



INSTALLATION NOTES:
 1 A/E TO DETERMINE EQUIPMENT ID#

DUAL HEAT EXCHANGER SYS CONTROL WITH ISO VALVES AND VARIABLE SPEED PUMPS CONTROL DIAGRAM

SEQUENCE OF OPERATION

HOT WATER HEATING SYSTEM - WITH DUAL HEAT EXCHANGERS AND VARIABLE SPEED PUMPS

NOTE: ALL SETPOINTS AND TIME INTERVAL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATOR. (CREATE REQUIRED VIRTUAL POINTS)

- HOT WATER HEATING SYSTEM PUMPS P-01 AND P-02 SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. ONE OF THE TWO PUMPS SHALL BE ACTIVATED BY THE DDC TO OPERATE BASED ON OUTDOOR AIR TEMPERATURE. THE OTHER WILL SERVE AS STANDBY. ONE OF THE HX ISOLATION VALVES SHALL BE OPENED BY THE DDC PRIOR TO PUMP ACTIVATION.
- DDC SHALL ALTERNATE PUMP OPERATION BASED ON MONTH. EVEN MONTHS THE EVEN NUMBERED PUMP & HX SYSTEM SHALL RUN AND ON ODD MONTHS THE ODD NUMBERED PUMP & HX SYSTEM SHALL RUN.
- DDC SHALL MONITOR OPERATING STATUS OF EACH PUMP THRU HARD WIRE CONNECTION. UPON PUMP FAILURE, DDC SHALL ACTIVATE FAILURE ALARM AND AUTOMATICALLY START THE STANDBY PUMP. DURING A LOSS OF COMMUNICATION WITH VFD FOR 60 SECONDS, DDC SHALL ACTIVATE FAILURE ALARM AND AUTOMATICALLY START THE STANDBY PUMP.

- DDC SHALL MODULATE THE ACTIVE PUMP VARIABLE FREQUENCY DRIVE TO MAINTAIN A DIFFERENTIAL PRESSURE AT SPECIFIED LOCATION WITHIN THE BUILDING. SET-POINT SHALL INITIALLY BE SET TO 25FT HEAD (ACTUAL SET-POINT SHALL BE DETERMINED DURING SYSTEM COMMISSIONING AND/OR BY THE WATER BALANCE CONTRACTOR).
- DDC SHALL CONTROL ISOLATION VALVES ASSOCIATED WITH HX-01 AND HX-02. ONE OF THE TWO HX SHALL BE ACTIVATED BY THE DDC TO OPERATE CONTINUOUSLY. THE OTHER WILL SERVE AS STANDBY.
- DDC SHALL ALTERNATE HX OPERATION BASED ON MONTH. EVEN MONTHS THE EVEN NUMBERED HX SHALL RUN AND ON ODD MONTHS THE ODD NUMBERED HX SHALL RUN.
- UPON PUMP PROOF THE ACTIVE HX, DDC SHALL MODULATE HX 1/3 AND 2/3 CONTROL VALVES IN SEQUENCE TO MAINTAIN TERMINAL HEATING SUPPLY (THS) TEMP SETPOINT. WHEN THE OUTDOOR AIR TEMPERATURE IS 0 DEGREES F, THE SET POINT IS 180 DEGREES F AND WHEN THE OUTDOOR AIR TEMPERATURE IS 60 DEGREES F, THE SET POINT IS 120 DEGREES F.
- WHEN CIRC PUMP P-01 AND/OR P-02 ARE OFF, THE RESPECTIVE HX STEAM VALVES SHALL REMAIN CLOSED

- RESPECTIVE HX STEAM VALVES SHALL REMAIN CLOSED
- SAFETIES: UPON A CONTROLS FAILURE THE PUMPS WILL FAIL OFF, THE STEAM CONTROL VALVES WILL FAIL CLOSED AND HARD-WIRED HIGH TEMPERATURE SENSORS (TE-1 AND TE-2) WILL BE USED TO CLOSE THE STEAM VALVES WHEN 200 DEG F (ADJ.) IS EXCEEDED. THERE SHALL ALSO BE A DDC POINT FOR REMOTE ALARMING AND MESSAGING. LOCAL PILOT-LIGHT INDICATION ON AUXILIARY PANEL FOR ALARM SHALL ALSO BE USED. 24HR ALARMS AND MESSAGES WILL BE USED TO INDICATE PUMP AND SYSTEM FAILURE. DDC TO MONITOR SUPPLY WATER TEMP SENSOR AND ALARM ABOVE 200 DEG F AND AT 40 DEG F LOWER THAN CURRENT SETPOINT. AFTER A SUSTAINED 30 MINTUES ALARM CONDITIONS A HEATING SYSTEM FAILURE TO BE SENT TO CENTRAL CONTROL. (MSU TO DEFINE MESSAGE STATEMENT)

ALARMING

- NORMAL**
- SUPPLY WATER TEMPERATURE
 - DIFFERENTIAL PRESSURE (+/- 25% OF SETPOINT)
- "ENHANCED" 24/7**
- PUMP FAILURE
 - HIGH TEMPERATURE LIMIT