OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC	OFFICE USE ONLY
CERTIFICATION PREAPPROVAL (OSP)	APPLICATION #: OSP – 0382
OSHPD Special Seismic Certification Preapproval (OSP)	
Type: 🗌 New 🛛 Renewal	
Manufacturer Information	
Manufacturer: Trane	
Manufacturer's Technical Representative: Joe Wells	
Mailing Address: 1515 Mercer Road, Lexington, KY 40511-1080	
Telephone: 859-288-2618 Email: joe.we	Ils@trane.com
Product Information FOR CODE CO	MD
Product Name: Blower Coil Air Handlers (BCxD)	TP
Product Type: Air Terminal Device	The second secon
Product Model Number: <u>BCHD (Horizontal) Sizes 12 to 90 & BCVD (</u> (List all unique product identification numbers and/or part numbers)	Vertical) Sizes 24 to 90
General Description: Cataloged Air Handling Units manufactured in vertical configurations. Units are offered with single & three phase fa made to the test units and modifications required to address anomali into the production units. DATE: 03/17/2020	n motors and electric heat. Seismic enhancement
Mounting Description: _BCHDs can be suspended with spring isolator	s and seismic cable restraints.
BCHDs and BCVDs can be base mounted with or without neoprene	pads.
Applicant Information Applicant Company Name: The VMC Group	ODE
Applicant Company Name: The VMC Group	
Contact Person: <u>John Giuliano</u>	
Mailing Address: <u>113 Main Street, Bloomingdale, NJ 07403</u>	
Telephone: 973-838-1780 Email: john.g	iuliano@thevmcgroup.com
I hereby agree to reimburse the Office of Statewide Health accordance with the California Administrative Code, 2016. Signature of Applicant:	
Title: President Company Name: The V	MC Group
"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"	OSHPD
STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY OSH-FD-759 (REV 12/16/15)	Page 1 of 3
03/17/2020 OSP-0382	Page 1 of 24



California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)
Company Name: The VMC Group
Name: Ken Tarlow California License Number: SE2851
Mailing Address: 113 Main Street, Bloomingdale, NJ 07403
Telephone: 973-838-1780 Email: <u>ken.tarlow@thevmcgroup.com</u>
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: Other (Please Specify): OSP-0382
Testing Laboratory
Company Name: PEER, University of California Berkley
Contact Name: Amarnath Kasalanati
Mailing Address: 1302 South 46 th Street, Building 420, Richmond, CA 94084
Telephone: 510-665-3409

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



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Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: 🖂 Yes 🗌 No
$1.50 (S_{DS} = 2.00, R_P = 6.0, z/h = 1); 3.60 (S_{DS} = 2.00, R_P = 2.5, z/h = 1)$ Design Basis of Equipment or Components (F _p /W _p) = $1.02 (S_{DS} = 2.27, R_P = 6.0, z/h = 0); 1.36 (S_{DS} = 2.27, R_P = 2.5, z/h = 0)$
S_{DS} (Design spectral response acceleration at short period, g) = 2.00 (z/h = 1); 2.27 (z/h = 0)
a _p (In-structure equipment or component amplification factor) = <u>2.5</u>
R _p (Equipment or component response modification factor) = 2.5 (Suspended Isolated); 6.0 (Floor mounted); 2.5 (Floor mounted with neoprene pads)
Ω_0 (System overstrength factor) = _2
I _p (Importance factor) = 1.5
z/h (Height factor ratio) = <u>1 and 0</u>
Equipment or Component Natural Frequencies (Hz) = See Attachments
Overall dimensions and weight (or range thereof) = <u>See Attachments</u>
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) ≠ Timothy J Piland
Ω_0 (System overstrength factor) =
C₄ (Deflection amplification factor) =DATE: 03/17/2020
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
Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the system Image: Specify in the
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025
1.1.1.00
Signature: Date: March 17, 2020
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"
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		S	tandard Bas	sic Modules	;	9	Shake Te	sted Unit	s		d Support litions	- Roof level		Ground Level	
Model	Unit Size	Max. Weight	Max. Length	Width	Height	Max. Weight	Max. Length	Width	Height	Suspended w/ Spring	Rigid Base	Roor	level	Ground	
		[lbs]	[in]	[in]	[in]	[lbs]	[in]	[in]	[in]	Isolators	Mounted ⁽¹⁾	S _{DS}	z/h	S _{DS}	z/h
						160.00	59.40	24.00	14.00	Extrapolated	UUT 7	2.00	1.0	2.27	0.0
	12	116.4	31.20	24.00	14.00	170.00	53.20	24.00	14.00	UUT 1		2.00	1.0	2.27	0.0
						200.00	74.20	24.00	14.00	UUT 2		2.00	1.0	2.27	0.0
	18	126.2	31.20	28.00	14.00	V ·		M	0.		Interpolated	2.00	1.0	2.27	0.0
	24	160.4		Interpolated	interpolated	2.00	1.0	2.27	0.0						
BCHD	36	195.2	33.72	40.00	18.00	U.	DHF		T.			2.00	1.0	2.27	0.0
(Horizontal)	54	316.9	41.57	40.00	22.00	178.00	47.00	40.00	22.00	UUT 9		2.00	1.0	2.27	0.0
(Honzontal)	04	010.0	41.07	+0.00	27.00	198.00	47.003	8 <u>4</u> 0.00	28.00	Interpolated	UUT 11	2.00	1.0	2.27	0.0
	72	354.1	41.57	48.00	22.00							2.00	1.0	2.27	0.0
					Б	299.00	52,50	48.50	28.00	UUT 10	Internolated				
	90	416.4	43.94	48.00	28.00	380.00	78.70	48.00	28.00	UUT 4A	morpolated	2.00	1.0	2.27	0.0
	90	410.4	43.94	40.00	20.00	450.00	65.00	48.00	28.00	UUT 3A		2.00	1.0	2.27	0.0
					D	A380:003	71.50	48.00	28.00	Interpolated	UUT 8 (Note 2)	2.00	1.0	2.27	0.0
	24	211.9	28.00	28.00	51.72	250.00	56.20	28.00	51.70	N/A	UUT 6	2.00	1.0	2.27	0.0
	36	259.5	28.00	40.00	51.72		M K		0	N/A		2.00	1.0	2.27	0.0
BCVD	54	385.3	30.00	40.00	63.57				4:	N/A	Interpolated	2.001.02.270.02.001.02.270.02.001.02.270.02.001.02.270.0UUT 62.001.02.270.02.001.02.270.0UUT 62.001.02.270.02.001.02.270.02.001.02.270.02.001.02.270.0UUT 122.001.02.270.0			
(Vertical)	72	458.5	30.00	48.00	63.57	DA.			0	N/A	Interpolated 2 UUT 12 2	2.00	1.0	2.27	0.0
	00	F10.0	20.00	40.00	71.04	398.00	31.00	48.00	86.5	N/A		2.00	1.0	2.27	0.0
	90	512.0	30.00	48.00	71.94	610.00	78.60	48.00	71.90	N/A	UUT5 (Note 2)	2.00	1.0	2.27	0.0

Table 1 - Certified BCxD Cabinet Sizes

Notes

1) Rigid base mounted units permitted to be installed with or without neoprene pads

2) UUT5 & UUT8 were tested on neoprene pads

Table 2 - Certified BCxD Base Frame Construction

Use	Size	Base Construction	Material	MFR	UUT
	12				1, 2, 7
	18-36	6			Interpolated
BCHD	54	Base Panel	22 Gauge Galv CS		<u>9, 11</u>
	72			-	Interpolated
	90			Trane	3A, 4A, 8, <u>10</u>
	24				6
BCVD	36-72	16 Gauge Legs DE	22 Gauge Galv CS		Interpolated
	90	20 Formation of Maria			5, <u>12</u>

Table 3 - Certified BCxD Enclosure Construction: Wall/Roof Exterior Panels

		Panel	44 OSP-03	Wall/Roof Panel			UI	TL
Skin	Insulation	Nominal Thickness	Wall/Roof Panel Material	Туре	Unit Size	MFR	Base Mounted	Suspended
Motor Access Panel	Matte Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	24-90		6, 8, 11, 12	4A, 9, 10
Motor Access Panel	Foil-Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	24-90		5	3A
Motor Access Panel	Matte Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12 & 18		Interpolated	2
Motor Access Panel	Foil-Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12 & 18		7	1
Coil Access Panel	Matte Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	24-90		6, 8, 11, 12	4A, 9, 10
Coil Access Panel	Foil-Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	24-90		5	3A
Coil Access Panel	Matte Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12 & 18		Interpolated	2
Coil Access Panel	Foil-Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12 & 18		7	1
Front Panel	Matte Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12-90	Trane	11, 12	2, 4, 9, 10
Front Panel	Foil-Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12-90	Tane	7	1, 3A
Inlet Side Panel	Matte Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	12-90		6, 8, 11, 12	2, 4A, 9, 10
Inlet Side Panel	Foil-Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	12-90		5, 7	1, 3A
Filter Access Door	Matte Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12-90		6, 8, 11, 12	<mark>2, 4A, 9, 10</mark>
Filter Access Door	Foil-Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12-90		5, 7	1, 3A
Coil Side Panel	Matte Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	12-90		6, 8, 11, 12	2, 4A, 9, 10
Coil Side Panel	Foil-Faced Fiberglass	1"	18 Gauge Galvanized CS	Single Wall	12-90		5, 7	1, 3A
Top Panel	Matte Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12-90		6, 8, 11, 12	2, 4A, 9, 10
Top Panel	Foil-Faced Fiberglass	1"	22 Gauge Galvanized CS	Single Wall	12-90		5, 7	1, 3A

Table 4a - Certified BCxD Hydronic Coils

Dimensions			Width (inches)	MFR	UL	IT	
Dimensi	0115	16	20	32	40		Base Mounted	Suspended
	8	Size 12	Size 18				7	2
Height	12		Size 24	Size 36		Trane	Interpolated	Interpolated
(inches)	17.5			Size 54	Size 72		11	9
	22.5				Size 90		5, 12	3A, 10

	FORCO	DECOU	UT
Table 4b - Certi	fied BCxD Hydronic Coil Options	Base Mounted	Suspended
Casing Material	16 Gauge Galv Steel	tPD 😽	
Tube Material	Copper		R
Tube Outer Diameter	0.375 or 0.5	0385, 7, 11, 12	2, 3A, 9, 10
Tube Wall Thickness	0.012 or 0.016		2, 5A, 9, 10
Permitted Fin Material	Aluminum		
Permitted Fin Pitch	12 BY: I IMOTHY	J Piland	
	1 (Heating)	Extrapolated	Extrapolated
Permitted Tube Rows	2 (Heating)		Exilapolated
Permitted Tube Rows	4 (Heating/Cooling)	7, 11, 12	9, 10
	6 (Heating/Cooling)	5	2, 3A
Header Type	Copper	5, 7, 11, 12	2, 3A, 9, 10

Table 4c - Certified BCxD Direct Expansion/Heat Pump Coils

Dimensions			Width (A BUILD	MFR	UL	IT
Dimensi		16	20	32	40	MIEN	Base Mounted	Suspended
	8	Size 12	Size 18				Extrapolated	1
Height	12		Size 24	Size 36		Tropo	6	Interpolated
(inches)	18			Size 54	Size 72	Trane	Interpolated	Interpolated
	24				Size 90		8	4A

		U	JT
Table 4d - Certified BCxD	Direct Expansion Coil Options	Base Mounted	Suspended
Casing Material	16 Gauge; Galv Steel		1, 4A
Tube Material	Copper		
Tube Outer Diameter	0.375"	6 9	
Tube Wall Thickness	0.012"	0, 0	
Permitted Fin Material	Aluminum		
Permitted Fin Pitch	12		
	3 0000	6	4A
Permitted Tube Rows	4EOR CODE COL	Interpolated	Interpolated
	6	Base Mounted 6, 8 6	1
Header Type	Copper	6, 8	1, 4A

Table 4e - Certified BCxD Steam Coils (Preheat)

Dimensions			Width (inches)	MFR	UUT		
Dimensi	Dimensions		21	33 BY:T	mo t hy J	Piland	Base Mounted	Suspended
	6	Size 12	Size 18				7	2
Height	12		Size 24	Size 36 ATE	1:03/17/2	020	0 Internelated	luteur elete el
(inches)	18			Size 54	Size 72	Trane	Interpolated	Interpolated
	24			AON IN	Size 90	Ster.	5	3A



Table 4f - Certified BCxI	UUT						
Casing Material	Casing Material 16 Gauge; Galv CS						
Tube Material	Copper						
Tube Outer Diameter	1"						
Tube Wall Thickness	0.031"	0 0 5 7					
Permitted Fin Material	Aluminum	2, 3A, 5, 7					
Permitted Fin Pitch	6						
Permitted Tube Rows	1						
Header Type	Gray Cast Iron						

Model	Phase	Rating	Voltage Rating	Trane PN	UL	IT	
Woder	Flidse	[HP]	Voltage Kating	Traile PN	Base Mounted	Suspended	
	1-Phase	0.5	115/208-230/277	X70660685	7	2, 1	
	I-FIIdSE	1.0	115/208-230/277	X70660684	1, 5, 6, 8	3A, 4A	
		0.5	208-230	X70660693010	11	9	
		0.5	460	X70660693030			
Variable Speed Motor		1.0	208-230	X70660693020			
valiable Speed Motor	3-Phase	1.0	460 R COD	X70660693040	Interpolated	Interpolated	
		1.5	208-230	X70660696040	Interpolated		
		1.5	460	X70660696030			
		3.0	208-230	X70660696020			
		3.0	460	X70660696010	12	10	
		1.5	208-230 SP_0?	X13612048040	11	9	
Variable Speed Driver	3-Phase	1.5	460	X13612048030	Interpolated	Interpolated	
Variable Speed Driver	3-Phase	3.0	208-230	X13612048020	Interpolated		
		3.0	B 460 mothy J	X13612048010	12	10	

• Forward Curved Centrifugal Fan **Table 6 - Certified BCxD Fans** Direct Drive UUT HP Fan MFR 0.50 1.00 1.50 3.00 Weight 14 40 56 **Base Mounted** Suspended 19 Size (Dia - Width) 9" - 4" UUT 7 7 UUT 1, 2 1, 2 NA NA **Impeller Weight** 3.8 Size (Dia - Width) 9" - 6" JG NA Х UUT 6 BNA Lau Industries 6 Interpolated **Impeller Weight** 4 Size (Dia - Width) 12" - 9" UUT 9, 11 UUT 3A, 4A, 5, 8 Х UUT 10, 12 5, 8, 11, 12 3A, 4A, 9, 10 7.2 **Impeller Weight** UUT Wheel Material Fan Diameter **Housing Material** UUT **Base Mounted** Suspended Galv Steel; 22 Gauge 9" 6,7 1, 2 1, 2, 3A, 4A, 5, 6, 7, 8, 9, 10, Galv Steel Galv Steel; 20 Gauge 12" 11, 12 5, 8, 11, 12 3A, 4A, 9, 10 UUT **Motor Mount HP Range** Material Configuration **Base Mounted** Suspended 0.50 1, 2, 9 11 1.00 5, 6, 7, 8 3A, 4A Horizontal Shaft FanSide Galvanized Mount 03/17/2020 1.50 Steel OSP-0382 Interpolated Interpolated Page 8 of 24 3.00 12 10

Table 7 - Certified BCxD Flat Filter (1" TA, 2" MERV 8, or 2" MERV 13)

Unit	Unit Cartridge	Frame Material Options	Dimens	ions [in]	MFR	UU	Т
Onic	Quantity		Width	Height		Base Mounted	Suspended
Size 12	x1	Galvanized Steel	24	12		Extrapolated	1, 2, 7
Size 18	x1	Galvanized Steel	24	12			
Size 24	x1	Galvanized Steel	25	16		6	Interpolated
Size 36	x2	Galvanized Steel	20	16	Trane		
Size 54	x2	Galvanized Steel	20	20	Talle	Interpolated	
Size 72	x1	Galvanized Steel	20 00 000	20		Interpolated	
Size 72	x1	Galvanized Steel	25	20			
Size 90	x3	Galvanized Steel	16	25		5, 8	3A, 4A

Table 8 - Certified BCxD Angle Filter (Accessory Section; 2" MERV 8 or 2" MERV 13)

Unit	Cartridge	Frame Material Options	Material Options [i		MFR	UU	Т
Onit	Quantity		Width			Base Mounted	Suspended
Size 12	x 2	Galvanized Steel	24	12			2
Size 18	x 2	Galvanized Steel	BY24 Imothy J	Piland 12			
Size 24	x 2	Galvanized Steel	24	12			
Size 36	x 2	Galvanized Steel	$p_{1}^{20} = 03/17/2$	20			
Size 54	x 4	Galvanized Steel	20	16	Trane	Extrapolated	
Size 72 (mixing box +	x 3 bottom	Galvanized Steel	16	16	Tane		Extrapolated
angle filter)	x 2 top	Galvanized Steel	20	. 16			
Size 72	x 6	Galvanized Steel	16	16			
Size 90	x 6	Galvanized Steel	204 BUILD	NG 16		5	

Table 9 - Certified BCxD Top or Bottom Filter (Accessory Section; 2" MERV 8 or 2" MERV 13)

Tune	Type Frame Mate		Dimens	ions [in]	MFR	UUT		
iype	,	Frame Material Options	Width	Height		Base Mounted	Suspended	
Size 12	x1	Galvanized Steel	20	12		7	Extrapolated	
Size 18	x1	Galvanized Steel	24	12		Interpolated		
Size 24	x1	Galvanized Steel	25	16		6		
Size 36	x1	Galvanized Steel	20	16				
Size 36	x1	Galvanized Steel	16	16	Trane			
Size 54	x1	Galvanized Steel	16 pp COD	20	Tane			
Size 54	x1	Galvanized Steel	20	20		Extrapolated		
Size 72	x1	Galvanized Steel	20 / 25	20				
	x1	Galvanized Steel		25			4.0	
Size 90	x2	Galvanized Steel	1400111	25			4A	

Table 10 - Certified BCxD Flat Media Options OSP-0382

Туро	Filter Material Timethy I Diland	MFR	UUT	
Туре	Filter Materia: I imothy J Piland	WIFR	Base Mounted	Suspended
1" Standard Efficiency Throw Away	Fiberglass	Air Guard Industries	Extrapolated	1, 3A
2" MERV 8	Pleated DATE 03/17/2020	Air Guard Industries	6, 8	4A
2" MERV 13	Pleated	Air Guard Industries	5	2

Table 11a - Certified BCxD Electric Heat

Model	Store Output		O _O Di	mensions [in]	Weight	MFR	UU	Т
Model	Stage	(kW)	H	W	NG D	[lbs]		Base Mounted	Suspended
Size 12	1 & 2	1.0 - 4.0	14.06	17.88_D	6.83	10.0		Extrapolated	1
Size 18	1 & 2	1.0 - 6.0	14.06	19.88	6.83	10.8			
Size 24	1 & 2	1.0 - 8.0	18.06	21.25	6.83	11.3		6	
Size 36	1 & 2	1.0 - 11.0	18.06	27.25	6.83	12.8	Tutco	Inf	Interpolated
Size 54	1 & 2	1.0 - 16.0	18.06	27.25	6.83	16.0	1	Interpolated	
Size 72	1 & 2	1.0 - 21.0	18.06	27.25	6.83	17.4			
Size 90	1 & 2	1.0 - 30.0	18.06	27.25	6.83	19.2		8, 12	4A, 10

Table 11b - Certified BCxD Electric Heat

Electrical				Voltage				MFR	UU	Т
Heat (kW)	115/60/1	208/60/1	230/60/1	277/60/1	208/60/3	230/60/3	460/60/3		Base Mounted	Suspended
1.0	UUT 6	Х	Х	Х	Х	Х			6	Extrapolated
1.5	Х	UUT 1	Х	Х	Х	Х	Х			1
2.0	Х	Х	Х	Х	Х	Х	Х			
2.5	Х	Х	Х	Х	Х	Х	Х			
3.0	Х	Х	Х	Х	Х	Х	Х			
3.5		Х	Х	Х	X	X	Х			
4.0		Х	Х	Х	ORXUD	ECOX	Х			
4.5		Х	Х	X	X	X	Х		Interpolated	
5.0		Х	Х	X	Х	X	Х			
5.5		Х	Х	X	Х	X Y	Х			Interpolated
6.0		Х	Х	X	Х	X	X			
6.5		Х	Х	X X	OS\$P-03	82 X	X			
7.0		Х	Х	X	Х	X	Х	-		
7.5		Х	Х	Х —	Х	X	X			
8.0		Х	UUT 8	X BY: I	imowy j	Pilar <mark>x</mark> a Mil	X		8	
9.0				X	Х	Х	X			
10.0					03×17/2	020 X	X	Tutco		
11.0				UUT 4A	Х	X	X			4A
12.0				T	X	X /	X			
13.0						2	X			
14.0				00		DE.	Х			
15.0				TN		CON	Х			
16.0					ABUILD	NG	Х			
17.0							Х		Interpolated	
18.0							Х			Interpolated
19.0							Х			merpolated
20.0							Х	-		
21.0							Х			
22.0							Х			
24.0							Х			
26.0							Х			
28.0							Х			
30.0							UUT 10, 12		12	10

Table 12 - Certified BCxD Control Panel

Model	Height	Width	Depth	MFR	UU	Т
WOUEI	[in]	[in]	n] [in]		Base Mounted	Suspended
Fan Speed Switch	11.5	6.8	3.75	Trane	7*	Extrapolated
CSTI	11.5	6.8	3.75	Trane	8, 11, 12	1, 4A, 9, 10
ZN010	11.5	6.8	3.75	Trane	Interpolated	2*
ZN510	11.5	6.8	3.75	Trane	Interpolated	3A*
ZN520	11.5	6.8	3.75	Trane	6, 7	2, 3A
UC400	11.5	6.8 OR COD	E Con 3.75	Trane	5	Extrapolated

ME OSHPD

*Two control boxes

Table 13 - Certified BCxD Dampers

Unit S		L.	a i a h t	4		00	C	MFR	UU	Т
Unit S	ize		eight	WidthOSP-038		82 Qtyn			Base Mounted	Suspended
12			9		17.5		2		Extrapolated	1
18			9	B	215 mothy J	Piland	2			
24			9		21.5		2		6	
36			9		33.5	~~~	2	Don Park Inc		Interpolated
54		1.	4.75		33.5:03/17/2	020	2		Interpolated	
72		1.	4.75		33.5		20			
90		1	4.75	T	33.5		2		8	4A
Damper M	aterial	Blade	MED			Actuator	Trong DN	UUT	1	
Frame	Blades	Orientation	MFR	UUT		MER	Trane PN	001		
Aluminum	Aluminum	Horizontal	Don Park Inc	1, 4A, 6, 8		Honeywell	X13610243010	1, 4A, 6, 8		

Table 14 - Certified BCxD Non-Active Components

Description	Aveilability	Manufacturer	Motorial	UU	UUT		
Description	Availability	Manufacturer	Material	Base Mounted	Suspended		
Mixing Box	All Sizes	Trane	Galvanized Steel	6, 8	1, 4A		
Angle Filter Box	All Sizes	Trane	Galvanized Steel	5	Extrapolated		
Bottom or Top Hinged Filter Access Box	All Sizes	Trane	Galvanized Steel	6,7	4A		
Hinged Motor Access Panel	All Sizes	Trane	Galvanized Steel	All	All		
Factory Provide Piping Package (field installed external to unit)	All Sizes	Trane	Copper	7	2, 3A		
Polymer Drain Pan	All Sizes	Trane	Polymer	6, 8, 11, 12	2, 4A, 9, 10		
Stainless Steel Drain Pan	All Sizes	Trane	Stainless Steel	5,7 Page 12 of	<mark>1, 3A</mark>		





All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

AND DE VMC GROUP	U		DER TI Imary S	EST (UU Sheet	JT)		UUT-3A	X
						-		STI 2014_03
Model Line			Model Numb	ber		N	Manufacture	ər
BCxD			BCHD - 90				Trane	
			Constructio	=				
22 Gauge Galvanized C	arbon Steel Base Fran	ne, 18 & 22 G	auge Galvan	ized Carbon S	Steel Enclos	ure		
		Ontions / S	hubcompon	ent Summary	,			
Hydronic Coil: Trane; St	eam Coil: Trane:1 Pha	-	-	-		n: Lau Indus	tries:	
	4		JUT Propert	ECOMp				
Weight		·····	ions [in]		12	Lowes F-B	st Nat. Freq	
[lbs]	Length		Width		Height		S-S	V
450	64.90		48.00 -0302 28.00			N/A	N/A	N/A
		-		ic Run Inform				
Building Code	Test Criteria	BY:\$DSM	<u>Othż/hJ</u>	Piland	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-E <mark>S AC1</mark> 56	2.00	1.0	1.5	3.2	2.4	1.33	0.52
		DATE 0	B/1 ^{0.0} /2	$020^{1.5}$	2.27	0.91	1.52	0.61
Vibration Isolated Suspe (1/4") Seismic Cable Kits SRBC-1s are fastened to	s and (3 per rod) SRB o L1x1x1/4 ASTM-A36	STM-A307 ro C-1 Rod Stiffe	ods, with (4)	VMC HRSA-1	C-150 Vibra e attached to	tion Isolator o structure u	Hangers, (4 sing 5/8" ha) SB-250 rdware.

ANTIED ANTIED D D D D D D D D D D D D D D D	U		DER TE mary S	ST (UU Sheet	IT)		UUT-4A	
Model Line		N	lodel Numb	or		N	PEER S	STI 2014_03
Model Lille		IV		ei		N	anulaciun	<i>†</i> 1
BCxD			BCHD - 90				Trane	
			onstruction	=				
22 Gauge Galvanized Ca	arbon Steel Base Frame	, 18 & 22 Ga	iuge Galvan	zed Carbon S	Steel Enclos	ure		
Direct Expansion Coil: Ti		-	-	nt Summary				
1-30kW, 1 phase electric	neat. Tuico, CST Con	EDFOF	UT Properti	COMP	ic.			
Weight	× ×	Dimensi	ons [in]	\mathcal{D}	Y.	Lowes	st Nat. Freq	. [Hz]
[lbs]	Length	Wi	dth	Heig	ght C	F-B	S-S	v
380	78.70	48	5P-03	62 28.	00	N/A	N/A	N/A
	UUT	Highest Pas	sed Seismi	c Run Inform	ation			
Building Code	Test Criteria	BY: \$ DSMO	othż/h J	Piland	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.2	2.4	1.33	0.52
000 2010	100-20 //0100	2.27	B/10-0/20	21.5	2.27	0.91	1.52	0.61
Vibration Isolated Suspe (1/4") Seismic Cable Kits SRBC-1s are fastened to	s and (3 per rod) SRBC-	1 Rod Stiffer						

All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

ANTIED UNC GROUP	U	NIT UND Sumr	DER TE mary S	•	JT)		UUT-5	
							PEER S	STI 2014_0
Model Line	!	M	odel Numb	er		Ν	lanufacture	er
BCxD			BCVD - 90				Trane	
		Product Co	onstruction	Summary				
22 Gauge Galvanized C	arbon Steel Base Frame	∋, 18 & 22 Gau	uge Galvani	zed Carbon	Steel Enclos	ure		
	eam Coil: Trane;1 Phase Filter: Trane; UC400 Co		Frane (Part#		*	n: Lau Indus	tries;	
	eam Coil: Trane;1 Phase	e fan motor: T ontrol panel: T	Trane (Part# Trane.	: X70660684	ι); 1.0 ΗΡ Fa	n: Lau Indus	tries;	
Flat Filter: Trane; Angle	eam Coil: Trane;1 Phase	e fan motor: T ontrol panel: T	Trane (Part# Trane. CODE	: X70660684	ι); 1.0 ΗΡ Fa			
Flat Filter: Trane; Angle Weight	eam Coil: Trane;1 Phase Filter: Trane; UC400 Co	e fan motor: T ontrol panel: T FOR UL Dimensio	Trane (Part# Trane. CODE UT Propertions [in]	: X70660684	i); 1.0 HP Fa	Lowes	st Nat. Freq	
Flat Filter: Trane; Angle	eam Coil: Trane;1 Phase	e fan motor: T ontrol panel: T UL Dimensic	Trane (Part# Trane. CODE UT Propertions [in]	: X70660684	ι); 1.0 ΗΡ Fa	Lowes F-B	st Nat. Freq S-S	V
Flat Filter: Trane; Angle Weight [Ibs]	eam Coil: Trane;1 Phase Filter: Trane; UC400 Co Length 78.60	e fan motor: T ontrol panel: T UL Dimensio 48	Trane (Part# Trane. CODE UT Propertions [in] dth 00 -03	: X70660684 COM es He 2 71	i); 1.0 HP Fa	Lowes	st Nat. Freq	
Flat Filter: Trane; Angle Weight [Ibs]	eam Coil: Trane;1 Phase Filter: Trane; UC400 Co Length 78.60	e fan motor: T ontrol panel: T UL Dimensic	Trane (Part# Trane. CODE UT Propertions [in] dth 00 -03	: X70660684 COM es He 2 71	i); 1.0 HP Fa	Lowes F-B	st Nat. Freq S-S 7.4	v 13.3
Flat Filter: Trane; Angle Weight [lbs] 610 Building Code	eam Coil: Trane;1 Phase Filter: Trane; UC400 Co Length 78.60 UUT Test Criteria	e fan motor: T ontrol panel: T UL Dimensic Wid 48. Highest Pass	Trane (Part# Trane. CODE UT Propertions [in] dth 00 -030 sed Seismic	EX70660684	ight .90 nation	Lowes F-B 5.7	st Nat. Freq S-S	V
Flat Filter: Trane; Angle Weight [Ibs] 610	eam Coil: Trane;1 Phase Filter: Trane; UC400 Co Length 78.60 UUT	e fan motor: T ontrol panel: T UL Dimensio 48 Highest Pass	Trane (Part# Trane. UT Propertions [in] dth 00 - 030 sed Seismic	EX70660684	ight .90 nation	Lowes F-B 5.7 А _{RIG-H}	st Nat. Freq S-S 7.4 A _{FLX-V}	V 13.3 A _{RIG-V}



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.





ATTED ATTED ATTED VMC GROUP	U		DER T mary \$	EST (UL Sheet	JT)		UUT-8	
								STI 2014_03
Model Line		N	lodel Num	ber		Ν	lanufacture	ər
BCxD			BCHD - 9	0			Trane	
		Product C	onstructio	n Summary				
22 Gauge Galvanized C	arbon Steel Base Frame	e, 18 & 22 Ga	auge Galva	nized Carbon	Steel Enclos	ure		
		Options / S	ubcompon	ent Summary	,			
1-8kW, 1 phase electric	heat: Tutco; CSTI Conti	EDFOF	COD	ECOME				
			UT Proper	ties		-		
Weight			ons [in]		1/		st Nat. Freq	
[lbs]	Length		dth	20	ght C	F-B	S-S	V
380.0	71.50 48.00 28.00 10.9					10.9	11.1	12.1
	UUT	Highest Pas	sed Seism	ic Run Inforn	nation			
Building Code	Test <mark>Criter</mark> ia	BY:Sos	pthż/hJ	Piland	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.2	2.4	1.33	0.52
0002010	100-ES AC 150	2.27	B/10-0/2	1.5	2. <mark>27</mark>	0.91	1.52	0.61
		Test	Mounting	Details				

UUT was floor-mounted to the base plate with neoprene pads using qty (24) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes.



ALLED THE THE THE THE THE THE THE THE THE THE	UUT-9						
Model Line		Model Number			N	/lanufacture	97462-1501 er
							1
BCxD		BCHD - 54				Trane	
	I	Product Construction Su	mmary	I			
22 Gauge Galvanized Ca	arbon Steel Base Frame	e, 18 Gauge Galvanized Carb	on Steel I	Enclosure			
		Options / Subcomponent S	Summary				
0.5 HP Fan: Lau Industri	L'S	UUT Properties	OMP				
Weight	N.	Dimensions [in]		YZ		st Nat. Freq.	. [Hz]
[lbs]	Length	Width	Heig		F-B	S-S	v
178	47 <mark>.00</mark>	40.00 -0302	22.0	00	N/A	N/A	N/A
	UUT	Highest Passed Seismic Ru	In Inform	ation			
Building Code	Test <mark>Crite</mark> ria	By:\$₀smothż/hJ Pil	land	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00 1.0	1.5	3.2	2.4	1.33	0.52
		2.27 08/100/202	1.5	2. <mark>27</mark>	0.91	1.52	0.61
		Test Mounting Detai	ls				
	ic Cable Kits and (3 per	STM-A307 rods, with (4) VMC rod) SRBC-1 Rod Stiffening (STM-A36 angle.					ing 5/8"



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

ALLED ALLED VMC GROUP	U		DER TE mary S	ST (UU Sheet	JT)		UUT-10	
Model Line	<u> </u>	N	lodel Numb	or			Manufacture	97462-150 ⁻
BCxD	,		BCHD - 90				Trane	,,
		Product C	onstruction	Summary				
22 Gauge Galvanized C	Carbon Steel Base Frame	e, 18 Gauge (Galvanized (Carbon Steel	Enclosure			
		Options / Su	ubcompone	nt Summary	,			
	L.N.	U	UT Properti	COMP				
Weight			ions [in]		YZ		st Nat. Freq	
[lbs]	Length	\cap	dth	Height		F-B	S-S	V
299	52.50		50-00	PZ 28.		N/A	N/A	N/A
Building Code	Test Criteria	BY Sps	think the set set set set set set set set set se	Run Inform		Δ	•	A _{RIG-V}
Building Code		2.00	1.0	Pila⊧nd 1.5	A _{FLX-H} 3.2	A _{RIG-H}	А _{FLX-V} 1.33	0.52
CBC 2016	ICC-E <mark>S AC1</mark> 56	2.27	0.0.0	1.5	2.27	0.91	1.52	0.61
			Mounting D			0.01	1.02	0.01
(4) SB-250 (1/4") Seism	ended unit on (4) 5/8" AS nic Cable Kits and (3 per e fastened to L1x1x1/4 AS	rod) SRBC-1	Rod Stiffen					sing 5/8"

HI

VMC GROUP	U	NIT UNE Sumi	DER TE mary S	-	JT)		UUT-11	
								97462-1501
Model Line	•	М	odel Numb	er		Γ	Manufacture	er
BCxD			BCHD - 54				Trane	
22 Course Colversized C	Yorkon Stad Daga Frama		onstruction	-	Freiseure			
22 Gauge Galvanized C	arbon Steel Base Frame	e, 18 Gauge G	saivanized C	arbon Steel	Enclosure			
		Options / Su	Ibcompone	nt Summarv	1			
	Phase fan motor: Trane ries; CSTI Control panel:	Trane	CODE	COME			X130120400	, ,
		<u> </u>	JT Properti	es		Lawa	st Nat. Freq	r II- 1
Weight [lbs]	Length	Dimensio		Hoi	ght	F-B	St Nat. Freq	. [H2]
198	47.00	40.		32 ₂₈		г-в 12.5	13.5	14.0
100		Highest Pase				12.0	10.0	14.0
Building Code	Test Criteria	BY S ₀md	othż/h J	Piland	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
		2.00	1.0	1.5	3.2	2.4	1.33	0.52
CBC 2016	ICC-E <mark>S AC1</mark> 56	2.27	3/10-0/20	$12^{1.5}$	2.27	0.91	1.52	0.61
UUT was floor-mounted	to the base plate using		Mounting D Grade 8 bolt		ufacturer-pro	vided moun	ting bracket	holes.
		DANIA B		NG COD				

Model Line Model Number Manufacturer BCxD BCVD - 90 Trane Product Construction Summary 22 Gauge Galvanized Carbon Steel with Ribs Base Frame, 18 Gauge Galvanized Carbon Steel Enclosure Options / Subcomponent Summary Vydtonic Coli: Trane: 3 Product Construction Summary Vydtonic Coli: Trane: 3 Product Construction Summary UUT Properties UUT Properties UUT Properties UUT Properties UUT Properties UUT Highest Passed Seismic Run Information Building Code Teat Criteria State UUT Highest Passed Seismic Run Information Building Code Teat Criteria State UUT Highest Passed Seismic Run Information Building Code Teat Criteria State Colspan="2">Colspan="2">Colspan= 2" UUT Highest Passed Seismic Run Information Building Code Teat Criteria St	ALLED VMC GROUP	UN		DER TE mary S	ST (UU heet	IT)		UUT-12	2
BCxD BCVD - 90 Trane Product Construction Summary 22 Gauge Galvanized Carbon Steel with Ribs Base Frame, 18 Gauge Galvanized Carbon Steel Enclosure Options / Subcomponent Summary Hydronic Coll: Trane: 3 Phase fan motor: Trane (Partle: X13612048010); Variable Speed Driver: Trane (Partle: X13612048010); 3 HP Fan: Lau Industries; 1-30 kW 3 phase electric heat: Tutico; CSTI Control panel: Trane UUT Properties UUT Properties UUT Properties UUT Properties Weight Dimensions [in] Lowest Nat. Freq. [Hz] [Ibs] Longth, Wright Alexon Page Said Said Said Said Said Said Said Said									97462-1501
Product Construction Summary 22 Gauge Galvanized Carbon Steel with Ribs Base Frame, 18 Gauge Galvanized Carbon Steel Enclosure Options / Subcomponent Summary Hydronic Coll: Trane: 3 Phase fan motor: Trane (Part#: X13612048010); 3 HP Fan: Lau Industries; 1-30 KW 3 phase electric heat: Tutco; CSTI Control panel: Trane UUT Properties UUT Properties UUT Properties UUT Highest Passed Soismic Run Information Building Code Test Criteria \$ck 12/h 2.4 1.33 0.52 CBC 2016 ICC-ES AC156 2.00 1.0 1.5 3.2 2.4 1.33 0.52 CBC 2016 ICC-ES AC156 2.00 1.0 1.5 2.27 0.91 1.52 0.61 Test Mounting Details UUT was floor-mounted to the base plate using city (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes. ·	Model Line	I Line Model Number Manufacturer							
Options / Subcomponent Summary Hydronic Coll: Trane: 3 Phase fan motor: Trane (Part#: X13612048010): 3HP Fan: Lau Industries; 1-30 kW 3 phase electric heat: Tutco; CSTI Control panel: Trane UUT Properties UUT Highest Passed Seismic Run Information Building Code Test Mounting Details UUT Was floor-mounted to the base plate using qty (16) 1/4° Grade 8 bots in the manufacture-provided mounting bracket holes	BCxD			BCVD - 90				Trane	
Options / Subcomponent Summary Hydronic Coll: Trane: 3 Phase fan motor: Trane (Part#: X13612048010); 3 HP Fan: Lau Industries; 1-30 KW 3 phase electric heat: Tutor: CSTI Control panel: Trane UUT Properties UUT Properties Weight Lowest Nat. Freq. [Hz] UUT Properties Weight Lowest Nat. Freq. [Hz] UUT Highest Passed Seismic Run Information Building Code Test Criteria \$ 200 1.15 2.27 0.90 1.15 2.07 0.91 1.52 0.81 UUT Highest Passed Seismic Run Information Eleven Building Code Test Criteria \$ 2.00 1.15 2.27 0.90 1.15 2.27 0.91 1.52 0.81 UUT Was floor-mounted to the base plate using qty (16) 1/4* Grade 8 bolts in the manufacturer-provided mounting bracket holes. UUT Was floor-mounted to the base plate using qty (16) 1/4* Grade 8 bolts in the manufacturer-provided mounting bracket holes. V									
Hydronic Coll: Trane: 3 Phase fan motor: Trane (Part#: X13612048010); 3 HP Fan: Lau Industries; 1-30 kW 3 phase electric heat: Tutor; CSTI Control panel: Trane UUT Properties UUT Properties UUT Properties UUT Height F-B S-S V 398 31.00 48:00 86.50 3.3 3.0 11.8 UUT Highest Passed Seismic Run Information Building Code Test Criteria Sos 2.00 1.0 1.5 3.2 2.4 1.33 0.52 CBC 2016 ICC-ES AC166 2.00 1.0 1.5 3.2 2.4 1.33 0.52 Test Mounting Details UUT was floor-mounted to the base place using qty (16) 1/4* Grade 8 bolts in the manufacturer-provided mounting bracket holes	22 Gauge Galvanized Carr	oon Steel with Ribs Ba	ise Frame, 18	8 Gauge Ga	Ivanized Car	oon Steel Er	iciosure		
Weight [lbs] Lowest Nat. Freq. [Hz] Length Width Height F-B S-S V 398 31.00 45.00 86.50 3.3 3.0 11.8 UUT Highest Passed Seismic Run Information Building Code Test Criteria Sole 2.0 1.0 1.5 2.27 0.9 1.5 2.27 0.91 1.52 0.61 Test Criteria Sole 2.00 1.0 1.5 2.27 0.91 1.52 0.61 Test Mounting Details UUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes		ase fan motor: Trane ((Part#: X706	60696010);	Variable Spee	ed Driver: Tr	ane (Part#:	X136120480	010);
Weight [Ibs] Longth Dimensions [in] Lowest Nat. Freq. [Hz] 398 31.00 46.00 86.50 3.3 3.0 11.8 UUT Highest Passed Seismic Run Information Building Code Test Criteria Sole 2.0 1.0 1.5 2.27 0.0 1.5 2.27 0.9 1.5 2.27 0.9 1.5 2.0 0.61 Test Criteria \$0e 2.27 0.0 1.5 2.27 0.91 1.52 0.61 Test Mounting Details UUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes		, N		UT Properti	es				
[Ibs] Length Width Height F-B S-S V 398 31.00 48:00 86:50 3.3 3.0 11.8 UUT Highest Passed Seismic Run Information UUT Highest Passed Seismic Run Information AFLX-H AFLX-H AFLX-V AFLC-V CBC 2016 Test Criteria Sos 2/h 1.5 3.2 2.4 1.33 0.52 CBC 2016 ICC-ES AC156 2.00 1.0 1.5 3.2 2.4 1.33 0.52 Test Mounting Details UUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes	Weight		<u></u>	-		Y	Lowes	st Nat. Freq	. [Hz]
UUT Highest Passed Seismic Run Information Building Code Test Criteria Sog Z/h Is Arus H Arus H </td <td>-</td> <td>Length</td> <td></td> <td></td> <td>Heig</td> <td>ght C</td> <td></td> <td></td> <td>1</td>	-	Length			Heig	ght C			1
Building Code Test Criteria Sos 2/h H AFLX+I AFLX-V AFLX-V AFLS-V AFLS	398	31.00	48	SP-03	82 _{86.}	50	3.3	3.0	11.8
CBC 2016 ICC-ES AC156 2.00 1.0 1.5 3.2 2.4 1.33 0.52 Test Mounting Details UUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes. OUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes.		UUTI	lighest Pas	sed Seismi	Run Inform	nation		I	
CBC 2016 ICC-ES AC156 2.27 0.0 1.5 2.27 0.91 1.52 0.61 Test Mounting Details UUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes	Building Code	Test <mark>Crite</mark> ria	BY: \$ ₀sm(othż/h J	Piland	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
UUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes	CBC 2016		2.00	1.0	1.5	3.2	2.4	1.33	0.52
UUT was floor-mounted to the base plate using qty (16) 1/4" Grade 8 bolts in the manufacturer-provided mounting bracket holes	666 2010	100-20 40130				2.27	0.91	1.52	0.61
All units were filled with contents and maintained structural integrity and functionality after AC-156 test.						E. L.			