

1 MECHANICAL OVERALL PLAN
SCALE: 1" = 40'-0"



DA	NEG	10/13/23	ISSUE FOR CONSTRUCTION	EX21022
NO.	BY	DATE	REVISIONS	CLIENT NO.



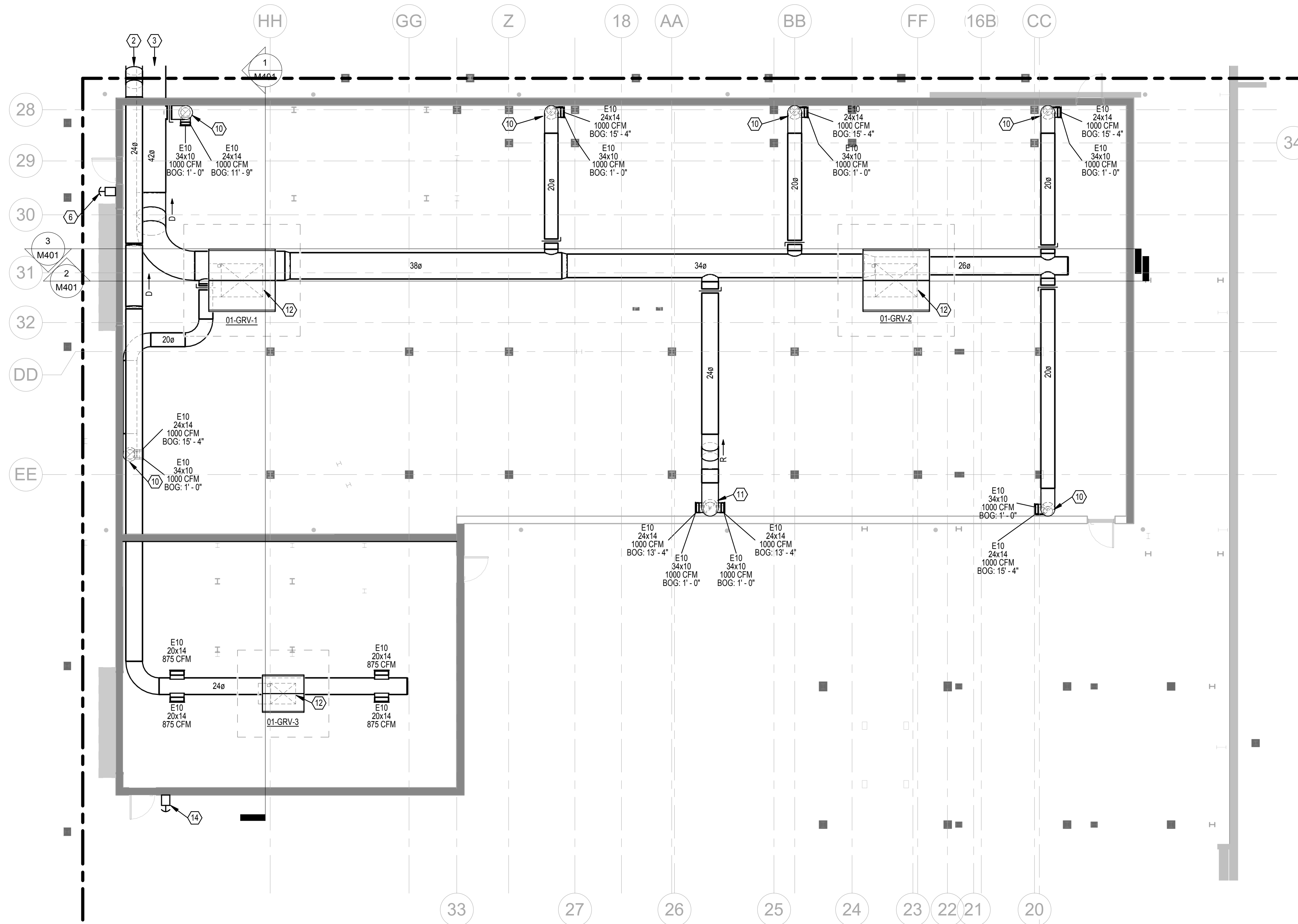
MONTAUK
RENEWABLES PILOT BLDG
MECHANICAL OVERALL PLAN

DRAWN: BMW	DRAWN DATE: 10/13/23	CHECKED: TMK	CHKD DATE: 10/13/23	APPROVED: -	APPR DATE: -
SCALE: AS NOTED	DRAWING NUMBER: M100			REV: A	

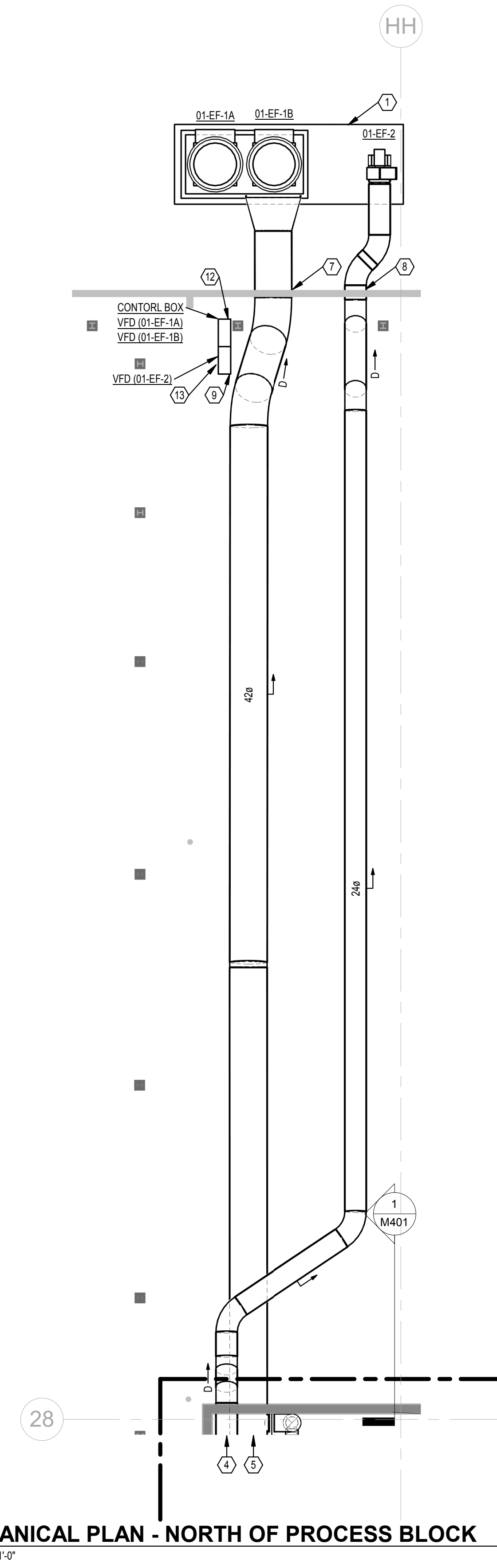


PLAN NOTES

1. INSTALL NEW FANS 01-EF-1 AND 01-EF-2 ON CONCRETE PAD. REFER TO NEXUS DRAWINGS FOR PAD DETAIL.
2. 24" EXHAUST DUCT. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION.
3. 42" EXHAUST DUCT. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION.
4. 24" EXHAUST DUCT. REFER TO VIEW 1 ON THIS SHEET FOR CONTINUATION.
5. 42" EXHAUST DUCT. REFER TO VIEW 1 ON THIS SHEET FOR CONTINUATION.
6. 01-EF-1A AND 01-EF-1B EMERGENCY SHUTOFF.
7. 42" EXHAUST DUCTWORK THROUGH WALL. SEAL WALL PENETRATION WEATHERTIGHT.
8. 24" EXHAUST DUCTWORK THROUGH WALL. SEAL WALL PENETRATION WEATHERTIGHT.
9. PROVIDE NEW UNISTRUT MOUNTING FOR NEW CONTROL PANELS AND VFDS.
10. 20" EXHAUST BRANCH DUCT DOWN. TRANSITION TO 14" DUCT AFTER UPPER GRILLE. DOWN TO LOWER GRILLES. COORDINATE DROP LOCATION WITH ALL TRADES.
11. 24" EXHAUST BRANCH DUCT DOWN. TRANSITION TO 20" DUCT AFTER UPPER GRILLES. DOWN TO LOWER GRILLES. COORDINATE DROP LOCATION WITH ALL TRADES.
12. 1-CONTROL INTEGRAL VFD CABINET FOR THE PROCESS ROOM WITH MAIN 480V DISCONNECT SWITCH
 - A. CABINET SHOULD BE NEMA 12 AND INCLUDE STEP DOWN TRANSFORMERS AS REQUIRED TO SUPPLY CONTROL POWER AND POWER TO THE ROOM GRAVITY VENTILATORS
 - B. LEAD LAG EXTERNAL FAN SELECTION SWITCH, FAN H-O-A SELECTION SWITCHES, AND FAN RUNNING INDICATOR LIGHTS
 - C. PROVIDE REMOTE RUN/FAULT CONTROL AND INDICATION CONTACTS FOR INTERFACE TO PLANT PLC CONTROL SYSTEM
13. 1-CONTROL INTEGRAL VFD CABINET FOR THE HOT OIL ROOM WITH MAIN 480V DISCONNECT SWITCH
 - A. CABINET SHOULD BE NEMA 12 AND INCLUDE STEP DOWN TRANSFORMERS AS REQUIRED TO SUPPLY CONTROL POWER AND POWER TO THE ROOM GRAVITY VENTILATORS
 - B. FAN H-O-A SELECTION SWITCH, AND FAN RUNNING INDICATOR LIGHT
 - C. PROVIDE REMOTE RUN/FAULT CONTROL AND INDICATION CONTACTS FOR INTERFACE TO PLANT PLC CONTROL SYSTEM
14. 01-EF-2 EMERGENCY SHUTOFF.



1 MECHANICAL PLAN - PROCESS BLOCK / HOT OIL ROOM
SCALE: 1/8" = 1'-0"



2 MECHANICAL PLAN - NORTH OF PROCESS BLOCK
SCALE: 1/8" = 1'-0"



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MONTAUK
RENEWABLES PILOT BLDG
MECH PLAN-PROCESS/HOT OIL

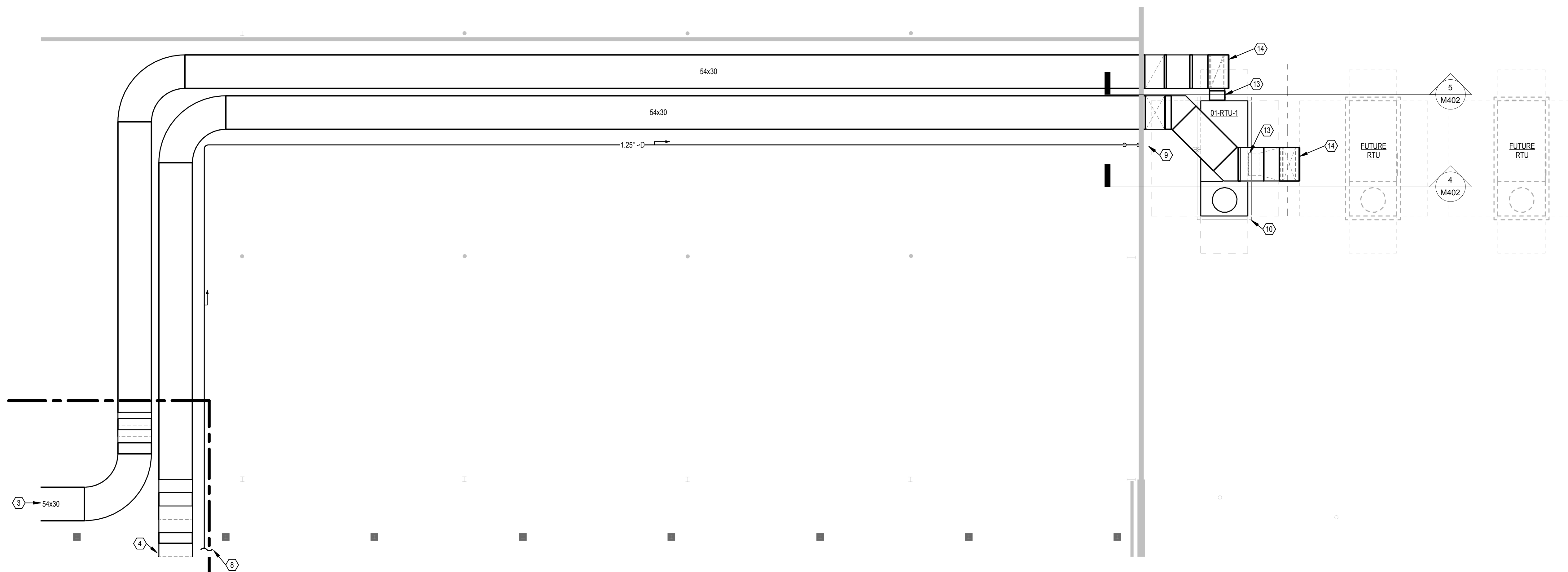
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BMW	10/13/23	TMK	10/13/23	-	-
SCALE:	DRAWING NUMBER:	PROJECT NO.:		REV.:	
AS NOTED	M101	MON2201		A	



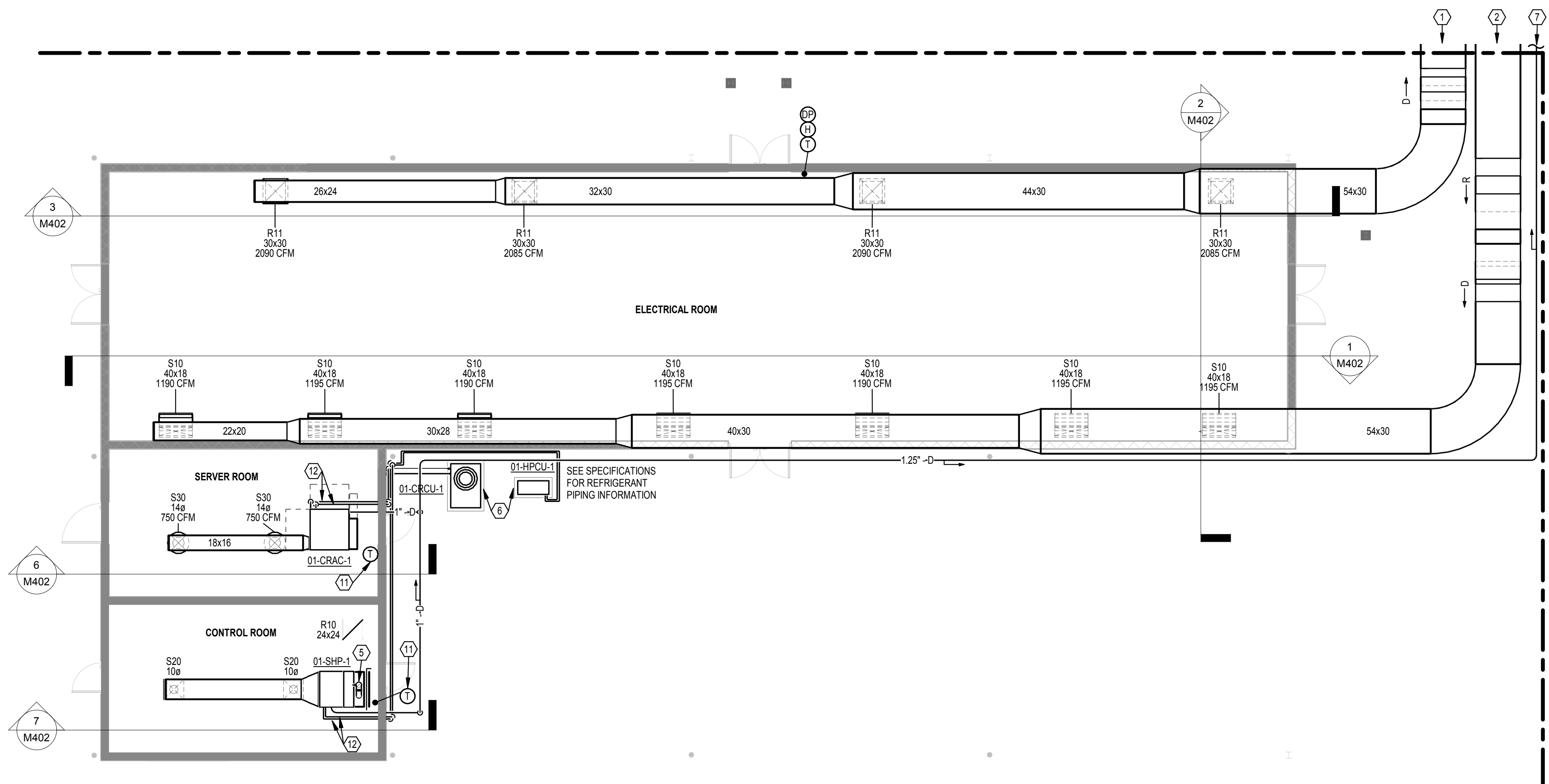
PROJECT NO. 2023-07014

PLAN NOTES

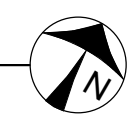
1. 54" X 30" RETURN DUCT. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION.
2. 54" X 30" SUPPLY DUCT. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION.
3. 54" X 30" RETURN DUCT. REFER TO VIEW 1 ON THIS SHEET FOR CONTINUATION.
4. 54" X 30" SUPPLY DUCT. REFER TO VIEW 1 ON THIS SHEET FOR CONTINUATION.
5. 6" OUTSIDE AIR DUCT UP THROUGH ROOF. BALANCE TO 50 CFM.
6. 4" CONCRETE HOUSEKEEPING PAD.
7. 1.25" CONDENSATE DRAIN. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION. PROVIDE INSULATION TO CONDENSATE LINE.
8. 1.25" CONDENSATE DRAIN. REFER TO VIEW 1 ON THIS SHEET FOR CONTINUATION. PROVIDE INSULATION TO CONDENSATE LINE.
9. 1.25" DRAIN THROUGH WALL. SEAL WALL PENETRATION WEATHERTIGHT. TERMINATE OVER SPLASH BLOCK WITH 90 DEGREE ELBOW.
10. INSTALL 01-RTU-1 ON CONCRETE PAD. REFER TO NEXUS DRAWINGS FOR PAD DETAIL.
11. FACTORY FURNISHED CONTROLLER.
12. PROVIDE REFRIGERANT PIPING, DEVICES, AND ACCESSORIES PER MANUFACTURERS RECOMMENDATIONS.
13. PROVIDE BACKDRAFT DAMPER IN DUCTWORK CONNECTION TO RTU.
14. TEE FITTING SHALL BE CAPPED AND INSULATED FOR FUTURE CONNECTION.



2 MECHANICAL PLAN - ELECTRICAL ROOM / SERVER ROOM / CONTROL ROOM
SCALE: 1/8" = 1'-0"



1 MECHANICAL PLAN - ELECTRICAL ROOM / SERVER ROOM / CONTROL ROOM
SCALE: 1/8" = 1'-0"



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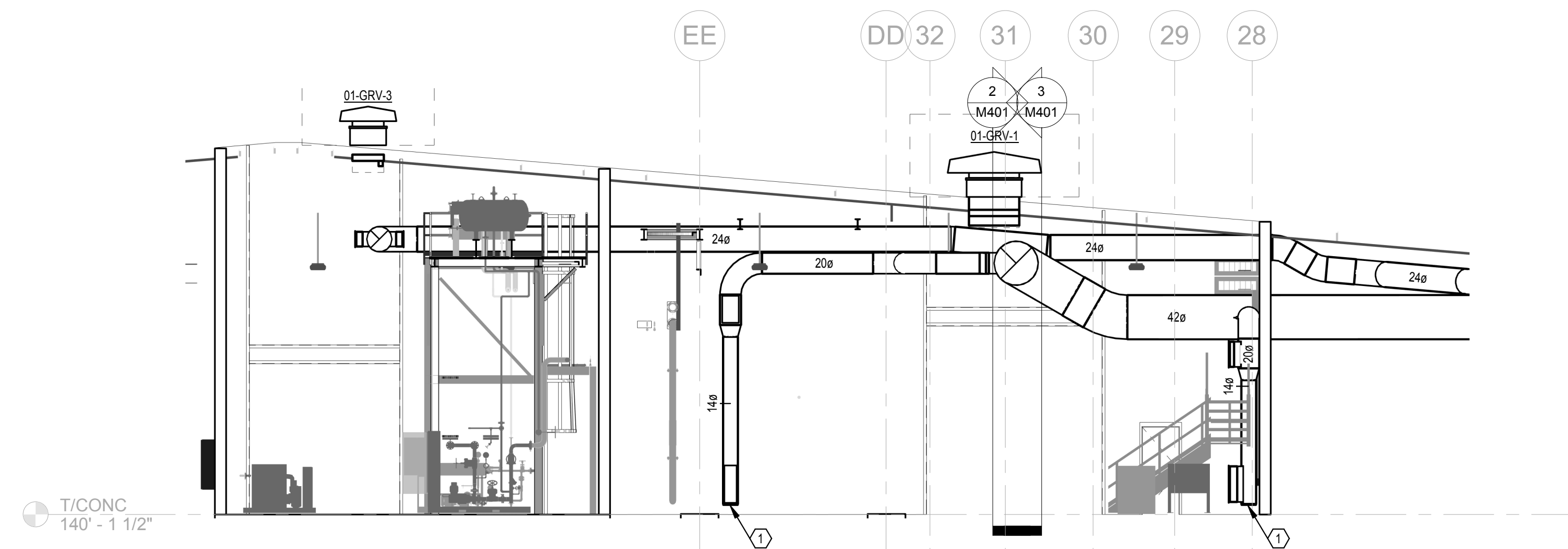
MONTAUK
RENEWABLES PILOT BLDG
MECH PLAN-ELEC/SERVER/CNTRL

DRAWN:	DRAWN DATE:	CHECKED:	CHKD DATE:	APPROVED:	APPR DATE:
BMW	10/13/23	TMK	10/13/23	-	-
SCALE:	DRAWING NUMBER:			REV:	
AS NOTED	M102			A	
NEXUS PROJ NO:	MON2201				

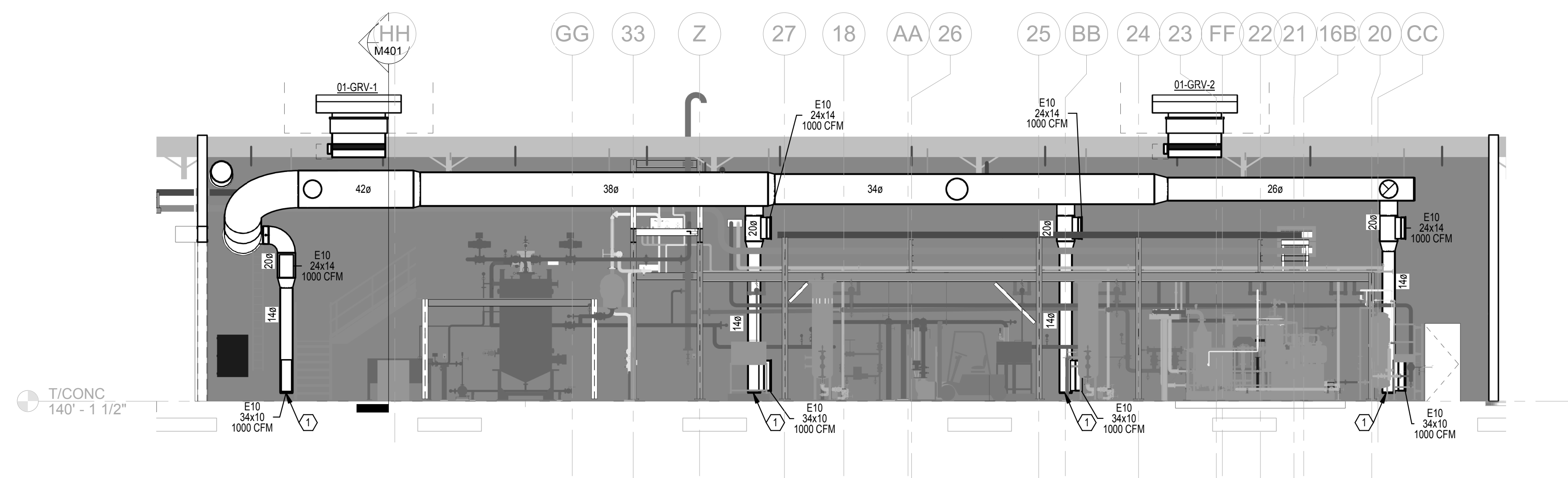


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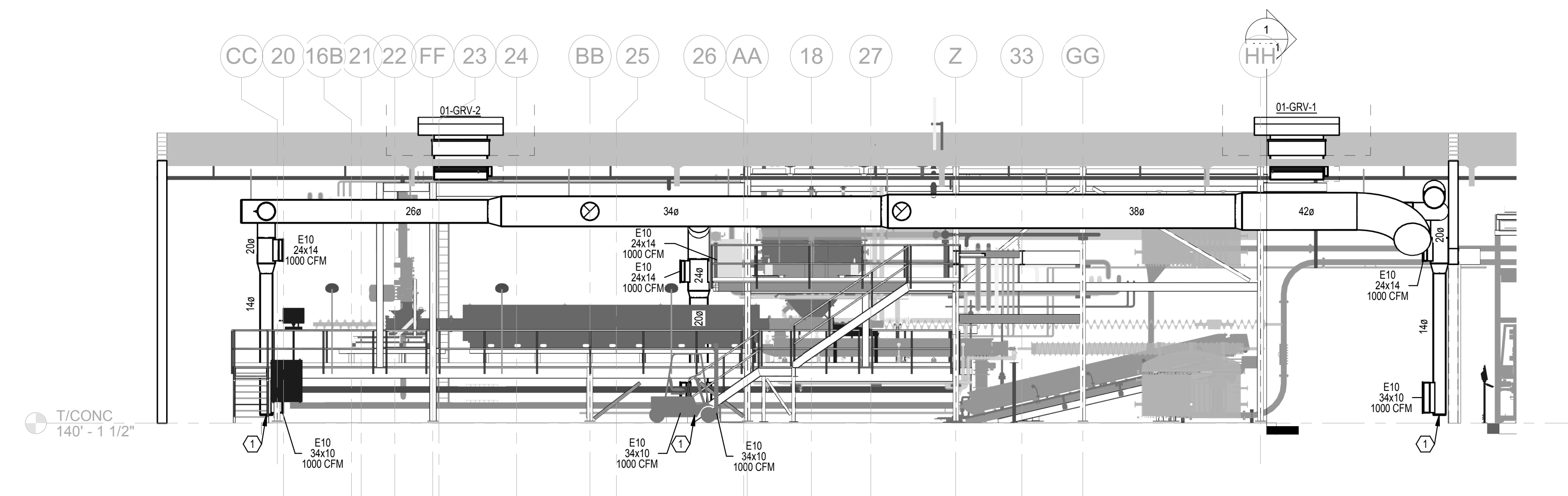
PLAN NOTES
 1. PROVIDE FLOOR STAND TO SUPPORT DUCTWORK.



SECTION 1 - PROCESS BLOCK / HOT OIL ROOM
 SCALE: 1/8" = 1'-0"



SECTION 2 - PROCESS BLOCK
 SCALE: 1/8" = 1'-0"



SECTION 3 - PROCESS BLOCK
 SCALE: 1/8" = 1'-0"



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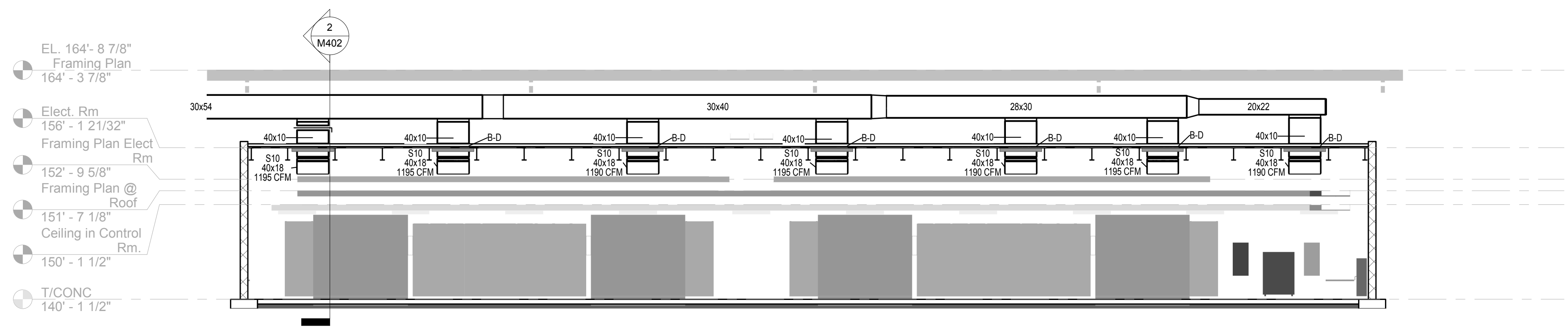
MONTAUK
 RENEWABLES PILOT BLDG
 SECTIONS AND ENLARGED VIEWS

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AS NOTED	M401		A		
NEXUS PROJ NO:	MON2201				

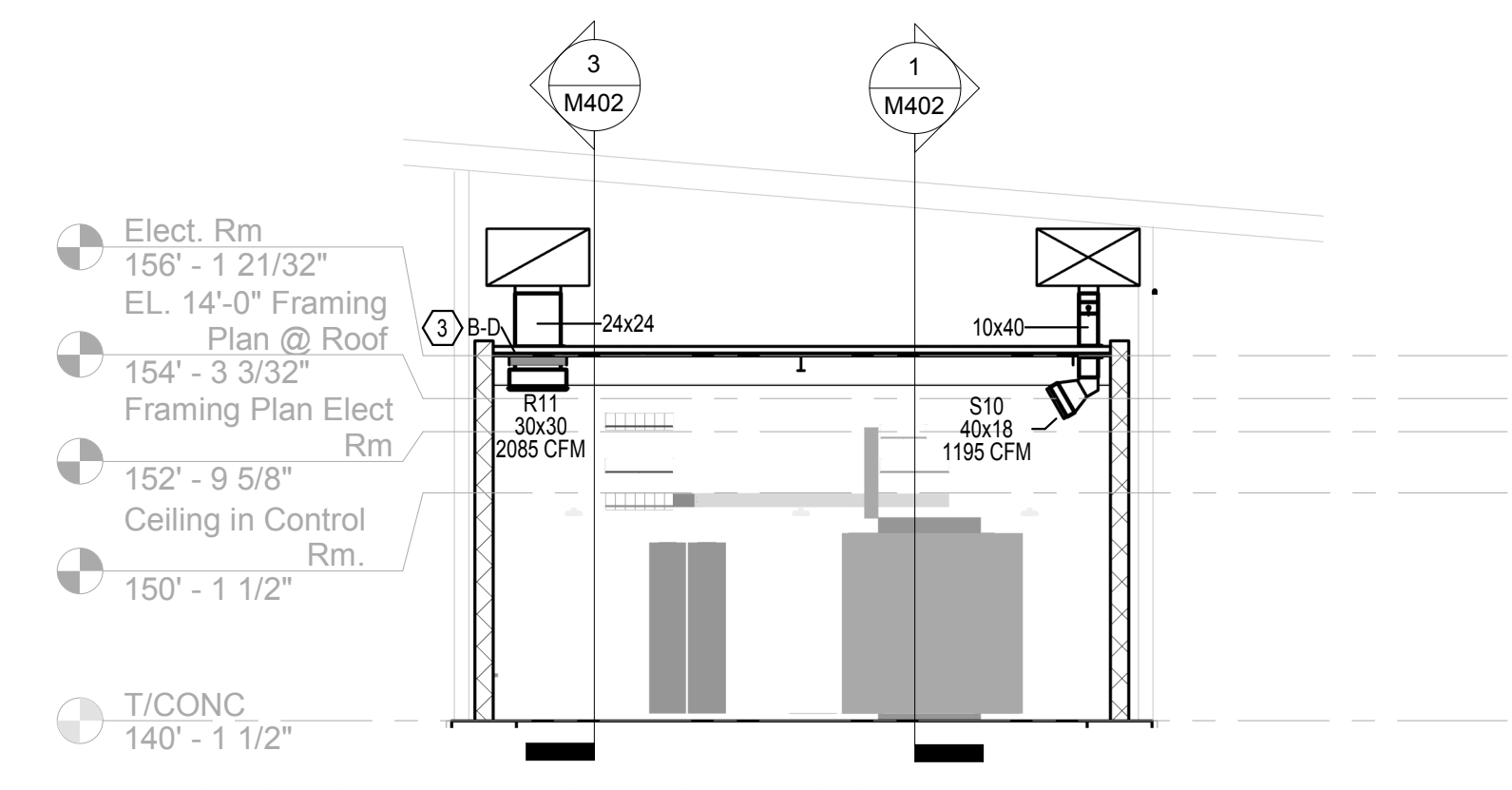


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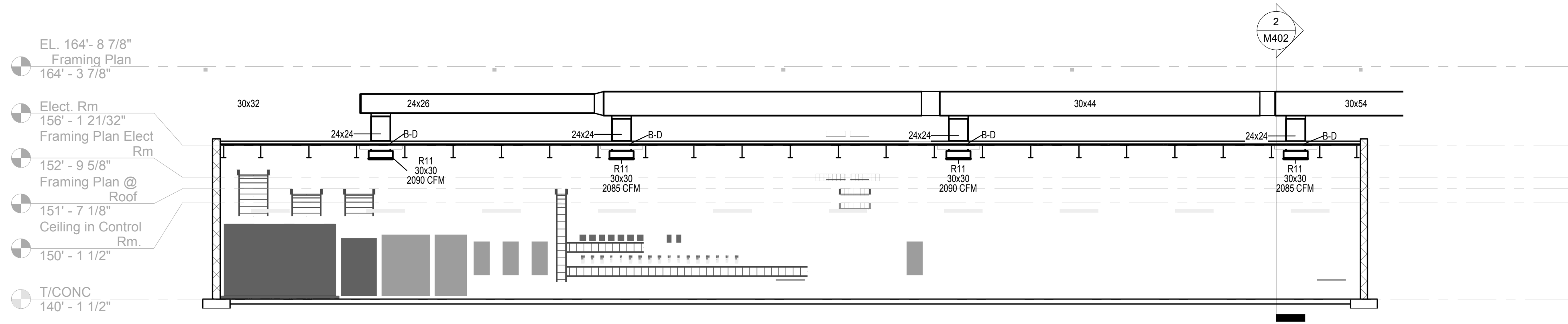
- PLAN NOTES**
- CAP FOR CONNECTION OF FUTURE RTU SUPPLY DUCTWORK.
 - CAP FOR CONNECTION OF FUTURE RTU RETURN DUCTWORK.
 - FIRE DAMPER UL RATING SHALL MATCH UL RATING OF THE CEILING.



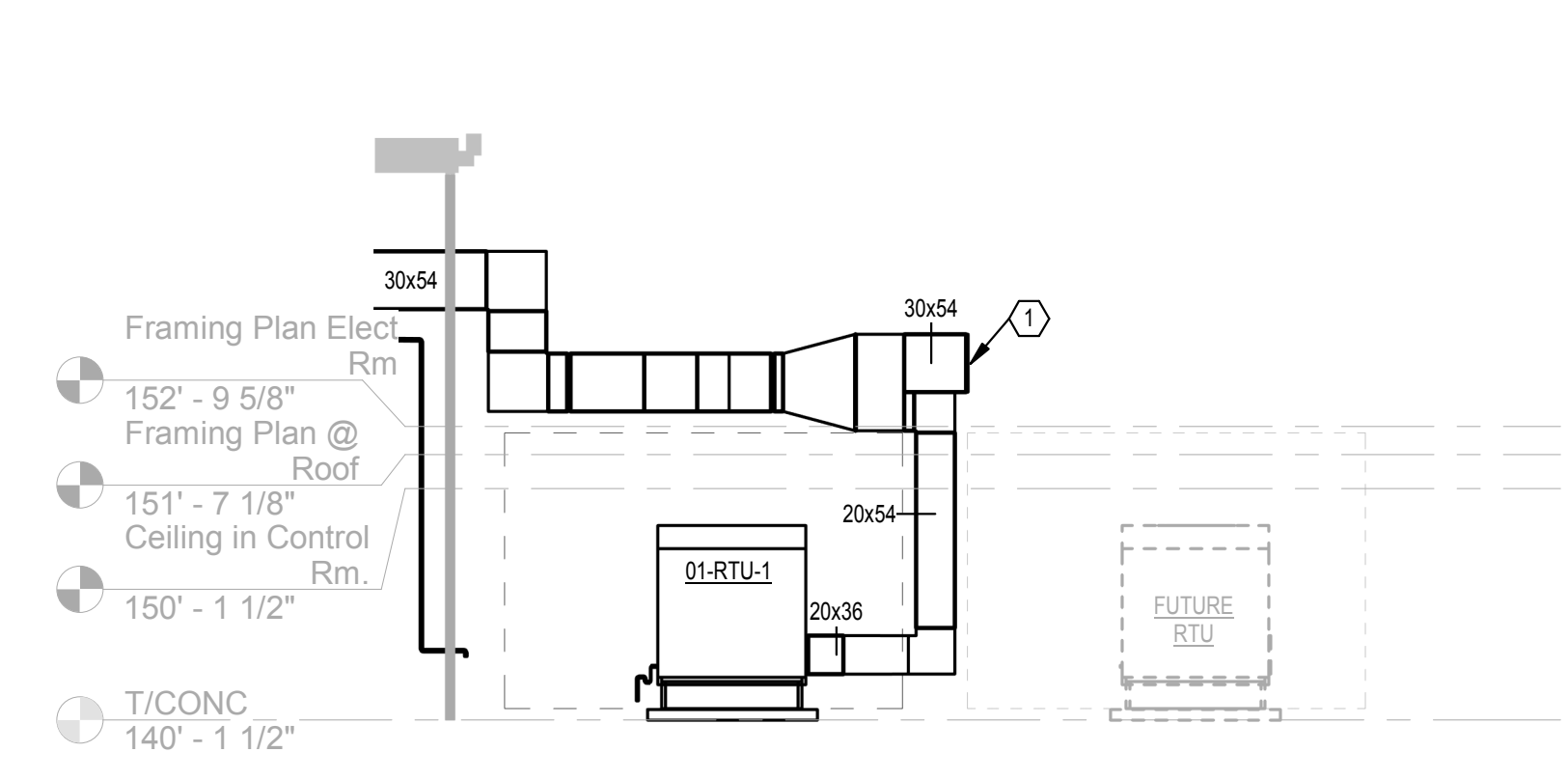
1 SECTION 1 - ELECTRICAL ROOM
SCALE: 1/8" = 1'-0"



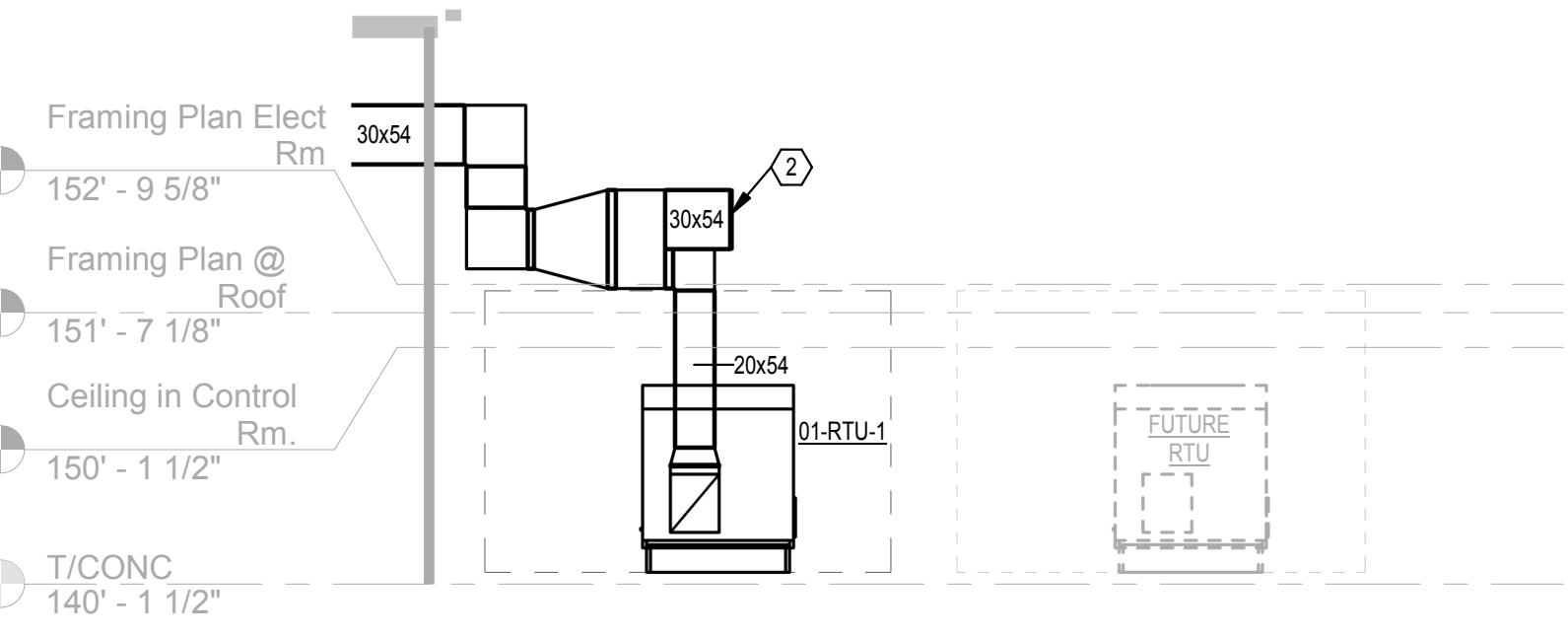
2 SECTION 2 - ELECTRICAL ROOM
SCALE: 1/8" = 1'-0"



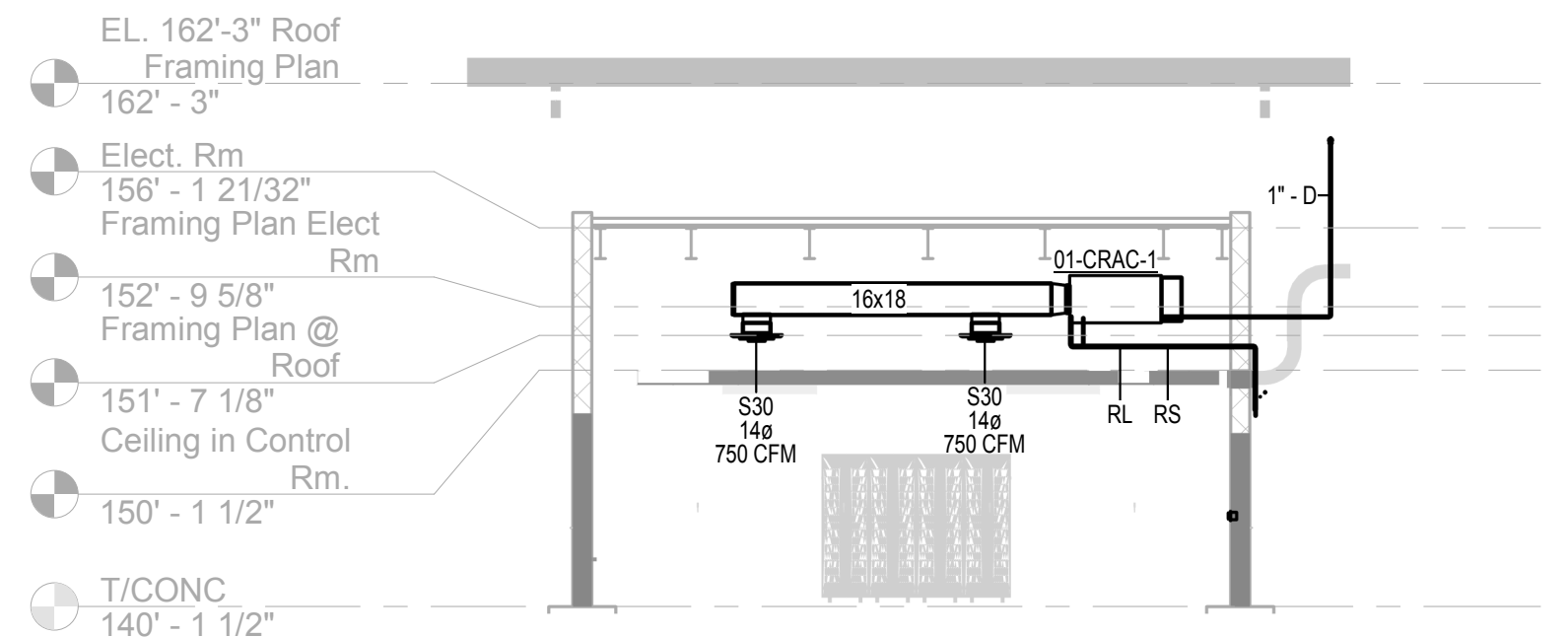
3 SECTION 3 - ELECTRICAL ROOM
SCALE: 1/8" = 1'-0"



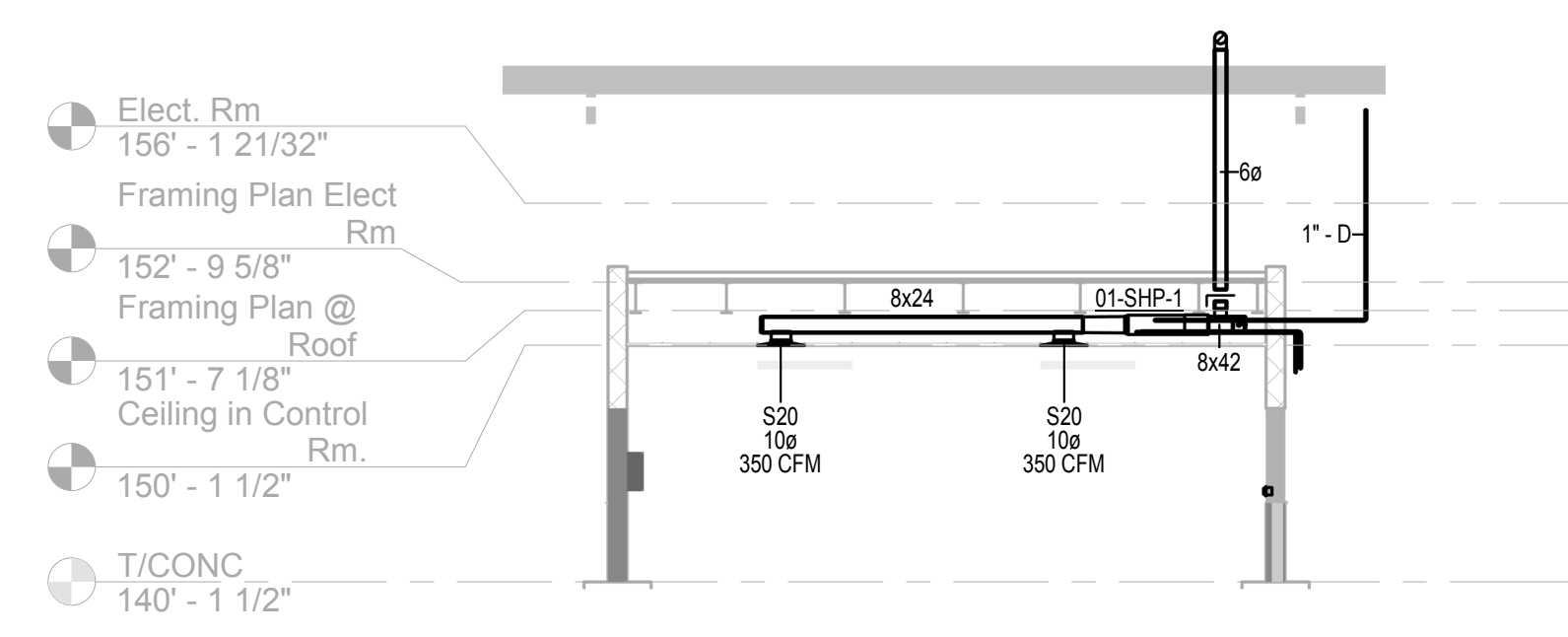
4 SECTION 4 - 01-RTU-1 SUPPLY DUCTWORK
SCALE: 1/8" = 1'-0"



5 SECTION 5 - 01-RTU-1 RETURN DUCTWORK
SCALE: 1/8" = 1'-0"



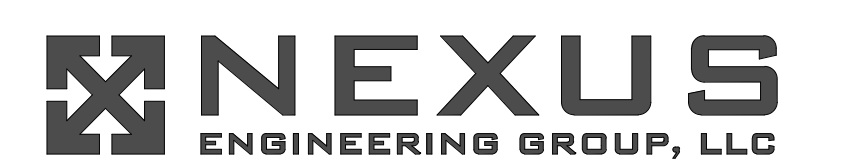
6 SECTION 6 - SERVER ROOM
SCALE: 1/8" = 1'-0"



7 SECTION 7 - CONTROL ROOM
SCALE: 1/8" = 1'-0"



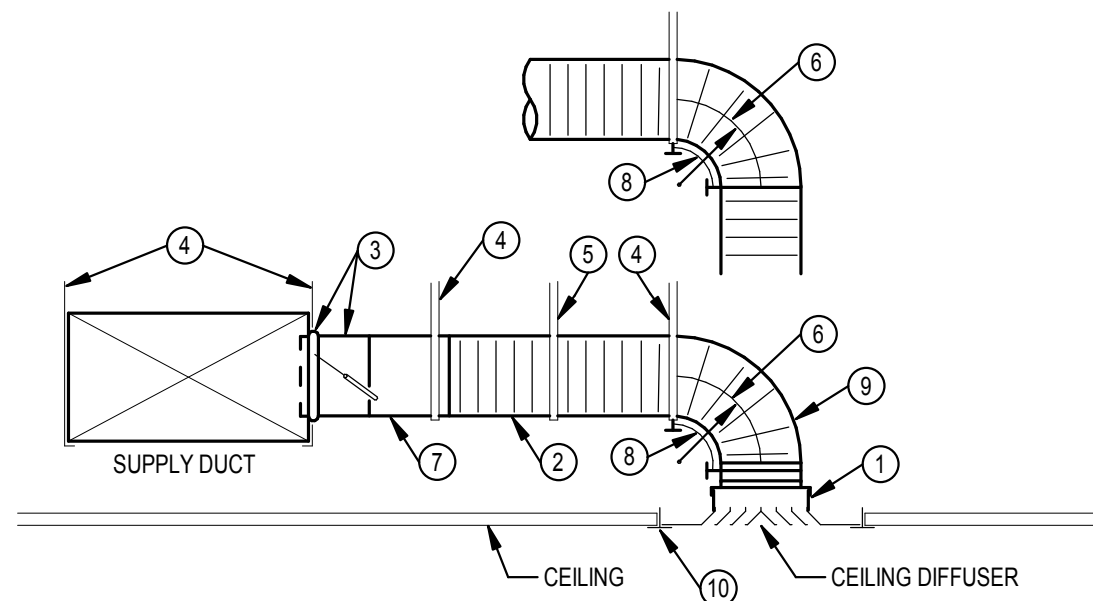
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MONTAUK
RENEWABLES PILOT BLDG
SECTIONS AND ENLARGED VIEWS

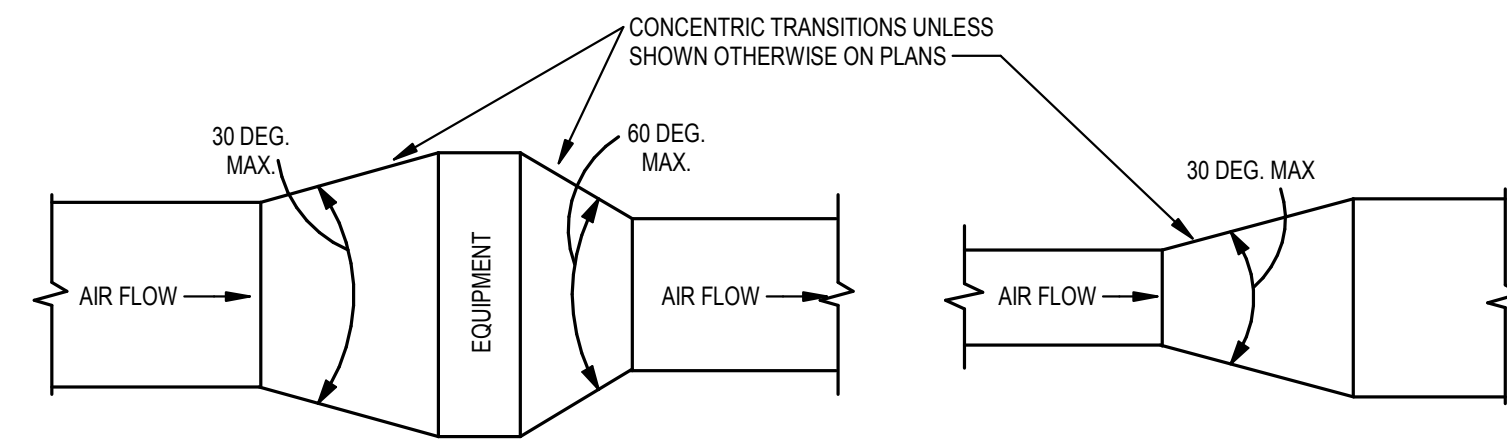
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BMW	10/13/23	TMK	10/13/23	-	-
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AS NOTED	NEXUS PROJ NO:	MON2201		PROJECT NO.	2023-07014





NOTES

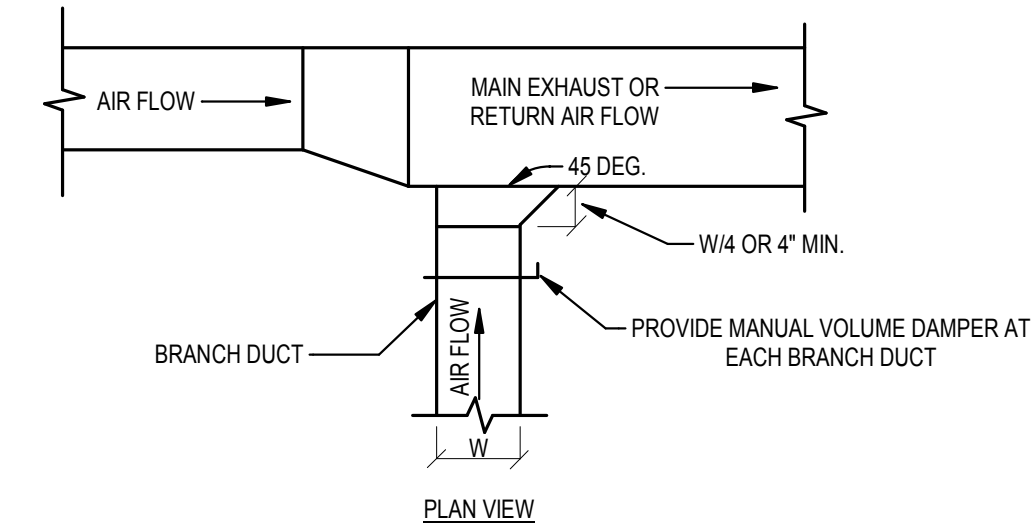
- SQUARE-TO-ROUND ADAPTER IF DIFFUSER NECK IS SQUARE. CONNECT ADAPTOR TO DIFFUSER. SEAL TO AIR DEVICE. SEAL CLASS A. INSULATE ADAPTOR AND EXPOSED BACKSIDE SURFACES OF AIR DEVICE.
- INSULATED FLEXIBLE DUCT SAME DIAMETER AS BRANCH DUCT (Ø). 9 FT. MAXIMUM TOTAL LENGTH PER AIR DEVICE. STRETCH FLEXIBLE DUCT TO AT LEAST 90% OF FULLY EXTENDED LENGTH.
- SPIN-IN BRANCH TAP FITTING, STRAIGHT SIDE WITH MANUAL DAMPER. DAMPER SHAFT IN HORIZONTAL. INTEGRAL INSULATION GUARD SLEEVE REQUIRED FOR TAP FITTING TO MAIN DUCT WITH INTERNAL INSULATION, AND EXTENDED DAMPER SHAFT AND HANDLE WITH STAND-OFF TO ACCOMMODATE EXTERNAL INSULATION.
- DUCT STRAP HANGER. ATTACH TO STRUCTURE.
- STRAP HANGER REQUIRED IF LENGTH OF FLEXIBLE DUCT IS LONGER THAN 2 FT.
- MINIMUM CENTERLINE RADIUS EQUAL TO DUCT DIAMETER.
- ROUND SHEET METAL BRANCH DUCT, SAME SIZE AS DIFFUSER INLET UNLESS NOTED OTHERWISE.
- FLEXIBLE DUCT ELBOW SUPPORT, INSTALLED WITH NYLON BANDING PER MANUFACTURER'S INSTRUCTIONS.
- RADIUS'D SHEET METAL ELBOW MAY BE USED IN LIEU OF A FLEXIBLE ELBOW SUPPORT WHEN CONNECTED DIRECTLY TO AIR DEVICE.
- CEILING T-BAR SUPPORT (FOR LAY-IN APPLICATIONS). COORDINATE AND VERIFY T-BAR TYPE FOR COMPATIBILITY WITH DIFFUSER.



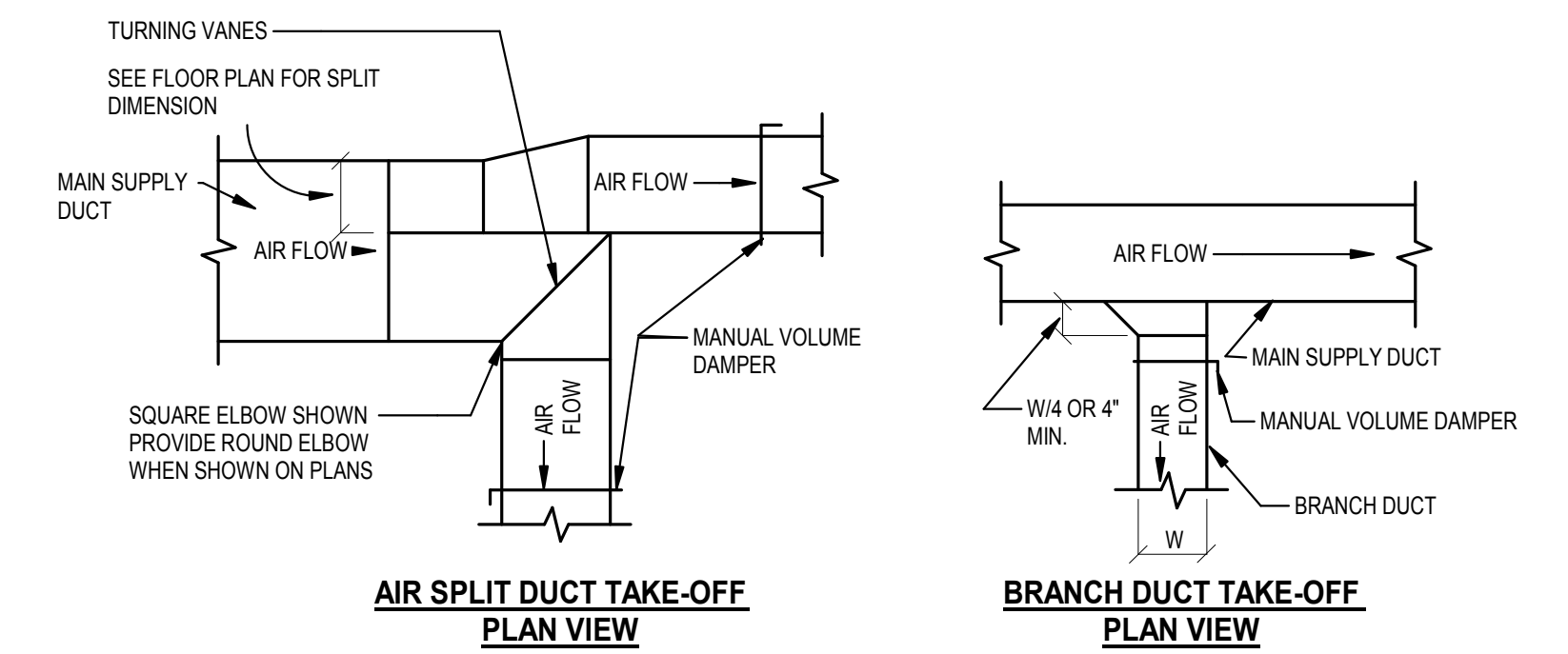
TYPICAL DUCTWORK TRANSITION WITH EQUIPMENT MOUNTED IN DUCT PLAN OR SIDE VIEW

TYPICAL DUCTWORK TRANSITION PLAN OR SIDE VIEW

- NOTE:**
 A. UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.
 B. TRANSITION ANGLES IN AND OUT OF FANS SHALL BE 50% OF THOSE SHOWN ABOVE.



EXHAUST OR RETURN BRANCH DUCTWORK



AIR SPLIT DUCT TAKE-OFF PLAN VIEW

BRANCH DUCT TAKE-OFF PLAN VIEW

THE BRANCH DUCT TAKE-OFF MAY BE USED FOR UP TO 15% OF THE MAIN DUCT CFM, AND UP TO 40% WHEN THE MAIN DUCT VELOCITY IS 1000 FPM OR LESS. THE AIR SPLIT DUCT TAKE-OFF SHALL BE USED IN ALL OTHER CASES.

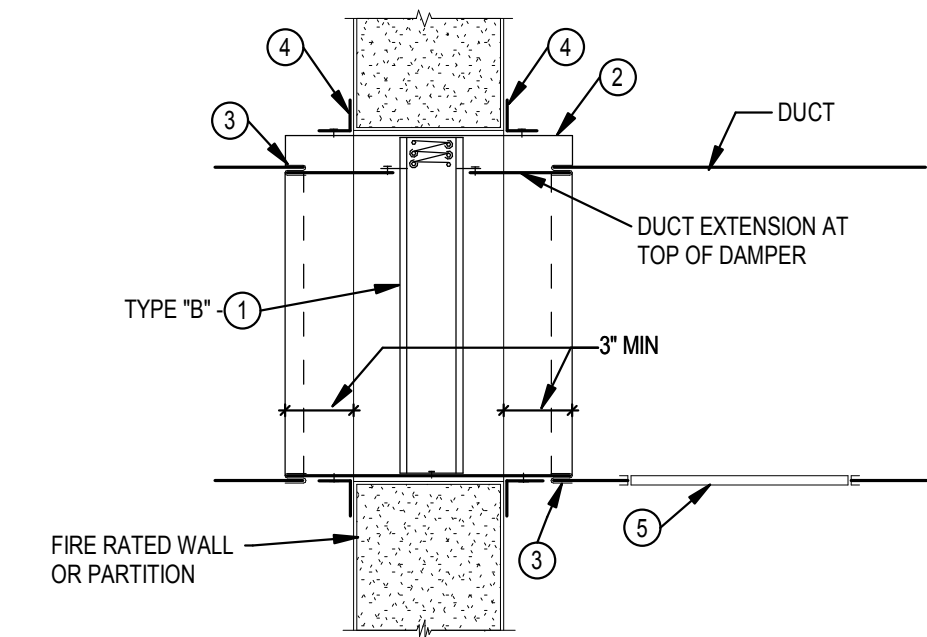
SUPPLY DUCTWORK BRANCH TAKE-OFFS

4 CEILING DIFFUSER DUCT CONNECTION

3 DUCTWORK TRANSITIONS

2 EXHAUST OR RETURN BRANCH DUCTWORK

1 SUPPLY DUCTWORK BRANCH TAKE-OFFS



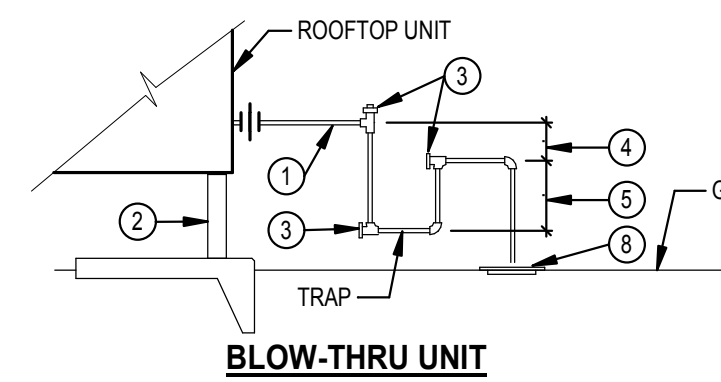
GENERAL NOTES

- FIRE DAMPERS SHALL BE UL LABELED.
- INSTALLATION OF FIRE DAMPERS AND ACCESSORIES SHALL CONFORM TO NFPA 90A, SMACNA AND MANUFACTURER'S INSTRUCTIONS.
- DETAILS SHOW INSTALLATION OF FIRE DAMPER IN WALL. DAMPER INSTALLATION IN FLOOR SIMILAR. COORDINATE REQUIRED ACCESS LOCATIONS.
- INSULATE RETAINING ANGLES FOR SYSTEMS REQUIRED TO BE INSULATED.

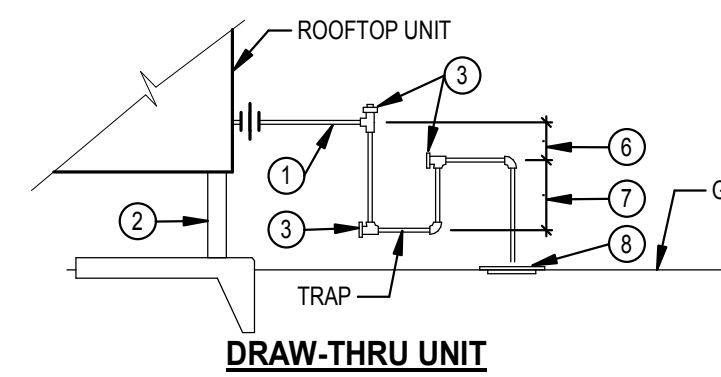
NOTES

- FIRE DAMPER, FOLDED BLADE CURTAIN TYPE, EXCEPT AS NOTED. VERTICAL MOUNT, GRAVITY DROP; HORIZONTAL MOUNT, SPRING LOADED TO CLOSE. REFER TO SPECS FOR VELOCITY LIMITATIONS OF EACH TYPE. REFER TO DRAWINGS FOR STATIC OR DYNAMIC REQUIREMENTS.
 - TYPE "B" - BLADES STORED OUT OF AIR STREAM. RECTANGULAR, ROUND OR OVAL DUCT CONNECTION.
- SHEET METAL WALL SLEEVE, SAME MATERIAL AS DUCT (EXCEPT GALVANIZED SHEET METAL FOR FIBERGLASS DUCT), SHEET METAL GAUGE PER SMACNA. USE EXTENDED HEAVY GAUGE SLEEVES WHEN INSTALLED CONDITION REQUIRES.
- DUCT/SLEEVE CONNECTION, BREAKAWAY TYPE SHOWN. CONNECTION MAY BE RIGID TYPE IF ALLOWED BY CODE AUTHORITY.
- RETAINING ANGLE ALL FOUR SIDES, GAUGE PER SMACNA. 1" MINIMUM OVERLAP OF WALL OPENING. LONGER LEG MAY BE REQUIRED TO ATTAIN REQUIRED OVERLAP. BOLT, SCREW OR TACK WELD TO WALL SLEEVE. SPACING OF FASTENERS PER SMACNA.
- DUCT ACCESS PANEL OR DOOR. REFER TO SPECIFICATIONS.

8 FIRE DAMPER TYPE "B"



BLOW-THRU UNIT

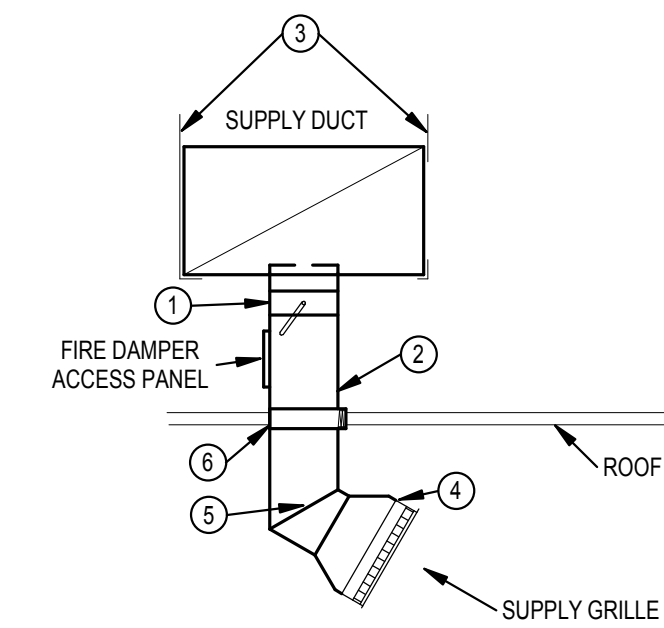


DRAW-THRU UNIT

NOTES

- DRAIN PIPE SAME SIZE AS UNIT DRAIN PAN CONNECTION.
- UNIT ROOF CURB. VERIFY REQUIRED HEIGHT FOR DRAIN PIPE AND TRAP INSTALLATION. PROVIDE CURB OF ADEQUATE HEIGHT TO ATTAIN REQUIRED DIMENSION.
- TEE WITH CLEANOUT PLUG.
- 1" CENTERLINE - TO - CENTERLINE DIMENSION.
- CENTERLINE - TO - CENTERLINE DIMENSION NOT LESS THAN SUPPLY FAN T.S.P. (INCH W.G.) + 12 INCH.
- CENTERLINE - TO - CENTERLINE DIMENSION NOT LESS THAN SUPPLY FAN T.S.P. (IN W.G.) + 1 INCH.
- CENTERLINE - TO - CENTERLINE DIMENSION SHALL BE 50% OF DIMENSION FOUND IN (6) ABOVE.
- SPLASH BLOCK.

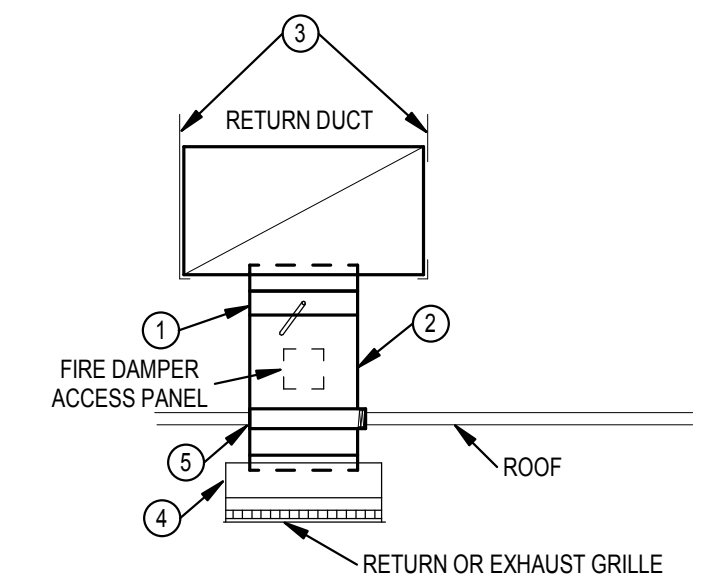
7 ROOFTOP UNIT DRAIN PIPING



NOTES

- MANUAL BALANCE DAMPER. INTEGRAL INSULATION GUARD SLEEVE REQUIRED WHEN MAIN DUCT HAS INTERNAL INSULATION. EXTENDED DAMPER SHAFT AND HANDLE WITH STAND-OFF REQUIRED FOR EXTERNALLY INSULATED DUCTWORK.
- SHEET METAL DUCT, SIZE AS NOTED ON PLANS.
- DUCT STRAP HANGER.
- SHEET METAL PLENUM, FULL SIZE OF GRILLE NECK. MINIMUM 6" TALL WITH SAME INTERNAL OR EXTERNAL INSULATION AS RETURN DUCT. CONNECT TO GRILLE. SEAL PLENUM AND CONNECTION TO GRILLE. SEAL CLASS A.
- TRANSITION ELBOW WITH TURNING VANES.
- FIRE DAMPER. REFER TO DETAIL.

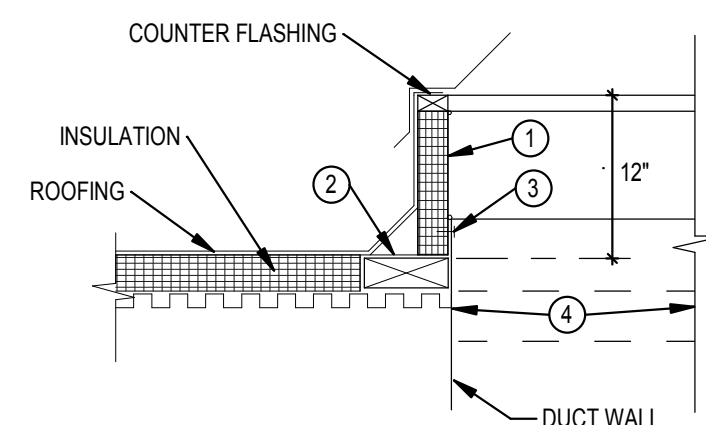
6 SUPPLY GRILLE DUCT CONNECTION



NOTES

- MANUAL BALANCE DAMPER. INTEGRAL INSULATION GUARD SLEEVE REQUIRED WHEN MAIN DUCT HAS INTERNAL INSULATION. EXTENDED DAMPER SHAFT AND HANDLE WITH STAND-OFF REQUIRED FOR EXTERNALLY INSULATED DUCTWORK.
- SHEET METAL DUCT, SIZE AS NOTED ON PLANS.
- DUCT STRAP HANGER.
- SHEET METAL PLENUM, FULL SIZE OF GRILLE NECK. MINIMUM 6" TALL WITH SAME INTERNAL OR EXTERNAL INSULATION AS RETURN DUCT. CONNECT TO GRILLE. SEAL PLENUM AND CONNECTION TO GRILLE. SEAL CLASS A.
- FIRE DAMPER. REFER TO DETAIL.

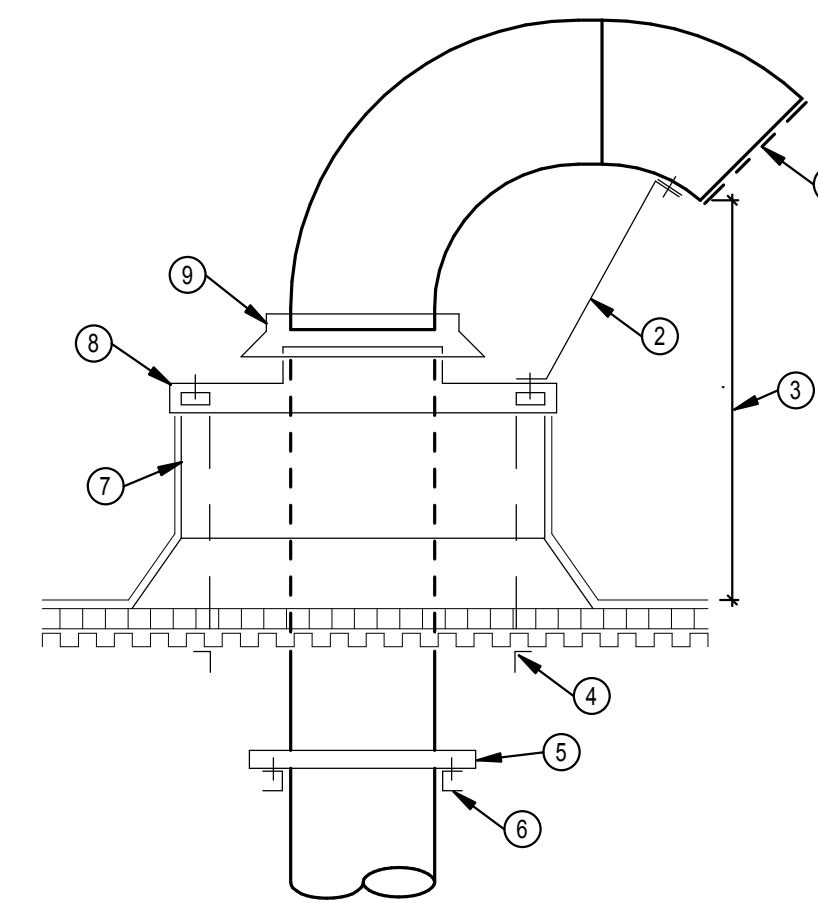
5 RETURN GRILLE DUCT CONNECTION



NOTES

- 18" HIGH INSULATED STEEL CURB.
- PROVIDE PRESSURE TREATED RIGID WOOD BLOCK FRAME SAME THICKNESS AS ROOF INSULATION. BOLT TO ROOF DECK.
- SHEET METAL SCREW.
- ROOF DECK OPENING. COORDINATE REQUIRED OPENING SIZE.

10 GRAVITY ROOF VENTILATOR MOUNTING CURB



NOTES

- 1/2" MESH BIRDSCREEN.
- 2" WIDE x 1/8" THICK STEEL SUPPORTS.
- 3'-0" CLEARANCE TYPICAL ALL VENTS.
- STRUCTURAL FRAMING FOR OPENING. COORDINATE REQUIRED OPENING DIMENSIONS.
- SUPPORT RING. FASTEN TO DUCTWORK AND CHANNEL.
- CHANNEL SUPPORT FROM ADJACENT JOISTS.
- 16" HIGH CURB.
- FLASHING COLLAR FASTEN TO DUCTS.
- STORM COLLAR FASTEN TO DUCT.

GENERAL NOTES

- PAIN'T ALL EXTERIOR DUCTWORK AND DEVICES WITH TWO COATS OF ENAMEL. ALL EXTERIOR SHEET METAL SHALL BE 'PAINT-GRIP' CONSTRUCTION.

9 OUTSIDE AIR DUCTS THRU ROOF



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MONTAUK RENEWABLES PILOT BLDG MECHANICAL DETAILS

DRAWN:	DRAWN DATE:	CHECKED:	CHKD DATE:	APPROVED:	APPR DATE:
B MW	10/13/23	TMK	10/13/23	-	-
SCALE:	DRAWING NUMBER:	PROJECT NO.:		REV.:	
AS NOTED	M501	MON2201		A	



PROJECT NO. 2023-07014

LEGEND- AUTOMATIC TEMPERATURE CONTROLS

	CONTROL POINT - SEE POINTS SCHEDULE
AI	ANALOG INPUT
AO	ANALOG OUTPUT
BI	BINARY INPUT
BO	BINARY OUTPUT
PI	PULSED INPUT
OAT	OUTSIDE AIR TEMPERATURE
MAT	MIXED AIR TEMPERATURE
RAT	RETURN AIR TEMPERATURE
SAT	SUPPLY AIR TEMPERATURE
CCAT	COOLING COIL LEAVING AIR TEMPERATURE
HCAT	HEATING COIL LEAVING AIR TEMPERATURE
OAHY	OUTSIDE AIR HUMIDITY
RAH	RETURN AIR HUMIDITY
SAH	SUPPLY AIR HUMIDITY
NC	NORMALLY CLOSED (CLOSES ON LOSS OF POWER)
NO	NORMALLY OPEN (OPENS ON LOSS OF POWER)
L	LOW
H	HIGH
C	COMMON
	2-WAY AUTOMATIC 2-POSITION CONTROL VALVE
	3-WAY AUTOMATIC 2-POSITION CONTROL VALVE
	2-WAY AUTOMATIC MODULATING CONTROL VALVE
	3-WAY AUTOMATIC MODULATING CONTROL VALVE
	DIFFERENTIAL PRESSURE SENSOR
	DIFFERENTIAL PRESSURE SWITCH
	CARBON DIOXIDE SENSOR
	CARBON MONOXIDE SENSOR
	CURRENT SENSOR TRANSMITTER
	ELECTRONIC TO PNEUMATIC TRANSDUCER
	FLOW METER TRANSMITTER
	HUMIDITY SENSOR
	LEVEL CONTROLLER
	LEVEL TRANSMITTER
	PRESSURE SENSOR
	STATIC PRESSURE SENSOR
	TEMPERATURE SENSOR
	WATER FLOW SENSOR
	WATER LEVEL SENSOR
	CURRENT SWITCH
	END SWITCH
	FLOW SWITCH
	HUMIDISTAT
	OCCUPANCY SENSOR
	PRESSURE SWITCH, HIGH LIMIT
	PRESSURE SWITCH, LOW LIMIT
	TEMPERATURE LOW LIMIT (FREEZE STAT)
	ROOM THERMOSTAT
	WATER LEVEL SWITCH
	EMERGENCY SHUT-OFF STATION

LEGEND- AUTOMATIC TEMPERATURE CONTROLS

	AIR FLOW MEASURING STATION
	VARIABLE FREQUENCY DRIVE (ADJUSTABLE FREQUENCY MOTOR CONTROLLER)
	MOTOR STARTER
	CONTACTOR
	LOCAL TEMPERATURE CONTROL PANEL
	PRESSURE SAFETY - HIGH
	PRESSURE SAFETY - LOW
	SMOKE DETECTOR
	DAMPER OR VALVE ACTUATOR - MODULATING
	DAMPER OR VALVE ACTUATOR - 2-POSITION
	RELAY
	UVGI LIGHT
	PUMP
	FAN
	COOLING COIL
	HEATING COIL
	HUMIDIFIER
	FILTER
	ENERGY RECOVERY WHEEL
	OPPOSED BLADE CONTROL DAMPER
	PARALLEL BLADE CONTROL DAMPER
	SMOKE DAMPER
	MIN OA / ECON DAMPER
	DX COIL
	WALL MOUNTED DEVICE
	DUCT INSERTION DEVICE
	PIPE INSERTION OR IMMERSION DEVICE WITH WELL
	AVERAGING SENSOR OR DEVICE
	OUTDOOR SENSOR OR DEVICE, SHIELDED
	FAN ARRAY, "X" FANS VERTICAL x "Y" FANS HORIZONTAL

GENERAL NOTES- AUTOMATIC TEMPERATURE CONTROLS

- A. A COMPLETE SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS SHALL BE INSTALLED AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF CONTROL FOR VARIOUS ITEMS OF EQUIPMENT AND SYSTEMS DESCRIBED HEREINAFTER.
- B. THE CONTROL DIAGRAMS AND INFORMATION CONTAINED WITHIN ARE TO SHOW DESIGN INTENT. IT IS THE CONTROL SUPPLIERS RESPONSIBILITY TO DEVELOP DETAILED AND COMPLETE CONTROL DIAGRAMS AND SHOP DRAWINGS TO ACCOMPLISH THE SPECIFIED SEQUENCES.
- C. THE POINTS LIST IS SHOWN AS AN AID TO THE CONTRACTOR INDICATING THE MINIMUM POINTS REQUIRED FOR CONTROL AND MONITORING. ALL INPUT AND OUTPUT POINTS, AND THEIR REQUIRED INTERFACE AND ACCESSORY HARDWARE, SHALL BE PROVIDED FOR A COMPLETE AND FUNCTIONAL CONTROL SYSTEM. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THESE POINTS, ALONG WITH ADDITIONAL DIRECT DIGITAL CONTROL PANEL(S) (IF REQUIRED), SHALL ALSO BE PROVIDED.
- D. BULB WELLS FOR TEMPERATURE SENSING AS INDICATED SHALL BE PROVIDED BY THE HVAC CONTRACT. PIPING WORK SHALL INCLUDE PROPERLY SIZED WELDOLET OR THREADED FITTINGS PLACED AS DIRECTED BY THE CONTROL SYSTEM SUPPLIER.
- E. ELECTRICAL WORK INCLUDES A POWER SOURCE TO THE MOTOR STARTERS. PROVIDE ALL HVAC POWER SOURCES REQUIRED BEYOND THESE STARTERS OR BEYOND SOURCES EXPLICITLY SHOWN ON THE ELECTRICAL DRAWINGS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO WIRING, CONDUIT, TRANSFORMERS, RELAYS AND FUSES.
- F. THE FOLLOWING CONTROL SEQUENCES HAVE BEEN WRITTEN TO COMMUNICATE THE DESIGN INTENT REGARDING EQUIPMENT CONTROL. DESIGN INTENT FOCUSES ON THE SEQUENCE OF DEVICES (FOR EXAMPLE, TO UTILIZE ECONOMIZER BEFORE MECHANICAL COOLING), CONTROLLING INPUTS (FOR EXAMPLE, TO CONTROL THE COOLING COIL TO THE SUPPLY AIR TEMPERATURE), AND DESIRED RESULT (FOR EXAMPLE, TO MAINTAIN SUPPLY AIR TEMPERATURE AT THE EFFECTIVE SETPOINT).
 - a. "MODES" WHERE SPECIFIED ARE USED TO SIGNAL MAJOR CHANGES TO EQUIPMENT OPERATED (I.E. OCCUPIED / UNOCCUPIED / OPTIMAL START, HEATING/COOLING, ETC.)
 - b. "RESETS" WHERE SPECIFIED ARE USED TO CHANGE A SETPOINT VALUE DYNAMICALLY. RESETS SHOULD BE BOUND BY THE MINIMUM AND MAXIMUM VALUES AT ALL TIMES. SIMPLE LINEAR/PROPORTIONAL BASED RESETS ARE ONLY ALLOWED WHERE SPECIFIED, OTHERWISE A FEEDBACK-BASED ALGORITHM IS REQUIRED (I.E. PID OR TRIM AND RESPOND).
 - c. "LOOPS" WHERE SPECIFIED ARE USED TO INDICATE USE OF PID ALGORITHMS TO HOLD AN INPUT SIGNAL AT A SPECIFIED SETPOINT WITHOUT SIGNIFICANT LONG-TERM DEVIATION FROM SETPOINT. SIMPLE ERROR-BASED PROPORTIONAL CONTROL IS NOT ACCEPTABLE.
 - d. "SEQUENCING" WHERE SPECIFIED IS USED TO CONTROL THE ORDER OF COMPONENTS ENGAGED TO SATISFY A CERTAIN CONDITION. FOR INSTANCE, A HEATING COIL, ECONOMIZER, AND COOLING COIL ALL AFFECT THE SUPPLY AIR TEMPERATURE, SO THEY MUST BE SEQUENCED TO MAXIMIZE ENERGY AND ELIMINATE SIMULTANEOUS HEATING AND COOLING.
- H. ANALOG OUTPUTS SHOULD BE CONTROLLED BASED UPON THE LOOPS AND SEQUENCING AS SPECIFIED. REQUIRED LOGIC TO ENSURE OUTPUTS ACT UPON SAFETIES, MODES, OR OTHER INTERLOCKING LOGIC IS THE RESPONSIBILITY OF THE CONTROL CONTRACTOR. EFFORTS TO STATE INTERLOCKING CONDITIONS HAVE BEEN MADE BUT IT IS THE ULTIMATE RESPONSIBILITY OF THE CONTROLS CONTRACTOR TO ENSURE OUTPUTS ARE COMMANDED APPROPRIATELY DURING ALL CONDITIONS.
- I. IT IS NOT THE INTENT OF THE DESIGN SEQUENCES TO SPECIFY EVERY CONTROL ELEMENT REQUIRED FOR STABLE CONTROL. TRANSITION BETWEEN MODES OR SEQUENCING OF OUTPUTS OFTEN REQUIRES DELAYS, RAMP, RESETS, OR OTHER LOGIC ELEMENTS TO ENSURE STABLE AND SMOOTH CONTROL. IT IS THE RESPONSIBILITY OF THE CONTROLS CONTRACTOR TO TEST EQUIPMENT THROUGH ALL TRANSITIONS, ADDING LOGICAL CONTROL ELEMENTS AS REQUIRED TO ENSURE STABLE PERFORMANCE.
- J. IT IS ALSO THE RESPONSIBILITY OF THE CONTROL CONTRACTOR TO TUNE ALL LOOPS INITIALLY DURING START UP AND SUBSEQUENTLY THROUGH OPERATION OF THE BUILDING AND VARIOUS WEATHER CONDITIONS. AT MINIMUM, PID TUNING SHOULD BE EVALUATED DURING START-UP AND OCCUPIED SUMMER, WINTER, AND SHOULDER SEASONS.
- K. UNDERSTANDING THE ABOVE INFORMATION, CONTROL CONTRACTORS ARE REQUIRED TO SUBMIT SEQUENCES OF OPERATION AS THEY INTEND TO PROGRAM THEIR CONTROLLERS. SIMPLY COPYING-AND-PASTING OF THE DESIGN SEQUENCES WILL BE FLAGGED IN SUBMITTAL REVIEW AS NOT CONFORMING TO THE INTENT OF THE SUBMITTAL. THE SEQUENCE OF OPERATION INCLUDED IN THE CONTROL SUBMITTAL SHOULD DOCUMENT THE CONTROL SEQUENCE "AS PROGRAMMED" IN A WRITTEN FORMAT FOR ENGINEER REVIEW AND FINALIZED POST CONSTRUCTION IN AS-BUILTS FOR OWNER REFERENCE.



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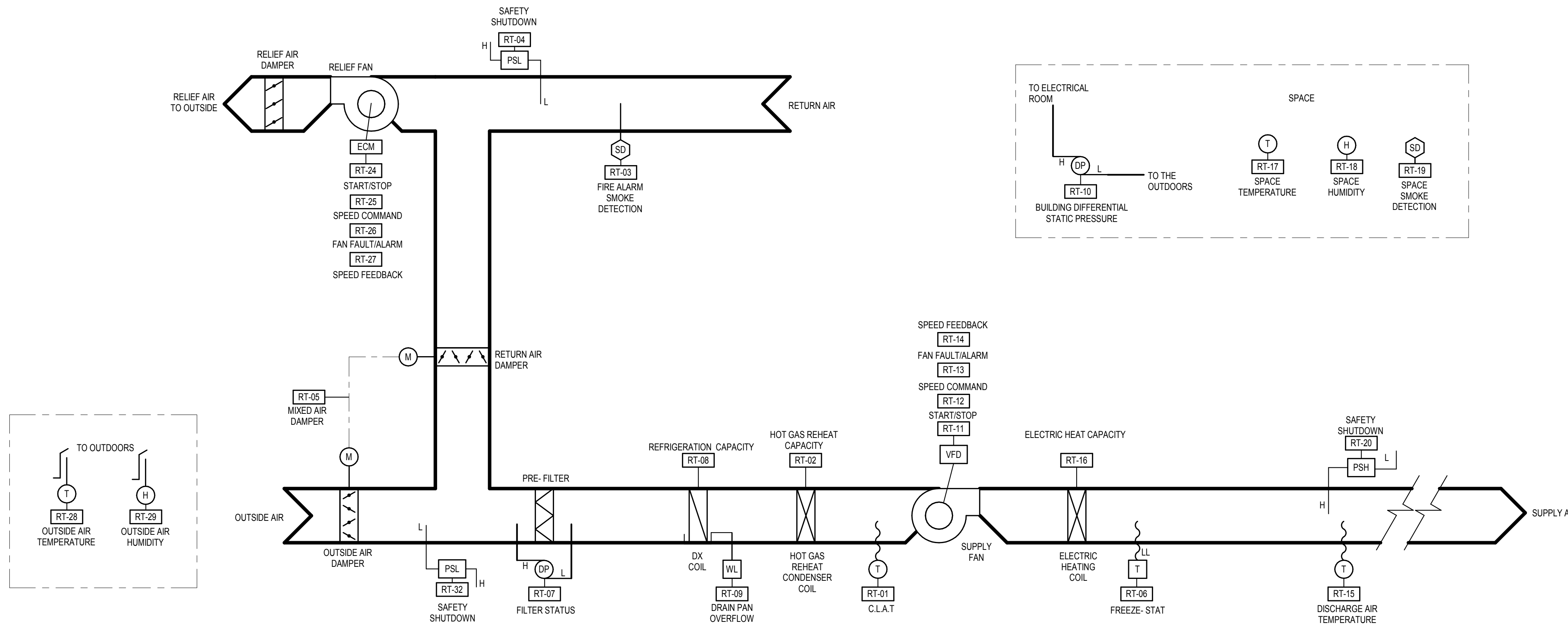


MONTAUK
RENEWABLES PILOT BLDG
ATC LEGEND

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B MW	10/13/23	TMK	10/13/23	-	-
SCALE:	DRAWING NUMBER:		REV:		
AS NOTED	M601		A		
NEXUS PROJ NO:	MON2201				



PROJECT NO. 2023-07014



ROOFTOP UNIT 01-RTU-1 CONTROLS DIAGRAM

SCALE: NONE

01-RTU-1 SEQUENCES

- A. RTU CONTROLLER(S) SEQUENCES OF OPERATION
1. ALL SEQUENCES SHALL COMPLY WITH ASHRAE STANDARD 90.1 - 2013.
2. THE RTU VENDOR SHALL WORK TO PROVIDE A WELL COORDINATED CONTROL SYSTEM.
3. THE RTU OCCUPANCY SCHEDULE SHALL RESIDE WITH-IN THE RTU CONTROLLER. "OCCUPIED" MODE SHALL BE AT ALL TIMES THROUGHOUT THE YEAR.
4. SAFETIES SHALL SHUT DOWN THE UNIT IN AN ORDERLY FASHION AND INDICATE ALARM ON THE USER INTERFACE.
5. THE AIR HANDLING UNIT COMPONENTS (DX COIL, ELECTRIC HEATER, ECONOMIZER, ETC.) SHALL BE SEQUENCED TO SATISFY THE "OCCUPIED" SPACE TEMPERATURE SETPOINT.
6. MINIMUM OUTSIDE AIR WHEN IN "OCCUPIED" MODE SHALL OPEN OA DAMPER TO THE MINIMUM OUTSIDE AIR CFM SETPOINT SCHEDULED. POSITION SHALL BE SET BY BALANCER.
7. ROOM TEMPERATURE SENSORS: CONTROLLER SHALL READ TEMPERATURE FROM ROOM TEMPERATURE SENSOR TO DETERMINE SPACE TEMPERATURE. THE CONTROLLER SHALL ENABLE HEATING / COOLING SEQUENCE WHENEVER THE AVERAGE SPACE TEMPERATURE DEVIATES FROM SPACE TEMPERATURE SETPOINT.
8. ROOM TEMPERATURE: DISCHARGE AIR RESET. THE SUPPLY AIR TEMPERATURE SHALL BE RESET TO MEET THE SPACE HEATING REQUIREMENTS. OR THE SPACE COOLING REQUIREMENTS BASED ON A DEVIATION FROM THE RESPECTIVE SPACE TEMPERATURE SET POINT. INITIAL SPACE TEMPERATURE SET POINTS SHALL BE 55 DEGREES F FOR HEATING AND 78 DEGREES F FOR COOLING. HEATING DISCHARGE AIR RESET SHALL BE FROM 60 DEGREES F TO A MAXIMUM SUPPLY TEMPERATURE OF 75 DEGREES F. COOLING DISCHARGE AIR RESET SHALL BE FROM 70 DEGREES TO A MINIMUM SUPPLY AIR TEMPERATURE OF 55 DEGREES F. WHEN THE SPACE TEMPERATURE IS IN THE DEAD BAND THE OUTSIDE AIR DAMPERS SHALL BE AT MINIMUM AND THERE SHALL BE NO ACTIVE HEATING AND COOLING.
9. ECONOMIZER CONTROL SHALL BE A DIFFERENTIAL ENTHALPY SEQUENCE WITH AN "OFF" SETPOINT OF 75 DEGREES F DB OUTSIDE AIR TEMPERATURE. ECONOMIZER SHALL BE DISABLED WHEN OUTSIDE AIR TEMPERATURE FALLS BELOW 35 DEGREES F DB. MIXED AIR DAMPERS SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE.
10. RELIEF AIR FAN SHALL BE ACTIVATED BY A WALL-MOUNTED DP SENSOR TRANSMITTER AND THE FAN SHALL MODULATE TO MAINTAIN A BUILDING PRESSURE OF +0.03" W.C. (ADJUSTABLE), REFERENCED TO OUTDOORS. RELIEF AIR FAN SHALL HAVE A SOFTWARE INTER-LOCK WITH THE RTU SUPPLY FAN. THE SPACE PRESSURE DP SENSOR-TRANSMITTER SHALL BE BY THE RTU VENDOR.
11. DX COIL - IF THE RTU FAN SYSTEM IS "ON" AND THE ECONOMIZER IS NOT ACTIVE AND THE COOLING DISCHARGE AIR TEMPERATURE IS ABOVE SETPOINT, THE SOLENOID VALVES AND COMPRESSOR STEPPING / SPEED SHALL BE SEQUENCED TO SATISFY THE SETPOINT. PROVIDE ON AND OFF TIME DELAYS BETWEEN STEPS. USE SUPPLY FAN DRIVE SPEED INTERLOCK ALARM STATE, AS SPECIFIED IN POINTS LIST SCHEDULE. FOR INTERLOCK THRU SOFTWARE TO KEEP COOLING OFF UNLESS THE SUPPLY FAN SYSTEM IS OPERATING.
12. ELECTRIC HEATER - SHALL BE STAGED TO MAINTAIN HEATING DISCHARGE AIR SETPOINT.
13. HOT GAS REHEAT DEHUMIDIFICATION - A WALL-MOUNTED HUMIDITY SENSOR SHALL BE USED TO CONTROL ACTIVATION OF DEHUMIDIFICATION MODE WHEN SPACE HUMIDITY IS ABOVE 60% RH. WHEN THIS OCCURS, THE COOLING SHALL BE AT MAXIMUM AND MODULATING VALVES SHALL CONTROL THE FLOW OF REFRIGERANT BETWEEN THE INDOOR REHEAT AND OUTDOOR CONDENSERS TO SATISFY DISCHARGE AIR SETPOINT IN ORDER TO DEHUMIDIFY THE SPACE. THIS MODE SHALL CONTINUE UNTIL THE SPACE RH IS BELOW 55%.
14. UNIT SMOKE DETECTION - UPON SENSING SMOKE OR PRODUCTS OF COMBUSTION THE AIR HANDLING SYSTEM SHALL BE DISABLED. SMOKE DETECTORS SHALL BE PROVIDED PER DIVISION 26 / 28 UNLESS OTHERWISE NOTED. INSTALLED IN THE RETURN DUCT SYSTEM AND WIRED TO THE FAN SAFETY CIRCUITS TO STOP THE AIR HANDLING UNIT SYSTEM UPON SMOKE DETECTION. REFER TO THE DRAWINGS FOR DETECTOR LOCATIONS AND COORDINATE THEIR INSTALLATION.
15. ALARMS SHALL BE SENT TO REMOTE MONITORING LOCATIONS, AS DETERMINED BY OWNER.

ROOFTOP UNIT 01-RTU-1 POINTS LIST SCHEDULE

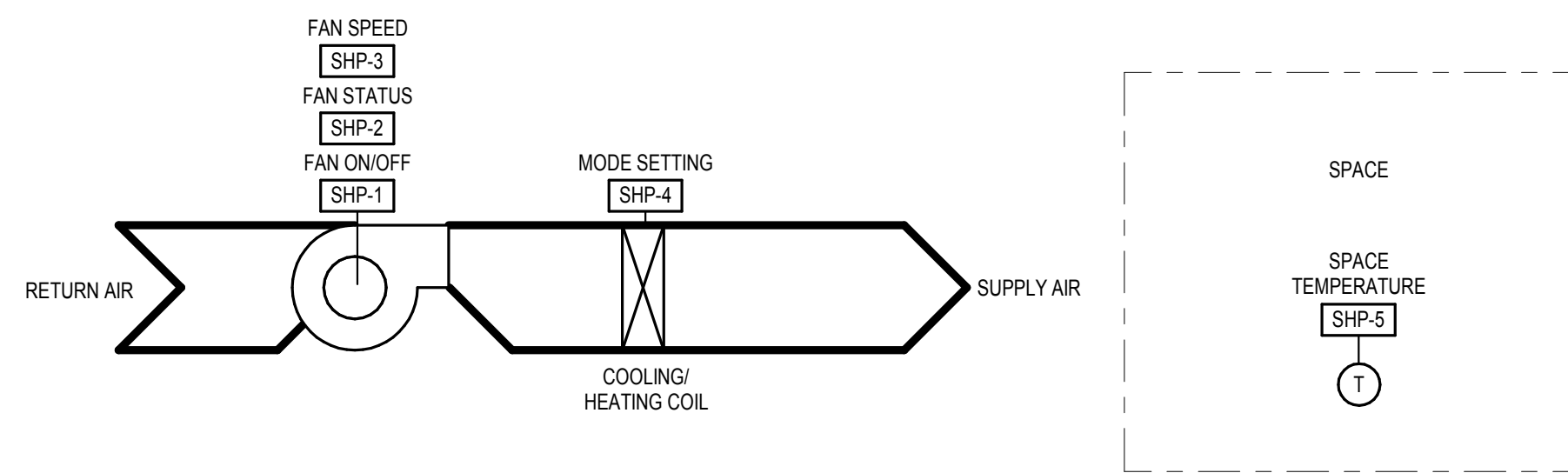
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POINT NAME	COIL LEAVING AIR TEMPERATURE	HOT GAS REHEAT CAPACITY	RETURN AIR SMOKE DETECTION	RETURN DUCT PRESSURE SAFETY SHUT-DOWN	MIXED AIR DAMPERS	FREEZE-STAT	PRE-FILTER STATUS	DX REFRIGERATION CAPACITY	DRAIN PAN OVERFLOW	BUILDING DIFFERENTIAL STATIC PRESSURE	SUPPLY FAN START/STOP	SUPPLY FAN SPEED COMMAND	SUPPLY FAN FAULT/ALARM	SUPPLY FAN SPEED FEEDBACK	DISCHARGE AIR TEMPERATURE	ELECTRIC HEAT CAPACITY	REPRESENTATIVE SPACE TEMPERATURE	REPRESENTATIVE SPACE HUMIDITY	SPACE SMOKE DETECTION	SUPPLY HIGH DUCT PRESSURE SAFETY SHUT-DOWN	MINIMUM OUTSIDE AIRFLOW SETPOINT	SUPPLY AIR TEMPERATURE SETPOINT	OCCUPANCY MODE REQUEST	RELIEF FAN START/STOP	RELIEF FAN SPEED COMMAND	RELIEF FAN FAULT/ALARM	RELIEF FAN SPEED FEEDBACK	OUTSIDE AIR TEMPERATURE	OUTSIDE AIR HUMIDITY	RTU FAULT STATUS	OCCUPANCY MODE STATUS	MIXED AIR PRESSURE SAFETY SHUT-DOWN
TYPE	AI	AO	BI	BI	AO	BI	BI	AO	BI	AI	BO	AO	BI	AI	AI	AO	AO	AO	BI	BI	AO	AO	AO	BO	AO	BI	AI	AO	AO	BO	AO	BI
ALARM	ON TRIP		ON TRIP	ON TRIP		ON TRIP	ON TRIP		ON TRIP	HIGHLOW			ON TRIP	S/S=ON FBK(MIN SPD)	HIGHLOW				ON TRIP	ON TRIP						ON TRIP	S/S=ON FBK(MIN SPD)			ON TRIP	ON MISMATCH	ON TRIP
NOTES			1,2			2			2											2	2		4							3	4	

DA: NEG 10/13/23 ISSUE FOR CONSTRUCTION EX21022
 NO. BY DATE REVISIONS CLIENT NO.

MONTAUK RENEWABLES PILOT BLDG ATC DIAGRAMS

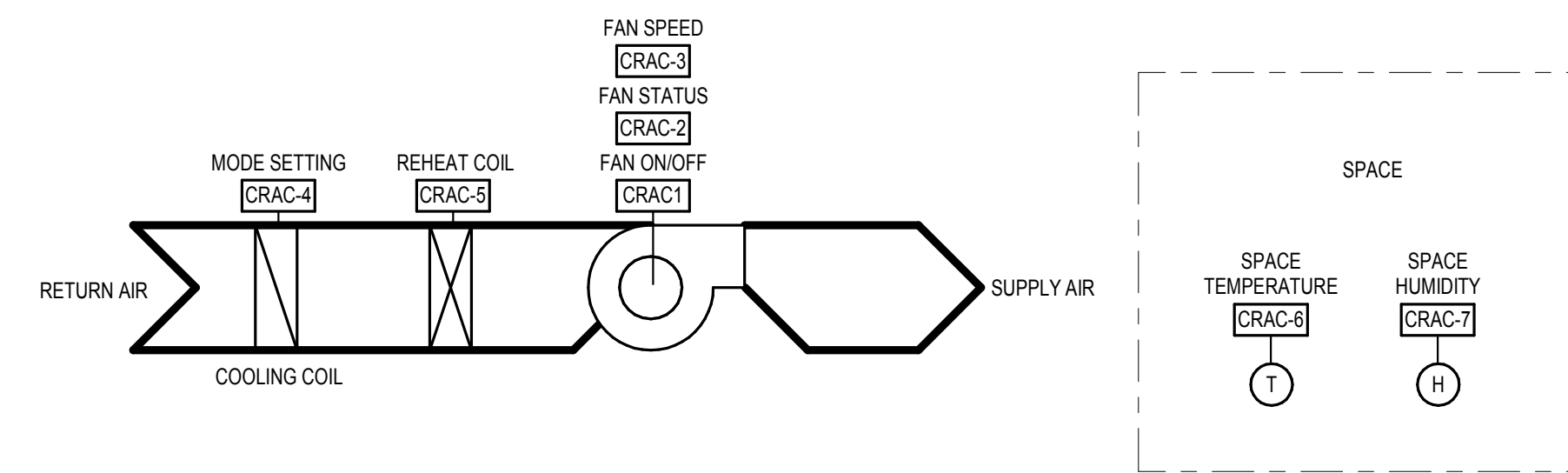
DRAWN: BMW	DRAWN DATE: 10/13/23	CHECKED: TMK	CHKD DATE: 10/13/23	APPROVED: -	APPR DATE: -
SCALE: AS NOTED	DRAWING NUMBER: M602	NEXUS PROJ NO: MON2201		REV: A	

PROJECT NO. 2023-07014



SPLIT SYSTEM HEAT PUMP 01-SHP-1 ATC DIAGRAM

SCALE: NONE



COMPUTER ROOM AC UNIT 01-CRAC-1 ATC DIAGRAM

SCALE: NONE

SPLIT SYSTEM HEAT PUMP 01-SHP-1 POINTS LIST									
GENERAL NOTES: A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED. IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.									
NOTES: 1. CURRENT SENSOR.									
POINT NO.	SHP-1	SHP-2	SHP-3	SHP-4	SHP-5				
POINT NAME	FAN ON/OFF	FAN STATUS	FAN SPEED	MODE SETTING	SPACE TEMPERATURE				
TYPE	BO	BI	AO	AO	AI				
ALARM		ON FAULT			BELOW 40°F				
NOTES		1							

SPLIT SYSTEM HEAT PUMP 01-SHP-1 SEQUENCES

- SPLIT SYSTEM HEAT PUMP CONTROLLER SEQUENCES OF OPERATION
- A. OCCUPIED MODE
- WHEN IN OCCUPIED MODE THE INDOOR UNIT FAN SHALL RUN CONTINUOUSLY.
 - OPERATION MODE SHALL MAINTAIN SETPOINT LISTED IN HVAC DESIGN DATA SCHEDULE
- B. UNOCCUPIED MODE
- OPERATE UNIT AS REQUIRED TO MAINTAIN UNOCCUPIED SETBACK TEMPERATURE SETPOINT OF 55°F (ADJ) IN HEATING AND 80°F (ADJ) IN COOLING.
- C. ALARMS SHALL BE SENT TO REMOTE MONITORING LOCATIONS, AS DETERMINED BY OWNER.

COMPUTER ROOM AC UNIT 01-CRAC-1 POINTS LIST									
GENERAL NOTES: A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED. IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.									
NOTES: 1. CURRENT SENSOR.									
POINT NO.	CRAC-1	CRAC-2	CRAC-3	CRAC-4	CRAC-5	CRAC-6	CRAC-7		
POINT NAME	FAN ON/OFF	FAN STATUS	FAN SPEED	COOLING COIL	REHEAT COIL	SPACE TEMPERATURE	SPACE HUMIDITY		
TYPE	BO	BI	AO	AO	AO	AI	AI		
ALARM		ON FAULT				BELOW 40°F			
NOTES		1							

COMPUTER ROOM AC UNIT 01-CRAC-1 SEQUENCES

- CRAC UNIT CONTROLLER SEQUENCES OF OPERATION.
- UNIT SHALL OPERATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AND HUMIDITY SETPOINTS BASED ON HVAC DESIGN DATA SCHEDULE.
 - ALARMS SHALL BE SENT TO REMOTE MONITORING LOCATIONS, AS DETERMINED BY OWNER.

① **SPLIT SYSTEM HEAT PUMP CONTROL DIAGRAM**

② **COMPUTER ROOM AC UNIT CONTROL DIAGRAM**



MONTAUK RENEWABLES PILOT BLDG ATC DIAGRAMS

DRAWN: BMW	DRAWN DATE: 10/13/23	CHECKED: TMK	CHKD DATE: 10/13/23	APPROVED: -	APPR DATE: -
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PROJECT NO. 2023-07014

COMPUTER ROOM A/C UNITS - AIR-COOLED

GENERAL NOTES:
 A. UNLESS NOTED OTHERWISE, CAPACITIES SHALL BE BASED ON INTERIOR DESIGN CONDITIONS OF 78 DB / 65 WB COOLING, 55 DB HEATING.
 B. CONDENSING UNIT COOLING CAPACITY SHALL BE BASED ON 95°F AMBIENT CONDITIONS.
 C. CONDENSING UNITS SHALL INCLUDE LOW AMBIENT CONTROLS AND ACCESSORIES, OPERATIONAL TO 10°F.
 D. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR VIBRATION ISOLATOR TYPES AND SEISMIC RESTRAINT REQUIREMENTS.
 E. REFRIGERANT PIPING - SIZES LISTED ARE APPROX. CIRCUITING, SIZING, NUMBER OF PIPES AND CIRCUITS, ARRANGEMENT, ETC. SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 F. ELECTRIC SERVICES FOR OUTDOOR UNIT AND INDOOR UNIT - SINGLE POINT POWER SERVICE CONNECTIONS TO EACH UNIT. UNLESS NOTED OTHERWISE, ADEQUACY OF LISTED CIRCUIT SIZES MUST BE VERIFIED BY H.C. AND UNIT SUPPLIER. COST FOR INCREASE OR CHANGE OF ELECTRIC SERVICE FOR EQUIPMENT SELECTED SHALL BE BORNE BY H.C.
 G. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, AND FIELD ADJUSTABLE SPEED CONTROL.
 H. COOLING COIL CONDENSATE PUMPS SHALL BE FACTORY-FURNISHED, COMPATIBLE WITH INDOOR FAN COIL UNIT VOLTAGE AND POWERED FROM THE INDOOR FAN COIL UNIT SINGLE POINT POWER CONNECTION.

NOTES:
 1. FILTER BOX SHALL BE FACTORY FURNISHED. 2. CONTROLS SHALL BE FACTORY FURNISHED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED. 3. FILTER BOX SHALL BE FACTORY FURNISHED.

MARK	DESCRIPTION	INDOOR UNIT												COMPRESSOR SYSTEM		OUTDOOR CONDENSER OR CONDENSING UNIT - AIR COOLED						SEE NOTE																										
		INSTALLATION TYPE		FAN		DX COOLING		FLTR	ELECTRIC HEAT / REHEAT		ELECTRICAL SERVICE		APPROX. DIMENSIONS		PIPING RUNOUT SIZES (NOTE E)		BASIS OF DESIGN	MARK	DESCRIPTION	ELECTRICAL SERVICE			BASIS OF DESIGN																									
		HORIZONTAL SUSPENDED	CEILING MOUNTED	WALL MOUNTED	FLOOR MOUNTED	RAISED FLOOR MOUNTED	IN-ROW COOLING	CFM	EXTERNAL STATIC PRESSURE (IN. W.C.)	MOTOR (HP)	ELECTRONICALLY COMMUTATED MOTORS	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	ENTERING AIR TEMPERATURE DB(WB) (°F)	LEAVING AIR TEMPERATURE DB (°F)	THICKNESS / MERV				KW	MINIMUM NO. STAGES (NOT INCLUDING "OFF")	SCR CONTROL	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	LENGTH	WIDTH	HEIGHT	REFRIGERANT LIQUID	REFRIGERANT SUCTION	DRAIN	COOLING CONDENSATE DRAIN PUMP (NOTE H)	VIBRATION ISOLATOR TYPE	MANUFACTURER	MODEL	WITH INDOOR UNIT	WITH OUTDOOR UNIT	VARIABLE SPEED	HOT GAS BYPASS	MARK	DESCRIPTION	NOMINAL TONS (SIZED TO MATCH COIL)	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	VIBRATION ISOLATOR TYPE
01-CRAC-1	5 TON DX FAN COIL MODULE	•	-	-	-	-	-	2750	0.20	3.4	•	67.1	55.6	79/65	59.7/56.8	4" / 8	11.2	1	-	208-3	33.2	41.5	40	47"	49"	24"	0.625"	1.125"	0.75"	•	J1	LIEBERT	MINIMATE MT060	-	-	-	-	01-CRCU-1	5 TON CONDENSING UNIT TOP AIR DISCHARGE	5	208-3	26.2	31.8	60	A1	LIEBERT	PFD067	1,2,3

ROOFTOP HEATING & COOLING UNITS - AIR-COOLED DX/ELECTRIC HEAT

GENERAL NOTES:
 A. COOLING CAPACITIES BASED ON 95°F AMBIENT AIR TEMPERATURE.
 B. HEATING L.A.T. IS BASED ON FULL UNIT CFM AT LISTED E.A.T. AND MBH OUTPUT.
 C. UNIT CONFIGURATIONS (SUPPLY FAN POSITION RELATIVE TO COOLING COIL) - "HDT" - HORIZONTAL DRAW THRU; "VDT" - VERTICAL DRAW THRU; "HBT" - HORIZONTAL BLOW THRU; "VBT" - VERTICAL BLOW THRU. REFER TO DRAWINGS FOR LAYOUT.
 D. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR SEISMIC RESTRAINT REQUIREMENTS.
 E. ELECTRIC SERVICE - SINGLE POINT POWER SERVICE CONNECTION TO UNIT. ADEQUACY OF LISTED CIRCUIT SIZE MUST BE VERIFIED BY H.C. AND UNIT SUPPLIER. COST FOR INCREASE OR CHANGE OF ELECTRIC SERVICE FOR EQUIPMENT SELECTED SHALL BE BORNE BY H.C. THIS SHALL INCLUDE LUG SIZE AND QUANTITY REQUIREMENTS.
 G. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE ANALOG SPEED CONTROL INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.
 H. THE LISTED MAX UNIT HEIGHT INCLUDES THE INTEGRAL UNIT BASE RAIL BUT DOES NOT INCLUDE THE SPECIFIED CURB (HEIGHT). IF THE HEIGHT OF THE SPECIFIED CURB IS REQUIRED TO BE INCREASED, SUCH AS TO ACCOMMODATE CONDENSATE TRAP HEIGHT, THEN THE LISTED MAX UNIT HEIGHT SHALL BE DECREASED BY THAT SAME AMOUNT.

NOTES:
 1. CONTROLS SHALL BE FACTORY FURNISHED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED. 2. POWERED EXHAUST UP TO FULL SPECIFIED SUPPLY FAN CFM, WITH BUILDING PRESSURE CONTROL. 3. 100% ECONOMIZER WITH COMPARITIVE ENTHALPHY CONTROL.

UNIT NUMBER	NOMINAL TONS	UNIT CONFIGURATION	CFM (TOTAL)	SUPPLY FAN		COOLING SECTION										HEATING SECTION		PRE-FILTERS		FINAL FILTERS		OUTSIDE AIR		DIMENSIONS		MISCELLANEOUS		ELECTRICAL SERVICE		BASIS OF DESIGN		SEE NOTE											
				EXTERNAL / TOTAL STATIC PRESSURE (IN. W.C.)	FAN QTY / WHEEL TYPE	COOLING SECTION	CONDENSING SECTION	HOT GAS REHEAT	HEATING SECTION	PRE-FILTERS	FINAL FILTERS	OUTSIDE AIR	DIMENSIONS	MISCELLANEOUS	ELECTRICAL SERVICE	BASIS OF DESIGN																											
				SPEED CONTROL	DX-COOLING COIL	CONDENSING SECTION	HOT GAS REHEAT	HEATING SECTION	PRE-FILTERS	FINAL FILTERS	OUTSIDE AIR	DIMENSIONS	MISCELLANEOUS	ELECTRICAL SERVICE	BASIS OF DESIGN																												
					ENTERING AIR TEMPERATURE DB(WB) (°F)	LEAVING AIR TEMPERATURE DB(WB) (°F)	MAXIMUM AIR PRESSURE DROP (IN. W.C.)	REFRIGERANT TYPE	MINIMUM QUANTITY OF COMPRESSORS	MINIMUM STAGES OF COOLING (NOT INCLUDING "OFF")	HOT GAS BYPASS	LOW AMBIENT OPERATION	LOW AMBIENT MIN OPERATING TEMP (°F)	HOT GAS REHEAT	HOT GAS REHEAT CAPACITY (MBH)	HEATING CAPACITY (KW)	ENTERING AIR TEMPERATURE DB (°F)	LEAVING AIR TEMPERATURE DB (°F) (NOTE B)	MINIMUM STAGES OF HEATING (NOT INCLUDING "OFF")	THICKNESS / MERV	THICKNESS / MERV	MINIMUM CFM	ECONOMIZER	MAX UNIT LENGTH (INCHES)	MAX UNIT WIDTH (INCHES)	MAX UNIT HEIGHT (INCHES) (NOTE H)	APPROXIMATE UNIT WEIGHT INCLUDING CURB (LBS)	INTEGRAL 100% POWERED RELIEF SERVICE RECEPTACLE	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	MINIMUM SCOR (AMPS)	NON-FUSED DISCONNECT	MANUFACTURER	MODEL							
01-RTU-1	25	HDT	8,350	1/7	SWSI AF	10	•	1	500	299.8	216.5	78.3 / 66.2	54.6 / 54.5	0.5	R410A	2	MODULATING	•	15	•	139.5	45.0	52.6	69.6	SCCR	2" / MERV 8	4" / MERV 14	500	•	162.3"	76.5"	82.5"	4000	•	460-3	72.5	90.6	125	10,000	•	CARRIER	50A	1

SPLIT SYSTEM HEAT PUMP UNITS

GENERAL NOTES:
 A. UNLESS NOTED OTHERWISE, CAPACITIES SHALL BE BASED ON INTERIOR DESIGN CONDITIONS OF 80DB / 67WB COOLING, 70DB HEATING.
 B. HEAT PUMP COOLING CAPACITY SHALL BE BASED ON 95°F AMBIENT CONDITIONS.
 C. HEAT PUMP HEATING CAPACITY SHALL BE BASED ON 17°F AMBIENT CONDITIONS.
 D. CONDENSING UNITS SHALL INCLUDE LOW AMBIENT COOLING & HEATING CONTROLS AND ACCESSORIES, OPERATIONAL TO 23°F.
 E. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR VIBRATION ISOLATOR TYPES AND SEISMIC RESTRAINT REQUIREMENTS.
 F. ELECTRIC SERVICES FOR OUTDOOR UNIT AND INDOOR UNIT - SINGLE POINT POWER SERVICE CONNECTIONS TO EACH UNIT. UNLESS NOTED OTHERWISE, ADEQUACY OF LISTED CIRCUIT SIZES MUST BE VERIFIED BY H.C. AND UNIT SUPPLIER. COST FOR INCREASE OR CHANGE OF ELECTRIC SERVICE FOR EQUIPMENT SELECTED SHALL BE BORNE BY H.C.
 G. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE ANALOG SPEED CONTROL INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.
 H. COOLING COIL CONDENSATE PUMPS SHALL BE FACTORY-FURNISHED, COMPATIBLE WITH INDOOR FAN COIL UNIT VOLTAGE AND POWERED FROM THE INDOOR FAN COIL UNIT SINGLE POINT POWER CONNECTION.
 I. REFRIGERANT PIPING - SIZES LISTED ARE APPROX. CIRCUITING, SIZING, NUMBER OF PIPES AND CIRCUITS, ARRANGEMENT, ETC. SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

NOTES:
 1. POWER FOR INDOOR UNIT IS TO BE FED THRU THE OUTDOOR UNIT POWER SUPPLY. 2. CONTROLS SHALL BE FACTORY FURNISHED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED. 3. FILTER BOX SHALL BE FACTORY FURNISHED.

MARK	DESCRIPTION	INDOOR UNIT												OUTDOOR HEAT PUMP CONDENSING UNIT - AIR COOLED						REFRIGERANT CONN. SIZE		SEE NOTE														
		TYPE		FAN		COIL CAPACITY		FLTR	ELECTRICAL SERVICE		APPROX. DIMENSIONS		BASIS OF DESIGN	MARK	NOMINAL TONS (SIZED TO MATCH COIL)	ELECTRICAL SERVICE		BASIS OF DESIGN		LIQUID LINE	SUCTION LINE															
		WALL-MOUNTED	CEILING-MOUNTED	CEILING RECESSED	DUCTED	CFM	EXTERNAL STATIC PRESSURE (IN. W.C.)	MOTOR (W)	ENT. AIR TEMP DB/WB	TOTAL / SENSIBLE CAPACITY (MBH)	ENTERING AIR TEMP. DB	CAPACITY (MBH)				MEV RATING	SERVED THRU OUTDOOR UNIT (NOTE 1)	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	LENGTH	WIDTH	HEIGHT	COOLING COIL CONDENSATE DRAIN PUMP (NOTE H)	VIBRATION ISOLATOR TYPE	MANUFACTURER	MODEL	MARK	NOMINAL TONS (SIZED TO MATCH COIL)	VARIABLE SPEED COMPRESSOR(S)	VOLTAGE - PHASE	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	MINIMUM SCOR (AMPS)	MANUFACTURER	MODEL
01-SHP-1	HORIZONTAL DUCTED UNIT	-	-	•	•	741	0.6	121	80/67	24.0/16.3	70	25.0	13	•	208/1	1.82	2.28	29"	43"	10"	•	J1	TRANE	TPEADA024	01-HPCU-1	2	•	208-1	17.0	27	5000	TRANE	TRUZH024	3/8	5/8	1,2,3



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MONTAUK
 RENEWABLES PILOT BLDG
 MECHANICAL SCHEDULES

DRAWN:	DRAWN DATE:	CHECKED:	CHKD DATE:	APPROVED:	APPR DATE:
B MW	10/13/23	TMK	10/13/23	-	-
SCALE:	DRAWING NUMBER:	REV:			
AS NOTED					
NEXUS PROJ NO:	MON2201	M701			A



PROJECT NO. 2023-07014

FANS																		
GENERAL NOTES: A. ALL FANS SHALL BE A.M.C.A. 211 AND 311 PERFORMANCE CERTIFIED AND SHALL BEAR THE A.M.C.A. LABEL. B. SONES VALUES BASED ON A.M.C.A. 301 MEASURED AT 5 FT. C. MOTOR HORSEPOWERS LISTED SHALL BE CONSIDERED MINIMUM. E. ROOF & WALL OPENINGS ARE APPROX. VERIFY SIZE & COORDINATE. F. COORDINATE STEEL FRAMING AROUND ROOF OPENING WHERE REQUIRED FOR DECK SUPPORT, AND WALL LINTELS FOR WALL OPENINGS. G. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR VIBRATION ISOLATOR TYPES AND SEISMIC RESTRAINT REQUIREMENTS. H. VFD'S SHALL BE CONSTRUCTED AND LABELED FOR REQUIRED SCOR (SHORT CIRCUIT CURRENT RATING). COORDINATE WITH DIVISION 26. I. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE ANALOG SPEED CONTROL INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.																		
NOTES: 1. FAN SHALL HAVE N+1 REDUNDANCY WITH FACTORY FURNISHED CONTROLS. 2. STATIC PRESSURE LISTED INCLUDES EXTERNAL STATIC PRESSURE ONLY. FAN SELECTION SHALL ACCOUNT FOR STATIC PRESSURE LOSSES OF FAN STACKS, NOZZLES, INLET BOXES, ETC.																		
MARK	TYPE (REFER TO SPECS)	DESCRIPTION	SERVICE	FAN CFM	EXTERNAL STATIC PRESSURE (IN. W.C.)	APPROX. WHEEL DIAMETER	MOTOR							BASIS OF DESIGN		SEE NOTE		
							MAXIMUM SONES	HORSEPOWER (HP)	VOLTAGE - PHASE	ELECTRONICALLY COMMUTATED	ECM MCA (AMPS, TOTAL)	ECM MOCP (AMPS, TOTAL)	VARIABLE FREQUENCY DRIVE	APPROX. WEIGHT (LBS.)	VIBRATION ISOLATOR TYPE		MANUFACTURER	MODEL
01-EF-1A	L2	HIGH PLUME DILUTION EXHAUST FAN	PROCESS BLOCK	16000	1.15	33.5	60	20	460/3	-	-	-	•	4,900	E1	GREENHECK	VECTOR-MD-27-4-85	1,2
01-EF-1B	L2	HIGH PLUME DILUTION EXHAUST FAN	PROCESS BLOCK	16000	1.15	33.5	60	20	460/3	-	-	-	•	4,900	E1	GREENHECK	VECTOR-MD-27-4-85	1,2
01-EF-2	B1	CENTRIFUGAL EXHAUST FAN WITH INTEGRAL STACK	HOT OIL ROOM	3500	1	18.25	26	5	460/3	-	-	-	•	400	E1	GREENHECK	FJI-18-BI	2

HVAC DESIGN DATA					
GENERAL NOTES: A. OUTDOOR DESIGN CONDITIONS: 95.2°F DB SUMMER 77°F WB SUMMER 15°F DB WINTER B. DESIGN ALTITUDE: 148 FT.					
NOTES: 1. LISTED RH IS MAXIMUM ANTICIPATED AT LISTED DB TEMPERATURE. 2. "FLOATING" MEANS THERE IS NO ACTIVE CONTROL. 3. OUTDOOR AIR VENTILATION ONLY.					
SPACE NAME / TYPE	INTERIOR DESIGN DATA				SEE NOTE
	SUMMER		WINTER		
	°F DB	% RH (NOTE 1)	°F DB	% RH	
CONTROL ROOM	75	55	72	FLOATING	2
ELECTRICAL & SERVER ROOMS	78	60	55	FLOATING	2
PROCESS BLOCK & HOT OIL ROOM	NOTE 3	FLOATING	NOTE 3	FLOATING	2

ROOM AIRFLOW SCHEDULE				
ROOM NAME	VOLUME (CUBIC FEET)	AIRFLOW (CFM)	TARGET AIR CHANGES PER HOUR	DESIGN AIR CHANGES PER HOUR
PROCESS ROOM	155,000	16,000	6	6.2
HOT OIL ROOM	34,250	3,500	6	6.1
ELECTRICAL ROOM	52,000	8,350	-	-
SERVER ROOM	6,450	2,750	-	-
CONTROL ROOM	4,000	741	-	-

AIR DISTRIBUTION DEVICES															
GENERAL NOTES: A. ALL LAY-IN AIR DEVICES SHALL FIT IN 24"X24" LAY-IN CLG SYSTEM. VERIFY GRID TYPE AND COORDINATE AIR DEVICE COMPATIBILITY. B. FINISH KEY: "W.B.E." - WHITE BAKED ENAMEL; "E.C.L." - ETCHED CLEAR LACQUER OR ANODIZED; "C.C.B.A." - CUSTOM COLOR SELECTED BY ARCHITECT. C. SUPPLY AIR DIFFUSERS SHALL BE 4-WAY BLOW, UNLESS INDICATED OTHERWISE ON DRAWINGS. D. PROVIDE AUX. FRAMES FOR AIR DEVICES IN PLASTER, GYPSUM BOARD, TILE OR OTHER HARD SURFACES.															
NOTES: 1. -															
MARK	DESCRIPTION	LAY-IN SURFACE	DUCT	SPRINE	SNAP-IN	STEEL	ALUMINUM	STAINLESS STEEL	W.B.E.	E.C.L.	C.C.B.A.	SQ-TO-RD NECK ADAPTOR	BASIS OF DESIGN		SEE NOTE
													MANUFACTURER	MODEL	
E10	LOUVERED FACE EXHAUST GRILLE	•	•	•	•	•	•	•	•	•	•	•	PRICE	630	
R10	EGGCRATE CEILING GRILLE	•	•	•	•	•	•	•	•	•	•	•	PRICE	80	
R11	DUCT MOUNTED EGGCRATE GRILLE	•	•	•	•	•	•	•	•	•	•	•	PRICE	80	
S10	DOUBLE DEFLECTION LOUVERED SUPPLY GRILLE	•	•	•	•	•	•	•	•	•	•	•	PRICE	520	
S20	STANDARD SQ. PLAQUE CEILING DIFFUSER - ROUND NECK - 24 X 24	•	•	•	•	•	•	•	•	•	•	•	PRICE	SPD	
S30	ROUND CONE DIFFUSER	•	•	•	•	•	•	•	•	•	•	•	PRICE	RCD	

GRAVITY ROOF VENTILATORS																
GENERAL NOTES: A. ROOF OPENING SIZES ARE APPROXIMATE. VERIFY B. COORDINATE STEEL FRAMING AROUND ROOF OPENING, WHERE REQUIRED FOR DECK SUPPORT. C. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR SEISMIC RESTRAINT REQUIREMENTS.																
NOTES: 1. -																
MARK	SERVICE	CFM	MAX. STATIC PRESSURE (IN. W.C.)	NECK SIZE			APPROX. HOOD SIZE			CURB HEIGHT	APPROX. WEIGHT (LBS.)	MOTORIZED	GRAVITY	BASIS OF DESIGN		SEE NOTE
				LENGTH	WIDTH	HEIGHT	LENGTH	WIDTH	HEIGHT					MANUFACTURER	MODEL	
01-GRV-1	INTAKE	8000	0.03	60"	48"	99"	94"	25"	18"	450	•	-	GREENHECK	FGI		
01-GRV-2	INTAKE	8000	0.03	60"	48"	99"	94"	25"	18"	450	•	-	GREENHECK	FGI		
01-GRV-3	INTAKE	3500	0.03	36"	30"	63"	58"	19"	18"	200	•	-	GREENHECK	FGI		

DUCT CONSTRUCTION, SEALING, AND INSULATION									
GENERAL NOTES: A. REFER TO SPECIFICATIONS FOR DUCT CONSTRUCTION. B. DUCT CONSTRUCTION AND SEALING SHALL BE PER SHEET METAL DUCT, INTERIOR LINING; EXTERIOR INSULATION, ETC. LATEST S.M.A.C.N.A. STANDARDS.									
NOTES: 1. DUCTWORK LOCATED OUTDOORS SHALL BE COVERED WITH A WEATHERTIGHT, UV RESISTANT JACKETING. 2. WATER TIGHT SEAL. 3. INSULATE 3/8" FROM PENETRATION OF WALL INTO BUILDING. 4. DUCT RUNOUTS TO AIR DEVICES MAY BE 1" CONSTRUCTION.									
DUCT SYSTEM	S.M.A.C.N.A. CLASS				INTERNALLY LINED	EXTERNAL INSULATION	DOUBLE WALL INSULATED	NOT INSULATED	SEE NOTE
	S.P. CON-STRUCT.	SEAL CLASS	RECT	RND					
SUPPLY DUCTWORK FOR ELECTRICAL ROOM RTU - OUTSIDE	+3"	A	8	4	•	-	-	-	1
RETURN DUCTWORK FOR ELECTRICAL ROOM RTU - OUTSIDE	-2"	A	16	8	•	-	-	-	1
SUPPLY DUCTWORK FOR ELECTRICAL ROOM RTU - INSIDE	+3"	A	8	4	•	-	-	-	4
RETURN DUCTWORK FOR ELECTRICAL ROOM RTU - INSIDE	-2"	A	16	8	•	-	-	-	4
SUPPLY DUCTWORK FOR SPLIT SYSTEMS	+2"	A	16	8	•	-	-	-	4
RETURN DUCTWORK FOR SPLIT SYSTEMS	-2"	A	16	8	-	-	-	•	-
EXHAUST DUCTWORK	-3"	A	8	4	-	NOTE 3	-	-	-
OUTSIDE AIR DUCTWORK	-1"	A	16	8	-	•	-	-	2

**2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS**
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

**MECHANICAL SUMMARY
MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT**

Thermal Zone
winter dry bulb: 15°
summer dry bulb: 95.2°

Interior design conditions
winter dry bulb: 72°
summer dry bulb: 75°
relative humidity: 55%

Building heating load: 25 MBH

Building cooling load: 24 MBH

Mechanical Spacing Conditioning System
Unitary
description of unit: SHP-1
heating efficiency: HSPF 10.4
cooling efficiency: SEER 16.6
size category of unit: 2 tons

List equipment efficiencies: See Above

APPENDIX B
SCALE: NONE



DA	NEG	10/13/23	ISSUE FOR CONSTRUCTION	EX21022
NO.	BY	DATE	REVISIONS	CLIENT NO.



MONTAUK
RENEWABLES PILOT BLDG
MECHANICAL SCHEDULES

DRAWN: BMW	DRAWN DATE: 10/13/23	CHECKED: TMK	CHKD DATE: 10/13/23	APPROVED: -	APPR DATE: -
SCALE: AS NOTED	DRAWING NUMBER: NEXUS PROJ NO: MON2201	DRAWING NUMBER: M702			REV: A



PROJECT NO. 2023-07014