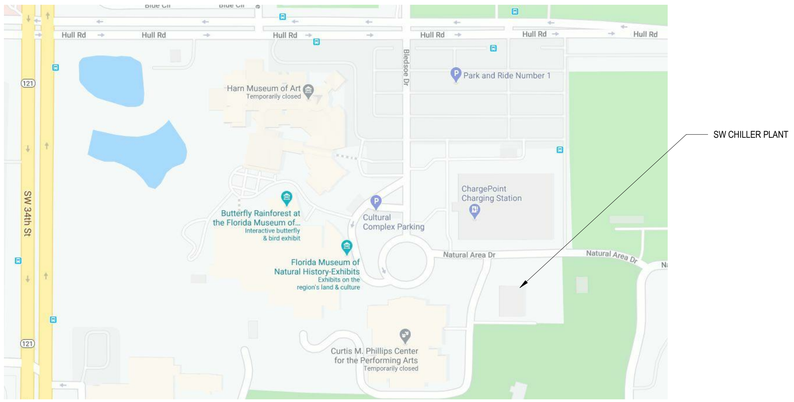
SW CHILLER PLANT CONDENSATION CORRECTIONS

UNIVERSITY OF FLORIDA

OWNERS PROJECT # UT00343
3113 HULL ROAD
GAINESVILLE, FL 32611

UF
UNIVERSITY of FLORIDA

SITE LOCATION MAP



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1 Revision 01 - 01/19/2021

WORK SUMMARY:
NEW CUSTOM CHILLED WATER AHU WITH ASSOCIATED PIPING, DUCTWORK AND CONTROLS.
NEW REFRIGERANT LEAK DETECTION SYSTEM CONTROLLER OPERATING NEW EXHAUST FANS AND MOTORIZED DAMPERS

100% CONSTRUCTION DOCUMENTS
SEPTEMBER 4, 2020

MG
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engineering

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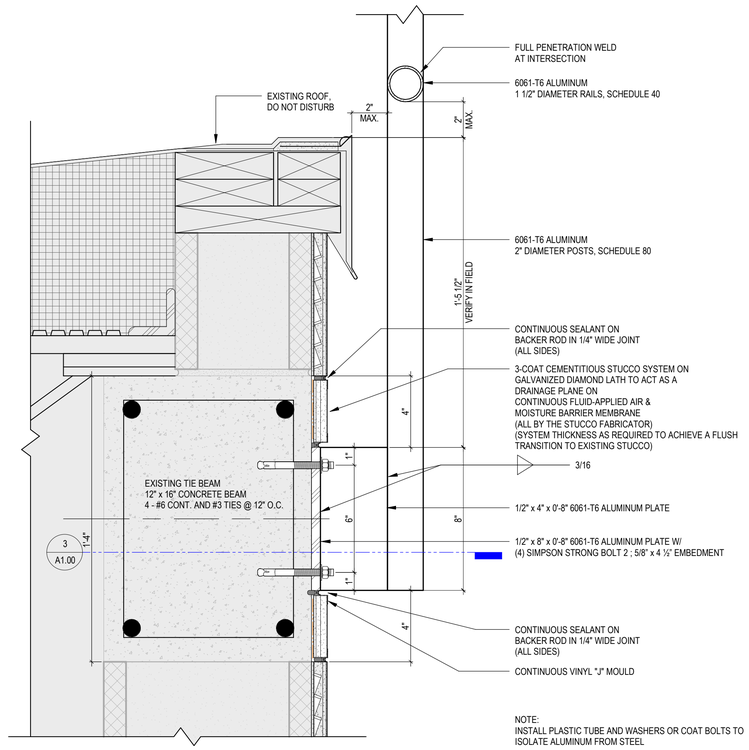
20057

GENERAL RAILING NOTES

1. ALL RAILING DIMENSIONS AND COMPONENTS TO BE FIELD VERIFIED PRIOR TO FABRICATION.
2. ALL WELDS TO BE GROUND SMOOTH AND FLUSH TO ADJACENT METAL FOR A SEAMLESS TRANSITION BETWEEN RAILING SEGMENTS.
3. TOP OF GUARDRAIL SHALL BE 42" A.F.F. ABOVE EXISTING ROOF WORKING SURFACE.
4. GUARD RAILS SHALL BE ABLE TO RESIST A SINGLE CONCENTRATED LOAD OF 200 POUNDS, APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP, AND HAVE ATTACHMENT DEVICES AND SUPPORTING STRUCTURE TO TRANSFER THIS LOADING TO APPROPRIATE STRUCTURAL ELEMENTS OF THE BUILDING.

LEGEND

EXISTING

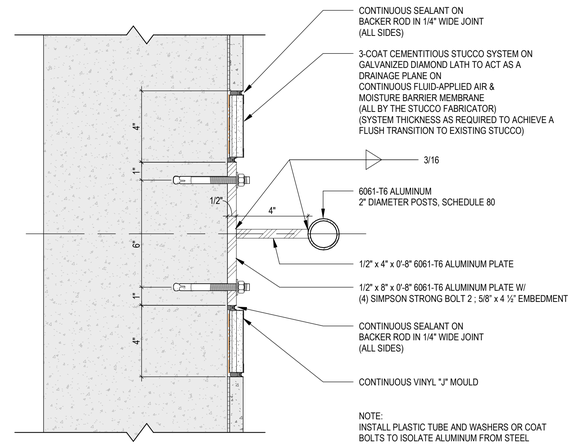


NOTE:
INSTALL PLASTIC TUBE AND WASHERS OR COAT BOLTS TO ISOLATE ALUMINUM FROM STEEL

REMOVE EXISTING EXTERIOR STUCCO FINISH FOR DIRECT ATTACHMENT TO EXISTING TIE BEAM

PATCH, REPAIR AND REPAINT AS REQUIRED

2 A1.00 FALL PROTECTION DETAIL
SCALE: 3" = 1'-0"



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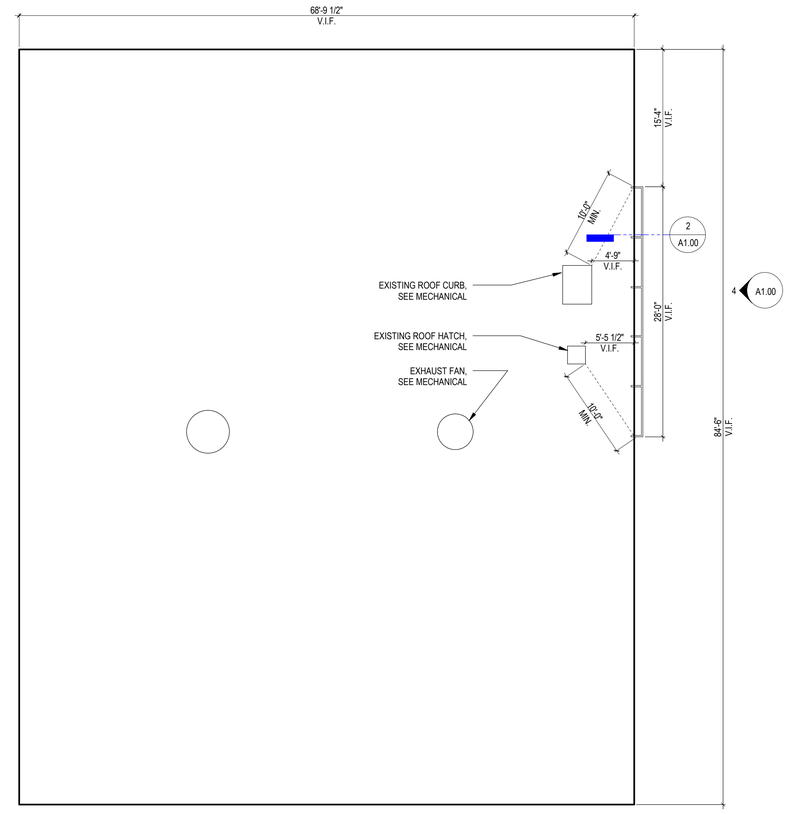
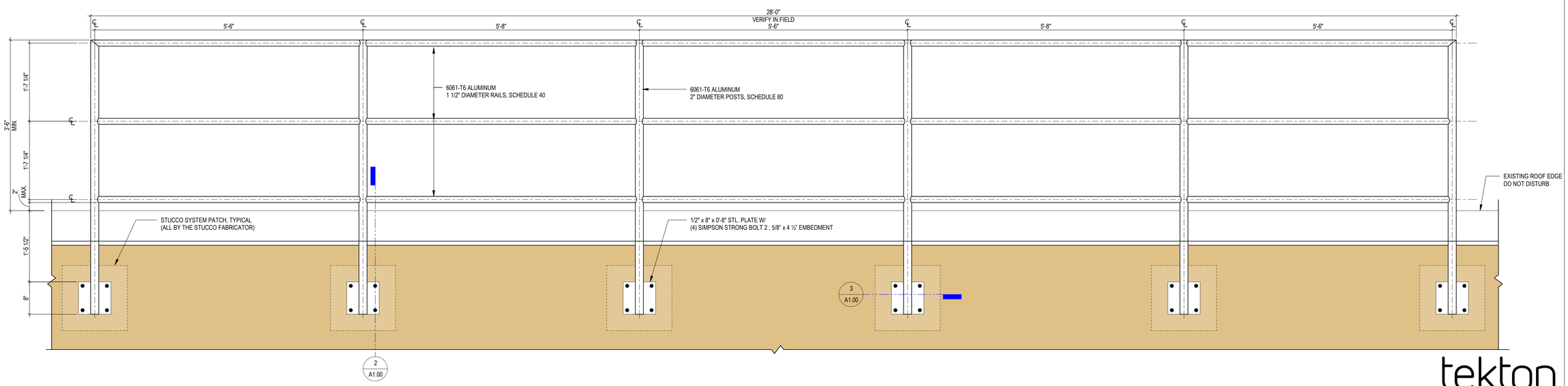


1 A1.00 ROOF PLAN
SCALE: 1/8" = 1'-0"



4 A1.00 FALL PROTECTION ELEVATION
SCALE: 1" = 1'-0"

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STATE OF FLORIDA
KEVIN TED WHITEHEAD
LICENSE NUMBER
36067343
REGISTERED ARCHITECT
K. WHITEHEAD

Digitally signed by Kevin T Whitehead
Date: 2021.01.21 15:54:41 -05'00'

PROJECT NAME:
UNIVERSITY OF FLORIDA SW CHILLER PLANT CONDENSATION CORRECTIONS

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REVISIONS:

REV	DESC	DATE
1	ADD NO. 01	01/19/21

ISSUE:
100% CONSTRUCTION DOCUMENTS

ISSUE DATE:
SEPTEMBER 4, 2020

CHECKED BY:
KTW

SHEET TITLE:
FALL PROTECTION DETAILS

SHEET NUMBER:
A1.00

MECHANICAL ABBREVIATIONS

A/C	AIR CONDITIONING
ABS	ABSOLUTE
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
AMPS	AMPERES
ATM	ATMOSPHERE
AUTO	AUTOMATIC
BAS	BUILDING AUTOMATION SYSTEM
BD	BALANCING DAMPER
BFC	BELOW FINISHED CEILING
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BT	BOTTOM THROAT
BTU	BRITISH THERMAL UNIT
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CO	CLEAN OUT
COP	COEFFICIENT OF PERFORMANCE
DB	DRY BULB OR DECIBELS
DG	DOOR GRILLE
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DIA	DIAMETER
DN	DOWN
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EP	ELECTRIC PNEUMATIC
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
F	FAHRENHEIT
FA	FREE AREA IN SQUARE FEET
FBC	FLORIDA BUILDING CODE
FC	FAIL CLOSED; FLEXIBLE CONNECTION
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FO	FAIL OPEN
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET
GAL	GALLON
GALV	GALVANIZED
GEN	GENERATOR
GPH	GALLON PER HOUR
GPM	GALLON PER MINUTE
GV	GRAVITY VENTILATOR
H	HOOD
HB	HOSE BIB
HHW	HEATING HOT WATER
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HP	HORSEPOWER
HSPF	HEATING SEASONAL PERFORMANCE FACTOR
HVAC	HEATING VENTILATING AND AIR-CONDITIONING
HZ	HERTZ
IN	INCHES
IN H2O	INCHES OF WATER
IN WG	INCHES OF WATER GAUGE
KEF	KITCHEN EXHAUST FAN
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCK ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	ONE THOUSAND BTUH
MCA	MINIMUM CURRENT AMPACITY
MER	MECHANICAL EQUIPMENT ROOM
MIN	MINIMUM
MSTP	MASTER SLAVE TOKEN PASSING
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OOA	OPERABLE AIR OPENING
OZ	OUNCE
PE	PNEUMATIC ELECTRIC
PH	PHASE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
RAG	RETURN AIR GRILLE
REF	REFRIGERANT
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
S/S	STAINLESS STEEL
SA	SUPPLY AIR
SD	SPLITTER DAMPER
SEC	SECOND
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SP	STATIC PRESSURE
SQ FT	SQUARE FOOT
STD	STANDARD
T	THROAT
TAB	TEST, ADJUST, AND BALANCE
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TSP	TOTAL STATIC PRESSURE
TT	TOP THROAT
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
W	WIDTH, WEST, WATER
W/	WITH
W/O	WITHOUT
WB	WET BULB
WMS	WIRE MESH SCREEN

MECHANICAL LEGEND

24XXCD YYYCFM	CEILING DIFFUSER; YYY=AIRFLOW 24=SQUARE SIZE, XX=NECK SIZE
24X24RAG YYYCFM XX"	RETURN AIR GRILLE YYY=AIRFLOW, XX=NECK SIZE
24X24EG YYYCFM XX"	EXHAUST GRILLE YYY=AIRFLOW, XX=NECK SIZE
	DUCT ELBOW (TURNING VANES SHOWN)
	FLEXIBLE DUCT CONNECTION
	FIRE DAMPER
	SMOKE DAMPER
	FIRE SMOKE DAMPER
	MOTORIZED DAMPER
	MANUAL BALANCING DAMPER
XX YY	EQUIPMENT TAG XX=EQUIP TYPE, YY=EQUIP. NO.
	CONNECT TO EXISTING
T	THERMOSTAT
H	HUMIDISTAT
S	SMOKE DETECTOR
-XXX	SPECIFIED AIR BALANCE OFFSET IN CFM
	HARDWIRE INTERLOCK
XXX	CONTROL DEVICE (SEE CONTROLS ABBREVIATIONS)
	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CALIBRATED BALANCING VALVE (CIRCUIT SETTER)
	RELIEF VALVE
M	TWO WAY CONTROL VALVE
M	THREE WAY CONTROL VALVE
	PLUG VALVE
	PRESSURE REDUCING VALVE
	STRAINER
	THERMOMETER
	SENSOR WELL
	UNION
	PRESSURE GAUGE
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	VENTURI FLOW METER
	FLEXIBLE PIPE CONNECTION

MECHANICAL GENERAL NOTES

1. IN GENERAL, PLANS AND DIAGRAMS ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED.
2. THE INTENT OF THE SPECIFICATIONS AND DRAWINGS IS TO CLARIFY THE SCOPE OF WORK AND ALERT CONTRACTOR OF EXISTING CONDITIONS. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL CLEARANCES BEFORE FABRICATION OF DUCTWORK AND PROVIDE ADDITIONAL OFFSET AND/OR CHANGES IN DUCT SIZES TO MEET FIELD CONDITIONS AND COORDINATE WITH ELECTRICAL, PLUMBING AND FIRE PROTECTION SUBCONTRACTOR BEFORE ANY CONSTRUCTION WORK.
3. SHOULD ANY CONFLICTS ARISE, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE CONFLICT BEFORE ANY CHANGES ARE MADE. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL BEFORE PROCEEDING WITH ANY CHANGES.
4. COORDINATE AIR DEVICE LOCATIONS WITH LIGHTING FIXTURES AND FIRE SPRINKLER HEADS.
5. DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS. DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, AND OTHER ITEMS OF THE AIR HANDLING SYSTEM SHALL NOT BE SUPPORTED BY THE CEILING OR CEILING SUSPENSION SYSTEM.
6. ALL SUPPLY AND RETURN DUCTWORK SHALL BE EXTERNALLY INSULATED SHEET METAL CONSTRUCTION IN ACCORDANCE WITH LATEST SMACNA STANDARDS. ALL EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL MATERIAL UNLESS NOTED OTHERWISE. APPLY LOW VOC DUCT MASTIC PER SMACNA AND LEED STANDARDS. PRESSURE TEST ALL DUCTWORK.
7. ALL WALL MOUNTED THERMOSTATS AND/OR TEMPERATURE SENSORS SHALL BE INSTALLED AT AN ELEVATION OF 54" ABOVE FINISHED FLOOR TO THE TOP UNLESS OTHERWISE NOTED ON DRAWINGS. LOCATION OF THE WALL MOUNTED THERMOSTAT SHALL BE COORDINATED WITH OTHER TRADES FOR A NEAT APPEARANCE. FINAL LOCATION OF THERMOSTAT SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER OR ENGINEER'S REPRESENTATIVE IN THE FIELD.
8. ALL WORK COVERED IN THIS SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST PUBLISHED STANDARDS OF ASHRAE, AND NFPA. ALL DUCTWORK MUST BE INSTALLED 6" AWAY FROM ANY FIRE RATED WALL TO ALLOW FOR WALL INSPECTION.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRADES INSTALLATION SCHEDULES. FIXED WORK SUCH AS DUCTWORK AND GRAVITY PLUMBING SHALL BE INSTALLED PRIOR TO ANY TRADE WORK THAT CAN BE EASILY RELOCATED OR OFFSET SUCH AS ELECTRICAL CONDUITS, SMALL DIAMETER PLUMBING PRESSURE PIPING, ETC.
10. PENETRATIONS THROUGH SMOKE OR FIRE-RATED ASSEMBLIES: PENETRATIONS FOR PIPES, CONDUITS OR OTHER PURPOSES THROUGH ASSEMBLIES (FLOORS, ROOF, WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE RESISTANCE RATING SHALL BE SEALED TO THE PENETRATING MEMBER IN AN APPROVED MANNER WHICH MAINTAINS THE REQUIRED FIRE RESISTANCE RATING OF THE ASSEMBLY.
11. UNLESS OTHERWISE NOTED, INSTALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO BOTTOM OF STRUCTURE. COORDINATE DUCT ELEVATION WITH RAIN LEADERS, WATER PIPING, SANITARY DRAINS AND MAJOR ELECTRICAL CONDUITS.
12. IT IS THE RESPONSIBILITY OF THE MECHANICAL INSTALLER TO PATCH AND REPAIR ANY DUCT OPENINGS WHICH RESULT FROM THE RELOCATION OR ELIMINATION OF ANY EXISTING AIR DEVICES. THE PATCH IS TO BE OF A SIMILAR MATERIAL TO THE REPAIRED DUCT AND TO BE SEALED IN ACCORDANCE WITH SMACNA STANDARDS.
13. ALL INSULATION SHALL HAVE A MINIMUM FLAME SPREAD/SMOKE DEVELOPED RATING OF 25/50.
14. SUBMIT EQUIPMENT AND MATERIAL SUBMITTALS FOR DIFFUSERS, GRILLES, AND FLEX DUCT.
15. AT THE CONCLUSION OF INSTALLATION THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A COMPLETE CERTIFIED TEST AND BALANCE REPORT FROM AN AGENCY HAVING A MINIMUM OF THREE YEARS EXPERIENCE AND REGISTERED WITH THE NEBB OR AABC. REPORT SHALL ITEMIZE THE PERFORMANCE OF EACH AIR DEVICE AND A/C UNIT WITH REGARD TO CFM, STATIC PRESSURE AND TEMPERATURE. TABULATE ALL VALUES AND COMPARE TO EQUIPMENT TOTAL PERFORMANCE. PROVIDE PERCENT DEVIATIONS OF RECORDED VALUES FROM DESIGN VALUES. CONTRACTOR SHALL SUBMIT A CERTIFIED COPY OF THE TEST AND BALANCE REPORT TO THE ENGINEER FOR REVIEW AND APPROVAL.
16. CONTRACTOR SHALL ARRANGE TO PAY FOR ALL NECESSARY PERMITS, LICENSES AND INSPECTIONS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
17. MARK DAMPER SHAFTS WITH GROOVE TO INDICATE FINAL POSITION.
18. PROVIDE FLEXIBLE CONNECTION ON ALL DUCTWORK AT MOTORIZED EQUIPMENT.

CODES AND STANDARDS

ALL PROJECT WORK SHALL BE GOVERNED BY AND ADHERE TO THE FOLLOWING CODES AND STANDARDS.

1. FLORIDA BUILDING CODE - SIXTH EDITION (2017)
   - A. FLORIDA BUILDING CODE - SIXTH EDITION (2017) - MECHANICAL
   - B. FLORIDA BUILDING CODE - SIXTH EDITION (2017) - EXISTING BUILDING
   - C. FLORIDA BUILDING CODE - SIXTH EDITION (2017) - ENERGY CONSERVATION
2. FLORIDA FIRE PREVENTION CODE SIXTH EDITION (2017)
   - A. FIRE CODE (NFPA 1 - 2015 FLORIDA EDITION)
   - B. LIFE SAFETY CODE (NFPA 101 - 2015 FLORIDA EDITION)
3. NATIONAL ELECTRIC CODE (NFPA 70 - 2014)
4. FIRE ALARM AND SIGNALING CODE (NFPA 72 - 2013)
5. ASHRAE STANDARD 15-2010 SAFETY STANDARD FOR REFRIGERATION SYSTEM
6. UNDERWRITERS' LABORATORIES (UL)
7. AMERICAN NATIONAL STANDARDS INSTITUTION (ANSI)
8. AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
9. SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
10. AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS (ASHRAE)
11. AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL (AMCA)
12. NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)
13. ASSOCIATED AIR BALANCE COUNCIL (AABC)

EXISTING CONDITIONS NOTES

1. CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL SURVEY THE PROJECT AREA AND BRING TO THE ENGINEER'S ATTENTION, ANY CONCERNS ABOUT PROJECT DESIGN, SCHEDULE OR FACILITY IMPACT.
2. COORDINATE ANY UTILITY OR EQUIPMENT OUTAGES WITH OWNER. PROVIDE MINIMUM NOTICE OF SEVEN DAYS PRIOR TO ANY OUTAGE.

AIR HANDLING UNIT SCHEDULE

MANUFACTURER	HAAKON
UNIT TYPE	CUSTOM
AIR HANDLER MARK	AHU-1
DESIGN CONDITIONS	
SUMMER OUTDOOR TEMP DB/WB (DEG F)	96/80
SUMMER INDOOR DB/WB (DEG F)	80/67
WINTER OUTDOOR TEMP (DEG F)	30
WINTER INDOOR (DEG F)	60
TOTAL AIR (CFM)	8,500
OUTSIDE AIR (CFM)	2,500
NO OF FANS	1
FAN TYPE	HOUSED DWDI FAN
DRIVE	BELT
EXTERNAL STATIC PRESSURE (IN WG)	0.5
TOTAL STATIC PRESSURE (IN WG)	3.7
FAN RPM	2,047
FAN MOTOR RPM	1,750
COOLING COIL (CHW)	
ENTERING AIR TEMPERATURE (DB/WB DEG F)	85/71
LEAVING AIR TEMPERATURE (DB/WB DEG F)	52.2/52
COIL APD (IN WG)	0.6
ENTERING WATER TEMPERATURE (DEG F)	45
LEAVING WATER TEMPERATURE (DEG F)	57
CHW FLOW (GPM)	85
CONTROL VALVE SIZE & TYPE	2" BALL
CONTROL VALVE CV	57
COIL PD (FT WC)	15.5
TOTAL CAPACITY (BTUH)	513,000
SENSIBLE CAPACITY (BTUH)	304,590
MINIMUM ROWS & MAXIMUM FINS/INCH	8 & 9
ELECTRICAL	
VOLTS-PHASE	460-3
POWER (HP)	10
VFD	YES
FILTRATION	
2" PREFILTER	MERV 8
12" AFTER FILTER	MERV 14
SCHEDULE NOTES	(1)(2)(3)(4)(5)

1) PROVIDE FIELD INSTALLED AHU MANUFACTURER UV LIGHTS.
2) PROVIDE WINDOW FOR EACH ACCESS DOOR. SEE FLOOR PLAN FOR DOOR SWING.
3) PROVIDE 6" BASERAIL.
4) PROVIDE SHIPPING SPLITS FOR FIELD ASSEMBLY.
5) PROVIDE SERVICE LIGHT IN EACH ACCESS SECTION.

EXHAUST FAN SCHEDULE

MANUFACTURER	GREENHECK	GREENHECK	GREENHECK
MODEL	CUBE-300-7	CUBE-360XP-20	CSP-A1050
UNIT TYPE	UPBLAST CENTRIFUGAL ROOF EXHAUST	UPBLAST CENTRIFUGAL ROOF EXHAUST	INLINE CABINET FAN
FAN MARK	EF-1	EF-2	TF-3
DRIVE	BELT	BELT	DIRECT
AIRFLOW (CFM)	4,250	4,250	750
EXTERNAL STATIC PRESSURE (CFM)	0.5	1.5	0.5
FAN SPEED (RPM)	443	882	892
FAN POWER (WATTS)	471	1,292	228
MOTOR SIZE (HP)	3/4	2	1/2
VOLTS-PHASE	460-3	460-3	120-1
SOUND DATA			
FIRST OCTIVE BAND (dB)	73	79	58
SECOND OCTIVE BAND (dB)	71	83	58
THIRD OCTIVE BAND (dB)	67	74	46
SCHEDULE NOTES	(1)(2)(3)	(1)(2)(3)	(1)(3)(4)

1) PROVIDE FACTORY MOUNTED DISCONNECT
2) PROVIDE BIRD SCREEN
3) PROVIDE THERMAL OVERLOAD
4) PROVIDE DIRECT DRIVE WITH SPEED CONTROLLER

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PETER RIZOV LICENSE No 76908 STATE OF FLORIDA PROFESSIONAL ENGINEER

R. Craig Gulledge II
PE - 69158

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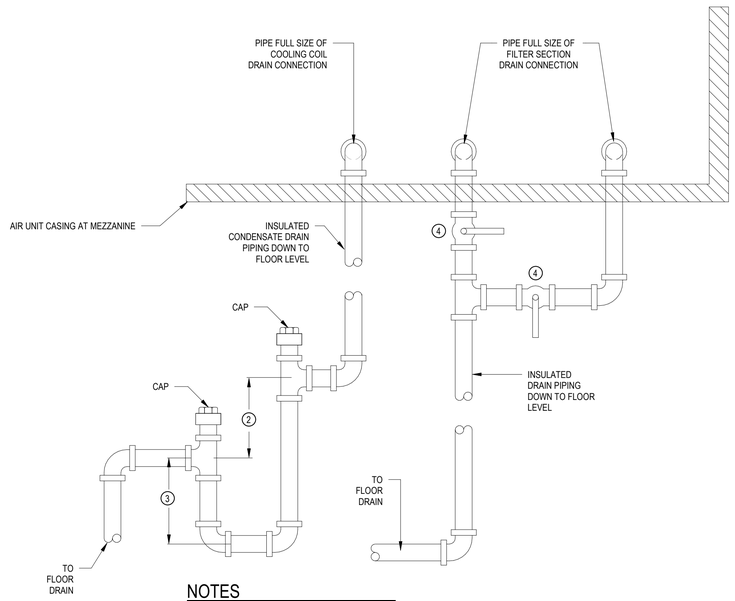
RCG

SHEET TITLE:
MECHANICAL LEGEND, NOTES, SCHEDULES AND STANDARDS

SHEET NUMBER:
M0.01

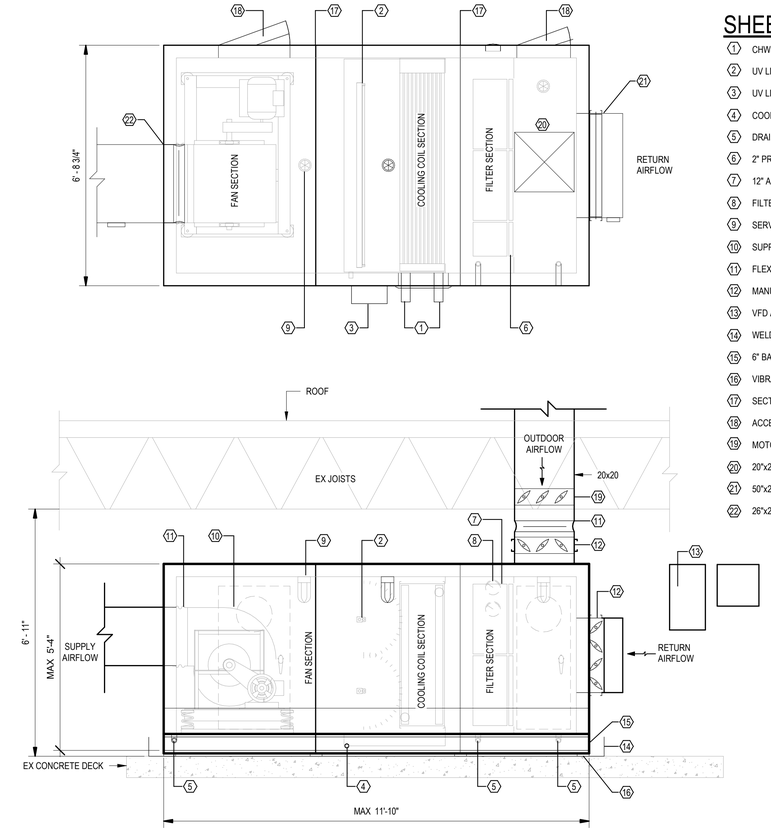


NOTES

1. LOCATE TRAPS FOR CLEANING ACCESSIBILITY.
2. HEIGHT SHALL EQUAL 12"
3. HEIGHT SHALL EQUAL 6"
4. BALL ISOLATION VALVE AT EACH SECTION

1 AHU DRAIN DETAIL

NOT TO SCALE

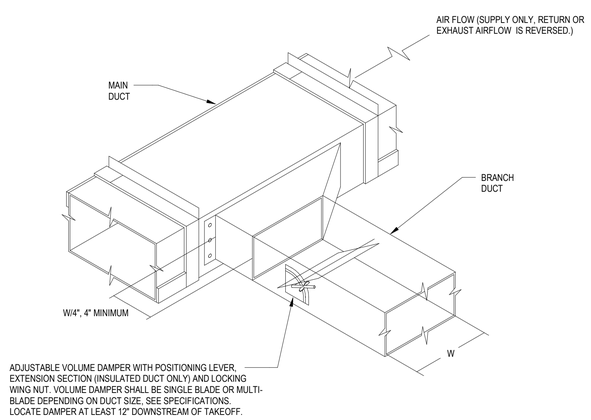


4 AHU DETAIL

NOT TO SCALE

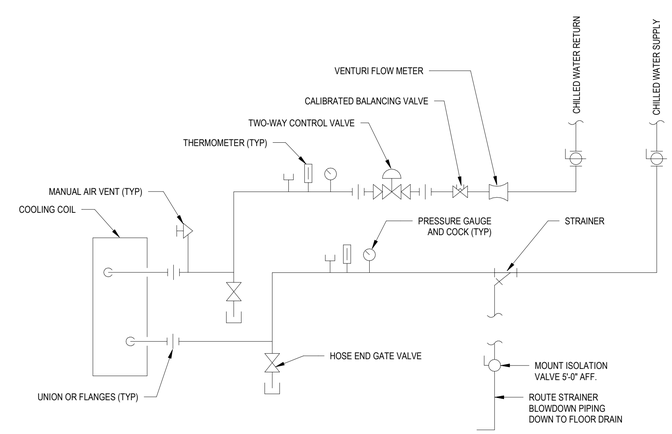
SHEET NOTES:

1. CHWS&R COOLING COIL CONNECTION
2. UV LIGHTS
3. UV LIGHTS ELECTRICAL PANEL
4. COOLING COIL DRAIN PAN DRAIN CONNECTION
5. DRAIN AND MANIFOLDED DRAIN PIPING.
6. 2" PRE-FILTERS
7. 12" AFTER FILTERS
8. FILTER PRESSURE GAUGES
9. SERVICE LIGHT (TYP)
10. SUPPLY FAN WITH BELT DRIVE
11. FLEXIBLE CONNECTION (TYP)
12. MANUAL BALANCING DAMPER (TYP)
13. VFD AND CONTROLS BEYOND.
14. WELDED STAINLESS STEEL DRAIN PAN
15. 6" BASERAIL - FULLY WELDED
16. VIBRATION ISOLATORS (TYP)
17. SECTION SPLIT
18. ACCESS DOOR WITH WINDOW (TYP)
19. MOTORIZED DAMPER
20. 20"x20" OUTDOOR AIR CONNECTION
21. 50"x20" RETURN AIR CONNECTION
22. 26"x20" SUPPLY AIR CONNECTION



3 BRANCH DUCT TAKEOFF DETAIL

NOT TO SCALE



2 COOLING COIL PIPING DIAGRAM

NOT TO SCALE

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R. Craig Gulledge II
PE - 69158

PROJECT NAME:
UNIVERSITY OF FLORIDA
SW CHILLER PLANT CONDENSATION CORRECTIONS

OWNER:
UNIVERSITY OF FLORIDA
3113 HULL ROAD
GAINESVILLE, FL 32611

OWNERS PROJECT # UT00343

MG PROJECT NUMBER: 20057

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MECHANICAL DETAILS

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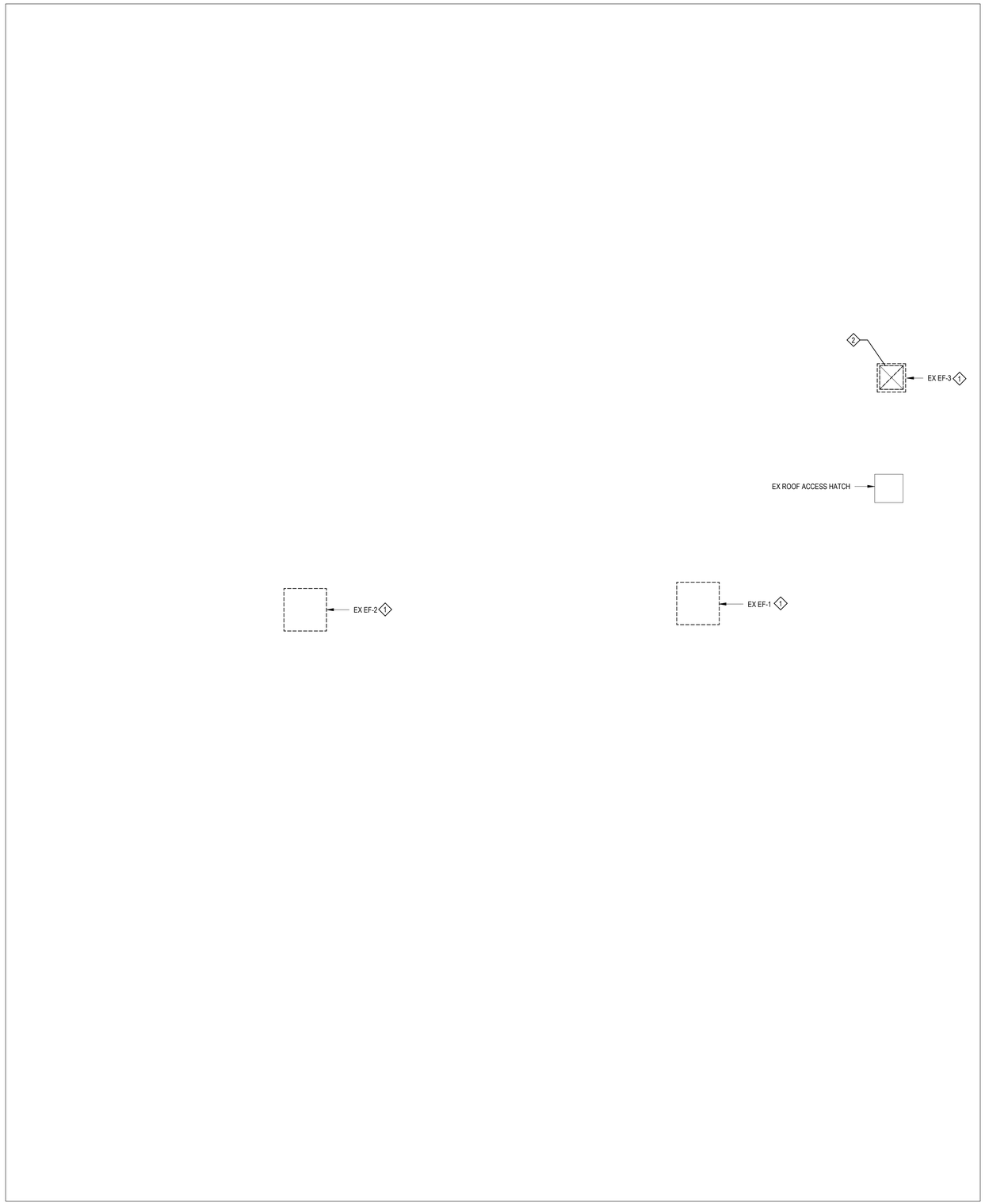

DEMOLITION NOTES:

1. DEMOLISH EXISTING EXHAUST FAN, ASSOCIATED THERMOSTAT AND CONDUIT. EXISTING ROOF CURB SHALL BE REUSED.
2. DEMOLISH EXISTING EXHAUST DUCT.

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CHILLER PLANT ROOF PLAN - DEMOLITION

1/4" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER R. CRAIG GULLEDGE LICENSE No. 69158 STATE OF FLORIDA

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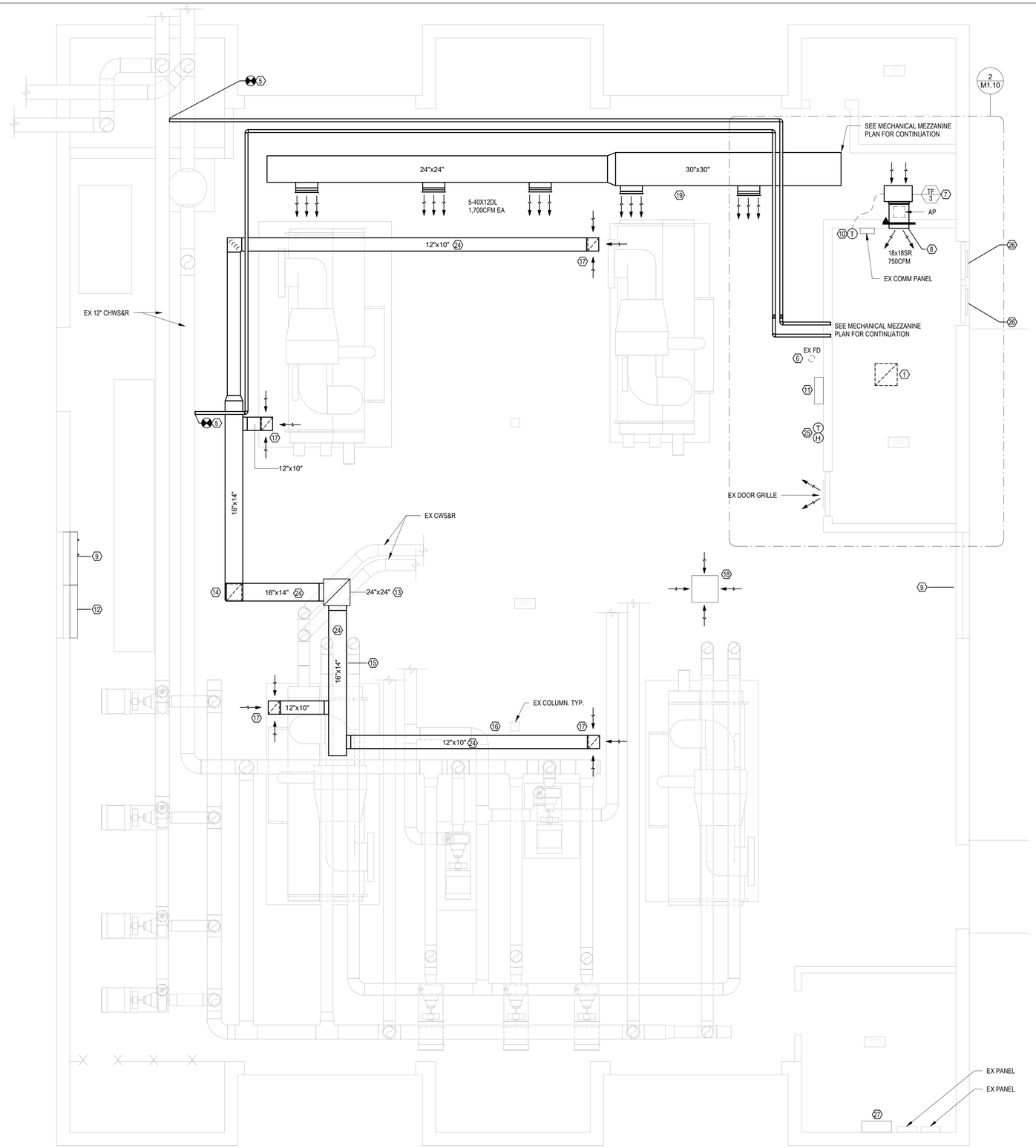
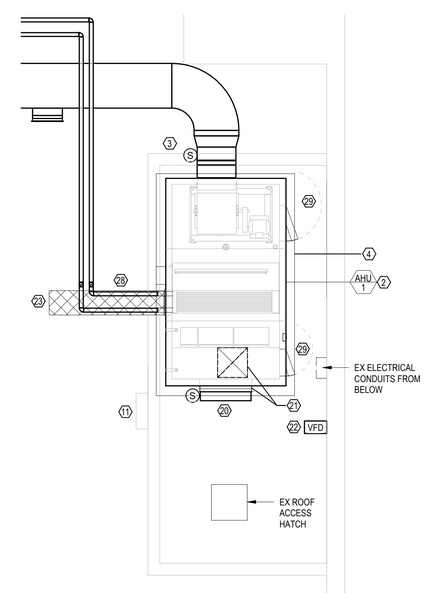


CHILLER PLANT FLOOR PLAN

1/4" = 1'-0"

SHEET NOTES:

1. DEMOLISH EXISTING EXHAUST DUCT SERVING ELECTRICAL IN ITS ENTIRETY. REPAIR ELECTRICAL ROOM CEILING OPENING. SECURE 18 GA GALVANIZED STEEL CAP TO EXISTING STEEL ANGLE IN ELECTRICAL ROOM CEILING. AT THE MEZZANINE PROVIDE 1/2" STEEL PLATE COVER INSTALLED FLUSH WITH EXISTING CONCRETE SURFACE.
2. INSTALL NEW AHU-1 ON MECHANICAL MEZZANINE ABOVE ELECTRICAL ROOM. POSITION AHU TO ALLOW ACCESS TO FILTER AND FAN SECTION AND CONNECTION TO OUTDOOR AIR INTAKE DUCT FROM ROOF.
3. REMOVE EXISTING RAILING TO ALLOW AHU SECTIONS TO BE LIFTED ONTO THE MEZZANINE. REPAIR AND REINSTALL EXISTING RAILING AFTER AHU IS POSITIONED.
4. PROVIDE WELDED 6" DEEP 18 GA STAINLESS STEEL DRAIN PAN UNDER THE AHU. ROUTE FULL SIZE DRAIN PAN DRAIN PIPING DOWN TO FLOOR DRAIN.
5. CONNECT NEW 2-1/2" CHWS&R PIPING TO EXISTING 12" PIPE USING WET TAP. PROVIDE GATE ISOLATION VALVES WITH CHAIN OPERATORS AT THE NEW TAP. ROUTE NEW PIPING HIGH BELOW JOISTS. ROUTE PIPING IN THE MOST DIRECT ROUTE, AVOID ROUTING PIPING OVER CHILLER CONTROL PANELS.
6. ROUTE FULL SIZE INSULATED COOLING COIL CONDENSATE DRAIN PIPE DOWN TO FLOOR LEVEL ALONG THE WALL. PROVIDE P-TRAP AT FLOOR LEVEL. ROUTE PIPING TO FLOOR DRAIN, PROVIDE NEW BRASS FUNNEL AT EXISTING FLOOR DRAIN GRATING.
7. SUPPORT INLINE TRANSFER FAN FROM STRUCTURE USING THREADED RODS WITH VIBRATION ISOLATORS. PROVIDE FLEXIBLE CONNECTION AT FAN DISCHARGE. SAW CUT EXISTING CUM WALL. DUCT SHALL PENETRATE EXISTING BLOCK WALL BELOW EXISTING LIGHT AT APPROXIMATE HEIGHT OF 9'. MOUNT SPEED CONTROLLER ON FAN CASING.
8. RELOCATE EXISTING TELECOM CONDUIT TO ALLOW NEW SUPPLY REGISTER INSTALLATION.
9. BLANK OFF AND SEAL EXISTING 96" WIDE AND 222" TALL LOUVER WITH 18 GA GALVANIZED SHEET METAL ON THE INTERIOR OF THE LOUVER. PROVIDE 2 LAYERS OF 2" THICK RIGID FIBERGLASS INSULATION BOARD WITH STAGGERED SEAMS. FINISH WITH 100% COVERAGE OF EDGES AND INTERIOR OF THE INSULATION WITH 2 LAYERS OF GLASS FABRIC AND MASTIC.
10. INSTALL NEW THERMOSTAT ADJACENT TO EXISTING COMMUNICATION PANEL. ROUTE CONTROL WIRING TO TF-3 IN NEW CONDUIT.
11. DEMOLISH EXISTING ACCESS LADDER AND PROVIDE NEW OSHA COMPLIANT LADDER LOCATED 18" SOUTH OF EXISTING AND ADJACENT TO EXISTING CONDUIT. FABRICATE NEW RAILING TO MATCH EXISTING.
12. PROVIDE 48" WIDE x 120" TALL AND 6" DEEP PLENUM WITH MOTORIZED 2-POSITION DAMPER. DAMPER SHALL OPEN WHEN EITHER EF-1 OR EF-2 ARE ON AND REMAIN ON UNTIL BOTH FANS ARE SHUT OFF. DAMPER ACTUATOR SHALL BE SPRING RETURN TYPE AND SHALL FAIL OPEN. BLANK OFF AND SEAL REMAINING LOUVER AREA WITH 18 GA GALVANIZED SHEET METAL ON THE INTERIOR OF THE LOUVER. PROVIDE 2 LAYERS OF 2" THICK RIGID FIBERGLASS INSULATION BOARD WITH STAGGERED SEAMS. FINISH WITH 100% COVERAGE OF EDGES AND INTERIOR OF THE INSULATION WITH 2 LAYERS OF GLASS FABRIC AND MASTIC.
13. PROVIDE BACKDRAFT DAMPER AT EF-2 INLET. ROUTE NEW EXHAUST PLENUM FROM EF-2 INLET DOWN BELOW JOIST AND EXISTING CONDUIT AND ABOVE EXISTING CONDENSER PIPING. ALL DUCTWORK SHALL BE AS HIGH AS POSSIBLE.
14. ROUTE NEW EXHAUST DOWN TO APPROXIMATELY 13'-0" AFF ABOVE EXISTING LIGHT SUPPORT STRUTS AND BELOW EXISTING UNIT HEATER.
15. ROUTE NEW EXHAUST BETWEEN EXISTING PIPE SUPPORT RODS ABOVE EXISTING CHWS&R PIPING.
16. ROUTE NEW EXHAUST DUCT BELOW JOIST AND ABOVE EXISTING CHW PIPING ON SOUTH SIDE OF EXISTING STEEL BEAM.
17. ROUTE NEW EXHAUST DUCT DOWN TO FLOOR, PROVIDE DUCT-MATE CONNECTION AT 6'-0" AFF TO ALLOW EASE OF LOWER DUCT SECTION REMOVAL DURING CHILLER SERVICING. PROVIDE BALANCING DAMPER LOW AT EACH INLET FOR AIR BALANCING. PROVIDE BIRD-SCREEN AT DUCT INLET. EACH EXHAUST DUCT AIR INLET SHALL BE BALANCED TO 1,100 CFM.
18. EF-1 AIR INLET WITH BACKDRAFT DAMPER.
19. ROUTE DUCTWORK BETWEEN EXISTING UNIT HEATER AND ROLL-UP DOOR, UNDER EXISTING CONDUIT.
20. INSTALL STRAIGHT RETURN DUCT TO ALLOW SMOKE DETECTOR INSTALLATION.
21. PROVIDE BALANCING DAMPER AT AHU RETURN AIR AND OUTDOOR AIR INLET.
22. PROVIDE UNISTRUT SUPPORTED VFD.
23. COIL PULL CLEARANCE.
24. INSTALL DUCTWORK AS HIGH AS POSSIBLE. TYPICAL UNLESS NOTED OTHERWISE.
25. NEW SPACE TEMPERATURE AND HUMIDITY SENSOR LOCATION.
26. NEW 30x30 DOOR GRILLE INSTALLED IN EXISTING EXTERIOR DOOR. PROVIDE COMPATIBLE GRILLE FOR EXISTING DOOR SYSTEM.
27. DEMOLISH EXISTING PANEL AND INSTALL NEW CONTROL PANEL WITH NEW AHU CONTROLLER AND NEW BUILDING LEVEL CONTROLLER. ALL AHU SENSOR WIRING SHALL BE ROUTED TO NEW CONTROLLER IN A NEW CONDUIT. PROVIDE NEW TRANSFORMER.
28. ALL PIPING DEVICES SHOWN ON COOLING COIL PIPING DIAGRAM SHALL BE LOCATED CLOSE TO AHU. POSITION CHAIN OPERATED BUTTERFLY ISOLATION VALVES OUTSIDE OF COIL PULL CLEARANCE AREA INDICATED TO ALLOW COIL ISOLATION DURING REPLACEMENT.
29. ENSURE DOOR SWING CLEARANCE IS UNOBSTRUCTED.



MECHANICAL MEZZANINE PLAN

1/4" = 1'-0"

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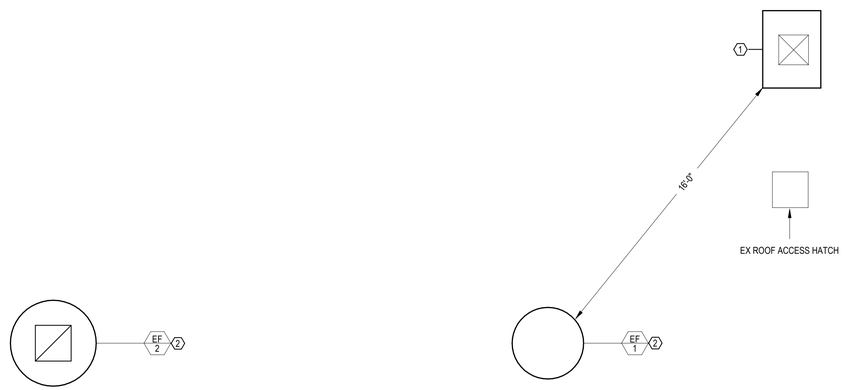

CHILLER PLANT ROOF PLAN

N

1/4" = 1'-0"

SHEET NOTES:

1. INSTALL NEW OUTDOOR AIR INTAKE ON EXISTING ROOF CURB. PROVIDE ROOF CURB ADAPTER FOR EXISTING 27.5" x 27.5" ROOF CURB. OUTDOOR AIR INTAKE SHALL BE EQUAL TO GREENHECK FGI VENTILATOR INTAKE WITH 24"X24" THROAT AND INTAKE VELOCITY OF 330 FPM AT 2,500 CFM AND 0.06 IN WG PRESSURE DROP. PROVIDE BIRD SCREEN. ROUTE 20x20 OA DUCT DOWN TO AHU.

2. INSTALL NEW EXHAUST FAN ON EXISTING ROOF CURB. PROVIDE CUSTOM ROOF CURB ADAPTER FOR EXISTING 46" x 46" ROOF CURB.

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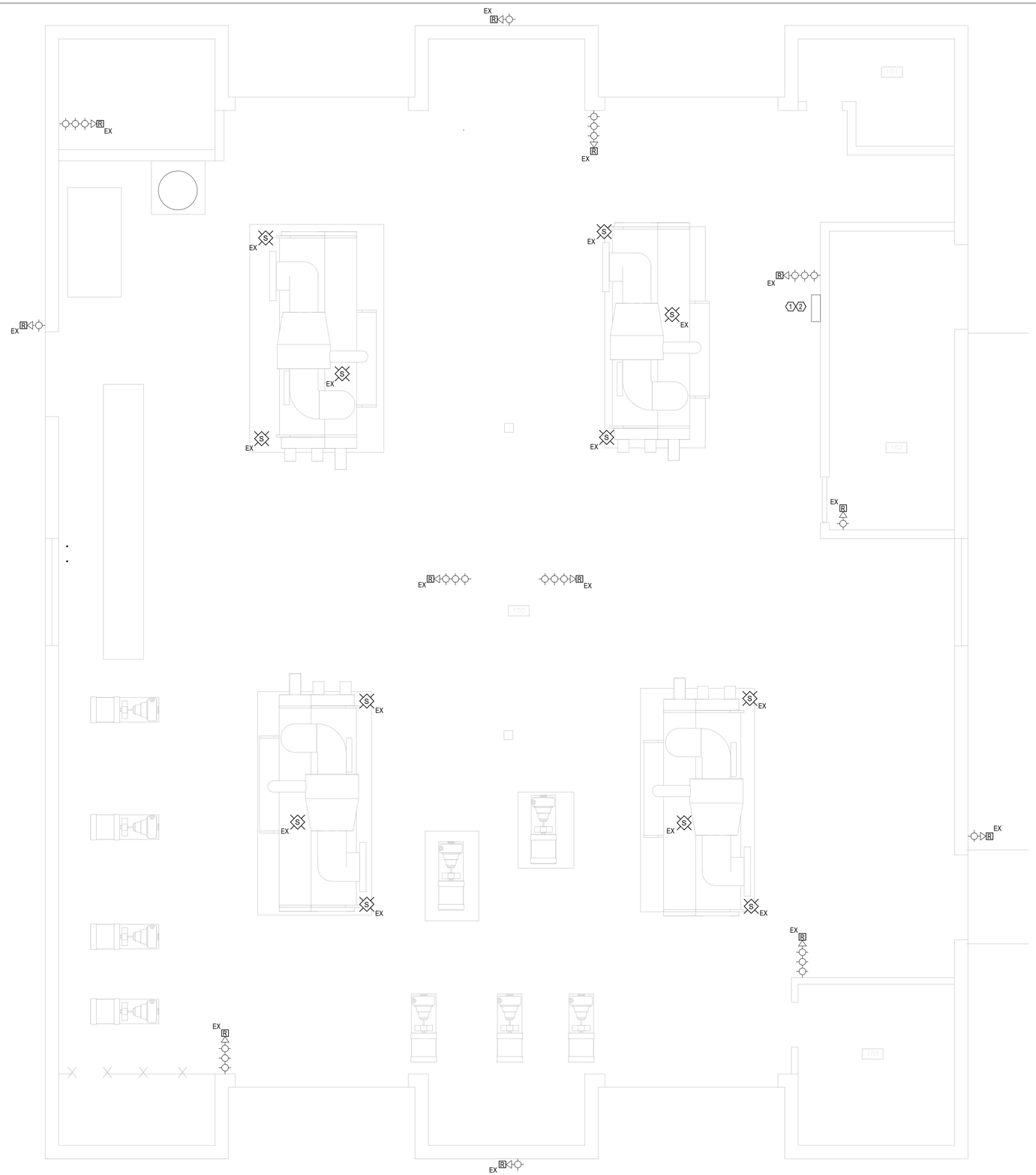

LEGEND

- S — REFRIGERANT SAMPLE POINT
- R — REFRIGERANT MONITORING SYSTEM AUDIO VISUAL ALARM (3-LIGHT INDICATOR)
- R — REFRIGERANT MONITORING SYSTEM AUDIO VISUAL ALARM (SINGLE STROBE)

SHEET NOTES:

1. DEMOLISH EXISTING REFRIGERANT LEAK DETECTION SYSTEM CONTROLLER. OWNER HAS FIRST RIGHT OF REFUSAL. EXISTING AUDIO-VISUAL DEVICES AND REFRIGERANT LEAK SENSORS TO REMAIN AND BE REUSED. ENSURE NEW CONTROL PANEL IS PROVIDED FOR REUSE OF EXISTING DEVICES.
2. INSTALL NEW REFRIGERANT MONITORING SYSTEM CONTROLLER IN THE EXISTING CONTROLLER LOCATION. CONNECT CONTROLLER TO EXISTING AUDIO-VISUAL DEVICES AND REFRIGERANT LEAK SENSORS. CONFIGURE NEW CONTROLLER FOR PROPER LEAK DETECTION OPERATION. CONFIGURE NEW CONTROLLER TO START EF-1 AND EF-2 WHEN AND REFRIGERANT LEAK IS DETECTED. CONFIGURE CONTROLLER TO PROVIDE REMOTE ALERTING TO CHILLER PLANT CONTROL SYSTEM AND REMOTE PAGING SYSTEM.

N

CHILLER PLANT FLOOR PLAN - REFRIGERANT MONITORING SYSTEM

1/4" = 1'-0"

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MECHANICAL FLOOR PLAN

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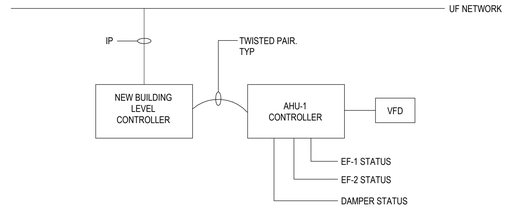
CONTROLS LEGEND

- DUCT ELBOW (TURNING VANES SHOWN)
- FLEXIBLE DUCT CONNECTION
- MANUAL BALANCING DAMPER
- AH 111 — EQUIPMENT TAG
- COM — INTEGRATION OF EQUIPMENT SPECIFIC POINTS TO BUILDING AUTOMATION SYSTEM VIA BACnet
- XXX — CONTROL DEVICE (SEE CONTROLS ABBREVIATIONS)
- DUCT BREAK
- AIRFLOW DIRECTION
- AVERAGING ELEMENT (SERPENTINE)
- POINT SENSOR
- PARALLEL BLADE DAMPER
- 2-WAY CONTROL VALVE

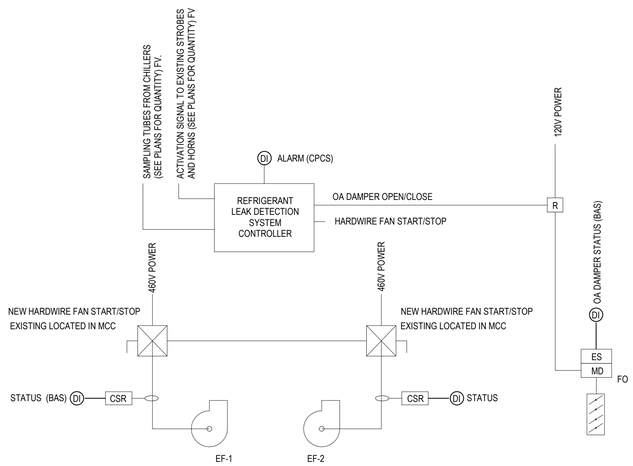
CONTROLS ABBREVIATIONS

AMS	AIR MEASURING STATION
AI	ANALOG INPUT
AO	ANALOG OUTPUT
CC	COOLING COIL
CPCS	CHILLER PLANT CONTROL SYSTEM
CSR	CURRENT RELAY
CT	CURRENT TRANSDUCER
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DP	DIFFERENTIAL PRESSURE SENSOR
ES	END SWITCH
FC	FAIL CLOSED
FM	FLOW METER
FO	FAIL OPEN
FTL	FAIL TO LAST
FS	FLOW SWITCH
FV	FIELD VERIFY
FZ	FREEZE STAT
HS	HUMIDITY SENSOR
M	MOTOR
MD	MOTORIZED DAMPER
MV	MOTORIZED VALVE
PS	PRESSURE SWITCH
R	RELAY
SCR	SILICONE-CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
T	THERMOSTAT
T/H	COMBINATION THERMOSTAT AND HUMIDITY SENSOR
TS	TEMPERATURE SENSOR



BAS NETWORK DIAGRAM

NOT TO SCALE



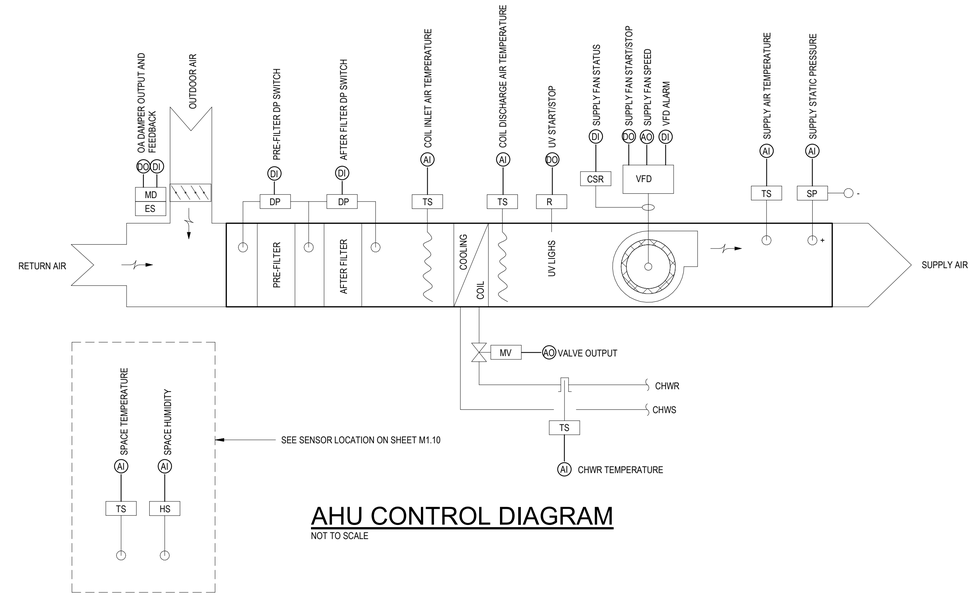
EXHAUST FAN CONTROL DIAGRAM

NOT TO SCALE

CONTROL SEQUENCE

1. START/STOP CONTROL:
   EXHAUST FANS AND OA DAMPER SHALL BE ACTIVATED BY REFRIGERANT LEAK DETECTION SYSTEM WHEN REFRIGERANT LEAK OR SPILL IS DETECTED. ONCE ACTIVATED, THE OA INTAKE LOUVER DAMPER SHALL OPEN AND BOTH EXHAUST FANS SHALL START AND OPERATE CONTINUOUSLY. ONCE REFRIGERANT LEAK ALARM IS ACKNOWLEDGED AND MANUAL RESET HAS BEEN RESET THE EXHAUST FANS SHALL SHUT OFF AND THE OA INLET DAMPER SHALL CLOSE.

2. INDICATION:
   ALL POINTS INDICATED ON CONTROL DIAGRAM SHALL BE MAPPED ONTO AHU-1 GRAPHICS PAGE.



AHU CONTROL DIAGRAM

NOT TO SCALE

AHU-1 CONTROL SEQUENCE

SAFETIES:

1. FIRE ALARM: NEW FIRE ALARM RELAY SHALL SHUTDOWN AHU ON SIGNAL FROM FACP.

MODE OF OPERATION:
AHU SHALL OPERATE CONTINUOUSLY 24HRS/DAY.

FAN SPEED CONTROL:
AHU SHALL OPERATE IN CONSTANT VOLUME MODE, FAN SPEED CONTROL WILL BE UTILIZED FOR MAINTAINING SCHEDULED AIRFLOW DESPITE FILTER LOADING. AHU CONTROLLER SHALL MONITOR STATIC PRESSURE READING AND MODULATE FAN SPEED TO MAINTAIN STATIC PRESSURE SET-POINT. THE STATIC PRESSURE SET-POINT SHALL BE DETERMINED DURING TEST AND BALANCE WORK TO ENSURE AHU PROVIDES SCHEDULED AIRFLOW. THE STATIC PRESSURE SENSOR SHALL BE SELECTED BY CONTROL CONTRACTOR TO ALLOW STABLE READING IN THE 0.05 TO 0.5 IN WG REGION.

SUPPLY AIR TEMPERATURE CONTROL:
ENABLE THE SUPPLY CONTROL ROUTINE ON PROOF OF FAN START. CLOSE VALVE TO COIL ON FAN STOP. MODULATE CHILLED WATER VALVE TO MAINTAIN A DISCHARGE AIR TEMPERATURE OF 53 DEG F.

SPACE TEMPERATURE OVERRIDE CONTROL:
AHU CONTROLLER SHALL MONITOR SPACE TEMPERATURE CONTINUOUSLY. WHEN SPACE TEMPERATURE FALLS BELOW 60 DEGF (ADJ), AHU SHALL SHUT OFF AND REMAIN OFF UNTIL SPACE TEMPERATURE RISES ABOVE 62 DEGF (ADJ).

ALARMS:
BAS SHALL ISSUE THE ALARMS INDICATED ON THE POINTS LIST.

INDICATION:
SHOW ALL POINTS SHOWN ON CONTROL DIAGRAM AND POINTS LIST BAS GRAPHICS.

AHU-1 POINTS LIST

SYSTEM POINT NAME	SYSTEM POINT DESCRIPTION	POINT TYPE				ALARMS			
		GRAPHICS	HARDWIRED INPUT	HARDWIRE OUTPUT	SOFTWARE POINT	ALARM DESCRIPTION	REFERENCE POINT	ALARM SETTING	TIME DELAY
AHU1.CHP.TEMP	CHILLER PLANT AIR TEMPERATURE	X	AI						
AHU1.CHP.TEMP.STPT	CHILLER PLANT AIR TEMPERATURE SET-POINT	X			X				
AHU1.CHP.HUM	CHILLER PLANT AIR HUMIDITY	X	AI						
AHU1.PRE.FLTR.DP	AHU-1 PRE-FILTER STATUS	X	DI			AHU1 DIRTY PRE-FILTER ALARM	STATUS	DP SWITCH ACTIVATED	15 MIN
AHU1.AFT.FLTR.DP	AHU-1 AFTER FILTER STATUS	X	DI			AHU1 DIRTY AFTER-FILTER ALARM	STATUS	DP SWITCH ACTIVATED	15 MIN
AHU1.CC.EAT	AHU-1 COOLING COIL ENTERING AIR TEMPERATURE	X	AI						
AHU1.CC.DAT	AHU-1 COOLING COIL DISCHARGE AIR TEMPERATURE	X	AI			AHU1 HIGH CC DISCHARGE TEMP	FEEDBACK	CC DAT 2 DEGF ABOVE SET-POINT	15 MIN
AHU1.CC.DAT.STPT	AHU-1 COOLING COIL DISCHARGE AIR TEMPERATURE SET-POINT	X			X				
AHU1.CC.CHWR.TEMP	AHU-1 COOLING COIL CHWR TEMPERATURE	X	AI						
AHU1.CC.VLV	AHU-1 COOLING COIL VALVE COMMAND	X		AO					
AHU1.FAN.SS	AHU-1 FAN START/STOP	X		DO					
AHU1.FAN.SPD	AHU-1 FAN SPEED COMMAND	X		AO					
AHU1.FAN.STAT	AHU-1 FAN STATUS	X	DI			AHU1 FAN FAILURE	STATUS	FAN STATUS DOES NOT MATCH COMMAND	5 MIN
AHU1.VFD.ALRM	AHU-1 VFD ALARM	X	DI			AHU1 VFD ALARM	STATUS	VFD FAULT SIGNAL	1 MIN
AHU1.ST.PRESS	AHU-1 SUPPLY STATIC PRESSURE	X	AI						
AHU1.ST.PRESS.STPT	AHU-1 SUPPLY STATIC PRESSURE SET-POINT	X			X				
EF1.STAT	EF-1 STATUS	X	DI			REFRIGERANT LEAK - EF1 ON	STATUS	FAN STATUS IS ON	15 SECONDS
EF2.STAT	EF-2 STATUS	X	DI			REFRIGERANT LEAK - EF2 ON	STATUS	FAN STATUS IS ON	15 SECONDS
OA.DMPR.STAT	OUTDOOR AIR DAMPER STATUS	X	DI			REFRIGERANT LEAK - OA DMPR OPEN	STATUS	DAMPER SWITCH IS CLOSED	30 SECONDS

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LEGEND

WIRING DEVICES

Φ_G DUPLEX RECEPTACLE, GFCI TYPE, INSTALL AT 18" AFF.

$\$_3$ 3-POLE, 600V, 30A WALL TOGGLE SWITCH

POWER EQUIPMENT AND CONNECTIONS:

DISTRIBUTION PANELBOARD.

PANELBOARD.

(E) ELECTRICAL CONNECTION TO EQUIPMENT. SEE ELECTRICAL EQUIPMENT SCHEDULE.

(J) JUNCTION BOX.

FIRE ALARM:

FACP FIRE ALARM CONTROL PANEL.

(D) [R] FIRE-ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR WITH SHUTDOWN RELAY FOR AHU. COORDINATE MOUNTING AND SAMPLING TUBE WITH MECHANICAL.

FIRE ALARM SUBSCRIPTS:

AHU AIR HANDLING UNIT SHUTDOWN RELAY. COORDINATE WITH MECHANICAL.

ANNOTATIONS:

◇1 DEMOLITION SHEET NOTE.

(1) ELECTRICAL SHEET NOTE.

AH 111 MECHANICAL EQUIPMENT TAG.

GENERAL SUBSCRIPTS (APPLY TO ALL CATEGORIES):

2P1A ELECTRICAL EQUIPMENT TAG.

72" INDICATES HEIGHT OF FIXTURE, RECEPTACLE, BOX, CABINET, ETC. HEIGHT IS TO CENTERLINE UNLESS OTHERWISE INDICATED.

EX EXISTING TO REMAIN

A-1 ELECTRICAL HOME RUN TO PANELBOARD. UNDERLINED LABEL INDICATES PANELBOARD NAME AND CIRCUIT NUMBER. UNLESS INDICATED OTHERWISE, DEFAULT WIRING IS #12 & #12G. PROVIDE CONDUCTORS AS NEEDED FOR INDICATED SWITCHED LEGS, ZONES, ETC. SEE ELECTRICAL EQUIPMENT SCHEDULE FOR SPECIFIC CIRCUIT SIZING.

---------- EXPOSED FEEDER OR CIRCUIT

LIGHTNING PROTECTION:

—— CLASS I LIGHTNING PROTECTION CONDUCTOR. MATCH EXISTING MATERIAL.

REUSE EXISTING CLASS I AIR TERMINAL.

TELECOMMUNICATIONS:

▼ DATA CONNECTION. ROUGH-IN BY EC, TELECOM BY UF.

ABBREVIATIONS

AC	ABOVE COUNTER
AFC	AVAILABLE FAULT CURRENT
A.I.C.	AMPERES OF INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
BOD	BASIS OF DESIGN
C	CONDUIT
CB	CIRCUIT BREAKER
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED
CKT	CIRCUIT
DIV	DIVISION
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EOR	ENGINEER OF RECORD
EX	EXISTING TO REMAIN
G	GROUND, GROUND FAULT CIRCUIT INTERRUPTER
GCB	GFCI CIRCUIT BREAKER
LTG	LIGHTING
LTS	LIGHTS
MCC	MOTOR CONTROL CENTER
NAC	NOTIFICATION APPLIANCE CIRCUIT
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PBD	PANELBOARD
PQM	POWER QUALITY METER
SPD	SURGE PROTECTION DEVICE
SLC	SIGNALING LINE CIRCUIT
SWBD	SWITCHBOARD
TBD	TO BE DETERMINED
TCR	TELECOMMUNICATIONS ROOM
TO	TELECOMMUNICATIONS OUTLET
TYP	TYPICAL
UF	UNIVERSITY OF FLORIDA
UFL	UNIVERSITY OF FLORIDA
UNO	UNLESS NOTED OTHERWISE
VFD	VARIABLE FREQUENCY DRIVE
WAO	WORK AREA OUTLET
WAP	WIRELESS ACCESS POINT
WP	WEATHER PROOF / WEATHER RESISTANT
WR	WEATHER PROOF / WEATHER RESISTANT
WRT	WITH RESPECT TO

CODES AND STANDARDS

ALL PROJECT WORK SHALL BE GOVERNED BY AND ADHERE TO THE FOLLOWING CODES AND STANDARDS.

1. FLORIDA BUILDING CODE - SIXTH EDITION (2017)
2. FLORIDA BUILDING CODE - SIXTH EDITION (2017) - ENERGY CONSERVATION
3. FLORIDA FIRE PREVENTION CODE - SIXTH EDITION (2017)
   A. FIRE CODE (NFPA 1 - 2015 FLORIDA EDITION)
   B. LIFE SAFETY CODE (NFPA 101 - 2015 FLORIDA EDITION)
4. NATIONAL ELECTRIC CODE (2014 NFPA 70).
5. FIRE ALARM AND SIGNALING CODE (2013 NFPA 72)
6. UNDERWRITERS' LABORATORIES (UL)
7. AMERICAN NATIONAL STANDARDS INSTITUTION (ANSI)
8. AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
9. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
10. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
11. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
12. NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA)
13. AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)
14. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
15. ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA)
16. TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)
17. ELECTRONICS INDUSTRY ALLIANCE (EIA)

UF STANDARDS NOTES

UF LABELING NOTES:

1. THE UNIVERSITY OF FLORIDA REQUIRES EXTENSIVE LABELING OF ALL SYSTEM. CONTRACTOR SHALL OBEY ALL UNIVERSITY OF FLORIDA LABELING REQUIREMENTS.
2. COLOR CODE BOX COVERS AND CONDUIT COUPLINGS PER UF STANDARDS AND PROJECT SPECIFICATION.
3. LABEL EQUIPMENT, CONDUCTORS, BOX COVERS, INSIDE PULL AND SPLICE BOXES, AND WIRING DEVICES PER UF STANDARDS AND PROJECT SPECIFICATION.

EX LIGHTNING PROTECTION NOTE

PROVIDE ALTERATIONS TO EXISTING LIGHTNING PROTECTION SYSTEM AS SHOWN ON DRAWINGS. PROVIDE OWNER WITH SEPARATE PROPOSAL TO PROVIDE UL MASTER LABEL RECERTIFICATION FOR THE ALTERATIONS.

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Peter Rizov
PE - 76608

PROJECT NAME:
UNIVERSITY OF FLORIDA
SW CHILLER PLANT CONDENSATION CORRECTIONS

OWNER:
UNIVERSITY OF FLORIDA
3113 HULL ROAD
GAINESVILLE, FL 32611

OWNERS PROJECT # UT00343

MG PROJECT NUMBER: 20057

REVISIONS:

REV	DESC	DATE

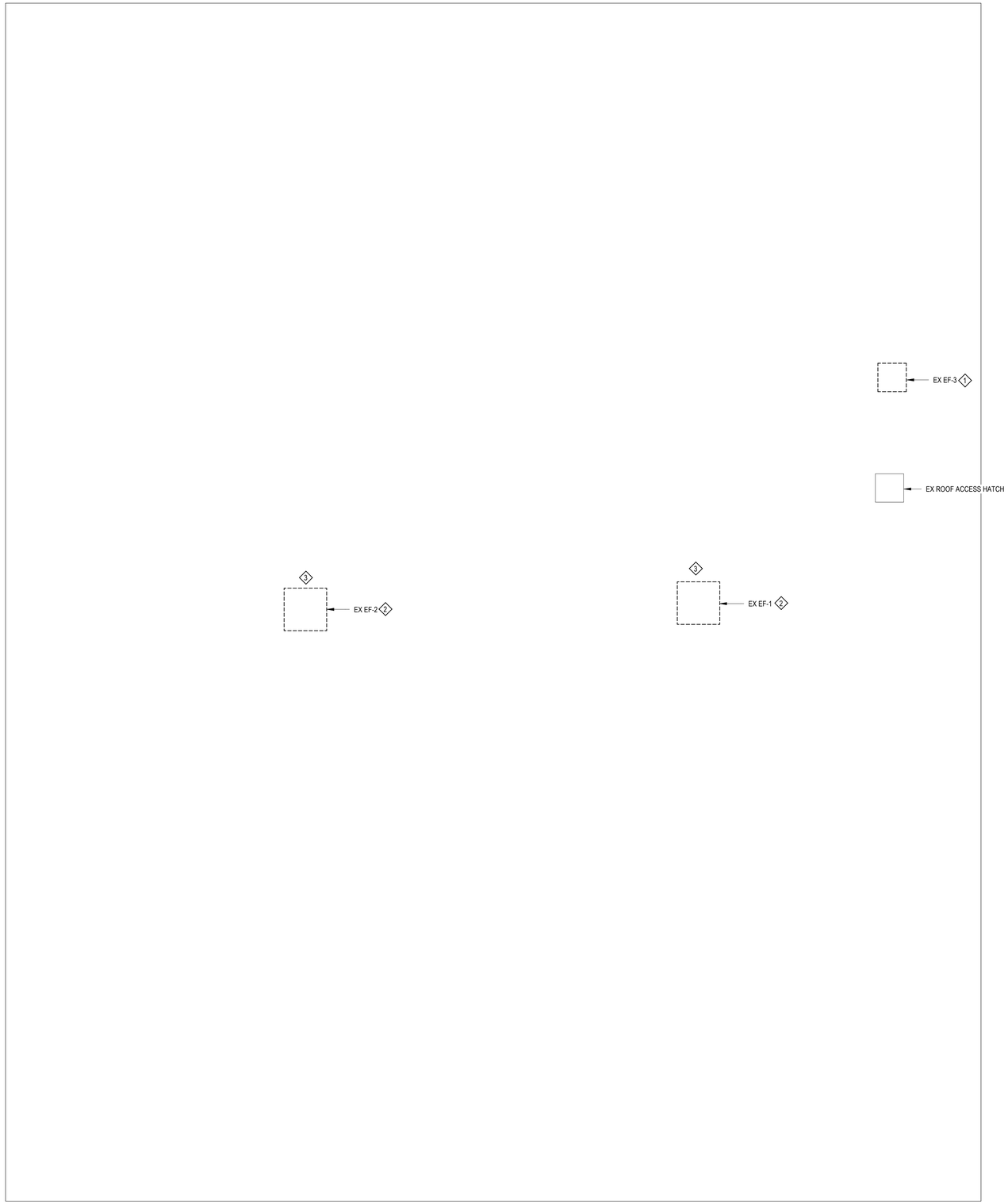
ISSUE:
100% CONSTRUCTION DOCUMENTS

ISSUE DATE:
SEPTEMBER 4, 2020

CHECKED BY:
PR

SHEET TITLE:
ELECTRICAL LEGEND, CODES, AND ABBREVIATIONS

SHEET NUMBER:
E0.01



DEMOLITION NOTES:

1. DEMOLISH ALL EXISTING ELECTRICAL CONDUITS, WIRES, DISCONNECTS, ETC SERVING EXHAUST FAN BEING REMOVED.
2. PARTIALLY DEMOLISH EXISTING CIRCUIT TO BELOW CEILING AND PREPARE FOR RE-USE.
3. CAREFULLY REMOVE EXISTING LIGHTNING PROTECTION AIR TERMINALS AND CABLING AND PREPARE FOR REINSTALLATION.

N

ELECTRICAL CHILLER PLANT ROOF PLAN - DEMOLITION

1/4" = 1'-0"

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STATE OF FLORIDA LICENSED PROFESSIONAL ENGINEER PETER RIZOV 76608 K. WHITEHEAD

Digitally signed by Kevin T Whitehead
Date: 2021.01.21 15:54:41 -05'00'

Peter Rizov
PE - 76608

PROJECT NAME:
UNIVERSITY OF FLORIDA
SW CHILLER PLANT CONDENSATION CORRECTIONS

OWNER:
UNIVERSITY OF FLORIDA
3113 HULL ROAD
GAINESVILLE, FL 32611

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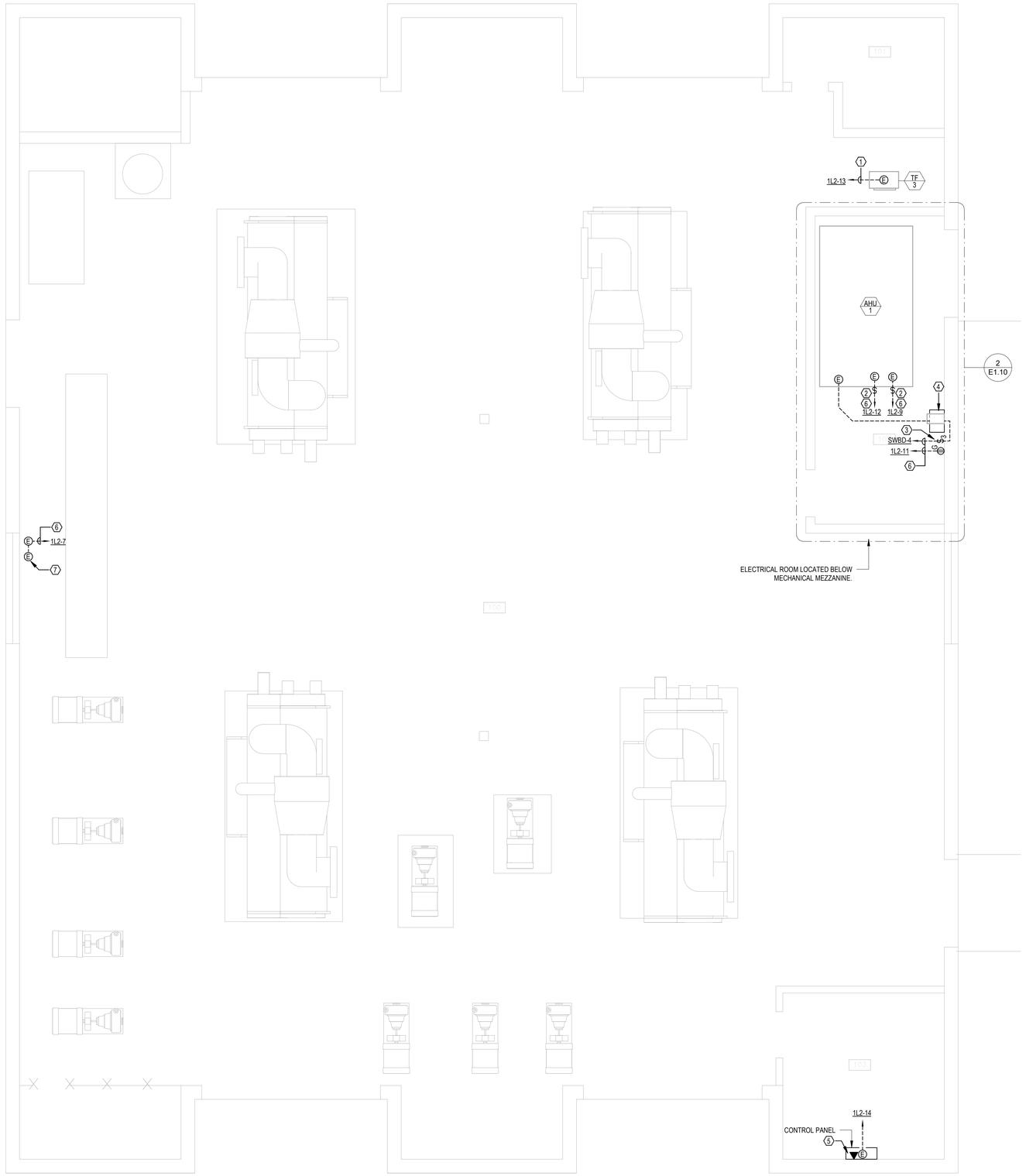
ELECTRICAL ROOF PLAN - DEMOLITION

SHEET NUMBER:
E1.01



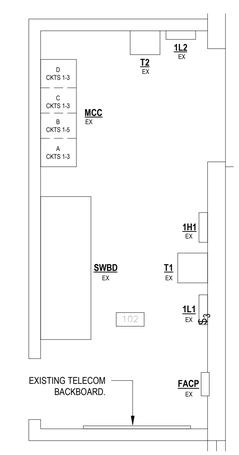
ELECTRICAL CHILLER PLANT FLOOR PLAN

N

1/4" = 1'-0"

SHEET NOTES:

1. CONNECT THROUGH SPEED CONTROLLER FURNISHED BY DIV 23, INSTALLED BY DIV 26. COORDINATE LOCATIONS AND INSTALLATION. 1/2"C WITH 2 #12 AND 1 #12 EGC CU.
2. INSTALL ON EQUIPMENT.
3. PROVIDE LEVITON TYPE MS303 TOGGLE DISCONNECT SWITCH, 600V, 3P, 30A.
4. VARIABLE FREQUENCY DRIVE FURNISHED BY DIV 23. CONNECTED BY ELECTRICAL CONTRACTOR.
5. PROVIDE 1"C FROM TTB TO CONTROL PANEL. TERMINATE WITH PLASTIC BUSHING AT ENDS. DATA CABLING AND PATCHING BY UF. COORDINATE WORK WITH DIV 23 AND UF.
6. 1/2"C WITH 2 #12 AND 1 #12 EGC CU.
7. DAMPER ACTUATORS, COORDINATE WORK WITH MECHANICAL DIVISION.



ELECTRICAL ROOM

1/4" = 1'-0"

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GAINESVILLE, FL 32611

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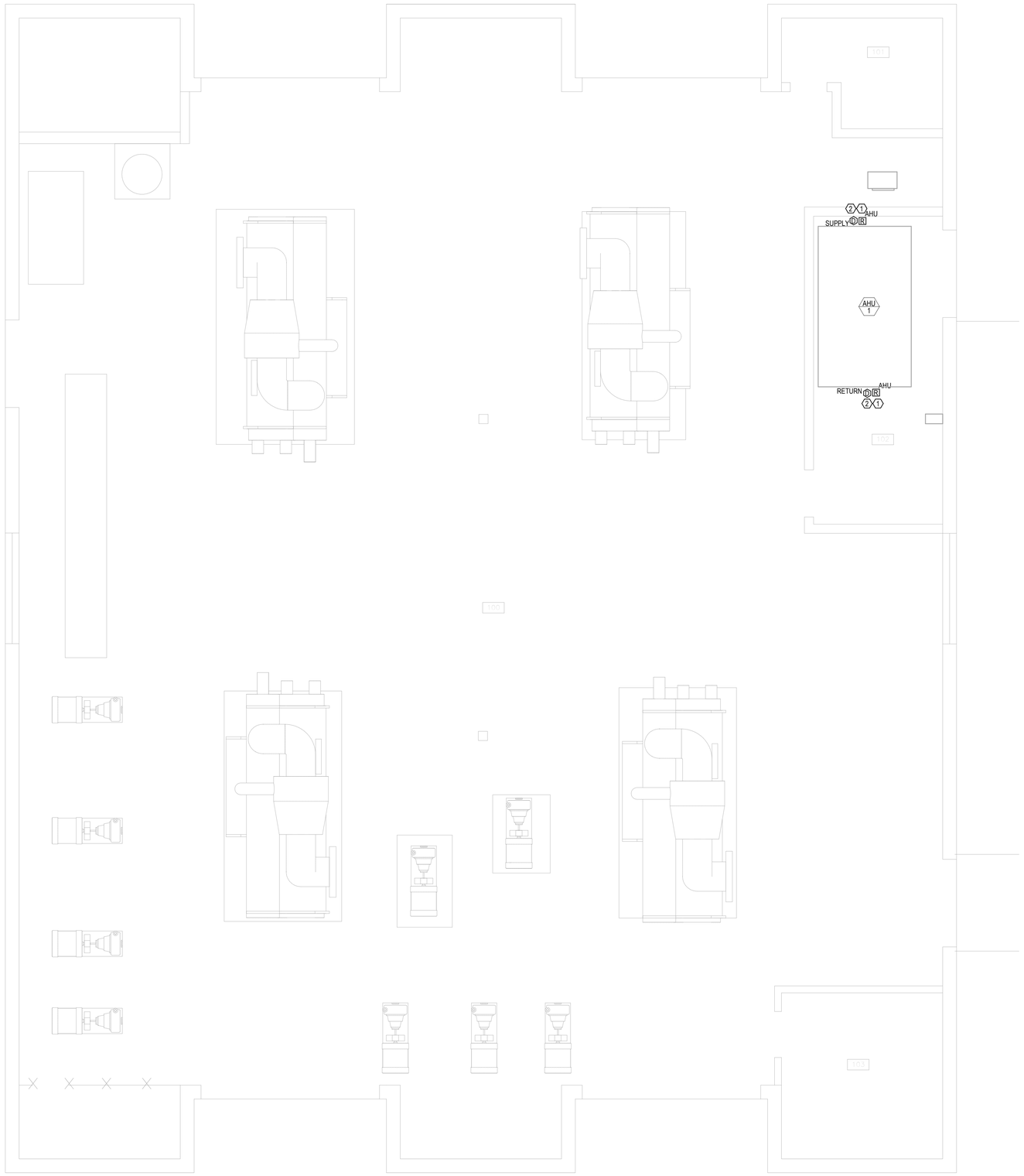
ELECTRICAL FLOOR PLAN - MECHANICAL POWER

SHEET NUMBER:
E1.10



SHEET NOTES:

1. PROVIDE NEW FIRE ALARM RELAY ON ADDRESSABLE SIMPLEX FIRE ALARM SYSTEM. CONNECT RELAY TO SHUT DOWN UNIT UPON ACTIVATION OF ALL DUCT SMOKE DETECTORS CORRESPONDING TO THIS AIR HANDLING UNIT.

2. PROVIDE NEW DUCT SMOKE DETECTORS ON ADDRESSABLE SIMPLEX FIRE ALARM SYSTEM. SAMPLING TUBES PROVIDED BY DIVISION 23.

N

ELECTRICAL CHILLER PLANT FLOOR PLAN - FIRE ALARM

1/4" = 1'-0"

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GAINESVILLE, FL 32611

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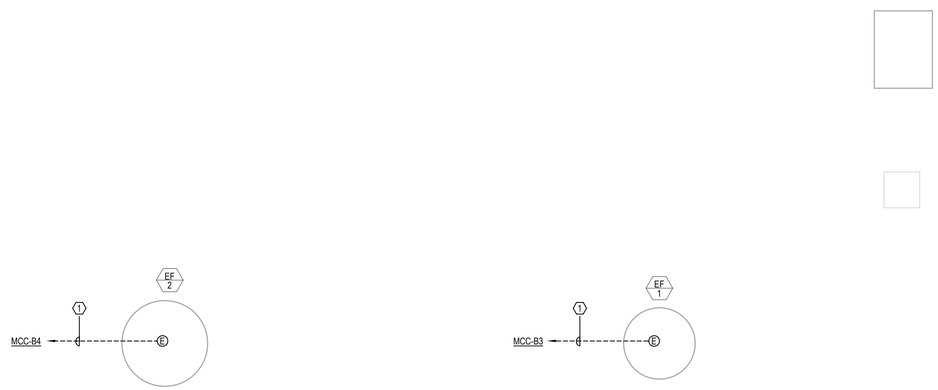
SHEET TITLE:
ELECTRICAL FLOOR PLAN - FIRE ALARM

SHEET NUMBER:
E1.11



ELECTRICAL CHILLER PLANT ROOF PLAN

1/4" = 1'-0"

SHEET NOTES:

1. RECONNECT TO EXISTING CIRCUIT. 1/2"C WITH 3 #12 AND 1 #12 EGC CU.

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3113 HULL ROAD
GAINESVILLE, FL 32611

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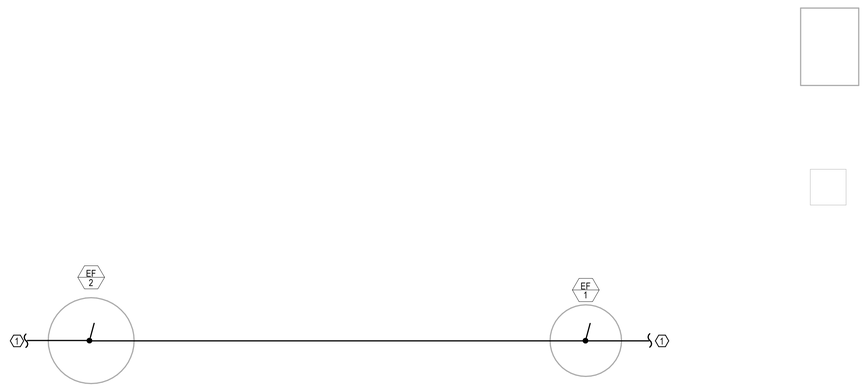
SHEET TITLE:
ELECTRICAL ROOF PLAN - MECHANICAL POWER

SHEET NUMBER:
E1.20



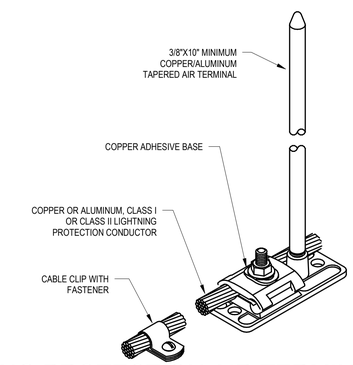
N

ELECTRICAL CHILLER PLANT ROOF PLAN - LIGHTNING PROTECTION

1/4" = 1'-0"

SHEET NOTES:

1. RECONNECT TO EXISTING LIGHTNING PROTECTION SYSTEM.



01 LIGHTNING PROTECTION AIR TERMINAL BASE DETAIL

NOT TO SCALE

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PETER RIZOV · No 76608 · STATE OF FLORIDA · PROFESSIONAL ENGINEER

Peter Rizov
PE - 76608

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SW CHILLER PLANT CONDENSATION CORRECTIONS

OWNER:
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3113 HULL ROAD
GAINESVILLE, FL 32611

OWNERS PROJECT # UT00343

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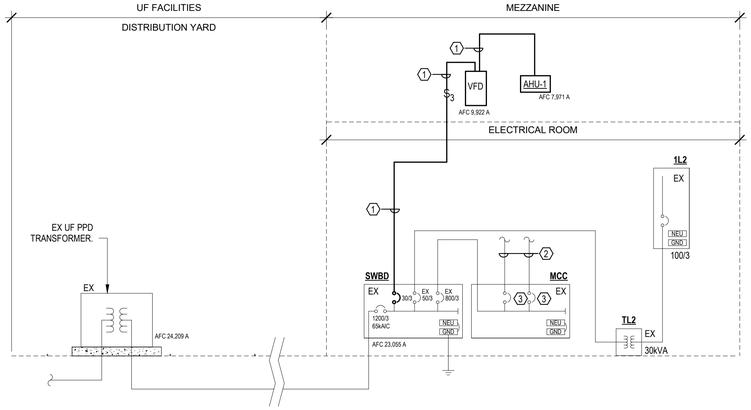
ELECTRICAL ROOF PLAN - LIGHTNING PROTECTION

SHEET NUMBER:
E1.21



1 PARTIAL EXISTING ELECTRICAL RISER DIAGRAM

NOT TO SCALE

RISER KEY NOTES:

1. 3/4"C WITH 3 #10 AND 1 #10 EGC CU.
2. REUSE AND EXTEND EXISTING CIRCUIT TO NEW FANS EF1 AND EF-2. SEE ROOF PLAN. 1/2"C WITH 3 #12 AND 1 #12 EGC CU.
3. EXISTING BUCKET-TYPE FUSED CONTROLLER. PROVIDE FUSES PER MANUFACTURER'S RECOMMENDED MAXIMUM FUSE SIZE OR MOCP.

LINETYPE LEGEND:

NEW WORK

EXISTING TO REMAIN

Ex Branch Panel: 1L2

Location:		**Volts:**	120/208 Wye	**Phase Bus Rating:**	125 A
Supply From:		**Phases:**	3	**MCB Rating:**	100 A
Mounting:	SURFACE	**Wires:**	4	**Neutral Rating:**	100%
Enclosure:	NEMA 1	**A.I.C. Rating:**	22,000	**Feeder Ampacity:**	100 A
Basis of Design:	GE A TYPE SERIES II	**SPD:**	NO	**Feeder Phase Conductor:**	EX
Service Rated:	NO	**PQM:**	NO	**Feeder Neutral Conductor:**	EX
				Feeder Ground Conductor:	EX
				Feeder Conduit:	EX
				Number of Parallel Runs:	EX

Notes:
BOLD INDICATES NEW WORK. REUSE EXISTING CIRCUIT BREAKERS.

CKT	Circuit Description	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Circuit Description	CKT
1				0 VA			2000 VA			1	30 A	SUMP PUMP 1	2
3	TVSS	30 A	3		0 VA			2000 VA		1	30 A	SUMP PUMP 2	4
5						0 VA			2000 VA	1	30 A	TOWER LIGHTING	6
7	**AHU-1 DAMPER ACTUATORS**	20 A	1	**17 VA**			180 VA			1	20 A	TOWER RECEPTACLES	8
9	**AHU-1 SERVICE LIGHTS**	20 A	1		**1440 VA**			250 VA		1	20 A	TRANE CONTROLS	10
11	**RECEPTACLES - MEZZANINE**	20 A	1			**180 VA**			**1440 VA**	1	20 A	**AHU-1 UV LIGHTS**	12
13	**TRANSFER FAN TF-3**	20 A	1	**228 VA**			**300 VA**			1	20 A	**AHU CONTROL PANEL**	14
15	SPACE ONLY	--	--		0 VA			0 VA		--	--	SPACE ONLY	16
17	SPACE ONLY	--	--			0 VA			0 VA	--	--	SPACE ONLY	18
19	SPACE ONLY	--	--	0 VA			0 VA			--	--	SPACE ONLY	20
21	SPACE ONLY	--	--		0 VA			0 VA		--	--	SPACE ONLY	22
23	SPACE ONLY	--	--			0 VA			0 VA	--	--	SPACE ONLY	24
25	SPACE ONLY	--	--	0 VA			0 VA			--	--	SPACE ONLY	26
27	SPACE ONLY	--	--		0 VA			0 VA		--	--	SPACE ONLY	28
29	SPACE ONLY	--	--			0 VA			0 VA	--	--	SPACE ONLY	30
			Total Load:	2725 VA		3690 VA		3620 VA					
			Total Amps:	23 A		32 A		31 A					

AHU-1 DISCONNECT

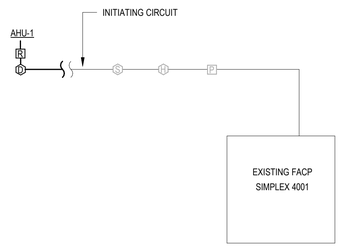
CKT SWBD-4

EXAMPLE MECHANICAL EQUIPMENT DISCONNECT LABEL

PROVIDE PRINTED SELF ADHESIVE LABEL AND PLACE ON SWITCH. WHITE LABEL, BLACK TEXT

2 ELECTRICAL EQUIPMENT LABELING DETAIL

NOT TO SCALE



FIRE ALARM RISER DIAGRAM NOTES

1. THIS RISER IS DIAGRAMMATIC AND IS NOT INTENDED TO INDICATE QUANTITY OR LOCATION OF DEVICES. SEE PLANS FOR LOCATIONS AND COUNTS.
2. INSTALL ALL COMPONENTS OF FIRE ALARM SYSTEM AS DESCRIBED BY GOVERNING CODES AND MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHERE A CONFLICT EXISTS BETWEEN CONTRACT DOCUMENTS, INSTALLATION INSTRUCTIONS, OR CODE, NOTIFY ENGINEER.
3. DO NOT USE WIRE NUTS IN FIRE ALARM SYSTEM WIRING. SEE SPECIFICATION.
4. FACP IS EXISTING TO REMAIN AND THE INITIATING CIRCUIT IS EXISTING TO REMAIN.
5. EXTEND THE EXISTING INITIATING CIRCUIT TO NEW DUCT DETECTORS.
6. REPROGRAM EXISTING SYSTEM TO INDICATE LOCATION AND TYPE OF TROUBLE, SUPERVISORY, AND ALARM STATUS FOR NEW ADDRESSABLE DEVICES.
7. MINIMUM SIZE CONDUCTOR IS #14 AWG CU., AND MINIMUM SIZE CONDUIT IS 3/4"C. ALL CABLING SHALL BE IN CONDUITS.
8. ALL BOXES MUST BE LISTED FOR FIRE ALARM SYSTEM INSTALLATION.

4 FIRE ALARM RISER DIAGRAM

NOT TO SCALE

Ex Switchboard: SWBD

Location:		**Volts:**	**480/277 Wye**	**Phase Bus Rating:**	**1200 A**
Supply From:		**Phases:**	**3**	**MCB Rating:**	**1200A**
Enclosure:	**NEMA 1**	**Wires:**	**4**	**Neutral Rating:**	**100%**
Model:	**GE AV-LINE**	**A.I.C. Rating:**	**65,000**	**Feeder Amapcity:**	**1200A**
Service Rated:	**YES**	**SPD:**		**Feeder Phase Conductors:**	**EXISTING**
Mounting:	**FLOOR**	**PQM:**		**Feeder Neutral Conductor:**	**EXISTING**
				Feeder Grounding...	**EXISTING**
NOTES:	**BOLD INDICATES NEW WORK**			**Feeder Conduit Size:**	**EXISTING**
				# of Parallel Runs:	**EXISTING**

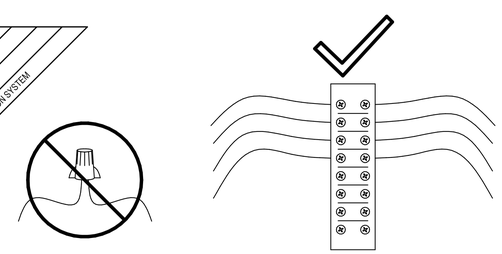
CKT	NAME	CIRCUIT BREAKER...	Load
A-1	DP-3	175/3	0 VA
A-2	DP-2	175/3	0 VA
A-3	D-1	175/3	0 VA
A-4	**AHU-1**	**30/3**	**10725 VA**
A-5	CHILLER HEATER	30/3	0 VA
A-6	CHILLER HEATER	30/3	0 VA
A-7	PANEL '1L2' VIA TRANSFORMER 30 kVA	50/3	0 VA
A-8	IHI	90/3	0 VA
A-9	-		0 VA
A-10	MOTOR CONTROL CENTER 'MCC'	800/3	0 VA
	SECTION BREAK		0 VA
B-1	CT-FAN2	100/3	0 VA
B-2	CT-FAN4	100/3	0 VA
B-3	PP-1	40/3	0 VA
B-4	PP-2	40/3	0 VA
B-5	PP-5 BACKUP	40/3	0 VA
B-6	UNIT HEATER 2	20/3	0 VA
B-7	UNIT HEATER 1	20/3	0 VA
B-8	UNIT HEATER 3	20/3	0 VA
B-9	UNIT HEATER 5	20/3	0 VA
B-10	UNIT HEATER 4	20/3	0 VA
B-11	ENERGY METER	30/3	0 VA
B-12	PP-3	40/3	0 VA
	SECTION BREAK		0 VA
C-1	CT-FAN1	100/3	0 VA
C-2	DP-4	175/3	0 VA
			0 VA
			0 VA
			0 VA
			0 VA

NOTE: NOT ALL ITEMS IN THIS MATRIX NECESSARILY APPLY TO THIS BUILDING. MAINTAIN EXISTING SEQUENCES FOR OVERALL BUILDING. WHERE EXISTING SEQUENCE DOES NOT MATCH INDICATED SEQUENCE, VERIFY THAT EXISTING SEQUENCE MEETS CURRENT CODES AND STANDARDS.

	ACTIVATE VISIBLE ALARM SIGNAL	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE ALARM INDICATORS AT FACP/FAA INTERFACES	ACTIVATE SUPERVISORY INDICATORS AT FACP/FAA INTERFACES	ACTIVATE TROUBLE INDICATORS AT FACP/FAA INTERFACES	DISPLAY ACTIVATION SOURCE INFORMATION AT FACP/FAA INTERFACES	TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION	TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION	TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION	SHUT DOWN CORRESPONDING AIR HANDLING UNIT	RELEASE CORRESPONDING MAGNETICALLY HELD SMOKE DOORS	RELEASE ALL MAGNETICALLY HELD SMOKE DOORS	RECALL ELEVATORS TO PRIMARY RECALL FLOOR	RECALL ELEVATORS TO SECONDARY RECALL FLOOR	CLOSE SMOKE AND FIRE/SMOKE DAMPERS FOR CORRESPONDING UNIT	CLOSE SMOKE AND FIRE/SMOKE DAMPERS IN RATED WALLS	UNLOCK EXITS	PRESSURIZE STAIRWELLS	ACTIVATE CORRESPONDING SMOKE EVACUATION SYSTEM
UNIT DUCT SMOKE DETECTOR ACTIVATED				✓		✓		✓		✓				✓					
SMOKE DAMPER DUCT SMOKE DETECTOR ACTIVATED				✓		✓		✓		✓					✓				

3 FIRE ALARM INPUT/OUTPUT MATRIX

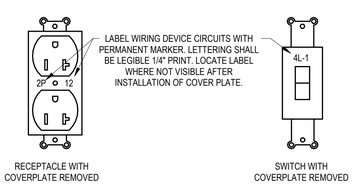
NOT TO SCALE



TERMINATE ALL FIRE ALARM WIRING ON TERMINAL BLOCKS OR DEVICE TERMINALS. NO WIRE NUTS SHALL BE INSTALLED ON FIRE ALARM WIRING.

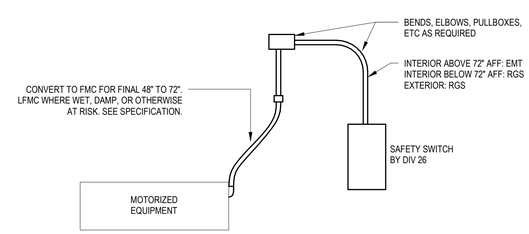
7 FIRE ALARM WIRING TERMINATION DETAIL

NOT TO SCALE



5 TYPICAL ELECTRICAL WIRING DEVICE LABEL DETAIL

NOT TO SCALE



6 TYPICAL EQUIPMENT CONNECTION DETAIL

NOT TO SCALE

DEMAND CALCULATIONS

PER NEC 220.87
(EXISTING 12-MONTH PEAK DEMAND PER UF FACILITIES' SERVICES, ON 6/10/2020: 347.5 kVA/ 417 A)

EXISTING LOAD AT 125%:	434.4 kVA
AHU (10 HP):	11.7 kVA
1L2 NEW LOAD:	3.6 kVA
TOTAL DEMAND:	450 kVA / 539 A
SERVICE SIZE:	/ 1200 A

MG mitchell • gulledge engineering

Mitchell Gulledge Engineering, Inc.
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PETER RIZOV LICENSE No 76608 STATE OF FLORIDA PROFESSIONAL ENGINEER

Peter Rizov
PE - 76608

PROJECT NAME:
UNIVERSITY OF FLORIDA
SW CHILLER PLANT CONDENSATION CORRECTIONS

OWNER:
UNIVERSITY OF FLORIDA
3113 HULL ROAD
GAINESVILLE, FL 32611

OWNERS PROJECT # UT00343

MG PROJECT NUMBER: 20057

REVISIONS:

REV	DESC	DATE

ISSUE:
100% CONSTRUCTION DOCUMENTS

ISSUE DATE:
SEPTEMBER 4, 2020

CHECKED BY:
PR

SHEET TITLE:
ELECTRICAL SCHEDULES, RISER, AND DETAIL

SHEET NUMBER:
E2.01