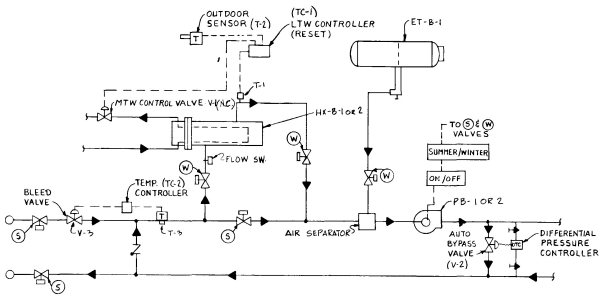
TEMPERATURE RESET SCHEDULE	
O.A.	LTW
15	180
60	75



CONTROL DIAGRAM FOR DUAL TEMP. SYSTEM

NO SCALE

NOTES:

SEQUENCE OF OPERATION

GENERAL

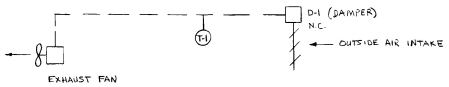
THE PUMP SHALL OPERATE THROUGH AN OFF/ON SWITCH. CONTROLS SHALL BE ENERGIZED AS INDICATED BELOW. THE SUMMER/WINTER SWITCH USED FOR AUH-B-1 OR 2 SHALL OPERATE (S) AND (W) VALVES AS INDICATED ON SYSTEM FLOW DIAGRAM SHT. M-6.

WINTER

FLOW TO HX-B SHALL ENERGIZE MTW CONTROL VALVE (V-1) THROUGH FLOW SWITCH. HOT WATER SUPPLY TEMPERATURE CONTROLLER (TC-1), RESET BY OUTSIDE AIR SENSOR (T-2), SHALL CONTROL VALVE (V-1) ON MTW RETURN LINE TO MAINTAIN SETTING OF SUPPLY TEMPERATURE (T-1) AS PER SCHEDULE. THE AUTO BYPASS VALVE (V-2) SHALL MODULATE OPEN THROUGH THE DIFFERENTIAL PRESSURE CONTROLLER IN ORDER TO MAINTAIN THE SUPPLY AND RETURN LINE DIFFERENTIAL PRESSURE

SUMMER

NO FLOW TO HX-B SHALL DEENERGIZE V-1. BLEED VALVE (V-3) SHALL MODULATE CHILLED WATER SUPPLY THROUGH TEMP CONTROLL (TC-2) SO AS TO MAINTAIN THE THERMOSTAT SETTING (T-3) OF 48°F. THE AUTOMATIC BYPASS VALVE (V-2) SHALL MODULATE OPEN THROUGH THE DIFFERENTIAL PRESSURE CONTROLLER IN ORDER TO MAINTAIN THE SUPPLY AND RETURN DIFFERENTIAL PRESSURE.



CONTROL DIAGRAM - STORAGE RM VENTILATION - WITH & WITHOUT DAMPER (D-1)

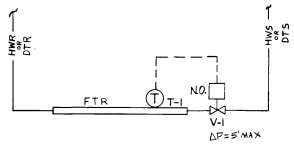
SCALE: NONE

SEQUENCE OF OPERATION

GENERAL: THE EXHAUST FAN SHALL BE CYCLED THROUGH THE ROOM THERMOSTAT T-1.

SUMMER/WINTER CYCLE W/ DAMPER: WHEN THE SPACE TEMPERATURE RISES ABOVE THE 90°F SET POINT OF THE ROOM THERMOSTAT T-1, THE EXHAUST FAN SHALL BE ENERGIZED AND THE TWO-POSITIONED MOTORIZED DAMPER (D-1) SHALL BE INTERLOCKED TO OPEN WHEN THE EXHAUST FAN IS ENERGIZED.

SUMMER/WINTER CICLE WO DAMPER: WHEN THE SPACE TEMPERATURE RISES ABOVE THE 90°F SET POINT OF THE ROOM THERMOSTAT T-1, THE EXHAUST FAN SHALL BE ENERGIZED.

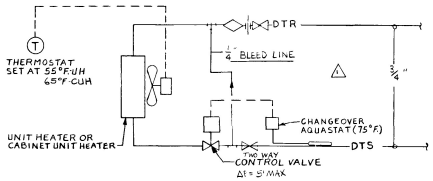


CONTROL DIAGRAM FOR FINNED TUBE RADIATORS

SCALE: NONE

SEQUENCE OF CONTROL

SPACE TEMPERATURE SHALL BE MAINTAINED AUTOMATICALLY BY CONTROLLING THE VALVE V-1 ON AND OFF BY MEANS OF A SELF CONTAINED THERMOSTAT T-1. WHEN THE SPACE TEMPERATURE DROPS BELOW THE 68°F. SET POINT OF THE ROOM THERMOSTAT, VALVE V-1 SHALL OPEN TO ALLOW HOT WATER FLOW THRU FINNED TUBE RADIATOR. REVERSE ACTION SHALL TAKE PLACE WHEN THE TEMPERATURE RISES ABOVE SET POINT.



CONTROL DIAGRAM FOR UNIT HEATERS

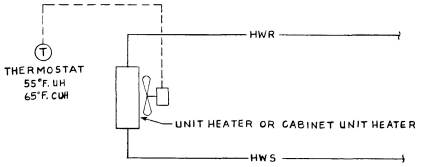
TYPICAL FOR BARRACKS

SCALE: NONE

SEQUENCE OF CONTROL

SPACE TEMPERATURE SHALL BE MAINTAINED AUTOMATICALLY BY STOPPING AND STARTING THE HEATER FAN BY MEANS OF A THERMOSTAT THROUGH A PIPE SURFACE MOUNTED AQUASTAT IN SERIES WITH THE HEATER FAN. WHEN THE WATER TEMPERATURE RISES ABOVE THE 75°F. SET POINT OF THE AQUASTAT, TWO WAY CONTROL VALVE SHALL OPEN. REVERSE ACTION SHALL TAKE PLACE WHEN THE WATER TEMPERATURE DROPS 75°F. OR BELOW.

WHEN THE SPACE TEMPERATURE DROPS BELOW THE SET POINT OF THE THERMOSTAT THE HEATER FAN SHALL BE ENERGIZED AND REVERSE ACTION SHALL TAKE PLACE WHEN THE SPACE TEMPERATURE RISES ABOVE THE SET POINT.



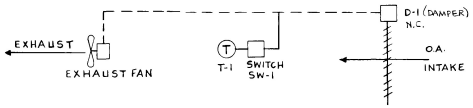
CONTROL DIAGRAM FOR UNIT HEATERS

TYP. FOR ADMIN. & HEADQUARTER BUILDINGS

SCALE: NONE

SEQUENCE OF OPERATION

SPACE TEMPERATURES SHALL BE MAINTAINED AUTOMATICALLY BY STOPPING AND STARTING THE HEATER FAN BY MEANS OF A THERMOSTAT. WHEN THE SPACE TEMPERATURE DROPS BELOW THE SET POINT OF THE THERMOSTAT, THE HEATER FAN SHALL BE ENERGIZED AND REVERSE ACTION SHALL TAKE PLACE WHEN THE SPACE TEMPERATURE RISES ABOVE SET TEMPERATURE.



MECHANICAL EQUIPMENT ROOM VENTILATION

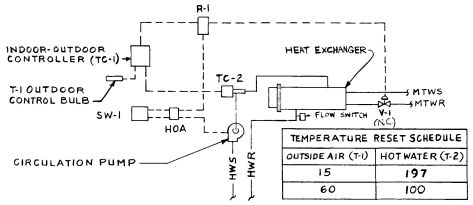
SCALE: NONE

SEQUENCE OF CONTROL

GENERAL: THE EXHAUST FAN SHALL BE CYCLED THROUGH THE ROOM THERMOSTAT T-1.

SUMMER VENTILATION CYCLE: SWITCH SW-1 SHALL BE IN THE SUMMER POSITION. WHEN THE SPACE TEMPERATURE RISES ABOVE THE 90°F. SET POINT OF THE ROOM THERMOSTAT T-1, THE EXHAUST FAN SHALL BE ENERGIZED AND THE TWO-POSITION MOTORIZED DAMPER D-1 SHALL BE INTERLOCKED TO OPEN WHEN THE EXHAUST FAN IS ENERGIZED. THE EXHAUST FAN SHALL RUN AT HIGH SPEED. WHEN THE SPACE TEMPERATURE DROPS BELOW THE THERMOSTAT SET POINT, THE FAN SHALL BE STOPPED AND DAMPERS CLOSED.

WINTER VENTILATION CYCLE: SWITCH SW-1 SHALL BE IN THE WINTER POSITION. THE REST OF CONTROL IS SAME AS SUMMER CYCLE EXCEPT THE EXHAUST FAN SHALL RUN AT LOW SPEED AND THERMOSTAT SET POINT IS 90°F.



TEMPERATURE RESET SCHEDULE	
OUTSIDE AIR (T-1)	HOT WATER (T-2)
15	197
60	100

CONTROL DIAGRAM FOR HEAT EXCHANGER - HQ & ADMIN

SCALE: NONE

SEQUENCE OF OPERATION

HOT WATER SYSTEM SHALL BE PLACED IN OPERATION THROUGH INDOOR-OUTDOOR CONTROLLER (TC-1) ONLY WHEN OUTSIDE AIR TEMPERATURE (T-1) REACHES 60°F OR BELOW.

HOT WATER SUPPLY TEMPERATURE CONTROLLER TC-2, RESET BY OUTSIDE AIR CONTROLLER TC-1, SHALL CONTROL VALVE V-1 ON MTW RETURN LINE. TEMPERATURE CONTROLLER TC-1, SHALL STOP CIRCULATION PUMP ABOVE 60°F. MTW RETURN VALVE V-1 SHALL CLOSE WHEN CIRCULATING PUMP STOPS. REVERSE ACTION SHALL TAKE PLACE ON PUMP AND VALVE WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW SET POINT.

SUMMER WINTER CHANGEOVER SWITCH SHALL OVERRIDE NORMAL AUTOMATIC CHANGEOVER CONTROL.

FLOW TO HEAT EXCHANGER SHALL ENERGIZE MTW VALVE (V-1) THROUGH FLOW SWITCH.

REV	DATE	DESCRIPTION	BY
2	MAY 90	REVISED AS BUILT	
1	24 FEB 89	REVISED PER MOD P00009	

US Army Corps of Engineers

U.S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
BALTIMORE, MARYLAND

ABERDEEN PROVING GROUND MARYLAND

ENLISTED BARRACKS PHASE IV

CONTROL DIAGRAMS

DRAWING NUMBER F-721-90-12 PLATE 129

SCALE: AS SHOWN DATE: 5 FEB 1987 SHEET M-13

41834