APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0373 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: BasX Solutions, LLC

Manufacturer's Technical Representative: Jorge Sanchez

Mailing Address: 3500 SW 21st Place, Redmond, OR 97756

Telephone: (503) 691-0811 Email: info@basxsolutions.com

Product Information

Product Name: Seismically Modified Absorption Chiller

Product Type: Absorption Chiller

Product Model Number: JAS-REEV-TOB-16DNP 018L0000S
(List all unique product identification numbers and/or part numbers)

General Description: Absorption chiller manufactured by CLK Corporation (Carrier) including BasX Solutions, LLC seismic modifications. Seismic enhancements and modifications required to address anomalies observed during testing shall be incorporated into the production units. ***OSP is limited to units identical to the tested unit.***

Mounting Description: Rigid floor mounted

Applicant Information

Applicant Company Name: Tobolski Watkins Engineering, Inc.

Contact Person: Derrick Watkins, PhD, SE

Mailing Address: 9246 Lightwave Ave, Suite 140, San Diego, CA 92123

Telephone: (858) 381-5843 Email: dwatkins@tobolskiwatkins.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant: Derrick Watkins Date: 12/03/13

Title: Executive Vice President Company Name: Tobolski Watkins Engineering, Inc.

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

Company Name: Tobolski Watkins Engineering, Inc.

Name: Derrick Watkins, PhD, SE California License Number: S 5257

Mailing Address: 9246 Lightwave Avenue, Suite 140, San Diego, CA 92123

Telephone: (858) 381-5843 Email: dwatkins@tobolskiwatkins.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: Environmental Testing Laboratory, Inc.

Contact Name: Paul E. Little

Mailing Address: 11034 Indian Trail Dallas, TX 75229

Telephone: (972) 247-9657 Email: paul@etldallas.com

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.15 (z/h = 0) and 1.58 (z/h = 1.0)

S_{DS} (Design spectral response acceleration at short period, g) = 2.56g (z/h = 0) and 2.20g (z/h = 1.0)

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

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 0.0 (S_{DS} = 2.56g) and 1.0 (S_{DS} = 2.20g)

Equipment or Component Natural Frequencies (Hz) = 5.12 Hz F-B; 4.49 Hz S-S; 19.15 Hz V

Overall dimensions and weight (or range thereof) = 145.0" x 79.5" x 82.0" – 19,731 lbs

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, 2010: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

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

☒ Other(s) (Please Specify): Attachments

OSHPD Approval (For Office Use Only) – **Approval Expires on December 31, 2019**

Signature: Date: January 17, 2014

Print Name: Timothy J. Piland Title: SSE

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

Condition of Approval (if applicable): ***OSP is limited to units identical to the tested unit.***

TOBOLSKI WATKINS ENGINEERING

Table 1

Special Seismic Certification Certified Product Matrix

TWEI Project No.: 2012-0509-CO-002

Manufacturer: BasX Solutions, LLC

Model Line: Seismically Modified Absorption Chiller

Certified Product Construction Summary:
Model number uniquely identifies the certified unit. Chiller manufactured by CLK Corporation with BasX Solutions, LLC seismic modifications.

Certified Options Summary:
None.

Certified Mounting Summary:
Rigid floor mounted.

Building Code: CBC 2013	***Seismic Certification Limits:***	S_{DS} = 2.56g	***z/h*** = 0.0	I_p = 1.5
		S_{DS} = 2.20g	***z/h*** = 1.0	I_p = 1.5

Model Number	Dimension (in)			Weight (lb)	Notes	UUT
	Depth	Width	Height			
JAS-REEV-TOB-16DNP 018L0000S	145.0	79.5	82.0	19,731		1

TOBOLSKI WATKINS ENGINEERING

UUT - 1

UNIT UNDER TEST (UUT)
Summary Sheet

TWEI Project No.: 2012-0509-CO-002

Manufacturer:	BasX Solutions, LLC
Model Line:	Seismically Modified Absorption Chiller
Model Number:	JAS-REEV-TOB-16DNP 018L0000S

Product Construction Summary:
Model number uniquely identifies the unit tested. Chiller manufactured by CLK Corporation with BasX Solutions, LLC seismic modifications.

Options/Subcomponent Summary:
None.

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
19,731	145.0	79.5	82.0	5.12	4.49	19.15

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 2013	ICC-ES AC 156	2.56g	0.0	1.5	2.56g	1.92g	1.71g	0.68g
		2.20g	1.0	1.5	3.52g	2.64g	1.47g	0.59g

Test Mounting Details:

Unit was tested full of contents per operational condition.
The unit is mounted to the seismic table using (16) - 3" long - 5/16" fillet welds.
Unit maintained structural integrity and remained functional per manufacturer's requirements.