SECTION 00 91 13
ADDENDA

1.1 PROJECT INFORMATION

A. Project Identification: **Boiler Replacement, Clark County Courthouse**

B. Project Location: **517 Court Street, Neillsville, WI 54456**

C. Designer: **Apex Engineering, 110 E Grand Avenue, Eau Claire**, **WI 54701**

D. Designer Project Number: **22101**

E. Date of Addendum: **November 6, 2023**.

1.2 NOTICE TO BIDDERS

A. This Addendum is issued pursuant to the Instructions to Bidders. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.

B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.

C. The date for receipt of bids is unchanged by this Addendum, at same time and location.

1.3 ATTACHMENTS

A. This Addendum includes the following attachments:

1. Plan Sheet M105, dated 10/16/2023, reissued.
2. Plan Sheet M200, dated 10/16/2023, reissued.
3. Plan Sheet M201, dated 10/16/2023, reissued.
4. Plan Sheet M300, dated 10/16/2023, reissued.
5. Plan Sheet M301, dated 10/16/2023, reissued.

1.4 CLARIFICATIONS

A. Construction Schedule and System Changeover: Boiler plant shutdown to be May 13th, 2024 and demolition can begin at that time. Date listed is subject to change depending on weather and temperature. Coordination with the Owner is required for actual start date. The intent is to first complete the pumps, buffer tank, expansion tank, accessories, and piping in the second-floor mechanical room(s) to allow for chiller start-up. Second-floor mechanical room(s) standalone hot water piping and boiler connections to changeover valves at buffer tank to follow upon cooling system completion. Fifth floor mechanical room work can start anytime upon boiler plant shutdown. All boiler and hot water installations to be completed by fall 2024 for heating season. Verify and coordinate actual construction schedule with Owner. Any standalone cooling piping that can be demolished prior to boiler plant shutdown will be allowed to obtain a head start on full demolition and cooling system startup.

B. Fifth Floor Mechanical Room(s): Existing hangers and supports to be reused for new equipment in remodel work where locations allow. Unused hangers to be removed. Where new hangers/supports are required, hangers to be secured to concrete tee rib on vertical structure approximately 8” from bottom of tee. Provide new opening in existing plaster ceiling large enough to complete required work in locations necessary. Upon completion of hanger installation, patch ceiling to match exiting and maintain 1 hour fire rating.

1.5 REVISIONS TO DRAWING SHEETS

A. Sheet M105 – Mechanical Room Demolition Plan – Fifth Floor
   1. Drawing 1/M105: Added note 22, including note verbiage.

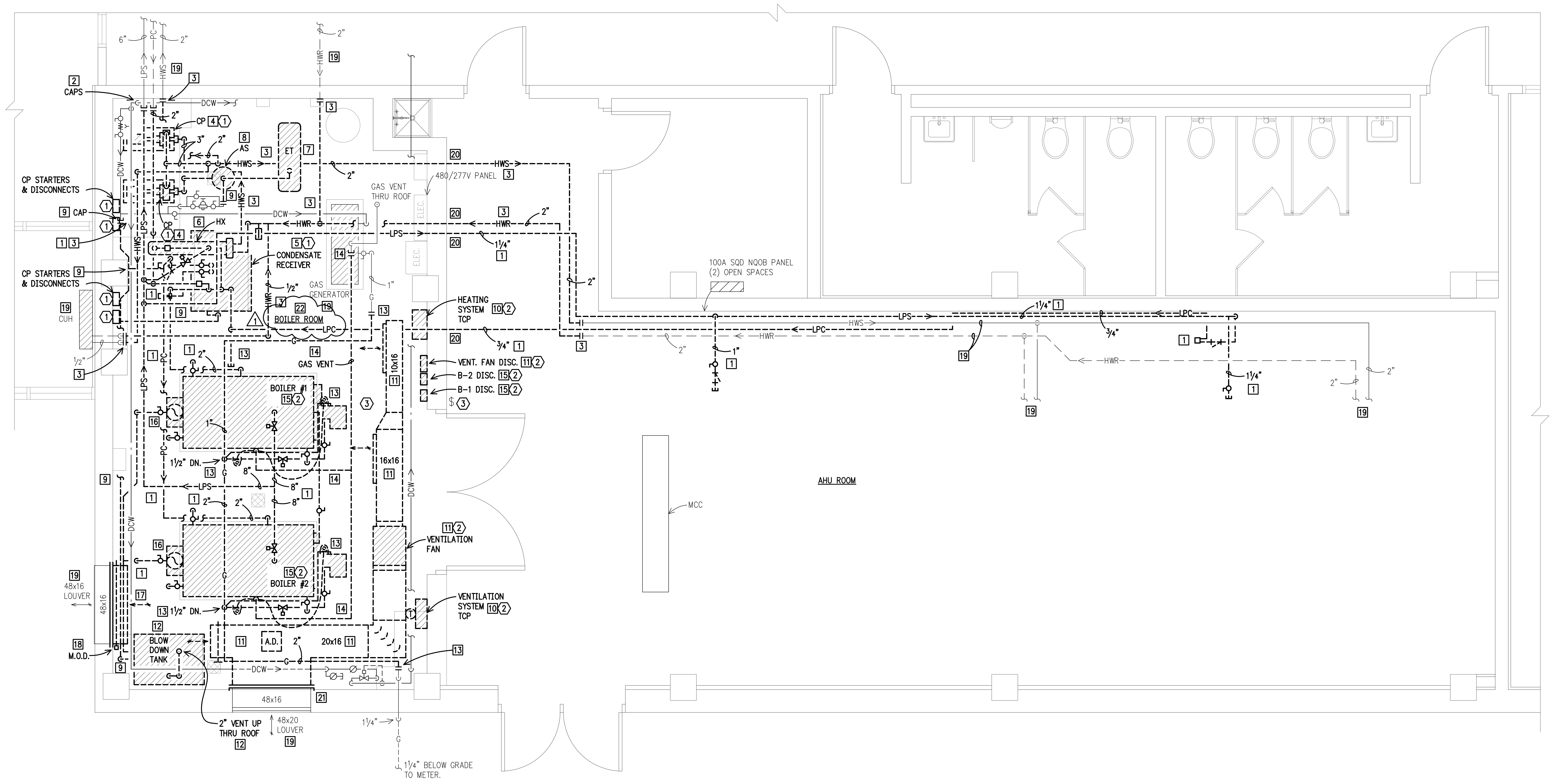
B. Sheet M200 – Mechanical Room Remodel Plans – Second Floor
   1. Drawing 1/M200: Added note 28 & 29 to plans, including note verbiage. Updated pipe size.
   2. Drawing 3/M200: Added note to plan for boiler vent terminations. Added verbiage to note 24.

C. Sheet M201 – Mechanical Room Remodel Plans – Fifth Floor
   1. Drawings 1 & 2/M201: Added note 24 & 29 to plans, including note verbiage.

D. Sheet M300 – Mechanical Schedules and Details
   1. Added Hot Water Heating Coil Schedule.

E. SheetM301 – Mechanical Details and Schematics
   1. Detail 14/M301 – Added verbiage to general note to maintain any existing roof warranties with Owner.
   2. Detail 2/M301 – Added verbiage to boiler isolation valve note.

END OF ADDENDA



1 M105 MECH. ROOM PLAN - FIFTH FLOOR

1/4"= 1'-0"

(DEMOLITION)

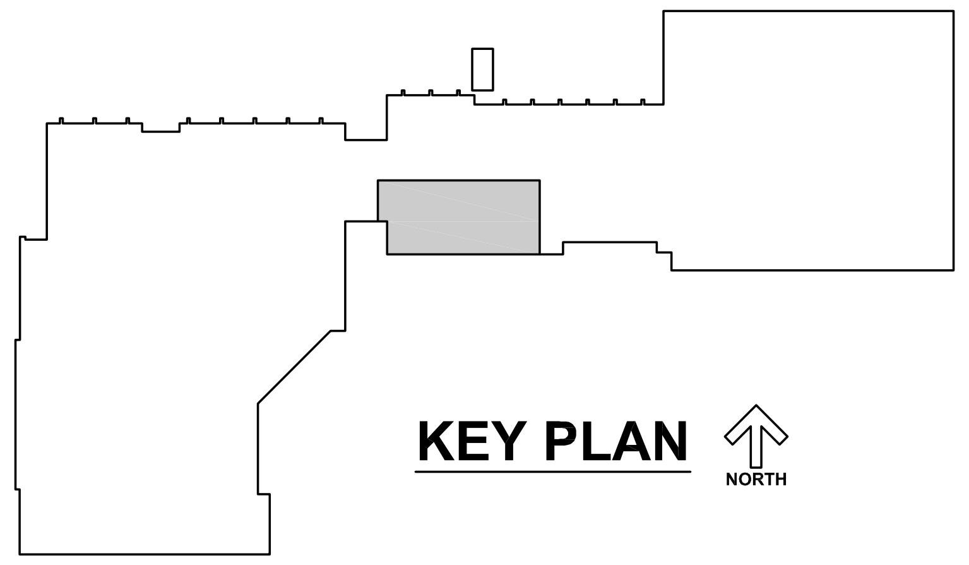
NORTH

MECHANICAL DEMOLITION NOTES:

1. REMOVE LPS/LPC/PC PIPING COMPLETE INCLUDING STRAINERS, STEAM TRAPS AND ACCESSORIES.
2. SEE 2/M103 FOR NOTES.
3. REMOVE HWS/R PIPING COMPLETE OR TO BREAK LINES AS SHOWN.
4. DISCONNECT AND REMOVE CIRCULATING PUMP COMPLETE INCLUDING CONTROLS AND ACCESSORIES.
5. DISCONNECT AND REMOVE CONDENSATE RECEIVER AND PUMP(S) COMPLETE INCLUDING CONTROLS AND ACCESSORIES.
6. REMOVE HEAT EXCHANGER COMPLETE INCLUDING ACCESSORIES.
7. REMOVE EXPANSION TANK COMPLETE.
8. REMOVE AIR SEPARATOR COMPLETE.
9. REMOVE DOMESTIC MAKE-UP WATER SUPPLY PIPING TO BREAK LINES AS SHOWN INCLUDING PRESSURE REDUCING VALVE AND ACCESSORIES, CAP WHERE WHERE INDICATED.
10. DISCONNECT AND REMOVE TCP COMPLETE.
11. DISCONNECT AND REMOVE VENTILATION FAN COMPLETE INCLUDING INLET DUCTWORK TO LOUVER, DISCHARGE DUCT AND SUPPLY REGISTERS, CONTROLS AND ACCESSORIES.
12. REMOVE BLOW-DOWN TANK COMPLETE INCLUDING VENT THRU ROOF. PATCH ROOF OPENING WITH MATERIALS TO MATCH EXISTING SURROUNDINGS. SEAL WATER TIGHT.
13. REMOVE GAS PIPING COMPLETE TO BREAK LINES AS SHOWN INCLUDING REGULATORS AND ACCESSORIES.
14. REMOVE VENT PIPING COMPLETE TO BREAK LINES. VENT TO BE EXTENDED TO NEW GAS REGULATORS IN REMODEL WORK.
15. DISCONNECT AND REMOVE EXISTING KEWANEE STEAM BOILER (1620 MBH INPUT) COMPLETE INCLUDING PRESSURE RELIEF VALVES, BURNER, LOW WATER CUT-OFF DEVICES, DRAIN PIPING, CONTROL AND ACCESSORIES.
16. REMOVE 10"ø BOILER VENT STACK THRU ROOF COMPLETE. ROOF OPENING REMAINS FOR USE IN REMODEL WORK.
17. REMOVE PORTION OF DUCTWORK TO BREAK LINES AS SHOWN.
18. DISCONNECT AND REMOVE M.O.D. COMPLETE INCLUDING CONTROLS AND ACCESSORIES.
19. EXISTING EQUIPMENT AND PIPING REMAINS.
20. PATCH WALL OPENING TO MAINTAIN FIRE RATING OF EXISTING MECHANICAL ROOM.
21. CAP LOUVER. SEE REMODEL PLANS FOR NOTES. △1
22. EXISTING HANGERS/SUPPORTS TO BE REUSED IN REMODEL WORK WHERE ALLOWED.

ELECTRICAL DEMOLITION NOTES:

1. SEE MECHANICAL NOTE 4 AND 5. E.C. SHALL DISCONNECT PUMPS AND ALL APPURTENANCES TO THE SOURCE. PUMPS ARE FED FROM MCC. UPDATE MCC SCHEDULE/LABELS.
2. E.C. SHALL DISCONNECT HVAC EQUIPMENT AND ALL APPURTENANCES TO THE SOURCE. UPDATE MCC AND OR PANELBOARD SCHEDULE/LABELS. BOILERS ARE FED FROM MCC. FIELD VERIFY POWER SOURCE.
3. DISCONNECT AND REMOVE LUMINAIRES/CONTROL AND CONDUCTORS FOR THIS ROOM TO SOURCE. SALVAGE AS MUCH CONDUIT AS POSSIBLE. PREP FOR NEW LIGHTING IN NEW LOCATIONS IN THIS ROOM. SEE REMODEL PLANS.



KEY PLAN NORTH

APEX Engineering
Eau Claire, Wisconsin
Telephone: 715-835-7736
Web: apexengineering.biz

BOILER REPLACEMENT PROJECT FOR
CLARK COUNTY COURTHOUSE
517 COURT STREET
NEILLSVILLE, WISCONSIN 54456

TITLE:
MECHANICAL ROOM DEMOLITION PLAN - FIFTH FLOOR

DO NOT SCALE DRAWINGS
USE FIGURED DIMENSIONS ONLY

REVISIONS:
△1 11-06-2023

PROJECT NO:
22101

DRAWN BY:
LJJ/PDK

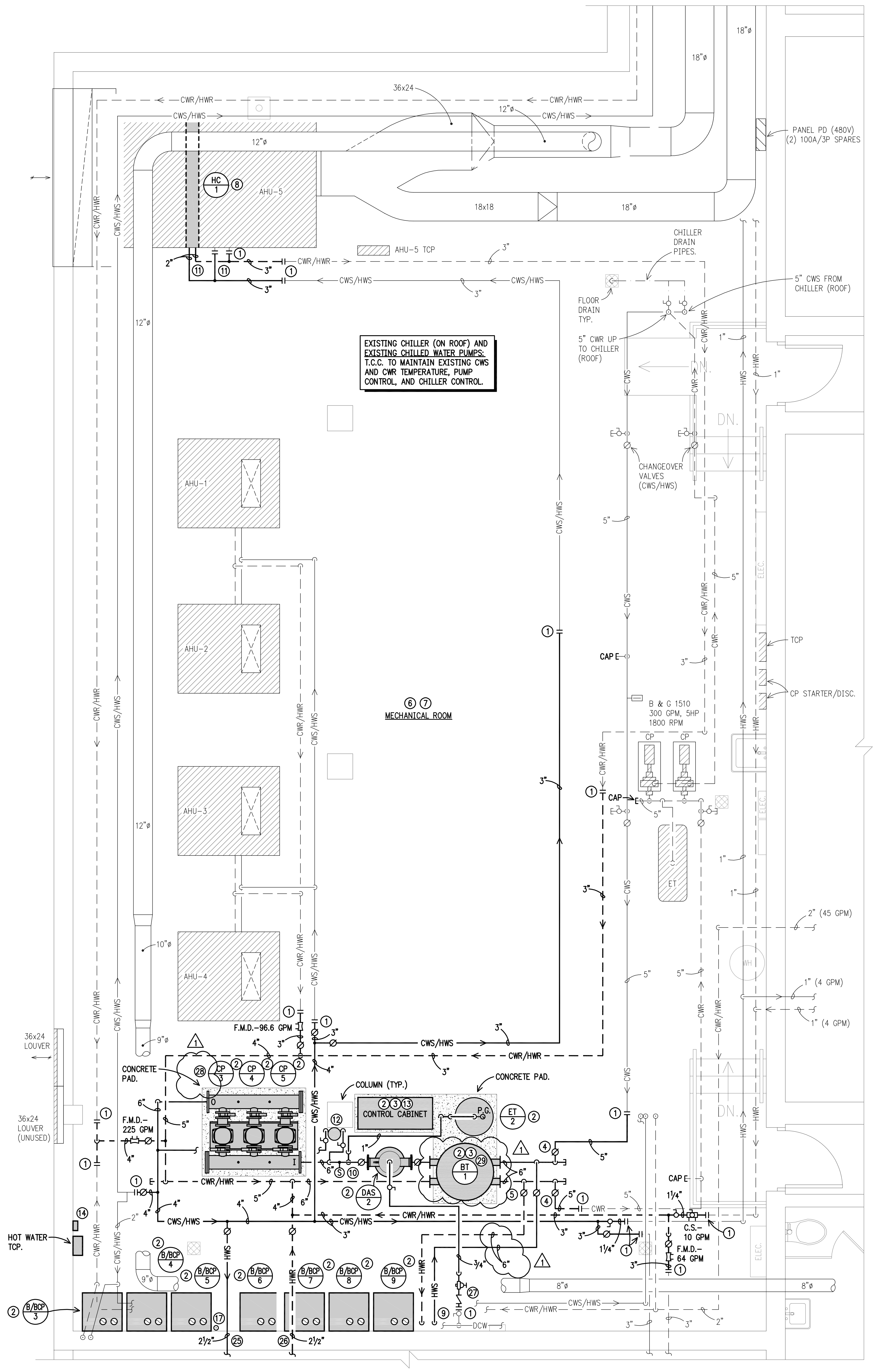
DESIGNED BY:
JKM/PDK

DATE:
10-16-2023

SHEET:
M105

APEX Engineering
landonJ 11/6/2023 3:52 PM 22101 Mech Plan Set.dwg

SEE 1/M102 FOR CONTINUATION



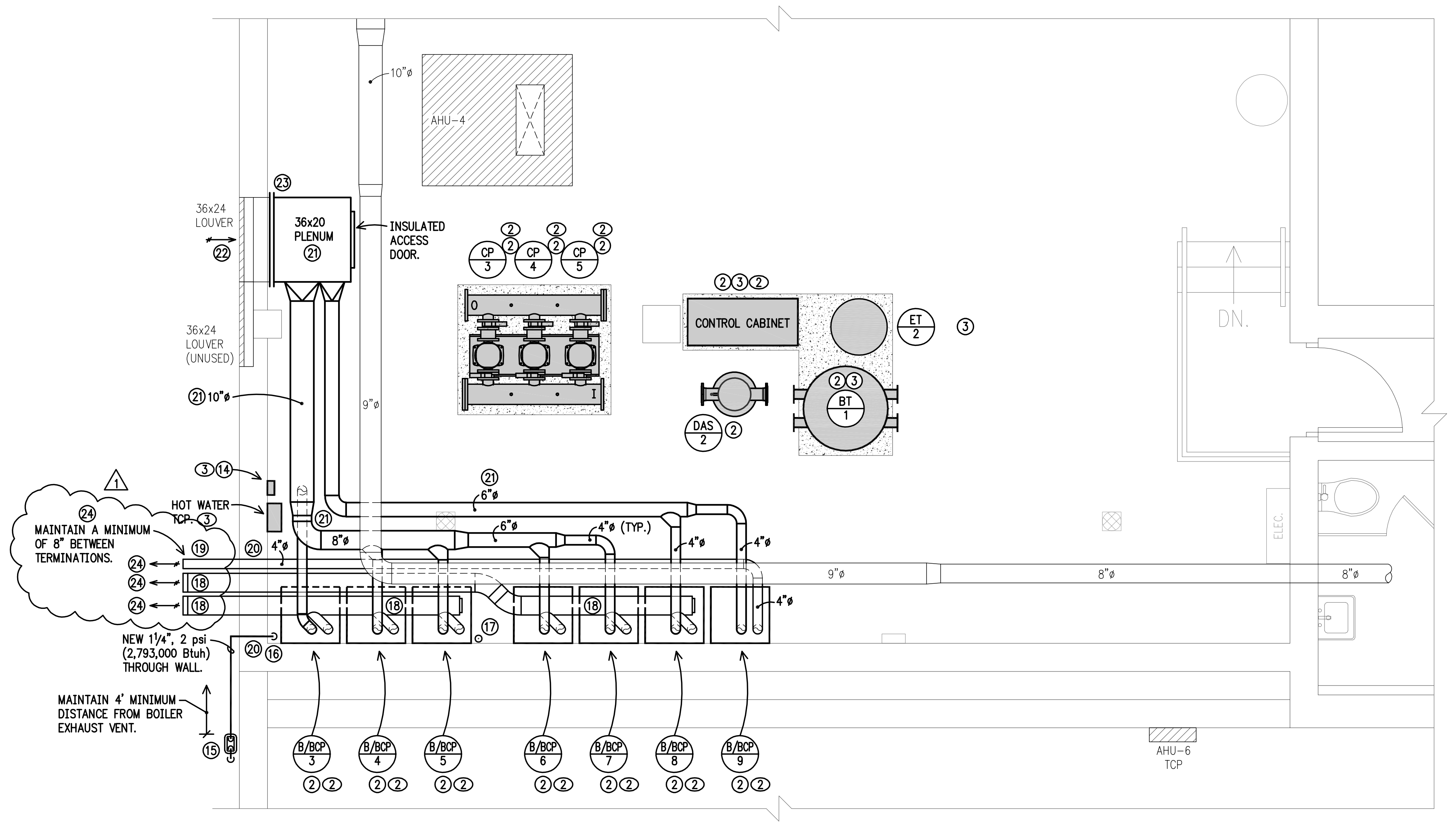
SEE 2/M200 FOR CONTINUATION

1 M200 MECH. ROOM PLAN - SECOND FLOOR

1/4"= 1'-0"

(REMODEL - HYDRONIC)

NORTH



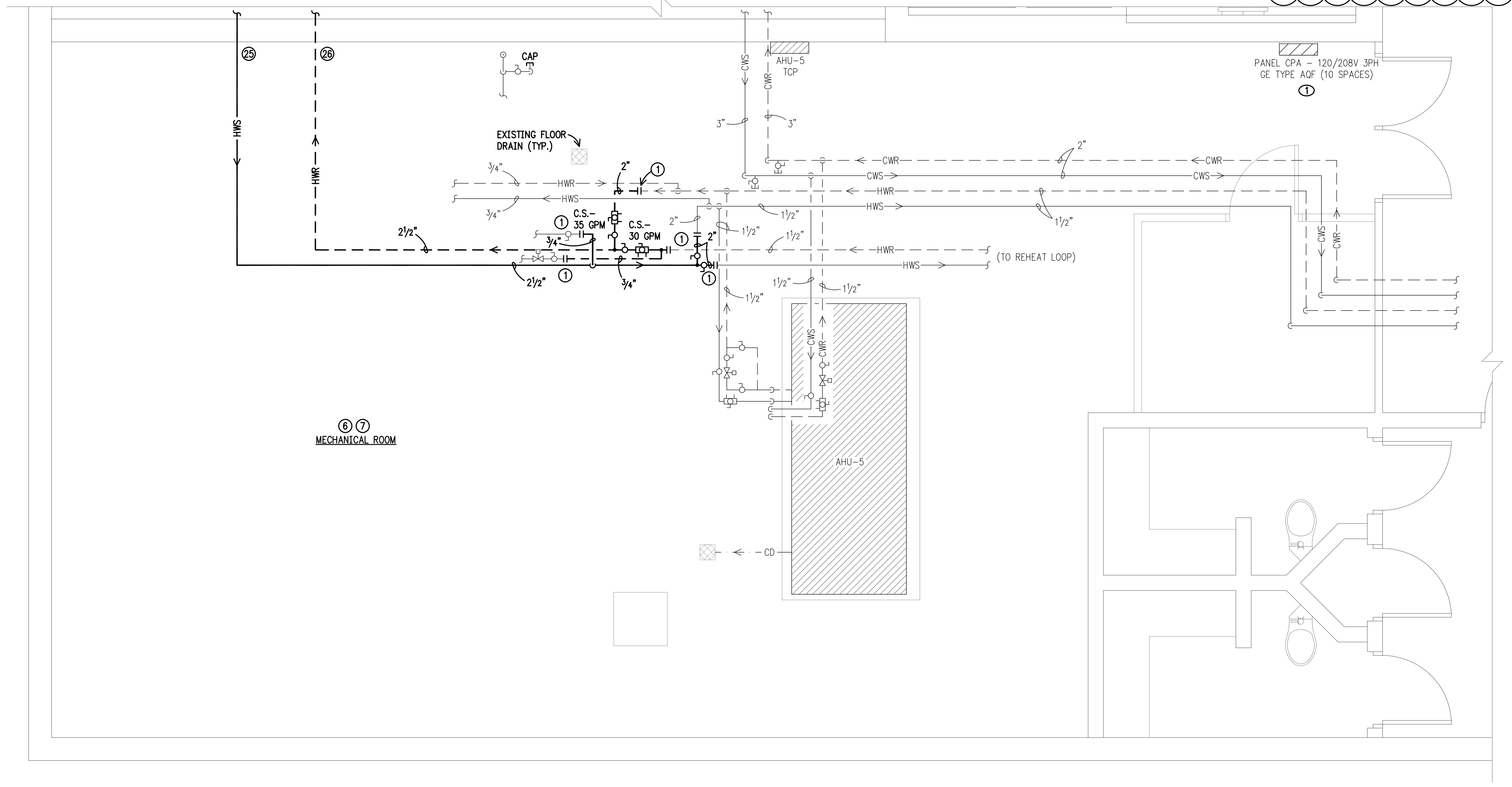
3 M200 MECH. ROOM PLAN - SECOND FLOOR

1/4"= 1'-0"

(REMODEL - VENTING)

NORTH

SEE 1/M200 FOR CONTINUATION



2 M200 MECH. ROOM PLAN - SECOND FLOOR

1/4"= 1'-0"

(REMODEL - HYDRONIC)

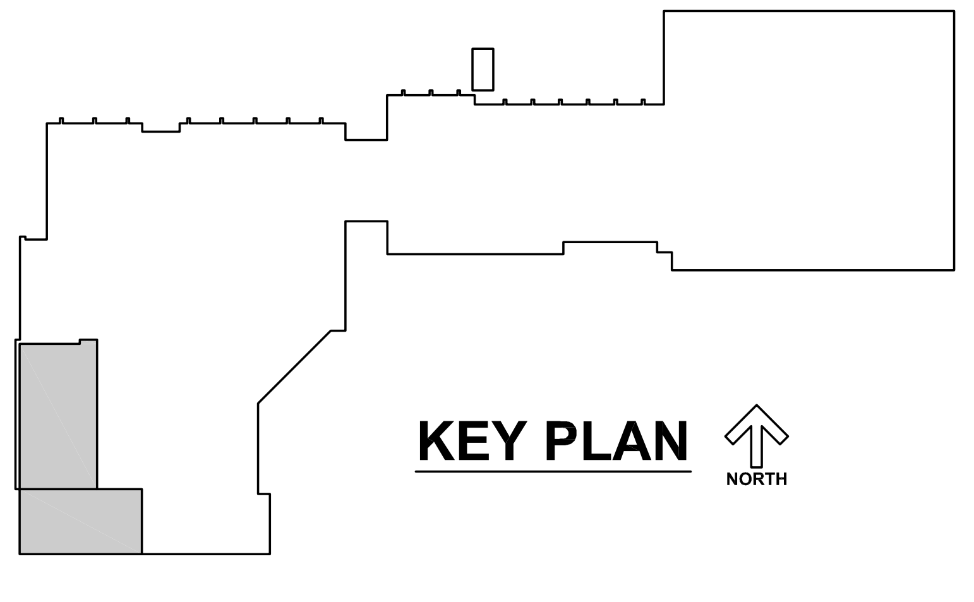
NORTH

Ⓔ ELECTRICAL REMODEL NOTES:

1. PROVIDE (9) 20A/1P BREAKERS IN OPEN SPACES IN EXISTING PANEL CPA.
2. SEE ELECTRICAL EQUIPMENT SCHEDULE ON SHEET M300 FOR MORE INFORMATION.
3. PROVIDE A 120V CIRCUIT FROM NEW 20A/1P BREAKER IN PANEL CPA.

Ⓗ MECHANICAL REMODEL NOTES:

1. NEW CONNECTION TO EXISTING PIPE. EXTEND AS SHOWN.
2. SEE DETAILS.
3. MOUNT ON NEW 4" CONCRETE PAD. REFER TO SPECIFICATION FOR REQUIREMENTS.
4. COOLING CHANGEOVER VALVES. VALVES OPEN IN SYSTEM COOLING MODE. VALVES CLOSED IN SYSTEM HEATING MODE.
5. HEATING CHANGEOVER VALVES. VALVES OPEN IN SYSTEM HEATING MODE. VALVES CLOSED IN SYSTEM COOLING MODE.
6. LABEL ALL NEW AND EXISTING PIPING IN MECHANICAL ROOM.
7. PIPING AND DUCTWORK SHOWN IS DIAGRAMMATIC AND SHOWN TO ASSIST THE M.C. WITH INSTALLATION. COORDINATE ALL NEW WORK WITH EXISTING CONDITIONS AND AVAILABLE SPACE IN ROOM. COORDINATE ELEVATIONS FOR INSTALLATION AND MAINTAIN ALL MFG. AND CODE REQUIRED CLEARANCES.
8. INSTALL NEW HOT WATER HEATING COIL (HC-1) IN EXISTING AHU. PROVIDE ANY EXTRA ACCESSORIES AS NEEDED FOR PROPER INSTALLATION. FIELD VERIFY ALL SIZES BEFORE ORDERING.
9. 6" HWS/R PIPING DN. TO BOILERS. SEE BOILER DETAIL FOR PIPING SIZES AND LAYOUTS. △1
10. PUMP SUCTION PRESSURE SENSOR.
11. T.C.C. TO MAINTAIN EXISTING SEQUENCE FOR HEATING/COOLING WITH NEW HOT AND CHILLED WATER DDC CONTROL VALVES. ADD POINTS AS REQUIRED FOR PROPER SEQUENCING.
12. M.C. TO PROVIDE NEW CHEMICAL POT FEEDER AND CONNECT TO HOT WATER SYSTEM AS SHOWN. SEE DETAIL. MOUNT TO WALL OR ON FLOOR STAND. UPON COMPLETION OF REMODEL WORK, PROVIDE SYSTEM INHIBITORS/CHEMICAL TREATMENT AS REQUIRED.
13. PACKAGED PUMP SYSTEM HAS TWO CONTROL SETPOINTS. T.C.C. TO PROGRAM COOLING AND HEATING FLOW/HEAD SETPOINTS AS REQUIRED. SEE SCHEDULES.
14. PROVIDE HEAT TIMER MULTI-MOD BOILER MODULATING CONTROLLER WITH EXM EXTENSION MODULE WITH BACNET INTEGRATION. T.C.C.'S OPTION TO PROVIDE FULL DDC CONTROL OF ALL BOILERS INCLUDING ALL INPUT/OUTPUT POINTS.
15. NEW 2 psi GAS METER SUPPLIED AND INSTALLED BY GAS SERVICE PROVIDER. PAINT ALL NEW PIPING WITH GREY ENAMEL. REFER TO SPECIFICATION FOR REQUIREMENTS.
16. 1¼" GAS MAIN DN. TO BENEATH BOILERS. SEE GAS SCHEMATIC FOR SIZING, CONNECTIONS AND ACCESSORIES.
17. EXISTING PLUMBING VENT.
18. PROVIDE MFG. SUPPLIED COMMON VENT SYSTEM MODEL No. PSVKIT05 FOR THREE BOILERS AS SHOWN. TERMINATE THROUGH WALL WITH MFG. APPROVED TERMINATION. SIZE AND INSTALL PER MFG. REQUIREMENTS.
19. BOILER EXHAUST VENT THRU WALL TO MFG. APPROVED TERMINATION.
20. NEW WALL OPENINGS. SEAL OPENINGS WATER TIGHT. REFER TO SPECIFICATION FOR REQUIREMENTS.
21. INSULATE COMBUSTION AIR DUCT WITH 2" FIBERGLASS PIPE INSULATION AND ASJ JACKET AS SPECIFIED.
22. THOROUGHLY CLEAN EXISTING LOUVER. LOUVER TO BE USED FOR COMBUSTION AIR INTAKE FOR BOILER IN REMODEL WORK.
23. NEW CONNECTION TO EXISTING LOUVER. SEE DETAIL.
24. TERMINATION TO EXTEND BEYOND OVERHANG. MAINTAIN A MINIMUM OF 8" BETWEEN TERMINATIONS AND BOILER VENT TERMINATIONS TO BE A MINIMUM OF 2' BELOW TEES IN MECHANICAL ROOM. △1
25. REUSE EXISTING WALL OPENING. MODIFY AND SEAL AS REQUIRED.
26. CORE DRILL NEW WALL OPENING. SEAL AS REQUIRED.
27. NEW BACKFLOW PREVENTER (RPBP-1) AND PRV. SEE DETAILS.
28. PUMP MANIFOLD(S) AND ANY ACCESSORIES TO BE REMOVED TO ALLOW PUMP PACKAGE TO FIT THRU EXISTING DOORWAYS. REINSTALL MANIFOLD(S) AND ANY ACCESSORIES WHEN PUMP PACKAGE IS LOCATED IN PLACE ON NEW PAD.
29. REMOVE DOOR FRAMES AS NECESSARY FOR BT-1 ENTRANCE TO MECHANICAL ROOM. COORDINATE WITH OWNER. DOOR FRAMES TO BE REINSTALLED TO EXISTING CONDITIONS UPON COMPLETION OF WORK. ANY DAMAGED PARTS TO BE REPLACED AT NO ADDITIONAL COST TO OWNER. △1



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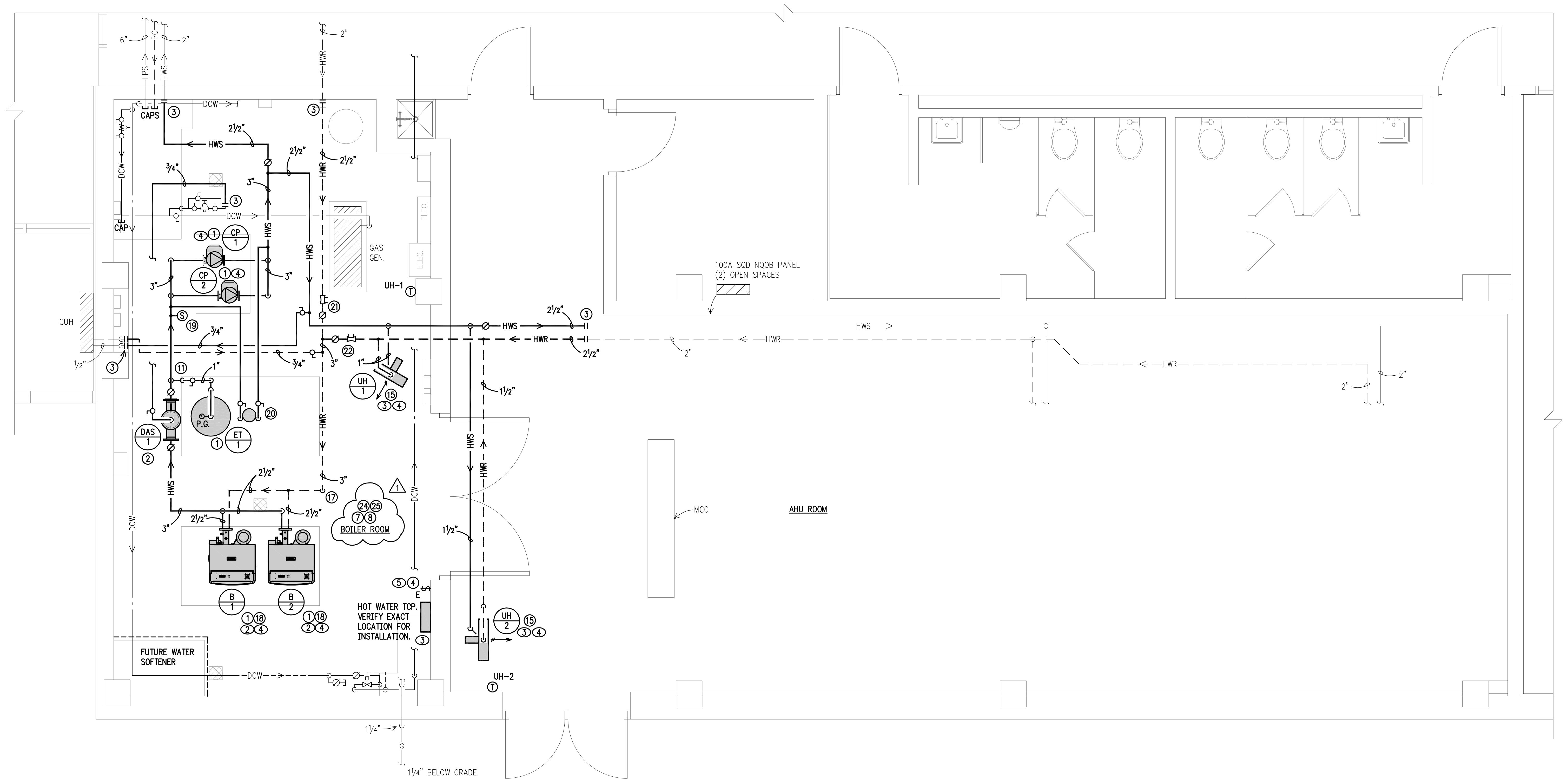
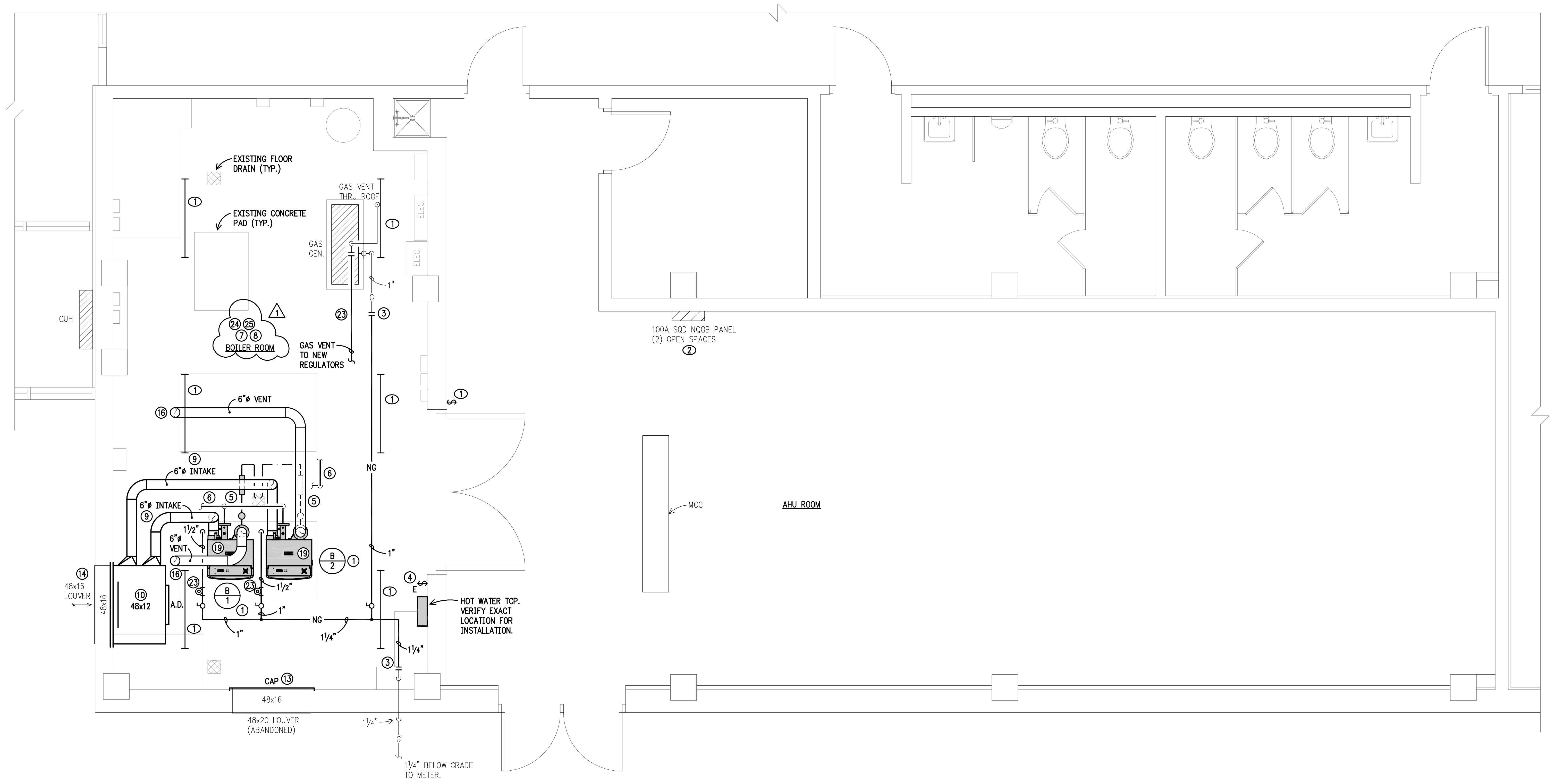


1 **M201** **MECH. ROOM PLAN - FIFTH FLOOR**
1/4"= 1'-0" (HYDRONIC REMODEL)

NORTH



1 **M201** **MECH. ROOM PLAN - FIFTH FLOOR**
1/4"= 1'-0" (DUCTWORK REMODEL)

NORTH

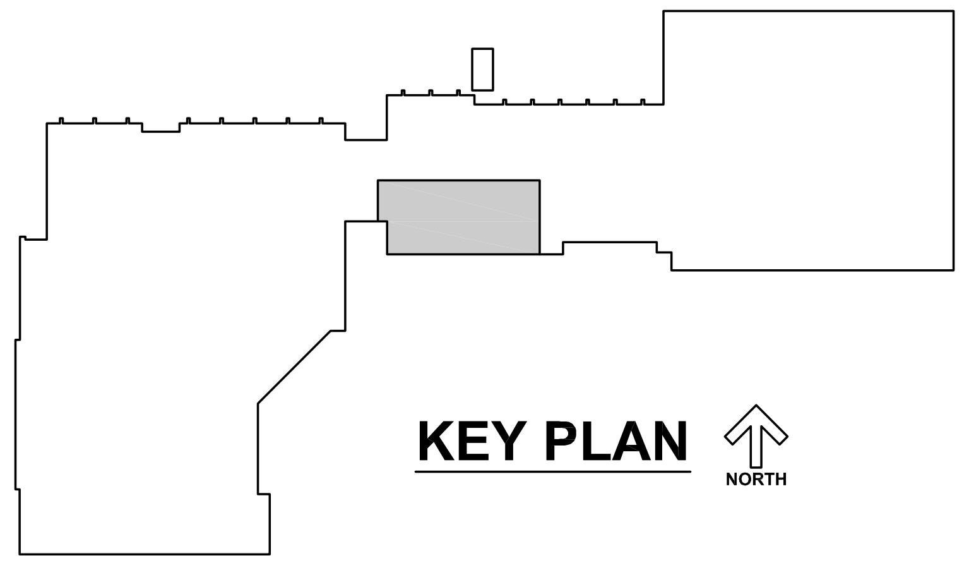
Ⓧ MECHANICAL REMODEL NOTES:

1. MOUNT LEVEL ON EXISTING CONCRETE PAD. SEE DETAILS.
2. SUPPORT FROM STRUCTURE ABOVE. SEE DETAILS.
3. NEW CONNECTION TO EXISTING PIPE. EXTEND AS SHOWN.
4. PROVIDE BOILER KILL SWITCH WIRED TO DISCONNECT ELECTRICAL POWER TO BOTH BOILERS AND CLOSE THE GAS VALVE AT EACH BOILER. PROVIDE LATCHING CLEAR COVER – NON LOCKABLE. SWITCH TO BE EATON 10250T5B62–S106 LABELED 'EMERGENCY BOILER SHUTDOWN'. VERIFY THAT THE GAS VALVE CLOSES UPON POWER DISCONNECTION. ALL WIRING TO BE IN CONDUIT. PROPER OPERATION OF EMERGENCY SHUTDOWN TO BE VERIFIED PRIOR TO PROJECT COMPLETION. COORDINATE LOCATION WITH LOCAL INSPECTOR.
5. PROVIDE DRAIN TRAP AND NEUTRALIZER. SEE DETAILS FOR SIZES. ROUTE CONDENSATE PIPING TO EXISTING FLOOR DRAIN. SIZE PER MFG. INSTRUCTIONS. ALL DRAIN PIPING TO BE STAINLESS STEEL.
6. APPROXIMATE LOCATION OF HWS/R PIPING FOR COORDINATION.
7. PIPING AND DUCTWORK SHOWN IS DIAGRAMMATIC AND SHOWN TO ASSIST THE M.C. WITH INSTALLATION. COORDINATE ALL NEW WORK WITH EXISTING CONDITIONS AND AVAILABLE SPACE IN ROOM. COORDINATE ELEVATIONS FOR INSTALLATION AND MAINTAIN ALL MFG. AND CODE REQUIRED CLEARANCES.
8. LABEL ALL NEW AND EXISTING PIPING IN THIS SPACE.
9. 2" FIBERGLASS PIPE INSULATION OVER COMBUSTION AIR SYSTEM. SEAL WITH ASJ JACKET.
10. 2" RIGID INSULATION WITH LAG & MASTIC ON 48x12 COMBUSTION AIR PLENUM.
11. BOTTOM CONNECTION TO HWS MAIN WITH TRAP. SEE DETAIL.
12. ROUTE BOILER PRESSURE RELIEF PIPING TO EXISTING FLOOR DRAIN. SEE DETAIL FOR MAXIMUM SYSTEM PRESSURE AND CONNECTION TO B–1 & 2.
13. CAP EXISTING LOUVER WITH SHEET METAL AND 2" RIGID INSULATION. SEAL AIR TIGHT.
14. NEW CONNECTION TO EXISTING LOUVER. THOROUGHLY CLEAN PRIOR TO DUCT INSTALLATION.
15. HANG LEVEL FROM STRUCTURE ABOVE.
16. 6"ø BOILER VENT UP THRU EXISTING ROOF OPENING. MODIFY OPENING AS REQUIRED. FLASH AND SEAL WATER TIGHT. FLASHING CONE AND SUPPORT TO BE STAINLESS STEEL. TERMINATE A MINIMUM OF 3' ABOVE EXISTING ROOF AND ADDITIONAL 2' ABOVE ANY OBJECT WITHIN 10' HORIZONTAL DISTANCE WITH MFG. APPROVED EXIT CONE. VERIFY WITH EXISTING CONDITIONS. SUPPORT STACK WITH GUY WIRES AS REQUIRED. INSTALL PER MFG. REQUIREMENTS. SEE DETAIL.
17. 3" HWR PIPE DN. TO NEAR FLOOR. COORDINATE EXACT ELEVATION WITH BOILER HWR INLET CONNECTION. SUPPORT PIPING FROM FLOOR AS REQUIRED.
18. MAINTAIN A MINIMUM OF 18" CLEAR ABOVE TOP OF BOILER PER MFG. INSTRUCTIONS.
19. PUMP SUCTION PRESSURE SENSOR.
20. M.C. TO PROVIDE NEW CHEMICAL POT FEEDER AND CONNECT TO HOT WATER SYSTEM AS SHOWN. SEE DETAIL. MOUNT ON FLOOR STAND. UPON COMPLETION OF REMODEL WORK, PROVIDE SYSTEM INHIBITORS/CHEMICAL TREATMENT AS REQUIRED.
21. F.M.D. – 47 GPM.
22. F.M.D. – 69 GPM.
23. PROVIDE 2 psig DOWN TO 7" WATER COLUMN (w.c.) GAS PRESSURE REGULATOR. INSTALL GAS REGULATOR AS PER REGULATOR AND GAS EQUIPMENT MANUFACTURER'S SPECIFICATIONS. VENT GAS REGULATORS TO EXISTING PIPE THRU ROOF AS SHOWN ON PLANS. INSTALL AND SIZE VENT PIPING PER GAS REGULATOR MFG. RECOMMENDATIONS.
24. UPON COMPLETION OF PROJECT ALL OPENINGS/PENETRATIONS TO ROOM, INCLUDING BUT NOT LIMITED TO EXISTING PLASTER CEILING, TO BE SEALED AS REQUIRED TO MAINTAIN EXISTING FIRE RATING.
25. REUSE EXISTING HANGERS/SUPPORTS WHERE ALLOWED. ALL UNUSED HANGERS/SUPPORTS TO BE REMOVED. PROVIDE NEW HANGERS WHERE REQUIRED, ATTACHED TO CONCRETE TEE VERTICAL RIB FACE 8" MINIMUM FROM BOTTOM OF TEE. PROVIDE NEW OPENING IN EXISTING PLASTER CEILING TO PERFORM WORK. PATCH CEILING TO MATCH EXISTING SURROUNDINGS AND MAINTAIN EXISTING FIRE RATING.

△1

Ⓧ ELECTRICAL REMODEL NOTES:

1. PROVIDE (6) 4' LED LENSED STRIP LIGHTS EQUAL TO A LITHONIA #CSS L48 MVOLT SWWW3 SELECTABLE WATTAGE AND COLOR TEMP. SET TO HIGH LUMENS AND 4000K. COORDINATE LOCATIONS WITH EQUIPMENT AND PROVIDE MOUNTING HARDWARE AS NEEDED. PROVIDE A NEW SWITCH AND REUSE EXISTING LIGHTING CIRCUIT WITH NEW CONDUCTORS. REUSE AS MUCH OF THE EXISTING CONDUIT AS POSSIBLE.
2. PROVIDE (2) 20A/1P BREAKERS IN EXISTING PANEL TO FEED NEW BOILERS (B–1 AND B–2).
3. USE SPARE 20A/1P BREAKERS CREATED BY DEMOLITION FOR OTHER NEW 120V EQUIPMENT.
4. SEE ELECTRICAL EQUIPMENT SCHEDULE ON SHEET M300 FOR MORE INFORMATION.
5. SEE MECHANICAL NOTE 4 FOR ELECTRICAL WORK.



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BOILER REPLACEMENT PROJECT FOR
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517 COURT STREET
NEILLSVILLE, WISCONSIN 54456

TITLE:
MECHANICAL ROOM REMODEL PLANS - FIFTH FLOOR

DO NOT SCALE DRAWINGS
USE FIGURED DIMENSIONS ONLY

REVISIONS:
△1 11-06-2023

PROJECT NO:
22101

DRAWN BY:
LJJ/PDK

DESIGNED BY:
JKM/PDK

DATE:
10-16-2023

SHEET:
M201

APEX Engineering
landonJ 11/6/2023 3:53 PM 22101 Mech Plan Set.dwg

GENERAL ELECTRICAL SPECIFICATIONS

GENERAL:

1. PROVIDE A COMPLETE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS AND DESCRIBED HEREIN.
2. ALL WORK SHALL BE IN CONFORMANCE WITH NATIONAL, STATE, AND LOCAL CODES AND/OR ORDINANCES.
3. PROVIDE ALL INCIDENTALS, EQUIPMENT, APPLIANCES, SERVICES, HOISTING, SCAFFOLDING, SUPPORTS, TOOLS, SUPERVISION, LABOR CONSUMABLE ITEMS, FEES, LICENSES, ETC., NECESSARY TO PROVIDE COMPLETE SYSTEMS. PERFORM START-UP AND CHECKOUT ON EACH ITEM AND SYSTEM TO PROVIDE FULLY OPERABLE SYSTEMS.
4. EXAMINE AND COMPARE THE ELECTRICAL DRAWINGS AND SPECIFICATIONS WITH THE DRAWINGS AND SPECIFICATIONS OF OTHER TRADES, AND REPORT ANY DISCREPANCIES BETWEEN THEM TO THE ARCHITECT/ENGINEER AND OBTAIN FROM HIM WRITTEN INSTRUCTIONS FOR CHANGES NECESSARY IN THE WORK. AT TIME OF BID, THE MOST STRINGENT REQUIREMENTS MUST BE INCLUDED IN SAID BID.
5. INSTALL AND COORDINATE THE ELECTRICAL WORK IN COOPERATION WITH OTHER TRADES INSTALLING INTERRELATED WORK. BEFORE INSTALLATION, MAKE PROPER PROVISIONS TO AVOID INTERFERENCES IN A MANNER APPROVED BY THE ARCHITECT/ENGINEER. ALL CHANGES REQUIRED IN THE WORK OF THE CONTRACTOR, CAUSED BY HIS NEGLECT TO DO SO, SHALL BE MADE BY HIM AT HIS OWN EXPENSE.
6. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO PROVIDE A COMPLETE WORKABLE SYSTEM READY FOR THE OWNER'S OPERATION. ANY ITEM NOT SPECIFICALLY SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT NORMALLY REQUIRED TO CONFORM WITH THE INTENT, ARE TO BE CONSIDERED A PART OF THE CONTRACT.
7. ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW AND UNUSED (TEMPORARY LIGHTING AND POWER PRODUCTS ARE EXCLUDED) AND FREE FROM DEFECTS. ALL MATERIALS USED SHALL BEAR THE UNDERWRITER'S LABORATORY, INC. LABEL PROVIDED A STANDARD HAS BEEN ESTABLISHED FOR THE MATERIAL IN QUESTION.
8. EXCEPT FOR CONDUIT, CONDUIT FITTINGS, OUTLET BOXES, WIRE AND CABLE, ALL ITEMS OF EQUIPMENT OR MATERIAL SHALL BE THE PRODUCT OF ONE MANUFACTURER THROUGHOUT THE ENTIRE PROJECT. MULTIPLE MANUFACTURERS WILL NOT BE PERMITTED.
9. UPON COMPLETION OF THE ELECTRICAL WORK, THE INSTALLATION SHALL BE TESTED FOR CONTINUITY, GROUNDS, AND SHORT CIRCUITS. THE ELECTRICAL CONTRACTOR SHALL DEMONSTRATE PROPER PERFORMANCE OF ALL SYSTEMS. ALL DEFECTIVE WORK OR MATERIALS SHALL BE REPLACED OR REPAIRED AS NECESSARY AND RETESTED.

QUALITY ASSURANCE:

1. WORK UNDER THIS DIVISION SHALL BE SUPERVISED BY A PERSON WHO HOLDS A CERTIFICATION ISSUED BY THE WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES AS A CERTIFIED ELECTRICAL CONTRACTOR, CERTIFIED ELECTRICAL CONTRACTOR-RESTRICTED OR CERTIFIED MASTER ELECTRICIAN.
2. WORK UNDER THIS DIVISION SHALL BE EXECUTED BY A PERSON WHO HOLDS A CERTIFICATION ISSUED BY THE WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES AS A CERTIFIED ELECTRICAL CONTRACTOR, CERTIFIED ELECTRICAL CONTRACTOR-RESTRICTED OR CERTIFIED MASTER ELECTRICIAN, CERTIFIED JOURNEYMAN ELECTRICIAN OR CERTIFIED BEGINNING ELECTRICIAN.

SERVICE AND DISTRIBUTION:

1. PANELBOARDS, PANELBOARD PRODUCTS, AND MOTOR CONTROL CENTER SHALL BE BY SQ-D, SIEMENS, GE OR CUTLER-HAMMER. GROUND PANELBOARDS IN ACCORDANCE WITH ELECTRICAL CODES. PANELBOARDS SHALL HAVE A TYPEWRITTEN CIRCUIT SCHEDULE INSTALLED INSIDE THE COVER. COVER SCHEDULE WITH CLEAR PLASTIC. PROVIDE ENGRAVED PLASTIC LAMINATE LABEL IDENTIFYING PANELBOARDS. PANELBOARDS TO BE FILLED AS INDICATED ON PANEL SCHEDULE.
2. ELECTRICAL CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH ELECTRIC SERVICE PROVIDER AND PROVIDE EQUIPMENT RATED TO THE GREATER VALUE OF THIS INFORMATION OR AS INDICATED ON PLAN SHEET.
3. PROVIDE FACTORY-ASSEMBLED CIRCUIT BREAKERS OF FRAME SIZES, CHARACTERISTICS, AND RATINGS INCLUDING RMS SYMMETRICAL INTERRUPTING RATINGS AS REQUIRED. MULTI-POLE BREAKERS SHALL HAVE COMMON INTERNAL TRIP AND U.L. LISTED AS MULTI-POLE ON ALL BREAKERS, AND SHALL HAVE TRIP RATING ENGRAVED IN HANDLE.
4. PROVIDE HEAVY-DUTY FUSED OR NOT FUSED DISCONNECT SWITCHES BY SQ-D, CUTLER-HAMMER OR APPROVED EQUIVALENT. DISCONNECT SWITCH ENCLOSURE TO BE NEMA TYPE AS REQUIRED FOR APPLICATION.
5. PROVIDE FUSES OF TYPE, CLASS, AND CURRENT RATING AS REQUIRED. FUSES ARE TO BE BUSSMAN, FERRAZ SHAWMUT, LITTELFUSE OR EQUIVALENT.

RACEWAYS:

1. ALL WIRING SHALL BE IN APPROVED METAL RACEWAY. USE RACEWAYS IN ACCORDANCE WITH ELECTRICAL CODES. IN GENERAL, PROVIDE ELECTRICAL METALLIC TUBING ABOVE SUSPENDED CEILINGS, IN PARTITIONS, AND IN OTHER AREAS NOT SUBJECT TO MOISTURE. ALL CONDUIT SHALL BE MINIMUM 1/2" SIZE. USE COMPRESSION TYPE FITTINGS OR SET SCREW ON E.M.T. TYPE AC/MC CABLE AND FLEXIBLE METAL CONDUIT MAY BE USED FOR LIGHT FIXTURE CONNECTIONS AND OTHER FLEXIBLE CONNECTIONS. USE RIGID OR INTERMEDIATE METAL CONDUIT IN DAMP OR WET LOCATION WITH WATERTIGHT FITTINGS. PVC CONDUIT MAY BE USED FOR UNDERGROUND INTERIOR AND EXTERIOR LOCATIONS OR AS INDICATED ON PLAN.
2. RACEWAYS SHALL BE CONCEALED IN ALL FINISHED AREAS IN THE BEST MANNER POSSIBLE. RACEWAYS SHALL BE RUN IN PARALLEL WITH CONSTRUCTION WHERE EXPOSED AND ABOVE SUSPENDED CEILINGS. USE RODS AND STEEL CHANNELS TO SUPPORT MULTIPLE CONDUIT RACEWAY RUNS. SINGLE CONDUIT RUNS SHALL BE SECURED TO STRUCTURE WITH HEAVY DUTY STRAPS.
3. PROVIDE MINIMUM #12 GROUND WIRE IN ALL RACEWAYS. PROVIDE ADDITIONAL GROUND WIRE FOR IG RECEPTACLES.
4. ELECTRICAL RACEWAYS THAT PENETRATE FIRE RATED ASSEMBLIES SHALL BE SLEEVED AND SEALED AS PER THE CURRENT WISCONSIN COMMERCIAL BUILDING CODE SECTION 712 REQUIREMENTS.

BOXES:

1. PROVIDE JUNCTION BOXES AND PULL BOXES AS REQUIRED BY ELECTRICAL CODES.
2. PROVIDE APPROPRIATE BOXES FOR WIRING DEVICES. OUTLET BOXES FOR DRY INTERIOR LOCATIONS SHALL BE GALVANIZED STEEL SIZED IN ACCORDANCE WITH CONDUCTOR FILL.
3. BACK-TO-BACK OUTLET BOX INSTALLATIONS SHALL NOT BE ALLOWED.
4. EXTERIOR LIGHTING AND POWER BOXES SHALL BE RECESSED WITH DEVICE MOUNTED FLUSH WITH WALL . SEAL BOXES IN EXTERIOR WALLS TO PREVENT INFILTRATION.
5. BOXES AND WIREWAYS SHALL MEET THE REQUIREMENTS FOR THE AREA IN WHICH INSTALLED. WHERE EXPOSED, BOXES 6" X 6" AND LARGER SHALL BE PAINTED GRAY.

WIRE:

1. USE TYPE THW, THHN, THWN OR XHHW COPPER WIRE. PROVIDE CONDUCTORS WITH 90° C INSULATION FOR WIRING LOCATED INSIDE LIGHT FIXTURES AND FOR FEEDERS TO PANELBOARDS. SIZE AND USE CONDUCTORS IN ACCORDANCE WITH WISCONSIN ELECTRICAL CODES.
2. BRANCH CIRCUIT WIRING SHALL BE MINIMUM #12 AWG. LINE VOLTAGE CONTROL WIRING SHALL BE A MINIMUM OF #14 AWG.
3. IDENTIFY WIRE AT EACH CONNECTOR OR SPLICE WITH PERMANENTLY ATTACHED WRAPAROUND ADHESIVE MARKERS. PROVIDE IDENTIFICATION ON MARKERS WHICH WILL AID FUTURE TROUBLE SHOOTING AND WIRE TRACING. IDENTIFY ALL JUNCTION BOXES 4"x4" AND LARGER WITH SYSTEM, EQUIPMENT SERVED AND/OR CIRCUIT NUMBERS. ADHESIVE PLASTIC TAPE MAY BE USED FOR JUNCTION BOX IDENTIFICATION. IDENTIFY ALL GROUND FAULT INTERRUPTER RECEPTACLES AS GFI.

WIRING DEVICES:

1. SWITCHES SHALL BE SPECIFICATION GRADE AC SWITCHES. SWITCHES SHALL BE RATED 20 AMP AND SHALL BE THE MANUFACTURE'S PREMIUM SPECIFICATION GRADE TOGGLE SWITCH WITH QUIET ACTUATION AND HEAVY-DUTY CONTACT ARM. ACCEPTABLE MANUFACTURERS ARE COOPER WIRING DEVICES, HUBBELL LEVITON OR EQUIVALENT.
2. WALL PLATES SHALL BE HIGH-IMPACT RESISTANT THERMOPLASTIC MATERIAL WITH MATCHING COLOR SCREWS. WALL PLATES SHALL MEET UL514 AND FED. SPEC. WP-455 REQUIREMENTS.

LIGHTING:

1. PROVIDE LUMINARIES AS SCHEDULED ON DRAWINGS.
2. INSTALL IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS, INCLUDING ALL COMPONENTS NECESSARY FOR MOUNTING LUMINARIES.

IDENTIFICATION

1. PROVIDE CLOTH TYPE WIRE MARKERS ON EACH CONDUCTOR AT PANEL BOARDS, PULL BOXES, OUTLET BOXES AND J-BOXES.
2. E.C. SHALL PROVIDE A TYPED PANEL BOARD DIRECTORY FOR ANY NEW PANELS OR CHANGES IN EXISTING PANELS.
   - PANEL BOARDS DIRECTORY SHALL BE LABELED FROM WHERE THE PANEL IS FED FROM.
3. NEW PANEL BOARDS, DISCONNECTS, RELAYS AND SUCH DEVICES SHALL HAVE AN ENGRAVED THREE LAYER LAMINATED PLASTIC LABEL, BLACK WITH WHITE BACKGROUND.

MOTOR, HVAC & EQUIPMENT SCHEDULE

IDENTIFICATION				CHARACTERISTICS			DISCONNECT DEVICE				STARTER				CONTROLS/CONTROL WIRING			NOTES
IDENT.	BREAK/FUSE SIZE	CIRCUIT #	FEEDER SIZE	KW,HP,FLA	V/PH	LOCATION	TYPE	NEMA	PROVIDE BY	LOCATION	TYPE	NEMA	PROVIDE BY	LOCATION	CHARACTERISTICS	WIRE BY	PRO. BY	
B-1	20A/1P BRK	SEE PLANS	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL				HVAC CONTROLS	M.C.	M.C.	1
B-2	20A/1P BRK	SEE PLANS	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL				HVAC CONTROLS	M.C.	M.C.	1
B-3/BCP-3	20A/1P BRK	CPA	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL VFD (BCP)				HVAC CONTROLS	M.C.	M.C.	1,2
B-4/BCP-4	20A/1P BRK	CPA	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL VFD (BCP)				HVAC CONTROLS	M.C.	M.C.	1,2
B-5/BCP-5	20A/1P BRK	CPA	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL VFD (BCP)				HVAC CONTROLS	M.C.	M.C.	1,2
B-6/BCP-6	20A/1P BRK	CPA	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL VFD (BCP)				HVAC CONTROLS	M.C.	M.C.	1,2
B-7/BCP-7	20A/1P BRK	CPA	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL VFD (BCP)				HVAC CONTROLS	M.C.	M.C.	1,2
B-8/BCP-8	20A/1P BRK	CPA	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL VFD (BCP)				HVAC CONTROLS	M.C.	M.C.	1,2
B-9/BCP-9	20A/1P BRK	CPA	2-#12+1-#12GND	FRACT.	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL VFD (BCP)				HVAC CONTROLS	M.C.	M.C.	1,2
CP-1	EXISTING MCC	MCC-1	3-#12+1-#12GND	**5 HP**	480V/3PH	SEE PLANS	INTEGRAL			SEE PLAN	INTEGRAL VFD/DISC.				HVAC CONTROLS	M.C.	M.C.	1,3,5
CP-2	EXISTING MCC	MCC-1	3-#12+1-#12GND	5 HP	480V/3PH	SEE PLANS	INTEGRAL			SEE PLAN	INTEGRAL VFD/DISC.				HVAC CONTROLS	M.C.	M.C.	1,3,5
CP-3	EXISTING 100A IN PANEL PD.	VERIFY	REUSE EXISTING	7.5 HP	480V/3PH	SEE PLANS	INTEGRAL			SEE PLAN	INTEGRAL VFD/DISC.				HVAC CONTROLS	M.C.	M.C.	1,4
CP-4			REUSE EXISTING	7.5 HP	480V/3PH	SEE PLANS	INTEGRAL			SEE PLAN	INTEGRAL VFD/DISC.				HVAC CONTROLS	M.C.	M.C.	1,4
CP-5			REUSE EXISTING	7.5 HP	480V/3PH	SEE PLANS	INTEGRAL			SEE PLAN	INTEGRAL VFD/DISC.				HVAC CONTROLS	M.C.	M.C.	1,4
UH-1	EXISTING	SEE PLANS	2-#12+1-#12GND	1/12 HP	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL				HVAC CONTROLS	M.C.	M.C.	1,6,7
UH-2	EXISTING	SEE PLANS	2-#12+1-#12GND	1/3 HP	120V/1PH	SEE PLANS	MOTOR RATED SNAP SWITCH	1	E.C.	SEE PLAN	INTEGRAL				HVAC CONTROLS	M.C.	M.C.	1,6,7

1. SEE MECHANICAL SHEETS FOR LOCATION OF EQUIPMENT AND COORDINATION WORK.
2. E.C SHALL PROVIDE CONNECTION FROM BOILER TO BCP.
3. PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT.
4. CP-3,4,5 ARE ON ONE SKID WITH A SINGLE POINT POWER CONNECTION TO THE CONTROL PANEL.
5. USE EXISTING TUB CREATED BY DEMOLITION. UPDATE FUSING TO MATCH MFG. RECOMMENDATIONS.
6. USE EXITING 20A/1P BREAKER SPARE CREATED BY DEMOLITION.
7. UH-1 AND UH-2 SHALL BE ON THE SAME CIRCUIT.

GENERAL NOTE: E.C. SHALL UPDATE ALL LABELING ON DISCONNECTS, MOTOR CONTROL CENTERS, PANELS AND VFDS TO MATCH NEW NUMBERING SYSTEM.

UH / #

UNIT HEATER SCHEDULE

PLAN SYMBOL	ROOM NO.	TYPE	CFM	E.A.T. (°F)	HEATING MEDIUM	E.W.T. (°F)	L.W.T. (°F)	MBH	GPM	MAX. W.P.D. (FT.)	FAN MOTOR HP/W	FAN MOTOR RPM	ELEC. CHAR.	MANUFACTURER & MODEL NO.	ACCESS./ NOTES
UH-1	SEE PLANS	HORIZONTAL THROW	1400	60	WATER	180	160	59.73	6.0	0.29	1/12 HP	1000	120/1	STERLING HS-96	TOTALLY ENCLOSED MOTOR WITH THERMAL OVERLOAD.
UH-2	SEE PLANS	HORIZONTAL THROW	2900	60	WATER	180	160	129.93	13.0	0.79	1/3 HP	1140	120/1	STERLING HS-204	TOTALLY ENCLOSED MOTOR WITH THERMAL OVERLOAD.

△1

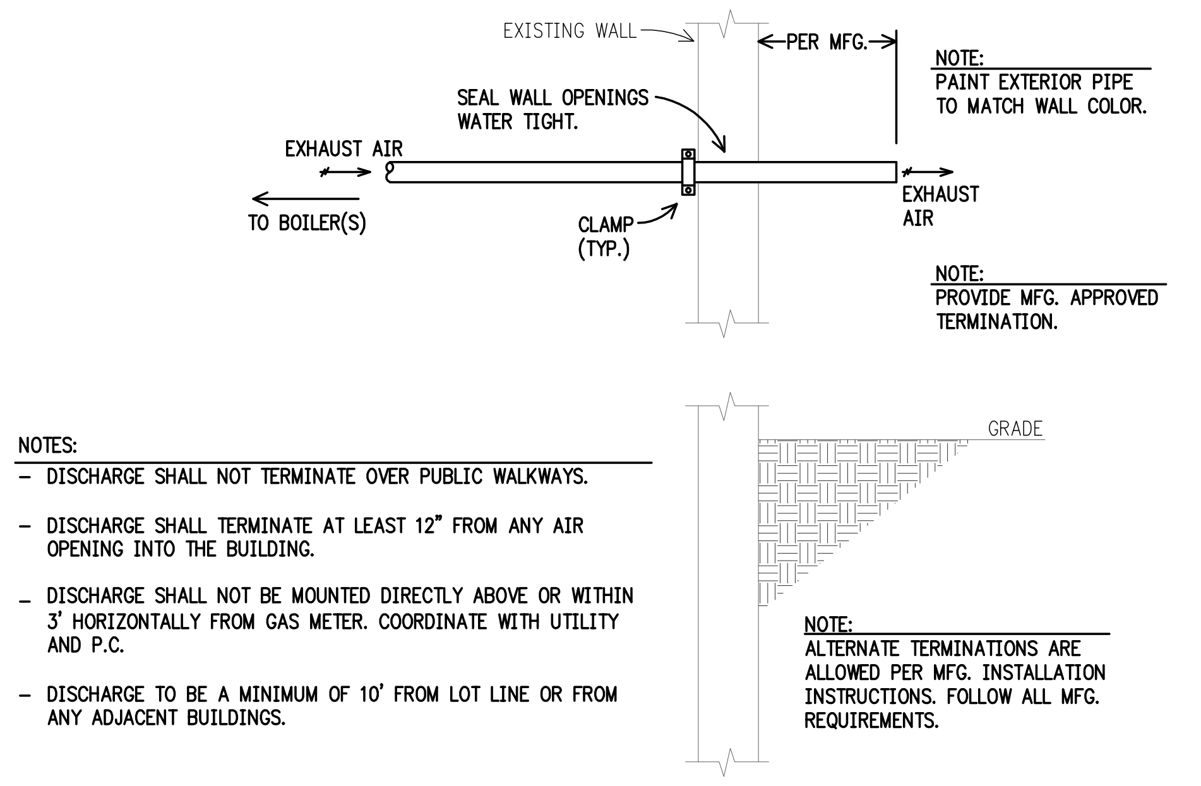
HWC / #

HOT WATER HEATING COIL SCHEDULE

PLAN SYMBOL	COIL SIZE (L" x H")	CFM	HEATING MEDIUM	E.W.T. (°F)	L.W.T. (°F)	E.A.T. (°F)	L.A.T. (°F)	MBH	GPM	MAX W.P.D.	MAX A.P.D.	MANUFACTURER & MODEL NO.	ACCESSORIES/NOTES
HC-1	81x30	6750	WATER	180	160	-20	56	556.35	37	4.72	0.066	TRANE D5WB30081G0AA133BABA00B	①②

① COIL SIZE LISTED IS APPROXIMATE. FIELD VERIFY ALL DIMENSIONS WITH EXISTING AHU.

② PROVIDE ADDITIONAL ACCESSORIES AND/OR PARTS AS REQUIRED FOR PROPER COIL INSTALLATION IN EXISTING AHU.



NOTE:
PAINT EXTERIOR PIPE TO MATCH WALL COLOR.

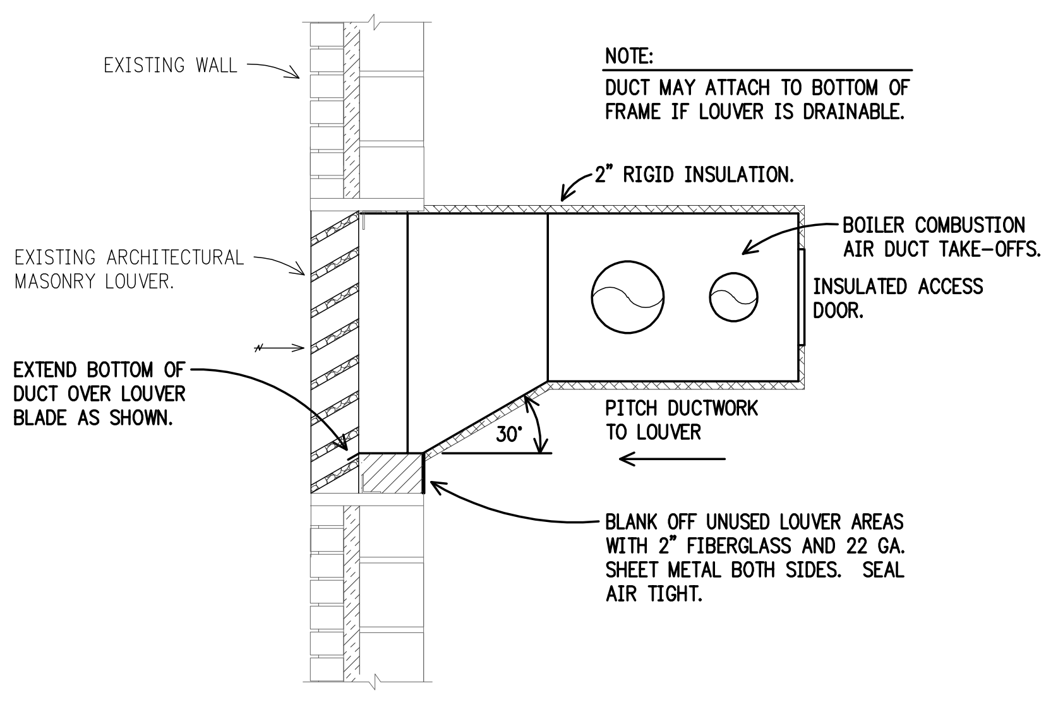
NOTE:
PROVIDE MFG. APPROVED TERMINATION.

NOTES:
- DISCHARGE SHALL NOT TERMINATE OVER PUBLIC WALKWAYS.
- DISCHARGE SHALL TERMINATE AT LEAST 12" FROM ANY AIR OPENING INTO THE BUILDING.
- DISCHARGE SHALL NOT BE MOUNTED DIRECTLY ABOVE OR WITHIN 3' HORIZONTALLY FROM GAS METER. COORDINATE WITH UTILITY AND P.C.
- DISCHARGE TO BE A MINIMUM OF 10' FROM LOT LINE OR FROM ANY ADJACENT BUILDINGS.

NOTE:
ALTERNATE TERMINATIONS ARE ALLOWED PER MFG. INSTALLATION INSTRUCTIONS. FOLLOW ALL MFG. REQUIREMENTS.

2 / M300 VENT TERMINATION DETAIL

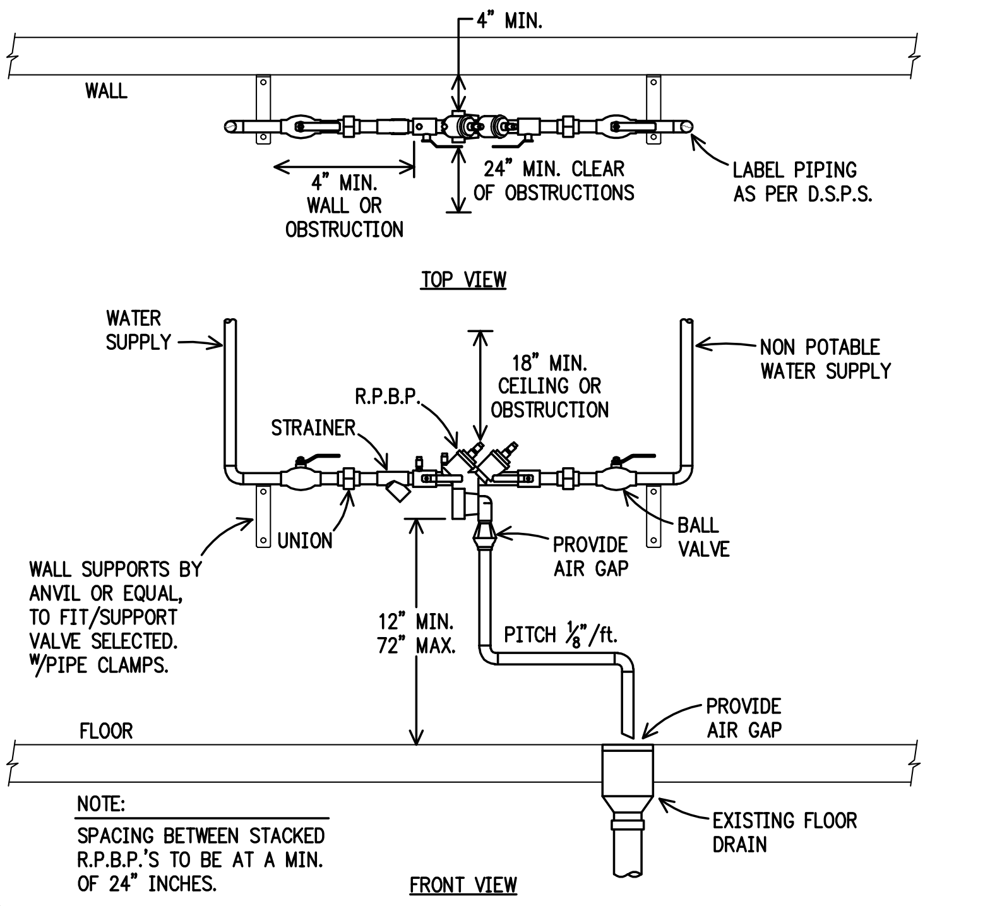
NO SCALE (BOILER EXHAUST) (B-3 THRU B-9)



NOTE:
DUCT MAY ATTACH TO BOTTOM OF FRAME IF LOUVER IS DRAINABLE.

1 / M300 LOUVER CONNECTION DETAIL

NO SCALE (BOILER COMBUSTION AIR) (B-3 THRU B-9)



NOTE:
SPACING BETWEEN STACKED R.P.B.P.'S TO BE AT A MIN. OF 24" INCHES.

3 / M300 CROSS CONNECTION CONTROL DETAIL

NO SCALE (REDUCED PRESSURE BACKFLOW DEVICE)

B / #

BOILER SCHEDULE

PLAN SYMBOL	ROOM NO.	TYPE	HEATING MEDIUM	MIN. FLOW (GPM)	GROSS INPUT (MBH)	GROSS OUTPUT (MBH)	AHRI EFF. (80-180)	FUEL	TURNDOWN	ELEC. CHAR.	APPROX. WEIGHT (LBS)	MANUFACTURER & MODEL NO.	ACCESSORIES/NOTES
B-1	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	12	750	720	95.6%	NAT.	15:1	120/1	910	AERCO BMK750 ① LOW NOx ②	VENTING & TERMINATION. CONDENSATE NEUTRALIZATION KIT. SEE DETAILS.
B-2	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	12	750	720	95.6%	NAT.	15:1	120/1	910	AERCO BMK750 ① LOW NOx ②	VENTING & TERMINATION. CONDENSATE NEUTRALIZATION KIT. SEE DETAILS.
B-3 ③	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	16	399	379	95.0%	NAT.	5.5:1	120/1	280	TRIANGLE TUBE ① PRESTIGE SOLO 399	30 PSI RELIEF VALVE. VENTING & TERMINATION. SEE DETAILS.
B-4 ③	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	16	399	379	95.0%	NAT.	5.5:1	120/1	280	TRIANGLE TUBE ① PRESTIGE SOLO 399	30 PSI RELIEF VALVE. VENTING & TERMINATION. SEE DETAILS.
B-5 ③	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	16	399	379	95.0%	NAT.	5.5:1	120/1	280	TRIANGLE TUBE ① PRESTIGE SOLO 399	30 PSI RELIEF VALVE. VENTING & TERMINATION. SEE DETAILS.
B-6 ③	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	16	399	379	95.0%	NAT.	5.5:1	120/1	280	TRIANGLE TUBE ① PRESTIGE SOLO 399	30 PSI RELIEF VALVE. VENTING & TERMINATION. SEE DETAILS.
B-7 ③	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	16	399	379	95.0%	NAT.	5.5:1	120/1	280	TRIANGLE TUBE ① PRESTIGE SOLO 399	30 PSI RELIEF VALVE. VENTING & TERMINATION. SEE DETAILS.
B-8 ③	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	16	399	379	95.0%	NAT.	5.5:1	120/1	280	TRIANGLE TUBE ① PRESTIGE SOLO 399	30 PSI RELIEF VALVE. VENTING & TERMINATION. SEE DETAILS.
B-9 ③	SEE PLANS	HIGH EFF. CONDENSING LOW NOx	180°F H.W.	16	399	379	95.0%	NAT.	5.5:1	120/1	280	TRIANGLE TUBE ① PRESTIGE SOLO 399	30 PSI RELIEF VALVE. VENTING & TERMINATION. SEE DETAILS.

① 1" GAS CONNECTION.

② ALL CONDENSATE DRAIN PIPING TO BE STAINLESS STEEL.

③ PROVIDE PROPER COMPONENTS FOR BACNET INTEGRATION OF BOILERS AND MODULATION CONTROL FROM HEAT TIMER MULTI-MOD BOILER CONTROLLER.

CP/BCP / #

CIRCULATING PUMP/BOILER CIRCULATING PUMP SCHEDULE

PLAN SYMBOL	ROOM NO.	SERVICE	FLUID TYPE	TYPE	FLOW (GPM)	HEAD (FT)	MIN. NPSH REQ'D	MIN. EFF. (%)	SIZE (IN.)			MOTOR					MANUFACTURER & MODEL NO.	ACCESS./ NOTES
									SUCT.	DISCH.	IMP.	BHP	HP/W	RPM	ELEC. CHAR.	VFD		
CP-1	SEE PLANS	BUILDING HEATING	WATER	VERTICAL INLINE	116	60	5.11	71.22	2½	2½	4.66	2.47	5 HP	3600	480/3	⑦	GRUNDFOS CRE-DP 32-1	⑧⑨
CP-2	SEE PLANS	BUILDING HEATING	WATER	VERTICAL INLINE	116	60	5.11	71.22	2½	2½	4.66	2.47	5 HP	3600	480/3	⑦	GRUNDFOS CRE-DP 32-1	⑧⑨
CP-3	SEE PLANS	HEATING/ COOLING	WATER	VERTICAL INLINE	①	①	11.27/ 8.63	64.85/ 67.38	PER MFG.	PER MFG.	PER MFG.	6.86/ 5.44	7.5 HP	3500/ 3300	480/3	②	GRUNDFOS CRE 32-2-1 ③	④⑤⑥
CP-4	SEE PLANS	HEATING/ COOLING	WATER	VERTICAL INLINE	①	①	11.27/ 8.63	64.85/ 67.38	PER MFG.	PER MFG.	PER MFG.	6.86/ 5.44	7.5 HP	3500/ 3300	480/3	②	GRUNDFOS CRE 32-2-1 ③	④⑤⑥
CP-5	SEE PLANS	HEATING/ COOLING	WATER	VERTICAL INLINE	①	①	11.27/ 8.63	64.85/ 67.38	PER MFG.	PER MFG.	PER MFG.	6.86/ 5.44	7.5 HP	3500/ 3300	480/3	②	GRUNDFOS CRE 32-2-1 ③	④⑤⑥
BCP-3	SEE PLANS	B-3	WATER	INLINE	33	15	–	59.26	PER MFG.	PER MFG.	PER MFG.	–	0.6 HP	PER MFG.	120/1	⑦	GRUNDFOS MAGNA3 40-120 GF	INTERLOCK WITH B-3
BCP-4	SEE PLANS	B-4	WATER	INLINE	33	15	–	59.26	PER MFG.	PER MFG.	PER MFG.	–	0.6 HP	PER MFG.	120/1	⑦	GRUNDFOS MAGNA3 40-120 GF	INTERLOCK WITH B-4
BCP-5	SEE PLANS	B-5	WATER	INLINE	33	15	–	59.26	PER MFG.	PER MFG.	PER MFG.	–	0.6 HP	PER MFG.	120/1	⑦	GRUNDFOS MAGNA3 40-120 GF	INTERLOCK WITH B-5
BCP-6	SEE PLANS	B-6	WATER	INLINE	33	15	–	59.26	PER MFG.	PER MFG.	PER MFG.	–	0.6 HP	PER MFG.	120/1	⑦	GRUNDFOS MAGNA3 40-120 GF	INTERLOCK WITH B-6
BCP-7	SEE PLANS	B-7	WATER	INLINE	33	15	–	59.26	PER MFG.	PER MFG.	PER MFG.	–	0.6 HP	PER MFG.	120/1	⑦	GRUNDFOS MAGNA3 40-120 GF	INTERLOCK WITH B-7
BCP-8	SEE PLANS	B-8	WATER	INLINE	33	15	–	59.26	PER MFG.	PER MFG.	PER MFG.	–	0.6 HP	PER MFG.	120/1	⑦	GRUNDFOS MAGNA3 40-120 GF	INTERLOCK WITH B-8
BCP-9	SEE PLANS	B-9	WATER	INLINE	33	15	–	59.26	PER MFG.	PER MFG.	PER MFG.	–	0.6 HP	PER MFG.	120/1	⑦	GRUNDFOS MAGNA3 40-120 GF	INTERLOCK WITH B-9

NOTE: SCHEDULE VALUES LISTED AS "COOLING/HEATING" FOR CP-3 THRU CP-5.

① COOLING FLOW SETPOINT: 480 GPM AT 110' HEAD. HEATING FLOW SETPOINT: 435 GPM AT 100' HEAD.

② VFD MOUNTED IN CONTROL CABINET.

③ PACKAGED PUMP SKID SYSTEM INCLUDES PUMPS, VFD'S, MANIFOLDS, ISOLATION VALVES ON SUCTION AND DISCHARGE, CHECK VALVES ON DISCHARGE SIDE, PRESSURE TRANSDUCERS AND GAUGES ON SUCTION AND DISCHARGE MANIFOLDS, CONTROL PANEL AND 304 S.S. BASE FRAME. VERTICAL INLINE MULTI-STAGE PUMPS WITH CARTRIDGE SHAFT SEALS. BACNET MS/TP. PROVIDE BACNET INTERFACE CARD. PACKAGED PUMP SYSTEM MODEL: GRUNDFOS HYDRO MPC-E 3CRE 32-2-1.

④ CONTROL PANEL INCLUDES CU352 COLOR DISPLAY CONTROLLER. SERVICE DISCONNECT SWITCH. SURGE PROTECTION. PUMP RUN LIGHTS. ALARM CIRCUIT WITH FAULT LIGHT AND 100KA SCCR RATING.

⑤ CONTROLLER SHALL HAVE A MINIMUM SCREEN SIZE OF 3.5"x4.625" AND SHALL HAVE THE FOLLOWING CAPABILITIES: PROPORTIONAL PRESSURE CONTROL, PUMP CASCADE CONTROL BASED ON EFFICIENCY, FORCED PUMP CHANGEOVER FOR EQUAL RUN TIME, HIGH & LOW PRESSURE SHUTDOWN, DRY RUN PROTECTION, REDUCED OPERATION MODE, LOW/NO FLOW STOP FUNCTION, SOFT PRESSURE BUILT MODE, ABILITY TO DISPLAY PRESSURE SETPOINT, SYSTEM STATUS, PUMP STATUS, ALARM, ESTIMATED FLOW RATE & POWER CONSUMPTION, BATTERY BACKUP.

⑥ SYSTEM SHALL BE FACTORY TESTED AND UL LISTED, NSF61 & 372 CERTIFIED AND ASHRAE 90.1 COMPLIANT.

⑦ VFD INTEGRAL TO PUMP.

⑧ EC MOTOR WITH INTEGRAL DP SENSORLESS CONTROL, BACNET MS/TP. PUMP SHALL READ/DISPLAY FLOW AND PRESSURE. PROVIDE BACNET INTERFACE CARD.

⑨ SUCTION DIFFUSER WITH STARTUP AND SYSTEM STRAINERS.

ET / #

EXPANSION TANK SCHEDULE

PLAN SYMBOL	ROOM NO.	TYPE	FLUID	FLUID TEMP. (AVG.)	MINIMUM PRECHARGE PRESSURE	MAXIMUM OPERATING PRESSURE	EXPAN. VOLUME (GAL.)	MIN. TANK VOLUME (GAL.)	DIMENSIONS (L" x DIA")	MANUFACTURER & MODEL NO.	ACCESSORIES/NOTES
ET-1	SEE PLANS	ASME VERTICAL DIAPHRAGM	WATER	170°F	12 PSI	30 PSI	22.6	55.7	34x24	AMTROL EXTROL AX-100V ①	AUTOMATIC AIR VENT, DRAIN VALVE, AND PRESSURE GAUGE.
ET-2	SEE PLANS	ASME VERTICAL DIAPHRAGM	WATER	170°F	16 PSI	30 PSI	106	106	66x24	AMTROL EXTROL 400-L ①	AUTOMATIC AIR VENT, DRAIN VALVE, AND PRESSURE GAUGE.

① SEE AIR CONTROL DETAIL. CHARGE TO FILL PRESSURE LISTED IN SCHEDULE.

DAS / #

DIRT AND AIR SEPARATOR SCHEDULE

PLAN SYMBOL	ROOM NO.	TYPE	FLUID	FLUID TEMP. (AVG.)	SYSTEM GPM	MAX SUGGESTED GPM	SIZE	COALESCING MEDIUM	RATED WORKING PRESS.	MANUFACTURER & MODEL NO.	ACCESSORIES/NOTES
DAS-1	SEE PLANS	COALESCING	WATER	170°F	116	150	3"	STAINLESS STEEL	175 PSIG	GRUNDFOS GBSR-030	SEE DETAILS AND SPECIFICATIONS.
DAS-2	SEE PLANS	COALESCING	WATER	170°F	480	560	6"	STAINLESS STEEL	175 PSIG	GRUNDFOS GBSR-060	SEE DETAILS AND SPECIFICATIONS.

BT / #

BUFFER TANK SCHEDULE

PLAN SYMBOL	ROOM NO.	STORAGE CAPACITY (GAL)	TANK TEMP	INLET AND RETURN CONNECTION	INLET AND RETURN QUANTITY	WATER OUTLET CONNECTION	WATER OUTLET QUANTITY	RELIEF VALVE CONN.	AQUASTAT CONN.	MANUFACTURER & MODEL NO.	ACCESSORIES/NOTES
BT-1	SEE PLANS	400	180°F	6"	2	6"	2	¾"	¾"	AMERICAN WHEATLEY HS-400	①

① INSULATE AS SPECIFIED.

RPBP / #

REDUCED PRESSURE BACKFLOW PREVENTER

UNIT NO.	ROOM NO.	SIZE	WATER TEMPERATURE	PRESSURE DROP	REPR. MFGR. & MODEL NO.	ACCESSORIES	REMARKS
RPBP-1	MECH.	¾"	40°F	16 psig AT 10 G.P.M.	WILKINS 975XL	WILKINS AG-4 AIR GAP CONNECTION.	INSTALL AS PER CODE AND DETAIL. BOILER MAKE-UP WATER. ①

① M.C. IS RESPONSIBLE FOR TESTING AND REGISTRATION OF NEW VALVE.

② EXTEND AIR GAP CONNECTION TO CLOSEST DRAIN.

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BOILER REPLACEMENT PROJECT FOR
CLARK COUNTY COURTHOUSE
517 COURT STREET
NEILLSVILLE, WISCONSIN 54456

TITLE:
MECHANICAL SCHEDULES AND DETAILS

DO NOT SCALE DRAWINGS
USE FIGURED DIMENSIONS ONLY

REVISIONS:
△1 **11-06-2023**

PROJECT NO:
22101

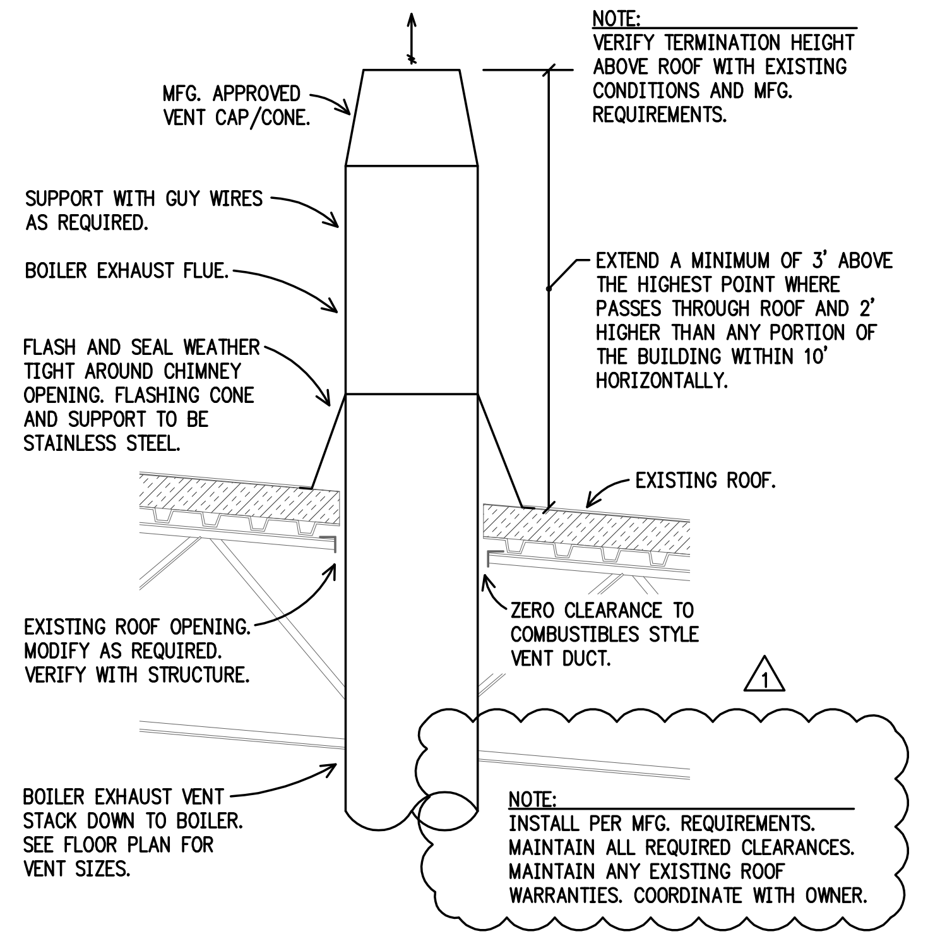
DRAWN BY:
LJJ/PDK

DESIGNED BY:
JKM/PDK

DATE:
10-16-2023

SHEET:
M300

landonJ 11/6/2023 3:53 PM 22101 Mech Plan Set.dwg

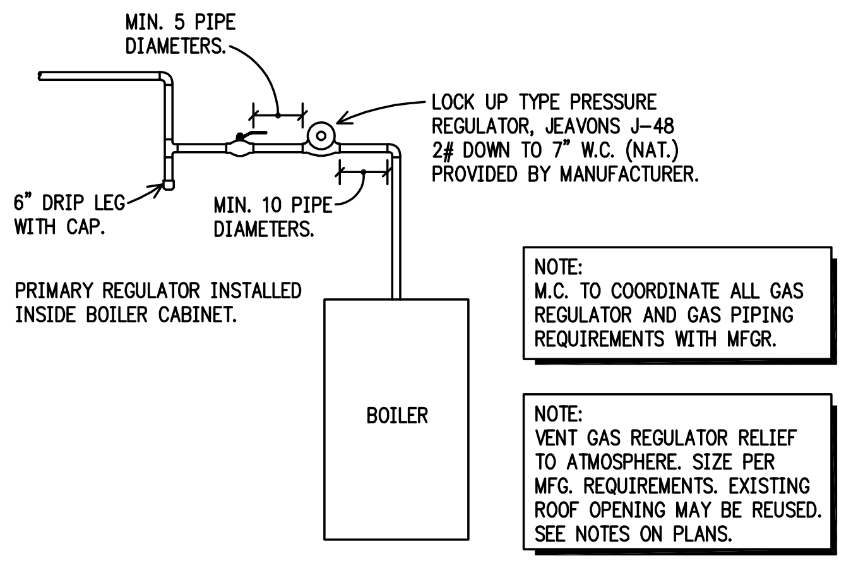


NOTE:
VERIFY TERMINATION HEIGHT ABOVE ROOF WITH EXISTING CONDITIONS AND MFG. REQUIREMENTS.

NOTE:
INSTALL PER MFG. REQUIREMENTS. MAINTAIN ALL REQUIRED CLEARANCES. MAINTAIN ANY EXISTING ROOF WARRANTIES. COORDINATE WITH OWNER.

14 BOILER VENT TERMINATION DETAIL

M301
NO SCALE
(THROUGH ROOF)
(B-1 & 2)

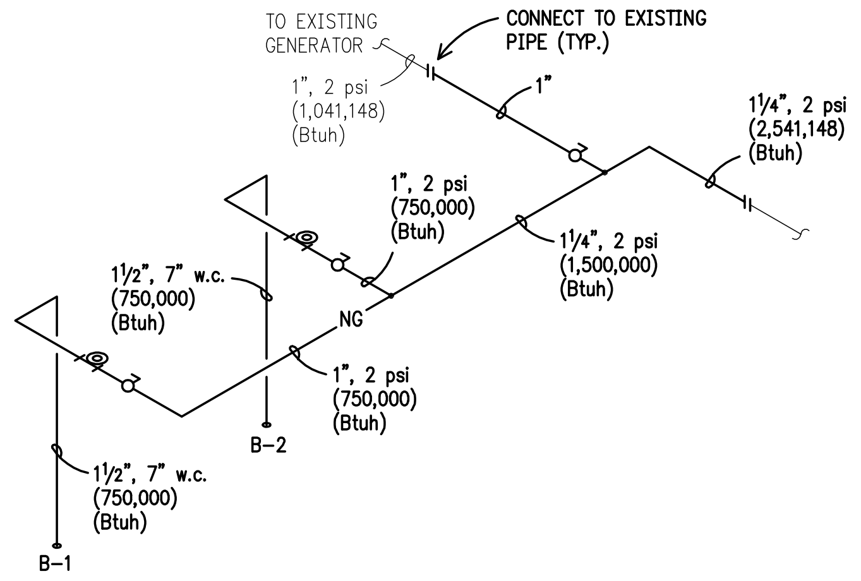


NOTE:
M.C. TO COORDINATE ALL GAS REGULATOR AND GAS PIPING REQUIREMENTS WITH MFGR.

NOTE:
VENT GAS REGULATOR RELIEF TO ATMOSPHERE. SIZE PER MFG. REQUIREMENTS. EXISTING ROOF OPENING MAY BE REUSED. SEE NOTES ON PLANS.

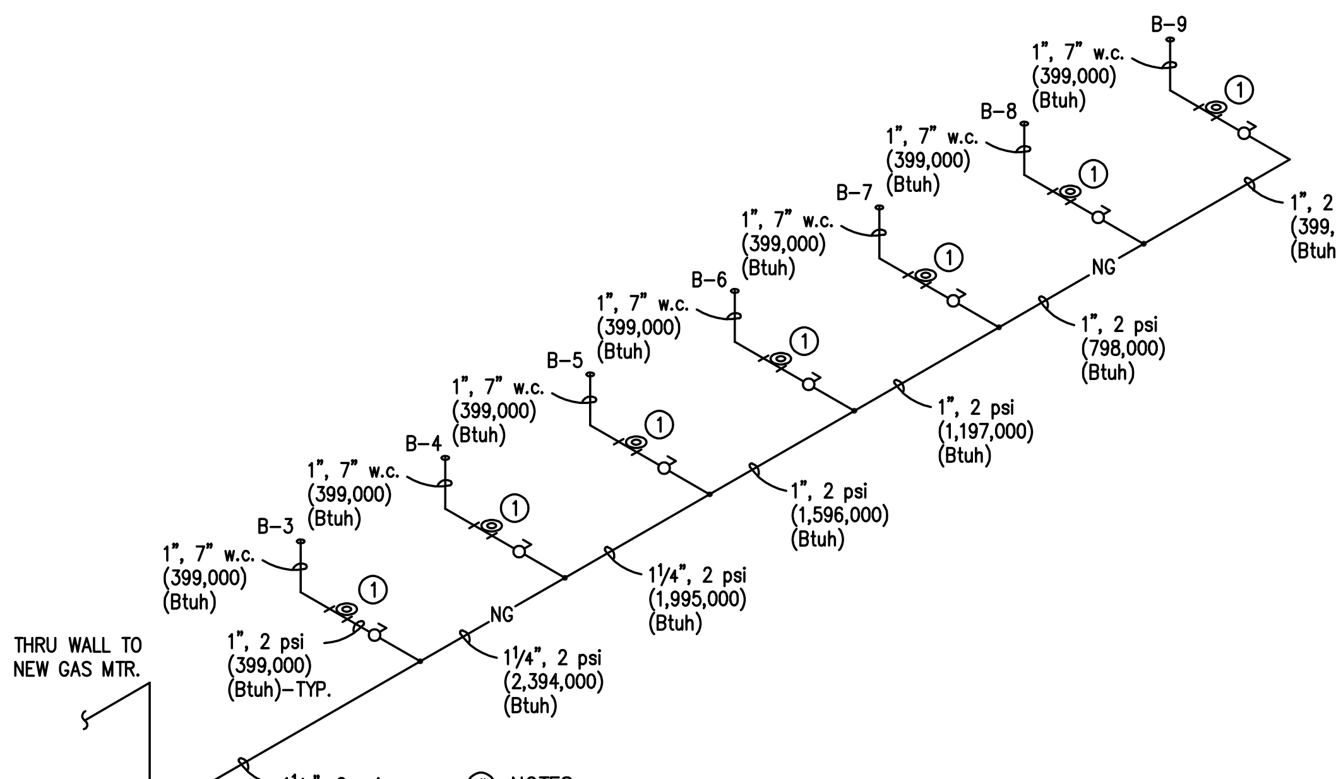
15 GAS CONNECTION DETAIL

M301
NO SCALE
(BOILERS)



16 GAS PIPING SCHEMATIC

M301
NO SCALE
(B-1 & 2)

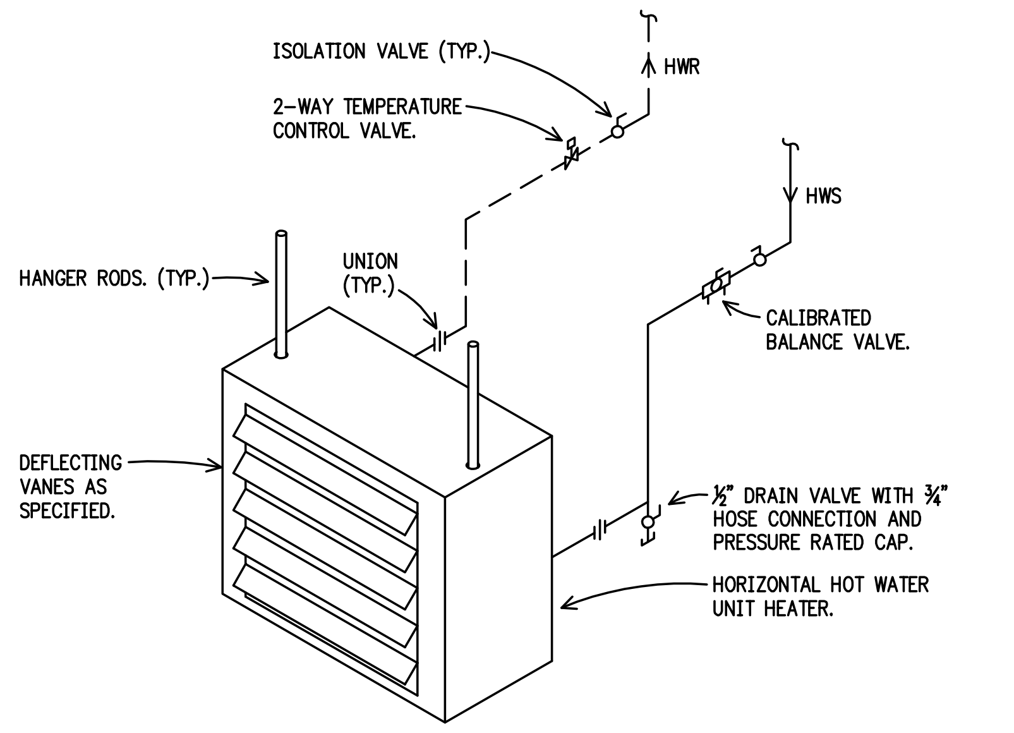


(#) NOTES:

1. PROVIDE 2 psig DOWN TO 7" WATER COLUMN (w.c.) GAS PRESSURE REGULATOR. INSTALL GAS REGULATOR AS PER REGULATOR AND GAS EQUIPMENT MANUFACTURER'S SPECIFICATIONS. VENT GAS REGULATORS THRU EXTERIOR WALL. INSTALL AND SIZE VENT PIPING PER GAS REGULATOR MFG. RECOMMENDATIONS.

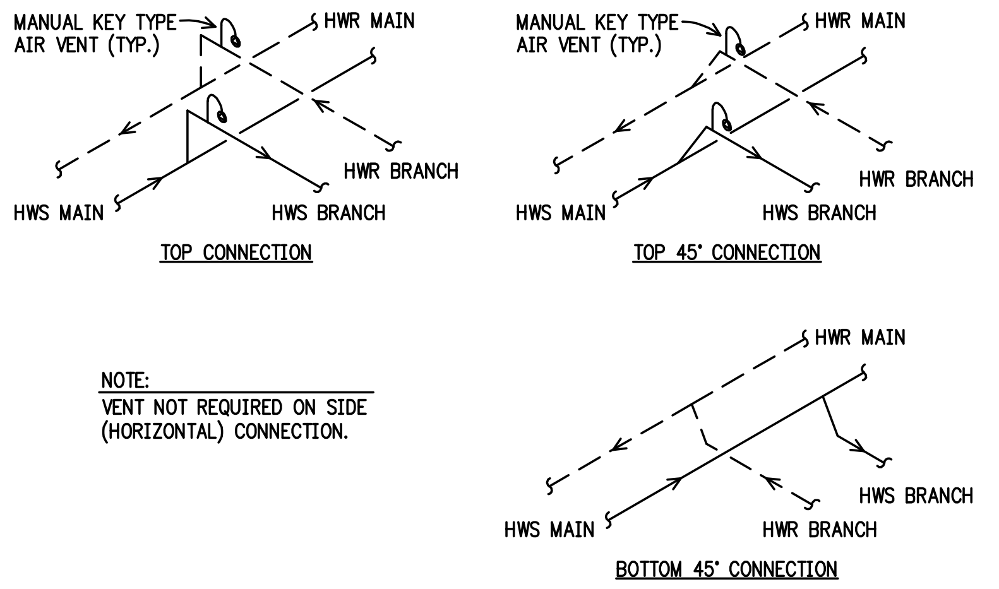
17 GAS PIPING SCHEMATIC

M301
NO SCALE
(B-3 THRU 9)



9 HOT WATER UNIT HEATER DETAIL

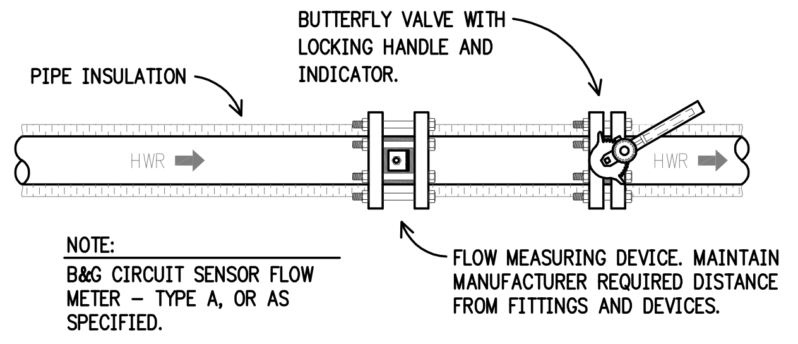
M301
NO SCALE
(HORIZONTAL)
(UH-1 & 2)



NOTE:
VENT NOT REQUIRED ON SIDE (HORIZONTAL) CONNECTION.

10 HW BRANCH PIPING DETAIL

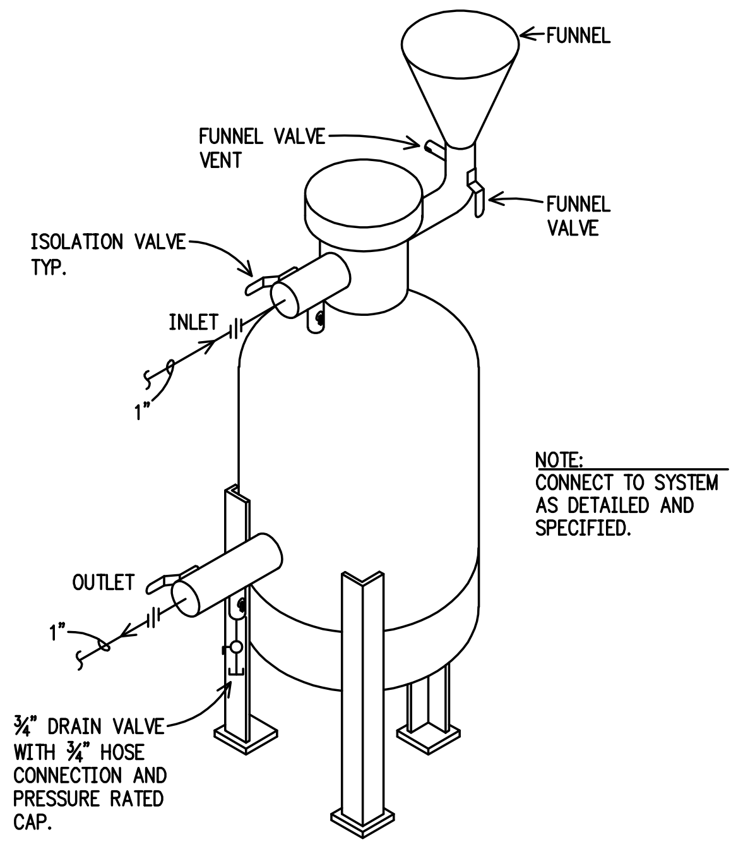
M301
NO SCALE



NOTE:
B&G CIRCUIT SENSOR FLOW METER - TYPE A, OR AS SPECIFIED.

11 FLOW SENSING DEVICE DETAIL

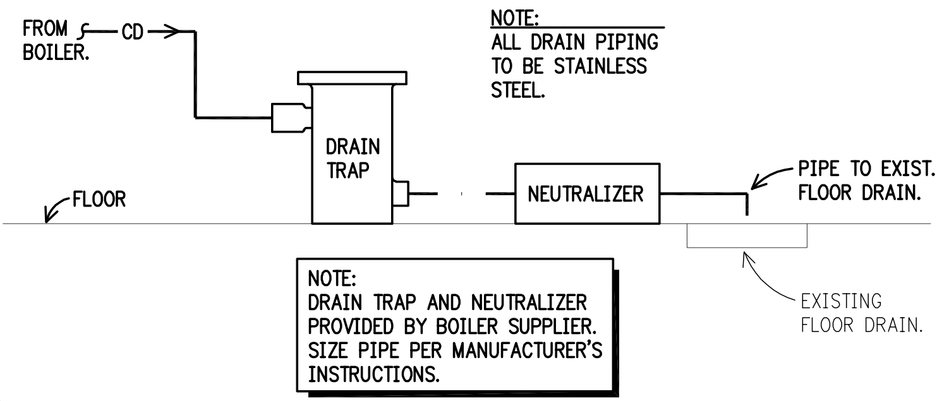
M301
NO SCALE
(2-1/2" AND LARGER)



NOTE:
CONNECT TO SYSTEM AS DETAILED AND SPECIFIED.

12 POT FEEDER DETAIL

M301
NO SCALE

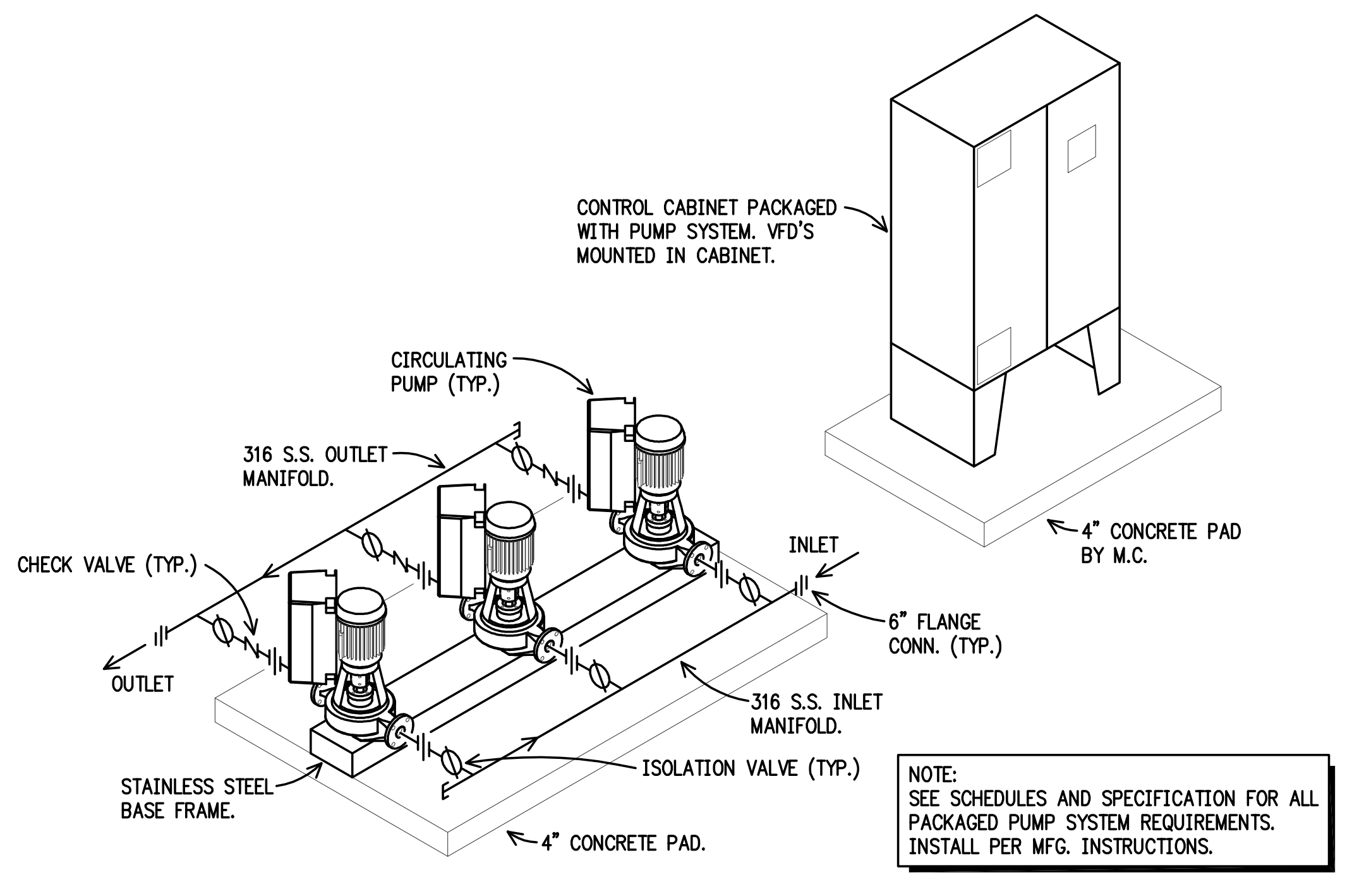


NOTE:
ALL DRAIN PIPING TO BE STAINLESS STEEL.

NOTE:
DRAIN TRAP AND NEUTRALIZER PROVIDED BY BOILER SUPPLIER. SIZE PIPE PER MANUFACTURER'S INSTRUCTIONS.

13 CONDENSATE NEUTRALIZER DETAIL

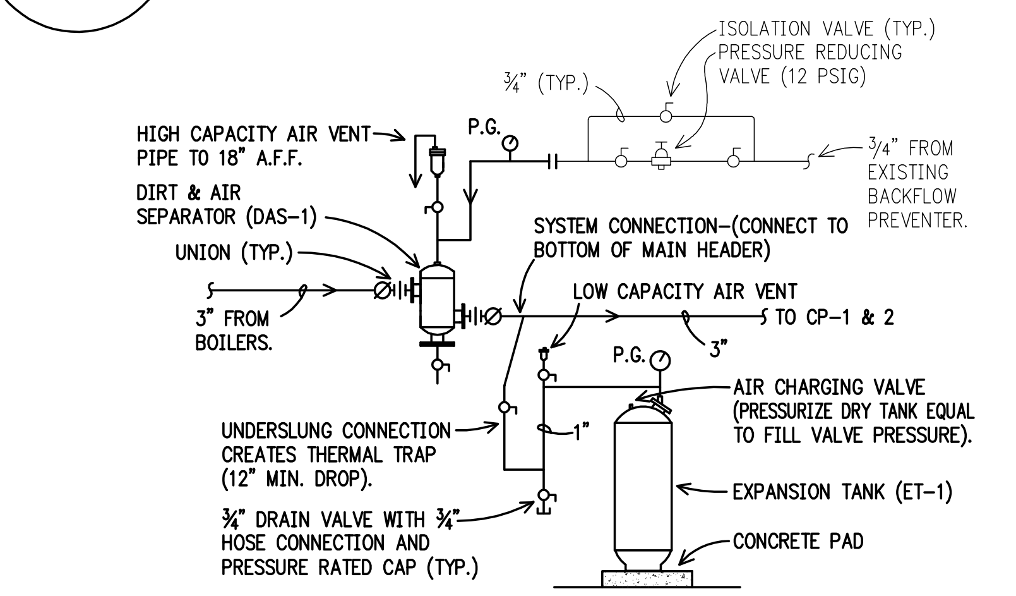
M301
NO SCALE



NOTE:
SEE SCHEDULES AND SPECIFICATION FOR ALL PACKAGED PUMP SYSTEM REQUIREMENTS. INSTALL PER MFG. INSTRUCTIONS.

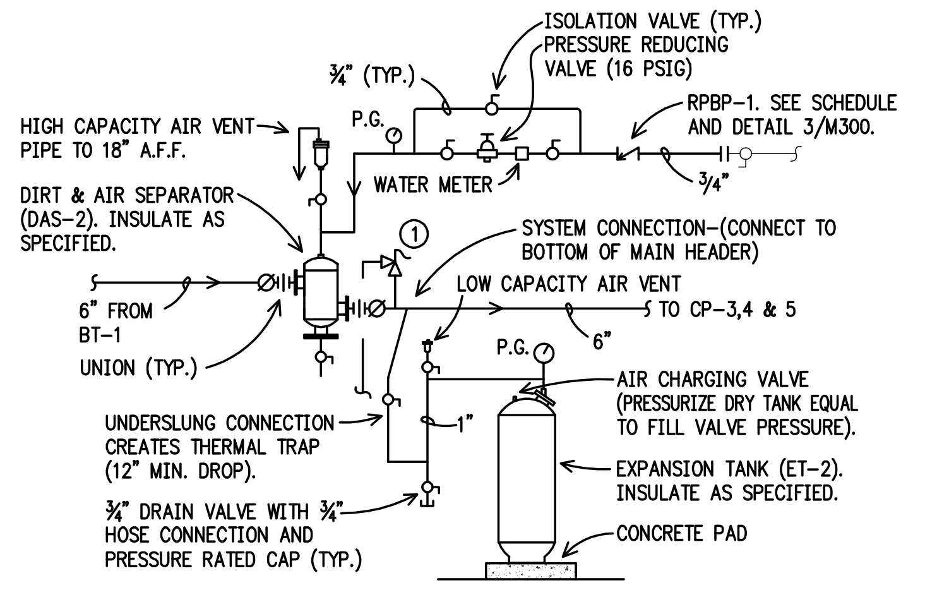
4 PACKAGED PUMP SYSTEM DETAIL

M301
NO SCALE
(CP-3,4 & 5)



5 AIR CONTROL DETAIL

M301
NO SCALE
(HOT WATER)
(B-1 & 2 SYSTEM)

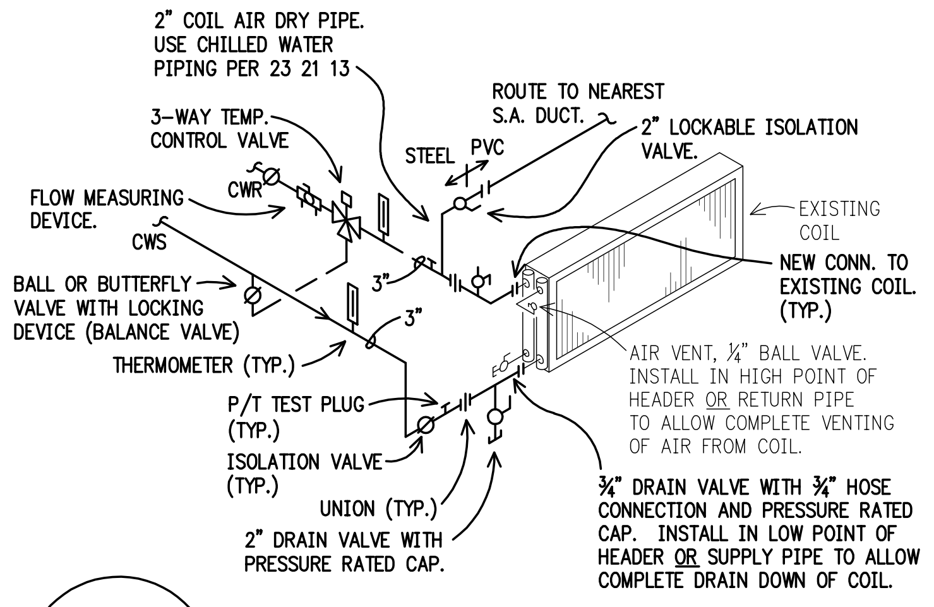


(#) NOTES:

1. 30 PSIG SYSTEM RELIEF VALVE. PIPE TO EXISTING DRAIN.

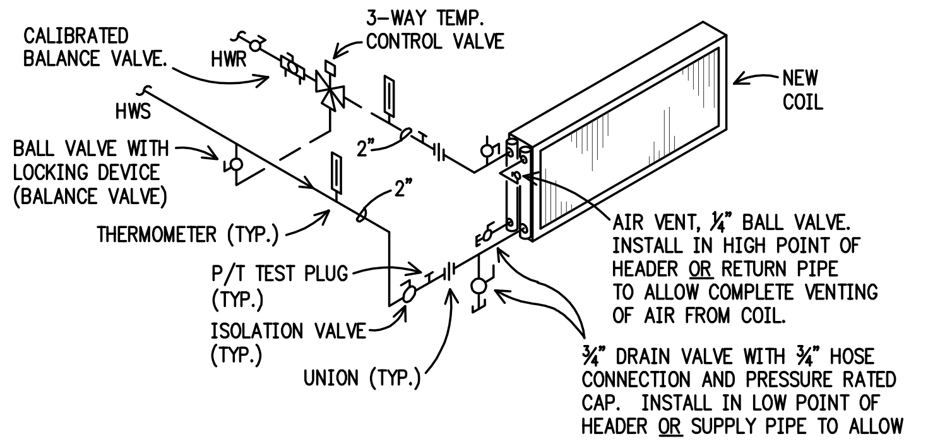
6 AIR CONTROL DETAIL

M301
NO SCALE
(HOT & CHILLED WATER)
(BT-1 SYSTEM)



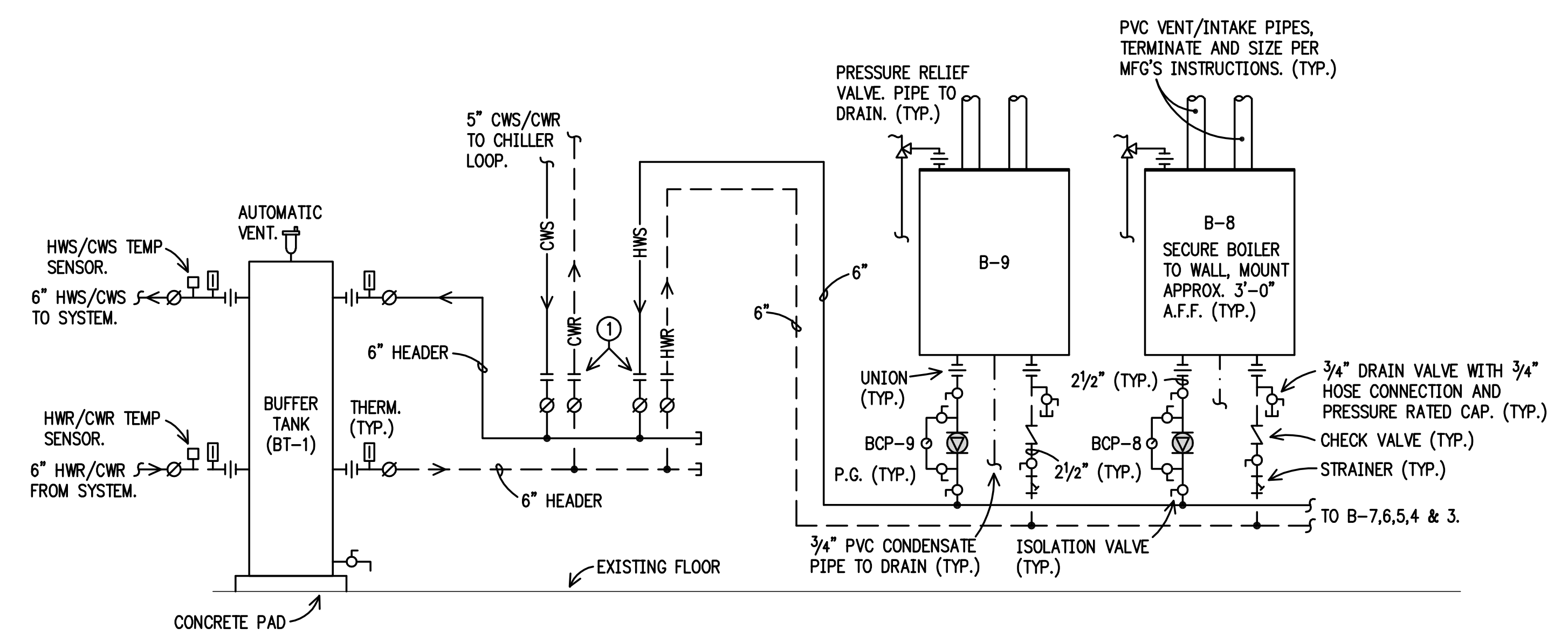
7 CW COIL PIPING DETAIL

M301
NO SCALE
(3-WAY CW COIL)
(EXISTING AHU-5)



8 HW COIL PIPING DETAIL

M301
NO SCALE
(3-WAY HW COIL)
(EXISTING AHU-5)

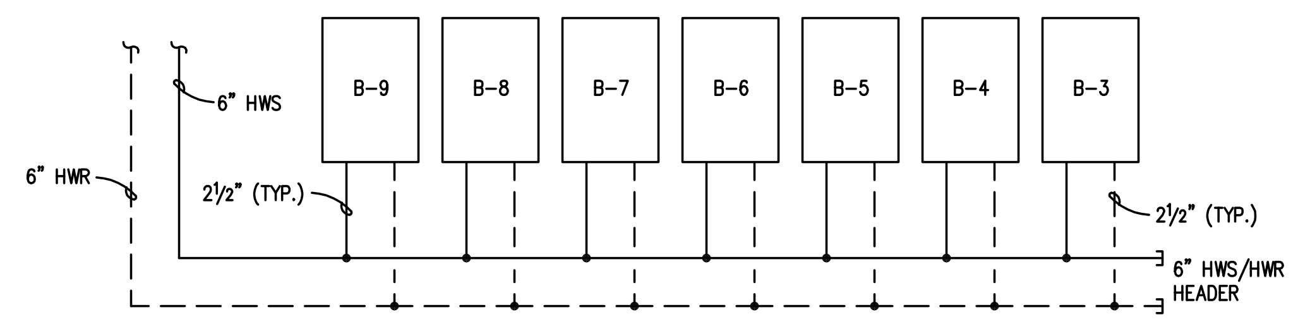


NOTE:
M.C. TO RUN CONDENSATE LINE FROM BOILER TO EXISTING FLOOR DRAIN.

NOTE:
SEE PIPING SCHEMATIC BELOW FOR PIPING SIZES TO BOILERS.

(#) NOTES:

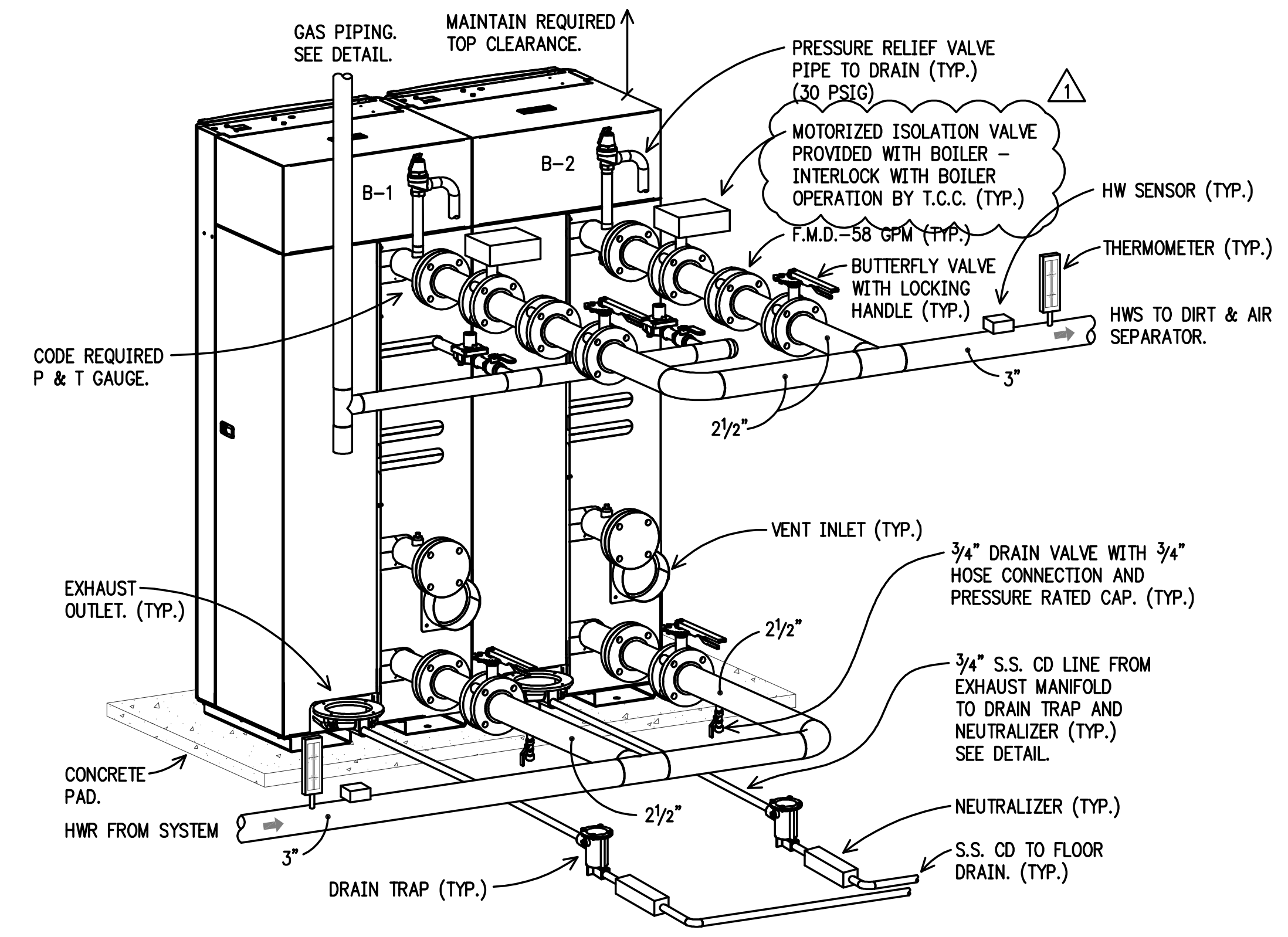
1. POINT OF PHASING FOR REQUIRED WORK. COORDINATE WITH OWNER AND ENGINEER.



BOILER PIPING SCHEMATIC

1 HOT WATER BOILER DETAIL

M301
NO SCALE
(B/BCP WITH BUFFER TANK)
(B/BCP-3 THRU 9)

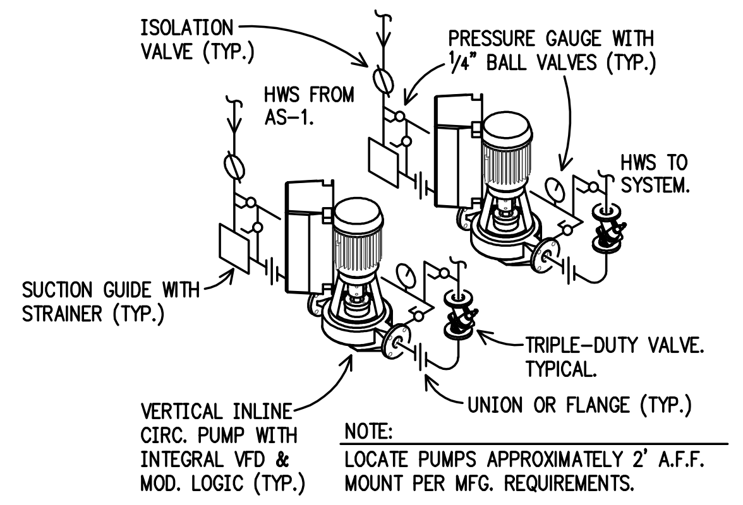


NOTE:
1. EACH AUTOMATICALLY-FIRED HOT WATER BOILER SHALL HAVE AT LEAST ONE TEMERATURE ACTUATED CONTROL TO SHUT OFF THE FUEL SUPPLY WHEN THE BOILER REACHES A PRESET OPERATING TEMPERATURE.
2. IN ADDITION THE BOILER SHALL HAVE A (BACKUP) HIGH LIMIT SWITCH WHICH WILL PREVENT THE WATER TEMPERATURE FROM EXCEEDING THE BOILER MAXIMUM ALLOWABLE TEMPERATURE. EACH LIMIT CONTROL SHALL BE CLEARLY SEPARATED AND HAVE ITS OWN SENSING ELEMENT AND OPERATING SWITCH.

NOTE:
BOILER INSTALLATION SHALL COMPLY WITH ASME IV AND CSD-1.

2 HOT WATER BOILER DETAIL

M301
NO SCALE
(B-1 & 2)



NOTE:
LOCATE PUMPS APPROXIMATELY 2' A.F.F. MOUNT PER MFG. REQUIREMENTS.

3 CIRCULATING PUMP DETAIL

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(CP-1 & 2)

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11/6/2023 4:05 PM 22101 Mech Plan Set.dwg
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