

REVISIONS				
SYM	DESCRIPTION	PREPARED BY	DATE	APPROVED

CONTINUATION OF CONTROL SEQUENCE:

GENERAL

- (1) SEE SHEET M9-1 FOR GENERAL CONTROL NOTES AND GENERAL SEQUENCE OF CONTROL:  
(2) SEE SHEET M9-1 FOR CONTROL LEGEND.

BUILDING COOL-DOWN CYCLE (COOLING PERIOD ONLY)

APPROXIMATELY 1-1/2 HOURS BEFORE THE NORMAL OCCUPANCY OF THE BUILDING OCCURS, THE DDC SYSTEM SHALL START THE HVAC SYSTEM AS FOLLOWS: THE RETURN DAMPER SHALL OPEN, THE AHU SUPPLY FANS SHALL START, ALL INTERLOCKED EXHAUST FANS SHALL REMAIN OFF, CWP-1 AND CWP-2 SHALL START, AND CHILLER WCI-1 SHALL OPERATE WHEN WATER FLOW IS PROVEN. ALL CHILLED WATER CONTROL VALVES FOR AHU COOLING COILS SHALL MODULATE TO MAINTAIN THEIR SET POINT TEMPERATURES. DURING THIS PERIOD OF OPERATION THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. APPROXIMATELY 1/2 HOUR BEFORE THE NORMAL OCCUPANCY PERIOD OCCURS THE DDC SYSTEM SHALL PLACE THE SYSTEM IN THE NORMAL OCCUPIED POSITION, THE OUTSIDE AIR DAMPER SHALL OPEN, INTERLOCKED EXHAUST FANS SHALL START AND THE AHU SYSTEMS AND COOLING SYSTEMS SHALL CONTINUE TO OPERATE IN THEIR NORMAL OCCUPIED SEQUENCE.

COOLING SYSTEM

THE COOLING CONTROL SEQUENCE SHALL BE INITIATED FROM THE DDC SYSTEM AS FOLLOWS: WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 13° C. AND WHEN THE CONTROL SYSTEM IS ENERGIZED CWP-1 AND CWP-2 PUMPS SHALL START, THROUGH HAND-OFF-AUTO SWITCHES (WHEN IN AUTO POSITION), AND SHALL PROVIDE FLOW TO THE SYSTEM. WHEN CHILLED WATER FLOW IS PROVEN THROUGH FLOW SWITCHES AT THE CHILLER THEN THE CHILLER CONTROLS SHALL BE ENERGIZED AND THE CHILLER SHALL OPERATE THROUGH ITS OWN SAFETY AND OPERATING CONTROLS TO MAINTAIN 7° C. DISCHARGE WATER TEMPERATURE. TEMPERATURE SENSORS LOCATED IN THE CWS AND CWR AT THE CHILLER SHALL INDICATE THE CHILLED WATER TEMPERATURES AT THE DDC SYSTEM. WHEN THE OUTSIDE AIR TEMPERATURE DROPS BELOW 13°C. THE CHILLER SYSTEM SHALL BE DEENERGIZED.

HEATING SYSTEM

THE HEATING CONTROL SEQUENCE SHALL BE INITIATED FROM THE DDC SYSTEM AS FOLLOWS: WHEN THE CONTROL SYSTEM IS ENERGIZED HWP-1 AND HWP-2 PUMPS SHALL START, THROUGH HAND-OFF-AUTO SWITCHES (WHEN IN AUTO POSITION), AND SHALL PROVIDE FLOW TO THE SYSTEM. WHEN HOT WATER FLOW IS PROVEN THROUGH FLOW SWITCHES AT THE BOILER THEN THE BOILER CONTROLS SHALL BE ENERGIZED AND THE BOILER SHALL OPERATE THROUGH ITS OWN SAFETY AND OPERATING CONTROLS TO MAINTAIN 82° C. BOILER WATER TEMPERATURE. TEMPERATURE SENSORS LOCATED IN THE HWS AND THE HWR AT THE BOILER SHALL INDICATE HEATING WATER TEMPERATURES AT THE DDC SYSTEM. THE BOILER WATER TEMPERATURE SHALL BE RESET AS INDICATED ON THE BOILER WATER RESET SCHEDULE.

BUILDING WARM-UP CYCLE (HEATING PERIOD ONLY)

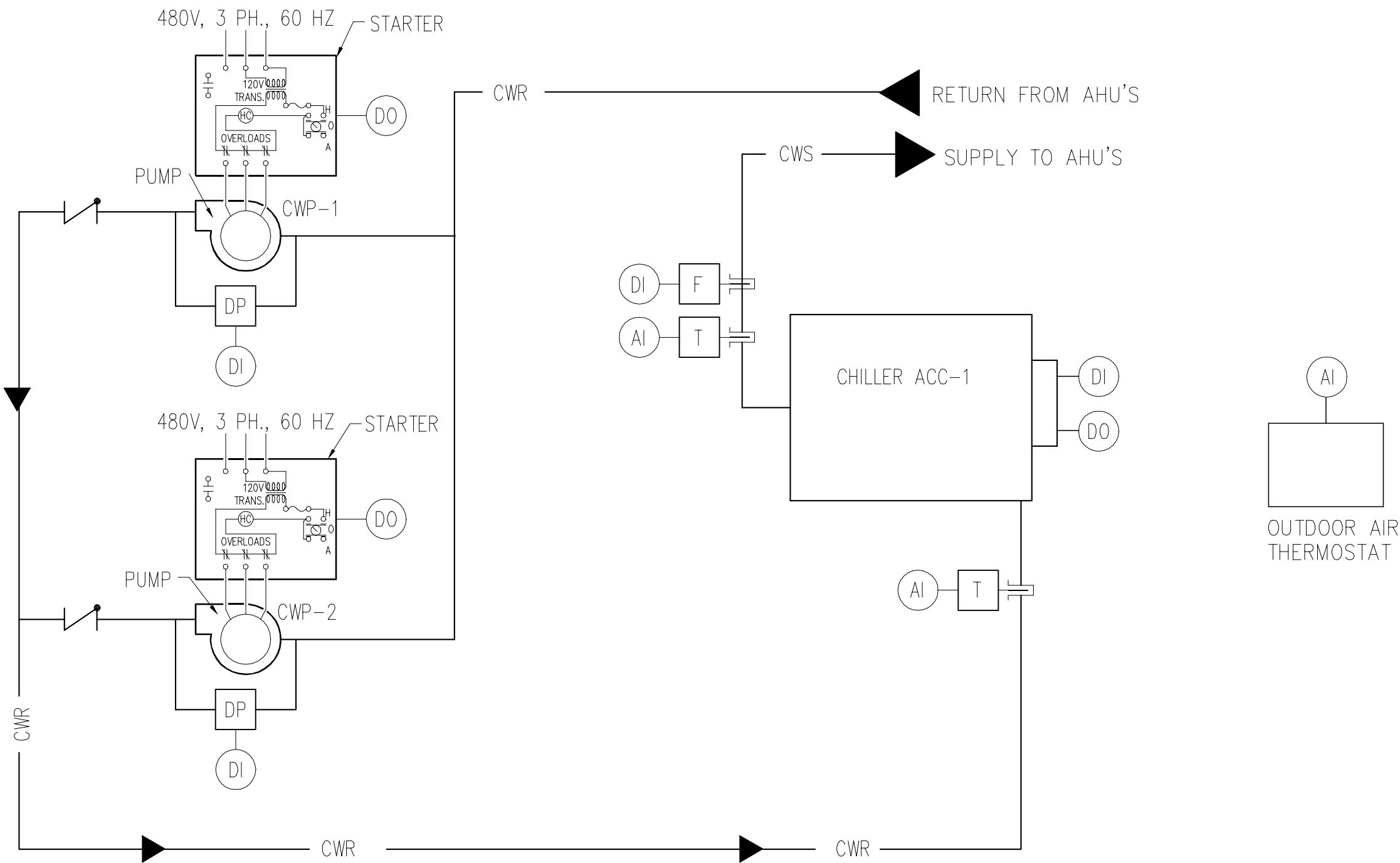
APPROXIMATELY 1-1/2 HOURS BEFORE THE NORMAL OCCUPANCY OF THE BUILDING OCCURS, THE DDC SYSTEM SHALL START THE HVAC SYSTEM AS FOLLOWS: THE RETURN DAMPER SHALL OPEN, THE AHU SUPPLY FANS SHALL START, ALL INTERLOCKED EXHAUST FANS SHALL REMAIN OFF, HWP-1 AND HWP-2 SHALL START, AND BOILER B-1 SHALL OPERATE WHEN WATER FLOW IS PROVEN. ALL H.W. CONTROL VALVES FOR TERMINAL UNIT COILS SHALL MODULATE TO MAINTAIN THEIR OCCUPIED SET POINT TEMPERATURES. DURING THIS PERIOD OF OPERATION THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. APPROXIMATELY 1/2 HOUR BEFORE THE NORMAL OCCUPANCY PERIOD OCCURS THE DDC SYSTEM SHALL PLACE THE SYSTEM IN THE NORMAL OCCUPIED POSITION, THE OUTSIDE AIR DAMPER SHALL OPEN, INTERLOCKED EXHAUST FANS SHALL START AND THE AHU SYSTEMS AND HEATING SYSTEMS SHALL CONTINUE TO OPERATE IN THEIR NORMAL OCCUPIED SEQUENCE.

TIMED OVERRIDE CYCLE

EACH TERMINAL UNIT THERMOSTAT (TU TSTAT) SHALL BE CAPABLE OF OVERRIDING THE SYSTEM "OFF" CYCLE TO PROVIDE PERIODS OF SYSTEM OVERRIDE OPERATION. THE TU S'TAT SHALL OVERRIDE THE OPERATION OF THE DDC SYSTEM "OFF" PERIOD, WHEN THE DDC SYSTEM HAS THE SYSTEM OFF FOR UNOCCUPIED PERIODS. THE TU S'TAT SHALL HAVE THE CAPABILITY TO OPERATE FOR A MAXIMUM PERIOD OF 4 HOURS (ADJUSTABLE FROM THE CENTRAL PROCESSOR). WHEN THE TU S'TAT IS MANUALLY SET THE ASSOCIATED AHU SHALL START IN ITS NORMAL START SEQUENCE, AND THE HEATING AND/OR COOLING SYSTEMS SHALL START AND OPERATE IN ITS NORMAL OPERATING SEQUENCE. WHEN THE TU S'TAT TIME HAS EXPIRED THE AHU AND HEATING AND/OR COOLING SYSTEMS SHALL STOP AND RETURN TO THE NORMAL UNOCCUPIED SEQUENCE.

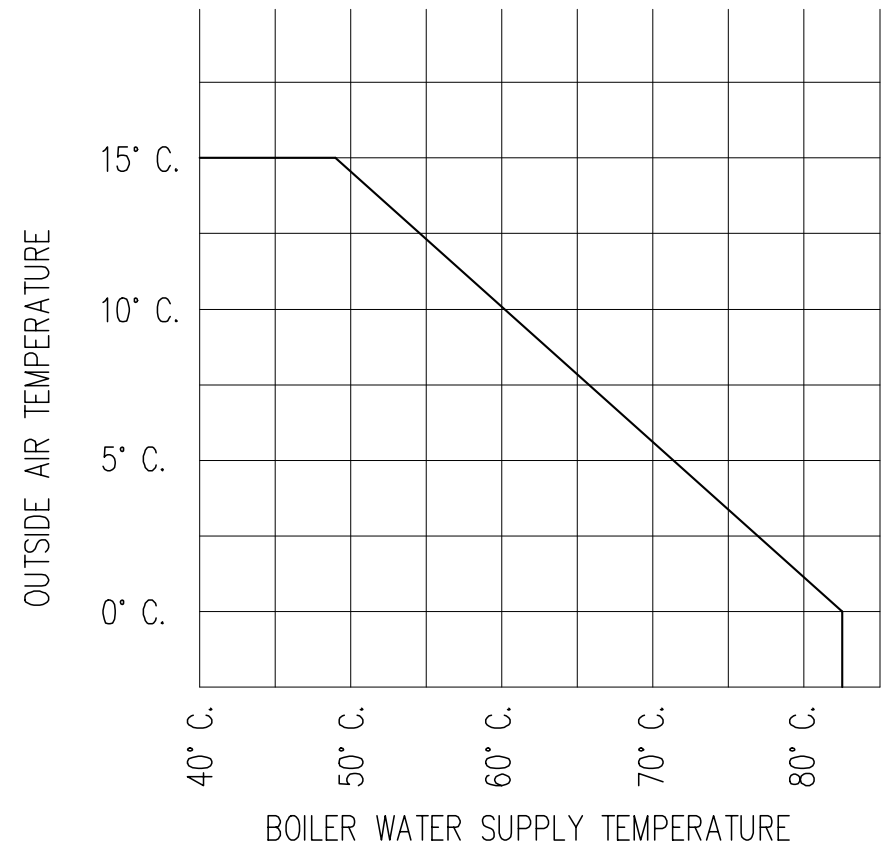
MEDICAL GAS ALARMS

THE MEDICAL GAS SYSTEMS SHALL CONSIST OF "ORAL EVACUATION (DENTAL VACUUM)", AND "DENTAL COMPRESSED AIR". A PRESSURE SENSOR SHALL SIGNAL THE DDC SYSTEM TO THE OPERATING PRESSURES OF EACH MEDICAL GAS SYSTEMS. HIGH PRESSURE AND LOW PRESSURES SHALL INITIATE AN ALARM TO THE DDC SYSTEM.

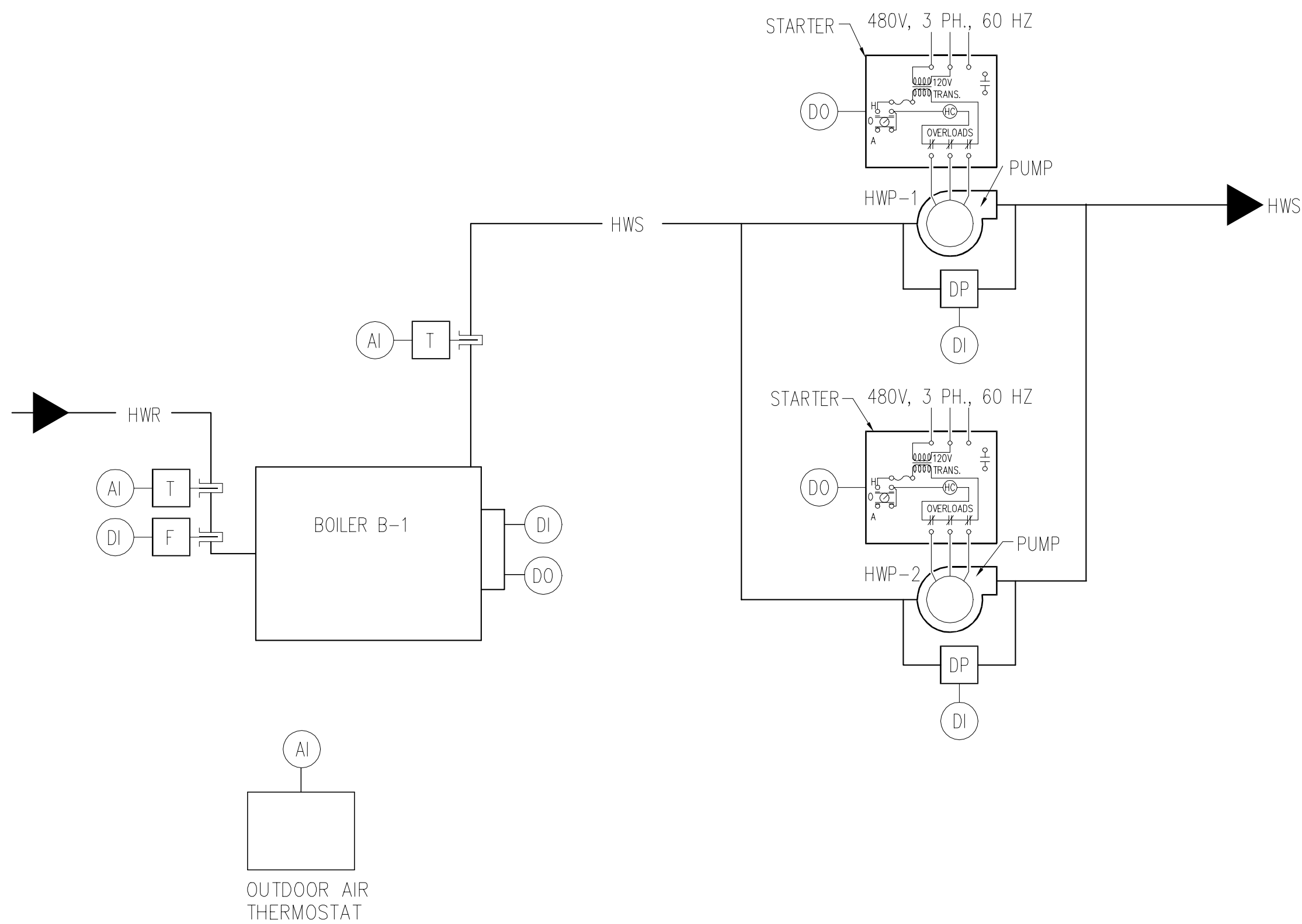


COOLING SYSTEM CONTROL DIAGRAM

DDC POINTS LIST							
	HARDWARE						SOFTWARE ALARMS
	INPUT			OUTPUT			
	DIGITAL	ANALOG		DIGITAL	ANALOG		
COOLING SYSTEM	STATUS						
	TEMPERATURE						
	START-STOP						
	OPEN-CLOSE						
	CONTROL						
CHILLER ACC-1 SUPPLY TEMP.			■				■
CHILLER ACC-1 RETURN TEMP.			■				
CHILLER ACC-1	■				■		■
CHILLED WATER FLOW	■						■
PUMP CWP-1					■		■
PUMP CWP-2	■				■		■
OUTDOOR AIR THERMOSTAT			■				



BOILER WATER TEMPERATURE RESET SCHEDULE



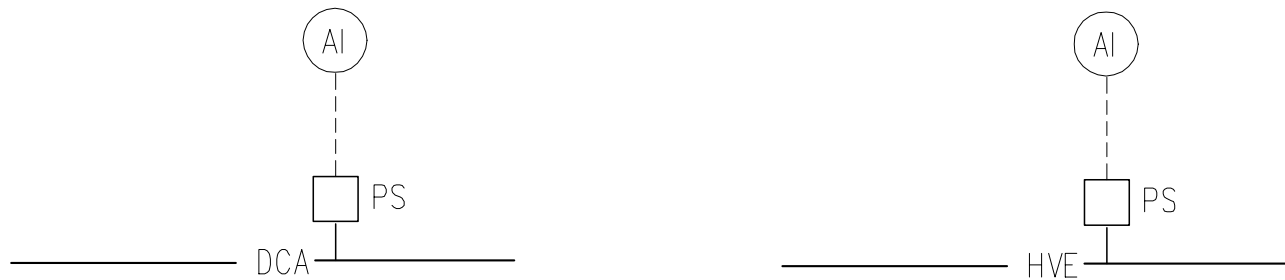
HEATING SYSTEM CONTROL DIAGRAM

NO SCALE:

	HARDWARE				SOFTWARE ALARMS	
	INPUT		OUTPUT			
	DIGITAL	ANALOG	DIGITAL	ANALOG		
HEATING SYSTEM	STATUS	TEMPERATURE	START-STOP	OPEN-CLOSE	CONTROL	
BOILER B-1 SUPPLY TEMP.		■				■
BOILER B-1 RETURN TEMP.		■				
BOILER B-1	■		■			■
BOILER B-1 FLOW						■
PUMP HWP-1	■		■			■
PUMP HWP-2	■		■			■
OUTDOOR AIR THERMOSTAT		■				

		HARDWARE				SOFTWARE ALARMS		
		INPUT		OUTPUT				
		DIGITAL	ANALOG	DIGITAL	ANALOG			
		STATUS	PRESSURE	START-STOP	OPEN-CLOSE		CONTROL	
MEDICAL GAS SYSTEMS								
DENTAL COMPRESSED AIR			■					■
ORAL EVACUATION			■					■

NOTE:  
PRESSURE SENSORS FOR EACH MEDICAL GAS SYSTEM INDICATED ABOVE SHALL BE PROVIDED UNDER THIS SECTION AND TURNED OVER TO THE MEDICAL GAS SYSTEM INSTALLATION CONTRACTOR FOR INSTALLATION IN THE PIPING SYSTEM. THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL OTHER CONTROL COMPONENTS FROM THIS PRESSURE SENSOR TO THE DDC SYSTEM.



DENTAL COMPRESSED AIR SYSTEM

ORAL EVACUATION

MEDICAL GAS SYSTEM CONTROLS

NO SCALE:

IF SHEET IS LESS THAN 28"x42", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

MEDICAL/DENTAL CLINIC

CONTROL  
DIAGRAMS

SIZE	CODE IDENT. NO.	DRAWING NO.
F	XXXXX	8144755
CONST. CONTR. NO.		
SCALE: AS SHOWN	SPEC. 11996048	SHEET 250 OF 316