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 -0190-10

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

1.0

The Trane Company — *Manufacturer*

Mr. Steve Lotspaih — *Manufacturer's Technical Representative*

3600 Pammel Creek Road, La Crosse, WI 54601 — *Mailing Address*

608-787-4100 — *Telephone*

slotspaih@trane.com — *E-mail Address*

2.0

Series R Helical Rotary Liquid Chillers — *Product Name*

Liquid Chiller — *Product Type*

RTHD 175 - 450 Tons — *Product model No (List all unique product identification numbers and/or serial numbers)*

General Description: These are cataloged tube shell chillers in 175 Ton to 450 Cooling Capacity. Approval is for units installed at floor on elastomeric bearing pads. Approval is limited to chillers, chiller mounted components and controls listed in the attachments. Approved units shall incorporate modification equivalent to those incorporated in the test units.

3.0

The VMC Group — *Applicant Company Name*

Mr. John Wilson — *Contact Person*

113 Main St, Bloomingdale NJ, 07403 — *Mailing Address*

973-838-1780 — *Telephone*

jwilson@thevmcgroup.com — *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.

Signature of Applicant

5/11/2011 — *Date*

CEO — *Title*

The VMC Group — *Company Name*

1/5

Registered Design Professional Preparing the Report

4.0

The VMC Group
Company Name

Samantha Kersting, SE	C57001
Contact Name	*California License Number*

113 Main St, Bloomingdale, NJ 07403
Mailing Address

973-838-1780	samantha.kersting@thevmcgroup.com
Telephone	*E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

The VMC Group
Company Name

Samantha Kersting, SE	S4642
Contact Name	*California License Number*

113 Main St, Bloomingdale, NJ 07403
Mailing Address

973-838-1780	samantha.kersting@thevmcgroup.com
Telephone	*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

UCSD/Gianmario Benzoni	Clark/JR Antenucci
Company Name/Contact Name	*Company Name/Contact Name*
Dep't of Str. Eng, La Jolla, CA 92093	1801 Rt 51 S., Jefferson Hills, PA 15025
Mailing Address	
858-534-1432/gbenzoni@ucsd.edu	412-382-5500/jrantenucci@clarkdynamic.com
Telephone/E-Mail	*Telephone/E-Mail*

2/5

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) = 3.42g, UNO and 4.1g for B1B1B1 Config Only

S_{DS} (Spectral response acceleration at short period) = 1.9g, UNO and 2.28g for B1B1B1 Config Only

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 attachments

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):*

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

Signature & Date 5/12/2011	**December 31, 2016** *Approval Expiration Date*
M. R. Karim, SHFR *Name & Title*	S_{DS} (g) = **See Section 9.0** z/h = **1.0** *Special Seismic Certification Valid Up to*

Condition of Approval (if any):

3/5

SPECIAL SEISMIC CERTIFICATION
FOR - TRANE RTHD CHILLERS

Certified Components and Subcomponents

RTHD	Compressor Size	Evaporator	Condenser	Unit Range (tons)	Max Dimensions Within Range				S_{DS}	UUT
					Length	Width	Height	Estimated Operating Weight		
Unit Configurations	B1	B1	B1	175-200	134.0	65.0	75.0	9867	2.28	1
	B2	C1	D1	200-225	142.7	64.3	70.8	10554	1.9	
	B2	B2	B2	200-225	124.4	64.3	70.3	10019	1.9	
	B2	C2	D2	200-225	142.7	64.3	70.8	10653	1.9	
	C1	D6	E5	225-275	125.6	67.6	73.4	13397	1.9	
	C1	D6	E4	225-275	125.6	67.6	73.4	13673	1.9	
	C1	E1	F1	225-275	144.0	67.5	73.4	15818	1.9	
	C2	D4	E4	275-325	125.6	67.6	73.4	13672	1.9	
	C2	D3	E3	275-325	125.6	67.6	73.4	15044	1.9	
	C2	F2	F3	275-325	144.5	67.5	73.5	17560	1.9	
	D1	D1	E1	325-400	125.6	67.6	73.4	15385	1.9	
	D1	F1	F2	325-400	144.5	67.5	73.5	17537	1.9	
	D1	G1	G1	325-400	147.3	69.7	77.3	20500	1.9	
	D1	G2	G2	325-400	147.3	69.7	77.3	21065	1.9	
	D2	D2	E2	375-450	125.6	67.6	73.4	15570	1.9	
	D2	F2	F3	375-450	144.5	67.5	73.5	18220	1.9	
	D2	G2	G1	375-450	147.3	69.7	77.3	20700	1.9	
	D2	G3	G3	375-450	149.0	70.0	80.0	21641	1.9	2
Compressor Manufacturer:		Trane	Trane							
Construction Material:		Cast Iron - Class 35								

	Manufacturer	Construction Material	Size	Number of Tubes						UUT
				1	2	3	4	5	6	
Evap Frame	Trane	Carbon Steel	B	X	X					1
			C	X	X					
			D	X	X	X	X	X	X	
			E	X						
			F	X	X					
			G	X	X	X				2
Cond Frame	Trane	Carbon Steel	B	X	X					1
			D	X	X					
			E	X	X	X	X	X		
			F	X	X	X				
			G	X	X	X				2

	Manufacturer	Material Construction	Number of passes	Water Pressure		UUT
				150 (psi)	300 (psi)	
Water Box Configuration	IP Automation	Cast Iron Class 35	2		X	1
			3			
			4	X		2

	Manufacturer	Part Number	Material	UUT
Oil Cooler	Alfa Laval	X24030667A	AISI 316 SST	UUT1

	Manufacturer	Type	UUT
Compressor Starter	Curtiss Wright	Wye-Delta	1
	Curtiss Wright	Solid State	2

	Model	UUT
Unit Voltage	200	1
	230	
	380	
	460	2

	Manufacturer	Construction Material	Dimensions (inches)			UUT
			L	W	H	
Control Panels	Curtiss Wright	NEMA 1 Enclosure	88	7.5	32.5	1,2

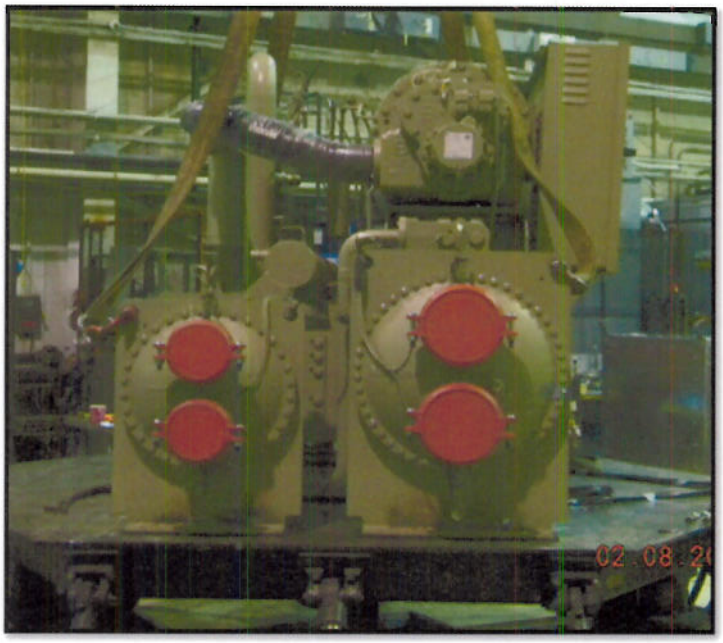
UUT = Unit Under Test

SPECIAL SEISMIC CERTIFICATION
FOR - TRANE RTHD CHILLERS

Units Under Test

UUT	MODEL	Chiller Length[1] [in]	Chiller Width [in]	Chiller Height [in]	Measured Operating Weight [lbs]	Condenser/ Evaporator Shell	Compressor Type	Compressor Starter	Oil Cooler	SDS Level	z/h	Mounting Config.
UUT1	RTHD B1B1B1	107 5/8"	64 15/16"	74 7/16"	8560	Trane B1 / B1	Trane B1	Curtiss Wright Wye -Delta	Alfa Laval Part No. X24030667	2.28	1.00	Elastomeric Pad
UUT2	RTHD D2G3G3	125 7/8"	70 1/4"	80"	21641[2]	Trane G3 / G3	Trane D2	Curtiss Wright Solid State	None	1.90	1.00	Elastomeric Pad

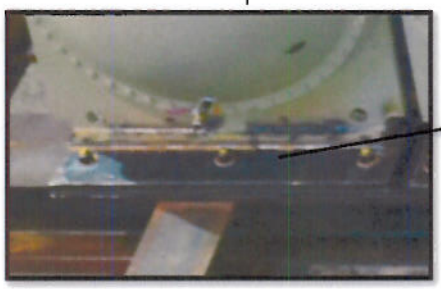
1. Chiller length is measured from base plate to base plate and does not represent the overall length
2. Weight is per specification



RTHD B1B1B1 mounted on 'VMC' elastomeric pad and anchored to the shake table with 8-5/8" diameter Grade 8 bolts.

RTHD D2G3G3 mounted on 'VMC' elastomeric pad anchored to the test fixture, an extension of the table, with 12-3/4" diameter Grade 8 bolts.

RTHD B1B1B1 unit with large washer plate between unit foot plate and bolt head-countermeasure of 1" base plate welded to unit foot plate tested on RTHD D2G3G3.



RTHD D2G3G3 with 1" base plate welded to original unit foot plate.

UUT	Frequency (Hz)								CBC factors for Seismic Design		
	Top of Condenser			Top of Compressor							
	F-B	S-S	Vert	F-B	S-S	Vert	SDS	z/h	ap	Rp	Ip
RTHD B1B1B1	28.3	16	24.2	7.4	16	22	2.28	1	2.5	2.5	1.5
RTHD D2G3G3	6.25	14.69	16.69	7.02	12	11.99	1.9	1			

F-B indicates Front to Back (motion in transverse direction), S-S indicates Side to Side (motion in longitudinal direction of unit)

THE VMC GROUP
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