DUCTWORK SYMBOLS

RECTANGULAR	ROUND / OVAL	
	CONICAL FITTING	ROUND BRANCH DUCTWORK
ACOUSTIC FITTING	ACOUSTIC FITTING	RECTANGULAR BRANCH DUCTWORK
		SQUARE TEE WITH TURNING VANES NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND / OVAL DUCTWORK SHALL BE PROVIDED WITH TURNING VANES. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
		RADIUS'D TEE
		RADIUS'D BRANCH
		UNLESS NOTED OTHERWISE ON DRAWINGS, 15° MAX FOR DIVERGING, 30° MAX FOR CONVERGING TRANSITION
		EXISTING DUCTWORK TO REMAIN
		EXISTING DUCTWORK TO REMOVED
		RETURN AIR, RELIEF AIR, OR TRANSFER AIR DUCTWORK. (UP AND DOWN) RADIUSED OR SQUARE WITH TURNING VANES.
		SUPPLY AIR OR OUTDOOR AIR DUCTWORK. (UP AND DOWN) RADIUSED OR SQUARE WITH TURNING VANES.
		EXHAUST AIR DUCTWORK. (UP AND DOWN) RADIUSED OR SQUARE WITH TURNING VANES.
		RECTANGULAR AND ROUND / OVAL DUCTWORK RISE / DROP WITH 90° RADIUSED OR SQUARE ELBOWS AND TURNING VANES.
		RADIUS ELBOW
		90° SQUARE ELBOW (WITH TURNING VANES) NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND DUCTWORK SHALL BE PROVIDED WITH TURNING VANES.
		SQUARE THROAT / RADIUS HEEL FITTINGS NOT ACCEPTABLE
AD	AD	ACCESS DOOR OR PANEL
R	R	DUCTWORK RISE IN DIRECTION OF AIR FLOW
D	D	DUCTWORK DROP IN DIRECTION OF AIR FLOW
		FLEXIBLE DUCTWORK
		DUCTWORK WITH ACOUSTICAL LINER. LISTED DUCT SIZES ARE INSIDE CLEAR DIMENSIONS.
		FLEXIBLE CONNECTION
		DUCTWORK CONSTRUCTED OF SPECIAL MATERIAL AS NOTED
		DIRECTION OF PITCH
26x20		RECTANGULAR DUCTWORK DIMENSIONS (W x H)
26ø		ROUND DUCTWORK DIMENSIONS (DIA)
26x20 OV		OVAL DUCTWORK DIMENSIONS (W x H)

GENERAL FLOOR PLAN NOTES

3	PLAN NOTE. APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE.
3	DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL.
A1	EQUIPMENT, DEVICE, OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES.
H1 OR H1	EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES.
2	RISER OR STACK NUMBER
B / H2	DETAIL: B = DETAIL DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED
1 / H2	SECTION: 1 = SECTION DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED
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" ELEV: 8' - 0"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE
20x20 TOD: 8' - 10" / 20x20 BOD: 7' - 2"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF DUCTWORK, UNLESS NOTED OTHERWISE
	CONNECT TO EXISTING

DUCTWORK DEVICE SYMBOLS

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
SD	DUCT MOUNTED SMOKE DETECTOR. COORDINATE LOCATION.
H	HUMIDITY SENSOR - DUCT MOUNTED
SP	STATIC PRESSURE SENSOR - DUCT MOUNTED
C	CARBON DIOXIDE SENSOR - DUCT MOUNTED
S	TEMPERATURE SENSOR - DUCT MOUNTED

MISC SYMBOLS

C	CARBON DIOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
CO	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.
S	TEMPERATURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
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.
	EMERGENCY SHUTOFF STATION. 46" MOUNTING HEIGHT UNLESS NOTED OTHERWISE.

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		BOTTOM CONNECTION (45°)
		BOTTOM CONNECTION (90°)
		BRANCH TEE CONNECTION (NOTE: BULLHEAD TEE'S ARE NOT PERMITTED)
		DIRECTION OF PITCH
D	D	DROP
		ELBOW DOWN
		ELBOW UP
		EXISTING PIPE TO BE REMOVED
		EXISTING PIPE TO REMAIN
		FLOW DIRECTION DESIGNATION
		PIPE RISER
R	R	RISE
		TOP CONNECTION (45°)
		TOP CONNECTION (90°)

HVAC PIPING DESIGNATIONS

D	DRAIN LINE. PITCH IN DIRECTION INDICATED
HWR	HEATING HOT WATER RETURN PIPE
HWS	HEATING HOT WATER SUPPLY PIPE
HG	REFRIGERANT HOT GAS LINE
RL	REFRIGERANT LIQUID LINE
RS	REFRIGERANT SUCTION LINE

VALVES AND FITTINGS

	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
P	PRESSURE GAUGE
T	TEMPERATURE GAUGE OR THERMOMETER
	UNION
	CLEANOUT
	STRAINER
	STRAINER WITH A BLOW DOWN VALVE AND HOSE CONNECTION
	DRAIN VALVE WITH HOSE END CONNECTION
	AUTOMATIC FLOW CONTROLLER WITH P/T PLUG IN AND OUT
	EXPANSION JOINT
	MANUAL AIR VENT
A	AUTOMATIC AIR VENT
	PRESSURE REDUCING VALVE
M	MODULATING 2 PORT AUTOMATIC CONTROL VALVE
M	2 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE
M	MODULATING 3 PORT AUTOMATIC CONTROL VALVE
M	3 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE
M	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 DISCHARGE TO OUTDOORS.
	VACUUM BREAKER
N	NEEDLE VALVE
	PRESSURE AND TEMPERATURE TEST PLUG
V	VACUUM GAUGE WITH STOP
	END CAP
	GLOBE VALVE
VB	SHUTOFF VALVE AND BOX
	SHUTOFF VALVE ON RISER
S	SOLENOID VALVE
M	WATER METER
F	FLOW METER
BM	BI-METALIC STEAM TRAP AND DRIP ASSEMBLY
TD	THERMODYNAMIC STEAM TRAP AND DRIP ASSEMBLY
IB	INVERTED BUCKET STEAM TRAP AND DRIP ASSEMBLY
FT	FLOAT AND THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
TS	THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
	PRESSURE GAUGE WITH COCK AND SIPHON LOOP

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

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

ABBREVIATIONS

AC	- AIR COMPRESSOR OR AIR CONDITIONER	ID	- INSIDE DIAMETER
ACCU	- AIR COOLED CONDENSING UNIT	INV	- INVERT ELEVATION
AD	- ACCESS DOOR OR AREA DRAIN	IN	- INCHES
ADJ	- ADJUSTABLE		
AFF	- ABOVE FINISHED FLOOR	KEC	- KITCHEN EQUIPMENT CONTRACTOR
AFG	- ABOVE FINISHED GRADE		
AFMS	- AIR FLOW MEASURING STATION	L	- LENGTH
ALT	- ALTERNATE	LAT	- LEAVING AIR TEMPERATURE
AP	- ACCESS PANEL	LAV	- LAVATORY
APPROX	- APPROXIMATE	LBS	- POUNDS
ARCH	- ARCHITECT OR ARCHITECTURAL	LPC	- LOW PRESSURE CONDENSATE RETURN
ASSY	- ASSEMBLY	LPS	- LOW PRESSURE STEAM SUPPLY
ATC	- AUTOMATIC TEMPERATURE CONTROL (SYNONYMOUS WITH BAS)	LWT	- LEAVING WATER TEMPERATURE
		MAX	- MAXIMUM
BAS	- BUILDING AUTOMATION SYSTEM	MDD	- MOTORIZED DAMPER
BDD	- BACK DRAFT DAMPER	MEZZ	- MEZZANINE
BFP	- BACKFLOW PREVENTER	MFR	- MANUFACTURER
BLDG	- BUILDING	MH	- MANHOLE
BOB	- BOTTOM OF BEAM	MIN	- MINIMUM OR MINUTE
BOD	- BOTTOM OF DUCT	MISC	- MISCELLANEOUS
BOE	- BOTTOM OF EQUIPMENT	MTD	- MOUNTED
BOF	- BOTTOM OF FOOTING	MTG	- MOUNTING
BOG	- BOTTOM OF GRILLE	MPC	- MEDIUM PRESSURE CONDENSATE RETURN
BOP	- BOTTOM OF PIPE		
BOT	- BOTTOM	MPS	- MEDIUM PRESSURE STEAM SUPPLY
BTU	- BRITISH THERMAL UNIT	MU	- WATER MAKE-UP
BTUH	- BRITISH THERMAL UNIT PER HOUR		
		N/C	- NORMALLY CLOSED
CBD	- COUNTER BALANCED BACKDRAFT DAMPER	N/C	- NOT IN CONTRACT
CFCI	- CONTRACTOR FURNISHED CONTRACTOR INSTALLED	N/O	- NORMALLY OPEN
		NOM	- NOMINAL
CFM	- CUBIC FEET PER MINUTE	NPT	- NATIONAL PIPE THREAD
CHS	- CHILLED WATER SUPPLY	NTS	- NOT TO SCALE
CHR	- CHILLED WATER RETURN		
CHGR	- CHILLED WATER GLYCOL SOLUTION RETURN	OA	- OUTDOOR AIR
CHGS	- CHILLED WATER GLYCOL SOLUTION SUPPLY	OBD	- OPPOSED BLADE DAMPER
CLG	- CEILING	OD	- OUTSIDE DIAMETER
CMU	- CONCRETE MASONRY UNIT	OFCI	- OWNER FURNISHED CONTRACTOR INSTALLED
CO	- CLEAN OUT		
CO2	- CARBON DIOXIDE	OFOI	- OWNER FURNISHED OWNER INSTALLED
CONN	- CONNECT OR CONNECTION		
CONTR	- CONTRACTOR	P	- PROPANE GAS
CTR	- CENTER	PC	- PLUMBING CONTRACTOR (DIVISION 22) OR PUMPED CONDENSATE RETURN
CU	- COPPER		
CW	- COLD WATER	PLBG	- PLUMBING
CWR	- CONDENSER WATER RETURN	PRESS	- PRESSURE
CWS	- CONDENSER WATER SUPPLY	PRV	- PRESSURE REGULATING VALVE
		PSF	- POUNDS PER SQUARE FOOT
D	- DRAIN LINE	PSI	- POUNDS PER SQUARE INCH
DB	- DRY BULB	PSIG	- POUNDS PER SQUARE INCH GAUGE
DDC	- DIRECT DIGITAL CONTROLS		
DI	- DEIONIZED WATER	RA	- RETURN AIR
DIA	- DIAMETER	RAD	- RADIUS
DIM	- DIMENSION	RCP	- REFLECTED CEILING PLAN
DN	- DOWN	RD	- ROOF DRAIN
DWG	- DRAWING	REC	- RECESSED
		REQD	- REQUIRED
EA	- EACH OR EXHAUST AIR	RI	- ROUGH IN
EAT	- ENTERING AIR TEMPERATURE	RL	- REFRIGERANT LIQUID
EC	- ELECTRICAL CONTRACTOR (DIVISION 26)	ROS	- REVERSE OSMOSIS WATER SUPPLY
EJ	- EXPANSION JOINT	ROR	- REVERSE OSMOSIS WATER RETURN
ELEC	- ELECTRICAL	RPM	- REVOLUTIONS PER MINUTE
ELEV	- ELEVATOR	RS	- REFRIGERANT SUCTION
EQUIP	- EQUIPMENT		
ET	- EXPANSION TANK	S	- SPRINKLER (WET)
ETR	- EXISTING TO REMAIN	SA	- SUPPLY AIR
EQS	- EQUIPMENT SUPPLIER	SAN	- SANITARY OR SANITARY DRAIN
EWT	- ENTERING WATER TEMPERATURE	SCH	- SCHEDULE
EXH	- EXHAUST	SCW	- SOFT COLD WATER
EXP	- EXPANSION	SHT	- SHEET
EXT	- EXTERIOR	SPEC	- SPECIFICATIONS
EX	- EXISTING	SQ	- SQUARE
		SR	- SUPPLY RISER
FD	- FLOOR DRAIN	SRV	- SAFETY RELIEF VALVE
FF	- FINISHED FLOOR ELEVATION	SS	- STAINLESS STEEL
FLR	- FLOOR	STD	- STANDARD
FOB	- FLAT ON BOTTOM	STM	- STORM OR STORM DRAINAGE
FOF	- FUEL OIL FLOW	STRUC	- STRUCTURAL OR STRUCTURE
FOG	- FUEL OIL GAUGE	SUC	- SITE UTILITY CONTRACTOR
FOR	- FUEL OIL RETURN		
FOS	- FUEL OIL SUPPLY	TEMP	- TEMPERATURE
FOT	- FLAT ON TOP	TOB	- TOP OF BEAM
FPM	- FEET PER MINUTE	TOD	- TOP OF DUCT
FSC	- FIRE SUPPRESSION CONTRACTOR (DIVISION 21)	TOE	- TOP OF EQUIPMENT
FT	- FEET	TOF	- TOP OF FOOTING
FTG	- FOOTING	TOJ	- TOP OF JOIST
		TOP	- TOP OF PIPE
G	- GAS OR NATURAL GAS	TOS	- TOP OF SLAB OR TOP OF STEEL
GA	- GAUGE	TYP	- TYPICAL
GAL	- GALLON		
GALV	- GALVANIZED	UNO	- UNLESS NOTED OTHERWISE
GC	- GENERAL TRADES CONTRACTOR		
GPM	- GALLONS PER MINUTE	V	- VENT
		VAC	- VACUUM
HB	- HOSE BIBB	VEL	- VELOCITY
HC	- HVAC CONTRACTOR (DIVISION 23)	VFD	- VARIABLE FREQUENCY DRIVE (ADJUSTABLE FREQUENCY MOTOR CONTROLLER)
HD	- HUB DRAIN		
HG	- REFRIGERANT HOT GAS		
HP	- HORSEPOWER	VIB	- VALVE IN BOX
HR	- HOUR	VOL	- VOLUME
HT	- HEAT TRACE	VTR	- VENT THROUGH ROOF
HTR	- HEATER	VR	- VENT RISER
HVAC	- HEATING, VENTILATING, AND AIR CONDITIONING		
HW	- HOT WATER	W/	- WITH
HWR	- HEATING HOT WATER RETURN	W/O	- WITHOUT
HWS	- HEATING HOT WATER SUPPLY	WB	- WET BULB
		WCO	- WALL CLEANOUT

GENERAL NOTES

A. COORDINATE THE LOCATION OF ALL DEVICES LOCATED IN THE CEILING WITH THE ARCHITECT'S REFLECTED CEILING PLAN AND OTHER TRADES DURING CONSTRUCTION. ALL CEILING AIR DEVICES SMALLER THAN THE GRID DIMENSIONS SHALL BE MOUNTED CENTERED WITHIN THE CEILING GRID TILE.

B. ALL EQUIPMENT ABOVE THE CEILING REQUIRING MAINTENANCE ACCESS SHALL BE MOUNTED A MAXIMUM OF 18" ABOVE CEILING TO ALLOW FOR ACCESS.

C. ANNULAR SPACE AROUND DUCTWORK, PIPING, CONDUIT, AND OTHER SIMILAR PENETRATIONS OR COMBINATIONS OF PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRESTOPPED TO RETARD THE PASSAGE OF FIRE AND SMOKE. REFER TO SPECIFICATION SECTION 23 05 05 FIRESTOPPING.

D. H.C. TO COORDINATE LOCATIONS OF ALL EQUIPMENT, DUCTWORK, AND AIR DEVICES WITH STRUCTURAL MEMBERS AND THE WORK OF OTHER TRADES PRIOR TO FINAL INSTALLATION OFFSET PIPING AND DUCTWORK AS REQUIRED TO MAINTAIN ALL MANUFACTURER'S RECOMMENDED CLEARANCES.

E. COORDINATE ALL WALL AND ROOF OPENINGS WITH GENERAL TRADES CONTRACTOR.

F. IN GENERAL, KEEP DUCT MAINS HIGH IN CEILING CAVITY, TIGHT TO STRUCTURE, WHERE POSSIBLE. ALL DUCTS SHALL BE RUN ABOVE CEILING UNLESS NOTED OTHERWISE. WHERE NO CEILINGS ARE INSTALLED HOLD AS HIGH AS POSSIBLE TO STRUCTURE UNLESS NOTED OTHERWISE.

G. HVAC CONTRACTOR SHALL CLEAN AND PREPARE FOR PAINTING ALL DUCTWORK, AND HVAC TEMPERATURE CONTROL CONDUIT LOCATED IN FINISHED ROOMS WHICH DO NOT HAVE A CEILING. THESE ITEMS ARE EXPOSED DUE TO THE LACK OF A CEILING AND WILL BE PAINTED BY THE GENERAL CONTRACTOR.

H. RUN-OUTS TO SUPPLY DIFFUSERS, RETURN GRILLES, AND EXHAUST GRILLES SHALL INCLUDE MANUAL DAMPERS PER DETAILS (NOT SHOWN ON PLANS FOR CLARITY). PROVIDE ADDITIONAL DAMPERS AS SHOWN ON FLOOR PLANS OR WHERE REQUIRED FOR SYSTEM BALANCING REGARDLESS OF BEING SHOWN OR NOT.

I. ALL SQUARE CORNER DUCT FITTINGS SHALL BE EQUIPPED WITH TURNING VANES.

J. HVAC CONTRACTOR SHALL COORDINATE CLOSELY WITH OTHER TRADES IN LOCATING THE INSTALLING ALL SYSTEMS ABOVE CORRIDORS, SPECIFICALLY, COORDINATE LAYOUT WITH E.C. TO ALLOW SUFFICIENT SPACE FOR CABLE TRAY SYSTEM.

K. WHERE SUPPLY DUCTWORK WILL REMAIN EXPOSED TO VIEW IN FINISHED SPACES, DO NOT APPLY EXTERNAL INSULATION. DUCTWORK SHALL BE INTERNALLY LINED. HVAC CONTRACTOR SHALL CLEAN AND PREPARE DUCT SURFACE FOR FINISH PAINTING BY THE GENERAL CONTRACTOR.

MECHANICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
M0.1	LEGEND & INDEX
M0.2	SCHEDULES & DETAILS
M0.3	DETAILS
M0.4	DETAILS
M0.5	DETAILS
M3.1	MECHANICAL LOWER LEVEL- WELD & DIESEL - NEW WORK
M3.2	MECHANICAL LOWER LEVEL- CONSTRUCTION LABS NEW WORK
M3.3	MECHANICAL ROOF - AREA A - NEW WORK
M3.4	MECHANICAL ROOF - AREA B - NEW WORK
M3.5	MECHANICAL ROOF - AREA C - NEW WORK
MD3.1	HVAC LOWER LEVEL- AREA WELD & DIESEL DEMOLITION
MD3.2	MECHANICAL LOWER LEVEL- AREA CONSTRUCTION LABS DEMOLITION
MD3.3	MECHANICAL ROOF - AREA A - DEMO
MD3.4	MECHANICAL ROOF - AREA B - DEMO
MD3.5	MECHANICAL ROOF - AREA C - DEMO

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PROJECT NO. 2023-06013

SCARLET OAKS PHASE 1 RTU REPLACEMENTS

GREAT OAKS CAREER CAMPUSES
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1	3/09/2023	BID SET

PROJECT NO. **22104.00**

DRAWING TITLE:
LEGEND & INDEX

M0.1

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ROOFTOP HEATING & COOLING UNITS - AIR-COOLED DX/GAS-FIRED

GENERAL NOTES:
A. COOLING CAPACITIES BASED ON 95°F AMBIENT AIR TEMPERATURE.
B. NATURAL GAS DELIVERY PRESSURE TO UNIT IS 7" W.C. PROVIDE SECONDARY REGULATOR IF REQ'D FOR UNIT OPERATION.
C. 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.
D. HEATING L.A.T. IS BASED ON FULL UNIT CFM AT LISTED E.A.T. AND MBH OUTPUT.
E. 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.
F. 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.
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 ANALOGUE SPEED CONTROL INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.

NOTES:
1. UNITS TO BE INSTALLED ON EXISTING CURB.
2. CONTRACTOR SHALL PICK UP UNITS AND CURBS FROM LIVE OAKS AND DELIVER TO SCARLET OAKS.
3. UNITS ARE OWNER PURCHASED, CONTRACTOR INSTALLED. CONTRACTOR SHALL PICK UP UNITS FROM LIVE OAKS AND DELIVER TO SCARLET OAKS.

	SUPPLY FAN									RETURN FAN								COOLING SECTION															HEATING SECTION							PRE FILTERS	FINAL FILTERS	OUTSIDE AIR			DIMENSIONS			MISCELLANEOUS							ELECTRICAL SERVICE						BASIS OF DESIGN		
					SPEED CONTROL									SPEED CONTROL				DX-COOLING COIL							CONDENSING SECTION																																						
UNIT NUMBER	CFM (TOTAL)	EXTERNAL / TOTAL STATIC PRESSURE (IN. W.C.)	FAN QTY / WHEEL TYPE	MOTOR (HP EACH)	ELECTRONICALLY COMMUTATED MOTORS	VARIABLE FREQUENCY DRIVE	VARIABLE FREQUENCY DRIVE (QTY)	INTEGRAL PIEZO RING AIRFLOW STATION (EACH)	CFM (TOTAL)	EXTERNAL / TOTAL STATIC PRESSURE (IN. W.C.)	FAN QTY / WHEEL TYPE	MOTOR (HP EACH)	ELECTRONICALLY COMMUTATED MOTORS	VARIABLE FREQUENCY DRIVE	VARIABLE FREQUENCY DRIVE (QTY)	INTEGRAL PIEZO RING AIRFLOW STATION (EACH)	MAXIMUM FACE VELOCITY (FPM)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	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)	HEATING CAPACITY (MBH OUTPUT)	ENTERING AIR TEMPERATURE DB (°F)	LEAVING AIR TEMPERATURE DB (°F).(NOTE F)	GAS INPUT MIN./MAX. (CFH)	MINIMUM STAGES OF HEATING (NOT INCLUDING "OFF")	FULL MODULATION	THICKNESS / MERV	THICKNESS / MERV	MINIMUM CFM	ECONOMIZER	INTEGRAL AIRFLOW STATION	MAX UNIT LENGTH BASERAIL (INCHES)	MAX UNIT WIDTH BASERAIL(INCHES)	MAX UNIT HEIGHT (INCHES) (NOTE I)	APPROXIMATE UNIT WEIGHT INCLUDING CURB (LBS)	ENERGY RECOV. SECTION (REFER TO SEPARATE SCHED.)	INTEGRAL 100% BAROMETRIC RELIEF	AIR BLENDER (REFER TO SEPARATE SCHED.)	INTERNAL LIGHTS	SERVICE RECEPTACLE	UVGI (NOTE G)	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	MINIMUM SCCR (AMPS)	FUSED DISCONNECT	MANUFACTURER	MODEL	SEE NOTE
RTU-7	6,100	1.5 / 3.51	2 / AF SWSI	7.2	-	●			5,185	0.5 / 0.75	1 / DD PROP	3	-	●			450	256	179	79.1 / 65.8	51.9 / 51.6	0.62	410A	4						320.0	48.0	97.0	400	15		2" / 8	4" / 13	1415	●		199"	89"	54"	6800							460 / 3	26.06	68	70		●	ENGINEERED AIR	FWE224/DJE40/O/M/R	1,3
RTU-8	10,000	1.5 / 3.86	2 / AF SWSI	7.2	-	●			8,500	0.5 / 0.75	1 / DD PROP	3	-	●			450	378	277	79.2 / 65.7	53.5 / 53.1	0.83	410A	3						400.0	54.0	91.0	500	15		2" / 8	4" / 13	2290	●		213"	89"	64"	8100							460 / 3	34.26	86	100		●	ENGINEERED AIR	FWE313/DJE60/O/M/R	1,3
RTU-9	7,100	1.5 / 3.69	2 / AF SWSI	7.2	-	●			6,035	0.5 / 0.75	1 / DD PROP	3	-	●			450	260	192	78.4 / 65.3	53.4 / 53	0.76	410A	4						320.0	57.0	97.0	400	15		2" / 8	4" / 13	1370	●		199"	89"	54"	6800							460 / 3	26.06	68	70		●	ENGINEERED AIR	FWE224/DJE40/O/M/R	1,3
RTU-10	7,200	1.5 / 3.62	2 / AF SWSI	7.2	-	●			6,120	0.5 / 0.75	1 / DD PROP	3	-	●			450	262	194	78.7 / 65.5	53.7 / 53.4	0.77	410A	4						320.0	56.0	97.0	400	15		2" / 8	4" / 13	1480	●		199"	89"	54"	7700							460 / 3	26.06	68	70		●	ENGINEERED AIR	FWE224/DJE40/O/M/R	1,3
RTU-11	8,500	1.5 / 3.68	2 / AF SWSI	7.2	-	●			7,225	0.5 / 0.75	1 / DD PROP	3	-	●			450	313	229	76.9 / 64.3	52 / 51.6	0.79	410A	2						400.0	62.0	105.0	500	15		2" / 8	4" / 13	940	●		199"	81"	60"	7000							460 / 3	39.46	78	100		●	ENGINEERED AIR	FWE252/DJE60/O/M/R	1,3
RTU-12	6,600	1.5 / 3.68	2 / AF SWSI	7.2	-	●			5,610	0.5 / 0.75	1 / DD PROP	3	-	●			450	319	215	82.5 / 68.0	52.3 / 52.1	0.72	410A	2						400.0	40.0	96.0	500	15		2" / 8	4" / 13	2765	●		199"	89"	54"	6800							460 / 3	39.46	78	100		●	ENGINEERED AIR	FWE252/DJE60/O/M/R	1,3
RTU-13	10,000	1.5 / 4.07	2 / AF SWSI	7.2	-	●			8,500	0.5 / 0.75	1 / DD PROP	3	-	●			450	437	306	82.4 / 67.9	54 / 53.8	0.97	410A	4						580.0	41.0	95.0	725	15		2" / 8	4" / 13	4085	●		213"	89"	64"	8100							460 / 3	33.06	99	110		●	ENGINEERED AIR	FWE354/DJE60/O/M/R	1,3
RTU-14	8,300	1.5 / 3.89	2 / AF SWSI	7.2	-	●			7,055	0.5 / 0.75	1 / DD PROP	3	-	●			450	375	259	81.2 / 67.1	52.3 / 52.1	0.81	410A	3						400.0	45.0	90.0	500	15		2" / 8	4" / 13	2860	●		199"	89"	61"	8150							460 / 3	34.26	86	100		●	ENGINEERED AIR	FWE313/DJE60/O/M/R	1,3
RTU-15	7,200	1.5 / 4.1	2 / AF SWSI	7.2	-	●			6,120	0.5 / 0.75	1 / DD PROP	3	-	●			450	316	217	79.9 / 66.3	51.9 / 51.5	0.67	410A	2						400.0	45.0	96.0	500	15		2" / 8	4" / 13	2425	●		199"	81"	54"	7000							460 / 3	47.33	86	100		●	ENGINEERED AIR	FWE252/DJE60/O/M/R	1,3
RTU-16	9,500	1.5 / 4.0	2 / AF SWSI	7.2	-	●			8,050	0.5 / 0.75	1 / DD PROP	5	-	●			450	320	241	76.2 / 63.9	52.7 / 52.3	0.69	410A	5						480.0	45.0	92.0	600	15		2" / 8	4" / 13	1280	●		199"	89"	65"	7900							460 / 3	35.83	87	100		●	ENGINEERED AIR	FWE282/DJE60/O/M/R	1,3
RTU-17	7,500	1.5 / 4.35	2 / AF SWSI	7.2	-	●			6,380	0.5 / 0.75	1 / DD PROP	3	-	●			450	258	195	76.9 / 64	52.8 / 52.2	0.80	410A	4						400.0	45.0	94.0	500	15		2" / 8	4" / 13	800	●		199"	89"	63"	6800							460 / 3	33.93	76	100		●	ENGINEERED AIR	FWE224/DJE60/O/M/R	1,3
RTU-18	7,200	1.5 / 4.27	2 / AF SWSI	7.2	-	●			6,090	0.5 / 0.75	1 / DD PROP	3	-	●			450	253	189	76.4 / 63.7	52.0 / 51.5	0.82	410A	4						400.0	45.0	96.0	500	15		2" / 8	4" / 13	560	●		187"	89"	63"	6800							460 / 3	33.93	76	100		●	ENGINEERED AIR	FWE224/DJE60/O/M/R	1,3
RTU-19	7,600	1.5 / 4.38	2 / AF SWSI	7.0	-	●			6,440	0.5 / 0.75	1 / DD PROP	3	-	●			450	258	195	76.7 / 64.0	52.9 / 52.4	0.80	410A	4						400.0	45.0	94.0	500	15		2" / 8	4" / 13	740	●		199"	89"	63"	6800							460 / 3	33.93	75	100		●	ENGINEERED AIR	FWE224/DJE60/O/M/R	1,3
RTU-20	6,200	1.5 / 4.07	2 / AF SWSI	4.8	-	●			5,260	0.5 / 0.75	1 / DD PROP	2	-	●			450	250	176	78.1 / 65.0	51.7 / 51.2	0.87	410A	4						400.0	45.0	105.0	500	15		2" / 8	4" / 13	1090	●		187"	89"	63"	6800							460 / 3	28.83	68	70		●	ENGINEERED AIR	FWE224/DJE60/O/M/R	1,3
RTU-21	6,300	1.5 / 3.59	2 / AF SWSI	4.4	-	●			5,355	0.5 / 0.75	1 / DD PROP	3	-	●			450	232	167	76.2 / 64.1	51.7 / 51.4	0.7	410A	3						320.0	58.0	105.0	400	15		2" / 8	4" / 13	1035	●		199"	89"	60"	6800							460 / 3	28.83	61	70	5K	●	ENGINEERED AIR	FWE183/DJE40/O/M/R	1,3
RTU-25	6,300	1.5 / 3.63	2 / AF SWSI	4.4	-	●			5,355	0.5 / 0.75	1 / DD PROP	3	-	●			450	273	189	80.1 / 66.6	52.4 / 52.2	0.74	410A	4						320.0	45.0	92.0	400	15		2" / 8	4" / 13	2250	●		199"	89"	60"	6800							460 / 3	28.83	63	70		●	ENGINEERED AIR	FWE224/DJE40/O/M/R	1,3
RTU-26	8,300	1.5 / 3.85	2 / AF SWSI	7.2	-	●			7,055	0.5 / 0.75	1 / DD PROP	3	-	●			450	308	218	76.8 / 64.5	52.4 / 51.8	0.77	410A	2						320.0	56.0	92.0	400	15		2" / 8	4" / 13	1600	●		199"	89"	60"	7350							460 / 3	28.83	78	100		●	ENGINEERED AIR	FWE252/DJE40/O/M/R	1,3
RTU-27	8,600	1.5 / 3.71	2 / AF SWSI	7.2	-	●			7,310	0.5 / 0.75	1 / DD PROP	3	-	●			450	316	229	77.2 / 64.7	52.6 / 52.2	0.82	410A	2						400.0	55.0	98.0	500	15		2" / 8	4" / 13	1795	●		199"	89"	66"	7000							460 / 3	28.83	78	100		●	ENGINEERED AIR	FWE252/DJE60/O/M/R	1,3
RTU-28	9,200	1.5 / 4.07	2 / AF SWSI	7.2	-	●			7,820	0.5 / 0.75	1 / DD PROP	3	-	●			450	380	268	79.7 / 66.3	52.8 / 52.5	0.84	410A	3						400.0	47.0	87.0	500	15		2" / 8	4" / 13	3075	●		213"	89"	70"	8050							460 / 3	28.83	86	100		●	ENGINEERED AIR	FWE313/DJE60/O/M/R	1,3
RTU-29	10,000	1.5 / 3.95	2 / AF SWSI	7.2	-	●			8,500	0.5 / 0.75	1 / DD PROP	3	-	●			450	374	268	77.7 / 65.1	52.9 / 52.5	0.85	410A	3						480.0	54.0	98.0	600	15		2" / 8	4" / 13	2350	●		213"	89"	70"	8000							460 / 3	28.83	86	100		●	ENGINEERED AIR	FWE313/DJE60/O/M/R	1,3
RTU-41	7,200	1.5 / 3.98	2 / AF SWSI	4.4	-	●			6,120	0.5 / 0.75	1 / DD PROP	3	-	●			450	260	190	77.7 / 65	53.2 / 52.9	0.78	410A	4						320.0	54.0	95.0	400	15		2" / 8	4" / 13	1685	●		187"	89"	56"	5800							460 / 3	28.83	64	70	65K	●	ENGINEERED AIR	FWE224/DJE40/O/M/R	1,3
RTU-42	9,100	1.5 / 3.80	2 / AF SWSI	7.2	-	●			7,735	0.5 / 0.75	1 / DD PROP	3	-	●			450	304	221	74.1 / 62.7	51.6 / 51	0.8	410A	2						320.0	66.0	98.0	400	15		2" / 8	4" / 13	495	●		187"	81"	57"	5800							460 / 3	28.83	78	100		●	ENGINEERED AIR	FWE252/DJE40/O/M/R	1,3
RTU-HV-2	14,000	1.5 / 4.7	2 / AF SWSI	10	-	●			14,331	1.0 / 2.7	1 / DD PROP	6.7	-	●																865.0	54.0	95.0	950	15		2" / 8	2" / 8	1520	●		259"	136"	109"	11400	●			●	●		460 / 3		53	70		●	ENGINEERED AIR	DJX100/HRW2400/O/MV	1,2
RTU-HV-3	15,520	1.5 / 5.0	2 / AF SWSI	10	-	●			15,831	1.0 / 2.8	1 / DD PROP	6.7	-	●																865.0	54.0	95.0	950	15		2" / 8	2" / 8	1520	●		259"	136"	109"	11900	●			●	●		460 / 3		53	70		●	ENGINEERED AIR	DJX100/HRW2400/O/MV	1,2

DUCT CONSTRUCTION, SEALING, AND INSULATION

GENERAL NOTES:
A. REFER TO SPECIFICATIONS FOR DUCT CONSTRUCTION; SHEET METAL DUCT; INTERIOR LINING; EXTERIOR INSULATION; FIBERGLASS DUCTBOARD; ETC.
B. DUCT CONSTRUCTION AND SEALING SHALL BE PER LATEST S.M.A.C.N.A. STANDARDS.

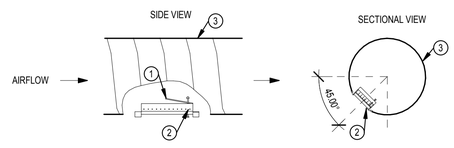
NOTES:
1. RETURN DUCTWORK WITHIN 15' OF AIR HANDLING UNIT SHALL BE INTERNALLY LINED.
2. AIR DEVICES ARE DIRECTLY CONNECTED TO SUPPLY DUCT.

	S.M.A.C.N.A. CLASS.								
			LEAKAGE CLASS						
DUCT SYSTEM	S.P. CONSTRUCT.	SEAL CLASS	RECT	RND	INTERNALLY LINED	EXTERNAL INSULATION	DOUBLE WALL INSULATED	NOT INSULATED	SEE NOTE
SUPPLY DUCTWORK FROM RTU/HV	+3"	A	8	4	●	-	-	-	-
SUPPLY DUCTWORK DOWNSTREAM OF RTU	+1"	A	16	8	-	●	-	-	2
SUPPLY DUCTWORK DOWNSTREAM FOR HV UNIT	+2"	A	16	8	-	-	-	-	2
RETURN DUCTWORK	-2"	A	16	8	-	-	-	●	1,2
TRANSFER/RETURN AIR SOUND BOOT	-1"	A	16	-	●	-	-	-	-

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.

		MOUNTING TYPE					MATERIAL			FINISH					BASIS OF DESIGN		
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
G1	DUCT MOUNT DIFFUSER			●			●			●					TITUS	S300F	



NOTES
1. AIR SCOOP DEVICE. (MUST BE ORDERED WITH GRILLE)
2. AIR SCOOP ADJUSTMENT SCREW.
3. INTERNALLY LINED SPIRAL DUCTWORK.

1 DUCT MOUNTED AIR DEVICE (AIR DEVICE G1)
SCALE: NONE

ENERGY RECOVERY SECTIONS

GENERAL NOTES:
A. EQUIPMENT SHALL BE CONSTRUCTED AND LABELED FOR REQUIRED SCCR (SHORT CIRCUIT CURRENT RATING). COORDINATE WITH DIVISION 26.
B. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR SEISMIC RESTRAINT REQUIREMENTS.
C. REFER TO ASHRAE STANDARD 90.1 FOR DEFINITION / CALCULATION OF ENERGY RECOVERY EFFECTIVENESS.
D. WHEN PICV IS INDICATED, MINIMUM REQUIRED INLET PRESSURE SHALL NOT EXCEED 5 PSIG.

NOTES:
1. BASIS OF DESIGN - ENGINEERED AIR.
2. LISTED SIZE IS APPROXIMATE.

	OUTSIDE AIR			EXHAUST AIR					ENERGY RECOVERY DEVICE											SEISMIC RESTRAINTS		
										TYPE						MOTOR						
ASSOCIATED EQUIPMENT MARK	CFM	SUMMER ENTERING AIR TEMP DB / WB (°F)	WINTER ENTERING AIR TEMP DB / WB (°F)	CFM	SUMMER ENTERING AIR TEMP DB / WB (°F)	WINTER ENTERING AIR TEMP DB / WB (°F)	SUMMER LEAVING AIR TEMP DB / WB (°F)	WINTER LEAVING AIR TEMP DB / WB (°F)	SENSIBLE	ENTHALPY	WHEEL	PLATE	HEAT PIPE	MIN. AHRI EFFECTIVENESS (%)	MIN. ASHRAE ENERGY RECOVERY EFFECTIVENESS (%) (NOTE C)	MAX. STATIC PRESSURE DROP (O.A. / EXH. AIR)	MOTOR (HP)	VOLTAGE - PHASE	VARIABLE FREQUENCY DRIVE	REQUIRED	IMPORTANCE FACTOR	SEE NOTE
RTU-HV-2	15,520	93 / 74	0 / -1	15,000	75 / 63	70 / 54	80.1 / 66.8	43 / 36.5	-	●	●	-	-	74.2	55.8	-1.55	6.7	460-3	-	-	-	1,2
RTU-HV-3	14,000	93 / 74	0 / -1	13,500	75 / 63	70 / 54	79.9 / 66.6	24.9 / 24.5	-	●	●	-	-	75.6	68.5	-1.55	6.7	460-3	-	-	-	1,2

MSA DESIGN
CINCINNATI | COLUMBUS | ORLANDO
msaarch.com | 855.241.5666

STATE OF OHIO
LANE G. OATMAN
70812
REGISTERED
PROFESSIONAL ENGINEER
3-8-2023

HEAPY
PROJECT NO. 2023-06013

SCARLET OAKS PHASE 1 RTU REPLACEMENTS
GREAT OAKS CAREER CAMPUSES
3254 E. KEMPER RD.
CINCINNATI, OH 45241

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NO.	DATE	ISSUED / REVISION
1	3/09/2023	BID SET

PROJECT NO. **22104.00**

DRAWING TITLE:
SCHEDULES & DETAILS

M0.2

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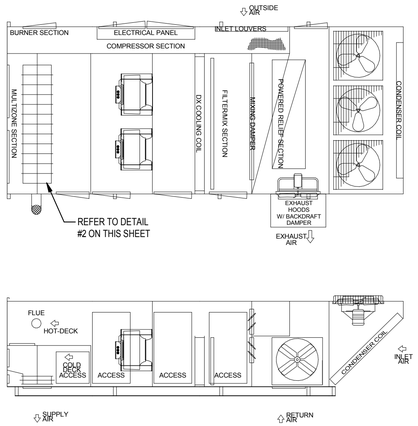

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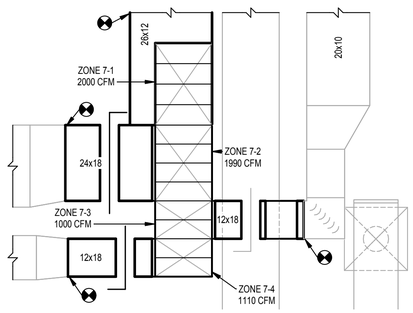

2 ZONE 7 DUCTS
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7 RTU-10
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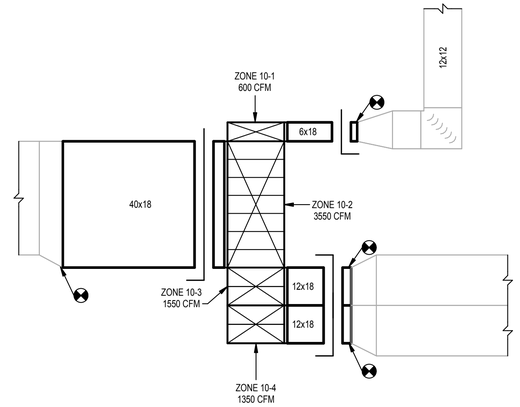

8 RTU-12 ZONE DUCTS
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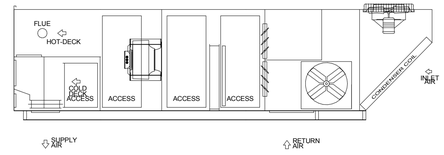

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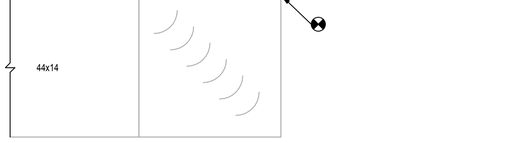

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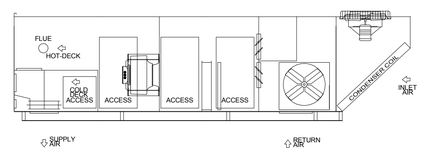

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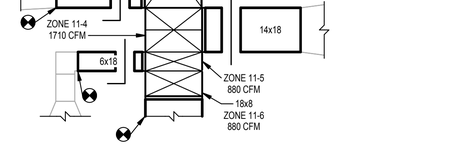

10 ZONE 11 DUCTS
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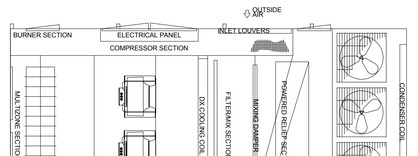

5 RTU-9
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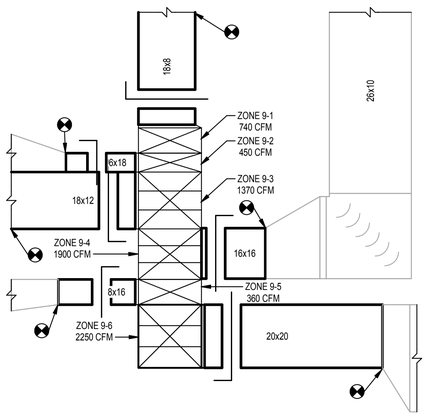
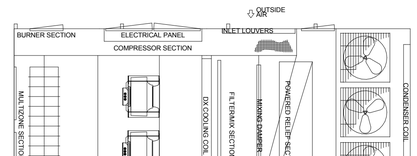


6 ZONE 9 DUCTS
SCALE: 1/2" = 1'-0"



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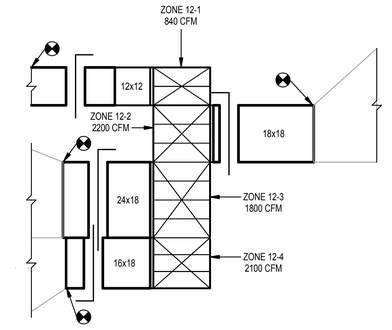

12 RTU-12 ZONE DUCTS
SCALE: 1/2" = 1'-0"

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SCARLET OAKS PHASE 1 RTU REPLACEMENTS
GREAT OAKS CAREER CAMPUSES
3254 E. KEMPER RD.
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DRAWING TITLE:
DETAILS

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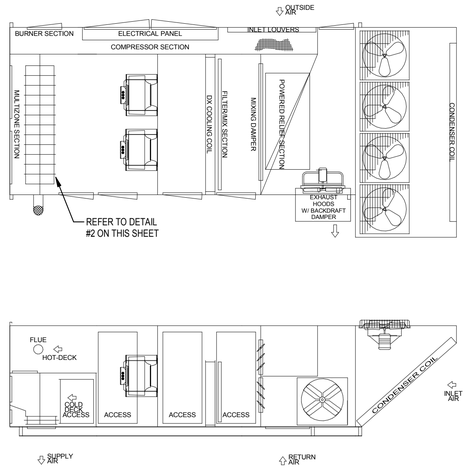

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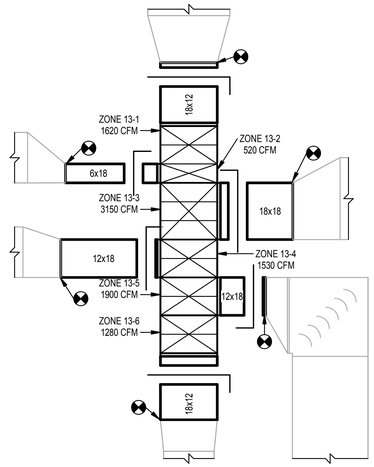

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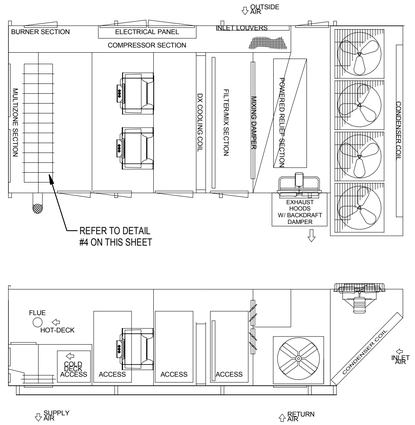
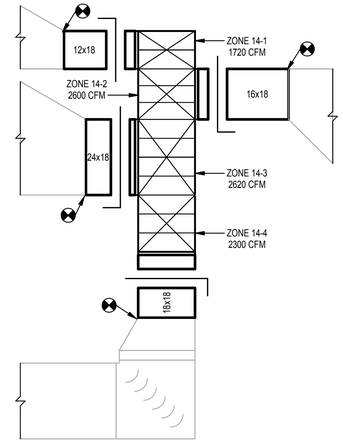
SCALE: 1/2" = 1'-0"



3 RTU-14
SCALE: 1/4" = 1'-0"



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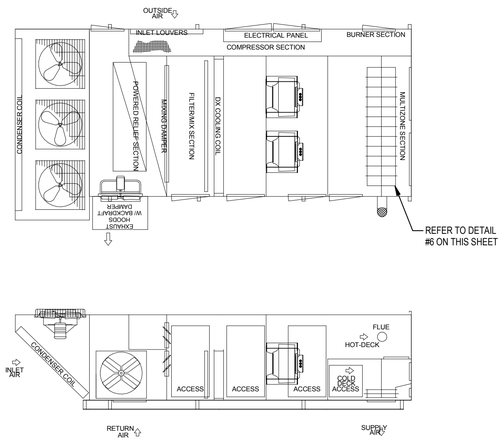
SCALE: 1/2" = 1'-0"



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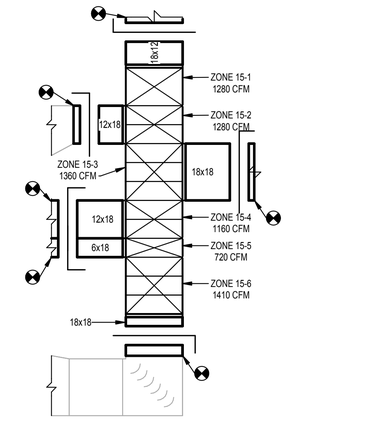
SCALE: 1/4" = 1'-0"



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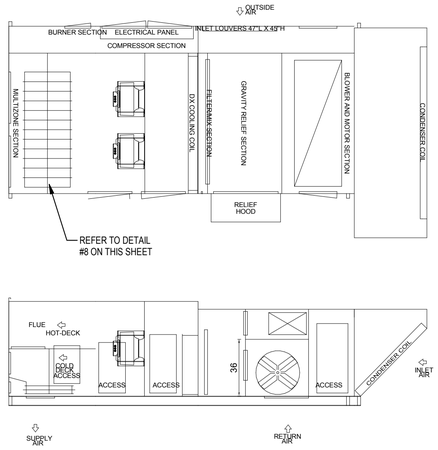
SCALE: 1/2" = 1'-0"



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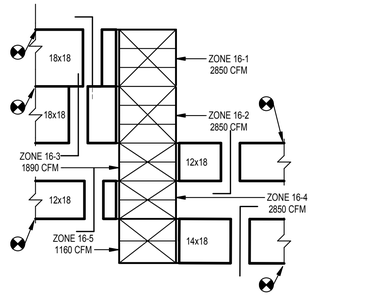
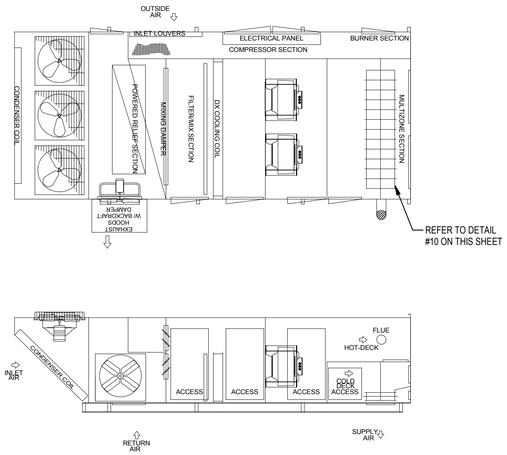
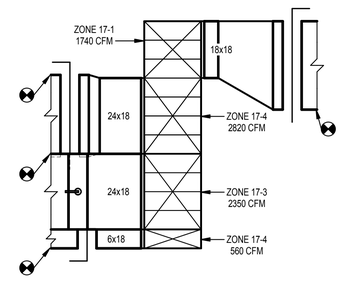
SCALE: 1/4" = 1'-0"



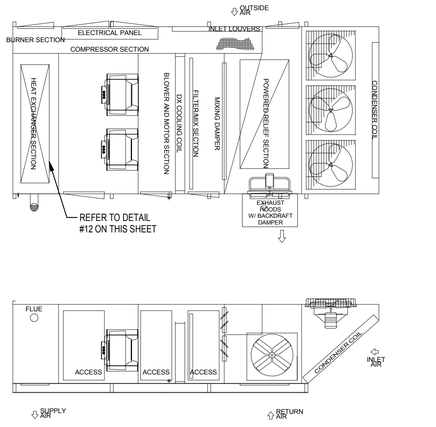
8 ZONE 16 DUCTS
SCALE: 1/2" = 1'-0"



9 RTU-17
SCALE: 1/4" = 1'-0"



10 ZONE 17 DUCTS
SCALE: 1/2" = 1'-0"



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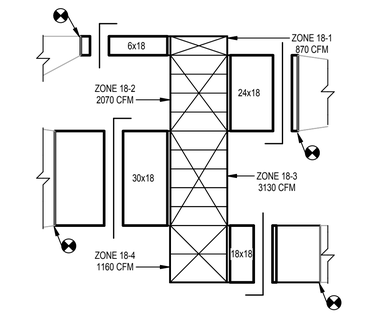

12 ZONE 18 DUCTS
SCALE: 1/2" = 1'-0"

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SCARLET OAKS PHASE 1 RTU REPLACEMENTS

GREAT OAKS CAREER CAMPUSES

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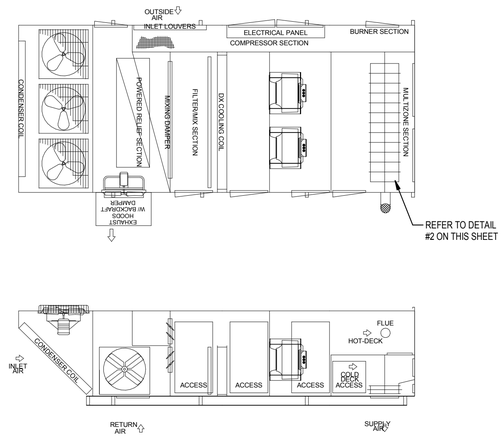
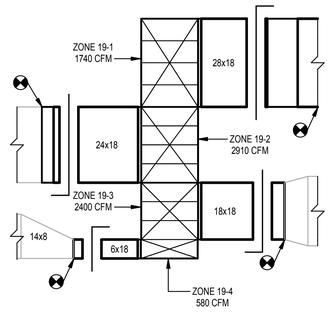
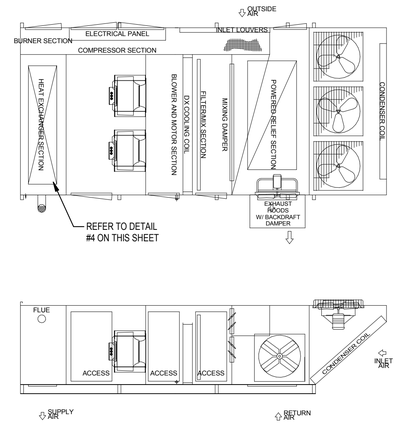


1 RTU-19
SCALE: 1/4" = 1'-0"



2 ZONE 19 DUCTS
SCALE: 1/2" = 1'-0"



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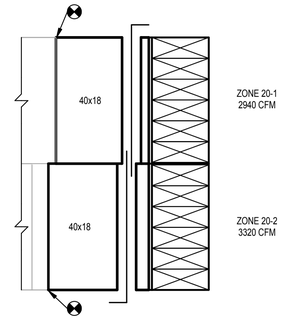
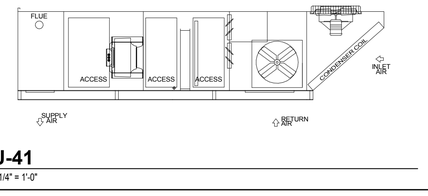
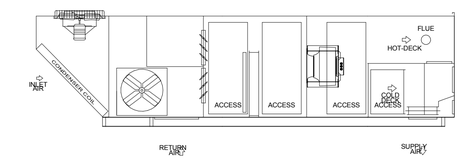


4 ZONE 20 DUCTS
SCALE: 1/2" = 1'-0"



5 RTU-21
SCALE: 1/4" = 1'-0"

6 RTU-28 ZONE DUCTS
SCALE: 1/2" = 1'-0"



7 RTU-29
SCALE: 1/4" = 1'-0"

8 RTU-28 ZONE DUCTS
SCALE: 1/2" = 1'-0"

9 RTU-41
SCALE: 1/4" = 1'-0"

10 RTU-28 ZONE DUCTS
SCALE: 1/2" = 1'-0"

11 RTU-42
SCALE: 1/4" = 1'-0"

12 RTU-42 ZONE DUCTS
SCALE: 1/2" = 1'-0"

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PROJECT NO. 2023-06013

SCARLET OAKS PHASE 1 RTU REPLACEMENTS
GREAT OAKS CAREER CAMPUSES
3254 E. KEMPER RD.
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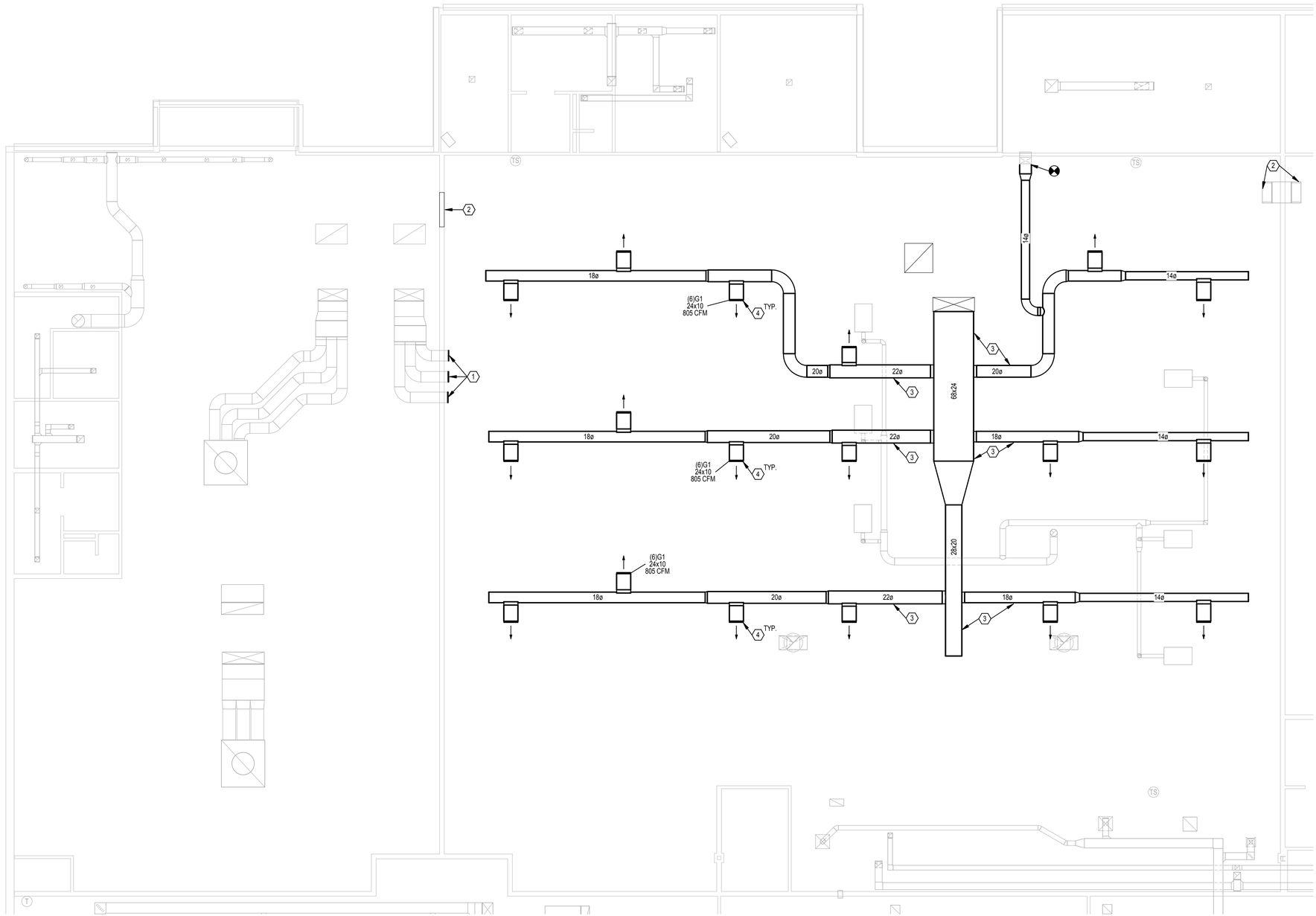


HVAC LOWER LEVEL - AREA A

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

0 4 8 16 24

GENERAL NOTES

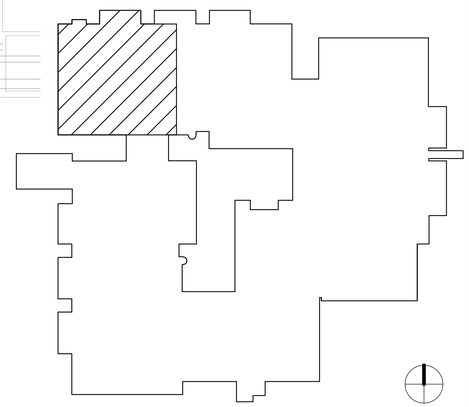
A. CONTRACTOR SHALL PERFORM A WIND LOAD ANALYSIS FOR ALL UNIT ATTACHEMENTS.

PLAN NOTES

1. CAP EXISTING DUCTWORK.
2. CAP AND SEAL EXISTING DUCT TRANSFER.
3. DUCTWORK RUN THRU THE BAR JOIST SPACE OPENINGS.
4. REFER TO DETAIL # 1 ON SHEET M.02 FOR AIR DEVICE MOUNTING DETAIL.

KEY PLAN

NOT TO SCALE



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GREAT OAKS CAREER CAMPUSES

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PROJECT NO. **22104.00**

DRAWING TITLE:
MECHANICAL
LOWER LEVEL-
WELD & DIESEL -
NEW WORK

M3.1

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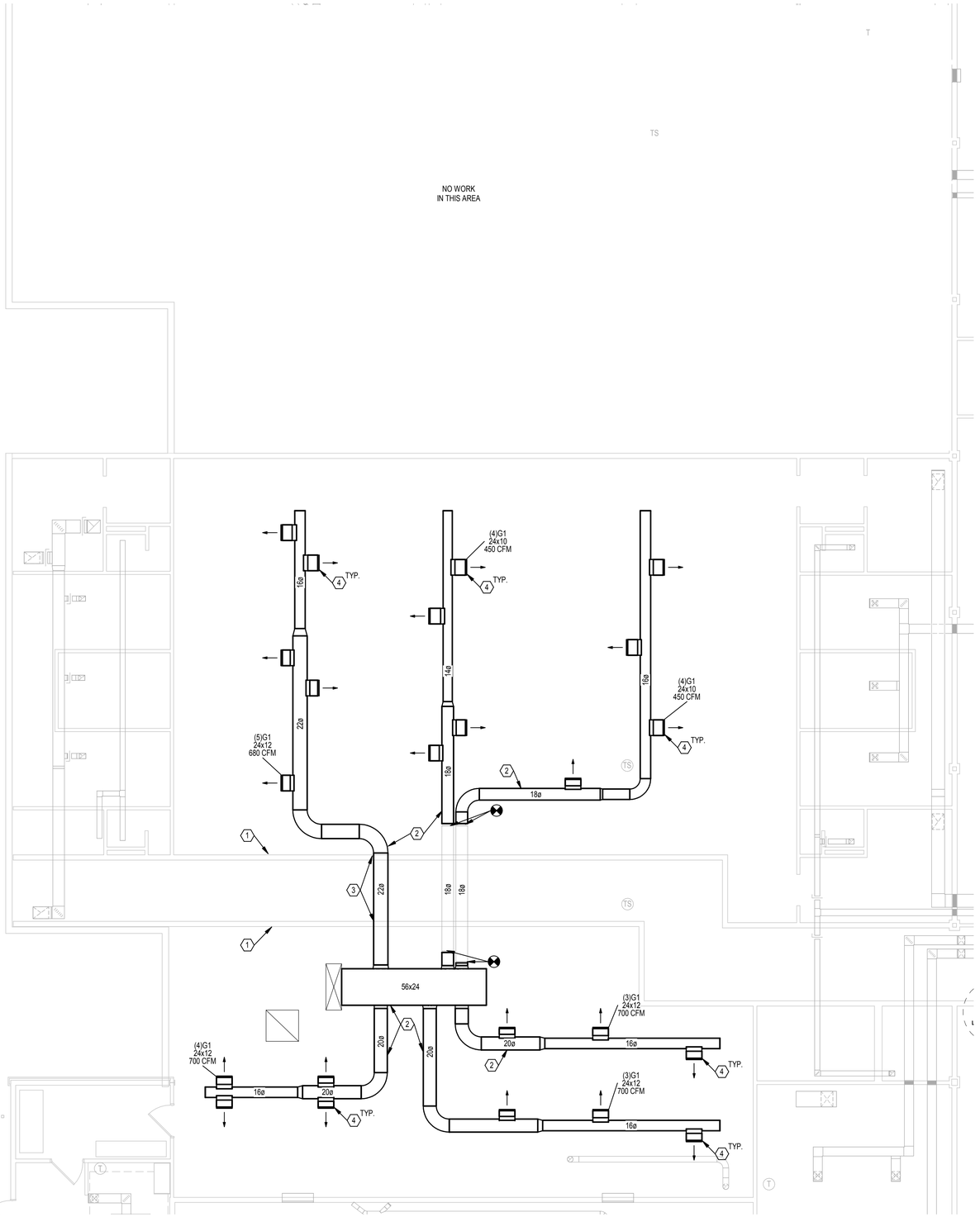


MECHANICAL LOWER LEVEL - AREA CONSTRUCTION LABS - NEW WORK

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

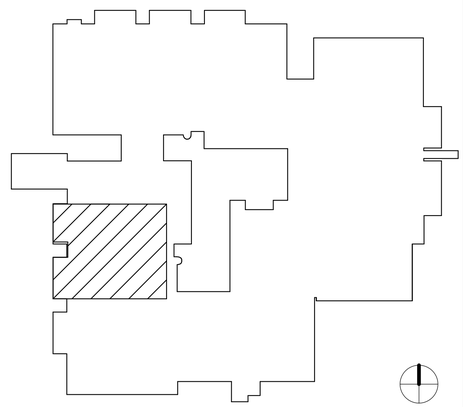
0 4 8 16 24

PLAN NOTES

1. EXISTING AIR TRANSFER TO REMAIN.
2. DUCTWORK ROUTE THRU BAR JOIST SPACE.
3. PENTRATE NEW DUCT OPENING.
4. REFER TO DETAIL # 1 ON SHEET M.02 FOR AIR DEVICE MOUNTING DETAIL.

KEY PLAN

NOT TO SCALE



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DRAWING TITLE:
MECHANICAL
LOWER LEVEL-
CONSTRUCTION
LABS NEW WORK

M3.2

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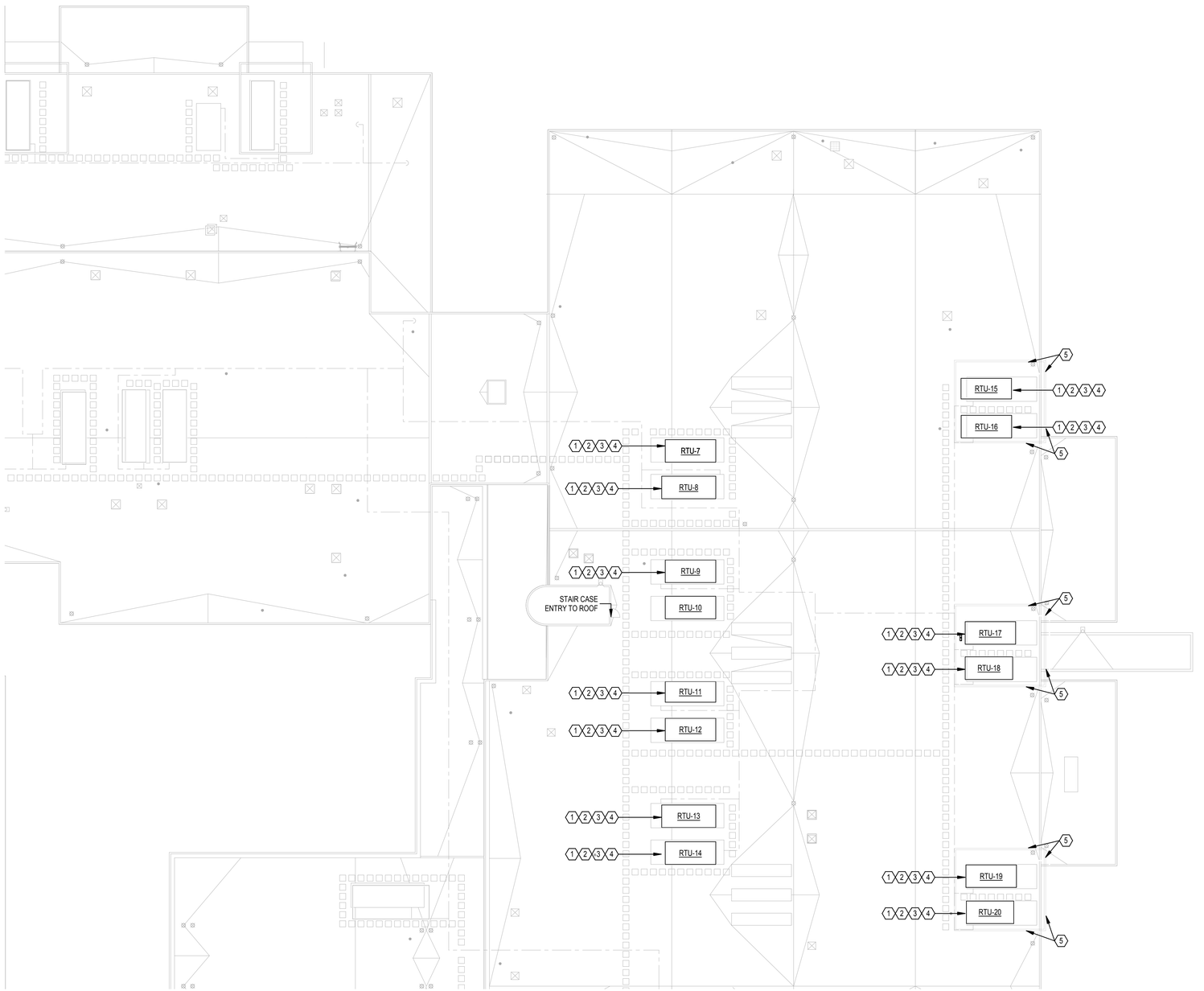


MECHANICAL - ROOF - AREA A - NEW WORK

SCALE: 1" = 20'-0"

GENERAL NOTES

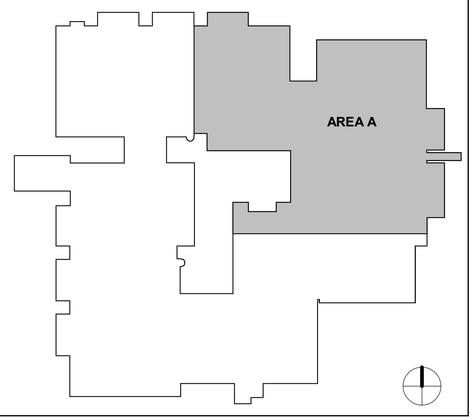
A. CONTRACTOR SHALL PERFORM A WIND LOAD ANALYSIS FOR ALL UNIT ATTACHEMENTS.

PLAN NOTES

1. PROVIDE NEW CONTROLS FOR UNIT. CONTROLS SHALL BE AUTOMATED LOGIC BY EMCOR. COORDINATE INSTALLATION OF NEW CONTROLS WITH EMCOR.
2. SET NEW UNIT ON EXISTING CURB. CONTRACTOR SHALL COVER ANY EXPOSED OPENING IN THE CURB WITH CAP AND WEATHER SEAL.
3. CONTRACTOR SHALL BALANCE EACH ZONE. REFER TO DETAIL SHEETS.
4. CONTRACTOR SHALL VERIFY AND INSPECT NEW RTU ARE IN GOOD CONDITION AND OPERATIONAL BEFORE INSTALL ON ROOF. CONTRACTOR SHALL LIFT UNIT TO ROOF AND INSTALL ON EXISTING CURB, SECURE, AND WEATHER SEAL.
5. EXISTING SCREEN WALL TO REMAIN.

KEY PLAN

NOT TO SCALE



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SCARLET OAKS PHASE 1 RTU REPLACEMENTS

GREAT OAKS CAREER CAMPUSES

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DRAWING TITLE:
MECHANICAL ROOF - AREA A - NEW WORK

M3.3

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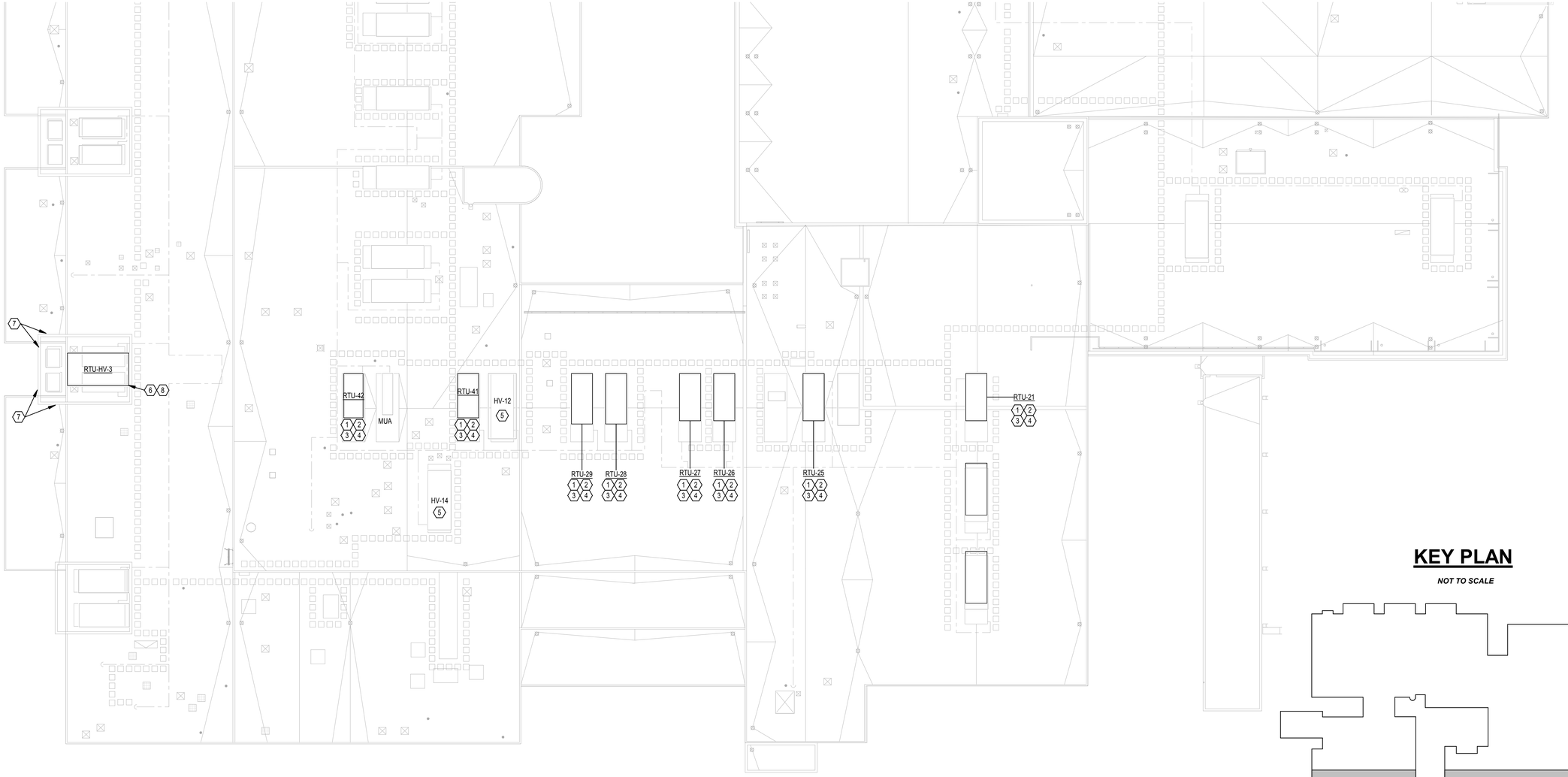
GENERAL NOTES

A. CONTRACTOR SHALL PERFORM A WIND LOAD ANALYSIS FOR ALL UNIT ATTACHMENTS.

PLAN NOTES

1. PROVIDE NEW CONTROLS FOR UNIT. CONTROLS SHALL BE AUTOMATED LOGIC BY EMCOR. COORDINATE INSTALLATION OF NEW CONTROLS WITH EMCOR.
2. SET NEW UNIT ON EXISTING CURB. CONTRACTOR SHALL COVER ANY EXPOSED OPENING IN THE CURB WITH CAP AND WEATHER SEAL.
3. CONTRACTOR SHALL ADJUST DAMPER POSITIONS TO MATCH EXISTING CONDITIONS.
4. CONTRACTOR SHALL VERIFY AND INSPECT NEW RTU ARE IN GOOD CONDITION AND OPERATIONAL BEFORE INSTALL ON ROOF. CONTRACTOR SHALL LIFT UNIT TO ROOF AND INSTALL ON EXISTING CURB, SECURE, AND WEATHER SEAL.
5. ISOLATE UNIT AND ABANDON IN PLACE. MAINTAIN EXISTING CURB. FABRICATE SHEETMETAL COVER WITH BRACING TO PERMANENTLY SEAL OFF OPENING AND WEATHER SEAL.
6. MOUNT NEW ROOF CURB FROM OWNER AS PICKED UP FROM LIVE OAKS CAMPUS SITE. CONTRACTOR SHALL COVER ANY EXPOSED OPENING IN THE CURB WITH CAP AND WEATHER SEAL. COORDINATE WITH ARCH/STRUCTURAL FOR FINAL LOCATION.
7. EXISTING SCREENWALL TO BE MAINTAINED.
8. INSTALL FLUE PER MANUFACTURERS RECOMMENDATIONS.



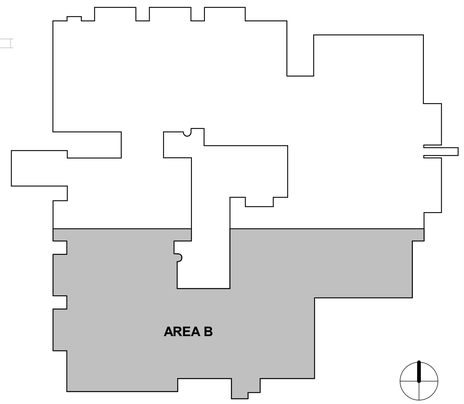
MECHANICAL - ROOF - AREA B - NEW WORK

SCALE: 1" = 20'-0"

0 10 20 40 60

KEY PLAN

NOT TO SCALE



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DRAWING TITLE:
MECHANICAL ROOF - AREA B - NEW WORK

M3.4

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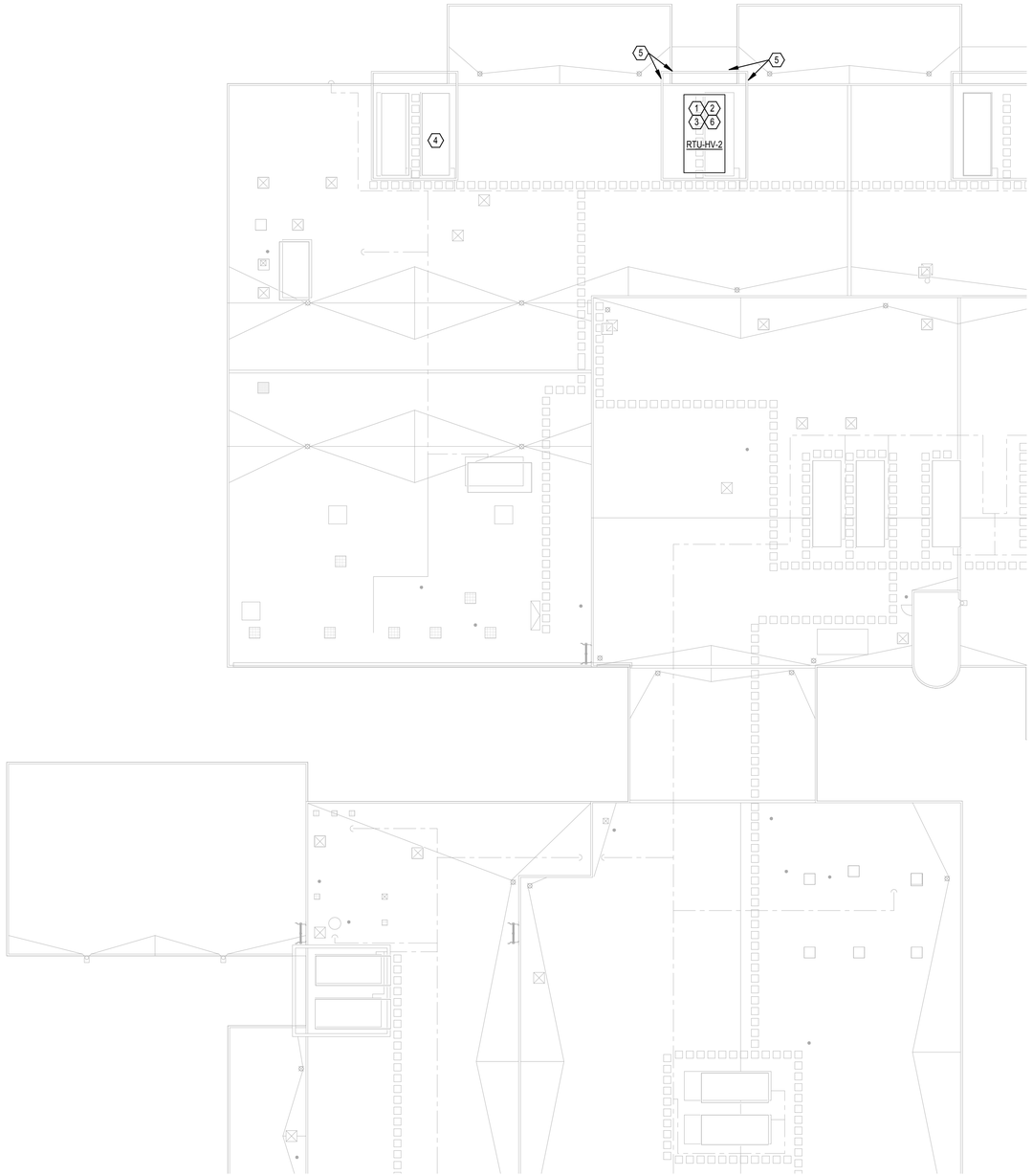


MECHANICAL - ROOF - AREA C - NEW WORK

SCALE: 1" = 20'-0"

0 10 20 40 60

GENERAL NOTES

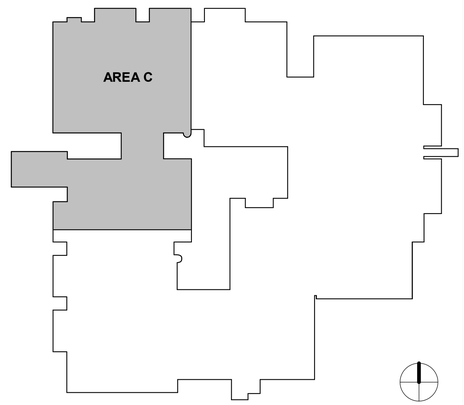
A. CONTRACTOR SHALL PERFORM A WIND LOAD ANALYSIS FOR ALL UNIT ATTACHEMENTS.

PLAN NOTES

1. CONTRACTOR SHALL COORDINATE WITH EMCORE IN INTEGRATION OF CONTROLS IN NEW UNIT.
2. MOUNT NEW ROOF CURB FROM OWNER AS PICKED UP FROM LIVE OAKS CAMPUS SITE. CONTRACTOR SHALL COVER ANY EXPOSED OPENING IN THE CURB WITH CAP AND WEATHER SEAL. COORDINATE WITH ARCHISTRUCTURAL FOR FINAL LOCATION.
3. CONTRACTOR SHALL VERIFY AND INSPECT NEW RTU IS IN GOOD CONDITION AND OPERATIONAL BEFORE INSTALL ON ROOF. CONTRACTOR SHALL LIFT UNIT TO ROOF AND INSTALL ON CURB, SECURE, AND WEATHER SEAL.
4. ISOLATE UNIT AND ABANDON IN PLACE. MAINTAIN EXISTING CURB. FABRICATE SHEETMETAL COVER WITH BRACING TO PERMANENTLY SEAL OFF OPENING AND WEATHER SEAL.
5. EXISTING SCREENALL TO BE MAINTAINED.
6. INSTALL FLUE PER MANUFACTURERS RECOMMENDATIONS.

KEY PLAN

NOT TO SCALE



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PROJECT NO. 2023-06013

SCARLET OAKS PHASE 1 RTU REPLACEMENTS

GREAT OAKS CAREER CAMPUSES

3254 E. KEMPER RD.
CINCINNATI, OH 45241

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PROJECT NO. **22104.00**

DRAWING TITLE:
MECHANICAL ROOF - AREA C - NEW WORK

M3.5

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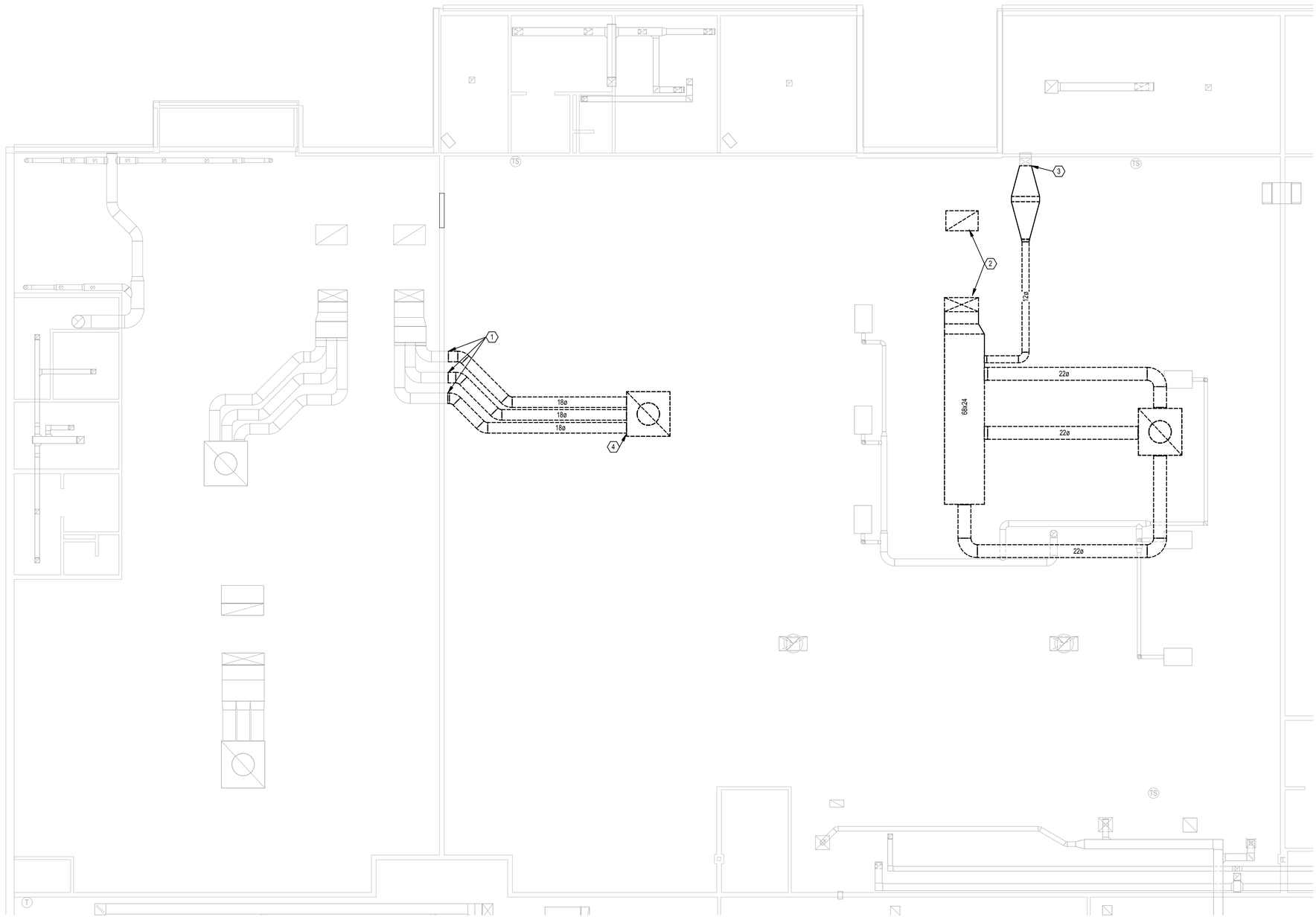


MECHANICAL LOWER LEVEL - AREA WELD & DIESEL DEMOLITION

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

0 4 8 16 24

GENERAL NOTES

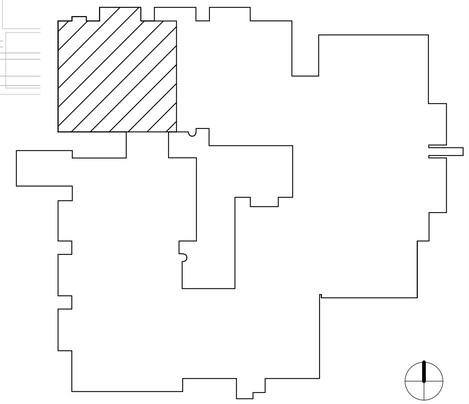
A. CONTRACTOR SHALL PERFORM A WIND LOAD ANALYSIS FOR ALL UNIT ATTACHEMENTS.

PLAN NOTES

1. DEMOLISH DUCTWORK AND ASSOCIATED AIR DEVICE BACK TO THIS POINT.
2. DEMOLISH DUCTWORK AND ASSOCIATED AIR DEVICES BACK TO UNIT. REFER TO ROOF DEMOLITION SHEETS FOR CONTINUATION.
3. DEMOLISH DUCTWORK BACK TO THIS POINT.
4. DEMOLISH DUCTWORK AND AIR DEVICE.

KEY PLAN

NOT TO SCALE



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SCARLET OAKS PHASE 1 RTU REPLACEMENTS

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DRAWING TITLE:
HVAC LOWER LEVEL- AREA WELD & DIESEL DEMOLITION

MD3.1

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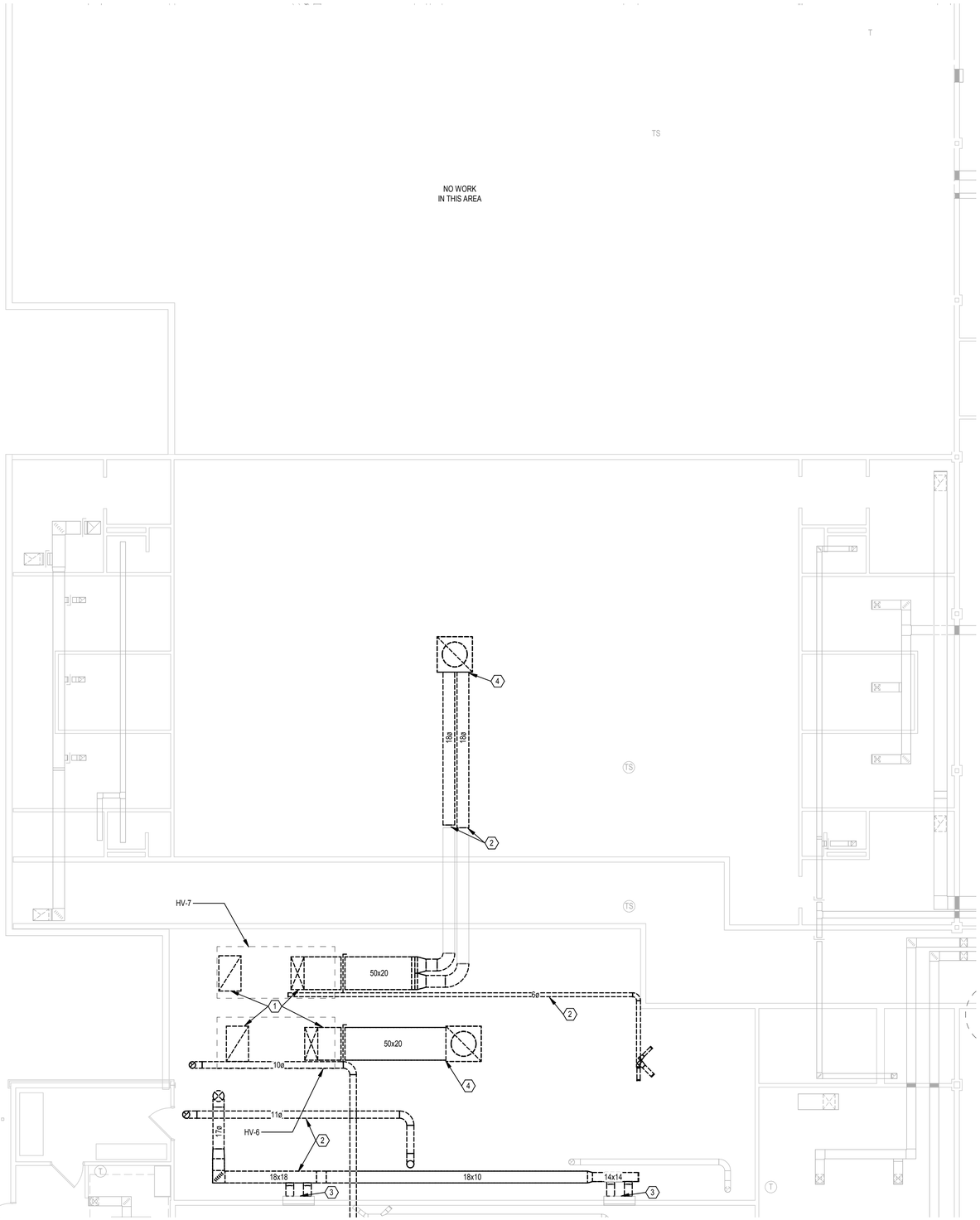


MECHANICAL LOWER LEVEL- AREA CONSTRUCTION LABS - DEMOLITION

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

GENERAL NOTES

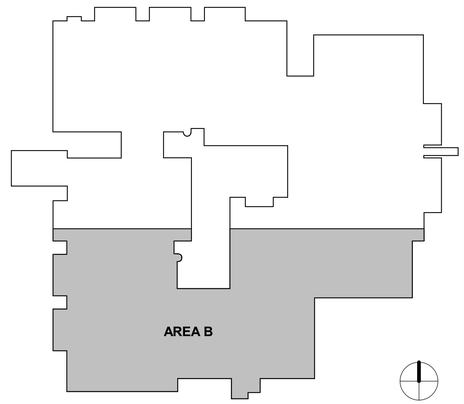
A. CONTRACTOR SHALL PERFORM A WIND LOAD ANALYSIS FOR ALL UNIT ATTACHEMENTS.

PLAN NOTES

1. DEMOLISH DUCTWORK AND ASSOCIATED AIR DEVICES BACK TO UNIT. REFER TO ROOF DEMOLITION SHEETS FOR CONTINUATION.
2. DEMOLISH DUCTWORK.
3. CAP OFF OPENING.
4. DEMOLISH DUCTWORK AND AIR DEVICE.

KEY PLAN

NOT TO SCALE



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SCARLET OAKS PHASE 1 RTU REPLACEMENTS

GREAT OAKS CAREER CAMPUSES

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DRAWING TITLE:
MECHANICAL LOWER LEVEL- AREA CONSTRUCTION LABS DEMOLITION

MD3.2

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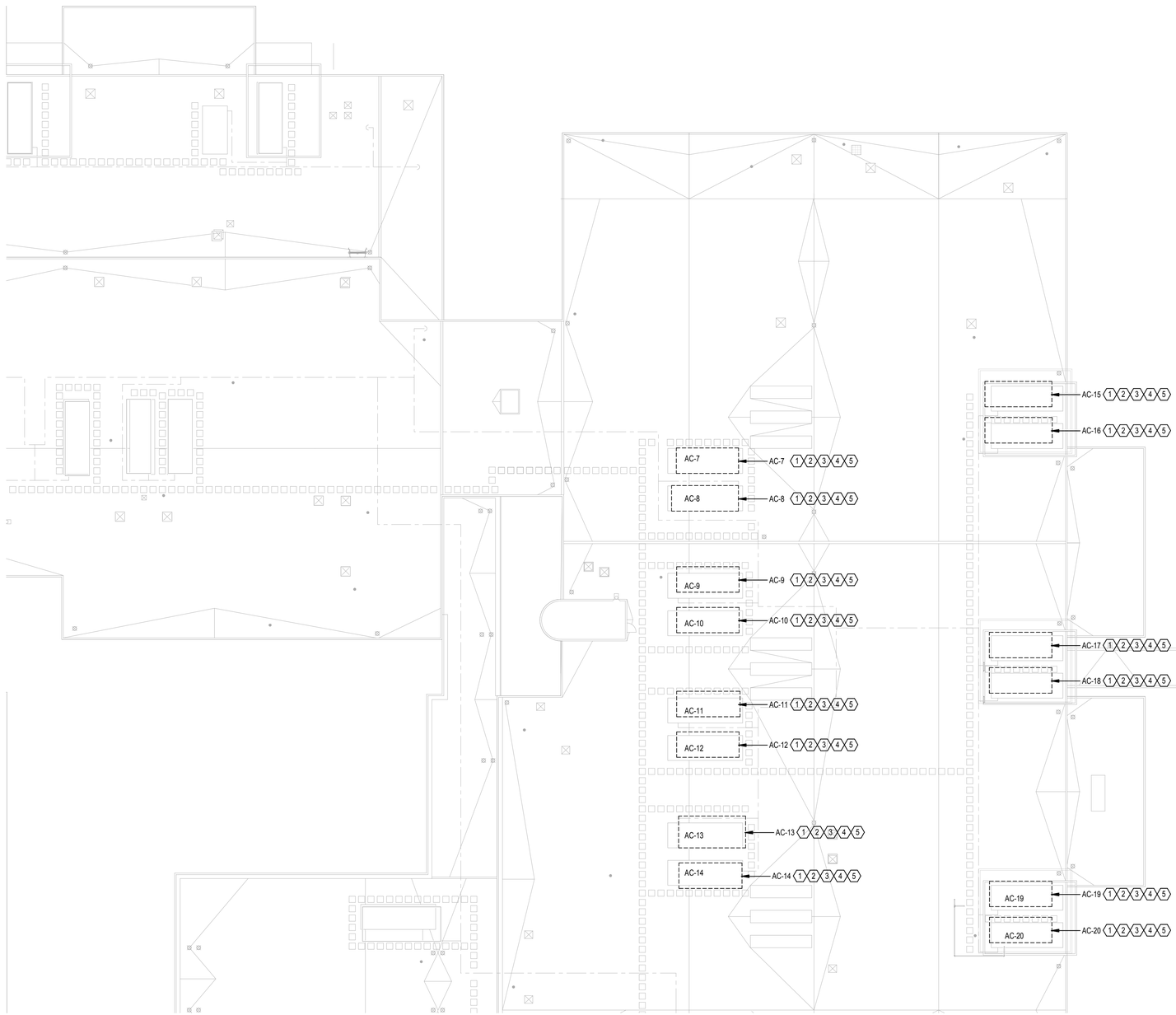


MECHANICAL - ROOF - AREA A - DEMOLITION

SCALE: 1" = 20'-0"

0 10 20 40 60

GENERAL NOTES

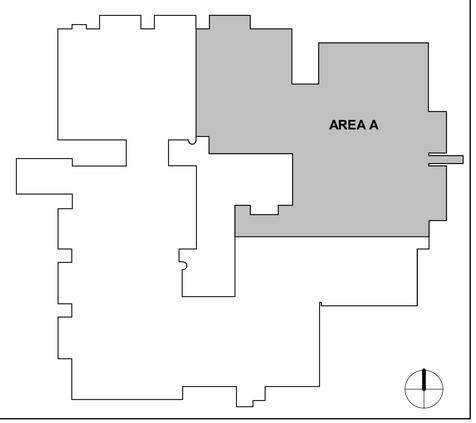
A. PROVIDE UNIT PRICE TO REPLACE ENTIRETY OF RETURN (DUCTBOARD) AND REPLACE SHEET METAL RETURN. REFER TO BID SHEET FOR ADDITIONAL INFORMATION.

PLAN NOTES

1. REMOVE EXISTING UNIT FROM ROOF AND DISPOSE OF PROPERLY OFF SITE. EVALUATE AND REPAIR, AS REQUIRED, EXISTING ROOF CURB TO REMAIN.
2. EMCORE SHALL DISCONNECT AND REMOVE FROM PROGRAMMING EXISTING UNITS CONTROLS.
3. CONTRACTOR SHALL EVACUATE ALL REFRIGERANT FROM EXISTING UNIT BEFORE REMOVAL AND DISPOSE OF PER CODE.
4. CONTRACTOR SHALL VERIFY EXISTING ZONE DAMPER POSITIONS PRIOR TO REMOVAL OF EXISTING UNIT. NEW UNIT SHALL MAINTAIN IDENTICAL POSITION.
5. REMOVE VERTICAL SECTION OF RETURN AND SUPPLY AND 5 FEET HORIZONTAL SECTION. REPLACE WITH SHEET METAL SUPPLY AND RETURN.

KEY PLAN

NOT TO SCALE



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SCARLET OAKS PHASE 1 RTU REPLACEMENTS

GREAT OAKS CAREER CAMPUSES

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DRAWING TITLE:
MECHANICAL ROOF - AREA A - DEMO

MD3.3

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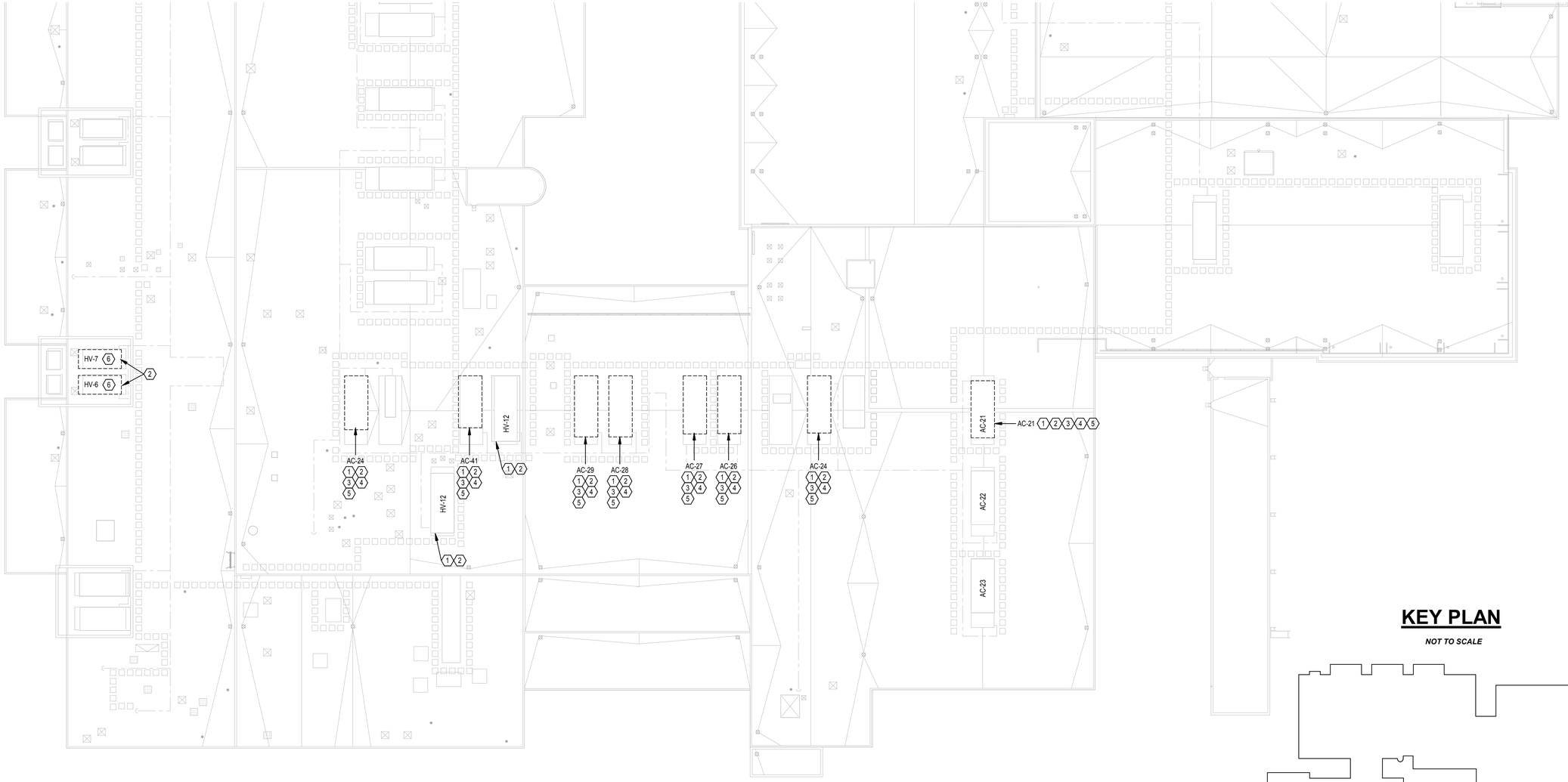
GENERAL NOTES

A. PROVIDE UNIT PRICE TO REPLACE ENTIRETY OF RETURN (DUCTBOARD) AND REPLACE SHEET METAL RETURN. REFER TO BID SHEET FOR ADDITIONAL INFORMATION.

PLAN NOTES

1. REMOVE EXISTING UNIT FROM ROOF AND DISPOSE OF PROPERLY OFF SITE. EVALUATE AND REPAIR, AS REQUIRED, EXISTING ROOF CURB TO REMAIN.
2. EMCORE SHALL DISCONNECT AND REMOVE FROM PROGRAMMING EXISTING UNITS CONTROLS.
3. CONTRACTOR SHALL EVACUATE ALL REFRIGERANT FROM EXISTING UNIT BEFORE REMOVAL AND DISPOSE OF PER CODE.
4. CONTRACTOR SHALL VERIFY EXISTING ZONE DAMPER POSITIONS PRIOR TO REMOVAL OF EXISTING UNIT. NEW UNIT SHALL MAINTAIN IDENTICAL POSITION.
5. REMOVE VERTICAL SECTION OF RETURN AND SUPPLY AND 5 FEET HORIZONTAL SECTION. REPLACE WITH SHEET METAL SUPPLY AND RETURN.
6. DEMOLISH UNIT, CURB, PAD, AND ASSOCIATED DUCTWORK.



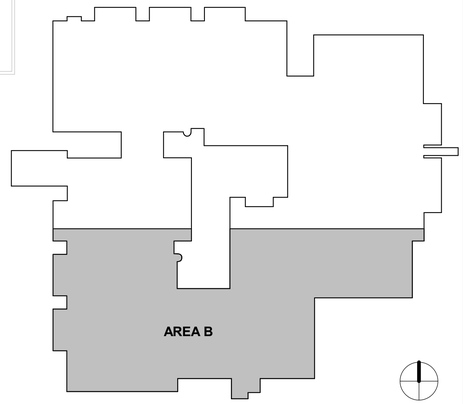
MECHANICAL - ROOF - AREA B - DEMOLITION

SCALE: 1" = 20'-0"

0 10 20 40 60

KEY PLAN

NOT TO SCALE



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DRAWING TITLE:
MECHANICAL ROOF - AREA B - DEMO

MD3.4

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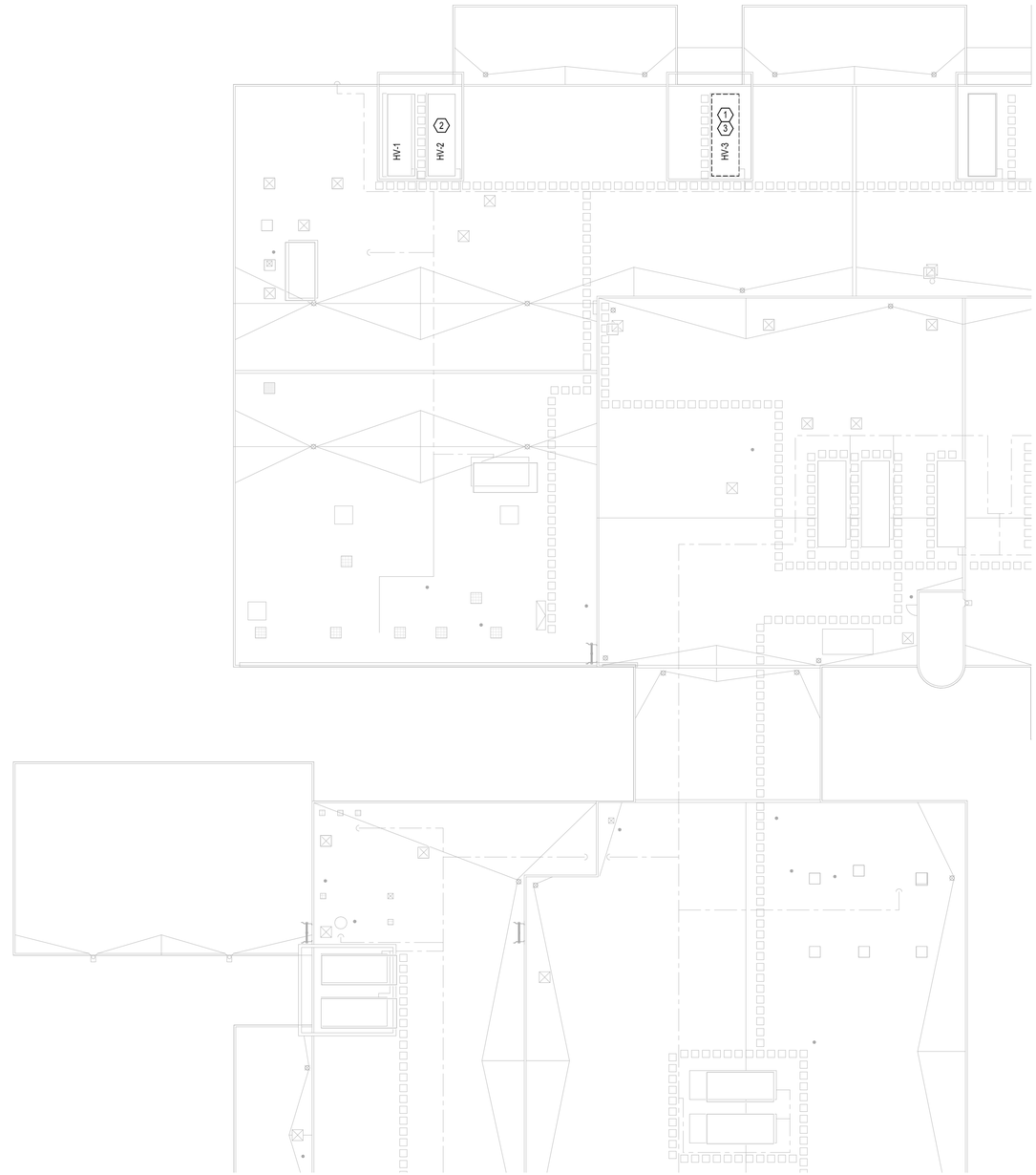


MECHANICAL - ROOF - AREA C - DEMOLITION

SCALE: 1" = 20'-0"

0 10 20 40 60

GENERAL NOTES

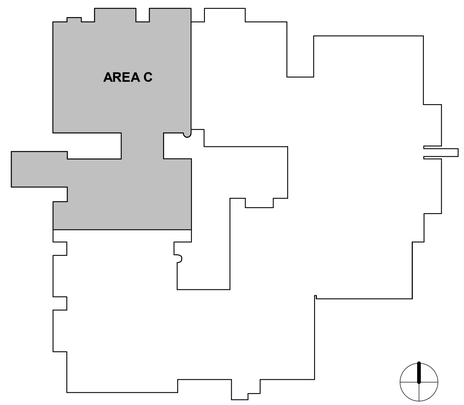
A. PROVIDE UNIT PRICE TO REPLACE ENTIRETY OF RETURN (DUCTBOARD) AND REPLACE SHEET METAL RETURN. REFER TO BID SHEET FOR ADDITIONAL INFORMATION.

PLAN NOTES

1. DEMOLISH UNIT, CURB, PAD, AND ASSOCIATED DUCTWORK.
2. UNIT TO BE ABANDONED IN PLACE. REFER TO SHEET M3.3 FOR SCOPE OF WORK.
3. EMCORE SHALL DISCONNECT AND REMOVE FROM PROGRAMMING EXISTING UNITS CONTROLS.

KEY PLAN

NOT TO SCALE



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MECHANICAL ROOF - AREA C - DEMO

MD3.5

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