

IBC SEISMIC ANALYSIS REPORT

DIVERSITECH QUICKSLING SUPERSTANDS

Original Release Date: 12/31/2020

Revision Date: 01/26/2021

Presented to:

Diversitech Corporation

By:

VMC Group

Report Number: VMA-53955-01 Rev. 01



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<u>Addendum</u>

- VMA-53955-01A Rev 0 IBCS Anchoring Report Diversitech Superstands
- Quick Sling Superstands Drawings pdf document FL22415_R1_II_FL-22415.2-SuperStand

Revision Control

Rev.	Description	Date	Ву
00	Initial Release	12/31/2020	ASP
01	Revised Analysis For Different Stand Heights	1/26/2021	ASP

Analysis Summary

Purpose

The purpose of this project is to analyze Diversitech Corporation manufactured QUICKSLING SUPERSTANDS to determine if it is capable of structurally withstanding seismic loading as defined in the International Building Code (IBC).

This report analyzes the following units for IBC seismic loading requirements of IBC 2018/ASCE 7-16 - Chapter 13, Section 13.3.

Manufacturer

Diversitech Corporation

Analyzed Models and Dimensions

Quick Sling Superstands Drawings pdf document FL22415_R1_II_FL-22415.2-SuperStand

Attachment Criteria

Directly to Concrete
V
Directly to Steel
V

Seismic Criteria

12" & 18" Stands $S_{DS} = 2.3 \text{ g}, \text{ z/h} = 1 \text{ at roof, Importance Factor } (I_P) = 1.0$ 24" Stands $S_{DS} = 1.76 \text{ g}, \text{ z/h} = 1 \text{ at roof, Importance Factor } (I_P) = 1.0$

Exclusions

The analysis does not evaluate any electrical and mechanical system connections, if present, to the analyzed equipment. The customer is responsible for clearly stating the requirements of these connections in the installation manuals. This includes the structural integrity of any conduit, cable tray, piping, ductwork or flexible connections for electrical services. Additionally, the analysis does not guarantee the unit will comply with UL guidelines for unit integrity after a seismic event.

Report By: Amit S. Phanse, IBC Project Engineer, The VMC Group

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SUPERSTAND ANALYSIS

Quick Sling Superstands Drawings pdf document FL22415_R1_II_FL-22415.2-SuperStand, was received from Diversitech.

These are made of structural steel members. Bolted connections are used to put various members together.

Following assumption are made for worst case analysis:

Reference: FL22415_R1_II_FL-22415.2-SuperStand

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Worst Case Rail Combo	Models	Max. Length in.	Max. Width in.	Max. Height in.
A+A+D+D	QSSB48 + QSSB48EXT + (2)QSSB62EXT	48" + 48" + 62" + 62" = 220"	45.5"	27" (24" Tall Stand) 21" (18" Tall Stand) 16.2" (12" Tall Stand)

Maximum Superstand Size Possible = 220" long x 45.5" wide x 27" high

Maximum Supported Equipment Possible = (2) x Daikin + (2) Mitsubishi, Next to one another

Drawing References:

Pag 8	max width	45.5"	cross rail / end piece
Page 16	max width	45.5"	cross rail / middle ext piece
Page 11	max Ht	27"	column / tall leg
Page 11	max length	62"	long rail
Pages 10 & 18		Vertical Stands	base

Equipment	Length in.	Width in.	Height in.	Weight lbs.
Mitsubishi	69	30	72	748
Daikin	49	31	67	780

Analysis and design of Mitsubishi and Daikin Equipment supported on Diversitech Superstands is not in VMC's scope of work. VMC's scope of work only included analysis of Diversitech Superstands for imparted seismic loading.

Two FEA models for Superstands rail combinations as given in reference pdf document were created, one for 27" tall Superstand and another for 21" tall Superstand.

FEA analysis was carried out using FEMAP with NX Nastran software. FEA Beam elements were used to simulate given member sizes of Superstands.



21" Tall Superstand FEA Model Summary:

Number of nodes = 152 Number of elements = 155 Number of materials = 2 Number of properties = 3 Number of constraints = 10 Number of load cases = 1



27" Tall Superstand FEA Model Summary: Number of nodes = 152 Number of elements = 155 Number of materials = 2 Number of properties = 3 Number of constraints = 10 Number of load cases = 1

Boundary Conditions:

Column support locations are assumed as Pin Connections. (Rotational directions free and translation directions restricted)

Member Sizes & Material Properties As Follows:

SuperStand Member	Cross Section	Size	Material & Yield Strngth
Long Rail	Channel	2.8125" Depth x 1.6875" Flanges x 0.125" thick	Steel 36 ksi
Cross Rail	Channel	1.5625" Depth x 2.375" FInages x 0.125" thick	Steel 36 ksi
Column Tube	Tube	1.25" x 1.25" Square x 0.125" thick	Steel 46 ksi

Long Rail, C/S Area = 0.74 in^2 Minimum plastic section modulus = 0.3256 in^3

Cross Rail C/S Area = 0.75 in^2 Minimum plastic section modulus = 0.51in^3

Column Tube C/S Area = 0.56 in^2 Minimum plastic section modulus = 0.192in^3

Loading Conditions:

Analysis has been performed for seismic reaction loads as described below.

21" Tall Superstand

Seismic Parameters: ASCE 7-16 Chapter 13 Section 13.3 $S_{DS}=2.3 \text{ g}$ z/h=1.0Ip=1.0ap=1.0Rp= 2.5

Maximum Tension = 839 lbs Maximum Shear = 345 lbs (Applied as reaction forces at each mounting location where Equipment attaches to Superstand)



Analysis has been performed for seismic reaction loads as described below.

27" Tall Superstand Seismic Parameters: ASCE 7-16 Chapter 13 Section 13.3 S_{DS}=1.76 g z/h=1.0 Ip=1.0 ap=1.0 Rp= 2.5

Maximum Tension = 576 lbs Maximum Shear = 264 lbs (Applied as reaction forces at each mounting location where Equipment attaches to Superstand)



Analysis Results Summary:

Linear Static analysis was conducted on FEA models.

Bending moment, shear forces on beams and column members were obtained from FEA analysis. Member capacities were determined using given physical and material properties.

Member sizes results summary is shown below.

21" Tall Superstand Members SDS = 2.3 g, z/h = 1.0 (at roof), Imp Factor = 1.0

SuperStand Member	FEA Max. Bending Moment kip-in	Bending Moment Capacity kip-in	Capacity Utilization
Long Rail	4.2	10.5	40.0%
Cross Rail	7.8	16.52	47.2%
Column Tube	7.8	7.95	98.1%

SuperStand Member	FEA Max. Shear Force	Shear Force Capacity	Capacity
SuperStand Member	kips	kips	Utilization
Long Rail	0.85	14.4	6%
Cross Rail	0.35	14.6	2%
Column Tube	0.37	13.9	3%

27" Tall Superstand Members SDS = 1.76 g, z/h = 1.0 (at roof), Imp Factor = 1.0

SuperStand Member	FEA Max. Bending Moment kip-in	Bending Moment Capacity kip-in	Capacity Utilization
Long Rail	2.9	10.5	27.6%
Cross Rail	7.5	16.52	45.4%
Column Tube	7.5	7.95	94.3%

SuperStand Member	FEA Max. Shear Force	Shear Force Capacity	Capacity
SuperStand Member	kips	kips	Utilization
Long Rail	0.59	14.4	4%
Cross Rail	0.34	14.6	2%
Column Tube	0.34	13.9	2%

Connections Analysis:

Maximum Tension on a bolted connection is observed at Cross Rail connetion to Long Rail. Maximum Tension = 7.8 / 1.5625" = 5.0 kips Maximum Shear = 0.85 kips

All members are attached together using 3/8" Dia. Hex Bolts and Washers. Each connection is assumed to use (2) bolts minimum. Bolts are assumed to be minimum A325 Grade.

Combined T&S Strength per AISC Steel Construction Manual 13th edition Part 16 Chapter J provisions For (1) 3/8" A325 Grade Bolt Tension = 8.1 kips Shear = 3.96 kips

As seen, connections are sufficient to resist demand seismic loads.

Superstands seismic anchoring calculations attachment to building structure is provided under a separate report issued by VMC.

For details refer to VMA-53955-01A Rev 0 IBCS Anchoring Report Diversitech Superstands

CONCLUSION

12" and 18" Diversitech Superstands are capable of withstanding demand seismic $S_{DS} = 2.3$ g at z/h = 1.0 (at roof installation) for equipment importance factor = 1.0

24" Diversitech Superstands are capable of withstanding demand seismic $S_{DS} = 1.76$ g at z/h = 1.0 (at roof installation) for equipment importance factor = 1.0





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SCALE DRAWING		12-22-415.2	R1
			3 OF 21

MENSION H MAXIMUM	DIMENSION L MAXIMUM	DIMENSION W MAXIMUM
73"	49"	32"
73"	49''	32"
73"	49"	32"
73"	49"	32"
73"	49"	32"
73"	49"	32"
73"	61"	32"
73"	61"	32"
73"	61"	32"
73"	61"	32"
73"	61"	32"
73"	61"	32"
73"	69"	32"
73"	69"	32"
73"	69"	32"
73"	69"	32"
73"	69"	32"
73"	69"	.32"

48''	14"	56"
48''	16.2"	56''
48''	14"	56''
48''	16.2"	56"
48''	19.8"	56''
48''	21"	56"
48''	19.8"	56''
48''	21"	56''
48''	25.8"	56"
48''	27"	56''
48''	25.8"	56''
48''	27"	56''
62"	14"	56''
62"	16.2"	56''
62"	14"	56''
62"	16.2"	56''
62"	19.8"	56''
62"	21"	56''
62"	19.8"	56"
62"	21"	56''
62"	25.8"	56''
62"	27"	56''
62"	25.8"	56''
62"	27"	56''
74''	14"	56"
74''	16.2"	56"
74''	14"	56''
74''	16.2"	56''
74''	19.8"	56''
74''	21"	56''
74''	19.8"	56''
74"	21"	56"
74"	25.8"	56"
74''	27"	56"
74"	25.8"	56"
74"	27"	56"

DIMENSION B

DIMENSION C

В

A





18 INCH FOOT

<u>24</u>	INCH	FOOT

INCH FOOT		<u>24</u>	<u>INCH FOOT</u>		•	
CONFIGURATION	PART 1	PART 2	PART 3	PART 4	PART 5	
QSSB48-12	65in Super Stand leg	Single-Saddle	48" Rail-Long Slots	SS102-12	Equiptment Pac	:kage
QSSB48-12M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-12M	Equiptment Pac	:kage
QSSB48-18	65in Super Stand leg	Single-Saddle	48" Rail-Long Slots	SS102-18	Equiptment Pac	:kage
QSSB48-18M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-18M	Equiptment Pac	:kage
QSSB48-24	65in Super Stand leg	Single-Saddle	48" Rail-Long Slots	SS102-24	Equiptment Pac	:kage
QSSB48-24M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-24M	Equiptment Pac	:kage
QSSB62-12	65in Super Stand leg	Single-Saddle	62" Rail-Long Slots	SS102-12	Equiptment Pac	:kage
QSSB62-12M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-12M	Equiptment Pac	:kage
QSSB62-18	65in Super Stand leg	Single-Saddle	62" Rail-Long Slots	SS102-18	Equiptment Pac	:kage
QSSB62-18M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-18M	Equiptment Pac	:kage
QSSB62-24	65in Super Stand leg	Single-Saddle	62" Rail-Long Slots	SS102-24	Equiptment Pac	:kage
QSSB62-24M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-24M	Equiptment Pac	:kage
QSSB74-12	65in Super Stand leg	Single-Saddle	74" Rail-Long Slots	SS102-12	Equiptment Pac	:kage
QSSB74-12M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-12M	Equiptment Pac	:kage
QSSB74-18	65in Super Stand leg	Single-Saddle	74" Rail-Long Slots	SS102-18	Equiptment Pac	:kage
QSSB74-18M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-18M	Equiptment Pac	:kage
QSSB74-24	65in Super Stand leg	Single-Saddle	74" Rail-Long Slots	SS102-24	Equiptment Pac	:kage
QSSB74-24M	65in Super Stand legM	Single-SaddleM	48" Rail-Long SlotsM	SS102-24M	Equiptment Pac	:kage
UNLESS OTHERWISE SPECI DIMENSIONS ARE IN INCHES TOLERANCES ARE: ANGLE	FIED: 5 [MILLIMETERS] 5 ± 1.0°	NITECH	CONFIDENTIAL - PROPRIETARY - DO NOT COPY THE INFORMATION SET FORTH IN THIS DOCUMENT AND RELATED INFORMATION IS THE CONFIDENTIAL PROPERTY OF DIVERSITECH CORPORATION, AND IS NOT TO BE COPIED OR	ASSEMBLY: SUPER	RSTANDS	WEIGHT -NA-
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CONFIGURATION	PART 1	PART 2	PART 3	PART 4	PART 5	PART 6	PART 7	PART 8
QSSB48-12	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSS482-12M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-12	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-12M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-12	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-12M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1 X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
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				$\begin{array}{c}$		DESCRIPTION		5 OF 21





CONFIGURATION	PART 1	PART 2	PART 3	PART 4	PART 5	PART 6	PART 7	PART 8
QSSB48-18	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	0 3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB48-18M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-18	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-18M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-18	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-18M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED) 3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
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				FRACTIONAL SIZES X/Y $\pm 1/64$ INCHES [MILLIMETERS] X = ± 0.1 [X = ± 2.5]			RAWING FL-224	15.2 R1
				.XX = ±0.01 [X = ± 1.3] .XXX = ±0.005 [XX = ±0.13]		DESCRIPTION		6 OF 2



CONFIGURATION	PART 1	PART 2	PART 3	PART 4	PART 5	PART 6	PART 7	PART 8
QSSB48-24	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED HEX	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB48-24M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED HEX	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-24	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED HEX	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-24M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED HEX	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-24	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED HEX	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1 X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-24M	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED HEX	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	NUT	BOLT GALVINIZED	WASHER	RUBBER WASHER	GALVANIZED	GALVANIZED BOLT
			UN DI TC FF N X X X X X X X	$\begin{array}{c} \text{MLESS OTHERWISE SPECIFIED:} \\ \text{MENSIONS ARE IN INCHES [MILLIMETERS]} \\ \text{JLERANCES ARE: ANGLES ±1.0°} \\ \text{ACTIONAL SIZES XIY ±1/64} \\ \hline \\ \hline \\ \text{CHES} \qquad [MILLIMETERS] \\ at the state state$	DiversiTech	CONFIDENTIAL - PROPR THE INFORMATION SET FORTH IN NFORMATION STREET CONTINUE REPRODUCED OR DSIRAULED WRITEN FROMSSION FROM D DO NOT SCAN DESCRIPTION	IETARY - DO NOT COPY THIS DOCUMENT AND RELATED NOT TO BE COPIED OR NOT TO BE COPIED OR IN ATY FORM WINDOUT PROC WERSTECH CORFORATION. LE DRAWING	STANDS WEIGHT -NA- 415.2 REV. R1 7 OF 21



2

В

А





12 IN FOOT

18 IN FOOT



A

QuickSling SuperStand (QSSB48 / 62 / 74 and its variants) and QuickSling MiniSplit SuperStand (QSMS3001 and its variants) are made from the following structural components: ASTM A500 Grade B or C 1-1/4" Square Structural Tubing - 11 ga. and 1-1/2" Square Structural Tubing - 11 ga.

ASME SA36 07ga. & 11ga. steel plate either in flat form or bent using a standard press brake.

These are all per: American Institute of Steel Construction, AISC - FBC 2214.3

Material Strength for the components listed above are as follows:

ASME SA36 07ga. & 11ga. & 14ga. steel plate all has a minimum YIELD STRENGTH of 36ksi

3

ASTM A500 Grade B or C structural steel tubing has a minimum YIELD STRENGTH of 46ksi



4





В

А



В

Α

3

ISION A	DIMENSION B	DIMENSION C
18''	14"	56"
18''	16.2"	56"
18''	14"	56"
18''	16.2"	56"
18"	19.8"	56"
18"	21"	56"
18"	19.8"	56"
48	21	56"
18 40''	25.8	56
+0 19''	2/	56
+0 18''	23.0	56
+0 (2''	1/"	56"
52 52''	16.2"	56"
5 <u>2</u> 52''	14"	56"
52" 52"	16.2"	56"
52"	19.8"	56"
52"	21"	56"
62"	19.8"	56"
62	21"	56"
52"	25.8"	56"
52"	27"	56"
52"	25.8"	56"
52	2/*	56"
′4 7 //'		56
74 7/''	10.2	56"
7 <u>4</u> "	14	56"
74''	19.8"	56"
74''	21"	56"
74''	19.8"	56"
74''	21"	56"
74''	25.8"	56"
74''	27"	56"
<u>4''</u>	25.8	56"
4	2/	56
ISION H	DIMENSION L	DIMENSION W
IMUM	MAXIMUM	MAXIMUM
'3"	49"	32"
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							5 3 H FOOT	
CONFIGURATION	PART 1	PART 2	F	ART 3	P	ART 4	PART 5	
QSSB48-12EXT	65in Super Stand leg	Double-Saddle	48'' Ra	I-Long Slots	SS	102-12	Equipment Pac	ckage
QSSB48-12MEXT	65in Super Stand legM	Double-SaddleM	48" Rail-	Long SlotsM	SS1	02-12M	Equipment Pac	ckage
QSSB48-18EXT	65in Super Stand leg	Double-Saddle	48'' Rai	I-Long Slots	SS	102-18	Equipment Pac	ckage
QSSB48-18MEXT	65in Super Stand legM	Double-SaddleM	48'' Rail	Long SlotsM	SS1	02-18M	Equipment Pac	ckage
QSSB48-24EXT	65in Super Stand leg	Double-Saddle	48'' Ra	I-Long Slots	SS	102-24	Equipment Pac	ckage
QSSB48-24MEXT	65in Super Stand legM	Double-SaddleM	48'' Rail-	Long SlotsM	SS1	02-24M	Equipment Pac	ckage
QSSB62-12EXT	65in Super Stand leg	Double-Saddle	62" Ra	I-Long Slots	SS	102-12	Equipment Pac	ckage
QSSB62-12MEXT	65in Super Stand legM	Double-SaddleM	48'' Rail	Long SlotsM	SS1	02-12M	Equipment Pac	ckage
QSSB62-18EXT	65in Super Stand lea	Double-Saddle	62" Ra	I-Long Slots	SS	102-18	Equipment Pac	ckage
QSSB62-18MEXT	65in Super Stand legM	Double-SaddleM	48'' Rail	Long SlotsM	SS1	02-18M	Equipment Pac	ckage
QSSB62-24EXT	65in Super Stand leg	Double-Saddle	62'' Ra	I-Long Slots	SS	102-24	Equipment Pac	ckage
QSSB62-24MEXT	65in Super Stand legM	Double-SaddleM	48'' Rail	Long SlotsM	SS1	02-24M	Equipment Pac	ckage
QSSB74-12EXT	65in Super Stand lea	Double-Saddle	74'' Ra	I-Long Slots	SS	102-12	Equipment Pac	ckage
QSSB74-12MEXT	65in Super Stand leaM	Double-SaddleM	48" Rail-	Long SlotsM	SS1	02-12M	Equipment Pac	ckage
QSSB74-18EXT	65in Super Stand lea	Double-Saddle	74'' Rai	I-Long Slots	SS	102-18	Equipment Pac	ckaae
QSSB74-18MEXT	65in Super Stand leaM	Double-SaddleM	48" Rail-	Long SlotsM	SS1	02-18M	Equipment Pac	ckage
QSSB74-24EXT	65in Super Stand lea	Double-Saddle	74" Ra	I-Long Slots	SS	102-24	Equipment Pac	ckage
QSSB74-24MEXT	65in Super Stand leaM	Double-SaddleM	48" Rail	Long SlotsM	SS1	02-24M	Equipment Pac	ckage
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CONFIGURATION	PART 1	PART 2	PART 3	PART 4	PART 5	PART 6	PART 7	PART 8
QSSB48-12EXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB48-12MEXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-12EXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB62-12MEXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-12EXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
QSSB74-12MEXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 IN RUBBER	3/8 IN SPLIT WASHER	3/8-16X2 1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASHER	GALVANIZED	GALVANIZED BOLT
NOTE - ALL ASSEMBLY HARDWARE IS INCLUDED				$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	DIVERSITEC	CONFIDENTIAL - PROPRIE	ASSEMBLY: SUPERS	TANDS WEIGHT -NA- 15.2 Rev. R1 13 of 21

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CONFIGURATION	PART 1	PART 2	PART 3	PART 4	PART 5	PART 6	PART 7	PART 8	3
QSSB48-18EXT	3/8-16X3.5 IN GALVANIZED BOLT	3/8 IN BONDED WASHER	3/8-16 GALVANIZED HEX NUT	3/8-16X1 3/4 IN HEX BOLT GALVINIZED	3/8 IN GALVANIZED WASHER	1X3/8X3/8 IN RUBI	SER 3/8 IN SPLIT WASHER GALVANIZED	3/8-16X2 GALVANIZED	1/2 D BOLT
QSSB48-18MEXT	3/8-16X3.5 IN GALVANIZED BOLT	3/8 IN BONDED WASHER	3/8-16 GALVANIZED HEX NUT	3/8-16X1 3/4 IN HEX BOLT GALVINIZED	3/8 IN GALVANIZED WASHER	1X3/8X3/8 IN RUBI WASHER	ER 3/8 IN SPLIT WASHER GALVANIZED	3/8-16X2 GALVANIZED	1/2 D BOLT
QSSB62-18EXT	3/8-16X3.5 IN GALVANIZED BOLT	3/8 IN BONDED WASHER	3/8-16 GALVANIZED HEX NUT	3/8-16X1 3/4 IN HEX BOLT GALVINIZED	3/8 IN GALVANIZED WASHER	1X3/8X3/8 IN RUBI WASHER	ER 3/8 IN SPLIT WASHER GALVANIZED	3/8-16X2 GALVANIZED	1/2 D BOLT
QSSB62-18MEXT	3/8-16X3.5 IN GALVANIZED BOLT	3/8 IN BONDED WASHER	3/8-16 GALVANIZED HEX NUT	3/8-16X1 3/4 IN HEX BOLT GALVINIZED	3/8 IN GALVANIZED WASHER	1X3/8X3/8 IN RUBI WASHER	ER 3/8 IN SPLIT WASHER GALVANIZED	3/8-16X2 GALVANIZED	1/2 D BOLT
QSSB74-18EXT	3/8-16X3.5 IN GALVANIZED BOLT	3/8 IN BONDED WASHER	3/8-16 GALVANIZED HEX NUT	3/8-16X1 3/4 IN HEX BOLT GALVINIZED	3/8 IN GALVANIZED WASHER	1X3/8X3/8 IN RUBI WASHER	ER 3/8 IN SPLIT WASHER GALVANIZED	3/8-16X2 GALVANIZED	1/2 D BOLT
QSSB74-18MEXT	3/8-16X3.5 IN GALVANIZED BOLT	3/8 IN BONDED WASHER	3/8-16 GALVANIZED HEX NUT	3/8-16X1 3/4 IN HEX BOLT GALVINIZED	3/8 IN GALVANIZED WASHER	1X3/8X3/8 IN RUBI WASHER	ER 3/8 IN SPLIT WASHER GALVANIZED	3/8-16X2 GALVANIZED	1/2 D BOLT
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				FRACTIONAL SIZES X/Y ±1/64	DIATIONT	REPRODUCED OR DI WRITEN PERMISSIC DO NOT	REUTED IN ANY FORM WITHOUT PRIOR FROM DIVERSITECH CORPORATION. SCALE DRAWING	15.2	REV.
NOTE - ALL ASSEN	IBLY HARDWARE IS IN	NCLUDED		$ \begin{array}{c} . \land = \pm 0.1 & [\land = \pm 2.5] \\ . XX = \pm 0.01 & [.X = \pm 1.3] \\ . XXX = \pm 0.005 & [.XX = \pm 0.13] \end{array} $		DESCRIPTION			14 OF 21

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CONFIGURATION	PART 1	PART 2	PART 3	PART 4	PART 5	PAR	Т 6	P	ART 7	PART 8	3
QSSB48-24EXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 II	N RUBBER	3/8 IN SF	PLIT WASHER	3/8-16X2	1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASH	HER	GAL	VANIZED	GALVANIZED	D BOLT
QSSB48-24MEXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 II	N RUBBER	3/8 IN SF	PLIT WASHER	3/8-16X2	1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASH	HER	GAL	VANIZED	GALVANIZED	D BOLT
QSSB62-24EXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 II	N RUBBER	3/8 IN SF	PLIT WASHER	3/8-16X2	1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASH	HER	GAL	VANIZED	GALVANIZED	D BOLT
QSSB62-24MEXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 II	N RUBBER	3/8 IN SF	PLIT WASHER	3/8-16X2	1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASH	HER	GAL	VANIZED	GALVANIZED	D BOLT
QSSB74-24EXT	3/8-16X3.5 IN	3/8 IN BONDED	3/8-16 GALVANIZED	3/8-16X1 3/4 IN HEX	3/8 IN GALVANIZED	1X3/8X3/8 II	N RUBBER	3/8 IN SF	PLIT WASHER	3/8-16X2	1/2
	GALVANIZED BOLT	WASHER	HEX NUT	BOLT GALVINIZED	WASHER	WASH	HER	GAL	VANIZED	GALVANIZED	D BOLT
QSSB74-24MEXT	3/8-16X3.5 IN GALVANIZED BOLT	3/8 IN BONDED WASHER	3/8-16 GALVANIZED HEX NUT	3/8-16X1 3/4 IN HEX BOLT GALVINIZED	3/8 IN GALVANIZED WASHER	1X3/8X3/8 II WASH	N RUBBER HER	3/8 IN SI GAL	PLIT WASHER	3/8-16X2 GALVANIZED	1/2 D BOLT
NOTE - ALL ASSEM	UNLESS OTHERWISE SPECIFIED: CONFIDENTIAL - PROPRIÉTARY - DO NOT COPY ASSEMBLY: SUPERSTANDS WEIGHT DIMENSIONS ARE IN INCHES [MILLIMETERS] DIMENSIONS ARE: ANGLES ±1.0° THE INFORMATION SET FORM IN TUBE COMPOSITION DECOMPORT OF DIVERSITION ASSEMBLY: SUPERSTANDS WEIGHT DIMENSIONS ARE: IN INCHES [MILLIMETERS] TOLERANCES ARE: ANGLES ±1.0° THE INFORMATION SET FORM IN TUBE COMPOSITION ASSEMBLY: SUPERSTANDS WEIGHT INCHES MILLIMETERS] TOLERANCES ARE: AND SUES X/Y ±1/64 THE INFORMATION SET FORM INTERVISED THE INFORMATION SET FORM INTERVISED FL-22415.2 REV. INCHES MILLIMETERS] TA ± ±0.1 [X = ±0.1] THE ANGLE THE ANGLE THE ANGLE THE ANGLE SHEET THE ANGLE SHEET TO SHEET TO SHEET TO SHEET THE ANGLE THE ANGLE SHEET TO SHEET										



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12 IN FOOT

18 IN FOOT

DIVERSITECH

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QuickSling SuperStand (QSSB48 / 62 / 74 and its variants) and QuickSling MiniSplit SuperStand (QSMS3001 and its variants) are made from the following structural components: ASTM A500 Grade B or C 1-1/4" Square Structural Tubing - 11 ga. and 1-1/2" Square Structural Tubing - 11 ga. ASME SA36 07ga. & 11ga. steel plate either in flat form or bent using a standard press brake. These are all per: American Institute of Steel Construction, AISC - FBC 2214.3 Material Strength for the components listed above are as follows: ASME SA36 07ga. & 11ga. & 14ga. steel plate all has a minimum YIELD STRENGTH of 36ksi ASTM A500 Grade B or C structural steel tubing has a minimum YIELD STRENGTH of 46ksi

UNLESS OTHERWISE SPECIFIED:

 INCHES
 [MILLIMETERS]

 .X = ±0.1
 [X = ± 2.5]

 .XX = ±0.01
 [.X = ± 1.3]

 .XXX = ±0.005
 [.XX = ±0.13]

3

DIMENSIONS ARE IN INCHES [MILLIMETERS] TOLERANCES ARE: ANGLES ±1.0° FRACTIONAL SIZES X/Y ±1/64

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THIRD ANGLE



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	Old Quicksling Model	Rail Combination	New Model Name
	QSSS1003	А	QSSB48
	QSSS1004	В	QSSB48
	QSSS1005	С	QSSB74
	QSSS1006	A+A	QSSB48+QSSB48EXT
	QSSS1007	A+C	QSSB48+QSSB74EXT
	QSSS1008	B+B	QSSB48+QSSB48EXT
	QSSS1009	B+C	QSSB48+QSSB74EXT
	QSSS1010	C+C	QSSB74+QSSB74EXT
	QSSS1011	C+A+A	QSSB74+(2)QSSB48EXT
	QSSS1012	A+B+C	QSSB74+(2)QSSB48EXT
	QSSS1013	A+C+C	QSSB48+(2)QSSB74EXT
	QSSS1014	B+C+C	QSSB48+(2)QSSB74EXT
	QSSS1015	C+C+C	QSSB74+(2)QSSB74EXT
	QSSS1016	A+A+A	QSSB48+(2)QSSB48EXT
	QSSS1017	A+B+B	QSSB48+(2)QSSB48EXT
	QSSS1018	B+B+B	QSSB48+(2)QSSB48EXT
	QSSS1019	D	QSSB62
	QSSS1020	D+D	QSSB62+QSSB62EXT
	QSSS1021	D+D+D	QSSB62+(2)QSSB62EXT
	QSSS1022	A+B	QSSB48+QSSB48EXT
	QSSS1023	A+A+B	QSSB48+(2)QSSB48EXT
	QSSS1024	A+D	QSSB48+QSSB62EXT
	QSSS1025	A+D+D	QSSB48+(2)QSSB62EXT
	QSSS1026	A+A+D	QSSB62+(2)QSSB48EXT
NDALL M. BACHIN	QSSS1027	A+A+D+D	QSSB48+QSSB48EXT+(2)QSSB62EXT
	QSSS1028	B+B+D	QSSB62+(2)QSSB48EXT
25-Jul * 2019	QSSS1029	C+D+B	QSSB74+QSSB62EXT+QSSB48EXT
STATE OF	QSSS1030	B+D	QSSB48+QSSB62EXT
CORIDA	QSSS1031	B+B+C	QSSB74+(2)QSSB48EXT
Ramball Barlie		UNLESS OTHERWISE DIMENSIONS ARE IN TOLERANCES ARE: / FRACTIONAL SIZES X INCHES [MILLIM .X = ±0.1 [X = .XX = ±0.01 [.X = .XX = ±0.001 [X =	ESPECIFIED: INCHES [MILLIMETERS] ANGLES ±1.0° ±2.5] ±1.3] ±0.13] PHIOD ANGLE HOLD ANGLE HOLD ANGLE HOLD ANGLE

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SCALE DRAWING			R1
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			19 of 21

FBC 1620.6 Rooftop structures and equipment.

The lateral force on rooftop structures and equipment with Af less than(0.1Bh) located on buildings of all heights shall be determined from Equation 29.5-1 of ASCE 7 in which the value of GCf shall be taken as 3.1. GCf shall be permitted to be reduced linearly from 3.1 to 1.1 as the value of Af is increased from (0.1Bh) to (Bh). The value of G from Section 26.9 of ASCE 7 shall not be used.

Additionally, a simultaneous uplift force shall be applied, given by Equation 29.5-1 of ASCE 7 in which GCf = 1.5 and Af is replaced by the horizontal projected area, Ar, of the rooftop structure or equipment.

For the uplift force GCf shall be permitted to be reduced linearly from 1.5 to 1.0 as the value of Ar is increased from (0.1BL) to (BL).

The DESIGN PRESSURE used for these calculations is determined using a Maximum Wind Speed of 180 MPH.

Using ASCE equation Sec. 27.3.2 / eq. 27.3-1 qz = 0.00256 * Kz * Kzt * Kd * V^2 = 63.45 psf

where Kz = 0.85, Kzt = 1.00, Kd = 0.90

LATERAL Direction For rooftop structures and equipment with Af less than (0.1Bh). GCr = 3.1

VERTICAL Direction For rooftop structures and equipment with Af less than (0.1Bh). GCr = 1.5

LATERAL FORCE due to Wind Load Only (ASCE 7-10 Equation 29.5-2) Fh = qh(GCr)Af = 196.7 psf, where GCr = 3.1

VERTICALI FORCE (UPLIFT) Wind Load Only (ASCE 7-10 Equation 29.5-3) Fh = qh(GCr)Af = 95.2 psf, where GCr = 1.5

FBC 1522.2 Rooftop mounted equipment

All rooftop equipment and supports shall be secured to the structure in compliance with the loading requirements of Chapter 16 (High-Velocity Hurricane Zones). The use of wood "sleepers" shall not be permitted.

FBC Section 2204 Connections

2204.1 Welding

The details of design, workmanship and technique for welding and qualification of welding personnel shall be in accordance with the specifications listed in Sections 2205, 2206, 2207, 2208, 2210 and 2211 (see Section 2222 for HVHZ). 2204.2 Bolting

The design, installation and inspection of bolts shall be in accordance with the requirements of Sections 2205, 2206, 2207, 2210 and 2211.

2204.3 Anchor rods

Anchor rods shall be set in accordance with the approved construction documents. The protrusion of the threaded ends through the connected material shall fully engage the threads of the nuts but shall not be greater than the length of the threads on the bolts. THE QSSB48 / 62 / 74 AND ITS QSSB48 / 62 / 74 EXTENSION VARIANTS ARE DESIGNED TO SUPPORT GENERAL CONDENSER SYSTEMS IN H.V.H.Z. (180 M.P.H.)

THESE STANDS ARE DESIGNED TO SUPPORT MULTIPLE CONDENSERS EACH. CONDENSER UNITS SUPPORTED CAN VARY BY MODEL, BY SIZE, AND BY WEIGHT.

MAX. WEIGHT OF ANY SPECIFIC CONDENSER EQUIPMENT SUPPORTED ON THIS STAND IS 500 LBS.

EACH OF THESE STANDS REQUIRES 2 CORROSION RESISTANT ANCHOR POINTS PER FOOT INTO THE ROOF OR CURB STRUCTURE.

(PER IBC Eq.16-15) EACH OF THESE ANCHOR POINTS MUST HAVE:

1. A MINIMUM TENSION RATED CAPACITY OF 1600 lbs.

2. A MINIMUM SHEAR RATED CAPACITY OF 400 lbs.

MAXIMUM DOWNWARD FOOT REACTION (PER FOOT) ON SUPPORTING ROOF OR CURB IS 300 LBS. OR LESS (IBC Eq. 16-12)

H OR HT OR HMD HURRICANE PADS FROM DIVERSITECH CAN BE USED AS A CURB STRUCTURE TO AVOID ROOF PENETRATION.

A REGISTERED PROFESSIONAL ENGINEER MUST PROVIDE ALL THE SUPPORTING CALCULATIONS FOR THIS FORM OF STAND SUPPORT.

For f'c > 3000 psi (20.7 MPa) Concre	te – Cracked & Uncracked – 10(D'BLDG — Risk Cat. II
Anchor Size (Select Any Below)	Minimum Embedment	Minimum Edge
3/8" Titen HD anchors	3 - 3/4"	4 - 1/
3/8" Strong-Tie Strong Bolt	2"	6"
3/8" Hilti KWIK Bolt TZ	2 - 5/16"	4"
3/8" Heavy Duty Tapcon	2 - 1/2"	4"
5/16" Heavy Duty Tapcon	1 - 3/4"	4"



	Wood, G = 0.42 Min., Cd = 1.6 -	15° BLDG - Risk Cat. II - Expos	sure C
Anchor Size	Minimum Embedment	Minimum Edge Distance	Minimum End Distance
3/8" LAG Screw	2 - 1/2"	5/8" into side grain	1 - 1/2"
	÷		· · · · · · · · · · · · · · · · · · ·



- Exposure C	
Distance	S
2"	
	1

FBC TAS 114 App. E / G-90 Corrosion Testing

TESTING APPLICATION STANDARD (TAS) 114-95 - APPENDIX E

TEST PROCEDURE FOR CORROSION RESISTANCE OF FASTENERS, BATTEN BARS AND STRESS DISTRIBUTION PLATES

1.0 Scope:

1.1 The corrosion test procedure is designed to assess the potential damage to nails, metal fasteners, batten bars and stress distribution plates used for mechanically attached roof covers and/or attachment of insulation. There is no single test procedure that approximates all climactic conditions experienced by roofing components; however, tests are available that provide an indication of potential resistance to corrosion.

1.2 All nails and carbon steel fasteners shall be tested for corrosion resistance in compliance with ASTM Standard Practice G85 [(Modified Salt Spray (Fog) Testing)], Annex A5 (Dolute Electrolyte Cyclic Fog/Dry Testing) as modified for the Florida Building Code, Building and noted in Section 2, herein.

1.3 All batten bars, stress distribution plates, and other metal fastener types shall be tested for corrosion resistance in compliance with DIN 50018 as noted in Section 3, herein.

The following Testing was completed by DiversiTech / Bells Powder Coating - March/April 2018

ASTM B117: Neutral Salt Spray

ASTM D7091: Film Thickness						
ASIM D3359: Adhesion						
Physical Testing Laboratory Report	Physic	al Testing Laboratory	Report Ve create chemistry expect more		Physic	al Test
Project Number: 188,817 Customer: Beils Fowder Coating 15M: B. ward Date Received: 23 March 2018 Location: North Attleboro, MA RSM: D. Elvin	Date Received: 23 March 2018	Location: North Attleboro, MA	RSM: D. Elvin	Project Number:	188,819	(
Report Date: 20 April 2018 Customer ID: 70601 P.O. Number:	Report Date: 20 April 2018	Customer ID: 70601	P.O. Number:	Date Received: Report Date:	23 March 2018 20 April 2018	Cus
ASTM B117: Neutral Salt Spray		Field Rating Key-Blister and Rust Ratings		Report Date.	20110112010	Cust
ASTM DT7. Neutral San Spray	Blister Density	Rust R	atings			
504 Hours	Rating Letter Rating Rating Number Rating	Percent of Surface Rusted	Visual Examples Puet Grade		Scribe Rat	ings Numbers
Start Date: 29 March 2018 Completion Date: 19 April 2018	n/a None 0 None	(Ranges)	Spot General Pinpoint Rust Ordue		Mean Rating Number	Corrosion
Sample ID (mm's) (mm's) Arithmetic ASTM ASTM D610/D714:	F Few 2 Few	9 >0.01% to 0.03%	9S 9G 9P Ril		10	0-Nor
MINIMUM AND MAXIMUM CREEPAGE MEASURED FROM SCRIBE. MEAN CREEPAGE CALCULATED FROM ACROSS Rust/Bister Thickness	M Medium 3 Moderate	8 >0.03% to 0.1%	8S 8G 8P 7S 7G 7P Bi 2		9	1-Very S
AND PERPENDICULAR MEASUREMENTS Field Rating (ASTM D1654) (mil's)	D Dense 5 Dense	6 >0.3% to 1.0%	6S 6G 6P Ri 3		8	2-Mode
Steel Panels 1 0.0 2.6 0.3 9 10/10 2.6.3.4 5B	Blister Size	5 >1.0% to 3.0%	5S 5G 5P		6	4-Conside
2 0.0 2.9 0.2 9 9P/10 2.0-2.5 5B	Rating Number Rating Number Rating	3 >10.0% to 16.0%	3S 3G 3P		5	5-Seve
3 0.0 6.8 2.1 6 9P/10 1.7-2.1 5B	10 0 No Blistering 0 mm	2 >16.0% to 33.0%	2S 2G 2P		4	_
	n/a S1 Requires Magnification 8 S2 Pinpoint 0-1 mm	0 > 50.0%	0 0 0 0		3	- >5
	6 83 Small 1-2 mm				1	-
	2 Large 3-5 mm	Note: Key serves only as a reference. When evaluation compared to the photograph stan	ating for blistering and rusting, samples must be dards provided by each method.		0	
	0 S5 Very Large >5mm				S	Spot Cree
				14		÷
Each of the Physical Members belonging to the Quick Sling Stands are powder coated and test	ed to the SALT SPRAY - SPECIFI	CATION ABOVE.				
All hardware provided with QuickSling Stands are Hot Dip Galvanized (HDP) and are considered	d to be corrosion resistant.					A
Any additional hardware that is supplied by the customer or OEM must be STAINLESS STEEL or	r Hot Dip Galvanized (HDP) to m	neet the corrosion resistance req	uirements.		AST	4 D3359
This includes any hardware used to anchor the QuickSling Stand to the roof as well as hardwar	re used to mount the equipmer	t to the QuickSling Stand.			5A	5B
					4A	4B
FBC 1522.3					3A	3B
Machinery, piping, conduit, ductwork, signs and similar equipment may be mounted on roofs	in compliance with the followin	g:			2A	2B
TABLE 1522.3	•				0A	0B
25 to 36 18						
37 to 48 24						
49 to 60 30						
61 and wider 48						
1522.3.1						
Permanently mounted rooftop equipment shall be installed to provide clearances, in accordan	nce with Table 1522.3, to permi	t repairs, replacement and/or ma	aintenance of the roofing system	or any of its compo	onents.	
1522.3.2						
When reroofing, recovering, performing repair or roof maintenance, and where the roof top e	auipment is moved to properly	execute such work. the minimu	m clearances of the said equipme	nt support shall be	in accordance w	ith Table 15
1522 3 3						
In huildings where the existing roofton equipment in the opinion of the huilding official provi	ides sufficient clearance to rena	ir recover replace and/or main	tain the roofing system or any of i	its components su	ch existing equin	ment need r
comply with Table 1522.2	lacs sufficient clearance to repe	in, recover, replace and or main	tain the rooming system of any of	its components, su	en existing equip	inclite inced in
The meximum WIDTH of any equipment mounted to a Quickfling SuperStand (QSSD40 / C2 / Z						
The maximum width of any equipment mounted to a Quicksing Superstand (QSSB48 / 62 / 7	· · · · · · · · · · · · · · · · · · ·	22413-1 Submittal IS 48.0 menes	· .			
I ne requirement for this condition is to have legs that are 24" tall. A 24" tall (leg height) versi	ion is a standard height that is a	vallable on all of these stand var	riants.			
		UNLESS OTHERWISE SPECIF				CONFIDENTIAL -
		DIMENSIONS ARE IN INCHES	[MILLIMETERS]	1911 EP		I HE INFORMATION SET F INFORMATION IS THE C CORPORATION
		FRACTIONAL SIZES X/Y ±1/64		IJIILU		REPRODUCED OR DIST WRITTEN PERMISSION

[<u>MILLIMETERS</u>] [X = ± 2.5]

 $XX = \pm 0.01$ [X = ± 1.3] XXX = ± 0.005 [XX = ± 0.13]

-⊕-)E —

THIRD ANGLE

INCHES .X = ±0.1

ing L	aboratory	Report	We	- BASF	Chemetall expect more
Customer:	Bells Powder Coating	TSM	4:	B,	Ward
Location:	North Attleboro, MA	RSM	/ 1:	D.	Elvin
tomer ID:	70601	P.O. Numbe	r:		

Scribe F	Rating Key			
ibers SO 4628-8	Representative Creepage From Scribe "One-sided"			
rosion Grade	Millimeters	Inches		
0-None	0	0		
Very Slight	Over 0 to 0.5	Over 0 to 1/64		
-Moderate	Over 0.5 to 1.0	Over 1/64 to 1/32		
-Moderate	Over 1.0 to 2.0	Over 1/32 to 1/16		
Considerable	Over 2.0 to 3.0	Over 1/16 to 1/8		
5-Severe	Over 3.0 to 5.0	Over 1/8 to 3/16		
	Over 5.0 to 7.0	Over 3/16 to 1/4		
	Over 7.0 to 10.0	Over 1/4 to 3/8		
>5	Over 10.0 to 13.0	Over 3/8 to 1/2		
	Over 13.0 to 16.0	Over 1/2 to 5/8		
	Greater Than 16.0	Greater Than 5/8		
ot Creepage	Isolated Creepage that I	Encompasses Less Than he Scribe		

dhesion Classifications					
ISO 2409	Percent Area Removed				
0	0%				
1	Less Than 5%				
2	5% to 15 %				
3	15% to 35%				
4	35% to 65%				
5	Greater than 65%				



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le 1522.3.

eed not

DESCRIPTION