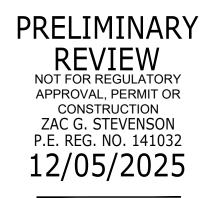
2423 Blinn Blvd, Texas 77802

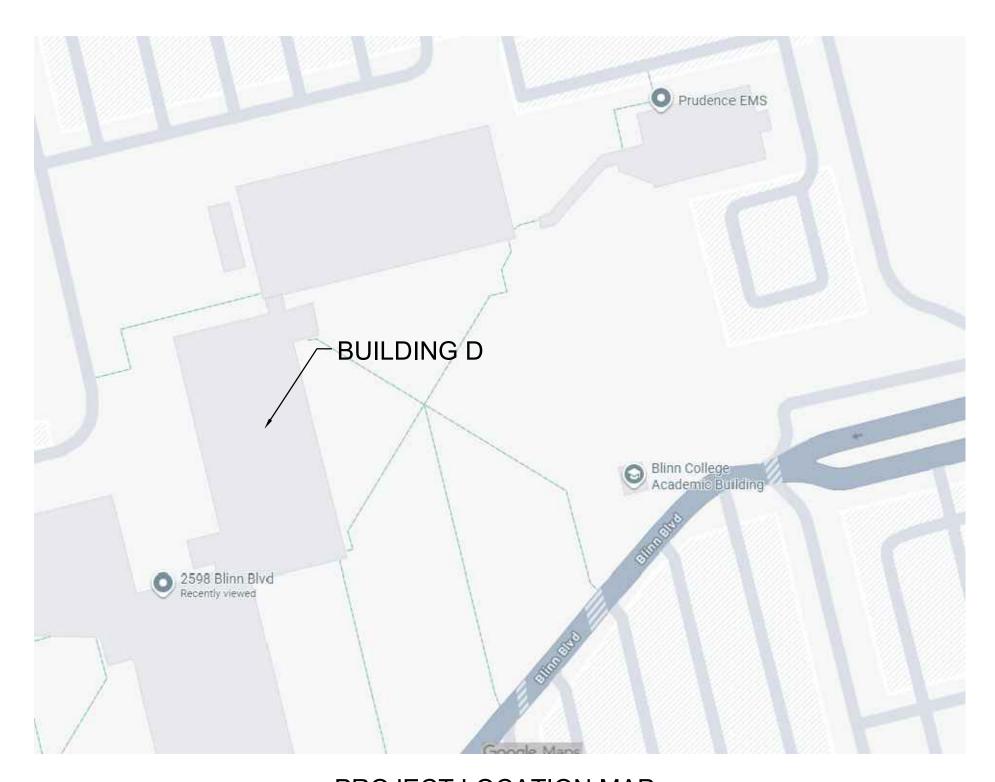






TITLE SHEET





PROJECT LOCATION MAP

MECHANICAL, PLUMBING AND ELECTRICAL ENGINEERS

Cleary Zimmermann Engineers

300 West 26th Street Bryan, Texas 77803 Voice (979) 341-8181

Mechanical:

M0.0 Mechanical Symbols and Abbreviations

MD1.1 Mechanical Demolition Plan - First Floor

M1.1 Mechanical New Work Plan - First Floor

M1.2 Mechanical New Work Plan - Second Floor

M2.1 Mechanical Enlarged Plan

M3.1 Mechanical Schedules and Details

M4.1 Mechanical Controls

Electrical:

E0.0 Electrical Symbols and Abbreviations

E2.1 Electrical Power Plan

MECHANICAL/REFRIGERATION SYMBOLS AND ABBREVIATIONS

SYMBOL DESCR	RIPTION	SYMBOL DE	SCRIPTION	ABBREVIATION	DESCRIPTION
30x24 \$	DUCT SIZE FIRST FIGURE IS SIDE SHOWN	- 	CALIBRATED BALANCING VALVE	A DV	400VE
00024	BOOT GIZE FINOT FIOURE IS SIDE SHOWN		CALIBITATED DALANGING VALVE	ABV AFF	ABOVE ABOVE FINISHED FLOOR
		- 	PRESSURE REDUCING VALVE	AV	AIR VENT
30x24	DUCT SECTION, POSITIVE PRESSURE, FIRST FIGURE IS TOP			BF	BELOW FLOOR
		₽ ¬	PRESSURE RELIEF VALVE	BHP BTU	BRAKE HORSEPOWER BRITISH THERMAL UNIT
30x24	DUCT SECTION, NEGATIVE PRESSURE,	J		CFM	CUBIC FEET PER MINUTE
JULI GONZA	FIRST FIGURE IS TOP	 _	TEMPERATURE AND PRESSURE	CLG	CEILING
 		T&P 7	RELIEF VALVE	CONNX/CONX.	CONNECTION
\$ UP \$	CHANGE OF ELEVATION - UP OR DOWN	M		CONT	CONTINUATION
•		<u>M</u>	THREE WAY VALVE (AUTOMATIC)	Ф cw	CENTERLINE CHILLED WATER
J				DB	DRYBULB
<u> </u>	DEMOLITION DUCTWORK	— M - M -	TWO WAY VALVE (AUTOMATIC)	DN	DOWN
<u> </u>		بو		DWG EAT	DRAWING ENTERING AIR TEMPERATURE
\$	EXISTING DUCT TO REMAIN	$\frac{1}{\sqrt{F}}$.S.	FLOW SWITCH	ELECT	ELECTRICAL
1 1				ELEV	ELEVATION
	FLEXIBLE DUCT	L _X	STRAINER, WYE WITH	ENT	ENTERING
_][][][[[[[i]]]]		Ti,	DRAIN VALVE	EXIST F	EXISTING FAHRENHEIT
 				FD	FLOOR DRAIN OR FIRE DAMPER
1 2	MANUAL VOLUME DAMPER	->><\-	GLOBE VALVE	FT	FEET
				GAL	GALLON(S)
FD S H	FIRE DAMPER (W/ ACCESS DOOR)	\bowtie	BUTTERFLY VALVE	GALV GPM	GALVANIZED GALLONS PER MINUTE
	SD=SMOKE DAMPER; SFD=SMOKE/FIRE DAMPER			HB	HOSE BIBB
		₩	HOSE VALVE (UTILITY PURPOSES)	HP	HORSEPOWER
\ \frac{100}{100}	SPLITTER DAMPER (WITH DIMENSION AS NEEDED)		(**************************************	HTR	HEATER
12"		\longrightarrow		H2O	WATER
1		7	SWING CHECK VALVE	HW HZ	HOT WATER HERTZ
FD SD S	DETECTORS, FIRE AND/OR SMOKE			INV	INVERT
		•	NEW TO EXISTING CONNECTION	IN	INCHES
		•		LAT	LEAVING AIR TEMPERATURE
24x8 12x8	DUCT TRANSITION	ou vo		MAX	MAXIMUM
		—— CWS ——	CHILLED WATER SUPPLY	MECH MIN	MECHANICAL MINIMUM
				MOBD	MOTORIZED OPPOSED BLADE DAMPER
	ELBOWS WITH TURNING VANES	—— CWR ——	CHILLED WATER RETURN	NC	NORMALLY CLOSED
T^T T_		DI		NIC	NOT IN CONTRACT
 		—— RL ——	REFRIGERANT LIQUID LINE	NO NTS	NORMALLY OPEN NOT TO SCALE
\$ \$\$	BRANCH DUCT WITH HEEL TAP AND DAMPERS			OA	OUTSIDE AIR
VD VD	(RETURN DUCT FLOW IS REVERSE)	RS	REFRIGERANT SUCTION LINE	ОН	OVERHEAD
1 -		\longrightarrow		PD PLBG	PRESSURE DROP PLUMBING
\	SUPPLY GRILLE OR REGISTER, SIDEWALL TYPE "A", 200 CFM.		NON-SLAM CHECK VALVE	PRESS	PRESSURE
$\frac{A}{200}$,	F		PSI	POUNDS PER SQUARE INCH, GAUGE
		⊸⊗́⊢	BALL VALVE	PVC	POLYVINYL CHLORIDE
\$ [X] }	AIR DEVICE TYPE "A", 300 CFM			RA REFRIG.	RETURN AIR REFRIGERATION
A 300			FLOW - IN DIRECTION OF ARROW	RPM	REVOLUTIONS PER MINUTE
A ,300			-	SA	SUPPLY AIR
₹ <u>⊗</u> }	AIR DEVICE TYPE "A", 300 CFM			SHT SP	SHEET STATIC PRESSURE
			RISER DOWN (ELBOW)	SPEC	SPECIFICATION
A				T/A	THROW AWAY (FILTERS)
	LINEAR SLOT DEVICE TYPE "A", 200 CFM		RISER UPŒLBOW)	TEMP	TEMPERATURE
Ц				TSH TYP	TOTAL SENSIBLE HEAT
		—— 	RISE OR DROP	UG	TYPICAL UNDERGROUND
A	RETURN/EXHAUST DEVICE TYPE "A"			UL	UNDERWRITER'S LABORATORIES
		I	BRANCH CONNECTION	V	VENT
	RETURN/EXHAUST GRILLE OR REGISTER,	—Ф	OUT OF TOP	VTR WB	VENT THRU ROOF WET BULB
<u> </u> <u>-</u> A-	SIDEWALL, DEVICE TYPE "A"			W/	WITH
			BRANCH CONNECTION OUT OF BOTTOM	W/O	WITHOUT
3	KEY NOTES				
\smile		<u>,+,</u>	BRANCH CONNECTION OUT OF SIDE		
	MECHANICAL FOLUDATATA ASS		- -		
(VAV-1	MECHANICAL EQUIPMENT MARK	7	CAD ON END OF BIDE		
		 -J	CAP ON END OF PIPE		
T	THERMOSTAT/TEMPERATURE SENSOR		NATURAL GAS REGULATOR		
VAV-1	EXISTING MECHANICAL EQUIPMENT MARK	—			
<u>v,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	LAIGHNO MEGHANIGAL EQUIFMENT MARK				
<u>GR-1</u>	PLUMBING EQUIPMENT MARK				

COMMISSIONING PLAN

A THIRD PARTY WILL BE RETAINED FOR PRE-COMMISSIONING AND COMMISSIONING SERVICES.

SYSTEM TO BE COMMISSIONED ARE HVAC AIR SYSTEMS (WHERE APPLICABLE) AND BUILDING AUTOMATION SYSTEMS.

REFER TO SPECIFICATION SECTIONS 019100 AND 230800 FOR ADDITIONAL REQUIREMENTS.

PRELIMINARY

REVIEW

NOT FOR REGULATORY

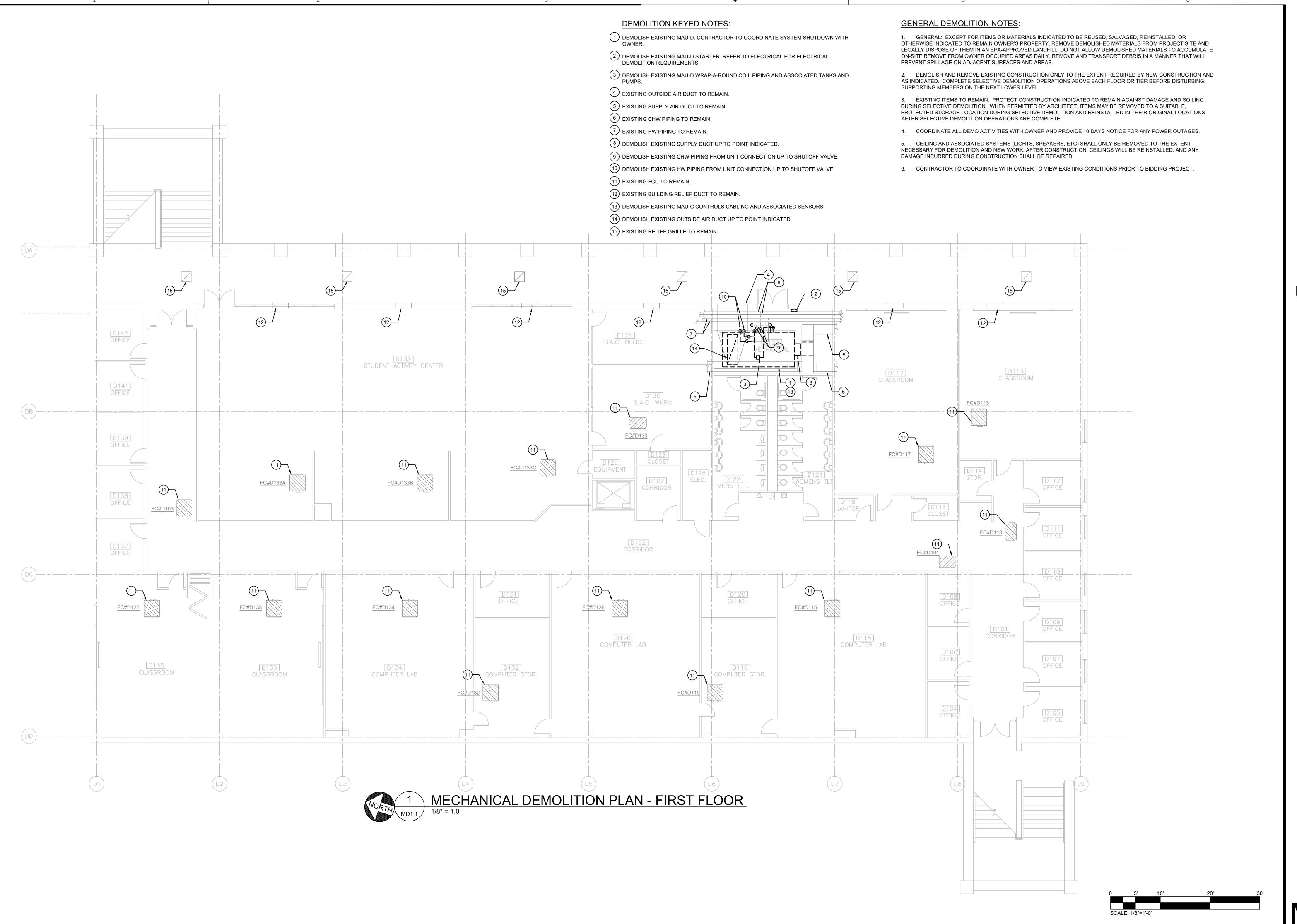
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CONSTRUCTION

ZAC G. STEVENSON

P.E. REG. NO. 141032

MECHANICAL SYMBOLS AND ABBREVIATIONS



CLEARY
ZIMMERN
EN
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REVIEW
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ZAC G. STEVENSON
P.E. REG. NO. 141032
12/05/2025

NN BUILDING D MA REPLACEMENT

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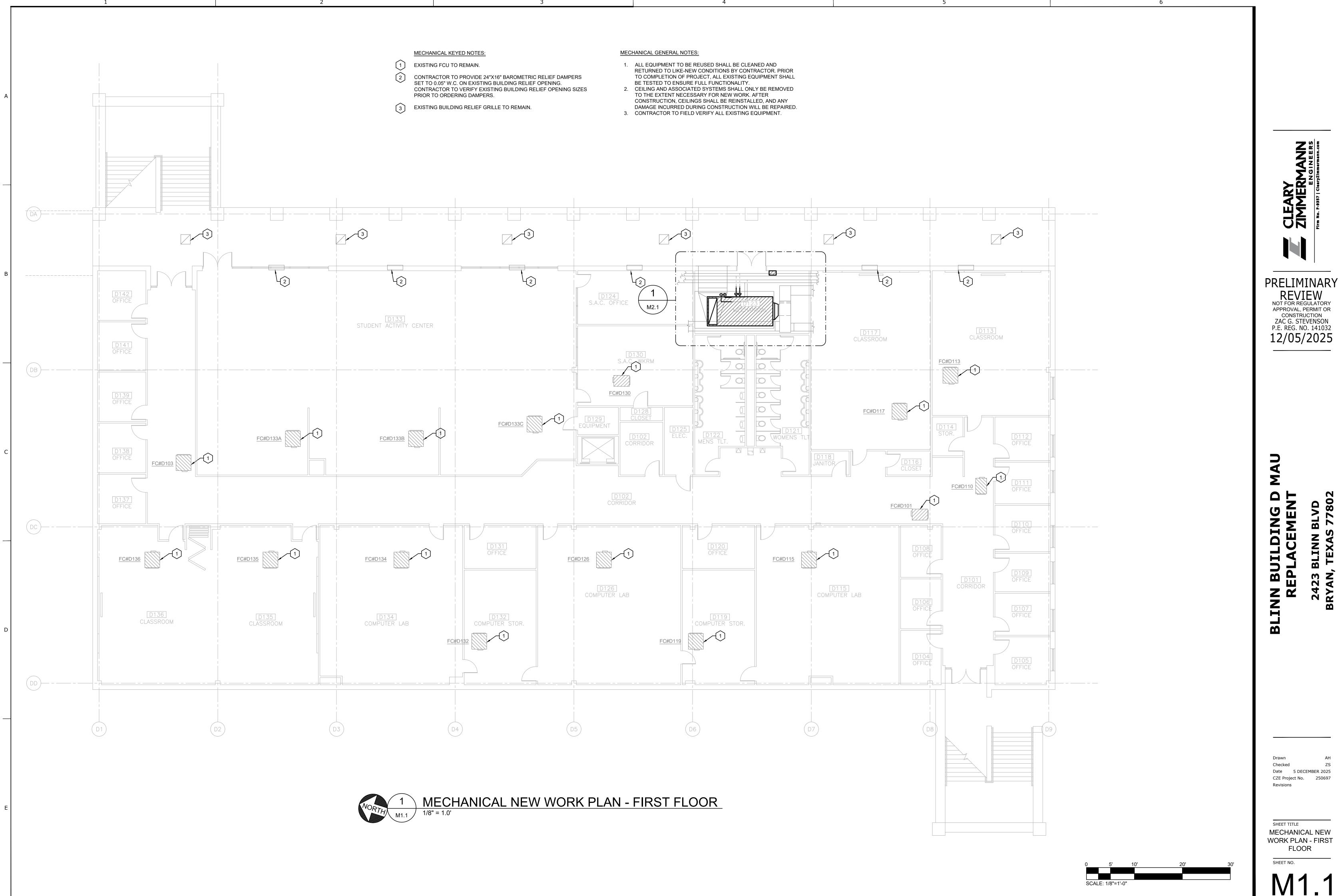
SHEET TITLE

MECHANICAL

DEMOLITION PLAN
FIRST FLOOR

SHEET NO.

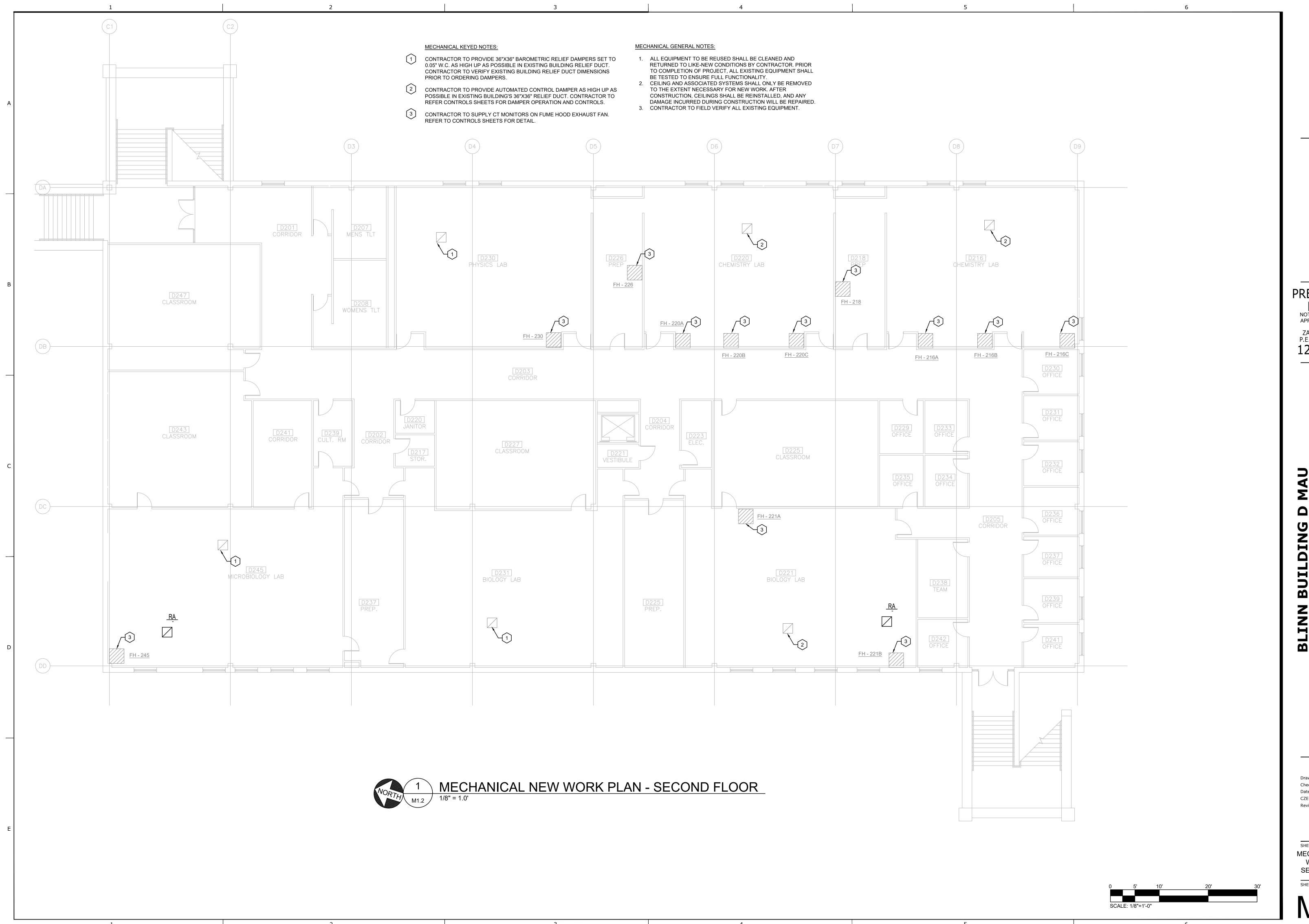
MD1.



2423 BLINN BLVD BRYAN, TEXAS 77802

MECHANICAL NEW WORK PLAN - FIRST FLOOR

M1.1



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ZAC G. STEVENSON
P.E. REG. NO. 141032
12/05/2025

BLINN BUILDING D
REPLACEMENT
2423 BLINN BLVD
BRYAN, TEXAS 77802

Orawn AH
Checked ZS
Oate 5 DECEMBER 2025
CZE Project No. 250697
Revisions

SHEET TITLE

MECHANICAL NEW

WORK PLAN
SECOND FLOOR

M1.2

1 CONTRACTOR TO REUSE EXISTING HOUSEKEEPING PAD.

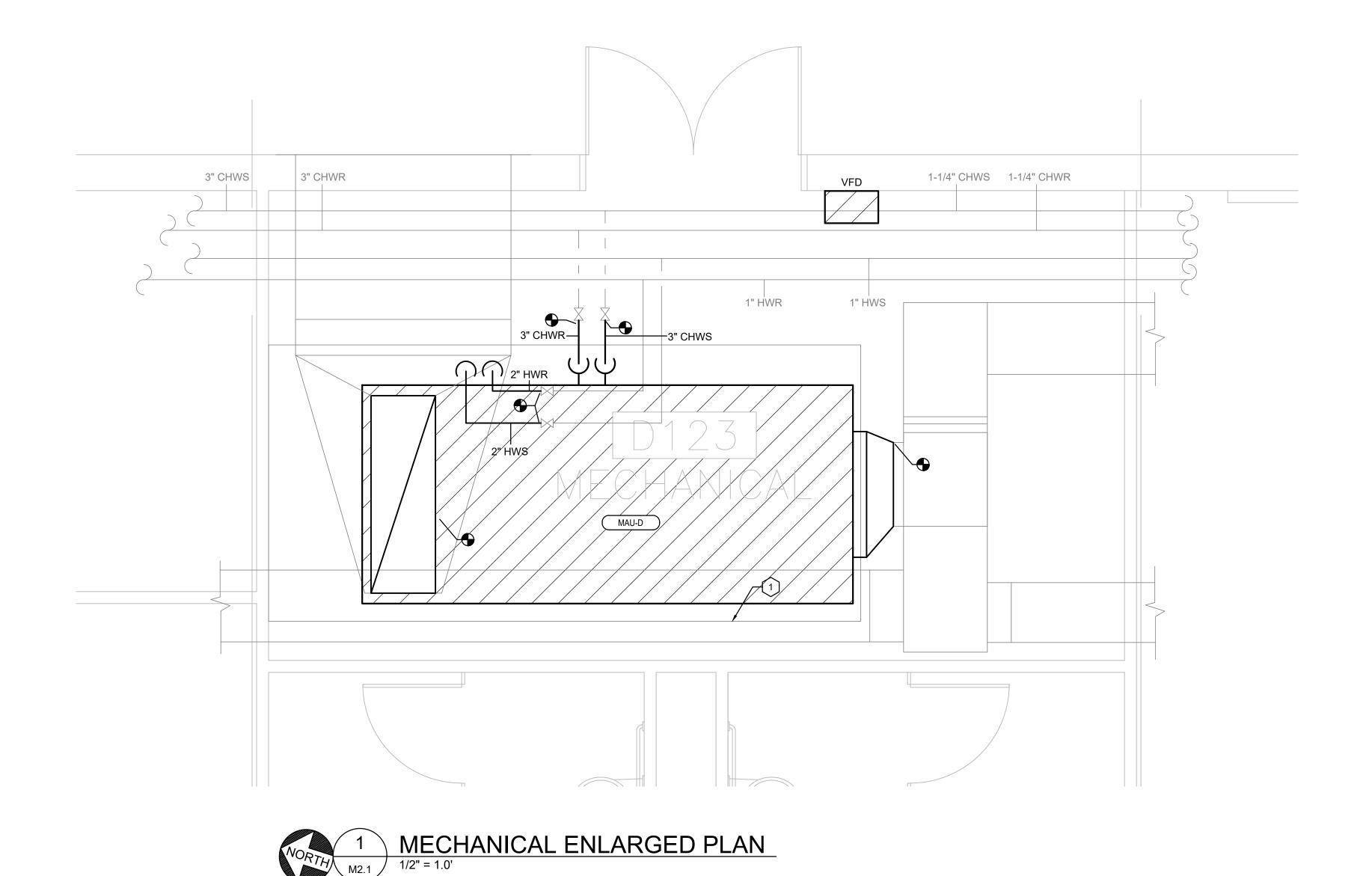
MECHANICAL GENERAL NOTES:

- 1. ALL EQUIPMENT TO BE REUSED SHALL BE CLEANED AND RETURNED TO LIKE-NEW CONDITIONS BY CONTRACTOR. PRIOR TO COMPLETION OF PROJECT, ALL EXISTING EQUIPMENT SHALL
- BE TESTED TO ENSURE FULL FUNCTIONALITY.

 2. CEILING AND ASSOCIATED SYSTEMS SHALL ONLY BE REMOVED TO THE EXTENT NECESSARY FOR NEW WORK. AFTER

 CONSTRUCTION CEILINGS SHALL BE PEINSTALLED, AND ANY
- CONSTRUCTION, CEILINGS SHALL BE REINSTALLED, AND ANY DAMAGE INCURRED DURING CONSTRUCTION WILL BE REPAIRED.

3. CONTRACTOR TO FIELD VERIFY ALL EXISTING EQUIPMENT.





MECHANICAL ENLARGED PLAN

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M2.1

FULLY ACCESSIBLE.

1 BALL OR BUTTERFLY ISOLATION VALVE DEPENDING ON SIZE.

2-WAY MODULATING VALVE IS REQUIRED WHEN NO VALUE IS GIVEN FOR (C), AND SHALL BE INSTALLED IN RETURN LINE.

AUTOMATIC AIR VENT PIPED TO FLOOR DRAIN. PROVIDE WHEN MAINS ARE LOCATED BELOW COIL.

BYPASS VALVE BALL OR BUTTERFLY VALVE DEPENDING ON SIZE.

FULLY SIZE TEMPORARY BYPASS FOR FLUSHING PURPOSES. REMOVE AFTER FLUSH COMPLETE. AHU COIL/VALVE ASSEMBLY TO BE COMPLETELY ISOLATED DURING FLUSH.

NOTE: SEE COIL PIPING SIZE SCHEDULE FOR SIZES AND NOTES.

WYE STRAINER WITH 3/4" HOSE DRAIN AND CAP

PRESSURE/TEMP TEST PORT (TYP)

TEMPERATURE GAUGE

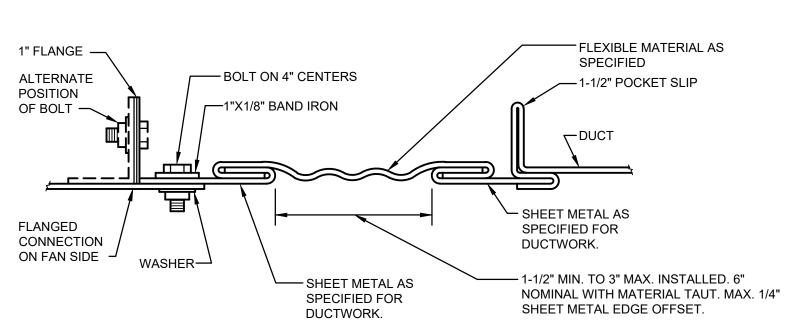
CHILLED OR HOT WATER COIL PIPING SCHEMATIC

CALIBRATED BALANCING

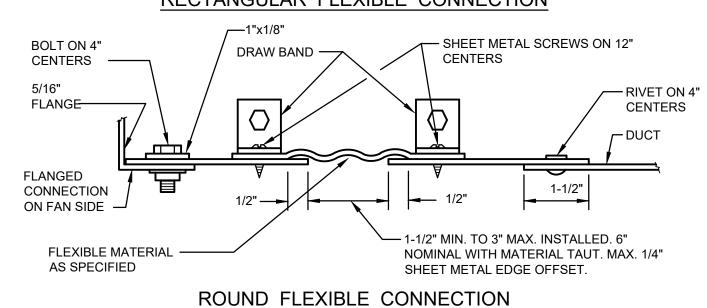
(RE:SCHEDULE FOR GPM)

VALVE

- 3/4" HOSE DRAIN **CONNECTION & CAP**

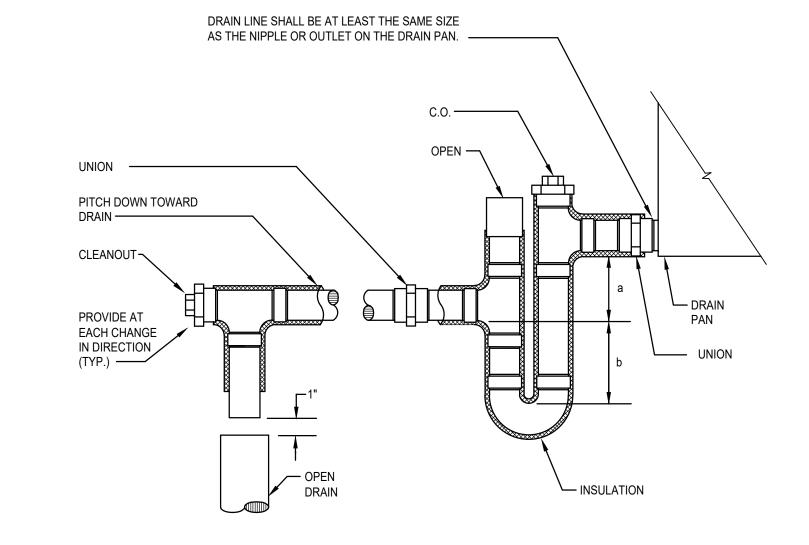


RECTANGULAR FLEXIBLE CONNECTION



TO BE INSTALLED AT ALL BUILDING EXPANSION JOINTS AND ALL HVAC UNIT CONNECTIONS. CONTRACTOR IS RESPONSIBLE FOR LOCATION AND QUANTITY.

DUCT FLEXIBLE CONNECTION DETAILS NOT TO SCALE



			_
UNIT STATIC PRESS.	а	b	NOTES:
0"-1"	1"	2"	1. FOR DEPTH OF SEAL, SEE SCHEDULE BELOW.
1"-2"	2"	3"	2. LOCATE TRAP SO AS TO BE ACCESSIBLE FOR
2"-3"	3"	4"	CLEANING. 3. ALL FITTING TO BE

4. ALL CONDENSATE SHALL BE ROUTED TO SANITARY DRAIN. NO CONDENSATE TO STORM.



TYPICAL DRAIN TRAP DETAIL NOT TO SCALE

	AIR DEVICE SCHEDULE										
MARK MODEL SIZE THROW (@ 100 FPM) CFM RANGE INLET # SLOTS O.B.D. REQ'D. ? P.D. ("WG) * MAX. NC REFERENCE NOT									NOTES		
RA	85	24"X24"	-	0 - 1500	24"X24"	N/A	NO	0.01	30	PRICE	-

* AT MAX. CFM KEYED NOTES (AIR DEVICE SCHEDULE):

GENERAL NOTES (AIR DEVICE SCHEDULE):

1. ALL AIR DEVICES TO BE ALUMINUM, WHITE FINISH UNLESS NOTED OTHERWISE.

2. REFER TO REFLECTED CEILING PLANS FOR CEILING TYPES. ALL AIR DEVICES MOUNTED IN A DRYWALL CEILING SHALL HAVE A MOUNTING FRAME.

3. FOR 2-WAY DISCHARGE, THROWS LISTED REFLECT AIRFLOW IN A SINGLE DIRECTION.

4. P.D. ("WG) REFLECTS "TOTAL" PRESSURE (STATIC AND DYNAMIC). 5. REFER TO FLEX DUCT SCHEDULE FOR DUCT SIZES.

6. TRANSITION AS REQUIRED TO CONNECT DUCT TO AIR DEVICE.

MARK	MAU-D	
AREA SERVED	BUILDING D	
UNIT LOCATION	D123	
TOTAL CFM	10,305	
O.A. CFM	10,305	
EXT. S.P. *	1.5	
COOLING COIL		
TYPE	CHW	
CFM	10,305	
EAT (DB / WB)	105 / 78	
LAT (DB / WB)	52.5 / 52.4	
MAX. FACE VEL. (FPM)	500	
MAX. APD (IN. WC)	0.65	
GPM AT 44 EWT (TEMP. RISE = 12°F)	139.4	
MAX. WPD (FT.)	15.5	
MIN. ROWS / MAX. FINS (PER IN.)	6 / 10	
VALVE TYPE	2-WAY	
TOTAL CAPACITY (MBH)	840.1	
SENS. CAPACITY (MBH)	555.5	
ACCESS SECTION		
DOOR REQUIRED?	YES	
DOOR SIZE (MIN.)	18" x 67.5"	
PRE-HEAT COIL	16 X 67.6	
TYPE	HW	
CFM	10,305	
EAT (DB)	28.0	
LAT (DB)	57.7	
MAX. FACE VEL (FPM)	442.5	
MAX. APD (IN. WATER)	0.1	
GPM AT 145 EWT (TEMP. DROP = 10°F)	61.3	
MAX. WATER PD (FT)	5.1	
MAX. ROWS / MAX. FINS (PER IN.)	1/9	
VALVE TYPE	3-WAY	
OUTPUT (MIN. MBH)	358.8	
ACCESS SECTION		
DOOR REQUIRED?	YES	
DOOR SIZE (MIN.)	16" x 67.5"	
DISCHARGE PLENLIM	T	
DISCHARGE PLENUM	NO	
REQUIRED?	NO	
REQUIRED? FAN		
REQUIRED? FAN TYPE	PLENUM	
REQUIRED? FAN TYPE DRIVE	PLENUM DIRECT	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE #	PLENUM DIRECT M4.1	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH]	PLENUM DIRECT	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE #	PLENUM DIRECT M4.1 4 / 16	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH]	PLENUM DIRECT M4.1 4 / 16 3930 / 4.5	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH] AIR MODULATION	PLENUM DIRECT M4.1 4 / 16 3930 / 4.5 CONSTANT	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH] AIR MODULATION FAN MOTOR (MIN. HP [EACH] / V / PH)	PLENUM DIRECT M4.1 4 / 16 3930 / 4.5 CONSTANT	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH] AIR MODULATION FAN MOTOR (MIN. HP [EACH] / V / PH) ACCESS SECTION DOOR REQUIRED?	PLENUM DIRECT M4.1 4 / 16 3930 / 4.5 CONSTANT 3.5 / 460 / 3 YES	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH] AIR MODULATION FAN MOTOR (MIN. HP [EACH] / V / PH) ACCESS SECTION DOOR REQUIRED? DOOR SIZE (MIN.)	PLENUM DIRECT M4.1 4 / 16 3930 / 4.5 CONSTANT 3.5 / 460 / 3	
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REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH] AIR MODULATION FAN MOTOR (MIN. HP [EACH] / V / PH) ACCESS SECTION DOOR REQUIRED? DOOR SIZE (MIN.) INLET SECTION TYPE INLETS FILTER TYPE	PLENUM DIRECT M4.1 4/16 3930 / 4.5 CONSTANT 3.5 / 460 / 3 YES 21.5" x 67.5" FILTER 1 4" PLEATED	
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REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH] AIR MODULATION FAN MOTOR (MIN. HP [EACH] / V / PH) ACCESS SECTION DOOR REQUIRED? DOOR SIZE (MIN.) INLET SECTION TYPE INLETS FILTER TYPE FINAL FILTER MERV (DIMENSIONS) FILTER MOUNTING OA DAMPERS MAX. INITIAL FILTER PD @ 500 FPM DIRTY FILTER ALLOWANCE (IN)**	PLENUM DIRECT M4.1 4/16 3930 / 4.5 CONSTANT 3.5 / 460 / 3 YES 21.5" x 67.5" FILTER 1 4" PLEATED 13 (20"x24"x4" / 20"x20"x4") FLAT YES 0.18 0.75	
REQUIRED? FAN TYPE DRIVE CONTROLS SEQUENCE # FAN QTY / FAN DIAMETER (IN.) [EACH] FAN RPM [EACH] / MOTOR FLA [EACH] AIR MODULATION FAN MOTOR (MIN. HP [EACH] / V / PH) ACCESS SECTION DOOR REQUIRED? DOOR SIZE (MIN.) INLET SECTION TYPE INLETS FILTER TYPE FINAL FILTER MERV (DIMENSIONS) FILTER MOUNTING OA DAMPERS MAX. INITIAL FILTER PD @ 500 FPM DIRTY FILTER ALLOWANCE (IN)** OPERATING WEIGHT (LBS.)	PLENUM DIRECT M4.1 4 / 16 3930 / 4.5 CONSTANT 3.5 / 460 / 3 YES 21.5" x 67.5" FILTER 1 4" PLEATED 13 (20"x24"x4" / 20"x20"x4") FLAT YES 0.18 0.75 6,427	
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AIR HANDLING UNIT NOTES:

1. SCHEDULE FOR REFERENCE ONLY. AHU IS OWNER PURCHASED, OWNER SUPPLIED.

2. AHU TO BE SHIPPED IN SECTIONS AND ASSEMBLED IN MECHANICAL ROOM.

AIR HANDLING UNIT SCHEDULE

3. AHU TO BE MOUNTED ON EXISTING HOUSEKEEPING PAD.

4. CONTRACTOR TO FIELD INSTALL AIR FLOW MEASURING STATION TUBING AND TRANSDUCER.

PRELIMINARY CONSTRUCTION ZAC G. STEVENSON P.E. REG. NO. 141032

CZE Project No.

SHEET TITLE MECHANICAL SCHEDULES AND **DETAILS**

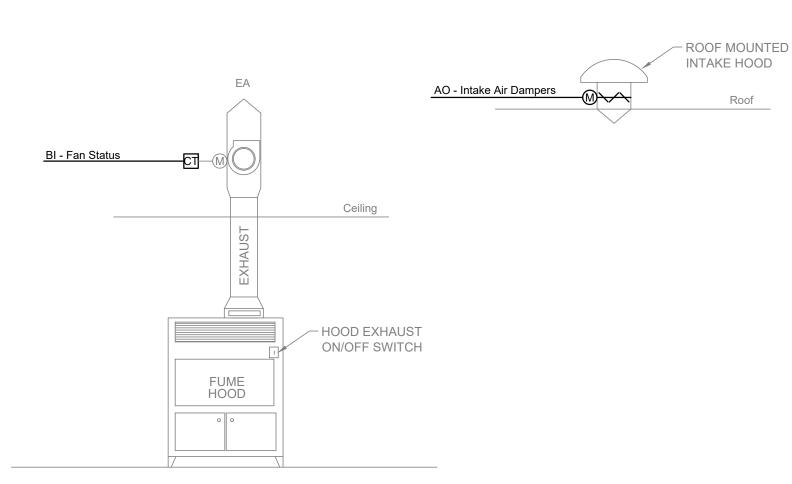
2. ALL DAMPERS, AIRFLOW MEASURING STATIONS AND SENSORS ARE TO BE LOW VOLTAGE (24V) POWERED BY DDC CONTRACTOR.

AI - Supply Air Temp AI - Outside Air Temp AI - AFMS BI - Supply Fan Status BI - Emergency Float Switch BO - Supply Fan Start/Stop AO - Heating Valve AO - Cooling Valve AO - Supply Fan VFD Speed (Each) BI - Supply Fan VFD Fault (Each) AI - Valve Position AI - Valve Position

	Н	ardwa	re Poir	nts		Software Points			
Point Name	Al	AO	BI	ВО	LOOP	Sched	Trend	Alarm	Show On Graphic
Outside Air Temperature	•						•		•
Freezestat			•						•
Cooling Coil Leaving Air Temperature	•						•		•
Supply Air Temperature	•						•		•
Supply Fan Status (Each)			•					•	•
Supply Fan Start/Stop (Each)				•					•
Cooling Valve		•			•		•		•
Heating Valve		•			•		•		•
Outside Air Damper		•					•		•
Outside Airflow	•								•
Cooling Valve Position	•						•		•
Heating Valve Position	•						•		•
Supply Fan VFD Speed (Each)		•			•		•		•
Supply Fan VFD Fault (Each)			•				•		•
VFD BACNet Interface		•						•	•

		RESPONSIBILITY MATRIX		
DEVICE	SUPPLIED BY	INSTALLED BY	WIRING BY CONTROLS	WIRING BY ELECTRICAL
Temp/Humidity/Misc. Sensors	Controls Contractor	Controls Contractor	DDC Panel to Sensors	N/A
Fan VFD	Mechanical Contractor	Mechanical Contractor	DDC panel to VFD	Electrical panel to VFD/Fan
Fan	AHU Manufacturer	Mechanical Contractor	DDC Panel to Starter or VFD	Electrical panel to starter/VF
Current Sensing Relay	Controls Contractor	Controls Contractor	DDC Panel to CSR	N/A
Motorized Valves-Body	Controls Contractor	Mechanical Contractor	N/A	N/A
Motorized Valves-Actuator	Controls Contractor	Controls Contractor	DDC Panel to Actuator	N/A
Dampers (O/A / Misc.)	Mechanical Contractor	Mechanical Contractor	N/A	N/A
Damper Actuators (O/A / Misc.)	Controls Contractor	Controls Contractor	DDC Panel to Actuator	N/A
Dampers (R/A)	AHU Manufacturer	Mechanical Contractor	N/A	N/A
Outside Air AFMS	AHU Manufacturer	AHU Manufacturer	DDC Panel to Sensors	N/A

CONSTANT VOLUME CW AIR HANDLER WITH HW PREHEAT



Software Points

LOOP Sched Trend Alarm

Hardware Points

AI AO BI BO

Point Name

Fan Status

RESPONSIBILITY MATRIX									
SUPPLIED BY	INSTALLED BY	WIRING BY CONTROLS	WIRING BY ELECTRICAL						
Mechanical Contractor	Mechanical Contractor	N/A	N/A						
Controls Contractor	Controls Contractor	DDC Panel to CT	N/A						
Controls Contractor	Controls Contractor	DDC Panel to Actuator	N/A						
	Mechanical Contractor Controls Contractor	SUPPLIED BY INSTALLED BY Mechanical Contractor Mechanical Contractor Controls Contractor Controls Contractor	SUPPLIED BY INSTALLED BY WIRING BY CONTROLS Mechanical Contractor Mechanical Contractor N/A Controls Contractor Controls Contractor DDC Panel to CT						

Fume Hood Exhaust Fan Status:

The controller shall monitor the fume hood exhaust fan's status.

<u>Intake Air Damper Control</u>
The BAS shall monitor each fume hood exhaust fan's status and modulate the intake damper as follows:

- When one or up to 3 fume hood exhaust fans are activated, associated control damper shall modulate to 75% open. - When 4 or more fume hood exhaust fans are activated, associated control damper shall modulate to 100% open. - When 0 fume hood exhaust fans are activated, associated control damper shall modulate to 100% closed.

2	INTAKE AIR DAMPER CONTROL
M4.1	NOT TO SCALE

Show On Graphic

Constant Volume CW w/ HW preheat

Run Conditions - Scheduled: The unit shall run according to a user definable time schedule.

The supply fan shall run per a user defined schedule unless shutdown on safeties. The outside air damper shall close when the unit is off.

Any associated sfd shall close when the unit is off.

FREEZE PROTECTION: Interlock freezestat with fan starter / VFD. Alarm input (dry contacts) to DDC,.

- Force CW control valve to open 50% - HW control valve to 100% open

Manual reset at freezestat.

Supply Fan in Hand: Commanded off, but the status is on.

Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).

Cooling mode shall be enabled whenever:

The supply air temperature is above cooling setpoint.

AND the HW control valve position is closed.

High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).

Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

CONTRO	DL DAMPER SCHEDULE
FUME HOOD	ASSOCIATED INTAKE CONTROL DAMPER LOCATION
FH-230	ROOM D220
FH-226	ROOM D220
FH-220A	ROOM D220
FH-220B	ROOM D220
FH-220C	ROOM D220
FH-218	ROOM D216
FH-216A	ROOM D216
FH-216B	ROOM D216
FH-216C	ROOM D216
FH-221A	ROOM D221
FH-221B	ROOM D221
FH-245	ROOM D221

CZE Project No.

PRELIMINARY

APPROVAL, PERMIT OR

CONSTRUCTION ZAC G. STEVENSON P.E. REG. NO. 141032

MECHANICAL CONTROLS

AHU Optimal Start:
The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period.

Via hardwire interlock:

 Open return air damper - Close outside air damper

<u>Supply Fan:</u>
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties.

Alarms shall be provided as follows:

Supply Fan Failure: Commanded on, but the status is off.

Cooling Mode:
The controller shall measure the supply air temperature and modulate the cooling coil valve to maintain its cooling

AND the supply fan status is on.

<u>Heating Mode:</u>
The controller shall measure the outdoor air temperature and modulate the heating coil valve to maintain the supply air temperature setpoint.

Heating mode shall be enabled whenever: • The outside air temperature is below the supply air temperature setpoint.

AND the supply fan status is on.

<u>Supply Air Temperature:</u> The controller shall monitor the supply air temperature.

The supply air temperature setpoint shall be 55°F (adj.)

Alarms shall be provided as follows:

ELECTRICAL SYMBOLS AND ABBREVIATIONS (SOME SYMBOLS MAY NOT BE APPLICABLE TO THIS PROJECT)

SYMBOLS **ABBREVIATIONS**

	GENERAL		<u>OUTLETS</u>		SITE UTILITY				
\wedge	MOTOR, HP AS INDICATED	Ф	SIMPLEX RECEPTACLE	MH#1	MANHOLE NUMBER 1; CMH-INDICATES	A	AMPERE(S)	MDP	MAIN DISTRIBUTION PANEL
	CONTROLLER TO BE FURNISHED UNDER DIVISION 15	Ф	DUPLEX RECEPTACLE	_	COMMUNICATIONS MANHOLE.	AC	ABOVE COUNTER	MECH	MECHANICAL
다	AND INSTALLED UNDER DIVISION 16 DISCONNECT SWITCH	Фwp, т, gfi, ig	DUPLEX RECEPTACLE; GFI=GROUND FAULT INTERRUPTING,	РВ	PULLBOX OR HANDHOLE AS SPECIFIED ON DRAWINGS AND SPECIFICATIONS.	A/C	AIR CONDITIONING	МН	METAL HALIDE
_ ⊠	MAGNETIC MOTOR STARTER	C, TV,CR	WP=WEATHERPROOF, T=TAMPER RESISTANT, IG=ORANGE SOLATED GROUND, C=CLOCK OUTLET, TV=TV RECEPTACLE, CR=CONTROLLED RECEPTACLE	● PP	POWER POLE	AIC	AMPERE INTERRUPTING CAPACITY	MIN	MINIMUM
⊠h	COMBINATION MOTOR STARTER/DISCONNECT SWITCH	Ф	DOUBLE DUPLEX RECEPTACLE	ightleftarrows	POLE MOUNTED TRANSFORMERS	AFF	ABOVE FINISHED FLOOR	MLO	MAIN LUGS ONLY
⊢ G	GROUNDING REFERENCE POINT.	.	EMERGENCY RED DUPLEX RECEPTACLE	■ TB	TELEPHONE TERMINAL BOX	AFG	ABOVE FINISHED GRADE	MTD	MOUNTED
①	JUNCTION BOX, CEILING MOUNTED	.	EMERGENCY RED QUAD RECEPTACLE	——— AP	AERIAL PRIMARY	AHU	AIR HANDLING UNIT	MTG	MOUNTING
⊢⊙	JUNCTION BOX, WALL MOUNTED	Ф	DUPLEX RECEPTACLE WITH USB PORTS	—— AS ——	AERIAL SECONDARY	AL , ALUM ATS	ALUMINUM AUTOMATIC TRANSFER SWITCH	MV MW	MERCURY VAPOR MICROWAVE
PC	PHOTO CELL	<u> </u>	SPECIAL PURPOSE RECEPTACLE	—— AT ——	AERIAL TELEPHONE; CATV = CABLE TELEVISION.	AWG	AMERICAN WIRE GAUGE	NA	NOT APPLICABLE
R	RELAY	•	ROUND FLOOR BOX WITH POWER AND DATA	—— UP ——	UNDERGROUND PRIMARY	BLDG	BUILDING	NC	NORMALLY CLOSED
TC	TIME CLOCK		SQUARE FLOOR BOX WITH POWER AND DATA	——US ——	UNDERGROUND SECONDARY	С	CONDUIT	NF	NONFUSIBLE
C	CONTACTOR	▼	TELEPHONE OUTLET	——UT ——	UNDERGROUND TELEPHONE/COMMUNICATIONS	СВ	CIRCUIT BREAKER	NL	NIGHT LIGHT
	BELL	$\mathbf{\Phi}$	TELEVISION OUTLET		TELEFTIONE/GOWINIONIGATIONS	CCTV	CLOSED CIRCUIT TELEVISION	NO	NORMALLY OPEN
□ ⁄	BUZZER	∇	VOICE/DATA OUTLET		CECUDITY	CFCI	CONTRACTOR FURNISHED,	NTS	NOT TO SCALE
Φ	CEILING MOUNTED CLOCK		SWITCHES		SECURITY		CONTRACTOR INSTALLED	ос	ON CENTER
⊬⊕ . ⊕	WALL MOUNTED CLOCK	¢		SEC	SECURITY PANEL	CKT	CIRCUIT		
₩	WALL MOUNTED DOUBLE FACE CLOCK	⊉ ª ♦ ²	SINGLE POLE SWITCH	DC	DOOR CONTACT	COND	CONDUCTOR	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
	HORN TRANSFORMER AS INDICATED	¥ \$°	DOUBLE POLE SWITCH	CAMERA	CCTV CAMERA WITH FIXED WIDE ANGLE LENS WALL MOUNTED TO SET CAMERA 6"	CPU	CENTRAL PROCESSING UNIT	OH	OVERHEAD
ATS	AUTOMATIC TRANSFER SWITCH	¥ \$ ⁴	THREE-WAY SWITCH	[aurra] 4	BELOW CEILING.	СТ	CURRENT TRANSFORMER	Р	POLE
<u>∧</u>	EQUIPMENT CONNECTION	\$ ^S	FOUR-WAY SWITCH CEILING FAN SPEED SWITCH	CAMERA PTZ	CCTV CAMERA; PT=PAN AND TILT; Z=ZOOM LENS	DCP	DATA COLLECTION PANEL	PA	PUBLIC ADDRESS
2	KEYED NOTE NO. 2	\$	SWITCH WITH PILOT LIGHT IN HANDLE	CAMERA WP	EXTERIOR CAMERA IN WEATHERPROOF ENCLOSURE WITH ANTI-FOG HEATERS.	DIA	DIAMETER	РВ	PUSHBUTTON
CH-	MECHANICAL EQUIPMENT DESIGNATION	\$WP	WEATHERPROOF SWITCH	DL	DOOR LOCK	DC	DISCONNECT	PBX	PRIVATE BUILDING EXCHANGE
		\$ ^M	MOTOR RATED SWITCH	CR	CARD READER ACCESS	DIST	DISTRIBUTION	PC	PULL CHAIN
		\$EP	EXPLOSION PROOF SWITCH	<u> </u>	DURESS PUSHBUTTON	DN	DOWN	P/C	PHOTO CELL
	<u>LUMINAIRES</u>	\	TIMER SWITCH	KP	KEYPAD	DWGS	DRAWINGS	PDP	POWER DISTRIBUTION PANEL
☐ A	LUMINAIRE, CEILING OR WALL MOUNTED. SUBSCRIPT INDICATES	<u>\$</u> 3 \$ b \$ d	MULTIPLE SWITCHES, GANGED.			EC	EMPTY CONDUIT	PH,Ø	PHASE
a	ASSOCIATED SWITCHING. CAPITAL LETTER INDICATES FIXTURE TYPE.	◆ ^{OS}	CEILING MOUNTED OCCUPANCY SENSOR			EF	EXHAUST FAN	PNL	PANELBOARD
0	FIXTURE CEILING MOUNTED FIXTURE WALL MOUNTED	\$ ⁰⁸	WALL MOUNTED OCCUPANCY SENSOR AND SWITCH		DIOTRIBUTION	EQMT EWC	EQUIPMENT ELECTRIC WATER COOLER	PR PSI	PAIR POUNDS PER SQUARE INCH
Ю 0 -	WALLWASH FIXTURE CEILING MOUNTED	\$	LOW VOLTAGE SWITCH		DISTRIBUTION	EXH	EXHAUST	PWR	POWER
† ⊕ †	EXIT LIGHT, CEILING MOUNTED WITH ARROWS	\$ ************************************	LOW VOLTAGE SWITCH WITH DIMMER		MOLDED CASE CIRCUIT BREAKER	EXP	EXPLOSION PROOF	QUAD	QUAD RECEPTACLE
+⊗‡	EXIT LIGHT, WALL MOUNTED WITH ARROWS	\$	WALL MOUNTED WIRELESS ON/OFF SWITCH	»—^—«	DRAWOUT POWER CIRCUIT BREAKER AIR, VACUUM OR SF AS SPECIFIED.	EXTG	EXISTING	REFR	REFRIGERATOR
ø 🔀	EMERGENCY FIXTURE	₹	WALL MOUNTED WIRELESS ON/OFF/DIM SWITCH	__	DISCONNECT SWITCH	F/A , F.A.	FIRE ALARM	S	SECURITY
	FIXTURE WITH WIRELESS OCCUPANCY AND DAYLIGHT SENSOR	•	PUSHBUTTON	__	FUSIBLE DISCONNECT SWITCH	FLUOR	FLUORESCENT	S.C.	SPLIT CIRCUIT
	EMERGENCY LIGHT, WALL MOUNTED		P.A./INTERCOM	<u>~~</u>	TRANSFORMER	FN	FULL NEUTRAL	S.C.	STATUS COMMAND CENTER
•-	POLE MOUNTED LUMINAIRE			<u> </u>	SHEILDED ISOLATION TRANSFORMER	FT	FEET, FOOT	SN	SOLID NEUTRAL
•<	FLOOD LIGHT. ARROW INDICATES AIMING DIRECTION.	IC	REMOTE INTERCOM STATION	VM	VOLTMETER	GALV	GALVANIZED	SPD	SURGE PROTECTION DEVICE
$\overline{\Delta} \overline{\Delta} \overline{\Delta}$	TRACK LIGHT WITH HEADS AS INDICATED	ICM	INTERCOM MASTER STATION	АМ	AMMETER	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SQFT. 🗖	SQUARE FOOT
		S	SPEAKER, CEILING MOUNTED SPEAKER, WALL MOUNTED	VS	VOLTMETER SELECTOR SWITCH	GFI	GROUND FAULT INTERRUPTER	SW	SWITCH
	RACEWAYS	H(s)	AMPLIFIER AND ASSOCIATED EQUIPMENT	AS	AMMETER SELECTOR SWITCH	GND	GROUND	SWBD	SWITCHBOARD
	CONDUIT CONCEALED IN WALL OR CEILING	(M)	MICROPHONE JACK	ST	SHUNT TRIP	GRD	GALVANIZED RIGID STEEL	TC	TIME CLOCK
	CONDUIT UNDER FLOOR OR CAST IN STRUCTURE	СВ	INTERCOM CALL BOX	₽ M	CT AND METER	HID	HIGH INTENSITY DISCHARGE	TELE	TELEPHONE
	SWITCH LEG					HP	HORSEPOWER	TSTAT	THERMOSTAT
P1A-2,4,6	BRANCH CIRCUIT HOMERUN 3/4"C, 3#12 AND 1#12 GND. MIN.					HOA	HAND OFF AUTOMATIC	TV	TELEVISION
	SURFACE RACEWAY		FIRE ALARM			HPS	HIGH PRESSURE SODIUM	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
—т	TELEPHONE	FACP	FIRE ALARM CONTROL PANEL			HVAC	HEATING/VENTILATING/AIR CONDITIONING	UON UPS	UNLESS OTHERWISE NOTED UNINTERRUPTABLE POWER
	BUS DUCT WITH TAKE OFF DEVICE	FAEX	FIRE ALARM EXPANSION PANEL			HZ ID	HERTZ INSIDE DIAMETER	uro V	SUPPLY VOLT(S)
		ANN	REMOTE FIRE ALARM ANNUNCIATOR			IG	INSIDE DIAMETER ISOLATED GROUND	V	VENDING
	PANEL AND RELATED ITEMS	F	MANUAL PULL STATION			IMC	INTERMEDIATE STEEL CONDUIT		
177777		(SD)(SD)	SMOKE DETECTOR; DASHED INDICATES			IN	INCHES	VP W	VAPOR PROOF WIRE , WATT(S)
	PANELBOARD, SURFACE MOUNTED.		BELOW RAISED FLOOR			INCD	INCANDESCENT	WP	WEATHERPROOF
CWPD	PANELBOARD, FLUSH MOUNTED. SWITCHBOARD OR DISTRIBUTION BOARD	SD _D	SMOKE DETECTOR, DUCT MOUNTED			JB	JUNCTION BOX	XFMR	TRANSFORMER
SWBD	MOTOR CONTROL CENTER	+ T	TEST SWITCH			KV	KILOVOLT	1P	ONE POLE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR.	HD	HEAT DETECTOR			KVA	KILOVOLT AMPERE	2P	TWO POLE
TELE	PLYWOOD TELEPHONE BACKBOARD: PROVIDE WALL MOUNTED	FS	FLOW SWITCH			KVAC	KILOVOLT AMPERE CAPACTIVE	2r 3P	THREE POLE
	WHITE PAINTED 4x8' PLYWOOD BACKBOARD	vs	VALVE SWITCH			KVAR	KILOVOLT AMPERE REACTIVE	OI.	
							KILOVOLT AMPERE REACTIVE		
		FS V	FLOW SWITCH			KW			
		F F	AUDIO-VISUAL ANNUNCIATOR (WALL, CEILING)			KWH	KILOWATT HOUR		
		V V	VISUAL ANNUNCIATOR (WALL, CEILING)			LPS	LOW PRESSURE SODIUM		
		DH	MAGNETIC DOOR HOLDER			MAX	MAXIMUM MAIN CIRCUIT PREAKER		
		PJ	FIRE FIGHTERS PHONE JACK			MCB	MAIN CIRCUIT BREAKER		
			FIRE ALARM SPEAKER / VISUAL (VOICE			MCC	MOTOR CONTROL CENTER		

FIRE ALARM SPEAKER / VISUAL (VOICE EVACUATION)



CZE Project No. 250697

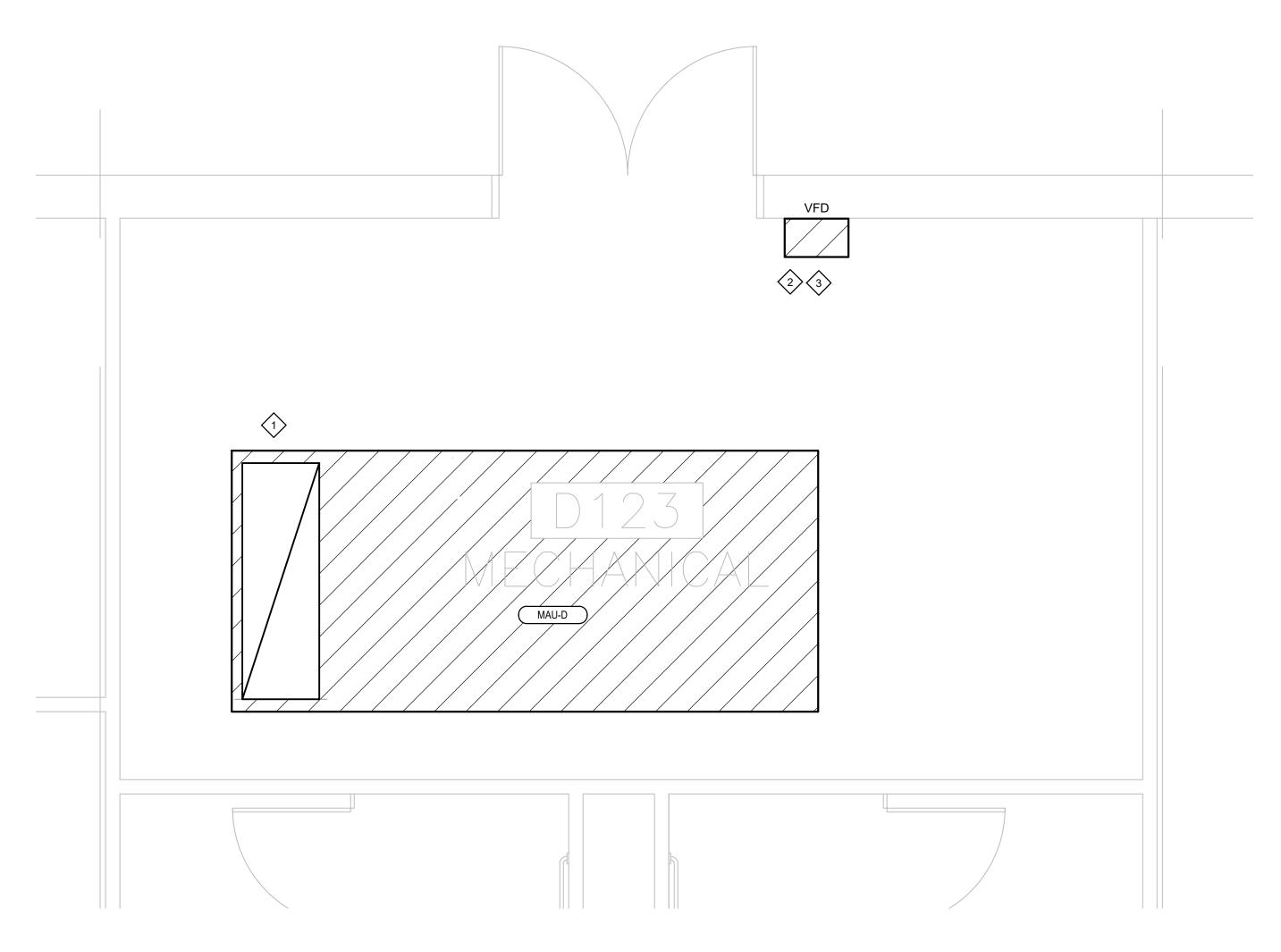
ELECTRICAL SYMBOLS AND ABBREVIATIONS

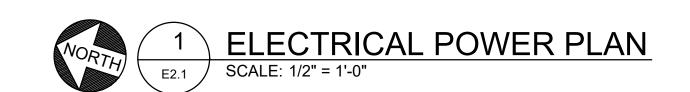
KEYED PLAN NOTES:

- SALVAGE ANY EXISTING DUCT SMOKE DETECTORS FROM MAU TO BE DEMOLISHED FOR INSTALLATION IN NEW MAU.
- DEMOLISH EXISTING MOTOR STARTER AND MAINTAIN EXISTING CIRCUIT FOR CONNECTION TO NEW EQUIPMENT.
- PROVIDE NEW 30A/3P/NF DISCONNECT AHEAD OF NEW VFD. DISCONNECT TO BE SUPPLIED BY EXISTING CIRCUIT REMAINING AFTER MOTOR STARTER DEMOLITION. NEW CONDUCTORS TO BE 3 #12 HOTS AND 1 #12 GROUND IN 3/4" CONDUIT.

ELECTRICAL GENERAL NOTES:

- ALL EQUIPMENT TO BE REUSED SHALL BE CLEANED AND RETURNED TO LIKE-NEW CONDITIONS BY CONTRACTOR. PRIOR TO COMPLETION OF PROJECT, ALL EXISTING EQUIPMENT SHALL
- BE TESTED TO ENSURE FULL FUNCTIONALITY. 2. CEILING AND ASSOCIATED SYSTEMS SHALL ONLY BE REMOVED TO THE EXTENT NECESSARY FOR NEW WORK. AFTER CONSTRUCTION, CEILINGS SHALL BE REINSTALLED, AND ANY DAMAGE INCURRED DURING CONSTRUCTION WILL BE REPAIRED.
- CONTRACTOR TO FIELD VERIFY ALL EXISTING EQUIPMENT.
 CONTRACTOR RESPONSIBLE FOR UPDATING EQUIPMENT AND PANEL SCHEDULES.









PRELIMINARY REVIEW
NOT FOR REGULATORY
APPROVAL, PERMIT OR
CONSTRUCTION
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ELECTRICAL POWER PLAN