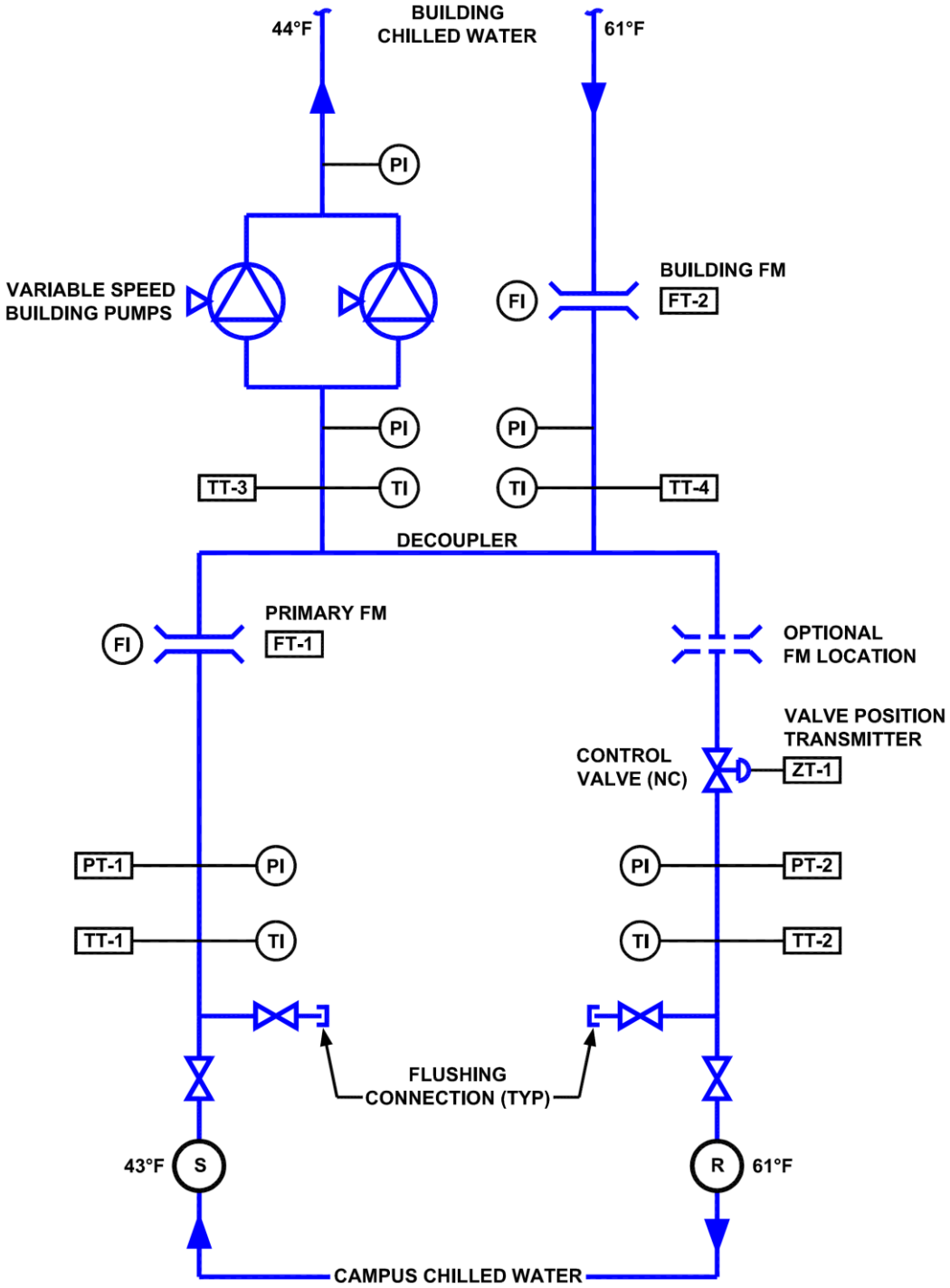

Chilled Water Bridge / Bridge Control Valve

- Each building shall be capable of being controlled from either Building Chilled Water Return Temperature (TT-4) or from Building Chilled Water Supply Temperature (TT-3).

- The building shall be commissioned utilizing both methods of control and initially operated utilizing Chilled Water Return Temperature operation.

- All pressure (PT), temperature (TT), flow (FT), control valve position (ZT) transmitters, as well as building pump status and speed shall be connected to the Campus Automation System. Temperature transmitters, TT-1 and TT-2, and control valve position shall be capable of being adjusted from the campus system.

- If TT-2 temperature is below TT-4 temperature, an alarm condition shall be indicated at local and central control stations.

Return Water Temperature Control

- Temperature transmitter (TT-4) shall modulate control valve to maintain Building Return Water Temperature of 61°F.

Supply Water Temperature Control

- Temperature transmitter (TT-3) shall modulate control valve to maintain Building Supply Water Temperature of available Primary Supply Water Temperature plus 1°F. (TT-3) SETPOINT = (TT-1) + 1°F

- No permanent system fill connections or expansion tanks are to be provided within the building.

- No piping by-passes around the building pumps are to be provided.

- No valves within the bridge decoupler are to be provided.

- All valving, fittings, and devices shall be a minimum of ANSI 150 Pound Class.

- Flow measuring devices shall be Mag Meters and shall be installed with the required upstream and downstream piping distances.

- The maximum Primary Supply Water Pressure to the building is 100 psig.

- Bridge control valves 3” and below shall be modulating ball valves. Bridge control valves above 3” shall be high performance butterfly valves. The bridge control valve and actuator shall be capable of full flow shut-off at 100 psig.

- All bridge manual isolation valves shall be capable of bidirectional bubble-tight shut off.

- If the Chilled Water Building Pumps are to be used for initial system flushing, the decoupler shall be provided with a piping spool piece to be removed and capped during flushing.

Building Chilled Water Operation

- Each building is to be provided with two Chilled Water Pumps sized for full building flow and pressure drop through the building. Pumps are to be provided with 18 pulse variable frequency drives.
- Each variable speed drive is to be provided with a by-pass starter.
- The pumps shall be provided with automatic Lead/Lag Operation as well as automatic Start of Lag pump upon failure of operating pump.
- Each pump VFD shall be field adjusted to minimum and maximum pump speeds.
- All terminal cooling devices shall be sized for 44°F entering water temperature and 61°F leaving water temperature.
- All terminal control valves shall be two way with actuator sized to fully close against the Distribution System Pressure (100 psig) and the Maximum Building Pressure.
- With systems consisting of more than four terminal cooling devices, the speed of the building pumps shall be from differential pressure at a strategic location in the building. If the strategic differential pressure location is difficult to determine during the design, multiple system differential pressure transmitters should be installed and the transmitter requiring the greatest differential pressure shall control the pump drives.
- With systems containing three or less terminal cooling devices, the terminal temperature control valve position requiring the most cooling shall set the pump speed.