



ADDENDUM NO. 1 - OUTLINE AND SUMMARY INFORMATION

Project Name: Leon Johnson Redundant Heat Pump Module

PPA No.: 19-0042

Location: Montana State University - Bozeman

Date: November 3, 2021

Owner: State of Montana, MSU - Bozeman
Plew Building 6th and Grant, PO Box 172760
Bozeman, Montana 59717-2760

To: *All Plan Holders of Record*

*The Plans and Specification prepared by **Cushing Terrell (fka CTA Architects and Engineers)** dated **October 15, 2021** shall be clarified and added as follow. The bidder proposes to perform all the following clarifications or changes. It is understood that the Base Bid shall include any modification of Work or Additional Work that may be required by reason of the following change or clarifications.*

The Bidders are to acknowledge the receipt of this Addendum by inserting its number and date into their Bid Forms. Failure to acknowledge may subject the Bidder to disqualification and rejection of the bid. This Addendum forms part of the Contract Documents as if bound therein and modifies them as follows:

1. AMENDMENTS TO THE PROJECT MANUAL

a. SECTION 230523 - GENERAL-DUTY VALVES FOR HVAC PIPING

- i. Part 2, add the following: “2.6 Control Valves shall be fully proportioning and provide near linear control. The valves shall be quiet in operation and fail-safe closed position. Valves shall operate in sequence with another valve when required by the sequence of operations. Control valves as scheduled on the drawings shall be sized by the control manufacturer. Control valves shall be suitable for the system flow conditions and close against the differential pressures involved. Body pressure rating and connection type (sweat, screwed, or flanged) shall conform to the pipe schedule elsewhere in this Specification. Ball valves shall be acceptable for bypass applications up to 4 inch, butterfly valves shall be acceptable for bypass applications greater than 2 inches. Electronic valve actuators shall be manufactured by the valve manufacturer. Each actuator shall have current limiting circuitry incorporated in its design to prevent damage to the actuator. Modulating actuators shall be provided as required by the sequence of operations. Actuators shall provide the minimum torque required for proper valve close-off against the system pressure for the required application. The valve actuator shall be sized based on valve manufacturer's recommendations for flow and pressure differential as scheduled on the drawings. Actuators on valves shall have mechanical spring. The spring return feature shall permit normally open or normally closed positions of the valves, as required. All direct shaft mount rotational actuators shall have external adjustable stops to limit the travel in either direction. Modulating actuators shall accept 24 VAC or VDC and 120 VAC power supply and be UL listed. The control signal shall be 2-10 VDC or 4-20 mA.”
- ii. Part 3, Paragraph 3.2, add the following: “G. Control valves for pump bypass sequence of operation, provide as shown, coordinate with Controls Contractor.”

b. INVITATION TO BID

- i. Change overall completion date from March 15, 2022 to February 15, 2023. Note intermediate completion date of March 1, 2022 for majority of work per Project Phasing Notes on Sheet G001.

2. AMENDMENTS TO THE DRAWINGS (attached)

- a. G001, Revision No. 1 Addendum 1 dated Nov. 3, 2021.
- b. M001, Revision No. 1 Addendum 1 dated Nov. 3, 2021.
- c. M100, Revision No. 1 Addendum 1 dated Nov. 3, 2021.
- d. M101, Revision No. 1 Addendum 1 dated Nov. 3, 2021.
- e. M200, Revision No. 1 Addendum 1 dated Nov. 3, 2021.

3. PRE-BID MEETING INFORMATION (attached)

- a. Pre-bid Meeting Agenda

4. PRE-BID MEETING ATTENDENT LIST (attached)

- a. Pre-bid meeting attendance list

LEON JOHNSON HALL

REDUNDANT HEAT PUMP MODULE INSTALLATION

OCTOBER 15, 2021

LEON JOHNSON HALL
BOZEMAN, MT 59715

VICINITY MAP: *Locator* 



LEON JOHNSON HALL

1.1 HEAT PUMP INSTALLATION CONSTRAINTS AND OUTAGE REQUIREMENTS

- A. HEATING HOT WATER AND COOLING CHILLED WATER MUST BE PROVIDED TO THE BUILDINGS AT ALL TIMES FOR THE DURATION OF THIS PROJECT TO RELOCATE THE EXISTING HEAT PUMP MODULES AND ADD THE NEW HEAT PUMP MODULE.
- B. THE HWS AND HWR ISOLATION VALVES TO THE HEAT PUMP MODULES ARE TO BE CLOSED, THE HEAT FUNCTION OF THE HEAT PUMP MODULES ARE TO BE DISABLED. THE STEAM HEAT EXCHANGER IX-2 (E) IS TO PROVIDE HEAT FOR THE BUILDINGS. REFER TO THE EXISTING HEAT PUMP PLANT CONTROL SEQUENCE, PARAGRAPHS E. AND F. ON DRAWING M001.
- C. THE CWS AND CWR ISOLATION VALVES TO THE HEAT PUMP MODULES ARE TO BE CLOSED, THE COOLING FUNCTION OF THE HEAT PUMP MODULES ARE TO BE DISABLED, THE HEAT PUMP BYPASS VALVE OPENED. AHU-1 AND AHU-4 ARE TO PROVIDE FREE COOLING FOR THE BUILDINGS. REFER TO THE EXISTING HEAT PUMP PLANT CONTROL SEQUENCE, PARAGRAPH G. ON DRAWING M001.
- D. IN ORDER FOR THE FREE COOLING TO BE EFFECTIVE, THE OUTSIDE AIR TEMPERATURE NEEDS TO BE LESS THAN 50 deg. F (adj.) WHEN THE HEAT PUMP MODULES ARE DISABLED. COORDINATE SHUTDOWN OF THE HEAT PUMP PLANT WITH MSU FACILITIES WHEN APPROPRIATE WEATHER IS ANTICIPATED.

1.2 PROJECT PHASING

- A. ALL WORK SHOWN ON THE PLANS WITH THE EXCEPTION OF INSTALLATION OF HEAT PUMP HP-6 (WHICH ARE BEING PRE-PURCHASED BY THE OWNER), SHALL BE COMPLETED BY THE CONTRACTOR BY MARCH 1, 2022. PROVIDE TEMPORARY SPOOL PIECES FOR THE LATER INSTALLATION OF HP-6.
- B. OWNER EXPECTS TO TAKE DELIVERY OF HP-6 AFTER MARCH 1, 2022.
- C. CONTRACT SHALL RIG THE HEAT PUMP HP-6 INTO PLACE IN THE LEON JOHNSON BASEMENT MECHANICAL ROOM FROM THE OWNER'S STORAGE FACILITY. HP-6 IS APPROXIMATELY 34"x72"x67" DEEP, 2610 LBS.
- D. HP-6, ASSOCIATED HEAT PUMP MANUFACTURER'S MASTER CONTROLLER UPGRADES AND HP-6 POWER WIRING SHOWN ON DRAWING E-100 SHALL BE INSTALLED DURING A CONSTRUCTION PERIOD OF NOVEMBER 15, 2022 AND FEBRUARY 15, 2023.

OWNER
Montana State University
Bozeman, MT 59715

MECHANICAL
CUSHING TERRELL
RICK DEMARINIS, P.E.
316 Last Chance Gulch
Helena, MT 59601
(406) 495-9400

ELECTRICAL
CUSHING TERRELL
JEFF FAIN, P.E.
411 E. Main St.
Bozeman, MT 59715
(406) 556-7100

SHEET INDEX

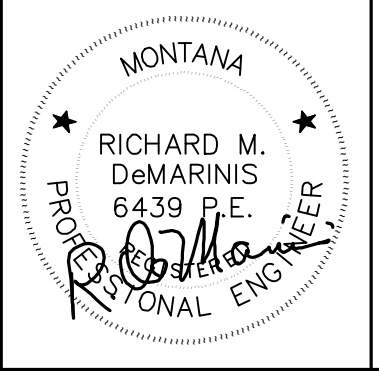
GENERAL	G001 COVER SHEET
MECHANICAL	M001 MECHANICAL SCHEDULES AND LEGEND
	M010 MECHANICAL DEMOLITION PLAN
	M100 MECHANICAL PLAN
	M101 SEVENTH AND EIGHT FLOOR MECHANICAL PLANS
	M200 MECHANICAL FLOW DIAGRAMS
ELECTRICAL	E100 ELECTRICAL PLANS AND SCHEDULES



Leon Johnson Hall
Redundant Heat Pump
Module Installation

CUSHING TERRELL
411 E. MAIN ST. SUITE 101
BOZEMAN, MT 59715
PH: 406.556.7100
FAX: 406.585.3031

DRAWN BY:	SB	
REVIEWED BY:	RD	
REV.	DESCRIPTION	DATE
1	ADDENDUM 1	11/03/21



PPA#: 19-0042

COVER SHEET

G001
10-15-2021

HEAT PUMP SCHEDULE

Table with columns: PLAN CODE, LOCATION ROOM #, MFR, MODEL, COOLING (EVAPORATOR, CONDENSER, SOURCE, LOAD, TOT, EER), HEATING (EVAPORATOR, CONDENSER, SOURCE, LOAD, TOT, EER), ELECTRICAL (POWER, MCA, MCOP), and REMARKS.

1. EXISTING HEAT PUMP PLANT CONTROL SEQUENCE (NEW WORK IS SHOWN BOLD) ALL WORK PERFORMED BY MTI CONTROL

- A. HEAT PUMP SOURCE WATER PUMPS (HPP-1, 2)... B. BUILDING CHILLED WATER PUMPS (CWP-1, 2)... C. BUILDING PONY CHILLED WATER PUMP (CWP-3)...

6. COOLING WATER... G. COOLING WATER... H. SOURCE WATER LOOP CONTROL...

- I. HEAT INJECTION PUMPS (HIP-1, 2)... J. COOLING TOWER SEQUENCE... K. SUMP FILL VALVE... L. HEAT REJECTION PUMPS (HRP-1, 2)...

PUMP SCHEDULE

Pump schedule table with columns: PLAN CODE, LOCATION, SERVICE, MFR, MODEL NO., TYPE, GPM, HEAD (FT), RPM, BHP, MOTOR HP, POWER (W/PH/Hz), IMPELLER DIA., MECH. EFF., NOTES.

CONTROL VALVE SCHEDULE (35% GYL/COOL)

Control valve schedule table with columns: PLAN CODE, LOCATION, SERVICE, VALVE TYPE, VALVE BODY, CV, GPM, HEAD LOSS (PSI), REMARKS.

MECHANICAL LEGEND

Mechanical legend table with columns: SYMBOL, DESCRIPTION, SYMBOL, DESCRIPTION. Includes items like DRAIN, HEATING WATER SUPPLY, CHILLED WATER SUPPLY, etc.

HVAC ABBREVIATIONS

HVAC abbreviations table with columns: ABBREVIATION, FULL NAME, ABBREVIATION, FULL NAME.



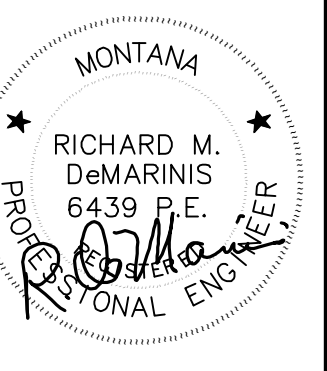
Leon Johnson Hall Redundant Heat Pump Module Installation

CUSHING TERRELL 411 E. MAIN ST., SUITE 101 BOZEMAN, MT 59715 PH: 406.556.7100 FAX: 406.585.3031

DRAWN BY: SB REVIEWED BY: RD

REV. DESCRIPTION DATE

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MECHANICAL SCHEDULES AND LEGEND

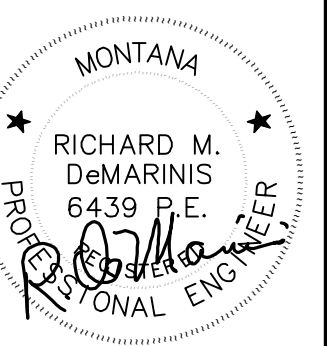
M001

10-15-2021

Leon Johnson Hall Redundant Heat Pump Module Installation

CUSHING TERRELL
411 E. MAIN ST., SUITE 101
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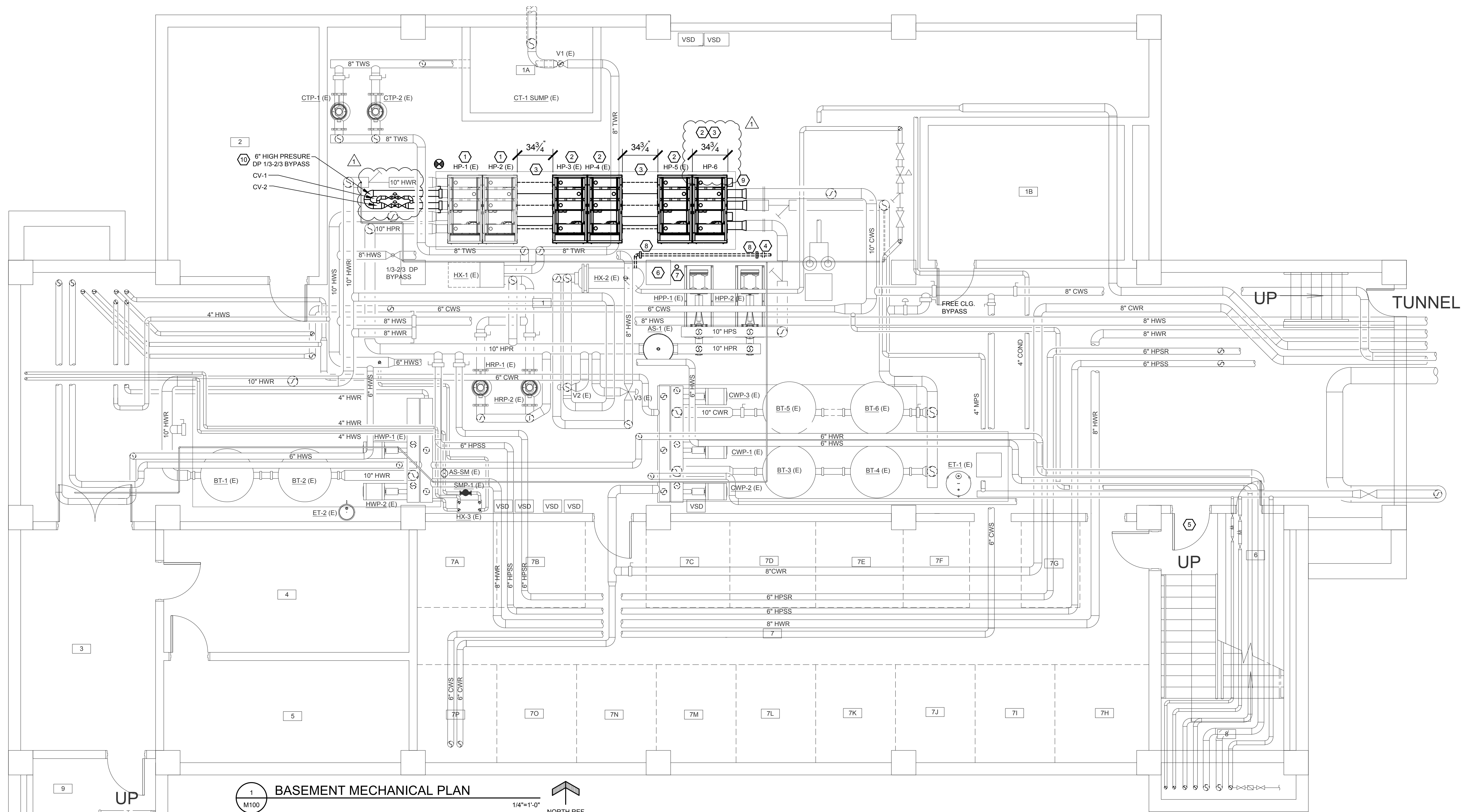


PPA#: 19-0042

MECHANICAL
PLAN

M100

10-15-2021



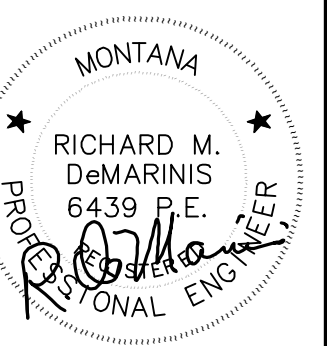
1 BASEMENT MECHANICAL PLAN
M100
1/4"=1'-0"
NORTH REF

- SHEET NOTES**
- 1 HP-1,2 TO REMAIN IN PLACE.
 - 2 NEW PLACEMENT OF HP-3,4,5 AND ADDITION OF HP-6. PROVIDE TEMPORARY SPOOL PIECES AS NOTED ON G100.
 - 3 PROVIDE SPOOL PIECES TO ALLOW FUTURE UNITS TO BE ADDED WITHOUT MOVEMENT OF EXISTING UNITS. FIELD VERIFY HEAT PUMP SPOOL PIECE LENGTHS AND CONNECTION CONFIGURATION WITH MANUFACTURER.
 - 4 FLANGES TO BE ADDED FOR REMOVAL OF 2" CONDENSATE PIPE FOR MAINTENANCE.
 - 5 PROPOSED BEST PATH FOR RIGGING HP-6 TO THE MECHANICAL ROOM.
 - 6 REMOVE EXISTING WALL HANGER FOR 2" CONDENSATE PIPE. MAINTAIN CLEARANCE FROM EXISTING COLUMN TO RELOCATED HP-5.
 - 7 EXISTING 3" WASTE RISER TO REMAIN.
 - 8 PROVIDE FLOOR PIPE SUPPORTS FOR EXISTING 2" CONDENSATE PIPE.
 - 9 REMOVE, RELOCATE AND RECONNECT EXISTING VALVING, STAINERS, PIPE FITTINGS AND CONTROLS AS REQUIRED FOR THE INSTALLATION OF HP-6.
 - 10 PROVIDE 6" HIGH PRESSURE 1/3 - 2/3 DP BYPASS AT THE ENDS OF THE CHILLED WATER SUPPLY AND RETURN HEADER.

Leon Johnson Hall Redundant Heat Pump Module Installation

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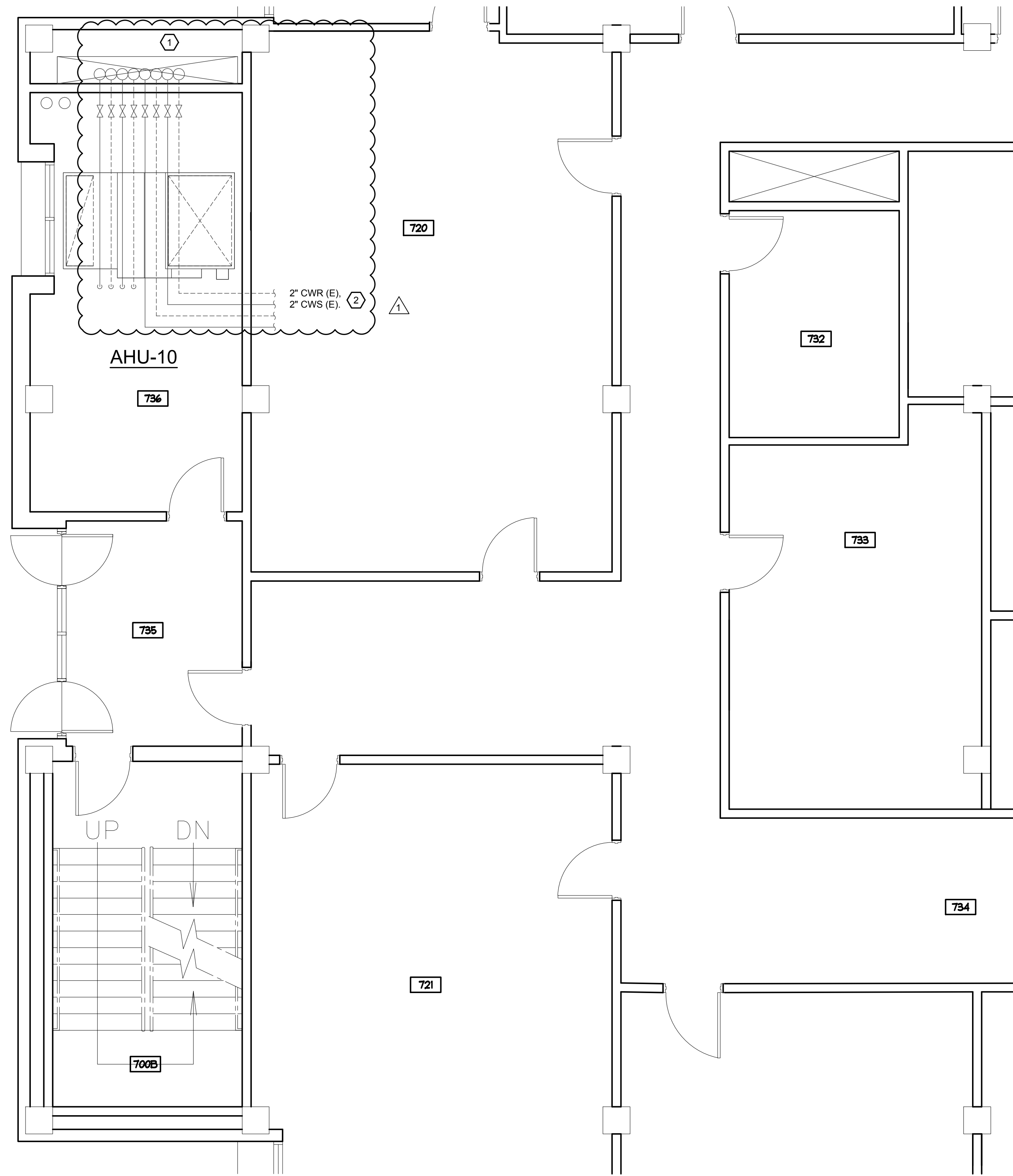


PPA#: 19-0042

SEVENTH AND
EIGHT FLOOR
MECHANICAL
PLANS

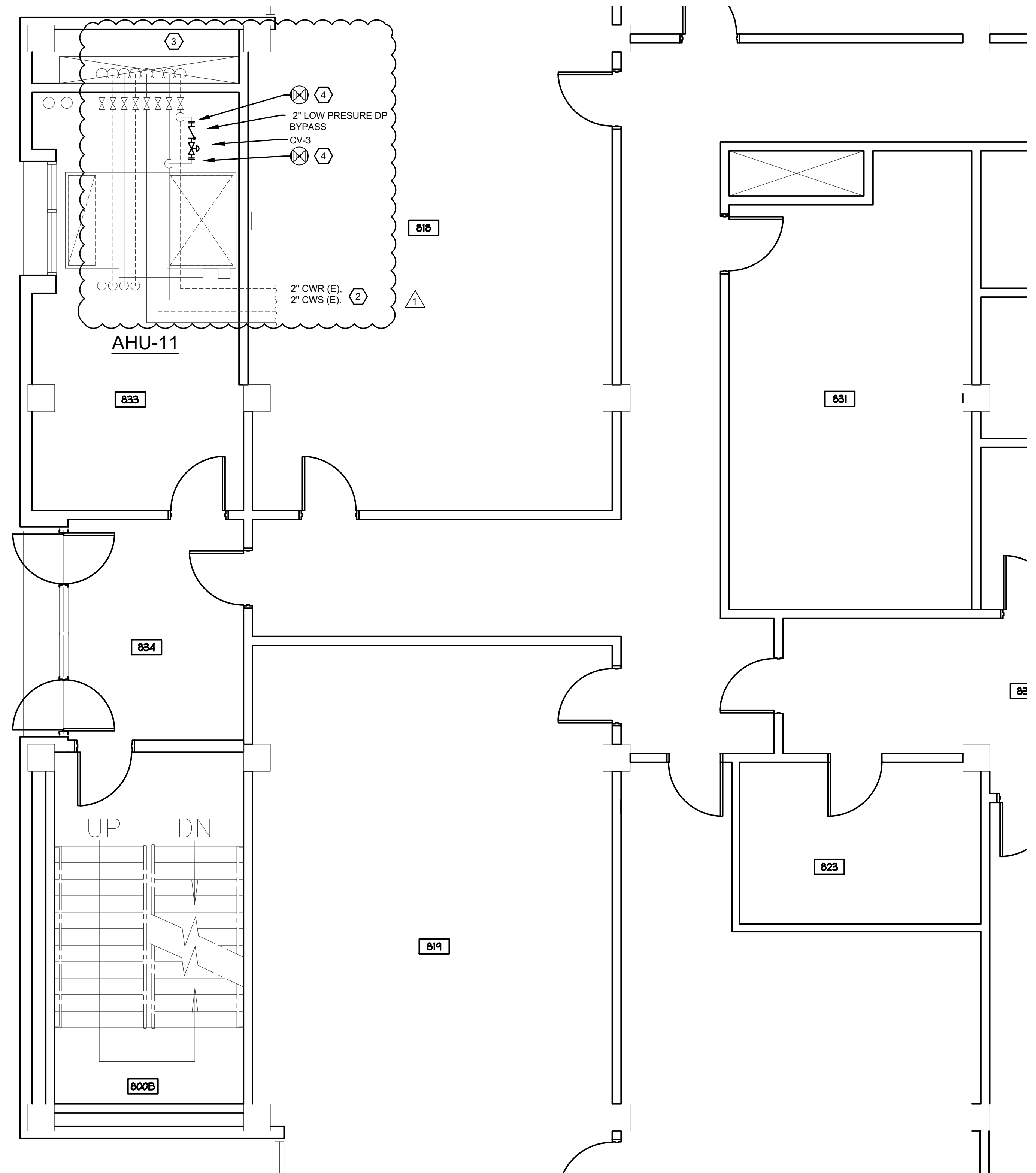
M101

10-15-2021



1 SEVENTH FLOOR MECHANICAL PLAN
M100 1/4"=1'-0" NORTH REF

- SHEET NOTES
- 1 EXISTING 3" CWS AND CWR RISERS DOWN AND 2" CWS AND RETURN RISERS UP TO REMAIN.
 - 2 EXISTING 2" CWS AND CWR BRANCH MAINS TO REMAIN.
 - 3 EXISTING 2" CWS AND CWR RISERS DOWN TO REMAIN.
 - 4 REMOVE EXISTING MANUAL BALANCING VALVE, PROVIDE DP CONTROL VALVE AND CHECK VALVE, RECONNECT PIPING. PROVIDE SEPERATE CONTROL CONDUIT AND WIRING FROM THE 8TH FLOOR MECHANICAL ROOM TO THE CONTROLLER IN THE BASEMENT MECHANICAL ROOM. WIRING OF CONTROLS FOR THE BYPASS VALVES, DIFFERENTIAL PRESSURE SENSORS AND CHILLED WATER PUMP VFD'S TO BE TO A SINGLE CONTROLLER TO AVOID NETWORK LAG TIME.



1 EIGHTH FLOOR MECHANICAL PLAN
M100 1/4"=1'-0" NORTH REF

- SHEET NOTES
- 1 EXISTING 3" CWS AND CWR RISERS DOWN AND 2" CWS AND RETURN RISERS UP TO REMAIN.
 - 2 EXISTING 2" CWS AND CWR BRANCH MAINS TO REMAIN.
 - 3 EXISTING 2" CWS AND CWR RISERS DOWN TO REMAIN.
 - 4 REMOVE EXISTING MANUAL BALANCING VALVE, PROVIDE DP CONTROL VALVE AND CHECK VALVE, RECONNECT PIPING. PROVIDE SEPERATE CONTROL CONDUIT AND WIRING FROM THE 8TH FLOOR MECHANICAL ROOM TO THE CONTROLLER IN THE BASEMENT MECHANICAL ROOM. WIRING OF CONTROLS FOR THE BYPASS VALVES, DIFFERENTIAL PRESSURE SENSORS AND CHILLED WATER PUMP VFD'S TO BE TO A SINGLE CONTROLLER TO AVOID NETWORK LAG TIME.

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Module Installation

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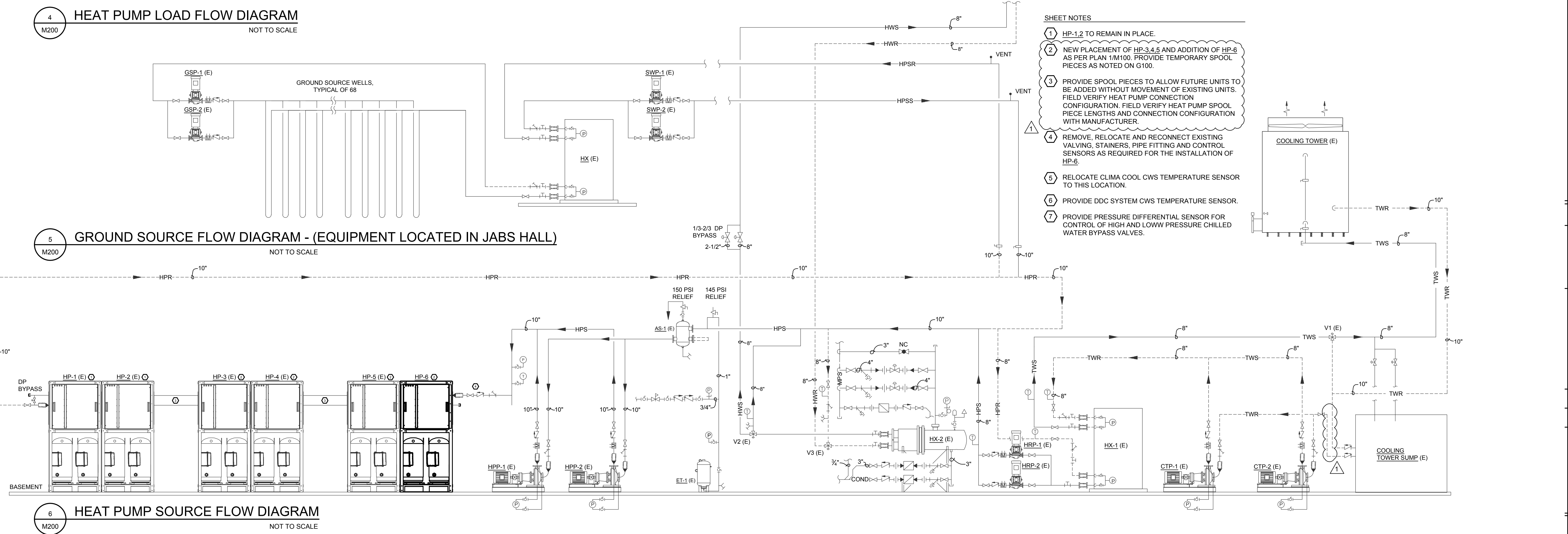
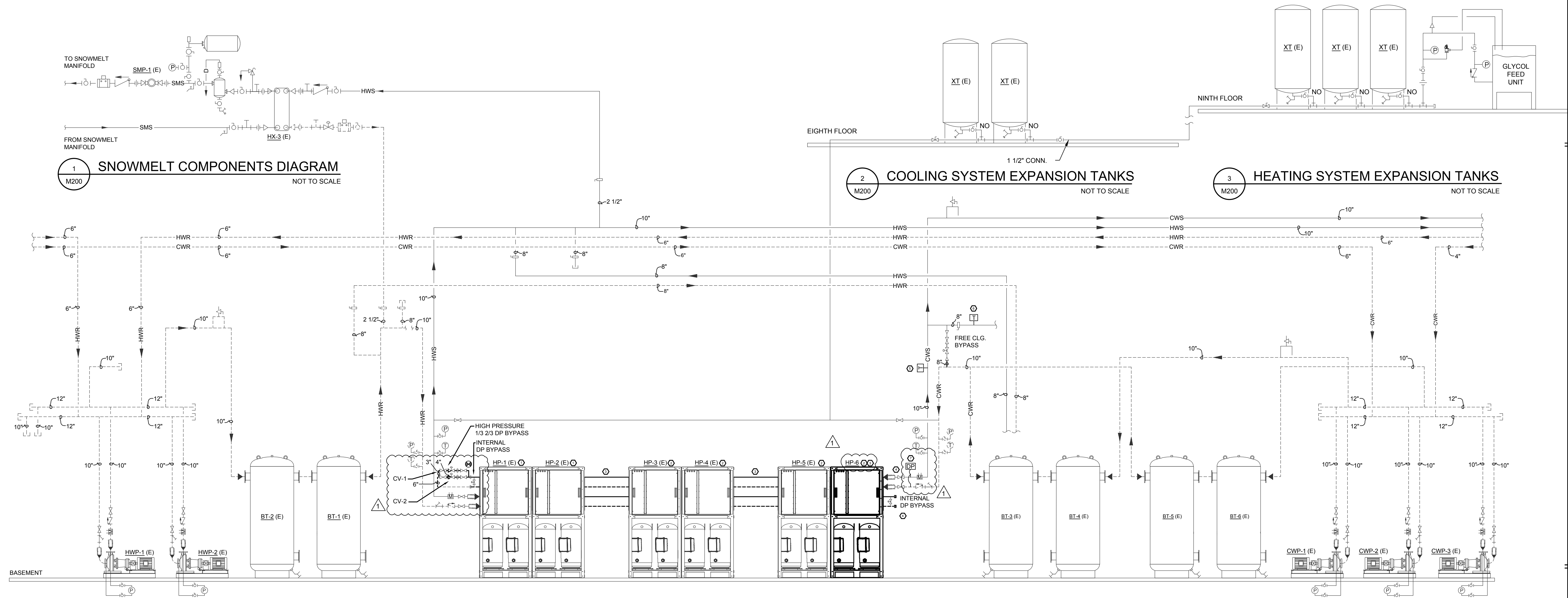
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REVIEWED BY:	RD
REV. DESCRIPTION DATE	
ADDENDUM 1	11/03/21

MONTANA
RICHARD M. DeMARINIS
6439 P.E.
PROFESSIONAL ENGINEER

PPA#: 19-0042

MECHANICAL FLOW DIAGRAMS

M200
10-15-2021



- SHEET NOTES**
- HP-1,2 TO REMAIN IN PLACE.
 - NEW PLACEMENT OF HP-3,4,5 AND ADDITION OF HP-6 AS PER PLAN 1/M100. PROVIDE TEMPORARY SPOOL PIECES AS NOTED ON G100.
 - PROVIDE SPOOL PIECES TO ALLOW FUTURE UNITS TO BE ADDED WITHOUT MOVEMENT OF EXISTING UNITS. FIELD VERIFY HEAT PUMP CONNECTION CONFIGURATION. FIELD VERIFY HEAT PUMP SPOOL PIECE LENGTHS AND CONNECTION CONFIGURATION WITH MANUFACTURER.
 - REMOVE, RELOCATE AND RECONNECT EXISTING VALVING, STAINERS, PIPE FITTING AND CONTROL SENSORS AS REQUIRED FOR THE INSTALLATION OF HP-6.
 - RELOCATE CLIMA COOL CWS TEMPERATURE SENSOR TO THIS LOCATION.
 - PROVIDE DDC SYSTEM CWS TEMPERATURE SENSOR.
 - PROVIDE PRESSURE DIFFERENTIAL SENSOR FOR CONTROL OF HIGH AND LOWW PRESSURE CHILLED WATER BYPASS VALVES.

PRE-BID MEETING AGENDA

Project:
From:
Date:

LEON JOHNSON HEAT PUMP MODULE PPA # 19-0042
TODD COOK, FACILITIES ENGINEER, PHONE 406-995-55480
10-26-2021

1. Recommended Attendees:
 - a. OFS Design/Consulting Staff,
 - b. OFS Construction Manager,
 - c. Safety and Risk Management
 - d. Outside consultants
 - e. Clients
 - f. MSU-ITC
2. Route sign-in sheet. Introductions
3. Availability of Contract Documents
4. Arrangement of Work:
 - a. Related work being performed by MSU or other contractors.
 - b. Owner furnished equipment.
 - c. Use of building areas for construction
5. Bidding Considerations:
 - a. Plan review fees paid by owner, permit fees paid by contractor. Status.
 - b. Bid opening date, time.
 - c. Bid Security of 10% of bid for all projects.
 - d. Deadline for Substitution, and Addenda.
 - e. Performance, labor, and material bonds for 100%, for projects over \$25,000.
 - f. State tax of 1% for projects over \$5000.
 - g. Prevailing wages for projects over \$25,000.
 - h. General liability, Owner protective liability, and property insurance, in MSU name.
 - i. Completion of project _____ days after Notice to Proceed.
 - j. Liquidated damages of _____ per day.
 - k. Project meetings.
6. Review drawings and technical specifications
7. Questions that have been raised since bid documents sent out.
8. Open discussion of project and related questions.
9. Project walk-through.

WENESDAY,
11-10-2021, 2PM

ISSUE
ADDENDUM DEADLINE
THURSDAY, 11-4-2021

WED 11-3-2021
SUBSTANTIAL
COMPLETION
(SYSTEM
OPERATIONAL),
THURSDAY, 3-17-2021

\$100

TUE,
3-15-2021

Encl: List of Attendees, Notes from Meeting

Name	Organization	Email	Phone #
TODD COOK	MSU	TODD.COOK1@MONTANA.EDU	406-994-5480
Neil Jorgensen	"	neil.jorgensen "	" " 1811
Rick DeMARINIS	ET	rickdemarinis@cushingsleggett.com	406 431 9495
Blake Brecher	Vemco	blakeb@vemcoinc.com	406-551-1226
Dan Bokma	WPH	dbokma@willplumb.com	406-922-5415
Loras O'Toole	MSU	loras@montana.edu	994-7092