PRMH20221752

Structural Calculation Report

PUYALLUP HIGH SCHOOL SPLIT SYSTEM STRUCTURAL CALCUALTIONS

City of Puyallup
Building
ACCEPTED
JMontgomery
11/23/2022
6:51:36 AM

THE APPROVED CONSTRUCTION PLANS, DOCUMENTS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.

FULL SIZED LEDGIBLE COLOR PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITEE ON SITE FOR INSPECTION

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Project	PUYALLUP HIGH SCHOOL
Location	105 7TH ST SW PUYALLUP, WA 98371
McKinstry Project	123130
McKinstry Drawings	SK-1
Date	11/4/22

JEFF GOODWIN
STATE OF WASHINGTON
42011
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 9-23-24

THIS IS AN ELECTRONIC SIGNATURE. DIGITAL STAMP ORIGINAL ON FILE AT MCKINSTRY

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PRMH20221752	PROJECT PUYALLUP HIGH SCHOOL		
McKinstry For The Life Of Your Building	TITLE STRUCTURAL CALCS		
800.669.6223 www.mckinstry.com	BY HBS	SCALE NTS	JOB # 123130
	DATE 11/4/22	REF.DWG	SHEET

SCOPE: (1) DESIGN SEISMIC/WIND ANCHORAGE FOR INCOMING MECH EQUIPMENT

PROJECT: PUYALLUP HIGH SCHOOL
105 7TH ST SW
PUYALLUP, WA 98371
MCK JOB NUMBER: 123130

LOCATIONS: SOUTH CHILLER YARD WALL

DESIGN PARAMETERS:

CODES: ASCE 7-16, ACI 318-14, IBC 2018 W/ WA AMENDMENTS

LOADS:

DEAD: SELF WT OF MECH EQUIPMENT
CU-01 WT = 245 LBS LXWXH = 42"X14"X53"

SEISMIC:

SDS = 1.02g
Ip = 1.0
Ap = 2.5
Rp = 6.0
z/h = 0.75
OMEGA = 2.0 (APPLIED AT CONCRETE CONNECTIONS)

WIND:

V3SEC = 104 MPH
EXP = B
IW = 1.0
HT = 10' AVE

SNOW:

Is = 1.0
Pg = 25 PSF

DESIGN APPROACH:
1. DETERMINE WORST CASE WIND/SEISMIC LOADS USING EXCEL.
2. DESIGN CONNECTION OF NEW CU TO CMU WALL.

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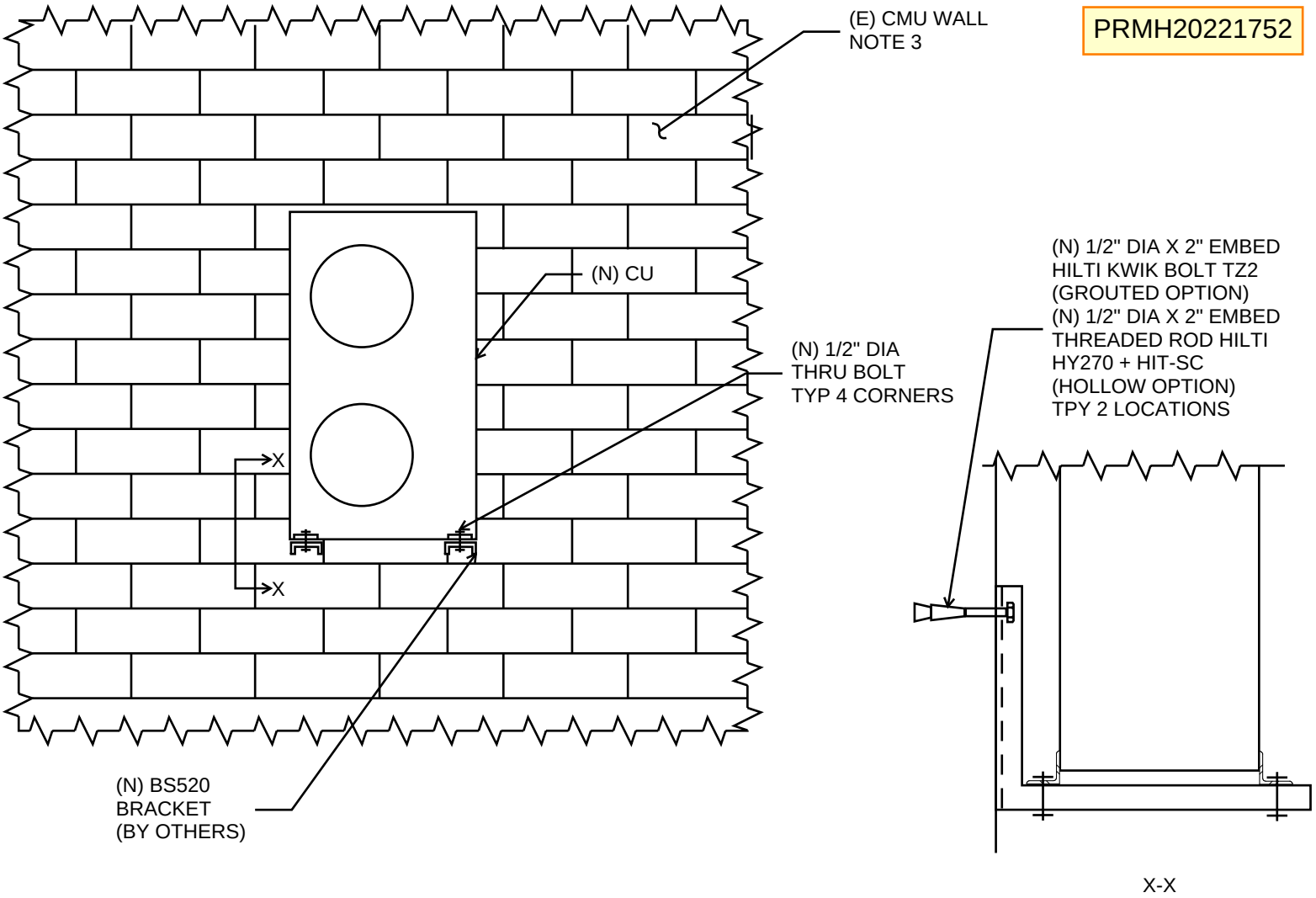

CONNECTION DETAIL

SCALE: NTS

NOTES:
1. (N) DENOTES "NEW"; (E) DENOTES "EXISTING".
2. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFO.
3. CONTRACTOR TO CONFIRM IF CMU WALL IS GROUTED OR HOLLOW.

McKinstry
For The Life Of Your Building

MCKINSTRY CO

5005 3RD AVE SW
SEATTLE, WA 98134
206-762-3311

www.mckinstry.com

PROJECT:

PUYALLUP HIGH SCHOOL
105 7TH ST SW
PUYALLUP, WA 98371

ISSUES:

NO	DATE	DESCRIPTION

DESIGNED:	HBS
DRAWN:	HBS
CHECKED:	JWG
JOB NO:	123130

SHEET TITLE:
CONN DETAIL

SHEET NUMBER:
SK-1

McKinstry For The Life Of Your Building 800.669.6223 www.mckinstry.com	PROJECT PUYALLUP HIGH SCHOOL		
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LOCATION OF CU:
CHILLER YARD WALL

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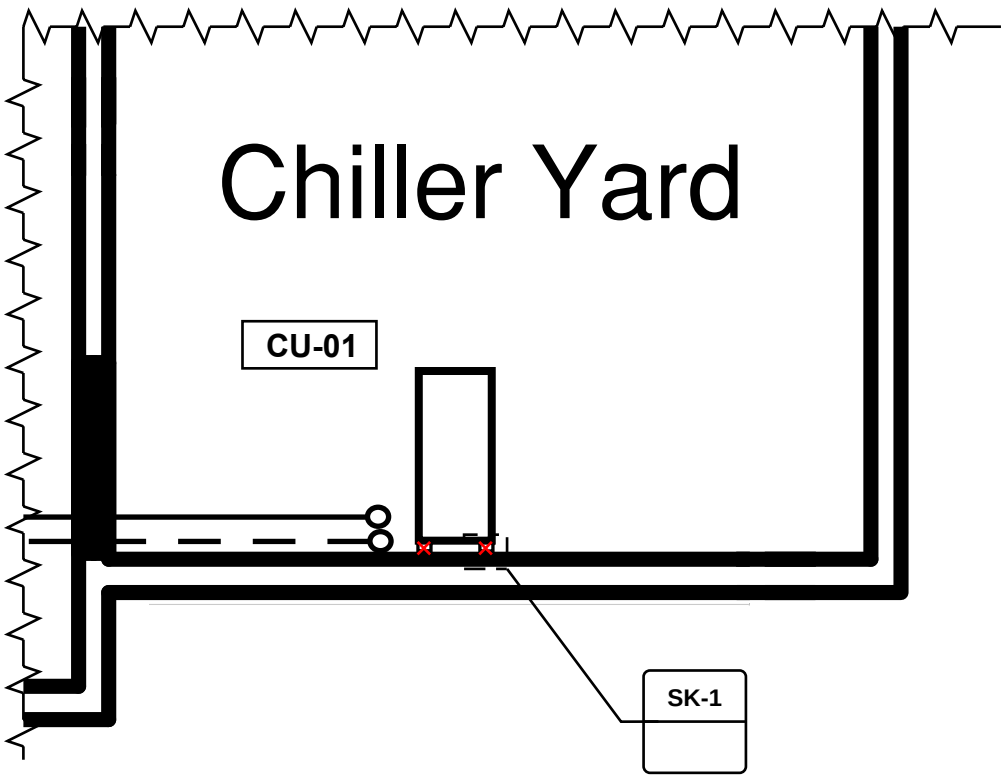

WIND LOADS CONTROL

WIND LOADS ON CU:

P = 20 PSF

W = 20 PSF*(13"/12"/FT)(53"/12"/FT) = 95.7 LBS

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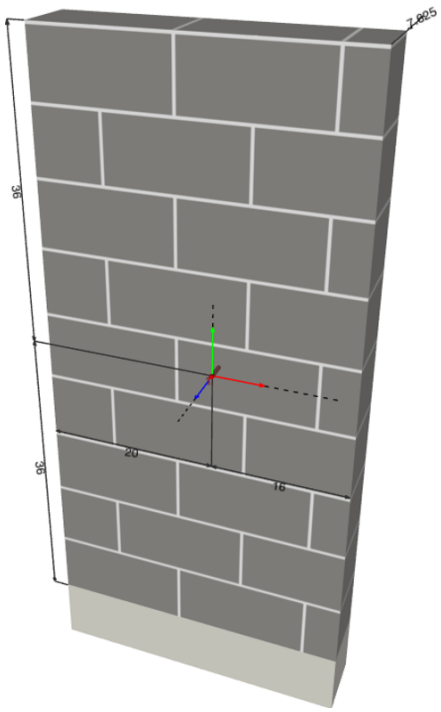
Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Nov 4, 2022	Date:	11/4/2022
Fastening point:			

Specifier's comments:

1 Input data

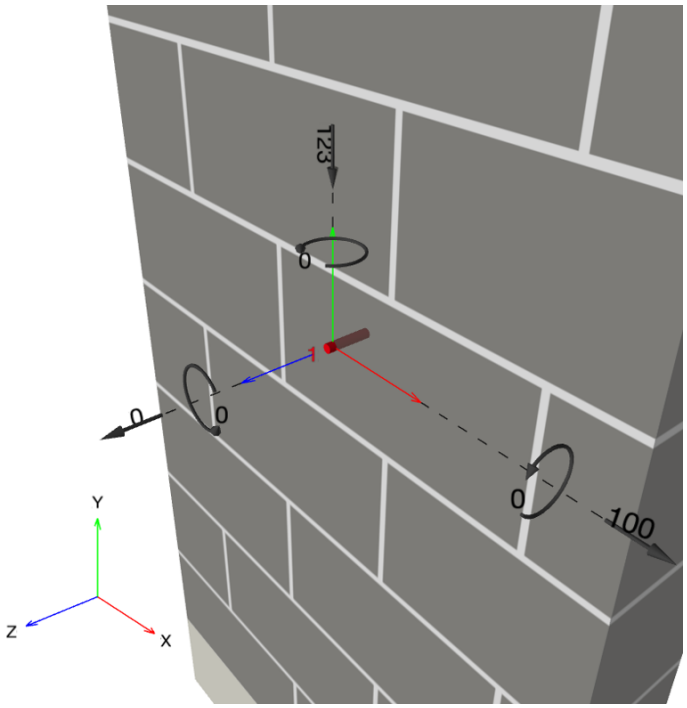
Anchor type and diameter:	**Kwik Bolt TZ2 - CS 1/2 (2)**
Item number:	2210254 KB-TZ2 1/2x3 3/4
Effective embedment depth:	h_{ef} = 2.000 in.
Material:	Carbon Steel
Evaluation Service Report:	ESR-4561
Issued I Valid:	3/1/2022 | 12/1/2023
Proof:	Design Method ASD Masonry
Stand-off installation:	
Profile:	
Base material:	Grout-filled CMU, L x W x H: 16.000 in. x 8.000 in. x 8.000 in.; Joints: vertical: 0.375 in.; horizontal: 0.375 in. Base material temperature: 68 °F
Installation:	Face installation
Seismic loads	no

Geometry [in.]



Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Nov 4, 2022	Date:	11/4/2022
Fastening point:			

Geometry [in.] & Loading [lb, in.lb]



1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 0; V_x = 100; V_y = -123; M_x = 0; M_y = 0; M_z = 0;	no	5

Company:		Page:	3
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Nov 4, 2022	Date:	11/4/2022
Fastening point:			

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Overall strength	0	0	0 / -	N/A
Shear	Overall strength	-	-	- / 5	OK

Loading	**β_N**	**β_V**	**α**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	-	-	-	-	N/A

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

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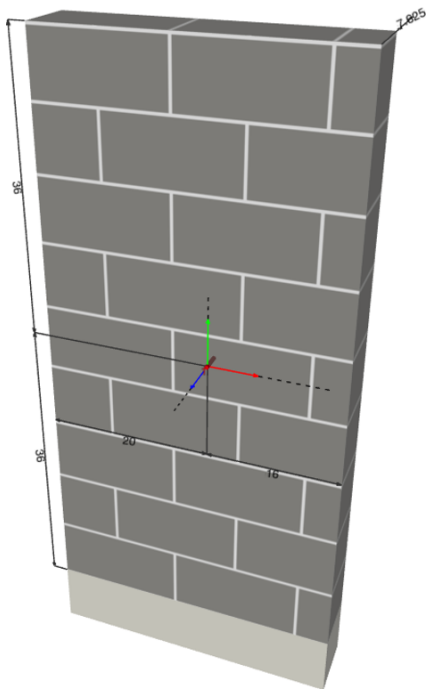
Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Nov 4, 2022	Date:	11/4/2022
Fastening point:			

Specifier's comments:

1 Input data

Anchor type and diameter:	**HY 270 + threaded rod 5.8 1/2, HIT-SC 18x50**
Item number:	385422 HAS 5.8 1/2"x3-1/8" (element) / 2194247 HIT-HY 270 (adhesive) / 360485 HIT-SC 18x50 (sieve sleeve)
Effective embedment depth:	h_{ef} = 2.000 in.
Material:	5.8
Evaluation Service Report:	ESR-4143
Issued I Valid:	3/1/2021 | 1/1/2022
Proof:	Design Method ASD Masonry
Stand-off installation:	
Profile:	
Base material:	Hollow CMU, L x W x H: 16.000 in. x 8.000 in. x 8.000 in.; Joints: vertical: 0.375 in.; horizontal: 0.375 in. Base material temperature: 68 °F
Installation:	Face installation
Seismic loads	no

Geometry [in.]



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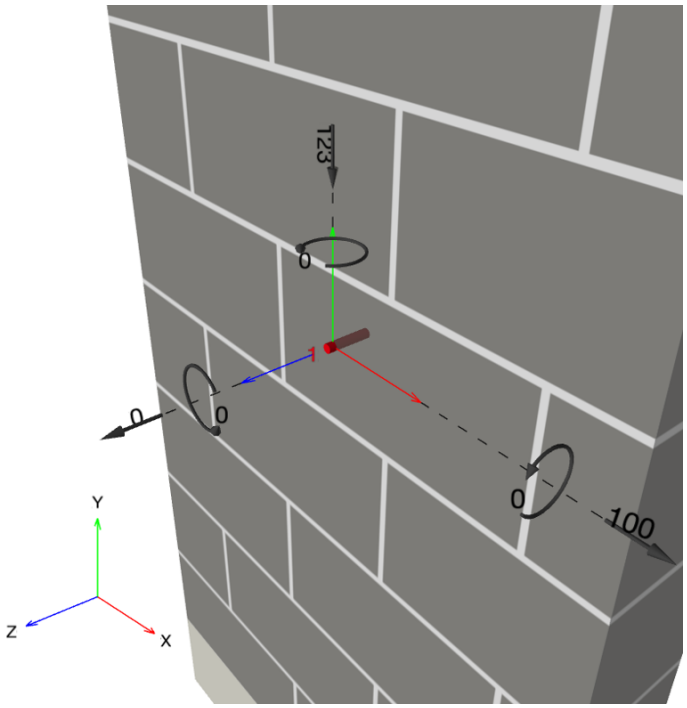
Fastening point:			

Geometry [in.] & Loading [lb, in.lb]



1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 0; V_x = 100; V_y = -123; M_x = 0; M_y = 0; M_z = 0;	no	34

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Address:		Specifier:	
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Design:	Masonry - Nov 4, 2022	Date:	11/4/2022
Fastening point:			

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Overall strength	0	0	0 / -	N/A
Shear	Bond strength	-	-	- / 34	OK

Loading	**β_N**	**β_V**	**α**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	-	-	-	-	N/A

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

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SPECIFICATIONS: PKA-A36KA7 & PUZ-A36NKA7(-BS)

Outdoor Unit	MCA	A	25.0
	MOCP	A	31
	Fan Motor Full Load Amperage	A	0.5 + 0.5
	Fan Motor Output	W	74
	Airflow Rate	CFM	3880/3880
	Refrigerant Control		LEV
	Defrost Method		Reverse Cycle
	Coating on Heat Exchanger		Blue Fin Coating (BS Model only)
	Sound Pressure Level, Cooling[1]	dB(A)	52
	Sound Pressure Level, Heating[2]	dB(A)	53
	Compressor Type		INVERTER-driven twin rotary
	Compressor Model		MNB33FBRMC-L
	Compressor Rated Load Amps	A	8
	Compressor Locked Rotor Amps	A	13.0
	Compressor Oil Type // Charge	oz.	FV50S // 45
	External Finish Color		Ivory Munsell 3Y 7.8/1.1
	Base Pan Heater		N/A
	Unit Dimensions	W x D x H: In. [mm]	41-5/16 x 13 (+1-3/16) x 52-11/16 [1050 x 330 (+30) x 1338]
	Package Dimensions	W x D x H: In. [mm]	42-15/16 x 17-11/16 x 56-4/16 [1091 x 450 x 1429]
	Unit Weight	Lbs. [kg]	214 [97]
	Package Weight	Lbs. [kg]	245 [111]
Outdoor Unit Operating Temperature Range	Cooling Air Temp [Maximum / Minimum]*	°F	115 DB / 0 DB
	Heating Air Temp [Maximum / Minimum]	°F	70 DB, 59 WB / -4 DB, -4 WB
	Heating Thermal Lock-out / Re-start Temperatures**	°F	-8 / -4
Refrigerant	Type		R410A
	Charge	Lbs, oz	10, 6.0
	Chargeless Piping Length	Ft. [m]	0.0 [30.0]
	Additional Refrigerant Charge Per Additional Piping Length	oz./Ft. [g/m]	0.7 [50]
Piping	Gas Pipe Size O.D. [Flared]	In.[mm]	5/8 [15.88]
	Liquid Pipe Size O.D. [Flared]	In.[mm]	3/8 [9.52]
	Maximum Piping Length	Ft. [m]	165 [50]
	Maximum Height Difference	Ft. [m]	100 [30]
	Maximum Number of Bends		15

NOTES:

AHRI Rated Conditions (Rated data is determined at a fixed compressor speed)

[1]Cooling (Indoor // Outdoor)	°F	80 DB, 67 WB // 95 DB, 75 WB
[2]Heating at 47°F (Indoor // Outdoor)	°F	70 DB, 60 WB // 47 DB, 43 WB
[3]Heating at 17°F (Indoor // Outdoor)	°F	70 DB, 60 WB // 17 DB, 15 WB

Conditions

[4]Heating at 5°F (Indoor // Outdoor)	°F	70 DB, 60 WB // 5 DB, 4 WB
[5]Heating at -4°F (Indoor // Outdoor)	°F	70 DB, 60 WB // -4 DB, -5 WB
[6]Heating at -5°F (Indoor // Outdoor)	°F	70 DB, 60 WB // -5 DB, -6 WB
[7]Heating at -13°F (Indoor // Outdoor)	°F	70 DB, 60 WB // -13 DB, -14 WB

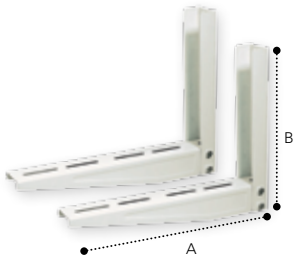
*Outdoor Unit Operating Temperature Range (Cooling Air Temp (Maximum / Minimum)):
- Wind baffles required to operate below 23°F DB in cooling mode.
- Heat pump system with wind baffle: 0°F - 115°F.
- Refer to wind baffle documentation for further information.

**Outdoor Unit Operating Temperature Range (Cooling Thermal Lock-out / Re-start Temperatures; Heating Thermal Lock-out / Re-start Temperatures):
- System cuts out in heating mode to avoid thermistor error and automatically restarts at these temperatures.

SEACOAST PROTECTION (-BS MODELS)
- External Outer Panel: Phosphate coating + Acrylic-Enamel coating
- Fan Motor Support: Epoxy resin coating (at edge face)
- Separator Assembly Valve Bed: Epoxy resin coating (at edge face)
- Blue Fin treatment is an anti-corrosion treatment that is applied to the condenser coil to protect it against airborne contaminants.

Brackets & Floor Supports

HEAVY DUTY WALL BRACKET

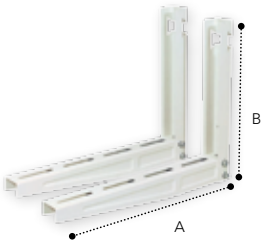


Heavy duty wall bracket. Supplied with screws only.

CAPACITY: 440 Lbs / 200 Kg

Model	Material	Dimension (mm) (AxB)	Dimension (inch)(AxB)	Pallet/Ctn (pcs)
BS520	Gal. Steel	520x400	19 11/16" x 15¾	117

WALL BRACKET WITHOUT BAR

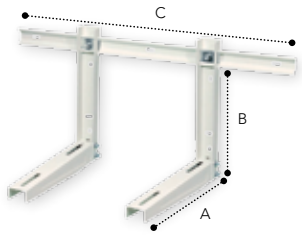


Wall bracket without bar. Supplied with screws, washers, & anchors.

CAPACITY: 300 Lbs / 140 Kg

Model	Material	Dimension (mm) (AxB)	Dimension (inch)(AxB)	Pallet/Ctn (pcs)
BS600	Gal. Steel	600x400	23 5/8" x 15¾	117

ADJUSTABLE WALL BRACKET WITH BAR

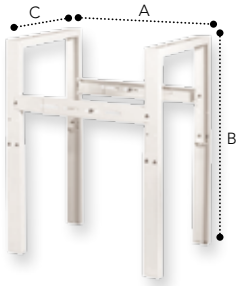


Adjustable wall bracket with bar. Supplied with screws, washers, & anchors.

CAPACITY: 660 lbs / 300 kg

Model	Material	Dimension (mm) (AxBxC)	Dimension (inch)(AxBxC)	Pallet/Ctn (pcs)
BS520HDFKDB	Gal. Steel	520x400x960	19 11/16"x15 3/4x37 4/5	117

FLOOR CUBE BRACKET



Floor cube bracket. Supplied with screws, and vibration dampers.

CAPACITY: 440 Lbs / 200 Kg

Model	Material	Dimension (AxBxC)	Dimension (AxBxC)
CB800	Gal. Steel	450x880x800	17¾" x 34 5/8" x 31½"x 17¾"

VIBRATION DAMPERS FOR WALL BRACKETS

Made of vulcanized natural rubber with threaded metal inserts, they feature excellent vibration dampening properties. Delivered in plastic bags of 4 pieces each. Nuts and washers included.

Model	Dimension (mm) (AxB)	Dimension (inch)(AxB)	Qty/Pallet (pcs)
BVD30	30x20	1 3/16" x ¾"	25
BVD40	40x40	1 9/16" x 1 9/16"	25

FLOOR SUPPORTS

PVC floor supports resistant to UV rays and high temperatures. Supplied with screws and bolts.

Model	Dimension (mm)	Dimension (inch)	Qty/Pallet (pcs)
FSE420	420 (length)	16½"	24

FLOOR SUPPORTS WITH GASKET

UV resistant PVC floor supports fitted with gasket for better adherence to the ground. Packed in kits of 2 pieces.

Model	Dimension (mm)	Dimension (inch)	Qty/Pallet (pcs)
FSEN450	450 (length)	17¾"	24

ADJUSTABLE FLOOR SUPPORT & SPANNER WRENCH

Floor supports made from nylon and glass fiber to absorb noise. Suitable for any use. Height can be adjusted from 3-1/2" (9cm) to 5-1/2" (14cm). The NBR O-rings placed under the blocks provide extra stability. All components are extremely wear resistant. Each kit consists of 4 floor supports shrink wrapped together (necessary to support one air conditioning unit).

Model	Qty/Ctn (pcs)
FSA6000	8 kits/carton

Optional accessory to adjust the height of FSA6000

Model	Qty/Ctn (pcs)
SPAN	5 pcs /bag