



TEMPERED WATER LOOP CONTROL SCHEMATIC

CONTROL SEQUENCES - TEMPERED WATER LOOP

- 1. IEMPERD WAITR LOOP CONTROL.

 A. TEMPERD WAITR PUMPS:

 1) I empered weler pumps shall be manually started and stopped from the HAND and OFF position of the HAND-OFF-AND switch in the VTD and automatically started and stopped by the BAS system when the switch is in the AIID position. All safety devices shall operate with the starter in the HAND or AIID position.

 2) Failure of the lead pump or VTD failure, as sensed by loss of current or alarm contact, shall start the stand-by pump and activate a pump fail alarm.

 3) The lead pump shall be automatically alternated every 30 days (adjustable).

 B. COOLING TOWER WAITE PUMPS:

 1) Cooling tower water pumps shall be manually started and stopped from the HAND and OFF position of the HAND-OFF-AIID switch in the starter and automatically started and stopped by the BAS system when the switch is in the AIID position. All safety devices shall operate with the storter in the HAND or AIID position.

 2) Failure of the lead pump, as sensed by loss of current, shall start the stand-by pump and activate pump fail alarm.

 3) The lead pump shall be automatically alternated every 30 days (adjustable).

 4) The cooling tower pump speed is constant.

 C. COOLING TOWER:

 1) Failure of cooling lower fan VFD, as sensed by the alarm contact shall adjusted and failure

 - COOLING TOWER:

 1) Failure of cooling tower fan VFD, as sensed by the alarm contact shall alarm, but the lead cooling tower pump shall continue to run.

 2) A rise in the TWS above 90°F (adjustable) shall activate a high loop w
- ie lead tempered water pump shall run continuously and) shall modulate pump speed to maintain loop
- with the lead pump YID shall include pump sheet or institution op-miss, and a minimum setpoint on the YID. Lead pump failes to start as determined by a "No Load" condition as YID, the failed pump shall be disabled and the standby pump shall start. An
- gred by the associated VPD, the foliad pump shall be disobled and the standby pump shall start. An condition shall be enabled.

 I temperature raises above 92°F a high temperature alorm shall be initiated; if TWR temperature drops 55°F a low temperature siarm shall be initiated. NG MODIC: The boiler manufacturer shall supply a control panel (integral or separate) to start and stage empered water boiler (3-1) to maintain tempered water supply temperature. Boiler control panels shall vabled/disobled by the 100° system.
- be enabled/disabled by the DOC system.

 1 The baller control panel shall be enabled if the arbient temperature drops below 60°F (adjustable).

 2) On a drop in WS temperature to 60°F (adjustable), the DOC system shall generate a call for heading to the baller control panel.

 3) The baller control panel shall start ballers after the baller's associated pump operation is proven.

 4) Sequence of operation for the SIARI/SIOP and modulation of the capacity of the baller shall be controlled by the baller control panel subject to internal safeties.

 5) The Baller control panel shall be set to maintain a temperature loop supply water temperature of 70°F (adjustable).

 6) Each baller's balancing valves shall be set during initial plant start-up to maintain a minimum hot water return temperature to the baller as determined by the baller maintain of ballers is in claim.

 7) The baller control panel shall provide an oldern output if any of the associated ballers is in claim.

 8) The DOC system shall manifor the baller EWF (entering water temperature) and LWF (leaving water temperature).

- 6) The DUC system shall monitor the boiler LNI (entering water temperature) and LNI (leaving water temperature).
 9) Upon activation of any override buttons or upon a drop in space temperature down to 60°F (adjustable) aduring unoccupied hours, boiler plant shall operate in accupied mode.
 J. SLT—TIMEPRING DMOIL: When INIS is between 60°F (adjustable) and OOF (adjustable), boiler, cooling tower and associated boiler/cooling tower pumps shall be off. The lead temperate water pump shall continue to run during the occupied mode. BAS shall monitor heat exchanger entering and leaving (IWS) water temperature.
 COOLING MODIC:
 - COOLING MODE:

 1) On a rise in IWS above 82°F (adjustable), during the occupied mode, the BAS shall start the lead cooling tower pump.

 2) On a rise in IWS above 84°F (adjustable) the BAS shall enable the cooling tower fan. The fan VFD's shall be modulated from 25% to 100% to maintain IWS at 86°F (adjustable).

 3) On a fall in IWS to 84°F (adjustable) the lower fan shall stop but the lead cooling tower pump shall confline for
- continue to run.

 4) On a fall in TWS to 78'F (adjustable) the lead cooling tower pump shall stop.



Revisions:		

Facility # 3050

HVAC AND ROOFING RENOVATIONS FOR BRITT ELEMENTARY SCHOOL

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BAS CONTROLS NOTES

- Automatic controls manufacturer is H Solutions. All BAS work shall be installed by Trazier Service Company.

 (// o points and control sequences shall comply with the lotest Gwinnett County Public School design guidelines.

 Any devictions to the sequences or points listed on these drawings shall be specifically approved by Owner and Engineer with a credit issued during shap drawing stabil privacy submittal privace as opplicable.