

PROJECT: **LEICESTER ELEMENTARY - HVAC UPGRADES**
BUNCOMBE COUNTY SCHOOLS
31 GILBERT ROAD
LEICESTER, NC 28748

BID DOCUMENTS

DESIGNER: **SUD ASSOCIATES, P.A.**

COMPANY LICENSE C-0315
 PROJECT NUMBER 19215
 DRAWING DATE 12/10/2019

OWNER'S REPRESENTATIVE: MR. JAMIE MESSER,
 PROJECT MANAGER

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
 (EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
 (Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: LEICESTER ELEMENTARY - HVAC UPGRADES
 Address: 31 GILBERT ROAD LEICESTER, NC Zip Code 28748
 Owner/Authorized Agent: JAMIE MESSER Phone # (828) 232-4244 E-Mail jamie.messer@bcsemail.org
 Owned By: County
 Code Enforcement Jurisdiction: County

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural					
Civil					
Electrical	SUD ASSOCIATES	DAVID BRIGGS	30835	(828)255-4691	dbriggs@sudassociates.com
Fire Alarm					
Plumbing					
Mechanical	SUD ASSOCIATES	MICHAEL SAENGER	18486	(828) 255-4691	msaenger@sudassociates.com
Sprinkler-Standpipe					
Structural					
Retaining Walls >5' High					
Other					

2018 NC BUILDING CODE: Renovation
 2018 NC EXISTING BUILDING CODE: N/A N/A N/A
 CONSTRUCTED: (date) 1937 CURRENT OCCUPANCY(S) (Ch. 3): EDUCATION
 RENOVATED: (date) 1950, 1997 PROPOSED OCCUPANCY(S) (Ch. 3):
 RISK CATEGORY (Table 1604.5): Current: N/A Proposed: N/A

BASIC BUILDING DATA
 Construction Type: I-A
 Sprinklers: No N/A
 Standpipes: No
 Primary Fire District: No Flood Hazard Area: No
 Special Inspections Required: No

Gross Building Area Table			
FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3 rd Floor			
2 nd Floor			
Mezzanine			
1 st Floor			
Basement			
TOTAL	77,350		

ALLOWABLE AREA
 Primary Occupancy Classification(s): Educational N/A N/A N/A N/A N/A

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
 MECHANICAL DESIGN
 (PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY
 MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
 Thermal Zone 4A
 winter dry bulb: 15.4 °F
 summer dry bulb: 88.0 °F
 Interior design conditions
 winter dry bulb: 68°F
 summer dry bulb: 74°F
 relative humidity: 50%
 Building heating load: 2,860,591 BTUH
 Building cooling load: 2,027,255 BTUH (Approx. 480,000 BTUH met by existing DX)
 Mechanical Spacing Conditioning System
 Unitary SEE MECHANICAL SCHEDULES
 description of unit: _____
 heating efficiency: _____
 cooling efficiency: _____
 size category of unit: _____
 Boiler
 Size category. If oversized, state reason: 2) at 1,987,000 BTUH sized for redundancy
 Chiller
 Size category. If oversized, state reason: 1,560,000 BTUH
 List equipment efficiencies: 85.6% boiler; 20.67 IPLV chiller

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
 ELECTRICAL DESIGN
 (PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY
 ELECTRICAL SYSTEM AND EQUIPMENT
 Method of Compliance: Select one
 Lighting schedule (each fixture type)
 lamp type required in fixture _____
 number of lamps in fixture _____
 ballast type used in the fixture _____
 number of ballasts in fixture _____
 total wattage per fixture _____
 total interior wattage specified vs. allowed (whole building or space by space) _____
 total exterior wattage specified vs. allowed _____
 Additional Efficiency Package Options
 (When using the 2018 NCECC, not required for ASHRAE 90.1)
 C406.2 More Efficient HVAC Equipment Performance
 C406.3 Reduced Lighting Power Density
 C406.4 Enhanced Digital Lighting Controls
 C406.5 On-Site Renewable Energy
 C406.6 Dedicated Outdoor Air System
 C406.7 Reduced Energy Use in Service Water Heating

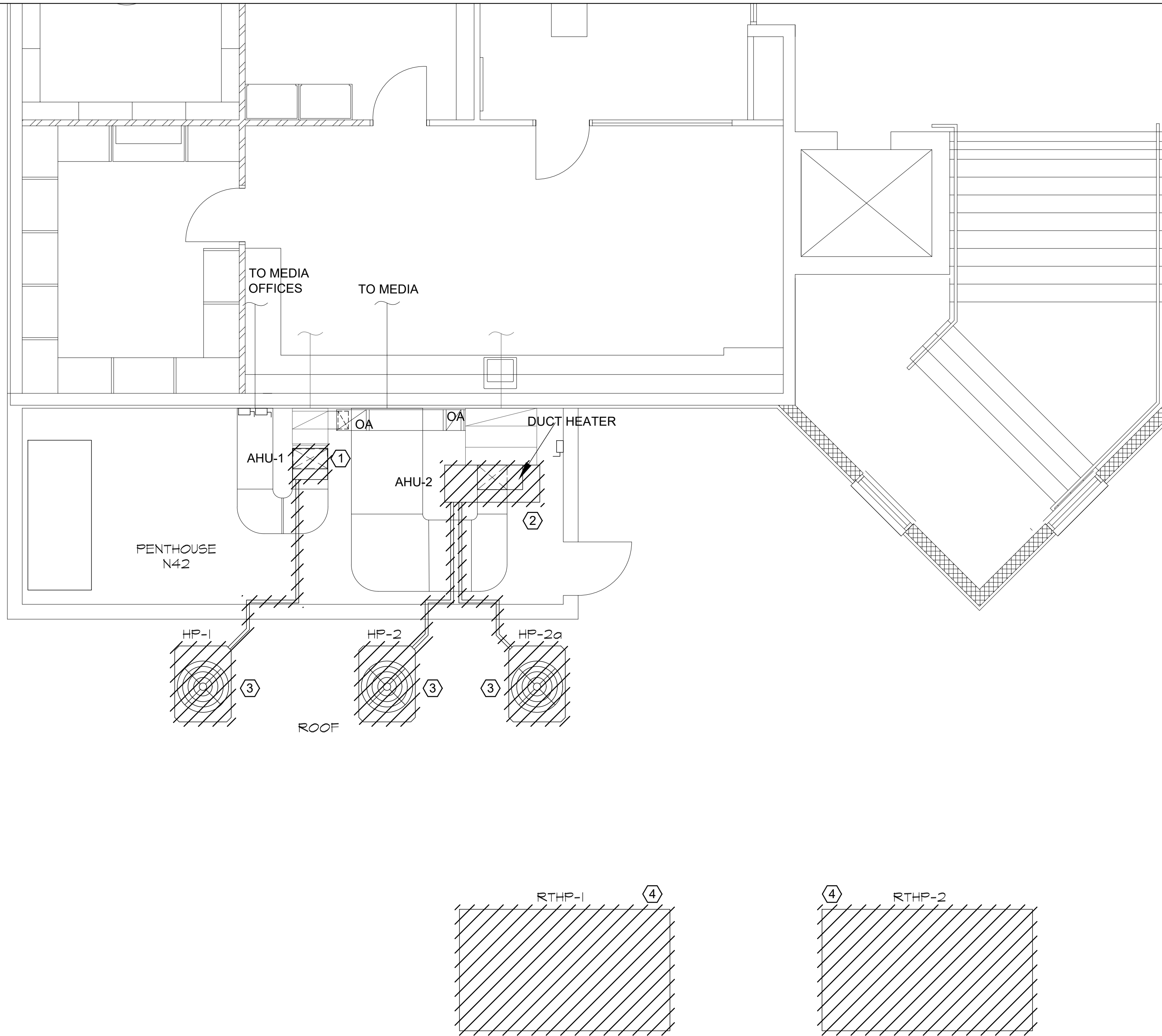
Sheet List Table	
Sheet Number	Sheet Title
---	COVER
M-0.1	MECHANICAL - DEMOLITION
M-0.2	MECHANICAL - DEMOLITION
M-1.1	MECHANICAL - CONSTRUCTION
M-1.2	MECHANICAL - CONSTRUCTION
M-1.3	MECHANICAL - CONSTRUCTION
M-1.4	MECHANICAL - CONSTRUCTION
M-2.1	MECHANICAL - GENERAL
M-2.2	MECHANICAL - GENERAL
E-0.1	ELECTRICAL - DEMOLITION
E-0.2	ELECTRICAL - DEMOLITION
E-1.1	ELECTRICAL - POWER
E-1.2	ELECTRICAL - POWER
E-2.1	ELECTRICAL - SCHEDULES, LEGEND AND NOTES

LEICESTER ELEMENTARY SCHOOL
31 GILBERT ROAD
LEICESTER, NC. 28748



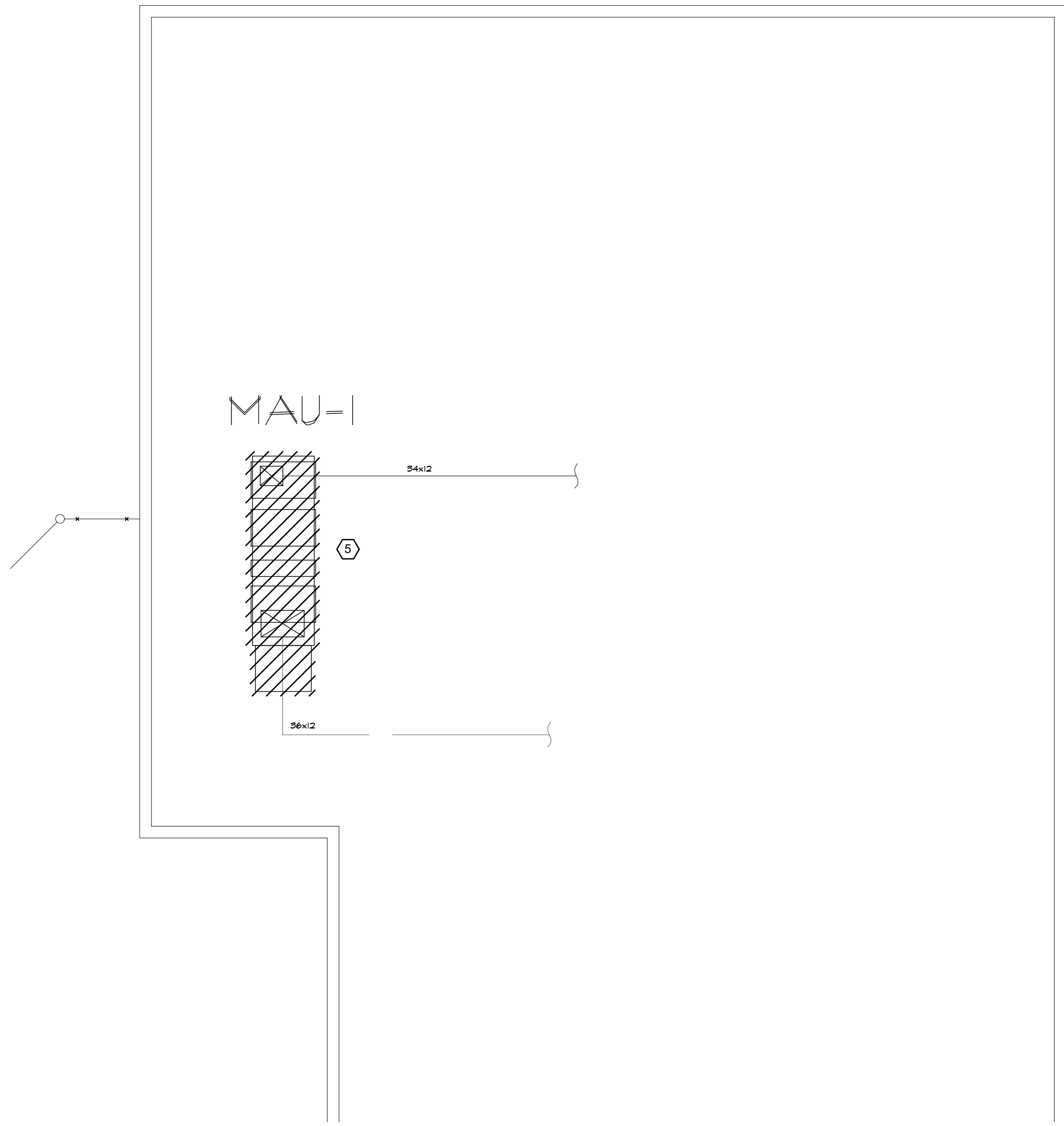
COVER SHEET

	REVISIONS		PROJECT NUMBER	19215
	ID	DATE	REVIEWED BY	JCH
			DESIGNED BY	MES
			DRAWN BY	PSD
			DRAWING DATE	12-10-2019
			SHEET NUMBER	COVER



1 MECHANICAL - AHU-1, 2 & RTHP UNITS
 M0.2 1/4" = 1'

2 MECHANICAL - MAU-1 OVER KITCHEN ALT 2
 M0.2 3/16" = 1'

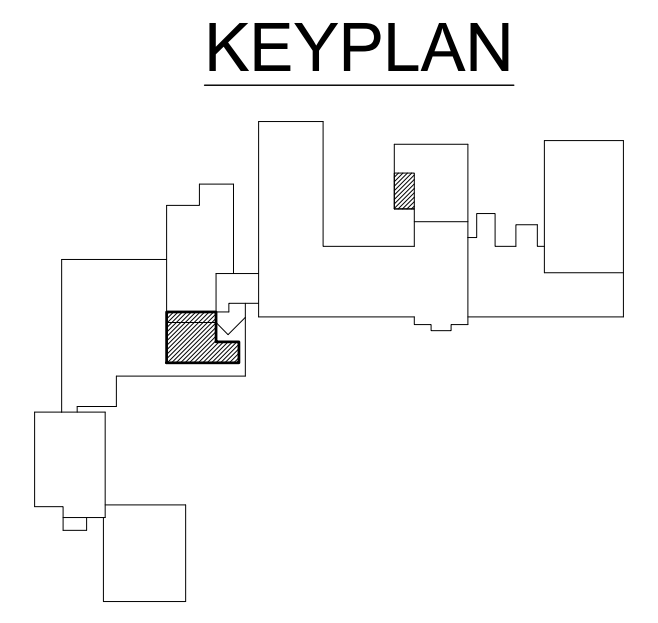


GENERAL NOTES

1 ROOF REPAIR TO BE BY OWNER APPROVED CONTRACTOR. CONTACT MANUFACTURER HOLDING ROOF WARRANTY FOR CONTRACTOR RECOMMENDATIONS. APPLIES TO ALL REPAIRS INCLUDING ANY RESULTING FROM CONDENSER RAIL MODIFICATION, RTHP REMOVAL, AND MAU REPLACEMENT.

KEYED NOTES

- ① REMOVE AND REPLACE EXISTING AHU-1 (5 TON HP).
- ② REMOVE AND REPLACE EXISTING AHU-2 (10 TON HP) AND ELECTRIC DUCT HEATER.
- ③ REMOVE EXISTING REFRIGERANT, THEN REMOVE CONDENSER, PIPING, AND ALL ACCESSORIES. RAILS TO REMAIN TO BE REUSED.
- ④ REMOVE EXISTING PACKAGED UNIT. UNITS NOT TO BE REPLACED. PROVIDE TEMPORARY COVER, IF NECESSARY, ROOF TO BE REPAIRED BY OWNER APPROVED CONTRACTOR.
- ⑤ REMOVE AND REPLACE MAU-1. EXISTING UNIT IS ELECTRIC HEAT.



SUD ASSOCIATES, P.A.
 CONSULTING ENGINEERS
 LICENSE NO. C-4815
 PROJECT # 19215
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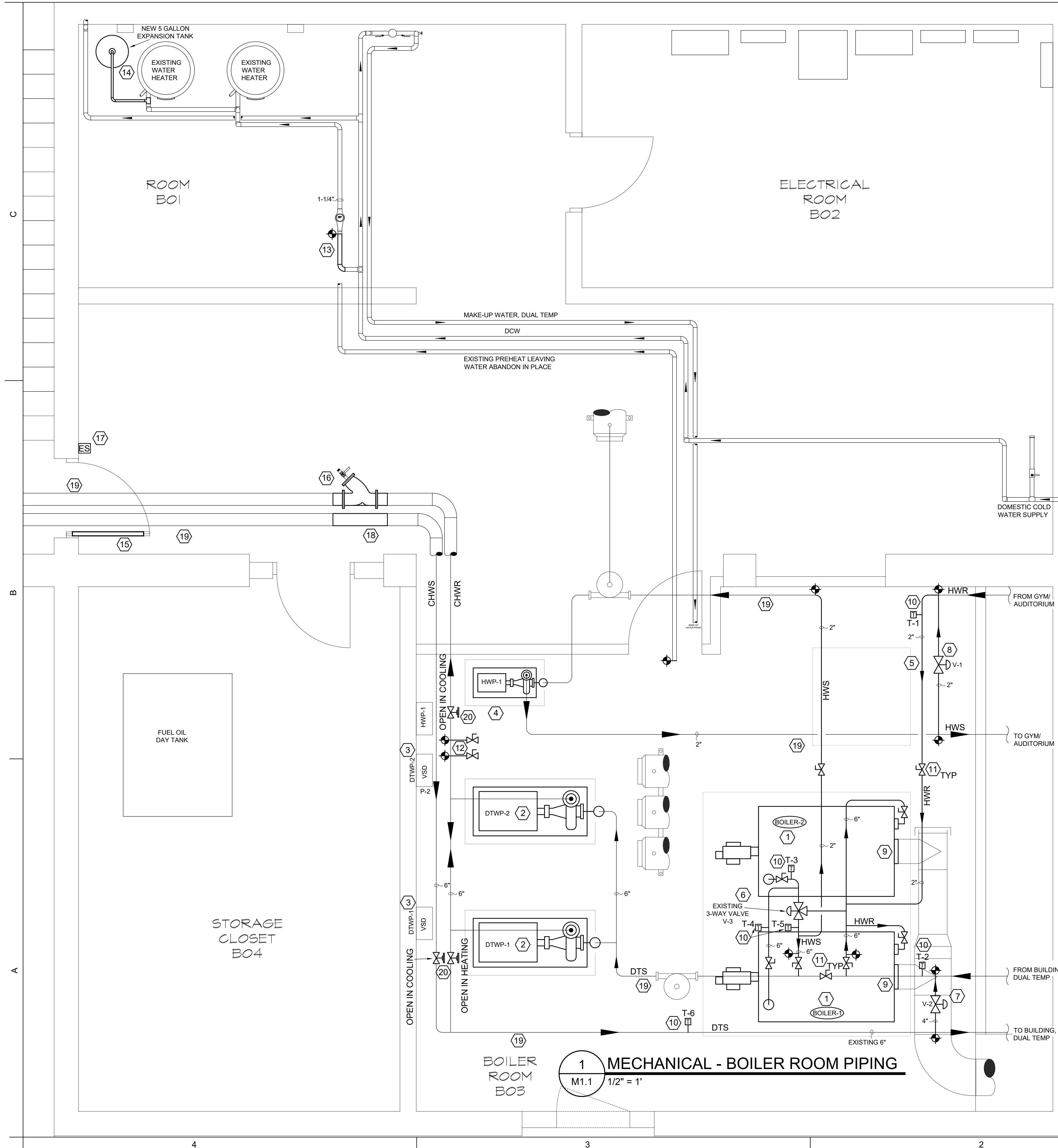
LEICESTER ELEMENTARY HVAC UPGRADES
 31 GILBERT ROAD
 LEICESTER, NC 28748
 MECHANICAL - DEMOLITION

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REVISIONS	
ID	COMMENTS

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SHEET NUMBER	

M0.2

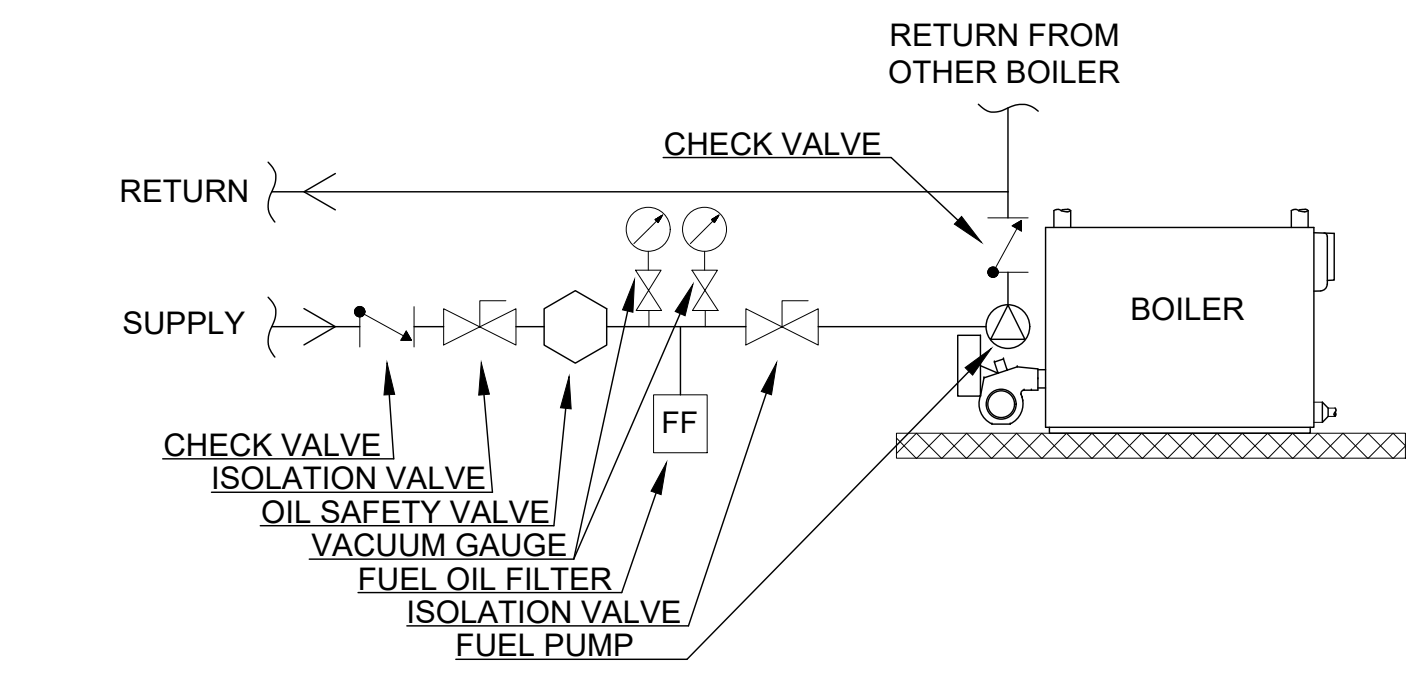


GENERAL NOTES

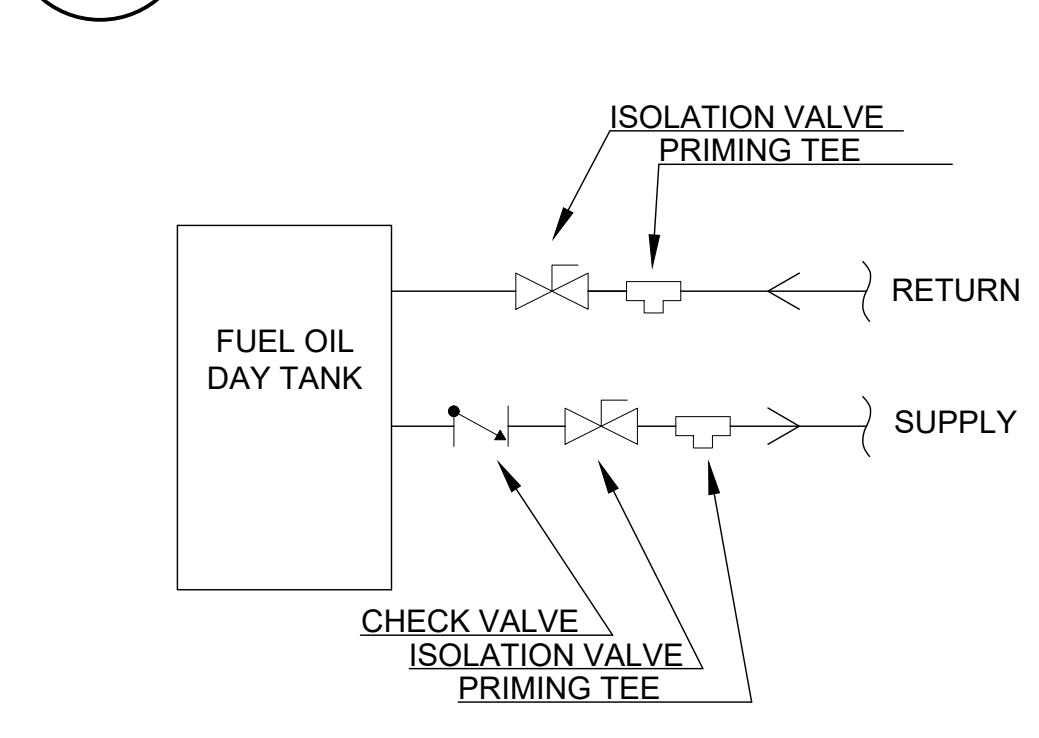
1 ALL CONTROL WIRING, INTERFACE, AND PROGRAMMING TO BE BY OWNER

KEYED NOTES

- 1 FURNISH AND INSTALL NEW CAST IRON SECTIONAL BOILER ON EXISTING HOUSEKEEPING PAD. REUSE EXISTING VENT PIPING. INSTALL NEW OIL PIPING AS NEEDED TO CONNECT TO EXISTING. INSTALL NEW HW PIPING AND ISOLATION VALVES AS SHOWN. PROVIDE AND INSTALL ALL REQUIRED ACCESSORIES AND SAFETIES.
- 2 FURNISH AND INSTALL NEW DUAL TEMP WATER PUMP ON EXISTING HOUSEKEEPING PAD. EXISTING SUCTION DIFFUSER MAY BE REUSED IF COMPATIBLE. EXISTING PUMP IS TACO EE4013E2M1G2LOA. INSTALL NEW TRIPLE DUTY VALVE.
- 3 FURNISH AND INSTALL NEW VSD AS SHOWN FOR CORRESPONDING DUAL TEMP WATER PUMP.
- 4 FURNISH AND INSTALL NEW HOT WATER PUMP ON EXISTING HOUSEKEEPING PAD TO MATCH EXISTING SUCTION DIFFUSER. EXISTING PUMP IS TACO FE1510E2E1F2LOA. INSTALL NEW TRIPLE DUTY VALVE. HWP-1 WILL REMAIN CONSTANT SPEED.
- 5 ROUTE FROM EXISTING RETURN PIPE TO NEW BOILERS AND BACK.
- 6 RE-INSTALL EXISTING 3-WAY CONTROL VALVE AS SHOWN TO ALLOW FOR HOT WATER SUPPLY TEMPERATURE CONTROL.
- 7 FURNISH AND INSTALL 6"x4" TEES AND PIPE BRIDGE BETWEEN EXISTING SUPPLY AND RETURN PIPING. INSTALL NEW 2-WAY CONTROL VALVE TO ALLOW FOR BOILER ENTERING WATER TEMPERATURE CONTROL.
- 8 FURNISH AND INSTALL 2" TEES AND PIPE BRIDGE BETWEEN EXISTING SUPPLY AND RETURN PIPING. INSTALL NEW 2-WAY CONTROL VALVE TO ALLOW FOR BOILER ENTERING WATER TEMPERATURE CONTROL.
- 9 REUSE EXISTING FLUE AND VENT PIPE. TRANSITION BRANCH CONNECTION TO NEW BOILER AS NECESSARY WITH DOUBLE WALL VENT PIPE.
- 10 INSTALL NEW THERMOWELLS. THERMOWELLS TO BE FURNISHED BY OWNER'S CONTROL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR. TEMPERATURE SENSOR TO BE INSTALLED BY OWNER'S CONTROL CONTRACTOR.
- 11 FURNISH AND INSTALL NEW APOLLO BRAND BUTTERFLY ISOLATION VALVES. TYPICAL OF ALL ISOLATION VALVES SHOWN.
- 12 IN BASE BID INSTALL 1" TAPS FOR WWHP (ALTERNATE 1) WITH ISOLATION VALVES.
- 13 IF ALTERNATE 1 NOT TAKEN, CONNECT 1-1/4" COLD WATER SUPPLY TO PIPING THROUGH FLOW METER.
- 14 FURNISH AND INSTALL NEW FLOOR-MOUNTED 5 GALLON DHW EXPANSION TANK. CONNECT TO TANK COLD WATER SUPPLY BRANCH AS SHOWN.
- 15 FURNISH AND INSTALL NEW DOOR LOUVER FOR COMBUSTION AIR, APPROXIMATELY 58 1/2"x22 1/2".
- 16 REPLACE STRAINER WITH NEW 40 MESH STRAINER. PROVIDE 1" BLOW DOWN WITH HOSE ADAPTER.
- 17 FURNISH AND INSTALL BOILER EMERGENCY SHUTOFF SWITCH NEXT TO ENTRY DOOR AS SHOWN.
- 18 FURNISH AND INSTALL SHORT SECTION OF PIPE WHERE TDV WAS REMOVED.
- 19 FURNISH AND INSTALL 2" NEW INSULATION WITH CANVAS JACKET ON ALL NEW AND EXISTING CHW, HW, AND DTW PIPING INSIDE BOILER ROOM AND MECHANICAL CORRIDOR.
- 20 FURNISH AND INSTALL NEW CHAIN-OPERATED APOLLO BRAND BUTTERFLY ISOLATION VALVES.
- 21 FURNISH AND INSTALL FUEL OIL SUPPLY AND RETURN PIPING FROM DAY TANK TO BOILERS WITH 3/4" COPPER PIPE AND FITTINGS. INSTALLATION IS TO BE A COMPLETE REPLACEMENT OF PIPING SYSTEM INCLUDING CHECK VALVES, PRIMING TEES, ISOLATION VALVES, OIL SAFETY VALVES, VACUUM GAUGES, AND OIL FILTERS AS SHOWN IN PIPING SCHEMATIC. PROVIDE OIL FILTERS PER BOILER SUPPLIER RECOMMENDATIONS. PROVIDE VACUUM GAUGES ON EITHER SIDE OF EACH FILTER.



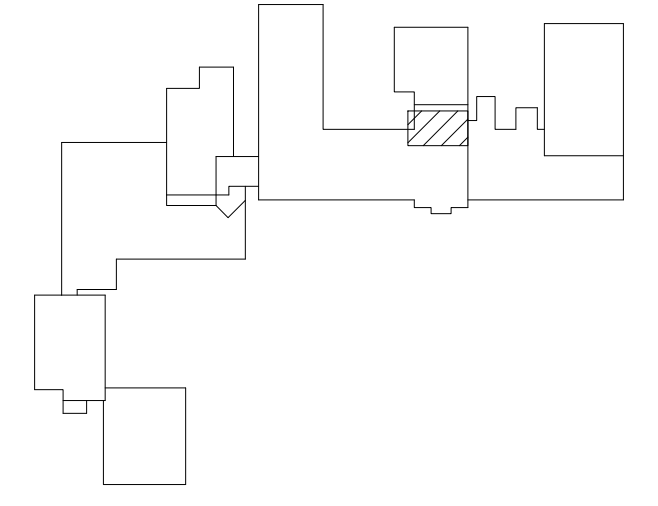
2 FUEL OIL PIPING SCHEMATIC AT BOILERS
M1.1 NTS



3 FUEL OIL PIPING AT DAY TANK
M1.1 NTS



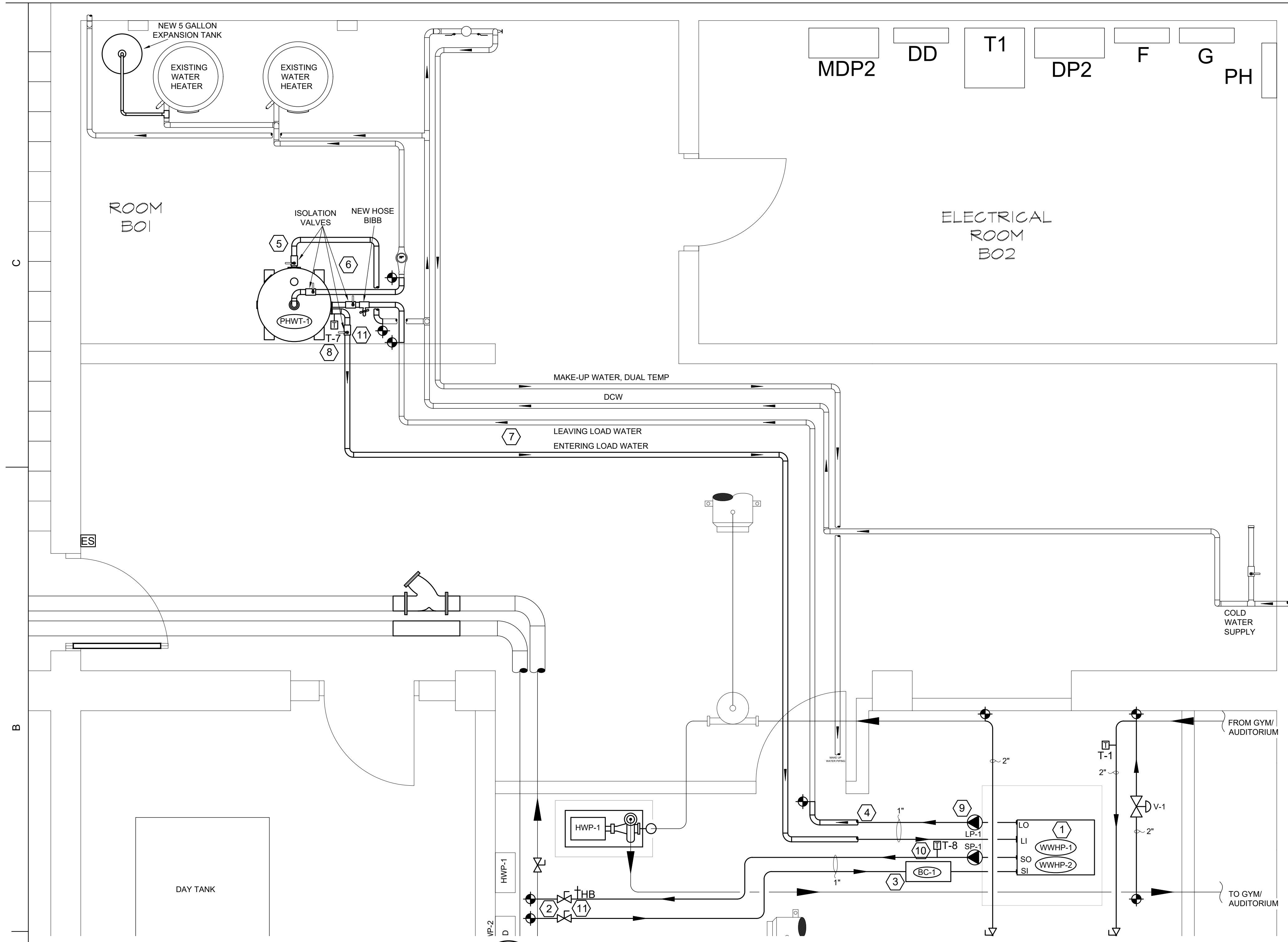
KEYPLAN



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REVISIONS		
ID	DATE	COMMENTS

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DESIGNED BY	MES
DRAWN BY	PSD
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SHEET NUMBER	M1.1



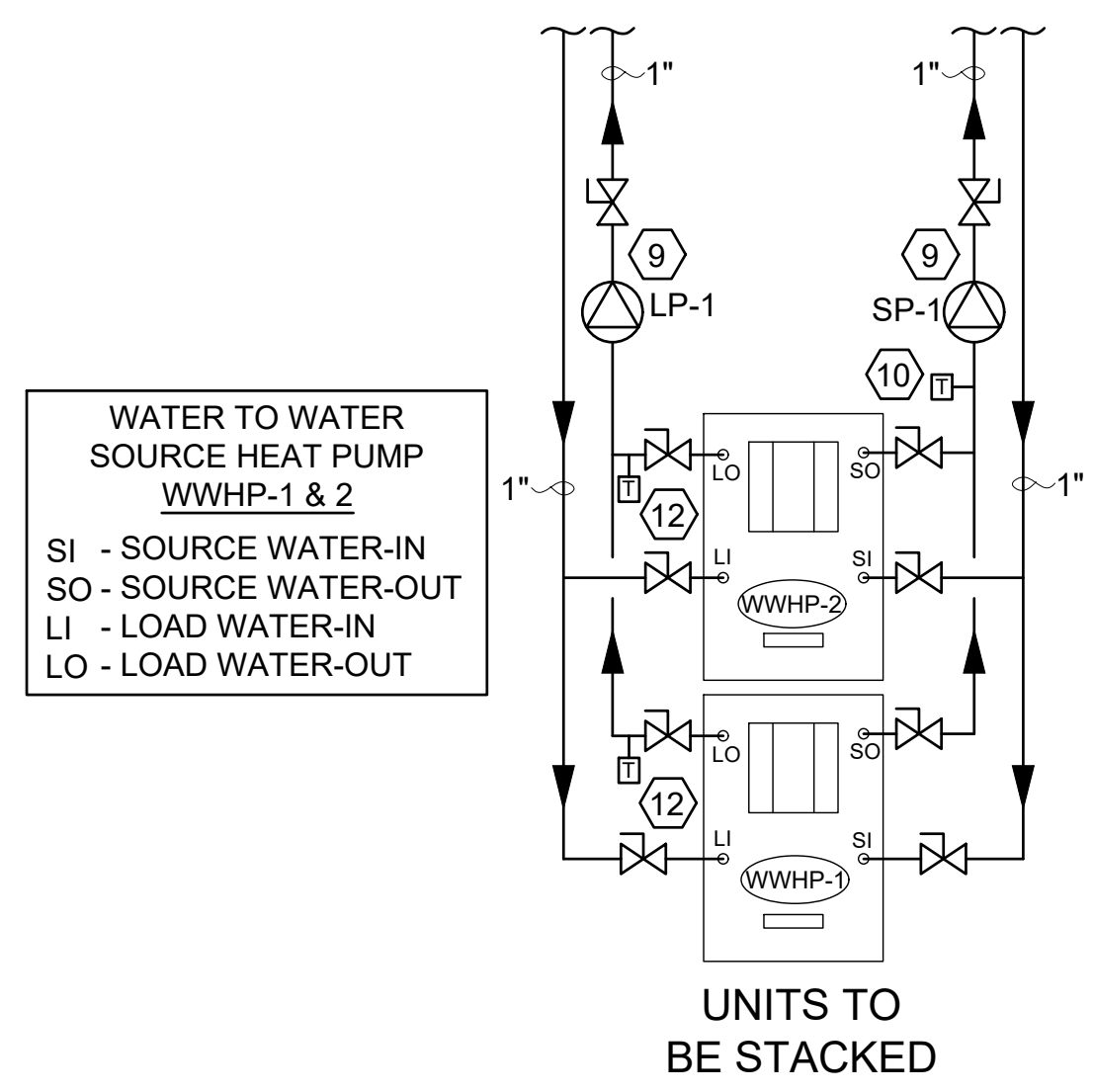
1 MECHANICAL - BOILER ROOM PIPING - ALT 1
M1.1 1/2" = 1'

GENERAL NOTES

1 ALL CONTROL WIRING, INTERFACE, AND PROGRAMMING TO BE BY OWNER

KEYED NOTES

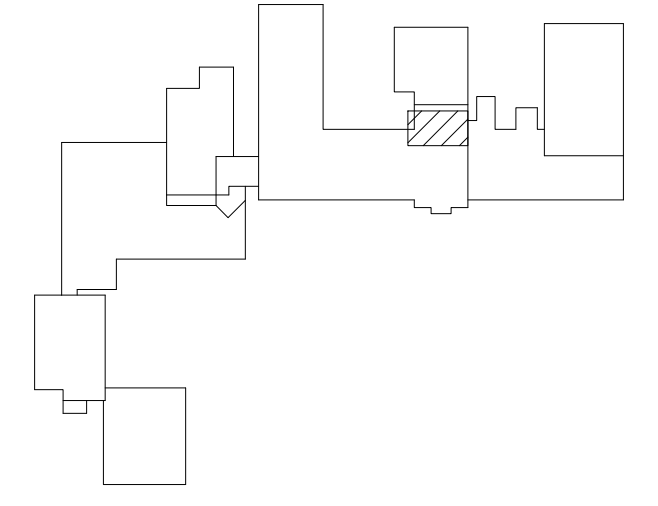
- 1 FURNISH AND INSTALL 2 NEW WATER TO WATER HEAT PUMPS ON EXISTING HOUSEKEEPING PAD TO PROVIDE DHW PREHEAT. WWHPS TO BE STACKED ONE ON THE OTHER. PROVIDE AND INSTALL APOLLO BRAND ISOLATION VALVES ON THE LOAD AND SOURCE INLETS AND OUTLETS (4 VALVES PER WWHP). THE UNITS SHALL BE PIPED IN PARALLEL. SEE WWHP PIPING DETAILS THIS SHEET.
- 2 FURNISH AND INSTALL NEW SOURCE WATER INLET AND OUTLET PIPES FOR WW HEAT PUMPS. ROUTE PIPES TO CONNECT TO EXISTING CHW RETURN PIPE AS SHOWN.
- 3 FURNISH AND INSTALL NEW BLOWER COIL NEAR CEILING HEIGHT. PIPE COIL INTO SOURCE WATER INLET PIPE AS SHOWN. BC-1 PICKS UP WASTE HEAT FROM THE BOILER ROOM FOR DHW PREHEAT.
- 4 FURNISH AND INSTALL NEW LOAD WATER OUTLET PIPE FOR WW HEAT PUMPS. ROUTE PIPE TO CONNECT TO EXISTING DHW PREHEAT PIPE AS SHOWN.
- 5 FURNISH AND INSTALL NEW 120 GALLON DHW PREHEAT TANK. PROVIDE NEW HOUSEKEEPING PAD.
- 6 CONNECT COLD WATER INLET ON PREHEAT TANK TO EXISTING TEE ON COLD WATER SUPPLY LINE. CONNECT HOT WATER OUTLET ON PREHEAT TANK TO EXISTING DHW PREHEAT PIPE UPSTREAM OF EXISTING WATER METER AS SHOWN.
- 7 CONNECT LOAD WATER INLET AND OUTLET PIPING AS SHOWN, REUSING EXISTING DHW PREHEAT PIPE FOR LOAD WATER MOVING FROM WW HEAT PUMPS TO PREHEAT TANK. PIPE FOR THE LOAD WATER LEAVING STORAGE TANK AND ENTERING WW HEAT PUMPS WILL BE NEW.
- 8 INSTALL NEW THERMOWELL FOR MEASURING DHW PREHEAT TANK TEMPERATURE. THERMOWELL TO BE INSTALLED IN TANK, OR AT TANK CONNECTION FOR LEAVING LOAD WATER AS SHOWN. THERMOWELL TO BE FURNISHED BY OWNER'S CONTROL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR. TEMPERATURE SENSOR TO BE INSTALLED BY OWNER'S CONTROL CONTRACTOR.
- 9 FURNISH AND INSTALL INLINE CIRCULATING PUMPS IN THE COMBINED LOAD WATER OUTLET AND COMBINED SOURCE WATER OUTLET OF WW HEAT PUMPS (2 PUMPS TOTAL). PUMPS TO BE CONTROLLED DIRECTLY BY WWHP-1.
- 10 FURNISH AND INSTALL NEW THERMOWELL FOR MEASURING COMBINED LEAVING SOURCE WATER TEMPERATURE FOR WWHPS. THERMOWELL TO BE FURNISHED BY OWNER'S CONTROL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR. TEMPERATURE SENSOR TO BE INSTALLED BY OWNER'S CONTROL CONTRACTOR.
- 11 FURNISH AND INSTALL A HOSE BIBB IN LOCATIONS SHOWN FOR AIR PURGE IN WWHP WATER LOOP.
- 12 INSTALL NEW THERMOWELL ON LEAVING LOAD WATER PIPE FOR EACH WWHP. THERMOWELL TO BE FURNISHED BY OWNER'S CONTROL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR. TEMPERATURE SENSOR TO BE INSTALLED BY OWNER'S CONTROL CONTRACTOR.
- 13 FURNISH AND INSTALL 1" INSULATION AND JACKET ON ALL NEW DOMESTIC WATER AND WATER TO WATER HEAT PUMP PIPING.



2 WATER TO WATER HEATPUMP SCHEMATIC ALT 1
M1.2 NTS



KEYPLAN



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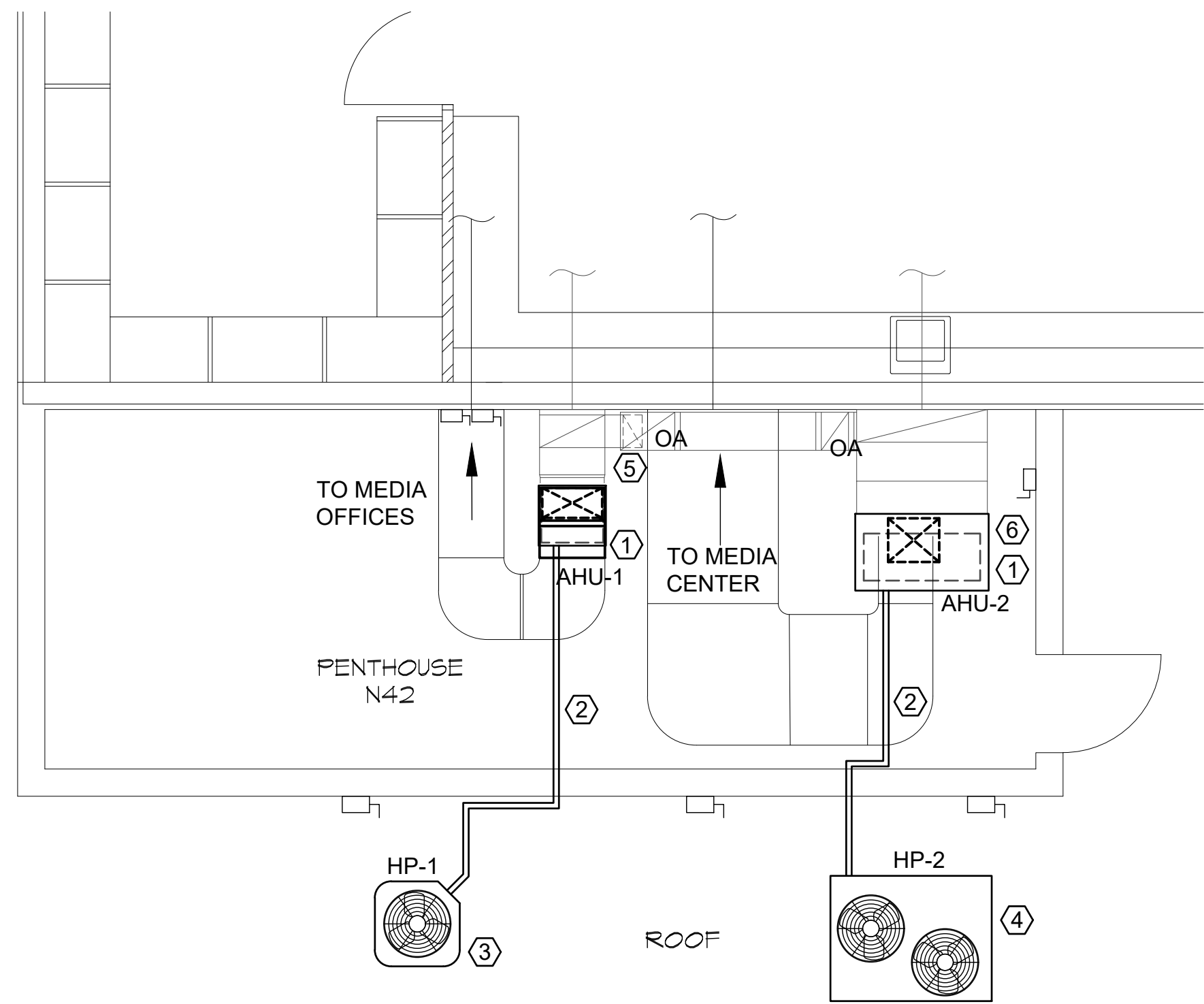


LEICESTER ELEMENTARY HVAC UPGRADES
31 GILBERT ROAD
LEICESTER, NC 28748
MECHANICAL - CONSTRUCTION

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REVISIONS		
ID	DATE	COMMENTS

PROJECT NUMBER	19215
REVIEWED BY	JCH
DESIGNED BY	MES
DRAWN BY	PSD
DRAWING DATE	12/10/2019
SHEET NUMBER	M1.2



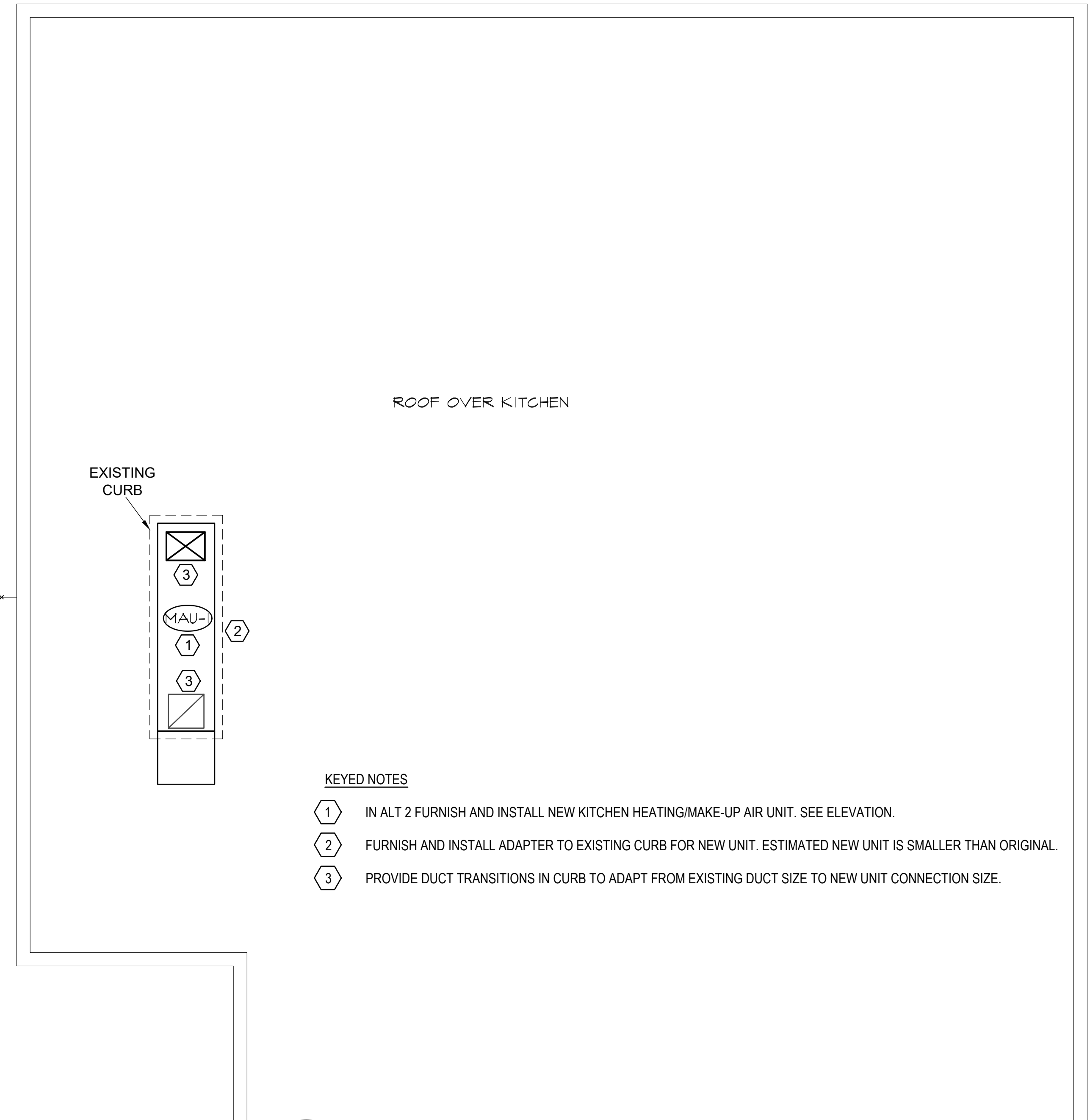
1 MECHANICAL - AHU-1 & 2
M1.4 1/4" = 1'

GENERAL NOTES

- 1 ALL CONTROL WIRING, INTERFACE, AND PROGRAMMING TO BE BY OWNER.
- 2 PROVIDE METAL ON LEADING EDGE OF DUCT WHERE CONNECTING NEW DUCT TO EXISTING DUCT.
- 3 TRANSITIONS FROM AHU OUTLET TO DIFFERENT SIZED DUCTS SHALL BE ANGLED AS MUCH AS POSSIBLE FOR SMOOTH TRANSITION AND BETTER AIRFLOW. TRANSITIONS BETWEEN DIFFERENT SIZED DUCTS SHALL BE SIMILARLY ANGLED.
- 4 ROOF REPAIR TO BE BY OWNER APPROVED CONTRACTOR. CONTACT MANUFACTURER HOLDING ROOF WARRANTY FOR CONTRACTOR RECOMMENDATIONS. APPLIES TO ALL REPAIRS INCLUDING ANY RESULTING FROM CONDENSER RAIL MODIFICATION, RTHP REMOVAL, AND MAU REPLACEMENT.

KEYED NOTES

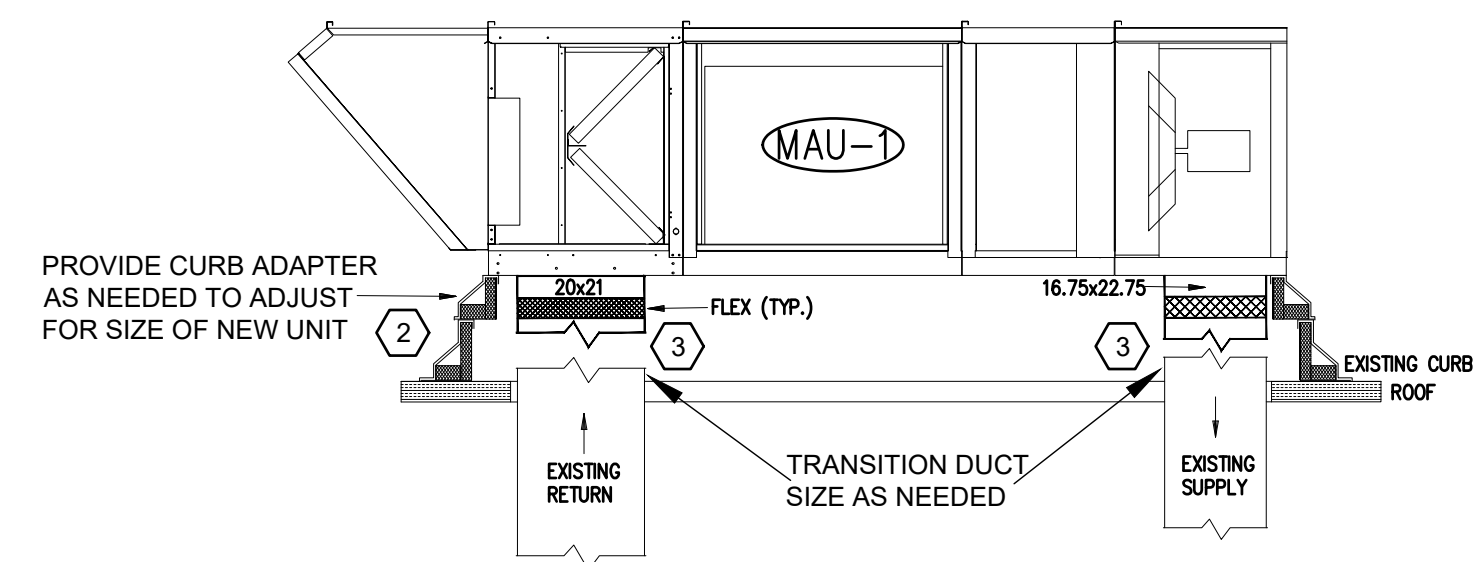
- 1 FURNISH AND INSTALL NEW SPLIT SYSTEM HEAT PUMP AHU IN LOCATION SHOWN. CONNECT TO EXISTING SUPPLY AND RETURN DUCTWORK USING NEW DUCT AS NEEDED FOR TRANSITION.
- 2 FURNISH AND INSTALL NEW REFRIGERANT LINES FOLLOWING EXISTING ROUTE. REUSE EXISTING EXTERIOR WALL PENETRATION. SEAL WITH SILICONE CAULK. EXTERIOR REFRIGERANT LINES TO HAVE ALUMINUM COVER. FLOW DRY NITROGEN THROUGH LINES DURING BRAZING. FOLLOW MANUFACTURERS SIZING RECOMMENDATION. INSTALL SOLENOID VALVES ON 10 TON FOR EACH CIRCUIT, FILTERS WHERE RECOMMENDED.
- 3 FURNISH AND INSTALL NEW 5 TON CONDENSING UNIT ON EXISTING RAILS. MODIFY RAILS IF NEEDED TO ACCOMMODATE CONDENSER SIZE.
- 4 FURNISH AND INSTALL NEW 10 TON CONDENSING UNIT USING EXISTING RAILS. EXISTING RAILS WERE DESIGNED FOR TWO 5 TON UNITS. SPAN AND MODIFY THEM AS NEEDED TO ACCOMMODATE NEW 10 TON UNIT.
- 5 INSULATE ALL NEW DUCTING. REPAIR OR REPLACE DAMAGED DUCT INSULATION AS NEEDED.
- 6 PROVIDE 2" FILTER RACK IN AHU-2.



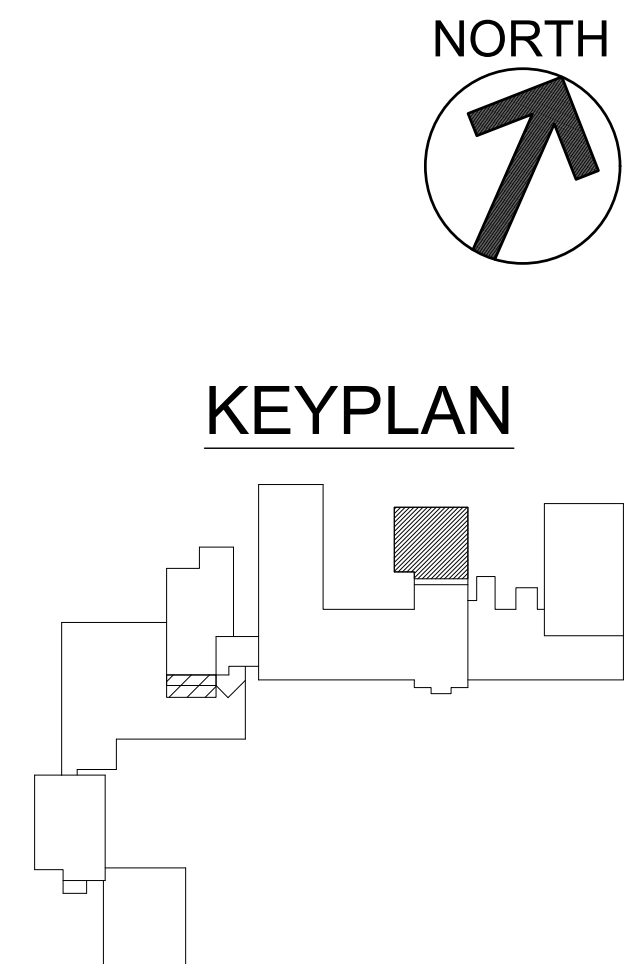
KEYED NOTES

- 1 IN ALT 2 FURNISH AND INSTALL NEW KITCHEN HEATING/MAKE-UP AIR UNIT. SEE ELEVATION.
- 2 FURNISH AND INSTALL ADAPTER TO EXISTING CURB FOR NEW UNIT. ESTIMATED NEW UNIT IS SMALLER THAN ORIGINAL.
- 3 PROVIDE DUCT TRANSITIONS IN CURB TO ADAPT FROM EXISTING DUCT SIZE TO NEW UNIT CONNECTION SIZE.

2 MECHANICAL - MAU-1 OVER KITCHEN ALT 2
M1.4 1/4" = 1'



3 MAKE UP AIR UNIT ELEVATION ALT 2
M1.4 NTS



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MECHANICAL GENERAL NOTES:

- 1 THE BUILDING PLANS ARE BASED ON INFORMATION PROVIDED BY THE OWNER. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, QUANTITIES, AND CONDITIONS PRIOR TO WORK. OWNER WILL NOT APPROVE ANY CHANGE ORDERS RESULTING FROM CONTRACTOR'S FAILURE TO FIELD VERIFY. DRAWINGS SHALL NOT BE SCALED TO DETERMINE ACTUAL DIMENSIONS.
- 2 THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE APPROXIMATE LOCATION OF EQUIPMENT, PIPING AND DUCTWORK. MINOR ADJUSTMENTS AND OFFSETS SHALL BE PROVIDED WHERE REQUIRED AT NO ADDITIONAL COST TO THE OWNER. COORDINATE CHANGES IN ROUTING OR OTHER WORK WITH THE ENGINEER PRIOR TO PROCEEDING.
- 3 EXISTING AREAS WHETHER WITHIN OR WITHOUT THE "GENERAL LIMITS OF CONSTRUCTION", SHALL BE REPAIRED WHERE ANY DAMAGE HAS OCCURRED DUE TO CONSTRUCTION BY THE CONTRACTOR.
- 4 ALL PENETRATIONS SHOULD BE REUSED TO EXTENT POSSIBLE. PATCH NEW AND EXISTING PENETRATIONS TO MATCH EXISTING WALL CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR SEALING ALL PENETRATIONS THROUGH ALL WALLS TO PREVENT SOUND TRANSFER. GROUT OR GYPSUM WALL BD. "MUD" MAY BE USED FOR NON RATED WALLS. PENETRATIONS THROUGH RATED WALLS SHALL BE MADE PER THE UL DETAILS PROVIDED.
- 5 ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THE NORTH CAROLINA STATE MECHANICAL CODE.
- 6 UNLESS OTHERWISE INDICATED MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, CORE-DRILLING AND PATCHING OF FLOORING AND WALLS AS REQUIRED TO MATCH EXISTING CONDITIONS.
- 7 MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING MECHANICAL RELATED WORK WITH OTHER TRADES. MECHANICAL CONTRACTOR IS CAUTIONED THAT IT IS TOTALLY HIS RESPONSIBILITY TO COORDINATE HANGERS AND SUPPORTS ETC. WITH OTHER TRADES.
- 8 DUCT DIMENSIONS INDICATED ON THE PLANS ARE NET INSIDE DIMENSIONS. FIELD VERIFY ALL MEASUREMENTS AND DIMENSIONS BEFORE FABRICATING DUCTWORK.
- 9 ALL SOLID DUCTWORK SHALL BE GALVANIZED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE CURRENT SMACNA DUCT CONSTRUCTION STANDARDS. DUCT SHALL BE CONSTRUCTED FOR ANTICIPATED STATIC PRESSURES. ALL JOINTS SHALL BE SEALED WITH MASTIC. MAXIMUM FLEX DUCT LENGTH IS 5'.
- 10 ALL NEW METAL SUPPLY DUCTWORK AND ALL RETURN DUCTWORK SHALL BE INSULATED WITH 2" EXTERNAL, 3/4 LB. DENSITY DUCT INSULATION, PROPERLY TAPED AND SEALED TO PROVIDE A CONTINUOUS VAPOR BARRIER. FRESH AIR DUCTS SHALL BE INSULATED SAME AS ABOVE. EXHAUST DUCTWORK DOES NOT HAVE TO BE INSULATED.
- 11 ALL SUPPLY DUCT ELBOWS SHALL CONTAIN TURNING VANES.
- 12 FIELD VERIFY UNIT & DUCT LOCATIONS. COORDINATE DUCT SIZING AND LAYOUT WITH BUILDING STRUCTURE PRIOR TO INSTALLATION. REVISE DUCTS TO EQUIVALENT SIZES AS NEEDED.
- 13 FURNISH AND INSTALL MANUAL DRAINS AT LOW POINTS IN PIPING AND VENTS AT HIGH POINTS.
- 14 MOUNT ROOM TEMPERATURE SENSORS AT 48" AFF. MOUNT THERMOSTATS AT 48" AFF. REPAIR WALL FROM REMOVAL OF EXISTING SENSOR TO MATCH EXISTING. ROUTE CONTROL WIRING IN WALL.
- 15 ALL SHUTDOWNS OF THE EXISTING UTILITIES SHALL BE SCHEDULED IN ADVANCE WITH OWNER.
- 16 ALL EQUIPMENT, BOTH EXISTING AND NEW, SHALL BE LABELED WITH PERMANENT LABELS, PROPERLY AFFIXED TO THE EQUIPMENT.
- 17 TEST AND BALANCE BY OWNER.
- 18 PROPER FIRE WATCH TO BE MAINTAINED AT ALL TIMES DURING WELDING OR OPEN FLAME USE.
- 19 IF THE BUILDING WILL BE OCCUPIED DURING CONSTRUCTION. COORDINATE WORK SO THAT UTILITIES ARE OPERATIONAL WHEN NEEDED IN OCCUPIED AREAS.
- 20 ROOF REPAIRS TO BE BY OWNER-APPROVED CONTRACTOR. CONTACT MANUFACTURER HOLDING ROOF WARRANTY FOR CONTRACTOR RECOMMENDATIONS.

GENERAL MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
	NEW PIPING OR EQUIPMENT
	EXISTING PIPING OR EQUIPMENT
	DEMO PIPING OR EQUIPMENT
	HOT WATER RETURN PIPING
	HOT WATER SUPPLY PIPING
	CHILLED WATER RETURN PIPING
	CHILLED WATER SUPPLY PIPING
	CONDENSER WATER RETURN PIPING
	CONDENSER WATER SUPPLY PIPING
	DUAL TEMPERATURE WATER RETURN PIPING
	DUAL TEMPERATURE WATER SUPPLY PIPING
	AUTOMATIC DAMPER
	SMOKE DAMPER
	FIRE DAMPER
	COMBINATION FIRE/SMOKE DAMPER
	BALL/BUTTERFLY VALVE
	CHAIN OPERATED VALVE
	GATE VALVE
	CONTROL VALVE - TWO WAY
	CONTROL VALVE - THREE WAY
	TRIPLE DUTY VALVE
	PRESSURE RELIEF VALVE
	AUTO FLOW VALVE
	CHECK VALVE
	CIRCUIT SETTER
	UNION
	Y STRAINER
	PUMP
	AIR VENT
	VARIABLE SPEED DRIVE
	TEMPERATURE SENSOR AND THERMOMETER
	PRESSURE SENSOR AND PRESSURE GAUGE
	AIR FLOW MONITORING STATION
	THERMOSTAT
	CO2 SENSOR
	DUCT SMOKE DETECTOR
	POINT OF CONNECTION - NEW TO EXISTING

SUD ASSOCIATES, P.A.
 CONSULTING ENGINEERS
 LICENSE NO. C-4815
 PROJECT # 19215
 90 SOUTHSIDE AVE. SUITE 300
 ASHEVILLE, NORTH CAROLINA
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LEICESTER ELEMENTARY HVAC UPGRADES
 31 GILBERT ROAD
 LEICESTER, NC 28748
 MECHANICAL - LEGEND, SCHEDULES, AND NOTES

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REVISIONS	
ID	COMMENTS

PROJECT NUMBER	19215
REVIEWED BY	JCH
DESIGNED BY	MES
DRAWN BY	PSD
DRAWING DATE	12/10/2019
SHEET NUMBER	

M2.1

C

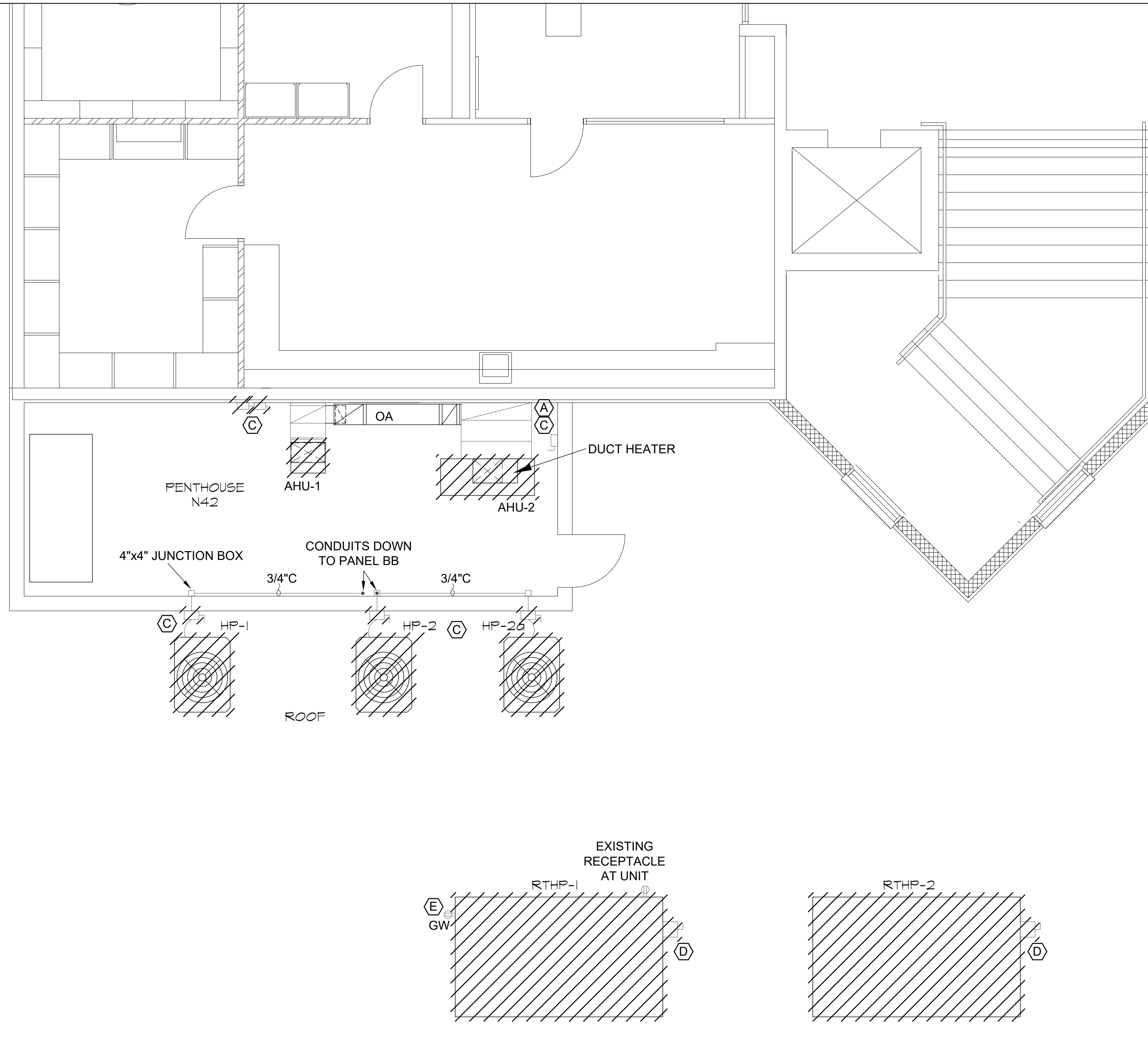
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A

C

B

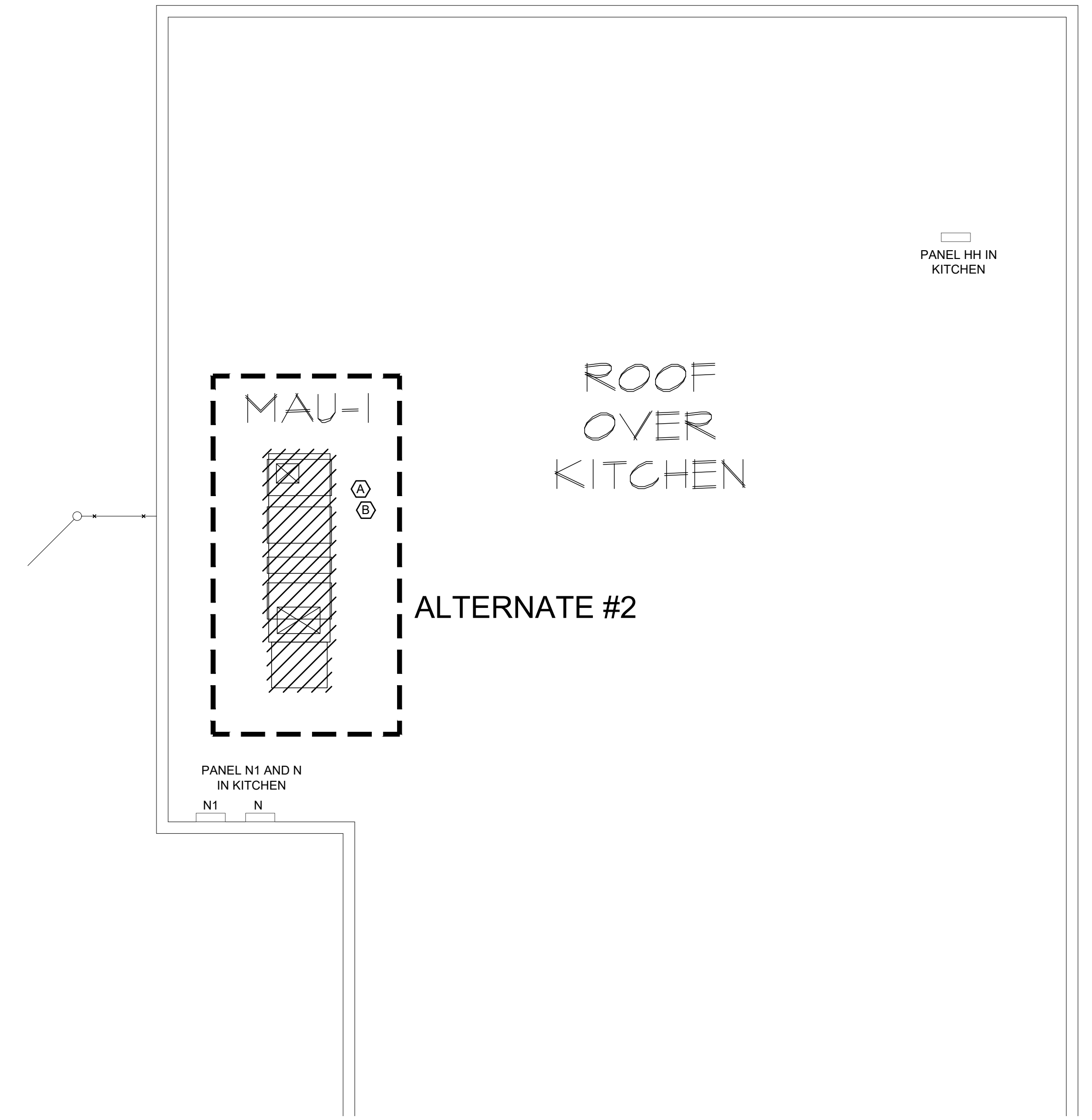
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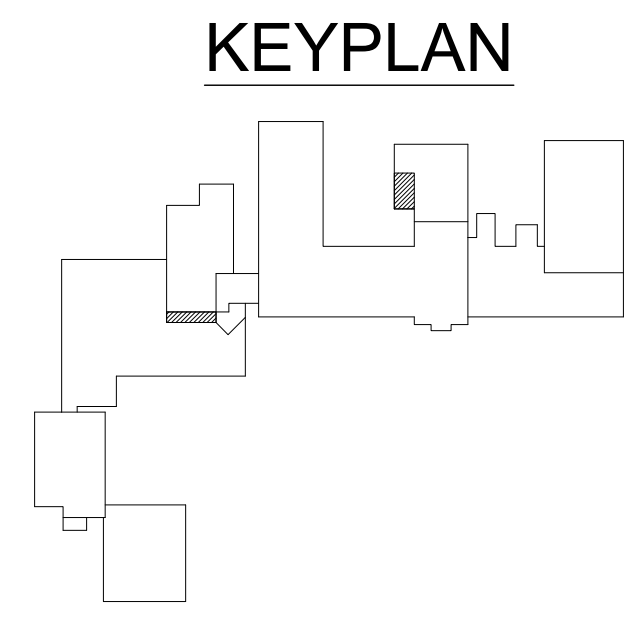
1 ELECTRICAL - AHU-1 & 2
E0.2 1/4" = 1'

KEYED NOTES

- (A) MAINTAIN DUCT SMOKE DETECTOR.
- (B) DISCONNECT UNIT, CIRCUIT, SAVE FOR REUSE, TO MAU-1 FROM PANEL HH. (SEE ALTERNATE #2)
- (C) DISCONNECT CIRCUITS TO AHU-1, AHU-2, HP-1, HP-2, AND HP-2A. MAINTAIN CIRCUITS, REMOVE SWITCHES EXCEPT SAVE AHU-2. REMOVE CIRCUITING TO DUCT HEATER AND AHU-1. LABEL BREAKERS IN PANEL A: SPARE, SWITCH, FOR AHU-2 MAY BE REUSED.
- (D) REMOVE SWITCHES AND CIRCUITS TO RTHP UNITS, CAP CONDUITS AT ROOF PENETRATION. LABEL BREAKERS, IN PANEL BB, 'SPARE' AND TURN OFF.
- (E) REMOVE RECEPTACLE, SAVE FOR REUSE. LOCATE PANEL SOURCE AND LABEL: ROOF RECEPTACLE.



2 ELECTRICAL - MAU-1 OVER KITCHEN ALT 2
E0.2 3/16" = 1'



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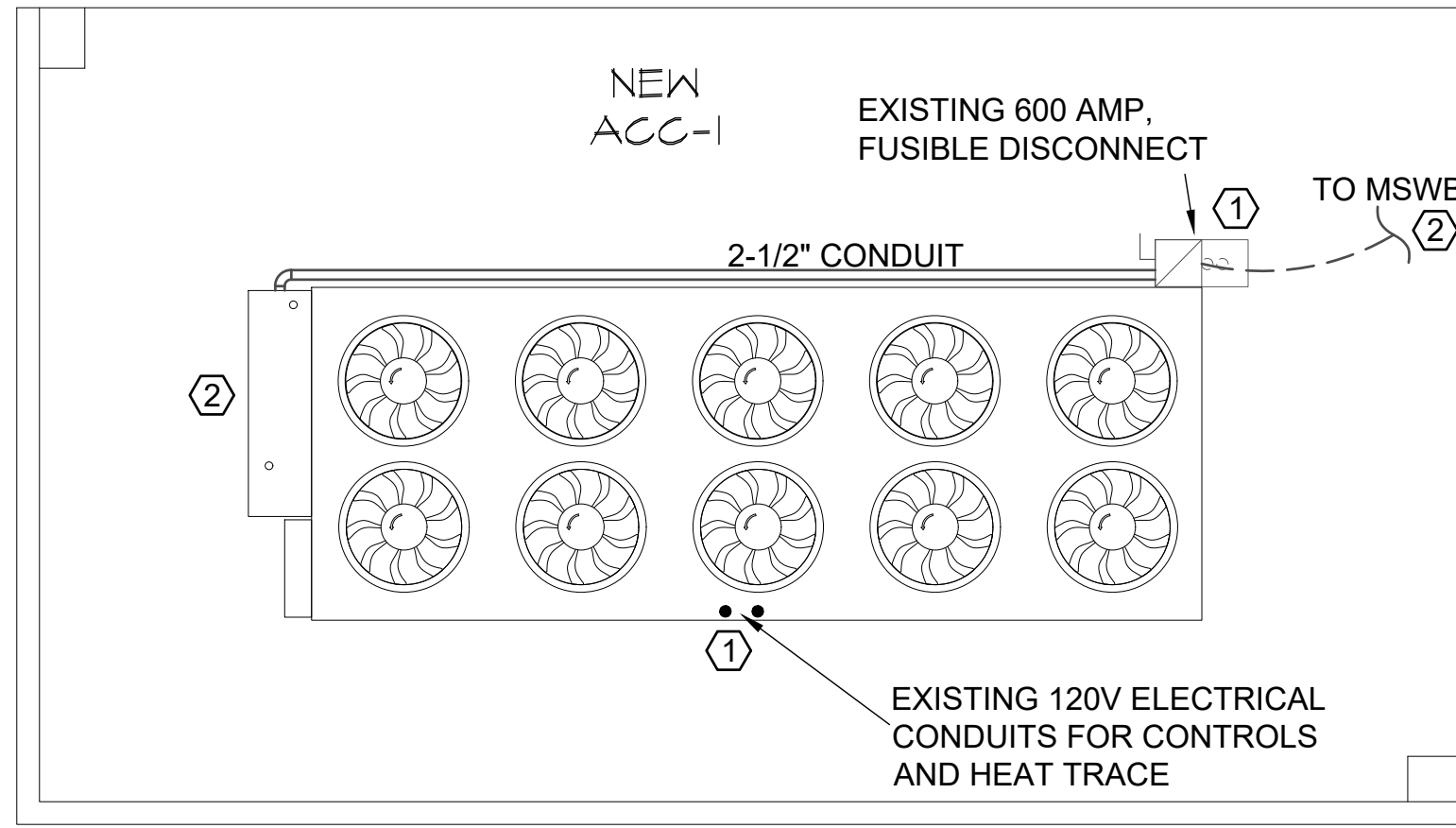
LEICESTER ELEMENTARY HVAC UPGRADES
31 GILBERT ROAD
LEICESTER, NC 28748
ELECTRICAL - DEMOLITION

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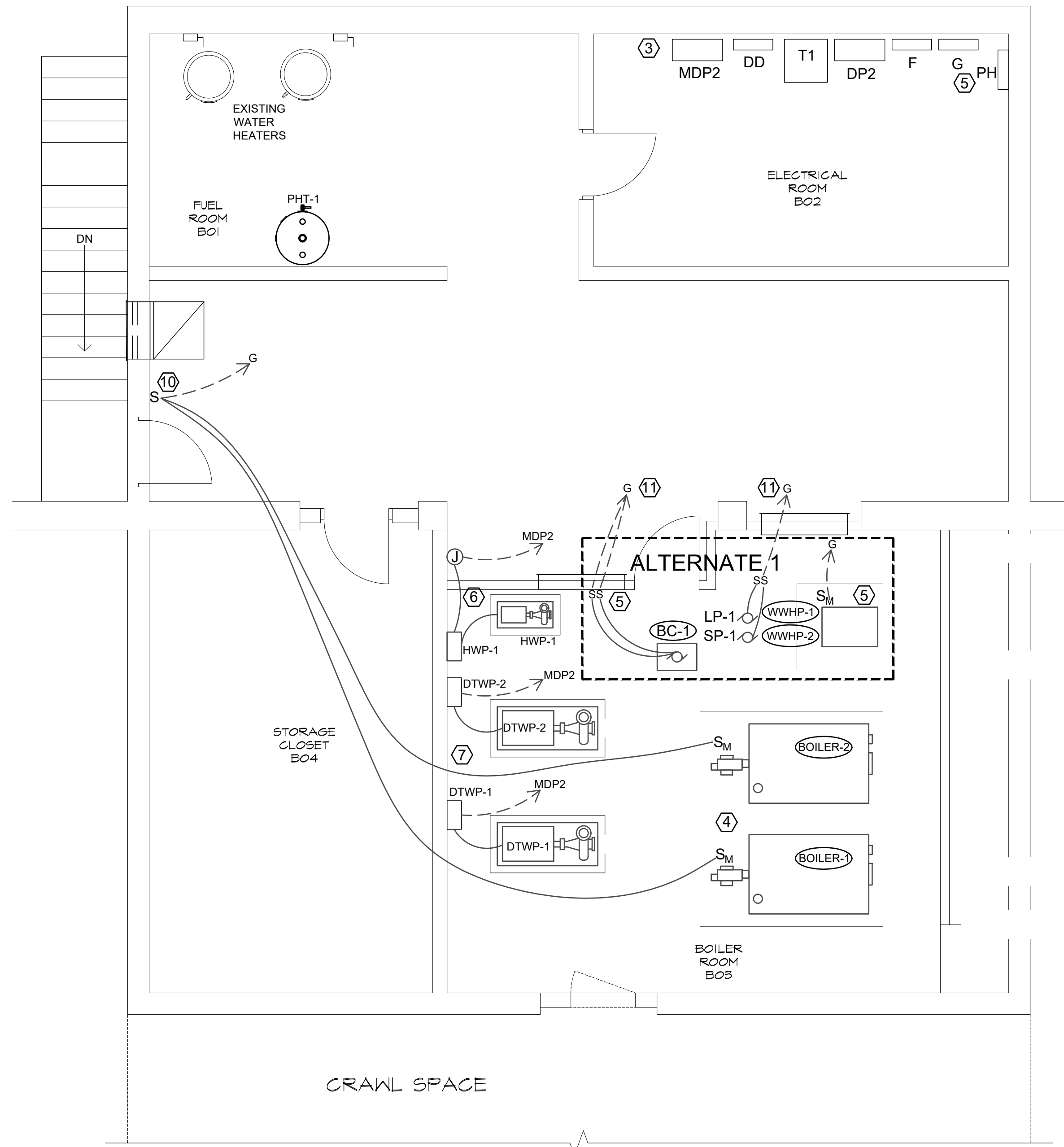
REVISIONS	
ID	COMMENTS

PROJECT NUMBER 19215
REVIEWED BY JCH
DESIGNED BY DLB
DRAWN BY PSD
DRAWING DATE 12/10/2019
SHEET NUMBER

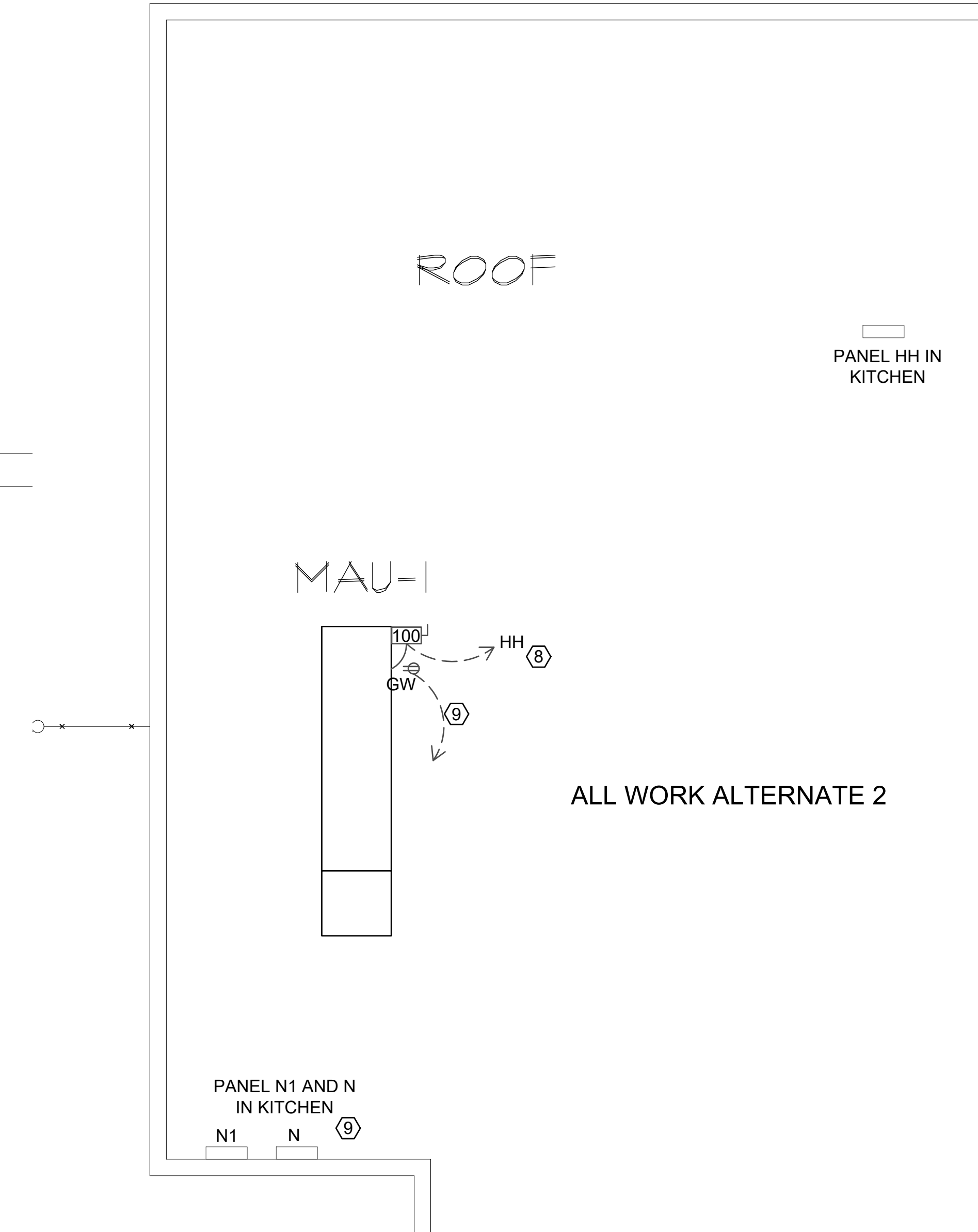
E0.2



1 POWER - NEW CHILLER
E1.1 1/4" = 1'



2 POWER - BOILER ROOM
E1.1 1/4" = 1'



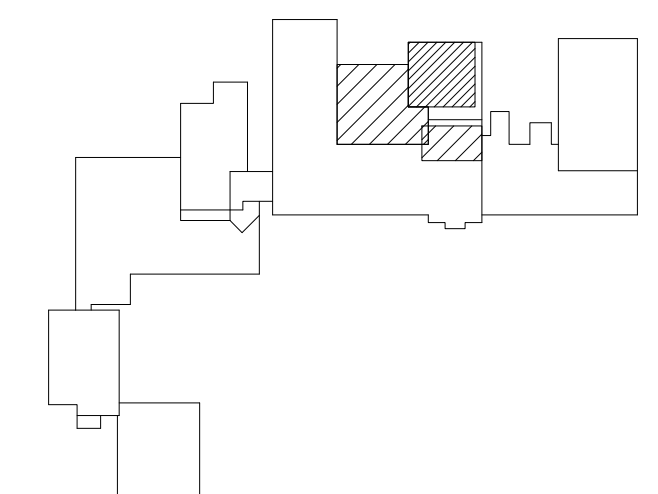
3 ELECTRICAL - MAU-1 OVER KITCHEN ALT 2
E1.1 1/4" = 1'

KEYED NOTES

- 1 CHILLER BEING REPLACED BY MECHANICAL CONTRACTOR. MAINTAIN-REUSE EXISTING FUSIBLE DISCONNECT. PROVIDE (6) 300 AMP RK-5 FUSES (3 ARE SPARES). PROVIDE ADAPTER CLIPS IF NEEDED. LABEL: AIC=24,000 AMPS (AFTER FUSES: 10,000 AMPS) ALSO MAINTAIN-REUSE HEAT TRACE CIRCUITS. PROVIDE 2-1/2" (6) 2/0 + #2 GROUND (VERIFY LUG SIZES TO UNIT PANEL).
- 2 DETERMINE BREAKER FEEDING CHILLER AND LABEL ON BREAKERS. LABEL SWITCH: AIC=23,000 AMPS LABEL PANEL: AIC=10,000 AMPS.
- 3 PANEL MDP2, MAINTAIN-REUSE BREAKERS (AND FEEDERS) TO PUMPS.
- 4 RECONNECT NEW BOILERS 1 & 2 AND REUSE MOTOR STARTER DISCONNECT SWITCHES.
- 5 MAINTAIN EXISTING CIRCUIT AND SWITCH TO BOILER #3. BOILER #3 TO BE DEMOED. WWHP-1 & 2 IS ALTERNATE 1. RELABEL BREAKER IN PANEL G: WATER TO WATER HEAT PUMPS #1 & #2. ALSO PROVIDE TWO (1) POLE, 15 AMP BREAKERS IN PANEL G. LABEL: EXHAUST FANS-BOILER ROOM AND WWHP CIRCUIT PUMP 3. PROVIDE (1) LIGHT SWITCH DISCONNECTS, BY DOOR, AND CIRCUIT TO WWHP DISCONNECTS TO CONTROL BC-1 FAN AND PUMPS.
- 6 EXTEND CIRCUIT (3/4" C, (3) #12, #12G) RELOCATE STARTER TO WALL NEXT TO VFD FOR PUMP DTWP-2. PROVIDE 3/4" LFMC WITH (3) #12 + #12G LABEL: HWP-1 AND AIC=21,000 AMPS.
- 7 INSTALL (2) NEW VFD (DRIVES) FURNISHED BY MECHANICAL CONTRACTOR. REUSE EXISTING CIRCUITS. PROVIDE 1" LFMC WITH (3) #6 + #8G.
- 8 MAINTAIN-REUSE CIRCUIT TO MAU-1. PROVIDE 3 POLE + GROUND FUSIBLE DISCONNECT, NEMA 3R WITH (6) 100 AMP TYPE RK-5 FUSES, ON/IAT UNIT. PROVIDE 3'-4" LFMC FROM CONDUIT TO UNIT.
- 9 PROVIDE 3/4" C, (2) #12 + #12G TO GFCI WEATHER PROOF RECEPTACLE (WITH IN-USE COVER) ON ROOF WITHIN 25' OF MAU-1. PROVIDE 1 POLE 20 AMP BREAKER IN KITCHEN PANEL N1. LABEL: ROOF RECEPTACLE.
- 10 PROVIDE 2 POLE LIGHT SWITCH AND CIRCUIT TO SHUT DOWN (2) BOILERS. LABEL: BOILERS SHUTOFF.
- 11 PROVIDE 3/4" C WITH (3) #12 + #12G FOR CIRCUITS TO BC-1, LP-1, AND SP-1.



KEYPLAN



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REVISIONS	
ID	COMMENTS

PROJECT NUMBER	19215
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