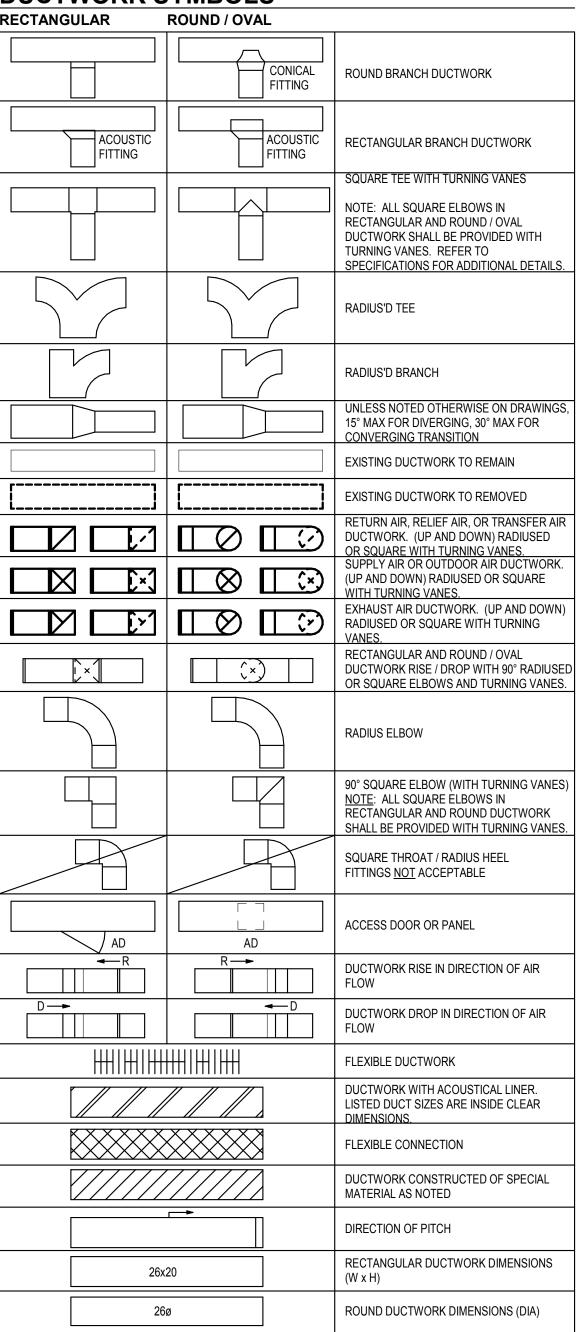
DUCTWORK SYMBOLS RECTANGULAR



DUCTWORK DEVICE SYMBOLS

DOCT WORK D	LEVICE 31 MIDULS
A3 10ø 300	AIR DEVICE. A3 = DESIGNATION (REFER TO FLOOR PLANS AND AIR DEVICE SCHEDULE FOR VARIOUS DESIGNATIONS). 10ø = NECK SIZE (IN INCHES). 300 = REQUIRED CFM. ALL AIR DEVICE DISCHARGE 4-WAY UNLESS NOTED WITH FLOW ARROWS. AIR DEVICE SHOWN IS 2-WAY SIDE THROW. METHOD OF IDENTIFICATION ALSO APPLIES TO OTHER CEILING MOUNTED AIR DEVICES.
SG1 20x12 300 BOG: 9'-0"	WALL OR DUCTWORK MOUNTED AIR DEVICE. SG1 = DESIGNATION (REFER TO AIR DEVICE SCHEDULE). 20x12 = DUCT CONNECTION SIZE (IN INCHES). 300 = REQUIRED CFM. 9'-0" = MOUNTING HEIGHT FROM FLOOR TO BOTTOM OF GRILLE.
	MANUAL BALANCING DAMPER WITH LOCKING DEVICE
XXX	BDD = BACK DRAFT DAMPER CBD = COUNTER-BALANCED BACK DRAFT DAMPER
A-D	FIRE DAMPER A = TYPE (REFER TO FLOOR PLANS FOR VARIOUS TYPES) D OR S = DYNAMIC OR STATIC
XX	SD = SMOKE DAMPER FS = COMBINATION FIRE - SMOKE DAMPER MDD = MOTORIZED DAMPER AFMS = AIR FLOW MEASURING STATION
(S)	DUCT MOUNTED SMOKE DETECTOR. COORDINATE LOCATION.
H	HUMIDITY SENSOR - DUCT MOUNTED
[] [] [] [] [] [] [] [] [] []	STATIC PRESSURE SENSOR - DUCT MOUNTED
0	CARBON DIOXIDE SENSOR - DUCT MOUNTED
<u> </u>	TEMPERATURE SENSOR - DUCT MOUNTED

OVAL DUCTWORK DIMENSIONS (W x H)

- -	CHECK VALVE
→ ₩ —	SHUTOFF VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
	COMBINATION SHUTOFF AND BALANCING VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
→	CONCENTRIC PIPE REDUCER
FOT FOB	ECCENTRIC PIPE REDUCER
Ø ^P	PRESSURE GAUGE
Ο _, Τ	TEMPERATURE GAUGE OR THERMOMETER
<u>≠</u> ⊣⊩	UNION
_ <u>_</u>	CLEANOUT
	STRAINER
- 	STRAINER WITH A BLOW DOWN VALVE AND HOSE CONNECTION
<u>v</u>	DRAIN VALVE WITH HOSE END CONNECTION
<u> </u>	AUTOMATIC FLOW CONTROLLER WITH P/T PLUG IN AND OUT
-t///-	EXPANSION JOINT
	MANUAL AIR VENT
<u></u> Д А	
<u> </u>	AUTOMATIC AIR VENT
<u>-M</u>	PRESSURE REDUCING VALVE
<u>—</u> ——	MODULATING 2 PORT AUTOMATIC CONTROL VALVE
	2 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE
★ ®	MODULATING 3 PORT AUTOMATIC CONTROL VALVE
	3 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE
	AUTOMATIC PRESSURE INDEPENDENT CONTROL VALVE
	QUICK OPENING MANUAL VALVE
	SAFETY RELIEF VALVE. FOR HYDRONIC SYSTEMS PIPE DISCHARGE AIR GAPPED TO FLOOR DRAIN UNLESS NOTED OTHERWISE. FOR STEAM SYSTEMS PIPE DISCHARG TO OUTDOORS.
<u> </u>	VACUUM BREAKER
<u>─</u> ⋈─	NEEDLE VALVE
N N	PRESSURE AND TEMPERATURE TEST PLUG
Z Ø,v	VACUUM GAUGE WITH STOP
<u>+</u> -	END CAP
	GLOBE VALVE
<u>- × </u> X	SHUTOFF VALVE AND BOX
W _{VB}	SHUTOFF VALVE AND BOX SHUTOFF VALVE ON RISER
S S	SOLENOID VALVE
<u></u>	WATER METER
9	FLOW METER
<u>~</u> -⊗	BI-METALIC STEAM TRAP AND DRIP ASSEMBLY
BM	THERMODYNAMIC STEAM TRAP AND DRIP ASSEMBLY
	INVERTED BUCKET STEAM TRAP AND DRIP ASSEMBLY FLOAT AND THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
FT O	FLOAT AND THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
$-\otimes_{\overline{TS}}$	THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
$\sqrt{}$	PRESSURE GAUGE WITH COCK AND SIPHON LOOP

MISC S	YMBOLS
©	CARBON DIOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
©	CARBON MONOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
(DP)	DIFFERENTIAL PRESSURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
Θ	HUMIDITY SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
<u>(S)</u>	TEMPERATURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
S	TEMPERATURE SENSOR MOUNTED IN CEILING PLENUM.
(SP)	STATIC PRESSURE SENSOR.
T	SPACE TEMPERATURE SENSOR / THERMOSTAT. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
f	EMERGENCY SHUTOFF STATION. 46" MOUNTING HEIGHT UNLESS NOTED OTHERWISE.

GENERAL FLOOR PLAN NOTES

(3	\rangle	PLAN NOTE. APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE.						
(3		DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL.						
A ⁻	1	EQUIPMENT, DEVICE, OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES.						
H1 0	OR <u>H1</u>	EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES.						
(2		RISER OR STACK NUMBER						
B		DETAIL: B = DETAIL DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED						
1 H2		SECTION: 1 = SECTION DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED						
A	1>	"UP TO" SYMBOL (ITEM ON FLOOR ABOVE)						
	TOE: 3' - 0" BOE: 0' - 6"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF EQUIPMENT, UNLESS NOTED OTHERWISE						
10" ELEV: 8' - 0"	10"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE						
20x20 20x20	TOD: 8' - 10" BOD: 7' - 2"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF DUCTWORK, UNLESS NOTED OTHERWISE						
#	UC-X	DOOR UNDERCUT. X = HEIGHT OF UNDERCUT IN INCHES; 0.75 INCH UNDERCUT IF NO HEIGHT IS NOTED. COORDINATE WITH GC.						
#	_DL-1	DOOR LOUVER. 1 = SQUARE FEET OF LOUVER.						
•	•	CONNECT TO EXISTING						
•)	DEMOLISH TO POINT INDICATED						
PIPING	SYMBO	n e						

PIPING SYMBOLS

<u>PIPING SYMB</u>	OLS	
DOUBLE LINE	SINGLE LINE	
		BOTTOM CONNECTION (45°)
(A)	<u></u>	BOTTOM CONNECTION (90°)
		BRANCH TEE CONNECTION (NOTE: BULLHEAD TEE'S ARE NOT PERMITTED)
		DIRECTION OF PITCH
D → D	D-	DROP
		ELBOW DOWN
	<u> </u>	ELBOW UP
(======================================		EXISTING PIPE TO BE REMOVED
		EXISTING PIPE TO REMAIN
•		FLOW DIRECTION DESIGNATION
 ●	——————————————————————————————————————	PIPE RISER
	\bigcirc	PUMP
← R		RISE
		TOP CONNECTION (45°)
		TOP CONNECTION (90°)

HVAC PIPING DESIGNATIONS

——CHS——	CHILLED WATER SUPPLY PIPE
	CHILLED WATER RETURN PIPE
CWS	CONDENSER WATER SUPPLY PIPE
CWR	CONDENSER WATER RETURN PIPE
CHGS	CHILLED WATER GLYCOL SOLUTION SUPPLY PIPE
CHGR	CHILLED WATER GLYCOL SOLUTION RETURN PIPE
D	DRAIN LINE. PITCH IN DIRECTION INDICATED
HWR	HEATING HOT WATER RETURN PIPE
HWS	HEATING HOT WATER SUPPLY PIPE
MU	WATER MAKE-UP PIPE
	VENT PIPE
——ET——	EXPANSION TANK PIPE
——HG——	REFRIGERANT HOT GAS LINE
	REFRIGERANT LIQUID LINE
RS	REFRIGERANT SUCTION LINE
10	STEAM SUPPLY PIPE - NUMBER INDICATES P.S.I.G.
——————————————————————————————————————	HIGH PRESSURE CONDENSATE RETURN PIPE
——HPS——	HIGH PRESSURE STEAM SUPPLY PIPE
LPC	LOW PRESSURE CONDENSATE RETURN PIPE
LPS	LOW PRESSURE STEAM SUPPLY PIPE
	MEDIUM PRESSURE CONDENSATE RETURN PIPE
MPS	MEDIUM PRESSURE STEAM SUPPLY PIPE
PC	PUMPED CONDENSATE RETURN PIPE

ABBREVIATIONS

	KEVIATIONO		
CCU	- AIR COMPRESSOR OR AIR CONDITIONER - AIR COOLED CONDENSING UNIT - ACCESS DOOR OR AREA DRAIN	ID INV IN	- INSIDE DIAMETER - INVERT ELEVATION - INCHES
ADJ AFF	- ADJUSTABLE - ABOVE FINISHED FLOOR	KEC	- KITCHEN EQUIPMENT CONTRACTOR
AFG AFMS	- ABOVE FINISHED GRADE - AIR FLOW MEASURING STATION	L	- LENGTH
LT .P	- ALTERNATE - ACCESS PANEL	LAT LAV	- LEAVING AIR TEMPERATURE - LAVATORY
PPROX RCH	- APPROXIMATE - ARCHITECT OR ARCHITECTURAL	LBS LPC	- POUNDS - LOW PRESSURE CONDENSATE RETURN
SSY TC	- ASSEMBLY - AUTOMATIC TEMPERATURE CONTROL	LPS LWT	- LOW PRESSURE STEAM SUPPLY - LEAVING WATER TEMPERATURE
10	(SYNONYMOUS WITH BAS)		
AS	- BUILDING AUTOMATION SYSTEM	MAX MDD	- MAXIMUM - MOTORIZED DAMPER
DD FP	- BACK DRAFT DAMPER - BACKFLOW PREVENTER	MEZZ MFR	- MEZZANINE - MANUFACTURER
LDG OB	- BUILDING - BOTTOM OF BEAM	MH MIN	- MANHOLE - MINIMUM OR MINUTE
OD OE	- BOTTOM OF DUCT - BOTTOM OF EQUIPMENT	MISC MTD	- MISCELLANEOUS - MOUNTED
OF	- BOTTOM OF FOOTING	MTG	- MOUNTING
OG OP	- BOTTOM OF GRILLE - BOTTOM OF PIPE	MPC	- MEDIUM PRESSURE CONDENSATE RETURN
OT TU	- BOTTOM - BRITISH THERMAL UNIT	MPS MU	- MEDIUM PRESSURE STEAM SUPPLY - WATER MAKE-UP
TUH	- BRITISH THERMAL UNIT PER HOUR	N/C	- NORMALLY CLOSED
BD FCI	- COUNTER BALANCED BACKDRAFT DAMPER - CONTRACTOR FURNISHED CONTRACTOR	NIC N/O	- NOT IN CONTRACT - NORMALLY OPEN
	INSTALLED	NOM	- NOMINAL
FM HS	- CUBIC FEET PER MINUTE - CHILLED WATER SUPPLY	NPT NTS	- NATIONAL PIPE THREAD - NOT TO SCALE
HR HGR	- CHILLED WATER RETURN - CHILLED WATER GLYCOL SOLUTION RETURN	OA	- OUTDOOR AIR
HGS LG	- CHILLED WATER GLYCOL SOLUTION SUPPLY - CEILING	OBD OD	- OPPOSED BLADE DAMPER - OUTSIDE DIAMETER
MU O	- CONCRETE MASONRY UNIT - CLEAN OUT	OFCI	- OWNER FURNISHED CONTRACTOR INSTALLED
O2 ONN	- CARBON DIOXIDE - CONNECT OR CONNECTION	OFOI	- OWNER FURNISHED OWNER INSTALLED
ONTR	- CONTRACTOR	P	- PROPANE GAS
TR U	- CENTER - COPPER	PC	- PLUMBING CONTRACTOR (DIVISION 22) OR PUMPED CONDENSATE RETURN
W WR	- COLD WATER - CONDENSER WATER RETURN	PLBG PRESS	- PLUMBING - PRESSURE
WS	- CONDENSER WATER SUPPLY	PRV PSF	- PRESSURE REGULATING VALVE - POUNDS PER SQUARE FOOT
В	- DRAIN LINE - DRY BULB	PSI PSIG	- POUNDS PER SQUARE INCH - POUNDS PER SQUARE INCH GAUGE
DC I	- DIRECT DIGITAL CONTROLS - DEIONIZED WATER	RA	- RETURN AIR
IA	- DIAMETER	RAD	- RADIUS
IM N	- DIMENSION - DOWN	RCP RD	- REFLECTED CEILING PLAN - ROOF DRAIN
WG	- DRAWING	REC REQD	- RECESSED - REQUIRED
A AT	- EACH OR EXHAUST AIR - ENTERING AIR TEMPERATURE	RI RL	- ROUGH IN - REFRIGERANT LIQUID
C J	- ELECTRICAL CONTRACTOR (DIVISION 26) - EXPANSION JOINT	ROS ROR	- REVERSE OSMOSIS WATER SUPPLY - REVERSE OSMOSIS WATER RETURN
LEC LEV	- ELECTRICAL - ELEVATOR	RPM RS	- REVOLUTIONS PER MINUTE - REFRIGERANT SUCTION
QUIP	- EQUIPMENT		
T TR	- EXPANSION TANK - EXISTING TO REMAIN	S SA	- SPRINKLER (WET) - SUPPLY AIR
QS WT	- EQUIPMENT SUPPLIER - ENTERING WATER TEMPERATURE	SAN SCH	- SANITARY OR SANITARY DRAIN - SCHEDULE
XH XP	- EXHAUST - EXPANSION	SCW SHT	- SOFT COLD WATER - SHEET
XT X	- EXTERIOR - EXISTING	SPEC SQ	- SPECIFICATIONS - SQUARE
		SR	- SUPPLY RISER
D F	- FLOOR DRAIN - FINISHED FLOOR ELEVATION	SRV SS	- SAFETY RELIEF VALVE - STAINLESS STEEL
LR OB	- FLOOR - FLAT ON BOTTOM		- STANDARD - STORM OR STORM DRAINAGE
OF OG	- FUEL OIL FLOW - FUEL OIL GAUGE	STRUC SUC	- STRUCTURAL OR STRUCTURE - SITE UTILITY CONTRACTOR
OR OS	- FUEL OIL RETURN - FUEL OIL SUPPLY	TEMP	- TEMPERATURE
OT PM	- FLAT ON TOP - FEET PER MINUTE	TOB TOD	- TOP OF BEAM - TOP OF DUCT
SC	- FIRE SUPPRESSION CONTRACTOR (DIVISION 21)	TOE	- TOP OF DOCT - TOP OF EQUIPMENT - TOP OF FOOTING
T TG	- FEET - FOOTING	TOF TOJ	- TOP OF JOIST
	- GAS OR NATURAL GAS	TOP TOS	- TOP OF PIPE - TOP OF SLAB OR TOP OF STEEL
A AL	- GAUGE - GALLON	TYP	- TYPICAL
ALV C	- GALVANIZED - GENERAL TRADES CONTRACTOR	UNO	- UNLESS NOTED OTHERWISE
PM	- GALLONS PER MINUTE	V VAC	- VENT - VACUUM
В	- HOSE BIBB	VEL	- VELOCITY
C D	- HVAC CONTRACTOR (DIVISION 23) - HUB DRAIN	VFD	- VARIABLE FREQUENCY DRIVE (ADJUSTABLE FREQUENCY
G P	- REFRIGERANT HOT GAS - HORSEPOWER	VIB	MOTOR CONTROLLER) - VALVE IN BOX
PC PS	- HIGH PRESSURE CONDENSATE RETURN - HIGH PRESSURE STEAM SUPPLY	VOL VTR	- VOLUME - VENT THROUGH ROOF
R	- HOUR	VR	- VENT RISER
T TR	- HEAT TRACE - HEATER	W/	- WITH
VAC W	- HEATING, VENTILATING, AND AIR CONDITIONING - HOT WATER	WB	- WITHOUT - WET BULB
WR WS	- HEATING HOT WATER RETURN - HEATING HOT WATER SUPPLY	WCO	- WALL CLEANOUT

NOTE: ALL SYMBOLS AND ABBREVIATIONS ARE SUBJECT TO MODIFICATIONS ON OTHER DRAWINGS.

ALL SYMBOLS OR ABBREVIATIONS MIGHT NOT NECESSARILY BE USED ON THIS PROJECT.

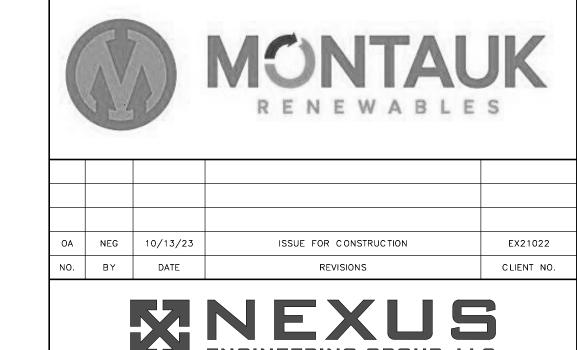
GENERAL NOTES

- A. THESE NOTES APPLY TO ALL DIVISION 23 DRAWINGS.
- B. ALL WORK SHALL BE IN ACCORDANCE WITH THE BEST QUALITY STANDARDS OF THE TRADE, AND SHALL CONFORM WITH ALL FEDERAL, STATE, AND LOCAL CODES AND STANDARDS. THE SAME ARE MADE A
- PART OF THESE CONTRACT DOCUMENTS. C. CONTRACT DOCUMENTS CONSIST OF BOTH THE PROJECT MANUAL AND DRAWINGS, AND BOTH ARE
- INTENDED TO BE COMPLIMENTARY. ANYTHING APPEARING ON EITHER MUST BE EXECUTED THE SAME AS D. CONSTRUCTION DOCUMENTS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. HOWEVER, SYSTEMS

E. DUCT RUNOUT SIZES TO DIFFUSERS SHALL BE THE SAME AS THE GRILLE OR DIFFUSER NECK SIZE

- HAVE BEEN SHOWN DIAGRAMMATICALLY AND IN SOME CASES, ENLARGED FOR CLARITY. ANY OFFSETS, ADDITIONAL FITTINGS, AND OR APPURTENANCES REQUIRED TO PROVIDE A COMPLETE AND COORDINATED SYSTEM SHALL BE BORN BY THE CONTRACTOR AND INCLUDED WITH THE CONTRACT.
- UNLESS OTHERWISE NOTED. F. MAINTAIN REQUIRED SERVICE ACCESS SPACE AT EQUIPMENT.
- G. REFER TO CONTROL GENERAL NOTES FOR COORDINATION INFORMATION.
- H. ALL CUTTING AND PATCHING WORK REQUIRED FOR THE HVAC WORK SHALL BE INCLUDED IN THE CONTRACT UNLESS NOTED OTHERWISE BELOW. REFINISH ANY SURFACE DISTURBED UNDER THIS WORK TO MATCH EXISTING, EXCEPT WHERE REFINISHING OF THAT SURFACE IS INCLUDED UNDER THE GENERAL TRADES CONTRACT.
- I. COORDINATE ALL REQUIRED SHUT-DOWNS WITH THE OWNER 14 DAYS IN ADVANCE OF SHUT-DOWN. J. AIRFOIL TURNING VANES SHALL BE INSTALLED IN ALL 90 DEGREE ELBOWS EXCEPT TRANSFER DUCTS AND OPEN RETURN AIR BOOTS.
- K. FLOOR PLANS DO NOT INDICATE ALL OF THE REQUIRED VALVING, DEVICES, ETC...ON THE PIPING REQUIRED. REFER TO STANDARD DETAILS, FLUID FLOW DIAGRAMS AND SPECIFICATION FOR ADDITIONAL
- L. ALL DUCTWORK DESIGNATIONS REFER TO NET FREE AREA INSIDE THE DUCTWORK.
- M. VOLUME DAMPERS SHALL BE LOCATED AT BRANCH CONNECTION TO THE MAIN PRIOR TO EACH AIR
- N. OFFSET PIPING AND DUCTWORK AS REQUIRED TO MAINTAIN ALL MANUFACTURER RECOMMENDED CLEARANCES.
- O. COORDINATE WALL AND FLOOR OPENINGS WITH ALL TRADES CONTRACTOR.
- P. BRANCH PIPING TO UNITS SHALL BE SAME SIZE INDICATED ON UNIT SCHEDULE UNLESS NOTED
- Q. FIELD VERIFY EXISTING CONDITIONS DURING BIDDING PERIOD, INCLUDING EQUIPMENT, PIPE, AND DUCT SIZES AND LOCATIONS, CLEARANCES, ETC.
- R. DUCTWORK AND PIPING ON DRAWINGS DOES NOT INDICATE ALL REQUIRED OFFSETS AND FITTINGS. INCLUDE THESE OFFSETS AND FITTINGS TO COORDINATE WITH OTHER CONTRACTORS AS PART OF THE
- S. COORDINATE LOCATION OF THERMOSTATS AND OTHER WALL-MOUNTED DEVICES WITH FURNITURE,
- WALL FRAMING, ELECTRICAL OUTLETS AND DEVICES, AND TECHNOLOGY OUTLETS AND DEVICES PRIOR
- T. THERMOSTATS SHALL BE MOUNTED PERPENDICULAR AND IN VERTICAL ALIGNMENT WITH THE ROOM LIGHT SWITCH WHERE POSSIBLE.

MECHANICAL SHEET LIST									
SHEET NUMBER	SHEET NAME								
M001	MECHANICAL LEGEND								
M100	MECHANICAL OVERALL PLAN								
M101	MECHANICAL PLAN - PROCESS BLOCK / HOT OIL ROOM								
M102	MECHANICAL PLAN - ELECTRICAL ROOM / SERVER ROOM / CONTROL ROOM								
M401	SECTIONS AND ENLARGED VIEWS								
M402	SECTIONS AND ENLARGED VIEWS								
M501	MECHANICAL DETAILS								
M601	ATC LEGEND								
M602	ATC DIAGRAMS								
M603	ATC DIAGRAMS								
M604	ATC DIAGRAMS								
M701	MECHANICAL SCHEDULES								
M702	MECHANICAL SCHEDULES								
Total Count: 13									

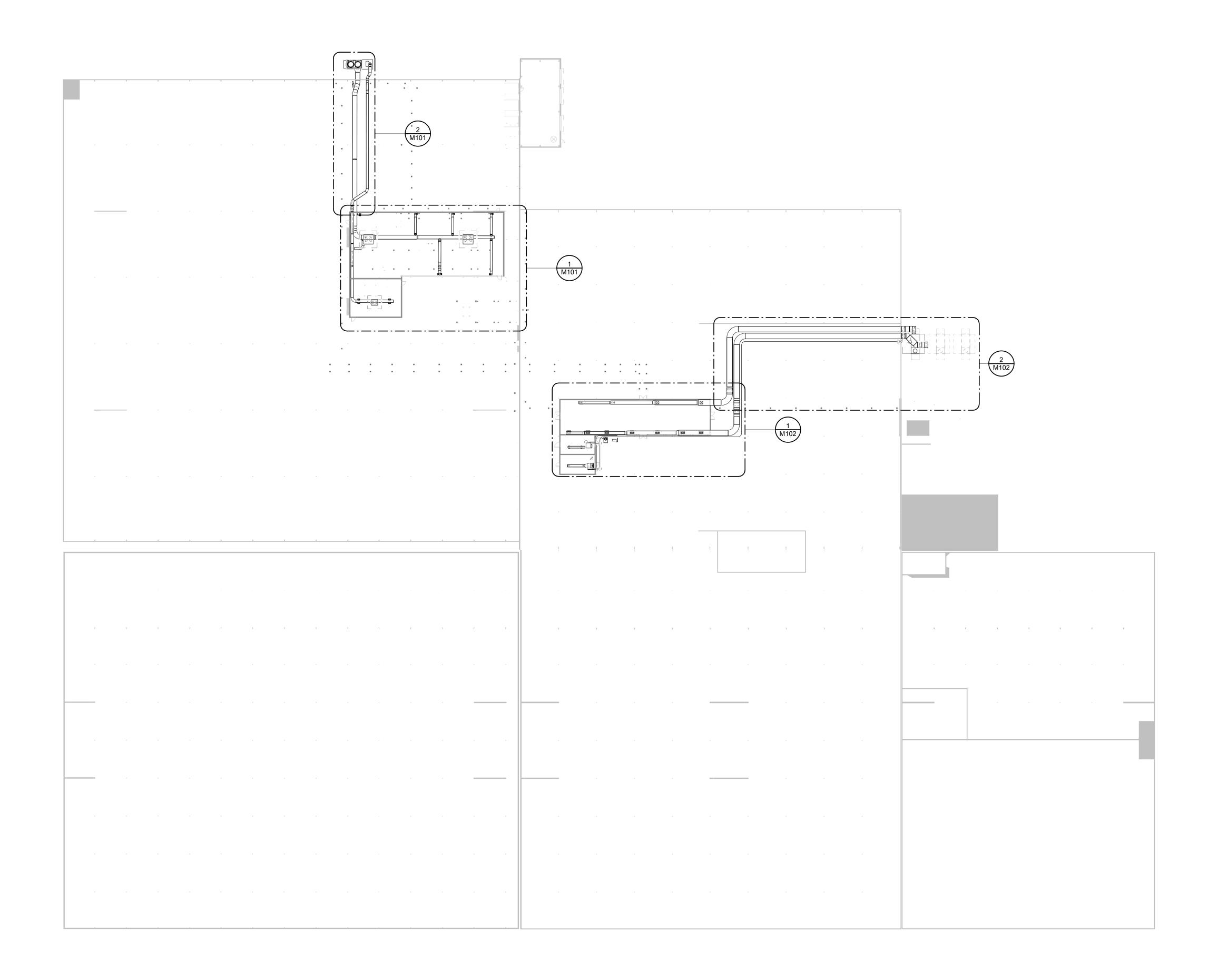


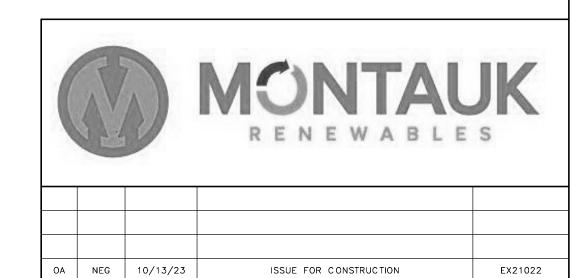


RENEWABLES PILOT BLDG MECHANICAL LEGEND



DRAWN DATE: CHECKED: CHKD DATE: AI 10/13/23 TMK 10/13/23 M001







MONTAUK RENEWABLES PILOT BLDG MECHANICAL OVERALL PLAN



DRAWN:

BMW

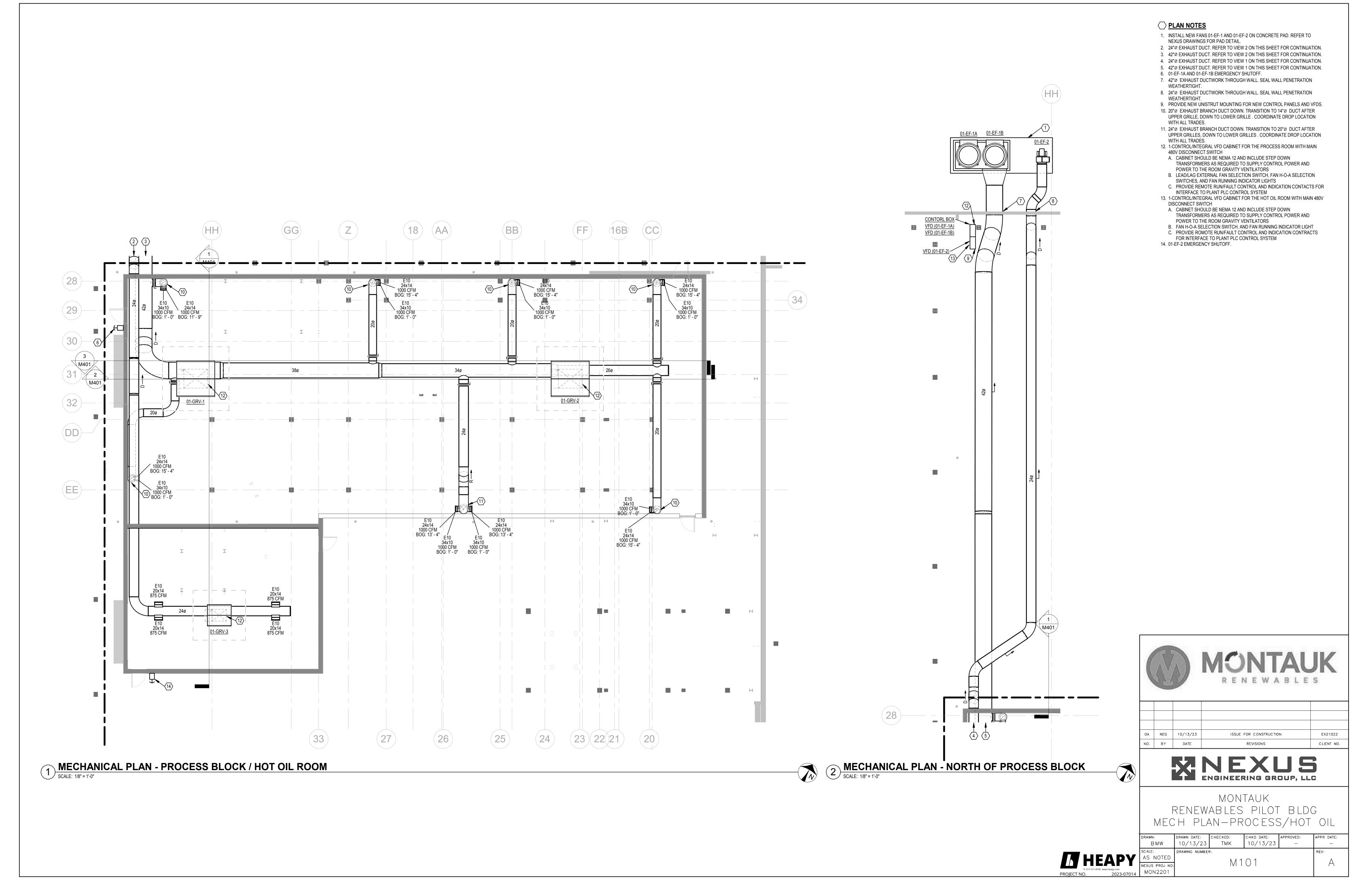
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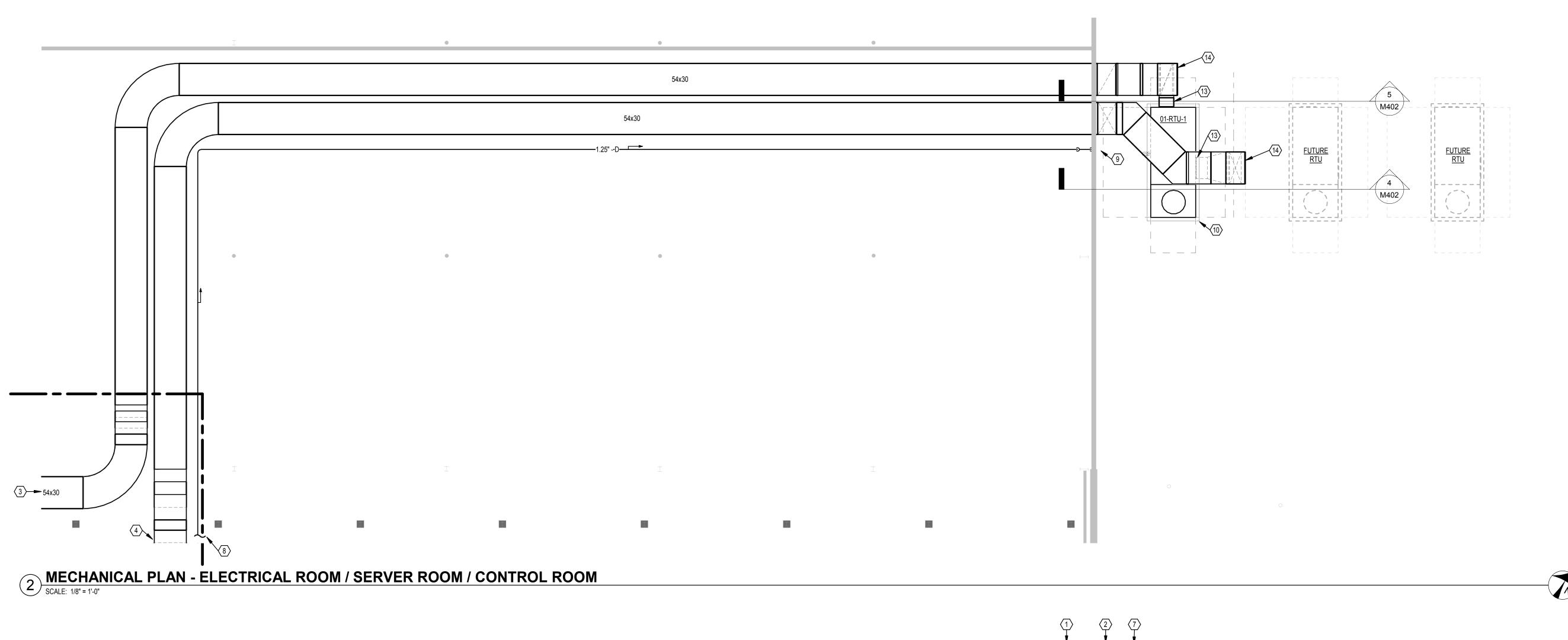
TMK

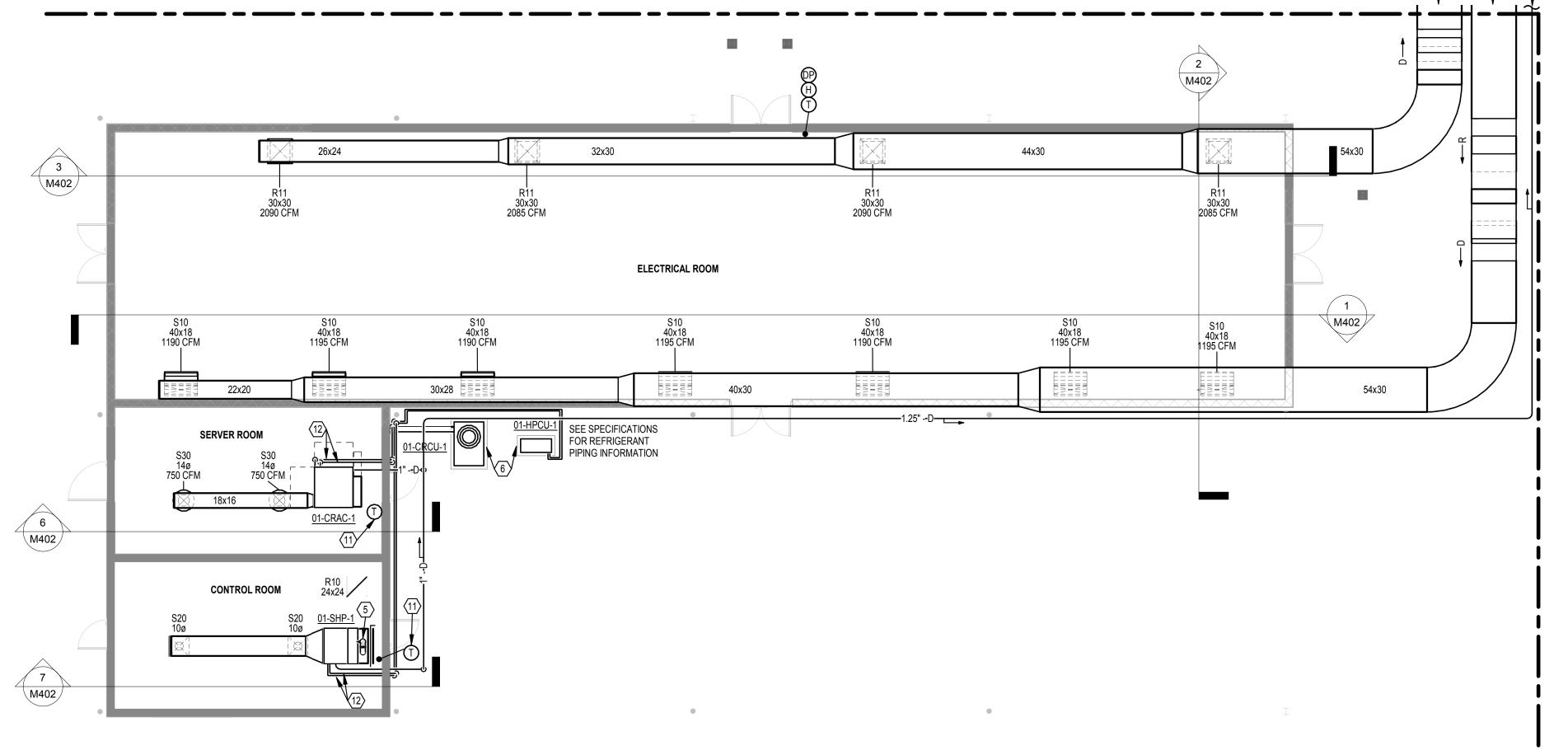
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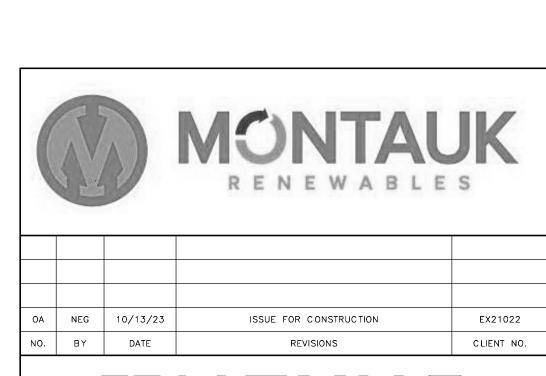






MECHANICAL PLAN - ELECTRICAL ROOM / SERVER ROOM / CONTROL ROOM

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



 \bigcirc <u>Plan notes</u>

4" CONCRETE HOUSEKEEPING PAD.

11. FACTORY FURNISHED CONTROLLER.

MANUFACTURERS RECOMMENDATIONS.

54" X 30" RETURN DUCT. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION.
 54" X 30" SUPPLY DUCT. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION.
 54" X 30" RETURN DUCT. REFER TO VIEW 1 ON THIS SHEET FOR CONTINUATION.
 54" X 30" SUPPLY DUCT. REFER TO VIEW 1 ON THIS SHEET FOR CONTINUATION.

5. 6Ø OUTSIDE AIR DUCT UP THROUGH ROOF. BALANCE TO 50 CFM.

 1.25" CONDENSATE DRAIN. REFER TO VIEW 2 ON THIS SHEET FOR CONTINUATION. PROVIDE INSULATION TO CONDENSATE LINE.
 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.

12. PROVIDE REFRIGERANT PIPING, DEVICES, AND ACCESSORIES PER

13. PROVIDE BACKDRAFT DAMPER IN DUCTWORK CONNECTION TO RTU.

14. TEE FITTING SHALL BE CAPPED AND INSULATED FOR FUTURE CONNECTION.

10. INSTALL 01-RTU-1 ON CONCRETE PAD. REFER TO NEXUS DRAWINGS FOR PAD

X NEXUS

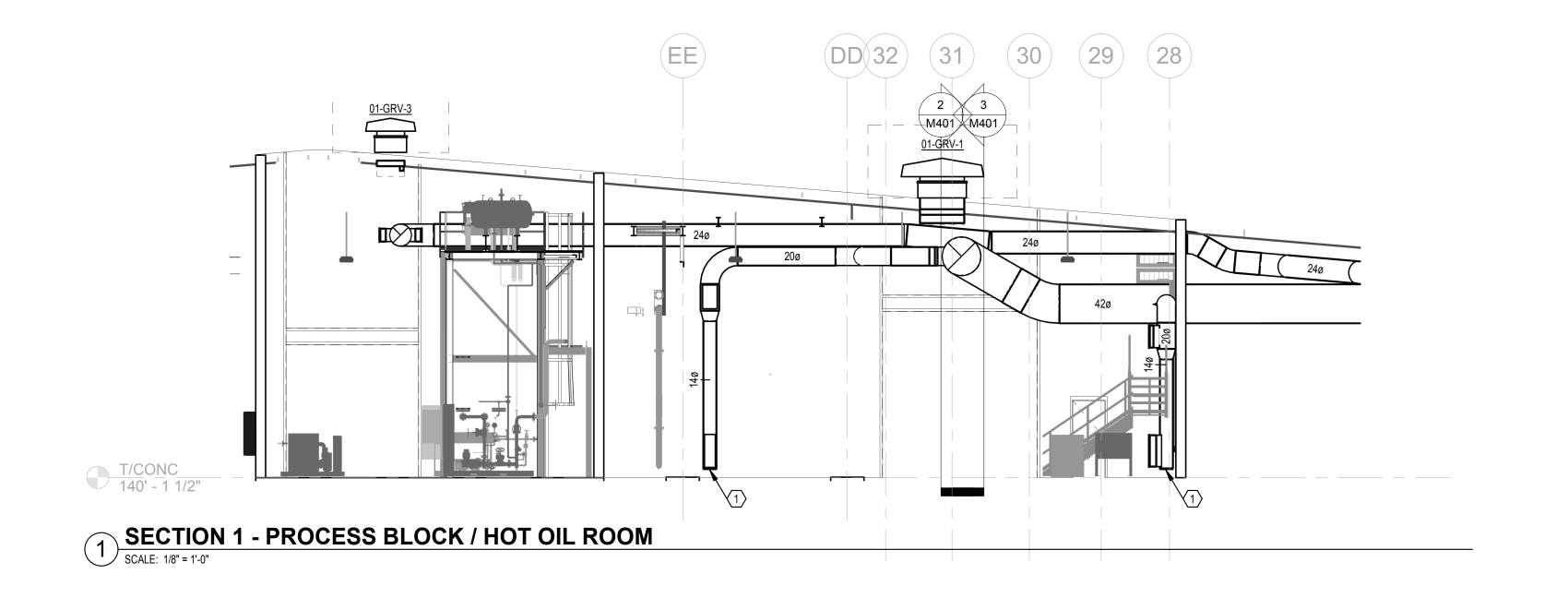
ENGINEERING GROUP, LLG

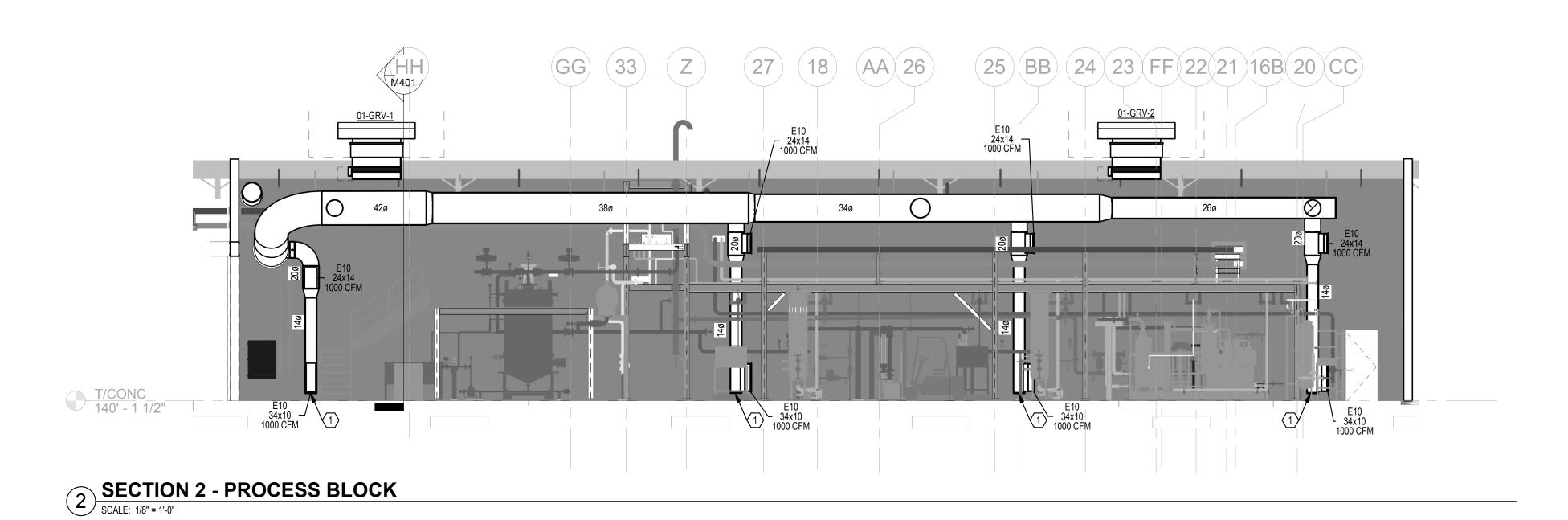
MONTAUK RENEWABLES PILOT BLDG MECH PLAN-ELEC/SERVER/CNTR

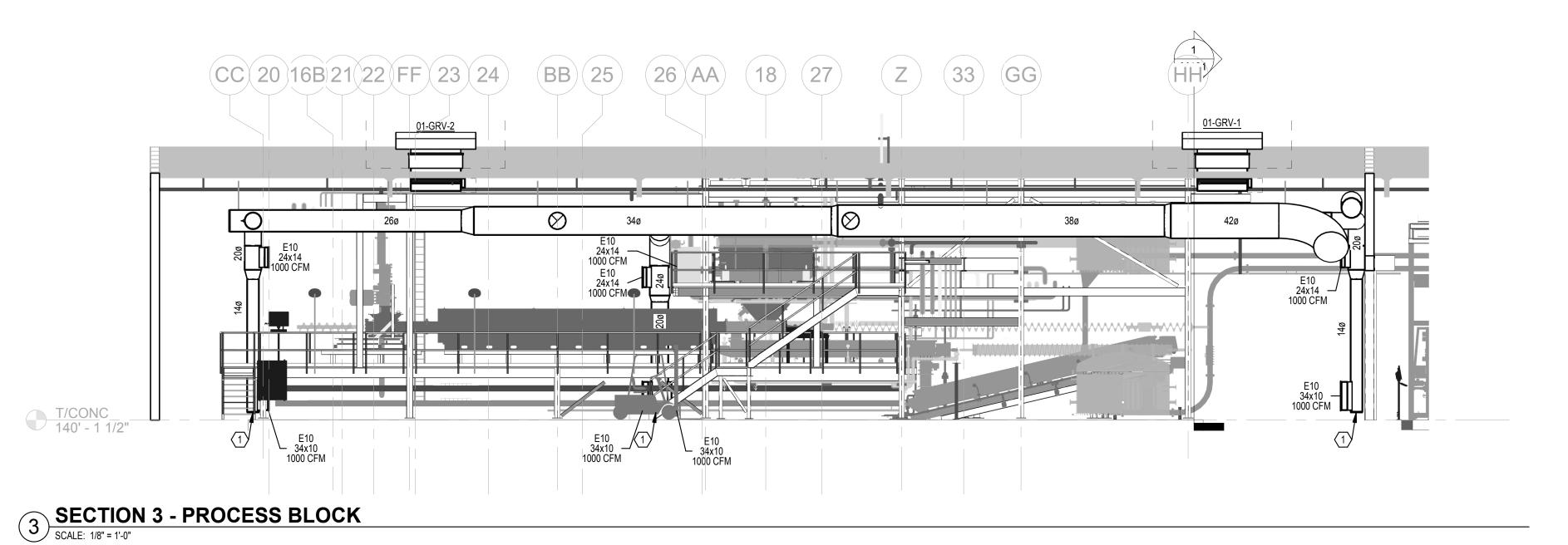
BMW 10
SCALE:
AS NOTED
NEXUS PROJ NO:
MON 2 2 0 1

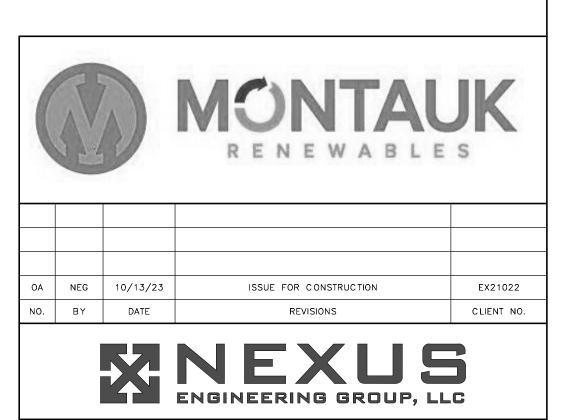
BMW DATE: CHECKED: CHKD DATE: APPROVED: APPR DATE: 10/13/23 TMK 10/13/23 — —

ALE: DRAWING NUMBER: REV: APPROVED: APPR DATE: APPR DA



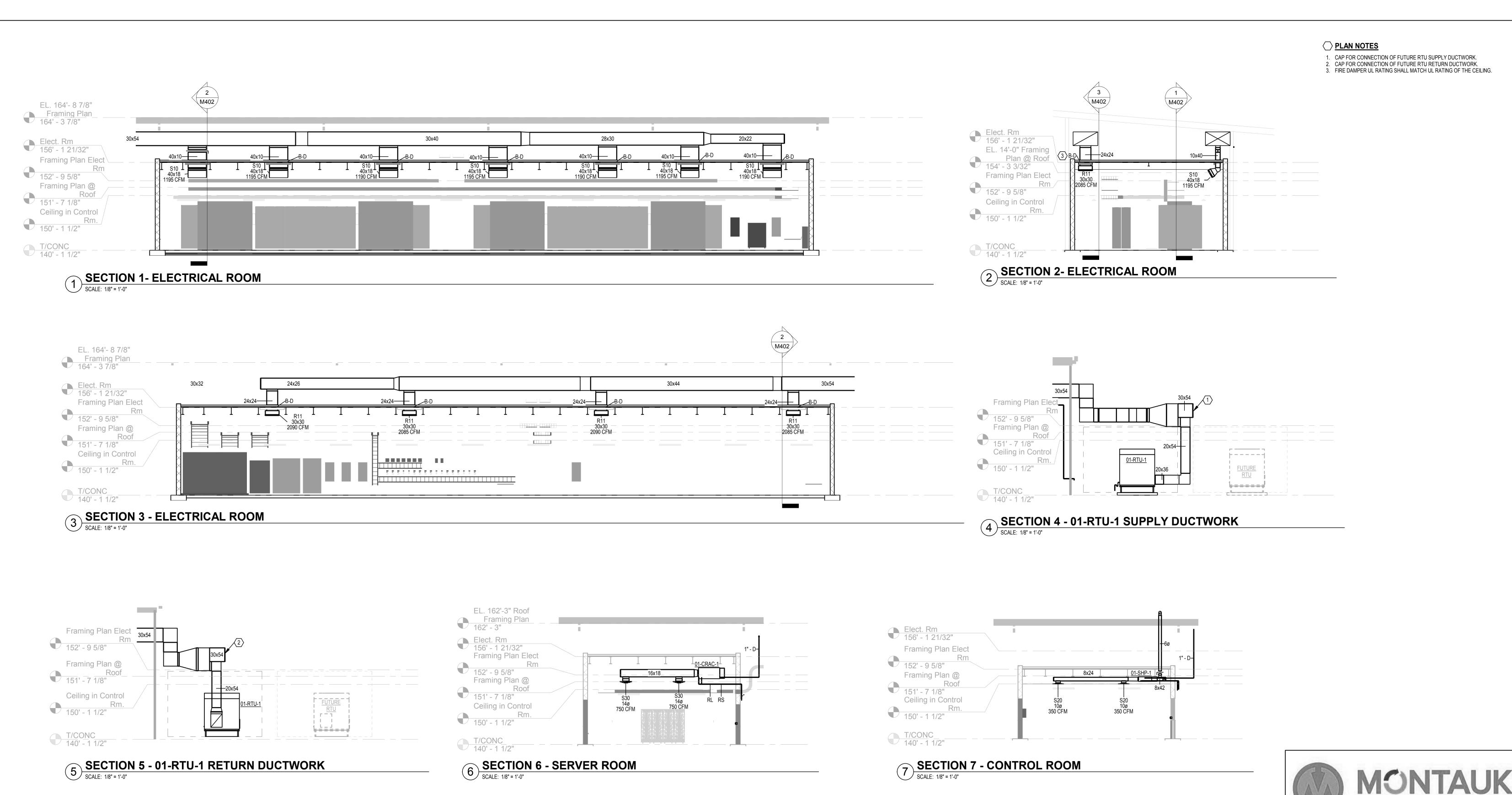


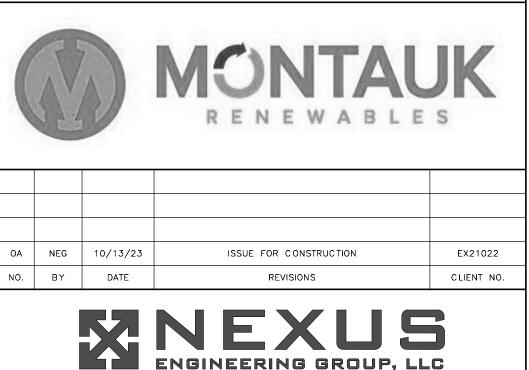




MONTAUK RENEWABLES PILOT BLDG SECTIONS AND ENLARGED VIEWS

•	DRAWN: BMW	DRAWN DATE: 10/13/23	CHECKED: TMK	CHKD DATE: 10/13/23	APPROVED:	APPR DATE:
THEAPY P: 317-571-8795 www.heapy.com	SCALE: AS NOTED NEXUS PROJ NO:	DRAWING NUMBER		REV:		
PROJECT NO. 2023-07014	MON2201					





MONTAUK
RENEWABLES PILOT BLDG
SECTIONS AND ENLARGED VIEWS

BMW 10/13/23 TMK 10/13/23 APPROVED: APPR DATE:

BMW 10/13/23 TMK 10/13/23 — —

SCALE:

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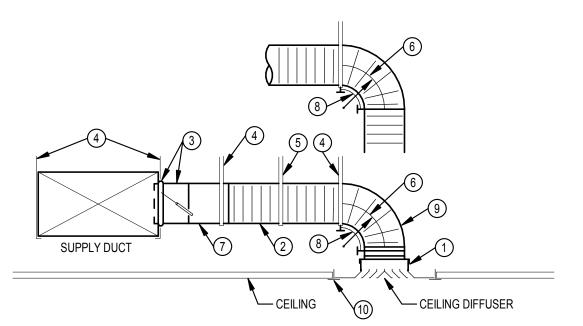
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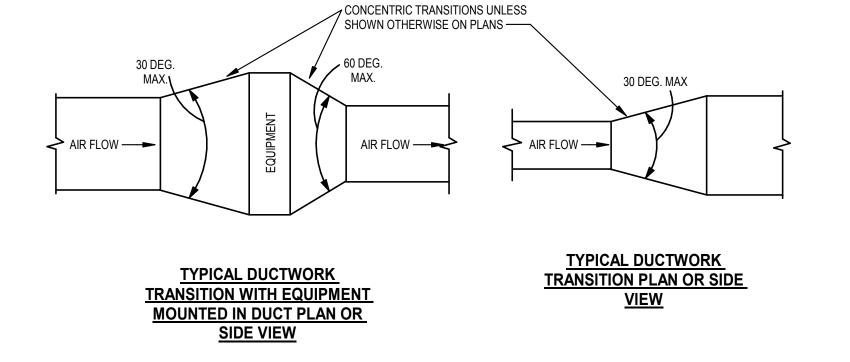
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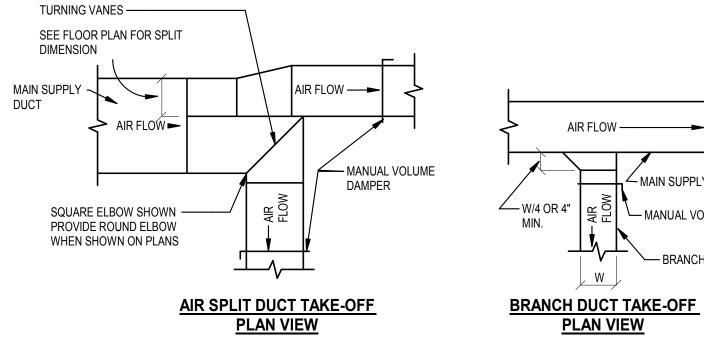
○ NOTES

- 1. 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.
- 2. INSULATED FLEXIBLE DUCT SAME DIAMETER AS BRANCH DUCT(7), 3 FT. MAXIMUM TOTAL LENGTH PER AIR DEVICE. STRETCH FLEXIBLE DUCT TO AT LEAST 90% OF FULLY
- EXTENDED LENGTH. 3. 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.
- 4. DUCT STRAP HANGER. ATTACH TO STRUCTURE. 5. STRAP HANGER REQUIRED IF LENGTH OF FLEXIBLE DUCT IS LONGER THAN 2 FT.
- 6. MINIMUM CENTERLINE RADIUS EQUAL TO DUCT DIAMETER. 7. ROUND SHEET METAL BRANCH DUCT, SAME SIZE AS
- DIFFUSER INLET UNLESS NOTED OTHERWISE. 8. FLEXIBLE DUCT ELBOW SUPPORT, INSTALLED WITH NYLON BANDING PER MANUFACTURER'S INSTRUCTIONS.
- 9. A RADIUS'D SHEET METAL ELBOW MAY BE USED IN LIEU OF A FLEXIBLE ELBOW SUPPORT WHEN CONNECTED DIRECTLY TO AIR DEVICE.
- 10. CEILING T-BAR SUPPORT (FOR LAY-IN APPLICATIONS). COORDINATE AND VERIFY T-BAR TYPE FOR COMPATIBILITY WITH DIFFUSER.



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.

MAIN EXHAUST OR ──► ➤ AIR FLOW —— RETURN AIR FLOW ── W/4 OR 4" MIN. - PROVIDE MANUAL VOLUME DAMPER AT BRANCH DUCT -EACH BRANCH DUCT



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

4 CEILING DIFFUSER DUCT CONNECTION

DUCTWORK TRANSITIONS

EXHAUST OR RETURN BRANCH DUCTWORK

SUPPLY DUCTWORK BRANCH TAKE-OFFS

SUPPLY DUCT

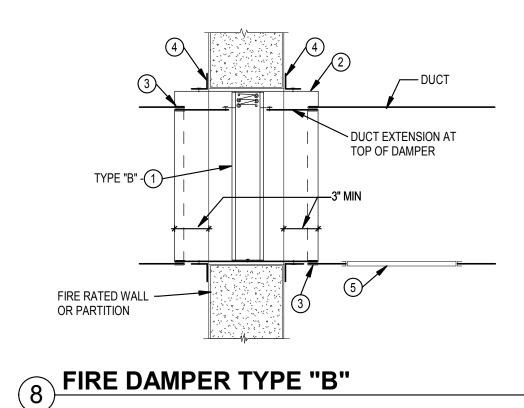
FIRE DAMPER

ACCESS PANEL

○ NOTES

DUCTWORK.

3. DUCT STRAP HANGER.

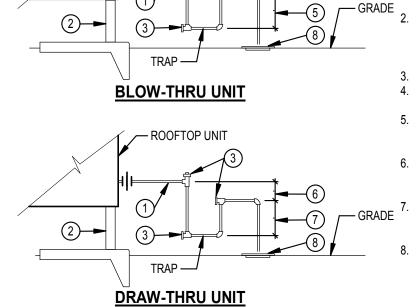


GENERAL NOTES

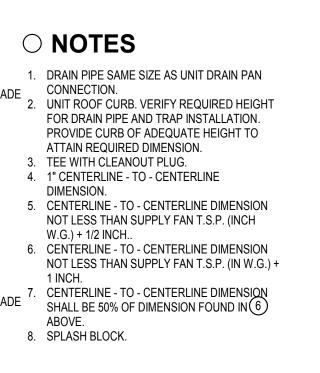
- B. INSTALLATION OF FIRE DAMPERS AND ACCESSORIES SHALL CONFORM TO NFPA 90A, SMACNA AND MANUFACTURER'S INSTRUCTIONS. C. DETAILS SHOW INSTALLATION OF FIRE DAMPER IN WALL. DAMPER INSTALLATION IN FLOOR SIMILAR. COORDINATE REQUIRED ACCESS
- D. INSULATE RETAINING ANGLES FOR SYSTEMS REQUIRED TO BE INSULATED.

○ NOTES

- 1. 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
- TYPE "B" BLADES STORED OUT OF AIR STREAM. RECTANGULAR, ROUND OR OVAL DUCT CONNECTION. 2. 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. 3. DUCT/SLEEVE CONNECTION. BREAKAWAY TYPE SHOWN. CONNECTION MAY BE RIGID TYPE IF ALLOWED BY CODE AUTHORITY.
- 4. 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.
- 5. DUCT ACCESS PANEL OR DOOR. REFER TO SPECIFICATIONS.



ROOFTOP UNIT DRAIN PIPING



1. 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

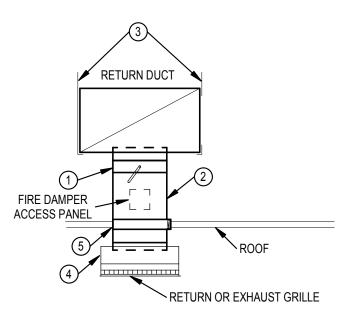
4. SHEET METAL DUCT, FULL SIZE OF GRILLE NECK SIZE. CONNECT AND SEAL

2. SHEET METAL DUCT, SIZE AS NOTED ON PLANS.

DUCT TO GRILLE, SEAL CLASS A.

6. FIRE DAMPER. REFER TO DETAIL.

5. TRANSITION ELBOW WITH TURNING VANES.



○ NOTES

1. 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

✓ MAIN SUPPLY DUCT

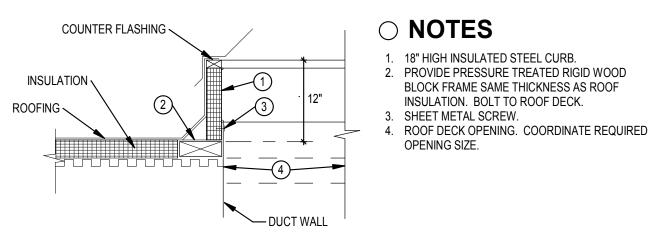
BRANCH DUCT

— MANUAL VOLUME DAMPER

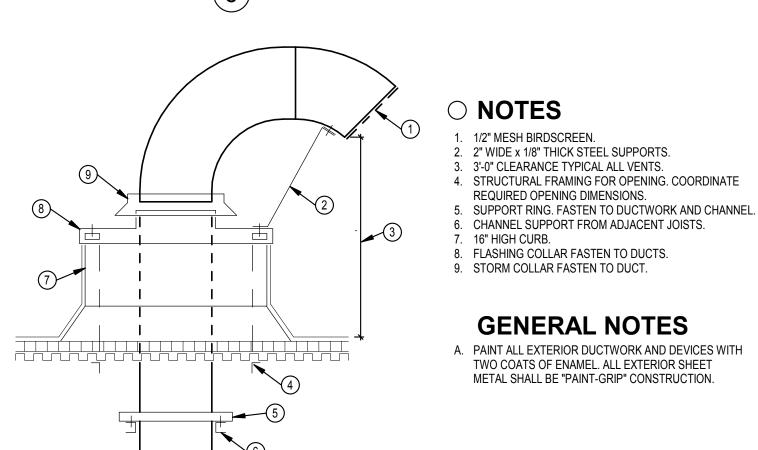
- DUCTWORK. 2. SHEET METAL DUCT, SIZE AS NOTED ON PLANS.
- 3. DUCT STRAP HANGER.
- 4. SHEET METAL PLENUM, FULL SIZE OF GRILLE NECK, MINIMUM 6" TALL WITH SAME INTERNAL OR EXTERNAL INSULATION AS RETURN DUCT, CONNECT TO GRILLE. SEAL PLENUM AND CONNECTION TO GRILLE, SEAL CLASS A.
- 5. FIRE DAMPER. REFER TO DETAIL.

6 SUPPLY GRILLE DUCT CONNECTION









9 OUTSIDE AIR DUCTS THRU ROOF



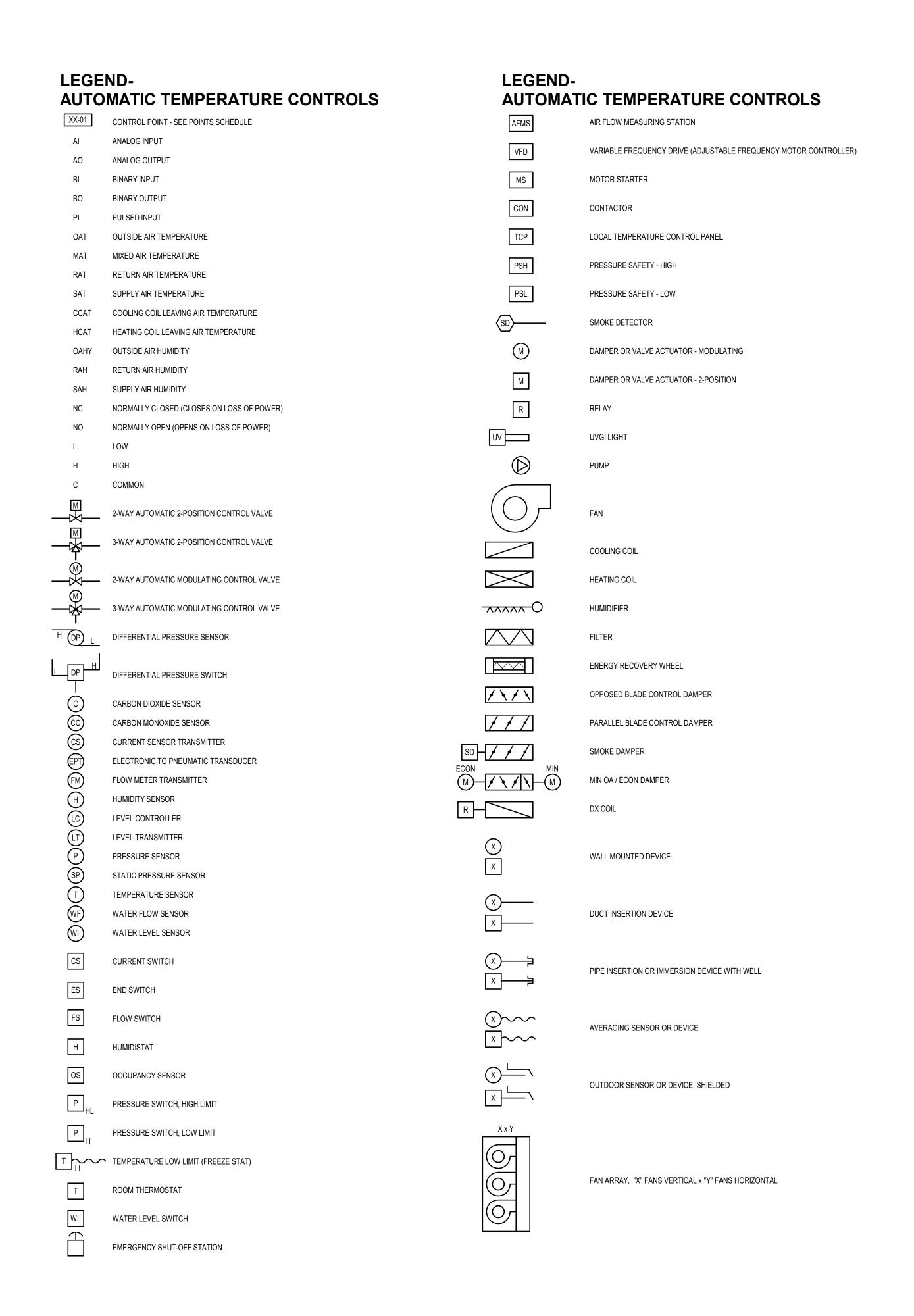


RENEWABLES PILOT BLDG MECHANICAL DETAILS

10/13/23 TMK 10/13/23 M501

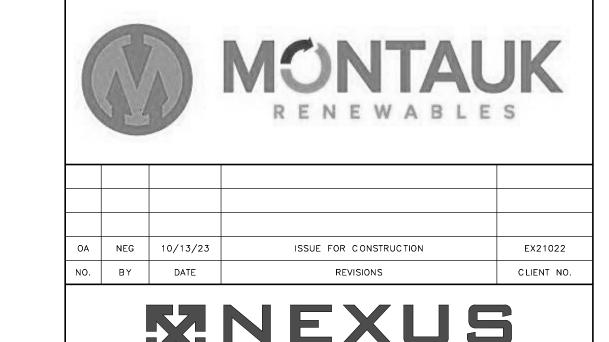
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GENERAL NOTES-AUTOMATIC TEMPERATURE CONTROLS

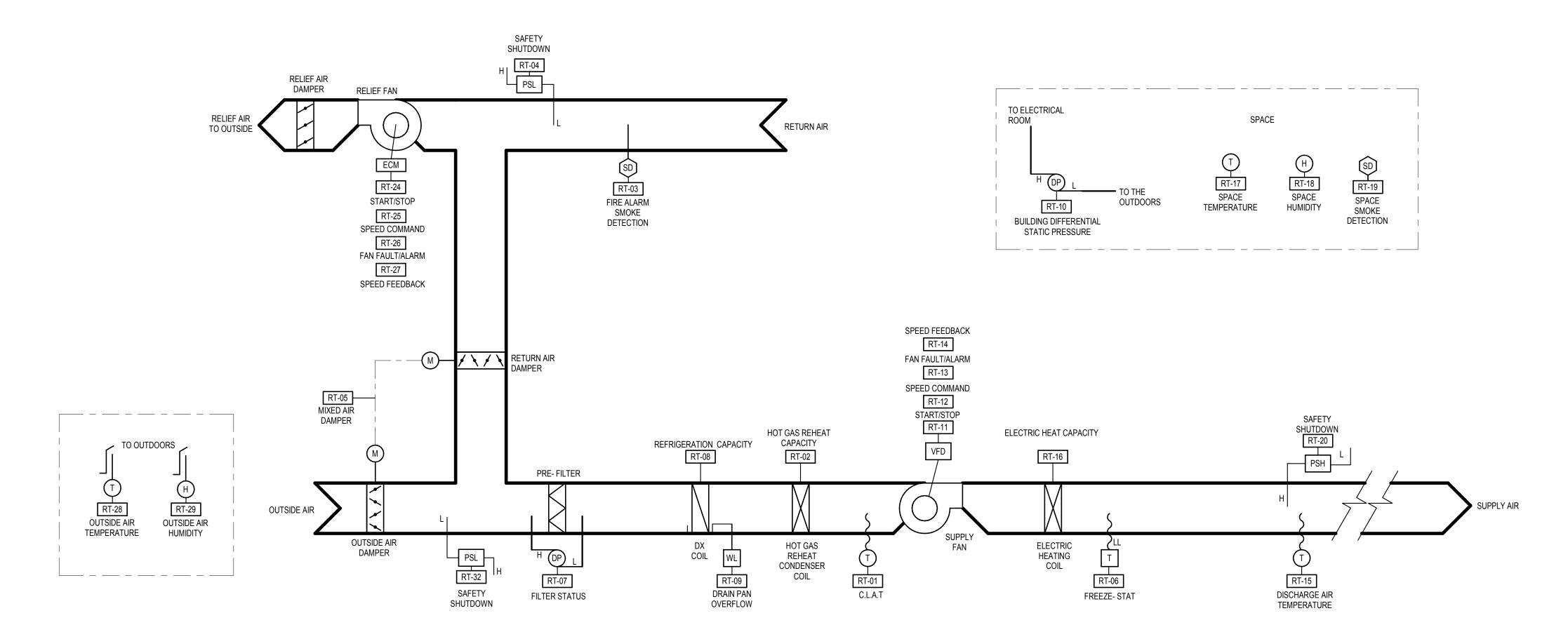
- A. A COMPLETE SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS SHALL BE INSTALLED AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF CONTROL FOR VARIOUS ITEMS OF EQUIPMENT AND SYSTEMS DESCRIBED HEREINAFTER.
- B. THE CONTROL DIAGRAMS AND INFORMATION CONTAINED WITHIN ARE TO SHOW DESIGN INTENT. IT IS THE CONTROL SUPPLIERS 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
- D. BULB WELLS FOR TEMPERATURE SENSING AS INDICATED SHALL BE PROVIDED BY THE HVAC CONTRACT. PIPING WORK SHALL INCLUDE PROPERLY SIZED WELDOLET OR THREADOLET 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).
- G. CONTROL SEQUENCES SHOULD BE REGARDED AS PERFORMANCE BASED, WITH STRICT ADHERENCE TO THE SPECIFIED LANGUAGE NOT ALWAYS REQUIRED. MANY COMBINATIONS OF LOGIC CAN RESULT IN THE DESIRED CONTROL. ALTERNATE LOGIC THAT RESULTS IN THE SAME PERFORMANCE AND ENERGY USAGE AS SPECIFIED IS CONSIDERED ACCEPTABLE. ALTERNATE LOGIC CREATING SIMULTANEOUS HEATING/COOLING OR UNSTABLE CONTROL IS NOT ACCEPTABLE.
- 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, RAMPS, 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 THOUGH 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.



MONTAUK
RENEWABLES PILOT BLDG



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ROOFTOP UNIT 01-RTU-1 CONTROLS DIAGRAM SCALE: NONE

									F	ROOI	FTO	P UN	NIT C	1-R	TU-1	PO	INTS	S LIS	T S	CHE	DUL	E										
GENERAL NOT A. POINT "TYI B. MANUFAC C. VFD POINT	PE" IS IN I TURER SI	HALL PRO	VIDE SUP	PLEMENT													TION AS IN	IDICATED	BELOW.													
NOTES: 1. COORDINA 2. IN ADDITIO 3. RTU FAUL 4. SHALL BE	ON TO BEI T SHALL I	NG A (BI) S NDICATE \	SAFETIES WHEN THE	SHALL BE E RTU HAS	E WIRED IN S SHUT-DO	I <mark>ƏHT OT</mark> V IA NI NWO	FAN STAR LARM FOR	TERS/VFD R ANY REA	(S) START			THAT THE	SAFETY	SHALL FU	NCTION V	VHETHER	THE SELE	CTOR SW	ITCH IS IN	N THE "HAI	ND" OR "A	UTOMATIO	C" POSITIO	DN.								
POINT NO.	RT-01	RT-02	RT-03	RT-04	RT-05	RT-06	RT-07	RT-08	RT-09	RT-10	RT-11	RT-12	RT-13	RT-14	RT-15	RT-16	RT-17	RT-18	RT-19	RT-20	RT-21	RT-22	RT-23	RT-24	RT-25	RT-26	RT-27	RT-28	RT-29	RT-30	RT-31	RT-32
POINT NAME	COIL- LEAVING AIR TEMPERATURE	HOT GAS REHEAT CAPACITY	RETURN AIR SMOKE DETECTION	RETURN DUCT PRESSURE SAFETY SHUT-DOWN	MIXED AIR DAMPERS	FREEZESTAT	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	Al	AO	BI	BI	AO	ВІ	ВІ	AO	BI	Al	ВО	AO	ВІ	Al	Al	AO	AO	AO	BI	BI	AO	AO	AO	ВО	AO	BI	Al	AO	AO	ВО	AO	BI
ALARM	ON TRIP		ON TRIP	ON TRIP		ON TRIP	ON TRIP		ON TRIP	HIGH/LOW			ON TRIP	S/S = ON FBK <min spd<="" td=""><td>HIGH/LOW</td><td></td><td></td><td></td><td>ON TRIP</td><td>ON TRIP</td><td></td><td></td><td></td><td></td><td></td><td>ON TRIP</td><td>S/S = ON FBK<min spd<="" td=""><td></td><td></td><td>ON TRIP</td><td>ON MISMATCH</td><td>ON TRIP</td></min></td></min>	HIGH/LOW				ON TRIP	ON TRIP						ON TRIP	S/S = ON FBK <min spd<="" td=""><td></td><td></td><td>ON TRIP</td><td>ON MISMATCH</td><td>ON TRIP</td></min>			ON TRIP	ON MISMATCH	ON TRIP
NOTES			1,2			2			2										2	2			4							3	4	

01-RTU-1 SEQUENCES

- A. RTU CONTROLLER(S) SEQUENCES OF OPERATION
- ALL SEQUENCES SHALL COMPLY WITH ASHRAE STANDARD 90.1 2013.
 THE RTU VENDOR SHALL WORK TO PROVIDE A WELL COORDINATED CONTROL
- 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.
- ETC.) SHALL BE SEQUENCED TO SATISFY THE "OCCUPIED" SPACE TEMPERATURE SETPOINT.

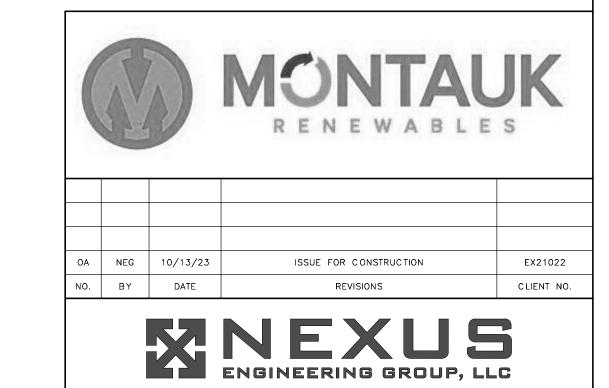
 6 MINIMUM OUTSIDE AIR WHEN IN "OCCUPIED" MODE SHALL OPEN OA DAMPER TO
- 6. MINIMUM OUTSIDE AIR WHEN IN "OCCUPIED" MODE SHALL OPEN OA DAMPER TO THE MINIMUM OUTSIDE AIR CFM SETPOINT SCHEDULED. POSITION SHALL BE SET BY BALANCER.
- 7. ROOM TEMPERATURE SENSORS: CONTROLLER SHALL READ TEMPERATURE FROM ROOM 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 73 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 VENDER.
- 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 MAXIMUMM 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



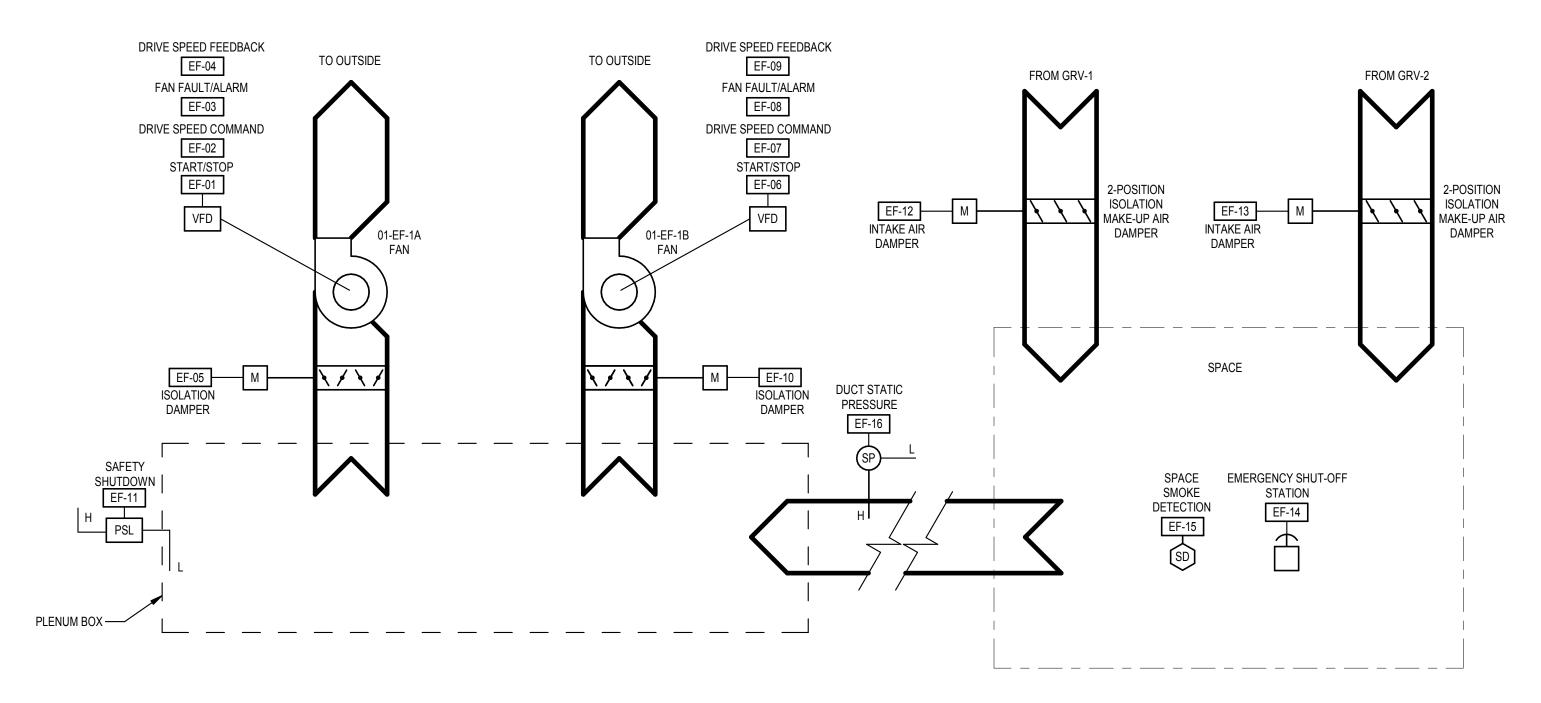
MONTAUK RENEWABLES PILOT BLDG ATC DIAGRAMS

DRAWN: DRAWN DATE: CHECKED: CHKD DATE: APPROVED: APPR DATE:

BMW 10/13/23 TMK 10/13/23 — —

SCALE: DRAWING NUMBER: REV:





EXHAUST FAN 01-EF-1 CONTROLS DIAGRAM SCALE: NONE

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	EXHAUST FAN 01-EF-1 POINTS LIST SCHEDULE															
GENERAL NOTES: A. POINT "TYPE" IS IN REFERENCE TO "POINT BY". B. MANUFACTURER SHALL PROVIDE SUPPLEMENTAL CONTROLLERS / DEVICES AS REQUIRED TO PROVIDE THE SPECIFIED SEQUENCES, POINTS, AND INTEGRATION AS INDICATED BELOW C. VFD POINTS SHALL BE DONE THROUGH HARDWIRE CONNECTION WHEN POSSIBLE. WHEN NOT POSSIBLE POINTS THROUGH INTEGRATION ARE ACCEPTABLE.																
NOTES: 1. COORDINATE SMOKE DETECTION ALARM SIGNAL FROM FIRE ALARM SYSTEM SMOKE DETECTOR BY DIV 26/28. 2. IN ADDITION TO BEING A (BI) SAFETIES SHALL BE WIRED INTO THE FAN STARTERS/VFD(S) STARTER CIRCUIT SUCH THAT THE SAFETY SHALL FUNCTION WHETHER THE SELECTOR SWITCH IS IN THE "HAND" OR "AUTOMATIC" POSITION. 3. MOTORIZED DAMPER INTERLOCKED WITH 01-EF-1.																
POINT NO.	EF-01	EF-02	EF-03	EF-04	EF-05	EF-06	EF-07	EF-08	EF-09	EF-10	EF-11	EF-12	EF-13	EF-14	EF-15	EF-16
POINT NAME	EXHAUST FAN START/STOP	EXHAUST FAN SPEED COMMAND	EXHAUST FAN FAULT/ALARM	EXHAUST FAN SPEED FEEDBACK	ISOLATION DAMPERS	EXHAUST FAN START/STOP	EXHAUST FAN SPEED COMMAND	EXHAUST FAN FAULT/ALARM	EXHAUST FAN SPEED FEEDBACK	ISOLATION DAMPERS	EXHAUST LOW DUCT PRESSURE SAFETY SHUT-DOWN	GRV ISOLATION DAMPERS	GRV ISOLATION DAMPERS	EMERGENCY SHUT-OFF STATION	SPACE SMOKE DETECTION	DUCT STATIC PRESSURE
TYPE	ВО	AO	BI	Al	ВО	ВО	AO	BI	Al	ВО	BI	ВО	ВО	BI	BI	Al

ALARM

NOTES

(1) EXHAUST FAN EF-1 CONTROLS DIAGRAM

01-EF-1 SEQUENCES

EXHAUST FAN CONTROLLER(S) SEQUENCES OF OPERATION

A. SYSTEM DESCRIPTION 1. THE EXHAUST FAN SYSTEM SHALL CONSIST OF TWO (2) EXHAUST FANS WITH A VFD PER FAN AND TWO (2) GRAVITY ROOF VENTILATORS. FANS SIT ON A COMMON

PLENUM BOX. B. SYSTEM ENABLE CONDITIONS:

1. THE FAN SYSTEM SHALL RUN 24/7.

- 2. THE FAN SYSTEM IS DESIGNED FOR N+1 OPERATION WITH ONE PRIMARY FAN AND ONE FAN ON STANDBY. UPON A FAN FAILURE THE SYSTEM SHALL INITIATE THE REDUNDANT FAN, CLOSE THE ISOLATION DAMPER ON THE FAILED FAN, AND TURN ON THE ALARM FOR A FAN FAILURE.
- 3. THE PRIMARY AND STANDBY FAN SHALL BE ROTATED WEEKLY. WHEN ROTATING FANS, THE STANDBY FAN SHALL TURN ON AND RAMP UP AS THE PRIMARY FAN IS RAMPING DOWN. THE SEQUENCE SHALL MAINTAIN DUCT STATIC PRESSURE DURING SWITCHOVER.
- 4. FAN SHALL OPERATE AT CONSTANT VOLUME. VFD SHALL MODULATE FAN SPEED TO MAINTAIN DUCT STATIC PRESSURE.
- C. SAFETIES: THE FOLLOWING SAFETIES SHALL BE PROVIDED TO STOP THE FAN SYSTEM AND POSITION ASSOCIATED CONTROL DEVICES TO THEIR "FAIL SAFE" POSITION. SAFETIES SHALL BE WIRED INTO THE FAN STARTER CIRCUIT SUCH THAT THE SAFETY SHALL FUNCTION WHETHER THE H-O-A SELECTOR SWITCH IS IN THE HAND ON OR AUTOMATIC POSITION.
- 1. HIGH NEGATIVE PRESSURE CUTOUT PROVIDE A MANUAL RESET TYPE DUCT STATIC PRESSURE SWITCH, SET AT THE MAXIMUM NEGATIVE WORKING PRESSURE OF THE DUCTWORK, TO STOP THE FAN SYSTEM (EXHAUST) ON A FALL IN DUCT STATIC BELOW SETPOINT.
- 2. UNIT SMOKE DETECTORS UPON SENSING SMOKE OR PRODUCTS OF COMBUSTION THE FAN SYSTEM SHALL BE DISABLED. SMOKE DETECTORS SHALL BE WIRED TO THE FAN SAFETY CIRCUITS TO STOP THE FAN SYSTEM UPON SMOKE DETECTION.
- MAKE-UP AIR DAMPER CONTROL.
- 1. THE GRV MAKE-UP AIR DAMPERS SHALL OPEN WHEN THE FAN SYSTEM IS RUNNING.
- E. ALARMS SHALL BE SENT TO REMOTE MONITORING LOCATIONS, AS DETERMINED BY

TO OUTSIDE EF-04 FROM GRV-3 FAN FAULT/ALARM EF-03 DRIVE SPEED COMMAND EF-02 START/STOP EF-01 VFD 2-POSITION ISOLATION MAKE-UP AIR DAMPER 01-EF-2 DAMPER SPACE SHUTDOW EF-06 PSL SPACE SMOKE DETECTION EF-08

EXHAUST FAN 01-EF-2 CONTROLS DIAGRAM

01-EF-2 POINTS LIST SCHEDULE

DRIVE SPEED FEEDBACK

A. POINT "TYPE" IS IN REFERENCE TO "POINT BY". B. MANUFACTURER SHALL PROVIDE SUPPLEMENTAL CONTROLLERS / DEVICES AS

REQUIRED TO PROVIDE THE SPECIFIED SEQUENCES, POINTS, AND INTEGRATION AS INDICATED BELOW. VFD POINTS SHALL BE DONE THROUGH HARDWIRE CONNECTION WHEN POSSIBLE WHEN NOT POSSIBLE POINTS THROUGH INTEGRATION ARE ACCEPTABLE.

1. COORDINATE SMOKE DETECTION ALARM SIGNAL FROM FIRE ALARM SYSTEM SMOKE DETECTOR BY DIV 26/28.

MOTORIZED DAMPER INTERLOCKED WITH 01-EF-1.

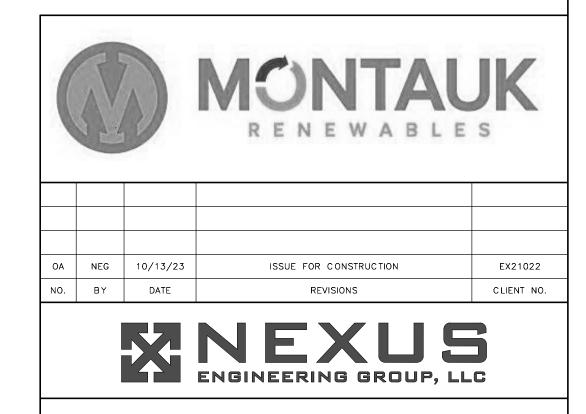
IN ADDITION TO BEING A (BI) SAFETIES SHALL BE WIRED INTO THE FAN STARTERS/VFD(S) STARTER CIRCUIT SUCH THAT THE SAFETY SHALL FUNCTION WHETHER THE SELECTOR SWITCH IS IN THE "HAND" OR "AUTOMATIC" POSITION.

POINT NO.	EF-01	EF-02	EF-03	EF-04	EF-05	EF-06	EF-07	EF-0
POINT NAME	EXHAUST FAN START/STOP	EXHAUST FAN SPEED COMMAND	EXHAUST FAN FAULT/ALARM	EXHAUST FAN SPEED FEEDBACK	ISOLATION DAMPERS	EXHAUST LOW DUCT PRESSURE SAFETY SHUT-DOWN	GRV ISOLATION DAMPERS	SPACE SMOKE DETECTION
TYPE	ВО	AO	BI	Al	во	ВІ	ВО	ВІ
ALARM			ON TRIP	ON MISMATCH		ON TRIP		ON TRIP
NOTEC						_	2	4.0

01-EF-2 SEQUENCES

- 1. THE EXHAUST FAN SYSTEM SHALL CONSIST OF ONE (1) EXHAUST FANS WITH A VFD
- AND ONE GRAVITY ROOF VENTILATOR. B. SYSTEM ENABLE CONDITIONS:
- 1. THE FAN SYSTEM SHALL RUN 24/7. 2. FAN SHALL OPERATE AT CONSTANT VOLUME. VFD SHALL BE SET BY AIR
- C. SAFETIES: THE FOLLOWING SAFETIES SHALL BE PROVIDED TO STOP THE FAN SYSTEM AND POSITION ASSOCIATED CONTROL DEVICES TO THEIR "FAIL SAFE" POSITION. SAFETIES SHALL BE WIRED INTO THE FAN STARTER CIRCUIT SUCH THAT THE SAFETY SHALL FUNCTION WHETHER THE H-O-A SELECTOR SWITCH IS IN THE HAND ON OR
- AUTOMATIC POSITION. 1. HIGH NEGATIVE PRESSURE CUTOUT - PROVIDE A MANUAL RESET TYPE DUCT STATIC PRESSURE SWITCH, SET AT THE MAXIMUM NEGATIVE WORKING PRESSURE OF THE DUCTWORK, TO STOP THE FAN SYSTEM (EXHAUST) ON A FALL IN DUCT
- STATIC BELOW SETPOINT. 2. UNIT SMOKE DETECTORS – UPON SENSING SMOKE OR PRODUCTS OF COMBUSTION THE FAN SYSTEM SHALL BE DISABLED. SMOKE DETECTORS SHALL BE WIRED TO THE FAN SAFETY CIRCUITS TO STOP THE FAN SYSTEM UPON SMOKE
- D. MAKE-UP AIR DAMPER CONTROL.
- 1. THE GRV MAKE-UP AIR DAMPERS SHALL OPEN WHEN THE FAN SYSTEM IS
- E. ALARMS SHALL BE SENT TO REMOTE MONITORING LOCATIONS, AS DETERMINED BY

EXHAUST FAN EF-2 CONTROLS DIAGRAM

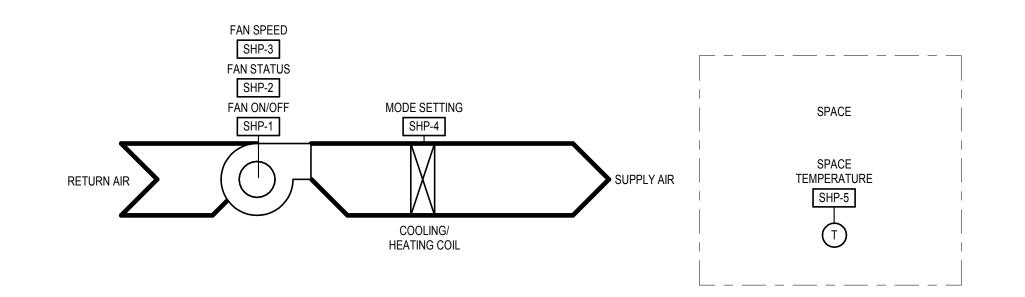


MONTAUK RENEWABLES PILOT BLDG ATC DIAGRAMS

10/13/23 TMK 10/13/23 $\mathsf{B}\mathsf{M}\mathsf{W}$

HEAPY AS NOTED NEXUS PROJ NO-

M603



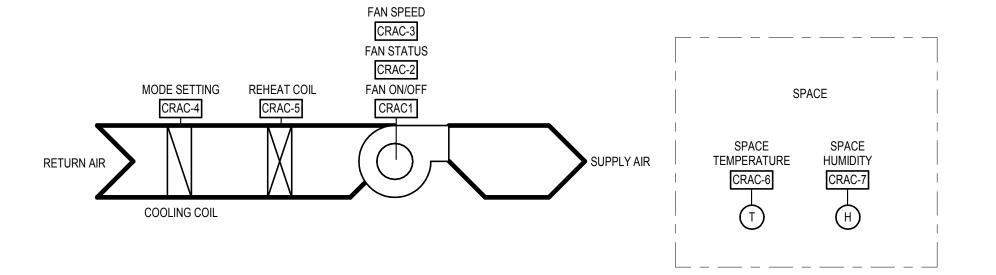
SPLIT SYSTEM HEAT PUMP 01-SHP-1 ATC DIAGRAM

SPL	IT S	YST		HEA NTS			01-8	SHP-	1
GENERAL NO A. THE FOLL INTENT TO REQUIRED POINTS SI	OWING LIS O SHOW A O TO ACCO	LL REQUI	RED POIN THE SEQL	TS. IF OR	WHEN AD	DITIONAL	POINTS A	\RE	
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	ВО	BI	AO	AO	Al				
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
- 1. WHEN IN OCCUPIED MODE THE INDOOR UNIT FAN SHALL RUN CONTINUOUSLY. 2. OPERATION MODE SHALL MAINTAIN SETPOINT LISTED IN HVAC DESIGN DATA
- B. UNOCCUPIED MODE
- 1. 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



COMPUTER ROOM AC UNIT 01-CRAC-1 ATC DIAGRAM

COMPUTER ROOM AC UNIT 01-CRAC-1 POINTS LIST

. 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.

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	ВО	ВІ	AO	AO	AO	Al	Al	
ALARM		ON FAULT				BELOW 40°F		
NOTES		1						

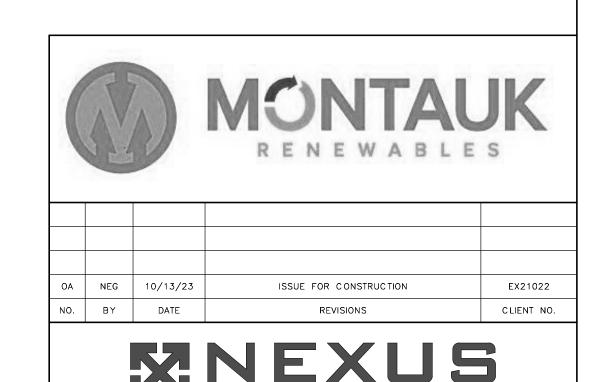
COMPUTER ROOM AC UNIT 01-CRAC-1 SEQUENCES

CRAC UNIT CONTROLLER SEQUENCES OF OPERATION.

- 1. UNIT SHALL OPERATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AND HUMIDITY SETPOINTS BASED ON HVAC DESIGN DATA SCHEDULE.
- 2. ALARMS SHALL BE SENT TO REMOTE MONITORING LOCATIONS, AS DETERMINED BY

2 COMPUTER ROOM AC UNIT CONTROL DIAGRAM

SPLIT SYSTEM HEAT PUMP CONTROL DIAGRAM



MONTAUK

RENEWABLES PILOT BLDG ATC DIAGRAMS
 DRAWN DATE:
 CHECKED:
 CHKD DATE:
 APPROVED:

 10/13/23
 TMK
 10/13/23
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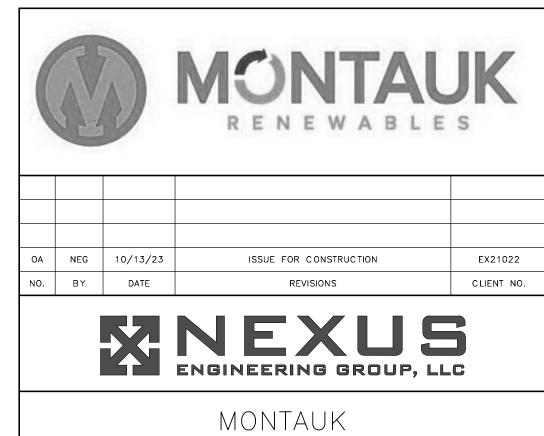


M604

									CON	IPUTE	ER RC	OM A	4/C UI	NITS	- AIR	-COOLED													
GENERAL NOTES: A. UNLESS NOTED OTHERWISE, CAPACITIES SHALL BE BASED 79 DB / 65 WB COOLING; 55 DB HEATING. B. CONDENSING UNIT COOLING CAPACITY SHALL BE BASED OF C. CONDENSING UNITS SHALL INCLUDE LOW AMBIENT CONTROTO 10°F.	N 95°F AMBIENT CO	NDITIONS.	R E. R	VHEN APPLICA EQUIREMENT REFRIGERANT RRANGEMEN	S. PIPING - SI	IZES LISTED	ARE APPROX	K. CIRCUITIN	NG, SIZING	, NUMBER	OF PIPES	AND CIRC		CONNI BE VEI	ECTIONS RIFIED BY	ICES FOR OUTDOO TO EACH UNIT. UN H.C. AND UNIT SUI T SELECTED SHAL	ILESS NOTED (PPLIER. COST	OTHERWISE, FOR INCREA	ADEQUAC'	OF LISTE	D CIRCUIT SIZES MUST DISCONNECT LECTRIC SERVICE H. COOLING COI	TING MEANS, IL CONDENS DLTAGE AND	S, INTERNA SATE PUMF	AL OVERLOAI PS SHALL BE	D PROTECT E FACTORY-	TION, AND FI /-FURNISHED	BE PROVIDED WI IELD ADJUSTABL D, COMPATIBLE V IIT SINGLE POINT	E SPEED CO VITH INDOOR	NTROL.
NOTES: 1. FILTER BOX SHALL BE FACTORY FURNISHED.			2. (CONTROLS SH	IALL BE FAC	CTORY FURI	NISHED TO A	CCOMPLISH	THE SEQ	JENCES O	F CONTRO	L SPECIF	TED.	3. FILTEF	R BOX SHA	ALL BE FACTORY F	URNISHED.												
					INDOOF	R UNIT												COMPR SYS			OUTDOOR CO	NDENSER C	OR CONDE	NSING UNIT	- AIR COOLF	.ED			
INSTALLATION TYPE	E FAN		DX COOLING		FILTE ELE	ECTRIC HEAT REHEAT		RICAL SER\	VICE A	PPROX. DI	IMENSIONS		NG RUNOU			BASIS OF	DESIGN				30.20000			LECTRICAL S		-	BASIS OF DE	ESIGN	
MARK SEASE FLOOR MOUNTED FLOOR MOUNTED RAISED FLOOR MOUNTED	CFM EXTERNAL STATIC PRESSURE (IN. W.C.)	ELECTRONICALLY COMMUTATED MOTORS TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH) ENTERING AIR TEMPERATURE DB/WB (°F)	LEAVING AIR TEMPERATURE DB (°F)	THICKNESS / MERV	MINIMUM NO. STAGES (NOT INCLUDING "OFF")	VOLTAGE - PHASE	FULL LOAD AMPS (FLA) MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	LENGTH	HEIGHT	REFRIGERANT LIQUID	REFRIGERANT SUCTION	DRAIN COOLING CONDENSATE DRAIN PUMP (NOTE H)		MANUFACTURER	MODEL	WITH INDOOR UNIT WITH OUTDOOR UNIT	VARIABLE SPEED HOT GAS BYPASS	MARK	DESCRIPTION	NOMINA TONS (SIZED TO MATCH COIL)	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA) MAX OVER CURRENT PROTECTION (MOCP)		1ANUFACTURER	MODEL	SEE NOTE
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	.2 1 -	208-3	3.2 41.5	40	47" 49	9" 24"	0.625"	1.125" 0.	.75" •	J1	LIEBERT	MINIMATE MT	060 - •	- - 01-	CRCU-1 5	TON CONDENSING UNIT TOP AIR DISCH	ARGE 5	208-3 ر	3 26.2 3	31.8 50	A1	LIEBERT	PFD067	1,2,3

DTILA	UNIT NUMBER		OTES:	HEATIN UNIT CO HORIZO	
0.5	NOMINAL TONS	OL SPEC	OI & &HV	NG CAPA NG L.A.T. ONFIGUE ONTAL DE	
HDT	UNIT CONFIGURATION		\	IS BASEI RATIONS RAW THR	
8,350	CFM (TOTAL)	CTOICI	NCTORY	D ON FUI (SUPPL) RU; "VDT"	
4 75 / 4 5	EXTERNAL / TOTAL STATIC PRESSURE (IN. W.C.)		ELIDNISHEL	LL UNIT CFN Y FAN POSI ' - VERTICAI	
1 / SWSI AF	FAN QTY / WHEEL TYPE	SUPPLY FAN	O TO ACCOMPLI	IENT AIR TEMPE M AT LISTED E.A TION RELATIVE L DRAW THRU; ' DRAWINGS FOR	
10		JIT ITIL	QU TUE	A.T. AND TO COO 'HBT" - H	
	ELECTRONICALLY COMMUTATED MOTORS VARIABLE FREQUENCY DRIVE	SPEE	SEOUE) MBH O OLING (HORIZO	
1 500	VARIABLE FREQUENCY DRIVE (QTY) MAXIMUM FACE VELOCITY (FPM)		NCES OF	OIL) - "HI	
200.0	TOTAL CAPACITY (MBH)			DT" - OW THRU	
046 E	SENSIBLE CAPACITY (MBH)	-			
78.3 / 66.2	ENTERING AIR TEMPERATURE DB/WB (°F)	CONTRO	2 DOWEDE	E. ELECTR LISTED C CHANGE	
EAGLE	LEAVING AIR TEMPERATURE DB/WB (°F)	L.	ED EARVITE	C SERVICE CIRCUIT SIZE OF ELECT	
4 E O E	MAXIMUM AIR PRESSURE DROP (IN. W.C.)	LING SE	ET LID TO	É - SINGL ZE MUST RIC SER	F
D4404	REFRIGERANT TYPE		A EIIII QD	E POINT BE VERII VICE FOF	ROOI
2 1	MINIMUM QUANTITY OF COMPRESSORS		PECIEIED	POWER FIED BY I R EQUIPI	FTOF
AODIII ATINI	MINIMUM STAGES OF COOLING (NOT INCLUDING "OFF")	- GOLLETTA	SUPPLY FAI	ONS FOR SE SERVICE CO H.C. AND UN MENT SELEC EQUIREMEN	P HEA
	HOT GAS BYPASS LOW AMBIENT OPERATION	IN OF IVI, VV		ONNECTION IIT SUPPLICTED SHA	TING
15	ERATING TEMP (°F)		ITU DI III	ON TO UI	& C
• 13	HOT GAS REHEAT	HOT GA		NIT. ADE	OOL
0 E 4 E	HOLIGAS KEREALI CAPACITT (MBR)	\S	ESSLIDE	QUACY NCREAS	ING
0 50.6	ENTERING AIR TEMPERATURE DB (°F)	HEATIN	 -	OF SE OR	UNIT
00.0	LEAVING AIR TEMPERATURE DB (°F) (NOTE B)		3 100%	FACT SPEE	S-A
CCCD	MINIMUM STAGES OF HEATING (NOT INCLUDING "OFF")		ECONOO	ORY DISC	AIR-C
2" / MERV	THICKNESS / MERV	PRE-FILTEF	MIZER WITH C	ARE INDICATI DNNECTING N DL, AND REMO DRDINATED W	OOLED
2 411 /				IEANS, I TE ANA	DX
MEDVAAA	THICKNESS / MERV		ITIVE ENTL	NTERNAL (LOG SPEEI	/ELEC
E00	MINIMUM CFM ECONOMIZER	OUTSIDE AIR	AL DV CON	OVERLOAD O CONTRO	TRIC
400 01	MAX UNIT LENGTH (INCHES)		TPOL	PROTE(HEA
70 511	MAX UNIT WIDTH (INCHES)	MENSIC		CTION, F WHEN R	T
00 5"	MAX UNIT HEIGHT (INCHES) (NOTE H)	DNS		IELD AD	
4000	APPROXIMATE UNIT WEIGHT INCLUDING CURB (LBS)	MISCEL		JUSTABL	
	INTEGRAL 100% POWERED RELIEF SERVICE RECEPTACLE			E	
400.0	VOLTAGE - PHASE			INCLU REQU	
72.5	FULL LOAD AMPS (FLA)	ELEC		DE THE S	
00.0	MIN CIRCUIT AMPS (MCA)	CTRICAL		SPECIFII BE INCF	
125	MAX OVER CURRENT PROTECTION (MOCP)	. SERVIC		ED CURB REASED,	
10,000	MINIMUM SCCR (AMPS)	E		(HEIGH SUCH AS	
CARRIER	NON-FUSED DISCONNECT MANUSATURAN MANUSATUR	BASI		ES THE INTEGRAL UNIT T). IF THE HEIGHT OF T TO ACCOMMODATE CO E DECREASED BY THAT	
50A	R MODEL	S OF DESIGN		HE SPECIFIED CURE ONDENSATE TRAP I	
				B IS	

2. CONTROLS SHALL BE FACTORY FURNISHED TO ACCOMPLISH THE SEQUENCES OF CONTROL SHALL BE FACTORY FURNISHED TO ACCOMPLISH THE SEQUENCES OF CONTROL SHALL BE FACTORY FURNISHED. VICTOR	CONDITION HEAT PUM HEAT PUM CONDENS CONTROLS	OTES: NOTED OTHERWISE, CA NS OF 80DB / 67WB COO MP COOLING CAPACITY MP HEATING CAPACITY SING UNITS SHALL INCL S AND ACCESSORIES, O	DLING; 70DB HEAT SHALL BE BASED SHALL BE BASED JDE LOW AMBIEN	ING. ON 95°F ON 17°F T COOLIN	AMBIENT AMBIENT	CONDITI	IONS. IONS.	E. WHEN AF AND SEIS F. ELECTRIC POWER S ADEQUAC SUPPLIEF EQUIPME	SMIC RES C SERVICE SERVICE CY OF LIS R. COST ENT SELE	STRAINT CES FOR CONNEC STED CIF FOR INC CCTED SI	REQUIRE OUTDOO CTIONS T RCUIT SIZ CREASE O HALL BE	MENTS. OR UNIT AI O EACH U ES MUST OR CHANG BORNE BY	ND INDO NIT. UNI BE VERII SE OF EL 'H.C.	OR UNIT LESS NO FIED BY I ECTRIC S	- SINGL TED OT H.C. ANI SERVICE	E POINT HERWIS D UNIT E FOR	Г БЕ,	P P S V	EC MOTORS ARE INDICA ROVIDED WITH FACTORY ROTECTION, FIELD ADJUS PEED CONTROL INPUT WI ITH THE BUILDING AUTON	DISCONNECTII TABLE SPEED HEN REMOTE (MATION SYSTE	NG MEANS, IN CONTROL, AN CONTROL IS S M.	TERNAL O ID REMOT	VERLOAI E ANALO	G	I. F	COMPAT THE IND REFRIGE OF PIPES	G COIL CONDENSAT TIBLE WITH INDOOR OOR FAN COIL UNIT RANT PIPING - SIZES S AND CIRCUITS, AR CTURER'S RECOMM	FAN COIL UNIT V SINGLE POINT P S LISTED ARE AP RANGEMENT, ET	OLTAGE AND POPER CONNECTOR OF THE PROX. CIRCUIT	OWERED FRO CTION. ING, SIZING, NI
THE HILL AND LINES (THE PROTECUTOR (AMEN)) WINDERLOR (AMEN) WANTER THANS (AMEN) WAS COR (AMENS) WAS COR (AMENS) WAS COR (AMENS) WINDERLOR (AMENS) WAS COR (AMENS) WAS CO		OR INDOOR UNIT IS TO	BE FED THRU THE	OUTDO	OR UNIT	POWER S			L SPECIF	IED.		JRNISHED	TO ACC	OMPLISE	THE SE	EQUENC	CES OF	3. F	LTER BOX SHALL BE FAC	ORY FURNISH	HED.									
ALL-MOUNTED SILING RECESSED SILING REC			T) (DE					0011 0454				E. E. E.		2) ((0)	10000	V 511451			D 4 0 10 0 5 5			OU						2501011	REFRIGERAN	NT CONN. SIZE
ALL MOUNTED SELING-MOUNTED S			TYPE		FAN		00/				-ILTERS	ELECTE	RICAL SE	RVICE	APPRO	X. DIME	NSIONS	Î	BASIS OF L	ESIGN			El	ECTRIC	AL SERV	ICE	BASIS OF I	DESIGN		
		DESCRIPTION	-MOUNTED NG-MOUNTEC NG RECESSE	CFM	TATIC PRESSURE (IN. W.	MOTOR (W)	ENT. AIR TEMP DB/WB	TOTAL / SENSIBLE CAPACITY (MBH)	AIR TEMP.	CAPACITY (MBH)	MERV RATING	SERVED THRU OUTDOOR UNIT (NOTE 1) VOLTAGE - PHASE	LOAD AMPS (FL.	CIRCUIT AMPS (MC,	LENGTH	WIDTH	НЕІСНТ	COIL CONDENSATE DRAIN PUMP	MANUFACTURER	MODEL	MARK	NOMINAL TONS (SIZED TO MATCH COIL)	VOLTAGE - PHASE	\ <u>\</u>	OVER CURRENT PROTECTION (MO	SCCR (AMP.	MANUFACTURER	MODEL	LIQUID LINE	SUCTION LINE



MONTAUK RENEWABLES PILOT BLDG MECHANICAL SCHEDULES



	10/13/23	TMK	10/13/23	-	
	DRAWING NUMBER	₹:			REV:
		117	\cap 1		Δ
):		IVI /	O I		

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. A. ALL FANS SHALL BEAR THE A M.C. A. LABEL. B. SONES YAULES BASED ON A M.C. A 301 HEASURED AT 5 FT. C. MOTOR HORSEPOWERS LISTED SHALL BE CONSIDERED MINIMUM. E. ROOF & WALL OPENINGS ARE APPROX. VERIFY SIZE & COORDINATE. C. MOTOR HORSEPOWERS LISTED SHALL BE CONSIDERED MINIMUM. E. ROOF & WALL OPENINGS ARE APPROX. VERIFY SIZE & COORDINATE. SHORL YAULE CONSTRUCTED AND LABELED FOR REQUIRED SCCR. (SHORT CIRCUIT CURRENT RATING). COORDINATE WITH DIVISION 26. SPECIFIED, COORDINATE WITH THE BUILDING AUTOMATION SYSTEM. F. COORDINATE STEEL FRAMING AROUND ROOF OPENINGS WHERE REQUIRED TO REPOSITE OF WITH PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTINCIL, AND REMOTE ANALOG SPEED CONTROL IN PUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATE WITH DIVISION 26. F. COORDINATE STEEL FRAMING AROUND ROOF OPENINGS WHERE REQUIRED TO REPOSITE OF WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE CANTON. F. COORDINATE WITH DIVISION 26. F. COORDINATE REPOSITION SOLUTION. F. COORDINATE WITH DIVISION 26. F. COORDINATE REPOSITION 26. F. COORDINATE WITH DIVISION 26. F. COORDINATE REPOSITION 26. F. COORDINA							FAN	S											
1. FAN SHALL HAVE N+1 REDUNDANCY WITH FACTORY FURNISHED CONTROLS. 2. STATIC PRESSURE LISTED INCLUDES EXTERNAL STATIC PRESSURE ONLY. FAN SELECTION FOR STATIC PRESSURE LOSSES OF FAN STACKS, NOZZLES, INLET BOXES, ETC.	A. ALL FA AND SI B. SONES C. MOTO	NS SH HALL B VALU R HOR	ALL BE A.M.C.A. 211 AND 311 PERFORMANCE CERTIFIED EAR THE A.M.C.A. LABEL. ES BASED ON A.M.C.A. 301 MEASURED AT 5 FT. SEPOWERS LISTED SHALL BE CONSIDERED MINIMUM.	FOR DECK SUPPO G. WHEN APPLICAB TYPES AND SEISM H. VFD'S SHALL BE O	ORT, AND LE, REFE MIC REST CONSTRI) WALL L ER TO SF FRAINT F UCTED A	LINTELS PECIFICA REQUIRE AND LAB	FOR WA ATIONS F EMENTS BELED FO	ILL OPE FOR VIB OR REQ	NINGS. RATION UIRED S	ISOLA		E (F	BE PRO OVERL REMOT	OVIDED WIT OAD PROTI TE ANALOG	H FACT ECTION SPEED	ORY DISCONNECTING , FIELD ADJUSTABLE : CONTROL INPUT WH	G MEANS, INTERNAL SPEED CONTROL, AND EN REMOTE CONTROL IS	
A	-	HALL H	AVE N+1 REDUNDANCY WITH FACTORY FURNISHED CONT	SELECTION SHAL	L ACCOL	JNT FOR ETC.	_		-		FAN S	STACKS							
RANGER PROPERTY						.C.					MOT	OR					BASIS	OF DESIGN	
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	MARK	E (REFER TO SP	DESCRIPTION	SERVICE		L STATIC PRESSURE (IN.	WHEEL DIAMETE		HORSEPOWER (HP)	AGE -	Y COMMUTATE	MCA	MOCP (AMPS, T	E FREQUENCY	WEIGHT	VIBRATION ISOLATOR TYPE	MANUFACTURER	MODEL	SEE NOTE
	01-EF-1A	L2	HIGH PLUME DILUTION EXHAUST FAN		16000	1.15	33.5	60	20	460/3	-	-	-	•	4,900	E1			1,2
01-FF-2 B1 CENTRIFUGAL EXHAUST FAN WITH INTEGRAL STACK HOT OIL ROOM 3500 1 18.25 26 5 460/3 • 400 F1 GREENHECK F.II-18-BI	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
5. 2. 2 5. 52. THE STATE OF THE THE STATE OF	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

VERIFY B. FINISH "E.C.L."	NOTES: Y-IN AIR DEVICES SHALL FIT IN 24"X24" LAY-IN CLG SYSTEM. 'GRID TYPE AND COORDINATE AIR DEVICE COMPATIBILITY. KEY: "W.B.E." - WHITE BAKED ENAMEL; - ETCHED CLEAR LACQUER OR ANODIZED; A." - CUSTOM COLOR SELECTED BY ARCHITECT.			D.	NDI PRC	CATI	ED C E AU	THE JX. FI	RWI	ISE (IES I	ON E	RAV AIR	VINC DEV	SS. ICES	BLOW, UNLESS IN PLASTER, URFACES.		
		МС	DUN	TING	TY	PE	MA	TER	IAL	F	NIS	Н	쏪	<u>بر</u>	BASIS OF DE	SIGN	
MARK	DESCRIPTION	LAY-IN	SURFACE	DUCT	SPLINE	SNAP-IN	STEEL	ALUMINUM	STAINLESS STEEL	W.B.E.	E.C.L.	C.C.B.A.	OPPOSED BLADE DAMPER	SQ-TO-RD NECK ADAPTOR	MANUFACTURER	MODEL	SEE NOTE
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	

AIR DISTRIBUTION DEVICES

					Gl	RAV	ITY F	ROO	F VE	NTILA	TOR	RS			
	NOTES: PENING SIZI D COORDINA	-	APPROX	IMATE.\	/ERIFY I			-	_	AROUND R			HEN APPLICABLE, RE R SEISMIC RESTRAIN		
NOTES: 1															
			W.C.)	NEC	SIZE	APPRO	X. HOO	D SIZE			1	DRAFT IPER	BASIS OF D	DESIGN	
MARK	SERVICE	CFM	MAX. STATIC PRESSURE (IN.	LENGTH	WIDTH	LENGTH	WIDTH / DIAMETER	НЕІСНТ	CURB HEIGHT	APPROX. WEIGHT (LBS.)	MOTORIZED	GRAVITY	MANUFACTURER	MODEL	SEE NOTE
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 CON	STRU	CTI	ON,	, SE	EALING	, AND I	INSULA	NOITA	
GENERAL NOTES: A. REFER TO SPECIFICATIONS FOR SHEET METAL DUCT; INTERIOR L INSULATION; ETC.					JCT CONSTRU TEST S.M.A.C			ALL BE PER	
NOTES: 1. DUCTWORK LOCATED OUTDOOF 2. WATERTIGHT SEAL. 3. INSULATE 36" FROM PENETRATION 4. DUCT RUNOUTS TO AIR DEVICES	ON OF WAL	L INTO I	BUILD	ING.	A WEATHERT	IGHT, UV RES	SISTANT JAC	KETING.	
	S.M.A	.C.N.A. (CLASS	3.					
				KAGE ASS			DOUBLE		
DUCT SYSTEM	S.P. CON- STRUCT.	SEAL CLASS	RECT	RND	INTERNALLY LINED	EXTERNAL INSULATION	WALL INSULATED	NOT INSULATED	SI NC
SUPPLY DUCTWORK FOR ELECTRICAL ROOM RTU - OUTSIDE	+3"	Α	8	4	•	-	-	-	
RETURN DUCTWORK FOR ELECTRICAL ROOM RTU - OUTSIDE	-2"	Α	16	8	•	-	-	-	
SUPPLY DUCTWORK FOR ELECTRICAL ROOM RTU - INSIDE	+3"	Α	8	4	•	-	-	-	4
RETURN DUCTWORK FOR ELECTRICAL ROOM RTU- INSIDE	-2"	Α	16	8	•	-	-	-	4
SUPPLY DUCTWORK FOR SPLIT SYSTEMS	+2"	Α	16	8	•	-	-	-	
RETURN DUCTWORK FOR SPLIT SYSTEMS	-2"	Α	16	8	-	-	-	•	
EXHAUST DUCTWORK	-3"	Α	8	4	-	NOTE 3	-	-	
OUTSIDE AIR DUCTWORK	-1"	Α	16	8	-	•	-	-	:

HVA	AC DES	IGN DA	TA		
GENERAL NOTES: A. OUTDOOR DESIGN CONDITIONS: 95.2°F DB SUMMER 77°F WB SUMMER 15°F DB WINTER		B. DESIGN AL	TITUDE: 148 I	FT.	
NOTES: 1. LISTED RH IS MAXIMUM ANTICIPA 2. "FLOATING" MEANS THERE IS NO 3. OUTDOOR AIR VENTILATION ONL	ACTIVE CON		RATURE.		
		INTERIOR D	ESIGN DATA		
	SUM	MER	WIN	TER	
SPACE NAME / TYPE	°F DB	% RH (NOTE 1)	°F DB	% RH	SEE NOTE
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 AIR	FLOW	SCHE	DULE	
ROOM NAME	VOLUME (CUBIC FEET)	AIRFLOW (CFM)	TARGET AIR CHANGES PER HOUR	CHANGES
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	-	-

2018 APPENDIX B

BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

MECHANICAL DESIGN (PROVIDE ON THE MECHANICL 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

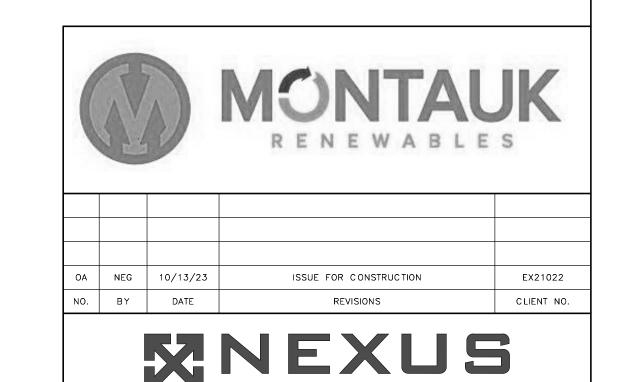
description of unit: SHP-1

heating efficiency: HSPF 10.4 cooling efficiency: SEER 16.6

size category of unit: 2 tons

List equipment efficiencies: See Above





MONTAUK RENEWABLES PILOT BLDG MECHANICAL SCHEDULES

DRAWN DATE: CHECKED: 10/13/23 TMK CHKD DATE: APPROVED: 10/13/23 -BMW

