



GENERAL SHEET NOTES

- A. FOR LEGEND, SYMBOLS AND ABBREVIATIONS SEE SHEET M-001 & M-002
- B. DUCTWORK, PIPING AND CONTROLS TO BE FIELD ROUTED AND COORDINATED WITH EXISTING OBSTRUCTIONS BY CONTRACTOR.

SHEET KEYNOTES

- FIELD ROUTE TO ACTIVE CP-3 CONDENSATE PUMP RECEIVER HEADER AND CONNECT
- FIELD CONNECTION TO UTILITY PIPING
- UTILITY PIPING UP TO AHU-17
- UTILITY PIPING UP TO AHU-28A-01
- FIELD ROUTE 2" CONDENSATE DRAIN SLOPED TO NEAREST FLOOR DRAIN
- PROVIDE PIPE SLEEVE AND FIRE RATED PENETRATION EXITING MECHANICAL ROOM (TYP)
- CORE DRILL SLAB FOR PIPING. DO NOT EXCEED 8" DIAMETER OPENING, WITH MINIMUM 12" CLEAR BETWEEN OPENINGS.

SA	APPR
10-30-17	DATE
ISSUE FOR BID & CONSTRUCTION	SYN
0	DESCRIPTION



**CH2MHILL**  
6600 Peachtree Dunwoody  
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Atlanta, GA 30328

**CLARK NEXSEN**  
Architecture & Engineering

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE OCT 2017

DES DKL DRW CAH CHK CTJ

BRANCH MANAGER

CHIEF ENGINEER XXX

NAVFACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND

CAMP LEJEUNE NORTH CAROLINA

CAMP LEJEUNE NORTH CAROLINA

MCLB CAMP LEJEUNE NH100 RENOVATION

OF STERILE PROCESSING AREA

MECHANICAL PIPING SECTIONS

SCALE: 1/2"=1'-0"

PROJECT NO: XXXXXXX

CONSTR. CONTR. NO. N62583-11-D-0533, Task Order WE30

NAVFAC DRAWING NO. 60020926

SHEET 55 OF 86

**MP301**

DRAWING REVISOR: 10 MARCH 2009











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PLOT DATE: 03/18/2014  
PLOT TIME: 6:04 PM

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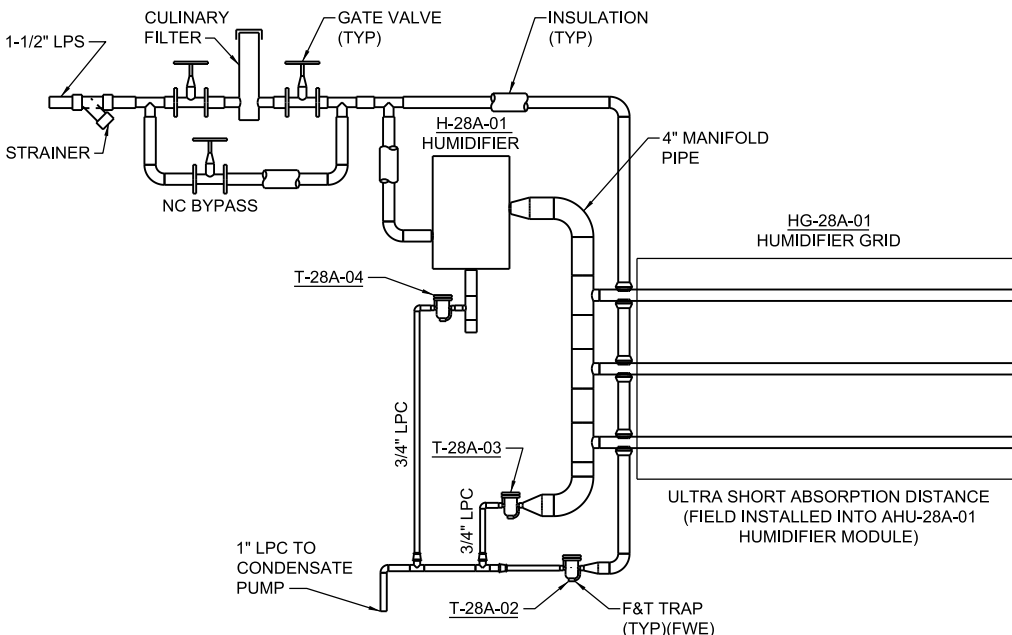
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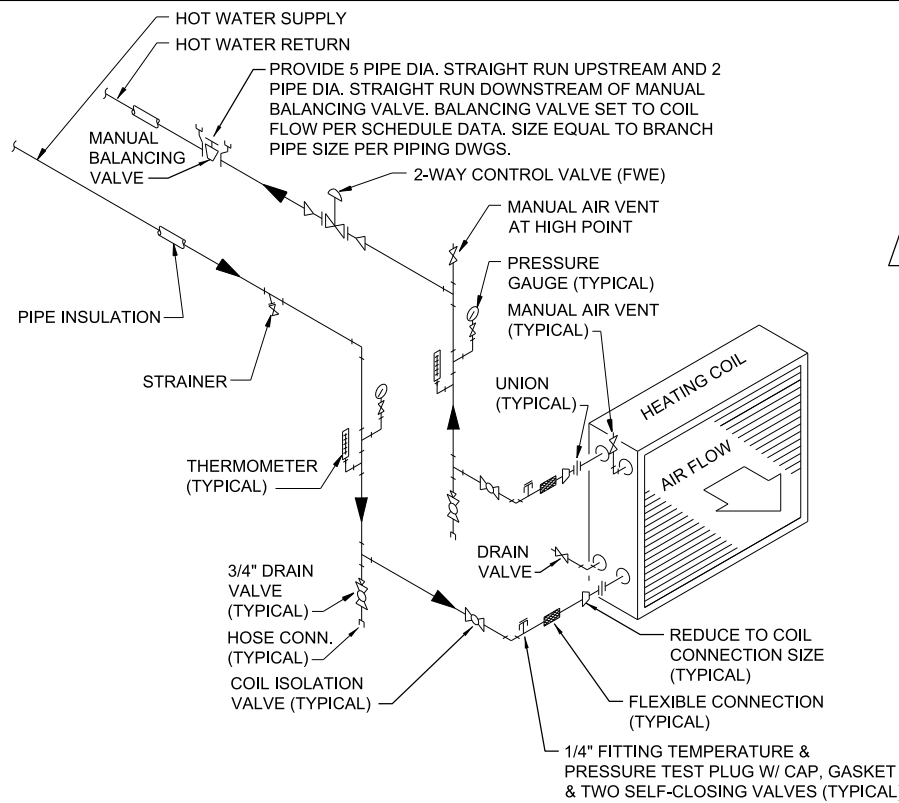
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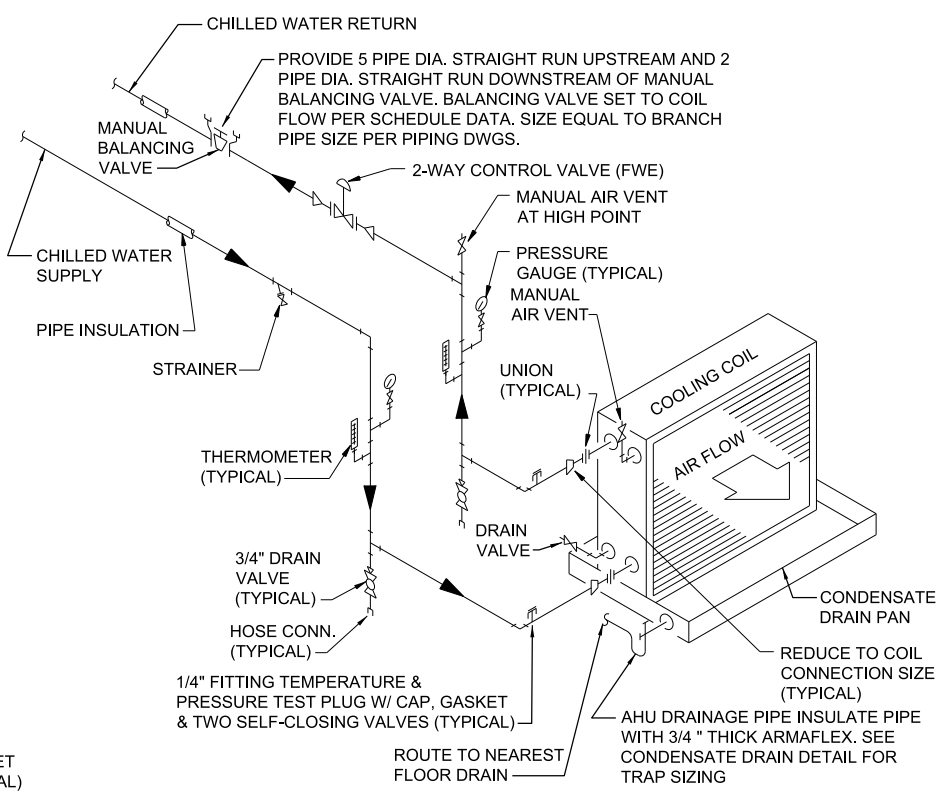
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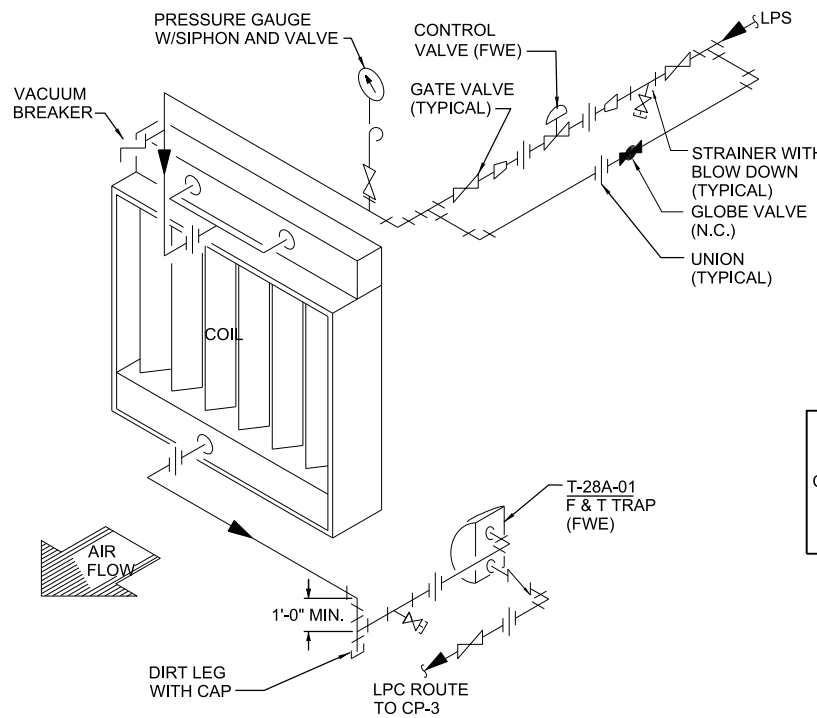
**C1 HUMIDIFIER DETAIL**  
NONE  
M-401, MP302



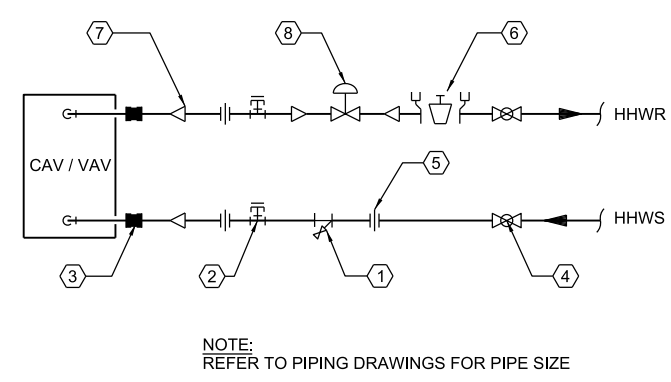
**C3 HEATING COIL DETAIL**  
NONE  
M-402  
MP302 GLYCOL HDC COIL  
MP301 SIMILAR



**C4 COOLING COIL DETAIL**  
NONE  
MP302



**A1 STEAM IFB HEATING COIL DETAIL**  
NONE  
M-401, MP302

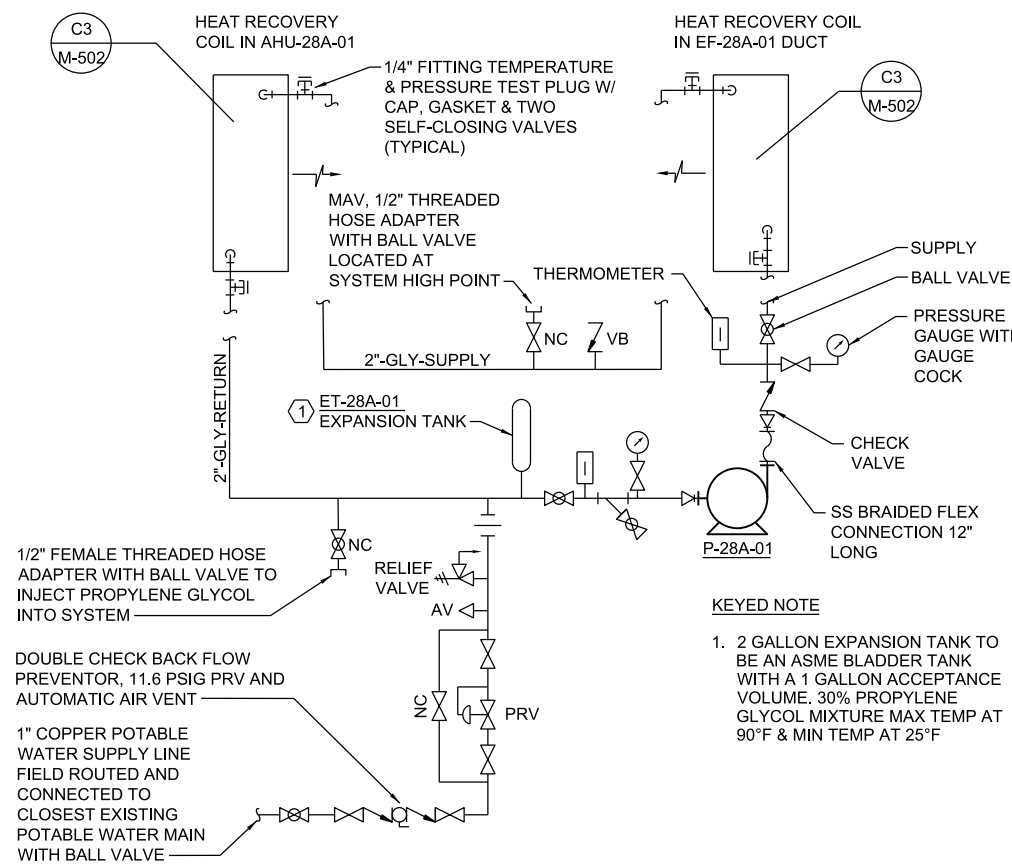


**A3 CAV / VAV REHEAT COIL CONNECTION DETAIL**  
NTS  
MP111  
MP112  
MP114

**KEYED NOTES**

1. STRAINER WITH BLOWDOWN VALVE
2. 1/4" FITTING TEMPERATURE & PRESSURE TEST PLUG W/ CAP, GASKET & TWO SELF-CLOSING VALVES (TYPICAL)
3. SS BRAIDED 12" LONG FLEX CONNECTION
4. BALL VALVE
5. COUPLING
6. MANUAL BALANCING VALVE SET TO SET TO COIL FLOW PER SCHEDULE DATA. SIZE EQUAL TO BRANCH PIPE SIZE PER PIPING DWGS.
7. TRANSITION TO CAV/VAV CONNECTION SIZE
8. CONTROL VALVE (FWE)

NOTE:  
REFER TO PIPING DRAWINGS FOR PIPE SIZE



**A4 HEAT RECOVERY SYSTEM DETAIL**  
NTS  
MP302

**KEYED NOTE**

1. 2 GALLON EXPANSION TANK TO BE AN ASME BLADDER TANK WITH A 1 GALLON ACCEPTANCE VOLUME. 30% PROPYLENE GLYCOL MIXTURE MAX TEMP AT 90°F & MIN TEMP AT 25°F

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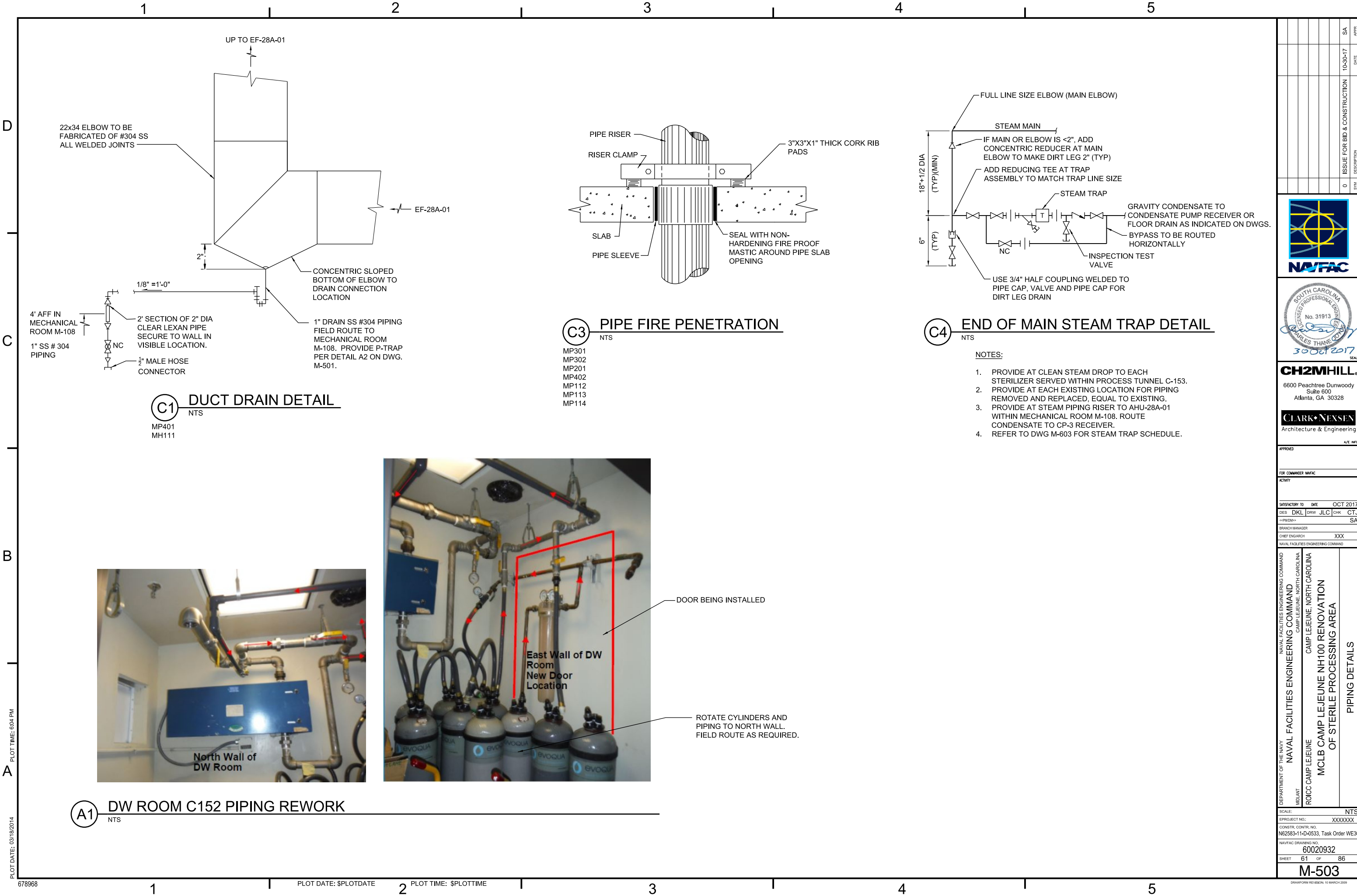
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FOR COMMANDER NAVFAC  
ACTIVITY: \_\_\_\_\_

SATISFACTORY TO: \_\_\_\_\_ DATE: OCT 2017  
DES: DKL | DRW: JLC | CHK: CTJ  
BRANCH MANAGER: XXX  
CHIEF ENGINEER: XXX  
NAVFAC FACILITIES ENGINEERING COMMAND

NAVFAC FACILITIES ENGINEERING COMMAND  
CAMP LEJEUNE NORTH CAROLINA  
CAMP LEJEUNE NORTH CAROLINA  
MCLB CAMP LEJEUNE NH100 RENOVATION  
OF STERILE PROCESSING AREA

SCALE: NTS  
PROJECT NO: XXXXXXX  
CONSTR. CONTR. NO: N62583-11-D-0533, Task Order WE30  
NAVFAC DRAWING NO: 60020931  
SHEET 60 OF 86  
**M-502**  
DRAWING REVISOR: 10 MARCH 2009



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DES DKL DRW JLC CHK CTJ  
BRANCH MANAGER  
CHIEF ENGINEER XXX  
NAVAL FACILITIES ENGINEERING COMMAND

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
CAMP LEJEUNE NORTH CAROLINA  
MCLB CAMP LEJEUNE  
MCLB CAMP LEJEUNE NH100 RENOVATION  
OF STERILE PROCESSING AREA  
PIPING DETAILS

SCALE: NTS  
EPROJECT NO: XXXXXXX  
CONSTR. CONTR. NO. N62583-11-D-0533, Task Order WE30  
NAVFAC DRAWING NO. 60020932  
SHEET 61 OF 86  
**M-503**  
DRAWING REVISOR: 10 MARCH 2009

















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CONSTANT VOLUME AIR HANDLING UNIT (AHU-28A-01) SEQUENCE OF OPERATION

1.

SUPPLY FAN (SAF-28A-01) HAND-OFF-AUTO (HOA) OPERATION: AN HOA SWITCH SHALL BE PROVIDED AS PART OF THE VFD FOR THE FAN. WHEN IN THE HAND MODE, THE FAN SHALL BE STARTED, IN THE OFF MODE THE FAN SHALL BE OFF. IN THE AUTO MODE, THE FAN SHALL BE STARTED AND STOPPED THRU THE EMCS. A POWER FAIL RESTART TIME DELAY WILL BE PROVIDE FOR THE VFD IN BOTH THE HAND AND AUTO MODES, TO STAGGER THE RESTART OF EACH UNIT AFTER A POWER FAILURE TO PREVENT CREATING A SPIKE IN THE ELECTRICAL DEMAND UPON ACTIVATION, SAFETIES SHALL STOP THE SUPPLY FAN IN THE HAND AND AUTO MODES.

2.

EXHAUST FAN (EF-28A-01) HAND-OFF-AUTO (HOA) OPERATION: AN HOA SWITCH SHALL BE PROVIDED AS PART OF THE VFD FOR THE FAN, WHEN IN THE HAND MODE, THE FAN SHALL BE STARTED, IN THE OFF MODE, THE FAN SHALL BE OFF, IN THE AUTO MODE, THE FAN SHALL BE STARTED AND STOPPED THROUGH THE EMCS. SAFETIES SHALL STOP THE EXHAUST FAN IN THE HAND AND AUTO MODE.

3.

SUPPLY FAN AUTOMATIC MODE START/STOP CONTROL: WHEN THE UNIT IS STARTED, A COMMAND SHALL BE SENT TO THE FAN'S VFD CAUSING THE SUPPLY FAN TO START, WHEN THE EMCS SENDS A STOP SIGNAL TO THE FAN VFD THE FAN SHALL STOP. IN THE EVENT THAT THE UNIT SHOULD FAIL, THE BAS SHALL SEND A STOP SIGNAL TO THE FAN VFD STARTER AND GENERATE AN ALARM AT THE OWS.

a. SCHEDULE START: AT THE SCHEDULED OCCUPANCY TIME THE UNIT SHALL START AND RUN IN THE OCCUPIED MODE.

4.

EXHAUST FAN AUTOMATIC MODE START/STOP CONTROL: WHEN THE SUPPLY FAN IS OFF, THE ASSOCIATED EXHAUST FAN SHALL BE OFF. WHEN THE SUPPLY FAN IS ON, THE EXHAUST FAN SHALL BE STARTED BY THE EMCS. FAN SPEED SHALL BE VARIED TO ASSURE 7,520 CFM IS EXHAUSTED BASED ON SUMMARIZING THE AMS-EXH STATIONS.

5.

STEAM IFB PRE-HEAT COIL VALVE CONTROL(PHC-28A-01): WHEN THE UNIT STATUS IS OFF, THE PRE-HEAT VALVE SHALL BE CLOSED. WHEN THE UNIT STATUS IS ON, THE PRE-HEAT STEAM VALVE SHALL BE CONTROLLED AS DESCRIBED AS DESCRIBED BELOW

a. THE STEAM PHC IS FOR EMERGENCY USE ONLY, IF THE HEAT RECOVERY SYSTEM FAILS, IS MANUALLY TURNED OFF, OR IF THE HRC IS NOT ABLE TO REACH SET POINT AND THE OUTSIDE ARE TEMPERATURE FALLS BELOW 50 F (ADJUSTABLE). THE STEAM PHC SHALL BE ENABLED.

b. THE EMCS SHALL OPEN FULLY THE PRE-HEAT STEAM VALVE OUTSIDE AIR TEMPERATURE FALLS BELOW 50°F(ADJUSTABLE). THE EMCS SHALL MODULATE THE INTERGRAL FACE AND BYBASS DAMPERS TO MAINTAIN THE DISCHARGE TEMPERATURE RESET SETPOINT BASED ON THE EXHAUST AIR TEMPERATURE.

6.

HEAT RECOVERY SYSTEM HRC-28A-01, HRC-28A 02 P-28A-HRC-01:THE BAS SHALL ENERGIZE THE "RUN AROUND COIL" SYSTEM PUMP P-28A-HRC-01 HAND-OFF AUTO (HOA) OPERATION. THE PUMP SHALL OPERATE SIMULTANEOUSLY WITH AHU-28A & EF-E8A-01. 30 % PROPYLENE GLYCOL SHALL BE CIRCULATED THROUGH COILS TO TRANSFER HEAT FROM THE EXHAUST STREAM TO PRE-CONDITIONED OUTSIDE AIR STREAM.

7.

CHILLED WATER VALVE CONTROL(CC-28A-01): WHEN THE UNIT STATUS IS OFF, THE CHILLED WATER VALVE SHALL BE CLOSED, WHEN THE UNIT STATUS IS ON, THE CHILLED WATER VALVE SHALL BE MODULATED AS DESCRIBED AS BELOW.

a. THE EMCS SHALL MODULATE THE CHILLED WATER VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE RESET SET POINT BASED ON THE EXHAUST AIR AND POLLED SPACE TEMPERATURE TO SATISFY FURTHEST FROM SET POINT.

b. IN HIGH HUMIDITY OVERRIDE THE CHILLED WATER VALVE SHALL BE MODULATED OPEN TO PROVIDE ADDITIONAL MOISTURE REMOVAL. UPON SATISFYING THE SET POINTS, THE OVERIDE SHALL BE RELEASED AND CHILLED WATER VALVE CONTROL RETURNED TO NORMAL OPERATION.

8.

HOT WATER COIL VALVE CONTROL(DHC-28A-01): WHEN THE UNIT STATUS IS OFF, THE RE-HEAT HOT WATER VALVE SHALL BE CLOSED. WHEN THE UNIT STATUS IS ON, THE HOT WATER VALVE SHALL BE CONTROLLED AS DESCRIBED BELOW.

a. THE EMCS SHALL MODULATE THE RE-HEAT HOT WATER VALVE THE EMCS SHALL MODULATE THE HOT WATER VALVE TO MAINTAIN THE DISCHARGE TEMPERATURE RESET SETPOINT BASED ON THE EXHAUST AIR AND SPACE TEMPERATURE.

9.

STEAM HUMIDIFIER (H-28A-01): THEM BAS SHALL MONITOR THE SPACE HUMIDITY AND SUPPLY AIR DEW POINT. SPACE SHALL BE 68°F/35% RH/39.4°Fdp MINIMUM. IF HIGH LIMIT HUMIDITY SENSOR IS SATISFIED (SET AT 85% RH) ADJUSTABLE, THE STEAM CONTROL VALVE SHALL MODULATE TO ADD STEAM TO AIR STREAM TO MEET DEMAND BASED ON FURTHEST FROM SPACE HUMIDITY SENSOR SETPOINT.

10.

DISCHARGE AIR SET POINT RESET BASED ON IF SPACE TEMPERATURE IS DEVIATING FROM SETPOINT, DISCHARGE TEMPERATURE TO BE RESET. TEMPERATURE CONTROL SHALL BE RESTRICTED SUCH THAT THE SUPPLY AIR TEMPERATURE SHALL NEVER FALL BELOW 53°F OR RISE ABOVE 57°F. IF SPACE TEMPERATURE AND HUMIDITY DO NOT MEET SET POINTS DURING RESET, THE RESET OVERRIDE IS TO BE RELEASED.

11.

CONSTANT AIR VOLUME BOX (CAV) DAMPER & HOT WATER REHEAT COIL VALVE CONTROL: WHEN THE UNIT STATUS IS OFF, THE RE-HEAT HOT WATER VALVE SHALL BE CLOSED. WHEN THE UNIT STATUS IS ON, THE RE-HEAT HOT WATER VALVE AND DAMPER SHALL BE CONTROLLED AS DESCRIBED AS DESCRIBED BELOW.

a. THE EMCS SHALL MODULATE THE RE-HEAT HOT WATER VALVE THE EMCS SHALL MODULATE THE RE-HEAT HOT WATER VALVE TO MAINTAIN THE SPACE TEMPERATURE.

b. THE BAS SHALL MODULATE THE DAMPER TO MAINTAIN THE DISCHARGE AIR FLOW SET POINT.

12.

ULTRAVIOLET LIGHT CONTROL (UV-C): THE EMCS SHALL TURN ON THE ULTRAVIOLET LIGHT ASSEMBLY WHEN THE UNIT IS IN ENERGIZED. UV LIGHT SHALL OPERATE 15 MINUTES EVERY HOUR OF OPERATION.

13.

MAINTENANCE SERVICE LIGHTS (MSL):MARINE TYPE FIXTURES ARE MANUALLY OPERATED BY A TOGGLE SWITCH AT THE UNIT EXTERIOR.

14.

FIRE ALARM SHUTDOWN CONTROL: SMOKE CONTROL SEQUENCE, SMOKE CONTROL SEQUENCE OF OPERATION SHALL TAKE PRIORITY OVER TEMPERATURE CONTROL SEQUENCE OF OPERATION (EXCEPT FREEZE PROTECTION). WHEN SMOKE MODE IS INITIATED BY ONE OR MORE OF THE VARIOUS SMOKE DETECTORS OR THERMAL DETECTORS, SMOKE REMOVAL SEQUENCE SHALL BE AS INDICATED AS BELOW.

a. SMOKE CONTROL ACTION INITIATED BY ANY DEVICE SHALL SIGNAL THE COMMUNICATION CENTER TO STOP OR START THE FANS, OPEN OR CLOSE DAMPERS.

b. SMOKE CONTROL SEQUENCE ALARM # 1 INITIATED BY SMOKE CONTROL ZONES (1B1, 1B2, 1D1, 2D2, 1G2): STOP EF-28A-01 FAN AND CLOSE THE EXHAUST AIR DUCT SMOKE DAMPER, OPEN AHU-28A-01 OUTSIDE AIR SMOKE DAMPER, OPEN AHU-28A-01 SUPPLY AIR DUCT SMOKE DAMPER AND START AHU-28A-01 SUPPLY AIR FAN AT FULL SPEED.

c. SMOKE CONTROL SEQUENCE ALARM # 2 INITIATED BY SMOKE CONTROL ZONE (1D1): STOP AHU-28A-01 SUPPLY AIR FAN. CLOSE AHU-28A-01 OUTSIDE AIR DUCT SMOKE DAMPER AND SUPPLY AIR DUCT SMOKE

DAMPER. OPEN THE EF-28A-01 EXHAUST AIR DUCT SMOKE DAMPER AND START THE EF-28A-01 FAN AT FULL SPEED.

d. SYSTEM SHALL RETURN TO NORMAL OPERATION POSITIONS AFTER THE SMOKE CONTROL PROGRAM IS RESET MANUALLY FROM THE BAS CONTROL CONSOLE.

15.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS AT THE FREEZESTAT , THE UNIT SHALL BE STOPPED THROUGH A HARD WIRE INTERLOCK, AN ALARM SHALL BE GENERATED IN THE EMCS AND DISPLAYED AT THE OWS. ON A FREEZE ALARM SIGNAL, THE EMCS SHALL FULLY OPEN THE PRE-HEAT STEAM VALVE. THE SAF SHALL BE DE-ENERGIZED. THE CHILLED WATER VALVE, HEATING HOT WATER VALVES AND OUTDOOR AIR DAMPER CLOSE. THE FREEZESTAT SHALL BE SET AT 36°F (MANUALLY ADJUSTABLE) AND MUST BE MANUALLY RESET AT THE FREEZESTAT.

16.

DIRTY FILTER ALARM: DIFFERENTIAL PRESSURE SWITCHES SHALL MONITOR THE PRESSURE DROP AT THE FILTERS. WHEN THE PRESSURE EXCEEDS AN ADJUSTABLE LIMIT, AN ALARM SIGNAL WILL BE SENT. PRESSURE DIFFERENCE INDICATORS, LOCATED THE FILTERS, SHALL INDICATE THE DIFFERENTIAL PRESSURE ACROSS THE FILTERS.

17.

FAN AND PUMPS STATUS: THE CURRENT RELAYS SHALL BE USED TO MONITOR THE STATUS OF THE FAN AND PUMPS. IF THE STATUS INDICATED DOES NOT MATCH COMMANDED OUTPUT FOR FAN AND PUMPS, AN ALARM SHALL BE GENERATED.

18.

FAILURE MODE: UPON LOSS OF CONTROL SIGNAL OR ELECTRIC POWER THE CONTROL DEVICES SHALL FAIL AS DEFINED BY THIS DWG..

19.

ADDITIONAL MONITORING AND REPORTING: IN ADDITION TO THE POINTS MENTIONED IN THESE SEQUENCES PROVIDE THE ADDITIONAL MONITORING POINTS FOR REPORTING.

a. MONITOR AND REPORT THE AHU OUTSIDE AIR TEMPERATURE, HUMDITY AND CFM

b. MONITOR AND REPORT EXHAUST AIR TEMPERATURE, HUMIDITY AND CFM

c. MONITOR AND REPORT SUPPLY AIR TEMPERATURE, HUMIDITY AND CFM

d. MONITOR AND REPORT INDIVIDUAL SUPPLY AIR TEMPERATURE, HUMIDITY AND CFM OF CAV-28A-01 THRU 06

e. MONITOR AND REPORT INDIVIDUAL TRANSFER AIR CFM OF AMS-TRN-28A-01 & 02

f. MONITOR AND REPORT INDIVIDUAL EXHAUST AIR CFM OF AMS -EXH-28A-01 THRU 09

g. MONITOR AND REPORT ROOM TEMPERATURE,HUMIDITY AND PRESSURIZATION FOR

1. ENDOSCOPIC ROOMS

2. DECONTAMINATION ROOM

3. CLEAN WORK ROOM

4. STERILE WORK ROOM

5. STERILE STORAGE ROOM

h. SUMMARIZE CAV SUBTOTALS TO PROVIDE AHU-28A SUPPLY AIR FLOW RATE. SAF-28A-01 TO HAVE SPEED VARIED TO ASSURE 5,200 CFM SUPPLY AIR IS PROVIDED TO CSS CONTINUOUSLY .

i. SUMMARIZE AMS-EHS-28A AIR MONITORS EXHAUST FLOW RATE. EF-28A-01 TO HAVE SPEED VARIED TO ASSURE 7,520 CFM EXHAUST AIR IS EXHAUSTED FROM CSS.

j. MONITOR OPERATION OF THE HEAT RECLAIM SYSTEM. SOUND ALARM ON ANY FAILURE OR IF SET POINTS ARE NOT MET.

k. REPORT TO OWS WHEN OVERRIDE SEQUENCE ARE IN OPERATION:

1. DE-HUMIDIFICATION ROUTINE

2. IFB PHC ROUTINE

20.

EMERGENCY STOP SWITCHES WILL BE LOCATED PER THIS DWG. UPON ACTIVATION THE (ESS) SHALL DE-ENERGIZE THE ENTIRE SYSTEM AND PLACE UNIT IN ALARM. THESE SWITCHES ARE MANUAL RESET ONLY AT MAIN

21.

EXHAUST AIR AND TRANSFER AIR MONITORING STATIONS CONTROL. WHEN AHU UNIT STATUS IS OFF, THE DAMPER IS CLOSED. WHEN THE AHU UNIT STATUS IS ON, THE DAMPER SHALL BE CONTROLLED AS DESCRIBED BELOW.

a. THE BAS SHALL MODULATE THE DAMPER TO MAINTAIN THE AIR FLOW SET POINT

22.

EXISTING EXHAUST FANS TO REMAIN AS PRESENTLY CONTROLLED.

EF-109, 1,420 CFM (MISC)

EF -104 300 CFM (CART WASH AND RO/DI)

23.

SPACE PRESSURIZATION IS DEPENDENT ON AIR BALANCE.

CFM PRESSURE

-DECONTAMINATION SIDE -10% -0.05"

-CLEAN SIDE +10% +0.05"

-AIR LOCK 0 +0.01"

-CORRIDOR 0 +0.00"

24.

AUTOMATIC DAMPERS AND SMOKE DAMPERS INDICATED TO ISOLATE AHU ASSOCIATED WITH AHU AND/OR WITHIN THE MECHANICAL ROOM ARE TO BE LOW LEAKAGE TYPE WITH SEALS TO TIGHTLY SHUT OFF AND PREVENT ANY CONTAMINATION FROM CROSSING THIS BOUNDARY.

25.

CONTRACTOR IS RESPONSIBLE FOR FUNCTION OF THE SYSTEMS TO MEET THE INTENT OF THESE SEQUENCES FROM THE TIE POINTS INDICATED ON DWG. M1601.

26.

REFER TO SHEET M1601 FOR CYBER SECURITY MECHANICAL GENERAL NOTE.

AHU-28A-01 BACNET DDC CONTROL SYSTEM POINTS LIST

Point Description

Analog Input

Binary Input

Analog Output

Binary Output

Alarm Point

Non-DDC Point

Notes

AHU-28A-01 CONTROL PANEL

TIME OF DAY/DAY OF WEEK SCHEDULE FROM BAS

1

1

3

OCCUPIED/UNOCCUPIED SETUP/SETBACK CONTROL FROM BAS

1

1

3

EXTERNAL START/STOP COMMAND FROM BAS

1

1

3

UV-C DISINFECTING MODULE START/STOP

8

8

4

MSL SERVICE LIGHT FIXTURES

9

9

5

BACNET INTERFACE MODULE

6

SYSTEM GRAPHICS

2

AHU-28A-01 PREHEAT COIL SECTION

HEATING COIL DISCHARGE TEMPERATURE

1

1

HOT WATER CONTROL VALVE POSITION (OPEN/CLOSED)

1

1

1

BYPASS DAMPER POSITION (MODULATING)

1

1

FACE DAMPER POSITION (MODULATING)

1

1

AHU-28A-01 HEAT RECLAIM COIL SECTION

COIL DISCHARGE TEMPERATURE

1

1

COIL INLET TEMPERATURE

1

1

HRC WATER PUMP OPERATION

1

1

AHU-28A-01 COOLING COIL SECTION

COOLING COIL ENTERING TEMPERATURE

1

1

SUPPLY AIR FLOW CFM

1

1

COOLING COIL DISCHARGE TEMPERATURE

1

1

1

1

CHILLED WATER CONTROL VALVE POSITION (MODULATING)

1

1

DISCHARGE AIR RESET BASED ON OA TEMPERATURE

1

1

1

1

DISCHARGE AIR RESET BASED ON RA ENTHALPY

1

1

1

1

AHU-28A-01 DEHUMIDIFYING COIL SECTION

HEATING COIL DISCHARGE TEMPERATURE

1

1

HEATING COIL DISCHARGE MOISTURE

1

1

1

1

HOT WATER CONTROL VALVE POSITION (MODULATING)

1

1

DISCHARGE AIR RESET BASED ON OA TEMPERATURE

1

1

1

1

DISCHARGE AIR RESET BASED ON EA/RA ENTHALPY

1

1

1

1

AHU-28A-01 SUPPLY AIR FAN

SUPPLY AIR FAN START/STOP AND STATUS

1

1

1

SUPPLY AIR FAN VFD

1

1

1

SUPPLY AIR TEMPERATURE

1

1

1

SUPPLY AIR FLOW CFM

1

1

1

AHU-28A-01 ALARM POINTS

CLOGGED FILTER SWITCH (FILTER A)

1

1

CLOGGED FILTER SWITCH (FILTER A)

1

1

CLOGGED FILTER SWITCH (FILTER C)

1

1

FREEZESTAT

1

1

LOW DISCHARGE AIR TEMPERATURE

1

1

1

LOW DISCHARGE AIR MOISTURE

1

1

1

HIGH DISCHARGE AIR MOISTURE

1

1

1

LOW DISCHARGE AIR TEMPERATURE

1

1

1

HIGH DISCHARGE AIR TEMPERATURE

1

1

1

AHU-28A-01 REMOTE POINTS

OUTSIDE AIR TEMPERATURE

1

EXHAUST AIR TEMPERATURE

1

EXHAUST AIR SMOKE DAMPER

1

1

1

SUPPLY AIR SMOKE DAMPER

1

1

1

FIRE ALARM SMOKE CONTROL 1

1

1

FIRE ALARM SMOKE CONTROL 2

1

1

RETURN/EXHAUST AIR TEMPERATURE

1

RETURN/EXHAUST AIR MOISTURE

1

RETURN/EXHAUST AIRFLOW

1

SPACE DIFFERENTIAL PRESSURE MONITORING

6

6

EMERGENCY STOP SWITCH

3

3

CAV-28A-01 THRU 06, AMS-TRN-28A-01 THRU 02 AND AMS-EXH-28A-01 THRU 09

SPACE TEMPERATURE

6

6

USER TEMPERATURE ADJUSTMENT

6

6

USER OVERRIDE OCCUPIED MODE

6

6

SUPPLY AIR TEMPERATURE

6

6

6

AIR FLOW CFM

6

6

17

DAMPER POSITION

17

17

HOT WATER CONTROL VALVE POSITION

6

6

EF-28A-01 EXHAUST AIR FAN

EXHAUST AIR FAN START/STOP AND STATUS

1

1

1

EXHAUST AIR FAN VFD

1

1

1

EXHAUST AIR FLOW CFM

1

1

1

AHU-28-01 BACNET CONTROL SYSTEM POINTS LIST TOTAL

296

NOTES:

1

PROVIDE ABILITY TO CALCULATE ENTHALPY USING TEMPERATURE AND MOISTURE TO RESET DISCHARGE AIR TEMPERATURE

2

PROVIDE FRONT END GRAPHICS SHOWING AIR HANDLING UNIT/CAV/AMS/EF AND ALL ASSOCIATED DEVICES AND PARAMETERS

3

PROVIDE OCCUPANCY SCHEDULE INCLUDING SETUP/SETBACK PER DWG. M-601

4

PROVIDE TIMER SEQUENCE TO OPERATE DISINFECTING MODULES (UV-C) EVERY 15 MINUTES PER 1 HOUR OF OPERATING TIME AS INDICATED

5

PROVIDE MANUAL ON/OFF SWITCHES OUTSIDE OF EACH AHU ACCESS DOOR CONTROLLING A MARINE SERVICE LIGHT INSIDE EACH AHU SECTION AS INDICATED

6

AHU-28A-01 CONTROL SYSTEM TO PROVIDE BACNET INTERFACE MODULE COMMUNICATING ALL POINTS REQUIRED FOR BAS TO CONTROL AND MONITOR SYSTEM INCLUDING DATA REQUIRED FOR BAS TO STORE AND CREATE TRENDING REPORTS FOR SYSTEM OPERATION AND PERFORMANCE

1

2

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4

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CONSTANT VOLUME AIR HANDLING UNIT (AHU-28A-01) SEQUENCE OF OPERATION

1.

SUPPLY FAN (SAF-28A-01) HAND-OFF-AUTO (HOA) OPERATION: AN HOA SWITCH SHALL BE PROVIDED AS PART OF THE VFD FOR THE FAN. WHEN IN THE HAND MODE, THE FAN SHALL BE STARTED, IN THE OFF MODE THE FAN SHALL BE OFF. IN THE AUTO MODE, THE FAN SHALL BE STARTED AND STOPPED THRU THE EMCS. A POWER FAIL RESTART TIME DELAY WILL BE PROVIDE FOR THE VFD IN BOTH THE HAND AND AUTO MODES, TO STAGGER THE RESTART OF EACH UNIT AFTER A POWER FAILURE TO PREVENT CREATING A SPIKE IN THE ELECTRICAL DEMAND UPON ACTIVATION, SAFETIES SHALL STOP THE SUPPLY FAN IN THE HAND AND AUTO MODES.

2.

EXHAUST FAN (EF-28A-01) HAND-OFF-AUTO (HOA) OPERATION: AN HOA SWITCH SHALL BE PROVIDED AS PART OF THE VFD FOR THE FAN, WHEN IN THE HAND MODE, THE FAN SHALL BE STARTED, IN THE OFF MODE, THE FAN SHALL BE OFF, IN THE AUTO MODE, THE FAN SHALL BE STARTED AND STOPPED THROUGH THE EMCS. SAFETIES SHALL STOP THE EXHAUST FAN IN THE HAND AND AUTO MODE.

3.

SUPPLY FAN AUTOMATIC MODE START/STOP CONTROL: WHEN THE UNIT IS STARTED, A COMMAND SHALL BE SENT TO THE FAN'S VFD CAUSING THE SUPPLY FAN TO START, WHEN THE EMCS SENDS A STOP SIGNAL TO THE FAN VFD THE FAN SHALL STOP. IN THE EVENT THAT THE UNIT SHOULD FAIL, THE BAS SHALL SEND A STOP SIGNAL TO THE FAN VFD STARTER AND GENERATE AN ALARM AT THE OWS.

a. SCHEDULE START: AT THE SCHEDULED OCCUPANCY TIME THE UNIT SHALL START AND RUN IN THE OCCUPIED MODE.

4.

EXHAUST FAN AUTOMATIC MODE START/STOP CONTROL: WHEN THE SUPPLY FAN IS OFF, THE ASSOCIATED EXHAUST FAN SHALL BE OFF. WHEN THE SUPPLY FAN IS ON, THE EXHAUST FAN SHALL BE STARTED BY THE EMCS. FAN SPEED SHALL BE VARIED TO ASSURE 7,520 CFM IS EXHAUSTED BASED ON SUMMARIZING THE AMS-EXH STATIONS.

5.

STEAM IFB PRE-HEAT COIL VALVE CONTROL(PHC-28A-01): WHEN THE UNIT STATUS IS OFF, THE PRE-HEAT VALVE SHALL BE CLOSED. WHEN THE UNIT STATUS IS ON, THE PRE-HEAT STEAM VALVE SHALL BE CONTROLLED AS DESCRIBED AS DESCRIBED BELOW

a. THE STEAM PHC IS FOR EMERGENCY USE ONLY, IF THE HEAT RECOVERY SYSTEM FAILS, IS MANUALLY TURNED OFF, OR IF THE HRC IS NOT ABLE TO REACH SET POINT AND THE OUTSIDE ARE TEMPERATURE FALLS BELOW 50 F (ADJUSTABLE). THE STEAM PHC SHALL BE ENABLED.

b. THE EMCS SHALL OPEN FULLY THE PRE-HEAT STEAM VALVE OUTSIDE AIR TEMPERATURE FALLS BELOW 50°F(ADJUSTABLE). THE EMCS SHALL MODULATE THE INTERGRAL FACE AND BYBASS DAMPERS TO MAINTAIN THE DISCHARGE TEMPERATURE RESET SETPOINT BASED ON THE EXHAUST AIR TEMPERATURE.

6.

HEAT RECOVERY SYSTEM HRC-28A-01, HRC-28A 02 P-28A-HRC-01:THE BAS SHALL ENERGIZE THE "RUN AROUND COIL" SYSTEM PUMP P-28A-HRC-01 HAND-OFF AUTO (HOA) OPERATION. THE PUMP SHALL OPERATE SIMULTANEOUSLY WITH AHU-28A & EF-E8A-01. 30 % PROPYLENE GLYCOL SHALL BE CIRCULATED THROUGH COILS TO TRANSFER HEAT FROM THE EXHAUST STREAM TO PRE-CONDITIONED OUTSIDE AIR STREAM.

7.

CHILLED WATER VALVE CONTROL(CC-28A-01): WHEN THE UNIT STATUS IS OFF, THE CHILLED WATER VALVE SHALL BE CLOSED, WHEN THE UNIT STATUS IS ON, THE CHILLED WATER VALVE SHALL BE MODULATED AS DESCRIBED AS BELOW.

a. THE EMCS SHALL MODULATE THE CHILLED WATER VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE RESET SET POINT BASED ON THE EXHAUST AIR AND POLLED SPACE TEMPERATURE TO SATISFY FURTHEST FROM SET POINT.

b. IN HIGH HUMIDITY OVERRIDE THE CHILLED WATER VALVE SHALL BE MODULATED OPEN TO PROVIDE ADDITIONAL MOISTURE REMOVAL. UPON SATISFYING THE SET POINTS, THE OVERIDE SHALL BE RELEASED AND CHILLED WATER VALVE CONTROL RETURNED TO NORMAL OPERATION.

8.

HOT WATER COIL VALVE CONTROL(DHC-28A-01): WHEN THE UNIT STATUS IS OFF, THE RE-HEAT HOT WATER VALVE SHALL BE CLOSED. WHEN THE UNIT STATUS IS ON, THE HOT WATER VALVE SHALL BE CONTROLLED AS DESCRIBED BELOW.

a. THE EMCS SHALL MODULATE THE RE-HEAT HOT WATER VALVE THE EMCS SHALL MODULATE THE HOT WATER VALVE TO MAINTAIN THE DISCHARGE TEMPERATURE RESET SETPOINT BASED ON THE EXHAUST AIR AND SPACE TEMPERATURE.

9.

STEAM HUMIDIFIER (H-28A-01): THEM BAS SHALL MONITOR THE SPACE HUMIDITY AND SUPPLY AIR DEW POINT. SPACE SHALL BE 68°F/35% RH/39.4°Fdp MINIMUM. IF HIGH LIMIT HUMIDITY SENSOR IS SATISFIED (SET AT 85% RH) ADJUSTABLE, THE STEAM CONTROL VALVE SHALL MODULATE TO ADD STEAM TO AIR STREAM TO MEET DEMAND BASED ON FURTHEST FROM SPACE HUMIDITY SENSOR SETPOINT.

10.

DISCHARGE AIR SET POINT RESET BASED ON IF SPACE TEMPERATURE IS DEVIATING FROM SETPOINT, DISCHARGE TEMPERATURE TO BE RESET. TEMPERATURE CONTROL SHALL BE RESTRICTED SUCH THAT THE SUPPLY AIR TEMPERATURE SHALL NEVER FALL BELOW 53°F OR RISE ABOVE 57°F. IF SPACE TEMPERATURE AND HUMIDITY DO NOT MEET SET POINTS DURING RESET, THE RESET OVERRIDE IS TO BE RELEASED.

11.

CONSTANT AIR VOLUME BOX (CAV) DAMPER & HOT WATER REHEAT COIL VALVE CONTROL: WHEN THE UNIT STATUS IS OFF, THE RE-HEAT HOT WATER VALVE SHALL BE CLOSED. WHEN THE UNIT STATUS IS ON, THE RE-HEAT HOT WATER VALVE AND DAMPER SHALL BE CONTROLLED AS DESCRIBED AS DESCRIBED BELOW.

a. THE EMCS SHALL MODULATE THE RE-HEAT HOT WATER VALVE THE EMCS SHALL MODULATE THE RE-HEAT HOT WATER VALVE TO MAINTAIN THE SPACE TEMPERATURE.

b. THE BAS SHALL MODULATE THE DAMPER TO MAINTAIN THE DISCHARGE AIR FLOW SET POINT.

12.

ULTRAVIOLET LIGHT CONTROL (UV-C): THE EMCS SHALL TURN ON THE ULTRAVIOLET LIGHT ASSEMBLY WHEN THE UNIT IS IN ENERGIZED. UV LIGHT SHALL OPERATE 15 MINUTES EVERY HOUR OF OPERATION.

13.

MAINTENANCE SERVICE LIGHTS (MSL):MARINE TYPE FIXTURES ARE MANUALLY OPERATED BY A TOGGLE SWITCH AT THE UNIT EXTERIOR.

14.

FIRE ALARM SHUTDOWN CONTROL: SMOKE CONTROL SEQUENCE, SMOKE CONTROL SEQUENCE OF OPERATION SHALL TAKE PRIORITY OVER TEMPERATURE CONTROL SEQUENCE OF OPERATION (EXCEPT FREEZE PROTECTION). WHEN SMOKE MODE IS INITIATED BY ONE OR MORE OF THE VARIOUS SMOKE DETECTORS OR THERMAL DETECTORS, SMOKE REMOVAL SEQUENCE SHALL BE AS INDICATED AS BELOW.

a. SMOKE CONTROL ACTION INITIATED BY ANY DEVICE SHALL SIGNAL THE COMMUNICATION CENTER TO STOP OR START THE FANS, OPEN OR CLOSE DAMPERS.

b. SMOKE CONTROL SEQUENCE ALARM # 1 INITIATED BY SMOKE CONTROL ZONES (1B1, 1B2, 1D1, 2D2, 1G2): STOP EF-28A-01 FAN AND CLOSE THE EXHAUST AIR DUCT SMOKE DAMPER, OPEN AHU-28A-01 OUTSIDE AIR SMOKE DAMPER, OPEN AHU-28A-01 SUPPLY AIR DUCT SMOKE DAMPER AND START AHU-28A-01 SUPPLY AIR FAN AT FULL SPEED.

c. SMOKE CONTROL SEQUENCE ALARM # 2 INITIATED BY SMOKE CONTROL ZONE (1D1): STOP AHU-28A-01 SUPPLY AIR FAN. CLOSE AHU-28A-01 OUTSIDE AIR DUCT SMOKE DAMPER AND SUPPLY AIR DUCT SMOKE

DAMPER. OPEN THE EF-28A-01 EXHAUST AIR DUCT SMOKE DAMPER AND START THE EF-28A-01 FAN AT FULL SPEED.

d. SYSTEM SHALL RETURN TO NORMAL OPERATION POSITIONS AFTER THE SMOKE CONTROL PROGRAM IS RESET MANUALLY FROM THE BAS CONTROL CONSOLE.

15.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS AT THE FREEZESTAT , THE UNIT SHALL BE STOPPED THROUGH A HARD WIRE INTERLOCK, AN ALARM SHALL BE GENERATED IN THE EMCS AND DISPLAYED AT THE OWS. ON A FREEZE ALARM SIGNAL, THE EMCS SHALL FULLY OPEN THE PRE-HEAT STEAM VALVE. THE SAF SHALL BE DE-ENERGIZED. THE CHILLED WATER VALVE, HEATING HOT WATER VALVES AND OUTDOOR AIR DAMPER CLOSE. THE FREEZESTAT SHALL BE SET AT 36°F (MANUALLY ADJUSTABLE) AND MUST BE MANUALLY RESET AT THE FREEZESTAT.

16.

DIRTY FILTER ALARM: DIFFERENTIAL PRESSURE SWITCHES SHALL MONITOR THE PRESSURE DROP AT THE FILTERS. WHEN THE PRESSURE EXCEEDS AN ADJUSTABLE LIMIT, AN ALARM SIGNAL WILL BE SENT. PRESSURE DIFFERENCE INDICATORS, LOCATED THE FILTERS, SHALL INDICATE THE DIFFERENTIAL PRESSURE ACROSS THE FILTERS.

17.

FAN AND PUMPS STATUS: THE CURRENT RELAYS SHALL BE USED TO MONITOR THE STATUS OF THE FAN AND PUMPS. IF THE STATUS INDICATED DOES NOT MATCH COMMANDED OUTPUT FOR FAN AND PUMPS, AN ALARM SHALL BE GENERATED.

18.

FAILURE MODE: UPON LOSS OF CONTROL SIGNAL OR ELECTRIC POWER THE CONTROL DEVICES SHALL FAIL AS DEFINED BY THIS DWG..

19.

ADDITIONAL MONITORING AND REPORTING: IN ADDITION TO THE POINTS MENTIONED IN THESE SEQUENCES PROVIDE THE ADDITIONAL MONITORING POINTS FOR REPORTING.

a. MONITOR AND REPORT THE AHU OUTSIDE AIR TEMPERATURE, HUMDITY AND CFM

b. MONITOR AND REPORT EXHAUST AIR TEMPERATURE, HUMIDITY AND CFM

c. MONITOR AND REPORT SUPPLY AIR TEMPERATURE, HUMIDITY AND CFM

d. MONITOR AND REPORT INDIVIDUAL SUPPLY AIR TEMPERATURE, HUMIDITY AND CFM OF CAV-28A-01 THRU 06

e. MONITOR AND REPORT INDIVIDUAL TRANSFER AIR CFM OF AMS-TRN-28A-01 & 02

f. MONITOR AND REPORT INDIVIDUAL EXHAUST AIR CFM OF AMS -EXH-28A-01 THRU 09

g. MONITOR AND REPORT ROOM TEMPERATURE,HUMIDITY AND PRESSURIZATION FOR

1. ENDOSCOPIC ROOMS

2. DECONTAMINATION ROOM

3. CLEAN WORK ROOM

4. STERILE WORK ROOM

5. STERILE STORAGE ROOM

h. SUMMARIZE CAV SUBTOTALS TO PROVIDE AHU-28A SUPPLY AIR FLOW RATE. SAF-28A-01 TO HAVE SPEED VARIED TO ASSURE 5,200 CFM SUPPLY AIR IS PROVIDED TO CSS CONTINUOUSLY .

i. SUMMARIZE AMS-EHS-28A AIR MONITORS EXHAUST FLOW RATE. EF-28A-01 TO HAVE SPEED VARIED TO ASSURE 7,520 CFM EXHAUST AIR IS EXHAUSTED FROM CSS.

j. MONITOR OPERATION OF THE HEAT RECLAIM SYSTEM. SOUND ALARM ON ANY FAILURE OR IF SET POINTS ARE NOT MET.

k. REPORT TO OWS WHEN OVERRIDE SEQUENCE ARE IN OPERATION:

1. DE-HUMIDIFICATION ROUTINE

2. IFB PHC ROUTINE

20.

EMERGENCY STOP SWITCHES WILL BE LOCATED PER THIS DWG. UPON ACTIVATION THE (ESS) SHALL DE-ENERGIZE THE ENTIRE SYSTEM AND PLACE UNIT IN ALARM. THESE SWITCHES ARE MANUAL RESET ONLY AT MAIN

21.

EXHAUST AIR AND TRANSFER AIR MONITORING STATIONS CONTROL. WHEN AHU UNIT STATUS IS OFF, THE DAMPER IS CLOSED. WHEN THE AHU UNIT STATUS IS ON, THE DAMPER SHALL BE CONTROLLED AS DESCRIBED BELOW.

a. THE BAS SHALL MODULATE THE DAMPER TO MAINTAIN THE AIR FLOW SET POINT

22.

EXISTING EXHAUST FANS TO REMAIN AS PRESENTLY CONTROLLED.

EF-109, 1,420 CFM (MISC)

EF -104 300 CFM (CART WASH AND RO/DI)

23.

SPACE PRESSURIZATION IS DEPENDENT ON AIR BALANCE.

CFM PRESSURE

-DECONTAMINATION SIDE -10% -0.05"

-CLEAN SIDE +10% +0.05"

-AIR LOCK 0 +0.01"

-CORRIDOR 0 +0.00"

24.

AUTOMATIC DAMPERS AND SMOKE DAMPERS INDICATED TO ISOLATE AHU ASSOCIATED WITH AHU AND/OR WITHIN THE MECHANICAL ROOM ARE TO BE LOW LEAKAGE TYPE WITH SEALS TO TIGHTLY SHUT OFF AND PREVENT ANY CONTAMINATION FROM CROSSING THIS BOUNDARY.

25.

CONTRACTOR IS RESPONSIBLE FOR FUNCTION OF THE SYSTEMS TO MEET THE INTENT OF THESE SEQUENCES FROM THE TIE POINTS INDICATED ON DWG. M1601.

26.

REFER TO SHEET M1601 FOR CYBER SECURITY MECHANICAL GENERAL NOTE.

AHU-28A-01 BACNET DDC CONTROL SYSTEM POINTS LIST

Point Description

Analog Input

Binary Input

Analog Output

Binary Output

Alarm Point

Non-DDC Point

Notes

AHU-28A-01 CONTROL PANEL

TIME OF DAY/DAY OF WEEK SCHEDULE FROM BAS

1

1

3

OCCUPIED/UNOCCUPIED SETUP/SETBACK CONTROL FROM BAS

1

1

3

EXTERNAL START/STOP COMMAND FROM BAS

1

1

3

UV-C DISINFECTING MODULE START/STOP

8

8

4

MSL SERVICE LIGHT FIXTURES

9

9

5

BACNET INTERFACE MODULE

6

SYSTEM GRAPHICS

2

AHU-28A-01 PREHEAT COIL SECTION

HEATING COIL DISCHARGE TEMPERATURE

1

1

HOT WATER CONTROL VALVE POSITION (OPEN/CLOSED)

1

1

1

BYPASS DAMPER POSITION (MODULATING)

1

1

FACE DAMPER POSITION (MODULATING)

1

1

AHU-28A-01 HEAT RECLAIM COIL SECTION

COIL DISCHARGE TEMPERATURE

1

1

COIL INLET TEMPERATURE

1

1

HRC WATER PUMP OPERATION

1

1

AHU-28A-01 COOLING COIL SECTION

COOLING COIL ENTERING TEMPERATURE

1

1

SUPPLY AIR FLOW CFM

1

1

COOLING COIL DISCHARGE TEMPERATURE

1

1

1

1

CHILLED WATER CONTROL VALVE POSITION (MODULATING)

1

1

DISCHARGE AIR RESET BASED ON OA TEMPERATURE

1

1

1

1

DISCHARGE AIR RESET BASED ON RA ENTHALPY

1

1

1

1

AHU-28A-01 DEHUMIDIFYING COIL SECTION

HEATING COIL DISCHARGE TEMPERATURE

1

1

HEATING COIL DISCHARGE MOISTURE

1

1

1

1

HOT WATER CONTROL VALVE POSITION (MODULATING)

1

1

DISCHARGE AIR RESET BASED ON OA TEMPERATURE

1

1

1

1

DISCHARGE AIR RESET BASED ON EA/RA ENTHALPY

1

1

1

1

AHU-28A-01 SUPPLY AIR FAN

SUPPLY AIR FAN START/STOP AND STATUS

1

1

1

SUPPLY AIR FAN VFD

1

1

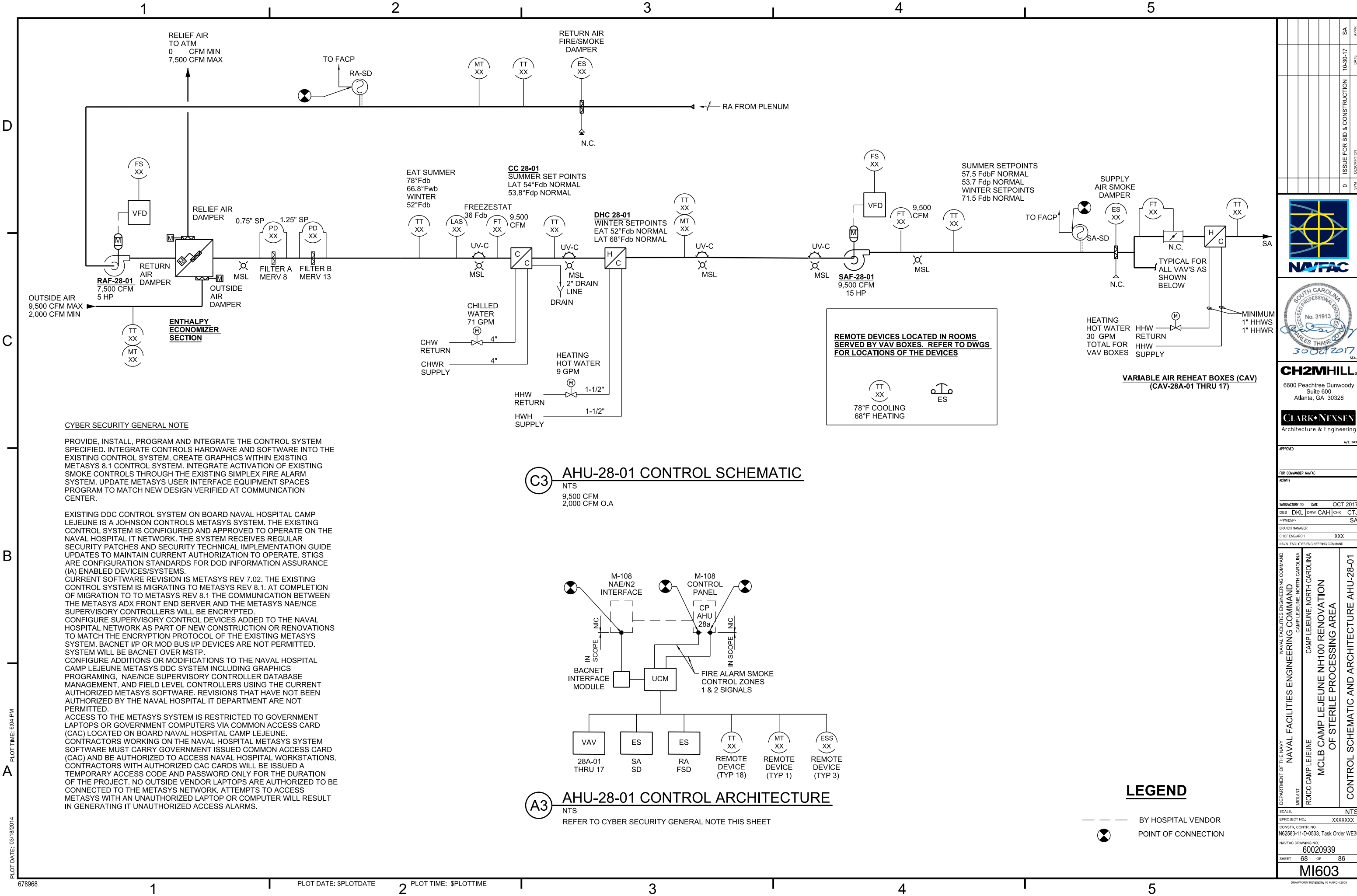
1

SUPPLY AIR TEMPERATURE

1

1



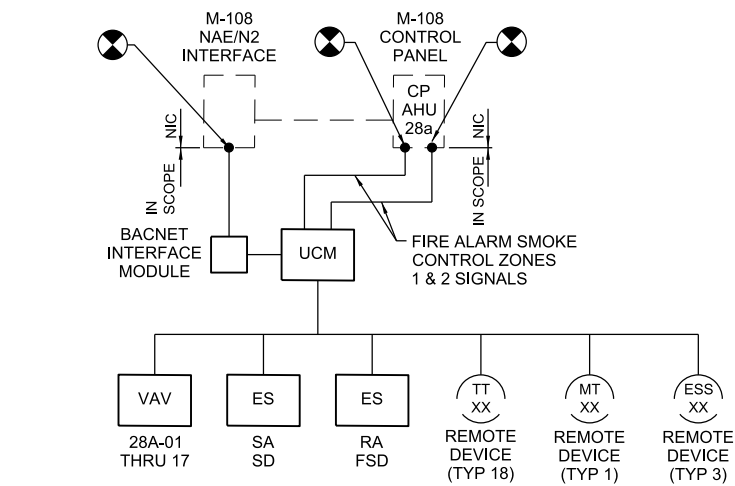


**CYBER SECURITY GENERAL NOTE**

PROVIDE, INSTALL, PROGRAM AND INTEGRATE THE CONTROL SYSTEM SPECIFIED. INTEGRATE CONTROLS HARDWARE AND SOFTWARE INTO THE EXISTING CONTROL SYSTEM. CREATE GRAPHICS WITHIN EXISTING METASYS 8.1 CONTROL SYSTEM. INTEGRATE ACTIVATION OF EXISTING SMOKE CONTROLS THROUGH THE EXISTING SIMPLEX FIRE ALARM SYSTEM. UPDATE METASYS USER INTERFACE EQUIPMENT SPACES PROGRAM TO MATCH NEW DESIGN VERIFIED AT COMMUNICATION CENTER.

EXISTING DDC CONTROL SYSTEM ON BOARD NAVAL HOSPITAL CAMP LEJEUNE IS A JOHNSON CONTROLS METASYS SYSTEM. THE EXISTING CONTROL SYSTEM IS CONFIGURED AND APPROVED TO OPERATE ON THE NAVAL HOSPITAL IT NETWORK. THE SYSTEM RECEIVES REGULAR SECURITY PATCHES AND SECURITY TECHNICAL IMPLEMENTATION GUIDE UPDATES TO MAINTAIN CURRENT AUTHORIZATION TO OPERATE. STIGS ARE CONFIGURATION STANDARDS FOR DOD INFORMATION ASSURANCE (IA) ENABLED DEVICES/SYSTEMS. CURRENT SOFTWARE REVISION IS METASYS REV 7.02. THE EXISTING CONTROL SYSTEM IS MIGRATING TO METASYS REV 8.1. AT COMPLETION OF MIGRATION TO TO METASYS REV 8.1 THE COMMUNICATION BETWEEN THE METASYS ADX FRONT END SERVER AND THE METASYS NAE/NCE SUPERVISORY CONTROLLERS WILL BE ENCRYPTED. CONFIGURE SUPERVISORY CONTROL DEVICES ADDED TO THE NAVAL HOSPITAL NETWORK AS PART OF NEW CONSTRUCTION OR RENOVATIONS TO MATCH THE ENCRYPTION PROTOCOL OF THE EXISTING METASYS SYSTEM. BACNET I/P OR MOD BUS I/P DEVICES ARE NOT PERMITTED. SYSTEM WILL BE BACNET OVER MSTP. CONFIGURE ADDITIONS OR MODIFICATIONS TO THE NAVAL HOSPITAL CAMP LEJEUNE METASYS DDC SYSTEM INCLUDING GRAPHICS PROGRAMING, NAE/NCE SUPERVISORY CONTROLLER DATABASE MANAGEMENT, AND FIELD LEVEL CONTROLLERS USING THE CURRENT AUTHORIZED METASYS SOFTWARE. REVISIONS THAT HAVE NOT BEEN AUTHORIZED BY THE NAVAL HOSPITAL IT DEPARTMENT ARE NOT PERMITTED. ACCESS TO THE METASYS SYSTEM IS RESTRICTED TO GOVERNMENT LAPTOPS OR GOVERNMENT COMPUTERS VIA COMMON ACCESS CARD (CAC) LOCATED ON BOARD NAVAL HOSPITAL CAMP LEJEUNE. CONTRACTORS WORKING ON THE NAVAL HOSPITAL METASYS SYSTEM SOFTWARE MUST CARRY GOVERNMENT ISSUED COMMON ACCESS CARD (CAC) AND BE AUTHORIZED TO ACCESS NAVAL HOSPITAL WORKSTATIONS. CONTRACTORS WITH AUTHORIZED CAC CARDS WILL BE ISSUED A TEMPORARY ACCESS CODE AND PASSWORD ONLY FOR THE DURATION OF THE PROJECT. NO OUTSIDE VENDOR LAPTOPS ARE AUTHORIZED TO BE CONNECTED TO THE METASYS NETWORK. ATTEMPTS TO ACCESS METASYS WITH AN UNAUTHORIZED LAPTOP OR COMPUTER WILL RESULT IN GENERATING IT UNAUTHORIZED ACCESS ALARMS.

**C3 AHU-28-01 CONTROL SCHEMATIC**  
NTS  
9,500 CFM  
2,000 CFM O.A



**A3 AHU-28-01 CONTROL ARCHITECTURE**  
NTS  
REFER TO CYBER SECURITY GENERAL NOTE THIS SHEET

**LEGEND**

— — — BY HOSPITAL VENDOR

POINT OF CONNECTION

SA	APPR
10-30-17	DATE
ISSUE FOR BID & CONSTRUCTION	DESCRIPTION
0	SYN

**CH2MHILL**  
6600 Peachtree Dunwoody  
Suite 600  
Atlanta, GA 30328

**CLARK+NEXSEN**  
Architecture & Engineering

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE OCT 2017

DES DKL DRW CAH CHK CTJ

BRANCH MANAGER

CHIEF ENGINEER XXX

NAVAL FACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND

CAMP LEJEUNE NORTH CAROLINA

ROICC CAMP LEJEUNE

MCLB CAMP LEJEUNE NH100 RENOVATION

OF STERILE PROCESSING AREA

CONTROL SCHEMATIC AND ARCHITECTURE AHU-28-01

SCALE: NTS

PROJECT NO: XXXXXXX

CONSTR. CONTR. NO. N62583-11-D-0533, Task Order WE30

NAVFAC DRAWING NO. 60020939

SHEET 68 OF 86

**MI603**

DRAWING REVISION: 10 MARCH 2009



