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 -0161-10

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

1.0

Carrier Corporation	Anthony Molavi
Manufacturer	*Manufacturer's Technical Representative*

9701 Old Statesville Road, Charlotte, NC 28269
Mailing Address

(704) 921-3976	Anthony.Molavi@carrier.utc.com
Telephone	*E-mail Address*

2.0

Carrier 30HXA and 30HXC Chillers	Water Cooled and Conderserless Chillers
Product Name	*Product Type*

30HXA076-271, 30HXC076-271
Product model No

General Description: 30HXA (Condenserless) and 30HXC is a water-cooled screw chiller. OSP for 30HXA and 30HXC *series* is ONLY valid for floor mounted installation with neoprene pads. All chillers shall incorporate seismic enhancement equivalent to the tested units.

3.0

Carrier Corporation	Anthony Molavi
Applicant Company Name	*Contact Person*

9701 Old Statesville Road, Charlotte, NC 28269
Mailing Address

(704) 921-3976	Anthony.Molavi@carrier.utc.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.

	4/18/2011
Signature of Applicant	*Date*
Engineering Manager Applied Water-Cooled Screw Chillers	Carrier Corp.
Title	*Company Name*

Registered Design Professional Preparing the Report

4.0

Buehler and Buehler Structural Engineers, Inc
Company Name

Ali Sumer	72785 / Civil
Contact Name	*California License Number*

Mailing Address

(916) 443-0303	asumer@bbse.com
Telephone	*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	3937 / Structural
Contact Name	*California License Number*

600 Q St. Suite 200, Sacramento, CA 95811
Mailing Address

(916) 443-0303	shooker@bbse.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

Wyle Laboratories	*Don E. Smith*
Company Name	*Contact Name*

7800 Highway 20 West Huntsville, AL 35806
Mailing Address

256-716-4221	*Don.Smith@wyle.com*
Telephone	E-mail:

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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) = 4.5g

S_{DS} (Spectral response acceleration at short period) =2.5 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 Table 1

Building period limits (if any) =N/A

Overall dimensions and weight (or range thereof) =See attached tables

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 letter*

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

Signature & Date **5/3/2011**	**December 31, 2016** *Approval Expiration Date*
M. R. Karim, SHFR *Name & Title*	S_{DS} (g) = **2.5** z/h = **1.0** *Special Seismic Certification Valid Up to*

Condition of Approval (if any):

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Carrier 30HX Productline

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)
30HXA076	75	UUT-1	Hard Mount - w/ Neoprene Pad	X	9.0	106	33	65	5,700
				Y	17.0				
				Z	**				
30HXC0271	265	UUT-2	Hard Mount - w/ Neoprene Pad	X	6.0	152	36	74	11,029
				Y	13.0				
				Z	24.0				

* Frequencies are for units tested prior to AC156.

** No resonance below 33.3 Hz were detected

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Table 2a. UUT-1: Tested Sub-Component List

UUT-1 : 30HXA076		
Description	***Part Number***	***Manufacturer***
Heat Exchanger (Cooler / Condenser)	30HX404211	Carrier
Compressor (and Motor*)	06NA2123S6NA	Carrier
Control Box	30HX403928	Gaston
Oil Separator	part of 30HX404211	Carrier

*Compressor motor is supplied by A.O. Smith.

Table 2b. UUT-2 Tested Sub-Component List

UUT-2 30HXC271		
Description	***Part Number***	***Manufacturer***
Heat Exchanger (Cooler / Condenser)	30HX404206	Carrier
Compressor (and Motor*)	06NW2250S7EA	Carrier
Control Box	30HX403990	Gaston
Oil Separator	part of 30HX404206	Carrier
Economizer	LL01SD010/011	Swep

*Compressor motor is supplied by A.O. Smith.

Table 2c. Seismic Enhancements (UUT-1 & UUT-2)

Enhancements	**Manufacturer**
Seismic Feet Package	**Carrier**
Neoprene Pad	**Mason**

30HXC/HXA Shake Table Test Pictures

Figure 1. UUT1 (30HXA 076) on the shake table

Figure 2. UUT2 (30HXC 271) on the shake table

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Table 3. 30HX Approved Unit List

Model Number	Nominal Tons	Tested/ Interpolated	Length (in)	Width (in)	Height (in)	Operating Weight HXA (lbs)	Operating Weight HXC (lbs)
30HXA076	**75**	**UUT-1**	**106**	**33**	**65**	4717	-
30HXC076	75	Interpolated	106	33	65	-	5,700
30HXC/HXA086	85	Interpolated	106	33	65	4,744	5,723
30HXC/HXA096	95	Interpolated	106	33	65	4,835	5,855
30HXC/HXA106	105	Interpolated	106	33	65	5,151	6,177
30HXC/HXA116	115	Interpolated	135	33	65	5,163	6,415
30HXC/HXA126	125	Interpolated	135	33	65	5,205	6,565
30HXC/HXA136	135	Interpolated	135	33	65	5,309	6,688
30HXC/HXA146	145	Interpolated	135	33	65	5,333	6,718
30HXC/HXA161	155	Interpolated	136	34	69	5,752	7,452
30HXC/HXA171	165	Interpolated	136	34	69	5,777	7,660
30HXC/HXA186	175	Interpolated	136	34	69	5,946	7,854
30HXC/HXA206	211	Interpolated	152	36	74	7,485	10,581
30HXC/HXA246	246	Interpolated	152	36	74	7,621	10,969
30HXC/HXA261	255	Interpolated	152	36	74	7,621	10,992
30HXA271	265	Interpolated	152	36	74	7,621	-
30HXC271	**265**	**UUT-2**	**152**	**36**	**74**	-	**11,029**

*30HXC/HXA can be applied as "Modular" combinations (may be installed separately).

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Table 4. Sub-Component List: 30HXC/HXA

Heat Exchanger (Cooler / Condenser)	
Model Number	***Manufacturer***
30HXC/HXA 076 thru 271	Carrier

Compressor (and Motor*)	
Model Number	***Manufacturer***
30HXC/HXA 076 thru 271	Carrier

*Compressor motor is supplied by A.O. Smith.

Control Box	
Model Number	***Manufacturer***
30HXC/HXA 076 thru 271	Caston

Economizer		
Model Number	***Economizer***	***Manufacturer***
HXC/HXA 076 thru 146	**No**	-
HXC/HXA 161 thru 271	**Yes**	Swep

Oil Separator		
Model Number	***Tons***	***Manufacturer***
HXC/HXA 076 thru 271	All	**Carrier**

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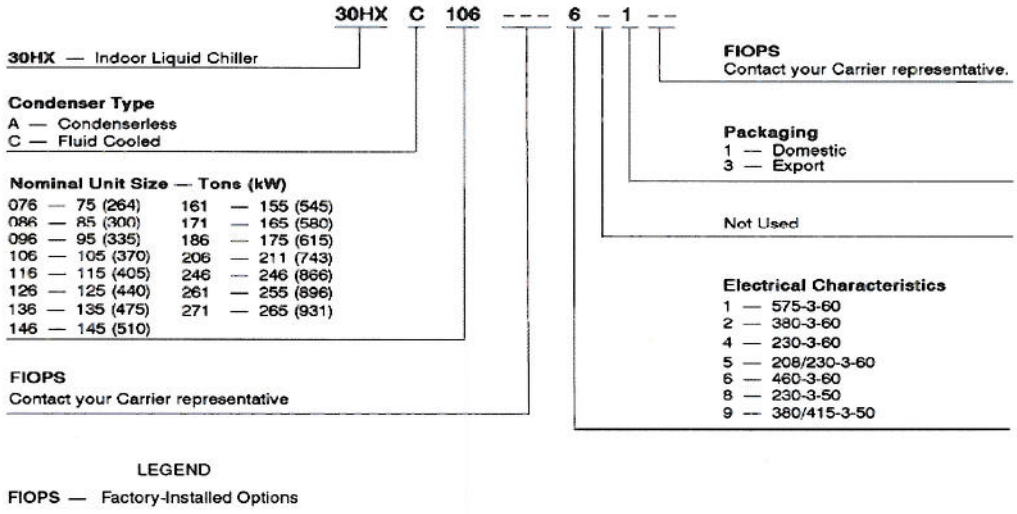
30HXC/HXA Model Number Nomenclature



LEGEND

FIOPS — Factory-Installed Options