

BASEMENT FLOOR PLAN - HVAC
 SCALE: 1/4" = 1'-0"
 DETAIL REFERENCES: FOR DUCT FITTINGS, SEE DETAIL 4

FLAG NOTES

- 1 MAINTENANCE CLEARANCE SPACE.
- 2 6" BOILER COMBUSTION AIR PIPING / VENT WITH PIPE JOINTS PER MANUFACTURER'S RECOMMENDATIONS. ROUTE PER MANUFACTURER'S RECOMMENDATIONS.
- 3 6" BOILER FLUE VENT PIPING / VENT WITH PIPE JOINTS PER MANUFACTURER'S RECOMMENDATIONS. ROUTE AND MAINTAIN PIPING SLOPE PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE REQUIRED PIPING JOINTS
- 4 FLEXIBLE CANVAS CONNECTION AT DUCT CONNECTIONS TO DOAS UNIT.
- 5 TRANSITION FROM 34/20 OUTLET SIZE TO 34/16 IMMEDIATELY AFTER TAKE-OFF FROM UNIT.
- 6 EXISTING SUMP PIT AND SUMP PUMPS.
- 7 INSTALL RELIEF AIR DUCT AS HIGH AS POSSIBLE BELOW EXISTING CONDUIT AND PROVIDE EXPANDED METAL SCREEN OVER DUCT OPENING AT CORRIDOR SIDE OF WALL.
- 8 PROVIDE NEW OPENING IN EXISTING MASONRY WALL TO ALLOW DUCTS TO PASS THROUGH WALL. PROVIDE WALL REINFORCING AT OPENING AS REQUIRED.
- 9 OFFSET BOILER COMBUSTION AIR INLET AND FLUE EXHAUST PIPING UP AS HIGH AS POSSIBLE.
- 10 ROUTE BOILER COMBUSTION AIR AND FLUE VENT PIPING THROUGH BUILDING WALL. SEAL AROUND PIPE WALL PENETRATIONS WITH METAL WALL PLATES AT INTERIOR AND EXTERIOR SIDES OF BUILDING WALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE GASKET MATERIAL AT EXTERIOR SIDE OF BUILDING WALL WHERE PIPE PENETRATES EXTERIOR WALL PLATE.
- 11 TERMINATE BOILER COMBUSTION AIR PIPING WITH TURNED DOWN ELBOW WITH BUG SCREEN OVER OPENING.
- 12 ROUTE BOILER FLUE EXHAUST PIPING UP SIDE OF BUILDING TO ELEVATION 2- FEET ABOVE ROOF ELEVATION. ANCHOR PIPING TO SIDE OF BUILDING WITH STRAPS AS RECOMMENDED BY VENT PIPING MANUFACTURER. TERMINATE PIPING AT TOP PER BOILER MANUFACTURER'S RECOMMENDATIONS.
- 13 BOILER FLUE EXHAUST PRESSURE CONTROL DAMPERS. DAMPERS TO BE US DRAFT MODEL CDS2 OR APPROVED EQUAL. DAMPERS TO BE FIELD INSTALLED IN FLUE VENT. CONTRACTOR TO WIRE BETWEEN CONTROLLER MOUNTED ON MECHANICAL ROOM WALL AND DAMPER ACTUATOR PER MANUFACTURER'S RECOMMENDATIONS.
- 14 BOILER FLUE VENT PIPE PRESSURE CONTROLLER. US DRAFT MODEL V250 OR APPROVED EQUAL. CONTRACTOR TO PROVIDE ALL NECESSARY WIRING BETWEEN CONTROLLER AND BOILER FLUE VENT DAMPER ACTUATOR, BOILER INTERLOCKS, PRESSURE SWITCH, AND FLUE PRESSURE TRANSDUCER PER CONTROLLER MANUFACTURER'S RECOMMENDATIONS.
- 15 CONTRACTOR TO PROVIDE BOILER FLUE VENT FAN AT TOP OF BOILER FLUE VENT AT OUTSIDE OF BUILDING. FAN TO BE US DRAFT MODEL CBX13 OR APPROVED EQUAL WITH 1/2 HP, 120-VOLT, 1-PHASE MOTOR CAPABLE OF EXHAUSTING 278 CFM AT 1.33 IN. W.C. CONTRACTOR TO PROVIDE POWER / CONTROL WIRING BETWEEN VENT FAN AND BOILERS TO ALLOW FAN TO OPERATE WHEN BOILERS OPERATE.

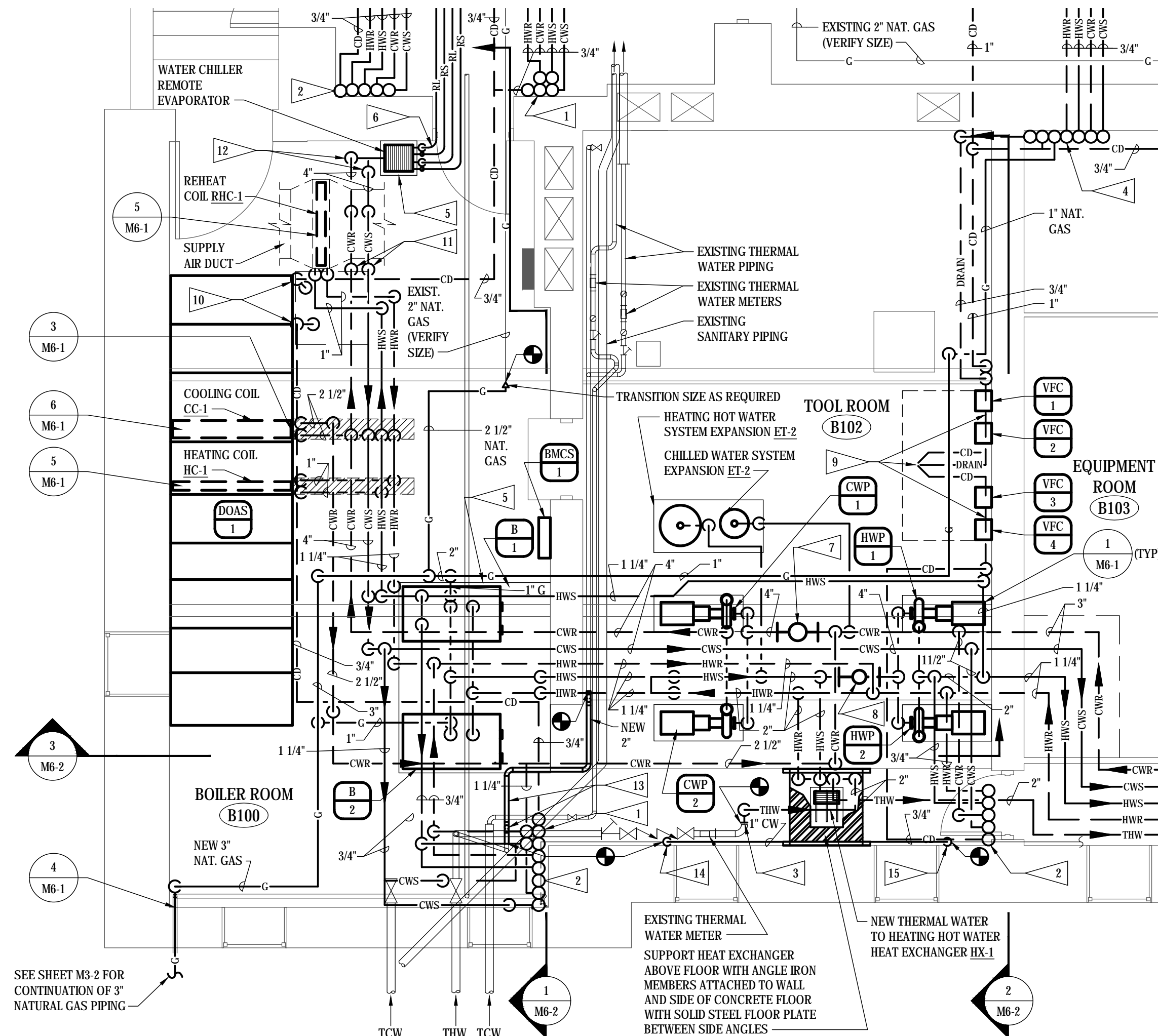
SCADA SYSTEM INTERFACE AND COORDINATION

THE EXISTING THERMAL WATER SERVING THE BUCKSTAFF BATH HOUSE BUILDING THERMAL / HEATING HOT WATER HEAT EXCHANGER HX-1 WILL BE ISOLATED WITH A MOTORIZED VALVE AND THE THERMAL WATER FLOW WILL BE METERED THROUGH AN EXISTING MAGNETIC FLOW METER. THE VALVE AND FLOW METER WILL BE CONNECTED TO THE NEW BUILDING DIRECT DIGITAL CONTROL (DDC) SYSTEM UTILIZING THE NPS HOSP SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM INSTALLED IN 2022.

THE NEW BUILDING DDC SYSTEM SHALL INTERFACE WITH THE HOSP SCADA THROUGH A PROTOCOL CONVERTER AND REMOTE IO MODULES USING ALLEN BRADLEY ETHERNET / IP INTERFACE. THIS DESIGN APPROACH IS INTENDED TO PREVENT DIRECT HVAC TO SCADA CONNECTIONS TO MAINTAIN CYBER-SECURITY. THE COMMUNICATIONS FROM THE BUILDING DDC CONTROL SYSTEM WILL BE REQUIRED TO BE BACNET / IP AND WILL CONVERT TO ALLEN BRADLEY ETHERNET / IP. THE ADMINISTRATION BUILDING PLC WILL BE THE INTERCHANGE BETWEEN THE HARDWIRED AND DDC DATA SIGNALS. THE PLC WILL THEN SEND THIS DATA TO THE NPS SCADA HUMAN MACHINE INTERFACE AND HISTORIAN.

THIS DESIGN WILL MINIMIZE CYBER-SECURITY RISKS BY PREVENTING A DIRECT DDC TO SCADA CONNECTION. THE MANAGED SWITCH WILL FURTHER RESTRICT ALLOWABLE IP ACCESS TO A MINIMUM.

REFER TO "Y" SHEETS FOR ADDITIONAL INFORMATION.



BASEMENT FLOOR PLAN - HVAC PIPING
 SCALE: 1/4" = 1'-0"
 DETAIL REFERENCES: FOR ADDITIONAL PIPE INFORMATION AT BOILER, SEE DETAIL 2
 SEE GAS PIPING RISER DIAGRAM 9

FLAG NOTES

- 1 CHILLED WATER SUPPLY & RETURN, HEATING HOT WATER SUPPLY & RETURN AND CONDENSATE DRAIN PIPING UP TO FAN COIL UNIT AT FIRST FLOOR.
- 2 CHILLED WATER SUPPLY & RETURN, HEATING HOT WATER SUPPLY & RETURN AND CONDENSATE DRAIN PIPING UP.
- 3 CONNECT NEW 2" THERMAL HOT WATER TO EXISTING 3". FIELD VERIFY SIZE OF EXISTING.
- 4 3/4" NATURAL GAS, 3/4" DRAIN PAN DRAIN, 3/4" CONDENSATE DRAIN, 3/4" CHILLED WATER SUPPLY & RETURN, AND 3/4" HEATING HOT WATER SUPPLY & RETURN PIPING UP TO CHASE AT FIRST FLOOR.
- 5 4" THICK CONCRETE HOUSEKEEPING PAD.
- 6 COORDINATE ROUTING OF CHILLER REFRIGERANT PIPING WITH BOILER COMBUSTION AIR INLET AND FLUE EXHAUST PIPING. SEE LARGE SCALE HVAC PLAN ON THIS SHEET FOR BOILER PIPING.
- 7 CHILLED WATER SYSTEM AIR / DIRT SEPARATOR.
- 8 HEATING HOT WATER SYSTEM AIR / DIRT SEPARATOR.
- 9 ROUTE CONDENSATE DRAINS AND DRAIN PAN DRAIN ALONG FLOOR BELOW VARIABLE FREQUENCY CONTROLLERS WHILE MAINTAINING A MINIMUM 1/8" PER FOOT SLOPE AND CONTINUE TO EXISTING FLOOR DRAIN. CONTRACTOR SHALL COMPLETELY CLEAN EXISTING FLOOR DRAIN STRAINER GRID AND SHALL SNAKE EXISTING DRAIN LINE TO ENSURE FREE FLOWING DRAIN.
- 10 ROUTE CONDENSATE DRAINS DOWN NEAR AIR HANDLING UNIT AND OFFSET ABOVE FLOOR TO OVER SUMP PIT.
- 11 OFFSET CHILLED WATER SUPPLY AND RETURN PIPING DOWN TO BELOW DUCTWORK.
- 12 OFFSET CHILLED WATER SUPPLY AND RETURN PIPING DOWN TO HEAT EXCHANGER.
- 13 NEW 2" THERMAL HOT WATER PIPING ROUTED TO ALLOW DUCTWORK TO PASS THROUGH EXISTING OPENING AT WEST END OF ROOM. OFFSET DOWN TO A LOWER ELEVATION TO ALLOW DUCTWORK TO ROUTE ABOVE (VERIFY REQUIRED ELEVATION IN FIELD).
- 14 CONNECT NEW 1" COLD WATER TO EXISTING AND OFFSET TO ELEVATION ABOVE WINDOW TO ALLOW DUCTWORK TO PASS BELOW TO NEW LOUVER AT WINDOW OPENING. FIELD VERIFY EXISTING PIPE SIZE.
- 15 OFFSET NEW COLD WATER DOWN TO EXISTING PIPING ELEVATION AND RE-CONNECT TO EXISTING. FIELD VERIFY EXISTING PIPE SIZE.

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FINAL CONSTRUCTION DOCUMENTS

A/E FIRM PRIME: KENNETH HAHN ARCHITECTS, INC. OMAHA, NE. SUBCONTRACTOR: ALVINE ENGINEERING OMAHA, NE.	DESIGNED: MRG DRAWN BY: MRG TECH. REVIEW: BAH DATE: 2/15/2024	SUB SHEET NO. M4-1	TITLE OF SHEET ENLARGED MECHANICAL ROOM PLANS BUCKSTAFF BATHHOUSE HVAC HOT SPRINGS NATIONAL PARK HOT SPRINGS, AK	DRAWING NO. XXX/XXXX PMIS NO. 177425 SHEET 28 OF 60
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