APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0368

HCAI 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 Rd, Jessup, MD 20794

Telephone: (410) 799-6533 Email: Dwu@baltimoreaircoil.com

Product Information

Product Name: Cooling Towers

Product Type: NA

Product Model Number: See Attachment

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.

Mounting Description: Rigid or Isolated, Floor Mounted

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: john.giuliano@thevmcgroup.com

Title: President

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

Company Name: THE VMC GROUP

Name: Kenneth Tarlow California License Number: S2851

Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814

Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

Certification Method

☐ GR-63-Core ☒ ICC-ES AC156 ☐ IEEE 344 ☐ IEEE 693 ☐ NEBS 3

☐ Other (Please Specify):

Testing Laboratory

Company Name: U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, CONSTRUCTION ENGINEERING RESEARCH LABORATORY (CERL)

Contact Person: James Wilcoski

Mailing Address: 2902 Newmark Dr., Champaign IL 61822-1076

Telephone: (217) 352-6511 Email: james.wilcoski@usace.army.mil

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)

Contact Person: Kelly Laplace

Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431

Telephone: (775) 358-5085 Email: kelly@shaketest.com

Company Name: UNIVERSITY OF BUFFALO (SEESL)

Contact Person: Mark Pitman

Mailing Address: 212 Ketter Hall, North Campus, Buffalo NY 14260

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

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 2.91 (Rigid); 4.37 (Isolated)

S_{DS} (Design spectral response acceleration at short period, g) = 1.94

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 3.0 (Rigid); 2.0 (Isolated)

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 08/10/2028

Date: 8/10/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: S_{DS} (g) = 1.94 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] [lb]	Operating Weight[6,7] [lb]	Tested Weight [lb]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	UUT
XES3E-8518-05G/S	18X8.5X80	3	90	8,620	15,760	N/A	216.5	101.75	104	Rigid, Isolated	Extrapolated
XES3E-8518-05H/S	18X8.5X80	5	90	8,630	15,770		216.5	101.75	104	Rigid, Isolated	
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	UUT-1A
XES3E-8518-05K/S	18X8.5X80	10	90	8,670	15,810	14,881	216.5	101.75	104	Isolated	UUT-1B
S3E-8518-05L/S	18X8.5X80	15	90	8,800	15,940	N/A	216.5	101.75	104	Rigid, Isolated	Interpolated
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		216.5	101.75	136	Rigid, Isolated	
S3E-8518-07N/S	18X8.5X112	25	90	10,330	19,910		216.5	101.75	136	Rigid, Isolated	
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	

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] [lb]	Operating Weight[6,7] [lb]	Tested Weight [lb]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	UUT
S3E-1020-07M/S	20X10X112	20	108	11,760	22,060	19,300	240.5	117.25	136	Rigid	UUT-8A
S3E-1020-07M/S	20X10X112	20	108	11,760	22,060	19,300	240.5	117.25	136	Isolated	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		240.5	117.25	136	Rigid, Isolated	
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	
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	N/A	258.5	141.75	136	Rigid, Isolated	Interpolated
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		258.5	141.75	186	Rigid, Isolated	
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	

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] [lb]	Operating Weight[6,7] [lb]	Tested Weight [lb]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	UUT
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	
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	N/A	258.5	141.75	250	Rigid, Isolated	Interpolated
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		288.5	167.125	218	Rigid, Isolated	
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	

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] [lb]	Operating Weight[6,7] [lb]	Tested Weight [lb]	Unit Width [in]	Unit Length [in]	Height to Fan Deck [in]	Installation Type	UUT
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	N/A	288.5	167.125	234	Rigid, Isolated	Interpolated
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	
S3E-1424-14Q/S	24X14X224	50	156	25,610	50,630		288.5	167.125	250	Rigid, Isolated	
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	UUT-3A
S3E-1424-14T/S	24X14X224	100	156	27,550	52,570	45,731	288.5	167.125	250	Isolated	UUT-3B
S3E-1424-14U/S	24X14X224	119	156	27,560	52,580	N/A	288.5	167.125	250	Rigid, Isolated	Extrapolated

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.

Table 2 - Certified Materials of Construction

Structural Frame and Basin MOC Option[1,2,3]	MOC of Structural Elements	UUT
Galvanized Carbon Steel	All Galvanized Carbon Steel	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**	**UUT**
FRP Casing Panels and Louvers	FRP/FRP	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

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	UUT
Top Inlet - Bottom Outlet - Pump Suction	Baltimore Aircoil Company	Top	Bottom	No	UUT-3A, UUT-3B
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. Internal piping, if included, is PVC.

Table 4 - Certified Sweeper Piping Configurations

Piping Connection Option[1]	Manufacturer	Material Construction	Inlet Location	Outlet Location	Internal Piping	UUT
Sweeper Piping	Baltimore Aircoil Company	See Note 1	Bottom	Bottom	Yes	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	UUT
End Equalizer	End	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 [lb]	UUT
Nidec	Cast Iron	Belt Drive	3	200, 230, 380, 415, 230/460, 460, or 575[1]	60	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		1,200	UUT-3A, UUT-3B
Baldor	Cast Iron	Direct Drive	20		570	UUT-8A, UUT-8B

Table 7 - Certified Subcomponents: Right Angle Gears

Component	MFR	Material	Model	Approximate Weight [lb]	UUT
Single Reduction Gear	Amarillo	Cast Iron	A-65	100	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[1]	Diameter [in]	No. of Blades	Approximate Weight [lb]	UUT
Standard Fan	Multi-Wing	GFRP	42	5	13	UUT-4A, UUT-4B
Standard Fan	Multi-Wing	GFRP	90	5	111	Interpolated
Standard Fan	Multi-Wing	GFRP	90	6	131	
Standard Fan	Multi-Wing	GFRP	92	8	175	UUT-6A, UUT-6B
Standard Fan	Cofimco	Aluminum	90	4	150	UUT-1A, UUT-1B
Standard Fan	Cofimco	Aluminum	90	5	177	Interpolated
Standard Fan	Cofimco	Aluminum	108	4	164	
Standard Fan	Cofimco	Aluminum	108	5	132	
Standard Fan	Cofimco	Aluminum	108	5	194	
Standard Fan	Cofimco	Aluminum	108	6	223	
Standard Fan	Cofimco	Aluminum	120	4	170	
Standard Fan	Cofimco	Aluminum	120	5	138	
Standard Fan	Cofimco	Aluminum	120	5	203	
Standard Fan	Cofimco	Aluminum	120	6	234	UUT-2A, UUT-2B
Standard Fan	Cofimco	Aluminum	132	5	214	Interpolated
Standard Fan	Cofimco	Aluminum	132	5	263	
Standard Fan	Cofimco	Aluminum	132	6	304	
Standard Fan	Cofimco	Aluminum	156	5	298	
Standard Fan	Cofimco	Aluminum	156	6	494	
Standard Fan	Cofimco	Aluminum	156	7	556	UUT-3A, UUT-3B
Low Sound Fan	Cofimco	Aluminum	90	7	176	UUT-1A, UUT-1B
Low Sound Fan	Cofimco	Aluminum	90	8	293	Interpolated
Low Sound Fan	Cofimco	Aluminum	108	6	267	
Low Sound Fan	Cofimco	Aluminum	120	6	478	
Low Sound Fan	Cofimco	Aluminum	132	5	262	
Low Sound Fan	Cofimco	Aluminum	132	7	675	
Low Sound Fan	Cofimco	Aluminum	156	7	842	UUT-3A, UUT-3B
Whisper Quiet Fan	Moore	Aluminum	108	4	354	UUT-8A, UUT-8B

Table 9 - Certified Subcomponents: Options and Accessories

Option or Accessory	Manufacturer	Material of Construction	Weight [lb]	UUT
Internal Walkway	Baltimore Aircoil Company	Stainless Steel	184	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	457	
Fan Deck Guardrails	Baltimore Aircoil Company	Guardrail Posts and Toeboards - Stainless Steel; Guardrail Rails - Galvanized Steel	380	
Aluminum Ladder(s) to Fan Deck	Ladder - Louisville Ladder; Ladder Mounting Brackets - Baltimore Aircoil Company	Ladder - Aluminum; Ladder Mounting Brackets - Stainless Steel	80	
Ladder Safety Cages	Baltimore Aircoil Company	Galvanized Steel	206	
Ladder Safety Gates	PS Doors	Galvanized Steel	3	
Mechanical Makeup	Baltimore Aircoil Company	Float - Polystyrene; Linkage - Galvanized Steel; Valve - Brass	12	
Stainless Steel Trash Screen	Baltimore Aircoil Company	Stainless Steel	2	
Stainless Steel Outlet Strainer	Baltimore Aircoil Company	Stainless Steel	8	UUT-1A, UUT-1B
Stainless Steel Fan Guard	Baltimore Aircoil Company	Stainless Steel	190	
Full Air Intake Screens	Baltimore Aircoil Company	Galvanized Steel	300	
Hot Water Basin Weir Dams	Baltimore Aircoil Company	Galvanized Steel	6	
Motor Shaft Grounding Ring	WEG or Nidec	Steel	1	
Basin Heaters and Standard Heater Controls	Indeeco	Heater Element - Copper	15	
Penn F63 Float Switches	Johnson Controls	Case - Steel; Float - Polypropylene	4	
Vibration Cutout Switches	Metrix	Case - Aluminum	4	
Electric Water Level Control (EWLC) with Solenoid Valve	EWLC - Kimberlite Assemblers; Solenoid Valve - ASCO	EWLC - PVC Housing, Stainless Steel Probes; Solenoid Valve - Brass	20	
External Gear Fill Line	Baltimore Aircoil Company	Galvanized Steel	4	
External Gear Oil Level Sight Glass	Baltimore Aircoil Company	Polycarbonate	5	
No Minimum Speed Gear Option	Amarillo	Steel	10	

Table 9 - Certified Subcomponents: Options and Accessories, Continued

Option or Accessory	Manufacturer	Material of Construction	Weight [lb]	UUT
Access Door Platform with Guardrails, Ladder, and Safety Gate - Front of Unit				
Platform Supports	Baltimore Aircoil Company	Galvanized Steel	7	UUT-8A, UUT-8B
Platform Grating	Creative Pultrusions	Glass Fiber Reinforced Plastic	26	
Guardrail Posts	Baltimore Aircoil Company	Galvanized Steel	94	
Guardrail Rails	Baltimore Aircoil Company	Galvanized Steel	80	
Toeboards	Baltimore Aircoil Company	Galvanized Steel	30	
Ladder	Louisville Ladder	Aluminum	26	
Safety Gate	PS Doors	Galvanized Steel	3	
Access Door Platform with Guardrails, Ladder, and Safety Gate - Back of Unit				
Platform Supports	Baltimore Aircoil Company	Stainless Steel	7	UUT-8A, UUT-8B
Platform Grating	Creative Pultrusions	Glass Fiber Reinforced Plastic	26	
Guardrail Posts	Baltimore Aircoil Company	Stainless Steel	94	
Guardrail Rails	Baltimore Aircoil Company	Galvanized Steel	80	
Toeboards	Baltimore Aircoil Company	Stainless Steel	30	
Ladder	Louisville Ladder	Aluminum	26	
Safety Gate	PS Doors	Galvanized Steel	3	
10 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel	63	UUT-1A, UUT-1B
10 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel	75	UUT-8A, UUT-8B
10 1/2" Fan Cylinder Extension	Baltimore Aircoil Company	Stainless Steel	92	Interpolated
1'-9" Fan Cylinder Extension	Baltimore Aircoil Company	Galvanized Steel	184	
1'-9" Fan Cylinder Extension	Baltimore Aircoil Company	Stainless Steel	200	UUT-3A, UUT-3B

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-1A

Test Report: UB-SEESL-2011-06; UUT-R1 & R2

Model Line	Model Number	Manufacturer
S3000 Open Cooling Tower	3240C/S	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel structure with fiberglass reinforced plastic casing and louver

Options / Subcomponent Summary

Fan Motors, Right Angle Gears, Fan, Stainless Steel Outlet Strainer, Stainless Steel Fan Guard, Full Air Intake Screens, Hot Water Basin Weir Dams, Motor Shaft Grounding Ring, Basin Heaters and Standard Heater controls, Penn F63 Float Switches, Vibration Cutout Switches, EWLC with Solenoid Valve, External Gear Fill Line, External Gear Oil Level Sight Glass, No Minimum Speed Gear Option, 10 1/2" Fan Cylinder Extension

UUT Properties

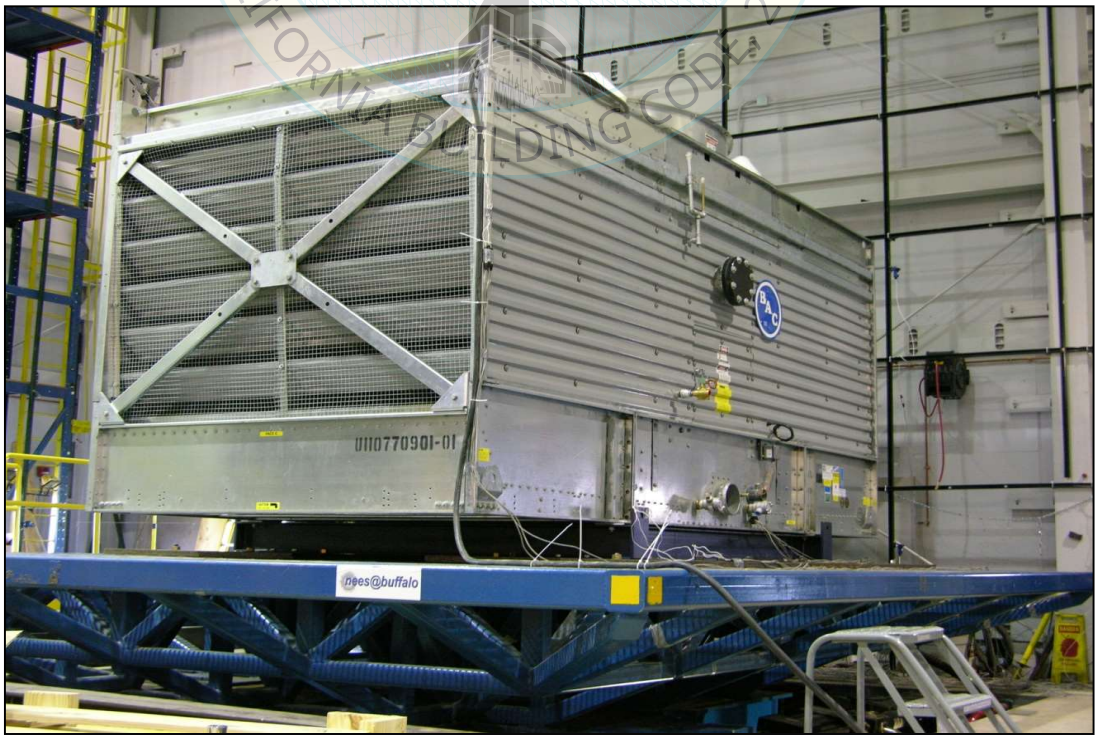
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
14,881	101.8	216.5	103.8	6.3	7.8	32.0

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.19	1.0	1.5	3.50	2.62	1.45	0.58
		-	-	-	-	-	-	-

Test Mounting Details

UUT-1A was rigidly mounted to the shake table using (8) 3/4" diameter Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-1B

Test Report: UB-SEESL-2011-06; UUT-V1 & V2

Model Line	Model Number	Manufacturer
S3000 Open Cooling Tower	3240C/S	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel structure with fiberglass reinforced plastic casing and louver

Options / Subcomponent Summary

Fan Motors, Right Angle Gears, Fan, Stainless Steel Outlet Strainer, Stainless Steel Fan Guard, Full Air Intake Screens, Hot Water Basin Weir Dams, Motor Shaft Grounding Ring, Basin Heaters and Standard Heater controls, Penn F63 Float Switches, Vibration Cutout Switches, EWLC with Solenoid Valve, External Gear Fill Line, External Gear Oil Level Sight Glass, No Minimum Speed Gear Option, 10 1/2" Fan Cylinder Extension

UUT Properties

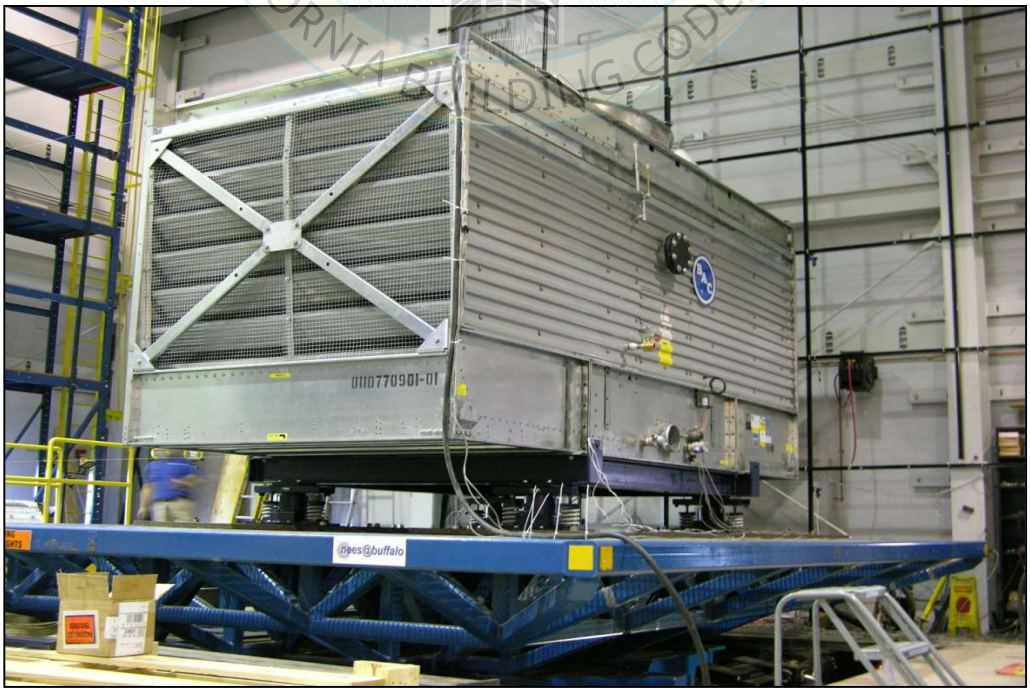
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
14,881	101.8	216.5	103.8	1.4	1.7	3.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53
		-	-	-	-	-	-	-

Test Mounting Details

UUT-1B was isolated using (4) Mason Industries SLFADA600 isolators each with (2) SLF-110 spring isolators and attached to the shake table using (8) 3/4" diameter Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-2A

Test Report: 10521-1202; UUT-H1a

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2 Open Cooling Tower (Single Fan Mechanical Section)	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel

Options / Subcomponent Summary

Fan Motor and Fan

UUT Properties

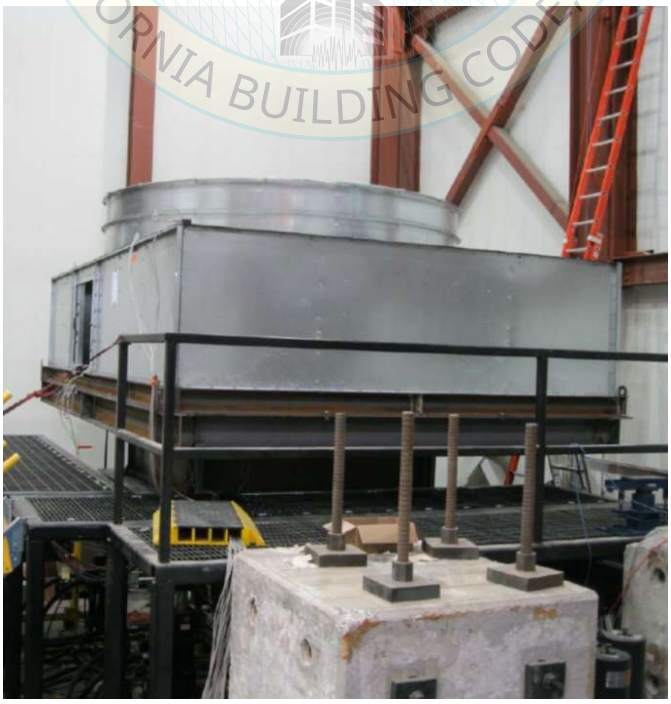
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216.0	144.0	72.0	20.3	12.8	19.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		3.20	0.0	1.5	3.20	-	2.14	0.86

Test Mounting Details

UUT-2A was attached to the steel mounting frame using (8) 3/8" diameter Grade 2 bolts and (116) 5/16" diameter Grade 2 bolts. The mounting frame was rigidly mounted to the shake table using (24) 3/4" diameter Grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-2B

Test Report: 10521-1202; UUT-H1b

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2 Open Cooling Tower (Single Fan Mechanical Section)	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel

Options / Subcomponent Summary

Fan Motor and Fan

UUT Properties

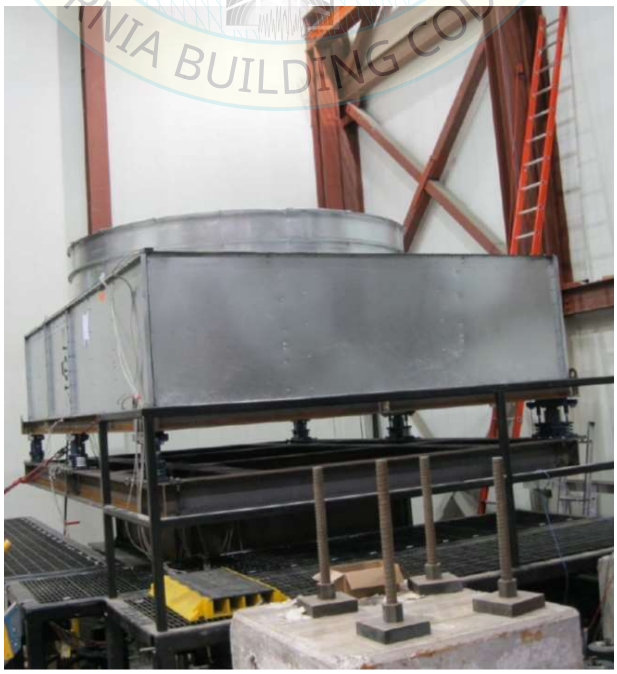
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216.0	144.0	72.0	3.8	4.8	6.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54
		-	-	-	-	-	-	-

Test Mounting Details

UUT-2B was attached to the steel mounting frame using (8) 3/8" diameter Grade 2 bolts and (116) 5/16" diameter Grade 2 bolts. The mounting frame was attached to (4) Mason Industries SLFADA-350-104 and (2) SLFADA-350-106 spring isolators with (2) 3/4" diameter Grade 8 bolts per isolator. The isolators were attached to the shake table using (8) 5/8" diameter Grade 8 bolts per isolator.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-3A

Test Report: UB-SEESL-2011-07; UUT-C in R1 & R2

Model Line	Model Number	Manufacturer
S3000 Open Cooling Tower	31301C/QSX	Baltimore Aircoil Company

Product Construction Summary

Stainless steel structure with stainless steel casing & PVC louvers

Options / Subcomponent Summary

Fan Motor, Right Angle Gears, Fans, Internal Walkway, Internal Platform and Ladder, Fan Deck Guardrails, Aluminum Ladder to Fan Deck, Ladder Safety Cages, Ladder Safety Gates, Mechanical Makeup, Stainless Steel Trash Screen, 1'-9" Fan Cylinder Extension

UUT Properties

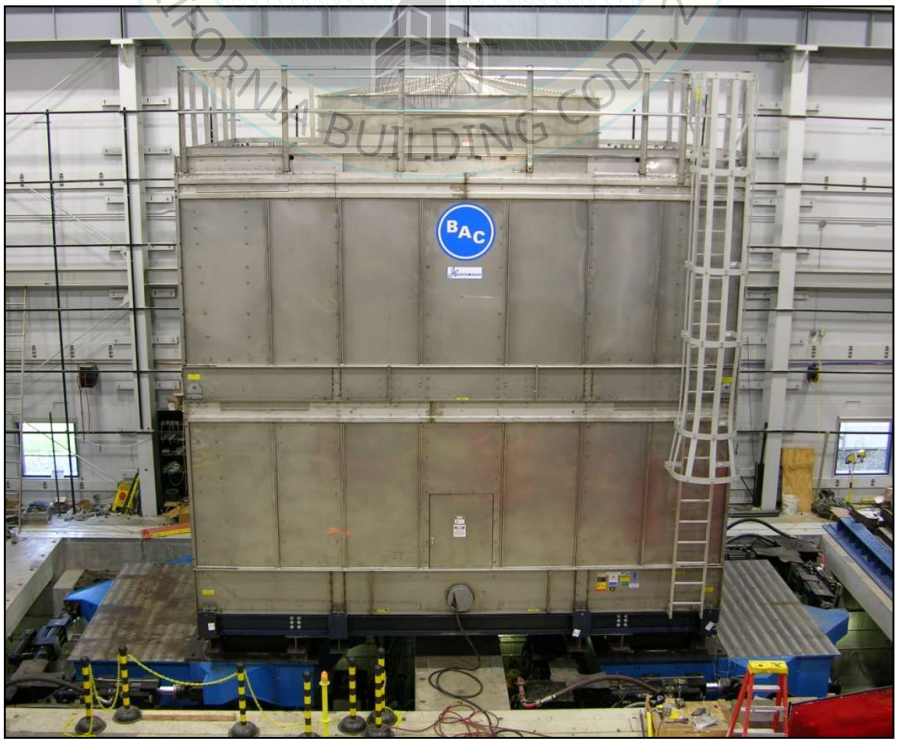
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
45,731	167.1	288.5	293.3	4.0	6.7	12.1

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	1.94	1.0	1.5	3.10	2.33	1.29	0.52
		-	-	-	-	-	-	-

Test Mounting Details

UUT-3A was rigidly mounted to the shake table using (16) 7/8" diameter Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-3B

Test Report: UB-SEESL-2011-07; UUT-C in 8V1 & 8V2

Model Line	Model Number	Manufacturer
S3000 Open Cooling Tower	31301C/QSX	Baltimore Aircoil Company

Product Construction Summary

Stainless steel structure with stainless steel casing & PVC louvers

Options / Subcomponent Summary

Fan Motor, Right Angle Gears, Fans, Internal Walkway, Internal Platform and Ladder, Fan Deck Guardrails, Aluminum Ladder to Fan Deck, Ladder Safety Cages, Ladder Safety Gates, Mechanical Makeup, Stainless Steel Trash Screen, 1'-9" Fan Cylinder Extension

UUT Properties

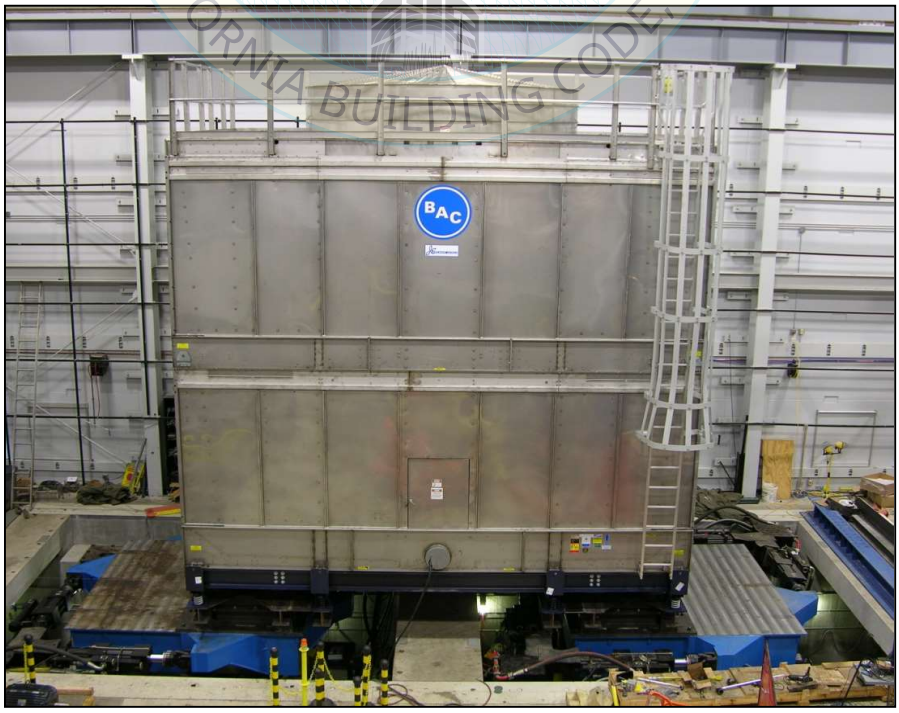
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
45,731	167.1	288.5	293.3	0.8	1.4	2.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	1.94	1.0	1.5	3.10	2.33	1.29	0.52
		-	-	-	-	-	-	-

Test Mounting Details

UUT-3B was isolated using (4) Mason Industries SLFADA600 isolators each with (2) SLF-110 spring isolators and attached to the shake table using (16) 7/8" diameter Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-4A

Test Report: UB-SEESL-2010-12; UUT-Configuration 2

Model Line	Model Number	Manufacturer
PC2 Evaporative Condenser	PC2-50-0406-7.5	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel structure with PVC louvers

Options / Subcomponent Summary

Fan motor and Fans

UUT Properties

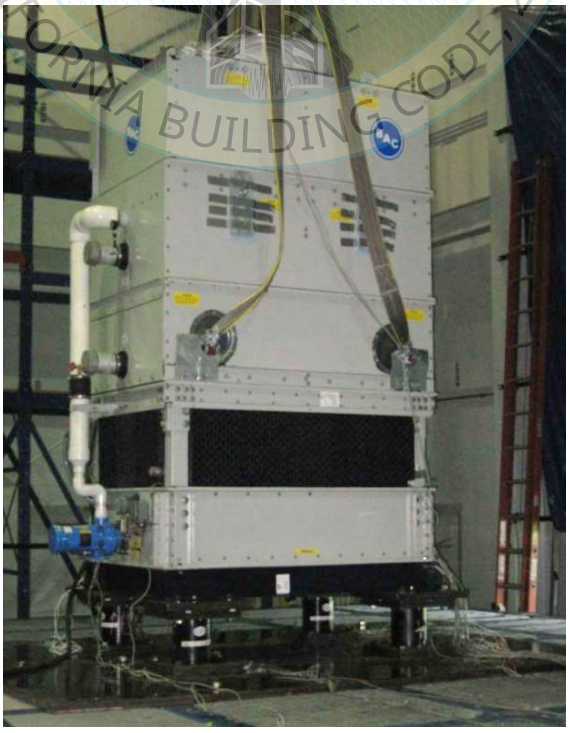
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,199	48.0	71.8	118.9	8.1	12.6	26.9

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.34	1.0	1.5	3.75	2.81	-	-
		3.75	0.0	1.5	-	-	2.50	1.88

Test Mounting Details

UUT-4A was rigidly mounted to the shake table using (4) 3/4" diameter Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-4B

Test Report: UB-SEESL-2010-12; UUT-Configuration 1

Model Line	Model Number	Manufacturer
PC2 Evaporative Condenser	PC2-50-0406-7.5	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel structure with PVC louvers

Options / Subcomponent Summary

Fan motor and Fans

UUT Properties

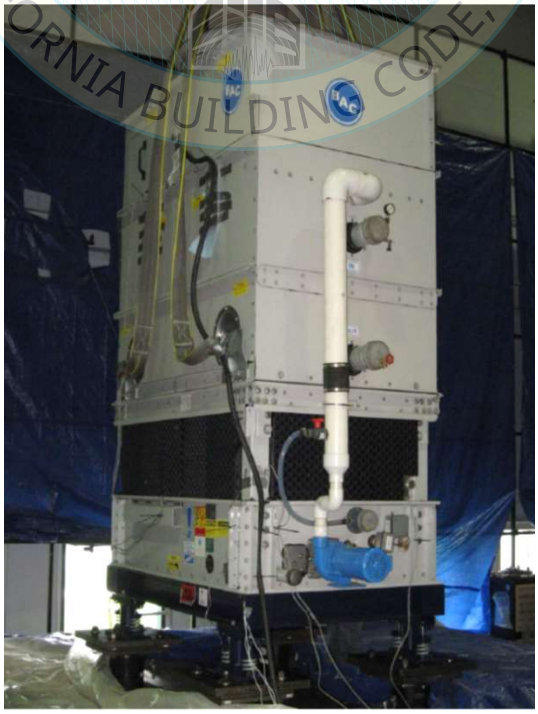
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,199	48.0	71.8	118.9	1.1	1.9	5.6

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	1.94	1.0	1.5	3.10	2.33	-	-
		3.10	0.0	1.5	-	-	2.07	1.38

Test Mounting Details

UUT-4B was isolated using (4) Mason Industries SLFADA200 isolators each with (2) SLF-C2 spring isolators and attached to the shake table using (4) 3/4" diameter Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-5A

Test Report: 10521-1201; UUT-Fa

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

Product Construction Summary

Stainless steel structure with PVC louvers

Options / Subcomponent Summary

Fan Motor

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
20,200	216.0	144.0	252.0	6.3	3.5	8.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		3.20	0.0	1.5	-	-	2.14	0.86

Test Mounting Details

UUT-5A was attached to the test fixture using (8) 3/4" diameter Grade 5 bolts. The test fixture was rigidly attached to the shake table using (16) 5/8" diameter Grade 8 bolts.

All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-5B

Test Report: 10521-1201; UUT-Fb

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

Product Construction Summary

Stainless steel structure with PVC louvers

Options / Subcomponent Summary

Fan Motor

UUT Properties

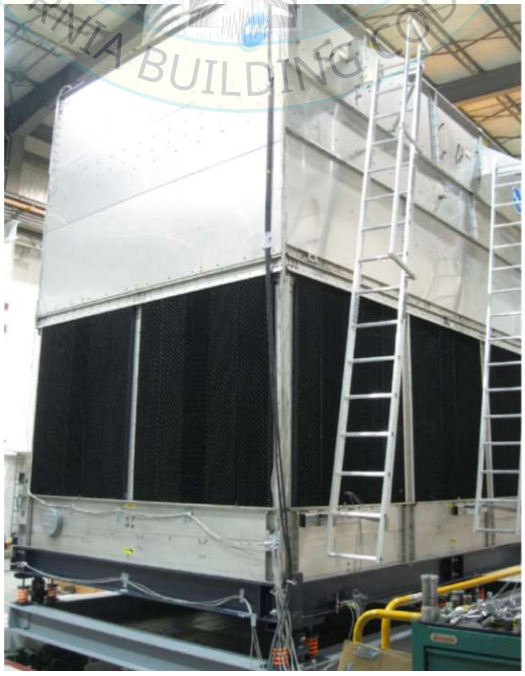
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
20,200	216.0	144.0	252.0	2.0	1.8	3.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54
		-	-	-	-	-	-	-

Test Mounting Details

UUT-5B was attached to the test fixture using (8) 3/4" diameter Grade 5 bolts. The test fixture was attached to (8) Mason Industries SLFDA350 snubber with (2) SLF-109 spring isolators using (2) 5/8" diameter Grade 8 bolts per isolator. The isolators were attached to the shake table using (4) 7/8" diameter Grade 8 bolts per isolator.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-6A

Test Report: 10521-1202; UUT-Ga

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2 Open Cooling Tower (Two Fan Mechanical Section)	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel

Options / Subcomponent Summary

Fan Motor and Fan

UUT Properties

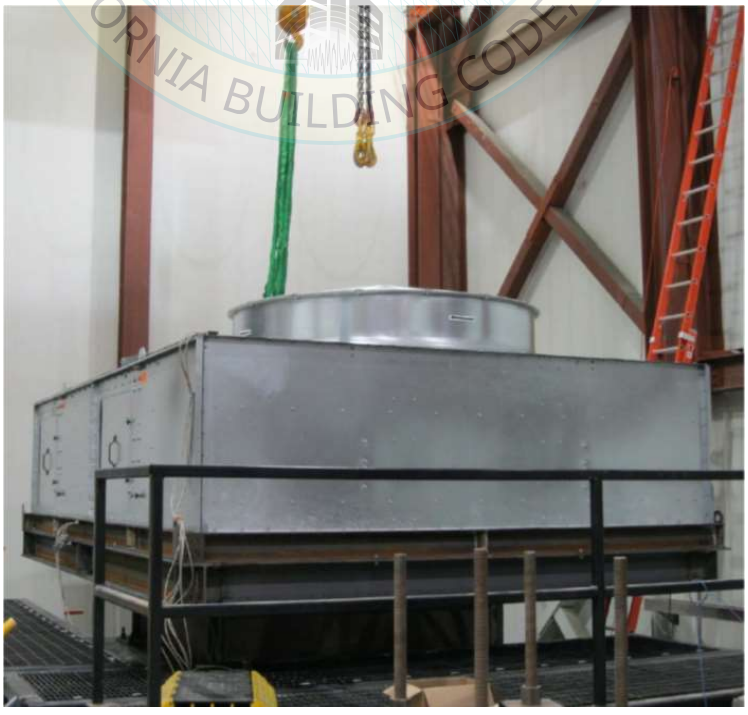
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,400	216.0	144.0	60.0	9.3	15.5	12.0

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		3.20	0.0	1.5	-	-	2.14	0.86

Test Mounting Details

UUT-6A was attached to the steel mounting frame using (8) 3/8" diameter Grade 2 bolts and (116) 5/16" diameter Grade 2 bolts. The mounting frame was rigidly mounted to the shake table using (24) 3/4" diameter Grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-6B

Test Report: 10521-1202; UUT-Gb

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2 Open Cooling Tower (Two Fan Mechanical Section)	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel

Options / Subcomponent Summary

Fan Motor and Fan

UUT Properties

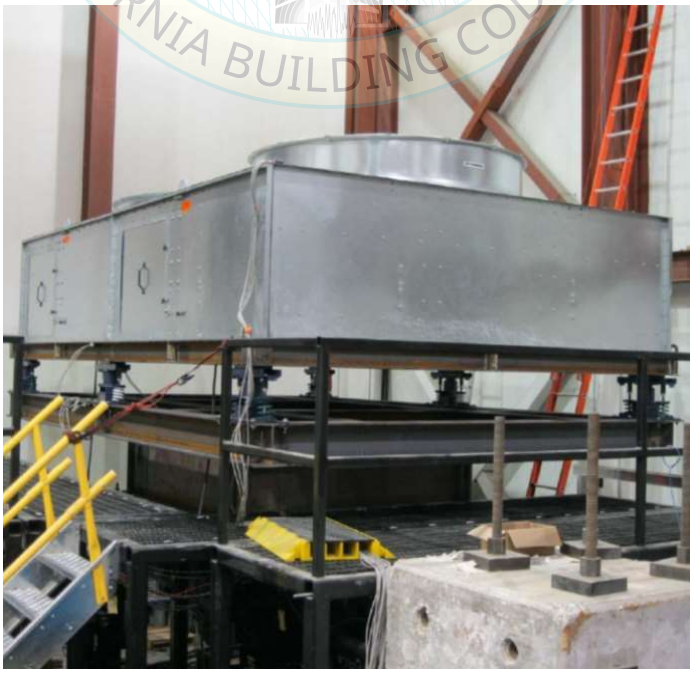
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,400	216.0	144.0	60.0	4.0	4.5	11.0

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54
		-	-	-	-	-	-	-

Test Mounting Details

UUT-6B was attached to the steel mounting frame using (8) 3/8" diameter Grade 2 bolts and (116) 5/16" diameter Grade 2 bolts. The mounting frame was attached to (4) Mason Industries SLFADA-350-104 and (2) SLFADA-350-106 spring isolators with (2) 3/4" diameter Grade 8 bolts per isolator. The isolators were attached to the shake table using (8) 5/8" diameter Grade 8 bolts per isolator.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-7A

Test Report: 10521-1202; UUT-H2a

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2 Open Cooling Tower (Single Fan Mechanical Section)	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel

Options / Subcomponent Summary

Fan Motor and Fan

UUT Properties

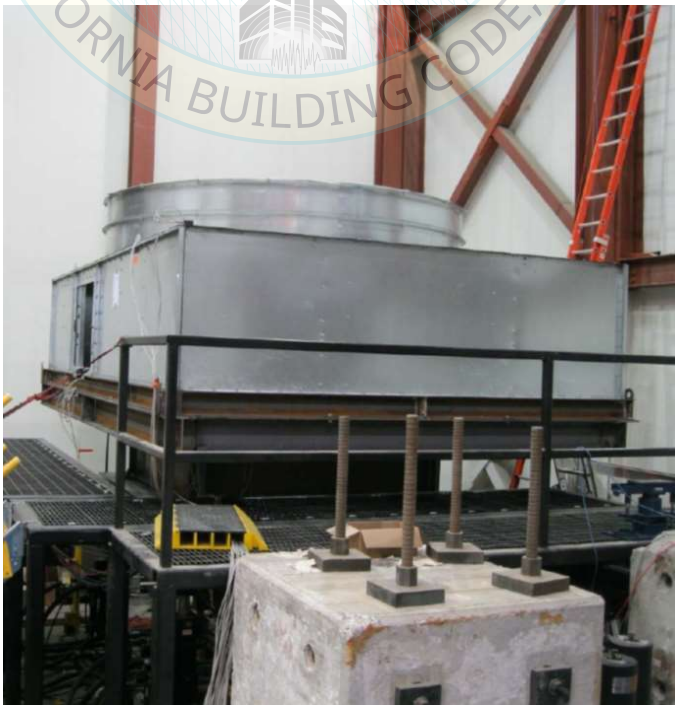
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216.0	144.0	72.0	20.0	13.3	10.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		3.20	0.0	1.5	-	-	2.14	0.86

Test Mounting Details

UUT-7A was attached to the steel mounting frame using (8) 3/8" diameter Grade 2 bolts and (116) 5/16" diameter Grade 2 bolts. The mounting frame was rigidly mounted to the shake table using (24) 3/4" diameter Grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-7B

Test Report: 10521-1202; UUT-H2b

Model Line	Model Number	Manufacturer
PT2 Open Cooling Tower	PT2 Open Cooling Tower (Single Fan Mechanical Section)	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel

Options / Subcomponent Summary

Fan Motor and Fan

UUT Properties

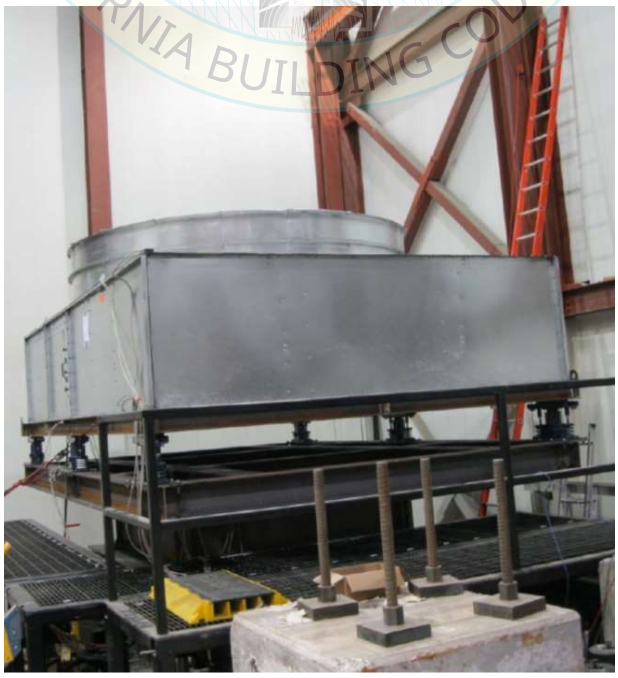
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,520	216.0	144.0	72.0	3.5	5.8	7.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54
		-	-	-	-	-	-	-

Test Mounting Details

UUT-7B was attached to the steel mounting frame using (8) 3/8" diameter Grade 2 bolts and (116) 5/16" diameter Grade 2 bolts. The mounting frame was attached to (4) Mason Industries SLFADA-350-104 and (2) SLFADA-350-106 spring isolators with (2) 3/4" diameter Grade 8 bolts per isolator. The isolators were attached to the shake table using (8) 5/8" diameter Grade 8 bolts per isolator.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-8A

Test Report: VMA 50927-01; UUT-18b

Model Line	Model Number	Manufacturer
S3000 Open Cooling Tower	S3E-1020-07M/S	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel structure with PVC louvers

Options / Subcomponent Summary

Fan Motors, Fans, Platform Supports/Grating, Guadrail Post/Rails, Toeboards, Ladder, Safety Gate, 10 1/2" Fan Cylinder Extension

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
19,300	241.0	118.0	170.0	7.5	11.5	31.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	1.94	1.0	1.5	3.10	2.33	1.29	0.52
		-	-	-	-	-	-	-

Test Mounting Details

UUT-8A was attached to the dunnage frame using (8) 3/4" diameter Grade 5 bolts. The dunnage frame was rigidly attached to the shake table interface plate using (12) 3/4" diameter Grade 8 bolts.

All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-8B

Test Report: VMA 50927-01; UUT-18a

Model Line	Model Number	Manufacturer
S3000 Open Cooling Tower	S3E-1020-07M/S	Baltimore Aircoil Company

Product Construction Summary

Galvanized carbon steel structure with PVC louvers

Options / Subcomponent Summary

Fan Motors, Fans, Platform Supports/Grating, Guadrail Post/Rails, Toeboards, Ladder, Safety Gate, 10 1/2" Fan Cylinder Extension

UUT Properties

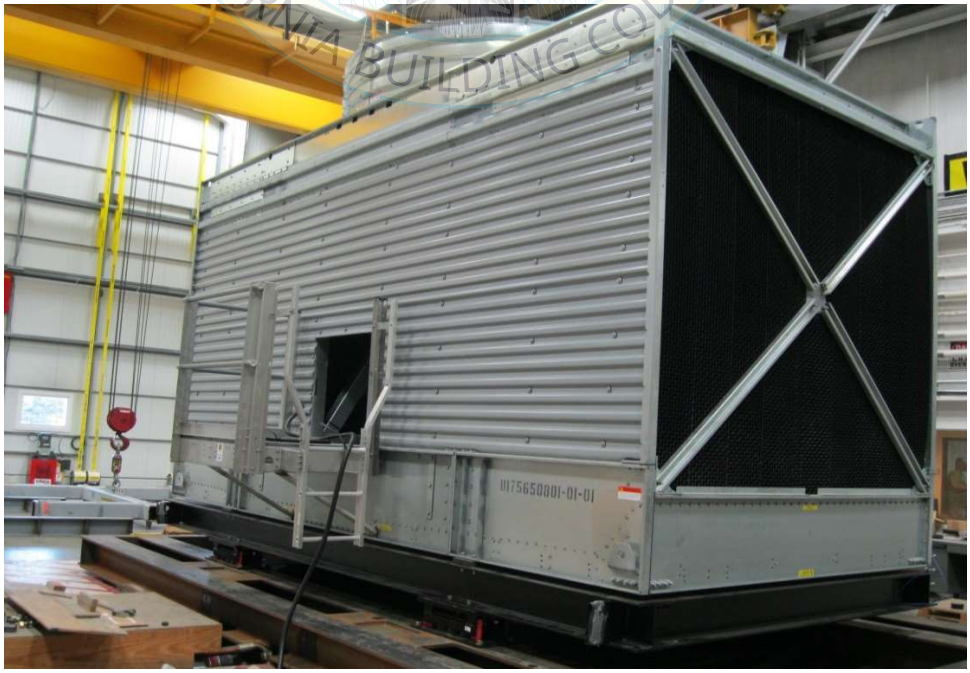
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
19,300	241.0	118.0	170.0	3.0	2.5	5.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019	ICC-ES AC156	1.94	1.0	1.5	3.10	2.33	1.29	0.52
		-	-	-	-	-	-	-

Test Mounting Details

UUT-8B was attached to the Dunnage Frame using (8) 3/4" diameter Grade 5 bolts. The Dunnage Frame was attached to (4) VMC Group M6SH-1E-7200N spring isolators using (4) 3/4" Grade 8 bolts per isolator. The isolators were attached to the shake table using (4) 1" diameter Grade 8 bolts per isolator.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.