

# REPLACE AHU AND RA SYSTEM COLUMBINE HALL

## UNIVERSITY OF COLORADO AT COLORADO SPRINGS

COLORADO SPRINGS COLORADO

100% CONSTRUCTION DOCUMENTS-ISSUED FOR BID

SEPTEMBER 8, 2022

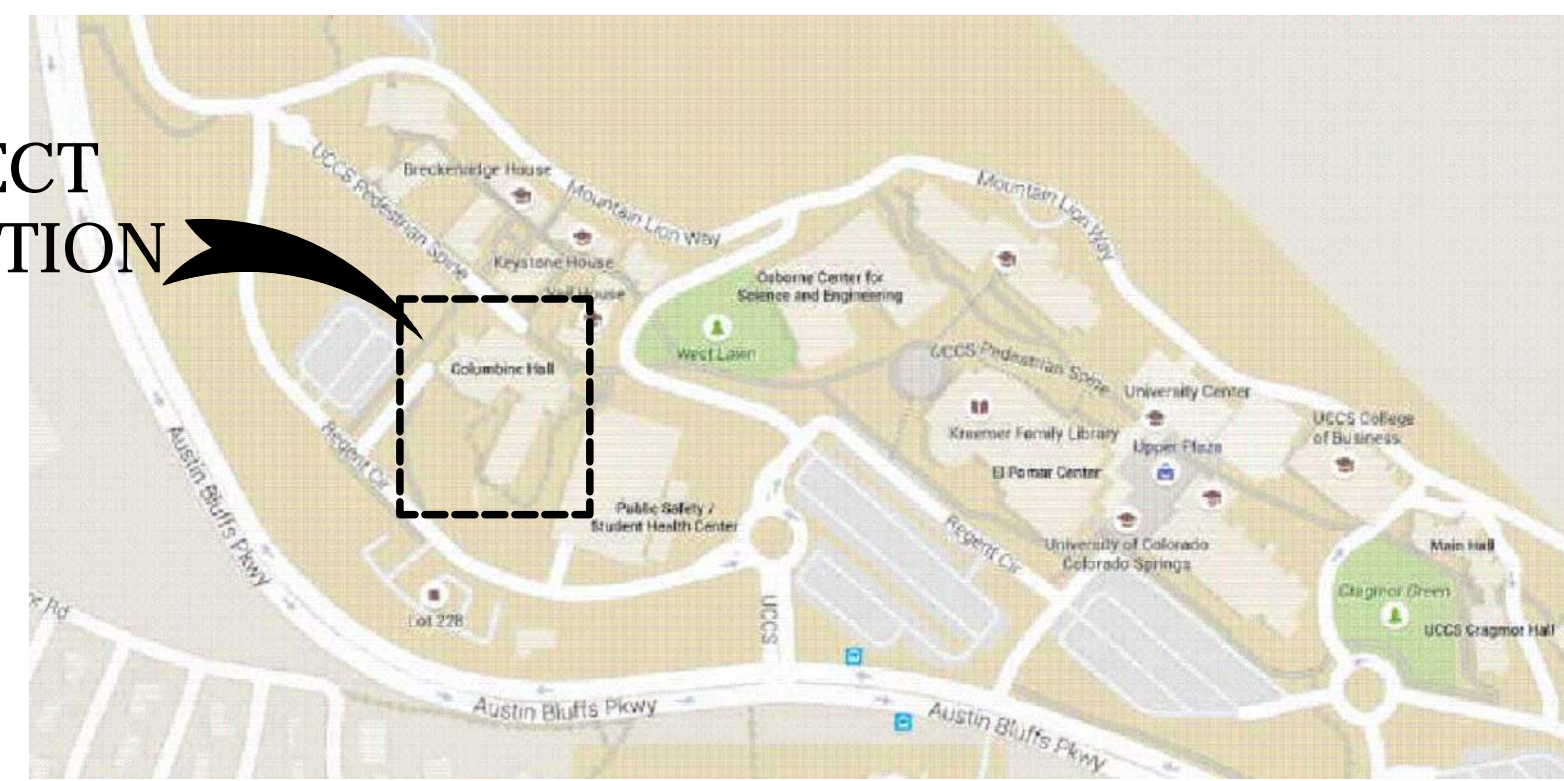


UNIVERSITY OF COLORADO COLORADO SPRINGS

REPLACE AHU AND RA SYSTEM COLUMBINE HALL

COLORADO SPRINGS, COLORADO

### PROJECT LOCATION



VICINITY MAP



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### PROJECT TEAM:

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#### EXISTING SYSTEM DESCRIPTION

THE BUILDING WAS CONSTRUCTED ABOUT 1997 AND INCLUDED TWO BUILT UP PENTHOUSE AIR HANDLERS. AHU-1 SERVES THE CLASSROOM WING AND AHU-2 SERVES THE OFFICE WING. EACH VAV UNIT CONSISTS OF A SUPPLY FAN, RETURN FANS, HYDRONIC HEATING COIL, BUILT UP DX COOLING COIL WITH EVAPORATIVE CONDENSING UNIT AND CONTROLS. WORK ASSOCIATED WITH THE CLASSROOM WING WAS COMPLETED IN 2016 AND IS NOT IN THIS PROJECTS SCOPE OF WORK.

THE RETURN FANS FOR AHU-2 WERE INSTALLED IN A RELIEF FAN CONFIGURATION THAT REQUIRES THE BUILDING TO BE PRESSURIZED TO RETURN AIR TO THE PENTHOUSE UNIT THROUGH A CENTRAL SHAFT. THE CEILING PLENUMS WAS COMPARTMENTALIZED INTO RETURN AIR (RA) ZONES. TRANSFER DUCTS WERE INSTALLED TO MOVE RA FROM EACH ZONE BACK TO THE MAIN RA SHAFT THAT ALLOWED RA TO MOVE UP TO THE PENTHOUSE UNIT. DURING THE ORIGINAL CONSTRUCTION, SOME RA ZONES WERE NOT PROVIDED WITH A TRANSFER PATH, SOME WERE PROVIDED WITH MULTIPLE TRANSFERS BEFORE REACHING THE RA SHAFT AND MOST TRANSFER DUCTS WERE SIZED TOO SMALL. THE LOBBY AREA REQUIRES PRESSURIZATION TO PUSH AIR INTO TRANSFER GRILLES AND DUCT BACK TO THE MAIN RA SHAFT.

#### PROJECT SCOPE OF WORK

THE PROJECT CONSISTS OF REPLACING THE R22 DX COOLING COILS, EVAPORATIVE CONDENSING UNIT, R22 COMPRESSORS AND ASSOCIATED REFRIGERANT PIPING AND COMPONENTS FROM THE OFFICE WING PENTHOUSE AIR HANDLING UNIT WITH A NEW R438A DX COOLING SYSTEM. ADDITIONALLY, THE RETURN AIR PATH FOR EACH FLOOR OF WILL BE MODIFIED TO CORRECT BUILDING OVER PRESSURIZATION ISSUES. RETURN AIR MODIFICATIONS INCLUDE PROVIDING NEW TRANSFER DUCTS AND OPENINGS IN ABOVE CEILING GYPSUM WALLS AND PROVIDING NEW LOBBY EXHAUST FANS. ASSOCIATED CONTROL SYSTEMS AND COMPONENTS WILL BE REPLACED DURING THE DX COOLING SYSTEM RENOVATION.

ACM INVESTIGATION AND ANY NECESSARY REMOVAL WILL OCCUR PARALLEL TO THIS PROJECT. GC SHALL COORDINATE THEIR WORK WITH ACM CONTRACTOR, BUT ACM CONTRACTOR WILL BE UNDER SEPARATE CONTRACT WITH OWNER AND SHALL NOT BE INCLUDED IN THE BID PRICING FOR THE SCOPE OF WORK LISTED IN THE PARAGRAPH ABOVE.

#### ADD ALTERNATES:

- REPLACE ALL AHU-2 PNEUMATIC CONTROLS WITH DDC CONTROLS, INCLUDING ACTUATORS, SENSORS, TRANSMITTERS ETC. PROVIDE NEW CONTROL PANELS WITHIN AHU-2. NEW COMPONENTS AND SYSTEM SHALL HAVE A SEAMLESS INTEGRATION WITH EXISTING DDC SYSTEM IN COLUMBINE HALL.
- PROVIDE ABOVE CEILING FIBERGLASS SOUND ATTENUATION BATTING ABOVE CEILING IN AREA ON EACH LEVEL INDICATED ON PLANS. ACOUSTICAL BATT SHALL PROVIDE 25 DB OF TRANSMISSION LOSS IN EACH OCTAVE BAND FROM 63 HZ TO 8000HZ.

#### UCCS GENERAL NOTES

##### GENERAL CONTRACTOR'S GENERAL RESPONSIBILITIES:

- GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS, CONSTRUCTION METHODS AND CRAFTSMANSHIP.
- ALL NEW WORK IS TO BE PLUMB, LEVEL, AND SQUARE.
- ALL NEW MATERIALS TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- ALL NEW WORK IS TO COMPLY WITH UCCS DESIGN AND CONSTRUCTION STANDARDS. SEE UCCS FACILITIES WEBSITE FOR LINKS TO STANDARDS.
- THE CONTRACTOR IS RESPONSIBLE TO BRING DISCREPANCIES OR CONFLICTS BETWEEN VARIOUS CONSTRUCTION DOCUMENTS INCLUDING DRAWINGS AND SPECIFICATIONS TO THE IMMEDIATE ATTENTION OF THE UCCS PROJECT MANAGER BEFORE BID OPENING FOR RESOLUTION. DO NOT ASSUME CORRECTNESS OF ONE DOCUMENT OR THE OTHER. DO NOT SCALE DRAWINGS.
- CONTRACTORS ARE RESPONSIBLE FOR COORDINATING WORK WITH OTHER TRADES, AND OWNER'S SELF-PERFORMED WORK.
- WORK AREAS WILL NEED TO BE KEPT CLEAN.
- GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE INSPECTION SERVICES PROVIDED BY STATE INSPECTORS. FEES FOR MEP AND FIRE DEPT. INSPECTIONS AND REQUIRED PERMITS TO BE BY GENERAL CONTRACTOR. FEES FOR STATE ARCHITECT INSPECTIONS BY OWNER.
- GENERAL CONTRACTOR TO COORDINATE CRANE ACCESS AND LOCATION WITH UCCS PROJECT MANAGER AND CAMPUS EMERGENCY SERVICES. CRANE LOCATION SHALL BE THE FIRE ACCESS ROAD TO THE EAST OF THE OFFICE WING. CRANE SHALL BE ON CAMPUS IN THE FIRE LANE FOR THE MINIMUM AMOUNT OF TIME NECESSARY TO COMPLETE THE ASSOCIATED WORK AND MUST BE COORDINATED WITH CAMPUS EMERGENCY SERVICE A MINIMUM OF 2 WEEKS PRIOR TO CRANE PLACEMENT.

##### CODE COMPLIANCE:

- COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODES, LAWS AND REGULATIONS. SEE BUILDING CODE ANALYSIS AND UCCS FACILITIES WEBSITE FOR LINK TO THE EXPANDED LIST OF STATE-APPROVED BUILDING CODES.
- PARKING, TRASH, REMOVAL, TEMPORARY FACILITIES, DELIVERIES:
- CONTRACTOR IS RESPONSIBLE TO PAY FOR PARKING ON CAMPUS.
  - THIS PROJECT WILL MAKE AVAILABLE TO THE GENERAL CONTRACTOR AN AREA FOR A LAYDOWN/DELIVERY AREA.
  - GENERAL CONTRACTOR IS RESPONSIBLE FOR TRASH AND RECYCLING REMOVAL. COORDINATE DUMPSTER LOCATIONS WITH UCCS PROJECT MANAGER.
  - GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING SECURING, AND MAINTENANCE OF TEMPORARY TOILET FACILITIES. COORDINATE LOCATIONS WITH UCCS PROJECT MANAGER.
  - DELIVERIES & HAUL ROUTE: DELIVERIES ARE TO BE OFF OF REGENT CIRCLE ON THE SOUTH SIDE OF THE BUILDING. CONSTRUCTION TRAFFIC IS TO USE THE REGENT CIRCLE ENTRY TO CAMPUS AND TO EXIT THE SAME WAY. CONSTRUCTION TRAFFIC IS NOT TO GO THROUGH THE EAGLE ROCK NEIGHBORHOOD.

##### SCHEDULE, WORK HOURS, & BUILDING ACCESS:

- CONSTRUCTION FOR THE PROJECT SHALL START IN DECEMBER 2022 AND MUST BE COMPLETE BY JANUARY 2024.
- CONSTRUCTION WORK HOURS ARE BETWEEN 8:00 AM AND 10:00 PM OR AS OTHERWISE ARRANGED WITH THE OWNER'S SCHEDULE.
- COORDINATE CONSTRUCTION ACTIVITIES WITH UCCS PROJECT MANAGER TO MEET OWNER'S SCHEDULE.
- ACTIVITIES CAUSING NOISE, VIBRATION, ODORS, DUST, ETC. AND ACTIVITIES WHICH REQUIRE CLOSURE OF PART OF THE BUILDING OR INTERRUPTION OF UTILITY SERVICES MUST BE COORDINATED WITH THE OWNER'S SCHEDULE.
- ARRANGE BUILDING ACCESS WITH UCCS PROJECT MANAGER.
- MAINTAIN EGRESS THROUGH ADJACENT CORRIDORS AT ALL TIMES. PROTECT PEDESTRIANS AND BUILDING USERS FROM CONSTRUCTION ACTIVITIES WITH WARNING TAPE, CONES, SIGNS, ETC. COORDINATE THESE EFFORTS WITH THE UCCS PROJECT MANAGER.

##### GENERAL DEMOLITION NOTES:

- ALL EXISTING CONDITIONS TO REMAIN SHALL BE PROTECTED DURING DEMOLITION OPERATIONS. PROTECT ADJACENT AREAS FROM DUST AND DEBRIS. MAINTAIN A CLEAN, SAFE WORK ENVIRONMENT AT ALL TIMES.
- EXISTING POWER/DATA/FIRE DEVICES TO REMAIN UNLESS NOTED OTHERWISE.
- PATCH AND REPAIR EXISTING WALLS WHERE AFFECTED BY NEW CONSTRUCTION. PATCH TO MATCH ADJACENT SURFACE. PAINT TO NEAREST BREAK.
- MINIMIZE DAMAGE TO LANDSCAPING AND PAVING. LANDSCAPING AND/OR PAVING DAMAGED DURING CONSTRUCTION ACTIVITIES TO BE REPLACED IN KIND.
- OWNER RETAINS FIRST RIGHT OF REFUSAL FOR ALL DEMOLISHED MATERIAL AND EQUIPMENT. VERIFY WHAT MATERIAL AND EQUIPMENT TO BE SALVAGED WITH OWNER PRIOR TO DISPOSAL.

REV	DATE

ENGINEER: LCE	CHECKED BY: LCE
DRAFTER: LCE	DATE: 09/08/2022

PROJECT NUMBER:  
21025

DRAWING TITLE:  
TITLE SHEET

DRAWING SCALE:  
AS INDICATED

DRAWING NUMBER:

T-1



### PIPING SYMBOLS

(NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)

ABBR.	SYMBOL	DESCRIPTION
AAV		AUTOMATIC AIR VENT
BC		BALANCING COCK
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
		FLEXIBLE PIPE CONNECTOR
		FLOW MEASURING STATION (SEE SPECIFICATIONS)
		FLOW SWITCH
		GATE VALVE
		GLOBE VALVE
HEV		HOSE END VALVE
MAV		MANUAL AIR VENT
		PRESSURE GAUGE WITH SHUT OFF COCK
		PRESSURE REDUCING VALVE
PRV		PRESSURE REGULATING VALVE
		PRESSURE RELIEF VALVE
P/T		PRESSURE/TEMPERATURE TEST POINT
		STEAM TRAP
		-INVERTED BUCKET TRAP (IBT)
		-THERMOSTATIC TRAP (TT)
		-FLOAT & THERMOSTATIC (FTT)
		STRAINER
		STRAINER WITH BLOW OFF
		THERMOMETER AND THERMOWELL
		UNION
		VENTURI FLOW METER (SEE SPECIFICATIONS)
		TURBINE FLOW METER (SEE SPECIFICATIONS)
		INLINE PUMP

### ABBREVIATIONS

(NOT ALL ABBREVIATIONS SHOWN ARE USED ON THESE DRAWINGS)

ABBR.	DESCRIPTION
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BDD	BACKDRAFT DAMPER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
CI	CAST IRON
CUH	CABINET UNIT HEATER
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ELEV	ELEVATION
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
FCO	FLOOR CLEANOUT
GCO	GRADE CLEANOUT
IE	INVERT ELEVATION

### DRAWING SYMBOLS

(NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)

	DETAIL NUMBER SHEET NUMBER WHERE DETAIL IS SHOWN		GRILLE, REGISTER, OR DIFFUSER TAG
	SECTION NUMBER SHEET NUMBER WHERE SECTION IS SHOWN		FINTUBE TAG
	POINT OF CONNECTION TO EXISTING SYSTEM		
	PIPING AND EQUIPMENT TO BE REMOVED		
	PLUMBING RISER DIAGRAM RISER NUMBER		

### SHEETMETAL SYMBOLS

(NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)

ABBR.	SYMBOL	DESCRIPTION
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		TEE
		90° ELBOW
		PIPING CAP OR PLUG
		PIPING FLANGE
		DIRECTION OF FLOW
		DIRECTION OF PIPE PITCH
		PIPE EXPANSION ANCHOR
		PIPE EXPANSION GUIDE
		CONDENSER WATER SUPPLY
		CONDENSER WATER RETURN
		HEATING WATER SUPPLY
		HEATING WATER RETURN
		REFRIGERANT LIQUID
		REFRIGERANT SUCTION
		LOW PRESSURE STEAM (15 PSI)
		LOW PRESSURE CONDENSATE RETURN
		PUMPED CONDENSATE
		CONDENSATE OR EQUIPMENT DRAIN
		OUTSIDE AIR INTAKE DUCT
		POSITIVE PRESSURE DUCT
		NEGATIVE PRESSURE DUCT
MAV		MANUAL VOLUME DAMPER IN DUCT
		FLEXIBLE CONNECTION IN DUCT
		FLEXIBLE DUCT WITH SPIN-IN FITTING AND VOLUME DAMPER (SEE SPECIFICATIONS)
		FIRE DAMPER WITH ACCESS PANEL
		FIRE/SMOKE DAMPER WITH ACCESS PANEL
		LINED DUCT (SEE SPECIFICATIONS)
		ELBOW WITH TURNING VANES
AP		ACCESS PANEL WITH SIZE
		PARALLEL BLADE DAMPER
		OPPOSED BLADE DAMPER
		SUPPLY DIFFUSER
		RETURN/EXHAUST GRILLE

### CONTROL SYMBOLS

(NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)

ABBR.	SYMBOL	DESCRIPTION
		DIGITAL INPUT
		ANALOG INPUT
		DIGITAL OUTPUT
		ANALOG OUTPUT (DDC)
		SINGLE PHASE
		THREE PHASE
		CONTROL WIRING
		POWER WIRING
		GAUGE COCK
		<u>AUTOMATIC CONTROL VALVES:</u>
		-2-WAY ELECTRIC
		-3-WAY ELECTRIC
		DUCT TEMPERATURE SENSOR WITH DUCT AVERAGING SENSOR
		DUCT TEMPERATURE SENSOR WITH IMERSION SENSOR
		ROOM TEMPERATURE SENSOR
		MAGNETIC STARTER
		CONTROL RELAY
		VARIABLE FREQUENCY DRIVE
		AIR FLOW MONITORING STATION
		CURRENT SENSOR
		MOTOR
		LIQUID TEMPERATURE SENSOR WITH WELL
		ELECTRIC MOTORIZED CONTROL DAMPER
		PNEUMATIC MOTORIZED CONTROL DAMPER

### GENERAL NOTES

- ALL WORK SHALL BE PERFORMED AND ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE STATE OF COLORADO BUILDING CODE INCLUDING, 2018 INTERNATIONAL BUILDING CODE, 2018 INTERNATIONAL MECHANICAL CODE, 2018 INTERNATIONAL PLUMBING CODE, 2018 INTERNATIONAL FUEL GAS CODE AND 2018 INTERNATIONAL ENERGY CONSERVATION CODE.
- ALL SHEET METAL SHALL BE 26 GAUGE (MINIMUM) AND SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARD (CURRENT VERSION) AND ASHRAE STANDARDS.
- PROVIDE A TEST AND BALANCE CONTRACTOR TO BALANCE AIR AND WATER FLOWRATES TO FLOWRATES INDICATED USING NEBB PRESCRIBED TECHNIQUES AND PROCEDURES AND PROVIDE COPY OF REPORT TO OWNER, ENGINEER AND INSPECTOR AT TIME OF FINAL INSPECTION. PROVIDE BALANCING FOR ALL SUPPLY, RETURN AND EXHAUST GRILLES, OUTSIDE AIR, ALL HYDRONIC COILS, ALL HYDRONIC PUMPS AND ALL SUPPLY, RETURN AND EXHAUST FANS. TESTING SHALL BE COMPLETED AFTER SYSTEM IS CLEAN AND NEW FILTERS ARE INSTALLED.
- COORDINATE THE INSTALLATION OF ALL MECHANICAL EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.
- DUCT SIZES INDICATED ARE CLEAR INSIDE DIMENSIONS. OUTSIDE DUCT DIMENSIONS SHALL BE INCREASED TO ACCOUNT FOR ACOUSTICAL LINER AS REQUIRED.
- PROVIDE BALANCING DAMPER FOR ALL SUPPLY AND RETURN GRILLES.
- PROVIDE ALL NECESSARY EQUIPMENT, CONTROLS, VALVES AND APPURTENANCES AS REQUIRED FOR A COMPLETE OPERATING SYSTEM.
- SEAL ALL EXTERIOR WALL AND ROOF PENETRATIONS WEATHER AND WATERTIGHT.
- ALL DUCT INSULATION SHALL BE FIBERGLASS BLANKET, TYPE II WITH HEAVY DUTY FSK VAPOR BARRIER FACING, 1 1/2" AND 3/4" PER CF WITH A MAXIMUM K VALUE OF 0.28 AT 75° F.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW, FREE OF DEFECTS, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S CURRENT PUBLISHED RECOMMENDATIONS IN A NEAT MANNER AND IN ACCORDANCE WITH STANDARD PRACTICE OF THE INDUSTRY.
- PROVIDE LOCKING ACCESS PANEL FOR ALL MECHANICAL EQUIPMENT (VALVES, DAMPERS, CONTROL EQUIPMENT, ETC.) INSTALLED WITHIN WALL CAVITIES. ACCESS PANEL SHALL BE MINIMUM OF 12X12 AND SIZED TO ALLOW MINIMUM 6" CLEARANCE AROUND MECHANICAL EQUIPMENT.
- CERTAIN MATERIALS AND/OR EQUIPMENT IN THIS SPECIFICATION ARE SPECIFIED BY MANUFACTURER AND CATALOG NUMBERS. THE DESIGN WAS BASED ON THE SPECIFIED EQUIPMENT AND ESTABLISHES A DEGREE OF QUALITY, PERFORMANCE, PHYSICAL CONFIGURATION, ETC. IF THE CONTRACTOR SHOULD ELECT TO USE EQUIPMENT OTHER THAN THE EQUIPMENT USED AS A BASIS FOR DESIGN, HE SHALL BE RESPONSIBLE FOR SPACE REQUIREMENTS, CONFIGURATION, PERFORMANCE AND CHANGES IN, BASES, SUPPORTS, VIBRATION ISOLATORS, STRUCTURAL MEMBERS, OPENINGS IN STRUCTURE AND OTHER APPARATUS THAT MAY BE AFFECTED BY ITS USE.
- THE APPEARANCE OF THE FINISHED WORK SHALL BE OF EQUAL IMPORTANCE WITH ITS MECHANICAL EFFICIENCY. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE COMMERCIAL PRACTICES. FURNISH THE SERVICES OF AN EXPERIENCED SUPERINTENDENT WHO SHALL BE CONSTANTLY IN CHARGE OF THE INSTALLATION OF THE WORK TOGETHER WITH ALL SKILLED WORKMEN, PLUMBERS, FITTERS, METAL WORKERS, WELDERS, HELPERS, AND LABOR REQUIRED TO UNLOAD, TRANSFER, ERECT, CONNECT-UP, ADJUST, START, OPERATE, AND TEST EACH SYSTEM.
- MECHANICAL EQUIPMENT PROVIDED UNDER THIS CONTRACT SHALL OPERATE UNDER ALL LOAD CONDITIONS WITHOUT SOUND OR VIBRATION WHICH IS OBJECTIONABLE IN THE OPINION OF THE OWNER'S REPRESENTATIVE. IN CASE OF MOVING MACHINERY, SOUND OR VIBRATION NOTICEABLE OUTSIDE OF ROOM IN WHICH IT IS INSTALLED, OR ANNOYINGLY NOTICEABLE INSIDE ITS OWN ROOM, WILL BE CONSIDERED OBJECTIONABLE. SOUND OR VIBRATION CONDITIONS CONSIDERED OBJECTIONABLE BY THE OWNERS SHALL BE CORRECTED IN AN APPROVED MANNER BY THE CONTRACTOR AT HIS EXPENSE. VIBRATION CONTROL SHALL BE BY MEANS OF APPROVED VIBRATION ELIMINATORS IN A MANNER AS RECOMMENDED BY THE MANUFACTURER OF THE ELIMINATORS
- THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, VALVE, FITTING, ETC.
- ALL DUCTWORK SHALL BE SEALED TO SEAL CLASS A, ALL LONGITUDINAL AND TRANSVERSE SEAMS SEALED TO 10" w.e.
- COORDINATE THE COLOR OF ALL VISIBLE MECHANICAL EQUIPMENT WITH THE ARCHITECT AND OWNER BEFORE ORDERING ANY EQUIPMENT.
- THE OWNER WILL PROVIDE TWO (2) REVIEWS OF THE PRODUCT SUBMITTALS. IF AFTER TWO (2) REVIEWS THE SUBMITTALS ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPENSATING THE OWNER FOR ADDITIONAL SUBMITTAL REVIEWS. COMPENSATION SHALL CONSIST OF SHIPPING AND DELIVERY COSTS, HOURLY WAGES AND OTHER COSTS INCURRED DURING THE ADDITIONAL SERVICES SUBMITTAL REVIEW.
- ALL EXISTING EQUIPMENT AND COMPONENTS ARE BASED UPON REFERENCE DRAWINGS AND FIELD OBSERVATIONS. THE CONTRACTOR SHALL FIELD VERIFY ALL EQUIPMENT, PIPING, COMPONENTS AND INVERTS PRIOR TO ANY CONSTRUCTION ACTIVITIES.
- ALL NEW CONTROLS SHALL BE CONNECTED TO THE EXISTING CONTROL SYSTEMS USING EQUIPMENT COMPATIBLE WITH THE EXISTING SYSTEM AND APPROVED BY THE OWNER.
- ALL DRAWINGS RELATING TO THIS PROJECT, TOGETHER WITH THESE SPECIFICATIONS, SHALL BE CONSIDERED IN BIDDING AND CONSTRUCTION. THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, AND WHAT IS CALLED FOR IN EITHER OF THESE SHALL BE AS BINDING AS THOUGH CALLED FOR BY BOTH. SHOULD ANY CONFLICT OR OMISSIONS ARISE BETWEEN THE DRAWINGS AND SPECIFICATIONS, SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE FOR RESOLUTION.
- THE PROJECT SCOPE OF WORK CONSISTS OF DEMO AND INSTALLATION OF SYSTEMS AND EQUIPMENT ABOVE THE EXISTING CEILING SYSTEM. THE CONTRACTOR SHALL RELOCATE HANGERS, SUPPORTS, CABLES, CONDUIT AND OTHER COMPONENTS THAT CONFLICT WITH THE INSTALLATION OF NEW SYSTEMS AND EQUIPMENT. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING ABOVE CEILING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REINSTALLING CEILING TILES, LIGHTS AND NECESSARY CEILING GRID FOR ACCESS TO WORK AREAS. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY BROKEN OR DAMAGED CEILING TILES, GRID OR LIGHTS AS A RESULT OF ANY CONSTRUCTION ACTIVITIES.



**UNIVERSITY OF COLORADO COLORADO SPRINGS**  
 REPLACE AHU AND RA SYSTEM COLUMBINE HALL  
 COLORADO SPRINGS, COLORADO

REV	DATE

ENGINEER: LCE	CHECKED BY: LCE
DRAFTER: LCE	DATE: 09/08/2022
PROJECT NUMBER: 21025	
DRAWING TITLE: MECHANICAL LEGEND AND GENERAL NOTES	
DRAWING SCALE: AS INDICATED	
DRAWING NUMBER: <b>M-1</b>	









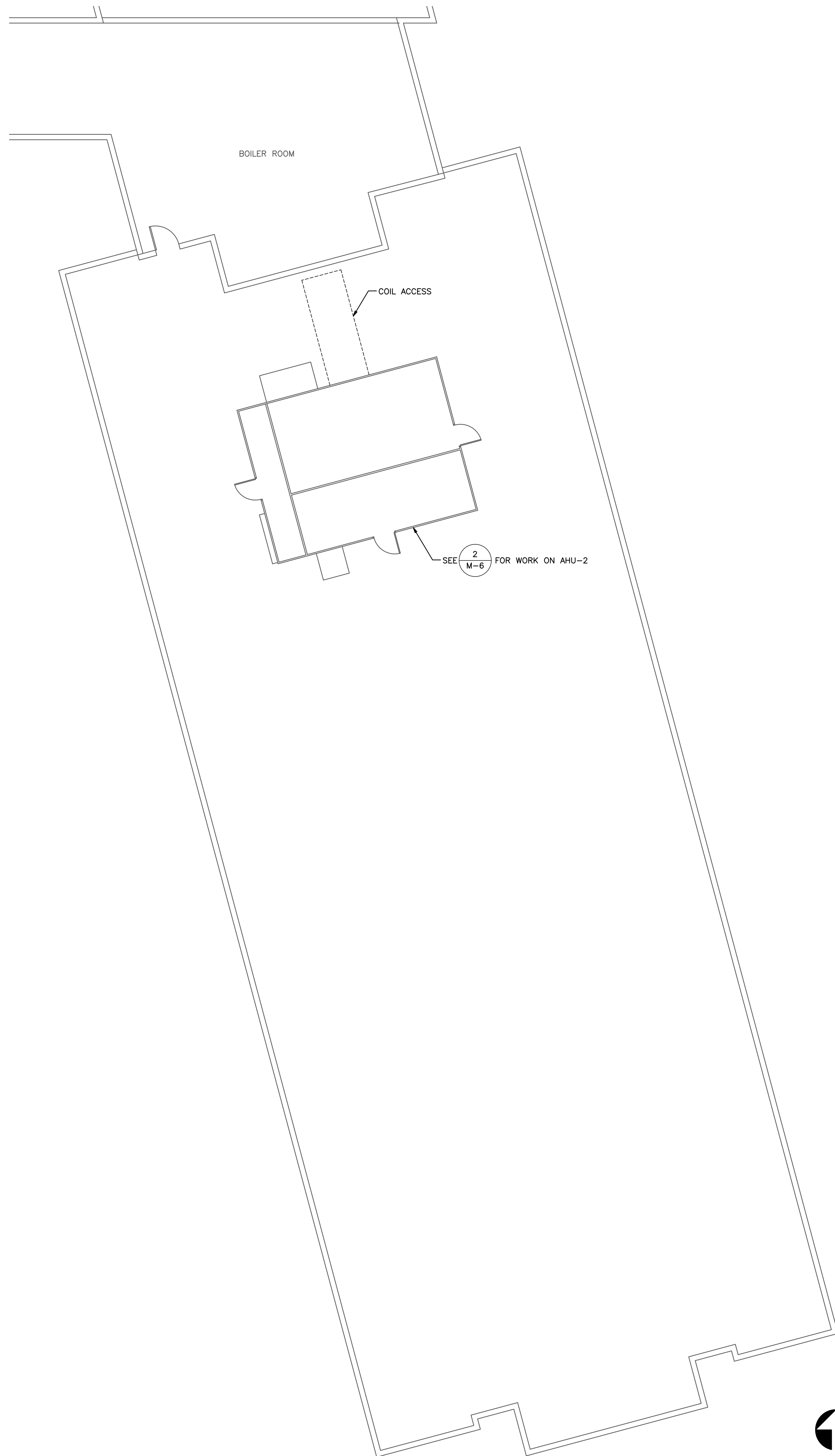






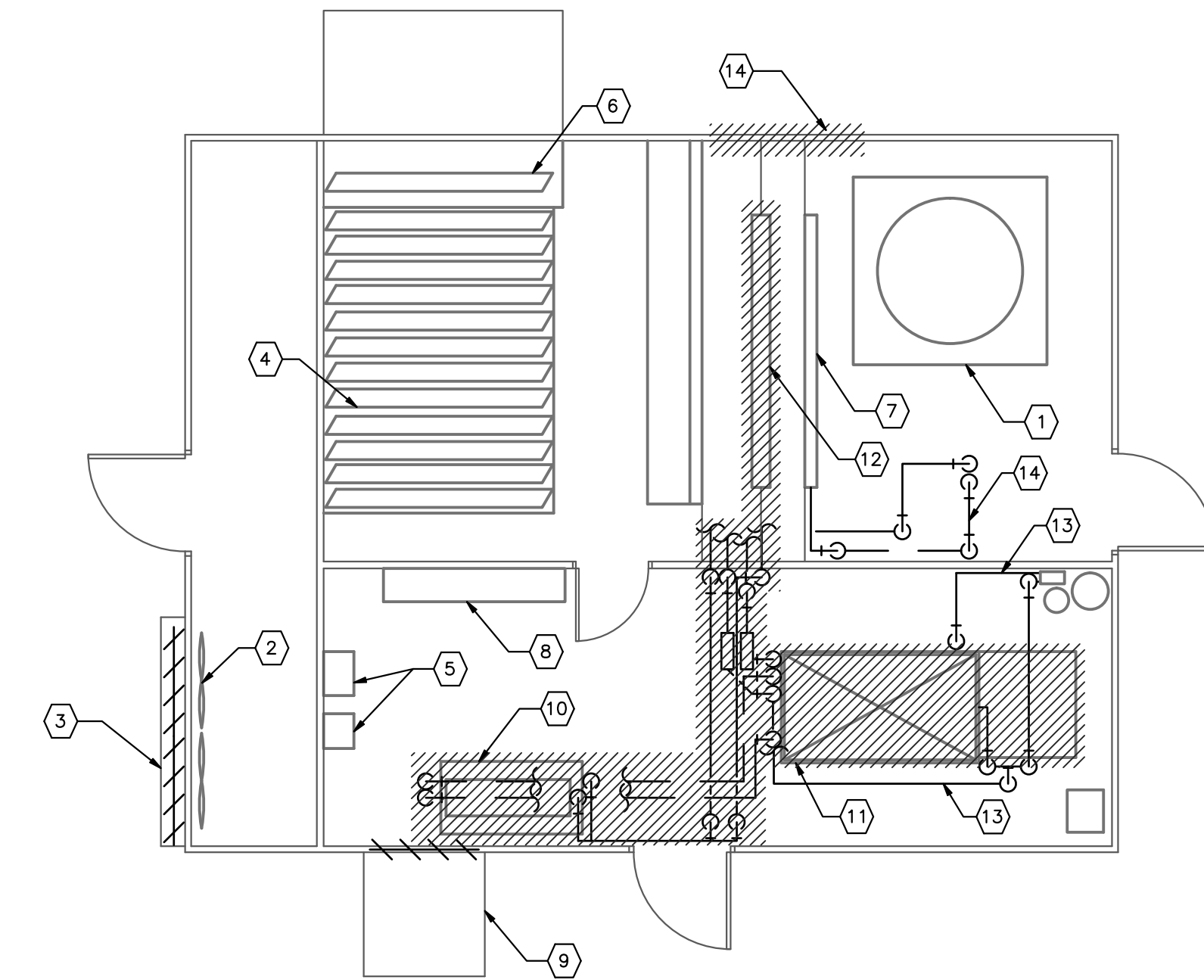






**SHEETNOTES**

- ① (E) SUPPLY FAN, NO WORK ON THIS EQUIPMENT.
- ② (E) RELIEF FANS (3), NO WORK ON THIS EQUIPMENT.
- ③ (E) 36X36 RELIEF AIR DAMPERS VERTICALLY STACKED, NO WORK ON THIS EQUIPMENT.
- ④ (E) RETURN DAMPERS, NO WORK ON THIS EQUIPMENT.
- ⑤ (E) SUPPLY AND RETURN FAN VFDS, NO WORK ON THIS EQUIPMENT. SEE ELECTRICAL PLANS FOR RELOCATION OF VFDS.
- ⑥ (E) OUTSIDE AIR DAMPER, NO WORK ON THIS EQUIPMENT.
- ⑦ (E) HEATING COIL, NO DEMO WORK ON THIS EQUIPMENT. CLEAN COIL AND COMB FINS WHEN COOLING COILS ARE REMOVED.
- ⑧ (E) ELECTRICAL PANEL AND DISCONNECTS, SEE ELECTRICAL PLANS FOR WORK ON THIS EQUIPMENT.
- ⑨ (E) EVAPORATIVE CONDENSING UNIT OUTSIDE AIR INTAKE SYSTEM, NO WORK ON THIS EQUIPMENT.
- ⑩ DEMO (E) R-22 COMPRESSORS (2 TOTAL), INCLUDING PIPING FROM EACH COMPRESSOR TO COOLING COIL AND EVAPORATIVE CONDENSING UNIT, INCLUDING PIPING, FITTINGS, VALVES, HANGERS, SUPPORTS AND ALL ASSOCIATED APPURTENANCES. RETAIN ALL COMPRESSOR RELAYS FOR INSTALLATION OF NEW COMPRESSORS. DEMO ALL (E) REFRIGERANT PRESSURE SENSORS AND SWITCHES.
- ⑪ DEMO (E) EVAPORATIVE CONDENSING UNIT, INCLUDING UNIT, FAN, DUCTWORK AND ALL ASSOCIATED APPURTENANCES. DISCONNECT (E) DCW PIPING AND CHEMICAL ADDITION PIPING FOR CONNECTION TO NEW EVAPORATIVE CONDENSING UNIT.
- ⑫ DEMO (E) R-22 COOLING COIL AND RECOVER R-22 REFRIGERANT, INCLUDING COILS, SUPPORTS, FITTINGS AND ALL ASSOCIATED APPURTENANCES. RETURN RECOVERED REFRIGERANT TO OWNER IN OWNER PROVIDED CONTAINERS.
- ⑬ (E) DCW MAKE UP PIPING AND CHEMICAL ADDITION PIPING, NO WORK ON THIS EQUIPMENT.
- ⑭ (E) HEATING WATER PIPING, NO WORK ON THIS EQUIPMENT.
- ⑮ DEMO SECTION OF AHU-2 EXTERIOR WALL FOR REMOVAL OF DX COIL. FIELD VERIFY (E) WALL AND SURROUNDING ROOFTOP EQUIPMENT FOR BEST LOCATION. COORDINATE LOCATION OF DEMO WORK PRIOR TO ANY DEMO WORK.



North 2 AHU-2 FLOOR PLAN-DEMO  
M-6 1/4" = 1'-0"

North 1 OFFICE WING ROOF LEVEL-DEMO  
M-6 1/8" = 1'-0"



**UNIVERSITY OF COLORADO COLORADO SPRINGS**  
REPLACE AHU AND RA SYSTEM COLUMBINE HALL  
COLORADO SPRINGS, COLORADO

REV	DATE

ENGINEER: LCE	CHECKED BY: LCE
DRAFTER: LCE	DATE: 09/08/2022

PROJECT NUMBER:  
21025

DRAWING TITLE:  
OFFICE WING  
ROOF LEVEL-DEMO

DRAWING SCALE:  
AS INDICATED

DRAWING NUMBER:  
**M-6**





UNIVERSITY OF COLORADO COLORADO SPRINGS  
REPLACE AHU AND RA SYSTEM COLUMBINE HALL  
COLORADO SPRINGS, COLORADO

REV	DATE
ENGINEER:	CHECKED BY:
LCE	LCE
DRAFTER:	DATE:
LCE	09/08/2022
PROJECT NUMBER: 21025	
DRAWING TITLE: OFFICE WING MAIN LEVEL-NEW AND SCHEDULES	
DRAWING SCALE: AS INDICATED	
DRAWING NUMBER: <b>M-7</b>	

SHEETNOTES

- 1 (E) CEILING PLENUM RA ZONE, SEE ID TAG FOR ZONE NUMBER, SA VOLUME AND RA VOLUME. ZONES INDICATED WITH A RA OF 0 ARE BLOCKED RA ZONES.
- 2 (E) TRANSFER AIR DUCT BETWEEN CEILING PLENUM RA ZONES. FIELD VERIFY EXACT LOCATION AND SIZE.
- 3 (E) SA DUCTWORK, FIELD VERIFY EXACT LOCATION AND SIZE. NOT ALL SA DUCTWORK SHOWN. FIELD VERIFY SA DUCTWORK IN ALL WORK ZONES.
- 4 (E) CORRIDOR RA GRILLE WITH RA DUCT AND FIRE SMOKE DAMPER.
- 5 (E) RA SHAFT TO PENTHOUSE AIR HANDLING UNIT.
- 6 (E) SA SHAFT TO PENTHOUSE AIR HANDLING UNIT.
- 7 RA PATH FLOW ARROW. ARROWS POINT IN THE DIRECTION OF INTENDED AIRFLOW.
- 8 (E) 8# SA DUCT PROVIDING 225 CFM TO ELECTRIC ROOM, NO WORK ON THIS EQUIPMENT.
- 9 PROVIDE NEW 10X10 EA DUCT IN (E) 10X10 WALL OPENING. REINSTALL (E) 10X10 EA GRILLE AND BALANCE TO 150 CFM. PROVIDE 6" LONG TRANSITION BETWEEN 10X10 AND NEW 18X18 EA DUCT. EXTEND 18X18 EA DUCT TO (E) 18X18 EA DUCT AND CONNECT. PROVIDE NEW 18X18 TYPE A EXHAUST GRILLE IN NEW 18X18 EA DUCT AND BALANCE TO 650 CFM.
- 10 NO RA FROM BREAK/COPY ROOM. ALL AIR IS EXHAUSTED FROM BUILDING.
- 11 (E) 18X18 TRANSFER AIR DUCT WITH GRILLES, NO WORK ON THIS EQUIPMENT.
- 12 (E) DUCT SMOKE DETECTOR, NO WORK ON THIS EQUIPMENT.
- 13 PROVIDE NEW EA DUCT FROM (E) TRANSFER DUCT TO NEW EF AND FROM NEW EF TO (E) TRANSFER DUCT. FIELD VERIFY (E) TRANSFER DUCT SIZES AND LOCATIONS.
- 14 (E) CABLE TRAY SYSTEM ROUTED ABOVE CEILING, FIELD VERIFY LOCATION AND ROUTING PRIOR TO ANY DEMO WORK. COORDINATE ANY ABOVE CEILING DEMO WORK WITH (E) CABLE TRAY SYSTEM. OWNER WILL RELOCATE ALL (E) CABLES WITHIN TRAY SYSTEM. COORDINATE DEMO WORK LOCATION WITH OWNER PRIOR TO ANY DEMO WORK ABOVE OR AROUND NEW WORK INSTALLED AT DEMO LOCATION.
- 15 PROVIDE NEW TRANSFER DUCT. MODIFY WALL FRAMING AS REQUIRED TO FIT DUCT. PATCH WALL FINISH AND PAINT TO MATCH SURROUNDING WALL. PROVIDE SEALANT BETWEEN TRANSFER DUCT AND WALL TO MAINTAIN ACOUSTICAL AND 1 HOUR CORRIDOR ISOLATION IN ACCORDANCE WITH IBC 714.4. ROUTE DUCT WITHIN STRUCTURAL TEE SPACE. RELOCATE CEILING GRID AND CABLE TRAY SUPPORTS AND HANGERS AS REQUIRED. ROUTE DUCT WITHIN JOIST TEE SPACE. FIELD VERIFY BEST LOCATION.
- 16 (E) DUCT FIRE SMOKE DAMPER, NO WORK ON THIS EQUIPMENT.
- 17 PROVIDE NEW EXHAUST FAN, SEE DIAGRAM 2 ON M-8 FOR DETAILS.
- 18 PROVIDE NEW PRESSURE SENSOR AND TRANSMITTER AND NEW TEMPERATURE SENSOR. TEST (E) PRESSURE SENSOR PNEUMATIC TUBING AND REPLACE AS NECESSARY.
- 19 ADD ALTERNATE #2 BOUNDARY.

MISC. EQUIPMENT SCHEDULE

TAG	DESCRIPTION
ECU-2	EVAPORATIVE CONDENSING UNIT, RECOLD MODEL JC-58, 1 CELL 26 CIRCUITS PER CELL, COPPER COIL, 8,300 CFM FAN, 5 HP FAN, 0.5 HP PUMP, 460/3# 40F SUCTION TEMP, 116.4F CONDENSING TEMP, R438A REFRIGERANT, SUPPLY FAN VFD, GALVANIZED STEEL CONSTRUCTION WITH STAINLESS STEEL COLD WATER BASIN, DISCHARGE DAMPER, DRIFT ELIMINATORS, ELECTRIC IMMERSION HEATERS WITH LOW WATER CUT OUT AND THERMOSTAT
COMP-5 COMP-6	HITACHI FIXED SPEED SCREW COMPRESSOR, MODEL 4002SCH, 460V/3#/60 HZ, 39KW, R438A, 533.5 MBH TOTAL COOLING

GRILLE/REGISTER/DIFFUSER SCHEDULE

TAG	STYLE	SERVICE	FACE SIZE	PATTERN	MAXIMUM CFM	MAXIMUM NO	MATERIAL	OSD	MANUFACTURER AND MODEL	NOTES
A	SIDEWALL	RETURN	SEE NOTES	LOUVERED	1000	35	STEEL	YES	TITUS 350RL	1,2,3

NOTES: 1. ALL AIR PERFORMANCE IS BASED UPON THE PROJECT ELEVATION.  
2. FACE SIZE 2. LARGER THAN NECK SIZE.  
3. SEE PLANS FOR NECK SIZE.  
4.  
5.

AIR HANDLER SCHEDULE

TAG	TYPE	SERVICE	O/A VOLUME		HEATING COIL	COOLING COIL	SUPPLY FAN						RETURN FAN						OPERATING WEIGHT	MANUFACTURER AND MODEL	NOTES		
			MIN.	MAX.			CFM	ESP	RPM	TYPE	HP	QTY	VOLTS/PH	CFM	ESP	RPM	TYPE	HP				QTY	VOLTS/PH
(E)AHU-2	PENTHOUSE	OFFICE WING	7,650	50,000	HC-2	CC-2	50,000	3.0" w.c.	1780	VA	50.0	1	460/3#	50,000	0.5" w.c.	---	PROP	5.0	3	460/3#	---	BUILT UP PENTHOUSE	1

NOTES: 1. PERFORMANCE IS BASED UPON THE ORIGINAL CONSTRUCTION DOCUMENTS  
2.  
3.  
4.  
5.

HYDRONIC HEATING COIL SCHEDULE

TAG	CAPACITY Btu/h	FIN SIZE Ht x Width	MAX. FACE VELOCITY	AIR SIDE CRITERIA				FLUID SIDE CRITERIA						MANUFACTURER AND MODEL	NOTES
				CFM	EAT	LAT	APD	GPM	EWT	LWT	WPD	ROWS	FPI		
(E)HC-2	1,160,754	42"x90"	952 FPM	50,000	36.0° F	61.3° F	0.10" w.c.	123.0	170° F	190° F	8.2 Ft	1	6	RAE	1,2,4

NOTES: 1. PERFORMANCE IS BASED UPON THE ORIGINAL CONSTRUCTION DOCUMENTS  
2. HEATING FLUID WITH TOTAL CAPACITY LISTED  
3. COILS WITH TOTAL OUTPUT CAPACITY LISTED

COOLING COIL SCHEDULE

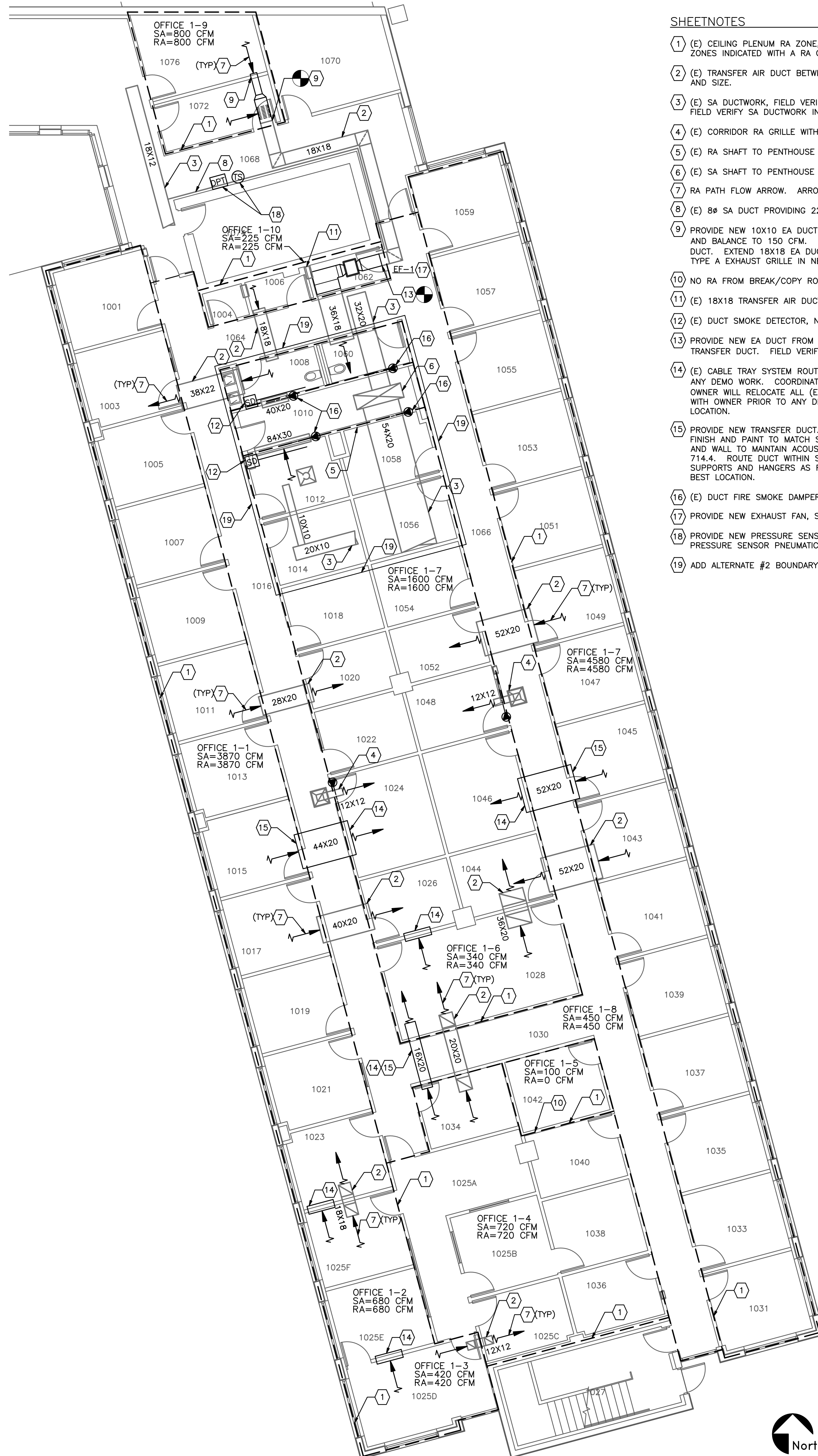
TAG	SEN. CAP. (Btu/h)	TOT. CAP. (Btu/h)	FINNED SIZE Ht x Width	MAX. FACE VELOCITY	AIR SIDE CRITERIA				FLUID SIDE CRITERIA						MANUFACTURER AND MODEL	NOTES		
					CFM	EAT(db)	EAT(wb)	LAT(db)	LAT(wb)	APD	GPM	EWT	LWT	WPD			ROWS	FPI
CC-2	666,828	705,118	54"x120"	560 FPM	25,000	83.2° F	57.1° F	53.0° F	45.8° F	0.56" w.c.	---	---	---	---	4	9	RAE 58D54X120-9-4-WZR	1,2,3,4

NOTES: 1. ALL AIR PERFORMANCE IS BASED UPON THE PROJECT ELEVATION OF 6150 FEET  
2. REFRIGERANT R438A  
3. STAGE INTERTWINED COIL  
4. COILS PER AHU, LISTED CAPACITY IS PER COIL

FAN SCHEDULE

TAG	TYPE	SERVICE	CFM	ESP In. w.c.	RPM	EFF. %	FAN DIA. Inches	FLA	MOTOR WATTS	ELECTRICAL VOLTS/PH	MANUFACTURER AND MODEL	NOTES
EF-1	INLINE	MAIN LEVEL ELEC. RM	800	0.15	939	---	---	4.75	91	120/1#	GREENHECK CSP-A1050-VG	1,2,3,4
EF-2	INLINE	SECOND LEVEL LOBBY	910	0.15	1017	---	---	4.75	124	120/1#	GREENHECK CSP-A1050-VG	1,2,3,4
EF-3	INLINE	THIRD LEVEL LOBBY	910	0.15	1017	---	---	4.75	124	120/1#	GREENHECK CSP-A1050-VG	1,2,3,4
EF-4	INLINE	FOURTH LEVEL LOBBY	925	0.15	1028	---	---	4.75	129	120/1#	GREENHECK CSP-A1050-VG	1,2,3,4

NOTES: 1. ALL AIR PERFORMANCE IS BASED UPON THE PROJECT ELEVATION.  
2. MOTOR WITH MOUNTED POTENTIOMETER DIAL  
3. ISOLATION HANGERS KIT  
4. SPRING LOADED BACKDRAFT DAMPER.  
5.  
6.



North 1 OFFICE WING FIRST LEVEL-NEW  
M-7 1/8" = 1'-0"





















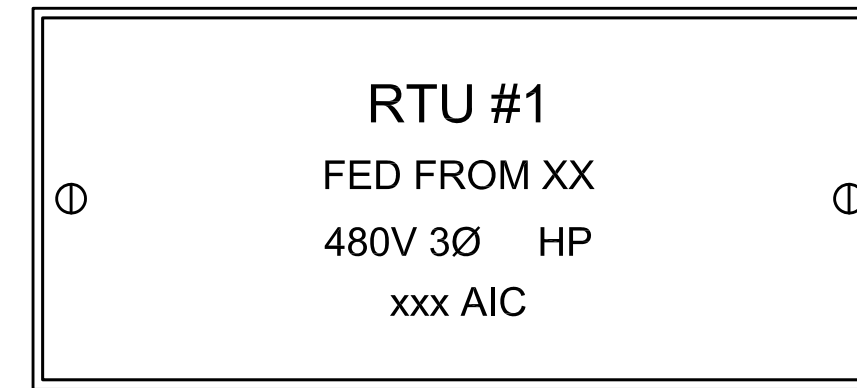


# ELECTRICAL LEGEND

LIGHTING		ONE LINE DIAGRAM	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	RECESSED FLUORESCENT LUMINAIRE, LAY-IN GRID CEILING, LOWERCASE SCRIPT INDICATES DIFFUSER/LENS INDICATES LUMINAIRE TYPE.		DISCONNECT SWITCH
	RECESSED FLUORESCENT LUMINAIRE, FLANGED		DISCONNECT SWITCH, FUSED
	SURFACE MOUNTED LUMINAIRE		CIRCUIT BREAKER: L=LONG TIME PICKUP, S=SHORT TIME PICKUP; I - INSTANTANEOUS TRIP, G=GROUND FAULT
	SURFACE OR PENDANT MOUNTED STRIP		FUSE
	SURFACE MOUNTED WALL LUMINAIRE		GROUND
	PENDANT MOUNTED LINEAR LUMINAIRE		STEP DOWN TRANSFORMER, ## INDICATES KVA
	RECESSED DIRECT/INDIRECT LUMINAIRE		CURRENT TRANSFORMER
	UNDERCABINET LIGHTING		POTENTIAL TRANSFORMER
	SURFACE MOUNTED CEILING LUMINAIRE		SERVICE ENTRANCE TRANSFORMER
	PENDANT MOUNTED LUMINAIRE		METER
	SURFACE MOUNTED WALL LUMINAIRE		EQUIPMENT ENCLOSURE
	RECESS MOUNTED WALL LUMINAIRE		KIRK KEY INTERLOCK, SUBSCRIPT INDICATES INTERLOCKED GROUP
	RECESS MOUNTED CEILING LUMINAIRE		ELECTRICAL INTERLOCK, SUBSCRIPT INDICATES INTERLOCKED GROUP
	RECESS MOUNTED CEILING LUMINAIRE-DIRECTIONAL		MECHANICAL INTERLOCK
	POLE MOUNTED LUMINAIRE		PANELBOARD "A"
	SPOT / FLOOD LIGHT		EM=ENERGY METER, PM=POWER METER, CM=CIRCUIT MONITOR
	BOLLARD		VOLTMETER
	TRACK LIGHTING		AMMETER
	EMERGENCY LIGHTING UNIT		ENGINE GENERATOR
	EXIT LIGHT, ARROWS AS INDICATED, FACES INDICATED BY SHADING		CONTACTOR/RELAY/CAPACITOR (AS NOTED)
	SINGLE POLE SWITCH (SUBSCRIPT DENOTES SWITCHING)		TRANSFER SWITCH - ATS=AUTOMATIC, MTS=MANUAL
	SWITCH: 2 = 2-POLE; 3 = 3-WAY; 4 = 4-WAY		GROUND FAULT INTERRUPTER
	K = KEY OPERATED SWITCH; M = HORSEPOWER RATED DIMMER SWITCH		TRANSIENT VOLTAGE SURGE SUPPRESSER
	LV = LOW VOLTAGE SWITCH; MC = MOMENTARY CONTACT		SHUNT TRIP
	THERMAL OVERLOAD SWITCH		DRAW-OUT DEVICE
	PHOTOCELL		PLUG-IN DEVICE
	TIME CLOCK		ELECTRICALLY OPERATED SERVICE WEATHERHEAD
	OCCUPANCY SENSOR WALL MOUNTED DUAL TECHNOLOGY; VS = VACANCY SENSOR		
	OCCUPANCY SENSOR CEILING MOUNT DUAL TECHNOLOGY; VS = VACANCY SENSOR		
	SHADING INDICATES CONNECTION TO EMERGENCY SYSTEM; LS INDICATE LIFE SAFETY CIRCUIT.		
POWER		ABBREVIATIONS	
SYMBOL	DESCRIPTION	A	AMPERES
	SINGLE RECEPTACLE	AFF	ABOVE FINISHED FLOOR
	DUPLEX RECEPTACLE	AFG	ABOVE FINISHED GRADE
	DUPLEX RECEPTACLE ABOVE COUNTER	ATS	AUTOMATIC TRANSFER SWITCH
	DOUBLE DUPLEX RECEPTACLE	BFG	BELOW FINISHED GRADE
	DOUBLE DUPLEX RECEPTACLE ABOVE COUNTER	C	CONDUIT
	DUPLEX RECEPTACLE, HALF SWITCHED	CATV	CABLE TELEVISION
	DUPLEX RECEPTACLE, CEILING MOUNTED	CB	CIRCUIT BREAKER
	DUPLEX RECEPTACLE, FLOOR MOUNTED	CCVT	CLOSED CIRCUIT TELEVISION
	DOUBLE DUPLEX RECEPTACLE, FLOOR MOUNTED	EM	EMERGENCY
	SPECIAL RECEPTACLE	EP	EXPLOSION PROOF
	SPECIAL RECEPTACLE, FLOOR MOUNTED	EPO	EMERGENCY POWER OFF
	JUNCTION BOX, WALL OR CEILING MOUNTED	EWC	ELECTRIC WATER COOLER
	ELECTRICAL PANELBOARD OR OTHER CABINET AS NOTED	FA	FIRE ALARM
	DISCONNECT SWITCH (NON-FUSED)	G	GROUND
	DISCONNECT SWITCH (FUSED)	GFI	GROUND FAULT INTERRUPTING
	COMBINATION STARTER/DISCONNECT	HOA	HAND OFF AUTOMATIC
	MOTOR STARTER	IG	ISOLATED GROUND
	PLUG MOLD (MULTI-OUTLET ASSEMBLY)	MCB	MAIN CIRCUIT BREAKER
	WIREMOLD (SURFACE RACEWAY)	MCC	MOTOR CONTROL CENTER
	CONNECTION TO PRE-WIRED EQUIPMENT	MDC	MAIN DISTRIBUTION CENTER
	CONDUIT CONCEALED	MH	MOUNTING HEIGHT
	CONDUIT EXPOSED	MLO	MAIN LUGS ONLY
	CONDUIT, UNDERGROUND OR CONCEALED IN FLOOR	MTS	MANUAL TRANSFER SWITCH
	CONDUIT TURNING UP	NC	NORMALLY CLOSED
	CONDUIT CAPPED	NIC	NOT IN CONTRACT
	GROUND BAR	NL	NIGHT LIGHT
	MAIN SWITCHBOARD/DISTRIBUTION CENTER	NO	NORMALLY OPEN
	TRANSFORMER	NTS	NOT TO SCALE
	CURRENT TRANSFORMER	OC	ON CENTER
	GENERATOR ANNUNCIATOR PANEL	OFCl	OWNER FURNISHED, CONTRACTOR INSTALLED
	MOTOR	OFoI	OWNER FURNISHED, OWNER INSTALLED
	SHADING INDICATES EMERGENCY SYSTEM TEXT INDICATES PANEL AND CIRCUIT DESIGNATION	PB	PULL BOX
		TP	TAMPER PROOF
		TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
		TYP	TYPICAL
		UF	UNDER FLOOR
		UG	UNDER GROUND
		UON	UNLESS OTHERWISE NOTED
		UPS	UNINTERRUPTABLE POWER SUPPLY
		V	VOLTS
		VFD	VARIABLE FREQUENCY DRIVE
		WP	WEATHER PROOF
		XFMR	TRANSFORMER

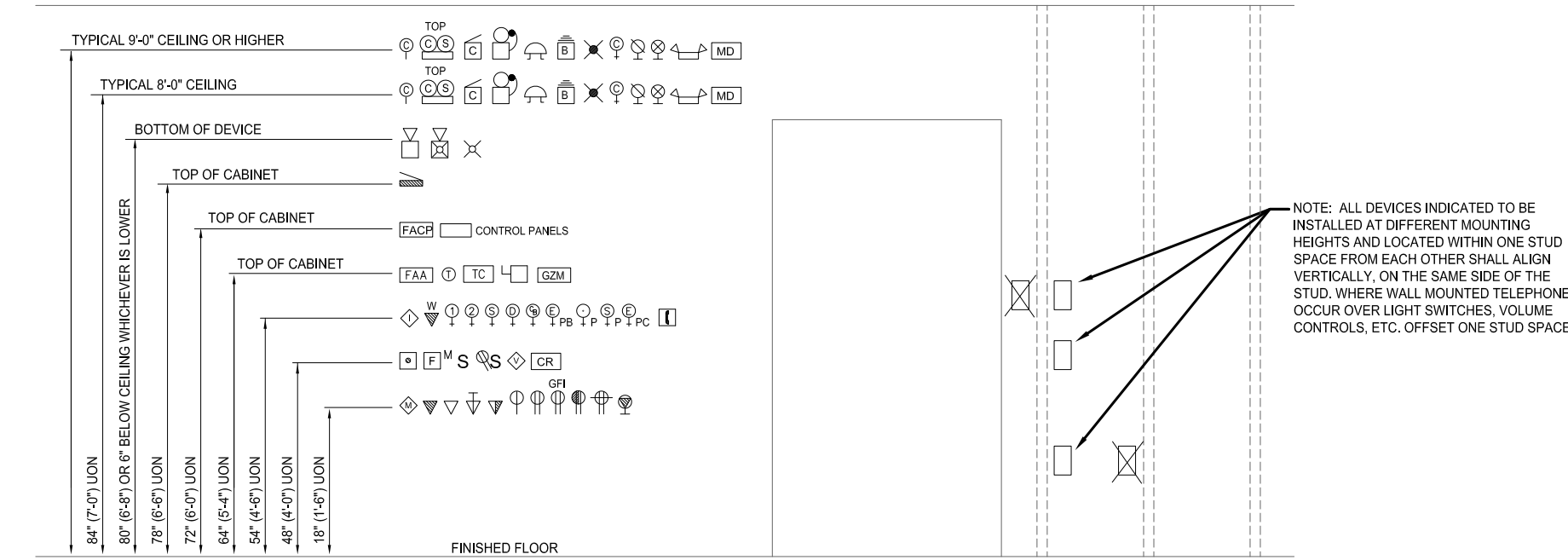
## GENERAL NOTES:

- WORK INCLUDED IN THE CONTRACT IS DENOTED IN BOLD. EXISTING CONDITIONS TO REMAIN ARE DENOTED LIGHTLY.
- ALL ELECTRICAL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM WITH THE 2020 NATIONAL ELECTRICAL CODE, 2018 INTERNATIONAL BUILDING CODES, AND LOCAL BUILDING AND FIRE DEPARTMENT REQUIREMENTS.
- ELECTRICAL CONTRACTOR SHALL FULLY COORDINATE WITH OWNER REPRESENTATIVES. PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS OF OWNER REPRESENTATIVES. ELECTRICAL CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER OF ANY CHANGES REQUIRED BY THE BUILDING MANAGEMENT AND TENANT REPRESENTATIVES.
- THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SHALL BE SUBJECT TO MINOR MODIFICATIONS AS DIRECTED BY THE GENERAL CONTRACTOR AND OWNER REPRESENTATIVES. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT FITTING OF ALL MATERIALS, EQUIPMENT, ETC. IN THE BUILDING AND TENANT SPACE. ALL DIMENSIONS SHALL BE VERIFIED ON THE JOB. ELECTRICAL CONTRACTOR SHALL CUT, CHANNEL, CHASE, AND/OR DRILL FLOORS, WALLS, PARTITIONS, CEILINGS, OR OTHER SURFACES AS REQUIRED FOR INSTALLATION, UPPOINT, ANCHORAGE, ETC. OF WORK. PROVIDE X-RAY OF FLOOR PRIOR TO CORE DRILLS. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUBSEQUENT PATCHING WORK.
- A DETAILED WRITTEN METHOD OF PROCEDURE IS REQUIRED WHEN A CONSTRUCTION ACTIVITY OR AN OUTAGE AFFECTS THE SAFETY OF OCCUPANTS, TELEPHONE/FIRE ALARM EQUIPMENT OR COMPONENTS OF ANY SYSTEM WHICH SUPPORTS THIS EQUIPMENT OR ESSENTIALLY AFFECTS THE BUILDING MANAGEMENT, OPERATIONS OR SECURITY. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- PRIOR TO SUBMITTING BIDS, THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING ELECTRICAL EQUIPMENT CONDITIONS AND DIFFICULTIES THAT WILL AFFECT EXECUTION OF THE WORK. FIELD VERIFY QUANTITIES OF EXISTING LIGHT FIXTURES, ELECTRICAL DEVICES, COMMUNICATION DEVICES, FIRE ALARM DEVICES, AND ELECTRICAL EQUIPMENT. NOTIFY THE ARCHITECT AND ENGINEER OF ANY EXISTING CONDITIONS WHICH MODIFY THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS. SUBMISSION OF A BID PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR MOBILIZATION, LABOR, EQUIPMENT, AND/OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED.
- PROTECT STRUCTURE AND OWNER EQUIPMENT FROM DAMAGE. IMMEDIATELY REPLACE OR REPAIR TO ORIGINAL CONDITION. DAMAGE CAUSED BY THE CONTRACTOR WHETHER EQUIPMENT APPEARS TO BE CURRENTLY IN USE OR NOT, UNLESS WRITTEN AUTHORIZATION FROM THE OWNER INDICATED OTHERWISE. PREPARE LISTING OF ALL EXISTING DAMAGED ITEMS AND SUBMIT TO OWNER PRIOR TO BEGINNING WORK.
- EXISTING INFORMATION SHOWN ON THE DRAWINGS HAS BEEN TAKEN FROM OWNER FURNISHED DRAWINGS AND/OR LIMITED FIELD OBSERVATIONS. CMO CONSULTING ENGINEERS, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION OR THE ADEQUACY, SAFETY AND CONFORMANCE TO CURRENT PREVAILING CODES OF ANY WORK SHOWN AS EXISTING ON THESE DRAWINGS.
- FIELD LOCATE EXISTING UNDERGROUND PUBLIC AND OWNER UTILITIES OF ALL TRADES AND BUILDING GROUNDING/LIGHTNING PROTECTION SYSTEMS PRIOR TO ANY EXCAVATION. REPLACE OR REPAIR DAMAGED UTILITIES AND GROUNDING/LIGHTNING PROTECTION SYSTEMS TO ORIGINAL CONDITION.
- INSTALL CONDUIT CONCEALED IN FINISHED AREAS UNLESS OTHERWISE NOTED.
- DO NOT ROUTE CONDUIT WITHIN STRUCTURAL OR TOPPING SLABS OF FLOORS UNLESS SPECIFICALLY NOTED OTHERWISE AND WRITTEN APPROVAL IS OBTAINED FROM THE STRUCTURAL ENGINEER.
- FIRE SEAL ALL FIRE RATED WALL AND FLOOR PENETRATIONS. VERIFY RATED WALL LOCATIONS ON ARCHITECTURAL DRAWINGS.
- PROVIDE SEPARATE INSULATED GROUNDING CONDUCTOR IN ALL FEEDER, HOMERUN AND BRANCH CIRCUITS.
- REFER TO ARCHITECTURAL AND MECHANICAL EQUIPMENT DRAWINGS FOR EXACT LOCATIONS OF ELECTRICAL DEVICES AND LIGHT FIXTURES. DO NOT SCALE FROM THE ELECTRICAL PLANS. ADDITIONAL ELECTRICAL REQUIREMENTS ON ARCHITECTURAL PLANS, MECHANICAL EQUIPMENT PLANS, AND MECHANICAL PLANS SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BID.
- DEMOLITION OF ANY ELECTRICAL AND COMMUNICATIONS CONDUIT, WIRING, CABLING, OR DEVICE MEANS TO REMOVE IN ITS ENTIRETY. REMOVE UNUSED CONDUITS FROM CEILING SPACES IN AREAS OF WORK. RETURN UNUSED ELECTRICAL EQUIPMENT AND LIGHT FIXTURES TO BUILDING MANAGEMENT FOR STORAGE AND/OR REMOVAL FROM SITE AS DIRECTED BY OWNERS.
- WHERE REMODELING INTERFERES WITH EXISTING CIRCUITS AND EQUIPMENT WHICH ARE NOT TO BE REMOVED OR ARE OUTSIDE OF THE PROJECT AREA, SUCH CIRCUITS AND EQUIPMENT SHALL BE REWORKED AND RELOCATED AS REQUIRED TO COMPLETE THE PROJECT.
- MINIMUM WORKING CLEARANCES PER THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE SHALL BE PROVIDED AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT.
- ELECTRICAL CONTRACTOR SHALL MAINTAIN ON THE JOB AN UP TO DATE SET OF WORKING DRAWINGS, MARKED UP TO SHOW ELECTRICAL SYSTEMS AS INSTALLED. PROVIDE TENANT REPRESENTATIVES WITH ONE SET OF REPRODUCIBLES WITH "AS BUILT" PROJECT RECORD INFORMATION CLEARLY INDICATED. ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LOCAL FEES, PERMITS, AND SERVICES OF INSPECTION AUTHORITIES REQUIRED BY ELECTRICAL WORK FOR THIS ELECTRICAL CONSTRUCTION.
- PROVIDE TYPED, UPDATED, COMPLETE AND ACCURATE PANELBOARD CIRCUIT DIRECTORIES AT THE COMPLETION OF WORK. CLEAN EXPOSED PANELBOARD SURFACES AND CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AS REQUIRED AND PROVIDE FILLER PLATES FOR VACANT SPACES.
- PROVIDE UPDATED LABELING OF ALL NEW AND RELOCATED ELECTRICAL EQUIPMENT IN SCOPE OF WORK INCLUDING, BUT NOT LIMITED TO, ENGINE GENERATOR SYSTEMS, TRANSFER SWITCHES, TRANSFORMERS, SWITCHGEAR, SWITCHBOARDS, PANELBOARDS, MOTOR CONTROL CENTERS, AND DISCONNECTS TO INDICATE THE AMPERE RATING, VOLTAGE RATING, PHASE, CONDUCTOR COLOR CODING WITHIN THE EQUIPMENT AND APPLICABLE AIC RATING.
- ALL NEW AND MODIFIED ELECTRICAL EQUIPMENT, SUCH AS SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS, THAT ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. THE MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT PER NEC 2020, ARTICLE 110.16.



### UTILIZATION EQUIPMENT NAMEPLATE DETAIL

- SCALE: FULL
- NOTES:
- SEE SPECIFICATIONS FOR ADDITIONAL NAMEPLATE INFORMATION.
  - REWORD NAMEPLATE FOR FIELD CONDITIONS.
  - HP SHALL INDICATE HORSEPOWER.



### TYPICAL DEVICE MOUNTING HEIGHTS

- NO SCALE
- NOTES:
- HEIGHTS SHOWN ARE TYPICAL TO CENTERLINE OF BOX UNLESS NOTED OTHERWISE.
  - WHERE EVER DEVICES ARE INDICATED TO BE ABOVE DOORS, DEVICE SHALL BE CENTERED BETWEEN TOP OF DOOR TRIM AND CEILING LINE.
  - MOUNTING HEIGHTS SHOWN ON ARCHITECTURAL ELEVATIONS SHALL GOVERN OVER THOSE SHOWN ABOVE.

UNIVERSITY OF COLORADO COLORADO SPRINGS  
REPLACE AHU AND RA SYSTEM IN COLUMBINE HALL  
COLORADO SPRINGS, COLORADO

REV	DATE

ENGINEER: CAB  
CHECKED BY: CAB  
DRAFTER: CAB  
DATE: 09/08/2022

PROJECT NUMBER: 21025

DRAWING TITLE:  
ELECTRICAL LEGEND AND GENERAL NOTES

DRAWING SCALE: AS INDICATED

DRAWING NUMBER:





**EXISTING PANEL '1LOA'**

150A MCB VOLTAGE 120 / 208 V PHASE 3 PH WIRE 4 W  
MFR: SQUARED MTG.: SURFACE AIC: 10,000 FULLY RATED

NOTE	DESCRIPTION	LTG	RECEPT	MOTORS	CONTIN	NON CONTIN	SWITCH			TOTAL	NON CONTIN	CONTIN	MOTORS	RECEPT	LTG	DESCRIPTION	NOTE
							AMP	I	P								
REC	1,080						20	1	1	A	2	20	1	1,080	REC		
REC	1,080						20	1	3	B	4	20	1	1,080	REC		
REC	1,080						20	1	5	C	6	20	1	1,080	REC		
REC	900						20	1	7	A	8	20	1	1,080	REC		
REC	1,080						20	1	9	B	10	20	1	1,080	REC		
REC	1,080						20	1	11	C	12	20	1	1,080	REC		
REC	1,080						20	1	13	A	14	20	1	1,080	REC		
REC	900						20	1	15	B	16	20	1	564	EF-1		1
REC	900						20	1	17	C	18	20	1	0	SPACE		
REC	1,080						20	1	19	A	20	20	1	0	SPACE		
SPACE	0						21	B	22	20	1	0	0	0	SPACE		
SPACE	0						23	C	24	20	1	0	0	0	SPACE		
SPACE	0						25	A	26	20	1	0	0	0	SPACE		
SPACE	0						27	B	28	20	1	0	0	0	SPACE		
SPACE	0						29	C	30	20	1	0	0	0	SPACE		
SPACE	0						31	A	32	20	1	0	0	0	SPACE		
SPACE	0						33	B	34	20	1	0	0	0	SPACE		
SPACE	0						35	C	36	20	1	0	0	0	SPACE		
SPACE	0						37	A	38	20	1	0	0	0	SPACE		
SPACE	0						39	B	40	20	1	0	0	0	SPACE		
SPACE	0						41	C	42	20	1	0	0	0	SPACE		
ZLOB	0	4320	0	0	2800	8600	1	A	1	1	0	0	0	0	0	0	0
LUGS ONLY	0	3240	1000	0	1000	5240	1	B	1	1	0	0	0	0	0	0	0
	750	2160	500	0	1000	4410	0	C	1	1	0	0	0	0	0	0	0

PHASE LOADING SUMMARY

LOAD TYPE (VA)	PH A	PH B	PH C	LOAD TYPE	CONNECTED LOAD KVA	NEC CALCULATED DEMAND LOAD
LIGHTING	0.0	0.0	750.0			
RECEPTACLES	11,700.0	8,460.0	7,380.0			
MOTORS	0.0	1,564.0	500.0	LIGHTING	0.6 KVA	x 125% = 0.9 KVA
CONTINUOUS	0.0	0.0	0.0	RECEPTACLES	10.0 KVA	x 100% = 10.0 KVA
NON CONTINUOUS	2,600.0	1,000.0	1,000.0	FIRST 10 KVA	10.0 KVA	x 100% = 10.0 KVA
TOTAL (VA)	14,300.0	11,024.0	9,330.0	REMAINDER	17.5 KVA	x 50% = 8.8 KVA
NEC CALCULATED PHASE AMPACITY	111.9	93.8	82.7	MOTORS	LARGEST 0.6 KVA	x 125% = 0.7 KVA
				REMAINDER	1.5 KVA	x 100% = 1.5 KVA
				CONTINUOUS	0.0 KVA	x 125% = 0.0 KVA
				NON CONTINUOUS	4.6 KVA	x 100% = 4.6 KVA
				TOTAL	35.0 KVA	26.5 KVA

GENERAL NOTES:  
1. PROVIDE NEW UPDATED PANEL DIRECTORIES FOR PANELS THAT ARE INCLUDED IN THIS PROJECT.  
2. PROVIDE TYPED DESCRIPTIONS OF NEW CIRCUITS BEING INSTALLED. INDICATE NEW SPARES IN PENCIL.

**EXISTING PANEL '3LOA'**

150A MCB VOLTAGE 120 / 208 V PHASE 3 PH WIRE 4 W  
MFR: SQUARED MTG.: SURFACE AIC: 10,000 FULLY RATED

NOTE	DESCRIPTION	LTG	RECEPT	MOTORS	CONTIN	NON CONTIN	SWITCH			TOTAL	NON CONTIN	CONTIN	MOTORS	RECEPT	LTG	DESCRIPTION	NOTE
							AMP	I	P								
REC	1,080						20	1	1	A	2	20	1	1,080	REC		
REC	1,080						20	1	3	B	4	20	1	1,080	REC		
REC	1,080						20	1	5	C	6	20	1	1,080	REC		
REC	1,080						20	1	7	A	8	20	1	1,080	REC		
REC	1,080						20	1	9	B	10	20	1	1,080	REC		
REC	1,080						20	1	11	C	12	20	1	1,080	REC		
REC	1,080						20	1	13	A	14	20	1	1,080	REC		
REC	900						20	1	15	B	16	20	1	1,000	1,000	EXISTING	
REC	900						20	1	17	C	18	20	1	1,000	1,000	EXISTING	
REC	1,080						20	1	19	A	20	20	1	1,000	1,000	EXISTING	
SPACE	0						21	B	22	20	1	0	0	0	0	0	0
SPACE	0						23	C	24	20	1	0	0	0	0	0	0
SPACE	0						25	A	26	20	1	0	0	0	0	0	0
SPACE	0						27	B	28	20	1	0	0	0	0	0	0
SPACE	0						29	C	30	20	1	0	0	0	0	0	0
SPACE	0						31	A	32	20	1	0	0	0	0	0	0
SPACE	0						33	B	34	20	1	0	0	0	0	0	0
SPACE	0						35	C	36	20	1	0	0	0	0	0	0
SPACE	0						37	A	38	20	1	0	0	0	0	0	0
SPACE	0						39	B	40	20	1	0	0	0	0	0	0
SPACE	0						41	C	42	20	1	0	0	0	0	0	0
ZLOB	0	4320	0	0	2000	6320	1	A	1	1	0	0	0	0	0	0	0
LUGS ONLY	0	3240	900	0	1000	4780	1	B	1	1	0	0	0	0	0	0	0
	750	2160	500	0	1000	4410	0	C	1	1	0	0	0	0	0	0	0

PHASE LOADING SUMMARY

LOAD TYPE (VA)	PH A	PH B	PH C	LOAD TYPE	CONNECTED LOAD KVA	NEC CALCULATED DEMAND LOAD
LIGHTING	0.0	0.0	0.0			
RECEPTACLES	8,640.0	6,840.0	6,480.0			
MOTORS	0.0	1,464.0	500.0	LIGHTING	0.0 KVA	x 125% = 0.0 KVA
CONTINUOUS	0.0	0.0	0.0	RECEPTACLES	10.0 KVA	x 100% = 10.0 KVA
NON CONTINUOUS	4,000.0	2,000.0	3,200.0	FIRST 10 KVA	10.0 KVA	x 100% = 10.0 KVA
TOTAL (VA)	12,640.0	10,304.0	10,180.0	REMAINDER	12.0 KVA	x 50% = 6.0 KVA
NEC CALCULATED PHASE AMPACITY	105.1	87.6	85.7	MOTORS	LARGEST 0.6 KVA	x 125% = 0.7 KVA
				REMAINDER	1.4 KVA	x 100% = 1.4 KVA
				CONTINUOUS	0.0 KVA	x 125% = 0.0 KVA
				NON CONTINUOUS	9.2 KVA	x 100% = 9.2 KVA
				TOTAL	33.1 KVA	27.3 KVA

GENERAL NOTES:  
1. PROVIDE NEW UPDATED PANEL DIRECTORIES FOR PANELS THAT ARE INCLUDED IN THIS PROJECT.  
2. PROVIDE TYPED DESCRIPTIONS OF NEW CIRCUITS BEING INSTALLED. INDICATE NEW SPARES IN PENCIL.

**EXISTING PANEL '2LOA'**

150A MCB VOLTAGE 120 / 208 V PHASE 3 PH WIRE 4 W  
MFR: SQUARED MTG.: SURFACE AIC: 10,000 FULLY RATED

NOTE	DESCRIPTION	LTG	RECEPT	MOTORS	CONTIN	NON CONTIN	SWITCH			TOTAL	NON CONTIN	CONTIN	MOTORS	RECEPT	LTG	DESCRIPTION	NOTE
							AMP	I	P								
REC	1,080						20	1	1	A	2	20	1	1,080	REC		
REC	1,080						20	1	3	B	4	20	1	1,080	REC		
REC	1,080						20	1	5	C	6	20	1	1,080	REC		
REC	1,080						20	1	7	A	8	20	1	1,080	REC		
REC	1,080						20	1	9	B	10	20	1	1,080	REC		
REC	1,080						20	1	11	C	12	20	1	1,080	REC		
EXISTING LOAD	1,080					1,000	20	1	13	A	14	20	1	1,080	REC		
REC	900						20	1	15	B	16	20	1	564	EF-2		1
REC	900						20	1	17	C	18	20	1	0	SPACE		
REC	720						20	1	19	A	20	20	1	0	SPACE		
REC	360						20	1	21	B	22	20	1	0	SPACE		
SPACE	0						23	C	24	20	1	0	0	0	SPACE		
SPACE	0						25	A	26	20	1	0	0	0	SPACE		
SPACE	0						27	B	28	20	1	0	0	0	SPACE		
SPACE	0						29	C	30	20	1	0	0	0	SPACE		
SPACE	0						31	A	32	20	1	0	0	0	SPACE		
SPACE	0						33	B	34	20	1	0	0	0	SPACE		
SPACE	0						35	C	36	20	1	0	0	0	SPACE		
SPACE	0						37	A	38	20	1	0	0	0	SPACE		
SPACE	0						39	B	40	20	1	0	0	0	SPACE		
SPACE	0						41	C	42	20	1	0	0	0	SPACE		
ZLOB	1000	4140	0	0	1100	6240	1	A	1	1	0	0	0	0	0	0	0
LUGS ONLY	0	3240	1000	0	1000	5240	1	B	1	1	0	0	0	0	0	0	0
	0	3240	0	0	1000	4240	0	C	1	1	0	0	0	0	0	0	0

PHASE LOADING SUMMARY

LOAD TYPE (VA)	PH A	PH B	PH C	LOAD TYPE	CONNECTED LOAD KVA	NEC CALCULATED DEMAND LOAD
LIGHTING	1,000.0	0.0	0.0			
RECEPTACLES	10,260.0	9,360.0	8,460.0			
MOTORS	0.0	1,564.0	0.0	LIGHTING	1.0 KVA	x 125% = 1.3 KVA
CONTINUOUS	0.0	0.0	0.0	RECEPTACLES	10.0 KVA	x 100% = 10.0 KVA
NON CONTINUOUS	2,100.0	1,000.0	1,000.0	FIRST 10 KVA	10.0 KVA	x 100% = 10.0 KVA
TOTAL (VA)	13,360.0	11,924.0	9,460.0	REMAINDER	18.1 KVA	x 50% = 9.0 KVA
NEC CALCULATED PHASE AMPACITY	112.1	101.3	78.7	MOTORS	LARGEST 0.6 KVA	x 125% = 0.7 KVA
				REMAINDER	1.5 KVA	x 100% = 1.5 KVA
				CONTINUOUS	0.0 KVA	x 125% = 0.0 KVA
				NON CONTINUOUS	4.1 KVA	x 100% = 4.1 KVA
				TOTAL	34.7 KVA	26.1 KVA

GENERAL NOTES:  
1. PROVIDE NEW UPDATED PANEL DIRECTORIES FOR PANELS THAT ARE INCLUDED IN THIS PROJECT.  
2. PROVIDE TYPED DESCRIPTIONS OF NEW CIRCUITS BEING INSTALLED. INDICATE NEW SPARES IN PENCIL.

**EXISTING PANEL '4LOA'**

150A MCB VOLTAGE 120 / 208 V PHASE 3 PH WIRE 4 W  
MFR: SQUARED MTG.: SURFACE AIC: 10,000 FULLY RATED

NOTE	DESCRIPTION	LTG	RECEPT	MOTORS	CONTIN	NON CONTIN	SWITCH			TOTAL	NON CONTIN	CONTIN	MOTORS	RECEPT	LTG	DESCRIPTION	NOTE
							AMP	I	P								
REC	1,080						20	1	1	A	2	20	1	1,080	REC		
REC	1,080						20	1	3	B	4	20	1	1,080	REC		
REC	1,080						20	1	5	C	6	20	1	1,080	REC		
REC	1,080						20										

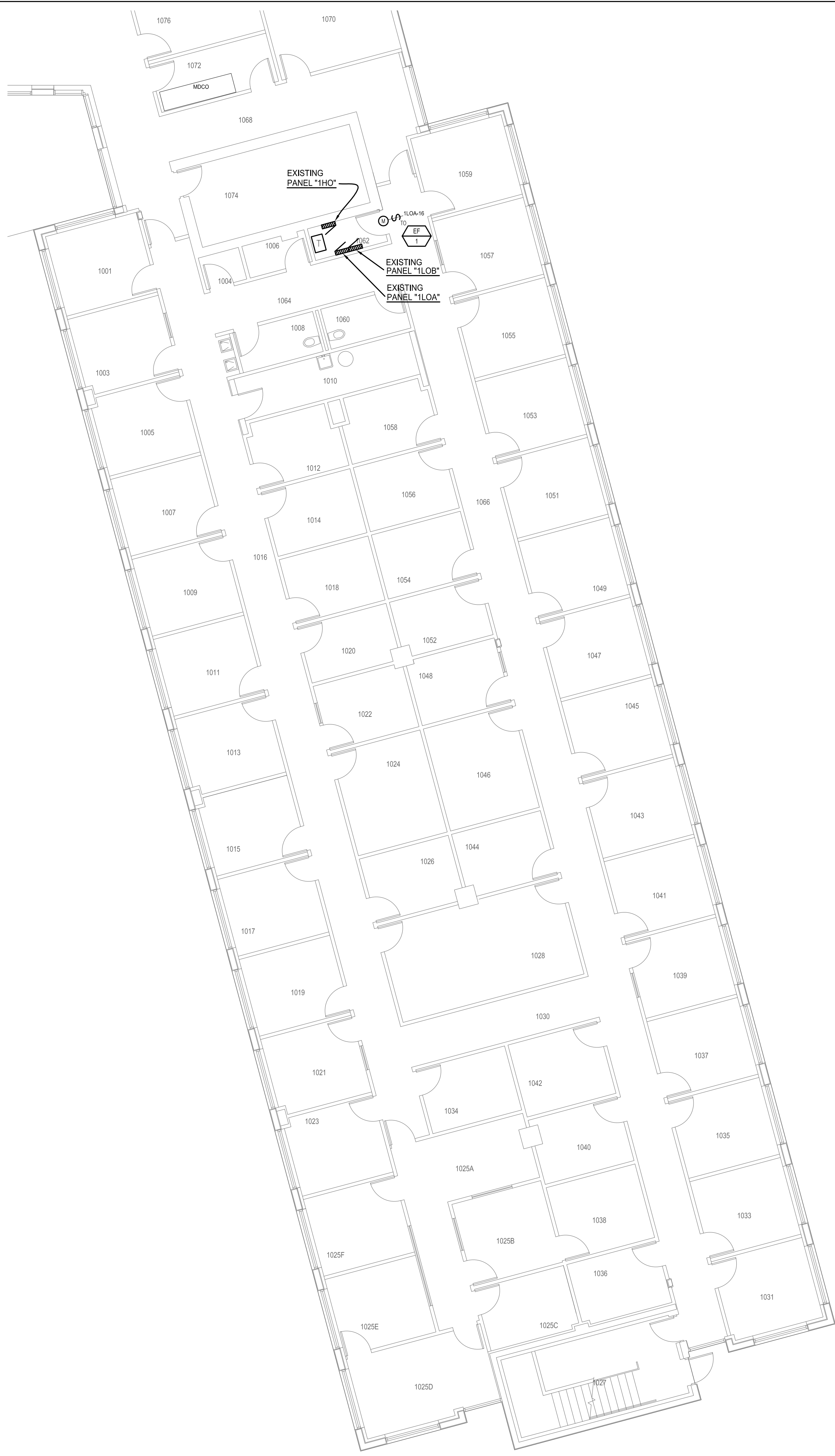




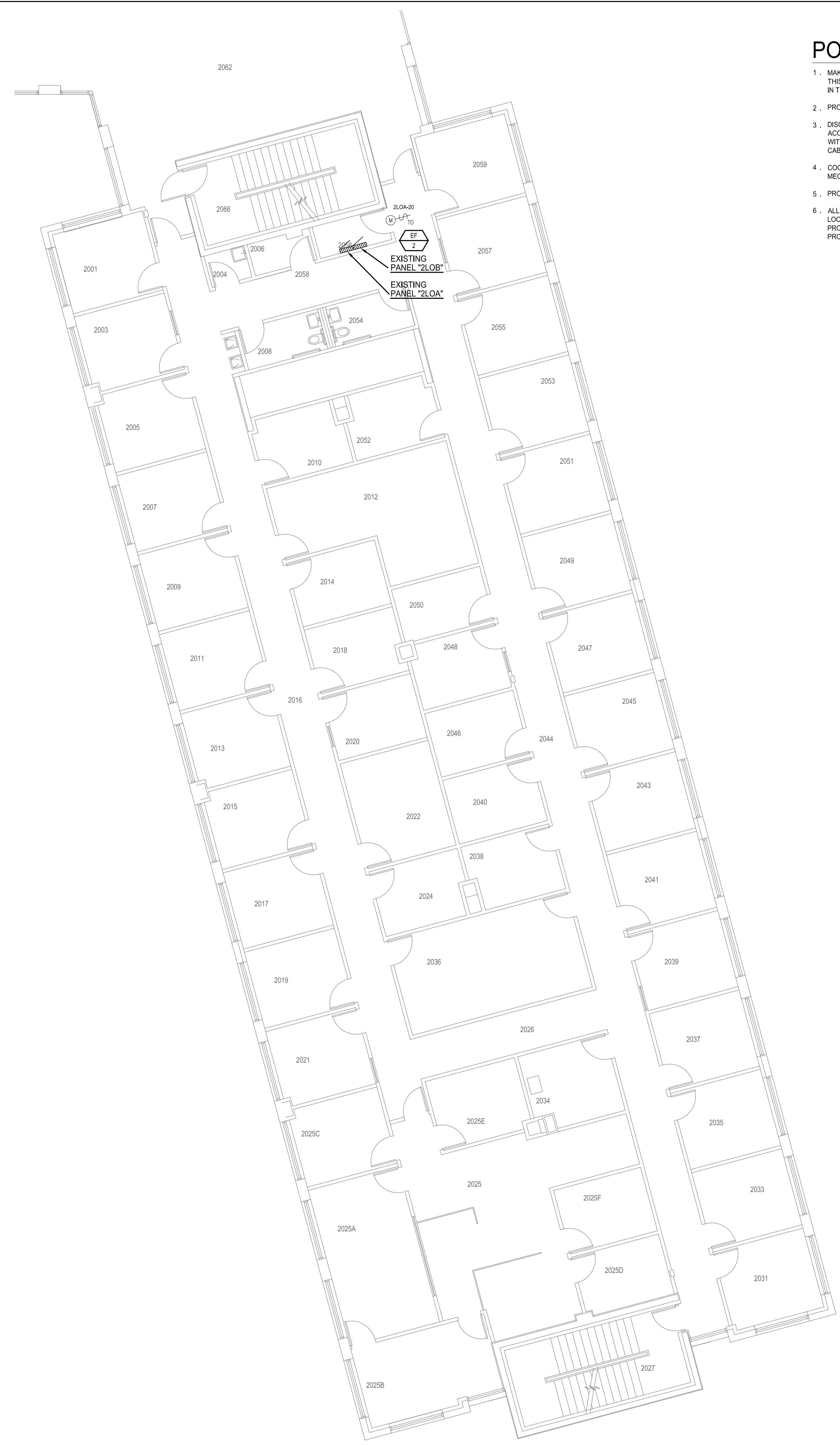


**POWER PLAN NOTES:**

1. MAKE ALL FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT REQUIRING ELECTRICAL CONNECTION. THIS SHALL INCLUDE BUT NOT BE LIMITED TO ALL MECHANICAL AND OTHER EQUIPMENT INCLUDED IN THIS PROJECT.
2. PROVIDE FUSES SIZED PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.
3. DISCONNECT SWITCH LOCATIONS ARE SHOWN DIAGRAMMATICALLY AND SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS TO SUIT EQUIPMENT AND SPACE. DISCONNECT SWITCHES SHALL BE WITHIN SIGHT OF THE EQUIPMENT THEY SERVE AND MOUNTED AT 6'-3", MAXIMUM, TO TOP OF CABINET, MAINTAIN NEC WORK SPACE REQUIREMENTS.
4. COORDINATE EXACT REQUIREMENTS AND LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
5. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH 120V AND 277V CIRCUIT.
6. ALL RECEPTACLE OUTLETS LOCATED IN TOILET ROOMS, SHOWER ROOMS, ROOFTOPS, OUTDOOR LOCATIONS, MECHANICAL ROOMS, WITHIN 6 FEET OF A SINK, OR OTHER WET LOCATIONS SHALL BE PROVIDED WITH GFCI PROTECTION PER NEC ARTICLE 210. ADDITIONAL GFCI PROTECTION TO BE PROVIDED AS INDICATED.



**OFFICE WING MAIN LEVEL - ELECTRICAL**  
 SCALE: 1/8" = 1'-0"



**OFFICE WING SECOND LEVEL - ELECTRICAL**  
 SCALE: 1/8" = 1'-0"



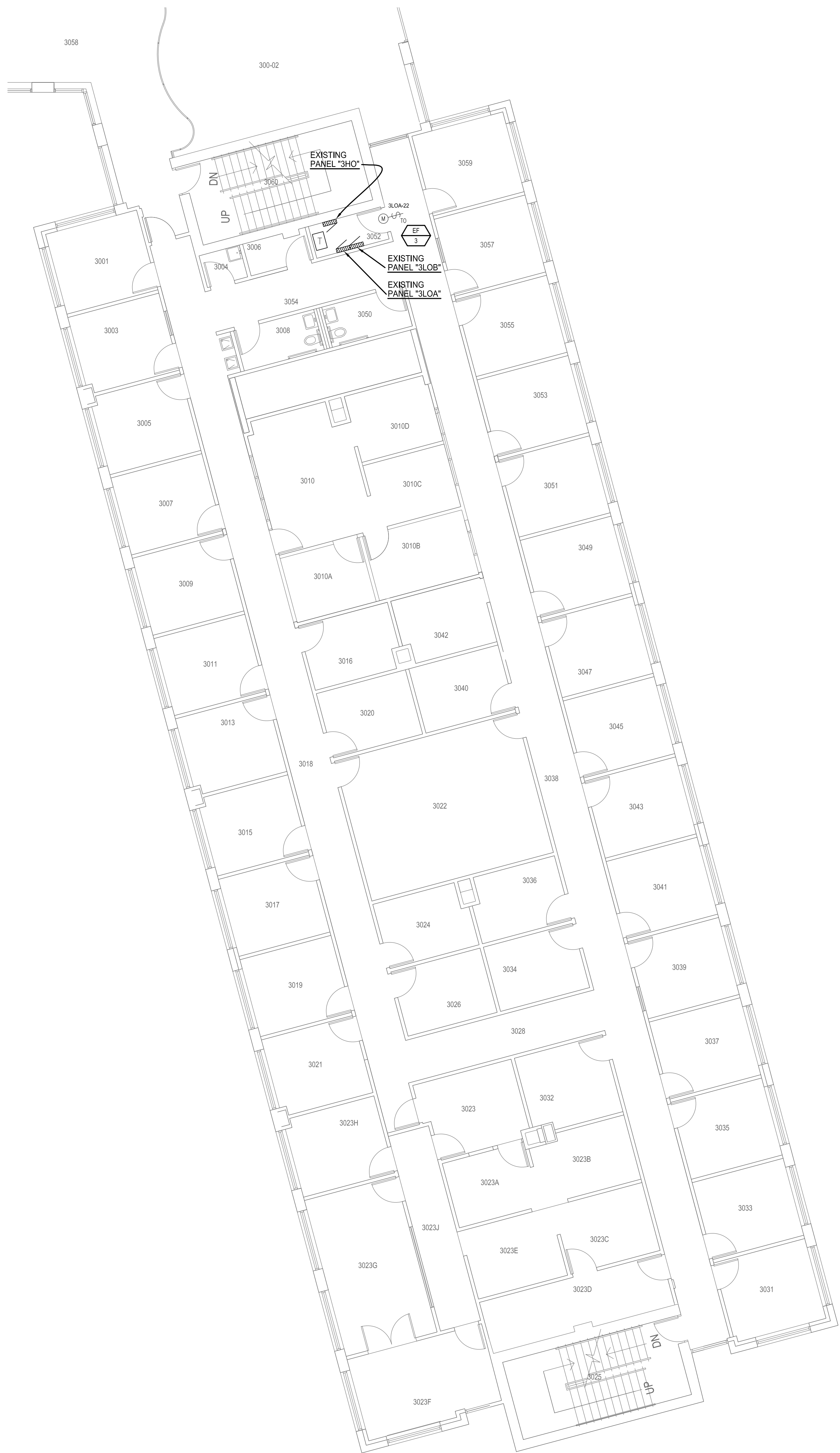
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**UNIVERSITY OF COLORADO COLORADO SPRINGS**  
 REPLACE AHU AND RA SYSTEM IN COLUMBINE HALL  
 COLORADO SPRINGS, COLORADO

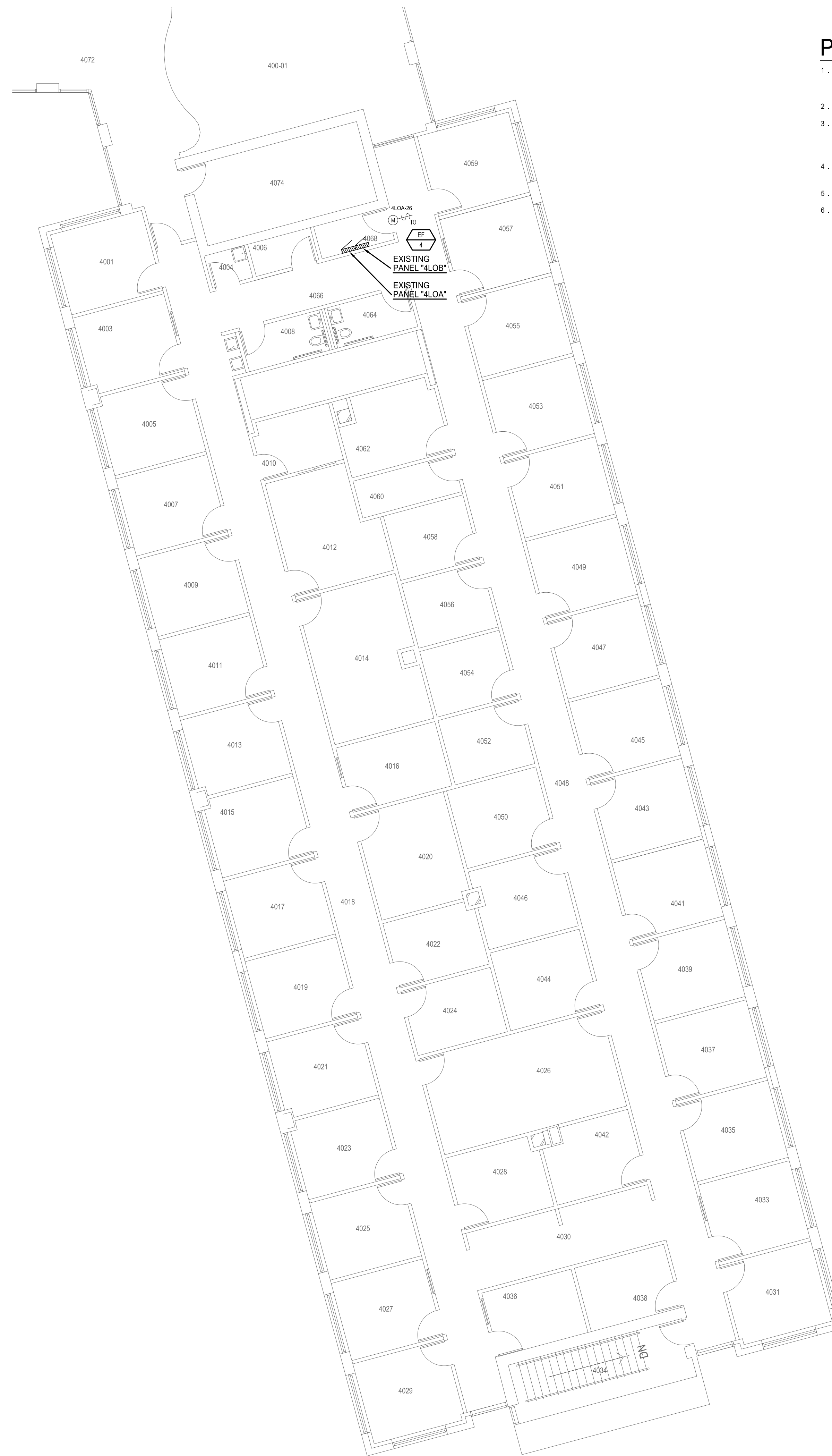
REV	DATE

ENGINEER: CAB	CHECKED BY: CAB
DRAFTER: CAB	DATE: 09/08/2022
PROJECT NUMBER: 21025	
DRAWING TITLE: ELECTRICAL OFFICE WING LEVEL 1 AND 2	
DRAWING SCALE: AS INDICATED	
DRAWING NUMBER: E-4	






**OFFICE WING THIRD LEVEL - ELECTRICAL**  
 SCALE: 1/8" = 1'-0"




**OFFICE WING FOURTH LEVEL - ELECTRICAL**  
 SCALE: 1/8" = 1'-0"

**POWER PLAN NOTES:**

1. MAKE ALL FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT REQUIRING ELECTRICAL CONNECTION. THIS SHALL INCLUDE BUT NOT BE LIMITED TO ALL MECHANICAL AND OTHER EQUIPMENT INCLUDED IN THIS PROJECT.
2. PROVIDE FUSES SIZED PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.
3. DISCONNECT SWITCH LOCATIONS ARE SHOWN DIAGRAMMATICALLY AND SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS TO SUIT EQUIPMENT AND SPACE. DISCONNECT SWITCHES SHALL BE WITHIN SIGHT OF THE EQUIPMENT THEY SERVE AND MOUNTED AT 6'-3", MAXIMUM, TO TOP OF CABINET, MAINTAIN NEC WORK SPACE REQUIREMENTS.
4. COORDINATE EXACT REQUIREMENTS AND LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
5. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH 120V AND 277V CIRCUIT.
6. ALL RECEPTACLE OUTLETS LOCATED IN TOILET ROOMS, SHOWER ROOMS, ROOFTOPS, OUTDOOR LOCATIONS, MECHANICAL ROOMS, WITHIN 6 FEET OF A SINK, OR OTHER WET LOCATIONS SHALL BE PROVIDED WITH GFCI PROTECTION PER NEC ARTICLE 210. ADDITIONAL GFCI PROTECTION TO BE PROVIDED AS INDICATED.

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**UNIVERSITY OF COLORADO COLORADO SPRINGS**  
 REPLACE AHU AND RA SYSTEM IN COLUMBINE HALL  
 COLORADO SPRINGS, COLORADO

REV	DATE

ENGINEER: CAB	CHECKED BY: CAB
DRAFTER: CAB	DATE: 09/08/2022
PROJECT NUMBER: 21025	
DRAWING TITLE: ELECTRICAL OFFICE WING LEVEL 3 AND 4	
DRAWING SCALE: AS INDICATED	
DRAWING NUMBER: E-5	




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