



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

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

OFFICE USE ONLY

APPLICATION #: **OSP – 0546 – 10**

**OSHPD Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Johnson Controls, Inc.

Manufacturer's Technical Representative: Jeff Ronald

Mailing Address: 1499 East Philadelphia Street, York, PA 17403

Telephone: 717.505.4697 Email: [jeffrey.joseph.ronald@jci.com](mailto:jeffrey.joseph.ronald@jci.com)

**Product Information**

Product Name: Harmonic Filters and Backdraft Dampers for Solution YC Air Conditioning Units

Product Type: Custom Air Conditioning Unit Components

Product Model Number: See Attachment 1

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

General Description: Harmonic Filters and Backdraft Dampers.

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

Mounting Description: Harmonic Filters wall mounted to equipment and Backdraft Dampers both wall mounted and horizontal surface mounted to equipment. See Attachment 1 for limitations.

**Applicant Information**

Applicant Company Name: Manwill Engineering LLC

Contact Person: Derek Manwill, SE

Mailing Address: PO Box 1194, Bend, OR 97709

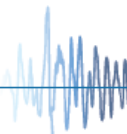
Telephone: 541.241.2102 Email: [derek@manwillSE.com](mailto:derek@manwillSE.com)

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: 03/13/2018

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](mailto: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): \_\_\_\_\_

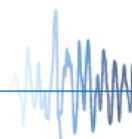
**Testing Laboratory**

Company Name: Environmental Testing Laboratory

Contact Name: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas, TX 75229

Telephone: 972.247.9657 Email: [jeremy@etldallas.com](mailto:jeremy@etldallas.com)





**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 ( $F_p/W_p$ ) = 1.5 ( $S_{DS} = 2.0g$ ); 1.44 ( $S_{DS} = 3.2g$ )

$S_{DS}$  (Design spectral response acceleration at short period, g) = 2.0 (z/h = 1); 3.2 (z/h = 0)

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

$R_p$  (Equipment or component response modification factor) = 6.0

$\Omega_0$  (System overstrength factor) = 2.0

$I_p$  (Importance factor) = 1.5

z/h (Height factor ratio) = 1 ( $S_{DS} = 2.0g$ ); 0 ( $S_{DS} = 3.2g$ )

Equipment or Component Natural Frequencies (Hz) = N/A

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) = \_\_\_\_\_

$\Omega_0$  (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

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

Signature:  Date: March 14, 2018

Print Name: Timothy J. Piland Title: SSE

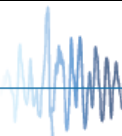
Special Seismic Certification Valid Up to :  $S_{DS}$  (g) = See Above z/h = See Above

Condition of Approval (if applicable): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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



## ATTACHMENT 1: CERTIFIED COMPONENTS

## SEISMIC COMPLIANCE REPORT

### TABLE 1 - WALL MNT. BACKDRAFT DAMPERS

DOCUMENT NO.: 17073CR1.1

MANUFACTURER: JOHNSON CONTROS, INC.						
PRODUCT FAMILY: SOLUTION YC AIR HANDLING UNITS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
<b>Ruskin - BD6<sup>1</sup> &amp; CBD6 Heavy Duty Backdraft Damper</b>						
BD6 - 6x6	2.3	6	6	1		EXTRAP
CBD6 - 6x7	2.3	6	6	1		EXTRAP
<i>Interpolated sizes<sup>2</sup></i>						EXTRAP
BD6 - 20x20	2.3	20	20	9		EXTRAP
CBD6 - 20x20	2.3	20	20	10		UUT 7
<i>Interpolated sizes<sup>2</sup></i>						INTERP
BD6 - 48x52	2.3	48	52	40		INTERP
CBD6 - 48x52	2.3	48	52	43		UUT 6
MOUNTING:	Wall mounted on equipment.			SEISMIC LEVELS	S <sub>DS</sub> = 2.0g for z/h = 1 S <sub>DS</sub> = 3.2g for z/h = 0 I <sub>p</sub> = 1.5	
NOTES:	<b>Product Construction:</b> Aluminum frame and blades. <b>Options/Subcomponents:</b> N/A 1. BD6 models are identical to CBD6 except that they do not have the small counterbalance weight attached to the blades. 2. Sizes are available in 1/16in increments for width and height.					

### TABLE 2 - HORIZONTAL SURFACE MNT. BACKDRAFT DAMPERS

MANUFACTURER: JOHNSON CONTROS, INC.						
PRODUCT FAMILY: SOLUTION YC AIR HANDLING UNITS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
<b>Ruskin - BD6<sup>1</sup> &amp; CBD6 Heavy Duty Backdraft Damper</b>						
BD6 - 6x6	2.3	6	6	1		EXTRAP
CBD6 - 6x7	2.3	6	6	1		EXTRAP
<i>Interpolated sizes<sup>2</sup></i>						EXTRAP
BD6 - 20x20	2.3	20	20	9		EXTRAP
CBD6 - 20x20	2.3	20	20	10		UUT 9
<i>Interpolated sizes<sup>2</sup></i>						INTERP
BD6 - 48x52	2.3	48	52	40		INTERP
CBD6 - 48x52	2.3	48	52	43		UUT 8
MOUNTING:	Roof mounted on equipment.			SEISMIC LEVELS	S <sub>DS</sub> = 2.0g for z/h = 1 S <sub>DS</sub> = 3.2g for z/h = 0 I <sub>p</sub> = 1.5	
NOTES:	<b>Product Construction:</b> Aluminum frame and blades. <b>Options/Subcomponents:</b> N/A 1. BD6 models are identical to CBD6 except that they do not have the small counterbalance weight attached to the blades. 2. Sizes are available in 1/16in increments for width and height.					

**ATTACHMENT 1: CERTIFIED COMPONENTS**

**SEISMIC COMPLIANCE REPORT**

**TABLE 3 - WALL MNT. HARMONIC FILTERS**

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER: JOHNSON CONTROS, INC.</b>						
<b>PRODUCT FAMILY: SOLUTION YC AIR HANDLING UNITS</b>						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
<b>TCI - HarmonicGuard Passive (HGP) 5% Harmonic Filters in Type 3R Enclosure</b>						
HGP0030AW3S0000-JCI-SEISMIC	13.7	33.3	32.3	144	30HP, 480V/60HZ, Type 3R	EXTRAP
HGP0030AW3F0000-JCI-SEISMIC	13.7	33.3	32.3	151	30HP, 480V/60HZ, Type 3R	EXTRAP
HGP0030CW3S0000-JCI-SEISMIC	13.7	33.3	32.3	154	30HP, 600V/60HZ, Type 3R	EXTRAP
HGP0030CW3F0000-JCI-SEISMIC	13.7	33.3	32.3	228	30HP, 600V/60HZ, Type 3R	<b>UUT 5</b>
HGP0040AW3S0000-JCI-SEISMIC	13.7	39.2	37.6	220	40HP, 480V/60HZ, Type 3R	INTERP
HGP0040AW3F0000-JCI-SEISMIC	13.7	39.2	37.6	227	40HP, 480V/60HZ, Type 3R	INTERP
HGP0040CW3S0000-JCI-SEISMIC	13.7	39.2	37.6	239	40HP, 600V/60HZ, Type 3R	INTERP
HGP0040CW3F0000-JCI-SEISMIC	13.7	39.2	37.6	243	40HP, 600V/60HZ, Type 3R	INTERP
HGP0050AW3S0000-JCI-SEISMIC	13.7	39.2	37.6	229	50HP, 480V/60HZ, Type 3R	INTERP
HGP0050AW3F0000-JCI-SEISMIC	13.7	39.2	37.6	237	50HP, 480V/60HZ, Type 3R	INTERP
HGP0050CW3S0000-JCI-SEISMIC	13.7	39.2	37.6	249	50HP, 600V/60HZ, Type 3R	INTERP
HGP0050CW3F0000-JCI-SEISMIC	13.7	39.2	37.6	253	50HP, 600V/60HZ, Type 3R	INTERP
HGP0060AW3S0000-JCI-SEISMIC	13.7	39.2	37.6	239	60HP, 480V/60HZ, Type 3R	INTERP
HGP0060AW3F0000-JCI-SEISMIC	13.7	39.2	37.6	247	60HP, 480V/60HZ, Type 3R	INTERP
HGP0060CW3S0000-JCI-SEISMIC	13.7	39.2	37.6	259	60HP, 600V/60HZ, Type 3R	INTERP
HGP0060CW3F0000-JCI-SEISMIC	13.7	39.2	37.6	263	60HP, 600V/60HZ, Type 3R	INTERP
HGP0075AW3S0000-JCI-SEISMIC	13.7	39.2	37.6	246	75HP, 480V/60HZ, Type 3R	INTERP
HGP0075AW3F0000-JCI-SEISMIC	13.7	39.2	37.6	251	75HP, 480V/60HZ, Type 3R	<b>UUT 1</b>
HGP0075CW3S0000-JCI-SEISMIC	13.7	39.2	37.6	269	75HP, 600V/60HZ, Type 3R	INTERP
HGP0075CW3F0000-JCI-SEISMIC	13.7	39.2	37.6	273	75HP, 600V/60HZ, Type 3R	INTERP
HGP0100AW3S0000-JCI-SEISMIC	13.7	39.2	37.6	269	100HP, 480V/60HZ, Type 3R	INTERP
HGP0100CW3S0000-JCI-SEISMIC	13.7	39.2	37.6	269	100HP, 600V/60HZ, Type 3R	INTERP
HGP0100AW3F0000-JCI-SEISMIC	13.7	39.2	37.6	277	100HP, 480V/60HZ, Type 3R	INTERP
HGP0100CW3F0000-JCI-SEISMIC	13.7	39.2	37.6	277	100HP, 600V/60HZ, Type 3R	INTERP
HGP0125AW3S0000-JCI-SEISMIC	13.7	39.2	37.6	289	125HP, 480V/60HZ, Type 3R	INTERP
HGP0125CW3S0000-JCI-SEISMIC	13.7	39.2	37.6	289	125HP, 600V/60HZ, Type 3R	INTERP
HGP0125AW3F0000-JCI-SEISMIC	13.7	39.2	37.6	297	125HP, 480V/60HZ, Type 3R	INTERP
HGP0125CW3F0000-JCI-SEISMIC	13.7	39.2	37.6	377	125HP, 600V/60HZ, Type 3R	<b>UUT 2</b>
<b>TCI - HarmonicGuard Passive (HGP) 5% Harmonic Filters in Type 1 Enclosure</b>						
HGP0030CW1S0000-JCI-SEISMIC	12.5	17.5	31.6	141	30HP, 600V/60HZ, Type 1	EXTRAP
HGP0030AW1S0000-JCI-SEISMIC	12.5	17.5	31.6	145	30HP, 480V/60HZ, Type 1	EXTRAP
HGP0030CW1F0000-JCI-SEISMIC	12.5	17.5	31.6	151	30HP, 600V/60HZ, Type 1	EXTRAP
HGP0030AW1F0000-JCI-SEISMIC	12.5	17.5	31.6	152	30HP, 480V/60HZ, Type 1	EXTRAP
HGP0040AW1S0000-JCI-SEISMIC	12.5	17.5	31.6	185	40HP, 480V/60HZ, Type 1	EXTRAP
HGP0040CW1S0000-JCI-SEISMIC	12.5	17.5	31.6	191	40HP, 600V/60HZ, Type 1	EXTRAP
HGP0040AW1F0000-JCI-SEISMIC	12.5	17.5	31.6	192	40HP, 480V/60HZ, Type 1	EXTRAP
HGP0040CW1F0000-JCI-SEISMIC	12.5	17.5	31.6	201	40HP, 600V/60HZ, Type 1	EXTRAP
HGP0050AW1S0000-JCI-SEISMIC	12.5	17.5	31.6	195	50HP, 480V/60HZ, Type 1	EXTRAP
HGP0050CW1S0000-JCI-SEISMIC	12.5	17.5	31.6	196	50HP, 600V/60HZ, Type 1	EXTRAP
HGP0050AW1F0000-JCI-SEISMIC	12.5	17.5	31.6	202	50HP, 480V/60HZ, Type 1	EXTRAP
HGP0050CW1F0000-JCI-SEISMIC	12.5	17.5	31.6	206	50HP, 600V/60HZ, Type 1	EXTRAP
HGP0060AW1S0000-JCI-SEISMIC	12.5	17.5	31.6	200	60HP, 480V/60HZ, Type 1	EXTRAP
NOTES:	Table continues on the next page. Additional notes, information, and seismic parameters are shown at the end of the table.					

**ATTACHMENT 1: CERTIFIED COMPONENTS**

**SEISMIC COMPLIANCE REPORT**

**TABLE 3 - WALL MNT. HARMONIC FILTERS (cont.)**

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER: JOHNSON CONTROS, INC.</b>						
<b>PRODUCT FAMILY: SOLUTION YC AIR HANDLING UNITS</b>						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
<b>TCI - HarmonicGuard Passive (HGP) 5% Harmonic Filters in Type 1 Enclosure (continued)</b>						
HGP0060CW1S0000-JCI-SEISMIC	12.5	17.5	31.6	201	60HP, 600V/60HZ, Type 1	EXTRAP
HGP0060AW1F0000-JCI-SEISMIC	12.5	17.5	31.6	208	60HP, 480V/60HZ, Type 1	EXTRAP
HGP0060CW1F0000-JCI-SEISMIC	12.5	17.5	31.6	211	60HP, 600V/60HZ, Type 1	EXTRAP
HGP0075AW1S0000-JCI-SEISMIC	12.5	17.5	31.6	205	75HP, 480V/60HZ, Type 1	EXTRAP
HGP0075AW1F0000-JCI-SEISMIC	12.5	17.5	31.6	212	75HP, 480V/60HZ, Type 1	EXTRAP
HGP0075CW1S0000-JCI-SEISMIC	12.5	17.5	31.6	221	75HP, 600V/60HZ, Type 1	EXTRAP
HGP0075CW1F0000-JCI-SEISMIC	12.5	17.5	31.6	179	75HP, 600V/60HZ, Type 1	<b>UUT 3</b>
HGP0100AW1S0000-JCI-SEISMIC	16.3	17.7	56.2	295	100HP, 480V/60HZ, Type 1	INTERP
HGP0100AW1F0000-JCI-SEISMIC	16.5	17.7	56.2	302	100HP, 480V/60HZ, Type 1	INTERP
HGP0100CW1S0000-JCI-SEISMIC	16.5	17.7	56.2	303	100HP, 600V/60HZ, Type 1	INTERP
HGP0100CW1F0000-JCI-SEISMIC	16.3	17.7	56.2	312	100HP, 600V/60HZ, Type 1	INTERP
HGP0125AW1S0000-JCI-SEISMIC	16.3	17.7	56.2	315	125HP, 480V/60HZ, Type 1	INTERP
HGP0125CW1S0000-JCI-SEISMIC	16.5	17.7	56.2	315	125HP, 600V/60HZ, Type 1	INTERP
HGP0125AW1F0000-JCI-SEISMIC	16.5	17.7	56.2	322	125HP, 480V/60HZ, Type 1	INTERP
HGP0125CW1F0000-JCI-SEISMIC	16.3	17.7	56.2	325	125HP, 600V/60HZ, Type 1	INTERP
HGP0150AW1S0000-JCI-SEISMIC	16.3	17.7	56.2	353	150HP, 480V/60HZ, Type 1	INTERP
HGP0150CW1S0000-JCI-SEISMIC	16.5	17.7	56.2	355	150HP, 600V/60HZ, Type 1	INTERP
HGP0150AW1F0000-JCI-SEISMIC	16.5	17.7	56.2	363	150HP, 480V/60HZ, Type 1	<b>UUT 4</b>
HGP0150CW1F0000-JCI-SEISMIC	16.3	17.7	56.2	365	150HP, 600V/60HZ, Type 1	EXTRAP
MOUNTING:	Wall <sup>1</sup> mounted on equipment.			SEISMIC LEVELS	S <sub>DS</sub> = 2.0g for z/h = 1 S <sub>DS</sub> = 3.2g for z/h = 0	I <sub>p</sub> = 1.5
NOTES:	<p><b>Product Construction:</b> Type 1 and Type 3R carbon steel enclosures.</p> <p><b>Options/Subcomponents:</b> Enclosures may contain any combination of subcomponents listed in Table 4 to create a complete harmonic filter.</p> <p>1. Harmonic filters wall mount to equipment through Unistrut P1000 rails. See UUT Summaries for a detailed description.</p>					

## ATTACHMENT 1: CERTIFIED SUBCOMPONENTS

## SEISMIC COMPLIANCE REPORT

### TABLE 4 - HARMONIC FILTER SUBCOMP.

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER: JOHNSON CONTROS, INC.</b>						
<b>PRODUCT FAMILY: SOLUTION YC AIR HANDLING UNITS</b>						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
<b>Hoffman - Type 3R Enclosures</b>						
26741	13.7	33.3	32.3			UUT 5
26742	13.7	39.2	37.6			UUT 1,2
<b>TCI - Type 1 Enclosures</b>						
HGPSMALL	12.5	17.5	31.6			UUT 3
HGPMEDIUM	16.3	17.7	56.2			UUT 4
<b>TCI - Line Reactors (vertically oriented, mounted on back panel)</b>						
KDRH1TT				40	480V	EXTRAP
KDRH41TT				40	600V	UUT 5
KDRI1TT				50	480V	INTERP
KDRI41TT				50	600V	INTERP
KDRG1TT				60	480V	INTERP
KDRG2TT				60	480V	INTERP
KDRG41TT				60	600V	INTERP
KDRG43TT				60	600V	INTERP
KDRG36TT				66	480V	UUT 3
<b>TCI - Line Reactors (horizontally oriented, mounted on back panel)</b>						
KDRG42TT				60	600V	UUT 5
KDRJ2TT				80	480V	INTERP
KDRJ41TT				80	600V	INTERP
KDRL1TT				100	480V	INTERP
KDRL41TT				115	600V	INTERP
KDRL7TT				125	480V	UUT 4
<b>TCI - Line Reactors (base mounted to bottom of enclosure)</b>						
KDRI1TT				50	480V	EXTRAP
KDRI41TT				50	600V	EXTRAP
KDRG1TT				60	480V	EXTRAP
KDRG2TT				60	480V	EXTRAP
KDRG41TT				60	600V	EXTRAP
KDRG42TT				60	600V	EXTRAP
KDRG43TT				60	600V	EXTRAP
KDRG36TT				66	480V	UUT 1
KDRJ2TT				80	480V	INTERP
KDRJ41TT				80	600V	INTERP
KDRL1TT				100	480V	INTERP
KDRL41TT				115	600V	UUT 2
<b>TCI - Tuning Reactors (vertically oriented, mounted on back panel)</b>						
KTR10A65HG				15	480V	EXTRAP
KTR10C65HG				15	600V	EXTRAP
KTR15A65HG				45	480V	EXTRAP
KTR15C65HG				45	600V	EXTRAP
KTR20A65HG				45	480V	EXTRAP
KTR20C65HG				45	600V	EXTRAP
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 4 - HARMONIC FILTER SUBCOMP. (cont.)

DOCUMENT NO.: 17073CR1.1

MANUFACTURER: JOHNSON CONTROS, INC.						
PRODUCT FAMILY: SOLUTION YC AIR HANDLING UNITS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
<b>TCI - Tuning Reactors (vertically oriented, mounted on back panel) (continued)</b>						
KTR25A65HG				45	480V	UUT 1
KTR25C65HG				50	600V	UUT 3
<b>TCI - Tuning Reactors (horizontally oriented, mounted on back panel)</b>						
KTR30A65HG				80	480V	EXTRAP
KTR30C65HG				85	600V	EXTRAP
KTR40A65HG				80	480V	EXTRAP
KTR40C65HG				90	600V	UUT 2
KTR45A65HG				100	480V	UUT 4
<b>ASC - Capacitors</b>						
27607					10kVar, 480V/60Hz	EXTRAP
28167					14.9kVar, 600V/60Hz	UUT 5
27608					15kVar, 480V/60Hz	UUT 5
<b>Vishay - Capacitors</b>						
28565					10kVar, 480V/60Hz	UUT 1
28568					10kVar, 600V/60Hz	UUT 3
28566					15kVar, 480V/60Hz	UUT 1,4
28569					15kVar, 600V/60Hz	UUT 3
28541					20kVar, 480V/60Hz	INTERP
28570					20kVar, 600V/60Hz	UUT 2
<b>Bussmann - Fuse Blocks</b>						
28799					30A, 600V, 3 pole	UUT 5
11005					60A, 600V, 3 pole	UUT 1,3
11071					100A, 600V, 3 pole	UUT 2,4
<b>GE - Contactors</b>						
29307					25A	UUT 5
29309					54A	UUT 1,3
29310					80A	UUT 2
29311					140A	UUT 4
<b>Sola/Hevi-Duty - Control Transformers</b>						
23891					50VA, 240V/480V-120V	UUT 1
24509					50VA, 600V-120V	UUT 2,3,5
23893					100VA, 240V/480V-120V	UUT 4
<b>Hoffman - Heater</b>						
11638					200W, 120V	UUT 1,2,5
<b>Macromatic Controls - Relays</b>						
30585					0A-5A current sensing relay, 120V	UUT 1-5
28730					190V-500V relay sensor	UUT 1,4
29348					460-600V fuse monitor relay	UUT 2,3,5
<b>Wieland - Terminal Block</b>						
13567					20A, 300V, 8 pole	UUT 1-5
MOUNTING:	Mounted within unit.			SEISMIC LEVELS	S <sub>DS</sub> = 2.0g for z/h = 1 S <sub>DS</sub> = 3.2g for z/h = 0	I <sub>p</sub> = 1.5
NOTES:	<b>Construction/Options:</b> Model number uniquely identifies manufacturer, materials, and configuration of subcomponents.					



## ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

## SEISMIC COMPLIANCE REPORT

### UUT 1

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER:</b>		TCI				
<b>MODEL NUMBER:</b>		HGP0075AW3F0000-JCI-SEISMIC				
<b>UNIT FUNCTION:</b>		HARMONIC FILTER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
13.7	39.2	37.6	251	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					
<b>IMPORTANCE FACTOR, I<sub>p</sub> = 1.5</b> 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.						
<b>MOUNTING:</b>		Wall mounted to P1000 Unistrut rails using (4) 3/8in Grade 2 bolts to P1008 Unistrut channel nuts. Unistrut rails mounted to test fixture using (2) 3/8in Grade 8 bolts per rail (2 rails, 4 bolts total).				
<b>CONSTRUCTION:</b>		Type 3R carbon steel enclosure				
<b>SUBCOMPONENTS</b>		Hoffman - Type 3R enclosure (26742), TCI - line reactor (KDRG36TT), TCI - tuning reactor (KTR25A65HG), Vishay - capacitors (28565 & 28566), Bussman - fuse block (11005), GE - contactor (29309), Sola/Hevi-Duty - control transformer (23891), Hoffman - heater (11638), Macromatic Controls - relays (30585 & 28730), Wieland - terminal block (13567)				
<b>TESTING NOTES:</b>		Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.				



### UUT 2

<b>MANUFACTURER:</b>		TCI				
<b>MODEL NUMBER:</b>		HGP0125CW3F0000-JCI-SEISMIC				
<b>UNIT FUNCTION:</b>		HARMONIC FILTER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
13.7	39.2	37.6	377	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					
<b>IMPORTANCE FACTOR, I<sub>p</sub> = 1.5</b> 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.						
<b>MOUNTING:</b>		Wall mounted to P1000 Unistrut rails using (4) 3/8in Grade 2 bolts to P1008 Unistrut channel nuts. Unistrut rails mounted to test fixture using (2) 3/8in Grade 8 bolts per rail (2 rails, 4 bolts total).				
<b>CONSTRUCTION:</b>		Type 3R carbon steel enclosure				
<b>SUBCOMPONENTS</b>		Hoffman - Type 3R enclosure (26742), TCI - line reactor (KDRL41TT), TCI - tuning reactor (KTR40C65HG), Vishay - capacitor (28570), Bussman - fuse block (11071), GE - contactor (29310), Sola/Hevi-Duty - control transformer (24509), Hoffman - heater (11638), Macromatic Controls - relays (30585 & 29348), Wieland - terminal block (13567)				
<b>TESTING NOTES:</b>		Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.				



## ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

## SEISMIC COMPLIANCE REPORT

### UUT 3

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER:</b>		TCI				
<b>MODEL NUMBER:</b>		HGP0075CW1F0000-JCI-SEISMIC				
<b>UNIT FUNCTION:</b>		HARMONIC FILTER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
12.5	17.5	31.6	179	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					



**IMPORTANCE FACTOR, I<sub>p</sub> = 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:** Wall mounted to P1000 Unistrut rails using (4) 3/8in Grade 2 bolts to P1008 Unistrut channel nuts. Unistrut rails mounted to test fixture using (2) 3/8in Grade 8 bolts per rail (2 rails, 4 bolts total).

**CONSTRUCTION:** Type 1 carbon steel enclosure

**SUBCOMPONENTS** TCI - Type 1 enclosure (HGPSMALL), TCI - line reactor (KDRG36TT), TCI - tuning reactor (KTR25C65HG), Vishay - capacitors (28568 & 28569), Bussman - fuse block (11005), GE - contactor (29309), Sola/Hevi-Duty - control transformer (24509), Macromatic Controls - relays (30585 & 29348), Wieland - terminal block (13567)

**TESTING NOTES:** Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.

### UUT 4

<b>MANUFACTURER:</b>		TCI				
<b>MODEL NUMBER:</b>		HGP0150AW1F0000-JCI-SEISMIC				
<b>UNIT FUNCTION:</b>		HARMONIC FILTER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
16.5	17.7	56.2	363	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					



**IMPORTANCE FACTOR, I<sub>p</sub> = 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:** Wall mounted to P1000 Unistrut rails using (4) 3/8in Grade 2 bolts to P1008 Unistrut channel nuts. Unistrut rails mounted to test fixture using (2) 3/8in Grade 8 bolts per rail (2 rails, 4 bolts total).

**CONSTRUCTION:** Type 1 carbon steel enclosure

**SUBCOMPONENTS** TCI - Type 1 enclosure (HGPSMALL), TCI - line reactor (KDRG36TT), TCI - tuning reactor (KTR25C65HG), Vishay - capacitors (28568 & 28569), Bussman - fuse block (11005), GE - contactor (29309), Sola/Hevi-Duty - control transformer (24509), Macromatic Controls - relays (30585 & 29348), Wieland - terminal block (13567)

**TESTING NOTES:** Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.

## ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

## SEISMIC COMPLIANCE REPORT

### UUT 5

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER:</b>		TCI				
<b>MODEL NUMBER:</b>		HGP0030CW3F0000-JCI-SEISMIC				
<b>UNIT FUNCTION:</b>		HARMONIC FILTER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
13.7	33.3	32.3	228	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					
<b>IMPORTANCE FACTOR, I<sub>p</sub> = 1.5</b>						
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.						
<b>MOUNTING:</b>		Wall mounted to P1000 Unistrut rails using (4) 3/8in Grade 2 bolts to P1008 Unistrut channel nuts. Unistrut rails mounted to test fixture using (2) 3/8in Grade 8 bolts per rail (2 rails, 4 bolts total).				
<b>CONSTRUCTION:</b>		Type 3R carbon steel enclosure				
<b>SUBCOMPONENTS</b>		Hoffman - Type 3R enclosure (26742), TCI - line reactor (KDRL41TT), TCI - tuning reactor (KTR40C65HG), Vishay - capacitor (28570), Bussman - fuse block (11071), GE - contactor (29310), Sola/Hevi-Duty - control transformer (24509), Hoffman - heater (11638), Macromatic Controls - relays (30585 & 29348), Wieland - terminal block (13567)				
<b>TESTING NOTES:</b>		Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.				



## ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

## SEISMIC COMPLIANCE REPORT

### UUT 6

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER:</b>		RUSKIN				
<b>MODEL NUMBER:</b>		CBD6 - 48X52				
<b>UNIT FUNCTION:</b>		BACKDRAFT DAMPER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
2.3	48.0	52.0	43	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					
<b>IMPORTANCE FACTOR, I<sub>p</sub> = 1.5</b> 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.						
<b>MOUNTING:</b>		Wall mounted to fixture using (34) 1/4" self drilling screws (6in o.c., all four sides).				
<b>CONSTRUCTION:</b>		Aluminum frame and blades				
<b>SUBCOMPONENTS</b>		N/A				
<b>TESTING NOTES:</b>		Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.				



### UUT 7

<b>MANUFACTURER:</b>		RUSKIN				
<b>MODEL NUMBER:</b>		CBD6 - 20X20				
<b>UNIT FUNCTION:</b>		BACKDRAFT DAMPER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
2.3	20	20	10	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					
<b>IMPORTANCE FACTOR, I<sub>p</sub> = 1.5</b> 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.						
<b>MOUNTING:</b>		Wall mounted to fixture using (16) 1/4" self drilling screws (6in o.c., all four sides).				
<b>CONSTRUCTION:</b>		Aluminum frame and blades				
<b>SUBCOMPONENTS</b>		N/A				
<b>TESTING NOTES:</b>		Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.				





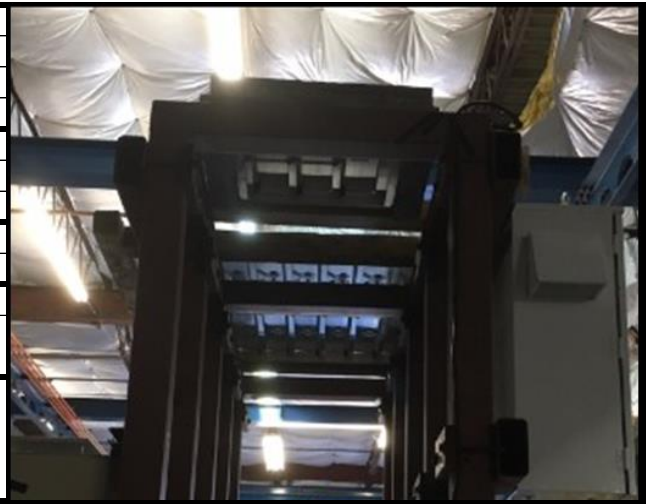
## ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

## SEISMIC COMPLIANCE REPORT

### UUT 8

DOCUMENT NO.: 17073CR1.1

<b>MANUFACTURER:</b>		RUSKIN				
<b>MODEL NUMBER:</b>		CBD6 - 48X52				
<b>UNIT FUNCTION:</b>		BACKDRAFT DAMPER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
2.3	48.0	52.0	43	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					
<b>IMPORTANCE FACTOR, I<sub>p</sub> = 1.5</b>						
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.						
<b>MOUNTING:</b>		Horizontal surface mounted to fixture using (34) 1/4" self drilling screws (6in o.c., all four sides).				
<b>CONSTRUCTION:</b>		Aluminum frame and blades				
<b>SUBCOMPONENTS</b>		N/A				
<b>TESTING NOTES:</b>		Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.				



### UUT 9

<b>MANUFACTURER:</b>		RUSKIN				
<b>MODEL NUMBER:</b>		CBD6 - 20X20				
<b>UNIT FUNCTION:</b>		BACKDRAFT DAMPER				
<b>SERIAL NUMBER:</b>		N/A				
<b>DIMENSIONS (in)</b>			<b>WEIGHT (lb)</b>	<b>RES. FREQ. (Hz)</b>		
<b>DEPTH</b>	<b>WIDTH</b>	<b>HEIGHT</b>		<b>F-B</b>	<b>S-S</b>	<b>V</b>
2.3	20.0	20.0	10	N/A	N/A	N/A
<b>BUILDING CODE</b>		<b>TEST CRITERIA</b>		<b>LAB REPORT NO.</b>		
2016 CBC		ICC-ES AC156		ETL 17073TR1		
<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>	
2.0	1	3.20	2.40	2.14	0.86	
3.2	0					
<b>IMPORTANCE FACTOR, I<sub>p</sub> = 1.5</b>						
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.						
<b>MOUNTING:</b>		Horizontal surface mounted to fixture using (16) 1/4" self drilling screws (6in o.c., all four sides).				
<b>CONSTRUCTION:</b>		Aluminum frame and blades				
<b>SUBCOMPONENTS</b>		N/A				
<b>TESTING NOTES:</b>		Tested with fixture rigid mounted to table and mounted to table using (4) Mason SSLFHC 1750 spring isolators.				

