SCHEDULE (ELECTRIC)

MARK	INLET SIZE (IN)	FLOW DATA			ELECTRICAL DATA			BASIS OF DESIGN		NOTES
		MAXIMUM AIR FLOW (CFM)	MINIMUM AIR FLOW (CFM)	HEATING AIR FLOW (CFM)	CAPACITY (kW)	VOLTAGE	PHASE	MODEL	MANUFACURER	
VAV-ED-1	10"	1120	1120	1120	7.0	277	1	DESV	Titus	1-2
VAV-ED-2	8"	600	600	600	4.0	277	1	DESV	Titus	1-2
VAV-ED-3	10"	800	800	800	5.0	277	1	DESV	Titus	1-2
VAV-ED-4	10"	800	800	800	5.0	277	1	DESV	Titus	1-2
VAV-ED-5	8"	600	600	600	4.0	277	1	DESV	Titus	1-2
VAV-ED-6	8"	800	800	800	5.0	277	1	DESV	Titus	1-2
VAV-ED-7	8"	460	460	460	3.0	277	1	DESV	Titus	1-2
VAV-ED-8	6"	330	330	330	2.0	277	1	DESV	Titus	1-2
VAV-ED-9	8"	600	600	600	4.0	277	1	DESV	Titus	1-2
VAV-ED-10	6"	400	400	400	2.5	277	1	DESV	Titus	1-2
VAV-ED-11	8"	1465	1465	1465	9.5	277	1	DESV	Titus	1-2
VAV-ED-12	8"	750	750	750	5.0	277	1	DESV	Titus	1-2
VAV-ED-13	12"	1340	1340	1340	8.5	277	1	DESV	Titus	1-2
VAV-ED-14	8"	455	455	455	3.0	277	1	DESV	Titus	1-2
VAV-ED-15	8"	575	575	575	4.0	277	1	DESV	Titus	1-2
VAV-ED-16	8"	220	220	220	1.5	277	1	DESV	Titus	1-2
VAV-ED-17	8"	220	220	220	1.5	277	1	DESV	Titus	1-2
VAV-ED-18	8"	910	910	910	6.0	277	1	DESV	Titus	1-2
VAV-ED-19	8"	400	400	400	2.5	277	1	DESV	Titus	1-2
VAV-ED-20	8"	300	300	300	2.0	277	1	DESV	Titus	1-2

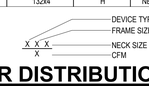
NOTES:

1. PROVIDE TERMINAL BOX REHEAT COIL WITH SCR CONTROLLER.
2. PROVIDE TERMINAL BOX WITH DEDICATED TRANSFORMER FOR CONTROL BOX.

AIR DISTRIBUTION DEVICE SCHEDULE

DEVICE LETTER	DEVICE TYPE	MANUFACTURER AND MODEL NUMBER
A	ARCH. DIFFUSER	NAILOR UNI-RC
B	BAR GRILLES	NAILOR SERIES 49
C	CEILING REGISTER	NAILOR 61 DV
D	SIDEWALL SUPPLY	NAILOR 5155H
E	EGGCRATE	NAILOR 61 EC
F	FILTER GRILLE	NAILOR 61 FP
G	SIDEWALL GRILLE	NAILOR 6155 H
H	FIRE RATED	NAILOR
J	CURVED GRILLE	61DVC
K	PLENUM DIFFUSER	NAILOR
L	LAMINAR FLOW	NAILOR 92LFD-SS
M	LINEAR SLOT	NAILOR 5010/5010R
N	LINEAR SLOT	NAILOR 48LL2
P	ARCH. RETURN/EXH.	NAILOR 6155H
Q	PERFORATED FACE	NAILOR 4325/4360
R	ROUND	NAILOR
S	SECURITY GRILLES	NAILOR SG-61FH
T	SECURITY DIFFUSER	NAILOR SG-6500

FRAME NUMBER	FRAME SIZE	NECK LETTER	NECK SIZE
1	12x12	A	8"∅
2	24x24	B	8"∅
3	24x12	C	10"∅
4	NECK + FRAME	D	12"∅
5	14x10	E	14"∅
6	48x24	F	16"∅
7	48x4	G	14x6
8	132x4	H	NECK SIZE



AIR DISTRIBUTION LEGEND KEY

NOTES:

1. SUPPLY, EXHAUST, AND RETURN DIFFUSERS FOR PATIENT AND SUPPORT SPACES (I.E. EVERYWHERE BUT UTILITY ROOMS AND RESTROOMS) SHALL BE PROVIDED WITH RETAINING CLIP OPTION FOR AFFIXING CEILING GRID TO CENTER OF DEVICE.
2. MAXIMUM AIR VELOCITY THROUGH DIFFUSERS, GRILLES AND REGISTERS SHALL BE 500 FPM, UNLESS INDICATED OTHERWISE.
3. MAXIMUM NC SHALL BE 30.
4. PROVIDE FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED, VERIFY WITH FINAL APPROVED ARCHITECTURAL CEILING PLAN.
5. BASIS OF DESIGN IS NAILOR OR EQUAL.
6. PROVIDE SQUARE TO ROUND TRANSITION WITH APPROPRIATE NECK SIZE, AS REQUIRED.
7. REFER TO ARCHITECTURAL FOR FINISHES.
8. SEE PLANS FOR NECK SIZES OF REGISTERS AND GRILLES, ETC.
9. INSULATE BACK PANEL OF ALL SUPPLY DIFFUSERS. INSULATION TYPE SHALL MATCH INSULATION USED ON SUPPLY DUCTWORK.
10. DEVICES LOCATED IN TOILET(S) SHALL BE CONSTRUCTED OF ALUMINUM.
11. PROVIDE LINEAR SLOT DIFFUSERS WITH 180-DEGREE WIPER BLADE DAMPER FOR AIRFLOW DIRECTIONAL ADJUSTMENT.

ENVIRONMENTS FOR HEALTH ARCHITECTURE
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CMC CONWAY MEDICAL CENTER with Novant Health

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6601 SC-90
CONWAY, SC 29526

PROJECT NUMBER: 3024097.00 HDG PROJECT NUMBER: 24020

Δ	DATE	DESCRIPTION

SOUTH CAROLINA HARRELL DESIGN GROUP, PC No. C02713 CERTIFICATE OF AUTHORIZATION

NOT FOR CONSTRUCTION

ORIG SUBMISSION: 08.22.2025
CURRENT:

SHEET TITLE AND NUMBER:

M6.01

SCHEDULES

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH WHEN PLOTTED ON ORIGINAL ARCHITECT'S DRAWINGS

SEQUENCE OF OPERATIONS:

ROOFTOP AIR HANDLING UNIT (RTU-1-1 AND RTU-1-2) – VAV, SUPPLY FAN, ECONOMIZER, REFRIGERANT COIL, ELECTRIC PREHEAT

GENERAL:
1. ALL ALARM POINTS SHALL WRITE TO BOTH THE BUILDING CONTROLLER AND TO THE CAMPUS BAS LOCATED IN THE EXISTING HOSPITAL.
2. THE BUILDING CONTROLLER SHALL BE VISIBLE AND ACCESSIBLE TO THE BAS.
3. ALARM ALL DIGITAL POINTS THAT DO NOT MATCH COMMAND LINE VALUE.
4. ALARM ALL ANALOGUE POINTS THAT ARE OUT OF AN ADJUSTABLE RANGE (+/-) FROM THE COMMAND LINE VALUE FOR MORE THAN 5 MINUTES (ADJUSTABLE BY POINT)
5. MANUAL RESET DUCT HIGH STATIC SWITCH, MANUAL RESET FREEZE THERMOSTAT, AND THE DUCT SMOKE DETECTORS SHALL BE HARD WIRED IN SERIES TO THE SF AND RF VSD MOTOR CONTROLLERS. AN OPEN CONTACT IN ANY SINGLE DEVICE SHALL STOP THE AHU.

AHU DISABLED:
1. SUPPLY FAN IS OFF.
2. OUTSIDE AIR DAMPER IS CLOSED.
3. RELIEF AIR DAMPER IS CLOSED.
4. AIR COOLED CONDENSING UNIT IS DE-ENERGIZED.
5. ELECTRIC PREHEAT COIL IS DE-ENERGIZED.
6. ALL SEQUENCES ARE DISABLED EXCEPT FOR THE COIL FREEZE PROTECTION SEQUENCE.

AHU START SEQUENCE:
1. RTU SHALL BE STARTED BY THE SCHEDULE PROGRAM IN THE BUILDING CONTROLLER, BY MORNING WARMUP ENABLE, OR BY MANUAL OVERRIDE. SCHEDULE PROGRAM SHALL BE 7 DAY, MINIMUM 6 EVENTS PER DAY. COORDINATE SCHEDULE WITH FACILITY OPERATIONS.
2. WHEN AN RTU ENABLE COMMAND IS RECEIVED, ENABLE THE SUPPLY FAN RUN SEQUENCE.
3. ON PROOF OF RUN OF THE SF ENABLE THE MINIMUM OUTSIDE AIR SEQUENCE AND THE ECONOMIZER SEQUENCE.
4. ENABLE THE HEATING SEQUENCE.
5. ENABLE THE COOLING SEQUENCE.

AHU STOP SEQUENCE:
1. RTU SHALL BE STOPPED BY THE SCHEDULE PROGRAM, MANUAL OVERRIDE, FAILURE ALARM CONDITION, OR SAFETY INTERLOCK.
2. WHEN ANY STOP COMMAND IS RECEIVED DISABLE THE AHU. STOP FANS AND RETURN DAMPERS OT THE OFF POSITION.

SUPPLY FAN SEQUENCE:
1. WHEN AN RTU ENABLE COMMAND IS RECEIVED, START THE SUPPLY FAN AT MINIMUM SPEED (ADJUSTABLE). RAMP THE SPEED UP BY PREPROGRAMMED ACCELERATION TIMING IN THE VSD MOTOR CONTROLLER. THE CONTROLS CONTRACTOR SHALL COORDINATE WITH THE VSD START UP TECHNICIAN TO DETERMINE THE OPTIMAL ACCELERATION RAMP. DO NOT EXCEED 60Hz PER MINUTE ACCELERATION TIME.
2. MONITOR THE DUCT STATIC PRESSURE (DSP) INPUT AND MODULATE THE SUPPLY FAN TO MAINTAIN THE DSP SETPOINT (ADJUSTABLE). TEST AND BALANCE CONTRACTOR SHALL PROVIDE THE INITIAL SETPOINT.
3. MONITOR THE AIR FLOW MEASUREMENT STATION ON THE SUPPLY FAN. CFM IS USED IN OTHER SEQUENCE FLOW CALCULATIONS.
4. IF THE SUPPLY FAN STATUS DOES NOT MATCH COMMAND LINE, INITIATE AN ALARM AT THE BAS IN THE ECC AND DISABLE THE RTU.
5. IF THE DSP VALUE APPROACHES A VALUE THAT IS 90% OF THE DUCT HIGH LIMIT (DHL) SETTING ON THE MANUAL RESET DUCT HIGH LIMIT SWITCH, INITIATE AN ALARM IN THE BAS.
6. WHEN THE SUPPLY FAN IS DISABLED RAMP THE FAN DOWN BY PREPROGRAMMED DECELERATION RAMP IN THE VSD. THE CONTROLS CONTRACTOR SHALL COORDINATE WITH THE VSD START UP TECHNICIAN TO DETERMINE THE OPTIMAL DECELERATION RAMP.

MINIMUM OUTSIDE AIR SEQUENCE:
1. WHEN THE RTU IS ENABLED AND PROOF OF THE SUPPLY FAN RUNNING IS VERIFIED, ENABLE THE MINIMUM OUTSIDE AIR SEQUENCE.
2. OPEN THE OUTSIDE AIR DAMPER AND MONITOR THE AIR FLOW MONITORING STATION. MODULATE THE OUTSIDE AIR DAMPER TO MAINTAIN THE MINIMUM OUTSIDE AIR SETPOINT (ADJUSTABLE).
3. IF THE AIR FLOW CFM DOES NOT MATCH THE COMMAND LINE ±10% INITIATE AND ALARM IN THE BAS.

COOLING SEQUENCE:
1. WHEN THE RTU IS ENABLED AND PROOF OF THE SUPPLY FAN RUNNING IS VERIFIED, ENABLE THE COOLING SEQUENCE.
2. IF THE ECONOMIZER SEQUENCE IS DISABLED THE UNIT SHALL BE THE FIRST STAGE OF COOLING.
3. MODULATE COMPRESSORS TO MAINTAIN THE AHU LEAVING AIR TEMPERATURE (LAT) SETPOINT ADJUSTABLE.
4. IF THE ECONOMIZER IS ENABLED THE EVAPORATOR SHALL BE THE SECOND STAGE OF COOLING.
5. IF THE LEAVING AIR TEMPERATURE (LAT) IS GREATER THAN THE LAT SETPOINT BY 2°F FOR MORE THAN 10 MINUTES, THE ECONOMIZER SEQUENCE IS ENABLED, AND THE OUTSIDE AIR DAMPER IS 100%. ENABLE THE AIR COOLED CONDENSING UNIT SEQUENCE TO MAINTAIN THE LAT SETPOINT. IF THE LAT FALLS BELOW THE LAT SETPOINT BY MORE THAN 2°F FOR MORE THAN 10 MINUTES AND THE ECONOMIZER IS ENABLED, DISABLE THE AIR COOLED CONDENSING UNIT SEQUENCE.
6. IF THE LAT IS GREATER THAN COMMAND LINE BY 5°F FOR MORE THAN 10 MINUTES, INITIATE AN ALARM IN THE BAS.

HEATING/PREHEAT SEQUENCE:
1. WHEN THE RTU IS ENABLED AND PROOF OF THE SUPPLY FAN RUNNING IS VERIFIED, ENABLE THE PREHEAT SEQUENCE.
2. IF THE MIXED AIR TEMPERATURE (MAT) IS BELOW THE MINIMUM MIXED AIR TEMPERATURE SETPOINT (ADJUSTABLE), STAGE THE ELECTRIC PREHEAT COIL TO MAINTAIN THE MINIMUM MIXED AIR TEMPERATURE SETPOINT.
3. RESET THE MINIMUM MIXED AIR TEMPERATURE SETPOINT BASED ON THE AHU LAT SETPOINT. MINIMUM MIXED AIR TEMPERATURE = LAT – 3°F.
4. IF THE MINIMUM MIXED AIR TEMPERATURE IS MORE THAN 5°F BELOW THE MINIMUM MIXED AIR TEMPERATURE SETPOINT FOR MORE THAN 10 MINUTES, INITIATE AN ALARM IN THE BAS.

ECONOMIZER SEQUENCE:
1. WHEN THE RTU IS ENABLED AND PROOF OF THE SUPPLY FAN RUNNING IS VERIFIED, ENABLE THE ECONOMIZER SEQUENCE.
2. MONITOR THE RETURN AIR ENTHALPY, CALCULATED FROM THE RETURN AIR TEMPERATURE AND HUMIDITY. COMPARE THE RETURN AIR ENTHALPY TO THE ENTHALPY OF THE OUTSIDE AIR. IF THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY BY 3 BTU/LB FOR A PERIOD OF 10 MINUTES, ENABLE THE ECONOMIZER SEQUENCE.
3. MODULATE THE OUTSIDE AIR DAMPER TO MAINTAIN THE MINIMUM MIXED AIR TEMPERATURE. IF THE OUTSIDE AIR DAMPER IS 100% OPEN AND THE MAT IS ABOVE THE MINIMUM MIXED AIR TEMPERATURE THE EVAPORATOR WILL ACT AS THE SECOND STAGE OF COOLING. SEE COOLING SEQUENCE.
4. REVERSE THE SEQUENCE UNTIL THE OUTSIDE AIR DAMPER IS MAINTAINING THE MINIMUM OUTSIDE AIR CFM.
5. IF THE MAT FALLS BELOW 38°F, INITIATE THE FREEZE PROTECTION SEQUENCE.

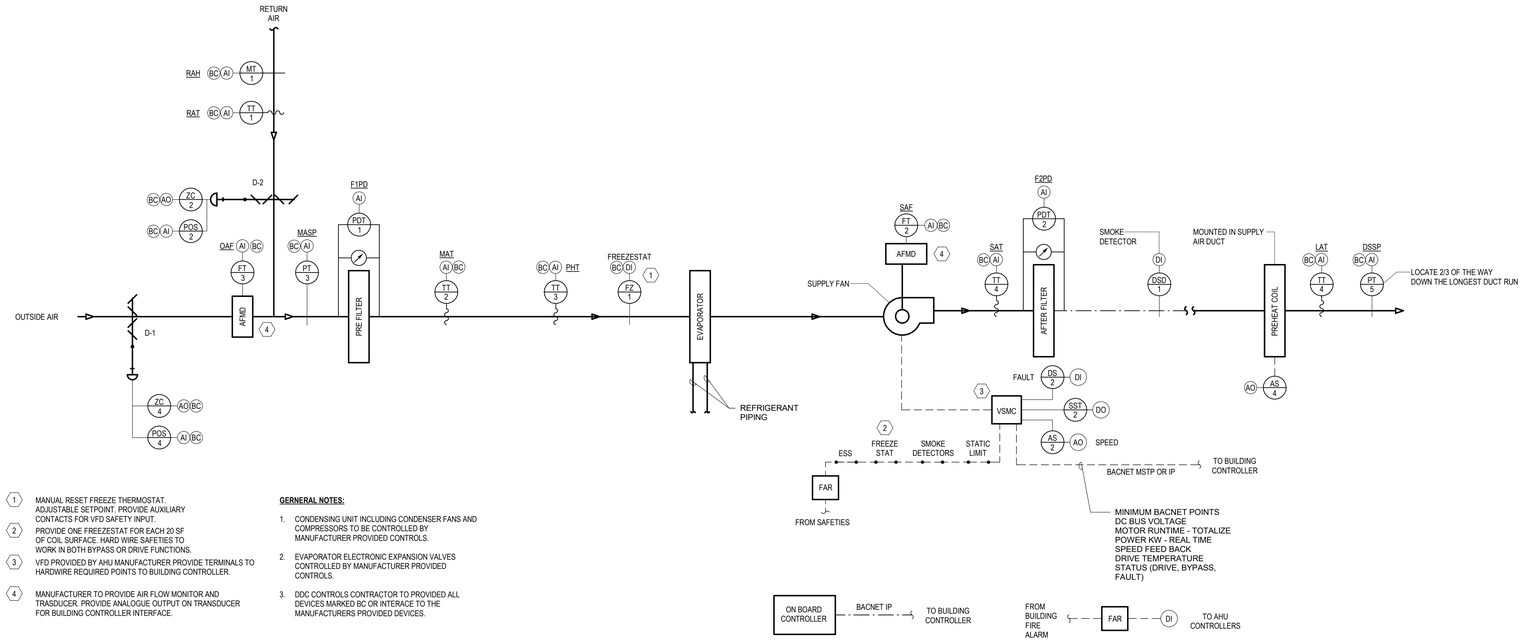
FREEZE PROTECTION SEQUENCE:
1. IF THE MAT FALLS BELOW 38°F THE FREEZE PROTECTION SEQUENCE SHALL BE ENABLED.
2. INITIATE ALARM IN THE BAS.
3. DISABLE THE AIR COOLED CONDENSING UNIT.
4. STAGE ON THE ELECTRIC PREHEAT COIL.

MORNING WARMUP SEQUENCE:
1. PROVIDE A DYNAMIC MORING WARMUP SEQUENCE.
2. USE HISTORICAL DATA AND OUTSIDE AIR TEMPERATURE TO DETERMINE WHEN THE MORNING WARMUP SEQUENCE WILL START.
3. START THE SUPPLY FAN PER THE START SEQUENCE.
4. THE OUTSIDE AIR DAMPER AND RETURN AIR DAMPER SHALL REMAIN CLOSED.
5. STAGE THE ELECTRIC PREHEAT COIL TO MAINTAIN THE MORNING WARM UP TEMPERATURE SETPOINT.
6. DYNAMICALLY RESET THE MORNING WARM UP TEMPERATURE SETPOINT BY THE OUTSIDE TEMPERATURE AND HISTORICAL DATA TO PROVIDE THE MOST EFFECTIVE TEMPERATURE FOR MORNING WARMUP.
7. WHEN THE SPACES IN THE CONTROL ZONE ARE AT OCCUPIED TEMPERATURES, DISCONTINUE MORNING WARMUP. START THE SYSTEM BY SYSTEM SCHEDULE.

UNOCCUPIED TEMPERATURE CONTROL SEQUENCE:
1. WHEN A MINIMUM OF 25% OF THE CONTROLLED SPACES ARE CALLING FOR HEATING OR WHEN ONE ZONE IS MORE THAN 10°F BELOW THE UNOCCUPIED HEATING SETPOINT, START THE MORNING WARMUP SEQUENCE. SET THE LAT TO 90°F. SHUT THE AHU DOWN WHEN ALL SPACES ARE SATISFIED.

MORNING COOL DOWN SEQUENCE:
1. PROVIDE A DYNAMIC MORNING COOL DOWN SEQUENCE.
2. USE HISTORICAL DATA AND OUTSIDE AIR TEMPERATURE TO DETERMINE WHEN THE MORNING COOL DOWN SEQUENCE WILL START.
3. START THE SUPPLY FAN PER THE START SEQUENCE.
4. ENABLE THE ECONOMIZER SEQUENCE AND MODULATE THE OUTSIDE AND RETURN AIR DAMPERS TO MAINTAIN THE AHU LAT SETPOINT FOR MORNING COOL DOWN. IF THE ECONOMIZER SEQUENCE CAN NOT MAINTAIN THE LAT SETPOINT, USE THE EVAPORATOR AS THE SECOND STAGE OF COOLING.
5. WHEN THE SPACES IN THE CONTROL ZONE ARE AT OCCUPIED TEMPERATURES, DISCONTINUE MORNING COOL DOWN. START THE SYSTEM BY SYSTEM SCHEDULE.

EXHAUST FAN INTERLOCK:
1. EXHAUST FANS INTERLOCKED TO RTU SHALL BE ENERGIZED AT ALL TIMES THAT RTU IS RUNNING, AND SHALL DE-ENERGIZE AT ALL TIMES THAT THE RTU IS NOT RUNNING. REFER TO FAN INTERLOCK SCHEDULE.



1. MANUAL RESET FREEZE THERMOSTAT. ADJUSTABLE SETPOINT. PROVIDE AUXILIARY CONTACTS FOR VFD SAFETY INPUT.
2. PROVIDE ONE FREEZESTAT FOR EACH 20 SF OF COIL SURFACE. HARD WIRE SAFETIES TO WORK IN BOTH BYPASS OR DRIVE FUNCTIONS.
3. VFD PROVIDED BY AHU MANUFACTURER PROVIDE TERMINALS TO HARDWIRE REQUIRED POINTS TO BUILDING CONTROLLER.
4. MANUFACTURER TO PROVIDE AIR FLOW MONITOR AND TRASDUCER. PROVIDE ANALOGUE OUTPUT ON TRANSDUCER FOR BUILDING CONTROLLER INTERFACE.

GERNERAL NOTES:

1. CONDENSING UNIT INCLUDING CONDENSER FANS AND COMPRESSORS TO BE CONTROLLED BY MANUFACTURER PROVIDED CONTROLS.
2. EVAPORATOR ELECTRONIC EXPANSION VALVES CONTROLLED BY MANUFACTURER PROVIDED CONTROLS.
3. DDC CONTROLS CONTRACTOR TO PROVIDED ALL DEVICES MARKED BC OR INTERACE TO THE MANUFACTURERS PROVIDED DEVICES.

CONTROLS SYMBOLS

- AS # — ANALOG SIGNAL INPUT OR OUTPUT (0-10V / 4-20 MA ONLY)
- DS # — DIGITAL SIGNAL (PULSE) (SWITCH, RELAY, ETC.)
- DSD # — DUCT SMOKE DETECTOR
- FT # — FLOW TRANSMITTER
- FZ # — FREEZESTAT
- IT # — CURRENT TRANSMITTER (STATUS)
- MT # — HUMIDITY SENSOR
- POS # — POSITION SENSOR
- PT # — PRESSURE TRANSMITTER
- SST # — START/STOP (ENABLE)
- TT # — TEMPERATURE SENSOR
- ZC # — DAMPER/VALVE ACTUATOR (0-10V / 4-20 MA ONLY)
- HS — HAND SWITCH
- ECC — CONNECTION TO ECC/BAS
- AFMD — AIRFLOW MEASURING DEVICE
- FAR — FIRE ALARM RELAY CONTROLLED BY FIRE SYSTEM N.C.
- SD — SMOKE DAMPER
- PDT # — PRESSURE DIFFERENTIAL TRANSMITTER

FAN INTERLOCK SCHEDULE

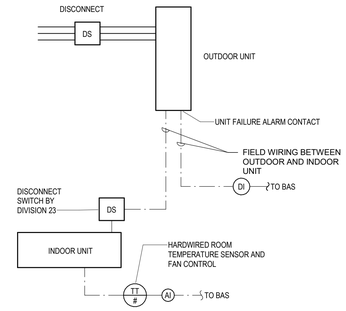
FAN NO.	FAN SERVICE	FAN INTERLOCKED TO UNIT	NOTES
EF-1-1	EXAM / ADMIN	RTU-1-1	NONE
EF-1-2	IMAGING	RTU-1-2	NONE
EF-ISO	ISOLATION EXAM	RTU-1-1	NONE
EF-MG	MEDICAL GAS	NONE	1
EF-PURGE	MRI EMERGENCY PURGE	NONE	2

NOTES:
1. EF-MG SERVES THE MEDICAL GAS ROOM AND HAS NO UNIT INTERLOCK.
2. EF-PURGE SERVES THE MRI SPACE IN THE EVENT OF EMERGENCY PURGE AND HAS NO UNIT INTERLOCK.

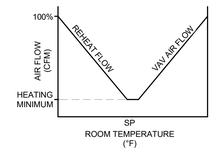
1 RTU CONTROL SCHEMATIC AND SEQUENCE OF OPERATION
12" = 1'-0"

DUCTLESS SPLIT SYSTEMS SEQUENCE OF OPERATIONS:

1. WHEN THE UNIT-MOUNTED INDOOR THERMOSTAT CALLS FOR COOLING, THE OUTDOOR AND INDOOR UNITS SHALL BE ENERGIZED. UNITS SHALL DE-ENERGIZED UPON REACHING 5 DEG. F (ADJ.) BELOW THE USER-DEFINED TEMPERATURE SETPOINT.
2. DEFROST CYCLE SHALL OPERATE PER MANUFACTURER'S RECOMMENDATION.
3. UPON RECEIPT OF ANY ALARM, BOTH THE INDOOR AND OUTDOOR UNITS SHALL BE DE-ENERGIZED AND AN ALARM SENT TO THE LOCAL BAS PANEL.



2 DUCTLESS SPLIT SYSTEM CONTROLS
NOT TO SCALE

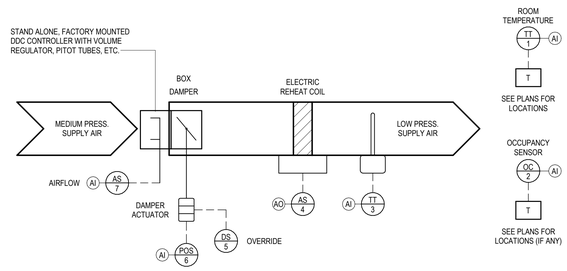


VAV BOX CONTROL SEQUENCE OF OPERATION:

1. DURING OCCUPIED OPERATION, THE TERMINAL BOX CONTROLLER SHALL MODULATE THE VOLUME DAMPER TO MAINTAIN THE SPACE SETPOINT.
2. UPON FALL IN SPACE TEMPERATURE BELOW 68°F, THE VAV DAMPER WILL MODULATE TO ITS MINIMUM POSITION. UPON FURTHER DROP IN SPACE TEMPERATURE, THE ELECTRIC REHEAT WILL STAGE ON TO MAINTAIN THE SPACE SETPOINT ± 1° F.
3. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.

CAV BOX CONTROL SEQUENCE OF OPERATION:

1. DURING OCCUPIED OPERATION, THE TERMINAL BOX CONTROLLER SHALL THE VOLUME DAMPER TO 100% TO MAINTAIN THE SCHEDULED SUPPLY AIR VOLUME.
2. DURING UNOCCUPIED OPERATION, THE TERMINAL BOX CONTROLLER SHALL MODULATE THE VOLUME DAMPER TO THE SPACE MINIMUM UNOCCUPIED AIR CHANGE RATE.
3. UPON FALL IN SPACE TEMPERATURE BELOW 68°F, THE ELECTRIC REHEAT WILL STAGE ON TO MAINTAIN THE SPACE SETPOINT ± 1° F.
4. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.



NOTES:
1. PROVIDE ONE LINE VOLTAGE TO 24V TRANSFORMER PER TERMINAL BOX TO POWER CONTROLLER.

3 VAV AND CV AIR TERMINAL UNIT WITH ELECTRIC REHEAT CONTROL DIAGRAM
NOT TO SCALE

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PROJECT NUMBER: 3024097.00 HDG PROJECT NUMBER: 24020

Δ	DATE	DESCRIPTION

SOUTH CAROLINA HARRELL DESIGN GROUP, PC No. 1202713 CERTIFICATE OF AUTHORIZATION

NOT FOR CONSTRUCTION

ORIG SUBMISSION: 08.22.2025
CURRENT:

SHEET TITLE AND NUMBER:

M7.01

CONTROLS SCHEMATICS