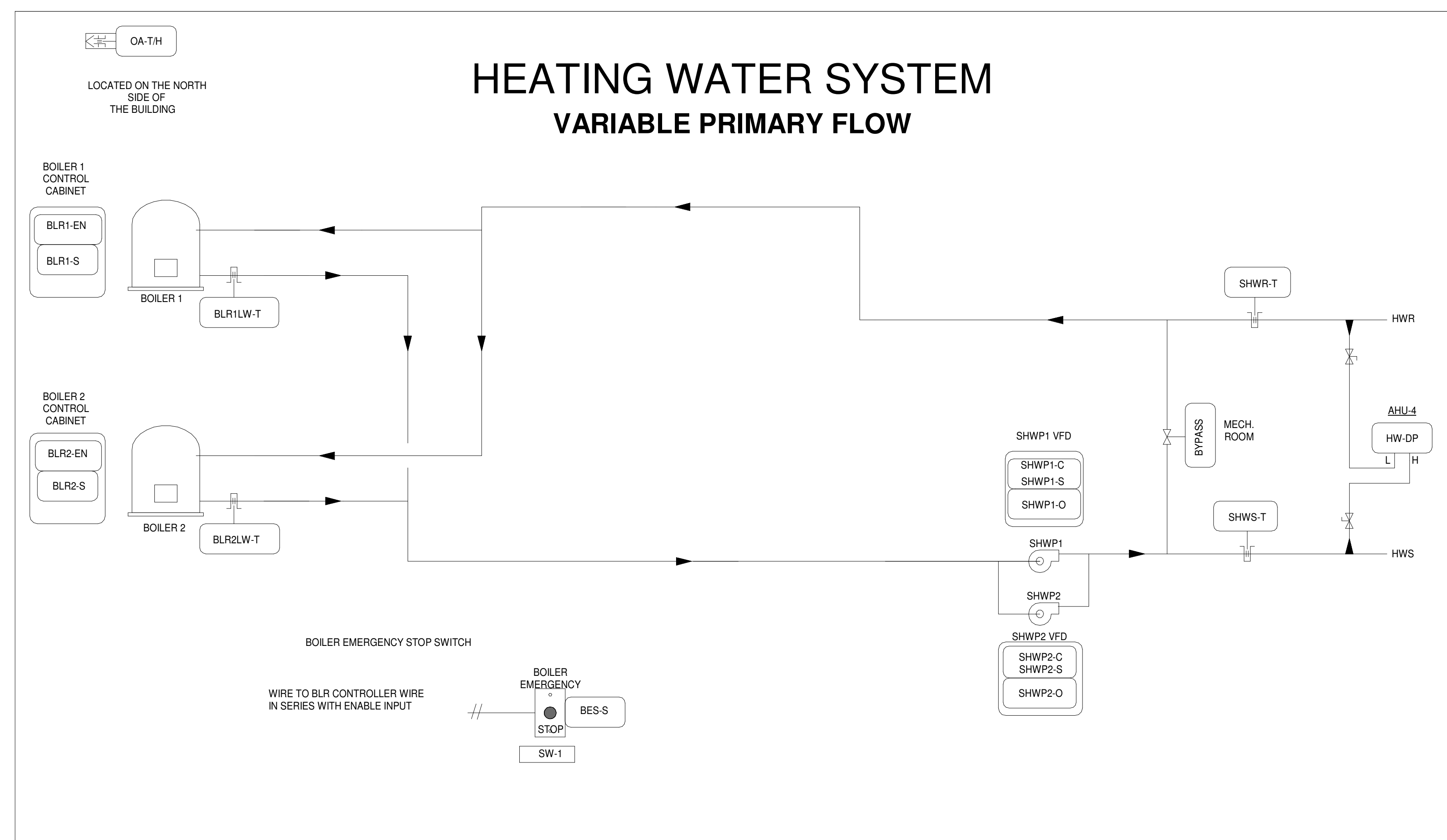


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PERMIT SET



#### HEATING WATER SYSTEM SEQUENCE OF OPERATION

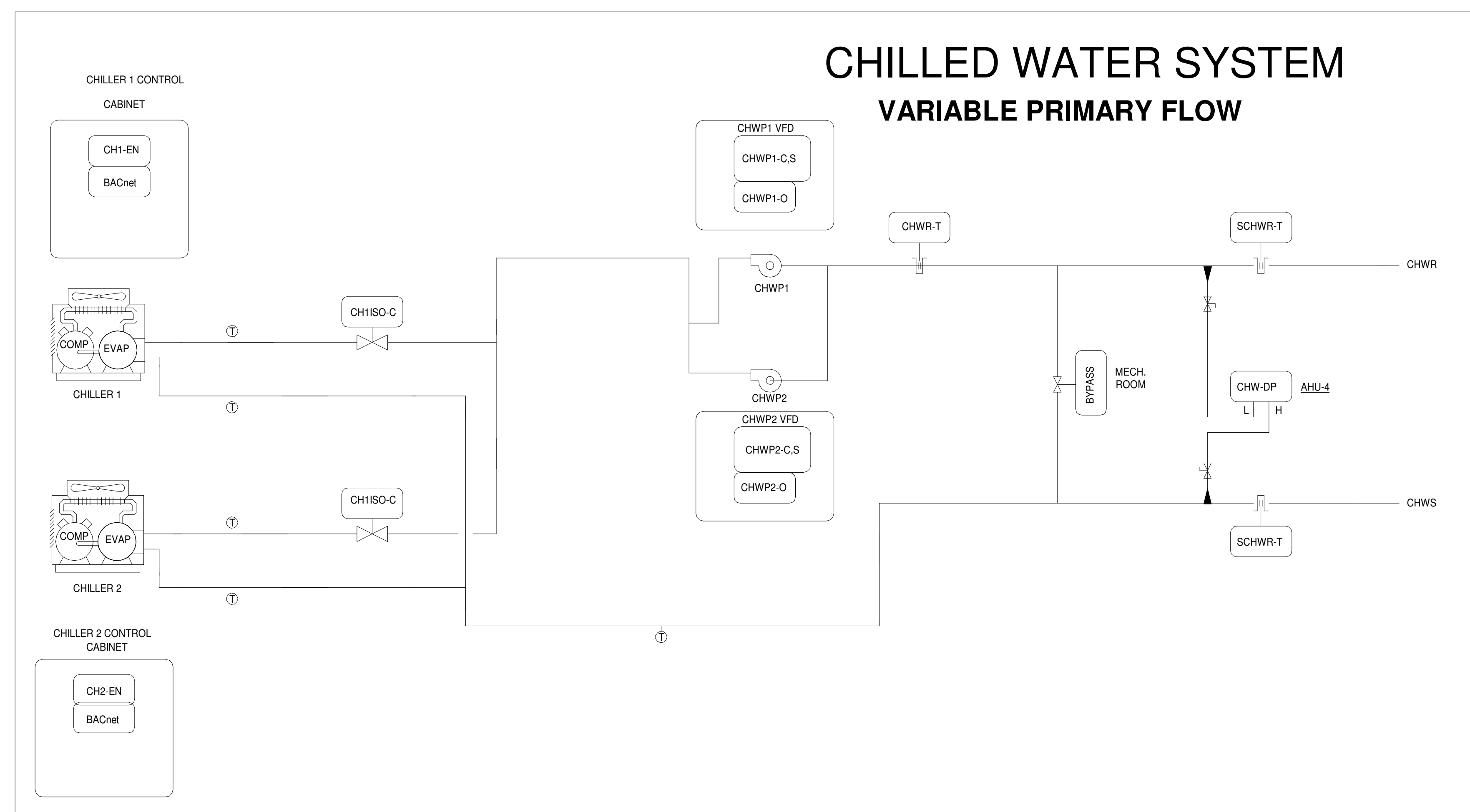
**SYSTEM ENABLE:**  
The heating system will automatically start when the outside air temperature falls below the system enable setpoint while the system enable is "ON". When the outside air temperature (OA-T) rises above this setpoint or the system enable is "OFF", the heating system will be disabled.

**BOILER CONTROL:**  
This system consists of two boilers. The burners shall be controlled via their own internal controls. The outdoor air temperature shall determine the number of boilers running. Heating water supply temperature set point will be reset based on outdoor air temperature.

**HOT WATER PUMP CONTROL:**  
When enabled, the pump associated with each boiler will be started. If the pump status does not match the command, an alarm will be generated and the boiler will be stopped. Upon loss of status, the pump will restart after the system is manually reset. After the boiler is commanded off, the pump will continue to run for a short time to dissipate the heat.

**SECONDARY LOOP PUMPING:**  
The lead secondary pump will be started when the system is enabled. Each variable frequency drive will be modulated in unison to maintain loop pressure. Additional pumps will be started as required to maintain the differential pressure in the secondary loop. When an additional pump is required, the pump with the lowest runtime total shall be enabled to run. If the pump status does not match the command, an alarm will be generated and the pump will be stopped. Upon loss of status, the pump will restart after the system reset is manually activated.

**ADDITIONAL POINTS MONITORED BY THE FMS:**  
Secondary Supply Temperature  
Secondary Return Temperature



#### CHILLED WATER SYSTEM SEQUENCE OF OPERATION

**SYSTEM ENABLE:**  
The cooling system will automatically start when the system enable is "ON". When the system enable is "OFF", the cooling system will be disabled.

**CHILLER CONTROL:**  
This system consists of two chillers. The chillers shall be controlled via their own internal controls to maintain a chilled water supply temperature. Each chiller will be staged on and off in order to maintain the differential setpoint between the supply and return temperatures.

**SECONDARY LOOP PUMPING:**  
The lead secondary pump will be started when the system is enabled. Each variable frequency drive will be modulated in unison to maintain loop pressure. Additional pumps will be started as required to maintain the differential pressure in the secondary loop. When an additional pump is required, the pump with the lowest runtime total shall be enabled to run. If the pump status does not match the command, an alarm will be generated and the pump will be stopped. Upon loss of status, the pump will restart after the system reset is manually activated.

**ADDITIONAL POINTS MONITORED BY THE BAS:**  
Chiller n Status  
Secondary Supply Temperature  
Secondary Return Temperature

ADDITION AND RENOVATION TO PLEASANT VALLEY COUNTRY CLUB

**CLUBHOUSE**

1 PLEASANT VALLEY DRIVE  
LITTLE ROCK, ARKANSAS 72212

REVISIONS

PROJECT NO.  
21075  
DATE:  
June 21, 2023

HVAC CONTROLS

M5.02-A