

- Replace the existing boilers with new, current technology equipment matched to the current loads and capable of handling additional loads as the

- The boiler sizing is based on the following conditions:
- Design winter outdoor conditions (2 degrees F, saturated outdoor conditions).
  - Design building ventilation rates.

Under the conditions, the boiler load is 250 boiler horse power. This is a

The medium pressure header is connected to the low pressure header via pressure reducing valve station. These valves are designed to operate in a closed position. When the pressure in the low pressure header is increased, the reducing station capacity and the larger valve selected for approximately 70% of the station capacity. The set point of the smaller valve should be higher than the set point of the larger valve. The set point of the larger valve should be 8 psig for the larger valve. This will allow the smaller valve to the open first. When the pressure in the low pressure header is increased to this point, the header pressure will begin to drop (because the small valve is already fully open). When the header pressure drops to the set point of the medium pressure header, the medium pressure valve will open. When the pressure at this location decreases, the sequence will reverse itself. Under an alternate bid, outputs from the DDC system are provided to allow the system to be programmed to operate in a different manner. The system can be programmed for wear and hunting. The programming will switch the set points of the two valves in the header station. When the pressure in the low pressure header is increased, it will transfer the load to the larger valve and minimize its tendency to wear and hunt. If the Alternate is not taken, this adjustment can be made manually if necessary.

The large (200 hp) medium pressure boiler 11-MPB-A acts as a back up boiler to the low pressure boiler 11-LPB-A and the small medium pressure boiler 11-MPB-B. The DDC control system will monitor the low pressure header and assume there has been a failure of either the low pressure boiler or the medium pressure boiler. If the header pressure drops below 2 psig for any length of time, the DDC will fire the 11-MPB-A. If the 11-MPB-A is fired, it will fire to maintain a header pressure of 80 psig. This will cause the smaller medium pressure boiler to go into a pressure cycling mode. The DDC will not allow the 11-MPB-A to fire in a simultaneous unnecessary firing of the two boilers together. If the load exceeds the capacity of the large medium pressure boiler, the header pressure will begin to drop, and the small boiler will automatically cycle on when the pressure drops to a set point.

- The heating water systems have been interconnected for several reasons including allowing recovered heat to serve all of the loads in the hospital and improving reliability and maintainability. One of the additional benefits of this modification is it allows the majority of the steam distribution system outside of the boiler room to be shut down m

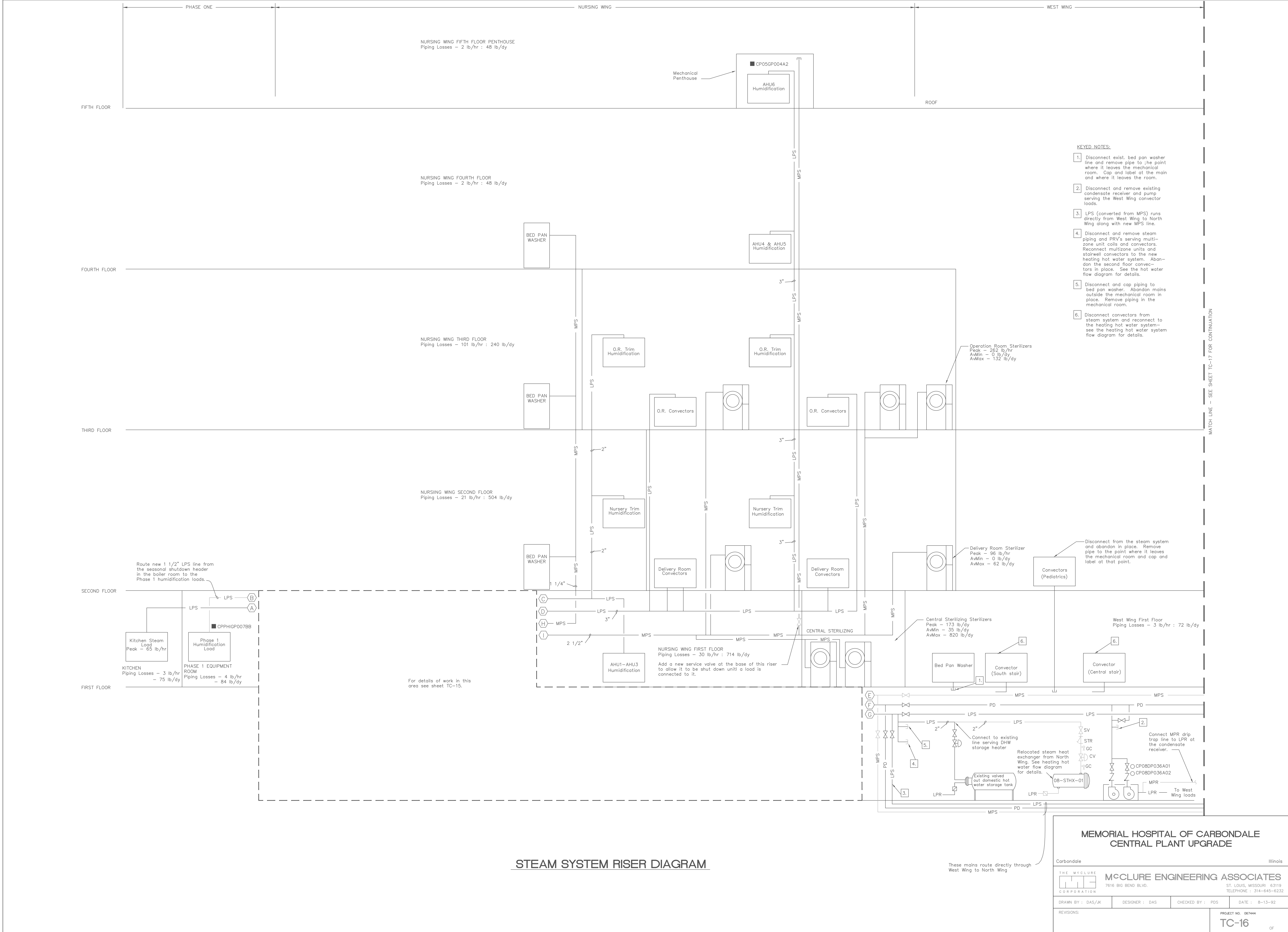
vented to atmosphere and provided with a domestic water cooling system to maintain the flash steam associated reducing the pressure on the saturated water in the boiler from boiler operating pressure to atmospheric pressure. A self contained control valve injects water into the receiver as required to maintain the temperature of the water leaving the unit to drain at or below 180 degrees F. The DDC system monitors the operation of the blow down system and will be programmed to issue an alarm if the blow down time on any boiler appears to

Each boiler is provided with a low water cut off and a backup up low water cut off which will shut down the boiler and lock it out if the make up system fails to maintain the correct water level. The DDC control system monitors the boiler for alarms and will issue a boiler failure message if an alarm condition is detected. The boiler control panel is arranged to indicate the specific alarm condition. The boiler control panel monitors the boiler firing control system and verifies boiler operation based on a contact closure triggered by the firing control proving main flame operation.

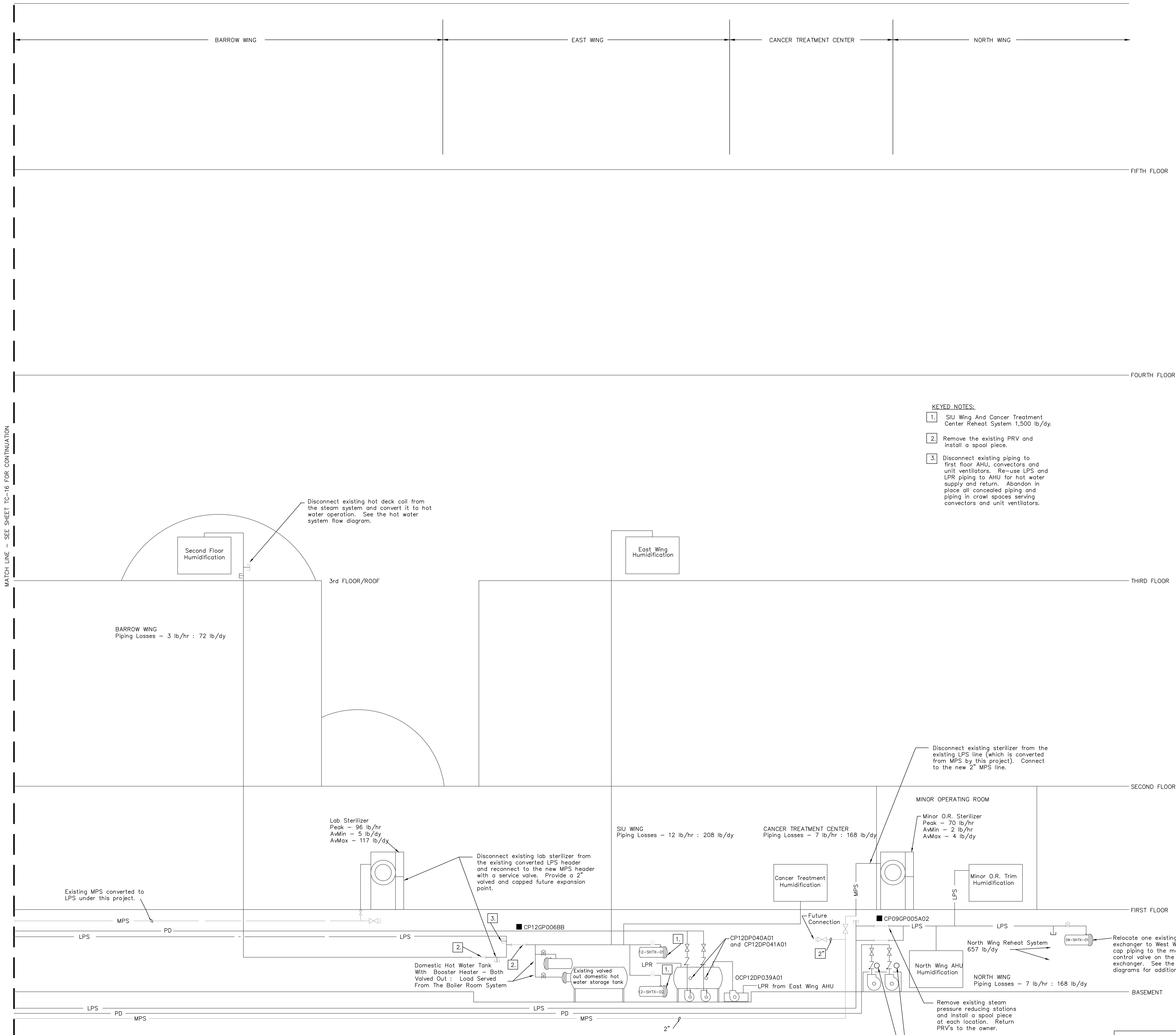
Steam System Flow Diagram – Design Development

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STEAM SYSTEM RISER DIAGRAM

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