

FIELD REPORT-Mechanical

TO: Frank John di Stefano, ADG
CC: Cecilia Vaniman, MSU
Don Platisha, CMS

Date of Visit: 4/4/12
Project: MSU Cooley Lab Renovation
GDP Job No.: 100104
Location: Bozeman, MT
Contractor: Dick Anderson Construction, Tri-County
Mechanical, Williams P&H, Electro Controls
Present at Site: Cecilia Vaniman (MSU), Don Platisha (CMS), Tim Tholt (DAC), Greg Schermele (DAC), Ray Wagner (Williams), Larry (TCME), Dave Broquist (GPD), Brad Kauffman (GPD)



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Purpose of Visit:

The purpose of the visit was to check on construction progress, conduct a walkthrough, and discuss any new mechanical issues with the contractors and the construction management team.

Project Status:

- The basement level slab is complete. The centrifugal chiller, heat pump, centrifugal pumps are all situated and mounted on their vibration isolators. The heat exchangers and steam generator are also in place. The condensate pump, water treatment equipment, water heaters and autoclave electric steam generators are not yet placed. The piping mains have been installed down the hallway but piping in the mechanical room is still limited but is progressing. Most block walls have been erected and framing for partition walls is essentially complete. Only openings required for access and equipment placement have been left open.
- Approximately 90% all ductwork has been installed in the basement laser labs.
- The piping and ductwork on floors one through four is approximately 90% complete and awaiting equipment placement for final connection. Pipe insulation has begun on second floor and workmanship and appearance appears to be very good.
- In the penthouse, the air handling units are now mounted on the specified neoprene pads. Pipe fitters are fabricating the drops and connections to the coils of the west air handling unit.
- Sheet metal work continues to progress in the penthouse. The lab exhaust fan discharge stacks have been installed and the architectural shrouds are being assembled on the exterior portions of the stacks. Inside, the inertia bases and vibration isolators for the four main exhaust fans are being mounted to the structural base rail assembly so that the fans can be set. Work on the main overhead exhaust duct has been stopped until the fans are set and the sprinkler line in the path of the heat recovery coil piping can be rerouted. The heat recovery ventilator is not on site yet and ducting for this unit has not begun. The fresh air intake plenum has not yet been lined

with tin. The Solar Wall has not been installed yet and the fresh air ductwork for the solar wall system is not yet installed.

- Overall progress of the mechanical systems appears to be keeping pace with balance of the project and there are more pipe fitters and sheet metal workers on site.

Items of Discussion:

- Ray would like to locate the condensate pump in the mechanical room pit at the tunnel entrance rather than on the opposite side of the wall in the tunnel as shown on plans. He believes there is adequate space to accomplish this. MSU's input will be sought and an RFI will be issued to document/track the decision on this.
- It may be possible to delete the isolation valves on each side of each of the four steam control valves for the heat exchangers as these units are fully redundant and are also each served by a separate isolation valve on the 6" steam supply. This would save considerable space and perhaps valve maintenance in the future. MSU's input will be sought and an RFI will be issued to document/track the decision on this.
- The 2 1/2" pumped condensate line from the ARC is incorrectly shown to join a smaller condensate line from steam trap assembly ST-7. To function properly the line can continue to route through the existing underground conduit system or the 2 1/2" line can be extended indoors to the tunnel. MSU's input will be sought and an RFI will be issued to document/track the decision on this.
- Ray and I walked through the intended routing of the piping drops to the air handling unit coils and the heat recovery coils. He intends to route the common reverse return lines low along the floor suspended on strut assemblies. This is acceptable so long as the pipe is supported on rollers and the insulation is covered by metal jacket as specified for pipes less than 18" above the floor. Also, a step-over cover will be provided between the two heat recovery units as this is the primary access to the inner of the four main exhaust fans. At the east side of the east air handling unit it will be necessary to offset the pipe risers in order to preserve an access path from the elevator into the penthouse.
- I asked Larry to rotate the perforated duct style supply air diffusers in the laser labs to keep from directing any airflow directly down on the laser tables.
- (old item still unresolved) The desired airflow orientation (air moving inward or outward) at room 208, the old bioinformatics server room, should be confirmed. The original orientation is outward towards the corridor as created by an oversupply condition. Depending upon the intended use for this room, there may be a desire to have and inward airflow orientation instead.
- (old item still unresolved) In the penthouse, the sprinkler lines above the heat recovery coils and the air handling unit fresh air intake ducts need to be modified or relocated to accommodate the ductwork first. These are high velocity ducts and streamlining of the airflow is not to be jeopardized to allow ease of sprinkler pipe routing.

Items Requiring Attention or Correction:

- The appearance of ductwork is being addressed with a cleanup effort starting on the fourth floor. The results of the process have reportedly been reviewed with MSU and are acceptable thus far.
- MSU would like the new centrifugal chiller to undergo eddy current testing of the
- (old item but still relevant and important) The radiused elbows with turning vanes at the inlet of the heat recovery coil sections are required as shown on Detail 3, Sheet M2.5.

Their centerline bend radius needs to be as large as the structure allows. The intent is to have a centerline bend radius of at least one duct diameter/height- in our case 24", meaning an inside bend radius of 12". The sound attenuators just upstream of these elbows will need to ramp upward away from the main duct in order to avoid interference with the main piping runs and gain the necessary height to accommodate an elbow with an acceptable sweep. This will necessitate an elbow with a bend exceeding 90 degrees for connection to the heat recovery coil section casings.

- I confirmed with Ray that the design intent for the air handler humidifiers is for the right and left side of each unit to have a separate drop and separate control valve. The requirement for this is confirmed by review of Addendum #3. Ray should confirm with S. Conley and Electro who is providing the four control valves.
- As discussed some time ago, the support of the main vertical pipe risers must accommodate thermal expansion and contraction through the use of spring hangers, pads or other flexible supports. Methodology can be discussed during future site visits.
- (old item now with response) The piping arrangement for the coil supplies on the west side of AHU-1 has left the heating water isolation valves very difficult to access. This condition needs to be rectified. The preferred approach is to move a portion of the clean steam line so that the valves can be accessed from directly below with a ladder. (The arrangement of the coil piping drops will prohibit gaining improved access as noted above. A method to access the valves from above the other piping will be pursued and will likely take the form of a small platform.)
- (old item now with response) In the same location, the chilled water piping was offset at an elevation that will block the top heating coil from pulling directly outward should it need to be replaced. I have asked S. Conley Sales, the supplier of the unit, to verify with the factory that the top coil could be moved forward, dropped down and then pulled out from the unit. Until they or the contractor can confirm this, it is important to note that this piping may have to be altered. (S. Conley verified with the factory and with actual site visits that the mounting method of the coils allows them to be "unstacked" inside the unit and dropped in front of, or behind, the other coils before sliding out of the unit. As such, this concern has been addressed.)
- (Old item left in as a reminder) Only specified and approved type gaskets should be utilized. Typical paper gaskets were noticed on site but it is not known if these were being installed or simply came with a flange set and were being set aside.

END REPORT