Clinton HPCH Module Opportunity

Overview

The proposed module will be a skid-mounted “heat pump chiller in a box” module with a 100 ton WaterFurnace brand heat pump chiller, two pumps, piping, valves, fittings, instrumentation, and electrical components.

The module will be designed for minimal field connections after placement:

- Chilled water supply
- Chilled water return
- Heating water supply
- Heating water return
- Electrical
- Controls

A location was identified for the module to be placed, in the chiller area of the CUP room, in the corner across from the last chiller (farthest from the roll-up door). There is existing shelving in this area that will need to be relocated to accommodate the module placement.

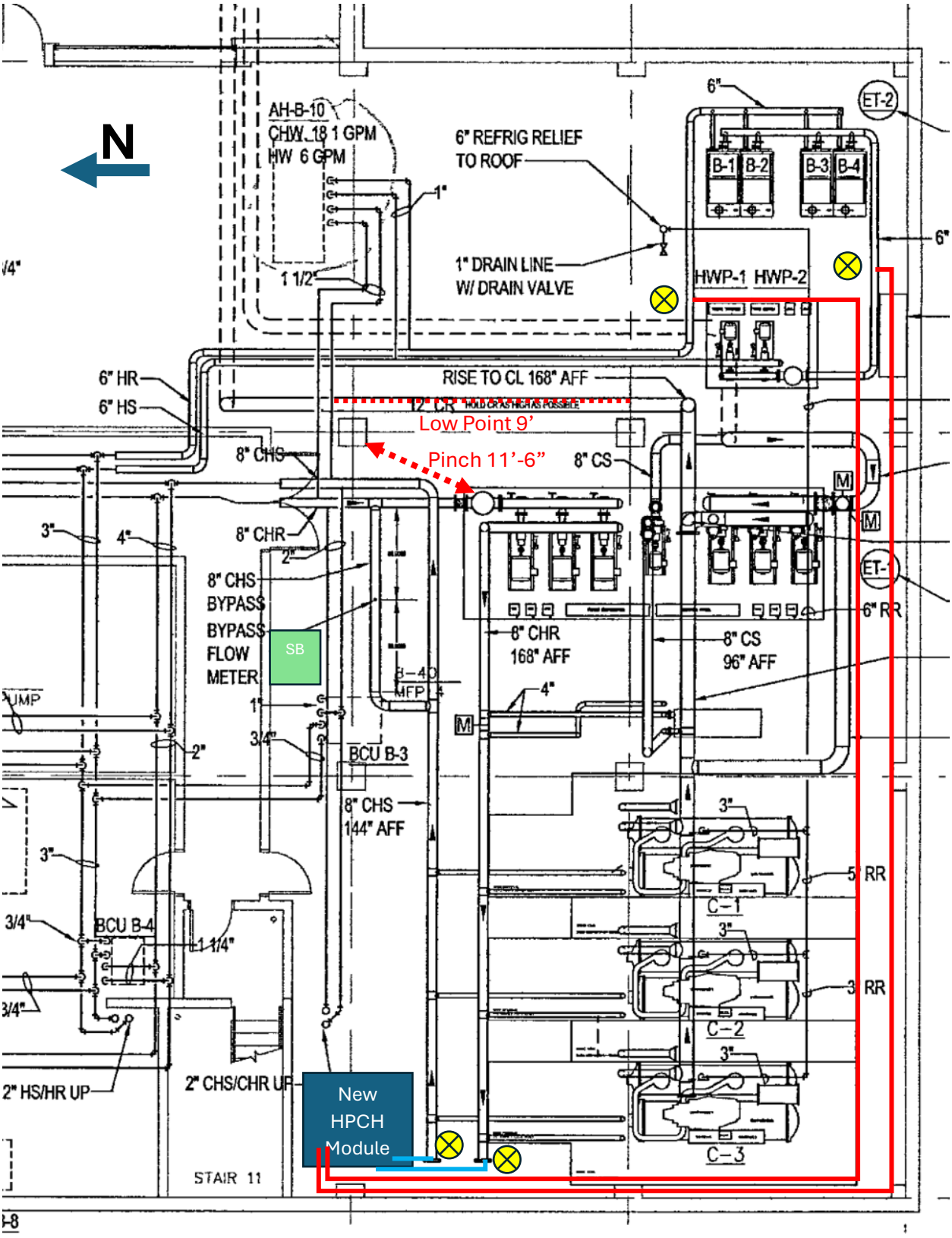
Based on the site conditions, the maximum size for the module would be approximately 9.5’ wide by 9’ tall by 14’ long. However, the module should be designed to minimize size, especially the width and height. The primary constraint for size is the existing 10’ tall by 10’ wide rollup door which will be the entry point for the module to the CUP. After the module is through the door, the next smallest pinch point is 11’-6”, which is between the pump skid piping and a structural column.

The existing chilled water return and supply headers for the chillers terminate with what appears to be a capped flange, which could be used for the chilled water connections.

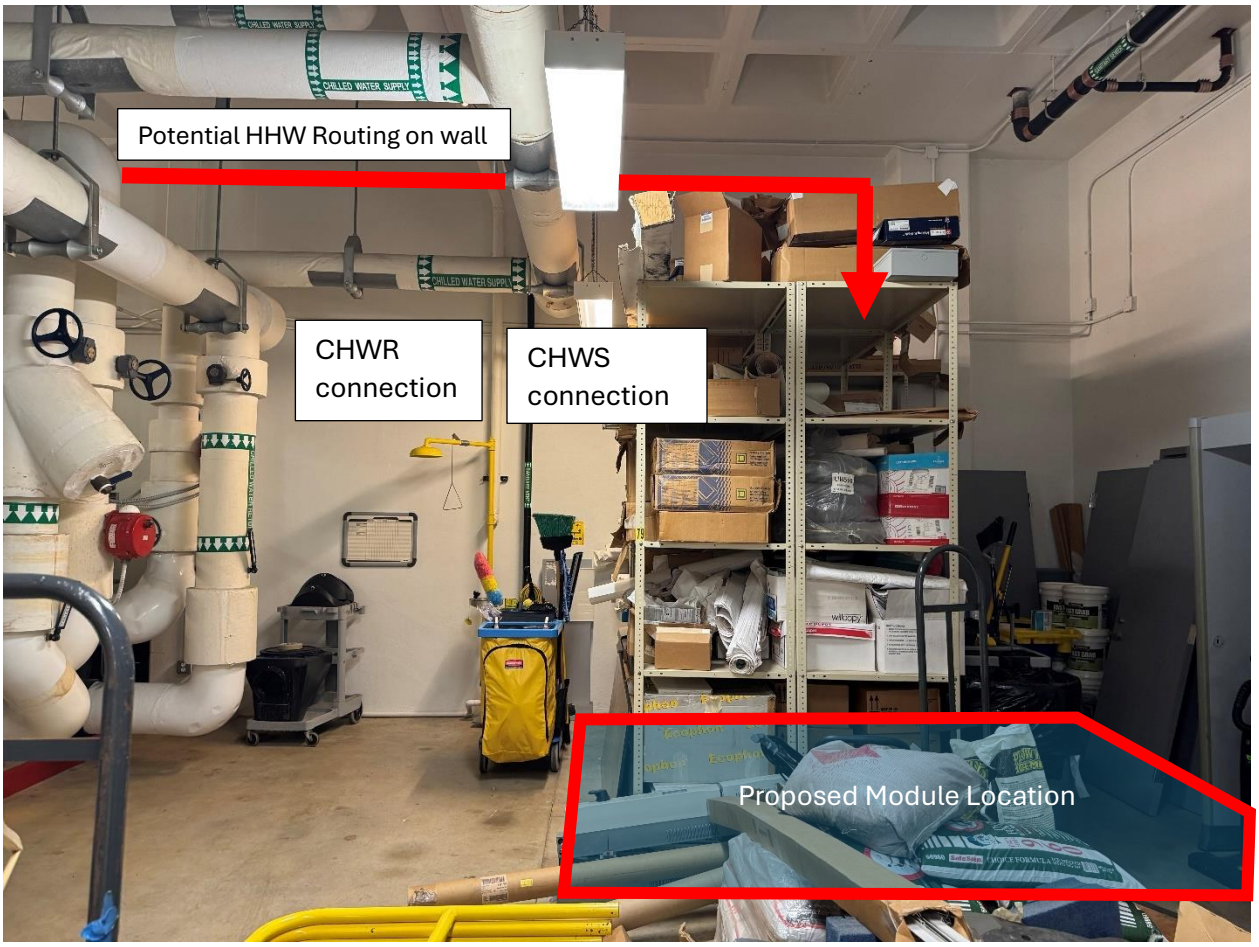
The heating hot water supply and return pipes will need to be routed from the boiler area in the south-east corner of the CUP room. The hot water pipes could be routed high along the south wall of the CUP room between the chillers and the exhaust ductwork and then routed along the west wall to the module area.

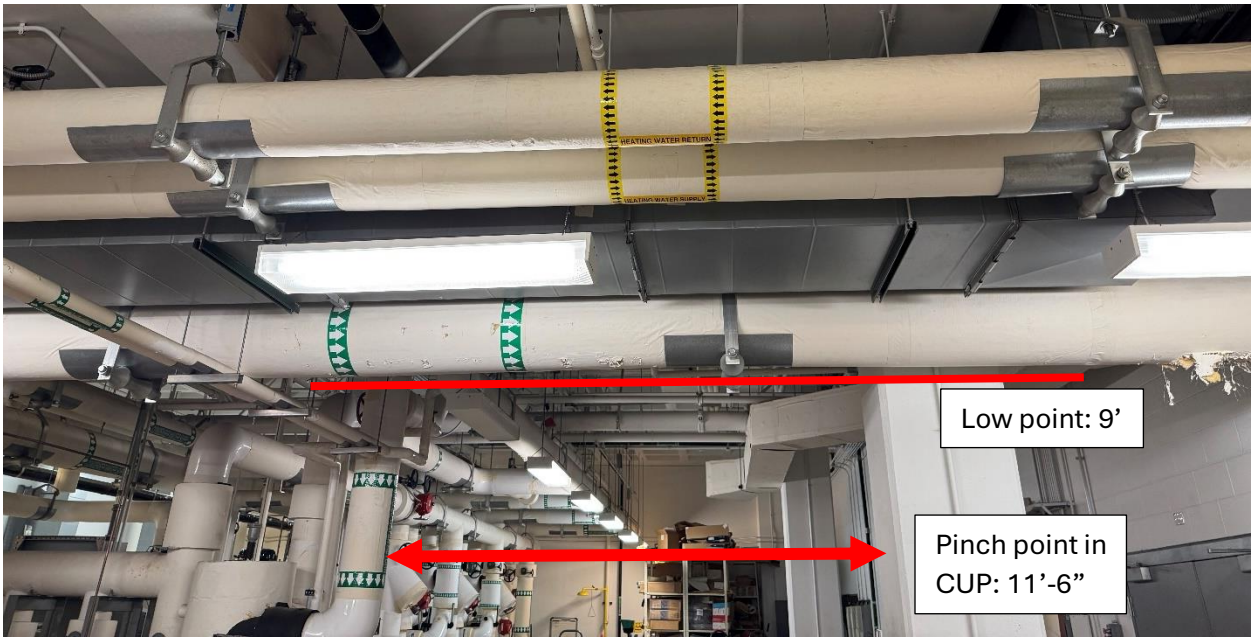
There is an existing 1200-amp switchboard adjacent to the identified module location that appears to have a blank circuit that could potentially be used for the module, but a brief evaluation of the existing load suggests the switchboard does not have much available capacity. The switchboard may need to be upgraded to accommodate the additional module, or another option may exist. This issue needs to be resolved during schematic design.

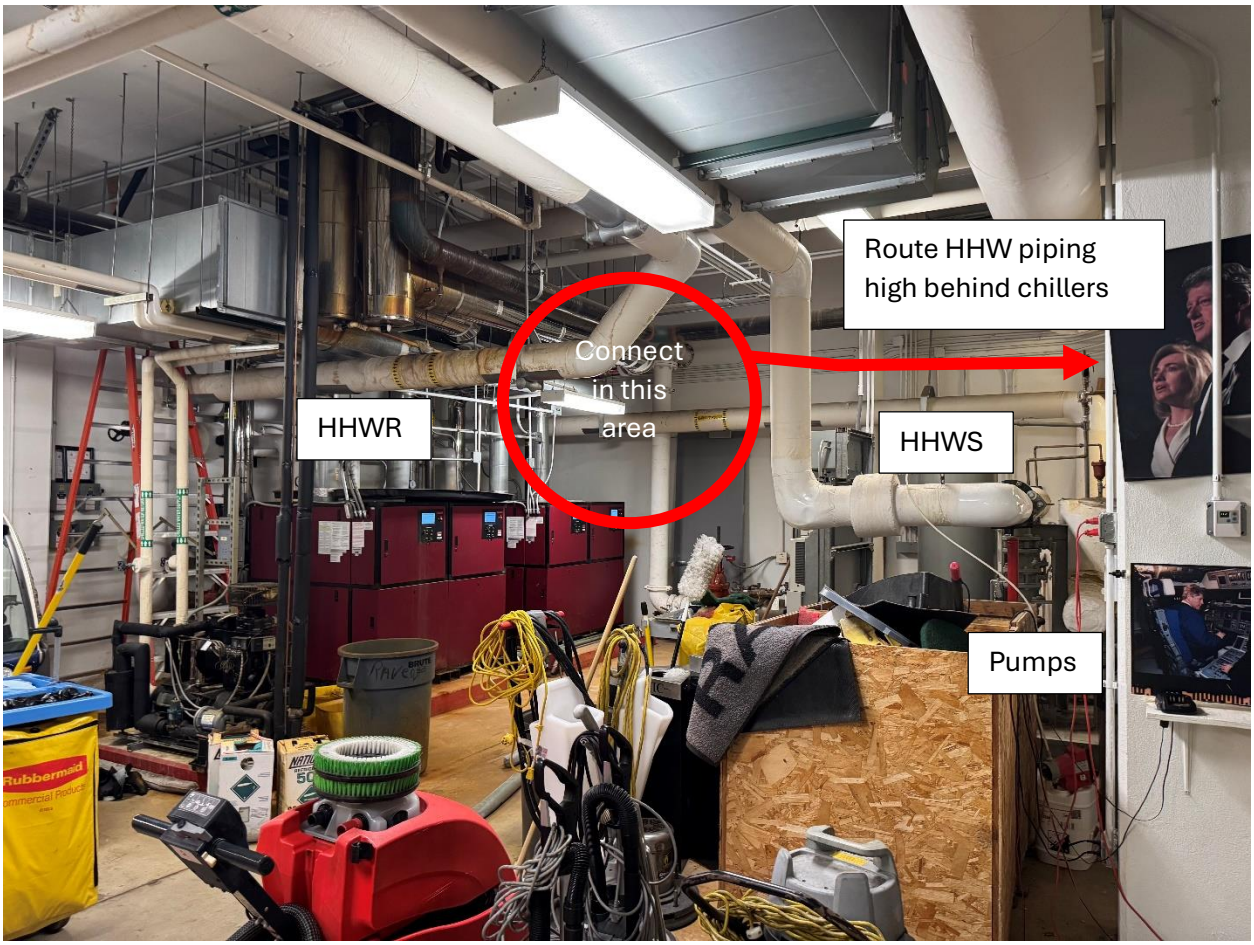
Sketch

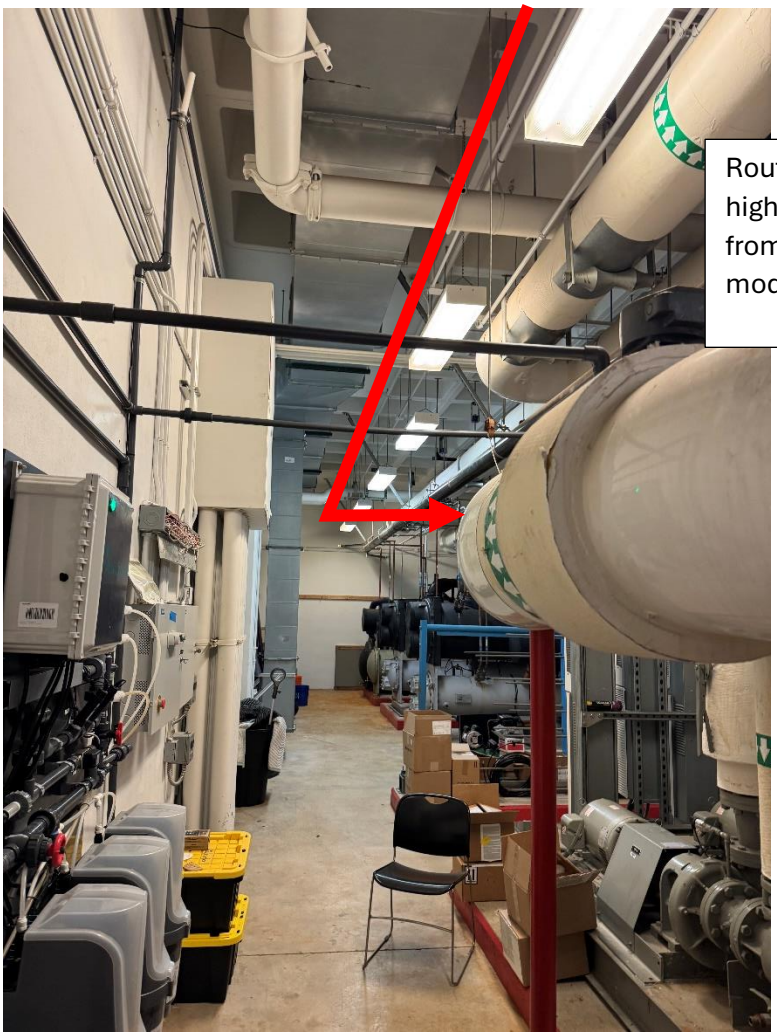

N
AH-B-10
CHW 18 1 GPM
HW 6 GPM
6" REFRIG RELIEF
TO ROOF
1" DRAIN LINE
W/ DRAIN VALVE
1 1/2"
1"
6"
ET-2
B-1
B-2
B-3
B-4
HWP-1
HWP-2
6" HR
6" HS
RISE TO CL 168" AFF
12" CR
Low Point 9'
Pinch 11'-6"
8" CHS
8" CS
8" CHR
2"
3"
4"
8" CHS
BYPASS
BYPASS
FLOW
METER
SB
8" CHR
168" AFF
8" CS
96" AFF
6" RR
4"
M
1"
3/4"
BCU B-3
8" CHS
144" AFF
3"
5" RR
C-1
3"
3" RR
C-2
3"
C-3
3/4"
BCU B-4
1 1/4"
2" HS/HR UP
2" CHS/CHR UP
New
HPCH
Module
STAIR 11

Supporting Photos

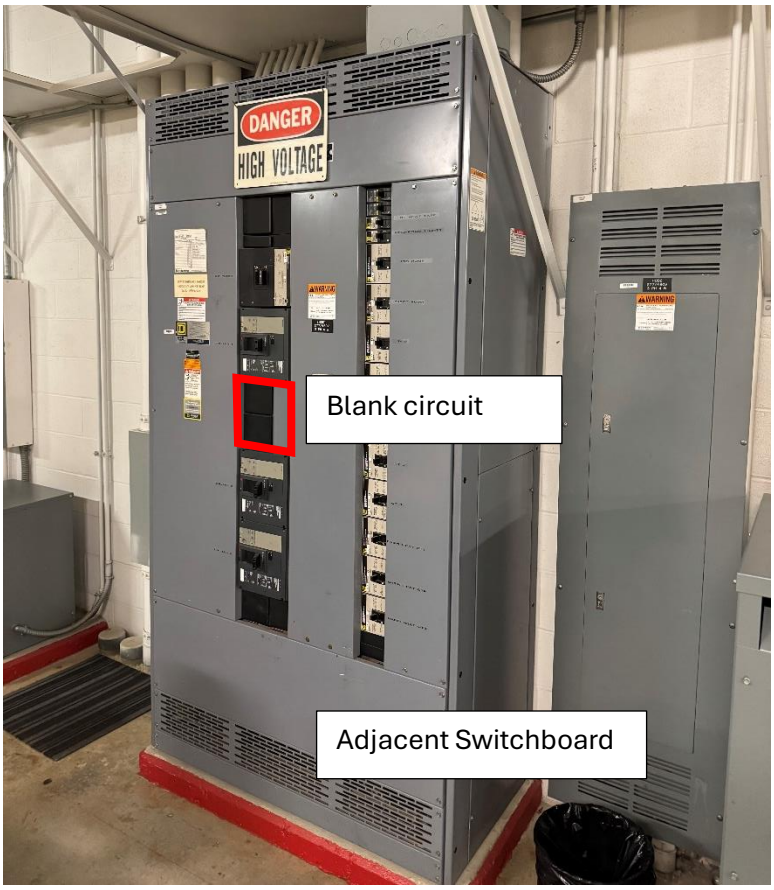





Route HHW piping high behind chillers
Connect in this area
HHWR
HHWS
Pumps
Rubbermaid



Route HHW piping high behind chillers, from boiler area to module


DANGER
HIGH VOLTAGE
Blank circuit
Adjacent Switchboard

Delivery and Placement

The module will need to be lowered into a pit area from the parking lot so the it can be moved through a rollup door and into place in the CUP. A fork lift will also need to be lowered into the pit to move the module as there are no fork lifts on site with enough capacity to move it.

- There is a there is a 5' side walk between the parking lot and a perimeter hip wall. The hip wall is 5' above the sidewalk.
- The floor of the pit is approximately 21' below the top of the hip wall.
- The width of the pit is 33' and the free area between the south wall of the pit and the transformer pad is approximately 30'.
- There is a stairwell on the wall of the pit opposite the roll-up door. The stairwell is approximately 42" wide.
- There is a ramp from the bottom of the pit to the rollup door that is approximately 11' long.
- The rollup door is 10' wide and 10' tall.

Overview of offload area

Aerial view of pit area

Pit Cross Section

Pending

Offload and Pit Area Photos