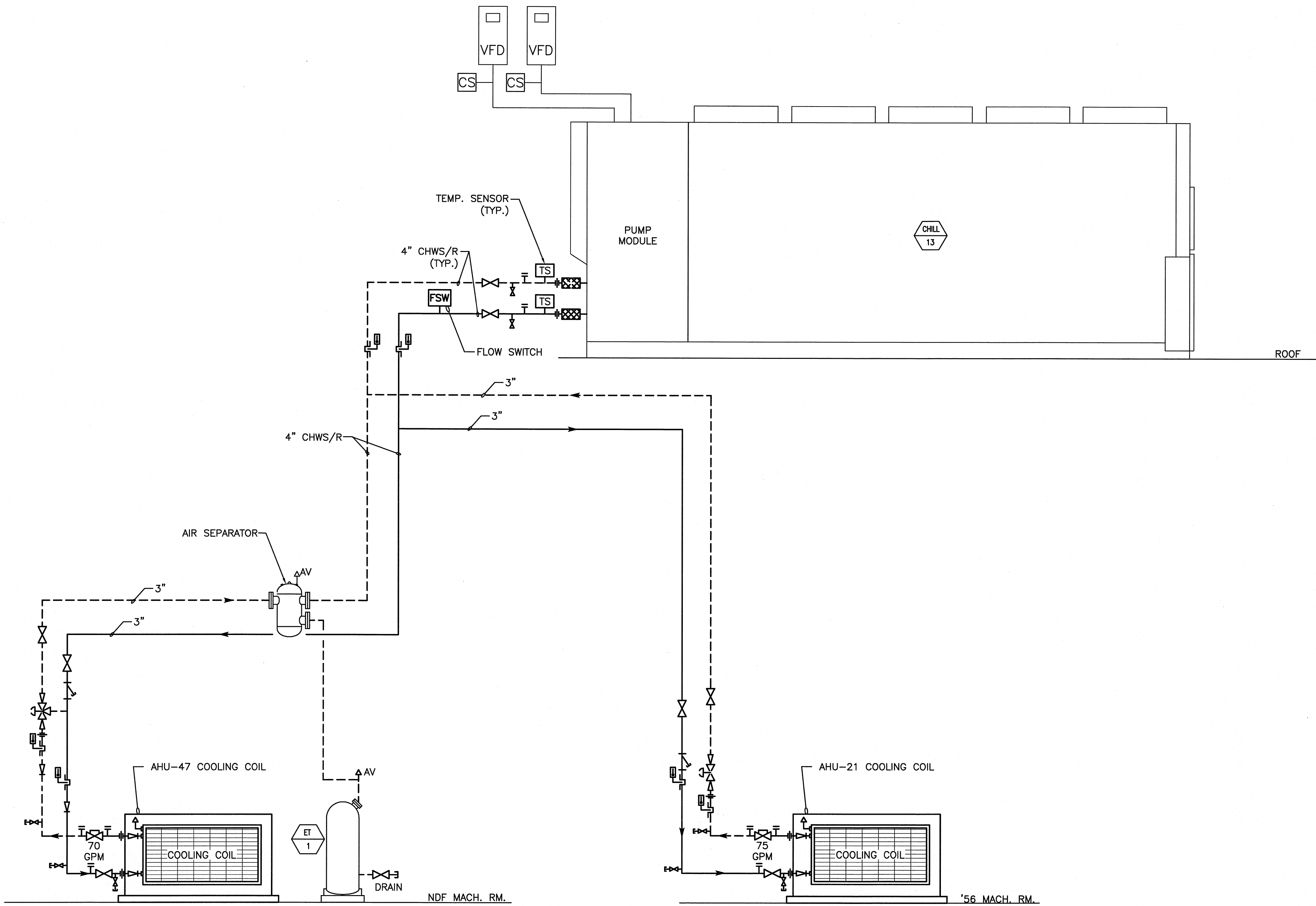


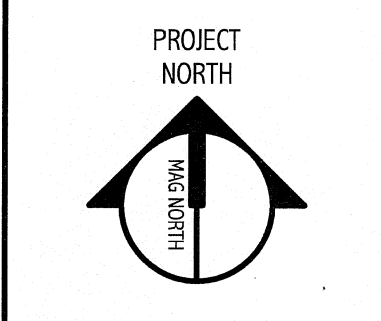
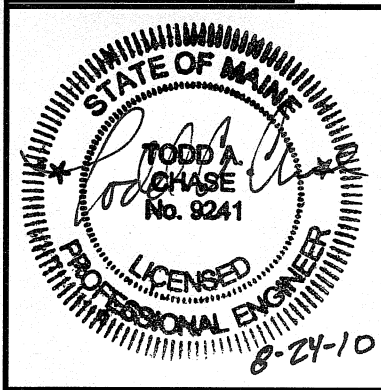
**SEQUENCE OF OPERATION:**

- A. GENERAL: UPON A CALL FOR COOLING SYSTEM CONTROL WILL SEND AN ENABLE SIGNAL TO THE CHILLER CONTROLLER. UPON RECEIVING THE ENABLE SIGNAL THE CHILLER SHALL CALL FOR THE LEAD CHILLED WATER PUMP OPERATION VIA A BINARY OUTPUT. UPON CONFIRMATION OF CHILLED WATER FLOW THE CHILLER SHALL BE ENERGIZED. WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 55°F, THE CHILLER PLANT SHALL BE DISABLED.
- B. THE SYSTEM SETPOINT SHALL BE 44 DEGREES F (ADJ). THE CHILLER CONTROLLER SHALL CONTROL CHILLER SETPOINTS TO MAINTAIN THE SYSTEM SUPPLY WATER TEMPERATURE AT SETPOINT.
- C. THE CHILLER CONTROLLER SHALL NOT SHUTDOWN PUMPS UNTIL THE CHILLER IS PROVEN OFF.
- D. UPON SENSING A CHILLER MODULE ALARM THE CHILLER SEQUENCING SOFTWARE SHALL LOCKOUT THAT MODULE AND LOG AN ALARM AT THE USER WORKSTATION.
- E. CHILLER LEAD/LAG COMPRESSOR SEQUENCING: THE CHILLER CONTROLLER SHALL HAVE THE CAPABILITY OF SEQUENCING THE CHILLER COMPRESSORS. ROTATION SHALL BE INITIATED BASED ON AN OPERATOR ENTERED DAY INTERVAL.
- H. THE CHILLED WATER PUMPS, CWP-1 AND CWP-2 SHALL OPERATE SUBJECT TO DIFFERENTIAL PRESSURE SENSOR DP-1. AS THE BYPASS VALVE OR INDIVIDUAL COIL CONTROL VALVE OPENS THE PUMP SHALL BE RAMPED UP TO MAINTAIN THE DIFFERENTIAL PRESSURE ACROSS THE CHILLER. PROVIDE LEAD/LAG PUMP AUTOMATIC SWITCHOVER ON A 7-DAY INTERVAL AND ALARM FOR PUMP FAILURE.
- I. CHILLER SOFT START - THE CHILLER SEQUENCING SOFTWARE WILL PROVIDE A USER ADJUSTABLE LOADING TIME AT SYSTEM START-UP. THIS LIMITS SYSTEM ELECTRICAL DEMAND DURING CHILLED WATER LOOP PULLDOWN.
- K. THE FOLLOWING POINTS SHALL BE MONITORED AND VISIBLE THROUGH CONTROL SYSTEM GRAPHICS:
  - 1. PROVIDE MONITORING OF ALL POINTS AVAILABLE AT THE CHILLER CONTROL PANEL. A COMMUNICATION GATEWAY SHALL BE PROVIDED WITH THE CHILLERS IF NECESSARY.
  - 2. CHILLER SYSTEM STATUS AND OUTSIDE AIR TEMPERATURE.
  - 3. LEAD CHILLED WATER PUMP STATUS.
  - 4. LAG CHILLED WATER PUMP STATUS.
  - 5. LEAD CHILLED WATER PUMP VFD SPEED.
  - 6. LAG CHILLED WATER PUMP VFD SPEED.
  - 7. MINIMUM PRESSURE DIFFERENTIAL SETPOINT AND ACTUAL READING.
  - 8. CHILLED WATER SUPPLY TEMPERATURE.
  - 9. CHILLED WATER RETURN TEMPERATURE.
- L. THE FOLLOWING POINTS SHALL BE ALARMED AT THE USER WORKSTATION:
  - 1. IF THE CHILLED WATER SYSTEM IS ENABLED AND FAILS TO OPERATE.
  - 2. IF THE LEAD CHILLED WATER PUMP IS ENABLED AND FAILS TO OPERATE.
  - 3. IF THE LAG CHILLED WATER PUMP IS ENABLED AND FAILS TO OPERATE.
  - 4. IF THE CHILLED WATER TEMPERATURE DROPS BELOW 42F OR ABOVE 46F FOR MORE THAN 5 MINUTES.



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ISSUED FOR CONSTRUCTION  
8.24.10

CURRENT ISSUE STATUS:

DATE	DESCRIPTION	REV
8.24.10	ISSUED FOR CONSTRUCTION	0

GRAPHIC SCALE:  
0" 1"

SCALE: NOT TO SCALE  
PROJECT MANAGER: DW  
IC/DRAWN BY: KPB  
A/E OF RECORD: TAC  
PROJECT NO: 09022-01  
DATE: 8.24.10

SHEET TITLE:  
SEQUENCE OF OPERATION

SHEET No.  
M-652