



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0075

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Nortek Air Solutions, LLC

Manufacturer's Technical Representative: Preston Harris

Mailing Address: 19855 SW 124<sup>th</sup> Ave., Tualatin, OR 97062

Telephone: (503) 403-4431

Email: [Preston.Harris@nortek.com](mailto:Preston.Harris@nortek.com)

Product Information

Product Name: Huntair Custom Air Conditioning Units

Product Type: Custom Air Conditioning Units

Product Model Number: Huntair Custom Air Conditioning Units

(List all unique product identification numbers and/or part numbers)

General Description: Custom air conditioners, sheet metal construction. Seismic enhancements made to the test units & modifications required to address the anomalies observed during testing shall be incorporated into the production units

Mounting Description: Rigid base mounted.

Applicant Information

Applicant Company Name: Structural Integrity Associates, Inc. dba TRU Compliance

Contact Person: Andrew Coughlin, SE

Mailing Address: 5215 Hellyer Ave, Suite 210, San Jose, CA 94608

Telephone: (844) 878-0200

Email: [acoughlin@structint.com](mailto:acoughlin@structint.com)

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

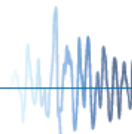
Signature of Applicant:

Date: 5/28/2018

Title: Director, TRU Compliance

Company Name: Structural Integrity Associates, Inc.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

Company Name: Structural Integrity Associates, Inc. dba TRU Compliance

Name: Andrew Coughlin, SE California License Number: S6082

Mailing Address: 5215 Hellyer Ave, Suite 210, San Jose, CA 94608

Telephone: (844) 878-0200 Email: [acoughlin@structint.com](mailto:acoughlin@structint.com)

**Supports and Attachments Preapproval**

- ☐ Supports and attachments are preapproved under OPM-  
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- ☒ Supports and attachments are not preapproved

**Certification Method**

- ☒ Testing in accordance with: ☒ ICC-ES AC156
- ☐ Other (Please Specify): \_\_\_\_\_

**Testing Laboratory**

Company Name: U.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL)

Contact Name: Jim Wilcoski

Mailing Address: 2902 Newmark Dr. Champaign, IL 61822

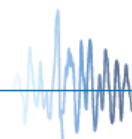
Telephone: (217) 373-6763 Email: [james.wilcoski@usace.army.mil](mailto:james.wilcoski@usace.army.mil)

Company Name: Clark Dynamic Test Laboratory, Inc.

Contact Name: Devon Lohr

Mailing Address: 1801 Route 51, Jefferson Hills, PA 15025

Telephone: (412) 387-1026 Email: [dlohr@clarktesting.com](mailto:dlohr@clarktesting.com)





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

Company Name: Environmental Testing Laboratory

Contact Name: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas, TX 75229-3513

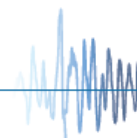
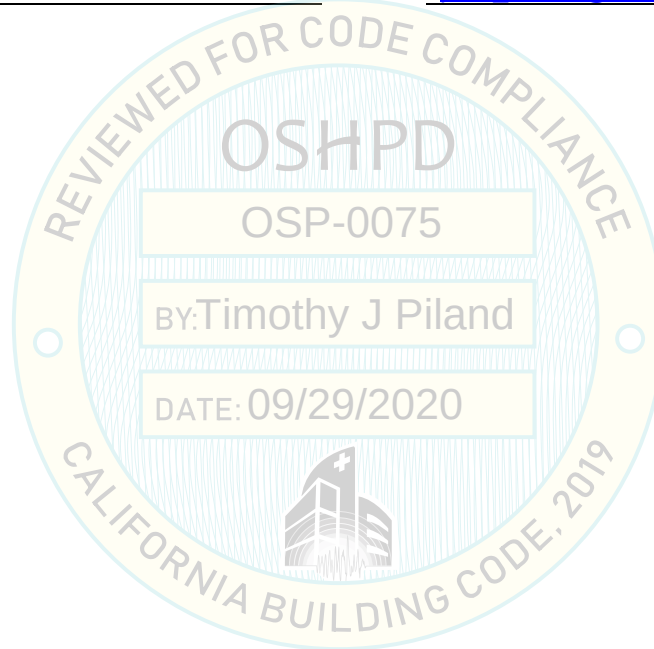
Telephone: (972) 247-9657 Email: [jeremy@etldallas.com](mailto:jeremy@etldallas.com)

Company Name: Pacific Earthquake Engineering Research Center (PEER)

Contact Name: Amarnath Kasalanati, PhD

Mailing Address: 1301 South 46th St., Bldg. 420, Richmond, CA 94804

Telephone: (510) 642-6475 Email: [peer\\_center@berkeley.edu](mailto:peer_center@berkeley.edu)





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
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**Seismic Parameters**

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.50

$S_{DS}$  (Design spectral response acceleration at short period, g) = 2.00

$a_p$  (In-structure equipment or component amplification factor) = 2.5

$R_p$  (Equipment or component response modification factor) = 6.0

$\Omega_0$  (System overstrength factor) = 2

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 1

Equipment or Component Natural Frequencies (Hz) = See Attachment

Overall dimensions and weight (or range thereof) = See Attachment

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components ( $V/W$ ) = \_\_\_\_\_

$S_{DS}$  (Design spectral response acceleration at short period, g) = \_\_\_\_\_

$S_{D1}$  (Design spectral response acceleration at 1 second period, g) = \_\_\_\_\_

$R$  (Response modification coefficient) = \_\_\_\_\_

$\Omega_0$  (System overstrength factor) = \_\_\_\_\_

$C_d$  (Deflection amplification factor) = \_\_\_\_\_

$I_p$  (Importance factor) = \_\_\_\_\_

Height to Center of Gravity above base = \_\_\_\_\_

Equipment or Component Natural Frequencies (Hz) = \_\_\_\_\_

Overall dimensions and weight (or range thereof) = \_\_\_\_\_

Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

**List of Attachments Supporting Special Seismic Certification**

☒ Test Report(s) ☒ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☒ Other(s) (Please Specify): Product and Subcomponent Matrices, UUT Summaries

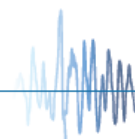
**OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025**

Signature: Timothy J. Piland Date: September 29, 2020

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to:  $S_{DS}$  (g) = 2.00  $z/h$  = 1

Condition of Approval (if applicable): \_\_\_\_\_





# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX



1801166-CR-001-R6

| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                                                                                                                                                               |                                                    |                                      |       |                  |             | <b>TABLE 1</b>                 |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------|-------|------------------|-------------|--------------------------------|---------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                                                                                                                                                         |                                                    |                                      |       |                  |             |                                |         |
| <b>Certified Product Construction Summary:</b><br>Galvanized carbon steel, stainless steel, or aluminum. See Table 2 and line drawings for certified product construction. Cross bracing as indicated in certified drawings. |                                                    |                                      |       |                  |             |                                |         |
| <b>Certified Options Summary:</b><br>See Tables 2 through 12 for certified options                                                                                                                                           |                                                    |                                      |       |                  |             |                                |         |
| <b>Mounting Configuration:</b><br>Base mounted - rigid<br>Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.                                     |                                                    |                                      |       |                  |             |                                |         |
| <b>Building Code: CBC 2019</b>                                                                                                                                                                                               |                                                    | <b>Seismic Certification Limits:</b> |       | $S_{DS} = 2.0 g$ |             | $z/h = 1.0$                    |         |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             | $I_p = 1.5$                    |         |
| Model Line                                                                                                                                                                                                                   | Model                                              | Dimensions (in)                      |       |                  | Weight (lb) | Notes                          | UUT     |
|                                                                                                                                                                                                                              |                                                    | Depth                                | Width | Height           |             |                                |         |
| Huntair CSU Series Custom Air Handling Units up to 240"W x 158"H and Aspect Ratio <sup>1</sup> (H/W) ≤ 1.1                                                                                                                   | CSU - 4 Walls                                      | No Limit                             | 24    | 24               | -           | Lower Range                    | Extrap. |
|                                                                                                                                                                                                                              |                                                    | ...                                  | ...   | ...              | ...         |                                | Extrap. |
|                                                                                                                                                                                                                              |                                                    | 96                                   | 240   | 144              | 11600       | UUT: 73 psf, Aluminum          | 3a      |
|                                                                                                                                                                                                                              |                                                    | 130                                  | 204   | 135              | 14762       | UUT: 80 psf, Galv. Carbon Stl  | 8       |
|                                                                                                                                                                                                                              |                                                    | 108                                  | 144   | 144              | 9050        | UUT: 84 psf, Galv. Carbon Stl  | 2a      |
|                                                                                                                                                                                                                              |                                                    | 138                                  | 244   | 160              | 24400       | UUT: 104 psf, Galv. Carbon Stl | 4       |
|                                                                                                                                                                                                                              |                                                    | 96                                   | 96    | 96               | 7450        | UUT: 116 psf, Galv. Carbon Stl | 1a      |
|                                                                                                                                                                                                                              |                                                    | 96                                   | 96    | 96               | 7450        | UUT: 116 psf, Galv. Carbon Stl | 1b      |
|                                                                                                                                                                                                                              |                                                    | ...                                  | ...   | ...              | ...         |                                | Extrap. |
|                                                                                                                                                                                                                              |                                                    | No Limit                             | 244   | 160              | -           | Upper Range, < 116 psf         | Extrap. |
|                                                                                                                                                                                                                              | CSU - 3 Walls (Inlet, Outlet, or Sidewall Removed) | No Limit                             | 24    | 24               | -           | Lower Range                    | Extrap. |
|                                                                                                                                                                                                                              |                                                    | ...                                  | ...   | ...              | ...         |                                | Extrap. |
|                                                                                                                                                                                                                              |                                                    | 139                                  | 134   | 146              | 8150        | UUT: 64 psf, Galv. Carbon Stl  | 5       |
|                                                                                                                                                                                                                              |                                                    | 108                                  | 144   | 144              | 9050        | UUT: 84 psf, Galv. Carbon Stl  | 2b      |
|                                                                                                                                                                                                                              |                                                    | ...                                  | ...   | ...              | ...         |                                | Extrap. |
|                                                                                                                                                                                                                              |                                                    | No Limit                             | 240   | 146              | -           | Upper Range, < 84 psf          | Extrap. |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             |                                |         |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             |                                |         |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             |                                |         |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             |                                |         |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             |                                |         |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             |                                |         |
|                                                                                                                                                                                                                              |                                                    |                                      |       |                  |             |                                |         |
| Additional Notes:                                                                                                                                                                                                            |                                                    |                                      |       |                  |             |                                |         |
| <sup>1</sup> For bracing requirements, see OSHPD Brace Detail sheet in line drawings at end of OSP.                                                                                                                          |                                                    |                                      |       |                  |             |                                |         |

**1801166-CR-001-R6**

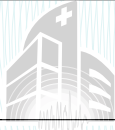


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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |                           | <b>Table Description:</b> Unit Construction                                   |                                                                                                  |             | <b>TABLE 2</b>                                         |
|------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |                           |                                                                               |                                                                                                  |             |                                                        |
| <b>Building Code:</b> CBC 2019                       |                           | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |                                                                                                  |             |                                                        |
| Component Type                                       | Manufacturer              | Model                                                                         | Description                                                                                      | Notes       | UUT                                                    |
| Walls/Roof                                           | Nortek Air Solutions, LLC | 2" Thickness                                                                  | Carbon Steel                                                                                     | 16 ga. Skin | 1 <sup>1</sup> ,6 <sup>1</sup>                         |
|                                                      |                           | 3" Thickness                                                                  |                                                                                                  | 16 ga. skin | Interp.                                                |
|                                                      |                           | 4" Thickness                                                                  |                                                                                                  | 16 ga. Skin | 2 <sup>1</sup> , 4, 5                                  |
|                                                      |                           | 2" Thickness                                                                  | Stainless Steel                                                                                  | 16 ga. skin | Interp.                                                |
|                                                      |                           | 3" Thickness                                                                  |                                                                                                  | 16 ga. skin | Interp.                                                |
|                                                      |                           | 4" Thickness                                                                  |                                                                                                  | 16 ga. Skin | 4                                                      |
|                                                      |                           | 2" Thickness                                                                  | Aluminum                                                                                         | 0.080" skin | Interp.                                                |
|                                                      |                           | 3" Thickness                                                                  |                                                                                                  | 0.080" skin | Interp.                                                |
|                                                      |                           | 4" Thickness                                                                  |                                                                                                  | 0.080" skin | 3a                                                     |
| Liner                                                | Nortek Air Solutions, LLC | Solid                                                                         |  Carbon Steel | 16 ga.      | Extrap.                                                |
|                                                      |                           |                                                                               |                                                                                                  | 20 ga.      | 1 <sup>1</sup> , 2 <sup>1</sup> , 4, 5, 6 <sup>1</sup> |
|                                                      |                           |                                                                               | Stainless Steel                                                                                  | 16 ga.      | Interp.                                                |
|                                                      |                           | 20 ga.                                                                        |                                                                                                  | 4           |                                                        |
|                                                      |                           | Perforated                                                                    | Aluminum                                                                                         | 0.063"      | 3a                                                     |
|                                                      |                           |                                                                               | Carbon Steel                                                                                     | 20 ga.      | Extrap.                                                |
|                                                      |                           |                                                                               | Stainless Steel                                                                                  | 22 ga.      | 4                                                      |
|                                                      |                           | Aluminum                                                                      | 0.040"                                                                                           | 4           |                                                        |
|                                                      |                           |                                                                               |                                                                                                  |             |                                                        |
|                                                      |                           |                                                                               |                                                                                                  |             |                                                        |
|                                                      |                           |                                                                               |                                                                                                  |             |                                                        |

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                               |                           | <b>Table Description:</b> Unit Construction                                   |                         |                                           | <b>TABLE 2</b>                                         |
|----------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------|-------------------------|-------------------------------------------|--------------------------------------------------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                         |                           |                                                                               |                         |                                           |                                                        |
| <b>Building Code:</b> CBC 2019                                                               |                           | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |                         |                                           |                                                        |
| Component Type                                                                               | Manufacturer              | Model                                                                         | Description             | Notes                                     | UUT                                                    |
| Blankoff                                                                                     | Nortek Air Solutions, LLC | Solid                                                                         | Carbon Steel            | 16 ga.                                    | 1 <sup>1</sup> , 2 <sup>1</sup> , 4, 5, 6 <sup>1</sup> |
|                                                                                              |                           |                                                                               | Stainless Steel         | 16 ga.                                    | Interp.                                                |
|                                                                                              |                           |                                                                               | Aluminum                | 0.080"                                    | 3a                                                     |
| Weather Hood                                                                                 | Nortek Air Solutions      | Weather Hood                                                                  | Carbon Steel            | 16ga. 62"(W) x 32"(H) x 26"(D)            | 6 <sup>1</sup>                                         |
| Base                                                                                         | Nortek Air Solutions, LLC | 6" Height                                                                     | Carbon Steel            | Channel                                   | 1 <sup>1</sup> , 2 <sup>1</sup>                        |
|                                                                                              |                           | 4" Height                                                                     |                         | Structural Tubing, Lower Range            | Extrap.                                                |
|                                                                                              |                           | 6" Height                                                                     |                         | Structural Tubing                         | 5, 6 <sup>1</sup>                                      |
|                                                                                              |                           | 8" Height                                                                     |                         | Structural Tubing                         | 8                                                      |
|                                                                                              |                           | 12" Height                                                                    | Stainless Steel         | Structural Tubing, Upper Range            | Interp.                                                |
|                                                                                              |                           | 4" Height                                                                     |                         | Structural Tubing, Lower Range            | Interp.                                                |
|                                                                                              |                           | 12" Height                                                                    |                         | Structural Tubing, Upper Range            | 4                                                      |
|                                                                                              |                           | 4" Height                                                                     |                         | Structural Tubing, Lower Range            | Interp.                                                |
|                                                                                              |                           | 6" Height                                                                     |                         | Structural Tubing, Upper Range            | 3a                                                     |
| Base Skin                                                                                    | Nortek Air Solutions, LLC | Galv. Carbon Steel Skin, Treadplate or Hot Rolled Pickled and Oiled           | Galvanized Carbon Steel | 0.25" thick                               | Extrap.                                                |
|                                                                                              |                           |                                                                               |                         | 0.188" thick                              | Extrap.                                                |
|                                                                                              |                           |                                                                               |                         | 12 ga.                                    | 4                                                      |
|                                                                                              |                           |                                                                               |                         | 16 ga., UUT: Hot Rolled Pickled and Oiled | 1 <sup>1</sup> , 2 <sup>1</sup> , 6 <sup>1</sup>       |
|                                                                                              |                           | Stainless Steel Skin, Treadplate                                              | Stainless Steel         | 12 ga.                                    | Interp.                                                |
|                                                                                              |                           |                                                                               |                         | 14 ga.                                    | Interp.                                                |
|                                                                                              |                           |                                                                               |                         | 16 ga.                                    | 5                                                      |
| Additional Notes:                                                                            |                           |                                                                               |                         |                                           |                                                        |
| <sup>1</sup> Subcomponent was tested in all UUT configurations as seen in the UUT Summaries. |                           |                                                                               |                         |                                           |                                                        |

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

**1801166-CR-001-R6**



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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                               |       | <b>Table Description:</b> Dampers and Louvers                            |       |        |                |                                                      | <b>TABLE 3</b>                                                 |                |
|----------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------|-------|--------|----------------|------------------------------------------------------|----------------------------------------------------------------|----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                         |       |                                                                          |       |        |                |                                                      |                                                                |                |
| <b>Building Code:</b> CBC 2019                                                               |       | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0\text{ g}$ $z/h = 1.0$ |       |        |                |                                                      | $I_p = 1.5$                                                    |                |
| Model Line<br>(Manufacturer)                                                                 | Model | Dimension (in)                                                           |       |        | Weight<br>(lb) | Material                                             | Notes                                                          | UUT            |
|                                                                                              |       | Depth                                                                    | Width | Height |                |                                                      |                                                                |                |
| Damper: HD6<br>(Huntair)                                                                     | HD6   | 8                                                                        | 8     | 6      | 2              | Galv Carbon Steel or Aluminum Frame, Aluminum Blades |                                                                | Extrap.        |
|                                                                                              |       | ...                                                                      | ...   | ...    | ...            |                                                      |                                                                | Extrap.        |
|                                                                                              |       | 8                                                                        | 48    | 30     | 120            | Galv. Carbon Steel Frame Aluminum Blades             | Actuator: Belimo AS-120-S                                      | 1 <sup>1</sup> |
|                                                                                              |       | ...                                                                      | ...   | ...    | ...            |                                                      |                                                                | Interp.        |
|                                                                                              |       | 8                                                                        | 100   | 120    | 1000           | Aluminum Frame and Blades                            | Actuator: Belimo 24V Mo. AF24-MFT                              | 3a             |
| Damper: CD<br>(Ruskin)                                                                       | CD 50 | 5                                                                        | 8     | 6      | 2              | Aluminum Frame and Blades                            |                                                                | Extrap.        |
|                                                                                              |       | ...                                                                      | ...   | ...    | ...            |                                                      |                                                                | Extrap.        |
|                                                                                              |       | 5                                                                        | 60    | 36     | 105            |                                                      | Actuator: Belimo AS-120-S                                      | 2 <sup>1</sup> |
|                                                                                              |       | ...                                                                      | ...   | ...    | ...            |                                                      |                                                                | Interp.        |
|                                                                                              |       | 5                                                                        | 60    | 120    | 350            |                                                      | Actuator: Belimo AFBUP-S                                       | 8              |
|                                                                                              |       | ...                                                                      | ...   | ...    | ...            |                                                      |                                                                | Interp.        |
|                                                                                              |       | 8                                                                        | 100   | 120    | 585            |                                                      | (2) Actuator: Siemens 24V MO. GCA131.1P and 120V Mo. GCA226.1U | 3a             |
| Damper: SD<br>(Ruskin)                                                                       | SD 50 | 5                                                                        | 8     | 5      | 2              | Aluminum Frame and Blades                            |                                                                | Extrap.        |
|                                                                                              |       | ...                                                                      | ...   | ...    | ...            |                                                      |                                                                | Extrap.        |
|                                                                                              |       | 5                                                                        | 33    | 57     | 78             |                                                      | Actuator: Honeywell MS4120                                     | 4              |
|                                                                                              |       | ...                                                                      | ...   | ...    | ...            |                                                      |                                                                | Interp.        |
|                                                                                              |       | 5                                                                        | 120   | 96     | 480            |                                                      | Actuator: Honeywell MS4120                                     | 4              |
|                                                                                              |       |                                                                          |       |        |                |                                                      |                                                                |                |
| Additional Notes:                                                                            |       |                                                                          |       |        |                |                                                      |                                                                |                |
| <sup>1</sup> Subcomponent was tested in all UUT configurations as seen in the UUT Summaries. |       |                                                                          |       |        |                |                                                      |                                                                |                |



# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                               |            | <b>Table Description:</b> Dampers and Louvers                     |       |        |                |                                                  | <b>TABLE 3</b>         |                |
|----------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------|-------|--------|----------------|--------------------------------------------------|------------------------|----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                         |            |                                                                   |       |        |                |                                                  |                        |                |
| <b>Building Code:</b> CBC 2019                                                               |            | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ |       |        |                |                                                  | $I_p = 1.5$            |                |
| Model Line<br>(Manufacturer)                                                                 | Model      | Dimension (in)                                                    |       |        | Weight<br>(lb) | Material                                         | Notes                  | UUT            |
|                                                                                              |            | Depth                                                             | Width | Height |                |                                                  |                        |                |
| Damper: AMS<br>(Ruskin)                                                                      | AMS 050    | 15                                                                | 6     | 6      | 3              | Galv. Carbon Steel Sleeve and<br>Aluminum Blades |                        | Extrap.        |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Extrap.        |
|                                                                                              |            | 15                                                                | 24    | 36     | 60             |                                                  | Actuator: Belimo AF120 | 4              |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Interp.        |
|                                                                                              |            | 15                                                                | 48    | 96     | 320            |                                                  | Actuator: Belimo AF120 | 4              |
| Damper: Tamco 1000<br>(Tamco)                                                                | Tamco 1000 | 4                                                                 | 8     | 6      | 2              | Aluminum Frame and Blades                        |                        | Extrap.        |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Extrap.        |
|                                                                                              |            | 4                                                                 | 60    | 30     | 60             |                                                  | Actuator: Belimo AMB24 | 6 <sup>1</sup> |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Interp.        |
|                                                                                              |            | 4                                                                 | 36    | 120    | 150            |                                                  | Actuator: Belimo AMB24 | 6 <sup>1</sup> |
| Louver: HL<br>(Huntair)                                                                      | HL         | 6                                                                 | 26    | 60     | 35             | Galv. Carbon Steel Frame and<br>Blades           |                        | 1 <sup>1</sup> |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Interp.        |
|                                                                                              |            | 4                                                                 | 60    | 120    | 290            |                                                  |                        | 8              |
| Louver: ELF<br>(Ruskin)                                                                      | ELF        | 6                                                                 | 40    | 36     | 60             | Aluminum Frame and Blades                        |                        | 2 <sup>1</sup> |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Interp.        |
|                                                                                              |            | 6                                                                 | 60    | 120    | 200            |                                                  |                        | 8              |
| Louver: AML<br>(Ruskin)                                                                      | AML        | 3                                                                 | 12    | 20     | 8              | Aluminum Frame and Blades                        |                        | Extrap.        |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Extrap.        |
|                                                                                              |            | 6                                                                 | 36    | 60     | 180            |                                                  |                        | 4              |
|                                                                                              |            | ...                                                               | ...   | ...    | ...            |                                                  |                        | Interp.        |
|                                                                                              |            | 3                                                                 | 100   | 120    | 1000           |                                                  |                        | 4              |
| Additional Notes:                                                                            |            |                                                                   |       |        |                |                                                  |                        |                |
| <sup>1</sup> Subcomponent was tested in all UUT configurations as seen in the UUT Summaries. |            |                                                                   |       |        |                |                                                  |                        |                |

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |               | <b>Table Description:</b> Fanwall                                 |       |        |                | <b>TABLE 4</b>                                                                                |                                                                                                       |                    |
|------------------------------------------------------|---------------|-------------------------------------------------------------------|-------|--------|----------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |               |                                                                   |       |        |                |                                                                                               |                                                                                                       |                    |
| <b>Building Code:</b> CBC 2019                       |               | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ |       |        |                | $I_p = 1.5$                                                                                   |                                                                                                       |                    |
| Model Line<br>(Manufacturer)                         | Model         | Dimension (in)                                                    |       |        | Weight<br>(lb) | Material                                                                                      | Notes                                                                                                 | UUT                |
|                                                      |               | Depth                                                             | Width | Height |                |                                                                                               |                                                                                                       |                    |
| Fanwall: Welded or Riveted (Huntair)                 | 10" Fan Wheel | 24                                                                | 20    | 20     | 133            | Carbon steel frame, aluminum fan wheels, vertical or horizontal flow, stacked up to 131" high |                                                                                                       | Extrap.            |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                               |                                                                                                       | Extrap.            |
|                                                      |               | 32                                                                | 24    | 20     | 173            |                                                                                               | UUT2: welded construction, vertical flow; UUT3a: riveted, multi. stack and adjacent cell, horiz. flow | 2 <sup>1</sup> ,3a |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                               |                                                                                                       | Interp.            |
|                                                      | 44            | 36                                                                | 44    | 356    |                |                                                                                               | Interp.                                                                                               |                    |
|                                                      | 12" Fan Wheel | 24                                                                | 20    | 20     | 140            |                                                                                               |                                                                                                       | Interp.            |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                               |                                                                                                       | Interp.            |
|                                                      |               | 44                                                                | 36    | 44     | 364            |                                                                                               |                                                                                                       | Interp.            |
|                                                      |               | 14" Fan Wheel                                                     | 24    | 24     | 20             |                                                                                               | 140                                                                                                   |                    |
|                                                      | ...           |                                                                   | ...   | ...    | ...            |                                                                                               |                                                                                                       | Interp.            |
|                                                      | 44            |                                                                   | 36    | 44     | 365            |                                                                                               |                                                                                                       | Interp.            |
|                                                      | 16" Fan Wheel |                                                                   | 32    | 28     | 20             |                                                                                               | 204                                                                                                   |                    |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                               |                                                                                                       | Interp.            |
|                                                      |               | 48                                                                | 44    | 44     | 367            |                                                                                               |                                                                                                       | Interp.            |
|                                                      |               | 18" Fan Wheel                                                     | ...   | ...    | ...            |                                                                                               | ...                                                                                                   |                    |
|                                                      | 32            |                                                                   | 28    | 20     | 207            |                                                                                               |                                                                                                       | Interp.            |
|                                                      | ...           |                                                                   | ...   | ...    | ...            |                                                                                               |                                                                                                       | Interp.            |
|                                                      | 48            |                                                                   | 44    | 44     | 367            |                                                                                               |                                                                                                       | Interp.            |
|                                                      |               |                                                                   |       |        |                |                                                                                               |                                                                                                       |                    |
|                                                      |               |                                                                   |       |        |                |                                                                                               |                                                                                                       |                    |

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                               |               | <b>Table Description:</b> Fanwall                                 |       |        |                | <b>TABLE 4</b>                                                                                |                                                                                                      |                    |  |
|----------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------|-------|--------|----------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------|--|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                         |               |                                                                   |       |        |                |                                                                                               |                                                                                                      |                    |  |
| <b>Building Code:</b> CBC 2019                                                               |               | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ |       |        |                | $I_p = 1.5$                                                                                   |                                                                                                      |                    |  |
| Model Line<br>(Manufacturer)                                                                 | Model         | Dimension (in)                                                    |       |        | Weight<br>(lb) | Material                                                                                      | Notes                                                                                                | UUT                |  |
|                                                                                              |               | Depth                                                             | Width | Height |                |                                                                                               |                                                                                                      |                    |  |
| Fanwall: Welded or Riveted<br>(Huntair)                                                      | 20" Fan Wheel | ...                                                               | ...   | ...    | ...            | Carbon steel frame, aluminum fan wheels, vertical or horizontal flow, stacked up to 131" high |                                                                                                      | Interp.            |  |
|                                                                                              |               | 32                                                                | 28    | 20     | 210            |                                                                                               |                                                                                                      | Interp.            |  |
|                                                                                              |               | ...                                                               | ...   | ...    | ...            |                                                                                               |                                                                                                      | Interp.            |  |
|                                                                                              |               | 48                                                                | 44    | 44     | 367            |                                                                                               |                                                                                                      | Interp.            |  |
|                                                                                              | 22" Fan Wheel | 32                                                                | 36    | 20     | 244            |                                                                                               |                                                                                                      | Interp.            |  |
|                                                                                              |               | ...                                                               | ...   | ...    | ...            |                                                                                               |                                                                                                      | Interp.            |  |
|                                                                                              |               | 32                                                                | 44    | 44     | 367            |                                                                                               | UUT2: welded construction, vertical flow; UUT3a: riveted, mult. stack and adjacent cell, horiz. flow | 2 <sup>1</sup> ,3a |  |
|                                                                                              |               |                                                                   |       |        |                |                                                                                               |                                                                                                      |                    |  |
| Fanwall Gen II<br>(Huntair)                                                                  | 10" Fan Wheel | 16                                                                | 22    | 24     | 54             |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              |               | ...                                                               | ...   | ...    | ...            |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              |               | 24                                                                | 22    | 27     | 82             | 2 wide x 5 high Gen II multi stack without extended coplanar                                  | 7                                                                                                    |                    |  |
|                                                                                              |               | ...                                                               | ...   | ...    | ...            |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              |               | 42                                                                | 30    | 30     | 157            |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              |               | 16                                                                | 25    | 24     | 57             |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              | 12" Fan Wheel | ...                                                               | ...   | ...    | ...            |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              |               | 23                                                                | 32    | 32     | 125            | 2 wide x 4 high Gen II multi stack and adjacent cell                                          | 4                                                                                                    |                    |  |
|                                                                                              |               | ...                                                               | ...   | ...    | ...            |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              |               | 42                                                                | 32    | 32     | 166            |                                                                                               | Interp.                                                                                              |                    |  |
|                                                                                              |               |                                                                   |       |        |                |                                                                                               |                                                                                                      |                    |  |
|                                                                                              |               |                                                                   |       |        |                |                                                                                               |                                                                                                      |                    |  |
| Additional Notes:                                                                            |               |                                                                   |       |        |                |                                                                                               |                                                                                                      |                    |  |
| <sup>1</sup> Subcomponent was tested in all UUT configurations as seen in the UUT Summaries. |               |                                                                   |       |        |                |                                                                                               |                                                                                                      |                    |  |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |               | <b>Table Description:</b> Fanwall                                 |       |        |                |                                                                                                                                               | <b>TABLE 4</b>                                                      |         |
|------------------------------------------------------|---------------|-------------------------------------------------------------------|-------|--------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |               |                                                                   |       |        |                |                                                                                                                                               |                                                                     |         |
| <b>Building Code:</b> CBC 2019                       |               | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ |       |        |                |                                                                                                                                               | $I_p = 1.5$                                                         |         |
| Model Line<br>(Manufacturer)                         | Model         | Dimension (in)                                                    |       |        | Weight<br>(lb) | Material                                                                                                                                      | Notes                                                               | UUT     |
|                                                      |               | Depth                                                             | Width | Height |                |                                                                                                                                               |                                                                     |         |
| Fanwall Gen II<br>(Huntair)                          | 14" Fan Wheel | 17                                                                | 25    | 24     | 57             | Bolted aluminum extrusion frame, aluminum and polymer fan wheels, stacked up to 144" high, horizontal flow, with or without extended coplanar |                                                                     | Interp. |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | 42                                                                | 34    | 34     | 173            |                                                                                                                                               |                                                                     | Interp. |
|                                                      | 16" Fan Wheel | 18                                                                | 28    | 28     | 66             |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | 48                                                                | 38    | 38     | 195            |                                                                                                                                               |                                                                     | Interp. |
|                                                      | 18" Fan Wheel | 21                                                                | 31    | 28     | 74             |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | 48                                                                | 40    | 40     | 199            |                                                                                                                                               |                                                                     | Interp. |
|                                                      | 20" Fan Wheel | 21                                                                | 31    | 28     | 74             |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | 50                                                                | 42    | 42     | 199            |                                                                                                                                               |                                                                     | Interp. |
|                                                      | 22" Fan Wheel | 22                                                                | 34    | 34     | 83             |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | 38                                                                | 40    | 44     | 165            |                                                                                                                                               | 2 wide x 4 high Gen II multi stack and adjacent cell                | 4       |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | 33                                                                | 44    | 44     | 175            |                                                                                                                                               | 2 wide x 4 high Gen II multi stack and adjacent cell                | 4       |
|                                                      |               | ...                                                               | ...   | ...    | ...            |                                                                                                                                               |                                                                     | Interp. |
|                                                      |               | 51                                                                | 34    | 34     | 199            |                                                                                                                                               | 2 wide x 4 high Gen II fan cells with and without extended coplanar | 7       |
|                                                      |               |                                                                   |       |        |                |                                                                                                                                               |                                                                     |         |

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |                                | <b>Table Description:</b> Heat Transfer Coils                     |       |        |                |                                                | <b>TABLE 5</b>                                                                          |                |
|------------------------------------------------------|--------------------------------|-------------------------------------------------------------------|-------|--------|----------------|------------------------------------------------|-----------------------------------------------------------------------------------------|----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |                                |                                                                   |       |        |                |                                                |                                                                                         |                |
| <b>Building Code:</b> CBC 2019                       |                                | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ |       |        |                |                                                | $I_p = 1.5$                                                                             |                |
| Model Line<br>(Manufacturer)                         | Model                          | Dimension (in)                                                    |       |        | Weight<br>(lb) | Material                                       | Notes                                                                                   | UUT            |
|                                                      |                                | Depth                                                             | Width | Height |                |                                                |                                                                                         |                |
| Water Coils<br>(Nortek Air Solutions)                | 5WC<br>1 - 2 Row               | 4                                                                 | 24    | 24     | 57             | copper or aluminum fins;<br>copper tubes       | 0.625"φ tube, 1 row, 0.006" (Cu) or<br>0.008" (Al) fins, 6 FPI                          | Extrap.        |
|                                                      |                                | ...                                                               | ...   | ...    | ...            |                                                |                                                                                         | Extrap.        |
|                                                      |                                | 4                                                                 | 40    | 85.5   | 230            | copper or aluminum (UUT) fins;<br>copper tubes | 0.625"φ tube, 1 row, 0.006" (Cu) or<br>0.008" (Al, UUT) fins, 7 FPI, stacked 2<br>high  | 1a             |
|                                                      |                                | ...                                                               | ...   | ...    | ...            |                                                |                                                                                         | Interp.        |
|                                                      |                                | 7                                                                 | 127   | 40.5   | 540            | copper or aluminum (UUT) fins;<br>copper tubes | 0.625"φ tube, 2 row, 0.006" (Cu) or<br>0.008" (Al, UUT) fins, 14 FPI, stacked 3<br>high | 2 <sup>2</sup> |
|                                                      | 5WC<br>3 - 12 Row              | 6.5                                                               | 24    | 24     | 143            | copper or aluminum fins;<br>copper tubes       | 0.625"φ tube, 3 row, 0.006" (Cu) or<br>0.008" (Al) fins, 14 FPI                         | Interp.        |
|                                                      |                                | ...                                                               | ...   | ...    | ...            |                                                |                                                                                         | Interp.        |
|                                                      |                                | 17.5                                                              | 83    | 40.5   | 1435           | copper (UUT) or aluminum fins;<br>copper tubes | 0.625"φ tube, 12 row, 0.006"(Cu, UUT)<br>or 0.008"(Al) fins, 6 FPI, stacked 2 high      | 1a             |
|                                                      | 5WC <sup>1</sup><br>3 - 10 Row | ...                                                               | ...   | ...    | ...            |                                                |                                                                                         | Interp.        |
|                                                      |                                | 15                                                                | 184   | 63     | 3594           | copper or aluminum (UUT) fins;<br>copper tubes | 0.625"φ tube, 10 row, 0.006" (Cu) or 0.008"<br>(Al, UUT) fins, 12 FPI, stacked 2 high   | 8              |
|                                                      |                                | ...                                                               | ...   | ...    | ...            |                                                |                                                                                         | Interp.        |

Additional Notes:

<sup>1</sup>Upgraded coil support per description in UUT8

Additional Notes:

<sup>1</sup>Upgraded coil support per description in UUT8



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| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                                      |                                     | <b>Table Description:</b> Enclosure                               |       |        |                | <b>TABLE 7</b> |                                               |         |
|-----------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------|-------|--------|----------------|----------------|-----------------------------------------------|---------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                                |                                     |                                                                   |       |        |                |                |                                               |         |
| <b>Building Code:</b> CBC 2019                                                                      |                                     | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ |       |        |                | $I_p = 1.5$    |                                               |         |
| Model Line<br>(Manufacturer)                                                                        | Model                               | Dimension (in)                                                    |       |        | Weight<br>(lb) | Material       | Notes                                         | UUT     |
|                                                                                                     |                                     | Depth                                                             | Width | Height |                |                |                                               |         |
| Huntair                                                                                             | Control & VFD Enclosures            | 12                                                                | 20    | 24     | 30             | Carbon Steel   | NEMA 1/12/3R/4X <sup>1</sup>                  | Extrap. |
|                                                                                                     |                                     | ...                                                               | ...   | ...    | ...            |                |                                               | Extrap. |
|                                                                                                     |                                     | 16                                                                | 28    | 42     | 176            |                | NEMA 1/12/3R/4X <sup>1</sup> , (UUT: NEMA 12) | 2a      |
|                                                                                                     |                                     | ...                                                               | ...   | ...    | ...            |                |                                               | Interp. |
|                                                                                                     |                                     | 10                                                                | 28    | 40     | 143            |                | NEMA 1/12/3R/4X <sup>1</sup> , (UUT: NEMA 1)  | 4       |
|                                                                                                     |                                     | ...                                                               | ...   | ...    | ...            |                |                                               | Interp. |
|                                                                                                     |                                     | 12                                                                | 36    | 48     | 216            |                | NEMA 1/12/3R/4X <sup>1</sup> , (UUT: NEMA 3R) | 1b      |
|                                                                                                     |                                     | ...                                                               | ...   | ...    | ...            |                |                                               | Interp. |
|                                                                                                     |                                     | 20                                                                | 56    | 72     | 470            |                | NEMA 1/12/3R/4X <sup>1</sup> , (UUT: NEMA 1)  | 1a      |
|                                                                                                     |                                     | ...                                                               | ...   | ...    | ...            |                |                                               | Interp. |
|                                                                                                     | Power Distribution & MSP Enclosures | 16                                                                | 56    | 90     | 530            | Carbon Steel   | NEMA 1/12/3R/4X <sup>1</sup> , (UUT: NEMA 1)  | 4       |
|                                                                                                     |                                     | 6                                                                 | 6     | 8      | 30             |                | NEMA 1/12/3R/4X <sup>1</sup>                  | Extrap. |
|                                                                                                     |                                     | ...                                                               | ...   | ...    | ...            |                |                                               | Extrap. |
|                                                                                                     |                                     | 10                                                                | 16    | 16     | 30             |                | NEMA 1/12/3R/4X <sup>1</sup> , (UUT: NEMA 4X) | 2b      |
|                                                                                                     |                                     | ...                                                               | ...   | ...    | ...            |                | Interp.                                       |         |
|                                                                                                     |                                     | 12                                                                | 22    | 34     | 105            |                | NEMA 1/12/3R/4X <sup>1</sup> , (UUT: NEMA 1)  | 8       |
| Hoffman                                                                                             | Power Distribution & MSP Enclosures | 6                                                                 | 24    | 24     | 50             | Aluminum       | UUT: NEMA 3R                                  | 3a      |
| Saginaw                                                                                             | Electrical Control Cabinet          | 16                                                                | 30    | 48     | 190            | Carbon Steel   | UUT: NEMA 1                                   | 8       |
|                                                                                                     |                                     |                                                                   |       |        |                |                |                                               |         |
| Additional Notes:                                                                                   |                                     |                                                                   |       |        |                |                |                                               |         |
| <sup>1</sup> No physical difference between NEMA 1, NEMA 12, and NEMA 3R. NEMA 4X is powder coated. |                                     |                                                                   |       |        |                |                |                                               |         |

Additional Notes:

<sup>1</sup>No physical difference between NEMA 1, NEMA 12, and NEMA 3R. NEMA 4X is powder coated.

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |              | <b>Table Description:</b> Actuator, Fan Motors                                |                  |              | <b>TABLE 8</b>                 |
|------------------------------------------------------|--------------|-------------------------------------------------------------------------------|------------------|--------------|--------------------------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |              |                                                                               |                  |              |                                |
| <b>Building Code:</b> CBC 2019                       |              | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |                  |              |                                |
| Component Type                                       | Manufacturer | Model                                                                         | Description      | Notes        | UUT                            |
| Actuator                                             | Belimo       | AMB24                                                                         |                  |              | 6 <sup>1</sup>                 |
|                                                      |              | AS-120-S                                                                      |                  |              | 1 <sup>1</sup> ,2 <sup>1</sup> |
|                                                      |              | AF24-MFT                                                                      | 24V              |              | 3a                             |
|                                                      |              | AF120                                                                         | 120V             |              | 4                              |
|                                                      |              | AFBUP-S                                                                       | 120V             |              | 8                              |
|                                                      | Honeywell    | MS4120F                                                                       | 2 position, 120V |              | 4                              |
|                                                      | Siemens      | GCA156.1U                                                                     |                  |              | Extrap.                        |
|                                                      |              | GCA131.1P                                                                     | 24V              |              | 3a                             |
|                                                      |              | GCA226.1U                                                                     | 120V             |              | 3a                             |
| Fan Motor                                            | Siemens      | 1 HP                                                                          | 230/460 Volts    | UUT: 55 lbs  | 2 <sup>1</sup> ,3a,7           |
|                                                      |              | ...                                                                           |                  |              | Interp.                        |
|                                                      |              | 10HP                                                                          | 460 Volts        | UUT: 144 lbs | 7                              |
|                                                      |              | ...                                                                           |                  |              | Interp.                        |
|                                                      |              | 15 HP                                                                         | 230/460 Volts    | UUT: 218 lbs | 2 <sup>1</sup>                 |
|                                                      |              | ...                                                                           |                  |              | Interp.                        |
|                                                      |              | 20 HP                                                                         | 230/460 Volts    | UUT: 291 lbs | 3a                             |
|                                                      | Baldor       | 1 HP                                                                          | 230/460 Volts    | UUT: 45 lbs  | 7                              |
|                                                      |              | ...                                                                           |                  |              | Interp.                        |
| 12 HP                                                |              | 230/460 Volts                                                                 | UUT: 169 lbs     | 7            |                                |
|                                                      |              |                                                                               |                  |              |                                |
|                                                      |              |                                                                               |                  |              |                                |

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |              | <b>Table Description:</b> Electrical                                          |             |                                     | <b>TABLE 12</b> |
|------------------------------------------------------|--------------|-------------------------------------------------------------------------------|-------------|-------------------------------------|-----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |              |                                                                               |             |                                     |                 |
| <b>Building Code:</b> CBC 2019                       |              | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |             |                                     |                 |
| Component Type                                       | Manufacturer | Model                                                                         | Description | Notes                               | UUT             |
| Disconnect Switch and Circuit Breaker                | Siemens      | CFS361J5                                                                      | 30A         | Eaton R4H3030FJ                     | Extrap.         |
|                                                      |              | CFS362J                                                                       | 60A         | Eaton R9J3060FJ                     | 3a              |
|                                                      |              | CFS363J                                                                       | 100A        | Eaton R9K3100FJ                     | Interp.         |
|                                                      |              | CFS364J                                                                       | 200A        | Eaton R9L3200FJ                     | 1b, 2a          |
|                                                      |              | CFS365J                                                                       | 400A        | Eaton R9M3400FJ                     | 1a              |
| Fuse Holder and Fuse                                 | Bussmann     | LPJ-1SP                                                                       | 1A          |                                     | Extrap.         |
|                                                      |              | LPJ-5SP                                                                       | 5A          | Bussmann Fuse Type LPJ, full range  | Extrap.         |
|                                                      |              | LPJ-10SP                                                                      | 10A         | Bussmann Fuse Type DFJ, full range  | Extrap.         |
|                                                      |              | LP-CC-15                                                                      | 15A         | Bussman Fuse Type LP-CC, full range | Extrap.         |
|                                                      |              | CCP-3-30CC, J60030-3CR                                                        | 30A         | Bussmann Fuse Type KTK, full range  | 1b              |
|                                                      |              | J60060-3CR, CCP-3-60CF                                                        | 60A         | Bussmann Fuse Type FNQ, full range  | Interp.         |
|                                                      |              | LPJ-100SP                                                                     | 100A        | Bussmann Fuse Type FNM, full range  | Interp.         |
|                                                      |              | LPJ-200SP                                                                     | 200A        | Bussmann Fuse Type GMA, full range  | Interp.         |
|                                                      |              | J60400-3CR                                                                    | 400A        |                                     | 1a              |
| Distribution Block                                   | Marathon     | 132580                                                                        | 175A        | Bussmann PDBFS220, PDB321-3         | 1b              |
|                                                      |              | 1403404                                                                       | 310A        | Bussmann PDBFS303, PDB323-3         | Interp.         |
|                                                      |              | 1453579                                                                       | 380A        | Bussmann PDBFS330                   | Interp.         |
|                                                      |              | 1453587                                                                       | 665A        | Bussmann PDBFS500                   | 1a              |
| Contactor                                            | Siemens      | 3RT10151AK61                                                                  | 7A          | Eaton XTCE007B10A                   | 1a              |
|                                                      |              | 3RT10231AK60                                                                  | 9A          | Eaton XTCE009B10A                   | Interp.         |
|                                                      |              | 3RT10241AK60                                                                  | 12A         | Eaton XTCE012B10A                   | Interp.         |
|                                                      |              | 3RT10251AK60                                                                  | 17A         | Eaton XTCE018C10A - 18A             | Interp.         |
|                                                      |              | 3RT10361AK60                                                                  | 50A         | Eaton XTCE050D00A                   | Interp.         |

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                       |              | <b>Table Description:</b> Electrical |                |                                 | <b>TABLE 12</b> |
|--------------------------------------------------------------------------------------|--------------|--------------------------------------|----------------|---------------------------------|-----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                 |              |                                      |                |                                 |                 |
| <b>Building Code:</b> CBC 2019                                                       |              |                                      |                |                                 |                 |
| <b>Seismic Certification Limits:</b> $S_{DS} = 2.0\text{ g}$ $z/h = 1.0$ $I_p = 1.5$ |              |                                      |                |                                 |                 |
| Component Type                                                                       | Manufacturer | Model                                | Description    | Notes                           | UUT             |
| Contactor                                                                            | Siemens      | 3RT10451AK60                         | 80A            | Eaton XTCE080F00A               | 1a              |
|                                                                                      |              | 3RT10461AK60                         | 95A            | Eaton XTCE095F00                | Interp.         |
|                                                                                      |              | 3RT10546AF36                         | 115A           | Eaton XTCE115G00A               | Interp.         |
|                                                                                      |              | 3RT10556AF36                         | 150A           | Eaton XTCE150G00A               | 1a              |
|                                                                                      |              | 3RT10646AF36                         | 225A           | Eaton XTCE185H22A - 185A        | Extrap.         |
|                                                                                      |              | 3RT10656AF36                         | 265A           | Eaton XTCS250L22A - 250A        | Extrap.         |
| MSP                                                                                  | Siemens      | 3RV10210JA10                         | 0.7 to 1.0A    | Eaton XTPR001BC1 - 0.63 to 1.0A | 1a              |
|                                                                                      |              | 3RV10211AA10                         | 1.1 to 1.6A    | Eaton XTPR1P6BC1 - 1.0 to 1.6A  | Interp.         |
|                                                                                      |              | 3RV10211CA10                         | 1.8 to 2.5A    | Eaton XTPR2P5BC1 - 1.6 to 2.5A  | Interp.         |
|                                                                                      |              | 3RV10211FA10                         | 3.5 to 5.0A    | Eaton XTPR004BC1 - 2.5 to 4.0A  | Interp.         |
|                                                                                      |              | 3RV10211HA10                         | 5.5 to 8.0A    | Eaton XTPR010BC1 - 6.3 to 10A   | 2a              |
|                                                                                      |              | 3RV10211KA10                         | 9.0 to 12.5A   | Eaton XTPR012BC1 - 8 to 12.5A   | 1a              |
|                                                                                      |              | 3RV10214AA10                         | 11 to 16A      | Eaton XTPR016BC1 - 10 to 16A    | 1a, 3a          |
|                                                                                      |              | 3RV10314BA10                         | 14 to 20A      | Eaton XTPR025DC1 - 16 to 25A    | Interp.         |
|                                                                                      |              | 3RV10314EA10                         | 22 to 32A      | Eaton XTPR032DC1 - 25 to 32A    | Interp.         |
|                                                                                      |              | 3RV10414HA10                         | 36 to 45A      | Eaton XTPR050DC1 - 40 to 50A    | Interp.         |
|                                                                                      |              | 3RV10414JA10                         | 45 to 50A      | Eaton XTPR063DC1 - 55 to 65A    | 1a              |
| Power Supply                                                                         | Siemens      | 6EP1332-1SH42                        | 2.5A           | Eaton PSG60E                    | Extrap.         |
|                                                                                      |              | 6EP1332-1SH51                        | 4A             | Eaton PSG120E                   | 1b, 8           |
|                                                                                      |              | 6EP1334-3BA00                        | 10A            | Eaton PSG240E                   | 4               |
|                                                                                      | IDEC         | PS5R-VE24                            | 0.5 lbs, 3.75A |                                 | 8               |
|                                                                                      |              |                                      |                |                                 |                 |
|                                                                                      |              |                                      |                |                                 |                 |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |              | <b>Table Description:</b> Electrical                                          |                                     |                                    | <b>TABLE 12</b> |
|------------------------------------------------------|--------------|-------------------------------------------------------------------------------|-------------------------------------|------------------------------------|-----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |              |                                                                               |                                     |                                    |                 |
| <b>Building Code:</b> CBC 2019                       |              | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |                                     |                                    |                 |
| Component Type                                       | Manufacturer | Model                                                                         | Description                         | Notes                              | UUT             |
| Transformer                                          | Micron       | B075LP7JK                                                                     | 75VA Pri 120x240 vac Sec: 24 vac    | Eaton C0075E1B                     | Extrap.         |
|                                                      |              | B050LP7RB                                                                     | 50VA Pri 120x240 vac Sec: 24 vac    | Eaton C0050E1BFB                   | Extrap.         |
|                                                      |              | B150LP7JKF                                                                    | 150VA Pri 120x240 vac Sec: 24 vac   | Eaton C0150E1B                     | 2a              |
|                                                      |              | B250BTZ13RBF                                                                  | 250VA Pri 480x240 vac Sec: 120 vac  | Eaton C0250E2AFB                   | Interp.         |
|                                                      |              | B500BTZ13RBF                                                                  | 500VA Pri 480x240 vac Sec: 120 vac  | Eaton C0500E2AFB                   | 1b              |
|                                                      |              | B750BTZ13RBF                                                                  | 750VA Pri 480x240 vac Sec: 120 vac  | Eaton C0750E2AFB                   | 1a              |
|                                                      |              | B1K0-0500-3F                                                                  | 1000VA Pri 480x240 vac Sec: 120 vac | Eaton C1000E2AFB                   | Interp.         |
|                                                      |              | B2K0-0502-3H                                                                  | 2000VA Pri 480x240 vac Sec: 120 vac | Eaton C2000K2AFB                   | Interp.         |
|                                                      |              | B3K0-0503-3H                                                                  | 3000VA Pri 480x240 vac Sec: 120 vac | Eaton C3000K2A                     | 1a              |
| Reactor                                              | TCI          | KDRA3H                                                                        | 7.6A                                |                                    | 4               |
|                                                      |              | KDRA4H                                                                        | 11A                                 |                                    | Interp.         |
|                                                      |              | KDRA5H                                                                        | 14A                                 |                                    | Interp.         |
|                                                      |              | KDRB2H                                                                        | 21A                                 |                                    | Interp.         |
|                                                      |              | KDRC3H                                                                        | 27A                                 |                                    | Interp.         |
|                                                      |              | KDRF4H                                                                        | 52A                                 |                                    | Interp.         |
|                                                      |              | KDRF2H                                                                        | 77A                                 |                                    | Interp.         |
|                                                      |              | KDRI2H                                                                        | 125A                                |                                    | Interp.         |
|                                                      |              | KDRG3H                                                                        | 156A                                |                                    | 1b              |
| Terminal Block                                       | Pheonix      | Typ QTC 2.5                                                                   | 15A                                 | Also Typ QTC 2.5-PE grounding term | Extrap.         |
|                                                      |              | Typ ST 4                                                                      | 30A                                 |                                    | 2b              |
|                                                      |              | Typ ST 4-PE                                                                   | 30A - Grounding Terminals           |                                    | 4               |
|                                                      |              |                                                                               |                                     |                                    |                 |
|                                                      |              |                                                                               |                                     |                                    |                 |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                |              | <b>Table Description:</b> Electrical |                                 |                      | <b>TABLE 12</b> |
|-------------------------------------------------------------------------------|--------------|--------------------------------------|---------------------------------|----------------------|-----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                          |              |                                      |                                 |                      |                 |
| <b>Building Code:</b> CBC 2019                                                |              |                                      |                                 |                      |                 |
| <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |              |                                      |                                 |                      |                 |
| Component Type                                                                | Manufacturer | Model                                | Description                     | Notes                | UUT             |
| VFD                                                                           | ABB          | ACH550 Series                        | 208V/230V/460V, 1 HP, 18 lbs    | UUT: 1 HP, 18 lbs    | 1a              |
|                                                                               |              |                                      | 208V/230V/460V, 3 HP, 18 lbs    |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 5 HP, 18 lbs    |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 7.5 HP, 18 lbs  |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 10 HP, 25 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 15 HP, 25 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 20 HP, 41 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 25 HP, 41 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 30 HP, 41 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 35 HP, 58 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 40 HP, 58 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 50 HP, 58 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 60 HP, 58 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 75 HP, 58 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 100 HP, 190 lbs |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 125 HP, 190 lbs |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 150 HP, 190 lbs | UUT: 150 HP, 190 lbs | 1a              |
|                                                                               |              | ACS320 Series                        | 208V/230V/460V                  | UUT: 1 HP, 3.5 lbs   | 1b              |
|                                                                               |              |                                      | 208V/230V/460V, 3 HP, 3.5 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 5 HP, 3.5 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 7.5 HP, 7 lbs   |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 10 HP, 7 lbs    |                      | Interp.         |
|                                                                               |              |                                      | 208V/230V/460V, 15 HP, 7 lbs    |                      | Interp.         |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                               |              | <b>Table Description:</b> Electrical                                          |                               |                      | <b>TABLE 12</b> |
|----------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------|-------------------------------|----------------------|-----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                         |              |                                                                               |                               |                      |                 |
| <b>Building Code: CBC 2019</b>                                                               |              | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |                               |                      |                 |
| Component Type                                                                               | Manufacturer | Model                                                                         | Description                   | Notes                | UUT             |
| VFD                                                                                          | ABB          | ACS320 Series                                                                 | 208V/230V/460V                | UUT: 20 HP, 11 lbs   | 1b              |
|                                                                                              |              |                                                                               | 208V/230V/460V, 25 HP, 11 lbs |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 30 HP, 11 lbs |                      | Interp.         |
|                                                                                              |              | ACS355 Series                                                                 | 480V, 0.5 HP, 2.6 lbs         |                      | Extrap.         |
|                                                                                              |              |                                                                               | 480V, 0.75 HP, 2.6 lbs        |                      | Extrap.         |
|                                                                                              |              |                                                                               | 480V, 1 HP, 3.0 lbs           |                      | Extrap.         |
|                                                                                              |              |                                                                               | 480V, 1.5 HP, 3.0 lbs         |                      | Extrap.         |
|                                                                                              |              |                                                                               | 480V                          | UUT: 2 HP, 3.0 lbs   | 7               |
|                                                                                              |              |                                                                               | 480V, 3 HP, 3.0 lbs           |                      | Interp.         |
|                                                                                              |              |                                                                               | 480V, 4 HP, 3.0 lbs           |                      | Interp.         |
|                                                                                              |              |                                                                               | 480V, 5 HP, 3.0 lbs           |                      | Interp.         |
|                                                                                              |              |                                                                               | 480V, 7.5 HP, 6.9 lbs         |                      | Interp.         |
|                                                                                              |              |                                                                               | 480V, 10 HP, 6.9 lbs          |                      | Interp.         |
|                                                                                              |              |                                                                               | 480V                          | UUT: 15 HP, 11.5 lbs | 7               |
|                                                                                              | Danfoss      | FC101 Series                                                                  | 208V/230V/460V                | UUT: 1 HP            | 4               |
|                                                                                              |              |                                                                               | 208V/230V/460V                | UUT: 15 HP           | 4               |
|                                                                                              |              | VLT Series                                                                    | 208V/230V/460V                | UUT: 5 HP            | 4               |
|                                                                                              |              |                                                                               | 208V/230V/460V                | UUT: 15HP            | 4               |
|                                                                                              |              |                                                                               | 208V/230V/460V                | UUT: 100 HP, 212 lbs | 2 <sup>1</sup>  |
|                                                                                              | Yaskawa      | E7 Series                                                                     | 208V/230V/460V, 3 HP, 9 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 5 HP, 9 lbs   |                      | Interp.         |
| Additional Notes:                                                                            |              |                                                                               |                               |                      |                 |
| <sup>1</sup> Subcomponent was tested in all UUT configurations as seen in the UUT Summaries. |              |                                                                               |                               |                      |                 |

Additional Notes:

<sup>1</sup>Subcomponent was tested in all UUT configurations as seen in the UUT Summaries.

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                               |              | <b>Table Description:</b> Electrical                                          |                                 |                      | <b>TABLE 12</b> |
|----------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------|---------------------------------|----------------------|-----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                         |              |                                                                               |                                 |                      |                 |
| <b>Building Code:</b> CBC 2019                                                               |              | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$ |                                 |                      |                 |
| Component Type                                                                               | Manufacturer | Model                                                                         | Description                     | Notes                | UUT             |
| VFD                                                                                          | Yaskawa      | E7 Series                                                                     | 208V/230V/460V, 7.5 HP, 9 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 10 HP, 13 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 15 HP, 13 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 20 HP, 13 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 25 HP, 22 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 30 HP, 22 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 40 HP, 53 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 50 HP, 53 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 60 HP, 88 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 75 HP, 88 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 100 HP, 88 lbs  |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 125 HP, 194 lbs |                      | Interp.         |
|                                                                                              |              | V1000 Series                                                                  | 208V/230V/460V                  | UUT: 150 HP, 196 lbs | 1a              |
|                                                                                              |              |                                                                               | 208V/230V/460V                  | UUT: 1 HP, 3 lbs     | 1b              |
|                                                                                              |              |                                                                               | 208V/230V/460V, 3 HP, 4.2 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 5 HP, 4.2 lbs   |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V, 7.5 HP, 5.7 lbs |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V                  | UUT: 10 HP, 9 lbs    | 1b              |
|                                                                                              |              |                                                                               | 208V/230V/460V, 15 HP, 9 lbs    |                      | Interp.         |
|                                                                                              |              |                                                                               | 208V/230V/460V                  | UUT: 20 HP, 12 lbs   | 1b              |
|                                                                                              |              |                                                                               | 208V/230V/460V, 25 HP, 12 lbs   |                      | Interp.         |
| Additional Notes:                                                                            |              |                                                                               |                                 |                      |                 |
| <sup>1</sup> Subcomponent was tested in all UUT configurations as seen in the UUT Summaries. |              |                                                                               |                                 |                      |                 |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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| Manufacturer: Nortek Air Solutions, LLC                                              |                      | Table Description: Electrical |                        |                               | TABLE 12 |
|--------------------------------------------------------------------------------------|----------------------|-------------------------------|------------------------|-------------------------------|----------|
| Model Line: Huntair Custom Air Handling Units                                        |                      |                               |                        |                               |          |
| Building Code: CBC 2019                                                              |                      |                               |                        |                               |          |
| Seismic Certification Limits: S <sub>DS</sub> = 2.0 g z/h = 1.0 I <sub>p</sub> = 1.5 |                      |                               |                        |                               |          |
| Component Type                                                                       | Manufacturer         | Model                         | Description            | Notes                         | UUT      |
| VFD                                                                                  | Yaskawa              | Z1000 Series                  | 480V                   | UUT: 3 HP, 11.9 lbs           | 7        |
|                                                                                      |                      |                               | 480V, 5 HP, 12.6 lbs   |                               | Interp.  |
|                                                                                      |                      |                               | 480V, 7.5 HP, 13.4 lbs |                               | Interp.  |
|                                                                                      |                      |                               | 480V, 10 HP, 16.1 lbs  |                               | Interp.  |
|                                                                                      |                      |                               | 480V, 15 HP, 16.8 lbs  |                               | Interp.  |
|                                                                                      |                      |                               | 480V                   | UUT: 20 HP, 18.5 lbs          | 7        |
|                                                                                      | Nortek Air Solutions |                               | 480V                   | UUT: 25 HP 28.7 lbs           | 7        |
|                                                                                      |                      |                               | HD4005XX               | 0.5 HP, 9.5 lbs               | Extrap.  |
|                                                                                      |                      |                               | HD4010XX               | UUT: 1 HP, 9.5 lbs, 10" model | 7        |
|                                                                                      |                      |                               | HD4015XX               | 1.5 HP, 9.5 lbs               | Interp.  |
|                                                                                      |                      |                               | HD4020XX               | 2 HP, 9.5 lbs                 | Interp.  |
|                                                                                      |                      |                               | HD4025XX               | 2.5 HP, 9.5 lbs               | Interp.  |
|                                                                                      |                      |                               | HD4030XX               | 3 HP, 9.5 lbs                 | Interp.  |
|                                                                                      |                      |                               | HD4035XX               | 3.5 HP, 9.5 lbs               | Interp.  |
|                                                                                      |                      |                               | HD4040XX               | 4 HP, 9.5 lbs                 | Interp.  |
|                                                                                      |                      |                               | HD4045XX               | 4.5 HP, 9.5 lbs               | Interp.  |
|                                                                                      |                      |                               | HD4050XX               | 5 HP, 9.5 lbs                 | Interp.  |
|                                                                                      |                      |                               | HD4055XX               | 5.5 HP, 9.5 lbs               | Interp.  |
|                                                                                      |                      |                               | HD4060XX               | 6 HP, 9.5 lbs                 | Interp.  |
|                                                                                      |                      |                               | HD4065XX               | 6.5 HP, 9.5 lbs               | Interp.  |
|                                                                                      |                      |                               | HD4070XX               | 7 HP, 9.5 lbs                 | Interp.  |
|                                                                                      |                      |                               | HD4075XX               | 7.5 HP, 9.5 lbs               | Interp.  |
|                                                                                      |                      |                               | HD4080XX               | 8 HP, 9.5 lbs                 | Interp.  |

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801166-CR-001-R6



| <b>Manufacturer:</b> Nortek Air Solutions, LLC                                               |                      | <b>Table Description:</b> Electrical                              |                                                              | <b>TABLE 12</b>                |                                    |
|----------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------|------------------------------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units                                         |                      |                                                                   |                                                              |                                |                                    |
| <b>Building Code:</b> CBC 2019                                                               |                      | <b>Seismic Certification Limits:</b> $S_{DS} = 2.0 g$ $z/h = 1.0$ |                                                              | $I_p = 1.5$                    |                                    |
| Component Type                                                                               | Manufacturer         | Model                                                             | Description                                                  | Notes                          | UUT                                |
| VFD                                                                                          | Nortek Air Solutions | HD4085XX                                                          | 480V, XX denotes 10" or 25" pressure setting (firmware only) | 8.5 HP, 9.5 lbs                | Interp.                            |
|                                                                                              |                      | HD4090XX                                                          |                                                              | 9 HP, 9.5 lbs                  | Interp.                            |
|                                                                                              |                      | HD4095XX                                                          |                                                              | 9.5 HP, 9.5 lbs                | Interp.                            |
|                                                                                              |                      | HD4100XX                                                          |                                                              | UUT: 10 HP, 9.5 lbs, 25" model | 7                                  |
| PLC Controls                                                                                 | Siemens              | Circuit Breaker                                                   |                                                              |                                | 1b                                 |
|                                                                                              |                      | Power Supply                                                      |                                                              |                                | 1b                                 |
|                                                                                              |                      | Controller                                                        |                                                              |                                | 1b                                 |
|                                                                                              |                      | Touch Screen                                                      | 4" min to 19" maximum                                        |                                | 1b                                 |
|                                                                                              |                      | Expansion Module                                                  |                                                              |                                | 4                                  |
|                                                                                              |                      | Communication Module                                              |                                                              |                                | 4                                  |
| Thermostat                                                                                   | Pfennenberg          | ETR201                                                            | Thermostat, 120-240V                                         | SKT011419N0                    | 2 <sup>1</sup> ,3a,4,7             |
| Transducer/Display                                                                           | Dwyer                | MS2-W103-LCD-BC                                                   | XDCR, DP, Adjustable 0-10",15"                               | No Eaton equivalent            | 1b                                 |
| Cool Fan (4" to 6")                                                                          | Rittal               | 120 to 240V                                                       |                                                              |                                | 4                                  |
|                                                                                              | U.S. Toyo            | 120 to 240V                                                       |                                                              |                                | 1 <sup>1</sup> ,2 <sup>1</sup> ,3a |
| Plasma BAR                                                                                   | Plasma Air           | PB-018                                                            | 1.1 lbs                                                      |                                | 8                                  |
|                                                                                              |                      | ...                                                               |                                                              |                                | Interp.                            |
|                                                                                              |                      | PB-096                                                            | 6.0 lbs                                                      |                                | 8                                  |
|                                                                                              |                      | PB-CP                                                             | Control Panel, 4.0 lbs                                       |                                | 8                                  |
| UV Lights                                                                                    | UV Resources         | RLM Xstream-33                                                    |                                                              |                                | 4                                  |
|                                                                                              |                      | ...                                                               |                                                              |                                | Interp.                            |
|                                                                                              |                      | RLM Xstream-61                                                    |                                                              |                                | 4                                  |
| Additional Notes:                                                                            |                      |                                                                   |                                                              |                                |                                    |
| <sup>1</sup> Subcomponent was tested in all UUT configurations as seen in the UUT Summaries. |                      |                                                                   |                                                              |                                |                                    |

**1801166-CR-001-R6**



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# UNIT UNDER TEST (UUT) SUMMARY SHEET



**1801166-CR-001-R6**

| <b>Manufacturer:</b> Nortek Air Solutions, LLC       |                                                                                   |                   |                                                       |                 |            |                |
|------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-------------------------------------------------------|-----------------|------------|----------------|
| <b>Model Line:</b> Huntair Custom Air Handling Units |                                                                                   |                   |                                                       |                 |            |                |
| UUT                                                  | Unit Description                                                                  | Report Number     | Testing Laboratory                                    | S <sub>DS</sub> | z/h        | I <sub>p</sub> |
| 1a                                                   | Air Handling Cabinet: CSU-10K                                                     | HuntAir9293       | Clark Testing                                         | 2.0             | 1.0        | 1.5            |
| 1b                                                   | Air Handling Cabinet: CSU-10K                                                     | HuntAir9293       | Clark Testing                                         | 2.0             | 1.0        | 1.5            |
| 2a                                                   | Air Handling Cabinet: CSU-20K                                                     | HuntAir9293       | Clark Testing                                         | 2.0             | 1.0        | 1.5            |
| 2b                                                   | Air Handling Cabinet: CSU-20K (Inlet Wall Removed w/ Cable Bracing)               | HuntAir9293       | Clark Testing                                         | 2.0             | 1.0        | 1.5            |
| 2c                                                   | Air Handling Cabinet: CSU-20K (Inlet & Outlet Wall Removed w/ Cable Bracing)      | HuntAir9293       | Clark Testing                                         | 2.0             | 1.0        | 1.5            |
| 2d                                                   | Air Handling Cabinet: CSU-20K (Inlet & Outlet Wall Removed w/o Cable Bracing)     | HuntAir9293       | Clark Testing                                         | 2.0             | 1.0        | 1.5            |
| 3a                                                   | Air Handling Cabinet: CSU-40K                                                     | HuntAir9293       | Clark Testing                                         | 2.0             | 1.0        | 1.5            |
| 4                                                    | Air Handling Cabinet: CSU-20K                                                     | 1700754-TR-001 R2 | CERL                                                  | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
| 5                                                    | Air Handling Cabinet: CSU-15K (Side Wall Removed)                                 | 1700754-TR-001 R2 | CERL                                                  | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
| 6a                                                   | Air Handling Cabinet: CSU-15K                                                     | 1700754-TR-001 R2 | CERL                                                  | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
| 6b                                                   | Air Handling Cabinet: CSU-15K (Filter Rack & Humidifier Removed w/ Cable Bracing) | 1700754-TR-001 R2 | CERL                                                  | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
| 7                                                    | FWT                                                                               | 13379 Rev.1       | Environmental Testing Laboratory, Inc.                | 2.0<br>3.2      | 1.0<br>0.0 | 1.5            |
| 8                                                    | Air Handling Cabinet: CSU-20K                                                     | 1801166-TR-001 R0 | Pacific Earthquake Engineering Research Center (PEER) | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
|                                                      |                                                                                   |                   |                                                       |                 |            |                |
| <b>Notes:</b>                                        |                                                                                   |                   |                                                       |                 |            |                |



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                                   |                               |
|----------------------|-----------------------------------|-------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC         | <b>UUT 1a</b>                 |
| <b>Model Line:</b>   | Huntair Custom Air Handling Units |                               |
| <b>Model Number:</b> | CSU-10K                           |                               |
|                      |                                   | <b>Serial Number:</b> 2097-01 |

## Product Construction Summary:

**Wall/Roof:** Standard 2" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner; **Base:** Carbon steel channel base, 16 ga. galv. carbon steel skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 18.5(W) x 61.5(H) with thermal break window, 12.5(W) x 61.5(H) no window.

## Options/Subcomponent Summary:

**Heat Transfer Coil:** Heat Transfer Coil (HT1): Huntair, 7 FPI, 1 row, aluminum, staggered mounting - qty. 2 (40"x8"x85.5"); Heat Transfer Coil (HT2): Huntair, 6 FPI, 12 rows, copper, stacked mounting - qty. 2 (83"x17.5"x40.5"); **Humidifier:** Mfg. Vapac (8"x24"x24"); **Electrical Control Panel:** NEMA1 (20"x56"x78"), ABB ACH550 150 HP VFD, Yaskawa E7 150 HP VFD; **Damper:** Huntair HD6 (8"x48"x30"); **Louver:** Huntair HL (6"x26"x60"); **Actuator:** Belimo AS-120-S; **Cool Fan:** U.S. Toyo 120V-240V; Disconnect Switch & Circuit Breaker; Fuse Holder & Fuse; Distribution Block; Contactor; MSP; Transformer; VFD

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 7450        | 96.25          | 96    | 96     | 15.2                          | 10.7      | 20.5     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.33                   | 0.53                   |

## Test Mounting Details:

(4) walls in place with 2-heat transfer coils



All test units contain an integrated structural base frame. This unit was mounted directly to the seismic table using twelve (12) 1/2"-13 Grade 5 hex head bolts (3 bolts per side) with flat washers and lock washers

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

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# UNIT UNDER TEST (UUT) SUMMARY SHEET

**NORTEK**  
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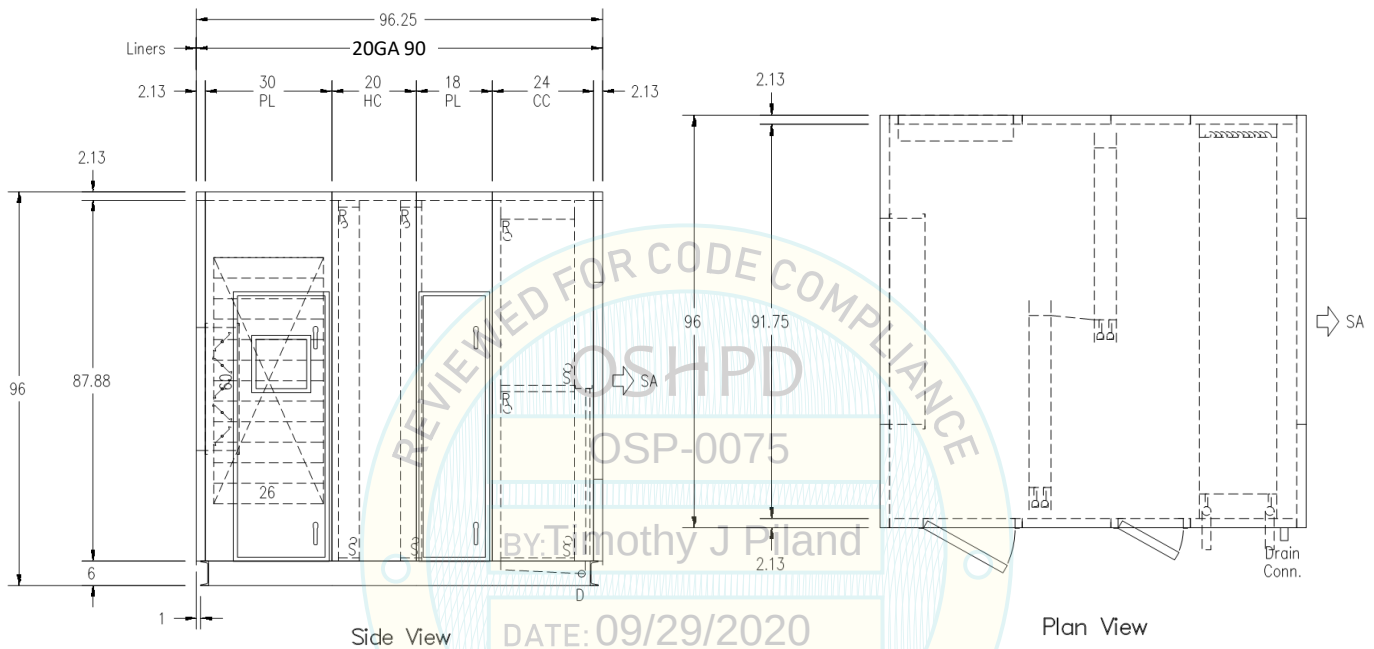
**1801166-CR-001-R6**

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-10K

**Serial Number:** 2097-01

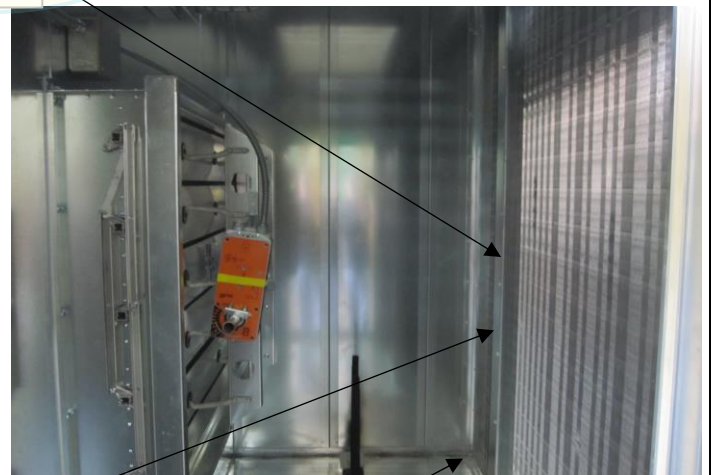
**UUT 1a**

## Unit Drawings



## Coil Support Details

(7) 0.188" Rivets at bottom of each coil, (6) 0.188 Rivets at top of each coil, (2) 2-16ga. C-channel stiffeners each side of coil (8-total), (3) #14x1" screws at 7-5/8" o.c. max spacing along each c-channel stiffener.



1

3

1



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                       |                                   |               |
|-----------------------|-----------------------------------|---------------|
| <b>Manufacturer:</b>  | Nortek Air Solutions, LLC         | <b>UUT 1b</b> |
| <b>Model Line:</b>    | Huntair Custom Air Handling Units |               |
| <b>Model Number:</b>  | CSU-10K                           |               |
| <b>Serial Number:</b> |                                   | 2097-01       |

## Product Construction Summary:

**Wall/Roof:** Standard 2" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner; **Base:** Carbon steel channel base, 16 ga. galv. carbon steel skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 18.5(W) x 61.5(H) with thermal break window, 12.5(W) x 61.5(H) no window.

## Options/Subcomponent Summary:

**Filter Rack:** Type 8, 4" pre-filter, 12" final filter (12"x92"x88"); **Humidifier:** Mfg. Vapac (8"x24"x24"); **Electrical Control Panel:** NEMA3R (12"x36"x48"), PLC, ABB ACH320 1,20 HP VFD's, Yaskawa V1000 1,10,20 HP VFD's; **Damper:** Huntair HD6 (8"x48"x30"); **Louver:** Huntair HL (6"x26"x60"); **Actuator:** Belimo AS-120-S; **Cool Fan:** U.S. Toyo 120V-240V; Disconnect Switch & Circuit Breaker; Fuse Holder & Fuse; Distribution Block; Power Supply; Transformer; Reactor; Transducer/Display; PLC Controls

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 7450        | 96.25          | 96    | 96     | 15.2                          | 10.7      | 20.5     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>P</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.33                   | 0.53                   |

## Test Mounting Details:

(4) walls in place, coils removed and replaced with filter rack



All test units contain an integrated structural base frame. This unit was mounted directly to the seismic table using twelve (12) 1/2"-13 Grade 5 hex head bolts (3 bolts per side) with flat washers and lock washers  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801166-CR-001-R6

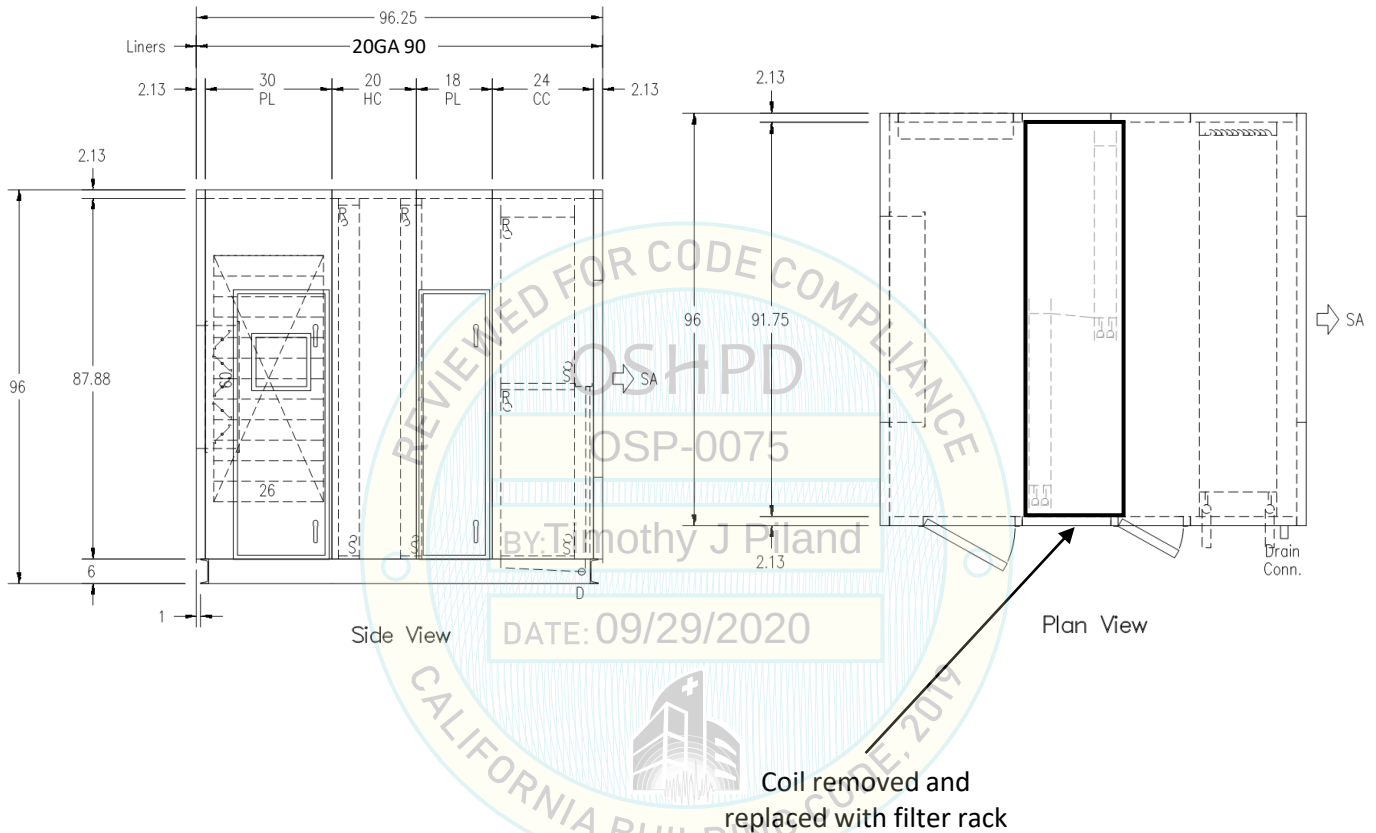


**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-10K

**Serial Number:** 2097-01

**UUT 1b**

## Unit Drawings



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                       |                                   |               |
|-----------------------|-----------------------------------|---------------|
| <b>Manufacturer:</b>  | Nortek Air Solutions, LLC         | <b>UUT 2a</b> |
| <b>Model Line:</b>    | Huntair Custom Air Handling Units |               |
| <b>Model Number:</b>  | CSU-20K                           |               |
| <b>Serial Number:</b> |                                   | 2097-02       |

## Product Construction Summary:

**Wall/Roof:** Standard 4" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner and 16 ga. galv. carbon steel blankoff with sloped roof; **Base:** Carbon steel channel base, 16 ga. galv. carbon steel skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 18.5(W) x 61.5(H) with thermal break window, 30.5(W) x 24.5(H) no window.

## Options/Subcomponent Summary:

**Fanwall:** 3 fans, vertical upflow (2 up, 1 down), 10" and 22" wheels, welded cells, 1 HP and 15 HP Siemens motors (38.5"x131"x136"); **Heat Transfer Coil:** Heat Transfer Coil (HT3): Huntair, 14 FPI, 2 row, aluminum, stacked mounting - qty. 3 (127"x7"x40.5"); **Filter Rack:** HEPA filter and filter rack (12"x140"x140"); **Electrical Control Panel:** NEMA12 (16"x28"x42"); **VFD:** Danfoss VLT 100 HP, recessed panel construction; **Damper:** Ruskin CD50 (5"x60"x36"); **Louver:** Ruskin ELF (6"x40"x36"); **Actuator:** Belimo AS-120-S; **Cool Fan:** U.S. Toyo 120V-240V; HEPA Filter; Disconnect Switch & Circuit Breaker; MSP; Transformer

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 9050        | 108            | 144   | 144.25 | 4.0                           | 6.6       | 20.6     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>P</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.33                   | 0.53                   |

## Test Mounting Details:

(4) walls in place



All test units contain an integrated structural base frame. This unit was mounted directly to the table using fourteen (14) 1/2" - 13 grade 5 hex head bolts (7 bolts on both exterior sides) with flat washer and lock washers.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

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# UNIT UNDER TEST (UUT) SUMMARY SHEET

**NORTEK**  
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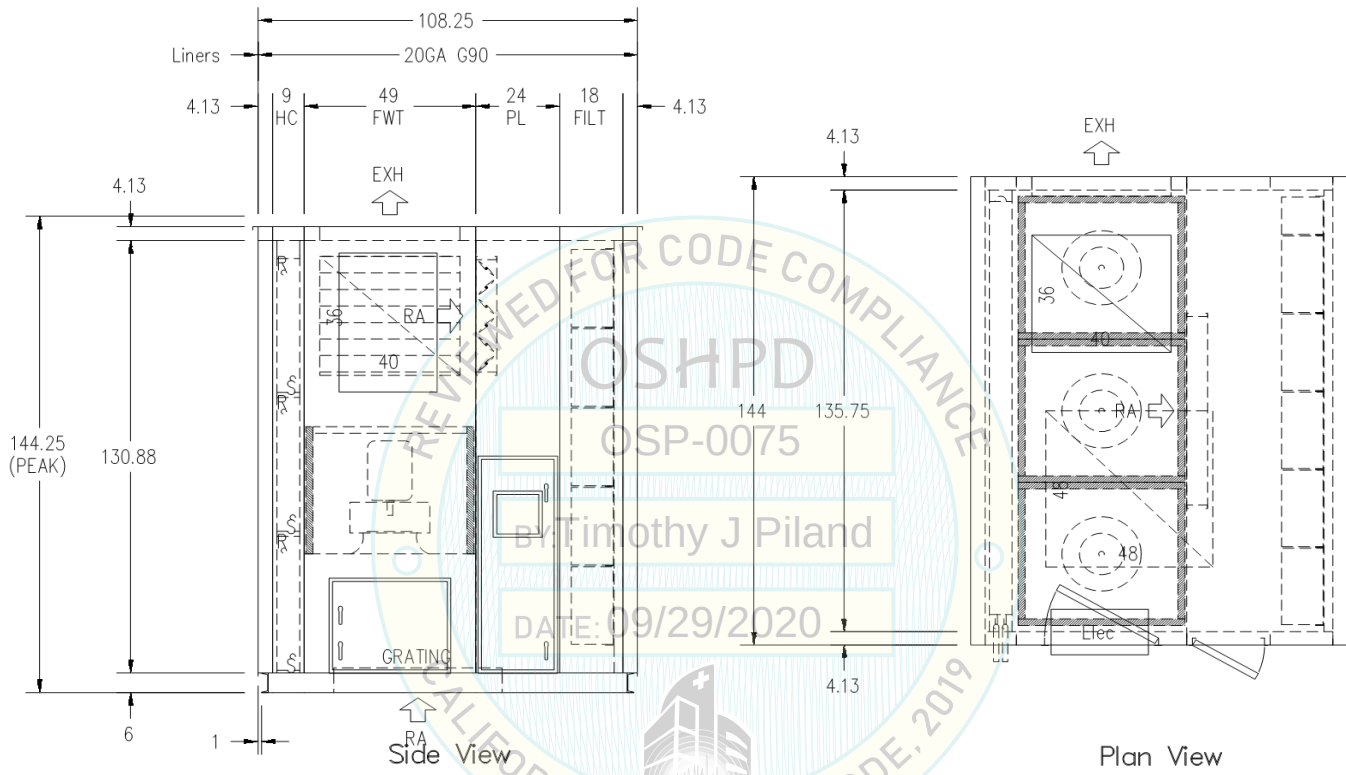
**1801166-CR-001-R6**

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-20K

**Serial Number:** 2097-02

**UUT 2a**

## Unit Drawings





# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                                   |                               |
|----------------------|-----------------------------------|-------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC         | <b>UUT 2b</b>                 |
| <b>Model Line:</b>   | Huntair Custom Air Handling Units |                               |
| <b>Model Number:</b> | CSU-20K                           |                               |
|                      |                                   | <b>Serial Number:</b> 2097-02 |

## Product Construction Summary:

**Wall/Roof:** Standard 4" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner and 16 ga. galv. carbon steel blankoff with sloped roof; **Base:** Carbon steel channel base, 16 ga. galv. carbon steel skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 18.5(W) x 61.5(H) with thermal break window, 30.5(W) x 24.5(H) no window; **Cable Bracing:** 3/8" galvanized steel cables with 1/4" A36 brackets.

## Options/Subcomponent Summary:

**Fanwall:** 3 fans, vertical upflow (2 up, 1 down), 10" and 22" wheels, welded cells, 1 HP and 15 HP Siemens motors (38.5"x131"x136"); **Heat Transfer Coil:** Heat Transfer Coil (HT3); Huntair, 14 FPI, 2 row, aluminum, stacked mounting - qty. 3 (127"x7"x40.5"); **Filter Rack:** HEPA filter and filter rack (12"x140"x140"); **MSP Enclosure:** NEMA4X (10"x16"x16"); **VFD:** Danfoss VLT 100 HP, recessed panel construction; **Damper:** Ruskin CD50 (5"x60"x36"); **Louver:** Ruskin ELF (6"x40"x36"); **Actuator:** Belimo AS-120-S; **Cool Fan:** U.S. Toyo 120V-240V; HEPA Filter; Terminal Block

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 9050        | 108            | 144   | 144.25 | 4.0                           | 6.6       | 20.6     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.33                   | 0.53                   |

## Test Mounting Details:

Inlet wall removed; cable bracing at coil



All test units contain an integrated structural base frame. This unit was mounted directly to the table using fourteen (14) 1/2" - 13 grade 5 hex head bolts (7 bolts on both exterior sides) with flat washer and lock washers.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

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# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801166-CR-001-R6

**NORTEK**  
AIR SOLUTIONS

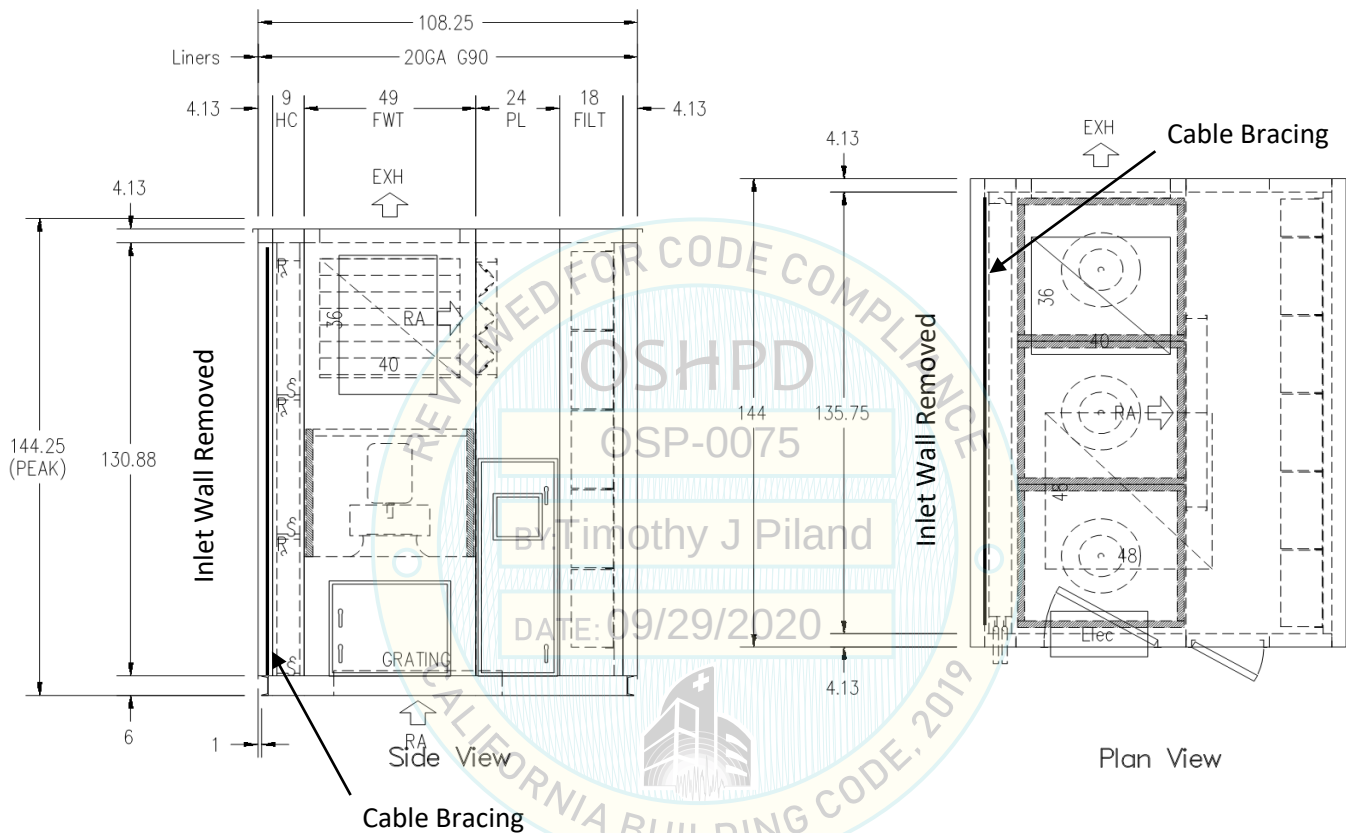
**TRU**  
COMPLIANCE

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-20K

**Serial Number:** 2097-02

**UUT 2b**

## Unit Drawings





# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                                   |                               |
|----------------------|-----------------------------------|-------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC         | <b>UUT 2c</b>                 |
| <b>Model Line:</b>   | Huntair Custom Air Handling Units |                               |
| <b>Model Number:</b> | CSU-20K                           |                               |
|                      |                                   | <b>Serial Number:</b> 2097-02 |

## Product Construction Summary:

**Wall/Roof:** Standard 4" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner and 16 ga. galv. carbon steel blankoff with sloped roof; **Base:** Carbon steel channel base, 16 ga. galv. carbon steel skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 18.5(W) x 61.5(H) with thermal break window, 30.5(W) x 24.5(H) no window; **Cable Bracing:** 3/8" galvanized steel cables with 1/4" A36 brackets.

## Options/Subcomponent Summary:

**Fanwall:** 3 fans, vertical upflow (2 up, 1 down), 10" and 22" wheels, welded cells, 1 HP and 15 HP Siemens motors (38.5"x131"x136"); **Heat Transfer Coil:** Heat Transfer Coil (HT3): Huntair, 14 FPI, 2 row, aluminum, stacked mounting - qty. 3 (127"x7"x40.5"); **Filter Rack:** HEPA filter and filter rack (12"x140"x140"); **VFD:** Danfoss VLT 100 HP, recessed panel construction; **Damper:** Ruskin CD50 (5"x60"x36"); **Louver:** Ruskin ELF (6"x40"x36"); **Actuator:** Belimo AS-120-S; **Cool Fan:** U.S. Toyo 120V-240V; HEPA Filter

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 9050        | 108            | 144   | 144.25 | 4.0                           | 6.6       | 20.6     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.33                   | 0.53                   |

## Test Mounting Details:

Inlet and outlet walls removed; cable bracing at coil



All test units contain an integrated structural base frame. This unit was mounted directly to the table using fourteen (14) 1/2" - 13 grade 5 hex head bolts (7 bolts on both exterior sides) with flat washer and lock washers.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

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# UNIT UNDER TEST (UUT) SUMMARY SHEET

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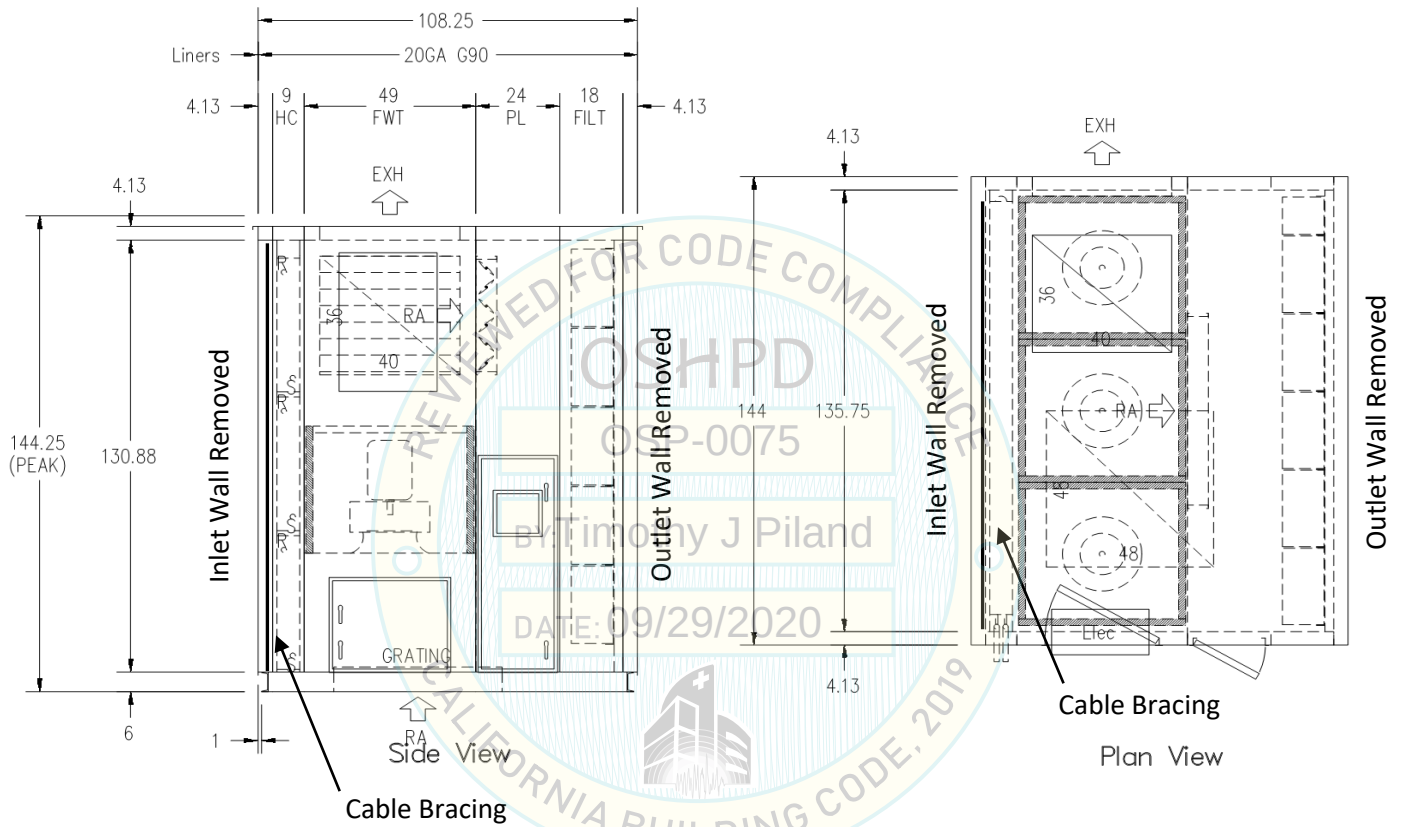


**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-20K

**Serial Number:** 2097-02

**UUT 2c**

## Unit Drawings



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                       |                                   |               |
|-----------------------|-----------------------------------|---------------|
| <b>Manufacturer:</b>  | Nortek Air Solutions, LLC         | <b>UUT 2d</b> |
| <b>Model Line:</b>    | Huntair Custom Air Handling Units |               |
| <b>Model Number:</b>  | CSU-20K                           |               |
| <b>Serial Number:</b> |                                   | 2097-02       |

## Product Construction Summary:

**Wall/Roof:** Standard 4" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner and 16 ga. galv. carbon steel blankoff with sloped roof; **Base:** Carbon steel channel base, 16 ga. galv. carbon steel skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 18.5(W) x 61.5(H) with thermal break window, 30.5(W) x 24.5(H) no window.

## Options/Subcomponent Summary:

**Fanwall:** 3 fans, vertical upflow (2 up, 1 down), 10" and 22" wheels, welded cells, 1 HP and 15 HP Siemens motors (38.5"x131"x136"); **Heat Transfer Coil:** Heat Transfer Coil (HT3): Huntair, 14 FPI, 2 row, aluminum, stacked mounting - qty. 3 (127"x7"x40.5"); **Filter Rack:** HEPA filter and filter rack (12"x140"x140"); **VFD:** Danfoss VLT 100 HP, recessed panel construction; **Damper:** Ruskin CD50 (5"x60"x36"); **Louver:** Ruskin ELF (6"x40"x36"); **Actuator:** Belimo AS-120-S; **Cool Fan:** U.S. Toyo 120V-240V; HEPA Filter

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 9050        | 108            | 144   | 144.25 | 4.0                           | 6.6       | 20.6     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>P</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.33                   | 0.53                   |

## Test Mounting Details:

Inlet and outlet walls removed; no cable bracing



All test units contain an integrated structural base frame. This unit was mounted directly to the table using fourteen (14) 1/2" - 13 grade 5 hex head bolts (7 bolts on both exterior sides) with flat washer and lock washers.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801166-CR-001-R6

**NORTEK**  
AIR SOLUTIONS

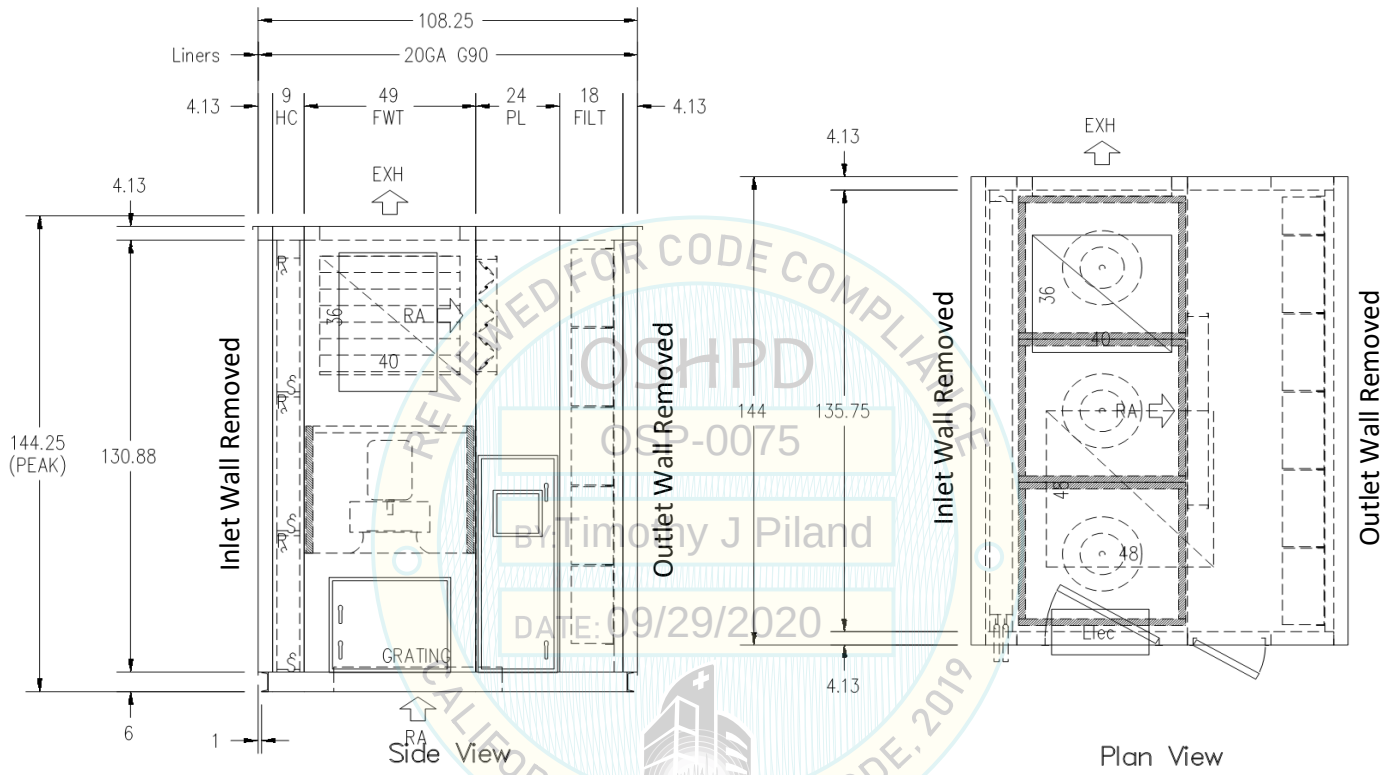
**TRU**  
COMPLIANCE

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-20K

**Serial Number:** 2097-02

**UUT 2d**

## Unit Drawings





# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                       |                                   |               |
|-----------------------|-----------------------------------|---------------|
| <b>Manufacturer:</b>  | Nortek Air Solutions, LLC         | <b>UUT 3a</b> |
| <b>Model Line:</b>    | Huntair Custom Air Handling Units |               |
| <b>Model Number:</b>  | CSU-40K                           |               |
| <b>Serial Number:</b> |                                   | 2097-03       |

## Product Construction Summary:

**Wall/Roof:** Standard 4" Panels, 0.080" aluminum exterior with 0.063" solid aluminum liner, 0.080" solid aluminum blankoff;  
**Base:** 6" Aluminum structural tubing, 0.125" aluminum floor liner with 0.063" aluminum base liner; **Door:** 2" thick, 12.5(W) x 61.5(H) no window.

## Options/Subcomponent Summary:

**Fanwall:** 29 fans, 10" and 22" carbon steel wheels, horizontal standard 5 cell(W) x 7 cell(H), welded/riveted cells, back draft dampers, 1 HP and 20 HP Siemens motors (34"x212"x131"); **Filter Rack:** 4" pre-filter, 12" final filter, type 8 (12"x236"x140");  
**Enclosure:** NEMA3R (6"x24"x24") Terminal blocks; **Damper:** Ruskin CD50 (8"x100"x120"), Huntair HD6 (8"x100"x120");  
**Actuator:** Belimo AF24-MFT, Seimens GCA131.1P, Seimens GCA226.1U; **Cool Fan:** U.S. Toyo 120V-240V; HEPA Filter; Disconnect Switch & Circuit Breaker; MSP

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 11600       | 96             | 240   | 144    | 4.7                           | 3.9       | 14.1     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>P</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.33                   | 0.53                   |

## Test Mounting Details:

(4) walls in place



All test units contain an integrated structural base frame. This unit was mounted directly to the seismic table using sixteen (16) 1/2" - 13 grade 5 hex head bolts (8 bolts per both exterior sides) with flat washers and lock washers.  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801166-CR-001-R6

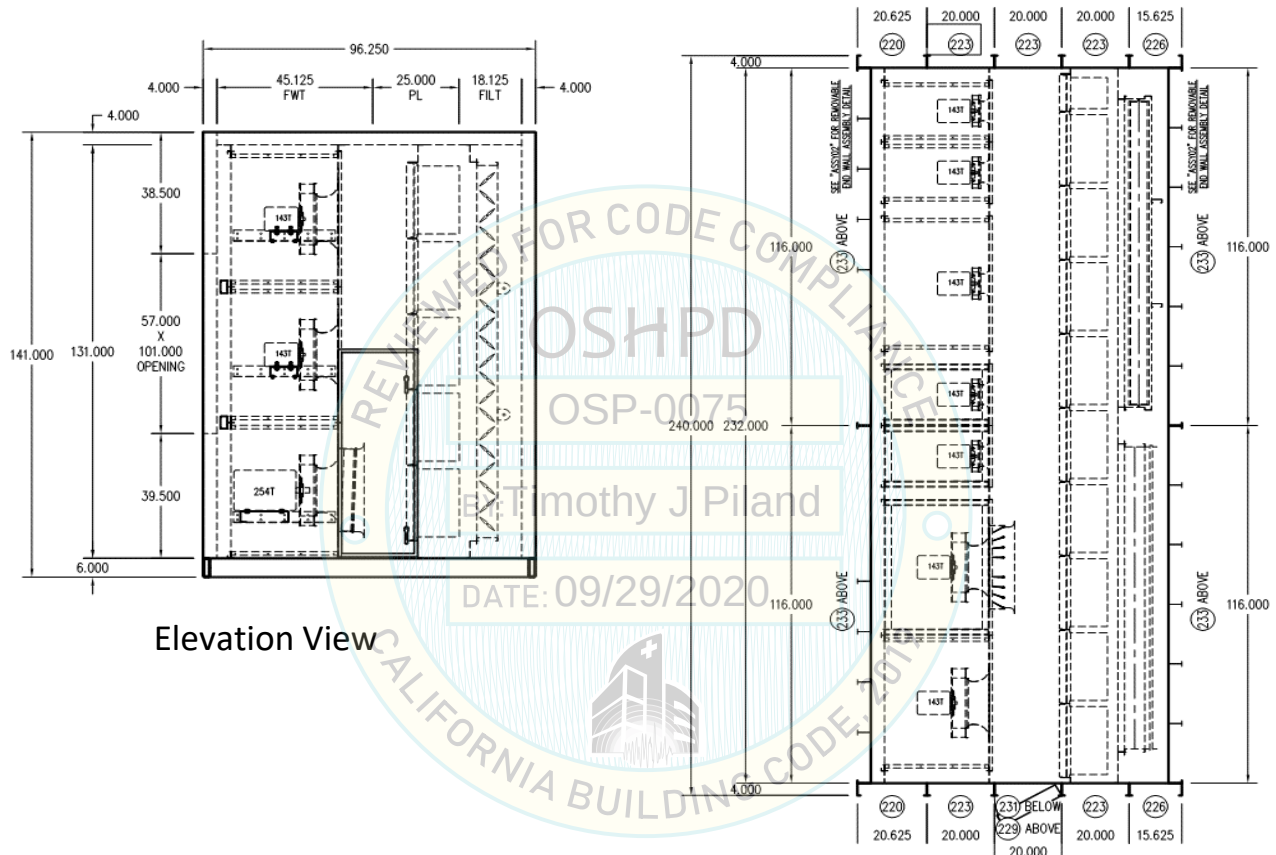


**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-40K

**Serial Number:** 2097-03

**UUT 3a**

## Unit Drawings





# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                       |                                   |              |
|-----------------------|-----------------------------------|--------------|
| <b>Manufacturer:</b>  | Nortek Air Solutions, LLC         | <b>UUT 4</b> |
| <b>Model Line:</b>    | Huntair Custom Air Handling Units |              |
| <b>Model Number:</b>  | CSU-20K STM/DX                    |              |
| <b>Serial Number:</b> |                                   | 0120-01      |

## Product Construction Summary:

**Wall:** 4" Panels 4 Variations - (A) 16 ga. stainless steel wall with 0.040" aluminum perforated liner, (B) 16 ga. galv carbon steel wall with 20 ga. galv. carbon steel solid liner, (C) 16 ga. stainless steel wall with 20 ga. stainless steel solid liner, (D) 16 ga. galv. carbon steel wall with 22 ga. stainless steel perforated liner, **Roof:** inner - 16 ga. stainless steel, outer - 16 ga. galv. carbon steel, sloped roof. **Base:** 12" tall stainless structural tubing, 12 ga. galv. carbon steel skin with 16 ga. galv. carbon steel liner and 16 ga. carbon steel subfloor.

## Options/Subcomponent Summary:

**Louver:** AML6 Louver (6"x36"x60"), AML3 Louver (3"x100"x120"), **Damper:** SD50 Smoke Damper (5"x33"x57"), SD50 Smoke Damper (5"x96"x120"), AMS050 Damper (15"x48"x96"), AMS050 Damper (15"x24"x36"), **Fan Motor:** 22" P200 ECMI 6kW, 12" P200 ECMI 3.4kW, 22" P200 Toshiba 15hp motor, **UV Lights:** UVR UV Lights, **Coils:** Huntair DX Coil (8.5"x 150"x45"), Huntair DX Coil (8.5"x56"x45"), Luvata DX Coil (8.5"x 150"x45"), Luvata DX Coil (8.5"x56"x45"), **Fanwall:** 2(w) x 4(h) Gen II 22" Fan Wall, 2(w) x 4(h) Gen II 12" Fan Wall, 2(w) x 4(h) Gen II 22" Fan Wall, Fan wheels constructed of aluminum and polymer, **Electrical Cabinet:** Nema 1 (16"x56"x90"), Nema 1 (10"x28"x40") **VFD:** Danfoss 1hp and 15hp FC101 VFD; **Actuator:** Belimo AF120, Honeywell MS4120F; **Cool Fan:** Rittal 120V-240V; **Power Supply ; Reactor ; Terminal Block ; VFD ; PLC Controls ; Pressure Gauge:** Dwyer Magnesense MS2 Series

## UUT Properties

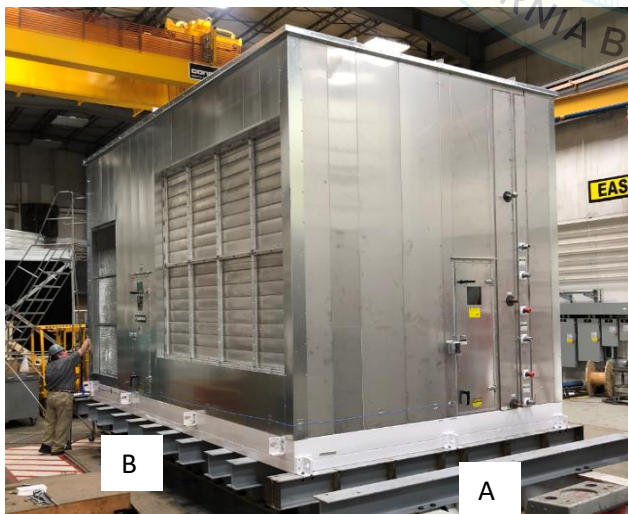
| Weight<br>(lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|----------------|----------------|-------|--------|-------------------------------|-----------|----------|
|                | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 24400          | 138            | 244   | 160    | 7.3                           | 6.0       | 13.1     |

## UUT Highest Passed Seismic Run Information

| CBC 2019, IBC 2018 | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|--------------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019           | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.67                   | 0.67                   |
|                    |                     | 2.5                 | 0.0 | 1.5            |                        |                        |                        |                        |

## Test Mounting Details:

(4) walls in place



All test units contain an integrated structural base frame. This unit was mounted to a I beam fixture using twelve (12) 5/8" SAE grade 8 hex head bolts with flat washers and lock washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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# UNIT UNDER TEST (UUT) SUMMARY SHEET



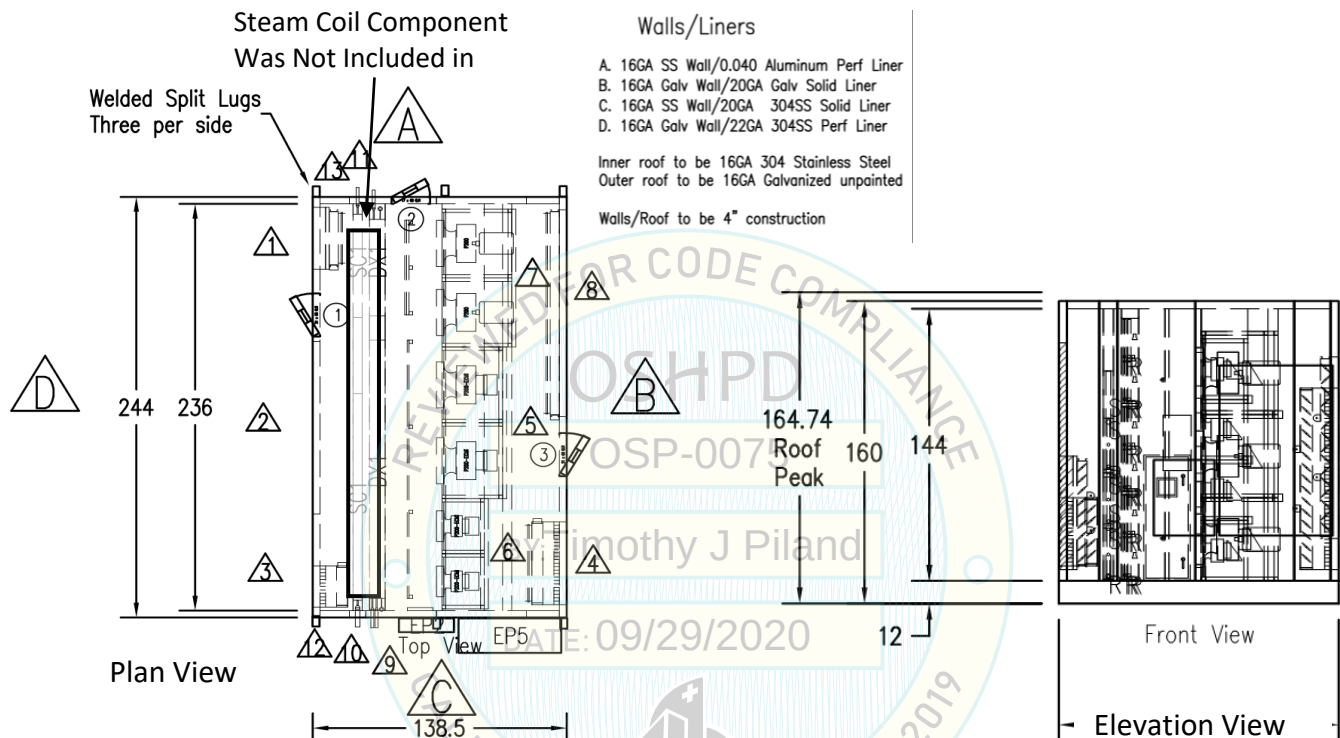
1801166-CR-001-R6

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-20K STM/DX

**Serial Number:** 0120-01

**UUT 4**

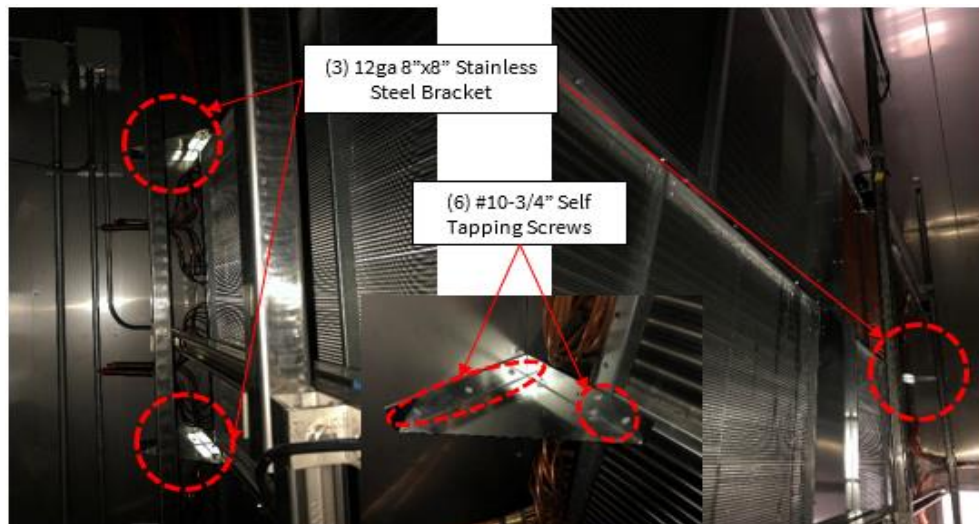
## Unit Drawings



**Note:** Steam coil is not certified.

## Seismic Upgrades Implemented:

The seismic upgrade for UUT4 consisted of mounting (3) 12 ga. 8"x8" stainless steel brackets to the wall and coil rack using (6) #10-3/4" self tapping screws. (2) were mounted to the rear of the unit, and (1) mounted to the front of the unit above the door.



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                                   |                               |
|----------------------|-----------------------------------|-------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC         | <b>UUT 5</b>                  |
| <b>Model Line:</b>   | Huntair Custom Air Handling Units |                               |
| <b>Model Number:</b> | CSU-15K                           |                               |
|                      |                                   | <b>Serial Number:</b> 0120-02 |

## Product Construction Summary:

**Wall/Roof:** Standard 4" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv carbon liner; **Base:** carbon steel structural tubing, 16 ga. stainless steel base skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 4" thick, 21"(W) x 64"(H) no window, 2" thick, 20"(W) x 134.5"(H); **Cable Bracing:** 3/8" stainless steel cable with 12 GA stainless steel gusset.

## Options/Subcomponent Summary:

**Sound Trap:** 24"x50"x136", 72"x86"x136"; **Filter Frame:** Type 8; **Pre Filter:** PerfectPleat Ultra AAF; **Final Filter:** VariCel DH & SH AAF; **Humidifier Grid:** DriSteem Ultra Sorb LV (120"x120")

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 8,150       | 139            | 134   | 146    | 6.4                           | 7.7       | 22.1     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 | 1.5            |                        |                        |                        |                        |

## Test Mounting Details:

(3) walls with inlet/outlet wall removed, open wall braced with cable



All test units contain an integrated structural base frame. This unit was mounted to a I beam fixture using six (6) 5/8" SAE grade 8 hex head bolts with flat washers and lock washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801166-CR-001-R6

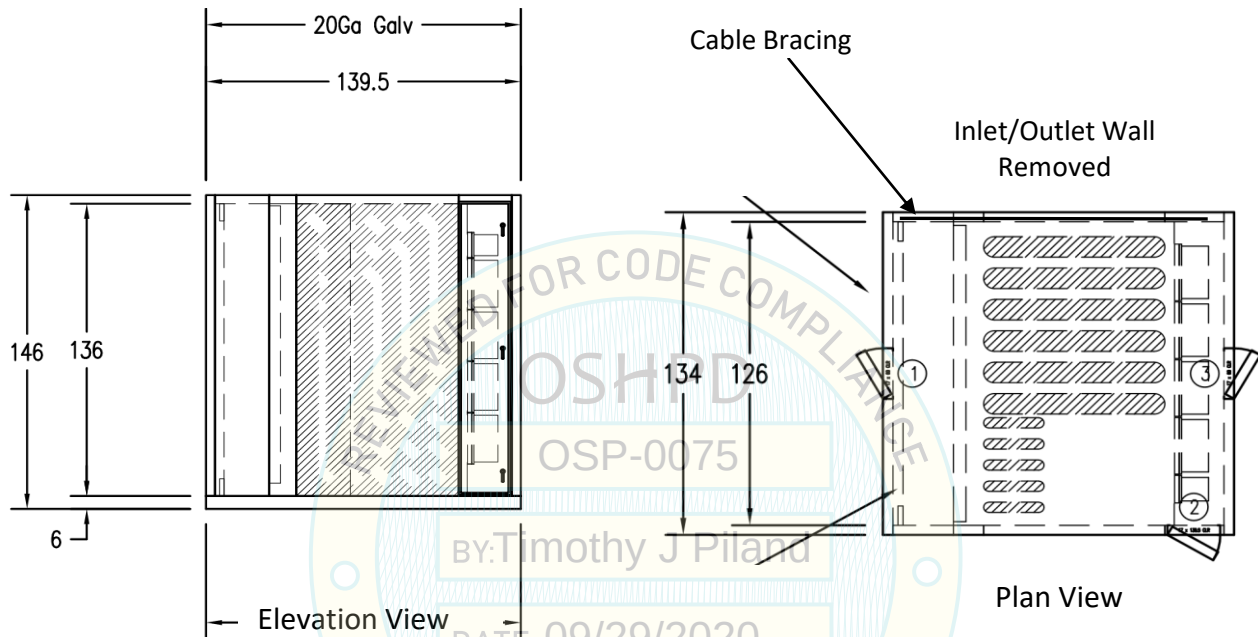


**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-15K

**Serial Number:** 0120-02

**UUT 5**

## Unit Drawings



# UNIT UNDER TEST (UUT) SUMMARY SHEET

**NORTEK**  
AIR SOLUTIONS



**1801166-CR-001-R6**

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-15K

**Serial Number:** 0120-02

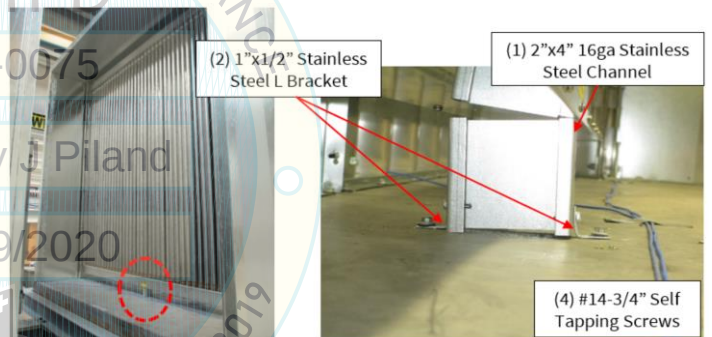
**UUT 5**

## Seismic Upgrades Implemented:

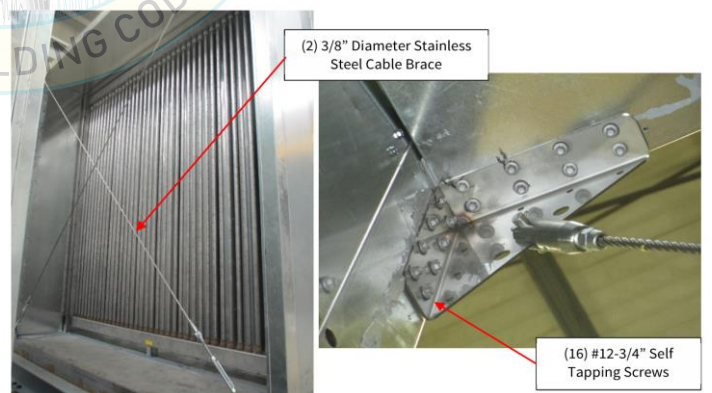
Attachment of the the humidifier grid: 1-5/8" 12ga unistrut member was attached to the ceiling with #12-3/4" self tapping screws at 8" O.C. The unistrut member was attached to the vertical humidifier supports via 3/8"f stainless steel thru bolts. (2) 3"x3" L-shaped blankoffs were added to the vertical unistrut supports and wall panels. Blankoffs were attached to the vertical unistrut via 3/8"f stainless steel thru bolts at 24" O.C., and to the wall panel with #12-3/4" self tapping screws at 6" O.C.



Bearing Support of Humidifier Grid: (1) 16 ga. stainless steel 2"x4" channel that was cut to length to bear against the base structure and the bottom of the humidifier header tube. The channel was mounted to the floor using (4) #14-3/4" self tapping screws and (2) 1"x1/2" 12 ga. stainless steel L-brackets.



Additional Lateral Bracing: (2) 3/8" stainless steel braces fastened with (16) #12-3/4" self tapping screws per 12 ga. stainless steel mounting bracket.





# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                                   |                               |
|----------------------|-----------------------------------|-------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC         | <b>UUT 6a</b>                 |
| <b>Model Line:</b>   | Huntair Custom Air Handling Units |                               |
| <b>Model Number:</b> | CSU-15K                           |                               |
|                      |                                   | <b>Serial Number:</b> 0120-03 |

## Product Construction Summary:

**Wall/Roof:** Standard 2" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner; **Base:** carbon steel structural tubing, 16 ga. galv. carbon steel base skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 21"(W) x 64"(H) no window, **Weatherhood:** 62"(W) x 32"(H) x 26"(D) 16 ga. galv. carbon steel construction

## Options/Subcomponent Summary:

**Filter Frame:** Type 8 (60.25"x132"), **Pre filter:** **Pressure Gage:** Dwyer Magnehelic 2000 Series; **Damper:** Tamco 1000 (4"x36"x120"), Tamco 1000 Damper (4"x60"x30"); **Humidifier Grid:** DriSteem LV Ultra-Sorb (40"x40"); **Air Flow Measurement System:** Paragon Controls Incorporated OAFE-1550; **Actuator:** Belimo AMB24

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 2350        | 144            | 76    | 152    | 11.0                          | 6.4       | 28.7     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 | 1.5            |                        |                        |                        |                        |

## Test Mounting Details:

(4) Walls in place, no internal bracing



All test units contain an integrated structural base frame. This unit was mounted to a I beam fixture using six (6) 5/8" SAE grade 8 hex head bolts with flat washers and lock washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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# UNIT UNDER TEST (UUT) SUMMARY SHEET



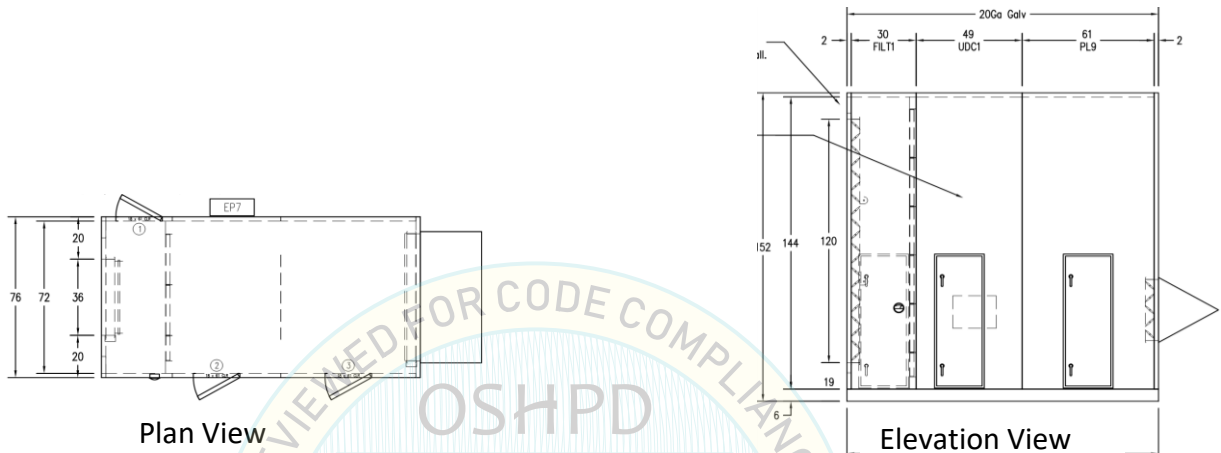
1801166-CR-001-R6

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-15K

**Serial Number:** 0120-03

**UUT 6a**

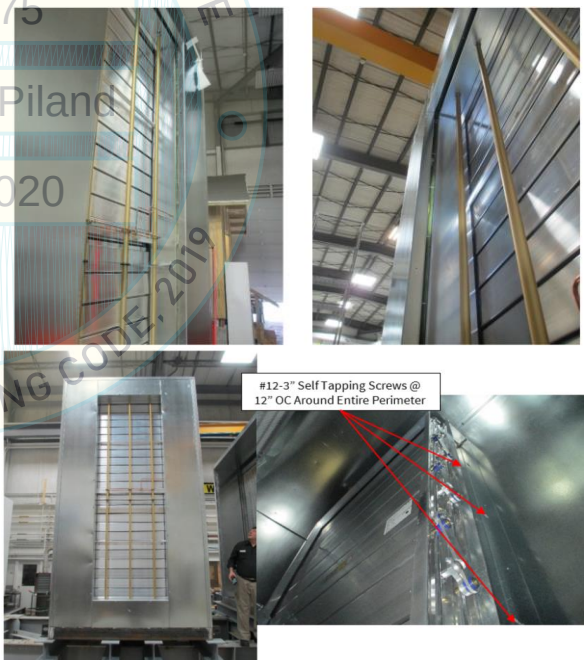
## Unit Drawings



## Modifications Made Due to Damage During Shipping:

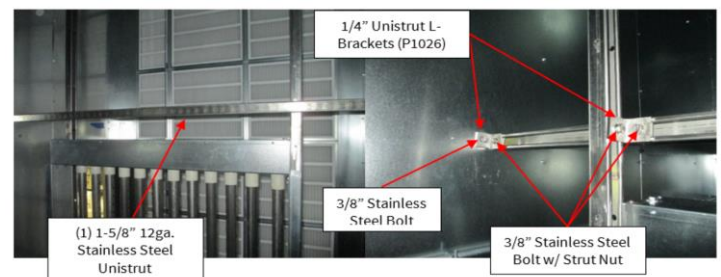
UUT 6 was damaged during shipping. It was discovered that during the fabrication of this unit, the fasteners did not extend into the cabinet panel structure.

Implemented repair: #12-3" self tapping screws @ 12" OC were fastened from the outside of the unit, attaching the flange of the structural channel along the entire perimeter of the OAFE-1550 casing. The original fasteners were then removed. Modification is already a part of the fabrication process.



## Seismic Upgrades Implemented:

The seismic upgrade for UUT6A consisted of mounting a 1-5/8" stainless steel 12 ga. Unistrut (P1000) cut to the width of the unit and mounted to the wall and vertical Unistrut support of the humidifier. The wall and Unistrut interface connection consisted of a 3/8" stainless steel bolt and 1/4" stainless steel Unistrut L-bracket (P1026), while the Unistrut to Unistrut connection consisted of a 3/8" stainless steel bolt, strut nut, and 1/4" Unistrut L-bracket (P1026).



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                                   |                               |
|----------------------|-----------------------------------|-------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC         | <b>UUT 6b</b>                 |
| <b>Model Line:</b>   | Huntair Custom Air Handling Units |                               |
| <b>Model Number:</b> | CSU-15K                           |                               |
|                      |                                   | <b>Serial Number:</b> 0120-03 |

## Product Construction Summary:

**Wall/Roof:** Standard 2" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner; **Base:** carbon steel structural tubing, 16 ga. galv. carbon steel base skin with 20 ga. galv. carbon steel liner and 20 ga. carbon steel subfloor; **Door:** (2) 2" thick, 21"(W) x 64"(H) no window; **Weatherhood:** 62"(W) x 32"(H) x 26"(D) 16 ga. galv. carbon steel construction; **Cable Bracing:** Center of unit braced with 1/4" galvanized steel cables attached with 12 GA stainless steel brackets. Brackets welded with 1/8" fillet weld.

## Options/Subcomponent Summary:

**Pressure Gauge:** Dwyer Magnehelic 2000 Series; **Damper:** Tamco 1000 (4"x36"x120"), Tamco 1000 (4"x60"x30"); **Air Flow Measurement System:** Paragon Controls Incorporated OAFE-1550; **Actuator:** Belimo AMB24

## UUT Properties

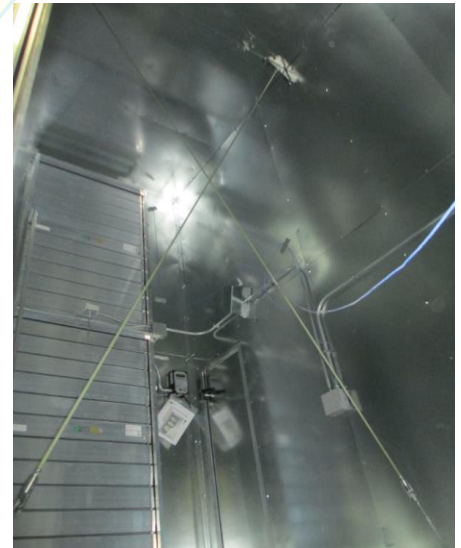
| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 1880        | 144            | 76    | 152    | 11.4                          | 5.5       | 30.3     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 | 1.5            |                        |                        |                        |                        |

## Test Mounting Details:

Humidifier removed, filter wall removed, cable bracing added



All test units contain an integrated structural base frame. This unit was mounted to a I beam fixture using six (6) 5/8" SAE grade 8 hex head bolts with flat washers and lock washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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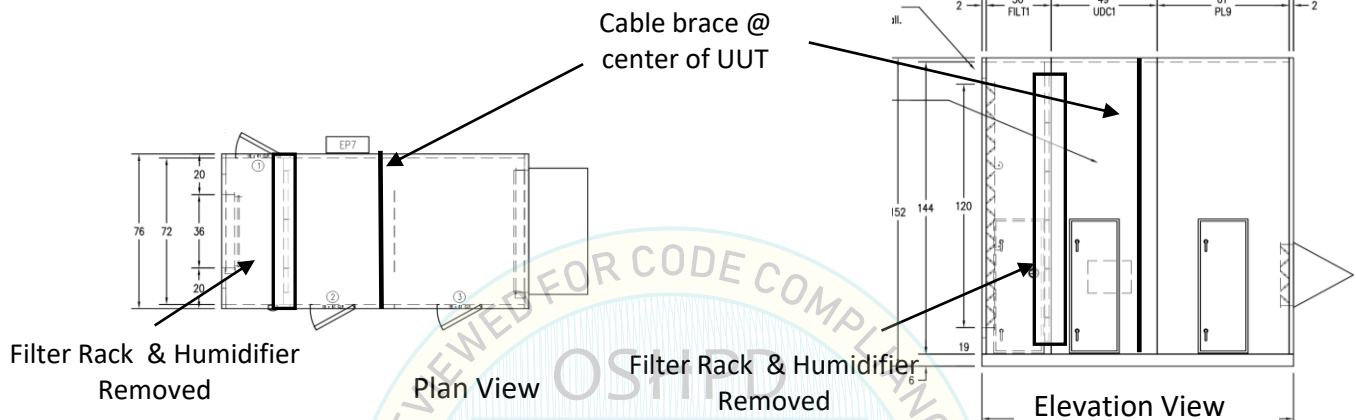
**1801166-CR-001-R6**



## UUT 6b

**Serial Number:** 0120-03

## Unit Drawings



To match the factory construction, the orientation of the fasteners were reversed from the previous modification. (Previous modification shown on the right)



Modified repair: #12-2" self tapping screws were drilled from the inside of the unit around the entire perimeter of the OAFE-1550 casing at 12" OC. The previous fasteners were removed.



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                           |                                |
|----------------------|---------------------------|--------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC | <b>UUT 7</b>                   |
| <b>Model Line:</b>   | Fanwall                   |                                |
| <b>Model Number:</b> | FWT                       |                                |
|                      |                           | <b>Serial Number:</b> 2101-005 |

## Product Construction Summary:

Fan cells are constructed of 2x2 aluminum extruded members. Wheels are constructed of aluminum. (10) 28Dx22Wx27H fan cells with 10" wheel (2W x 5H configuration) without extended coplanar. (4) 34Dx34Wx34H fan cells with 22" wheel without extended coplanar and (4) 51Dx34Wx34H fan cells with 22" wheel with extended coplanar (overall 2W x 4H configuration). Coplanar and extended coplanar panel construction: 0.040" aluminum and 22 ga. stainless steel sheet – solid and perforated. **Cable Bracing:** 3/8" galvanized steel cables with 1/4" A36 brackets.

## Options/Subcomponent Summary:

**Motor 480V:** (2) Novatorque 2HP, (2) Novatorque 6HP, (2) Baldor 1HP, (2) Baldor 12HP, (4) Toshiba 1HP, (2) Toshiba 12 HP, (2) Siemens 1HP, (2) Siemens 10HP; **VFD 460V:** Nortek Air Solutions (4) HD4010xx-1.0HP, (2) HD4100xx-10HP. ABB, Inc. (2) ACS355-03U-04A14/2.0HP, (2) ACS355-03U-23A1-4/15HP. Yaskawa, Inc. (2) CIMR-ZU4A0005FAA/3HP, (1) CIMRZU4A00027FAA/20HP, (1) CIMRZU4A00034FAA/25HP; Back draft damper

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 7155        | 60             | 130   | 150    | 3.6                           | 3.9       | 22.9     |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 2.13                   | 0.85                   |
|               |                     | 3.2                 | 0.0 | 1.5            |                        |                        |                        |                        |

## Test Mounting Details:

Single Cross Bracing, no inlet or outlet wall.



FANWALL sections mounted within air handling section constructed of 2" galvanized steel panels with 6" tube sections. FANWALL sections mounted at base using floor rigid CES Group standard mounting details with gage metal blank off panels to air handling walls. Air handling section mounted to shake table with (4) 5/8" diameter grade 8 bolts.

Unit maintained structural integrity and remained functional per manufacturer requirement.

Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com



# UNIT UNDER TEST (UUT) SUMMARY SHEET

**NORTEK**  
AIR SOLUTIONS

**TRU**  
COMPLIANCE

1801166-CR-001-R6

**Manufacturer:** Nortek Air Solutions, LLC

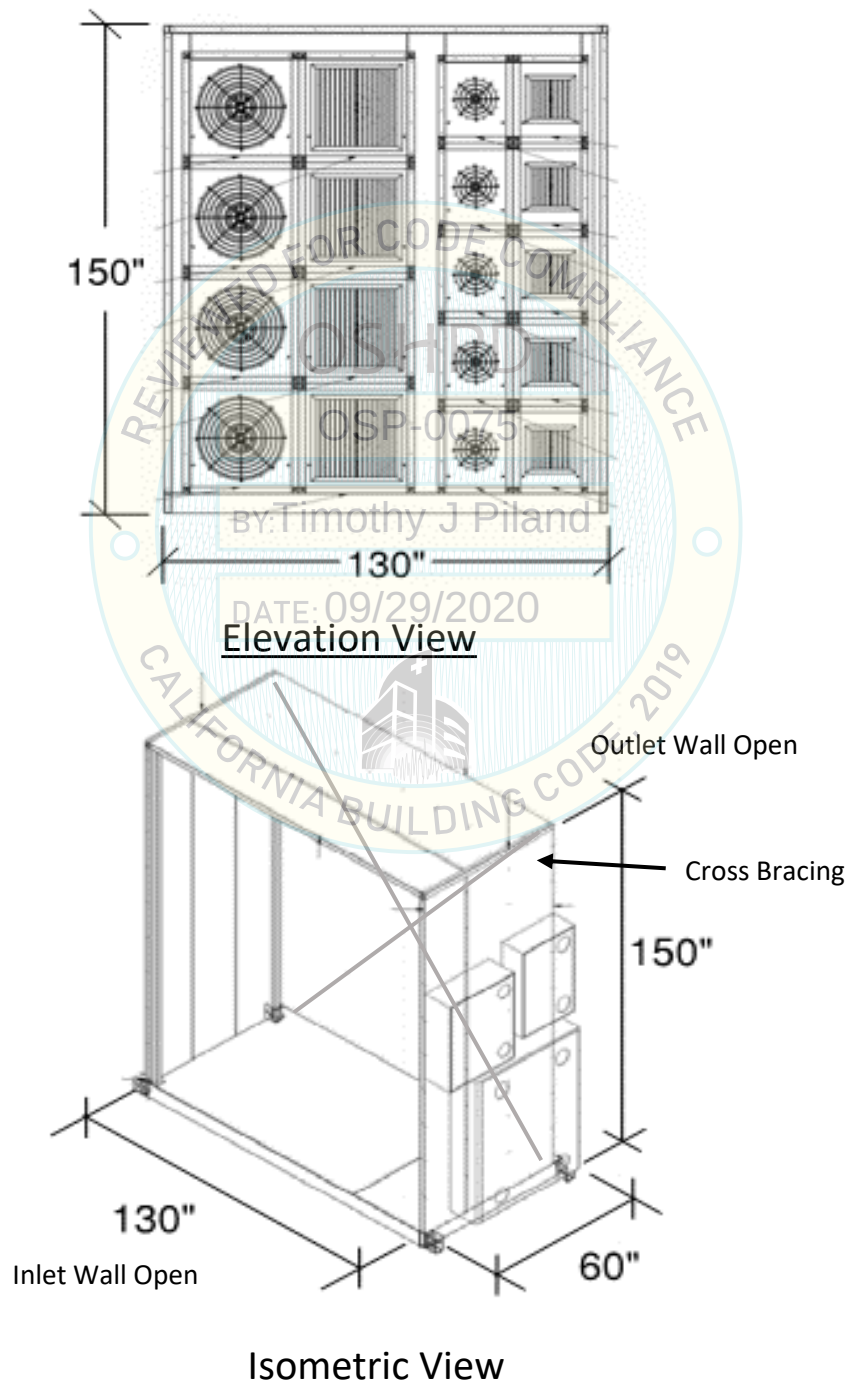
**Model Line:** Fanwall

**Model Number:** FWT

**Serial Number:** 2101-005

**UUT 7**

## Unit Drawings



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801166-CR-001-R6

|                      |                                   |                                  |
|----------------------|-----------------------------------|----------------------------------|
| <b>Manufacturer:</b> | Nortek Air Solutions, LLC         | <b>UUT 8</b>                     |
| <b>Model Line:</b>   | Huntair Custom Air Handling Units |                                  |
| <b>Model Number:</b> | CSU-20K CHW                       |                                  |
|                      |                                   | <b>Serial Number:</b> 000139-006 |

## Product Construction Summary:

**Wall/Roof:** Standard 4" Panels, 16 ga. galv. carbon steel exterior with 20 ga. galv. carbon steel liner; **Base:** 8" carbon steel structural tubing, 16 ga. galv. carbon steel base skin with 20 ga. galv. carbon steel liner; **Door:** (1) 4" thick, 24"(W) x 64"(H) no window

## Options/Subcomponent Summary:

**Chilled Water Coil:** 12 FPI, 10 row, copper, stacked mounting - qty. 1 (48"Hx184"Wx15"D); 12 FPI, 10 row, aluminum, stacked mounting - qty. 1 (63"Hx184"Wx15"D); **Damper:** Ruskin CD 50 (60"x120"); **Louvers:** Huntair (60"Wx120"H), Ruskin ELF6375DX (60"Wx120"H); **Pressure Gage:** Dwyer Photohelic 3001; **Electrical Panel:** NEMA1; **Actuator:** AFBUP-S

## UUT Properties

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 14,762      | 130            | 204   | 135    | 7.46                          | 9.75      | 10.97    |

## UUT Highest Passed Seismic Run Information

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2019      | ICC-ES AC156 (2015) | 2.0                 | 1.0 | 1.5            | 3.2                    | 2.4                    | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 | 1.5            |                        |                        |                        |                        |

## Test Mounting Details:

(4) Walls in place, no Internal Bracing



All test units contain an integrated structural base frame. This unit was mounted to a I beam fixture using fourteen (14) 5/8" SAE grade 8 hex head bolts with flat washers and lock washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

# UNIT UNDER TEST (UUT) SUMMARY SHEET

**NORTEK**  
AIR SOLUTIONS

**TRU**  
COMPLIANCE

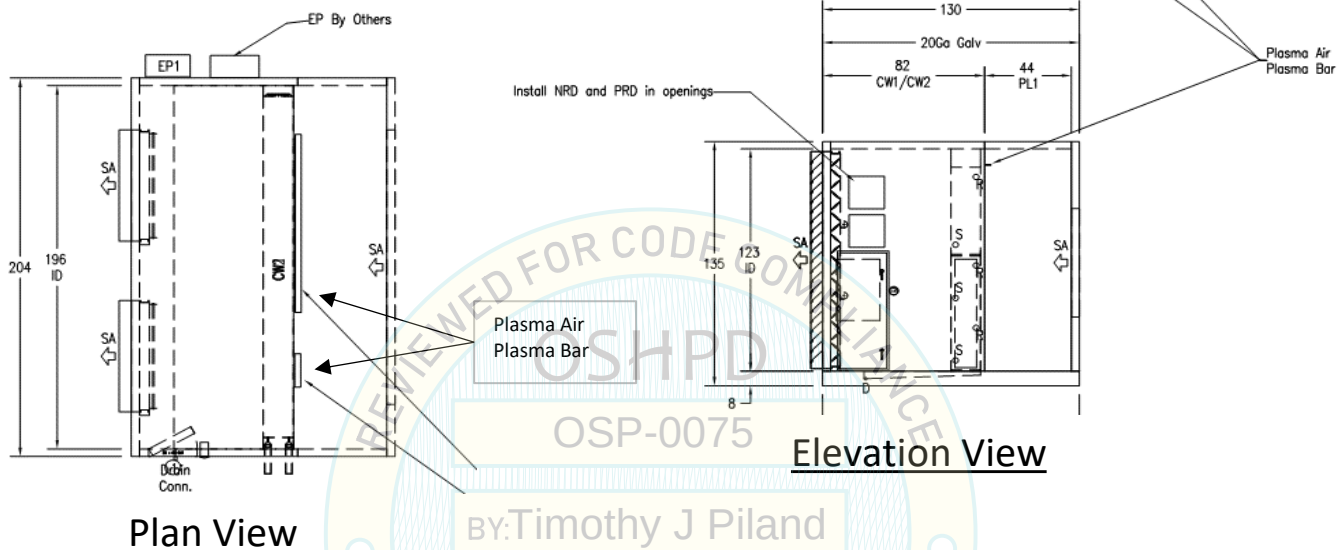
1801166-CR-001-R6

**Manufacturer:** Nortek Air Solutions, LLC  
**Model Line:** Huntair Custom Air Handling Units  
**Model Number:** CSU-20K CHW

**Serial Number:** 000139-006

**UUT 8**

## Unit Drawings



## Seismic Upgrades Implemented (required for large coils as defined in table 5):

(1) 1/4"-14 screws top and bottom of coil at 10" o.c. max spacing, (2) 2-12ga. c-channel stiffeners<sup>1</sup> each side of coil, (3) 1/4"-14 screws at 10" o.c. max spacing along each c-channel stiffener.



## Notes:

<sup>1</sup>Stainless steel c-channels tested, stiffener channels may also be constructed of carbon steel.

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- 1a FANWALL (Vertical)

1b FANWALL (Horizontal)

2a Heat Transfer Coils (Stacked)

2b Heat Transfer Coils (Staggered)
- 3 Pre/Final Filters

4 Sound Trap

5 Humidifier

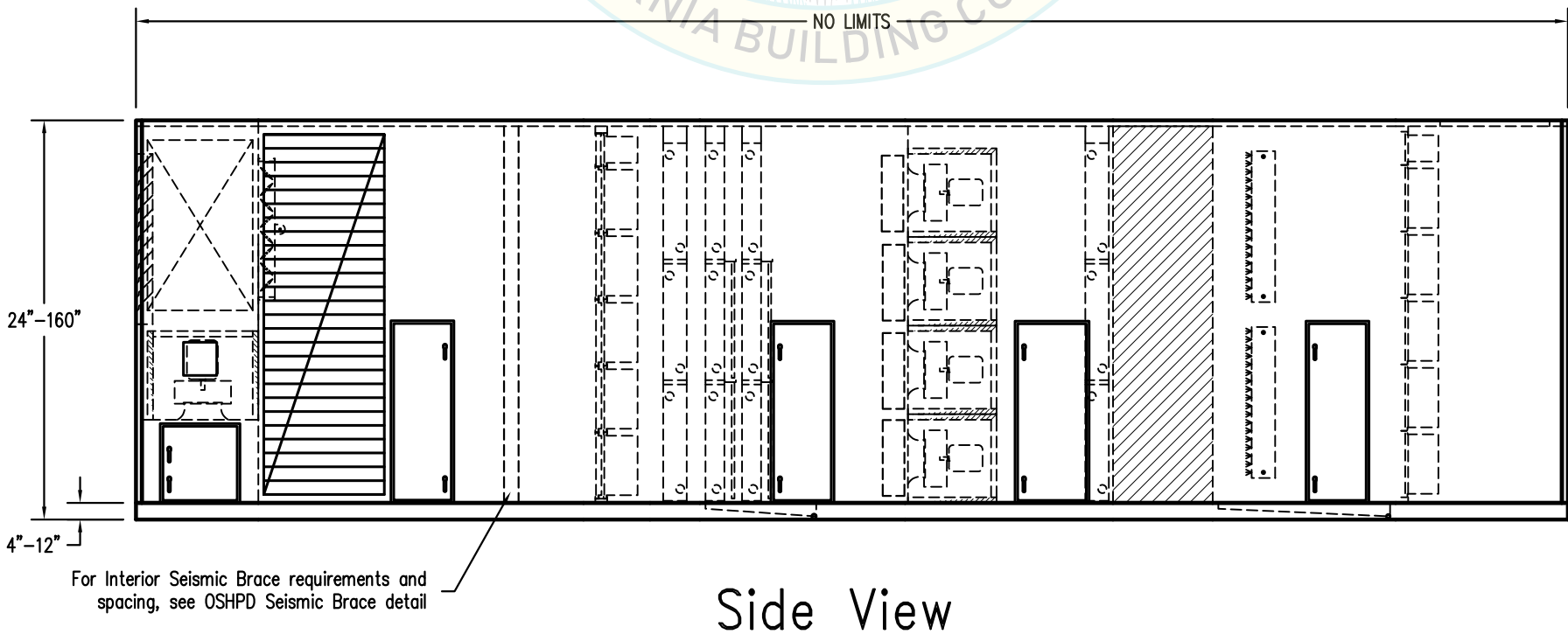
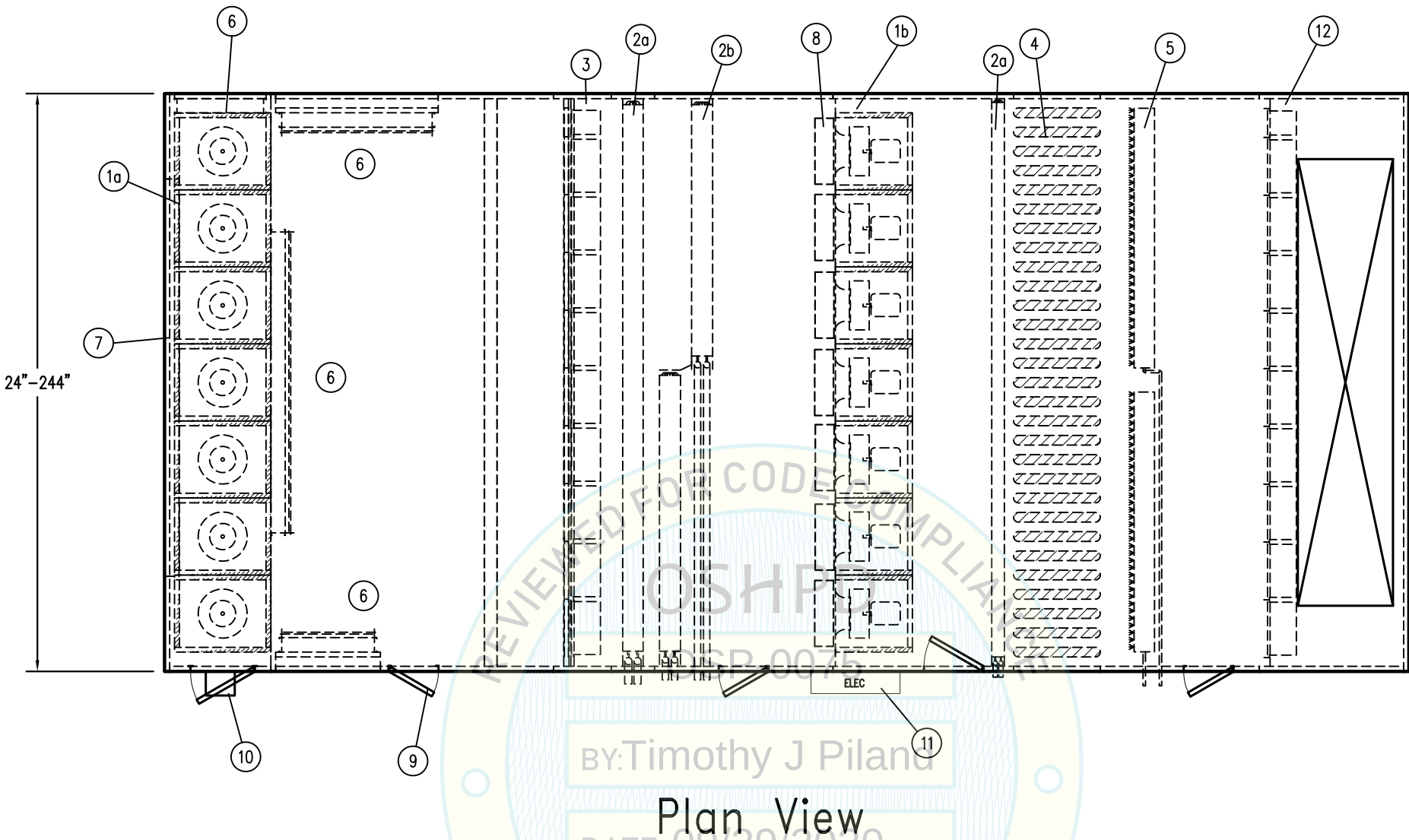
6 Damper
- 7 Louver

8 Back-draft Damper

9 Access Doors

10 Electrical Panel (MSP)
- 11 Control Panel (VFD/PLC)

12 HEPA Filters



- Construction Notes:
- All dimensions inches unless stated otherwise
  - Insulation thickness/panel size: 2", 3", and 4"
  - Cabinet Material: Aluminum, Galvanized Steel, Stainless Steel
  - Base can be structural channel or tube (4" to 12" height)
  - Interior seismic bracing to be implemented per restrictions detailed on sheet "OSHPD BRACE DETAILS".
  - Base frame must be anchored around entire perimeter.
  - All splits shall maintain structural continuity between sections.
  - All transverse base members to be designed for tributary dead load & full capacity of seismic braced frame elements.

|                                                                                                                                                                                                             |                    |        |                                                                                                                         |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|-------------------------------------------------------------------------------------------------------------------------|------------|
| TOLERANCES<br>UNLESS OTHERWISE<br>SPECIFIED<br>FRACTIONS: ±1/32<br>0.0: ±0.1<br>0.00: ±0.03<br>0.000: ±0.010<br>ANGLES: ±0.5°<br>OTHER:<br>SEE DOC. QMS000.01A                                              | OSHPD              |        | HUNTAIR®<br>a Nortek Air Solutions Brand<br>19855 SW 124th Ave. TUALATIN, OR 97062<br>(503) 639-0113 FAX (503) 692-0958 |            |
|                                                                                                                                                                                                             | Single Tunnel Unit |        |                                                                                                                         |            |
|                                                                                                                                                                                                             | DRAWN BY           | DATE   | LAYOUT                                                                                                                  | TIME STAMP |
|                                                                                                                                                                                                             | 3/31/20            |        |                                                                                                                         |            |
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| Page 63 of 70                                                                                                                                                                                               |                    |        |                                                                                                                         | A          |

- 1a) FANWALL (Vertical)

1b) FANWALL (Horizontal)

2a) Heat Transfer Coils (Stacked)

2b) Heat Transfer Coils (Staggered)
- 3) Pre/Final Filters

4) Sound Trap

5) Humidifier

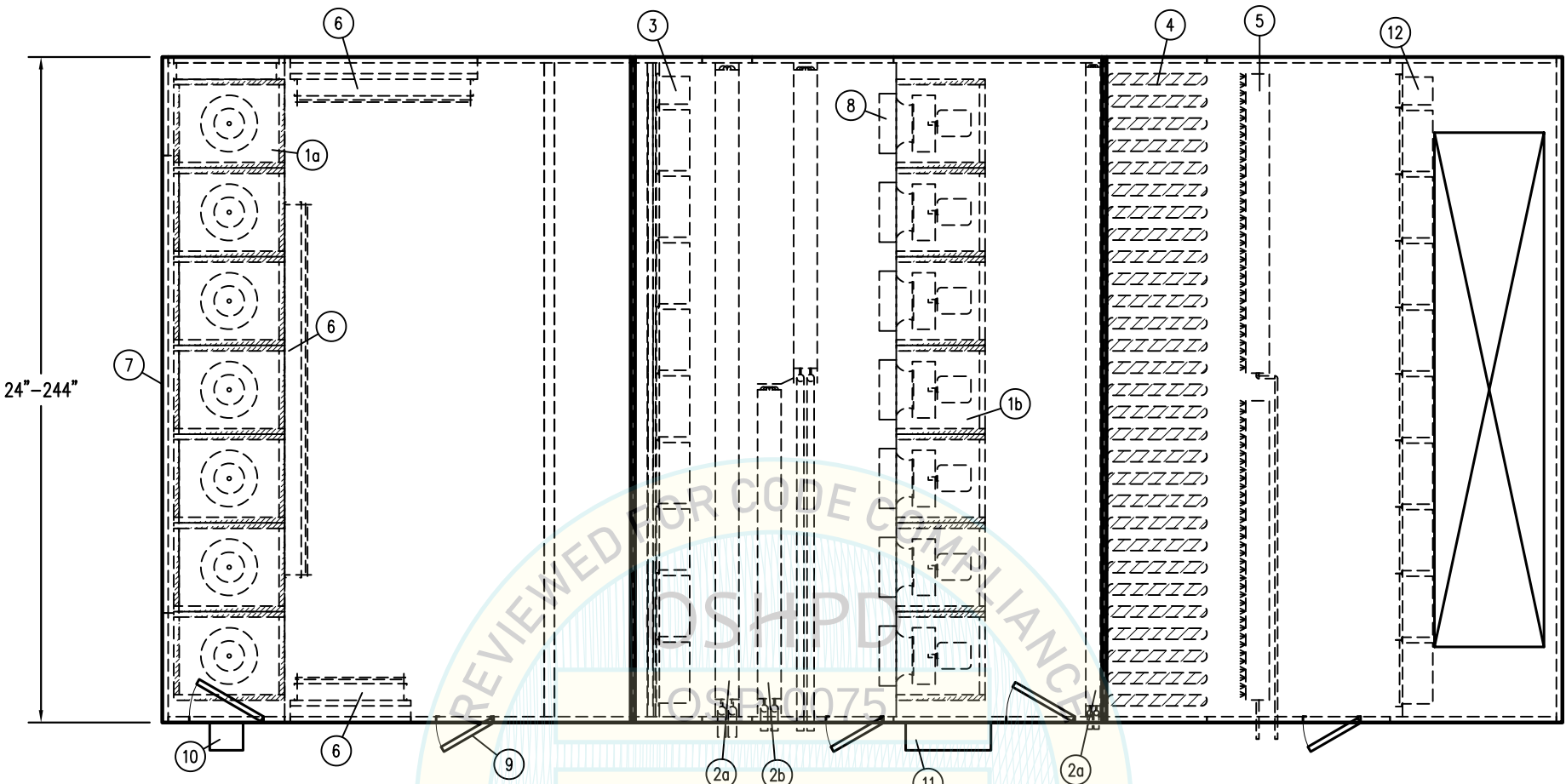
6) Damper
- 7) Louver

8) Back-draft Damper

9) Access Doors

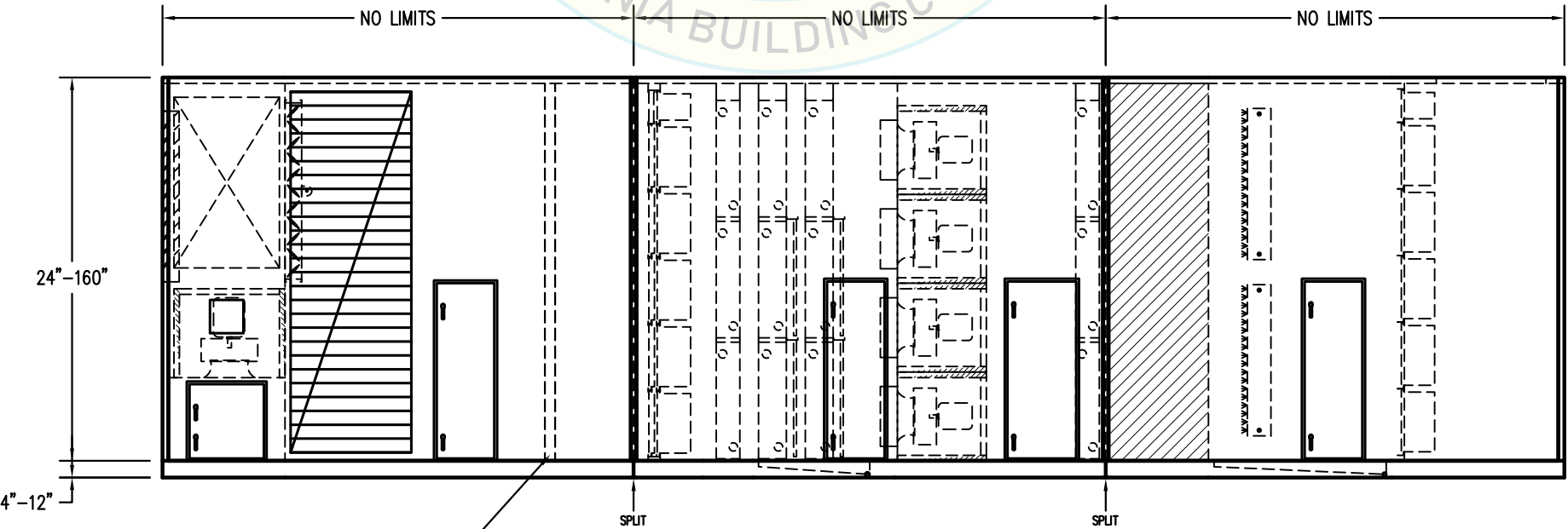
10) Electrical Panel (MSP)
- 11) Control Panel (VFD/PLC)

12) HEPA Filters



BY: Timothy J Piland  
DATE: 09/29/2020

Plan View



For Interior Seismic Brace requirements and spacing, see OSHPD Seismic Brace detail

Side View

Construction Notes:

1. All dimensions inches unless stated otherwise
2. Insulation thickness/panel size: 2", 3", and 4"
3. Cabinet Material: Aluminum, Galvanized Steel
4. Base can be structural channel or tube (4" to 12" height)
5. Interior seismic bracing to be implemented per restrictions detailed on sheet "OSHPD BRACE DETAILS".
6. Base frame must be anchored around entire perimeter.
7. All splits shall maintain structural continuity between sections.
8. All transverse base members to be designed for tributary dead load & full capacity of seismic braced frame elements.

09/29/2020

OSP-0075

TOLERANCES  
UNLESS OTHERWISE  
SPECIFIED

FRACTIONS: ±1/32

0.0: ±0.1

0.00: ±0.03

0.000: ±0.010

ANGLES: ±0.5°

OTHER:  
SEE DOC. QMS000.01A

OSHPD

Single Tunnel With Splits

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REV A



- 1a) FANWALL (Vertical)

1b) FANWALL (Horizontal)

2a) Heat Transfer Coils (Stacked)

2b) Heat Transfer Coils (Staggered)
- 3) Pre/Final Filters

4) Sound Trap

5) Humidifier

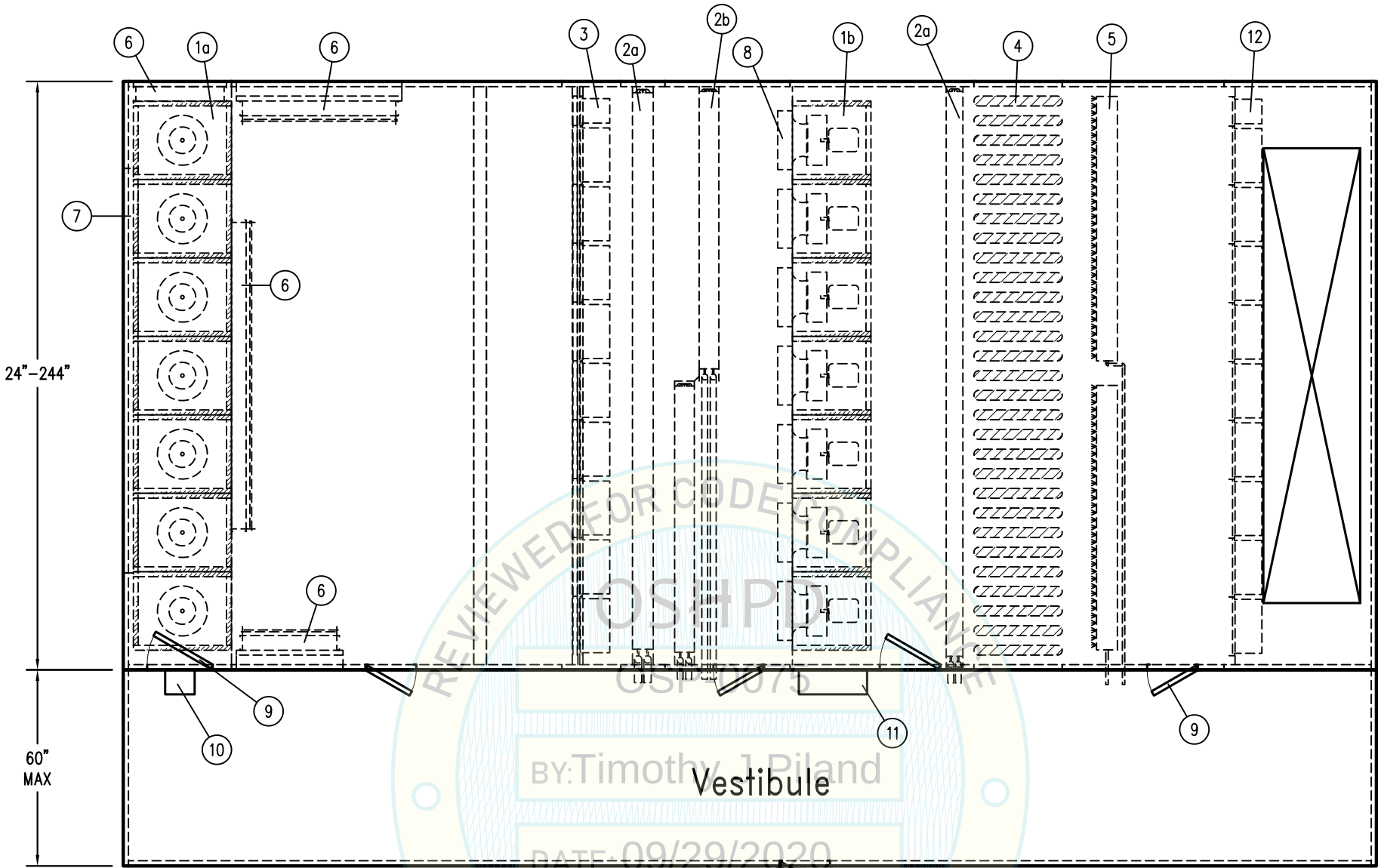
6) Damper
- 7) Louver

8) Back-draft Damper

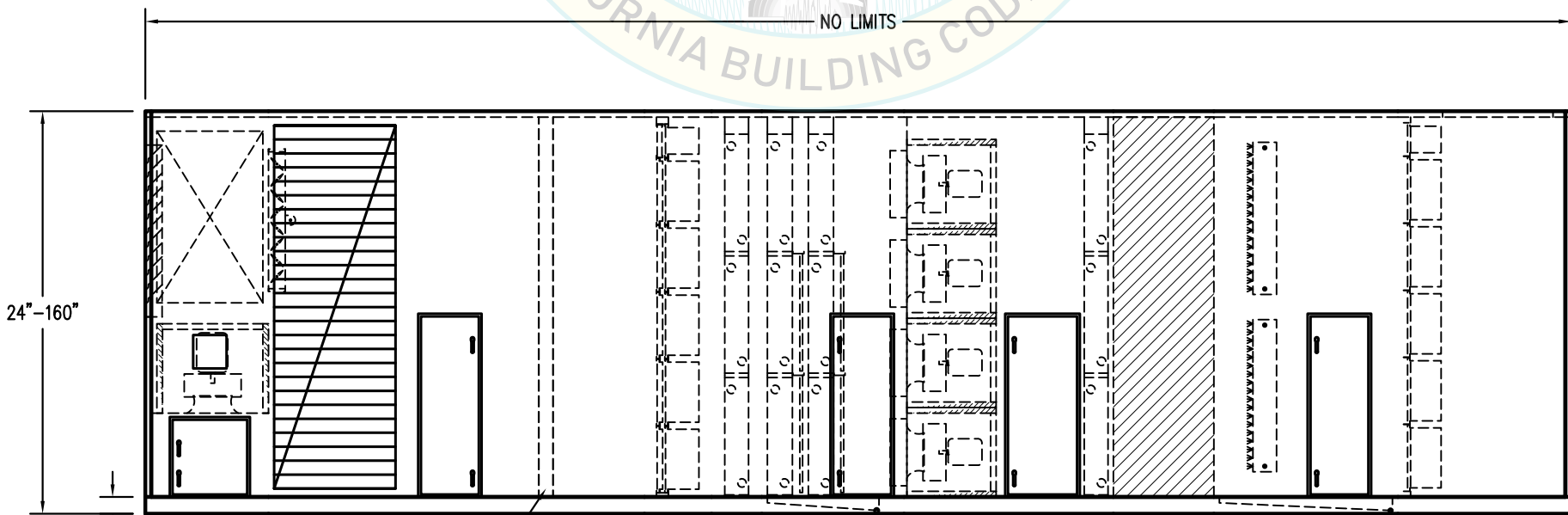
9) Access Door

10) Electrical Panel (MSP)
- 11) Control Panel (VFD/PLC)

12) HEPA Filters



Plan View



Side View

Construction Notes:

1. All dimensions inches unless stated otherwise
2. Insulation thickness/panel size: 2", 3", and 4"
3. Cabinet Material: Aluminum, Galvanized Steel, Stainless Steel
4. Base can be structural channel or tube (4" to 12" height)
5. Interior seismic bracing to be implemented per restrictions detailed on sheet "OSHPD BRACE DETAILS".
6. Base frame must be anchored around entire perimeter.
7. All splits shall maintain structural continuity between sections.
8. All transverse base members to be designed for tributary dead load & full capacity of seismic braced frame elements

TOLERANCES  
UNLESS OTHERWISE  
SPECIFIED

FRACTIONS: ±1/32  
0.0: ±0.1  
0.00: ±0.03  
0.000: ±0.010  
ANGLES: ±0.5°  
OTHER:  
SEE DOC. QMS000.01A

OSHPD

Single Tunnel with Vestibule

DRAWN BY: 3/31/20 LAYOUT

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TIME STAMP

SCALE: 1:60

SHEET OF

DWG NO.

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REV. A

- 1a) FANWALL (Vertical)

1b) FANWALL (Horizontal)

2a) Heat Transfer Coils (Stacked)

2b) Heat Transfer Coils (Staggered)
- 3) Pre/Final Filters

4) Sound Trap

5) Humidifier

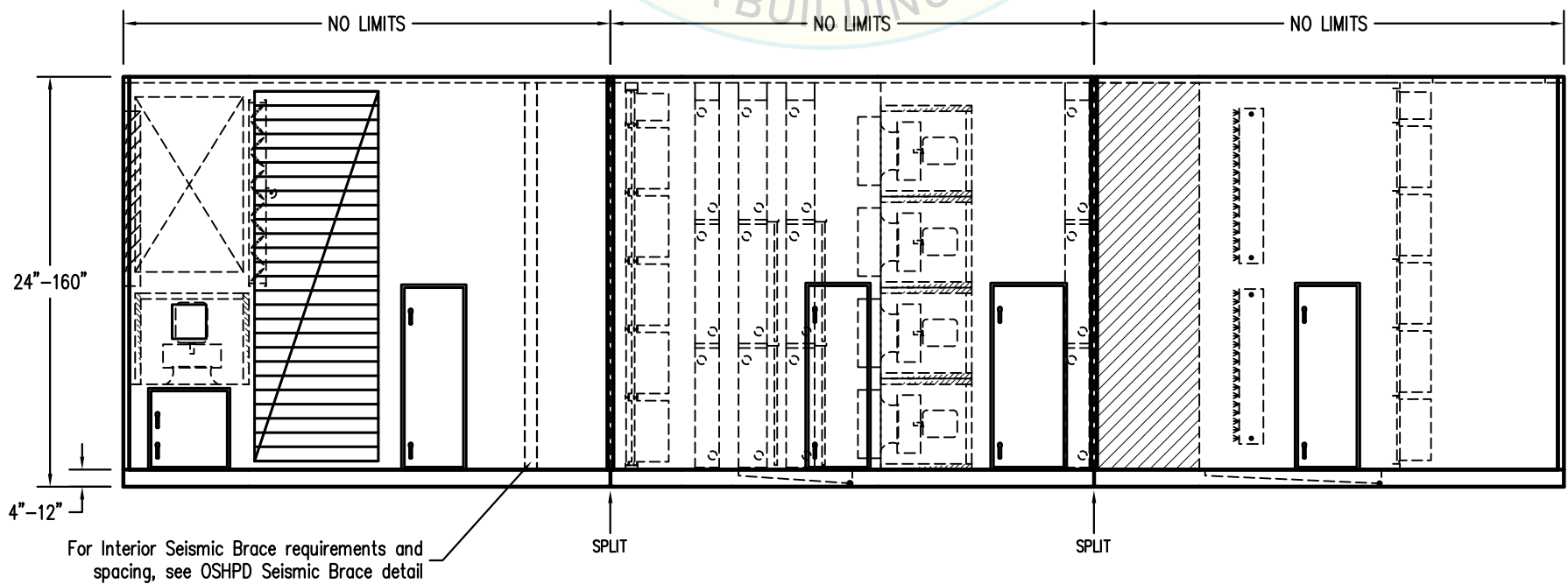
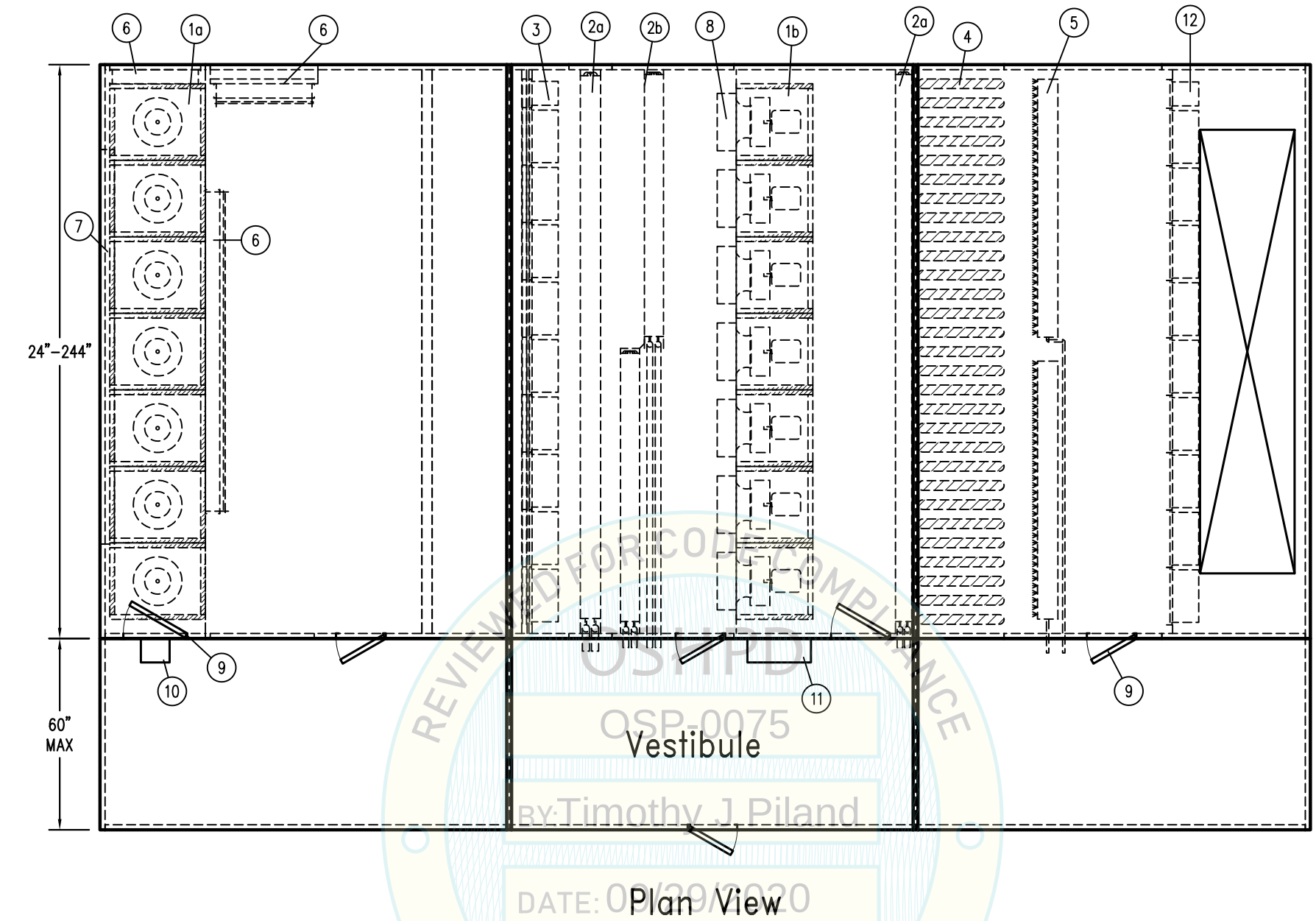
6) Damper
- 7) Louver

8) Back-draft Damper

9) Access Door

10) Electrical Panel (MSP)
- 11) Control Panel (VFD/PLC)

12) HEPA Filters



- Construction Notes:
1. All dimensions inches unless stated otherwise
  2. Insulation thickness/panel size: 2", 3", and 4"
  3. Cabinet Material: Aluminum, Galvanized Steel, Stainless Steel.
  4. Base can be structural channel or tube (4" to 12" height)
  5. Interior seismic bracing to be implemented per restrictions detailed on sheet "OSHPD BRACE DETAILS".
  6. Base frame must be anchored around entire perimeter.
  7. All splits shall maintain structural continuity between sections.
  8. All transverse base members to be designed for tributary dead load & full capacity of seismic braced frame elements.

TOLERANCES  
UNLESS OTHERWISE  
SPECIFIED

FRACTIONS: ±1/32  
0.0: ±0.1  
0.00: ±0.03  
0.000: ±0.010  
ANGLES: ±0.5°  
OTHER:  
SEE DOC. QMS000.01A

OSHPD

Single Tunnel With Vestibule and Splits

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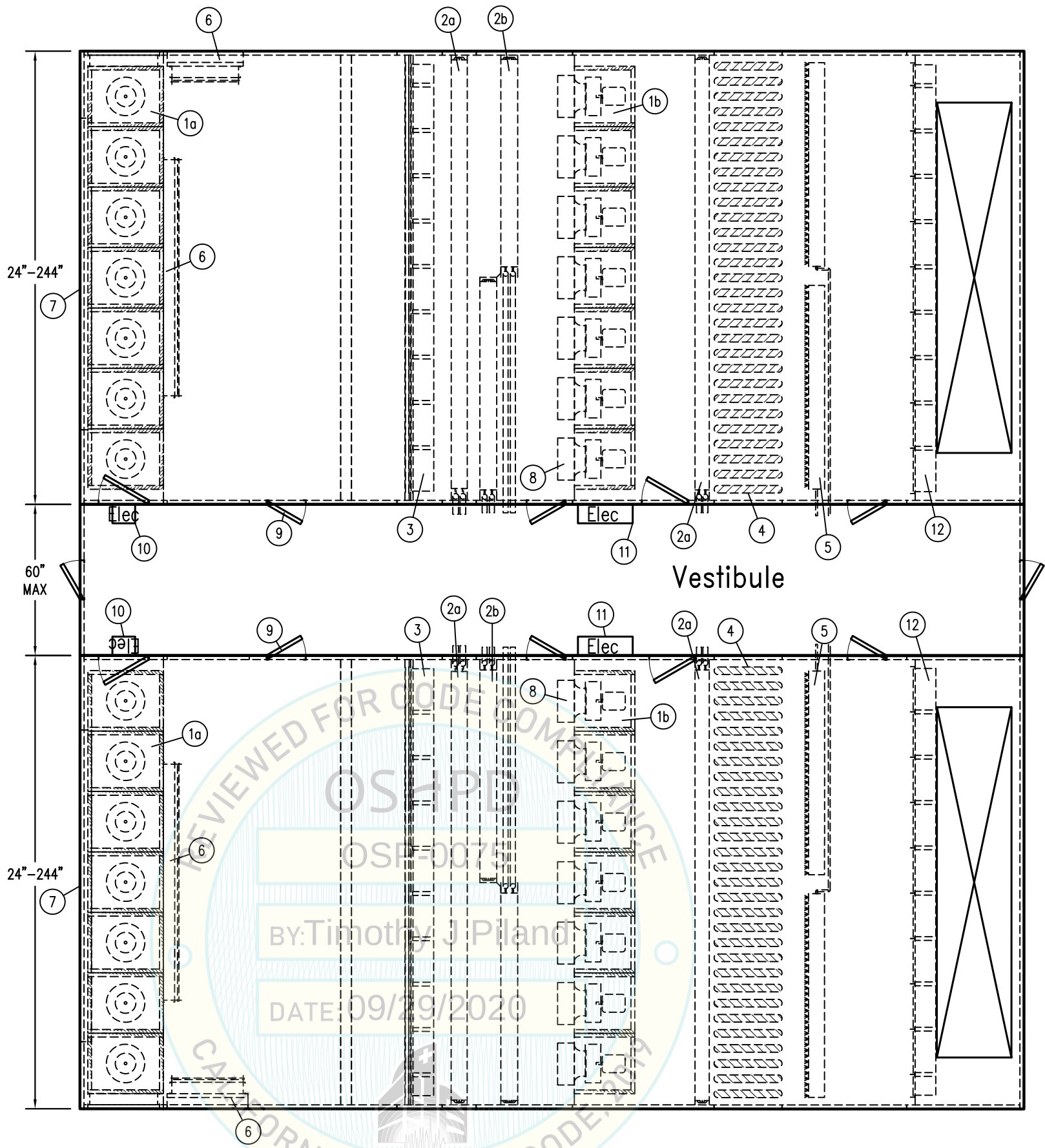
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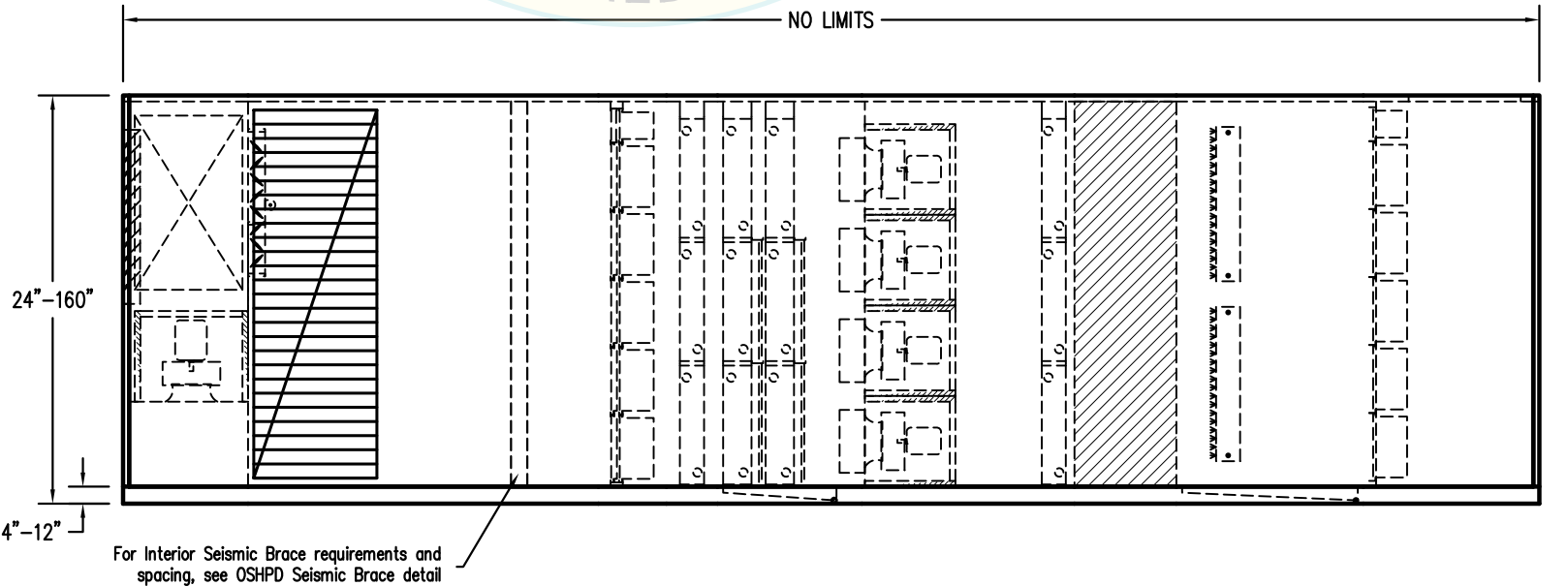
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Page 66 of 70

Plan View



Side View



For Interior Seismic Brace requirements and spacing, see OSHPD Seismic Brace detail

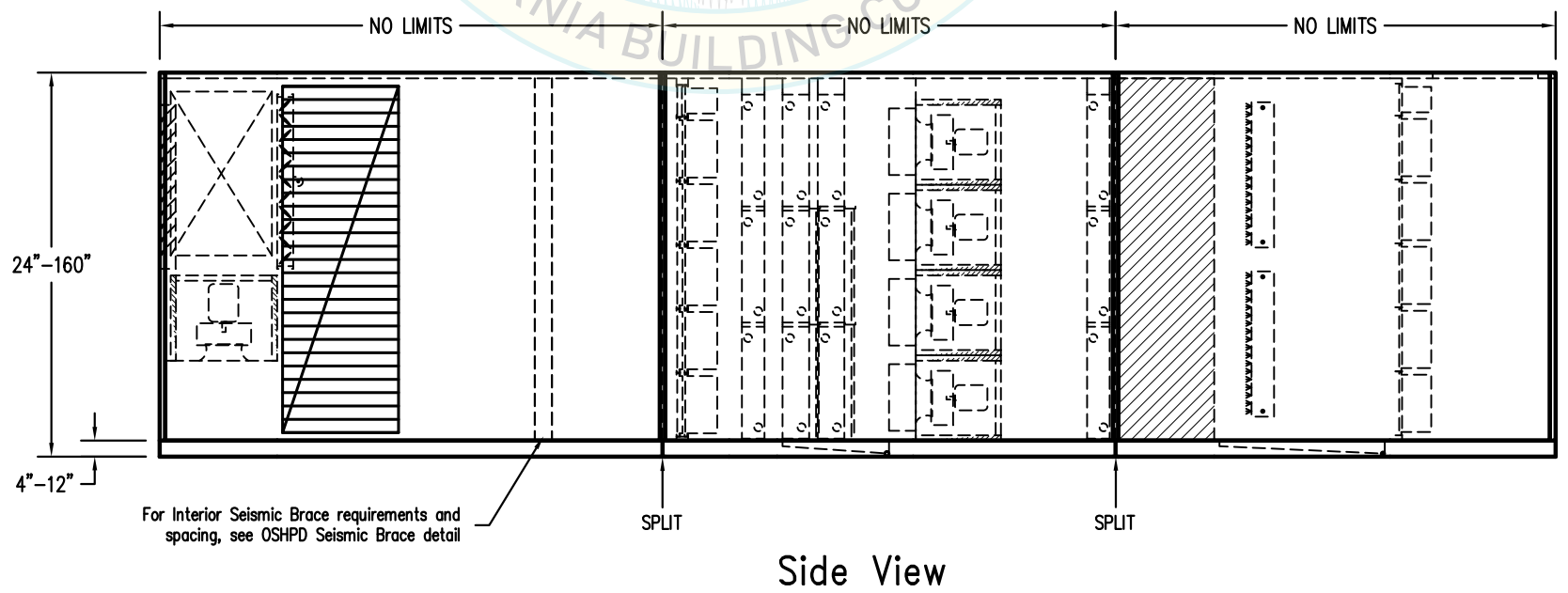
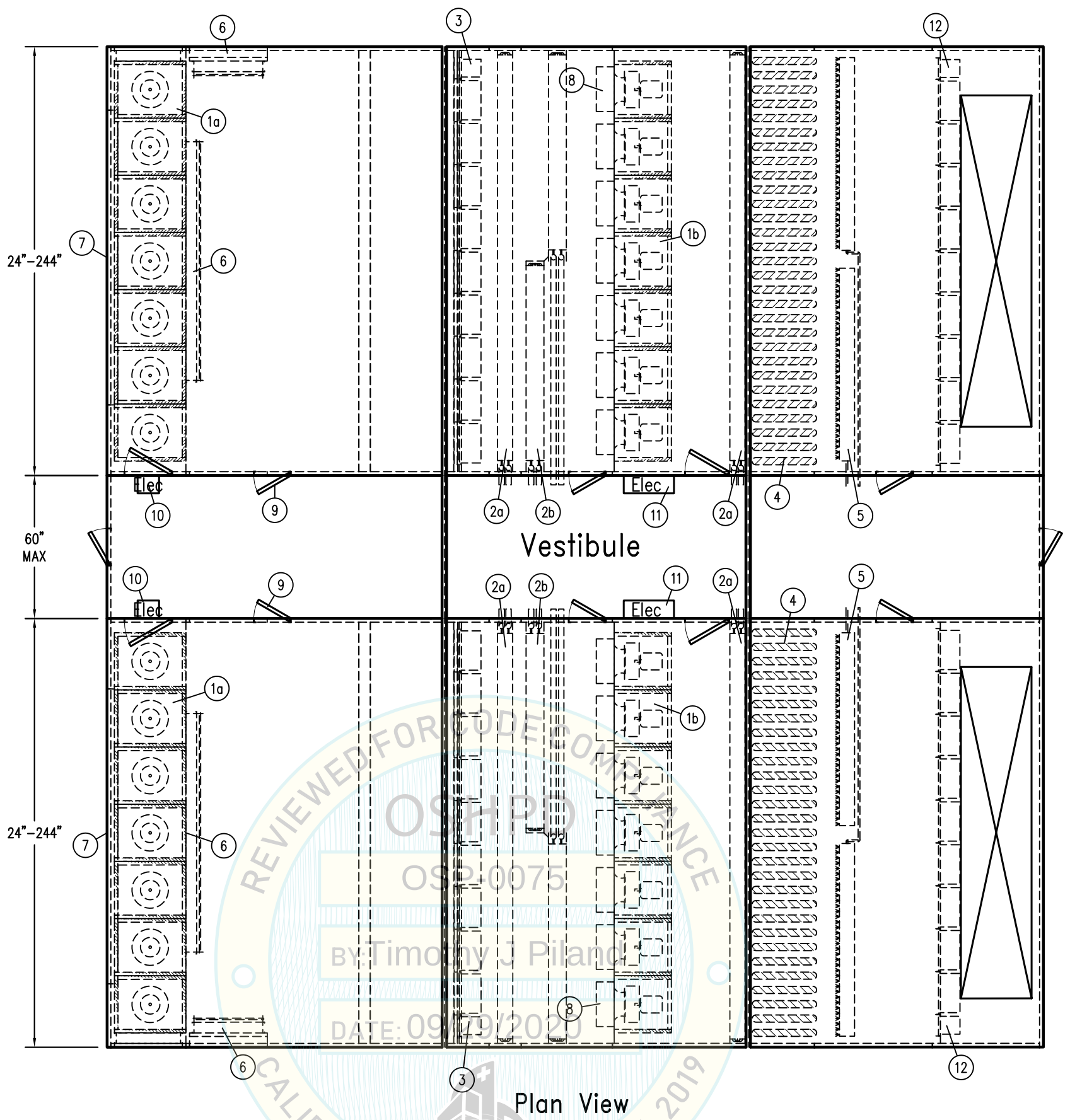
- |                                      |                       |                             |                              |
|--------------------------------------|-----------------------|-----------------------------|------------------------------|
| (1a) FANWALL (Vertical)              | (3) Pre/Final Filters | (7) Louver                  | (11) Control Panel (VFD/PLC) |
| (1b) FANWALL (Horizontal)            | (4) Sound Trap        | (8) Back-draft Damper       | (12) HEPA Filters            |
| (2a) Heat Transfer Coils (Stacked)   | (5) Humidifier        | (9) Access Doors            |                              |
| (2b) Heat Transfer Coils (Staggered) | (6) Damper            | (10) Electrical Panel (MSP) |                              |

Construction Notes:

1. All dimensions inches unless stated otherwise.
2. Insulation thickness/panel size: 2", 3", and 4".
3. Cabinet Material: Aluminum, Galvanized Steel, Stainless Steel.
4. Base can be structural channel or tube (4" to 12" height).
5. Interior seismic bracing to be implemented per restrictions detailed on sheet "OSHPD BRACE DETAILS".
6. Each base frame must be anchored around entire perimeter, including double wall location.
7. All splits shall maintain structural continuity between sections.
8. All transverse base members to be designed for tributary dead load & full capacity of seismic braced frame elements.

|                                                                                                                                                                                                             |                                     |                       |                                                                                                                                |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>TOLERANCES UNLESS OTHERWISE SPECIFIED</b><br>FRACTIONS: ±1/32<br>0.0: ±0.1<br>0.00: ±0.03<br>0.000: ±0.010<br>ANGLES: ±0.5°<br>OTHER: SEE DOC. QMS000.01A                                                | <b>OSHPD</b>                        |                       | <b>HUNTAIR®</b><br>a Nortek Air Solutions Brand<br>19855 SW 124th Ave. TUALATIN, OR 97062<br>(503) 639-0113 FAX (503) 692-0958 |                      |
|                                                                                                                                                                                                             | <b>Double Tunnel With Vestibule</b> |                       | DATE: 3/31/20                                                                                                                  | LAYOUT               |
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| Page 67 of 70                                                                                                                                                                                               |                                     | REV A                 |                                                                                                                                |                      |





- |                                      |                       |                             |                              |
|--------------------------------------|-----------------------|-----------------------------|------------------------------|
| (1a) FANWALL (Vertical)              | (3) Pre/Final Filters | (7) Louver                  | (11) Control Panel (VFD/PLC) |
| (1b) FANWALL (Horizontal)            | (4) Sound Trap        | (8) Back-draft Damper       | (12) HEPA Filters            |
| (2a) Heat Transfer Coils (Stacked)   | (5) Humidifier        | (9) Access Door             |                              |
| (2b) Heat Transfer Coils (Staggered) | (6) Damper            | (10) Electrical Panel (MSP) |                              |

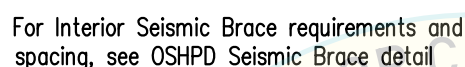
#### Construction Notes:

1. All dimensions inches unless stated otherwise.
2. Insulation thickness/panel size: 2", 3", and 4".
3. Cabinet Material: Aluminum, Galvanized Steel, Stainless Steel.
4. Base can be structural channel or tube (4" to 12" height).
5. Interior seismic bracing to be implemented per restrictions detailed on sheet "OSHPD BRACE DETAILS".
6. Each base frame must be anchored around entire perimeter, including double wall location.
7. All splits shall maintain structural continuity between sections.
8. All transverse base members to be designed for tributary dead load & full capacity of seismic braced frame elements.

| TOLERANCES<br>UNLESS OTHERWISE<br>SPECIFIED |  |
|---------------------------------------------|--|
| FRACTIONS: ±1/32                            |  |
| 0.0: ±0.1                                   |  |
| 0.00: ±0.03                                 |  |
| 0.000: ±0.010                               |  |
| ANGLES: ±0.5°                               |  |
| OTHER:<br>SEE DOC. QMS000.01A               |  |

|                                                                                                                                                                                                             |         |                                                                             |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------|------------|
| <b>OSHPD</b>                                                                                                                                                                                                |         | <b>HUNTAIR®</b><br>a Nortek Air Solutions Brand                             |            |
| <b>Double Tunnel With Vestibule and Splits</b>                                                                                                                                                              |         | 19855 SW 124th Ave. TUALATIN, OR 97062<br>(503) 639-0113 FAX (503) 692-0958 |            |
| DRAWN BY                                                                                                                                                                                                    | DATE    | LAYOUT                                                                      | TIME STAMP |
|                                                                                                                                                                                                             | 3/31/20 |                                                                             |            |
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| Page 68 of 70                                                                                                                                                                                               |         | SCALE                                                                       | SHEET      |
|                                                                                                                                                                                                             |         | 1:55                                                                        | OF         |
|                                                                                                                                                                                                             |         |                                                                             | REV        |
|                                                                                                                                                                                                             |         |                                                                             | A          |

- ## Side View



## OSP-0075

|                                                                                                                                                                                                                                                                                     |  |                                                                                                                                                                                                                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <div> <div>OSHPD</div> <div>  <div> HUNTAIR®<br/> a Nortek Air Solutions Brand </div> </div> </div> <div> 19855 SW 124th Ave. TUALATIN, OR 97062<br/> (503) 639-0113 FAX (503) 692-0958 </div> |  | <div> <div>L-Unit With Vestibule and Splits</div> <div> <div> DRAWN BY<br/> DATE<br/> 3/31/20 </div> <div> LAYOUT </div> </div> <div> TIME STAMP </div> <div> SCALE<br/> 1:60 </div> <div> SHEET<br/> OF </div> </div> |  |
| <div> <div>THIS DRAWING, SPECIFICATIONS, AND CONCEPTS CONTAINED HEREIN ARE THE SOLE PROPERTY OF HUNTAIR, AND MAY NOT BE REPRODUCED OR USED IN ANY MANNER WITHOUT THE EXPRESS WRITTEN PERMISSION OF HUNTAIR.</div> <div> JOB NO </div> </div> <div> Page 69 of 70 </div>             |  | <div> <div>DWG NO</div> <div>REV</div> <div>  </div> </div>                                                                       |  |

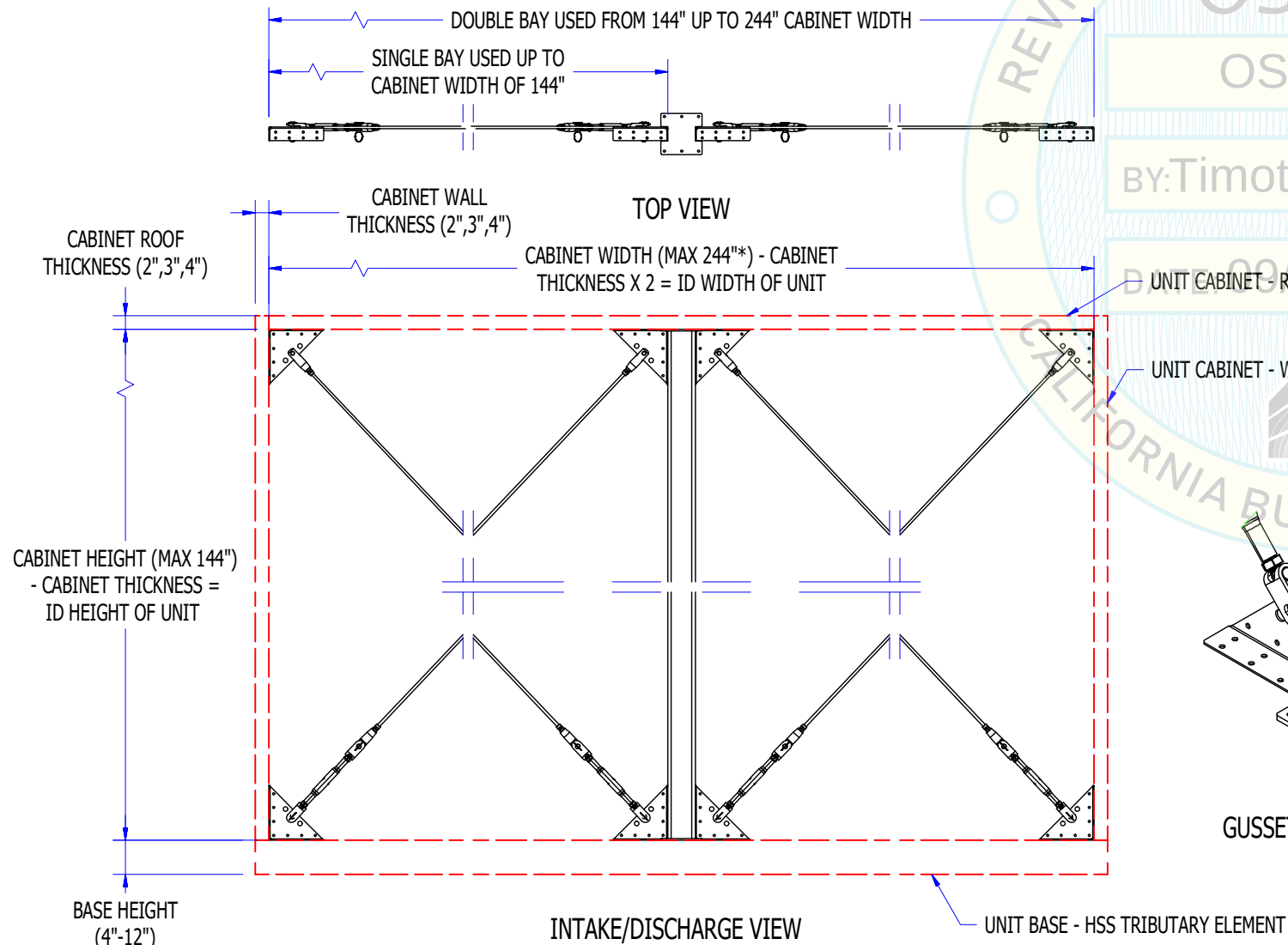


Transverse Bracing Requirements:

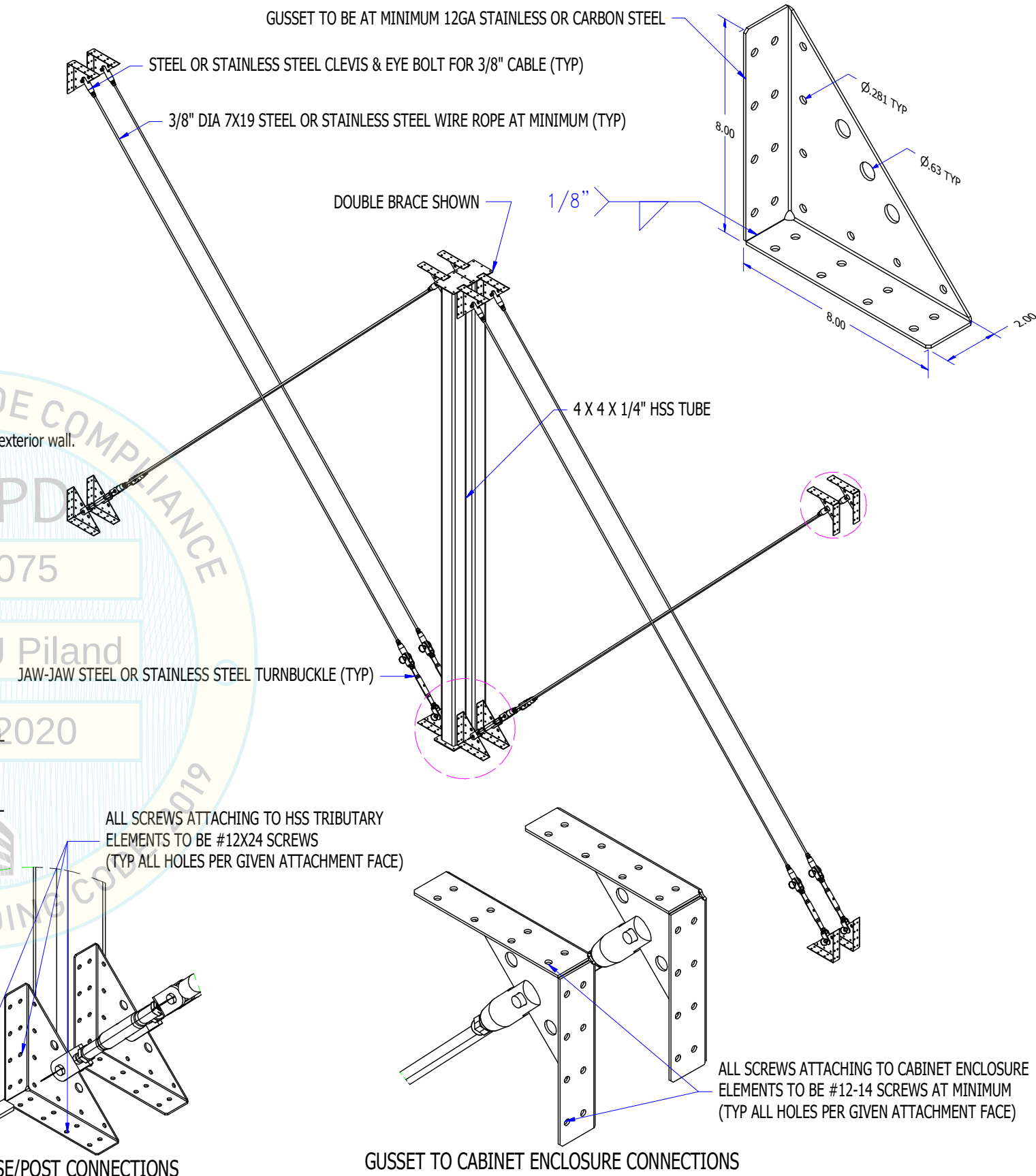
- 1. Average spacing is calculated as the sum of distances between braces on each side of brace divided by 2.
  - a. Units with aluminum construction cabinets or bases shall have single bracing required at 4'-0" average spacing, or double bracing at 8'-0" average spacing.
- 2. For Aspect Ratios <= 1.1: Single bracing required at 5'-6" average spacing, or double bracing at 11'-0" average spacing. Bracing Elements for Aspect Ratio <= 1.1:
  - a. Coil wall
  - b. Fanwall
  - c. Cable Brace
  - d. Panel Wall meeting the requirements listed below
- 3. For Aspect Ratios > 1.1: Single bracing required at 5'-0" average spacing, or double bracing at 10'-0" average spacing. Bracing Elements for Aspect Ratio > 1.1:
  - a. Cable Brace
  - b. Panel Wall meeting the requirements listed below
- 4. Bracing elements 2.a. through 2.c. and 3.a. must run the full width and height of the cabinet enclosure (excluding vestibule sections).
- 5. Humidifier Systems require independent structural support or adjacent upstream cable brace (see UUT-2b, 5, and 6a)

Panel Wall Bracing Requirements:

- 6. If a panel wall is utilized as a bracing element, the following conditions must be met:
  - a. The bracing wall must be of the construction detailed in the OSHPD approved drawing set.
  - b. Height to width ratio of the bracing wall must not exceed 2.0.
  - c. Openings in a bracing wall shall not exceed the lesser of one third of the height of the total bracing wall and one third the width of the total bracing wall.
  - d. Exterior openings are defined to be at an exterior wall of the cabinet enclosure.
  - e. Exterior bracing walls not meeting 6.c. criteria must have the total length of exterior wall be greater than or equal to the total length of the combined exterior openings on the exterior wall.
  - f. Exterior walls running perpendicular to air flow not meeting 6.c. or 6.e. criteria must have a supplementary bracing element placed within 3'-0".
  - g. Exterior walls running parallel to air flow not meeting 6.c. or 6.e. criteria are not allowed.



CABINET WIDTH IS DEFINED AS THE DIMENSION FROM EXTERNAL WALL TO OPPOSING EXTERNAL WALL IN THE DIRECTION PERPENDICULAR TO AIR FLOW.  
\*IN THE CASE OF DUAL TUNNEL UNITS, THE CABINET WIDTH IS DEFINED AS THE EXTERNAL WALL TO THE CENTER OF THE DOUBLE WALL OR VESTIBULE WALL.



|                                                                                                              |                                                                                                                                                                                                               |                                |  |      |                                                |                                                                                         |
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|                                                                                                              |                                                                                                                                                                                                               | ISSUED ON:<br><b>9/21/2020</b> |  |      |                                                |                                                                                         |
|                                                                                                              |                                                                                                                                                                                                               | CHECKED BY:                    |  |      |                                                |                                                                                         |
|                                                                                                              |                                                                                                                                                                                                               | PART NO.:                      |  |      |                                                |                                                                                         |
| FRACTIONS: ±1/32<br>0.0: ±0.1<br>0.00: ±0.03<br>0.000: ±0.010<br>ANGLES: ±0.5°<br>OTHER: SEE DOC. OMS000.01A |                                                                                                                                                                                                               | JOB NO.:                       |  | REV: |                                                | SHEET 1 OF 1                                                                            |
| FILE NAME:                                                                                                   |                                                                                                                                                                                                               | Page 70 of 70                  |  |      |                                                |                                                                                         |