APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0618

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Baltimore Aircoil Company, Inc.

Manufacturer's Technical Representative: David Wu

Mailing Address: 7600 Dorsey Run Road, Jessup, MD 20794

Telephone: 410-799-6438 Email: Dwu@baltimoreaircoil.com

Product Information

Product Name: Series 3000E

Product Type: Open Cooling Tower

Product Model Number: See Attachment
(List all unique product identification numbers and/or part numbers)

General Description: Series 3000E Open Cooling Tower product line used in evaporative cooling applications. Certification covers: upgraded structure option (identified with a suffix "/S" in the model nomenclature); single and multiple cells; galvanized and stainless-steel materials of construction; belt, gear and direct drive; standard, low sound and whisper quiet fans. Seismic enhancements made to the test units and modifications required to address anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid mounted and restrained spring vibration isolated mounted.

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: Mr. John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: 973-838-1780 Email: john.giuliano@thevmcgroup.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: 8/1/2019

Title: President Company Name: The VMC Group

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

Company Name: The VMC Group

Name: Mr. Ken Tarlow California License Number: SE2851

Mailing Address: 113 Main St, Bloomingdale, NJ 07403

Telephone: 973-838-1780 Email: ken.tarlow@thevmcgroup.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: Structural Engineering & Earthquake Simulation Laboratory (SEESL)

Contact Name: Mark Pitman

Mailing Address: Department of Civil, Structural, and Environmental Engineering, University at Buffalo, The State University of New York, 212 Ketter Hall, North Campus, Buffalo, NY 14260

Telephone: 716-645-4377 Email: mpitman@buffalo.edu

Testing Laboratory

Company Name: Construction Engineering Research Laboratory / Dynamic Certification Laboratories

Contact Name: James Wilcoski / Kelly Laplace

Mailing Address: 2902 Newmark Drive, Champaign, IL 61822 / 1315 Greg Pkwy # 109, Sparks, NV 89431

Telephone: (217) 352-6511 / (775) 358-5085 Email: james.wilcoski@usace.army.mil / Kelly@shaketest.com

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 2.19 Rigid; 3.29 Vibration Isolated

S_{DS} (Design spectral response acceleration at short period, g) = 1.46

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

R_p (Equipment or component response modification factor) = 3.0 Rigid; 2.0 Vibration Isolated

Ω_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) =

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):

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

Signature: Date: October 20, 2020

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: S_{DS} (g) = 1.46 z/h = 1

Condition of Approval (if applicable):

Table 1: Certified Open Cooling Tower Models

Base Model No.[1,2,3,4,8]	Nominal Box Size[5] [in]	Motor HP	Fan Diameter [in]	Shipping Weight[6] [lbs]	Operating Weight[6,7] [lbs]	Tested Weight [lbs]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
XES3E-8518-05G/S	18X8.5X80	3	90	8,620	15,760		216.5	101.75	104	Rigid, Isolated		
XES3E-8518-05H/S	18X8.5X80	5	90	8,630	15,770	N/A	216.5	101.75	104	Rigid, Isolated		Extrapolated
XES3E-8518-05J/S	18X8.5X80	7.5	90	8,660	15,800		216.5	101.75	104	Rigid, Isolated		
XES3E-8518-05K/S	18X8.5X80	10	90	8,670	15,810	14,881	216.5	101.75	104	Rigid, Isolated		UUT 1A & UUT 1B
S3E-8518-05L/S	18X8.5X80	15	90	8,800	15,940		216.5	101.75	104	Rigid, Isolated		
S3E-8518-05M/S	18X8.5X80	20	90	9,710	16,850		216.5	101.75	104	Rigid, Isolated		
XES3E-8518-06G/S	18X8.5X96	3	90	9,030	16,700		216.5	101.75	120	Rigid, Isolated		
XES3E-8518-06H/S	18X8.5X96	5	90	9,040	16,710		216.5	101.75	120	Rigid, Isolated		
XES3E-8518-06J/S	18X8.5X96	7.5	90	9,080	16,750		216.5	101.75	120	Rigid, Isolated		
XES3E-8518-06K/S	18X8.5X96	10	90	9,090	16,760		216.5	101.75	120	Rigid, Isolated		
S3E-8518-06L/S	18X8.5X96	15	90	9,160	16,830		216.5	101.75	120	Rigid, Isolated		
S3E-8518-06M/S	18X8.5X96	20	90	10,030	17,710		216.5	101.75	120	Rigid, Isolated		
S3E-8518-06N/S	18X8.5X96	25	90	9,910	17,590		216.5	101.75	120	Rigid, Isolated		
S3E-8518-06O/S	18X8.5X96	30	90	9,990	17,670		216.5	101.75	120	Rigid, Isolated		
XES3E-8518-07G/S	18X8.5X112	3	90	9,450	19,020		216.5	101.75	136	Rigid, Isolated		
XES3E-8518-07H/S	18X8.5X112	5	90	9,460	19,030		216.5	101.75	136	Rigid, Isolated		
XES3E-8518-07J/S	18X8.5X112	7.5	90	9,490	19,060		216.5	101.75	136	Rigid, Isolated		
XES3E-8518-07K/S	18X8.5X112	10	90	9,500	19,070		216.5	101.75	136	Rigid, Isolated		
XES3E-8518-07L/S	18X8.5X112	15	90	9,580	19,150		216.5	101.75	136	Rigid, Isolated		
S3E-8518-07M/S	18X8.5X112	20	90	10,440	20,010	N/A	216.5	101.75	136	Rigid, Isolated		Interpolated
S3E-8518-07N/S	18X8.5X112	25	90	10,330	19,910		216.5	101.75	136	Rigid, Isolated	1.46	
S3E-8518-07O/S	18X8.5X112	30	90	10,410	19,980		216.5	101.75	136	Rigid, Isolated		
S3E-8518-07P/S	18X8.5X112	40	90	10,450	20,020		216.5	101.75	136	Rigid, Isolated		
XES3E-1020-06G/S	20X10X96	3	108	10,330	19,930		240.5	117.25	120	Rigid, Isolated		
XES3E-1020-06H/S	20X10X96	5	108	10,340	19,940		240.5	117.25	120	Rigid, Isolated		
XES3E-1020-06J/S	20X10X96	7.5	108	10,360	19,960		240.5	117.25	120	Rigid, Isolated		
XES3E-1020-06K/S	20X10X96	10	108	10,370	19,970		240.5	117.25	120	Rigid, Isolated		
XES3E-1020-06L/S	20X10X96	15	108	10,440	20,040		240.5	117.25	120	Rigid, Isolated		
S3E-1020-06M/S	20X10X96	20	108	11,390	20,990		240.5	117.25	120	Rigid, Isolated		
S3E-1020-06N/S	20X10X96	25	108	11,380	20,980		240.5	117.25	120	Rigid, Isolated		
S3E-1020-06O/S	20X10X96	30	108	11,730	21,330		240.5	117.25	120	Rigid, Isolated		
XES3E-1020-07G/S	20X10X112	3	108	10,690	20,980		240.5	117.25	136	Rigid, Isolated		
XES3E-1020-07H/S	20X10X112	5	108	10,700	20,990		240.5	117.25	136	Rigid, Isolated		
XES3E-1020-07J/S	20X10X112	7.5	108	10,740	21,030		240.5	117.25	136	Rigid, Isolated		
XES3E-1020-07K/S	20X10X112	10	108	10,750	21,040		240.5	117.25	136	Rigid, Isolated		
XES3E-1020-07L/S	20X10X112	15	108	10,830	21,120		240.5	117.25	136	Rigid, Isolated		
S3E-1020-07M/S	20X10X112	20	108	11,760	22,060	19,300	240.5	117.25	136	Rigid, Isolated		UUT 8A & UUT 8B
S3E-1020-07N/S	20X10X112	25	108	11,760	22,050		240.5	117.25	136	Rigid, Isolated		
S3E-1020-07O/S	20X10X112	30	108	12,110	22,410	N/A	240.5	117.25	136	Rigid, Isolated		Interpolated
S3E-1020-07P/S	20X10X112	40	108	12,410	22,700		240.5	117.25	136	Rigid, Isolated		
XES3E-1222-06H/S	21.5X12X96	5	120	12,310	24,590		258.5	141.75	120	Rigid, Isolated		

Table 1: Certified Open Cooling Tower Models Continued

Base Model No.[1,2,3,4,8]	Nominal Box Size[5] [in]	Motor HP	Fan Diameter [in]	Shipping Weight[6] [lbs]	Operating Weight[6,7] [lbs]	Tested Weight [lbs]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
XES3E-1222-06J/S	21.5X12X96	7.5	120	12,350	24,630		258.5	141.75	120	Rigid, Isolated		
XES3E-1222-06K/S	21.5X12X96	10	120	12,360	24,640		258.5	141.75	120	Rigid, Isolated		
XES3E-1222-06L/S	21.5X12X96	15	120	12,430	24,710		258.5	141.75	120	Rigid, Isolated		
S3E-1222-06M/S	21.5X12X96	20	120	13,430	25,700		258.5	141.75	120	Rigid, Isolated		
S3E-1222-06N/S	21.5X12X96	25	120	14,200	26,480		258.5	141.75	120	Rigid, Isolated		
S3E-1222-06O/S	21.5X12X96	30	120	14,210	26,480		258.5	141.75	120	Rigid, Isolated		
XES3E-1222-07J/S	21.5X12X112	7.5	120	13,000	26,030		258.5	141.75	136	Rigid, Isolated		
XES3E-1222-07K/S	21.5X12X112	10	120	13,010	26,040		258.5	141.75	136	Rigid, Isolated		
XES3E-1222-07L/S	21.5X12X112	15	120	13,090	26,120		258.5	141.75	136	Rigid, Isolated		
XES3E-1222-07M/S	21.5X12X112	20	120	14,070	27,100		258.5	141.75	136	Rigid, Isolated		
S3E-1222-07N/S	21.5X12X112	25	120	14,860	27,890		258.5	141.75	136	Rigid, Isolated		
S3E-1222-07O/S	21.5X12X112	30	120	14,850	27,880		258.5	141.75	136	Rigid, Isolated		
S3E-1222-07P/S	21.5X12X112	40	120	14,980	28,010		258.5	141.75	136	Rigid, Isolated		
S3E-1222-07Q/S	21.5X12X112	50	120	14,930	27,960		258.5	141.75	136	Rigid, Isolated		
S3E-1222-07R/S	21.5X12X112	60	120	15,900	28,930		258.5	141.75	136	Rigid, Isolated		
XES3E-1222-10K/S	21.5X12X160	10	132	16,310	34,490		258.5	141.75	186	Rigid, Isolated		
XES3E-1222-10L/S	21.5X12X160	15	132	16,390	34,570		258.5	141.75	186	Rigid, Isolated		
XES3E-1222-10M/S	21.5X12X160	20	132	17,770	35,940		258.5	141.75	186	Rigid, Isolated		
XES3E-1222-10N/S	21.5X12X160	25	132	17,790	35,960		258.5	141.75	186	Rigid, Isolated		
XES3E-1222-10O/S	21.5X12X160	30	132	17,970	36,140		258.5	141.75	186	Rigid, Isolated		
S3E-1222-10P/S	21.5X12X160	40	132	17,820	35,990	N/A	258.5	141.75	186	Rigid, Isolated	1.46	Interpolated
S3E-1222-10Q/S	21.5X12X160	50	132	18,190	36,360		258.5	141.75	186	Rigid, Isolated		
S3E-1222-10R/S	21.5X12X160	60	132	17,980	36,150		258.5	141.75	186	Rigid, Isolated		
S3E-1222-10S/S	21.5X12X160	75	132	19,180	37,350		258.5	141.75	186	Rigid, Isolated		
XES3E-1222-12K/S	21.5X12X192	10	132	17,330	37,320		258.5	141.75	218	Rigid, Isolated		
XES3E-1222-12L/S	21.5X12X192	15	132	17,410	37,400		258.5	141.75	218	Rigid, Isolated		
XES3E-1222-12M/S	21.5X12X192	20	132	18,780	38,770		258.5	141.75	218	Rigid, Isolated		
XES3E-1222-12N/S	21.5X12X192	25	132	18,810	38,800		258.5	141.75	218	Rigid, Isolated		
XES3E-1222-12O/S	21.5X12X192	30	132	18,990	38,970		258.5	141.75	218	Rigid, Isolated		
S3E-1222-12P/S	21.5X12X192	40	132	18,840	38,830		258.5	141.75	218	Rigid, Isolated		
S3E-1222-12Q/S	21.5X12X192	50	132	19,100	39,090		258.5	141.75	218	Rigid, Isolated		
S3E-1222-12R/S	21.5X12X192	60	132	19,100	39,090		258.5	141.75	218	Rigid, Isolated		
S3E-1222-12S/S	21.5X12X192	75	132	20,310	40,290		258.5	141.75	218	Rigid, Isolated		
XES3E-1222-13K/S	21.5X12X208	10	132	17,830	38,280		258.5	141.75	234	Rigid, Isolated		
XES3E-1222-13L/S	21.5X12X208	15	132	17,910	38,360		258.5	141.75	234	Rigid, Isolated		
XES3E-1222-13M/S	21.5X12X208	20	132	19,280	39,730		258.5	141.75	234	Rigid, Isolated		
XES3E-1222-13N/S	21.5X12X208	25	132	19,320	39,760		258.5	141.75	234	Rigid, Isolated		
XES3E-1222-13O/S	21.5X12X208	30	132	19,490	39,940		258.5	141.75	234	Rigid, Isolated		
S3E-1222-13P/S	21.5X12X208	40	132	19,340	39,790		258.5	141.75	234	Rigid, Isolated		
S3E-1222-13Q/S	21.5X12X208	50	132	19,600	40,050		258.5	141.75	234	Rigid, Isolated		
S3E-1222-13R/S	21.5X12X208	60	132	19,600	40,050		258.5	141.75	234	Rigid, Isolated		

Table 1: Certified Open Cooling Tower Models Continued

Base Model No.[1,2,3,4,8]	Nominal Box Size[5] [in]	Motor HP	Fan Diameter [in]	Shipping Weight[6] [lbs]	Operating Weight[6,7] [lbs]	Tested Weight [lbs]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
S3E-1222-13S/S	21.5X12X208	75	132	19,840	40,290		258.5	141.75	234	Rigid, Isolated		
XES3E-1222-14L/S	21.5X12X224	15	132	18,380	38,820		258.5	141.75	250	Rigid, Isolated		
XES3E-1222-14M/S	21.5X12X224	20	132	19,760	40,200		258.5	141.75	250	Rigid, Isolated		
XES3E-1222-14N/S	21.5X12X224	25	132	19,780	40,230		258.5	141.75	250	Rigid, Isolated		
XES3E-1222-14O/S	21.5X12X224	30	132	19,960	40,410		258.5	141.75	250	Rigid, Isolated		
S3E-1222-14P/S	21.5X12X224	40	132	19,820	40,260		258.5	141.75	250	Rigid, Isolated		
S3E-1222-14Q/S	21.5X12X224	50	132	20,070	40,520		258.5	141.75	250	Rigid, Isolated		
S3E-1222-14R/S	21.5X12X224	60	132	20,020	40,460		258.5	141.75	250	Rigid, Isolated		
S3E-1222-14S/S	21.5X12X224	75	132	20,250	40,700		258.5	141.75	250	Rigid, Isolated		
S3E-1222-14T/S	21.5X12X224	100	132	21,600	42,050		258.5	141.75	250	Rigid, Isolated		
XES3E-1424-07J/S	24X14X112	7.5	132	17,710	35,750		288.5	167.125	136	Rigid, Isolated		
XES3E-1424-07K/S	24X14X112	10	132	17,720	35,760		288.5	167.125	136	Rigid, Isolated		
XES3E-1424-07L/S	24X14X112	15	132	17,800	35,840		288.5	167.125	136	Rigid, Isolated		
XES3E-1424-07M/S	24X14X112	20	132	19,180	37,210		288.5	167.125	136	Rigid, Isolated		
XES3E-1424-07N/S	24X14X112	25	132	19,210	37,250		288.5	167.125	136	Rigid, Isolated		
S3E-1424-07O/S	24X14X112	30	132	19,380	37,420		288.5	167.125	136	Rigid, Isolated		
S3E-1424-07P/S	24X14X112	40	132	19,260	37,300		288.5	167.125	136	Rigid, Isolated		
S3E-1424-07Q/S	24X14X112	50	132	19,460	37,500		288.5	167.125	136	Rigid, Isolated		
S3E-1424-07R/S	24X14X112	60	132	19,250	37,280		288.5	167.125	136	Rigid, Isolated		
XES3E-1424-12L/S	24X14X192	15	156	23,250	46,090		288.5	167.125	218	Rigid, Isolated		
XES3E-1424-12M/S	24X14X192	20	156	24,420	47,260	N/A	288.5	167.125	218	Rigid, Isolated	1.46	Interpolated
XES3E-1424-12N/S	24X14X192	25	156	24,420	47,260		288.5	167.125	218	Rigid, Isolated		
XES3E-1424-12O/S	24X14X192	30	156	24,710	47,550		288.5	167.125	218	Rigid, Isolated		
XES3E-1424-12P/S	24X14X192	40	156	24,690	47,530		288.5	167.125	218	Rigid, Isolated		
S3E-1424-12Q/S	24X14X192	50	156	24,720	47,550		288.5	167.125	218	Rigid, Isolated		
S3E-1424-12R/S	24X14X192	60	156	24,960	47,800		288.5	167.125	218	Rigid, Isolated		
S3E-1424-12S/S	24X14X192	75	156	24,950	47,790		288.5	167.125	218	Rigid, Isolated		
S3E-1424-12T/S	24X14X192	100	156	26,660	49,500		288.5	167.125	218	Rigid, Isolated		
XES3E-1424-13L/S	24X14X208	15	156	23,680	47,510		288.5	167.125	234	Rigid, Isolated		
XES3E-1424-13M/S	24X14X208	20	156	24,850	48,670		288.5	167.125	234	Rigid, Isolated		
XES3E-1424-13N/S	24X14X208	25	156	24,850	48,680		288.5	167.125	234	Rigid, Isolated		
XES3E-1424-13O/S	24X14X208	30	156	25,140	48,970		288.5	167.125	234	Rigid, Isolated		
XES3E-1424-13P/S	24X14X208	40	156	25,120	48,950		288.5	167.125	234	Rigid, Isolated		
S3E-1424-13Q/S	24X14X208	50	156	25,150	48,970		288.5	167.125	234	Rigid, Isolated		
S3E-1424-13R/S	24X14X208	60	156	25,390	49,220		288.5	167.125	234	Rigid, Isolated		
S3E-1424-13S/S	24X14X208	75	156	25,380	49,210		288.5	167.125	234	Rigid, Isolated		
S3E-1424-13T/S	24X14X208	100	156	27,090	50,920		288.5	167.125	234	Rigid, Isolated		
XES3E-1424-14M/S	24X14X224	20	156	25,310	50,330		288.5	167.125	250	Rigid, Isolated		
XES3E-1424-14N/S	24X14X224	25	156	25,310	50,330		288.5	167.125	250	Rigid, Isolated		
XES3E-1424-14O/S	24X14X224	30	156	25,600	50,620		288.5	167.125	250	Rigid, Isolated		
XES3E-1424-14P/S	24X14X224	40	156	25,580	50,600		288.5	167.125	250	Rigid, Isolated		

Table 1: Certified Open Cooling Tower Models Continued

Base Model No.[1,2,3,4,8]	Nominal Box Size[5] [in]	Motor HP	Fan Diameter [in]	Shipping Weight[6] [lbs]	Operating Weight[6,7] [lbs]	Tested Weight [lbs]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
S3E-1424-14Q/S	24X14X224	50	156	25,610	50,630	N/A	288.5	167.125	250	Rigid, Isolated	1.46	Interpolated
S3E-1424-14R/S	24X14X224	60	156	25,850	50,870		288.5	167.125	250	Rigid, Isolated		
S3E-1424-14S/S	24X14X224	75	156	25,840	50,860		288.5	167.125	250	Rigid, Isolated		
S3E-1424-14T/S	24X14X224	100	156	27,550	52,570	45,731	288.5	167.125	250	Rigid, Isolated		UUT 3A & UUT 3B
S3E-1424-14U/S	24X14X224	119	156	27,560	52,580	N/A	288.5	167.125	250	Rigid, Isolated		Interpolated
S3E-1424-14W/S	24X14X224	125	156	27,560	52,580	23200 / 24400	288.5	167.125	250	Rigid		UUT 9A / UUT9B[9]

Notes:

1. Base models listed are for standard fan option. Actual unit model number may include a suffix "L" designating low sound fan option (e.g., S3E-1222-10P/LS or XES3E-1212-10K/LS) or suffix W designating whisper quiet fan option (e.g., S3E-1222-10P/SW or XESE-1212-10K/SW).
2. Actual unit model number may include a suffix "E" designating two sets of drift eliminators (e.g., S3E-1212-10P/SE or XES3E-1212-10K/SE).
3. Actual unit model number may include a suffix "-2", "-3", or "-4" designating number of cells per unit (e.g., S3E-1212-10P-3/S or XES3E-1212-10K-3/S for a three cell unit). Each cell of multi-cell units is a structurally independent cooling tower. All tabulated values are provided per cell.
4. Actual unit model number may include a suffix "X" designating non-CTI certified (e.g., S3E-1212-10P/SX or XES3E-1212-10K/SX).
5. Nominal Box Size nomenclature: nominal width in feet X nominal length in feet X total fill height in inches.
6. Weights are base unit weights. Actual weights may include accessory weight adds.
7. Operating weights at overflow water level. UUT test weight at operating water level.
8. Cooling tower material of construction options (i.e., structural frame, enclosure, and basins) are listed in Table 2.
9. UUT 9 cooling tower base model No. S3E-1424-14W/S top half subcomponent tested only.

Table 2 - Certified Materials of Construction

Structural Frame and Basin MOC Option[1,2,3]	MOC of Structural Elements	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
Galvanized Carbon Steel	All Galvanized Carbon Steel	1.46	UUT 1A & UUT 1B
Galvanized Carbon Steel	All Galvanized Carbon Steel		UUT 8A & UUT 8B
Galvanized Carbon Steel with Stainless Steel Cold Water Basin	Galvanized Carbon Steel and Stainless Steel		Interpolated
Galvanized Carbon Steel with TriArmor® Cold Water Basin	Galvanized Carbon Steel		Interpolated
Galvanized Carbon Steel with Stainless Steel Hot & Cold Water Basin	Galvanized Carbon Steel and Stainless Steel		Interpolated
BALTIBOND® Corrosion Protection System with TriArmor® Cold Water Basin	Galvanized Carbon Steel		Interpolated
BALTIBOND® Corrosion Protection System with Stainless Steel Cold Water Basin	Galvanized Carbon Steel and Stainless Steel		Interpolated
BALTIBOND® Corrosion Protection System with Stainless Steel Hot & Cold Water Basin	Galvanized Carbon Steel and Stainless Steel		Interpolated
EVERTOUGH™ Construction	Galvanized Carbon Steel and Stainless Steel		Interpolated
JE PREMIER SERIES® Construction	All Stainless Steel		UUT 3A & UUT3B
Enclosure and Air Inlet Louver MOC Option	**MOC of Casing/Louvers**	**Certified S_{DS} Level at z/h = 1.0 [g]**	**UUT**
FRP Casing Panels and Louvers	FRP/FRP	1.46	UUT 1A & UUT 1B
FRP Casing Panels and Louvers	FRP/FRP		Interpolated
Fire Retardant FRP Casing Panels and Louvers	FRP/FRP		Interpolated
FRP Casing Panels and Combined Air Inlet Shields	FRP/PVC		UUT 8A & UUT 8B
Fire Retardant FRP Casing Panels and Combined Air Inlet Shields	FRP/PVC		Interpolated
Stainless Steel Casing Panels and FRP Louvers	Stainless Steel/FRP		Interpolated
Stainless Steel Casing Panels and Combined Air Inlet Shields	Stainless Steel/PVC		UUT 3A & UUT 3B
Stainless Steel Casing Panels and Combined Air Inlet Shields	Stainless Steel/PVC		UUT 9A & UUT 9B

Notes:

1. BALTIBOND® and TriArmor® are coating systems. Base material is Galvanized Steel.
2. EVERTOUGH™ Construction includes FRP hot water basins.
3. Structural frames and basins are manufactured by Baltimore Aircoil Company.

Table 3 - Certified Inlet/Outlet Configurations

Water Inlet and Outlet Connection Option[1]	Manufacturer	Inlet Location	Outlet Location	Internal Piping	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
Top Inlet - Bottom Outlet - Pump Suction	Baltimore Aircoil Company	Top	Bottom	No	1.46	UUT 3A & UUT3B
Top Inlet - End Outlet - Pump Suction		Top	End	No		Interpolated
Top Inlet - Bottom Outlet - Remote Sump		Top	Bottom	No		Interpolated
End Inlet EASY CONNECT® - Bottom Outlet - Pump Suction		End	Bottom	Yes		Interpolated
End Inlet EASY CONNECT® - Bottom Outlet - Remote Sump		End	Bottom	Yes		Interpolated
Bottom Inlet EASY CONNECT® - Bottom Outlet - Pump Suction		Bottom	Bottom	Yes		Interpolated
Bottom Inlet EASY CONNECT® - Bottom Outlet - Remote Sump		Bottom	Bottom	Yes		Interpolated
End Inlet EASY CONNECT® - End Outlet - Pump Suction		End	End	Yes		UUT 1A & UUT 1B

Notes:

1. Water inlet and outlet connection material of construction matches the MOC of the structural frame or cold water basin to which it is attached.

Table 4 - Certified Sweeper Piping Configurations

Piping Connection Option[1]	Manufacturer	Material Construction	Inlet Location	Outlet Location	Internal Piping	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
Sweeper Piping	Baltimore Aircoil Company	See Note 1	Bottom	Bottom	Yes	1.46	UUT 8A & UUT 8B
Sweeper Piping		See Note 1	End	Bottom	Yes		Extrapolated
Sweeper Piping		See Note 1	Bottom	End	Yes		
Sweeper Piping		See Note 1	End	End	Yes		

Notes:

1. Sweeper pipings are PVC. Sweeper piping nozzles are polypropylene.

Table 5 - Certified Equalizer/Bypass Configurations

Equalizer and Bypass Connection Option[1,2]	Connection Location	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
End Equalizer	End	1.46	UUT 3A & UUT 3B
End Bypass	End		Interpolated
Bottom Equalizer	Bottom		
Bottom Bypass	Bottom		UUT 1A & UUT 1B

Notes:

1. Equalizer and bypass material of construction matches the MOC of the cold water basin.
2. Equalizer and bypass connections are manufactured by Baltimore Aircoil Company.

Table 6 - Certified Subcomponents: Fan Motors

MFR	Material	Drive Type	HP	Voltage	Approximate Weight [lbs]	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
Nidec	Cast Iron	Belt Drive	3	200, 230, 380, 415, 230/460, 460, or 575[1]	60	1.46	Extrapolated
Nidec	Cast Iron	Belt Drive	5		70		UUT 6A & UUT 6B
Nidec	Cast Iron	Belt Drive	7.5		100		Interpolated
Nidec	Cast Iron	Belt Drive	10		110		
Nidec	Cast Iron	Belt Drive	15		180		
Nidec	Cast Iron	Belt Drive	20		200		UUT 5A & UUT 5B
Nidec	Cast Iron	Belt Drive	25		340		Interpolated
Nidec	Cast Iron	Belt Drive	30		390		
Nidec	Cast Iron	Belt Drive	40		530		
Nidec	Cast Iron	Belt Drive	50		590		
Nidec	Cast Iron	Belt Drive	60		750		UUT 2A & UUT 2B
Nidec	Cast Iron	Belt Drive	75		800		Extrapolated
Nidec	Cast Iron	Gear Drive	7.5		100		
Nidec	Cast Iron	Gear Drive	10		110		UUT 1A & UUT 1B
Nidec	Cast Iron	Gear Drive	15		180		Interpolated
Nidec	Cast Iron	Gear Drive	20		200		
Nidec	Cast Iron	Gear Drive	25		340		
Nidec	Cast Iron	Gear Drive	30		390		
Nidec	Cast Iron	Gear Drive	40		530		
Nidec	Cast Iron	Gear Drive	50		590		
Nidec	Cast Iron	Gear Drive	60		750		
Nidec	Cast Iron	Gear Drive	75		800		
Nidec	Cast Iron	Gear Drive	100		1200		UUT 3A & UUT 3B
WEG	Cast Iron	Belt Drive	3		60		Extrapolated
WEG	Cast Iron	Belt Drive	5		70		UUT 6A & UUT 6B
WEG	Cast Iron	Belt Drive	7.5		100		Interpolated
WEG	Cast Iron	Belt Drive	10		110		
WEG	Cast Iron	Belt Drive	15		180		
WEG	Cast Iron	Belt Drive	20		200		
WEG	Cast Iron	Belt Drive	25		340		
WEG	Cast Iron	Belt Drive	30		390		
WEG	Cast Iron	Belt Drive	35		530		UUT 5A & UUT 5B
WEG	Cast Iron	Belt Drive	40		530		Interpolated
WEG	Cast Iron	Belt Drive	50		590		
WEG	Cast Iron	Belt Drive	60		750		UUT 7A & UUT 7B
WEG	Cast Iron	Belt Drive	75		800		Extrapolated
WEG	Cast Iron	Gear Drive	7.5		100		
WEG	Cast Iron	Gear Drive	10		110		UUT 1A & UUT 1B
WEG	Cast Iron	Gear Drive	15		180		Interpolated
WEG	Cast Iron	Gear Drive	20		200		
WEG	Cast Iron	Gear Drive	25		340		
WEG	Cast Iron	Gear Drive	30		390		
WEG	Cast Iron	Gear Drive	40		530		
WEG	Cast Iron	Gear Drive	50		590		
WEG	Cast Iron	Gear Drive	60		750		
WEG	Cast Iron	Gear Drive	75		800		
WEG	Cast Iron	Gear Drive	100		1200		UUT 3A & UUT 3B

Table 6 - Certified Subcomponents: Fan Motors Continued

MFR	Material	Drive Type	HP	Voltage	Approximate Weight [lbs]	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
Baldor	Cast Iron	Direct Drive	20	460	570	1.46	UUT 8A & UUT 8B
Baldor	Cast Iron	Direct Drive	20	575	570		Interpolated
Baldor	Cast Iron	Direct Drive	20	460	690		
Baldor	Cast Iron	Direct Drive	20	460	690		
Baldor	Cast Iron	Direct Drive	20	575	690		
Baldor	Cast Iron	Direct Drive	20	460	775		
Baldor	Cast Iron	Direct Drive	20	575	775		
Baldor	Cast Iron	Direct Drive	20	460	860		
Baldor	Cast Iron	Direct Drive	20	575	860		
Baldor	Cast Iron	Direct Drive	20	460	1420		
Baldor	Cast Iron	Direct Drive	20	575	1420		
Baldor	Cast Iron	Direct Drive	20	460	1590		
Baldor	Cast Iron	Direct Drive	20	575	1590		
Baldor	Cast Iron	Direct Drive	25	460	570		
Baldor	Cast Iron	Direct Drive	25	575	570		
Baldor	Cast Iron	Direct Drive	25	460	690		
Baldor	Cast Iron	Direct Drive	25	575	690		
Baldor	Cast Iron	Direct Drive	25	460	775		
Baldor	Cast Iron	Direct Drive	25	575	775		
Baldor	Cast Iron	Direct Drive	25	460	860		
Baldor	Cast Iron	Direct Drive	25	575	860		
Baldor	Cast Iron	Direct Drive	25	460	1420		
Baldor	Cast Iron	Direct Drive	25	575	1420		
Baldor	Cast Iron	Direct Drive	25	460	1610		
Baldor	Cast Iron	Direct Drive	25	575	1610		
Baldor	Cast Iron	Direct Drive	30	460	690		
Baldor	Cast Iron	Direct Drive	30	575	690		
Baldor	Cast Iron	Direct Drive	30	460	775		
Baldor	Cast Iron	Direct Drive	30	575	775		
Baldor	Cast Iron	Direct Drive	30	460	860		
Baldor	Cast Iron	Direct Drive	30	575	860		
Baldor	Cast Iron	Direct Drive	30	460	1420		
Baldor	Cast Iron	Direct Drive	30	575	1420		
Baldor	Cast Iron	Direct Drive	30	460	1590		
Baldor	Cast Iron	Direct Drive	30	575	1590		
Baldor	Cast Iron	Direct Drive	30	460	1885		
Baldor	Cast Iron	Direct Drive	30	575	1885		
Baldor	Cast Iron	Direct Drive	40	460	775		
Baldor	Cast Iron	Direct Drive	40	575	775		
Baldor	Cast Iron	Direct Drive	40	460	860		
Baldor	Cast Iron	Direct Drive	40	575	860		
Baldor	Cast Iron	Direct Drive	40	460	1420		
Baldor	Cast Iron	Direct Drive	40	575	1420		
Baldor	Cast Iron	Direct Drive	40	460	1590		
Baldor	Cast Iron	Direct Drive	40	575	1590		
Baldor	Cast Iron	Direct Drive	40	460	1610		
Baldor	Cast Iron	Direct Drive	40	575	1610		

Table 6 - Certified Subcomponents: Fan Motors Continued

MFR	Material	Drive Type	HP	Voltage	Approximate Weight [lbs]	Certified S_{DS} Level at z/h = 1.0 [g]	UUT
Baldor	Cast Iron	Direct Drive	40	575	1885	1.46	Interpolated
Baldor	Cast Iron	Direct Drive	40	460	1885		
Baldor	Cast Iron	Direct Drive	50	575	1420		
Baldor	Cast Iron	Direct Drive	50	460	1420		
Baldor	Cast Iron	Direct Drive	50	575	1590		
Baldor	Cast Iron	Direct Drive	50	460	1590		
Baldor	Cast Iron	Direct Drive	50	575	1610		
Baldor	Cast Iron	Direct Drive	50	460	1610		
Baldor	Cast Iron	Direct Drive	50	575	1885		
Baldor	Cast Iron	Direct Drive	50	460	1885		
Baldor	Cast Iron	Direct Drive	50	575	1910		
Baldor	Cast Iron	Direct Drive	50	460	1910		
Baldor	Cast Iron	Direct Drive	60	575	1590		
Baldor	Cast Iron	Direct Drive	60	460	1590		
Baldor	Cast Iron	Direct Drive	60	575	1610		
Baldor	Cast Iron	Direct Drive	60	460	1610		
Baldor	Cast Iron	Direct Drive	60	575	1885		
Baldor	Cast Iron	Direct Drive	60	460	1885		
Baldor	Cast Iron	Direct Drive	60	575	2170		
Baldor	Cast Iron	Direct Drive	60	460	2170		
Baldor	Cast Iron	Direct Drive	60	575	1910		
Baldor	Cast Iron	Direct Drive	60	460	1910		
Baldor	Cast Iron	Direct Drive	75	575	1885		
Baldor	Cast Iron	Direct Drive	75	460	1885		
Baldor	Cast Iron	Direct Drive	75	575	2170		
Baldor	Cast Iron	Direct Drive	75	460	2170		
Baldor	Cast Iron	Direct Drive	75	575	2435		
Baldor	Cast Iron	Direct Drive	75	460	2435		
Baldor	Cast Iron	Direct Drive	75	575	1910		
Baldor	Cast Iron	Direct Drive	75	460	1910		
Baldor	Cast Iron	Direct Drive	100	575	1885		
Baldor	Cast Iron	Direct Drive	100	460	1885		
Baldor	Cast Iron	Direct Drive	100	575	2170		
Baldor	Cast Iron	Direct Drive	100	460	2170		
Baldor	Cast Iron	Direct Drive	100	575	2435		
Baldor	Cast Iron	Direct Drive	100	460	2435		
Baldor	Cast Iron	Direct Drive	100	575	2695		
Baldor	Cast Iron	Direct Drive	100	460	2695		
Baldor	Cast Iron	Direct Drive	119	575	2435		
Baldor	Cast Iron	Direct Drive	119	460	2435		
Baldor	Cast Iron	Direct Drive	119	575	2695		
Baldor	Cast Iron	Direct Drive	119	460	2695		
Baldor	Cast Iron	Direct Drive	125	575	2435		
Baldor	Cast Iron	Direct Drive	125	460	2435		
Baldor	Cast Iron	Direct Drive	125	575	2695		
Baldor	Cast Iron	Direct Drive	125	460	2695		UUT 9A & UUT 9B

Table 7 - Certified Subcomponents: Right Angle Gears

Component	MFR	Material	Model	Approximate Weight [lbs]	Certified SDS Level at z/h = 1.0 [g]	UUT
Single Reduction Gear	Amarillo	Cast Iron	A-65	100	1.46	UUT 1A & UUT 1B
Single Reduction Gear	Amarillo	Cast Iron	A-85	215		Interpolated
Single Reduction Gear	Amarillo	Cast Iron	A-110	350		
Single Reduction Gear	Amarillo	Cast Iron	A-135	530		
Single Reduction Gear	Amarillo	Cast Iron	A-155	705		
Single Reduction Gear	Amarillo	Cast Iron	A-175	855		UUT 3A & UUT 3B

Table 8 - Certified Subcomponents: Fans

Component	MFR	Material	Diameter [in]	No. of Blades	Certified SDS Level at z/h = 1.0 [g]	UUT
Standard Fan	Multi-Wing	GFRP	42	5	1.46	UUT 4A & UUT 4B
Standard Fan	Multi-Wing	GFRP	90	5		Interpolated
Standard Fan	Multi-Wing	GFRP	90	6		
Standard Fan	Multi-Wing	GFRP	92	8		UUT 6A & UUT 6B
Standard Fan	Cofimco	Aluminum	90	4		UUT 1A & UUT 1B
Standard Fan	Cofimco	Aluminum	90	5		Interpolated
Standard Fan	Cofimco	Aluminum	108	4		
Standard Fan	Cofimco	Aluminum	108	5		
Standard Fan	Cofimco	Aluminum	108	5		
Standard Fan	Cofimco	Aluminum	108	6		
Standard Fan	Cofimco	Aluminum	120	4		
Standard Fan	Cofimco	Aluminum	120	5		
Standard Fan	Cofimco	Aluminum	120	5		
Standard Fan	Cofimco	Aluminum	120	6		UUT 2A & UUT 2B
Standard Fan	Cofimco	Aluminum	132	5		Interpolated
Standard Fan	Cofimco	Aluminum	132	5		
Standard Fan	Cofimco	Aluminum	132	6		
Standard Fan	Cofimco	Aluminum	156	5		
Standard Fan	Cofimco	Aluminum	156	6		
Standard Fan	Cofimco	Aluminum	156	7		UUT 3A & UUT 3B
Low Sound Fan	Cofimco	Aluminum	90	7		UUT 1A & UUT 1B
Low Sound Fan	Cofimco	Aluminum	90	8		Interpolated
Low Sound Fan	Cofimco	Aluminum	108	6		
Low Sound Fan	Cofimco	Aluminum	120	6		
Low Sound Fan	Cofimco	Aluminum	132	5		
Low Sound Fan	Cofimco	Aluminum	132	7		
Low Sound Fan	Cofimco	Aluminum	156	7		UUT 3A & UUT 3B
Low Sound Fan	Cofimco	Aluminum	156	8		UUT 9B
Whisper Quiet Fan	Moore	Aluminum	108	4		UUT 8A & UUT 8B
Whisper Quiet Fan	Moore	Aluminum	120	4		Interpolated
Whisper Quiet Fan	Moore	Aluminum	132	4		
Whisper Quiet Fan	Moore	Aluminum	132	5		
Whisper Quiet Fan	Moore	Aluminum	156	4		
Whisper Quiet Fan	Moore	Aluminum	156	5		UUT 9A

Table 9 - Certified Subcomponents: Options and Accessories

Option or Accessory	Manufacturer	Material of Construction	Certified SDS Level at z/h = 1.0 [g]	UUT
Internal Walkway	Baltimore Aircoil Company	Stainless Steel	1.46	UUT 3A & UUT 3B
Internal Platform and Ladder	Platform Supports, Guardrails - Baltimore Aircoil Company; Platform Grating - Creative Pultrusions; Ladder - Louisville Ladder	Platform Supports - Stainless Steel; Guardrail Posts and Toeboards - Stainless Steel; Guardrail Rails - Galvanized Steel; Platform Grating - Glass Fiber Reinforced Plastic; Ladder - Aluminum		
Fan Deck Guardrails	Baltimore Aircoil Company	Guardrail Posts and Toeboards - Stainless Steel; Guardrail Rails - Galvanized Steel		
Aluminum Ladder(s) to Fan Deck	Ladder - Louisville Ladder; Ladder Mounting Brackets - Baltimore Aircoil Company	Ladder - Aluminum; Ladder Mounting Brackets - Stainless Steel		
Ladder Safety Cages	Baltimore Aircoil Company	Galvanized Steel		
Ladder Safety Gates	PS Doors	Galvanized Steel		
Mechanical Makeup	Baltimore Aircoil Company	Float - Polystyrene; Linkage - Galvanized Steel; Valve - Brass		
Stainless Steel Trash Screen	Baltimore Aircoil Company	Stainless Steel		
Stainless Steel Outlet Strainer	Baltimore Aircoil Company	Stainless Steel		UUT 1A & UUT 1B
Stainless Steel Fan Guard	Baltimore Aircoil Company	Stainless Steel		
Full Air Intake Screens	Baltimore Aircoil Company	Galvanized Steel		
Hot Water Basin Weir Dams	Baltimore Aircoil Company	Galvanized Steel		
Motor Shaft Grounding Ring	WEG or Nidec	Steel		
Basin Heaters and Standard Heater Controls	Indeeco	Heater Element - Copper		
Penn F63 Float Switches	Johnson Controls	Case - Steel; Float - Polypropylene		
Vibration Cutout Switches	Metrix	Case - Aluminum		
Electric Water Level Control (EWLC) with Solenoid Valve	EWLC - Kimberlite Assemblers; Solenoid Valve - ASCO	EWLC - PVC Housing, Stainless Steel Probes; Solenoid Valve - Brass		
External Gear Fill Line	Baltimore Aircoil Company	Galvanized Steel		
External Gear Oil Level Sight Glass	Baltimore Aircoil Company	Polycarbonate		
No Minimum Speed Gear Option	Amarillo	Steel		

Table 9 - Certified Subcomponents: Options and Accessories continued

Option or Accessory	Manufacturer	Material of Construction	Certified SDS Level at z/h = 1.0 [g]	UUT
Access Door Platform with Guardrails, Ladder, and Safety Gate - Front of Unit				
Platform Supports	Baltimore Aircoil Company	Galvanized Steel	1.46	UUT 8A & UUT 8B
Platform Grating	Creative Pultrusions	Glass Fiber Reinforced Plastic		
Guardrail Posts	Baltimore Aircoil Company	Galvanized Steel		
Guardrail Rails	Baltimore Aircoil Company	Galvanized Steel		
Toeboards	Baltimore Aircoil Company	Galvanized Steel		
Ladder	Louisville Ladder	Aluminum		
Safety Gate	PS Doors	Galvanized Steel		
Access Door Platform with Guardrails, Ladder, and Safety Gate - Back of Unit				
Platform Supports	Baltimore Aircoil Company	Stainless Steel	1.46	UUT 8A & UUT 8B
Platform Grating	Creative Pultrusions	Glass Fiber Reinforced Plastic		
Guardrail Posts	Baltimore Aircoil Company	Stainless Steel		
Guardrail Rails	Baltimore Aircoil Company	Galvanized Steel		
Toeboards	Baltimore Aircoil Company	Stainless Steel		
Ladder	Louisville Ladder	Aluminum		
Safety Gate	PS Doors	Galvanized Steel		
10 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel		UUT 1A & UUT 1B
10 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel		UUT 8A & UUT 8B
10 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Stainless Steel		Interpolated
1'-9" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel		
1'-9" Fan Cylinder Extension	Baltimore Aircoil Company	Stainless Steel		UUT 3A & UUT 3B
2'-7 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel		Interpolated
2'-7 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Stainless Steel		
3'-6" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel		
3'-6" Fan Cylinder Extension	Baltimore Aircoil Company	Stainless Steel		UUT 9A & UUT9B

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-1A (Rigid)

UB-SEESL-2011-06;
UUT A in Conf. R1 & R2

Model Line	Model Number	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	3240C/S	XES3E-8518-05K/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Casing & Louver: Fiberglass Reinforced Plastic

Options / Subcomponent Summary

10 HP Gear (A-65) drive motor: Nidec & WEG; Standard & Low sound 90 in fan with 4 standard blades & 7 low sound blades.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
14,881	101.75	216.5	122.125	6.30	7.80	32.00

UUT Highest Passed Seismic Run Information

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	2.19	1.00	1.50	3.50	2.62	1.45	0.58

Test Mounting Details

Qty. (8) 3/4" diameter bolts, Grade 5, 150 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT) Summary Sheet

UUT-1B (Isolated)

UB-SEESL-2011-06;
UUT A in Conf. V1 & V2

Model Line	Model Number	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	3240C/QS	XES3E-8518-05K/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Casing & Louver: Fiberglass Reinforced Plastic

Options / Subcomponent Summary

10 HP Gear (A-65) drive motor: Nidec & WEG; Standard & Low sound 90 in fan with 4 standard blades & 7 low sound blades.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
14,881	101.75	216.5	122.125	1.40	1.70	3.30

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

Qty. (4) Mason Industries, Inc SLFADA600 isolators, each with (2) SLF-110. Qty. (8) 3/4" diameter bolts, Grade 5, 150 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-2A (Rigid)

10521-1202;
UUTH1a

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	N/A	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Louver: N/A

Options / Subcomponent Summary

Qty. 60 HP, 60Hz, 230/460V Belt drive motor: Nidec
132 in fan with 7 blades (Aluminum): Cofimco

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216	144	72	20.30	12.80	19.30

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	2.14	0.86

Test Mounting Details

Qty. (116) 5/16" & qty. (8) 3/8" diameter bolts, Grade 2.

All units [illegible] onality

UNIT UNDER TEST (UUT) Summary Sheet

UUT-2B (Isolated)

10521-1202;
UUTH1b

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	N/A	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Louver: N/A

Options / Subcomponent Summary

Qty. 60 HP, 60Hz, 230/460V Belt drive motor: Nidec
132 in fan with 7 blades (Aluminum): Cofimco

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216	144	72	3.80	4.80	6.80

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	1.34	0.54

Test Mounting Details

Qty. (4) Mason Industries, Inc SLFADA350-104 & (2) Mason Industries, Inc SLFADA350-106 isolators.
Qty. (116) 5/16" & qty. (8) 3/8" diameter bolts, Grade 2.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-3A (Rigid)

UB-SEESL-2011-07;
UUT C in Cof. R1 & R2

Model Line	Model Number	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	31301C/S	XES3E-8518-05K/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Stainless Steel
Casing & Louver: Stainless Steel & PVC louvers

Options / Subcomponent Summary

100 HP Gear (A-175) drive motor: Nidec & WEG; Standard & Low sound 156 in fan with 7 standard low sound blades.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
45,731	167.125	288.5	293.25	4.00	6.70	9.10

UUT Highest Passed Seismic Run Information

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	1.94	1.00	1.50	3.10	2.33	1.29	0.52

Test Mounting Details

Qty. (16) 7/8" diameter bolts, Grade 5, 200 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-3B (Isolated)

UB-SEESL-2011-07;
UUT C in Cof. 8V1 & 8V2

Model Line	Model Number	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	31301C/QS	S3E-1424-14T/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Stainless Steel
Casing & Louver: Stainless Steel & PVC louvers

Options / Subcomponent Summary

100 HP Gear (A-175) drive motor: Nidec & WEG; Standard & Low sound 156 in fan with 7 standard low sound blades.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
45,731	167.125	288.5	293.25	0.80	1.40	2.80

UUT Highest Passed Seismic Run Information

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	1.94	1.00	1.50	3.10	2.33	1.29	0.52

Test Mounting Details

Qty. (4) Mason Industries, Inc SLFADA600 isolators, each with (2) SLF-110. Qty. (16) 7/8" diameter bolts, Grade 5, 200 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-4A (Rigid)

UB-SEESL-2010-12;
UUT

Model Line	Model Number	Manufacturer
PC2 Evaporative Condenser	PC2-50-0406-7.5/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
PVC louvers

Options / Subcomponent Summary

7.5 HP, 60Hz, 230/460V Direct drive motor: Nidec
42 in fan with 5 blades: Multi-Wing

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,199	48	71.75	118.875	8.13	12.63	26.88

UUT Highest Passed Seismic Run Information

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	2.34	1.00	1.50	3.75	2.81	2.50	1.88
		3.75	0.00					

Test Mounting Details

Qty. (4) 3/4" diameter bolts, Grade 5, 150 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT) Summary Sheet

UUT-4B (Isolated)

UB-SEESL-2010-12;
Vibration Isolated UUT

Model Line	Model Number	Manufacturer
PC2 Evaporative Condenser	PC2-50-0406-7.5/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
PVC louvers

Options / Subcomponent Summary

7.5 HP, 60Hz, 230/460V Direct drive motor: Nidec
42 in fan with 5 blades: Multi-Wing

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,199	48	71.75	118.875	1.13	1.88	5.63

UUT Highest Passed Seismic Run Information

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	1.94	1.00	1.50	3.10	2.33	2.07	1.38
		3.10	0.00					

Test Mounting Details

Qty. (4) Mason Industries, Inc SLFADA200 isolators, each with (2) SLF-C2. Qty. (4) 3/4" diameter bolts, Grade 5, 150 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-5A (Rigid)

10521-1201;
UUTFa

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2-1218A-3S1/WQS	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Stainless Steel
PVC louvers

Options / Subcomponent Summary

20 HP, 60Hz, 230/460V Belt drive motor: Nidec
35 HP, 60Hz, 230/460V Belt drive motor: WEG
84 in fan with 3 blades (flass-fiber reinforced plastic): Howden
92 in fan with 3 blades (flass-fiber reinforced plastic): Howden

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
20,200	216	144	252	6.30	3.50	8.50

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	2.14	0.86
		3.20	0.00					

Test Mounting Details

Qty. (8) 3/4" diameter bolts, Grade 5, 150 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-5B (Isolated)

10521-1201;
UUTFb

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2-1218A-3S1/WQS	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Stainless Steel
PVC louvers

Options / Subcomponent Summary

20 HP, 60Hz, 230/460V Belt drive motor: Nidec
35 HP, 60Hz, 230/460V Belt drive motor: WEG
84 in fan with 3 blades (flass-fiber reinforced plastic): Howden
92 in fan with 3 blades (flass-fiber reinforced plastic): Howden

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
20,200	216	144	252	2.00	1.80	3.80

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	1.34	0.54

Test Mounting Details

Qty. (8) Mason Industries, Inc SLFADA350 isolators, each with (2) SLF-109. Qty. (8) 3/4" diameter bolts, Grade 5, 150 ft-lbs.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-6A (Rigid)

10521-1202;
UUTGa

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	N/A	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Louver: N/A

Options / Subcomponent Summary

Qty. (2) 5 HP, 60Hz, 230/460V Belt drive motor: Nidec & WEG
84 in fan with 6 blades (Aluminum): Cofimco
92 in fan with 3 blades (glass-fiber reinforced plastic): Multi-Wing

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,400	216	144	60	9.30	15.50	12.00

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	2.14	0.86
		3.20	0.00					

Test Mounting Details

Qty. (116) 5/16" & qty. (8) 3/8" diameter bolts, Grade 2.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-6B (Isolated)

10521-1202;
UUTGb

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	N/A	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Stainless Steel
Louver: N/A

Options / Subcomponent Summary

Qty. (2) 5 HP, 60Hz, 230/460V Belt drive motor: Nidec & WEG
84 in fan with 6 blades (Aluminum): Cofimco
92 in fan with 3 blades (glass-fiber reinforced plastic): Multi-Wing

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,400	216	144	60	4.00	4.50	11.00

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	1.34	0.54

Test Mounting Details

Qty. (4) Mason Industries, Inc SLFADA350-104 & (2) Mason Industries, Inc SLFADA350-350-106 isolators.
Qty. (116) 5/16" & qty. (8) 3/8" diameter bolts, Grade 2.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-7A (Rigid)

10521-1202;
UUTH2a

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	N/A	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Louver: N/A

Options / Subcomponent Summary

Qty. 60 HP, 60Hz, 230/460V Belt drive motor: WEG
132 in fan with 7 blades (Aluminum): Cofimco

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216	144	72	20.00	13.30	10.80

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	2.14	0.86
		3.20	0.00					

Test Mounting Details

Qty. (116) 5/16" & qty. (8) 3/8" diameter bolts, Grade 2.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT) Summary Sheet

UUT-7B (Isolated)

10521-1202;
UUTH2b

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	N/A	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Louver: N/A

Options / Subcomponent Summary

Qty. 60 HP, 60Hz, 230/460V Belt drive motor: Nidec
132 in fan with 7 blades (Aluminum): Cofimco

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216	144	72	3.50	5.80	7.30

UUT Highest Passed Seismic Run Information

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	2.00	1.00	1.50	3.20	2.40	1.34	0.54

Test Mounting Details

Qty. (4) Mason Industries, Inc SLFADA350-104 & (2) Mason Industries, Inc SLFADA350-106 isolators.
Qty. (116) 5/16" & qty. (8) 3/8" diameter bolts, Grade 2.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-8A (Rigid)

VMA-50927-01;
UUT 18b

Model Line	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	S3E-1020-07M/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Louver: PVC

Options / Subcomponent Summary

20 HP Baldor direct drive fan motor; 108 in. Moore Whisper Quiet Fan with 4 blades.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
19,300	241	118	170	7.50	11.50	31.50

UUT Highest Passed Seismic Run Information

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	1.94	1.00	1.50	3.10	2.33	1.29	0.52

Test Mounting Details

Unit attached to dunnage frame via (8) 3/4" diameter Grade 5 bolts. Dunnage frame attached to shake table interface fixture with (12) 3/4" diameter Grade 8 bolts.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-8B (Isolated)

VMA-50927-01;
UUT 18a

Model Line	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	S3E-1020-07M/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Galvanized Carbon Steel
Louver:PVC

Options / Subcomponent Summary

20 HP Baldor direct drive fan motor; 108 in. Moore Whisper Quiet Fan with 4 blades.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
19,300	241	118	170	3.00	2.50	5.50

UUT Highest Passed Seismic Run Information

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	1.94	1.00	1.50	3.10	2.33	1.29	0.52

Test Mounting Details

Unit attached to dunnage frame via (8) 3/4" diameter Grade 5 bolts. Dunnage frame attached to shake table interface fixture with (4) VMC M6SH-1E-7200N isolators.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-9A (Rigid)

31015-1901;
UUT 20

Model Line	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	S3E-1424-14W/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Stainless Steel
Louver: PVC

Options / Subcomponent Summary

125 HP Baldor direct drive fan motor; 156 in. Moore Whisper Quiet Fan with 5 blades.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
23,200	288	164	179	6.00	8.50	14.50

UUT Highest Passed Seismic Run Information

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	3.53	1.00	1.50	5.65	4.24	2.35	0.94

Test Mounting Details

UUT attached to the shake table interface fixture with (54) 1/2" Grade 2 bolts.

All units were filled with contents and maintained structural integrity and functionality

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-9B (Rigid)

VMA-50927-01;
UUT 19b

Model Line	Base Model Number	Manufacturer
Series 3000 Open Cooling Tower	S3E-1424-14W/S	Baltimore Aircoil Company, Inc.

Product Construction Summary

Structure:Stainless Steel
Louver: PVC

Options / Subcomponent Summary

125 HP Baldor direct drive fan motor; 156 in. Cofimco Low Sound Fan with 8 blades.

UUT Properties

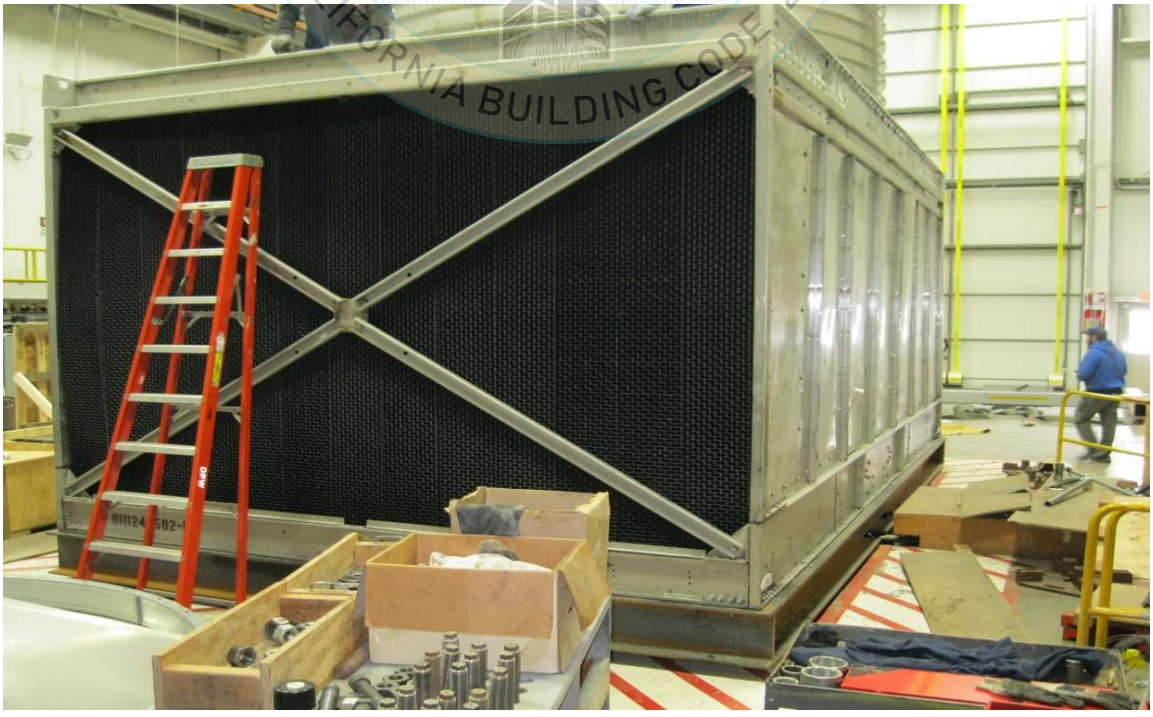
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
24,400	289	167	181	7.00	11.00	25.00

UUT Highest Passed Seismic Run Information

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	3.53	1.00	1.50	5.65	4.24	2.35	0.94

Test Mounting Details

UUT attached to the shake table interface fixture with (54) 1/2" Grade 2 bolts.



All units were filled with contents and maintained structural integrity and functionality