



708 Garland St., Little Rock, AR 72201 Ph: 501-375-1181

Environmental Systems for Energy Conservation  
HVACR #090432  
Security License #E2006-0054

**Job Name:** ACH CVICU Room Exhaust

**City/State:** Little Rock, AR

**Engineer:** Cromwell Architects/Engineers - Robert L. Seay

**Sheet Metal Contractor:** Custom Metals

**Mechanical Contractor:** Comfort Systems USA

**Balanced By:** Vernon Wade - Cary McFarlin

**Date Balanced:** Feb. 6, 7, 8, 2024

**Submitted:** Feb. 16, 2024

**Copies Sent To:** Custom Metals - Joe Minton

Comfort Systems USA - Casey Howell

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**Environmental Systems for Energy Conservation**  
**HVACR #090432**  
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2/15/2024

ACH CVICU Room Exhaust Test and Balance

Summary Report

The rooms served by new K-EF-19 exhaust fan have been balanced in both the Positive and Negative modes. The room exhaust quantities are controlled by calibrated RRV Tuttle and Bailey Air Terminals while in the Negative mode.

The Exhaust Terminals shut and the return motorized dampers open when the rooms are in the Positive (Normal Mode).

Per the Director of Cardiac Services at Childrens Hospital, one of the rooms is to be negative and one room positive. The south room 4H-20 CVICU K4511 is to be negative.

This mode of room operation neutralizes the room pressures unless the door between the rooms 4H-19 and 4H-20 remains shut. In addition, the supply air in 4H-19 has been increased to 400 cfm constant volume to keep this room positive to the corridor. 4H-19 is .004 inches to the corridor. 4H-20 is -0.004 inches to the corridor with the door shut.

A door sweep for the door between the rooms will help increase the Room Pressure Monitor differential. Door sweeps beneath the sliding room doors for each room should create a differential of .01 and -0.01.

Submitted by,  
Vernon Wade



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### Air Terminal Functional Performance Test Report

Building Name: ACH CVICU Room Exhaust Zone: \_\_\_\_\_  
 Scheduled Terminal: ( E ) VAV 96-30 Manufacturer: Tuttle and Bailey Model#: SDV

OPERATIONAL CHECKS Date: 2/6/2024

Size 6 Address 96-30 Application CAV Reheat Static Setpoint 1.2

1. The damper drives to the parallel position at full stroke: Yes x No \_\_\_\_\_

2. The damper closes tight to 0 d.p. when commanded: Yes x No \_\_\_\_\_

3 Controller parameters are entered correctly: Max Cooling 325 Max Heat 325  
 Min Cooling 325 Min Heat 325  
 Flow coefficient: Initial 462 Final 420

4 The hot water valve opens and closes fully:  
 Entering air temp 55 Leaving air temp 55 (Valve closed to coil.)  
 Entering air temp 55 Leaving air temp 111 (Valve open to coil.)  
 Entering air design 55 Leaving air design 92

5 Hot water supply temperature: Measured 150 Design 160

Comments on accessibility, damage, or other: This room to be Positive Pressure Room. Standard.

Plans Sheet #: MH 104 Unit/Area: AHU-96

| Location      | # | Air Distribution Devices |         |          |            | Fac | Vel | Air Readings |      |     |     |
|---------------|---|--------------------------|---------|----------|------------|-----|-----|--------------|------|-----|-----|
|               |   | Type                     | Size    | Model    | Design CFM |     |     | 1st          | 2nd  | 3rd | 4th |
|               |   |                          |         |          |            |     |     | Neg.         | Pos. |     |     |
| 4H-19 CVICU   | 1 | Linear                   | 10"/48" | Slot     | 325        |     |     | 325          | 400  |     |     |
| K4510         |   |                          |         |          |            |     |     |              |      |     |     |
| 4H-19/ K4510  | 1 | RR-EX                    | 824     | Existing | 150        |     |     | 0            | 150  |     |     |
| 4H-19 CVICU   | 1 | ET-1                     | 6"      | RRV      | 300        |     |     |              |      |     |     |
| K4510         | 1 | ER-A                     | 1024    | CRE-500  | 300        |     |     | 300          | 0    |     |     |
|               |   |                          |         |          |            |     |     |              |      |     |     |
| Toilet K4510R | 1 | ER                       | 1024    |          | 125        |     |     | 135          | 135  |     |     |

CD - Ceiling Diffuser      SG - Supply Grille      EG - Exhaust Grille      RR - Return Register  
 LD - Linear Diffuser      RG - Return Grille      SR - Supply Register      ER - Exhaust Register



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### Air Terminal Functional Performance Test Report

Building Name: ACH CVICU Room Exhaust Zone: \_\_\_\_\_  
 Scheduled Terminal: ( E ) VAV 96-29 Manufacturer: Tuttle and Bailey Model#: SDV

OPERATIONAL CHECKS

Date: 2/6/2024

Size 6 Address 96-29 Application CAV Reheat Static Setpoint 1.2

1. The damper drives to the parallel position at full stroke: Yes x No \_\_\_\_\_

2. The damper closes tight to 0 d.p. when commanded: Yes x No \_\_\_\_\_

3 Controller parameters are entered correctly: Max Cooling 325 Max Heat 325  
 Min Cooling 325 Min Heat 325  
 Flow coefficient: Initial 462 Final 430

4 The hot water valve opens and closes fully:  
 Entering air temp 55 Leaving air temp 55 (Valve closed to coil.)  
 Entering air temp 55 Leaving air temp 106 (Valve open to coil.)  
 Entering air design 55 Leaving air design 92

5 Hot water supply temperature: Measured 150 Design 160

Comments on accessibility, damage, or other: This room to be Negative Pressure Room.

| Plans Sheet #: <u>MH 104</u> |   |                          |         |          |                      | Unit/Area: <u>AHU-96</u> |     |                       |      |     |     |
|------------------------------|---|--------------------------|---------|----------|----------------------|--------------------------|-----|-----------------------|------|-----|-----|
| Location                     | # | Air Distribution Devices |         |          |                      | Fac                      | Vel | Air Readings          |      |     |     |
|                              |   | Type                     | Size    | Model    | Design CFM           |                          |     | 1st                   | 2nd  | 3rd | 4th |
| 4H-20 CVICU                  | 1 | Linear                   | 10"/48" | Slot     | 325                  |                          |     | Standard              | Neg. |     |     |
| K4511                        |   |                          |         |          |                      |                          |     | 325                   | 325  |     |     |
| 4H-20/K4511                  | 1 | RR-EX                    | 824     | Existing | 150                  |                          |     | 150                   | 0    |     |     |
| 4H-20 CVICU                  | 1 | ET-1                     | 6"      | RRV      | 325                  |                          |     |                       |      |     |     |
| K4511                        | 1 | ER-A                     | 1024    | CRE-500  | 325                  |                          |     | 0                     | 355  |     |     |
| Toilet K4511R                | 1 | ER                       | 1024    |          | 100                  |                          |     | 110                   | 110  |     |     |
| CD - Ceiling Diffuser        |   | SG - Supply Grille       |         |          | EG - Exhaust Grille  |                          |     | RR - Return Register  |      |     |     |
| LD - Linear Diffuser         |   | RG - Return Grille       |         |          | SR - Supply Register |                          |     | ER - Exhaust Register |      |     |     |

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## Test & Balance Reports

**Project:** ACH CVICU Room Exhaust

**Plans Pg #:** MH 104

**Unit/Area:** Exhaust System

| Location   | #    | Air Distribution Devices |          |       |              | Fac | Vel | Air Readings |     |     |     |
|--|------|--------------------------|----------|-------|--------------|-----|-----|--------------|-----|-----|-----|
|  |      | Type                     | Size     | Model | Design CFM   |     |     | 1st          | 2nd | 3rd | 4th |
| Greenheck Varigreen 3/4 h.p.   |      |                          | 115/1/60 |       | RPM 350-2200 |     |     | N.P. 10.5    |     |     |     |
| 4H-19 CVICU K4510  | ET-1 | VAV                      | 6"       | RRV   | 300          |     |     | 300          | 0   |     |     |
| 4H-20 CVICU K4511  | ET-2 | VAV                      | 6"       | RRV   | 325          |     |     | 325          | 355 |     |     |
| ET-2 has a calibrated setpoint of 355 cfm to keep the room negative. |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |
|  |      |                          |          |       |              |     |     |              |     |     |     |

|                       |                    |                      |                       |
|-----------------------|--------------------|----------------------|-----------------------|
| CD - Ceiling Diffuser | SG - Supply Grille | EG - Exhaust Grille  | RR - Return Register  |
| LD - Linear Diffuser  | RG - Return Grille | SR - Supply Register | ER - Exhaust Register |

Factors shown on ceiling diffusers are based on using an Anor velometer.  
 Factors shown for grilles and registers are net core area. Velocity = CFM/Factor