oshpd
State of California – Health and Human Services Agency
Office of Statewide Health Planning and Development
Facilities Development Division www.oshpd.ca.gov/fdd
400 R Street, Suite 200, Sacramento, California 95811-6213 Phone (916) 440-8300 Fax (916) 654-2973

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP -0167-10

Check whether application is: NEW [X] RENEWAL [ ]

1.0

Smardt Inc.	Tom Timmons, Eng.
Manufacturer	*Manufacturer's Technical Representative*

1800 TransCanada Hwy, Dorval, QC, Canada, H9P 1H7
Mailing Address

514-426-8989 x262	tom.timmons@smardt.com
Telephone	*E-mail Address*

2.0

Smardt water-cooled chillers	Water-cooled Chillers
Product Name	*Product Type*

WA021 through WA 240
Product model No (List all unique product identification numbers and/or serial numbers)

General Description: Smardt`s WA series is water-cooled chillers with cooling capacity ranging from 60 to 682 tons. The OSP is valid for C, S, and N configurations. This OSP is ONLY valid for units installed on floor mounted neoprene pads.

3.0

Smardt Inc.	Tom Timmons
Applicant Company Name	*Contact Person*

1800 Trans-Canada Hwy, Dorval, QC, Canada H9P 1H7
Mailing Address

514-426-8989 x262	Tom.timmons@smardt.com
Telephone	*E-mail Address*

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

	March 22, 2011
Signature of Applicant	*Date*
Engineering Manager	Smardt Inc.
Title	*Company Name*

1/11

Registered Design Professional Preparing the Report

4.0

Buehler and Buehler Structural Engineers Inc.
Company Name

Ali Sumer
Contact Name

72785 / Civil
California License Number

600 Q street, Suite 200, Sacramento, CA 95811
Mailing Address

916-443-0303
Telephone

asumer@bbse.com
E-mail Address

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

Buehler and Buehler Structural Engineers Inc.
Company Name

Scott R. Hooker
Contact Name

3937 / Structural
California License Number

600 Q street, Suite 200, Sacramento, CA 95811
Mailing Address

916-443-0303
Telephone

shooker@bbse.com
E-mail Address

Anchorage Pre-Approval

6.0

☐ *Anchorage is pre-approved under OPA-*
(Separate application for anchorage pre-approval is required)

☒ Anchorage is not Pre-approved

Certification Method

70. ☒ *Testing in accordance with:* ☒ *ICC-ES AC-156* ☐ *Other (Please Specify):*

☐ *Analysis*

☐ *Experience data*

☐ *Combination of Testing, Analysis, and/or Experience Data (Please Specify):*

Testing Laboratory (if applicable)

8.0

University at Buffalo - State University of New York, SEESL
Company Name

Mark Pitman
Contact Name

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

716-645-4377
Telephone

mpitman@buffalo.edu
E-mail:

2/11

Approval Parameters

9.0

Design in accordance with ASCE 7-05 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = 3.60 g

S_{DS} (Spectral response acceleration at short period) = 2.00 g

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

R_p (Equipment or component response modification factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio)=1.0

Equipment or Component fundamental period(s) = see attachment

Building period limits (if any) = N/A

Overall dimensions and weight (or range thereof) = see attachment

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: ☐ Yes ☒ No

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

S_{DS} (Spectral response acceleration at short period) =

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient)=1.0

Ω_0 (System overstrength factor) =1.0

C_d (Deflection amplification factor) =1.0

I_p (Importance factor) =1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: ☐ Yes ☒ No

10.0 ***List of attachments supporting the special seismic certification of equipment or components:***

☒ *Test Report* ☒ *Drawings* ☒ *Manufacturer's Catalog*

☐ *Calculations* ☒ *Others (Please Specify): Operability witness signed documents*

11.0 ***OSHPD Approval*** *(For Office Use Only)*

Signature & Date 4/7/2011	**December 31, 2016** *Approval Expiration Date*
Chris Tokas, SHFR *Name & Title*	S_{DS} (g) = **2.0** z/h = **1.0** *Special Seismic Certification Valid Up to*

Condition of Approval (if any):

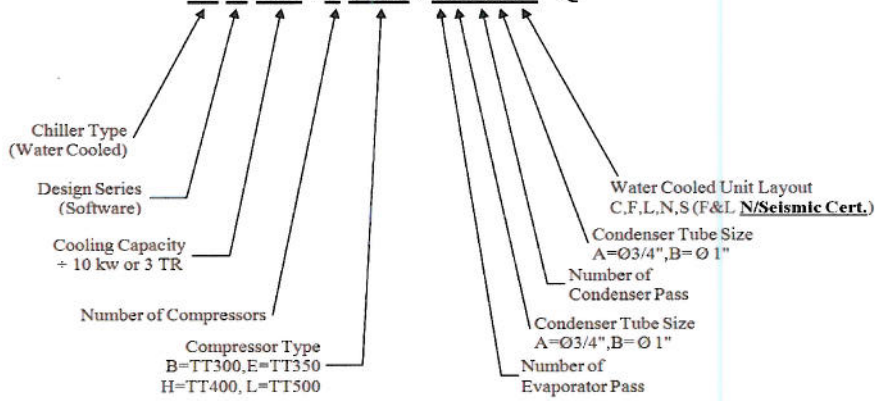
3/11

Special Seismic Certification
OSHPD Preapproval
SMARDT WA Chiller Series

WA Model Number Nomenclature

SMARDT **Chiller Nomenclature**

W A 027 . 1 BG4 . 4A4AN - Q



Special Seismic Certification
OSHPD Preapproval
SMARDT WA Chiller Series

Table 1. Shake Table Tested Units Summary*

Model Number	Tonnage	UUT Mark	Mounting	Excitation Direction	Frequency** (Hz)	Length (in)	Width (in)	Height (in)	Operating Weight (lbs)
WA240	682	UUT-1	Base - bolted & neoprene pad	X	10.1	239	87	78	21,000
				Y	6.0				
				Z	9.1				
WA026	74	UUT-2	Base - bolted & neoprene pad	X	9.4	90	46	80	4,700
				Y	12.7				
				Z	13.9				

* Frequencies are for units tested prior to AC156.

** Tested at Univ. at Buffalo Report No: UB CSEE/SEESL-2011-03

SMARDT

SMARDT INC WATER-COOLED CHILLERS
MODEL #'S: WA-026 AND WA-240
SHAKE TABLE TESTING

Buehler & Buehler
structural engineers

Figure 1. UUT 1 on the shake table

Figure 2. UUT 2 on the shake table

6/11

Table 2a. UUT-1 Sub-Component List: WA240.5XXX.2A2AS-Q

UUT-1		
Description	***Part Number***	***Manufacturer***
Evap Assy WA240.5HG5.22S	P01519	**SMARDT**
Cond Assy WA240.5HG5.22S	P01520	**SMARDT**
Seismic SxS Bracket	M01997	**SMARDT**
Wbox/MAR Assy 26"	M02209	**SMARDT**
Wbox/MAR Assy 30"	M02211	**SMARDT**
Std Wbox Assy 26"	M00440	**SMARDT**
Std Wbox Assy 30"	M01286	**SMARDT**
Flow Sensor Eflector 300	P01408	**IFM**
Differential Pressr Xmtr Dwyer	P00239	**DWYER**
Seismic Feet Package WA240	M01999	**SMARDT**
HGBP WA190, WA240 P&ID	P00816	**SMARDT**
Disch w/ Staging Ln WA240	P01328	**SMARDT**
Liquid Ln WA240E	P01329	**SMARDT**
LL Pipe Support	M01998	**SMARDT**
Float Ln WA240	P01330	**SMARDT**
MCL WA240	P01331	**SMARDT**
Suct Ln WA240 SXS	P01999	**SMARDT**
Electrical WA240.5HG8.22E (SEISMIC)	E00765	**SMARDT**
Electrical WA240 (SEISMIC)	E00765	**SMARDT**
CTRL Panel Box VERIGREEN	E01032	**BEL**
ELECTRICAL SPL BOX	E00169	**BEL**
L Box Comp M176	E00190	**BEL**
KIT KILTECH CTRL VERIGREEN	E00662	**SMARDT**
TERMINAL BLOCK TOPJOB SERIES	E01999	**WAGO**
TT350-G12-1-HL-A-0-NC (7Turn)	DTC-171269	**DANFOSS-TURBOCOR**
TT400-G6-1-ST-C-O-NC 460 Volts	DTC-170396	**DANFOSS-TURBOCOR**
TT500-G10-1-ST-A-0-NC	DTC-170022	**DANFOSS-TURBOCOR**

Table 2b. UUT-2: Sub-Component List: WA026.1BXX.44C

UUT-2		
Description	***Part Number***	***Manufacturer***
EvapAssy 20"X71" 170T 2.4P 1B	P01138	**SMARDT**
CondAssy 16"X71" 182T 4P 1B	P01115	**SMARDT**
Wbox/MAR Assy 16"	M02204	**SMARDT**
Wbox/MAR Assy 20"	M02206	**SMARDT**
Std Wbox Assy 16"	M00993	**SMARDT**
Std Wbox Assy 20"	M00522	**SMARDT**
Pressur Sw Differential RT262A	P01026	**DANFOSS**
Foot Chilr SBS SEISMIC	M01217	**SMARDT**
Suct Ln-WA030	P01473	**SMARDT**
MCL Ln WA030	P01475	**SMARDT**
HGBP Ln-WA030	P01476	**SMARDT**
Float Ln -WA030	P01477	**SMARDT**
Disch Ln WA030	P01478	**SMARDT**
Liquid Ln WA030	P01479	**SMARDT**
Electrical WA026 (SEISMIC)	E00630	**SMARDT**
CTRL Panel Box Boser	E00611	**BEL**
ELECTRICAL SPL BOX	E00169	**BEL**
L Box Comp M175	E01988	**BEL**
TERMINAL BLOCK Z SERIES	E00760	**WEIDMULLER**
Kit Kiltech CTRL GEN#3	E00586	**SMARDT**
TT300-F2-1-ST-C-O-NC 575 Volts	DTC-170388	**DANFOSS-TURBOCOR**

Table 2c. Seismic Enhancements

Enhancements	***Avail Config***	***Tested/ Interpolated***	**Manufacturer**
Seismic Feet Package	C,N	**UUT-2**	**SMARDT**
Seismic Frame	S	**UUT-1**	**SMARDT**
LL Pipe Support	S	**UUT-1**	**SMARDT**
Seismic Elec Frame	S	**UUT-1**	**SMARDT**
Seismic SxS Bracket	S	**UUT-1**	**SMARDT**

Special Seismic Certification
OSHPD Preapproval
SMARDT WA Chiller Series

Table 3a. Approved Unit List

Model Number	Avail Config	Nominal Tons	Tested/ Interpolated	Length (in)	Width (in)	Height (in)	Operating Weight (lbs)
WA021	C	**60**	Interpolated	81.7	45.6	81.45	4,600
WA026	C	**74**	**UUT-2**	89.6	45.6	80.45	4,700
WA027	N	**77**	Interpolated	97.4	45.6	80.45	4,700
WA030	C	**85**	Interpolated	89.6	45.6	81.45	4,900
WA031	N	**88**	Interpolated	97.4	45.6	81.45	5,000
WA041	N	**117**	Interpolated	97.4	45.6	90.65	6,600
WA042	N	**119**	Interpolated	146.2	45.6	81.65	7,300
WA044	N	**125**	Interpolated	145.7	45.1	80.70	6,800
WA046	C	**131**	Interpolated	93.6	52.2	91.85	7,100
WA048	N	**136**	Interpolated	149.8	48.3	81.65	6,400
WA050	N	**142**	Interpolated	146.2	45.6	81.65	6,900
WA062	N	**176**	Interpolated	146.2	45.6	81.65	7,600
WA064	N	**182**	Interpolated	146.2	45.6	81.65	7,400
WA074	N	**210**	Interpolated	162	45.6	81.65	8,400
WA080	N	**227**	Interpolated	162	44.6	81.65	8,100
WA084	N	**239**	Interpolated	162.1	45.6	81.65	8,700
WA091	N	**259**	Interpolated	162	45.6	81.65	8,100
WA092	N	**262**	Interpolated	163.5	49.3	90.65	9,900
	S	**262**	Interpolated	163	66.1	70	9,900
WA095	N	**270**	Interpolated	148	49.6	93.54	10,300
	S	**270**	Interpolated	150.4	66.1	70	10,300
WA096	N	**273**	Interpolated	164.9	52.5	91.1	10,400
	S	**273**	Interpolated	164.9	65.9	70	10,400
WA105	N	**298**	Interpolated	179	48.8	90.65	11,600
WA120	N	**341**	Interpolated	181.1	49.3	91.65	12,400
	S	**341**	Interpolated	180.6	70.8	70	12,400
WA122	N	**347**	Interpolated	181.1	49.3	91.65	11,800
WA125	N	**355**	Interpolated	180.6	52.5	91.1	12,100
WA130	S	**370**	Interpolated	180.6	79.8	73.5	11,800
WA140	N	**398**	Interpolated	198.2	52.5	92.1	14,900
	S	**398**	Interpolated	198.2	71.7	70	14,900
WA190	N	**540**	Interpolated	216.5	55.6	100.2	17,800
	S	**540**	Interpolated	216.5	84.66	78.25	17,800
WA200	N	**569**	Interpolated	216.5	55.6	100.2	17,500
	S	**569**	Interpolated	216.5	84.66	78.25	17,500
WA240	S	**682**	**UUT-1**	239.4	87.2	78.25	21,000

Table 3b. Seismic Enhancements

Enhancements	Avail Config	Manufacturer
Seismic Feet Package	C,N	**SMARDT**
Seismic Frame	S	**SMARDT**
LL Pipe Support	S	**SMARDT**
Seismic Elec Frame	S	**SMARDT**
Seismic SxS Bracket	S	**SMARDT**

Table 4. Sub-Component List: Water-Cooled

Compressor		
Model Number	***Nominal Tons***	***Manufacturer***
TT300	86	Danfoss-Turbocor
TT350	107	Danfoss-Turbocor
TT400	136	Danfoss-Turbocor
TT500	190	Danfoss-Turbocor

Evaporator		
Model Number	***Nominal Tons***	***Manufacturer***
WA021	60	SMARDT
WA026	74	SMARDT
WA027	77	SMARDT
WA030	85	SMARDT
WA031	88	SMARDT
WA041	117	SMARDT
WA042	119	SMARDT
WA044	125	SMARDT
WA046	131	SMARDT
WA048	136	SMARDT
WA050	142	SMARDT
WA062	176	SMARDT
WA064	182	SMARDT
WA074	210	SMARDT
WA080	227	SMARDT
WA084	239	SMARDT
WA091	259	SMARDT
WA092	262	SMARDT
WA095	270	SMARDT
WA096	273	SMARDT
WA105	298	SMARDT
WA120	341	SMARDT
WA122	347	SMARDT
WA125	355	SMARDT
WA130	370	SMARDT
WA140	398	SMARDT
WA190	540	SMARDT
WA200	569	SMARDT
WA240	682	SMARDT

Controller		
Model Number	***Nominal Tons***	***Manufacturer***
Kiltech Gen.3	N/A	Kiltech
Kiltech VariGreen	N/A	Kiltech

Table 4. Sub-Component List: (Cont'd)

Condenser		
Model Number	***Nominal Tons***	***Manufacturer***
WA021	60	SMARDT
WA026	74	SMARDT
WA027	77	SMARDT
WA030	85	SMARDT
WA031	88	SMARDT
WA041	117	SMARDT
WA042	119	SMARDT
WA044	125	SMARDT
WA046	131	SMARDT
WA048	136	SMARDT
WA050	142	SMARDT
WA062	176	SMARDT
WA064	182	SMARDT
WA074	210	SMARDT
WA080	227	SMARDT
WA084	239	SMARDT
WA091	259	SMARDT
WA092	262	SMARDT
WA095	270	SMARDT
WA096	273	SMARDT
WA105	298	SMARDT
WA120	341	SMARDT
WA122	347	SMARDT
WA125	355	SMARDT
WA130	370	SMARDT
WA140	398	SMARDT
WA190	540	SMARDT
WA200	569	SMARDT
WA240	682	SMARDT

Control Box		
Model Number	***Nominal Tons***	***Manufacturer***
WA021	60	Box By Bel, Controller by Kiltech
WA026	74	
WA027	77	
WA030	85	
WA031	88	
WA041	117	
WA042	119	
WA044	125	
WA046	131	
WA048	136	
WA050	142	
WA062	176	
WA064	182	
WA074	210	
WA080	227	
WA084	239	
WA091	259	
WA092	262	
WA095	270	
WA096	273	
WA105	298	
WA120	341	
WA122	347	
WA125	355	
WA130	370	
WA140	398	
WA190	540	
WA200	569	
WA240	682	

Table 4. Sub-Component List: (Cont'd)

Condenser	
Model Number	***Manufacturer***
Standard Waterbox 16"	**SMARDT**
Standard Waterbox 18"	**SMARDT**
Standard Waterbox 20"	**SMARDT**
Standard Waterbox 22"	**SMARDT**
Standard Waterbox 24"	**SMARDT**
Standard Waterbox 26"	**SMARDT**
Standard Waterbox 28"	**SMARDT**
Standard Waterbox 30"	**SMARDT**
Standard Waterbox 32"	**SMARDT**
Marine Waterbox 16"	**SMARDT**
Marine Waterbox 18"	**SMARDT**
Marine Waterbox 20"	**SMARDT**
Marine Waterbox 22"	**SMARDT**
Marine Waterbox 24"	**SMARDT**
Marine Waterbox 26"	**SMARDT**
Marine Waterbox 28"	**SMARDT**
Marine Waterbox 30"	**SMARDT**
Marine Waterbox 32"	**SMARDT**

Flow Control	
Model Number	***Manufacturer***
Differential Pressure Switch	**Danfoss**
Thermal Dispersion Flow Switch	**IFM**
Differential Pressure Transmitter	**Dwyer**

Terminal Block Assembly	
Model Number	***Manufacturer***
TopJob-S	**WAGO**
ZDU, ZPE, ZSI, ZAP, ZDK, ZQV TYPE BLOCKS	**WeidMuller**