Facilities Development Division www.oshpd.ca.gov/fdd
400 R Street, Suite 200, Sacramento, California 95811-6213 Phone (916) 440-8300 Fax (916) 654-2973

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP – 0113-10

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

1.0 Greenheck Fan Corporation — *Manufacturer*

David Mayer — *Manufacturer's Technical Representative*

400 Ross Ave Schofield, WI 54476 — *Mailing Address*

715-355-3939 — *Telephone*

David.mayer@greenheck.com — *E-mail Address*

2.0 Greenheck Ventilation Fans — *Product Name*

Centrifugal and Axial Fans — *Product Type*

Various: See Attachment **B** — *Product model No (List all unique product identification numbers and/or serial numbers)*

General Description: Air handling fans including centrifugal and propeller, inline and rooftop, supply and exhaust fans. See Attachment B for full description.

3.0 Greenheck Fan Corporation — *Applicant Company Name*

Ken Tokarz — *Contact Person*

400 Ross Ave, Schofield, WI 54476 — *Mailing Address*

715-355-6440 — *Telephone*

Ken.tokarz@greenheck.com — *E-mail Address*

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

Ken Tokarz — *Signature of Applicant*

9/8/10 — *Date*

General Manager, Fans & Ventilators — *Title*

Greenheck Fan Corporation — *Company Name*

Registered Design Professional Preparing the Report

4.0

ANCO Engineers, Inc.
Company Name

John C. Stoessel — *Contact Name*

37259 — *California License Number*

1965-A 33rd St., Boulder, CO 80301
Mailing Address

(818)591-9001 — *Telephone*

john@ancoengineers.com — *E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

Tobolski Watkins Engineering Inc.
Company Name

Derrick Watkins — *Contact Name*

S5257 — *California License Number*

3170 Ruffin Road, San Diego, CA 92123
Mailing Address

(858) 381-5843 — *Telephone*

dwatkins@tobolskiwatkins.com — *E-mail Address*

Anchorage Pre-Approval

6.0

☐ *Anchorage is pre-approved under OPA-*
(Separate application for anchorage pre-approval is required)

☒ Anchorage is not Pre-approved

Certification Method

70. ☒ *Testing in accordance with:* ☒ *ICC-ES AC-156* ☐ *Other (Please Specify):*

☐ *Analysis*

☐ *Experience data*

☐ *Combination of Testing, Analysis, and/or Experience Data (Please Specify):*

Testing Laboratory (if applicable)

8.0

ANCO Engineers, Inc.
Company Name

Paul Ibanez
Contact Name

1965-A 33rd Street, Boulder, CO 80301
Mailing Address

(303)443-7580 x239
Telephone

paul@ancoengineers.com
E-mail:

Approval Parameters

9.0 *Design in accordance with ASCE 7-05 Chapter 13:* ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = See Attachment ***C***

S_{DS} (Spectral response acceleration at short period) =2.28g

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

R_p (Equipment or component response modification factor) = See Attachment ***C***

I_p (Importance factor) = 1.5

z/h (Height factor ratio)=1

Equipment or Component fundamental period(s) = See Attachment ***A***

Building period limits (if any) = None

Overall dimensions and weight (or range thereof) =See Attachment ***B***

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) =

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

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient)=1.0

Ω_0 (System overstrength factor) =1.0

C_d (Deflection amplification factor) =1.0

I_p (Importance factor) =1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: ☐ Yes ☒ No

10.0 ***List of attachments supporting the special seismic certification of equipment or components:***

☐ *Test Report* ☐ *Drawings* ☐ *Manufacturer's Catalog*

☐ *Calculations* ☒ *Others (Please Specify):* RRS Parameters

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

10/25/10	**December 31, 2016**
Signature & Date	*Approval Expiration Date*
Chris Tokas, SHFR	S_{DS} (g) = **2.28** z/h = **1.0**
Name & Title	*Special Seismic Certification Valid Up to*

Condition of Approval (if any): **Approval is only valid for mounting specified in Attachment B.**

Attachment A - UUT Summary

GREENHECK
Building Value in Air.

UUT	Model	Dimension (in)			Weight (lb)	Natural Frequency (Hz)			Mounting	Options/ Accessories
		Length	Width	Height		F-B	S-S	V		
Utility Centrifugal Fans										
1	SFD-6	16.0	11.0	17.4	28	6.5	4.9	16.5	Base mounted on neoprene isolators	Inlet & outlet guards TH discharge CW wheel rotation
2	SFD-10	21.3	19.0	24.0	101	2.1	2.2	5.5	Base mounted on spring isolators with snubbers	Weatherhood BH discharge CW wheel rotation
3	SWB-106	26.5	19.0	28.0	87	9.1	7.3	13.0	Base mounted on neoprene isolators	Aluminum wheel Inlet & outlet guards Belt guard TH discharge CW wheel rotation
4	SFB-25	46.6	40.0	51.0	513	3.1	3.8	5.5	Base mounted on spring isolators with snubbers	Weatherhood Galvanized finish BH discharge CCW wheel rotation
5	SWB-227	52.0	48.8	58.4	559	3.7	3.9	9.1	Base mounted on spring isolators with snubbers	Inlet & outlet flanges Belt guard Galvanized finish UB discharge CW wheel rotation
6	SWB-236	81.0	68.0	61.5	1,256	2.0	2.1	5.1	Base mounted on spring isolators with snubbers	Inlet flange Weatherhood Painted finish DB discharge CCW sheel rotation

* Note: Max. weight includes largest motor and accessories

Attachment A - UUT Summary

GREENHECK
Building Value in Air.

UUT	Model	Dimension (in)			Weight (lb)	Natural Frequency (Hz)			Mounting	Options/ Accessories
		Length	Width	Height		F-B	S-S	V		
Inline Fans										
7	SQ-60	12.0	12.0	15.0	22	18.5	13.8	> 33	Base mounted on neoprene isolators (standing)	None
8	SQ-160	26.0	26.0	28.0	125	~~2.2~~	~~2.1~~	~~3.4~~	Suspended on spring isolators with cable bracing	None
9	BSQ-70	15.0	14.8	23.0	69	3.0	2.9	5.6	Base mounted on spring isolators with snubbers (standing)	None
10	BSQ-420	76.0	58.0	52.8	773	~~4.7~~	~~< 1.33~~	~~4.9~~	Suspended on spring isolators with cable bracing	Motor cover
Hooded Rooftop Propeller Fans										
11	RE2-18	48.0	51.0	42.3	221	8.1	10.8	27.0	Base mounted on roof curb	Tall base
12	RPDR-54	113.0	112.0	52.3	1,057	5.5	10.4	12.2	Base mounted on roof curb	Reversible air flow
13	RBF-1L/H20	51.0	58.8	27.0	193	7.8	8.1	12.0	Base mounted on roof curb	None
14	RBE-3L/H72	136.0	135.5	52.5	1,365	5.8	7.6	5.9	Base mounted on roof curb	None
Rooftop Upblast Propeller Fans										
15	RBUMO-1L/H20	45.8	30.0	44.0	202	7.2	7.9	12.2	Base mounted on roof curb	Construction Level I Aluminum damper Outlet guard
16	RBUMO-3L/H60	72.1	72.1	75.0	954	6.6	6.0	8.1	Base mounted on roof curb	Construction Level III Steel damper High temp rating
Rooftop Supply Fans										
17	RSF-90-10	34.6	34.6	27.8	162	6.4	6.6	> 33	Base mounted on roof curb	None
18	RSFP-200-75	58.1	58.1	42.3	558	5.6	4.5	13.5	Base mounted on roof curb	None

* Note: Max. weight includes largest motor and accessories

Attachment A - UUT Summary

GREENHECK
Building Value in Air.

UUT	Model	Dimension (in)			Weight	Natural Frequency (Hz)			Mounting	Options/ Accessories
		Length	Width	Height	(lb)	F-B	S-S	V		
Centrifugal Fans										
19	73-AFSW	109.0	126.0	144.0	7,055	2.1	2.1	4.0	Base mounted on spring isolators with snubbers	Arrangement 9 Series 41 Class I Steel construction BAU discharge
20	30-AFSW	51.0	67.0	70.0	844	2.9	2.8	5.8	Base mounted on spring isolators with snubbers	Arrangement 10 Series 21 Class I Aluminum construction TH discharge
21	33-BISW	58.0	60.0	76.8	1,046	2.0	1.9	-	Base mounted on spring isolators with snubbers	Arrangement 10 Series 21 Class II Steel construction TAU discharge Aluminum wheel
22	7-BISW	25.0	34.5	27.0	260	3.6	2.2	12.5	Base mounted on spring isolators with snubbers	Arrangement 9 Series 41 Class II Stainless steel construction BH discharge

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 1 - Utility Centrifugal Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
SFD-6	18.0	15.0	18.0	30	UUT 1	(1) Base mounted on neoprene Isolators (2) Base mounted on spring isolators with snubbers	Weatherhood Inlet/Outlet Guards Belt Guard Discharge (TH, UB, BH, BAD, TAD, TAU, BAU, UB) Finish (galvanized/painted) Wheel Material (Aluminum/steel) Wheel Rotation (CW/CCW)
SFD-7.5	20.0	17.0	18.0	40	Interpolated		
SFD-9	23.0	18.0	21.0	75			
SFD-10	27.0	21.0	24.0	113	UUT 2		
SWB-106	30.0	29.0	24.0	150	UUT 3		
SWB-206	30.0	29.0	24.0	150	Interpolated		
SWB-107	30.0	29.0	24.0	150			
SWB-207	30.0	29.0	24.0	150			
SWB-108	30.0	29.0	24.0	150			
SWB-208	30.0	29.0	24.0	150			
SFB-9	28.0	26.0	22.0	140			
SWB-110	30.0	29.0	24.0	150			
SWB-210	30.0	29.0	24.0	150			
SFB-10	29.0	26.0	22.0	150			
SFB-12	30.0	26.0	23.0	167		(1) Base mounted on spring isolators with snubbers	
SWB-113	35.0	32.0	26.0	205			
SWB-212	32.0	29.0	27.0	200			
SWB-213	37.0	31.0	29.0	215			
SWB-115	40.0	32.0	31.0	250			
SWB-215	40.0	32.0	31.0	275			
SFB-15	34.0	30.0	25.0	234			
SWB-116	42.0	37.0	32.0	286			
SWB-216	42.0	37.0	32.0	295			
SWB-118	48.0	41.0	36.0	365			
SWB-218	48.0	41.0	36.0	382			
SFB-18	44.0	39.0	33.0	285			
SWB-120	52.0	42.0	39.0	424			
SWB-220	52.0	42.0	39.0	436			
SFB-20	50.0	45.0	38.0	450			
SWB-222	58.0	46.0	44.0	495			
SFB-22	57.0	47.0	42.0	600			
SWB-124	64.0	48.0	46.0	635			
SWB-224	64.0	48.0	46.0	675			
SFB-25	65.0	50.0	46.0	800	UUT 4		
SWB-227	67.0	52.0	51.0	813	UUT 5		
SFB-27	70.0	56.0	50.0	925			
SWB-230	74.0	56.0	57.0	975			
SFB-30	80.0	60.0	57.0	1035			
SWB-233	85.0	60.0	65.0	1256			
SWB-236	93.0	65.0	70.0	1425	UUT 6		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

ACCUREX

GREENHECK
Building Value in Air.

Table 2 - Utility Centrifugal Fans (ACCUREX Branded)							
Approved Model	Maximum Dimension (in)			Max Weight*	Greenheck Model	Mounting	Options/ Accessories
	Length	Width	Height				
XUEB-106	30.0	29.0	24.0	150	SWB-106	Base mounted on (1) Neoprene Isolators (2) Spring isolators with snubbers	Weatherhood Inlet/Outlet Guards Belt Guard Discharge (TH, UB, BH, BAD, TAD, TAU, BAU, UB) Finish (galvanized/painted) Wheel Material (Aluminum/steel) Wheel Rotation (CW/CCW)
XUEB-206	30.0	29.0	24.0	150	SWB-206		
XUEB-107	30.0	29.0	24.0	150	SWB-107		
XUEB-207	30.0	29.0	24.0	150	SWB-207		
XUEB-108	30.0	29.0	24.0	150	SWB-108		
XUEB-208	30.0	29.0	24.0	150	SWB-208		
XUEB-110	30.0	29.0	24.0	150	SWB-110		
XUEB-210	30.0	29.0	24.0	150	SWB-210		
XUEB-113	35.0	32.0	26.0	205	SWB-113	(1) Base mounted on spring isolators with snubbers	
XUEB-212	32.0	29.0	27.0	200	SWB-212		
XUEB-213	37.0	31.0	29.0	215	SWB-213		
XUEB-115	40.0	32.0	31.0	250	SWB-115		
XUEB-215	40.0	32.0	31.0	275	SWB-215		
XUEB-116	42.0	37.0	32.0	286	SWB-116		
XUEB-216	42.0	37.0	32.0	295	SWB-216		
XUEB-118	48.0	41.0	36.0	365	SWB-118		
XUEB-218	48.0	41.0	36.0	382	SWB-218		
XUEB-120	52.0	42.0	39.0	424	SWB-120		
XUEB-220	52.0	42.0	39.0	436	SWB-220		
XUEB-222	58.0	46.0	44.0	495	SWB-222		
XUEB-124	64.0	48.0	46.0	635	SWB-124		
XUEB-224	64.0	48.0	46.0	675	SWB-224		
XUEB-227	67.0	52.0	51.0	813	SWB-227		
XUEB-230	74.0	56.0	57.0	975	SWB-230		
XUEB-233	85.0	60.0	65.0	1256	SWB-233		
XUEB-236	93.0	65.0	70.0	1425	SWB-236		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 3 - Inline Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
SQ-60	12.0	13.0	12.0	30	UUT 7	(1) Base mounted on neoprene isolators (standing) (2) Base mounted on spring isolators with snubbers (standing) (3) Suspended on spring isolators with cable bracing	Motor Cover Belt/Bearing Cover Motor Location (side/top)
SQ-65	12.0	13.0	12.0	30	Interpolated		
SQ-70	12.0	13.0	12.0	30			
SQ-75	15.0	16.0	15.0	45			
SQ-80	15.0	16.0	15.0	45			
SQ-85	15.0	16.0	15.0	45			
SQ-90	15.0	16.0	15.0	45			
SQ-95	15.0	16.0	15.0	45			
SQ-100	17.0	21.0	17.0	65			
SQ-120	19.0	21.0	19.0	80			
SQ-130	21.0	21.0	21.0	95			
SQ-140	23.0	22.0	23.0	125			
SQ-160	26.0	26.0	26.0	200	UUT 8		
BSQ-70	16.0	22.0	32.0	100	UUT 9		
BSQ-80	16.0	22.0	32.0	100	Interpolated		
BSQ-90	16.0	22.0	32.0	110			
BSQ-100	18.0	22.0	36.0	120			
BSQ-120	18.0	22.0	36.0	125			
BSQ-130	22.0	22.0	40.0	125			
BSQ-140	24.0	23.0	42.0	135			
BSQ-160	27.0	27.0	46.0	230			
BSQ-180	29.0	29.0	48.0	275			
BSQ-200	33.0	33.0	54.0	350			
BSQ-240	40.0	35.0	64.0	445			
BSQ-300	48.0	40.0	72.0	625			
BSQ-360	54.0	44.0	78.0	765			
BSQ-420	56.0	52.0	84.0	925	UUT 10		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

ACCUREX

GREENHECK
Building Value in Air.

Table 4 - Inline Fans (ACCUREX Branded)							
Approved Model	Maximum Dimension (in)			Max Weight*	Greenheck Model	Mounting	Options/ Accessories
	Length	Width	Height				
XID-60	12.0	13.0	12.0	30	SQ-60	(1) Base mounted on neoprene isolators (standing) (2) Base mounted on spring isolators with snubbers (standing) (3) Suspended on spring isolators with cable bracing	Motor Cover Belt/Bearing Cover Motor Location (side/top)
XID-65	12.0	13.0	12.0	30	SQ-65		
XID-70	12.0	13.0	12.0	30	SQ-70		
XID-75	15.0	16.0	15.0	45	SQ-75		
XID-80	15.0	16.0	15.0	45	SQ-80		
XID-85	15.0	16.0	15.0	45	SQ-85		
XID-90	15.0	16.0	15.0	45	SQ-90		
XID-95	15.0	16.0	15.0	45	SQ-95		
XID-100	17.0	21.0	17.0	65	SQ-100		
XID-120	19.0	21.0	19.0	80	SQ-120		
XID-130	21.0	21.0	21.0	95	SQ-130		
XID-140	23.0	22.0	23.0	125	SQ-140		
XID-160	26.0	26.0	26.0	200	SQ-160		
XIB-70	16.0	22.0	32.0	100	BSQ-70		
XIB-80	16.0	22.0	32.0	100	BSQ-80		
XIB-90	16.0	22.0	32.0	110	BSQ-90		
XIB-100	18.0	22.0	36.0	120	BSQ-100		
XIB-120	18.0	22.0	36.0	125	BSQ-120		
XIB-130	22.0	22.0	40.0	125	BSQ-130		
XIB-140	24.0	23.0	42.0	135	BSQ-140		
XIB-160	27.0	27.0	46.0	230	BSQ-160		
XIB-180	29.0	29.0	48.0	275	BSQ-180		
XIB-200	33.0	33.0	54.0	350	BSQ-200		
XIB-240	40.0	35.0	64.0	445	BSQ-240		
XIB-300	48.0	40.0	72.0	625	BSQ-300		
XIB-360	54.0	44.0	78.0	765	BSQ-360		
XIB-420	56.0	52.0	84.0	925	BSQ-420		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 5 - Hooded Rooftop Propeller Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
RE2-18	48.0	51.0	41.0	185	UUT 11	(1) Base mounted on roof curb less than 24" tall (Greenheck GPF, GPR, SD or equivalent)	Drive Type (belt/direct) Base Height (tall/standard) Filtration (yes/no) Propeller Construction (Cast aluminum/steel, type L/H)
RE2-20	54.0	51.0	45.0	210	Interpolated		
RE2-24	66.0	63.0	47.0	245			
RE2-30	78.0	87.0	52.0	285			
RE2-36	94.0	87.0	57.0	330			
RE2-42	93.0	99.0	60.0	450			
RE2-48	112.0	111.0	61.0	645			
RE2-54	124.0	123.0	67.0	805			
RS2-18	48.0	51.0	41.0	185			
RS2-20	54.0	51.0	45.0	210			
RS2-24	66.0	63.0	47.0	245			
RS2-30	78.0	87.0	52.0	285			
RS2-36	94.0	87.0	57.0	330			
RS2-42	93.0	99.0	60.0	450			
RS2-48	112.0	111.0	61.0	645			
RS2-54	124.0	123.0	67.0	805			
RCE3-20	54.0	51.0	45.0	220			
RCE3-24	66.0	63.0	47.0	260			
RCE3-30	78.0	87.0	52.0	295			
RCE3-36	94.0	87.0	57.0	340			
RCE3-42	93.0	99.0	60.0	465			
RCE3-48	112.0	111.0	61.0	670			
RCE3-54	124.0	123.0	67.0	825			
RCS3-20	54.0	51.0	45.0	220			
RCS3-24	66.0	63.0	47.0	260			
RCS3-30	78.0	87.0	52.0	295			
RCS3-36	94.0	87.0	57.0	340			
RCS3-42	93.0	99.0	60.0	465			
RCS3-48	112.0	111.0	61.0	670			
RCS3-54	124.0	123.0	67.0	825			
RPDR-24	66.0	63.0	47.0	260			
RPDR-30	78.0	87.0	52.0	295			

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 5 - Hooded Rooftop Propeller Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
RPDR-36	94.0	87.0	57.0	340	Interpolated	(1) Base mounted on roof curb less than 24" tall (Greenheck GPF, GPR, SD or equivalent)	Drive Type (belt/direct) Base Height (tall/standard) Filtration (yes/no) Propeller Construction (Cast aluminum/steel, type L/H)
RPDR-42	100.0	99.0	61.0	465			
RPDR-48	112.0	111.0	62.0	670			
RPDR-54	124.0	123.0	67.0	825	UUT 12		
RBE-1L/H20	54.0	51.0	45.0	195	Interpolated		
RBE-2L/H20	54.0	51.0	45.0	210			
RBE-1L/H24	66.0	63.0	47.0	235			
RBE-2L/H24	66.0	63.0	47.0	245			
RBE-3L/H24	66.0	63.0	47.0	260			
RBE-1L/H30	78.0	87.0	52.0	280			
RBE-2L/H30	78.0	87.0	52.0	285			
RBE-3L/H30	78.0	87.0	52.0	295			
RBE-1L/H36	94.0	87.0	57.0	320			
RBE-2L/H36	94.0	87.0	57.0	330			
RBE-3L/H36	94.0	87.0	57.0	340			
RBE-2H42	93.0	99.0	60.0	450			
RBE-3L/H42	93.0	99.0	60.0	465			
RBE-2H48	112.0	111.0	61.0	645			
RBE-3L/H48	112.0	111.0	61.0	670			
RBE-2H54	124.0	123.0	67.0	805			
RBE-3L/H54	124.0	123.0	67.0	825			
RBE-2H60	136.0	135.0	68.0	935			
RBE-3L/H60	136.0	135.0	68.0	970			
RBE-3L/H72	136.0	147.0	71.0	1145	UUT 14		
RBCE-3H24	66.0	63.0	47.0	260	Interpolated		
RBCE-3H30	78.0	87.0	52.0	295			
RBCE-3H36	94.0	87.0	57.0	340			
RBCE-3H42	93.0	99.0	60.0	465			
RBCE-3H48	112.0	111.0	61.0	670			
RBCE-3H54	124.0	123.0	67.0	825			
RBCE-3H60	136.0	135.0	68.0	970			
RBCE-3H72	136.0	147.0	71.0	1145			
RBS-1L/H20	54.0	51.0	45.0	195			
RBS-2L/H20	54.0	51.0	45.0	210			
RBS-1L/H24	66.0	63.0	47.0	235			

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 5 - Hooded Rooftop Propeller Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
RBS-2L/H24	66.0	63.0	47.0	245	Interpolated	(1) Base mounted on roof curb less than 24" tall (Greenheck GPF, GPR, SD or equivalent)	Drive Type (belt/direct) Base Height (tall/standard) Filtration (yes/no) Propeller Construction (Cast aluminum/steel, type L/H)
RBS-3L/H24	66.0	63.0	47.0	260			
RBS-1L/H30	78.0	87.0	52.0	280			
RBS-2L/H30	78.0	87.0	52.0	285			
RBS-3L/H30	78.0	87.0	52.0	295			
RBS-1L/H36	94.0	87.0	57.0	320			
RBS-2L/H36	94.0	87.0	57.0	330			
RBS-3L/H36	94.0	87.0	57.0	340			
RBS-2H42	93.0	99.0	60.0	450			
RBS-3L/H42	93.0	99.0	60.0	465			
RBS-2H48	112.0	111.0	61.0	645			
RBS-3L/H48	112.0	111.0	61.0	670			
RBS-2H54	124.0	123.0	67.0	805			
RBS-3L/H54	124.0	123.0	67.0	825			
RBS-2H60	136.0	135.0	68.0	935			
RBS-3L/H60	136.0	135.0	68.0	970			
RBS-3L/H72	136.0	147.0	71.0	1145			
RBCS-3H24	66.0	63.0	47.0	260			
RBCS-3H30	78.0	87.0	52.0	295			
RBCS-3H36	94.0	87.0	57.0	340			
RBCS-3H42	93.0	99.0	60.0	465			
RBCS-3H48	112.0	111.0	61.0	670			
RBCS-3H54	124.0	123.0	67.0	825			
RBCS-3H60	136.0	135.0	68.0	970			
RBCS-3H72	136.0	147.0	71.0	1145			
RBF-1L/H20	54.0	51.0	45.0	195	UUT 13		
RBF-2L/H20	54.0	51.0	45.0	210	Interpolated		
RBF-1L/H24	66.0	63.0	47.0	235			
RBF-2L/H24	66.0	63.0	47.0	245			
RBF-3L/H24	66.0	63.0	47.0	260			
RBF-1L/H30	78.0	87.0	52.0	280			
RBF-2L/H30	78.0	87.0	52.0	285			
RBF-3L/H30	78.0	87.0	52.0	295			
RBF-1L/H36	94.0	87.0	57.0	320			
RBF-2L/H36	94.0	87.0	57.0	330			

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 5 - Hooded Rooftop Propeller Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
RBF-3L/H36	94.0	87.0	57.0	340	Interpolated	(1) Base mounted on roof curb less than 24" tall (Greenheck GPF, GPR, SD or equivalent)	Drive Type (belt/direct) Base Height (tall/standard) Filtration (yes/no) Propeller Construction (Cast aluminum/steel, type L/H)
RBF-2H42	93.0	99.0	60.0	450			
RBF-3L/H42	93.0	99.0	60.0	465			
RBF-2H48	112.0	111.0	61.0	645			
RBF-3L/H48	112.0	111.0	61.0	670			
RBF-2H54	124.0	123.0	67.0	805			
RBF-3L/H54	124.0	123.0	67.0	825			
RBF-2H60	136.0	135.0	68.0	935			
RBCF-3H24	66.0	63.0	47.0	260			
RBCF-3H30	78.0	87.0	52.0	295			
RBCF-3H36	94.0	87.0	57.0	340			
RBCF-3H42	93.0	99.0	60.0	465			
RBCF-3H48	112.0	111.0	61.0	670			
RBCF-3H54	124.0	123.0	67.0	825			
RBCF-3H60	136.0	135.0	68.0	970			
RBCF-3H72	136.0	147.0	71.0	1145			
RPBR-24	66.0	63.0	47.0	260			
RPBR-30	78.0	87.0	52.0	295			
RPBR-36	94.0	87.0	57.0	340			
RPBR-42	100.0	99.0	61.0	465			
RPBR-48	112.0	111.0	62.0	670			
RPBR-54	124.0	123.0	67.0	825			
RPBR-60	136.0	135.0	68.0	970			
RPBR-72	136.0	147.0	71.0	1145			

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 6 - Rooftop Upblast Propeller Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
RBUMO-1L/H20	30.0	46.0	44.0	285	UUT 15	(1) Base mounted on roof curb less than 24" tall (Greenheck GPF, GPR, SD or equivalent)	Construction (Level I, II, III) Dampers (aluminum or steel) Belt Tube Damper Lifters
RBUMO-2L/H20	30.0	46.0	44.0	297	Interpolated		
RBUMO-1L/H24	34.0	50.0	46.0	321			
RBUMO-2L/H24	34.0	50.0	46.0	338			
RBUMO-3L/H24	34.0	50.0	46.0	343			
RBUMO-1L/H30	40.0	56.0	52.0	364			
RBUMO-2L/H30	40.0	56.0	52.0	396			
RBUMO-3L/H30	40.0	56.0	52.0	451			
RBUMO-1L/H36	46.0	64.0	60.0	424			
RBUMO-2L/H36	46.0	64.0	60.0	474			
RBUMO-3L/H36	46.0	64.0	60.0	547			
RBUMO-2L/H42	52.0	70.0	65.0	563			
RBUMO-3L/H42	52.0	70.0	65.0	630			
RBUMO-2L/H48	58.0	76.0	69.0	662			
RBUMO-3L/H48	58.0	76.0	69.0	767			
RBUMO-2H54	66.0	82.0	76.0	824			
RBUMO-3L/H54	66.0	82.0	76.0	1021			
RBUMO-3L/H60	72.0	89.0	80.0	1191	UUT 16		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 7 - Rooftop Supply Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
RSF-90	36.0	36.0	24.0	150	UUT 17	(1) Base mounted on roof curb less than 24" tall (Greenheck GPF, GPR, SD or equivalent)	Construction (flat sheet metal sides/louvered aluminum sides)
RSF-100	42.0	42.0	24.0	185	Interpolated		
RSF-120	48.0	48.0	28.0	240			
RSF-150	54.0	54.0	32.0	350			
RSF-180	62.0	62.0	35.0	425			
RSF-200	74.0	74.0	40.0	650			
RSFP-90	32.0	32.0	26.0	130			
RSFP-100	36.0	36.0	26.0	150			
RSFP-120	40.0	40.0	30.0	195			
RSFP-150	46.0	46.0	34.0	265			
RSFP-180	52.0	52.0	36.0	300			
RSFP-200	59.0	59.0	41.0	450	UUT 18		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

ACCUREX

GREENHECK
Building Value in Air.

Table 8 - Rooftop Supply Fans (ACCUREX Branded)							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
XRS-90	36.0	36.0	24.0	150	RSF-90	Roof curb less than 24" tall (Greenheck GPF, GPR, SD or equivalent)	Construction (flat sheet metal sides/louvered aluminum sides)
XRS-100	42.0	42.0	24.0	185	RSF-100		
XRS-120	48.0	48.0	28.0	240	RSF-120		
XRS-150	54.0	54.0	32.0	350	RSF-150		
XRS-180	62.0	62.0	35.0	425	RSF-180		
XRS-200	74.0	74.0	40.0	650	RSF-200		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 9 - Centrifugal Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
7-BISW	52.0	43.4	39.1	429	UUT 22	(1) Base mounted on spring isolators with snubbers	Arrangement (9 & 10) Series (21 & 41) Class (I & II) Material of Construction (Aluminum, Steel, Stainless Steel) Discharge (TH, TAU, TAD, BD, BAD, BH, BAU, UB) Heigh saving structural steel base
8-BISW	52.0	43.4	39.1	429	Interpolated		
9-BISW	52.0	43.4	39.1	429			
10-BISW	52.0	43.4	39.1	429			
12-AFSW	56.8	46.4	43.4	495			
12-BISW	56.8	46.4	43.4	495			
13-AFSW	57.8	46.4	44.9	508			
13-BISW	57.8	46.4	44.9	508			
15-AFSW	59.1	47.9	46.8	594			
15-BISW	59.1	47.9	46.8	594			
16-AFSW	63.8	49.8	52.0	719			
16-BISW	63.8	49.8	52.0	719			
18-AFSW	65.8	54.5	54.1	917			
18-BISW	65.8	54.5	54.1	917			
20-AFSW	67.1	54.5	56.3	942			
20-BISW	67.1	54.5	56.3	942			
22-AFSW	73.4	58.4	63.9	1170			
22-BISW	73.4	58.4	63.9	1170			
24-AFSW	75.6	60.0	66.6	1367			
24-BISW	75.6	60.0	66.6	1367			
27-AFSW	81.6	65.6	77.0	1567			
27-BISW	81.6	65.6	77.0	1567			
30-AFSW	84.4	68.9	80.4	1936	UUT 20		
30-BISW	84.4	68.9	80.4	1936	Interpolated		

* Note: Max. weight includes largest motor and accessories

Attachment B - Seismically Qualified Products

GREENHECK
Building Value in Air.

Table 9 - Centrifugal Fans							
Approved Model	Maximum Dimension (in)			Max Weight*	Testing Scope	Mounting	Options/ Accessories
	Length	Width	Height				
33-AFSW	75.4	74.9	82.7	1954	Interpolated	(1) Base mounted on spring isolators with snubbers	Arrangement (9 & 10) Series (21 & 41) Class (I & II) Material of Construction (Aluminum, Steel, Stainless Steel) Discharge (TH, TAU, TAD, BD, BAD, BH, BAU, UB) Heigh saving structural steel base
33-BISW	75.4	74.9	82.7	1954	UUT 21		
36-AFSW	79.6	77.4	91.1	2237	Interpolated		
36-BISW	79.6	77.4	91.1	2237			
40-AFSW	84.1	80.0	98.9	2527			
40-BISW	84.1	80.0	98.9	2527			
44-AFSW	92.9	85.8	109.8	3349			
44-BISW	92.9	85.8	109.8	3349			
49-AFSW	98.4	88.4	119.4	3703			
49-BISW	98.4	88.4	119.4	3703			
54-AFSW	103.6	94.3	130.7	4958			
54-BISW	103.6	94.3	130.7	4958			
60-AFSW	111.1	98.3	144.7	5732			
60-BISW	111.1	98.3	144.7	5732			
66-AFSW	120.9	104.4	157.7	6751			
66-BISW	120.9	104.4	157.7	6751			
73-AFSW	129.4	113.4	172.4	7627	UUT 19		
73-BISW	129.4	113.4	172.4	7627	Interpolated		

* Note: Max. weight includes largest motor and accessories

Attachment C - Seismic Qualification and Anchorage Parameters

GREENHECK
Building Value in Air.

Mounting Arrangement	S_{DS}	z/h	I_p	a_p	R_p	F_p/W_p
Rigid mounted	2.28	1.0	2.5	2.5	6.0	1.7
Spring isolated with <0.25" air gap					2.0	5.1
Neoprene isolated					2.5	4.1
Suspended with spring isolators					2.5	4.1