



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

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: **OSP – 0181 – 10**

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: AAON, Inc.

Manufacturer's Technical Representative: James Velde

Mailing Address: 203 Gum Springs Road, Longview, TX 75602

Telephone: 903.247.9263

Email: jvelde@aaon.com

Product Information

Product Name: CB/CC Condensing Units

Product Type: Condensers

Product Model Number: Varies, see attachment.

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

General Description: Galvanized steel panel cabinets w/internal & external components. Seismic enhancements made to test units to address anomalies observed during testing shall be incorporated into production units.

Mounting Description: Rigid base mounted.

Applicant Information

Applicant Company Name: Structural Integrity Associates, Inc.

Contact Person: Matthew J. Tobolski, PhD, SE

Mailing Address: 5215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 541.205.4064

Email: mtobolski@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.

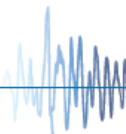
Signature of Applicant: _____

Date: 7/19/2017

Title: Executive Advisor

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.

Name: Matthew J. Tobolski, PhD, SE California License Number: S5648

Mailing Address: 5215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 541.205.4064 Email: mtobolski@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): _____

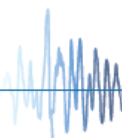
Testing Laboratory

Company Name: Clark Testing

Contact Name: Robert Francis

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

Telephone: 412.387.1001 Email: rfrancis@clarktesting.com





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

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.44

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

a_p (In-structure equipment or component amplification factor) = 1.0

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

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) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

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): Attachment

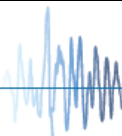
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature:  Date: September 15, 2017

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

TRU PROJECT NO. 1700667



Manufacturer: AAON Coil Products, Inc.	TABLE 1
Model Line: CB/CC Packaged Condensing Units	

Certified Product Construction Summary:
20 ga Carbon steel panel construction

Certified Options Summary:
Interior corrosion protection, Single or Three phase 208, 230, or 460V system.

Mounting Configuration:
Base mounted - rigid
Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code: CBC 2016 **Seismic Certification Limits:** $S_{DS} = 2.0g$ $z/h=1.0$ $I_p = 1.5$

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
CB	CB-B-024	36.3	31.0	36.7	237		Interp.
	CB-B-036	36.3	31.0	36.7	237		Interp.
	CB-B-048	36.3	37.0	40.5	260		Interp.
	CB-B-060	36.3	37.0	40.5	281		Interp.
CC	CC-B-002	20.2	50.1	38.6	237		9
	CC-B-003	20.2	50.1	38.6	237		Interp.
	CC-B-004	20.2	50.1	38.6	260		Interp.
	CC-B-005	20.2	50.1	38.6	281		10

**SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX**

TRU PROJECT NO. 1700667



Manufacturer:	AAON Coil Products, Inc.	Table Description: Compressors	
Model Line:	CB/CC Packaged Condensing Units		TABLE 2

Building Code: CBC 2016 **Seismic Certification Limits:** $S_{DS} = 2.0 g$ $z/h=1.0$ $I_p = 1.5$

Component (manufacturer)	Model	Dimension (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Compressors (Copeland)	ZPS20K4E	9.5	9.5	16	67		9
	ZPS30K4E	9.5	9.5	16	68.2		Interp.
	ZPD34K5E	9.6	9.6	17.7	68.2		Interp.
	ZPS40K4E	9.5	9.5	16	68.2		Interp.
	ZPD42K5E	9.3	9.3	18.4	68.2		Interp.
	ZPS51K4E	9.6	9.6	16.9	76.6		10

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700667



Manufacturer: AAON Coil Products, Inc.	Table Description: Fan motors - mounted to fan assembly	TABLE 3
Model Line: CB/CC Packaged Condensing Units		

Building Code: CBC 2016 **Seismic Certification Limits:** $S_{DS} = 2.0g$ $z/h=1.0$ $I_p = 1.5$

Component Type	Manufacturer	Model	Description	Notes	UUT
Fan Motors	GE	48	1/2 HP, 208/230-460V, 17 lbs.	UUT10: 460V; UUT9: 208/230V	9,10

**SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX**

TRU PROJECT NO. 1700667



Manufacturer:	AAON Coil Products, Inc.	Table Description: Fans	TABLE 4
Model Line:	CB/CC Packaged Condensing Units		

Building Code: CBC 2016 **Seismic Certification Limits:** $S_{DS} = 2.0g$ $z/h=1.0$ $I_p = 1.5$

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Diam.	Blades	Width				
Fans (LAU)	T12E07A	22	3	8	2.1	Carbon steel		9
	6088190	22	3	8	2.1	Carbon steel		Interp.
	T5082630	26	3	8	2.3	Carbon steel		10

**SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX**

TRU PROJECT NO. 1700667



Manufacturer: AAON Coil Products, Inc.	Table Description: Microchannel Coils	TABLE 5
Model Line: CB/CC Packaged Condensing Units		

Building Code: CBC 2016 **Seismic Certification Limits:** $S_{DS} = 2.0g$ $z/h = 1.0$ $I_p = 1.5$

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Depth	Width	Height				
Microchannel (Delphi)	Custom Coils		33.8	43	30	Aluminum	2-5 ton CC A/C	10

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700667



Manufacturer: AAON Coil Products, Inc.	Table Description: Tube and Fin Coils	TABLE 6
Model Line: CB/CC Packaged Condensing Units		

Building Code: CBC 2016 **Seismic Certification Limits:** $S_{DS} = 2.0g$ $z/h=1.0$ $I_p = 1.5$

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Depth	Width	Height				
Tube and Fin Coils (AAON, INC.)	Custom Coils	3 row	43	34	67	Cu tube, Al fin, CS Casing		9

Tube Wall Thickness: .012" **Fin Thickness:** .0060" aluminum; **Fins per Inch:** 22

**SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX**

TRU PROJECT NO. 1700667



Manufacturer: AAON Coil Products, Inc.	Table Description: Sensors	TABLE 7
Model Line: CB/CC Packaged Condensing Units		

Building Code: CBC 2016 **Seismic Certification Limits:** $S_{DS} = 2.0 g$ $z/h=1.0$ $I_p = 1.5$

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Johnson Controls	P352PN-4C	2.4	2.4	5	1		9-10

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700667



Manufacturer: AAON Coil Products, Inc.	Table Description: Expansion Valves	TABLE 8
Model Line: CB/CC Packaged Condensing Units		

Building Code: CBC 2016	Seismic Certification Limits: $S_{DS} = 2.0g$ $z/h=1.0$	$I_p = 1.5$
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Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Sporlan	CBBIZE-2	1.5	1.9	2.9	0.9		9
	CBBIZE-3	1.5	1.9	2.9	0.9		Interp.
	CBBIZE-4	1.5	1.9	2.9	1.2		Interp.
	CBBIZE-5	1.5	1.9	2.9	1.2		10

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 1700667

Manufacturer: AAON Coil Products, Inc.	UUT 9
Model Line: CB/CC Packaged Condensing Units	
Model Number: CC-B-002 (CC-B-002-1-B-1:BG00000) Serial Number: N/A	

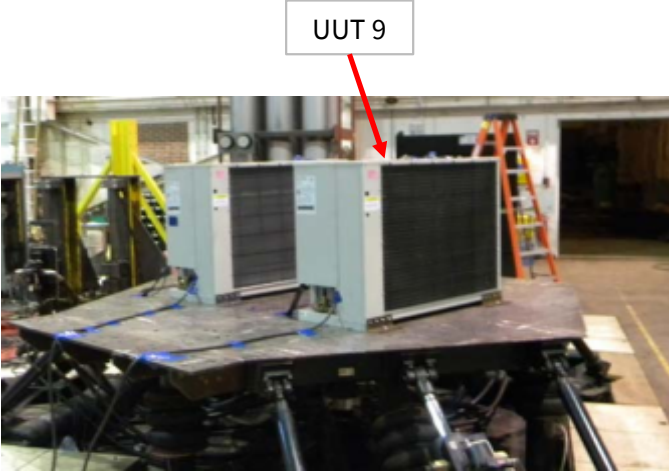
Product Construction Summary:
Painted carbon steel enclosure

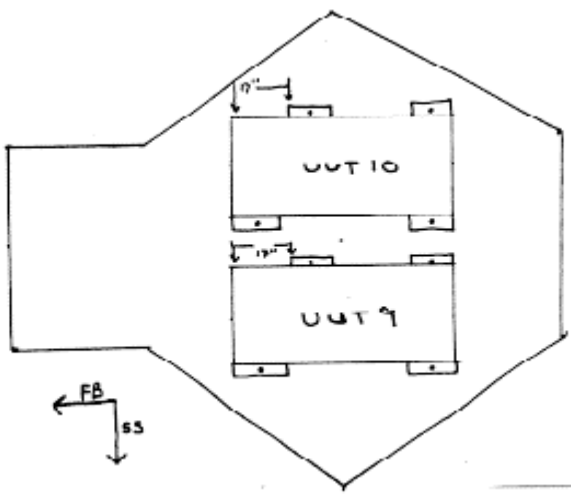
Options/Subcomponent Summary:
Compressor: Copeland ZPS20K4E; Fan Motor: GE 1/2HP; Fan: LAU T12E07A; Coil: 3 Row Tube and Fin;
Sensors: JCI P352PN-4C
Internal Components: 208/230V

<i>UUT Properties</i>						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
325	20.2	50.1	38.6	25.1	11.8	> 33.3

<i>UUT Highest Passed Seismic Run Information</i>								
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Test Mounting Details:





Unit was rigid base mounted to the shake table using (4) 2"x2"x 8"x1/4" carbon steel angles. Each angle used (4) #14 x 1-1/2" zip screws to attach to the unit and (1) 1/2"-13 bolt (Grade 5) to anchor to the shake table.

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



TRU PROJECT NO. 1700667

Manufacturer: AAON Coil Products, Inc.	UUT 10
Model Line: CB/CC Packaged Condensing Units	
Model Number: CC-B-005 (CC-B-005-3-B-1:0DB000X) Serial Number: N/A	

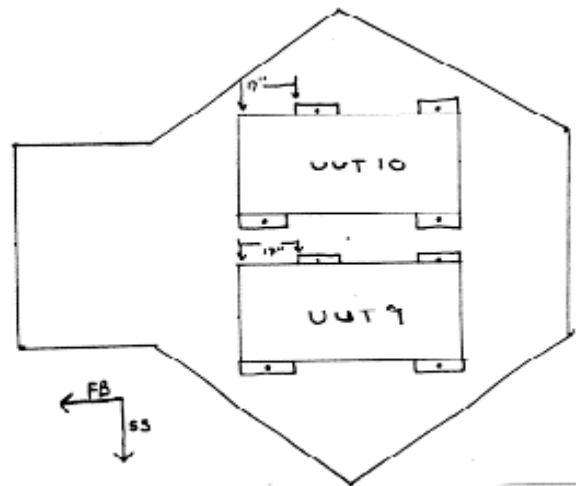
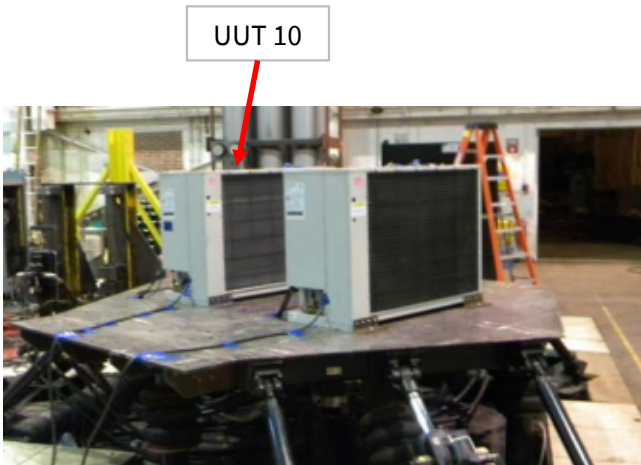
Product Construction Summary:
Painted carbon steel enclosure

Options/Subcomponent Summary:
Compressor: Copeland ZPS51K4E; Fan Motor: GE 1/2HP; Fan: LAU 6123840001; Coil: Delphi Microchannel;
Sensors: JCI P352PN-4C
Internal Components: 460V

<i>UUT Properties</i>						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
330	20.2	50.1	38.6	30.2	11.3	> 33.3

<i>UUT Highest Passed Seismic Run Information</i>								
Building Code	Test Criteria	S _{DS} (g)	z/h	I _P	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Test Mounting Details:



Unit was rigid base mounted to the shake table using (4) 2"x2"x 8"x1/4" carbon steel angles. Each angle used (4) #14 x 1-1/2" zip screws to attach to the unit and (1) 1/2"-13 bolt (Grade 5) to anchor to the shake table.
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