



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP – 0374 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Johnson Controls, Inc.

Manufacturer's Technical Representative: Adam Kelly

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

Telephone: 717.771.7527

Email: adam.j.kelly@jci.com

Product Information

Product Name: YLAA/QTC3 Air-Cooled Scroll Chillers with Brazed Plate Heat Exchangers

Product Type: Air-Cooled Chiller

Product Model Number: See Attachment 1

(List all unique product identification numbers and/or part numbers)

General Description: Carbon steel air-cooled scroll chillers with brazed plate heat exchangers.

Seismic enhancements made to the test units shall be incorporated into the production units.

Mounting Description: Spring isolated floor mounted with captive mount spring 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

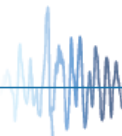
Email: derek@manwillSE.com

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: 8/23/2018

Title: President Company Name: Manwill Engineering LLC

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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):

OSP-0374-10

BY: Ali Sumer

DATE: 03/20/2019

Testing Laboratory

Company Name: Environmental Testing Laboratory

Contact Name: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas, TX 75229

Telephone: 972.247.9657

Email: jeremy@etldallas.com

Testing Laboratory

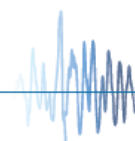
Company Name: U.S. Army ERDC – Civil Engineering Research Laboratory

Contact Name: Jim Wilcoski

Mailing Address: 2902 Newmark Drive, Champaign, IL 61826

Telephone: 217.373.6763

Email: james.wilcoski@usace.army.mil





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 4.5 ($S_{DS} = 2.0g$); 1.88 ($S_{DS} = 2.5g$)

S_{DS} (Design spectral response acceleration at short period, g) = 2.0 ($z/h = 1$); 2.5 ($z/h = 0$)

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

R_p (Equipment or component response modification factor) = 2.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1 ($S_{DS} = 2.0g$); 0 ($S_{DS} = 2.5g$)

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) = OSP-0374-10

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = BY: Ali Sumer

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = DATE: 03/20/2019

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

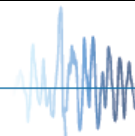
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: [Signature] Date: 3/18/2019

Print Name: Ali Sumer Title: DSE

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

Condition of Approval (if applicable): _____



ATTACHMENT 1: CERTIFIED COMPONENTS

SEISMIC COMPLIANCE REPORT

TABLE 1 - YLAA

DOCUMENT NO.: 17123CR1.1

MANUFACTURER: JOHNSON CONTROLS, INC.						
PRODUCT FAMILY: YLAA AIR-COOLED SCROLL CHILLERS WITH BRAZED PLATE HEAT EXCHANGERS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
YLAA Air-Cooled Scroll Chillers with Brazed Plate Heat Exchangers						
YLAA0058***X	104.1	93.7	94.2	5132		EXTRAP
YLAA0065***X	104.1	93.7	94.2	5369		EXTRAP
YLAA0070***X	120.0	93.7	94.2	5292	Voltage tested: 460/3/60	UUT 2
YLAA0080***X	120.0	93.7	94.2	5652		INTERP
YLAA0081***X	104.1	93.7	94.2	5839		INTERP
YLAA0082***X	104.1	93.7	94.2	5876		INTERP
YLAA089/90***X	120.0	93.7	94.2	5967		INTERP
YLAA0091/92***X	146.6	93.7	94.2	6551		INTERP
YLAA0100***X	146.6	93.7	94.2	6648		INTERP
YLAA0101***X	146.6	93.7	94.2	6836		INTERP
YLAA0115***X	146.6	93.7	94.2	6935		INTERP
YLAA0120***X	146.6	93.7	94.2	7153		INTERP
YLAA0125***X	191.6	93.7	94.2	7838		INTERP
YLAA0135/136***X	191.6	93.7	94.2	8156		INTERP
YLAA0141/142***X	191.6	93.7	94.2	8319		INTERP
YLAA0139***X	191.6	93.7	94.2	8485		INTERP
YLAA0155***X	191.6	93.7	94.2	8499		INTERP
YLAA0156***X	236.6	93.7	94.2	9444		INTERP
YLAA0170***X	236.6	93.7	94.2	9864		INTERP
YLAA0175***X	236.6	93.7	94.2	10074	Voltage tested: 200-208/3/60	UUT 1
YLAA0200***X	274.4	88.3	94.2	10350		INTERP
YLAA0230***X	274.4	88.3	94.2	10900	Voltage tested: 460/3/60	UUT 3
MOUNTING:	Isolated floor mounted.			SEISMIC LEVELS:	S _{DS} = 2.0g for z/h = 1 S _{DS} = 2.5g for z/h = 0 I _p = 1.5	
NOTES:	Product Construction: Painted carbon steel construction. Options/Subcomponents: Available subcomponents are listed in Table 3. Voltage: 200-575V 60Hz. Nomenclature: - '**' in position 9 indicates efficiency: 'S' for standard efficiency, 'H' for high efficiency. - '***' in positions 10 and 11 indicates voltage: '17' for 200V, '28' for 230V, '40' for 380V, '46' for 460V, '58' for 575V.					

ATTACHMENT 1: CERTIFIED COMPONENTS

SEISMIC COMPLIANCE REPORT

TABLE 2 - QTC3

DOCUMENT NO.: 17123CR1.1

MANUFACTURER: JOHNSON CONTROLS, INC.						
PRODUCT FAMILY: YLAA AIR-COOLED SCROLL CHILLERS WITH BRAZED PLATE HEAT EXCHANGERS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
QTC3 Air-Cooled Scroll Chillers						
QTC3055TE**X	104.1	93.7	94.2	5132	Identical to YLAA0070	EXTRAP
QTC3060TE**X	104.1	93.7	94.2	5369		EXTRAP
QTC3070TE**X	120.0	93.7	94.2	5292		UUT 2
QTC3075TE**X	120.0	93.7	94.2	5652		INTERP
QTC3079TE**X	120.0	93.7	94.2	5876		INTERP
QTC3080TE**X	104.1	93.7	94.2	5839		INTERP
QTC3085TE**X	120.0	93.7	94.2	5967		INTERP
QTC3090TE**X	146.6	93.7	94.2	6551		INTERP
QTC3095TE**X	146.6	93.7	94.2	6648		INTERP
QTC3100TE**X	146.6	93.7	94.2	6836		INTERP
QTC3110TE**X	146.6	93.7	94.2	7153		INTERP
QTC3120TE**X	191.6	93.7	94.2	7838		INTERP
QTC3125TE**X	191.6	93.7	94.2	8156		INTERP
QTC3130TE**X	191.6	93.7	94.2	8319		INTERP
QTC3129TE**X	191.6	93.7	94.2	8485		INTERP
QTC3140TE**X	191.6	93.7	94.2	8499		INTERP
QTC3150TE**X	236.6	93.7	94.2	9444		INTERP
QTC3160TE**X	236.6	93.7	94.2	9864		INTERP
QTC3170TE**X	236.6	93.7	94.2	10074	Identical to YLAA0175	UUT 1
QTC3170TE**X	274.4	88.3	94.2	10350		INTERP
QTC3225TE**X	274.4	88.3	94.2	10900	Identical to YLAA0230	UUT 3
MOUNTING:	Isolated floor mounted.			SEISMIC LEVELS:	S _{DS} = 2.0g for z/h = 1 S _{DS} = 2.5g for z/h = 0	I _p = 1.5
NOTES:	Product Construction: Identical to YLAA; naming/branding is the only difference. Painted carbon steel construction. Options/Subcomponents: Available subcomponents are listed in Table 3. Voltage: 200-575V 60Hz. Nomenclature: -'**' in positions 10 and 11 indicates voltage: '17' for 200V, '28' for 230V, '40' for 380V, '46' for 460V, '58' for 575V.					

ATTACHMENT 1: CERTIFIED SUBCOMPONENTS

SEISMIC COMPLIANCE REPORT

TABLE 3 - SUBCOMPONENTS

DOCUMENT NO.: 17123CR1.1

MANUFACTURER: JOHNSON CONTROLS, INC.						
PRODUCT FAMILY: YLAA AIR-COOLED SCROLL CHILLERS WITH BRAZED PLATE HEAT EXCHANGERS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
Copeland - Compressor						
ZP154	10.4	11.2	21.7	143		UUT 2
ZP180	12.6	13.8	23.3	235		INTERP
ZP385	17.6	16.8	28.5	390		UUT 1
ZP485	14.5	13.6	29.4	419		UUT 3
Bitzer - Compressor						
GSD60154	10.5	9.7	21.7	195		UUT 2
GSD60182	10.5	9.7	21.7	195		INTERP
GSD80295	16.1	15.2	28.0	333		INTERP
GSD80421	16.1	15.2	28.0	336		INTERP
GSD80385	16.1	15.2	28.0	337		UUT 1
Alfa Laval - Evaporator						
ACH502-90	9.6	12.7	29.1	209		EXTRAP
ACH500-102	11.0	12.7	29.1	231		UUT 2
ACH502-106	11.1	12.7	29.1	238		INTERP
ACH502-122	12.7	12.7	29.1	268		INTERP
ACH500-126	13.4	12.7	29.1	275		INTERP
ACH502-142	14.7	12.7	29.1	305		INTERP
ACH502-162	16.7	12.7	29.1	342		INTERP
ACH500-166	17.5	12.7	29.1	349		INTERP
ACH500-190	20.0	12.7	29.1	394		INTERP
ACH502-210	21.5	12.7	29.1	431		INTERP
ACH502-230	23.4	12.7	29.1	468		INTERP
ACH500-250	26.2	12.7	29.1	505		INTERP
ACH1000-150	14.9	19.2	32.2	536		INTERP
ACH500-270	28.2	12.7	29.1	542		UUT 1
ACH1000-170	16.8	19.2	32.2	597		UUT 3
Luvata - Condenser						
026-45535-000	1.0	87.8	47.7	62		UUT 1-3
AO Smith - Motor						
024-36873-507*				100	Voltage tested: 414-515V	UUT 2,3
024-34980-501**				100	Voltage tested: 414-515V	UUT 2
024-36873-503*				100	Voltage tested: 180-220V	UUT 1
024-34980-502**				100	Voltage tested: 180-220V	UUT 1
MultiWing - Impeller						
026-41594-000*	35.2	35.2	4.0	25		UUT 1-3
026-41942-000**	35.2	35.2	4.0	25		UUT 1,2
Johnson Controls - VFD						
VFD66	8.0	8.0	20.0	50	Voltage tested: 208V & 460V	UUT 1-3
Danfoss - Electronic Expansion Valve						
ETS-25	2.4	4.8	5.9	1.5		UUT 2
ETS-50	2.4	5	8.1	3.3		INTERP
ETS-100	2.4	6.6	8.4	3.7		UUT 1
NOTES: Table continues on the next page. Additional notes, information, and seismic parameters are shown at the end of the table.						

ATTACHMENT 1: CERTIFIED SUBCOMPONENTS

SEISMIC COMPLIANCE REPORT

TABLE 3 - SUBCOMPONENTS (continued)

DOCUMENT NO.: 17123CR1.1

MANUFACTURER: JOHNSON CONTROLS, INC.						
PRODUCT FAMILY: YLAA AIR-COOLED SCROLL CHILLERS WITH BRAZED PLATE HEAT EXCHANGERS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
Sporlan - Electronic Expansion Valve						
SERI-G	1.6	6.8	6.3	3.0		EXTRAP
SERI-J	1.6	7.1	6.3	3.2		EXTRAP
SERI-K	1.6	7.7	6.3	3.3		UUT 3
SERI-L	1.6	7.7	6.3	3.3		INTERP
SEHI-175	2.2	8.5	7.9	3.7		UUT 3
Westermeyer - Liquid Receiver						
026-45013-000	6.0	6.0	81.7	110		UUT 1-3
Johnson Controls - Aesthetic Panel Kit						
375-83856-000	2.5	43.4	50.1	10	Dimensions/weight per panel	UUT 1-3
Johnson Controls - Strainer						
029-27042-000	17.6	11.7	5.5	79		UUT 3
Johnson Controls - Inverter						
024-34335-021	8.0	8.0	20.0	50		UUT 3
Johnson Controls - Hot Gas Bypass						
392-41495-100	36.0	0.8	0.8	5.0		UUT 3
Johnson Controls - Electrical Panel						
371-05244-3xx	9.5	76.5	30.7	500		EXTRAP
371-05245-3xx	9.5	76.5	30.7	500	See Note 1 below	UUT 2
371-05247-3xx	9.5	76.5	30.7	500	See Note 1 below	UUT 1
371-08058-3xx	9.5	76.5	30.7	500		UUT 3
MOUNTING:	Mounted within unit.			SEISMIC LEVELS:	S _{DS} = 2.0g for z/h = 1 S _{DS} = 2.5g for z/h = 0 I _p = 1.5	
NOTES:	Construction/Options: Model number uniquely identifies manufacturer, materials, and configuration of subcomponents. 1. Electrical panels on UUT 1 and UUT 2 were manufactured by Schneider Electric. Electrical panels are now manufactured by Johnson Controls, including the panel tested on UUT 3. All internal components and materials are identical to panels manufactured by Schneider Electric. The only difference is the enclosure is now welded instead of riveted.					

ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SEISMIC COMPLIANCE REPORT

UUT 1

DOCUMENT NO.: 17123CR1.1

MANUFACTURER:		JOHNSON CONTROLS, INC.				
MODEL NUMBER:		YLAA0175H17X/QTC3170TE17X				
UNIT FUNCTION:		AIR-COOLED CHILLER				
SERIAL NUMBER:		N/A				
DIMENSIONS (in)			WEIGHT (lb)	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT		S-S	F-B	V
236.6	93.7	94.2	10,074	3.5	7.0	8.1
BUILDING CODE		TEST CRITERIA		LAB REPORT NO.		
2016 CBC		ICC-ES AC156		ERDC-CERL 2011-0263		
S_{DS} (g)	z/h	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)	
2.5	1	4.00	3.00	1.68	0.68	
2.5	0					
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 (8) VMC YRSM3 spring isolators. Unit bolted to each isolator with (1) 5/8" Grade 8 bolt (8 total). Each isolator bolted to fixture with (4) 5/8" Grade 5 bolts (32 total).				
CONSTRUCTION:		Painted carbon steel construction. Voltage: 200-208V.				
SUBCOMPONENTS:		Copeland - compressor (ZP385), Bitzer - compressor (GSD80385), Alfa Laval - evaporator (ACH500-270), Luvata - condenser (026-45535-000), AO Smith - motors (024-36873-503*, 024-34980-502**), MultiWing - impellers (026-41594-000*, 026-41942-000**), Johnson Controls - VFD (VFD66), Danfoss - electronic expansion valve (ETS-100), Westermeyer - liquid receiver (026-45013-000), Johnson Controls - aesthetic panel kit (375-83856-000), Schneider Electric - electrical panel (371-05247-3xx).				
TESTING NOTES:		N/A				



DATE: 03/20/2019

ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SEISMIC COMPLIANCE REPORT

UUT 2

DOCUMENT NO.: 17123CR1.1

MANUFACTURER:		JOHNSON CONTROLS, INC.				
MODEL NUMBER:		YLAA0070S46X/QTC3070TE46X				
UNIT FUNCTION:		AIR-COOLED CHILLER				
SERIAL NUMBER:		N/A				
DIMENSIONS (in)			WEIGHT (lb)	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT		S-S	F-B	V
120.0	93.7	94.2	5,292	3.6	4.8	7.9
BUILDING CODE		TEST CRITERIA		LAB REPORT NO.		
2016 CBC		ICC-ES AC156		ERDC-CERL 2011-0263		
S_{DS} (g)	z/h	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)	
2.5	1	4.00	3.00	1.68	0.68	
2.5	0					
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 YRSM3 spring isolators. Unit bolted to each isolator with (1) 5/8" Grade 8 bolt (4 total). Each isolator bolted to fixture with (4) 5/8" Grade 5 bolts (16 total).				
CONSTRUCTION:		Painted carbon steel construction. Voltage: 460V.				
SUBCOMPONENTS:		Copeland - compressor (ZP154), Bitzer - compressor (GSD60154), Alfa Laval - evaporator (ACH500-102), Luvata - condenser (026-45535-000), AO Smith - motors (024-36873-507*, 024-34980-501**), MultiWing - impellers (026-41594-000*, 026-41942-000**), Johnson Controls - VFD (VFD66), Danfoss - electronic expansion valve (ETS-25), Westermeyer - liquid receiver (026-45013-000), Johnson Controls - aesthetic panel kit (375-83856-000), Schneider Electric - electrical panel (371-05245-3xx).				
TESTING NOTES:		N/A				



DATE: 03/20/2019

ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SEISMIC COMPLIANCE REPORT

UUT 3

DOCUMENT NO.: 17123CR1.1

MANUFACTURER:	JOHNSON CONTROLS, INC.
MODEL NUMBER:	YLAA0230H46X/QTC3225TE46X
UNIT FUNCTION:	AIR-COOLED CHILLER
SERIAL NUMBER:	N/A

DIMENSIONS (in)			WEIGHT (lb)	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT		S-S	F-B	V
274.4	88.3	94.2	10,900	2.1	2.3	5.0

BUILDING CODE	TEST CRITERIA	LAB REPORT NO.
2016 CBC	ICC-ES AC156	ETL 17123TR1

S _{DS} (g)	z/h	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.0	1	3.20	2.40	1.68	0.68
2.5	0				

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 (10) Mason SSLFH-C spring isolators. Unit bolted to each isolator with (1) 5/8" Grade 8 bolt (10 total). Each isolator bolted to fixture with (2) 5/8" Grade 8 bolts (20 total).
CONSTRUCTION:	Painted carbon steel construction. Voltage: 460V.
SUBCOMPONENTS:	Copeland - compressor (ZP485), Alfa Laval - evaporator (ACH1000-170), Luvata - condenser (026-45535-000), AO Smith - motor (024-36873-507*), MultiWing - impeller (026-41594-000*), Johnson Controls - VFD (VFD66), Sporlan - electronic expansion valves (SERI-K, SEHI-175), Westermeyer - liquid receiver (026-45013-000), Johnson Controls - aesthetic panel kit (375-83856-000), Johnson Controls - strainer (029-27042-000), Johnson Controls - inverter (024-34335-021), Johnson Controls - hot gas bypass (392-41495-100), Johnson Controls - electrical panel (371-08058-3xx).
TESTING NOTES:	N/A

