

## **MECHANICAL ADDENDUM:**

### 1. Refer to Mechanical Room Floor Plan on Drawing M2:

Revise mechanical room layout with boilers and water heater oriented along the exterior wall while maintaining all manufacturers' recommended service clearances.

Provide individual combustion air supplies to each appliance from the original combustion air intake opening. Terminate with downturned elbows. Maintain a maximum elevation above finished grade, minimum 450mm.

Direct vent all appliances through the existing window staying as far from the combustion air intakes as possible. Terminate with downturned elbows. Maintain a maximum elevation above finished grade, minimum 450mm.

Mount all equipment on 100mm high housekeeping pads.

The expansion tank is to remain where shown on the original drawing.

Relocate the existing gas regulator to maintain distances from building openings, air intakes, etc. in conformance with the gas code. Provide new piping from the exterior shut-off valve to the existing service entry. Properly secure the piping and paint to match foundation.

Relocate the new janitor's sink to the end wall in the corner next to the existing chimney.

Connect the sink waste into existing sanitary stack and provide with an Air Admittance Valve in conformance with the Plumbing Code and to the requirements of the Authority Having Jurisdiction.

Seal the top of the chimney and all connections to the chimney in the boiler room, and abandon.

### 2. Refer to the Piping Schematic on Drawing M2:

Revise the three (3) heating zone (East Zone, South Zone and West Zone) return mains as follows. The zones shall feed into a common 100mm header in the mechanical room. Make the connections at equal distances along the header. Zone circulating pumps (PU-3 and PU-4) shall tie into the header between the return connections at equal spacings. The balancing valves shown on the zone return mains shall be fully adjustable circuit balancing valves. All other valving shown in the original schematic shall remain as shown.

Revise the heating return piping between the main circulating pump (PU-1 and PU-2) and the boilers (B-1 and B-2) such that PU-1 serves B-1 and PU-2 serves B-2 directly. A 50 mm pipe and a normally closed valve shall connect to two lines as a manual switchover should one of the boilers or pumps fails. The balancing valves shown on each boiler shall be circuit balancing valves.

Provide Y-Strainers on the intake side of each pump.

Provide a minimum of five (5) pipe diameters of straight run to the inlets and outlets of each pump or as recommended by the pump manufacturer.

### 3. Refer to the Sequence of Operation on Drawing M2:

Revise to read as follows:

1. Main circulating pumps (PU-1, PU-2)
  - 1.1 Pumps PU-1 and PU-2, in conjunction with the associated boiler, are to operate on a “duty-standby” basis.  
The changeover is to be performed automatically on a schedule through the boiler controller.

Add the following:

- 1.5 When the pumps are enabled, pump mounted VFDs will control the duty pump to maintain system pressure and flow. Setpoints to be fully adjustable and to be set and adjusted by the contractor during start-up and commissioning.

2. Control Valve CV-1

Revise to read as follows:

- 2.3 Limit water temperature in the secondary loop between 45°C and 80°C and limit the return water temperature in the primary loop to the boilers at 60°C or higher to protect the boilers.

4. Zone Circulating Pumps (PU-3, PU-4)

Revise to Read as follows:

- 4.1 Both pumps shall operate simultaneously when enabled by the boiler controller.
- 4.5 Pump mounted VFDs will control the duty pump to maintain system pressure and flow. Setpoints to be fully adjustable and to be set and adjusted by the contractor during start-up and commissioning.

Delete in its entirety:

4.6 and 4.7

4. Refer to the Demolition Plan, Drawing D1:

For all equipment and materials identified in the plan to be removed, also remove all associated flue vents, pumps, valves and piping and, as applicable, cap-off or make ready for new connections. Remove and terminate all associated electrical power supplies and controls.

Revise existing note “Abandon Expansion Tank in Ceiling” to read “Remove Existing Expansion Tank Partially Embedded in the Ceiling”.

5. New fire rated boiler room door and door frame shall be complete with hardware. Door shall be approximately 1981 x 914 mm. Dimensions to be confirmed on site by the contractor.

6. The ceiling and east interior wall are to have a 1 hr fire rating to form a separation between the boiler room and the adjacent rooms, corridor, and floor above. It appears that the south, north and west wall are constructed of concrete and existing drywall can remain in place. Asbestos has been found in the existing drywall compound. Refer to Specification Section 02 82 000.02 for asbestos abatement and HAZMAT report details. All existing and new openings through the concrete must be filled with concrete and sealed using fire stop caulking. The east wall and ceiling shall be stripped of the existing drywall and replaced with 2 layers of 5/8” type “X” drywall. All pipe, conduit and electrical cable penetrations are to be sealed using fire stop caulking.

7. Refer to Equipment Schedules Drawing M1:

Replace schedules with the following information:

**Boilers:** RBI mid efficiency, natural gas boilers (85% thermal efficiency), model "Dominator 400", 117 kW input and 99 kW output and a water flow rate of 2.15 L/s and 0.9 kPa P.D. at 11.1°C temperature rise. Provide completely with controls and all necessary component to operate as per the sequence of operation as well as all safety devices to be code compliant. Unit to be direct vented through through the exterior wall using Category III venting system. Electrical requirements 120 V/1 Ph/60 Hz/6 Amps.

**Pumps:** PU-1 and PU-2 to be Grundfos model "Magna3" 40-40F at 2.15 L/s and head of 18 kPa, cast iron pump with flanged connections. Electrical, 70 W, 230 v, 1 phase. Pumps shall operate to maintain constant flow rates through the boilers.

PU-1 and PU-2 to be Grundfos model "Magna3" 40-100F at 1.61 L/s and head of 75 kPa, cast iron pump with flanged connections. Electrical, 250 W, 230 v, 1 phase.

Note: All selections to be verified by the supplier to ensure equipment is best suited for the application. Pumps shall operate to maintain constant pressure to deliver water on demand as heating valves open and close throughout the heating zones.

**Domestic Water Heater:** Rheem high efficiency, natural gas, condensing domestic water heater with power direct vent, model "Prestige" CN RHE40S, 140 L capacity, 11.7 kW input, 180 LPH recovery and first hour delivery of 280 L. Unit to be vented through the wall using 50mm CPVC pipe certified to ULC-S636. Provide complete with integral controls and condensate neutralizer to be piped to floor drain.

**Janitor's Sink: Franke Commercial #WSS6713-1/2 Service / Mop Sink**, 2 hole, 8" (203 mm) center, 508 mm (20") wide x 483 mm (19") long x 635 mm (25") high deep, wall hung, faucet on backsplash, grade 18-10 14 GA. (2.0 mm) type 304 stainless steel, polished satin finish rim and bowls, radius coved bowls corners, 89 mm (3-1/2") crumb cup waste assembly with 38 mm (1-1/2") brass tailpiece.

**Chicago Faucets #897-RCF Wall Mounted two handles Faucet**, Rough Chrome Finish, solid brass exposed body, ceramic 1/4 turn operating cartridge, unrestricted hose end outlet, 203 mm (8") projection spout with atmospheric vacuum breaker and bucket hook, 60 mm (2-3/8") metal vandal proof lever handles with blue and red index buttons, wall brace support. **McGuire #8912CB P-Trap**, heavy cast brass adjustable body, with slip nut, 38 mm (1-1/2") size, box flange and seamless tubular wall bend. **Watts #CA-321 Fixture Carrier**, epoxy coated top and bottom universal steel hanger plates. For one unit: 102 mm (4") for two to six units in a row: 152 mm (6") finished metal stud wall to back of pipe space.

Note that fixture carrier and water supplies are to be exposed, and sufficient backing is required to support the faucet.

8. Prior to ordering equipment, the Contractor is to confirm with ATCO gas that the present service to this facility is adequate with the full load from the new boilers and water heater.

9. Clarification: All heating and domestic water lines within the mechanical room shall be insulated as per the specification. Hangers shall be oversized to accommodate insulation and saddles. Hangers must not contact insulated piping directly.