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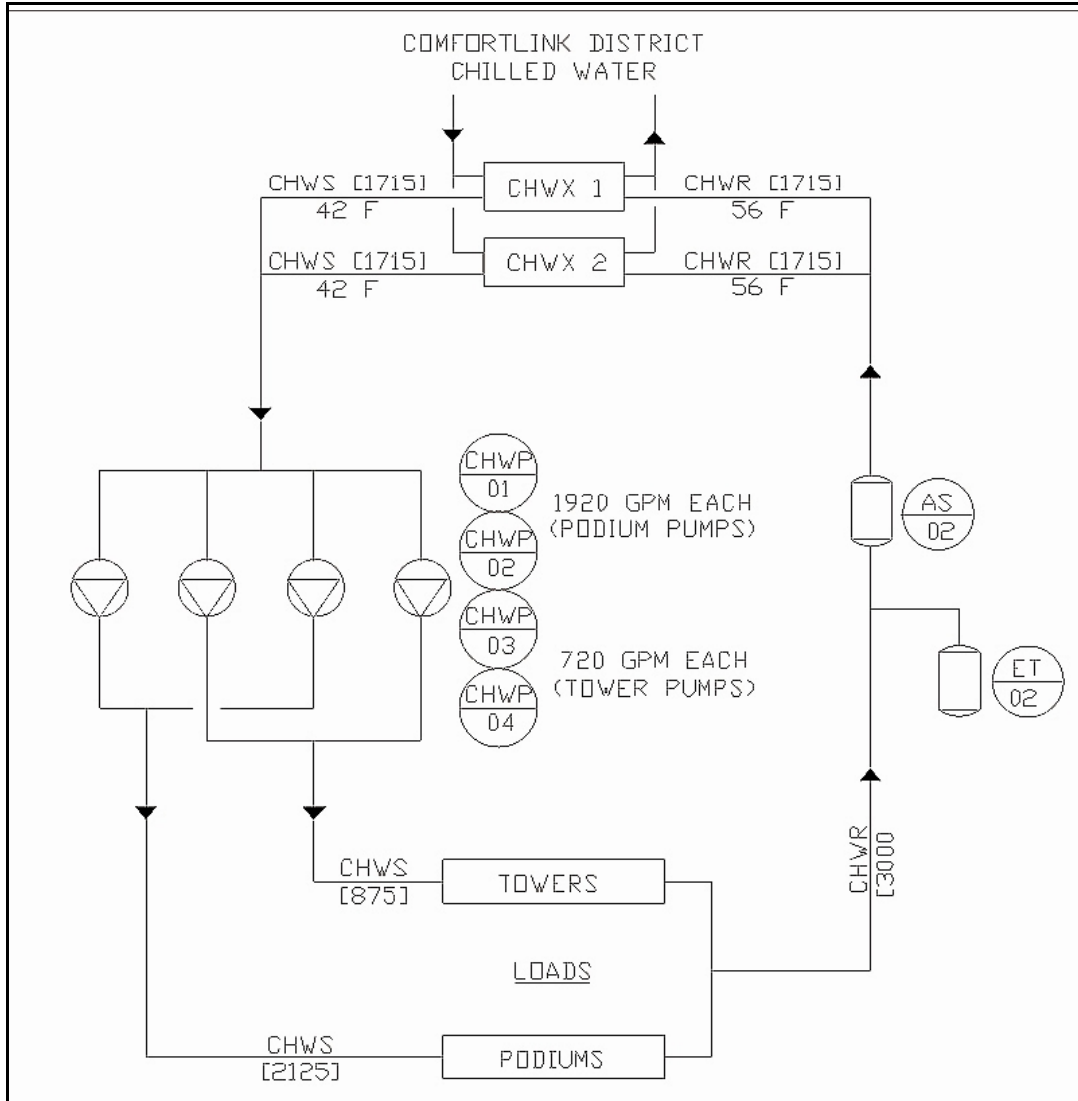
4.0 Existing Mechanical Conditions

Cooling

The HBCCH receives chilled water from the ComfortLink district chilled water system. Chilled water is supplied by two ComfortLink-owned plate and frame heat exchangers designated CHWX 1 and CHWX 2, seen in Figure-2 of this report. These heat exchangers are located in the mechanical room on the east podium mezzanine level. The capacity of each heat exchanger is roughly 1,000 tons. The district or primary side of both heat exchangers receive district chilled water from ComfortLink chilled water piping originating in the Baltimore Convention Center and running across the bridge spanning Howard Street to the mezzanine mechanical room in the east podium. This water is designed to have a seventeen degree change in temperature (37 F to 54 F).

Chilled water piping for the building systems of the HBCCH originates on the secondary or warm side of ComfortLink's heat exchangers. Chilled water is distributed in two main pumping zones; one zone is the guest room towers, and the second zone is for the east and west podium public areas. Two variable speed pumps are provided for each zone, each sized for 60% of the design flow rate. These pumps are designated CHWP 1, CHWP 2, CHWP 3, and CHWP 4 in Figure-2 of this report. CHWP 1 and CHWP 2 serve the podium zone while CHWP 3 and CHWP 4 serve the guest room towers. It's important to note that the pumps were selected such that should one pump fail, the other will be able to provide 100% of the total flow for the zone. Differential pressure sensors in the systems control the variable speed drives of the pumps to maintain the required flow and pressure. The chilled water system is designed for a fourteen degree temperature difference between the supply and return (42 F to 56 F).

Figure-2: Existing Chilled Water Schematic

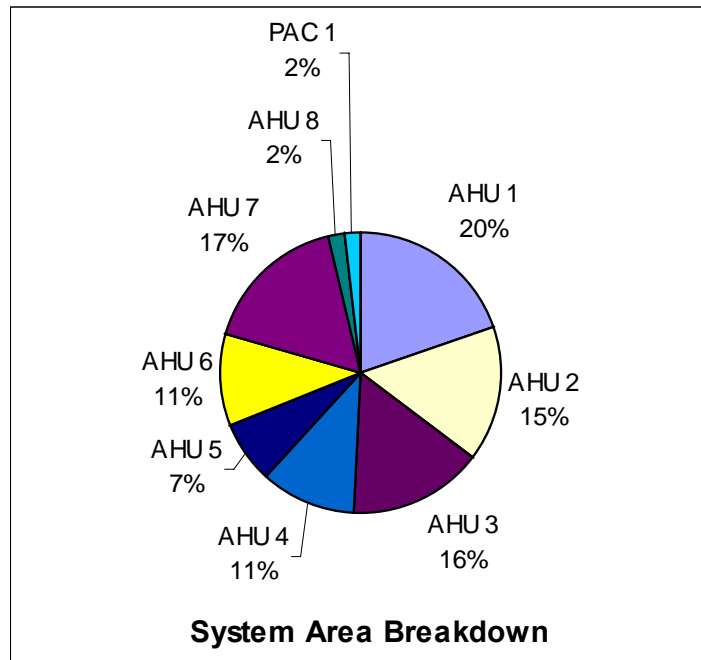


Air Handling

AHU 1: Located in the West Podium mezzanine level mechanical room, this AHU serves the ground and mezzanine levels of the West Podium. The unit is balanced to supply 31,000 cfm of air, with a minimum of 14,000 cfm of outdoor air. AHU 1 will be an indoor built-up variable volume unit with; an economizer section, filters, HW preheat coil, chilled water cooling coil, dual plenum supply fans, discharge plenum, and sound attenuators. Supply and relief fans will have variable frequency drives.

AHU 2: Located in the East Podium mezzanine level mechanical room, this AHU serves the ground level of the East Podium. The unit is balanced to supply 31,000 cfm of air, with a minimum of 24,000 cfm of outdoor air. AHU 2 will be an indoor variable volume unit with an economizer section, filters, HW preheat coil, chilled water cooling coil, plenum supply fan, discharge plenum, and sound attenuators. Supply and relief fans will have variable frequency drives.

Figure-3: System Area Breakdown



AHU 3: Located in the West Podium third level mechanical room, this AHU serves the second level of the West Podium. The unit is balanced to supply 38,000 cfm of air, with a minimum of 16,000 cfm of outdoor air. AHU 3 will be an indoor variable volume unit, with an economizer section, filters, HW preheat coil, chilled water cooling coil, plenum supply fan, discharge plenum, and sound attenuators. Supply and relief fans will have variable frequency drives.

AHU 4: Located on the roof of the East Podium second level, this AHU serves the second and third levels of the East Podium. The unit is balanced to supply 26,000 cfm of air, with a minimum of 11,000 cfm of outdoor air. AHU 4 will be an outdoor variable volume unit with; intake and relief louvers, economizer section with relief fan, filters,

HW preheat coil, chilled water cooling coil, plenum supply fan, and discharge and return plenums. Supply and relief fans will have variable frequency drives.

AHU 5: Located on the roof of the East Podium second level, this AHU serves the second level and junior ballroom areas of the East Podium. The unit is balanced to supply 47,000 cfm of air, with a minimum of 25,000 cfm of outdoor air. AHU 5 will be an outdoor variable volume unit with; intake and relief louvers, economizer section with relief fan, filters, HW preheat coil, chilled water cooling coil, plenum supply fan, and discharge and return plenums. Supply and relief fans will have variable frequency drives.

AHU 6 and AHU 7: Located in the West Podium third level mechanical room, these units serve the grand ballroom and third level prefunction areas of the West Podium. The units are both balanced to supply 48,500 cfm of air, with a minimum of 28,000 cfm of outdoor air each. AHU 6 and 7 will be outdoor variable volume units with; intake and relief louvers, economizer section with relief fan, filters, HW preheat coil, chilled water cooling coil, plenum supply fan, and discharge and return plenums. Supply and relief fans will have variable frequency drives.

AHU 8: Located on the roof of the West Podium fourth level, this AHU serves the exercise areas on the fourth level of the West Podium. The unit is balanced to supply 4,000 cfm of air, with a minimum of 3,000 cfm of outdoor air. AHU 8 will be a constant volume unit, with an economizer section, filters, HW preheat coil, run-around hot water reheat coil, chilled water cooling coil, plenum supply fan, and discharge and return plenums.

PAC 1: Located in the pool equipment room on the fourth level of the West Podium, this unit serves the swimming pool and pool equipment room. The unit is balanced to supply 5,300 cfm of air, with a minimum of 4,300 cfm of outdoor air. PAC 1 will be an indoor packaged unit with ducted outdoor air, filter, refrigerant DX cooling coil, hot gas reheat coil, auxiliary heating coil and DX hot gas pool heater for heat reclaim.

The remainder of the spaces in the HBCCH receive outdoor air from four makeup air units.

MAU 1 and MAU 2: These units, located on the roof of the guest towers, provide conditioned outdoor air to the guest room bathrooms, corridors and elevator lobbies in the guest room towers. These units are 100% outdoor air units which keep the guest rooms properly ventilated. The remainder of the space load in the guest rooms is treated by fan coil units located in each room.

MAU 3 and MAU 4: These units serve the large kitchen areas in the podiums. MAU 3 is located in the East Podium, and it serves the Multi-Purpose Restaurant Kitchen. MAU 4, located in the West Podium, serves the main kitchen area serving the grand ballroom. These units are 100% outdoor air units.

Guest Room FCUs: The fan coil units in the guest rooms are 2-pipe vertical stacked, (high-rise) fan coil units. Chilled water will be distributed using vertical risers located in chases. The units will be equipped with electric resistance heat. The FCUs will be non-ducted concealed type to be located in drywall enclosures at the outside walls of the guest rooms. Return air will be through a louvered access door on the fan coil unit enclosure.

Heating

Steam from the Trigen district steam system enters the HBCCH in the mechanical room located in the southeast corner of the west podium. This steam, initially at 150 psi, passes through a Trigen owned metering station before entering Pressure Reducing Station 1 (Figure-4). The steam, now at 50 psi, splits in order to serve two separate purposes. 2,250 lbs/hr of steam serve the kettles and dishwashers located in the east and west podium kitchens. The remainder of the steam is used in order to create heating hot water for the building systems located throughout the HBCCH.

Two shell and tube heat exchangers, HHWX 1 and HHWX 2 in Figure-4 and Figure-5 of this report, are used to convert the steam into heating hot water. These heat exchangers,

designed for an inlet temperature of 140 F and outlet temperature of 180 F, are each sized for 810 gpm and 6,500 MBH.

Heating hot water is distributed throughout the HBCCH using three dedicated variable speed pumps. Each pump is designed for 50% of the total design flow. These pumps, designated HHWP 1, HHWP 2, and HHWP 3 in Figure-4 of this report, can each handle 750 gpm of flow. A differential pressure sensor in the system controls the variable speed drives of the pumps in order to maintain the required flow and pressure. Heating hot water serves preheat and reheat coils in AHU's and MAU's, VAV reheat coils, and domestic hot water generation.

Figure-4: Existing Steam Schematic

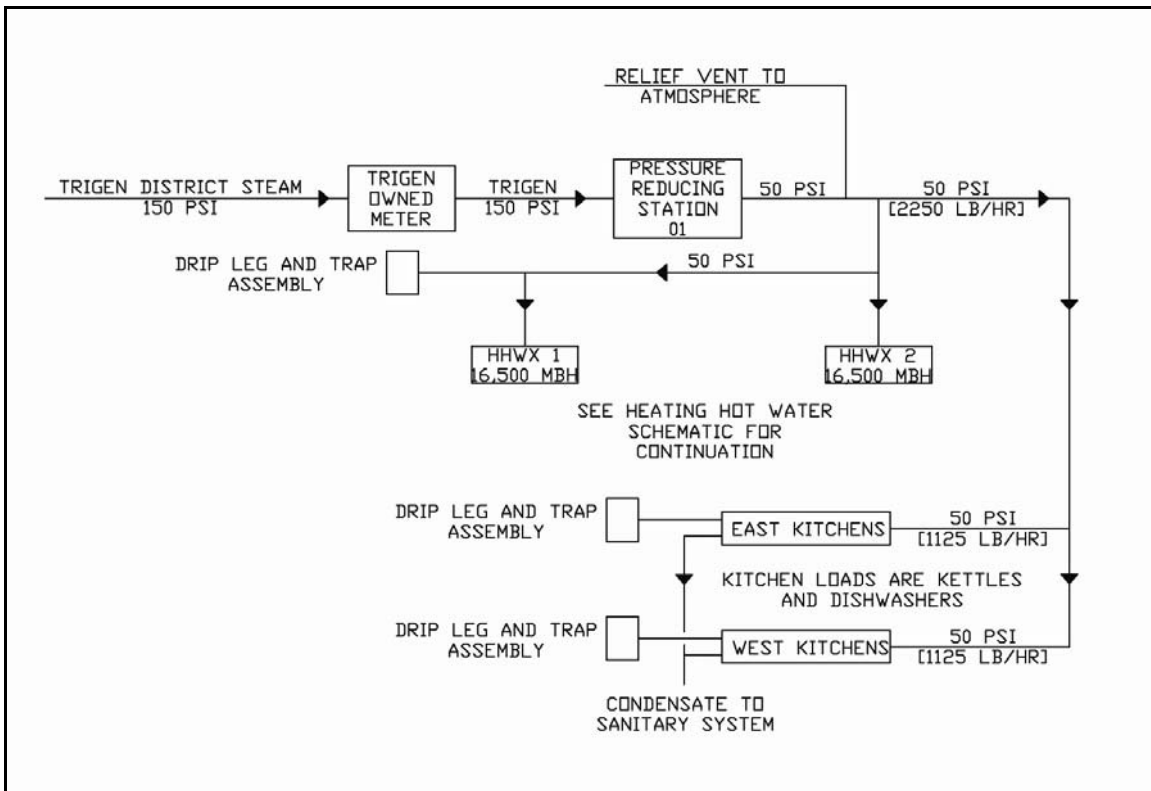


Figure-5: Existing Heating Hot Water Schematic

