

Project Name Avera Sacred Heart Hospital
 Medical/Surgical Patient Room Renovation

Addendum # 3

Date 6-23-14

Sent by Jacob T. Bunde AIA
 Jacob.bunde@avera.org
 605-322-7802

ARCHITECTURAL

Specifications:

1. Window treatments call out for a 3-10% openness. This is to be changed to a 1%
2. The specs require epoxy adhesive und the sheet flooring under beds. This is required for all Patient rooms in the bed location.

Drawings:

1. A skim coat for the entire corridor should not be necessary and is not to be bid. If upon removal of existing wall covering it is found to be required. We will negotiate a change order.
2. Patient room vanities are solid surface.
3. Modification to note 15 addendum 2: 554 and 520 are to get new head walls like the rest of the patient rooms.

General Notes:

1. The wall between the existing patient floor corridor and the patient rooms will receive one (1) mudded sheet of drywall for required smoke permeation barrier. Completion of this work will require a barrier in the corridor to limit dust and noise. Location of the barrier shall be coordinated with Randy.
2. A fire watch will be required during construction if existing fire alarm detection devices are disabled to support the temporary ICRA partition in the corridor. Contractor will be expected to sign hospital safety agreement.
3. All temporary partitions shall be constructed of sheet rock. Plastic type will not be acceptable. Negative air will be required in construction areas.
4. Contractor will be required to participate in and assist in completing an Interim Life Safety Measures document for submission to the State.

Contractor Questions from Prebid:

- A. Please clarify the dashed lines indicated near Room 452. Dashed lines indicate required clearances.
- B. At the walls between the corridors and the patient rooms not being renovated by this project, the Owner will provide the required mudded drywall smoke permutation barrier.
- C. Shower rod shall be provided by the Contractor.
- D. Specified wiring devices not at new headwall locations will need to be cut into existing drywall walls.
- E. Are new sprinkler heads required to be provided? Yes, new piping and heads are specified.
- F. Are new sprinklers required on 3rd Floor? No, only modifications necessary to facilitate installation of new work.

- G. Contractor will be responsible for FM sprinkler calculation submittals.
- H. Are there structural concerns regarding where and where not to drill core drills? Yes existing structural drawings are attached.
- I. Are there structural concerns regarding the installation of trench drains? Existing structural drawings are attached.
- J. Do fire sprinkler zones equate to construction phasing zones? No. Maintain sprinklers in occupied areas.
- K. Medical gas zoning shall be maintained. Outlets in occupied areas shall remain active.
- L. Where are quantities and locations of existing ceiling devices indicated? They are not. Existing ceiling plans will be included in AD-3.
- M. AD-3 will include a First Level electrical floor plan, indicating locations of existing sources for specified feeders.
- N. To what location will salvaged materials be delivered? Contractor shall coordinate with Randy.
- O. Will there need to be any temporary fire alarm smoke detectors provided? Documents do not specify any.
- P. Owner would like a few FCU's to be salvaged for them.
- Q. Medical Gas Outlet: The existing medical gas outlets are Ohmeda. Part numbers are listed in the specifications and can be obtained from Bio-med (Chris). New faceplates and brackets are required to be provided by the Contractor.
- R. Cannot locate a detail of the stud wall at the headwall. Head wall is to be a 3 5/8" mtl stud wall placed in front of the existing wall with a PLAM over the MTL stud.
- S. Cannot locate specific locations for television backing. Will be coordinated with the owner
- T. Who will be the temperature controls contractor? Johnson Controls.
- U. Who will open up and close up walls for specified medical gas work? This is a means and methods question.
- V. Cannot locate the window and doors schedule. Door schedule was provided in AD-2. Windows will not be scheduled.
- W. Where are mirrors scheduled? Section 102800. Preframed.
- X. The existing fire protection drawings are added for reference.
- Y. Can MC cable be used for some new receptacles and light switches? All specified wall box devices having a generator source cannot use HCF type metal clad cable. To be determined for normal source wiring devices.
- Z. Does the Contractor need to have dedicated 1" empty conduits from each nurse call rough-in to the corridor, or can these be daisy chained together? SES does not have a proposal from the selected nurse call vendor to substantiate that daisy chaining will be acceptable. Provide dedicated 1" conduits from each rough-in location.

Addendum 3



Date: 06/23/2014

Project Name: Avera Sacred Heart Hospital
Medical/Surgical Patient Room Renovation

Project #: 14041

General Specification Items:

GS1. The following manufacturers are approved to bid the project. Approval to bid does not constitute acceptance of the product for use in the building. Final approval must be obtained through the formal shop drawing submittal process. The list is presented by product application and not necessarily by specification reference.

A. Radiant Heating and Cooling Units:

1. Price

B. Combination Fire & Smoke Dampers:

1. NCA Manufacturing

C. Utility Set Fans:

1. Aerovent

GS2. Approved alternate manufacturers for lighting fixture types are indicated in Lighting Fixture Schedule on Sheet E500.

Mechanical Specification Items:

MS1. Section 211313 – Wet-Pipe Fire-Suppression Sprinklers

A. Article 1.6: Add subparagraph L as follows:

“L. Owner Insurance Company Review: Submit approved sprinkler drawings and hydraulic calculations to FM Global for review and comment. Coordinate submission with Owner’s Representative.”

MS2. Section 221116 – Domestic Water Piping

A. Article 2.2. Paragraph A: Add Subparagraph 3 as follows:

“3. Wrought-Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.”

B. Article 2.3: Add Subparagraph C as follows:

“C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.”

MS3. Section 230900 – Instrumentation and Control for HVAC

A. Add Article 2.16 to read as follows:

B. "2.16 PRESSURE INDEPENDENT CONTROL VALVES

- A. Acceptable Manufacturers:
 - 1. Flow Control Industries.
- B. All modulating control valves shall be provided by the same manufacturer.
- C. All control valves shall be industrial quality and must be fully rebuildable. Valves shall be designed to last 30 years or throughout the life of the facility.
- D. Balancing valves and associated balancing shall not be used. The control valve must have the ability to limit flow to the maximum design flow specific for each coil at all valve differential pressure ranges of 5 to 70 PSID.
- E. Each control valve shall be individually flow tested and factory verified to deviate no more than +/-5% through the entire operating pressure range of 5 to 70. All valves shall be tested on a test stand calibrated and verified with traceability to NIST standards.
- F. In addition to testing, each control valve shall have a calibrated performance tag listing the measured flow rate in 10° rotation increments.
- G. Valves shall require no more than 5 PSID to operate at the flow rates indicated on the flow tag.
- H. Control valve rangeability shall be a minimum of 100:1 through the operating pressure range, at 5 to 70 PSID.
- I. Valve bodies 2" and smaller shall be brass. Valve bodies 3" thru 8" shall be ductile iron. All internal parts shall be brass, carbon steel, stainless steel or Teflon®. Plastic internal parts are not acceptable.
- J. All valves shall have (3) factory installed pressure/temperature ports to allow factory and field verification of flow and proper operation.
- K. Valve flow characteristics may be modified in valves 8" and smaller without removal from the piping system. All seals may be replaced in valves 3" and smaller without removal from the piping system.
- L. Valve differential pressure rating shall be equal to or greater than the associated pump's design head pressure. Valve assembly and actuator torque shall be selected to close off against this differential pressure.
- M. All valves shall be warranted by the manufacturer for no less than a full 5 years from the date of purchase. The warranty provided by the actuator manufacturer shall apply to actuators.
- N. The control valve manufacturer shall provide written guarantee that the heating and cooling coils will meet or exceed design delta T performance at all load conditions as projected by an ARI certified coil program at time of commissioning. The valve manufacturer will reimburse the full purchase price of the valve if this performance level cannot be met."

MS4. Section 237313 – Modular Indoor Air-Handling Units

- A. Add the attached Owner Provided Equipment Cut Sheets documentation to the end of the section. Cut sheets are provided for Contractor reference and represent equipment actually purchased.

MS5. Section 238413 – Humidifiers

- A. Delete Article 1.2 in its entirety.
- B. Revise Article 2.1 to read:

“Steam-Injection Humidifiers are provided by the Owner with the air handling unit pre-purchase package for installation by this Contractor. Refer to Owner Provided Equipment cut sheets for additional information.”

Electrical Specification Items:

ES1. The following section is added in its entirety:

- A. Section 262200 – Low-Voltage Transformers

ES2. Section 260533 – Raceways and Boxes

- A. Article 3.1, Subparagraph B.2: Add Subparagraph a as follows:

“a. In lieu of EMT, normal branch circuits may utilize Type HCF armored cable with redundant equipment ground (Type HCF armored cable shall be suitable for redundant equipment ground requirements). Armored cable use in this application is limited, acceptable only for vertical drops to devices concealed in walls and for horizontal interconnection between devices concealed in walls. Interconnection of rooms and associated homeruns shall be EMT. Armored cable shall not be utilized where exposed, and is not acceptable for emergency/essential branches.”

Mechanical Drawing Items:

MD1. The following drawings are added for reference only:

- A. EXISTING PLAN FP2 – LEVEL 1 NORTH FIRE PROTECTION DATED 1980
- B. EXISTING PLAN FP3 – LEVEL 1 SOUTH FIRE PROTECTION DATED 1980
- C. EXISTING PLAN FP4 – LEVEL 2 NORTH FIRE PROTECTION DATED 1980
- D. EXISTING PLAN FP5 – LEVEL 2 SOUTH FIRE PROTECTION DATED 1980
- E. EXISTING PLAN FP6 – LEVEL 3 FIRE PROTECTION DATED 1980
- F. EXISTING PLAN FP7 – LEVEL 4&5 FIRE PROTECTION DATED 1980
- G. EXISTING PLAN M17 – LEVEL 4 HVAC
- H. EXISTING PLAN M18 – LEVEL 5 HVAC

MD2. The following sheets are reissued in their entirety:

- A. M032 – THIRD LEVEL DEMOLITION – PLUMBING AND MED GAS
- B. M041 – FOURTH LEVEL DEMOLITION – HVAC AND PIPING
- C. M042 – FOURTH LEVEL DEMOLITION – PLUMBING AND MED GAS
- D. M043 – FOURTH LEVEL DEMOLITION – FIRE PROTECTION
- E. M051 – FIFTH LEVEL DEMOLITION – HVAC AND PIPING
- F. M052 – FIFTH LEVEL DEMOLITION – PLUMBING AND MED GAS
- G. M053 – FIFTH LEVEL DEMOLITION – FIRE PROTECTION
- H. M131 – THIRD LEVEL – HVAC
- I. M132 – THIRD LEVEL – PIPING
- J. M161 – MECHANICAL ROOF PLAN
- K. M241 – FOURTH LEVEL – PLUMBING AND MED GAS
- L. M251 – FIFTH LEVEL – PLUMBING AND MED GAS
- M. M351 – FIFTH LEVEL – FIRE PROTECTION
- N. M500 – MECHANICAL DETAILS
- O. M600 – MECHANICAL SCHEDULES

- P. M931 – THIRD LEVEL – CONTROLS
- Q. M941 – FOURTH LEVEL – CONTROLS

Electrical Drawing Items:

- ED1. Sheet E000 – Electrical Cover Sheet
 - A. Provide the following additional General Note to the Electrical Supplemental Symbol Legend – Nurse Call Rough-In:

“Nurse Call system and cables shall be Owner-furnished and Owner-installed.”
“Provide individual 1” conduit stub outs for each nurse call rough-in indicated.”
- ED2. The following drawings are added for reference only:
 - A. EXISTING PLAN E12 – LEVEL 4 AND 5 LIGHTING
 - B. EXISTING PLAN E13 – LEVEL 4 AND 5 POWER
- ED3. The following sheet is added to the project:
 - A. SHEET E211 – FIRST LEVEL – POWER PLAN
- ED4. The following sheets are reissued in their entirety:
 - A. E041 – FOURTH LEVEL DEMOLITION – ELECTRICAL
 - B. E051 – FIFTH LEVEL DEMOLITION – ELECTRICAL
 - C. E211 – FIRST LEVEL – POWER PLAN
 - D. E231 – THIRD LEVEL – POWER PLAN
 - E. E400 – ENLARGED FLOOR PLANS & TYPICAL ROOM LAYOUTS
 - F. E500 – ELECTRICAL SCHEDULES
 - G. E501 – ELECTRICAL DETAILS
 - H. E502 – ELECTRICAL PANEL SCHEDULES
 - I. E503 – ELECTRICAL RISER DIAGRAM

Submitted By: Eric Granzow and John Larson

SECTION 26 2200 - LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:
 - 1. Distribution transformers.

1.3 SUBMITTALS

- A. Product Data: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer indicated.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For transformers to include in emergency, operation, and maintenance manuals. Provide transformer voltage test results and tap settings.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each transformer type through one source from a single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods during which equipment is not energized and when transformer is not in a space that is continuously under normal control of temperature and humidity.

1.6 COORDINATION

- A. Coordinate installation of wall-mounting and structure-hanging supports with actual transformer provided.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Products.
 - 2. General Electric Company.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; Schneider Electric.

2.2 GENERAL TRANSFORMER REQUIREMENTS

- A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.

- B. Cores: Grain-oriented, non-aging silicon steel.
- C. Coils: Continuous windings without splices except for taps.
 - 1. Internal Coil Connections: Brazed or pressure type.
 - 2. Coil Material: Aluminum.

2.3 DISTRIBUTION TRANSFORMERS

- A. Comply with NEMA TP1, and list and label as complying with UL 1561.
- B. Cores: One leg per phase.
- C. Enclosure: Ventilated, NEMA 250, Type 2.
 - 1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
- D. Ratings required on transformer shall not be achieved through the addition of a secondary cooling fan.
- E. Transformer Enclosure Finish: Comply with NEMA 250.
 - 1. Finish Color: Gray.
- F. Taps for Transformers Smaller Than 3 kVA: One 5 percent tap above normal full capacity.
- G. Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.
- H. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity.
- I. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 115 deg C rise above 40 deg C ambient temperature.
- J. Energy Efficiency for Transformers Rated 15 kVA and Larger:
 - 1. Comply with NEMA TP 1, Class 1 efficiency levels.
 - 2. Tested to NEMA TP 2.
- K. Low-Sound-Level Requirements: Maximum sound levels, when factory tested according to IEEE C57.12.91 and NEMA ST-20, as follows:
 - 1. 9 kVA and Less: 40 dBA.
 - 2. 30 to 50 kVA: 45 dBA.
 - 3. 51 to 150 kVA: 50 dBA.
 - 4. 151 to 300 kVA: 55 dBA.
 - 5. 301 to 500 kVA: 60 dBA.
 - 6. 501 to 750 kVA: 62 dBA.
 - 7. 751 to 1000 kVA: 64 dBA.
- L. Comply with additional sound restriction requirements where specifically indicated on plans.

2.4 IDENTIFICATION DEVICES

- A. Nameplates: Engraved, laminated-plastic or metal nameplate for each distribution transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Division 16 Section "Electrical Identification."

2.5 SOURCE QUALITY CONTROL

- A. Test and inspect transformers according to IEEE C57.12.91.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for each transformer.

- B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's written instructions.
- C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.
- D. Verify that ground connections are in place and requirements in Division 16 Section "Grounding and Bonding" have been met. Maximum ground resistance shall be 5 ohms at location of transformer.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install transformers on concrete bases. Construct concrete bases according to Division 16 "Electrical Supports".

3.3 CONNECTIONS

- A. Ground equipment according to Division 16 Section "Grounding and Bonding."
- B. Connect wiring according to Division 16 Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- C. Remove and replace units that do not pass tests or inspections and retest as specified above.
- D. Test Labeling: On completion of satisfactory testing of each unit, attach a dated and signed "Satisfactory Test" label to tested component.

3.5 ADJUSTING

- A. Record transformer secondary voltage at each transformer upon completion of project but before occupancy. Using recorded voltages, adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 3 percent. Submit recording and tap settings as test results.
- B. Output Settings Report: Prepare a written report recording output voltages and tap settings.

3.6 CLEANING

- A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION 26 2200

Lighting Panel: CDP-2

Location: 3RD LEVEL
 Supply From: ATS-CDP2
 Branch: CRITICAL
 Mounting: Surface

Volts: 120/208 Wye
 Phases: 3
 Wires: 4
 Available SCC (kA): 9.8

Rating: 350 A
 Mains Type: MCB
 Panel Poles: 30
 Sections: 1

Ckt	Circuit Description	Opt	Rati...	Poles	A	B	C	Poles	Rati...	Opt	Circuit Description	Ckt
1					9106 VA	11600 VA						2
3	CP4B2		100 A	3		8595 VA	10100 VA				CP4A2	4
5							6480 VA	8125 VA				6
7					6480 VA	6887 VA						8
9	CP5A2		100 A	3		5590 VA	6480 VA				CP5B2	10
11							6860 VA	6035 VA				12
13												14
15												16
17												18
19												20
21												22
23												24
25												26
27												28
29												30

Lighting Panel Remarks:
 1. Spare Circuit Breakers: Provide the following spare branch circuit breakers in addition to circuit breakers listed above. Spares: 2-100/3

General Lighting Panel Notes:
 1. Panel AIC (Interrupting) Rating shall be minimum 120% of the available SCC (Short Circuit Current).
 2. Circuit Breaker Options: 'S' or 'ST' - Provide Shunt Trip Circuit Breaker / 'G' or 'GFCI' - Provide GFCI Circuit Breaker / 'GFP' - Provide GFP Circuit Breaker.

Lighting Panel: CP4A2

Location: Space 415
 Supply From: CDP-2
 Branch: Critical
 Mounting: Recessed

Volts: 120/208 Wye
 Phases: 3
 Wires: 4
 Available SCC (kA): 4.4

Rating: 100 A
 Mains Type: MLO
 Panel Poles: 42
 Sections: 1

Ckt	Circuit Description	Opt	Rati...	Poles	A	B	C	Poles	Rati...	Opt	Circuit Description	Ckt	
1	PWR - CNV SPACE 411		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 412	2
3	PWR - CNV SPACE 413		20 A	1		1620 VA	1620 VA			1	20 A	PWR - CNV SPACE 414	4
5	PWR - CNV SPACE 421		20 A	1			1620 VA	1620 VA		1	20 A	PWR - CNV SPACE 422	6
7	PWR - CNV SPACE 423		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 424	8
9	PWR - CNV SPACE 425		20 A	1		1620 VA	1620 VA			1	20 A	PWR - CNV SPACE 415	10
11	PWR - CNV SPACE 426		20 A	1			1620 VA	1620 VA		1	20 A	PWR - CNV SPACE 420	12
13	PWR - CNV SPACE 419		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 418	14
15	PWR SPACE 1998		20 A	1		2000 VA	1620 VA			1	20 A	PWR - CNV SPACE 416	16
17	LTG ROOM 425,426,427,430,431		20 A	1				705 VA	940 VA	1	20 A	LTG ROOM...	18
19	LTG SPACE 422A		20 A	1	1175 VA	705 VA				1	20 A	LTG SPACE 418A	20
21												22	
23												24	
25												26	
27												28	
29												30	
31												32	
33												34	
35												36	
37												38	
39												40	
41												42	

Lighting Panel Remarks:
 1. Spare Circuit Breakers: Provide the following spare branch circuit breakers in addition to circuit breakers listed above. Spares: 10-20/1

General Lighting Panel Notes:
 1. Panel AIC (Interrupting) Rating shall be minimum 120% of the available SCC (Short Circuit Current).
 2. Circuit Breaker Options: 'S' or 'ST' - Provide Shunt Trip Circuit Breaker / 'G' or 'GFCI' - Provide GFCI Circuit Breaker / 'GFP' - Provide GFP Circuit Breaker.

Lighting Panel: CP5A2

Location: Space 1974
 Supply From: CDP-2
 Branch: Critical
 Mounting: Recessed

Volts: 120/208 Wye
 Phases: 3
 Wires: 4
 Available SCC (kA): 4.1

Rating: 100 A
 Mains Type: MLO
 Panel Poles: 42
 Sections: 1

Ckt	Circuit Description	Opt	Rati...	Poles	A	B	C	Poles	Rati...	Opt	Circuit Description	Ckt	
1	PWR - CNV SPACE 527		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 525	2
3	PWR - CNV SPACE 524		20 A	1		1620 VA	1620 VA			1	20 A	PWR - CNV SPACE 523	4
5	PWR - CNV SPACE 522		20 A	1			1620 VA	1620 VA		1	20 A	PWR - CNV SPACE 521	6
7	PWR - CNV SPACE 520		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 519	8
9	LTG ROOM 500,501,502,503,504		20 A	1		940 VA	1410 VA			1	20 A	LTG ROOM 505,506,507,508	10
11	PWR SPACE 1949		20 A	1			2000 VA	1620 VA		1	20 A	PWR - CNV SPACE 517	12
13												14	
15												16	
17												18	
19												20	
21												22	
23												24	
25												26	
27												28	
29												30	
31												32	
33												34	
35												36	
37												38	
39												40	
41												42	

Lighting Panel Remarks:
 1. Spare Circuit Breakers: Provide the following spare branch circuit breakers in addition to circuit breakers listed above. Spares: 10-20/1

General Lighting Panel Notes:
 1. Panel AIC (Interrupting) Rating shall be minimum 120% of the available SCC (Short Circuit Current).
 2. Circuit Breaker Options: 'S' or 'ST' - Provide Shunt Trip Circuit Breaker / 'G' or 'GFCI' - Provide GFCI Circuit Breaker / 'GFP' - Provide GFP Circuit Breaker.

Lighting Panel: CP5B2

Location: Space 1975
 Supply From: CDP-2
 Branch: Critical
 Mounting: Recessed

Volts: 120/208 Wye
 Phases: 3
 Wires: 4
 Available SCC (kA): 3.9

Rating: 100 A
 Mains Type: MLO
 Panel Poles: 42
 Sections: 1

Ckt	Circuit Description	Opt	Rati...	Poles	A	B	C	Poles	Rati...	Opt	Circuit Description	Ckt	
1	PWR - CNV SPACE 526		20 A	1	720 VA	1307 VA				1	20 A	LTG ROOM 509,510,511,512,513	2
3	PWR - CNV SPACE 509		20 A	1		1620 VA	1620 VA			1	20 A	PWR - CNV SPACE 508	4
5	PWR - CNV SPACE 507		20 A	1			1620 VA	1620 VA		1	20 A	PWR - CNV SPACE 506	6
7	PWR - CNV SPACE 505		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 504	8
9	PWR - CNV SPACE 503		20 A	1		1620 VA	1620 VA			1	20 A	PWR - CNV SPACE 502	10
11	PWR - CNV SPACE 501		20 A	1			1620 VA	1175 VA		1	20 A	LTG ROOM 514,515,516,517	12
13	PWR - CNV SPACE 535		20 A	1	1620 VA								14
15												16	
17												18	
19												20	
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23												24	
25												26	
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29												30	
31												32	
33												34	
35												36	
37												38	
39												40	
41												42	

Lighting Panel Remarks:
 1. Spare Circuit Breakers: Provide the following spare branch circuit breakers in addition to circuit breakers listed above. Spares: 10-20/1

General Lighting Panel Notes:
 1. Panel AIC (Interrupting) Rating shall be minimum 120% of the available SCC (Short Circuit Current).
 2. Circuit Breaker Options: 'S' or 'ST' - Provide Shunt Trip Circuit Breaker / 'G' or 'GFCI' - Provide GFCI Circuit Breaker / 'GFP' - Provide GFP Circuit Breaker.

Lighting Panel: CP4B2

Location: Space 2088
 Supply From: CDP-2
 Branch: Critical
 Mounting: Recessed

Volts: 120/208 Wye
 Phases: 3
 Wires: 4
 Available SCC (kA): 4.5

Rating: 100 A
 Mains Type: MLO
 Panel Poles: 42
 Sections: 1

Ckt	Circuit Description	Opt	Rati...	Poles	A	B	C	Poles	Rati...	Opt	Circuit Description	Ckt	
1	PWR - CNV SPACE 404		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 405	2
3	PWR - CNV SPACE 406		20 A	1		1620 VA	1620 VA			1	20 A	PWR - CNV SPACE 407	4
5	PWR - CNV SPACE 408		20 A	1			1620 VA	1620 VA		1	20 A	PWR - CNV SPACE 409	6
7	PWR - CNV SPACE 2011		20 A	1	1620 VA	1620 VA				1	20 A	PWR - CNV SPACE 2017	8
9	PWR - CNV SPACE 2002		20 A	1		1620 VA	1620 VA			1	20 A	PWR - CNV SPACE 401	10
11	PWR - CNV SPACE 402		20 A	1			1620 VA	1620 VA		1	20 A	PWR - CNV SPACE 403	12
13	LTG ROOM...		20 A	1	1006 VA	1620 VA				1	20 A	PWR - CNV SPACE 433	14
15	LTG SPACE 401A		20 A	1		1175 VA	940 VA			1	20 A	LTG ROOM...	16
17												18	
19												20	
21												22	
23												24	
25												26	
27												28	
29												30	
31												32	
33												34	
35												36	
37												38	
39												40	
41												42	

Lighting Panel Remarks:
 1. Spare Circuit Breakers: Provide the following spare branch circuit breakers in addition to circuit breakers listed above. Spares: 10-20/1

General Lighting Panel Notes:
 1. Panel AIC (Interrupting) Rating shall be minimum 120% of the available SCC (Short Circuit Current).
 2. Circuit Breaker Options: 'S' or 'ST' - Provide Shunt Trip Circuit Breaker / 'G' or 'GFCI' - Provide GFCI Circuit Breaker / 'GFP' - Provide GFP Circuit Breaker.

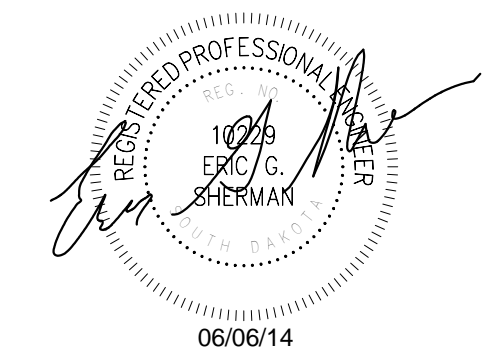
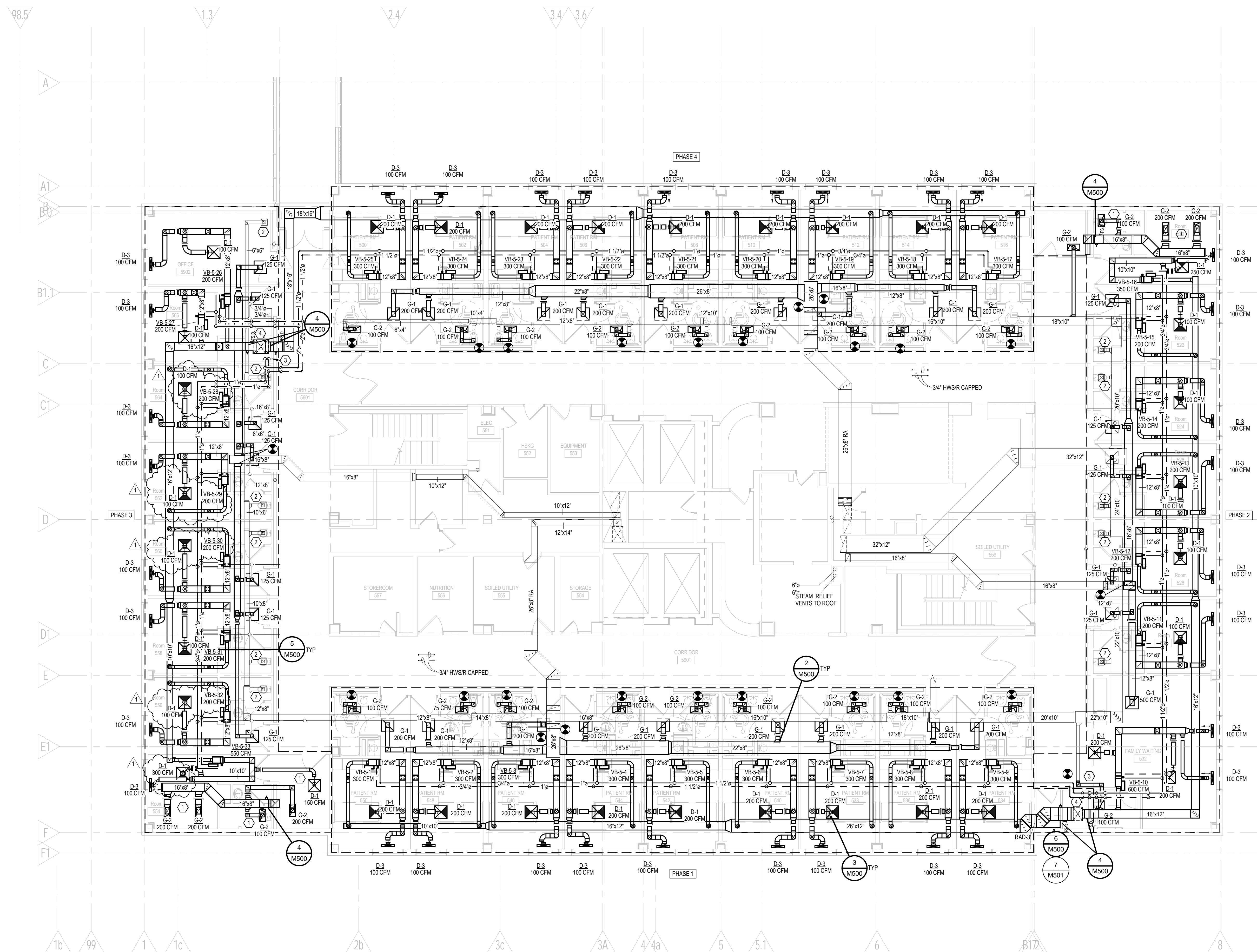
Lighting Panel: EP3A

GENERAL NOTES

- A. REFER TO MECHANICAL COVER SHEET M000 FOR GENERAL REQUIREMENTS, SYMBOLS, ABBREVIATIONS, AND MOUNTING ELEVATION REQUIREMENTS.
- B. PIPING TO INDIVIDUAL VAV BOXES SHALL BE 3/4" UNLESS NOTED OTHERWISE.

SHEET NOTES

- 1 SEAL EXISTING AND NEW PENETRATIONS WITHIN ROOM AIR TIGHT.
- 2 REBALANCE EXISTING EXHAUST GRILLE TO 75 CFM.
- 3 2" HW5HWR DOWN TO 4TH FLOOR.
- 4 26" x 18" SA DUCT DOWN TO 4TH FLOOR.



No.	Description	Date
1	Addendum #3	06/23/14

1 FIFTH LEVEL - HVAC AND PIPING
1/8" = 1'-0"

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 10360 Ellison Circle
 Omaha, NE 68134
 Phone: 402.991.5520
 www.specializedeng.com

SES PROJECT # 14041

SACRED HEART
4TH & 5TH
FIFTH LEVEL - HVAC
AND PIPING

Date: 6/23/2014 10:21:10 AM

M151

Scale: 1/8" = 1'-0"

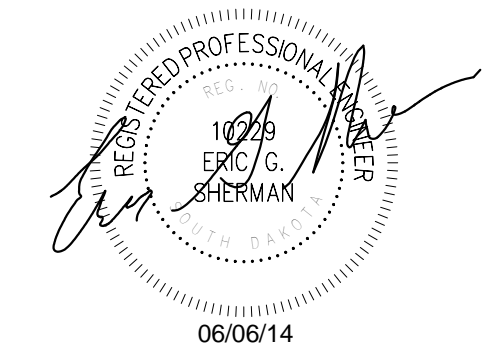


PLATE AND FRAME HEAT EXCHANGER SCHEDULE

MARK	TYPE	COLD SIDE				HOT SIDE				CONNECTION SIZE (INCHES)	HEAT EXCHANGER (MBH)	NUMBER OF PASSES	MFR	MODEL			
		FLUID	GPM	EWT	LWT	PD [PSI]	FLUID	GPM	EWT						LWT	PD [PSI]	
HX-CW1	PLATE FRAME	30% PROP. GLYCOL	456	55	45	9.94	6	WATER	430	57	47	6.96	6	2,162	2	BELL AND GOSSETT	GPX P62 BY5432

REMARKS
(1) PROVIDE INSULATED JACKET FOR HEAT EXCHANGER ASSEMBLY.

DUCT CONSTRUCTION SCHEDULE

SYSTEM DESCRIPTION	DUCT FUNCTION	DESCRIPTION	LOCATION	MATERIAL (1)	INSULATION (2)	FINISH (3)	DUCT PRESSURE CLASS (4)	SMACNA DUCT SEAL CLASS (5)	DUCT CLEANLINESS LEVEL (6)	REMARKS
AHU-10	SUPPLY	FAN DISCHARGE TO VAV BOX	ABOVE CEILING	GALVANIZED STEEL	2" EXTERNAL WRAP	FSK JACKET	6"	A	ADVANCED	-
	SUPPLY	FAN DISCHARGE TO VAV BOX	EXPOSED	GALVANIZED STEEL	2" EXTERNAL WRAP	FSK JACKET	6"	A	ADVANCED	-
	SUPPLY	VAV BOX TO DIFFUSER	ABOVE CEILING	GALVANIZED STEEL	2" EXTERNAL WRAP	FSK JACKET	2"	A	ADVANCED	-
	RETURN	GRILLE TO FAN INLET	ABOVE CEILING	GALVANIZED STEEL	2" EXTERNAL WRAP	FSK JACKET	-3"	A	ADVANCED	-
	RETURN	GRILLE TO FAN INLET	EXPOSED	GALVANIZED STEEL	2" EXTERNAL WRAP	FSK JACKET	-3"	A	ADVANCED	-
	RELIEF	LOUVER TO AHU/FAN HOUSING	EXTERIOR	GALVANIZED STEEL	2" EXTERNAL WRAP	FSK JACKET	+4.6"	A	ADVANCED	-
EF-1.2	EXHAUST	GRILLE TO FAN INLET	ABOVE CEILING	GALVANIZED STEEL	2" EXTERNAL WRAP	FSK JACKET	-1"	B	INTERMEDIATE	-
	EXHAUST	GRILLE TO FAN INLET	EXTERIOR	GALVANIZED STEEL	-	PAINT GRIP	-1"	B	INTERMEDIATE	-

REMARKS
(1) REFER TO PROJECT SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
(2) REFER TO PROJECT SPECIFICATIONS FOR INSULATION MATERIAL DESCRIPTIONS AND REQUIREMENTS. PROVIDE INSULATION WITHIN 10 FEET OF EXTERIOR PENETRATIONS FOR ALL DUCT SYSTEMS.
(3) REFER TO PROJECT SPECIFICATIONS FOR FINISH DESCRIPTIONS AND REQUIREMENTS.
(4) REFER TO SMACNA DUCT CONSTRUCTION STANDARDS, CURRENT EDITION FOR CONSTRUCTION REQUIREMENTS.
(5) REFER TO SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL FOR REQUIREMENTS.
(6) REFER TO SMACNA DUCT CLEANLINESS FOR NEW CONSTRUCTION GUIDELINES FOR REQUIREMENTS.

DIFFUSER, REGISTER, AND GRILLE SCHEDULE

MARK (1)	DESCRIPTION	MAX. S.P. [IN. W.C.]	CONST. MATERIAL	FINISH	FACE SIZE	NECK SIZE	AIRFLOW	MANUFACTURER	MODEL	REMARKS
D-1	LOUVERED FACE STYLE SUPPLY DIFFUSER	0.1	STEEL	WHITE	24"x24"	6"	0-195	TITUS KRUEGER	TDX SH SMD	(1)(2)(3)
						8"	196-290			
						10"	291-410			
						12"	411-540			
D-2	LOUVERED FACE STYLE SUPPLY DIFFUSER	0.1	STEEL	WHITE	12"x12"	6"	0-155	TITUS KRUEGER	TDX SH SMD	(1)(2)(3)
						8"	156-230			
						-	-			
						-	-			
D-3	LINEAR SLOT STYLE SUPPLY DIFFUSER	0.1	STEEL	WHITE	24"x4" 2 SLOTS @ 1"	8"	0-100	TITUS KRUEGER	ML 1900 SDS	(1)(2)(3)
						-	-			
G-1	DUCTED PERFORATED RETURN GRILLE	0.1	STEEL	WHITE	24"x24"	6"x6"	0-195	TITUS KRUEGER	PAR 6490 PFR	(1)(2)(3)
						8"x8"	196-290			
						10"x10"	291-400			
						12"x12"	401-500			
G-2	DUCTED PERFORATED RETURN GRILLE	0.1	STEEL	WHITE	24"x12"	6"x6"	0-195	TITUS KRUEGER	PAR 6490 PFR	(1)(2)(3)
						8"x8"	196-290			
						10"x10"	291-400			
						12"x12"	401-500			
G-3	DUCTED PERFORATED RETURN GRILLE	0.1	STEEL	WHITE	12"x12"	6"x6"	0-195	TITUS KRUEGER	PAR 6490 PFR	(1)(2)(3)
						8"x8"	196-290			
						-	-			
						-	-			

REMARKS
(1) COORDINATE EXACT MODEL AND FRAME WITH CEILING/WALL TYPE.
(2) PROVIDE REMOTE DAMPER ACTUATION IN HARD CEILINGS.
(3) PROVIDE BLACKOUT PANELS ON TRANSFER GRILLES.
(4) DIFFUSER/GRILLE CONSTRUCTION SHALL BE 100% ALUMINUM AND RATED FOR USE IN MRI APPLICATIONS BY THE MANUFACTURER.

FAN SCHEDULE

MARK	TYPE	MAX. WEIGHT [LBS.]	AIR FLOW [CFM]	TOTAL S.P. [IN.W.C.]	MAX. FAN RPM	MAX. FAN BHP	ELECTRICAL DATA		MANUFACTURER	MODEL	REMARKS	
							HP	VOLTS/PHASE				
EF-1	UTILITY SET	212	1000	0.75	968	0.18	1/4	115/1	TWIN CITY	BCV-150	(1)(2)(3)(4)(5)	
EF-2	UTILITY SET	216	1600	1.00	1252	0.41	1/2	115/1	TWIN CITY	BCV-150	(1)(2)(3)(4)(5)	

REMARKS
(1) PROVIDE DISCONNECT.
(2) PROVIDE 12" ROOF CURB.
(3) PROVIDE AUTOMATIC BACKDRAFT DAMPER INTERLOCKED WITH MOTOR.
(4) PROVIDE WEATHER COVER.
(5) PROVIDE VIBRATION ISOLATION.

RADIANT PANEL SCHEDULE

MARK	SIZE [IN]	BTU PER LINEAL FT.	FLOW RATE [GPM]	NUMBER OF TUBES	MAX. PRESSURE DROP [FT]	MEAN WATER TEMP. [DEG F]	MANUFACTURER	MODEL	REMARKS
RAD-1	24 x 48	375	2	4	3	170	AIRTEX	HPH	(1)(2)(3)(4)
RAD-2	24 x 48	375	2	4	3	170	AIRTEX	HPH	(1)(2)(3)(4)
RAD-3	24 x 48	375	2	4	3	170	AIRTEX	HPH	(1)(2)(3)(4)

REMARKS
(1) COORDINATE PANEL WITH CEILING SYSTEM.
(2) INSULATE BACK OF RADIANT PANEL.
(3) PROVIDE TRIM RING IN HARD CEILINGS.
(4) COLOR TO BE SELECTED BY ARCHITECT FROM MANUFACTURER STANDARD FINISHES.

HVAC PIPE CONSTRUCTION SCHEDULE

SYSTEM DESCRIPTION	OPERATING TEMPERATURE RANGE (DEG F)	SIZE RANGE	MATERIAL (1)	SYSTEM PRESSURE CLASS (PSI)	CONNECTIONS (4)	FITTINGS (4)	LOCATION (2)	INSULATION (1)	FINISH (1)(3)	REMARKS
HEATING WATER SUPPLY AND RETURN	110-180	0' TO 2'	TYPE L COPPER	125	95/5 SOLDER OR PRESSURE SEAL THREADED/FLANGED OR GROOVED MECHANICAL JOINT	WROUGHT COPPER OR PRESSURE SEAL CAST IRON OR GROOVED MECHANICAL JOINT	ABOVE CEILING	2" PREFORMED FIBERGLASS	ASJ JACKET	5
		EXPOSED - FINISHED SPACE	2" PREFORMED FIBERGLASS	PAINT TO MATCH			5			
		EXPOSED - UNFINISHED SPACE	2" PREFORMED FIBERGLASS	ASJ JACKET			5			
CHILLED WATER SUPPLY AND RETURN	45-60	0' TO 2'	TYPE L COPPER	125	95/5 SOLDER OR PRESSURE SEAL THREADED/FLANGED OR GROOVED MECHANICAL JOINT	WROUGHT COPPER OR PRESSURE SEAL CAST IRON OR GROOVED MECHANICAL JOINT	ABOVE CEILING	1-1/2" FLEXIBLE ELASTOMERIC	NONE	5
		EXPOSED - FINISHED SPACE	1-1/2" FLEXIBLE ELASTOMERIC	PAINT TO MATCH			5			
		EXPOSED - UNFINISHED SPACE	1-1/2" FLEXIBLE ELASTOMERIC	NONE			5			
STEAM AND RELIEF VENT	0-80 PSIG	0' TO 2'	ASTM A53 SCHEDULE 40, TYPE E, GRADE B STEEL PIPE	125	THREADED	CAST IRON	ABOVE CEILING	4.5" PREFORMED FIBERGLASS	ASJ JACKET	5
		EXPOSED - FINISHED SPACE	4.5" PREFORMED FIBERGLASS	PAINT TO MATCH			5			
		EXPOSED - UNFINISHED SPACE	4.5" PREFORMED FIBERGLASS	ASJ JACKET			5			
CONDENSATE	0-80 PSIG	0' TO 2'	ASTM A53 SCHEDULE 40, TYPE E, GRADE B STEEL PIPE	125	THREADED	CAST IRON	ABOVE CEILING	4.5" PREFORMED FIBERGLASS	ASJ JACKET	5
		EXPOSED - FINISHED SPACE	4.5" PREFORMED FIBERGLASS	PAINT TO MATCH			5			
		EXPOSED - UNFINISHED SPACE	4.5" PREFORMED FIBERGLASS	ASJ JACKET			5			
CONDENSATE DRAIN	45-60	ALL	TYPE L COPPER	125	95/5 SOLDER OR PRESSURE SEAL	WROUGHT COPPER OR PRESSURE SEAL	ABOVE CEILING	1" FLEXIBLE ELASTOMERIC	NONE	5
		EXPOSED - FINISHED SPACE	1" FLEXIBLE ELASTOMERIC	PAINT TO MATCH			5			
		EXPOSED - UNFINISHED SPACE	1" FLEXIBLE ELASTOMERIC	NONE			5			
DOMESTIC HOT WATER AND HOT WATER RE-CIRCULATING	110-120	0' TO 4'	ASTM B88 TYPE L COPPER	125	95/5 SOLDER OR PRESSURE SEAL	WROUGHT COPPER OR PRESSURE SEAL	ABOVE CEILING	1.5" PREFORMED FIBERGLASS	ASJ JACKET	5
		EXPOSED - FINISHED SPACE	1.5" PREFORMED FIBERGLASS	PAINT TO MATCH			5			
		EXPOSED - UNFINISHED SPACE	1.5" PREFORMED FIBERGLASS	ASJ JACKET			5			
DOMESTIC COLD WATER SOFT COLD WATER	40-60	0' TO 4'	ASTM B88 TYPE L COPPER	125	95/5 SOLDER OR PRESSURE SEAL	WROUGHT COPPER OR PRESSURE SEAL	ABOVE CEILING	1" FLEXIBLE ELASTOMERIC	NONE	5
		EXPOSED - FINISHED SPACE	1" FLEXIBLE ELASTOMERIC	PAINT TO MATCH			5			
		EXPOSED - UNFINISHED SPACE	1" FLEXIBLE ELASTOMERIC	NONE			5			
GRAVITY SOIL AND WASTE AND VENT	AMBIENT	ALL SIZES	PVC DWV	N/A	SOLVENT CEMENT	PVC DRAINAGE FITTINGS	ABOVE CEILING	NONE	NONE	-
		EXPOSED - FINISHED SPACE	NONE	NONE			-			
		EXPOSED - UNFINISHED SPACE	NONE	NONE			-			
FIRE PROTECTION	AMBIENT	0' TO 2'	STANDARD WEIGHT BLACK STEEL PIPE	125	THREADED	GRAY - IRON THREADED	ABOVE CEILING	NONE	NONE	-
		EXPOSED - FINISHED SPACE	NONE	PAINT TO MATCH			-			
		EXPOSED - UNFINISHED SPACE	NONE	NONE			-			
MEDICAL COMPRESSED AIR, OXYGEN	AMBIENT	ALL	ASTM B819 TYPE K COPPER CLEANED FOR OXYGEN SERVICE	150	BRAZED	WROUGHT COPPER, CLEANED PURGED AND BAGGED FOR OXYGEN SERVICE	ABOVE CEILING	NONE	NONE	5
		EXPOSED - FINISHED SPACE	NONE	NONE			5			
		EXPOSED - UNFINISHED SPACE	NONE	NONE			5			
MEDICAL VACUUM	AMBIENT	ALL	ASTM B819 TYPE L	150	BRAZED	WROUGHT COPPER	ABOVE CEILING	NONE	NONE	5
		EXPOSED - FINISHED SPACE	NONE	NONE			5			
		EXPOSED - UNFINISHED SPACE	NONE	NONE			5			

REMARKS
(1) REFER TO PROJECT SPECIFICATIONS FOR REQUIREMENTS.
(2) FINISHED SPACES INCLUDE BUT ARE NOT LIMITED TO NORMALLY OCCUPIED SPACES, STORAGE ROOMS WITHOUT CEILINGS, LOADING AREAS, ETC. UNFINISHED SPACES INCLUDE BUT ARE NOT LIMITED TO SHELL SPACES, UTILITY ROOMS, EQUIPMENT ROOMS, ETC.
(3) PROVIDE PVC JACKET FOR FITTINGS AND ELBOWS. PROVIDE REMOVABLE JACKETS ON VALVES AND CONTROL DEVICES.
(4) WHERE MORE THAN ONE TYPE IS LISTED, THE CONTRACTOR HAS THE OPTION OF UTILIZING ONE OR A COMBINATION OF THE TYPES LISTED. USE OF MULTIPLE TYPES WITHIN THE SAME SYSTEM SHALL BE APPROVED BY THE ENGINEER. PRESSURE SEAL SYSTEM BASED ON VEGAPRESS. OTHER SYSTEMS WILL BE CONSIDERED THROUGH THE APPROVAL PROCESS.
(5) GROOVED MECHANICAL JOINT SYSTEM BASED ON VICTALIC AGS. OTHER SYSTEMS WILL BE CONSIDERED THROUGH THE APPROVAL PROCESS.
(6) FOR PIPE CONNECTIONS REQUIRING HOT WORK, CONTRACTOR SHALL FOLLOW OWNER'S HOT WORK PROCEDURES AND PROVIDE ALL NECESSARY EQUIPMENT AND PERSONNEL REQUIRED.

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10360 Ellison Circle
Omaha, NE 68134
Phone: 402.991.5520
www.specializedeng.com

SES PROJECT # 14041

Meeting Minutes



Date: 6/19/2014
Project Name: Avera - Sacred Heart - 4th & 5th Renovation **Project #:** 14041
Location: Sacred Heart Pavillion Conf Rm 2
Re: Pre-bid Meeting

Discussion:

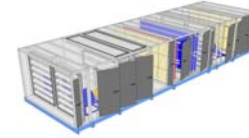
1. Randy provided a project introduction and overview.
2. Addendum 3 will be issued Monday, June 23, 2014. Bids will be due on Wednesday, June 25, 2014.
3. The negative air and isolation rooms on 5th Floor will get a limited “facelift”, not a complete renovation.
4. The wall between the existing patient floor corridor and the patient rooms will receive one (1) mudded sheet of drywall for required smoke permeation barrier. Completion of this work will require a barrier in the corridor to limit dust and noise. Location of the barrier shall be coordinated with Randy.
5. AHU 15 is Owner-furnished and Contractor-installed. This AHU is scheduled to ship August 15, 2014.
6. A fire watch will be required during construction if existing fire alarm detection devices are disabled to support the temporary ICRA partition in the corridor. Contractor will be expected to sign hospital safety agreement.
7. All temporary partitions shall be constructed of sheet rock. Plastic type will not be acceptable. Negative air will be required in construction areas.
8. Contractor will be required to participate in and assist in completing an Interim Life Safety Measures document for submission to the State.
9. Joint Commission will be onsite during the construction of this project.
10. Contractor Questions:
 - A. Please clarify the dashed lines indicated near Room 452. Dashed lines indicate required clearances.
 - B. At the walls between the corridors and the patient rooms not being renovated by this project, the Owner will provide the required mudded drywall smoke permutation barrier.
 - C. Shower rod shall be provided by the Contractor.
 - D. Specified wiring devices not at new headwall locations will need to be cut into existing drywall walls.
 - E. Are new sprinkler heads required to be provided? Yes, new piping and heads are specified.
 - F. Are new sprinklers required on 3rd Floor? No, only modifications necessary to facilitate installation of new work.
 - G. Contractor will be responsible for FM sprinkler calculation submittals.
 - H. Are there structural concerns regarding where and where not to drill core drills? Yes. Jacob will review structure and issue clarification via AD-3. Webs of structure shall not be drilled into.
 - I. Are there structural concerns regarding the installation of trench drains? Jacob will review structure and issue clarification via AD-3.
 - J. Do fire sprinkler zones equate to construction phasing zones? No. Maintain sprinklers in occupied areas.
 - K. Medical gas zoning shall be maintained. Outlets in occupied areas shall remain active.

- L. Where are quantities and locations of existing ceiling devices indicated? They are not. Existing ceiling plans will be included in AD-3.
- M. AD-3 will include a First Level electrical floor plan, indicating locations of existing sources for specified feeders.
- N. To what location will salvaged materials be delivered? Contractor shall coordinate with Randy.
- O. Will there need to be any temporary fire alarm smoke detectors provided? Documents do not specify any.
- P. Owner would like a few FCU's to be salvaged for them.
- Q. Medical Gas Outlet: The existing medical gas outlets are Ohmeda. Part numbers are listed in the specifications and can be obtained from Bio-med (Chris). New faceplates and brackets are required to be provided by the Contractor.
- R. Cannot locate a detail of the stud wall at the headwall. This is a means and methods question.
- S. Cannot locate specific locations for television backing. This is a means and methods question.
- T. Who will be the temperature controls contractor? Johnson Controls.
- U. Who will open up and close up walls for specified medical gas work? This is a means and methods question.
- V. Cannot locate the window and doors schedule. Door schedule was provided in AD-2. Windows will not be scheduled.
- W. Where are mirrors scheduled? Section 102800. Preframed.
- X. The existing fire protection drawings will be included in AD-3 for reference.
- Y. Can MC cable be used for some new receptacles and light switches? All specified wall box devices having a generator source cannot use HCF type metal clad cable. To be determined for normal source wiring devices.
- Z. Does the Contractor need to have dedicated 1" empty conduits from each nurse call rough-in to the corridor, or can these be daisy chained together? SES does not have a proposal from the selected nurse call vendor to substantiate that daisy chaining will be acceptable. Provide dedicated 1" conduits from each rough-in location.

Please submit comments and/or corrections to these meeting minutes in writing within five (5) days of issuance. If comments are not received within this time period, this document will be assumed accurate and filed as part of the permanent record for this project.

Submitted By: Eric Granzow, John Larson

Job Information		Technical Data Sheet	
Job Name	Yankton		
Date	June 10 2014		
Submitted By	RFO		
Software Version	10.20		
Unit Tag	AHU-1		



Unit Overview												
Model Number	Supply						Return/Exhaust					
	Air Volume cfm	Static Pressure		External Dimensions			Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in		External inWc	Total inWc	Height in	Width in	Length in
CAH050GDGC	24000	3.30	6.57	80*	120*	282	24000	2.75	2.92	80*	120*	132

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit			
Model Number:	CAH050GDGC		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Outer Panel:	Standard G90 Galvanized Steel (unpainted)		
Liner:	Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	Drive (Handling) Location:	Right
Base:	6" formed channel	Wall Thickness:	2 in
Tread Plate Floor Liner:	Tread plate installed (unless noted per section)	Altitude:	0 ft
Parts Warranty:	Standard One Year		

Access Section		Component: 1	Length: 12 in	Shipping Section: 1
Air Pressure Drop				
0.00 inWc				
Door				
Location		Width		Opening
Drive side		8 in		Outward

Isolation Damper		Component: 2	Length: 12 in	Shipping Section: 1
Pressure Drop	Individual Height	Individual Width	Quantity	Actuator
0.00 inWc	72 in	56 in	2	Included

Vision™ Air Handling Unit



Return/Exhaust Fan		Component: 3		Length: 46 in		Shipping Section: 2			
Fan Performance									
Air Volume*	Static Pressure			Brake Horsepower*	Speed		Outlet Velocity*		
	External	Total	Cabinet		Operating	Maximum			
12000 cfm	2.75 inWc	2.92 inWc	0.00 inWc	9.11 BHP	1748 rpm	2183 rpm	0 ft/min		
Fan Data									
Fan Type	Blade Type / Class	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location		
Centrifugal - Plenum	Airfoil / 2	2	24.50 in	Aluminium	9	Axial	Behind Fan		
Motor Data									
Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current*	Full Load Current*
10.0 HP	460/60/3 V/Hz/Phase	1750 rpm	Premium	ODP	215 T frame	Generic	4	81 A	11.7 A
Fan Options									
Shaft Grounding Kit:		Provided			Isolator Type:		Spring		
Door									
Location			Width		Opening				
Drive side			30 in		Outward				
Notes									
* after a unit label denotes the data for an individual fan.									

Economizer		Component: 4		Length: 62 in		Shipping Section: 3 & 3	
Portion	Damper				Rated CFM	Air Pressure Drop	Quantity
	Size (length x width)		Location	Type			
	Overall	Opening					
Outside Air	28 in x 116 in	24 in x 106 in	Top	UltraSeal Low Leak	24000 cfm	0.14 inWc	1
Return Air	28 in x 116 in	24 in x 106 in	Internal	UltraSeal Low Leak	24000 cfm	0.14 inWc	1
Exhaust Air	26 in x 116 in	22 in x 106 in	Top	UltraSeal Low Leak	24000 cfm	0.17 inWc	1
Door							
Location			Width		Opening		
Drive side			28 in		Outward		

Blender		Component: 5		Length: 38 in		Shipping Section: 4	
Model	Quantity	Total Face Area		Face Velocity	Air Pressure Drop		
Kees Inc.	3	23.8 ft²		1011 ft/min	0.25 inWc		

Vision™ Air Handling Unit



Panel Filter		Component: 6		Length: 12 in		Shipping Section: 4	
Type	Efficiency	Face Velocity	Face Area	Air Volume	Filter Loading		
Throwaway	MERV 7	434 ft/min	55.3 ft²	24000 cfm	Side		
Air Pressure Drop			Number of Filters	Height	Width	Depth	
Clean Air	Mean Air	Dirty Air	12	24 in	24 in	2 in	
0.20 inWc	0.60 inWc	1.00 inWc		3	24 in	20 in	2 in
Door							
Location			Width		Opening		
Drive side			8 in		Outward		
Special Options							
Tread Plate Floor Liner				Filter Gauge			
(As casing details)				Minihelic II 0-2"			

Hot Water Coil		Component: 7		Length: 42 in		Shipping Section: 5	
Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)	
5WH0802B	1358746 Btu/hr	2	2	8	0.625 in	1.50 in x 1.299 in	
Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering	Leaving					
24000 cfm	Dry Bulb	Dry Bulb	0.16 inWc	33 in	104 in	47.67 ft²	503 ft/min
	45.0 °F	96.8 °F					
Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight	
Entering	Leaving	87.50 gpm	7.30 ftHd	4.20 ft/s	14.0 gal	124.00 lb	
180.0 °F	148.9 °F						
Connection					Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Quantity	Size	Location	Material			
Threaded	2	2.50 in	Drive side	Carbon steel	148.9 °F	148.9 °F	0.000
Material					Drain Pan		Drain Side
Fin	Tube	Header	Case		Stainless steel drip pan		Drive side
Aluminum .0075 in	Copper .020 in	Copper	Galvanized track				

AHRI 410 Certification



Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door		
Location	Width	Opening
Drive side	30 in	Outward

Chilled Water Coil		Component: 8			Length: 48 in		Shipping Section: 5		
Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)		
5WS1008A	1185173 Btu/hr	784459 Btu/hr	2	8	10	0.625 in	1.50 in x 1.299 in		
Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
24000 cfm	82.0 °F	68.0 °F	52.1 °F	51.8 °F	0.51 inWc	33 in	107 in	49.04 ft²	489 ft/min
Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight			
Entering	Leaving								
44.0 °F	56.7 °F	186.00 gpm	18.80 ftHd	4.50 ft/s	50.0 gal	420.00 lb			
Connection					Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor		
Type	Quantity	Size	Location	Material					
Threaded	2	2.50 in	Drive side	Carbon steel	44.0 °F	44.0 °F	0.000		
Material					Drain Pan		Drain Side		
Fin	Tube	Header	Case						
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel		Stainless steel	Drive side			
AHRI 410 Certification									
Coil is NOT certified by AHRI									
Door									
Location		Width	Opening	Window Type		Light			
Drive side		26 in	Outward	Round		UVC Lights			
Access Section		Component: 9			Length: 12 in		Shipping Section: 6		
Air Pressure Drop									
0.00 inWc									
Door									
Location		Width		Opening					
Drive side		8 in		Outward					
Isolation Damper		Component: 10			Length: 12 in		Shipping Section: 6		
Pressure Drop	Individual Height	Individual Width	Quantity		Actuator				
0.00 inWc	72 in	56 in	2		Included				

Vision™ Air Handling Unit



Supply Fan		Component: 11		Length: 50 in		Shipping Section: 7			
Fan Performance									
Air Volume*	Static Pressure			Brake Horsepower*	Speed		Outlet Velocity*		
	External	Total	Cabinet		Operating	Maximum			
12000 cfm	3.30 inWc	6.57 inWc	0.00 inWc	17.74 BHP	1768 rpm	1981 rpm	0 ft/min		
Fan Data									
Fan Type	Blade Type / Class	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location		
Centrifugal - Plenum	Airfoil / 2	2	27.00 in	Aluminium	12	Axial	Behind Fan		
Motor Data									
Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current*	Full Load Current*
20.0 HP	460/60/3 V/Hz/Phase	1750 rpm	Premium	ODP	256 T frame	Generic	4	145 A	23.3 A
Fan Options									
Shaft Grounding Kit:		Provided			Isolator Type:		Spring		
Door									
Location			Width			Opening			
Drive side			30 in			Outward			
Notes									
* after a unit label denotes the data for an individual fan.									

Access Section		Component: 12		Length: 20 in		Shipping Section: 8	
Air Pressure Drop							
0.00 inWc							
Door							
Location			Width			Opening	
Drive side			16 in			Outward	

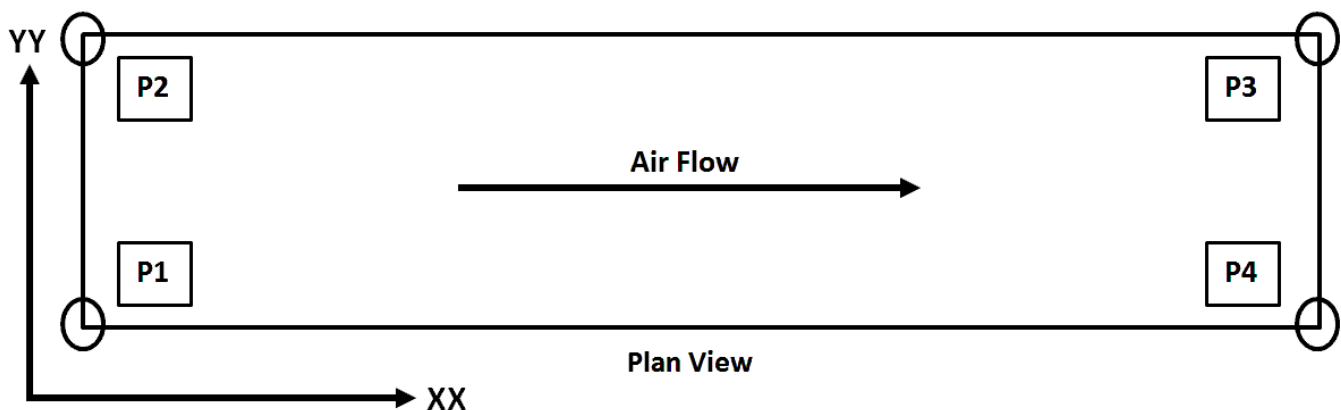
Combination Filter		Component: 13		Length: 22 in		Shipping Section: 8			
Access		Face Velocity		Face Area		Air Volume			
Side		437 ft/min		55.0 ft²		24000 cfm			
Portion	Type	Efficiency	Air Pressure Drop			Number of Filters	Height	Width	Depth
			Clean Air	Mean Air	Dirty Air				
Pre-Filter	Throwaway	MERV 7	0.20 inWc	0.60 inWc	1.00 inWc	12	24 in	24 in	2 in
						3	24 in	20 in	2 in
Filter	Varicel SH cartridge	MERV 14	0.47 inWc	0.99 inWc	1.50 inWc	12	24 in	24 in	12 in
						3	24 in	20 in	12 in
Door									
Location			Width			Opening			
Drive side			18 in			Outward			
Special Options									
Tread Plate Floor Liner (As casing details)				Filter Gauge Magnehelic 0-5"					

Plenum Section		Component: 14	Length: 26 in	Shipping Section: 8
Opening Location		Opening Size		Air Pressure Drop
Top		22.00" x 116.00"		0.02 inWc
Door				
Location		Width		Opening
Drive side		18 in		Outward

Control Details				
Control Company		Number of Control Points		Control Type
All		4		Digital Ready
Component	Description	Vendor	Model Number	
1 : Inlet section	Isolation (ACT31)	Belimo	AMB24-3	
2 : Inlet section	Isolation (ACT32)	Belimo	AMB24-3	
3 : Inlet section	Isolation (ACT31)	Belimo	GMB24-3	
4 : Inlet section	Isolation (ACT32)	Belimo	GMB24-3	

Unit Sound Power (dB)								
Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	82	79	85	75	73	69	54	44
Unit Discharge:	91	88	94	91	89	84	75	60
Unit Return:	82	82	96	89	81	83	81	72

Shipping Section Details									
Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	24	652	163	163	163	163	12	60	43
2	46	2392	638	638	558	558	21	60	37
3	62	1200	280	280	320	320	33	60	43
4	50	1290	320	320	325	325	25	60	43
5	90	3923	890	832	1063	1138	50	58	43
6	24	652	163	163	163	163	12	60	43
7	50	2701	698	698	653	653	24	60	37
8	68	1677	427	427	411	411	33	60	43
Entire Unit	414	14487	3604	3538	3639	3707	210	59	41



NOTE: Special components aren't included in the corner weights and center of gravity data.

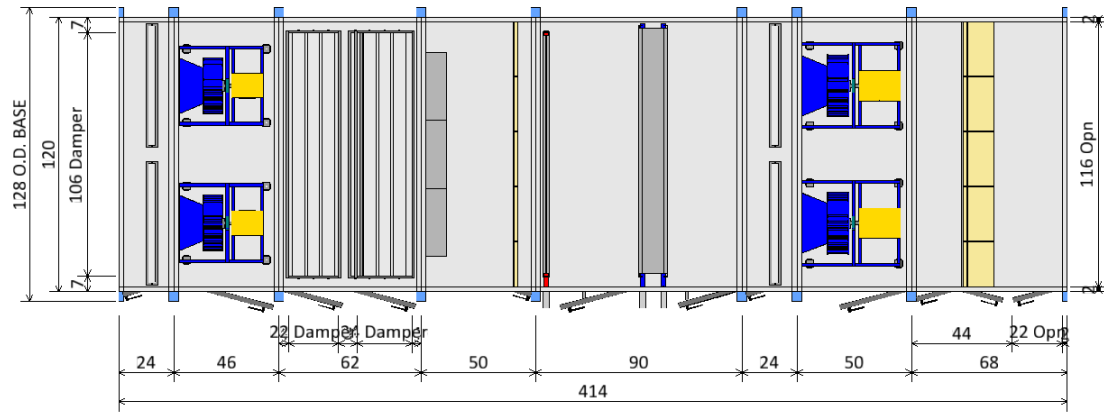
AHRI Certification

The air-handler is selected outside of the scope of AHRI 430

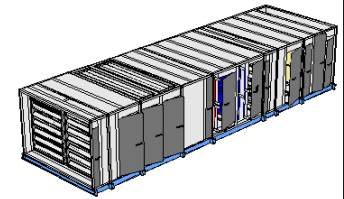
Notes

Important

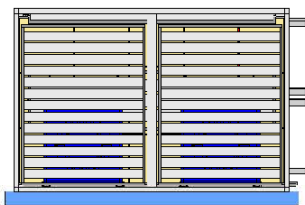
1. This unit may not meet ASHRAE Standard 90.1 - 2007 fan motor power limitations. If that code applies, alternate fan selections may be required.
2. The designer and installer must ensure compliance with applicable codes. A component supplier cannot determine the brake horsepower ("BHP") for other motors in the air handling system.
3. Before approving this unit, determine whether ASHRAE Standard 90.1 - 2007 has been adopted in the specific jurisdiction or contract specifications in which the unit will be installed.



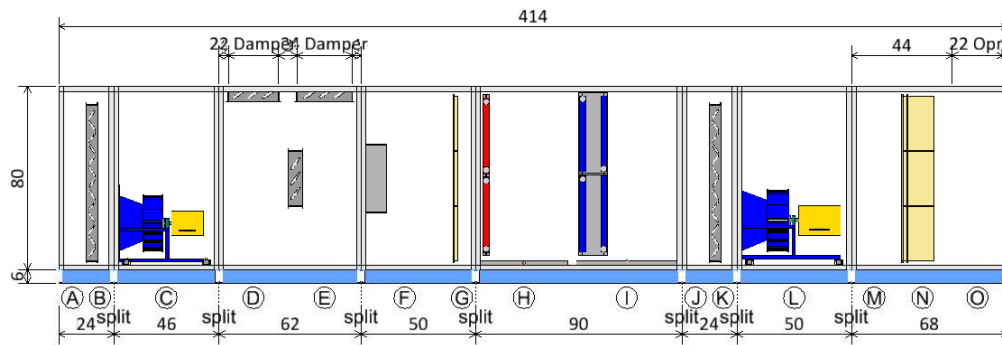
PLAN VIEW



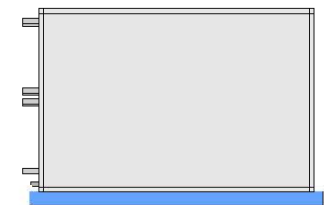
ISOMETRIC VIEW




FRONT END VIEW

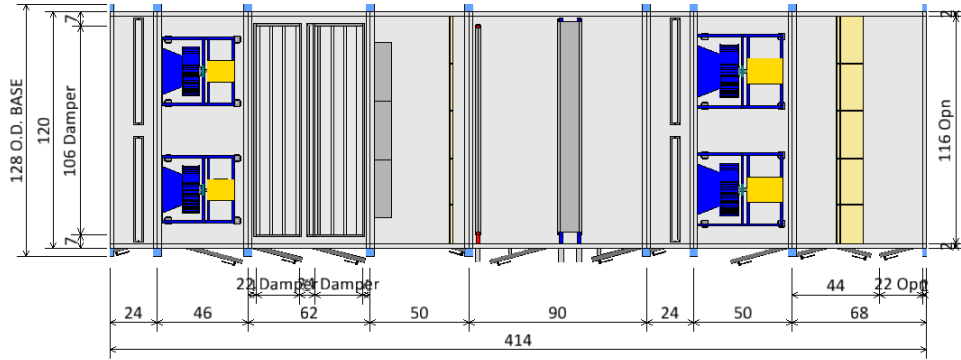


ELEVATION VIEW

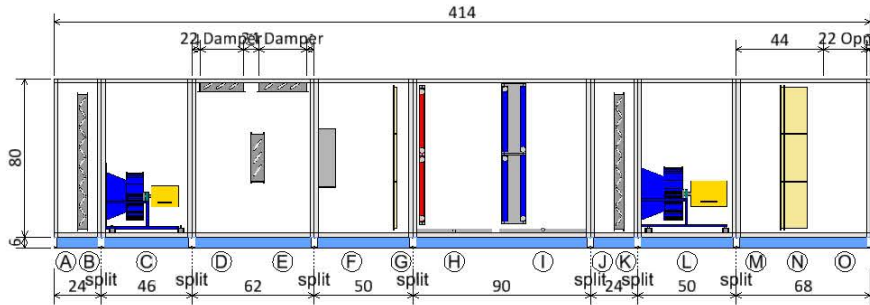


REAR END VIEW

Product Drawing		Unit Tag: AHU-1		Sales Office: O'Connor Company (Sioux Falls)			 13600 Industrial Park Blvd, Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 10.21
Product: Vision Air Handler		Project Name: Yankton		Sales Engineer:			
Model: CAH050GDGC	June 10, 2014	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in	



PLAN VIEW

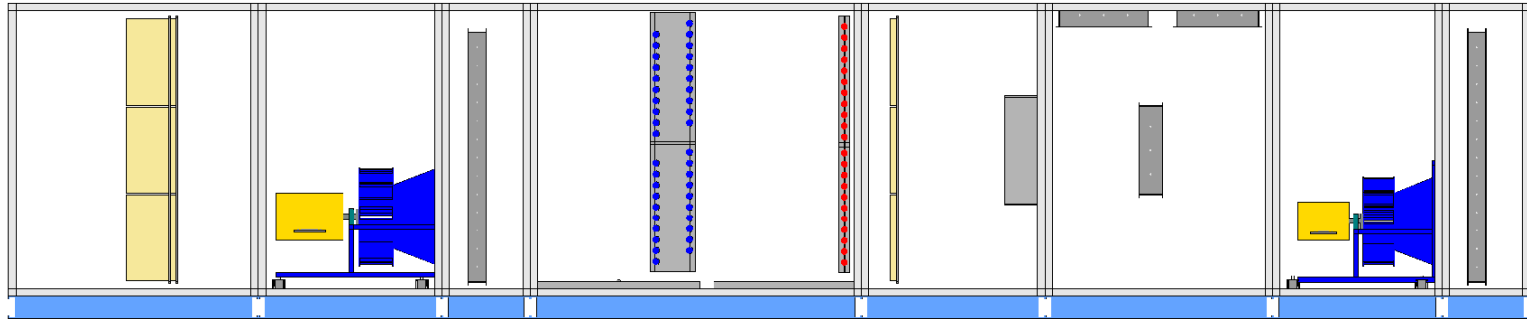


ELEVATION VIEW

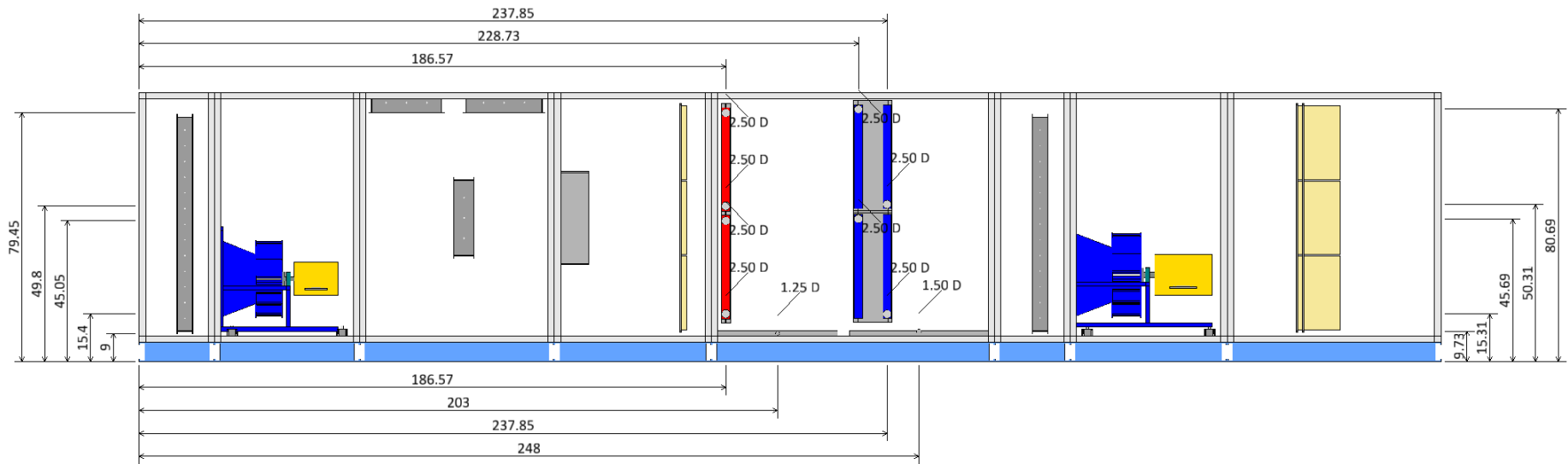
Component Key

Access Section		Plenum Section
(A) Right Door Width: 8 ins	8 ins	Opening Location: Top
Right Door Height: 68 ins	68 ins	(C) Opening Size: 22 ins x 116 ins
(B) Damper		Right Door Width: 18 ins
Fan		Right Door Height: 64 ins
Fan Type: Centrifugal - Plenum		Base 6" deep, Cross members extend 4" on each side of the unit.
Fan Size (Class): 24 (2)		
(C) Air Flowrate: 12000.0 cfm		
T.S.P: 2.9 insWg		
Motor Power: 10.0 HP		
Right Door Width: 30 ins		
Right Door Height: 68 ins		
Economizer Return		
(D) Right Door Width: 26 ins		
Right Door Height: 68 ins		
Economizer Mixing		
(E) Right Door Width: 28 ins		
Right Door Height: 68 ins		
(F) Blender		
Blender Manufacturer: Kees Inc.		
Panel Filter		
(G) Filter Type: Pleated (MERV 7)		
Right Door Width: 8 ins		
Right Door Height: 76 ins		
Hot Water Coil		
(H) Coil Model: 5WH0802B		
Total Capacity: 1358746.0 Btu/hr		
Right Door Width: 30 ins		
Right Door Height: 64 ins		
Chilled Water coil		
(I) Coil Model: 5WS1008A		
Total Capacity: 1185173.0 Btu/hr		
Right Door Width: 26 ins		
Right Door Height: 68 ins		
Access Section		
(J) Right Door Width: 8 ins		
Right Door Height: 68 ins		
(K) Damper		
Fan		
Fan Type: Centrifugal - Plenum		
Fan Size (Class): 27 (2)		
(L) Air Flowrate: 12000.0 cfm		
T.S.P: 6.6 insWg		
Motor Power: 20.0 HP		
Right Door Width: 30 ins		
Right Door Height: 68 ins		
Access Section		
(M) Right Door Width: 16 ins		
Right Door Height: 68 ins		
Panel and Bag Filter		
(N) Pre Filter Type: Pleated (MERV 7)		
Bag Filter Type: Varicel SH		
Right Door Width: 18 ins		
Right Door Height: 76 ins		


Product Drawing		Unit Tag: AHU-1		Sales Office: O'Connor Company (Sioux Falls)			 13600 Industrial Park Blvd, Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 10.21
Product: Vision Air Handler		Project Name: Yankton		Sales Engineer:			
Model: CAH050GDGC	June 10, 2014	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in	



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Unit Connections		Unit Tag: AHU-1		Sales Office: O'Connor Company (Sioux Falls)			 13600 Industrial Park Blvd, Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 10.21
Product: Vision Air Handler		Project Name: Yankton		Sales Engineer:			
Model: CAH050GDGC	June 10, 2014	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in	

Submittal Package

Project Name: Avera

Project Number:

Preparation Date: 2014/06/10

Agent Name: oconnor company

Agent Business Address: 4909 N. Lewis Ave
Sioux falls
South Dakota
57104

Salesperson: ryan OConnor

1.0 Zone List

Zone Tag	HTot	Qma	DBsd	RHsd	DBbh	RHbh	DBah	RHah	Qoa	DBoa	RHoa	Location	Wduct	Hduct	Absorption	Technology
Zone(1)	113.25	24000	72	35	55	53	55	64	18	-13	65	In Duct	120	80	0.21	LiveSteam

HTot = Total Humidification	RHah = After Humidification Relative Humidity
Qma = Mixed Air Volume	Qoa = Outside Air Volume
DBsd = Space Design Dry Bulb Temperature	DBoa = Outside Air Design Dry Bulb Temperature
RHsd = Space Design Relative Humidity	RHoa = Outside Air Design Relative Humidity
DBbh = Before Humidification Dry Bulb Temperature	Wduct = Duct Width
DBah = Before Humidification Relative Humidity	Hduct = Duct Height
HTot = After Humidification Dry Bulb Temperature	Absorption = Absorption Distance

2.0 Bill of Materials

Zone Tag	Item	Part Number	Quantity
Zone(1)	Valve, Bronze, 3/4 Cv=5.50	1594322	1
Zone(1)	Actuator 0-10Vdc 1/2-2in (1/2-3/4in SS)	1507549	1
Zone(1)	Wye Strainer, 0.75 nominal diameter	1599621	1
Zone(1)	Trap F&T up to 15 psig	1599601	1
Zone(1)	Trap F&T up to 15 psig	1599601	1
Zone(1)	Steam Tube, SAM-e, 66 in Type A, 304SS	1503398	10
Zone(1)	Header SAM-e 120, 12 centers	1506804	1
Zone(1)	Mounting Frame, SAM-e 51 - 99 in	1503471	1
Zone(1)	Inlet adapter, SAM-e, Pressure Steam 3/4 npt	1503474	1
Zone(1)	Switch Air Proving (duct airflow safety interlock)	1329203	1
Zone(1)	Digital Duct Humidistat, On/Off HI LIMIT	2548732	1

3.0 Humidifiers

3.1 LiveSteam: Valves - Bronze

Description

LIVESTEAM HUMIDIFIERS

Pressurized Boiler Steam Humidifier (Isothermal Technology)

Pre-engineered, cost effective, humidification system designed to control and distribute steam under pressure, from a facility steam boiler, for introduction into a duct or Air Handling Unit.

The system is configured to operate with regular boiler steam, up to 50 psig, using standard bronze and stainless steel components.

Steam distributors are constructed of high quality stainless steel and can be configured for single or multiple configurations. The optional stainless steel insulation jacket encompasses 1/2" fiberglass insulation to minimize heat transfer in the air stream

All LIVESTEAM systems consist of: a steam valve, separator, actuator/linkage and steam distributor(s). Required optional components: steam trap(s), wye strainers, humidistat(s) and temperature switch.

FEATURES

- Stainless steel separators
- Bronze steam valves with stainless steel seat, stem, and plug
- Pneumatic or electric actuator/linkage
- Stainless steel steam distributors (standard or insulated)
- Single distributor capacity: up to 1501 lbs/hr @ 50 psi
- Multiple distributor capacity: up to 3209 lbs/hr @ 50 psi
- On/Off or modulating control
- Two-year limited warranty

Data Sheet

Product Name: Valve, Bronze, 3/4 Cv=5.50

Product Number: 1594322

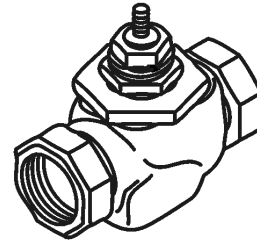


Performance:		Dimensions:	
Output Range Minimum:	2.00 lbs/hr	Height	12.20 in
Output Range	513.00 lbs/hr	Width:	10.30 in
Maximum:		Depth:	6.00 in

Schematic

VALVE DATA

Valve Manufacturer: Schneider Electric
Valve Model: VB-7263
Valve Size: 1/2" - 2"
Flow Type: Modified Equal Percentage
Flow Coefficient (Cv) Factor: As Specified



Valve Body Data		Material	
Maximum Static Pressure	250 Psig	Body	Bronze
Maximum Inlet Pressure (Steam)	100 Psig	Stem	Stainless Steel
Recommended Differential Pressure	35 Psig	Seat	Bronze
		Plug	Stainless Steel
Maximum Media Temperature	340°F(171°C)	Packing	Spring Loaded Teflon Cone
Plug Type	Parabolic	Disc	Teflon

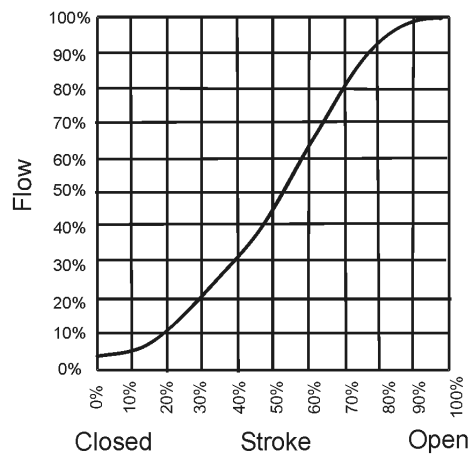
Rangeability:

Rangeability is defined as the ratio of rated flow to the minimum controllable flow.

For two-way valves, modulation occurs when plug displacement allows flow through the area between the plug and the port. The rangeability value is achieved by accurately machining the plug and port diameters for appropriate clearance. The following are normal values, with 25% tolerances.

Nominal Size		Valve Cv	Nominal Ratio
Standard	Metric		
1/2"	15mm	0.1	2:1
		0.22	4:1
		0.4	5:1
		0.75	10:1
		1.3	15:1
		2.2	25:1
		2.8	28:1
3/4"	20mm	4.4	40:1
		5.5	50:1
		7.5	60:1
1"	25mm	10	60:1
		12	75:1
1 1/4"	32mm	20	75:1
1 1/2"	40mm	28	75:1
2"	50mm	40	75:1

Typical Flow Curve



*For representative purposes only

NORTEC reserves the right to ship the selected valve or an equivalent valve depending on availability

4.0 Humidifier Options

Item	Part Number	Description
Wye Strainer, 0.75 nominal diameter	1599621	LIVESTEAM Wye Strainer, used in the supply steam line to remove impurities by filtering the steam through a strainer screen.
Actuator 0-10Vdc 1/2-2in (1/2-3/4in SS)	1507549	LIVESTEAM / SE Series Electric Modulating Actuator, provides motive power to operate steam valves. The actuators are designed mount directly to the valves without the use of linkages. They are linear acting and feature a return spring to close the valve in case of a loss of power. A manual override simplifies commissioning and allows the user to set the correct pre-load tension on the valve stem. The actuators are designed for safe operation and feature overload protection as well as a plenum rated polymer housing. Available control voltages include on/off, 0-10VDC, or 4- 20 mA, and 2 to 10 VDC feedback signal reports position of the valve. All actuators a operate with a 24 VAC supply voltage. For applications where only 120 VAC is available, a plug-in transformer, part 1603032, can be used.
Trap F&T up to 15 psig	1599601	LIVESTEAM Steam Trap, float and thermostatic for pressures up to 15 psig. The trap allows removal of condensate from a pressurized steam system while preventing the passage of steam.

Shop Drawing - 1599621

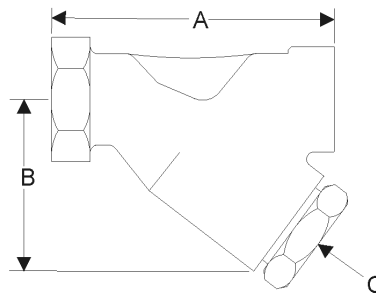
STRAINER DATA

Strainer Type:	"Y" Type
Strainer Size:	1/2" to 3"
Connection:	NPT
Body Material:	Cast Iron
Screen Material:	20 Mesh Stainless Steel
Pressure (non-shock):	250 psi (1725 kPa) - 406°F (208°C)
Installation:	The strainer should be installed with the flow direction as indicated on the body, in a vertical down or horizontal pipe line. The strainer must be accessible for periodic removal of accumulated debris by either blowing down or removal and cleaning of the screen.

Type	IT
Sizes	1/2" to 3"
Connections	NPT
Construction	Cast Iron
Maximum Saturated Steam Pressure	250 psig
Standard Screen	20 Mesh Type 304 Stainless Steel

No	Part	Material
1	Body	Cast Iron
2	Bushing (1/4" - 2")	Malleable Iron
2A	Cap (2 1/2" - 3")	Cast Iron
3	Cap Gasket (2 1/2" & 3")	Graphite
4	Standard Screen	Stainless Steel Type 304

Dimension	A	B	C	Weight
Size	inch	inch	NPT	lbs
1/2	3.4	2.7	3/8"	1.2
3/4	4.4	3.4	1/2"	2.9
1	4.9	3.5	3/4"	4.3
1-1/4	5.4	4.1	1"	6.5
1-1/2	6.4	4.7	1-1/4"	9.6
2	7.5	5.4	1-1/2"	12.9
2-1/2	9.0	6.4	1-1/4"	22.0
3	10.0	7.6	1-1/4"	35.0



Note: Plug for port "C" is not supplied by NORTEC.

Installation

Actuator/Valve Close-Off Pressure

Valve Material	Valve Part Number	CV	Size	Pressure* (psig)	Actuator Part Number			Linkage Kit**
					0-10 Vdc	4-20 mA dc	On/Off	
Bronze	1594300	0.10	0.5"	2-50	1507549	1507550	1507551	2573331
	1594302	0.22	0.5"	2-50	1507549	1507550	1507551	2573331
	1594304	0.40	0.5"	2-50	1507549	1507550	1507551	2573331
	1594306	0.75	0.5"	2-50	1507549	1507550	1507551	2573331
	1594310	1.3	0.5"	2-50	1507549	1507550	1507551	2573331
	1594314	2.2	0.5"	2-50	1507549	1507550	1507551	2573331
	1594316	2.9	0.5"	2-50	1507549	1507550	1507551	2573331
	1594318	4.4	0.5"	2-50	1507549	1507550	1507551	2573331
	1594322	5.5	0.75"	2-50	1507549	1507550	1507551	2573331
	1594324	7.5	0.75"	2-50	1507549	1507550	1507551	2573331
	1594330	10	1"	2-50	1507549	1507550	1507551	2573331
	1594332	12	1"	2-50	1507549	1507550	1507551	2573331
	1594341	20	1.25"	2-50	1507549	1507550	1507551	2573331
	1594350	28	1.5"	2-35	1507549	1507550	1507551	2573331
				36-50	1507552	1507553	1507554	2573332
	1594360	40	2"	2-20	1507549	1507550	1507551	2573331
21-50				1507552	1507553	1507554	2573332	
Stainless Steel	1594201	0.10	0.5"	2-50	1507549	1507550	1507551	2573333
	1594203	0.22	0.5"	2-50	1507549	1507550	1507551	2573333
	1594205	0.40	0.5"	2-50	1507549	1507550	1507551	2573333
	1594206	0.75	0.5"	2-50	1507549	1507550	1507551	2573333
	1594207	0.95	0.5"	2-50	1507549	1507550	1507551	2573333
	1594208	1.3	0.5"	2-50	1507549	1507550	1507551	2573333
	1594209	1.75	0.5"	2-50	1507549	1507550	1507551	2573333
	1594210	2.2	0.5"	2-50	1507549	1507550	1507551	2573333
	1594211	2.8	0.5"	2-50	1507549	1507550	1507551	2573333
	1594213	3.6	0.5"	2-50	1507549	1507550	1507551	2573333
	1594221	4.3	0.75"	2-50	1507549	1507550	1507551	2573333
	1594222	5	0.75"	2-50	1507549	1507550	1507551	2573333
	1594223	6.2	0.75"	2-50	1507549	1507550	1507551	2573333
	1594432	10	1"	2-50	1507556	1507557	1507558	2573334
	1594440	24	1.5"	2-50	1507556	1507557	1507558	2573334
	1594450	40	2"	2-50	1507556	1507557	1507558	2573334

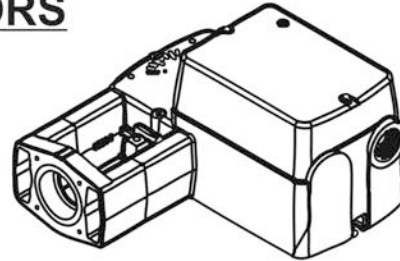
*Maximum operating steam pressure for LiveSteam humidifiers is 50 PSIG (15 PSIG on Steam Exchange Humidifiers)

**Linkage Kit already included with Actuator

Shop Drawing - 1507549

ELECTRIC ACTUATORS

For bronze 1/2" - 2" and stainless steel 1/2" - 3/4" valves, for incoming pressures from 2 to 50 psi for all valves, except for 1 1/2" which would be 2 to 34 psi and 2" which would be 2 to 19 psi.



Actuator Inputs

Control Signal: On/Off, 0-10 Vdc, 4-20 mAdc

Power Input: See Table-1. All 24 Vac circuits are Class 2. All circuits 30 Vac and above are class 1.

Connections: 3 ft (91cm) appliance wire or plenum cables, enclosure accepts 1/2" (13mm) conduit connectors. For M20 metric connector, use 1/2" NPT to M20 adaptor.

Actuator Outputs

Electrical:

Position Feedback Voltage (proportional or floating only): For voltage ranges, the feedback signal is the same range as the input signal. The 4-20 mAdc current range and floating actuators have a 2-10 Vdc position feedback signal. The position feedback signal can supply up to 0.5 mA to operate up to 4 additional slave actuators.

Mechanical:

Linear Stroke: 1/2" (13mm) nominal.

Approx. Stroke Timing: Powered, 44-60 sec.

Manual Override: Allows positioning of valve and pre-load using manual crank.

Right/Left Jumper: Permits reverse acting/direct acting linear motion (0-10 Vdc and 4-20 mAdc only).

Environment:

Shipping & Storage: -40 to 160°F (-40 to 71°C)

Operating: -22 to 140°F (-30 to 60°C)

Temperature Restrictions: For maximum ambient 140°F (60°C) the maximum allowable fluid temperature should not exceed 366°F (186°C).

Humidity: 15-95%RH, non-condensing

Location: NEMA 1. NEMA 2 (enclosure is air plenum rated), UL Type 2 (IEC IP54) with customer supplied water tight conduit connectors.

Overall Dimensions: 6.76" (172mm) x 3.5" (89mm) x 6.31" (160mm)

Agency Listings

UL 873: Underwriters Laboratories (File #E9429 Category Temperature-Indicating and Regulating Equipment).

CUL: UL Listed for use in Canada by Underwriters Laboratories. Canadian Standards C22.2 No. 24-93.

Table 1

Part Number	Control Action	Voltage	Actuator Power Input					Linear Stroke Inches	Approx. Stroke Timing in Seconds @ 70°F (21°C)		Output Force Rating lb (Newton)		
			Running				Holding 50/60Hz W		Powered	Spring Return	Min.	Max Stall	
			50Hz		60Hz								DC Amps
1507549	0-10 Vdc	24 Vac±20%	6.6	4.2	6.6	4.2	0.14	1.5	1/2	60	16	-	-
1507550	4-20 mAdc		5.3	4.1	5.3	4.1	0.15	1.2		44	19	-	-
1507551	On/Off	20-30 Vdc	5.3	4.1	5.3	4.1	0.15	1.2					

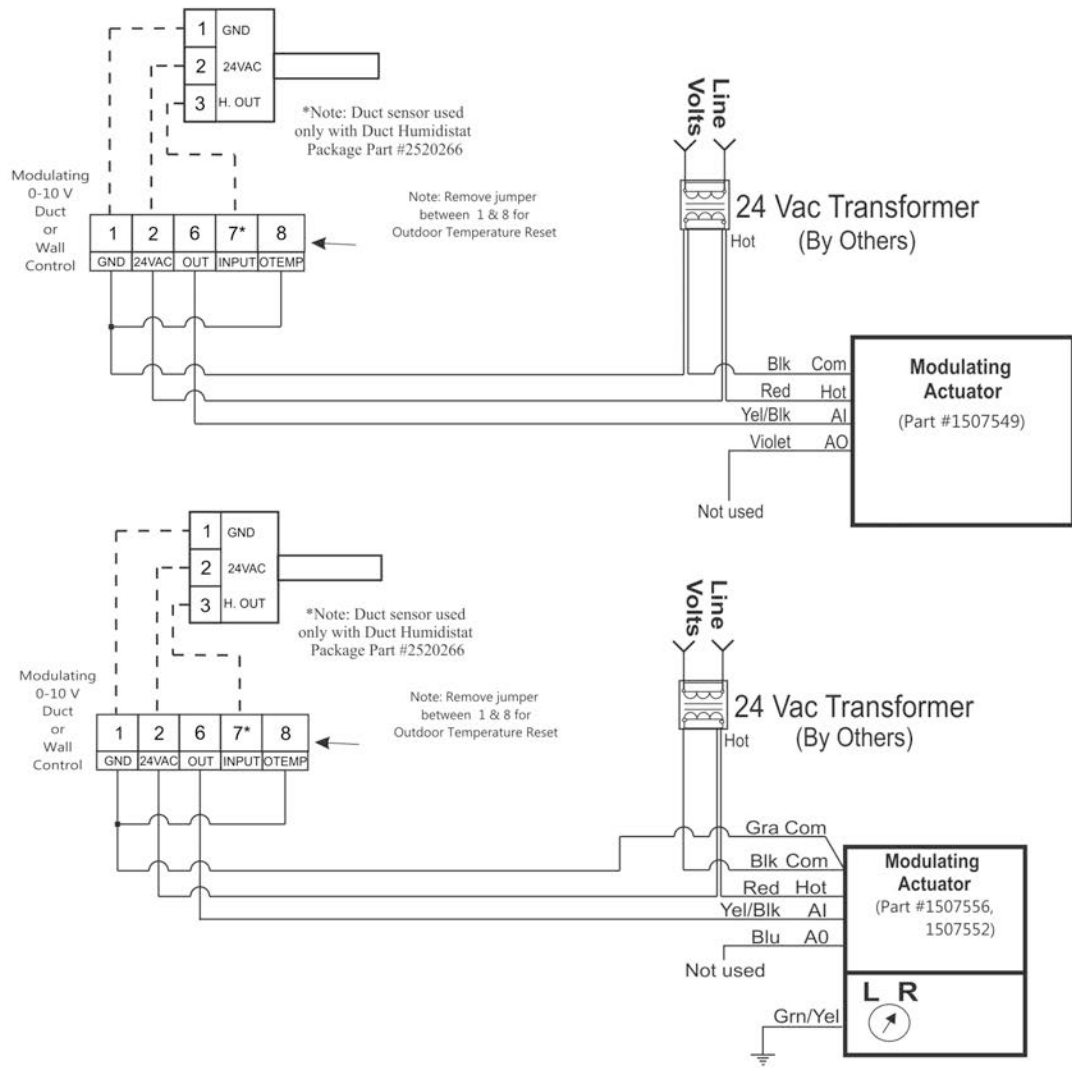
Shop Drawing - 1507549

**0-10V DIGITAL HUMIDISTAT
Wiring Diagram for Livesteam**

Part #	Description
1510142	0-10V Digital Wall Humidistat
2520266	0-10V Digital Duct Humidistat pkg.

Warning: Failure to wire the humidistat in accordance with the wiring diagram could permanently damage the electronics. Such errors will void the warranty.
Cabling between controls and unit should be shielded 18 AWG

HUMIDISTAT TO ACTUATOR CONNECTIONS

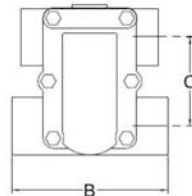
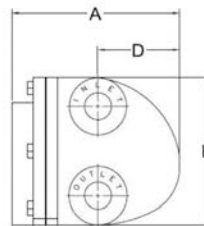


Shop Drawing - 1599601

TRAP DATA

Trap Type:	Float and Thermostatic
Trap Connection:	¾" NPT
Construction:	Cast Iron Body and Cover. Stainless Steel Internals.
Maximum Operating Pressure:	15 psig (103 kPa) Nortec Part #1599601 75 psig (517 kPa) Nortec Part #1599602
Installation:	Full port isolating valves should be placed to permit servicing. The trap should be installed below the drainage point with a collecting leg before the trap, in a position so that the float arm is in a horizontal plane so that the float rises and falls vertically, and with the direction of flow as indicated on the body.
Maintenance:	This product can be maintained without disturbing the piping connections. Complete isolation from both supply and return line is required before any servicing is performed.

Construction Materials	
Part	Material
Body & Cover	Cast Iron ASTM A126 CIB
Valve Head	Stainless Steel
Valve Seat	Stainless Steel
Valve Seat Gasket	Stainless Steel
Float	Stainless Steel
Bracket & Lever Assembly	Stainless Steel
Thermostatic Air Vent	Stainless Steel
Cover Bolts	Carbon Steel Grade 5
Cover Gasket	Non-Asbestos
Draining Plug	Stainless Steel



Dimensions (Nominal)						
	A	B	C	D	E	Weight
in	6.25	5.50	3.31	3.00	5.75	9 lb
mm	157	117	84	77	146	4.1 kg

5.0 Distributors

5.1 Short Absorption MANIFOLD

Description

SAM-e Overview:

The SAM-e precisely distributes either atmospheric or pressure steam uniformly across the entire air stream ensuring short absorption distance. A wide variety of configurations allow the mini SAM-e to meet the needs of nearly any project, including both horizontal or vertical duct applications. Backed by an industry leading 10 year limited warranty, the SAM-e is ideal choice for small ducts that require short absorption distances.

The SAM-e consists of up to 5 maintenance free components:

- Header
- Inlet Kit
- Distribution tubes
- Mounting frame
- Insulation (Optional)

SAM-e Headers:

The header is the primary component of the SAM-e providing connections for steam and support for the steam tubes. It is typically installed with vertical tubes for horizontal airflow applications, but can also be mounted horizontally (10 deg. incline from horizontal) for vertical airflow applications. The headers can be ordered with 3, 6, 9, or 12 inch center to center tube spacing for maximum flexibility and optimal steam distribution. Manufactured out of high grade 304 stainless steel, the header features welded inlet and condensate connections to ensure leak-free operation. Specialized synthetic grommets form an air and water-tight seal around the base of the steam tubes, simplifying installation and ensuring reliable leak-free operation.

SAM-e Inlet Kit:

The inlet kit adapts the header to match the humidifier being used. The specific kit is determined based on which humidifier is to be mated with the SAM-e system, and is available for both pressure steam or atmospheric steam applications.

Atmospheric steam inlet kits are made from high quality 304 stainless steel and include a 1 foot long flexible steam hose and 2 clamps for a simple connection to the hard pipe between the humidifier and SAM-e.

Pressurized steam inlet kits are also constructed from high quality 304 stainless steel and are available with male NPT threaded connections.

SAM-e Distribution Tubes:

Distribution tubes are constructed of 1.5” O.D. (3.8 cm) type 304 stainless steel tubing, and stand vertically on the header to disperse steam uniformly into the air stream. To ensure that only condensate free steam is distributed, the distribution tubes feature evenly spaced nozzles on two sides. These nozzles draw condensate free steam from the center of the tube while condensate drains down the tube walls. Any condensate generated drains out through the header eliminating the need for traditional jacketed steam tubes. During manufacturing nozzles are hydraulically pressed into the steam tubes to ensure a leak free seal. Additionally, the nozzles have the same thermal expansion characteristics as the tubes ensuring a permanent union and preventing nozzles from loosening or dislodging over time.

The distribution tubes are available in lengths to accommodate duct heights between 8-24”, as well as 3 different capacities:

- Type A: 15 lbs/hr (6.8 kg/hr) per tube
- Type B: 36 lbs/hr (16 kg/hr) per tube
- Type B+: 55 lbs/hr (25 kg/hr) per tube
- Type C: 75 lbs/hr (34 kg/hr) per tube

SAM-e Mounting Frame:

Available in two materials: galvanized steel or high grade 304 stainless steel, the mounting frame provides support and allows for a quick and easy installation. The telescopic frame can be adjusted to suit the duct or air handling unit. The mounting frame is optional for horizontal duct applications, but required for vertical duct applications.

SAM-e Insulation (Optional – See Bill of Materials):

To reduce the loss of steam to condensate, SAM-es are available with an optional 304 stainless steel air-gap insulation. Insulation consists of stainless steel shielding that is clamped onto both the header and distribution tubes. Contact and heat transfer between the insulating shield and the tube is prevented by using strips of synthetic foam insulation. The

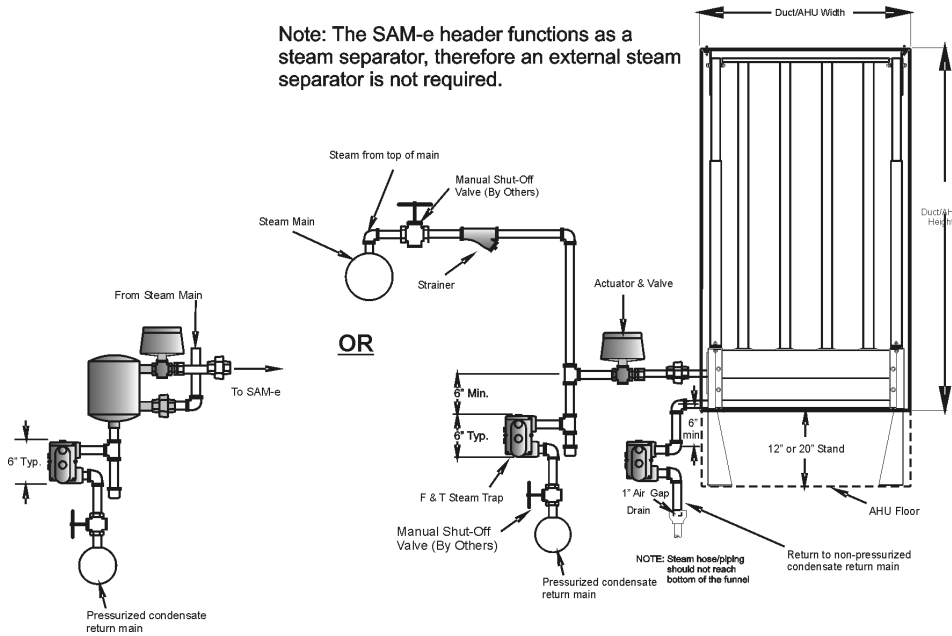
resulting air gap around reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation. Insulation significantly reduces energy losses from hot headers and distribution tubes, and can reduce condensate by up to 70% compared with insulated SAM-es. This minimizes airstream heat gain, reduces water waste, and improves overall energy efficiency. Insulation can be factory installed with new orders or easily retrofit to existing installations.

Refer to the Bill of Materials to determine if insulation is included with a specific SAM-e.

Installation

Pressurized Steam

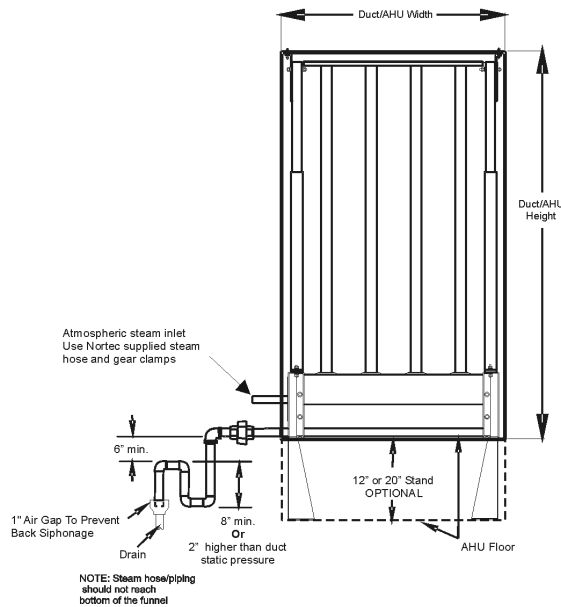
Note: The SAM-e header functions as a steam separator, therefore an external steam separator is not required.



Installation with External Separator

Installation without External Separator

Atmospheric Steam



Zone(1):Bill of Materials

Zone Tag	Item	Part Number	Quantity
Zone(1)	Steam Tube, SAM-e, 66 in Type A, 304SS	1503398	10
Zone(1)	Header SAM-e 120, 12 centers	1506804	1
Zone(1)	Mounting Frame, SAM-e 51 - 99 in	1503471	1
Zone(1)	Inlet adapter, SAM-e, Pressure Steam 3/4 npt	1503474	1

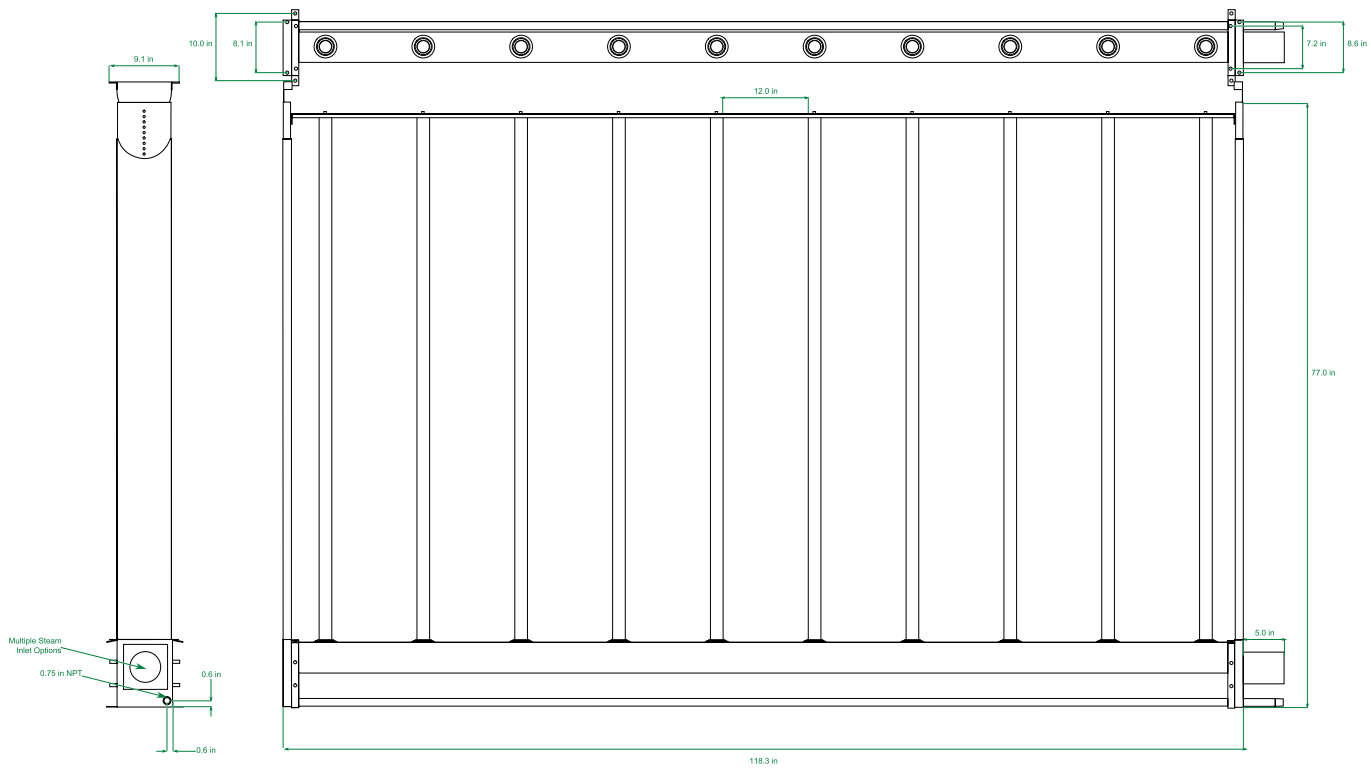
Performance:

Absorption Distance: 0.21 ft

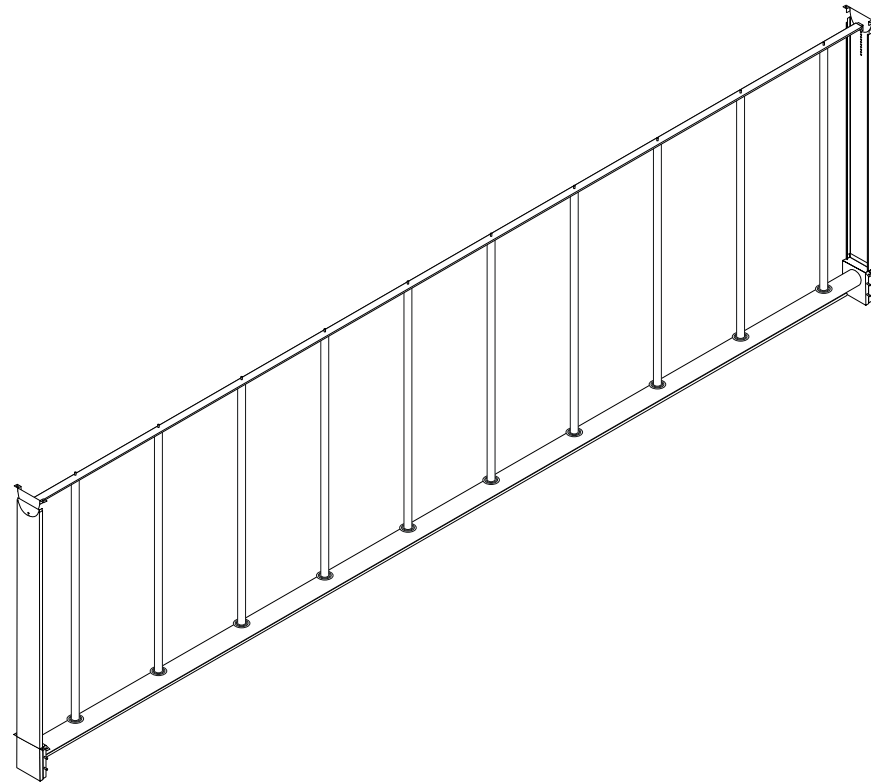
Duct Width: 120.00 in

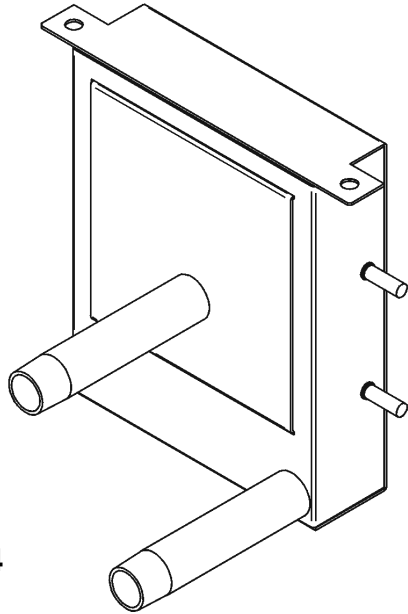
Duct Height: 80.00 in

Zone(1) : Dynamic Drawing

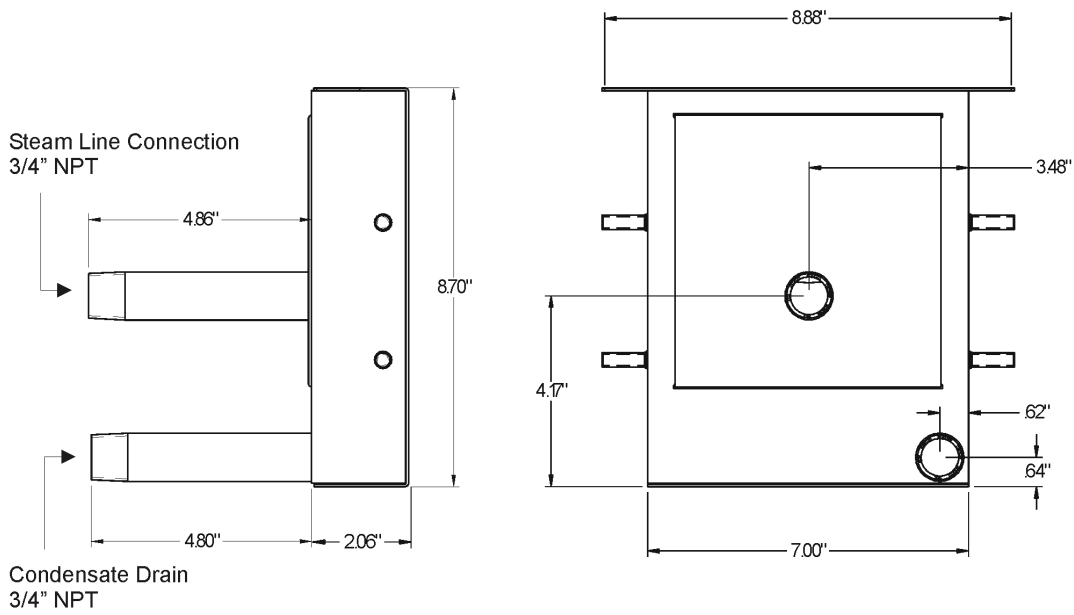


Zone(1) : Isometric Dynamic Drawing



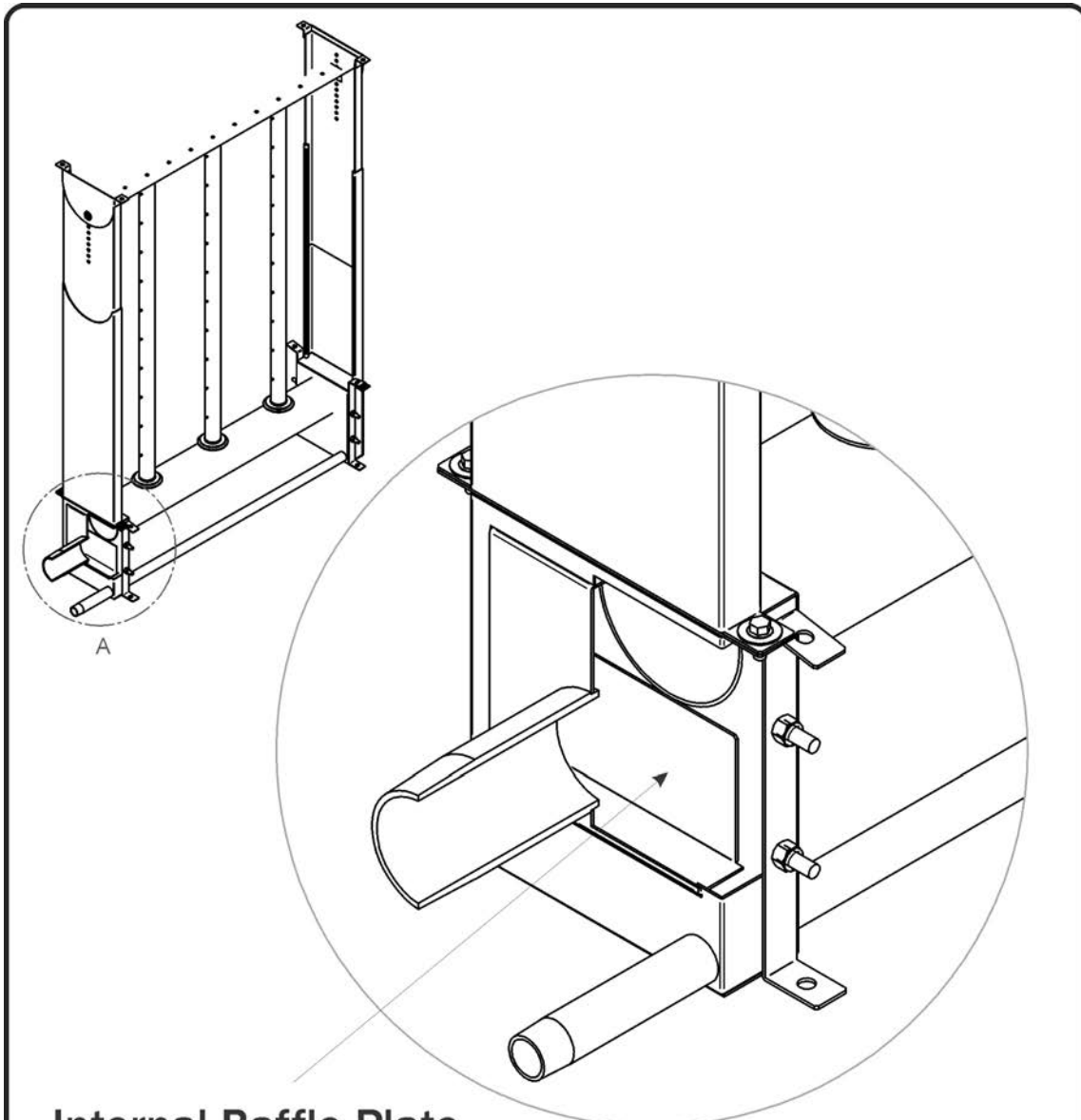


Shop Drawing - 1503474



Physical Dimensions
1503474 - 3/4" NPT Pressure Inlet

Shop Drawing - 1503474



Internal Baffle Plate

DETAIL A

All pressurized SAM-e inlet kits come with a standard internal baffle plate. The baffle plate redirects the flow of steam causing condensate to 'fall out', eliminating the need to install an external steam separator.

6.0 Distributor Options

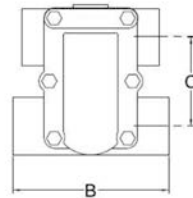
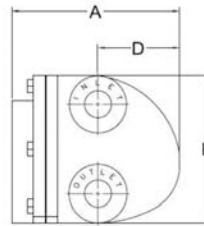
Item	Part Number	Description
Trap F&T up to 15 psig	1599601	LIVESTEAM Steam Trap, float and thermostatic for pressures up to 15 psig. The trap allows removal of condensate from a pressurized steam system while preventing the passage of steam.

Shop Drawing - 1599601

TRAP DATA

Trap Type:	Float and Thermostatic
Trap Connection:	¾" NPT
Construction:	Cast Iron Body and Cover. Stainless Steel Internals.
Maximum Operating Pressure:	15 psig (103 kPa) Nortec Part #1599601 75 psig (517 kPa) Nortec Part #1599602
Installation:	Full port isolating valves should be placed to permit servicing. The trap should be installed below the drainage point with a collecting leg before the trap, in a position so that the float arm is in a horizontal plane so that the float rises and falls vertically, and with the direction of flow as indicated on the body.
Maintenance:	This product can be maintained without disturbing the piping connections. Complete isolation from both supply and return line is required before any servicing is performed.

Construction Materials	
Part	Material
Body & Cover	Cast Iron ASTM A126 CIB
Valve Head	Stainless Steel
Valve Seat	Stainless Steel
Valve Seat Gasket	Stainless Steel
Float	Stainless Steel
Bracket & Lever Assembly	Stainless Steel
Thermostatic Air Vent	Stainless Steel
Cover Bolts	Carbon Steel Grade 5
Cover Gasket	Non-Asbestos
Draining Plug	Stainless Steel



Dimensions (Nominal)						
	A	B	C	D	E	Weight
in	6.25	5.50	3.31	3.00	5.75	9 lb
mm	157	117	84	77	146	4.1 kg

7.0 Controls

Item	Part Number	Description
Digital Duct Humidistat, On/Off HI LIMIT	2548732	On/Off Digital Duct Humidistat, for use with all product lines. Duct mounted controller with digital display. This humidistat can be configured for either humidity control or as a high limit safety device. An internal humidity sensor provides accurate control of the RH in a zone or space. An optional remote sensor can be used for outdoor temperature setback in the fresh air duct. FEATURES • 24 Vac On/Off control. • Single speed fan support. • Password protected programmable user and control parameters. • Accuracy of ± 5 %RH. • No loss of set parameters when returning from power failure.
Switch Air Proving (duct airflow safety interlock)	1329203	Air Proving Switch, on/off, duct mounted, pressure differential switch, adjustable set point from 0.07 IWC to 12.0 IWC, good for positive, negative or differential pressure applications, stops humidifier if duct air pressure is not sensed. Turns humidifier off if air handler fails.

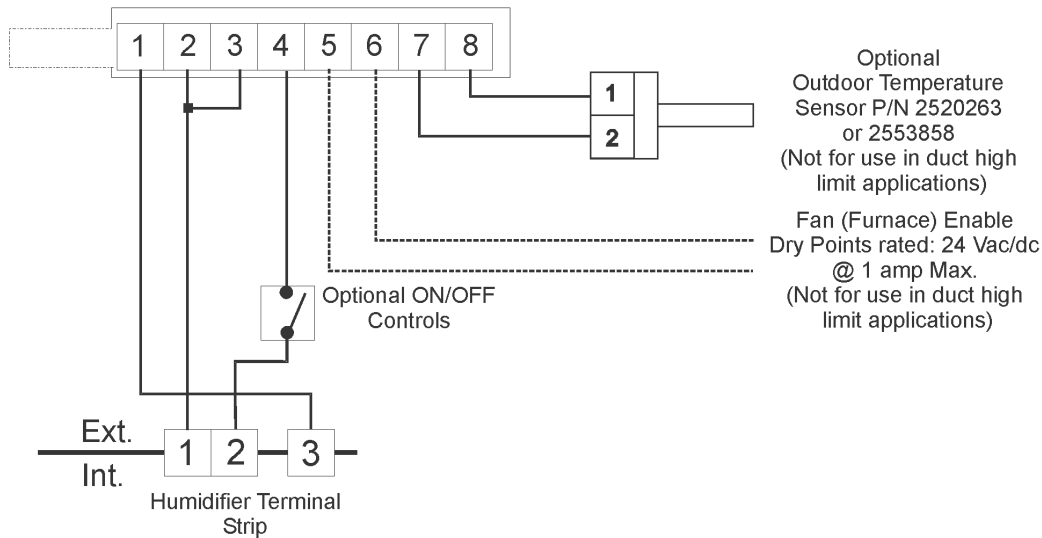
Installation

NORTEC Wall and Duct ON/OFF HUMIDISTAT WIRING DIAGRAM

Use for NHTC/NHPC, RH Series, NHRS, GSTC/GSP, SETC/SEP, MHTC, AIRFOG, and HP with:

Part #	Description
2548731	Digital ON/OFF Wall Humidistat
2548732	Digital ON/OFF Duct Humidistat
2520263	Outdoor Temperature Sensor
2553858	Outdoor Mount Temperature Sensor

Warning: Failure to wire the humidity transducer in accordance with wiring diagram could permanently damage the electronics. Such errors will void the warranty.
Cabling between transducers and unit should be shielded 18 AWG



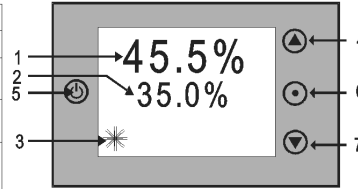
Humidistat - Relay Timing Chart



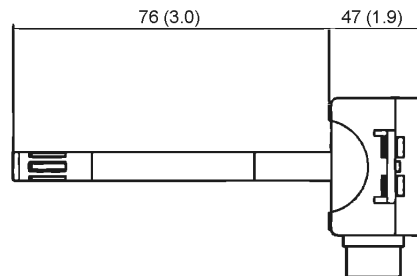
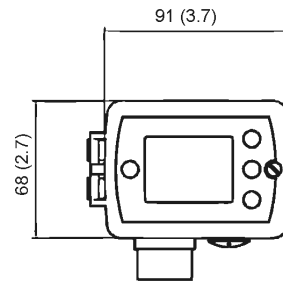
Shop Drawing - 2548732

Technical Data

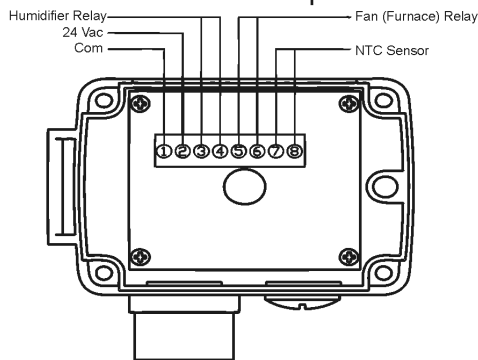
Power Supply	Operating Voltage	24V AC/DC \pm 10%, 50...60Hz
	Power Consumption	Max. 1.5 VA
	Electrical Connection	Terminal Connectors, Wire: AWG 24...12
	Internal Rectification Signal ground = Power ground	Half wave rectified Isolation transformer required
Signal Inputs	Humidity Input: Range Accuracy Hysteresis	Element: Polymer-Based Capacity Sensor 0...100% r.H. 10%...90% r.H. \pm 5.0% 0%...10% and 90%...100% \pm 7.0% \pm 1% r.H.
	Temperature Input Range Accuracy	External NTC (P/N: 2520263) -40...70°C (-40...158°F) -40...0°C (-40...32°F): 0.5 C 0...50°C (32...122°F): 0.2 C 50...70°C (122...158°F): 0.5 C
	Signal Outputs	Digital Switching Outputs Switching type AC Switching power
Environment	Operation Climatic Conditions Temperature Humidity	To IEC 721-3-3 class 3 K5 0...50 °C (32...122 °F) <95 % r.H. non-condensing
	Transport & Storage Climatic Conditions Temperature Humidity Mechanical Conditions	To IEC 721-3-2 and IEC 721-3-1 class 3 K3 and class 1 K3 -25...70 °C (-13...158 °F) <95 % r.H. non-condensing class 2M
Standards	Product standards Automatic electrical controls for household and similar use	EN 60 730-1 EN 60 730-2-9
	Degree of Protection	IP30 to EN 60 529
	Safety Class	III (IEC 60536)
Housing	Cover, back part Mounting Plate	Polycarbonate PC (UL94 class V0) PTFE coated 1µm pores
General	Dimensions (H x W x D): Transmitter case: Probe length:	91 x 68 x 47mm (3.7" x 2.7" x 1.9") 76 mm (3.0")
	Weight (including package)	220g



- Legend:**
- 1 Display of current humidity value.
 - 2 Display of setpoint.
 - 3 Snow flake displayed if outdoor temperature setback active.
 - 4 Adjusts setpoint and calibration (Up).
 - 5 Power On/Off.
 - 6 Toggles between RH setpoint and temperature (if temperature sensor present).
 - 7 Adjusts setpoint and calibration (Down).



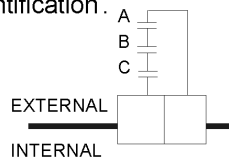
Terminal Strip



Installation

Controls are available from the factory as options. If controls were not ordered with the humidifier, they may be purchased/supplied by others. The following information is relevant to all ON/OFF controls, factory supplied or otherwise.

Controls are to be wired in series (only one path for current) across the control terminals on the low voltage control terminal strip, or replaced with a jumper wire for constant operation. Consult each individual unit wiring diagram for terminal identification.



A. Control On/Off Humidistat - Wired to make on drop in humidity, break on rise. Set to desired %rh.

B. Duct High Limit On/Off Humidistat - Wired to make on drop in humidity, break on rise. Set to a higher set point (max. 85% rh) as a safety to prevent saturation.

C. Air Proving On/Off Switch - Wired to make when sensing air flow, break when no air flow. As a safety to prevent duct saturation when no air flows.

1. The factory offers various versions of controls to suit each application.

2. Field wiring from humidistat to humidifier and between devices should be 18 AWG or heavier.

3. The low voltage control terminal strip is provided in the electrical compartment.

4. Each unit is supplied with a wiring diagram. Consult each individual unit wiring diagram for exact terminal identification.

5. Mount any wall humidistat (control or high limit) over a standard electrical box at a height similar to a typical thermostat. Any wall humidistat should be in a location representative of the overall space being humidified and not in the path of a blower pack or an air supply grille.

6. Mount any duct control humidistat in a location representative of the overall air humidity, usually the return duct. Do not mount it directly in front of the steam distributor or in a turbulent or mixing zone. Mount it where the air's humidity and temperature are uniform.

7. Mount any duct high limit humidistat downstream of steam distributors far, enough that under normal humidity and air flow conditions the steam will have been fully absorbed (typically more than 10 feet). It must be location to sense high humidity only when the uniform and representative air is over-humidified or approaching saturation.

8. Mount any air proving switch so that it is able to sense air flow or the lack of it. Wire it to make when air flow is sensed and break with no air flow.

9. Check operation of controls before starting unit.