APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0250

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: **Johnson Controls, Inc.**

Manufacturer's Technical Representative: Devin Du

Mailing Address: 5000 Renaissance Drive, New Freedom, PA 17349

Telephone: 717.771.6376 Email: devin.du@jci.com

Product Information

Product Name: **YCAL/QTC2 & YCUL Air-Cooled Scroll Chillers**

Product Type: Air-Cooled Chillers

Product Model Number: See Attachment 1
(List all unique product identification numbers and/or part numbers)

General Description: Carbon steel air-cooled scroll chillers.
Seismic enhancements made to the test units shall be incorporated into the production units.

Mounting Description: Isolated floor mounted with captive mount neoprene isolators.

Applicant Information

Applicant Company Name: **Manwill Engineering LLC**

Contact Person: Derek Manwill, SE

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: 541.241.2102 Email: derek@manwillSE.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant: Date: 4/24/2019

Title: President Company Name: **Manwill Engineering LLC**

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

Company Name: **Manwill Engineering LLC**

Name: Derek Manwill, SE California License Number: S6266

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: 541.241.2102 Email: derek@manwillSE.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: Clark Dynamic Test Laboratory, Inc.

Contact Name: Patrick Wetherill

Mailing Address: 1801 51 South, Jefferson Hills, PA 15025

Telephone: 412.387.1676 Email: pwetherill@clarktesting.com

Seismic Parameters

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

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

S_{DS} (Design spectral response acceleration at short period, g) = 2.00

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

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Attachment 2

Overall dimensions and weight (or range thereof) = See Attachments 1 & 2

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, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

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

☒ Other(s) (Please Specify): Attachments 1, 2, & 3

OSHPD Approval (For Office Use Only) – **Approval Expires on December 31, 2025**

Signature: _____ Date: July 23, 2020

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.00 z/h = 1

Condition of Approval (if applicable):

ATTACHMENT 1: CERTIFIED COMPONENTS

SEISMIC COMPLIANCE REPORT

DOCUMENT NO.: 19042CR1.0

TABLE 1

MANUFACTURER: JOHNSON CONTROLS, INC.

PRODUCT FAMILY: YCAL/QTC2 & YCUL AIR-COOLED SCROLL CHILLERS

MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
YCAL/QTC2 & YCUL Air-Cooled Scroll Chillers						
YCUL0020EE**XE	109.8	44.7	46.1	1502		EXTRAP
QTC2015TEE**XEB	109.8	44.7	46.1	1597		EXTRAP
YCAL0019EE**XE	109.8	44.7	46.1	1597		EXTRAP
YCUL0024EE**XE	109.8	44.7	46.1	1502		EXTRAP
QTC2020TEE**XEB	109.8	44.7	46.1	1597		EXTRAP
YCAL0022EE46XE	109.8	44.7	46.1	1597	460V	**UUT 1**
YCAL0022EE**XE	109.8	44.7	46.1	1597		INTERP
YCUL0031EE**XE	118.6	44.7	50.0	1734		INTERP
QTC2025TEE**XEB	118.6	44.7	50.0	1829		INTERP
YCAL0028EE**XE	118.6	44.7	50.0	1829		INTERP
YCUL0035EE**XE	118.6	44.7	50.0	1982		INTERP
QTC2030TEE**XEB	118.6	44.7	50.0	2077		INTERP
YCAL0033EE**XE	118.6	44.7	50.0	2077		INTERP
YCUL0045EE**XE	144.8	90.6	47.8	2856		INTERP
QTC2035TEE**XEB	144.8	90.6	47.8	2967		INTERP
YCAL0043EE**XE	144.8	90.6	47.8	2967		INTERP
YCUL0051EE**XE	144.8	90.6	47.8	2890		INTERP
QTC2040TEE**XEB	144.8	90.6	47.8	3001		INTERP
YCAL0046EE**XE	144.8	90.6	47.8	3001		INTERP
YCUL0055EE**XE	148.8	90.6	62.6	3104		INTERP
QTC2045TEE**XEB	148.6	90.6	62.6	3233		INTERP
YCAL0052EE**XE	148.8	90.6	62.6	3233		INTERP
YCUL0065EE**XE	148.8	90.6	62.6	3116		INTERP
YCAL0056EE**XE	148.8	90.6	62.6	3245		INTERP
YCUL0072EE**XE	153.6	90.6	62.6	3973		INTERP
YCAL0066EE**XE	153.6	90.6	62.6	4142		INTERP
YCAL0066EE17XE	153.6	90.6	62.6	4142	200/208V	**UUT 2**

MOUNTING:	Isolated floor mounted on captive mount neoprene isolators.	**SEISMIC LEVEL:**	S_{DS} = 2.00g for z/h = 1	I_P = 1.5

NOTES:

Product Construction: Painted carbon steel construction.
Options/Subcomponents: Available subcomponents are listed in Table 2. Voltage: 200-575V, 60Hz.
Nomenclature: See Attachment 3 for full nomenclature.
-QTC2 is identical to YCAL except for branding.
-YCUL is identical to YCUL except that they do not have an evaporator.
-'**' indicates voltage (see Attachment 3).

TABLE 2 - SUBCOMPONENTS

MANUFACTURER: JOHNSON CONTROLS, INC.

PRODUCT FAMILY: YCAL/QTC2 & YCUL AIR-COOLED SCROLL CHILLERS

MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
Copeland - Scroll Compressors						
ZP103	10.4	11.2	21.0	134		EXTRAP
ZP120	10.4	11.2	21.0	135		**UUT 1**
ZP137	10.4	11.2	21.0	138		INTERP
ZP154	12.9	11.7	22.2	146		INTERP
ZP182	12.9	11.7	21.7	146		**UUT 2**
ZP235	16.8	14.8	28.5	310		**UUT 2**
SWEP - Brazed Plate Heat Exchanger Evaporators (Stainless Steel)						
P120T-82	7.8	9.6	20.7	95	Single circuit	**UUT 1**
Dp300x122	9.6	9.6	20.7	111	Dual circuit	INTERP
Dp300x146	11.4	9.6	20.7	129	Dual circuit	INTERP
Dp300x198	15.3	9.6	20.7	169	Dual circuit	**UUT 2**
Johnson Controls - Condensers (Copper Tube, Aluminum Fin)						
375-58294-024	5.0	78.0	32.0			**UUT 1**
375-58294-022	5.0	81.0	32.0			INTERP
375-58294-023	5.0	90.0	36.0			INTERP
375-59426-200	5.0	90.0	36.3			INTERP
375-58487-200	5.0	90.0	48.0			INTERP
375-58276-200	5.0	99.0	48.0			**UUT 2**
AO Smith - Condenser Fan Motor						
024-35427-xxx	5.0	5.0	9.1	19	0.5HP	**UUT 1**
024-34980-xxx	6.4	6.4	15.7	51	2HP	**UUT 2**
Baldor - Condenser Fan Motor						
024-27322-xxx	6.6	6.6	16.9	44	2HP	**UUT 2**
MultiWing - Condenser Fan Impeller						
026-43008-000	30.0	30.0			30in, 21deg, 3 blade, low sound	**UUT 1**
026-41592-000	30.0	30.0			30in, 29deg, 3 blade, low sound	INTERP
026-41593-000	30.0	30.0			30in, 29deg, 4 blade, ultra quiet	**UUT 2**
026-41942-000	35.0	35.0			35in, 34deg, 3 blade, low sound	INTERP
026-41594-000	35.0	35.0			35in, 26deg, 3 blade, ultra quiet	**UUT 2**
Danfoss - Thermal Expansion Valve						
025-40900-001	2.0	4.5	4.6	1		EXTRAP
025-40900-002	2.0	4.8	4.6	1		**UUT 1**
025-40900-003	2.0	5.1	5.7	2		INTERP
025-40900-006	2.0	5.1	5.7	2		**UUT 2**
025-40900-007	2.0	5.1	5.7	2		**UUT 2**
Johnson Controls - Power Panel (Carbon Steel, NEMA 3R)						
371-05161-xxx	9.0	38.1	25.4	150		**UUT 1**
371-05162-xxx	9.0	38.1	25.4	150		INTERP
371-05163-xxx	9.0	38.1	25.4	150		**UUT 2**

MOUNTING:	Mounted within unit.	**SEISMIC LEVEL:**	S_{DS} = 2.00g for z/h = 1	I_P = 1.5
NOTES:	**Construction/Options:** Model number uniquely identifies manufacturer, materials, and configuration of subcomponents.			

UUT 1

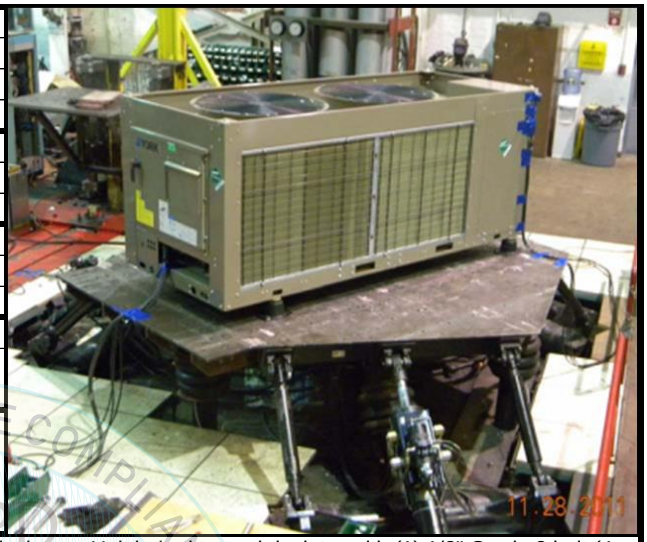
MANUFACTURER:	JOHNSON CONTROLS, INC.
MODEL NUMBER:	YCAL0022EE46XE
UNIT FUNCTION:	AIR-COOLED CHILLER
SERIAL NUMBER:	2EXM011678

DIMENSIONS (in)			WEIGHT	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT	(lb)	F-B	S-S	V
109.8	44.7	46.1	1597	16.1	8.1	13.1

CODE & CRITERIA:	2016 CBC	ICC-ES AC156	
TEST LABORATORY:	CLARK DYNAMIC TEST LABORATORY, INC.		
REPORT & DATE:	EL:9911	November 28, 2011	

S_{DS} (g)	z/h	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.50	**1**	**4.00**	**3.00**	**1.68**	**0.68**

IMPORTANCE FACTOR, I_P = 1.5
Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.



MOUNTING:	Floor mounted on (4) VMC RSM 3-700 neoprene isolators. Unit bolted to each isolator with (1) 1/2" Grade 8 bolt (4 total). Each isolator bolted to fixture with (2) 5/8" Grade 5 bolts (8 total).
CONSTRUCTION:	Painted carbon steel construction. Voltage: 460V.
SUBCOMPONENTS:	Copeland - scroll compressor (ZP103), SWEP - brazed plate heat exchanger (P120T-82), Johnson Controls - condenser (375-58294-024), AO Smith - condenser fan motor (024-35427-xxx), MultiWing - condenser fan impeller (026-43008-000), Danfoss - thermal expansion valve (025-40900-002), Johnson Controls - power panel (371-05161-xxx).

UUT 2

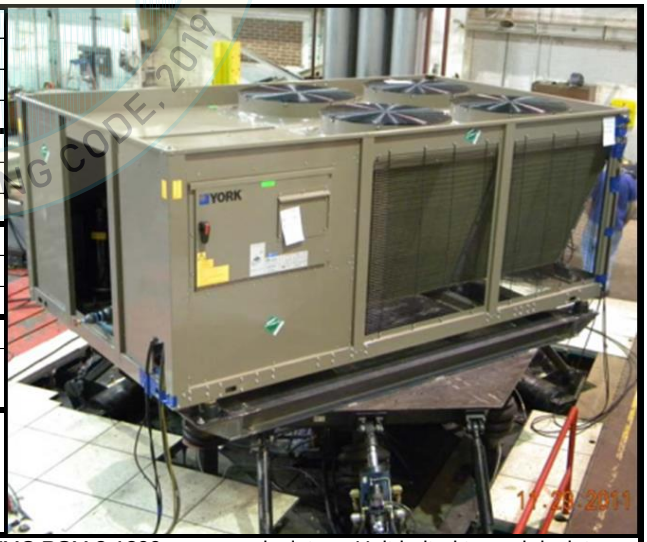
MANUFACTURER:	JOHNSON CONTROLS, INC.
MODEL NUMBER:	YCAL0066EE17XE
UNIT FUNCTION:	AIR-COOLED CHILLER
SERIAL NUMBER:	2KXM3489

DIMENSIONS (in)			WEIGHT	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT	(lb)	F-B	S-S	V
153.6	90.6	62.6	4142	4.5	6.1	6.1

CODE & CRITERIA:	2016 CBC	ICC-ES AC156	
TEST LABORATORY:	CLARK DYNAMIC TEST LABORATORY, INC.		
REPORT & DATE:	EL:9911	November 29, 2011	

S_{DS} (g)	z/h	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.00	**1**	**3.20**	**2.40**	**1.34**	**0.54**

IMPORTANCE FACTOR, I_P = 1.5
Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.



MOUNTING:	Floor mounted on (2) VMC RSM 3-1000 and (2) VMC RSM 3-1300 neoprene isolators. Unit bolted to each isolator with (1) 1/2" Grade 8 bolt (4 total). Each isolator bolted to fixture with (2) 5/8" Grade 5 bolts (8 total).
CONSTRUCTION:	Painted carbon steel construction. Voltage: 200/208V.
SUBCOMPONENTS:	Copeland - scroll compressors (ZP182, ZP235), SWEP - brazed plate heat exchanger (Dp300x198), Johnson Controls - condenser (375-58276-200), AO Smith - condenser fan motor (024-34980-xxx), Baldor - condenser fan motor (024-27322-xxx), MultiWing - condenser fan impellers (026-41593-000, 026-41594-000), Danfoss - thermal expansion valves (025-40900-006, 025-40900-007), Johnson Controls - power panel (371-05163-xxx).

YCAL AIR-COOLED SCROLL CHILLERS

DIGIT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAMPLE:	Y	C	A	L	0	0	3	3	E	E	4	6	X	E	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DIGIT	DIGIT DESCRIPTION	CODES	DEFINITIONS
1-4	Brand and Unit Type	YCAL	York YCAL Air-Cooled Scroll Chiller
5-8	Nominal Capacity	0019	14.5 Tons
		0022	17.8 Tons
		0028	24.3 Tons
		0033	28.0 Tons
		0043	34.9 Tons
		0046	38.0 Tons
		0052	45.2 Tons
		0056	45.2 Tons
		0066	60.1 Tons
9	Efficiency	E	High Efficiency Unit
10	Refrigerant	E	R-410A
11-12	Output Voltage	17	200/208V, 3 Phase, 60Hz
		28	230V, 3 Phase, 60Hz
		40	380V, 3 Phase, 60Hz
		46	460V, 3 Phase, 60Hz
		58	575V, 3 Phase, 60Hz
13	Start Type	X	Across-the-Line
14	Design Series	E	

QTC2 AIR-COOLED SCROLL CHILLERS

DIGIT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	-	-	-	-	-	-	-	-	-	-	-	-	-
SAMPLE:	Q	T	C	2	0	1	5	T	E	E	4	6	X	E	B	-	-	-	-	-	-	-	-	-	-	-	-	-

DIGIT	DIGIT DESCRIPTION	CODES	DEFINITIONS
1-4	Brand and Unit Type	QTC2	Quantech QTC2 Air-Cooled Scroll Chiller
5-9	Nominal Capacity	015TE	15.5 Tons; equivalent to YCAL0019
		020TE	18.7 Tons; equivalent to YCAL0022
		025TE	25.6 Tons; equivalent to YCAL0028
		030TE	28.6 Tons; equivalent to YCAL0033
		035TE	37.2 Tons; equivalent to YCAL0043
		040TE	39.4 Tons; equivalent to YCAL0046
		045TE	46.2 Tons; equivalent to YCAL0052
10	Refrigerant	E	R-410A
11-12	Output Voltage	17	200/208V, 3 Phase, 60Hz
		28	230V, 3 Phase, 60Hz
		40	380V, 3 Phase, 60Hz
		46	460V, 3 Phase, 60Hz
		58	575V, 3 Phase, 60Hz
13	Start Type	X	Across-the-Line
14	Design Series	E	
15	Development Level	B	

ATTACHMENT 3: MODEL NOMENCLATURE

SEISMIC COMPLIANCE REPORT

YCUL AIR-COOLED SCROLL CHILLERS

DOCUMENT NO.: 19042CR1.0

DIGIT:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAMPLE:	Y	C	U	L	0	0	4	5	E	E	4	6	X	E	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DIGIT	DIGIT DESCRIPTION	CODES	DEFINITIONS
1-4	Brand and Unit Type	YCUL	York YCUL Air-Cooled Scroll Chiller
5-8	Nominal Capacity	0020	17.0 Tons; equivalent to YCAL0019 without evaporator
		0024	20.1 Tons; equivalent to YCAL0022 without evaporator
		0031	27.0 Tons; equivalent to YCAL0028 without evaporator
		0035	30.9 Tons; equivalent to YCAL0033 without evaporator
		0045	41.6 Tons; equivalent to YCAL0043 without evaporator
		0051	44.1 Tons; equivalent to YCAL0046 without evaporator
		0055	51.6 Tons; equivalent to YCAL0052 without evaporator
		0065	59.5 Tons; equivalent to YCAL0056 without evaporator
		0072	73.5 Tons; equivalent to YCAL0066 without evaporator
9	Efficiency	E	High Efficiency Unit
10	Refrigerant	E	R-410A
11-12	Output Voltage	17	200/208V, 3 Phase, 60Hz
		28	230V, 3 Phase, 60Hz
		40	380V, 3 Phase, 60Hz
		46	460V, 3 Phase, 60Hz
		58	575V, 3 Phase, 60Hz
13	Start Type	X	Across-the-Line
14	Design Series	E	