NORTH CAROLINA AIR NATIONAL GUARD

C-17 CORROSION CONTROL AND FUEL CELL HANGAR AND FLIGHT SIMULATOR
145th AIRLIFT WING
CHARLOTTE-DOUGLAS IAP, NORTH CAROLINA

CONTRAC'T NO.: W9133L-15-D-0002
TASK ORDER NO.: D303
PN: FJRP159062

B-3 FINAL DESIGN SUBMISSION
22 SEPTEMBER 2017

VOLUME 4 of 5
EQUIPMENT, MECHANICAL, PLUMBING
1. REFER TO Q-601 FOR EQUIPMENT SCHEDULE.

EQUIPMENT PLAN GENERAL NOTES

1. THESE ITEMS ARE PART OF VENDOR DESIGNED SYSTEM. REFER TO SPECIFICATION SECTION 41 34 23.33.

2. ROOF TOP UNIT MOUNTED ON ROOF CURB.

3. ROOF TOP FAN MOUNTED ON CURB WITH GRAVITY VENTILATOR AT TOP OF STACK.

4. MAINTAIN 1'-0" CLEARANCE BETWEEN ITEM CC2M AND ROOF CRICKET.

5. UNDER FLOOR TRENCH - REFER TO STRUCTURAL.

6. MECHANICAL EQUIPMENT - REFER TO MECHANICAL DRAWINGS.
AIRFLOW MEASUREMENT STATION

RELATIVE HUMIDITY

NOT ALL VALVES, INSTRUMENTS AND MISCELLANEOUS PIPING COMPONENTS HAVE BEEN TYPICAL REQUIRED.

EXHAUST

WHERE FLEXIBLE DUCT CONNECTORS ARE USED, THEY SHALL BE EQUAL TO OR GREATER THAN MANUFACTURER ALLOW. 4 FT OF STRAIGHT DUCT DOWNSTREAM OF VAV TERMINAL BEFORE INSTALL PIPING AND DUCTWORK TO AVOID ARCHITECTURAL FRAMING, STRUCTURAL MEMBERS AND OTHER CONSTRUCTION AND PROVIDE NECESSARY FITTINGS AND ACCESS DOORS.

Charlotte, North Carolina

FLEX DUCT CONNECTIONS SHALL MATCH RESPECTIVE CEILING DIFFUSER.

SUPPLY FAN

COMPUTER ROOM AIR CONDITIONING.

MAXIMUM

PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR WHEN THERMOSTATS TO BE SUPPLIED WITH THE FAN COIL UNITS ARE NOT LOCATED ON THE SAME RECESSES AS THE UNIT.

PRESSURE DIFFERENTIAL INDICATOR

DRAIN

PROVIDE MIN. 4" THICK HOUSEKEEPING PADS (OR GREATER IF REQ'D FOR CONDENSATE AFTER DRAINAGE).

TEMPERATURE

ANALOG OUTPUT

CARBON DIOXIDE DETECTOR.

CHILLED WATER RETURN

RETURN AIR

BOTTOM OF PIPE

OA

RETURN

SMOKE DETECTOR

BOTTOM OF DUCT

FILTER

DIRECT DIGITAL CONTROL PANEL

DOWN

THERMOSTAT/VAV SPACE TEMPERATURE SENSOR

TOP OF DUCT

VARIABLE AIR VOLUME

ALL MISCELLANEOUS SUPPORT STEEL SHALL BE PROVIDED BY DIVISION 23 UNLESS NOTED OTHERWISE.

CURRENT RELAY

EA

T

PIPE PENETRATIONS THROUGH SLAB AND WALLS SHALL HAVE PIPE SLEEVES WITH FIRE STOPPERS.

HORSEPOWER

DIAMETER

PRESSURE INDICATOR

REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION. IF THERE IS A CONFLICT BETWEEN THE HYGROMECHANICAL AND THE PIPING SPECIFICATIONS, FOLLOW THE HYGROMECHANICAL SPECIFICATIONS.

CUBIC FEET PER MINUTE

CONTROL DAMPER

FIRE SMOKE DAMPER

AHU

SIDEWALL EXHAUST GRILLE

TRANSFER GRILLE

ARCHITECTURAL DOOR GRILLE

EXHAUST

DIAMETER SYMBOL

WATER GAUGE

SA

ANALOG INPUT

DESCRIPTION

TEMPERATURE INDICATOR

AUTOMATIC AIR VENT

SQUARE HEAD COCK

W/PRESSURE TAPS

METERED BALANCING VALVE

FLEXIBLE CONNECTION

DIRECTION OF FLOW

CONCENTRIC REDUCER

CHECK VALVE

GENERAL SYMBOLS
1. Provide two (2) manual on/off switches, one for MAU-03/EF-03 and the other for MAU-04/EF-04.

2. High expansion foam generators. Refer to fire protection drawings for more information.

3. Route 8"Ø EA ductwork to wall cap as shown.

4. 10"Ø ductwork and associated hose reel to be provided as part of an OLI if required.

5. Control panel for hose reel and fans.

6. Route supply air duct through the joists and tuck to structure. Refer to section view for more detail.

7. Fuel cell hose reel to be mounted above clear zone of aircraft. Coordinate with all trades.

8. Furnace exhaust vent to be provided. Refer to plumbing drawings.

9. De-stratification fan. Refer to performance data and mechanical schedules for more information.

10. Hose reel. Refer to plumbing drawings.

11. HOSE REEL. REFER TO PLUMBING DRAWINGS.

12. Provide ventilation control system with manual selection switches as follows:

   - One "auto/on" switch for EF-05, 06 and 07; and one "auto/on" switch for EF-08, 09, 10, 11 and 12.

   - Two (2) manual "normal/maintenance" switches for MAU-01/EF-01 and MAU-02/EF-02;

   - One (1) "auto/on" switch for EF-05, 06 and 07; and one (1) "auto/on" switch for EF-08, 09, 10, 11 and 12.

13. Provide two (2) manual on/off switches, one for MAU-03/EF-03 and the other for MAU-04/EF-04.

14. Provide two (2) manual on/off switches, one mounted at 5' AFF and the other at 10' AFF.

15. Furnace exhaust vent to be provided. Refer to plumbing drawings.
1. Refer to sheet M-001 for additional general notes, abbreviations, symbols, and line designations.

Key Points:

1. 38"Ø SA duct routed through joists and tight to structure. Refer to section view for more details.
2. 8"Ø trench drain exhaust ductwork to below slab.
3. Mount bottom of exhaust grille at 6'-0" AFF.

General Notes:

- Refer to sheet M-001 for additional general notes, abbreviations, symbols, and line designations.
5 COCKPIT AIR CONDITIONER TO BE PROVIDED BY OTHERS.
3 36X14 RA DUCT. SEE DETAIL C1, ON THIS SHEET FOR CONTINUATION.
1 10X10 EA UP TO EXHAUST FAN EF-01S ON ROOF. REFER TO SHEET M-151 FOR CONTINUATION.
18 18” DEEP PLENUM FULL SIZE OF LOUVER.
17 DDC CONTROL PANELS.
10 ROUTE 8”Ø SA DUCT UP THROUGH PLATFORM FLOOR AND CONNECT TO BOTTOM OF SA DUCT.
5 COCKPIT AIR CONDITIONER TO BE PROVIDED BY OTHERS.
3 36X14 RA DUCT. SEE DETAIL C1, ON THIS SHEET FOR CONTINUATION.
1 10X10 EA UP TO EXHAUST FAN EF-01S ON ROOF. REFER TO SHEET M-151 FOR CONTINUATION.
18 18” DEEP PLENUM FULL SIZE OF LOUVER.
17 DDC CONTROL PANELS.
10 ROUTE 8”Ø SA DUCT UP THROUGH PLATFORM FLOOR AND CONNECT TO BOTTOM OF SA DUCT.
GENERAL NOTES:

A. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

MECHANICAL

C-17 CORROSION CONTROL & FUEL CELL HANGAR
M-112

MECHANICAL

C-17 FIRE PUMP BUILDING
HVAC PLAN

09/22/2017
1/4" = 1'-0"

0

1/4" = 1'-0"

2' 4' 8' 12'

KEYNOTES

A. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

GENERAL NOTES:
1. FANS, DUCTWORK, VENTILATORS, CONTROLS, AND ALL ASSOCIATED COMPONENTS FOR PAINT AND SANDING BOOTH ARE PART OF A DELEGATED DESIGN TO BE PROVIDED BY THE BOOTH MANUFACTURER.

2. SEE DETAIL 13/M-501 FOR RTU DETAIL.

3. EXHAUST FAN MOUNTED ON MANUFACTURER'S ROOF CURB. SEE DETAIL 12/M-501.

4. REFERENCE 15/M-501 FOR MOUNTING DETAILS.

5. ROUTE AND SPILL INTO DOWNSPOUT. REFERENCE DETAIL 11/M-501.

6. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.
CHILLED WATER COCKPIT AIR CONDITIONER

C1 WEAPON SYSTEM TRAINER BAY AHU-02S

D1 CHILLED WATER COCKPIT AIR CONDITIONER
**MECHANICAL EQUIPMENT PLATFORM - AREA A - ENLARGED PLAN**

1. POWER WASH EQUIPMENT. REFERENCE PLUMBING DRAWINGS FOR MORE INFORMATION.

2. PLUMBING EQUIPMENT. REFER TO PLUMBING DRAWINGS FOR MORE INFORMATION.

3. INSTALL COMBINATION MOTORIZED DAMPER WITH AIRFLOW MEASURING STATION. PROVIDE GREENHECK MODEL AMD-23 OR APPROVED EQUAL.

4. SIZE AND INSULATE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATION. REFER TO SHEET M-141 FOR CONTINUATION.

5. SIZE AND INSULATE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATION. SEE SHEET M-103 FOR CONTINUATION.

6. SEE SHEET M-106 FOR CONTINUATION.

7. ROUTE CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. SEE PLUMBING DRAWINGS FOR LOCATION. REFERENCE DETAIL 11/M-501.

8. 18" OUTSIDE AIR DUCT FROM ABOVE PENETRATING THROUGH THE ROOF PLATFORM.

9. ROUTE REFRIGERANT PIPING THROUGH WALL TO ROOF MOUNTED CONDENSING UNIT. SEE SHEET M-141 FOR CONTINUATION.

10. 18" DEEP PLACER FULL SIZE OF LOUVER.

---

**GENERAL NOTES:**

A. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

B. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

C. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

D. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

---

**MECHANICAL C-17 HANGAR**

**HANGAR ENLARGED PLANS**

**C-17 CORROSION CONTROL & FUEL CELL HANGAR**

**GENERAL NOTES:**

A. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

B. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

C. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.

D. REFER TO SHEET M-001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LINE DESIGNATIONS.
1. All air boxes shall be pressure tested in accordance with manufacturer’s guidelines.
2. All UL listed wiring shall be pressure tested before installation begins for service.
3. Provide with motor protection.
4. PROVIDE WITH MANUFACTURER’S PACKAGED CONTROLS WITH BACNET CAPABILITY.
5. PROVIDE WITH MANUFACTURER’S PACKAGED CONTROLS WITH BACNET CAPABILITY.

**AR Handling Unit Schedule**

<table>
<thead>
<tr>
<th>Model</th>
<th>Manufacturer</th>
<th>Condensing Unit</th>
<th>Package</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-4</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-3</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
</tbody>
</table>

**Energy Recovery Unit Schedule**

<table>
<thead>
<tr>
<th>Model</th>
<th>Manufacturer</th>
<th>Rotor Type</th>
<th>Number of</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-4</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-3</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
</tbody>
</table>

**Packaged RTU Schedule**

<table>
<thead>
<tr>
<th>Model</th>
<th>Manufacturer</th>
<th>Type</th>
<th>Package</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-4</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-3</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
</tbody>
</table>

**Refrigerant Piping Schedule**

<table>
<thead>
<tr>
<th>Model</th>
<th>Manufacturer</th>
<th>Type</th>
<th>Package</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-4</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-3</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
</tbody>
</table>

**Exhaust Fan Schedule**

<table>
<thead>
<tr>
<th>Model</th>
<th>Manufacturer</th>
<th>Type</th>
<th>Package</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-4</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
<tr>
<td>10TH</td>
<td>CARRIER</td>
<td>38AUZB08 DX MAU-3</td>
<td>91.9</td>
<td>460/3/60</td>
</tr>
</tbody>
</table>

NOTES:
- PROVIDE UNIT WITH MANUFACTURER’S PACKAGED CONTROLS WITH BACNET CAPABILITY.
- PROVIDE WITH MANUFACTURER’S PACKAGED CONTROLS.
- PROVIDE WITH MANUFACTURER’S PACKAGED CONTROLS.
- PROVIDE WITH MANUFACTURER’S PACKAGED CONTROLS.
- PROVIDE WITH MANUFACTURER’S PACKAGED CONTROLS.
- PROVIDE UNIT WITH MANUFACTURER’S PACKAGED CONTROLS.
## Notes

1. **Gravity Ventilator Schedule**
   - **Room Type:** HVAC System
   - **Room:** All Rooms

2. **Supply Air Device Schedule**
   - **Room Type:** HVAC System
   - **Room:** All Rooms

3. **Return and Exhaust Air Device Schedule**
   - **Room Type:** HVAC System
   - **Room:** All Rooms

## Mechanical HVAC Schedules

### Hose Reel Supply Air Schedule

### Hose Reel Exhaust Air Schedule

### Mini Split Cooling Only Indoor Unit Schedule (DU)

### Mini Split Cooling Only Outdoor Condensing Unit Schedule (DDU)

### Dehumidification Fan Schedule

### Lower Schedule

### Gravity Ventilation Schedule

---

### Mechanical HVAC Schedules

#### Hose Reel Supply Air Schedule

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2018</td>
</tr>
</tbody>
</table>

#### Hose Reel Exhaust Air Schedule

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2018</td>
</tr>
</tbody>
</table>

#### Mini Split Cooling Only Indoor Unit Schedule (DU)

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2018</td>
</tr>
</tbody>
</table>

#### Mini Split Cooling Only Outdoor Condensing Unit Schedule (DDU)

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2018</td>
</tr>
</tbody>
</table>

#### Dehumidification Fan Schedule

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2018</td>
</tr>
</tbody>
</table>

#### Lower Schedule

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2018</td>
</tr>
</tbody>
</table>

#### Gravity Ventilation Schedule

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2018</td>
</tr>
</tbody>
</table>
2. PROVIDE WITH INTEGRAL DISCONNECT SWITCHES.

NOTES:

1. PROVIDE WITH GRAVITY BACKDRAFT DAMPER.

2. ALL FANS SHALL BE U.L LISTED AND LABELED.

3. PROVIDE MANUFACTURERS ROOF CURB & FACTORY MOUNTED SPEED CONTROLLER.

4. COMPRESSORS SHALL HAVE INDIVIDUAL VIBRATION ISOLATION.

5. SYSTEM SHALL OPERATE IN HEAT PUMP MODE PRIOR TO ENERGIZING ELECTRIC HEAT.

6. All fans shall be superseded one manufacturer may be substituted.

7. PROVIDE WITH LOW LEAKAGE MOTORIZED CONTROL DAMPER.

8. DISCHARGE DUCT MUST BE GASKETED AND SCREWED DIRECTLY TO THE DISCHARGE PANEL OF THE UNIT.

9. PROVIDE WITH BIRDSCREEN. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND ELEVATION.

10. SELECT BASED ON CRAC CONDENSING UNIT SCHEDULE

11. ELEC HEATING COIL DATA

12. ELECTRICAL DATA

13. SYSTEM SHALL BE PROVIDED WITH PACKAGED CONTROLS THAT ARE BACNET COMPATIBLE.

14. EQUIPMENT SHALL BE UL LISTED AND MUST BE ARI CERTIFIED.

15. WATER HEATER SCHEDULE

16. SUMMARY OF EQUIPMENT

17. AIR HANDLING SCHEDULE (AHU)

18. CHILLER SCHEDULE

19. UNIT HEATER SCHEDULE - FIRE PUMP BUILDING

20. RETURN AND EXHAUST AIR DEVICE SCHEDULE

21. MINI SPLIT HEAT PUMP OUTDOOR UNIT SCHEDULE (XDU)

22. MINI SPLIT HEAT PUMP INDOOR UNIT SCHEDULE (XDI)
**GENERAL NOTES**

A. REFER TO SHEET M-001 FOR SYMBOLS AND ABBREVIATIONS.

B. SEE DIVISION 23, DIRECT DIGITAL CONTROL FOR HVAC, FOR SEQUENCE OF OPERATION.

C. DUCT SMOKE DETECTORS AND CONTROL MODULES PROVIDED AND CONNECTED TO FIRE ALARM SYSTEM BY DIVISION 28. SEE DIVISION 28, FIRE ALARM, FOR ADDITIONAL INFORMATION.

**REVISIONS**

<table>
<thead>
<tr>
<th>SHEET</th>
<th>REVISION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-703</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KEYNOTES**

1. FAN DISCONNECT.
2. LIGHT SWITCH.
3. CHILLER WILL BE PROVIDED WITH PACKAGE CONTROLS AND INTERLOCKED WITH COCKPIT AIR CONDITIONER PROVIDED BY OTHERS. CONNECT CHILLER RUN STATUS AND ALARM/TROUBLE CONTACTS AT CHILLER CONTROL PANEL TO BAS FOR MONITORING.
4. PROVIDE INTERLOCK WIRING BETWEEN FAN AND ASSOCIATED ISOLATION DAMPER. WHEN FAN IS COMMANDED TO START IN EITHER HAND OR AUTO MODE, DAMPER SHALL OPEN. ONCE DAMPER IS PROVEN OPEN BY ASSOCIATED END SWITCH, FAN SHALL START. DAMPER SHALL CLOSE WHEN THE FAN STOPS.

**SCALE**

12" = 1'-0"
### BAS POINT FUNCTION SCHEDULE

<table>
<thead>
<tr>
<th>POINT DESCRIPTION</th>
<th>HARDWARE</th>
<th>SOFTWARE</th>
<th>SOFTWARE</th>
<th>GRAPHICS</th>
<th>ALARMS/LETS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

A. REFER TO SHEET M-001 FOR SYMBOLS AND ABBREVIATIONS. B. BAS DIVISION IS DIRECT DIGITAL CONTROL FOR HVAC, FOR SEQUENCE OF OPERATIONS.

**KEYNOTES**

- LIMIT ALARMS LISTED AT +/- 10% OF MINIMUM OUTDOOR AIR FLOW. ALARMS MAY OCCUR DURING UNOCCUPIED PERIODS.
- PROVIDE NECESSARY OUTPUTS AS REQUIRED.
- COORDINATE NUMBER OF DX COOLING STAGES AND SCHEDULE. INHIBIT ALARMING DURING UNOCCUPIED PERIODS.
- MAY DIFFER DEPENDING ON ACTUAL OPERATING SCHEDULE.
- ENTHALPY ECONOMIZER.
- DIRECT DIGITAL CONTROL.
- SET ALARMS LISTED AT +/- 10% OF MINIMUM OUTDOOR AIR FLOW. ALARMS MAY OCCUR DURING UNOCCUPIED PERIODS.
- PROVIDE NECESSARY OUTPUTS AS REQUIRED.
- COORDINATE NUMBER OF DX COOLING STAGES AND SCHEDULE. INHIBIT ALARMING DURING UNOCCUPIED PERIODS.
- MAY DIFFER DEPENDING ON ACTUAL OPERATING SCHEDULE.
- ENTHALPY ECONOMIZER.

**DRAWN BY**

J. STAMPER

**DESIGNED BY**

S. KOWALCZYK

**MECHANICAL**

DOUGLAS IAP, NORTH CAROLINA

**GENERAL NOTES**

A. REFER TO SHEET M-001 FOR SYMBOLS AND ABBREVIATIONS. B. BAS DIVISION IS DIRECT DIGITAL CONTROL FOR HVAC, FOR SEQUENCE OF OPERATIONS.

**KEYNOTES**

- LIMIT ALARMS LISTED AT +/- 10% OF MINIMUM OUTDOOR AIR FLOW. ALARMS MAY OCCUR DURING UNOCCUPIED PERIODS.
- PROVIDE NECESSARY OUTPUTS AS REQUIRED.
- COORDINATE NUMBER OF DX COOLING STAGES AND SCHEDULE. INHIBIT ALARMING DURING UNOCCUPIED PERIODS.
- MAY DIFFER DEPENDING ON ACTUAL OPERATING SCHEDULE.
- ENTHALPY ECONOMIZER.
- DIRECT DIGITAL CONTROL.
- SET ALARMS LISTED AT +/- 10% OF MINIMUM OUTDOOR AIR FLOW. ALARMS MAY OCCUR DURING UNOCCUPIED PERIODS.
- PROVIDE NECESSARY OUTPUTS AS REQUIRED.
- COORDINATE NUMBER OF DX COOLING STAGES AND SCHEDULE. INHIBIT ALARMING DURING UNOCCUPIED PERIODS.
- MAY DIFFER DEPENDING ON ACTUAL OPERATING SCHEDULE.
- ENTHALPY ECONOMIZER.
### BAS Point Function Schedule

**Point Description**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Fail Mode</th>
<th>Software</th>
<th>Graphics</th>
<th>Alarm Limits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAN AND EF (MAN SHUT-OF &amp; EF SHUT-OF)</td>
<td>EF-01</td>
<td>EF-02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMERGENCY SHUT DOWN SWITCH</td>
<td>EF-01</td>
<td>EF-02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAN AND EF (MAN SHUT-OF &amp; EF SHUT-OF)</td>
<td>EF-01</td>
<td>EF-02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMERGENCY AIR DISTRIBUTION SHUT DOWN</td>
<td>EF-01</td>
<td>EF-02</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General Notes**
- A. REFER TO SHEET M-001 FOR SYMBOLS AND ABBREVIATIONS.
- B. SEE DIVISION 23, DIRECT DIGITAL CONTROL FOR HVAC, FOR SEQUENCE OF OPERATION.

**Device Code**

- SUPERVISED WIRING
- ANALOG INPUT
- DIGITAL INPUT
- ADDRESSABLE INPUT
- ANALOG OUTPUT
- AIR FLOW SET POINT BASED ON MECHANICAL
- INTEGRATE METERING INFORMATION INTO BAS.
- NETWORK INTERFACE USING BACNET. MAP OVER AND PROVIDE NECESSARY OUTPUTS AS REQUIRED.

**Configuration**

- UNIT MANUFACTURER AND SENSORS.
- QUANTITIES OF VAV BOXES AND SPACE TEMPERATURE SCHEDULE. INHIBIT ALARMING DURING UNOCCUPIED CONDITIONS.

**Set Alarms**

- LIMITS ALARMS MWT'S AND DETAILED SOFTWARE ONLY AND WITH SOFTWARE AUTOMATION CONSIDERED.
- AUTOMATION CONSIDERED FOR HVAC SYSTEMS ONLY.

**Software Interlocks**

- SOFTWARE INTERLOCKS ARE CONNECTED TO BASE ON NETWORKS, RESEARCH-LABORATORY'S BUDGET, PERFORMANCE, AND/OR TECHNICAL INFORMATION INTO BASE

**Revisions**

- MECHANICAL
- C-17 HANGAR
- BAS POINT FUNCTION SCHEDULE

### Mechanical

**C-17 Hangar**

- NORTH CAROLINA AIR NATIONAL GUARD
- DOUGLAS IAP, NORTH CAROLINA

**Drawing Information**

- REV
- Date
- Sheet
- Project No.
- Sheet No.

**Scale**

- 1/500

**Dimensions**

- 3024.0 x 2160.0

**Project**

- NORTH CAROLINA AIR NATIONAL GUARD
- DOUGLAS IAP, NORTH CAROLINA
PROVIDE DIELECTRIC UNIONS AS REQUIRED.

PROVIDE ACCESS PANELS FOR ALL VALVES, WATER HAMMER.

LOCATE ALL VALVES ABOVE ACCESSIBLE CEILING WHERE POSSIBLE.

MOUNTING AND ANCHORING OF MECHANICAL EQUIPMENT SHALL BE

HORIZONTAL VENT PIPING SHALL BE RUN ABOVE CEILING AND ALL

PROVIDE WIRING FOR ELECTRICAL CONTROLS IN ACCORDANCE WITH

VERIFY THE ITEMS TO BE FURNISHED FIT THE SPACE

FIRESTOP ALL PENETRATIONS OF FIRE RATED WALLS AND FLOOR

COORDINATE ALL PLUMBING WORK WITH SITE CONDITIONS AND THE

WHERE APPROVAL CODES HAVE BEEN ESTABLISHED BY OSHA,

COORDINATE LOCATION OF FLOOR DRAINS AND TRENCH DRAINS WITH

DO NOT SCALE THESE DRAWINGS FOR CONSTRUCTION PURPOSES.

ABBREVIATIONS

PRESSURE GAUGE

CHECK VALVE

BALL VALVE

ADA AMERICANS WITH DISABILITY ACT

AFF ABOVE FINISH FLOOR

ARCH ARCHITECT

PRESSURE RELIEF VALVE

CONCENTRIC REDUCER

BFP BACKFLOW PREVENTER

ECCENTRIC REDUCER

CONNECTIONS AS MAY BE REQUIRED

FLEXIBLE CONNECTION

FLEX CONN FLEXIBLE CONNECTION

GAS / NATURAL GAS

GALV GALVANIZED

GPM GALLONS PER MINUTE

GS/GW GREASE DRAINAGE / GREASE WASTE

HTR HEATER

HW HOT WATER

DIV DOMESTIC HOT WATER (110°F OR 140°F)

HWS HOT WATER HEATING SUPPLY

HWT HOT WATER RETURN

DOMESTIC HOT WATER (60°F)

W/TP W/ TAP PRIMER

W/PRESSURE TAPS

METERED BALANCING VALVE

CONCRETE POUR OR CORE DRILL.

CONCRETE POUR OR CORE DRILL.

CONCRETE POUR OR CORE DRILL.

CONCRETE POUR OR CORE DRILL.

CONCRETE POUR OR CORE DRILL.

CONCRETE POUR OR CORE DRILL.

CONCRETE POUR OR CORE DRILL.
PLUMBING GENERAL NOTES

1. FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS REFER TO SHEET P-001.

PLUMBING C-17 HANGAR
PARTIAL SANITARY PIPING PLAN - AREAS B AND C

INVERT ELEVATION AT 27" BELOW FINISHED FLOOR

1/8" = 1'-0"

PLUMBING CONTRACTOR SHALL COORDINATE EXACT DRAIN PIPING LOCATION WITH BOOTH MANUFACTURER PRIOR TO INSTALLATION.

REFERENCE DETAIL C1 AND D4/P-501 FOR FD-1.

FOR CONTINUATION, REFER TO OVERALL SANITARY PIPING PLANS.

FOR CONTINUATION, REFER TO CIVIL DRAWINGS.

24'4' 8' 16'

REFERENCES:

- SHEET P-001
- SHEET P-002
- SHEET P-003

SCALE
1/8" = 1'-0"
PLUMBING GENERAL NOTES

1. FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS REFER TO SHEET P-001.

P-101

A1 PARTIAL SANITARY PIPING PLAN - AREA D

1 TRENCH DRAIN SHALL SLOPE TOWARDS THE BOTTOM DRAIN CONNECTION.

2 SEE MECHANICAL PLANS FOR 8" EXHAUST DUCT CONNECTION AT END OF DRAIN.

3 FOR CONTINUATION, REFER TO AREA A SANITARY PIPING PLAN, SHEET P-102.

KEY NOTES

PLUMBING C-17 HANGAR
PARTIAL SANITARY PIPING PLAN - AREA D

C-17 CORROSION CONTROL & FUEL CELL HANGAR

1/8" = 1'-0"
1. For general notes, legend, and abbreviations refer to Sheet P-001.

- Trench drain shall slope toward bottom drain connection.
- Refer to mechanical plans for 8" exhaust duct connection instead of drain.
- For coordination, refer to overall sanitary piping plans.

1 Trench drain shall slope toward bottom drain connection.
2 See mechanical plans for 8" exhaust duct connection instead of drain.
3 For continuation, refer to overall sanitary piping plans.

PLUMBING GENERAL NOTES

KEY NOTES
1. Coordinate floor drain locations with actual equipment installed.

2. Provide and install 12" diameter exhaust header for 6" diameter vents from power wash equipment and route to exhaust louver as shown. Coordinate installation with mechanical exhaust ducts in the area.

3. Provide water heater manufacturer's concentric wall vent kit. Route supply and exhaust 6" vents to water heater connections.

4. Provide and install hooded wall cap with birdscreen.

5. Coordinate location with equipment installed on roof. Maintain a minimum of 10' horizontal distance from air intakes.
1 PROVIDE 1"CA DROP TO MANUAL HOSE REEL MOUNTED ON WALL.
2 DROP PIPING DOWN TO BE ABOVE CEILING AT LOCATION SHOWN.
3 RAISE PIPING TO ABOVE CEILING AT LOCATION SHOWN.
4 ROUTE PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
5 PROVIDE BALANCING VALVE FOR HOT WATER RETURN LINE.
6 ROUTE BA/CA PIPING UP TO HANGAR STRUCTURE. REFER TO P-115 FOR CONTINUATION.
7 ROUTE BA/CA PIPING UP TO HANGAR STRUCTURE. REFER TO P-114 FOR CONTINUATION.
8 PROVIDE MANUAL DRAIN VALVE AT THIS LOCATION 3' ABOVE FINISHED FLOOR.
9 SLOPE BA/CA PIPING AT 1" PER 50FT BACK TOWARDS DRAIN VALVE.
10 ROUTE 3/4"CW LINE UP TO ROOF FOR HYD-1.
11 FOR CONTINUATION, REFER TO OVERALL PLUMBING PIPING PLANS.
PLUMBING GENERAL NOTES

1. FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS REFER TO SHEET P-001.

KEY NOTES

- PROVIDE 3" TURBINE TYPE WATER METER WITH REMOTE READOUT CAPABILITY ON WALL. TIE INTO BUILDING AUTOMATION SYSTEM (BAS).
- PROVIDE ELECTRONIC GAS METER WITH REMOTE READOUT CAPABILITY ON WALL. TIE INTO BUILDING AUTOMATION SYSTEM (BAS).
- PROVIDE 1" DROP TO COMPRESSED AIR MANUAL HOSE REEL MOUNTED ON WALL. TIE INTO BUILDING AUTOMATION SYSTEM (BAS).
- PROVIDE ELECTRONIC GAS METER WITH REMOTE READOUT CAPABILITY ON WALL. TIE INTO BUILDING AUTOMATION SYSTEM (BAS).
- PROVIDE 3" DROP TO COMPRESSED AIR MANUAL HOSE REEL MOUNTED ON WALL. TIE INTO BUILDING AUTOMATION SYSTEM (BAS).
- PROVIDE 1/2" BREATHING AIR DISCONNECT INTO COMPOSITE BOOTHS. ROUTE 1" GAS LINE FOR BOOTH MANUFACTURE MAKE UP AIR UNIT ON ROOF. TERMINATE WITH ISOLATION VALVE AND CAP BELOW ROOF. FINAL CONNECTIONS TO BE MADE BY BOOTH MANUFACTURER.
- PROVIDE 1/2" COMPRESSED AIR DISCONNECT INTO PAINT BOOTHS.
- PROVIDE 3/4" COMPRESSED AIR DISCONNECT INTO SANDING BOOTH.
- FOR CONTINUATION, REFER TO CIVIL DRAWINGS.
- FOR CONTINUATION, REFER TO OVERALL PLUMBING PIPING PLANS.
- ROUTE 3" CW PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
- ROUTE 3" G PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
- ROUTE 3" CW PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
- ROUTE 3 C" W PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
- ROUTE 3" G PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
- ROUTE 3" CW PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
- PROVIDE 3/4" COMPRESSED AIR DISCONNECT INTO SANDING BOOTH.
- ROUTE 3" G PIPING UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
1. PROVIDE AND INSTALL AUTOMATIC HOSE REELS FOR COMPRESSED AIR AND BREATHING AIR.
2. PROVIDE AND INSTALL POWER WASH OUTLET STATION. COORDINATE REQUIREMENTS WITH POWER WASH MANUFACTURER.
3. PROVIDE AND INSTALL MANUAL HOSE REELS FOR COMPRESSED AIR.
4. PROVIDE AND INSTALL MANUAL HOSE REELS FOR COMPRESSED AIR.
5. HIGH POINT OF CA/BA PIPING SLOPE TOWARDS DRAIN VALVE UPSTREAM AND DOWNSTREAM OF THIS LOCATION.
6. SLOPE BA/CA PIPING AT 1" PER 50FT BACK TOWARDS DRAIN VALVE.
7. FOR CONTINUATION, REFER TO OVERALL PLUMBING PIPING PLANS.

PLUMBING GENERAL NOTES

1. FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS REFER TO SHEET P-001.
1. PROVIDE AND INSTALL AUTOMATIC HOSE REELS FOR COMPRESSED AIR.
2. PROVIDE AND INSTALL POWER WASH OUTLET STATION. COORDINATE REQUIREMENTS WITH POWER WASH MANUFACTURER.
3. PROVIDE AND INSTALL MANUAL HOSE REELS FOR COMPRESSED AIR AND BREATHING AIR.
4. PROVIDE AND INSTALL BALANCING VALVE FOR HOT WATER RETURN LINE.
5. SLOPE BA/CA PIPING AT 1" PER 50FT BACK TOWARDS DRAIN VALVE.
6. PROVIDE AND INSTALL POWER WASH SOLUTION MIX STATION. COORDINATE REQUIREMENTS WITH POWER WASH MANUFACTURER.
7. FOR CONTINUATION, REFER TO OVERALL PLUMBING PIPING PLANS.

PLUMBING GENERAL NOTES

1. FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS REFER TO SHEET P-001.
1. FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS REFER TO SHEET P-001.

PLUMBING GENERAL NOTES

1. ROUTE 3"CW PIPING UP FROM FIRST FLOOR TO PLATFORM AND RUN PIPING ALONG PLATFORM.
2. PROVIDE LOW POINT DRAINAGE FOR PIPING AT LOCATIONS SHOWN.
3. SLOPE CA PIPING AWAY FROM COMPRESSORS.
4. ROUTE CA PIPING AWAY FROM REELS.
5. GAS PRESSURE REGULATOR. STEP DOWN TO 7 IN. W.C.
6. FOR CONTINUATION, REFER TO OVERALL PLUMBING PIPING PLANS.

PLUMBING C-17 HANGAR MECHANICAL EQUIPMENT PLATFORM PLUMBING PIPING PLANS

PLUMBING GENERAL NOTES

1. ROUTE 3"CW PIPING UP FROM FIRST FLOOR TO PLATFORM AND RUN PIPING ALONG PLATFORM.
2. PROVIDE LOW POINT DRAINAGE FOR PIPING AT LOCATIONS SHOWN.
3. SLOPE CA PIPING AWAY FROM COMPRESSORS.
4. ROUTE CA PIPING AWAY FROM REELS.
5. GAS PRESSURE REGULATOR. STEP DOWN TO 7 IN. W.C.
6. FOR CONTINUATION, REFER TO OVERALL PLUMBING PIPING PLANS.

PLUMBING C-17 HANGAR MECHANICAL EQUIPMENT PLATFORM PLUMBING PIPING PLANS

PLUMBING GENERAL NOTES

1. ROUTE 3"CW PIPING UP FROM FIRST FLOOR TO PLATFORM AND RUN PIPING ALONG PLATFORM.
2. PROVIDE LOW POINT DRAINAGE FOR PIPING AT LOCATIONS SHOWN.
3. SLOPE CA PIPING AWAY FROM COMPRESSORS.
4. ROUTE CA PIPING AWAY FROM REELS.
5. GAS PRESSURE REGULATOR. STEP DOWN TO 7 IN. W.C.
6. FOR CONTINUATION, REFER TO OVERALL PLUMBING PIPING PLANS.
1. ROUTE 1" CA UP TO MECHANICAL EQUIPMENT PLATFORM ABOVE.
2. ROUTE 1" CA LINE DOWN TO MAINTENANCE WORKROOM.
3. PROVIDE ELECTRONIC WATER METER ON WALL. TIE INTO BUILDING AUTOMATION SYSTEM (BAS).
4. PROVIDE GAS METER ON WALL. TIE INTO BUILDING AUTOMATION SYSTEM (BAS).
5. PROVIDE GAS FIRED TANKLESS INSTANTANEOUS WATER HEATER. MOUNT ON WALL. ROUTE PRESSURE AND TEMPERATURE RELIEF LINE ALONG WALL AND TERMINATE 3" ABOVE MOP SINK. PROVIDE 3" SUPPLY AND EXHAUST VENT WITH MANUFACTURER'S CONCENTRIC ROOF OUTLET.
6. PROVIDE INTERNAL DRAIN WITH AIR COMPRESSION.
7. GAS METER TO BE PROVIDED BY GAS COMPANY. MOUNT OUTSIDE ON CONCRETE PAD. PROVIDE WITH STEP DOWN PRESSURE REGULATOR TO 7" W.C.
8. GAS PIPING SIZED BASED ON INTERNATIONAL FUEL GAS CODE. LENGTH 150 FT, PRESSURE DROP 0.3" W.C., 120 CFH AND 0.60 SPECIFIC GRAVITY.
9. 1" CA LINE DOWN WALL FROM MECHANICAL PLATFORM ABOVE WITH DISCONNECT AT END OF LINE.
10. CONNECT 3/4" MAKE UP WATER TO CHILLED WATER SYSTEM. SEE HVAC PLANS FOR CONTINUATION.
1. PROVIDE WALL CLEANOUT AT BASE OF ALL ROOF DRAINAGE DOWSPOUTS. PROVIDE WALL CLEANOUT.
2. GAS COCK, FIN FL UNION, TYP.
3. DOMESTIC COLD WATER SUPPLY LINE.
4. PRESSURE REGULATOR.
5. COLUMN OR PARTITION UNION (TYP.).
6. 2-1/2" GAS SHOWN ON PRIMER PLUMBING FLOOR THREAD WITH TFE JOINT COMPOUND.
7. PROVIDE A SECTION OF HIGH CLOCK AND MANUAL 25mm AIR OVERRIDE SWITCH AT EACH HANGER POINT.
8. INSULATION STEP DOWN TO 7" W.C.
9. MAY BE HALF ROUND OR FULL ROUND A CHASE OR PARTITION, PROVIDE COVER TO MAU SANDING BOOTH AS SPECIFIED.
10. 1" GAS TO MAU-011, 600 MBH 870 CFH.
11. 3" GAS PIPE OF WALL SURFACE, PROVIDE HUB AT FLOOR FINISHED FLOOR.
12. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
13. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
14. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
15. TYPICAL PIPE SUPPORT DETAILS.
16. PROVIDE WALL CLEANOUT DETAIL.
17. ELECTRONIC TRAP PRIMER DETAIL.
18. TYPICAL PIPE SUPPORT DETAILS.
19. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
20. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
21. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
22. TYPICAL PIPE SUPPORT DETAILS.
23. ELECTRONIC TRAP PRIMER DETAIL.
24. TYPICAL PIPE SUPPORT DETAILS.
25. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
26. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
27. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
28. TYPICAL PIPE SUPPORT DETAILS.
29. ELECTRONIC TRAP PRIMER DETAIL.
30. TYPICAL PIPE SUPPORT DETAILS.
31. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
32. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
33. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
34. TYPICAL PIPE SUPPORT DETAILS.
35. ELECTRONIC TRAP PRIMER DETAIL.
36. TYPICAL PIPE SUPPORT DETAILS.
37. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
38. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
39. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
40. TYPICAL PIPE SUPPORT DETAILS.
41. ELECTRONIC TRAP PRIMER DETAIL.
42. TYPICAL PIPE SUPPORT DETAILS.
43. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
44. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
45. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
46. TYPICAL PIPE SUPPORT DETAILS.
47. ELECTRONIC TRAP PRIMER DETAIL.
48. TYPICAL PIPE SUPPORT DETAILS.
49. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
50. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
51. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
52. TYPICAL PIPE SUPPORT DETAILS.
53. ELECTRONIC TRAP PRIMER DETAIL.
54. TYPICAL PIPE SUPPORT DETAILS.
55. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
56. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
57. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
58. TYPICAL PIPE SUPPORT DETAILS.
59. ELECTRONIC TRAP PRIMER DETAIL.
60. TYPICAL PIPE SUPPORT DETAILS.
61. PROVIDE DISTRIBUTION UNIT FOR MULTIPLE FLOOR DRAINS.
62. PROVIDE SPRING VIBRATION ISOLATORS ON ALL PIPING 3" OR LARGER (TYPICAL).
63. NOTE: CLEANOUT. MAXIMUM HEIGHT ABOVE FINISHED FLOOR 1.2m.
64. TYPICAL PIPE SUPPORT DETAILS.
**PLUMBING FIXTURE CONNECTION SCHEDULE**

<table>
<thead>
<tr>
<th>S/N.</th>
<th>Description</th>
<th>Connection Type</th>
<th>COMBINATION</th>
<th>ELECTRICAL TYPE</th>
<th>Size of Fixture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>STOOL TANK</td>
<td>2&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>WATER HEATER</td>
<td>1 1/2&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>SHOWER TANK</td>
<td>3&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
</tbody>
</table>

**OIL WATER SEPARATOR SCHEDULE**

<table>
<thead>
<tr>
<th>S/N.</th>
<th>Description</th>
<th>Type</th>
<th>Flow Rate</th>
<th>Capacity</th>
<th>Gross GPM</th>
<th>Net GPM</th>
<th>Model</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>OIL WATER SEPARATOR</td>
<td>CIP</td>
<td>150 GPM</td>
<td>50 GPM</td>
<td>150 GPM</td>
<td>50 GPM</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**WATER HEATER SCHEDULE**

<table>
<thead>
<tr>
<th>S/N.</th>
<th>Description</th>
<th>Connection Type</th>
<th>COMBINATION</th>
<th>ELECTRICAL TYPE</th>
<th>Size of Fixture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>STEAM TANK</td>
<td>2&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>WATER HEATER</td>
<td>1 1/2&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>SHOWER TANK</td>
<td>3&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
</tbody>
</table>

**AIR COMPRESSOR SCHEDULE**

<table>
<thead>
<tr>
<th>S/N.</th>
<th>Description</th>
<th>Type</th>
<th>Horsepower</th>
<th>Capacity (CFM)</th>
<th>Temperature (F)</th>
<th>Pressure (PSI)</th>
<th>Hours/Day</th>
<th>Motor RPM</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC.1</td>
<td>AIR COMPRESSOR</td>
<td>20</td>
<td>7.5</td>
<td>30</td>
<td>97</td>
<td>140</td>
<td>190</td>
<td>3450</td>
<td>-</td>
</tr>
<tr>
<td>AC.2</td>
<td>AIR COMPRESSOR</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>97</td>
<td>140</td>
<td>190</td>
<td>3450</td>
<td>-</td>
</tr>
<tr>
<td>AC.3</td>
<td>AIR COMPRESSOR</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>97</td>
<td>140</td>
<td>190</td>
<td>3450</td>
<td>-</td>
</tr>
</tbody>
</table>

**SHOWER SYSTEM SCHEDULE**

<table>
<thead>
<tr>
<th>S/N.</th>
<th>Description</th>
<th>Connection Type</th>
<th>COMBINATION</th>
<th>ELECTRICAL TYPE</th>
<th>Size of Fixture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>RECLUCTANT</td>
<td>2&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>EPHRAIM</td>
<td>3&quot;</td>
<td>CIP</td>
<td>CIP</td>
<td>1/2&quot;</td>
<td>-</td>
</tr>
</tbody>
</table>

**WATER HEATER SCHEDULE**

<table>
<thead>
<tr>
<th>S/N.</th>
<th>Description</th>
<th>Type</th>
<th>Flow Rate</th>
<th>Capacity</th>
<th>Gross GPM</th>
<th>Net GPM</th>
<th>Model</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>OIL WATER SEPARATOR</td>
<td>CIP</td>
<td>150 GPM</td>
<td>50 GPM</td>
<td>150 GPM</td>
<td>50 GPM</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
PROVIDE TRAP PRIMER TO FLOOR DRAIN, SEE DETAIL C1 SHEET P-501
PROVIDE TRAP PRIMER TO FLOOR DRAIN, SEE DETAIL C1 SHEET P-501

NOTES:
120 MBH TOTAL USAGE.
LONGEST PIPING RUN TO OVEN IS 750 FT.
INLET PRESSURE 7" W.C.
PRESSURE DROP 0.3" W.C.
SPECIFIC GRAVITY 0.60.
PIPING SIZING BASED ON INTERNATIONAL FUEL GAS CODE.
C-17 FLIGHT SIMULATOR DOMESTIC WATER AND GAS PIPING RISER DIAGRAM

Connect C-17 simulator water to CHILLED WATER SYSTEM. See HVAC plans for continuation.