

PROJECT:

9601 RESIDENCE

LOCATION:

PUMAYNA 9601 SW 67TH AVE, MIAMI, FL 33156.

STRUCTURAL CALCULATIONS FOR:

INTERIOR STAIR & BALCONY GLASS RAIL.

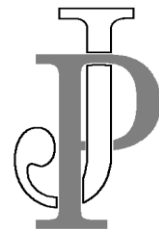
INDEX:

Cover	1
Stair Glass Rail w/ Spigot Design.	2-7
Balcony Glass Rail w/ Standoff Design.	8-21

THIS ITEM HAS BEEN DIGITALLY SIGNED
AND SEALED BY J.E. POLANCO, PE, ON THE
DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE
NOT CONSIDERED SIGNED AND SEALED
AND THE SIGNATURE MUST BE VERIFIED ON
ANY ELECTRONIC COPIES.

José E. Polanco
P.E. No. 76919
14927 SW 142th Ct. Miami,
FL 33186.





DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599

www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

Hardware and Glass Group LLC
8 the Green Salte #7407
Dover, Delaware 19901

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER-Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein and has been designed to comply with the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Postless Glass Railing System

APPROVAL DOCUMENT: Drawing No. HWG002, titled "STL9642B Glass Spigot Railing", sheets 1 through 4 of 4, prepared by Building Drops, Inc., dated May 09, 2023, signed and sealed by Hermes F. Norero, P.E., on June 11, 2023, bearing Miami-Dade County Product Control Approval stamp with the Notice of Acceptance number and the approval date by the Miami-Dade County Product Control Section.

MISSILE IMPACT RATING: Small and Large Missile Impact

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and the following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official. The structural adequacy of the supporting structures is not part of this approval & shall be reviewed by the corresponding Building Dept.

This NOA consists of this page 1, evidence submitted page E-1 as well as approval document mentioned above.

The submitted documentation was reviewed by **Helmy A. Makar, P.E., M.S.**



Helmy A. Makar
11/16/2023

NOA No. 23-0714.07
Expiration Date: 11/16/2028
Approval Date: 11/16/2023
Page 1

Hardware and Glass Group LLC

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing No. HWG002, titled "**STL9642B Glass Spigot Railing**", sheets 1 through 4 of 4, prepared by Building Drops, Inc., dated May 09, 2023, signed and sealed by Hermes F. Norero, P.E., on June 11, 2023.

B. TESTS

1. Test Report No. **2557T0001**, by PRI Construction Materials Technologies LLC, dated April 13, 2023, signed and sealed by Zachary R. Priest, P.E., testing Postless Glass Railing for concentrated and distributed loads per FBC 1618.4.6, Impacts per ANSI Z97.1, Large Missile Impact TAS 201-94, Static Wind Load per TAS 202-94.

C. CALCULATIONS

1. Calculation titled "**STL9642B Glass Spigot Railing**", 20 sheets, dated May 22, 2023, prepared by Building Drops, Inc., signed and sealed by Hermes F. Norero, P.E., on June 11, 2023.

D. QUALITY ASSURANCE

1. By Miami-Dade County Department of Regulatory and Economic Resources (RER).

E. MATERIAL CERTIFICATIONS

1. None.



Helmy A. Makar, P.E., M.S.
Product Control Section Supervisor
NOA No. 23-0714.07
Expiration Date: 11/16/2028
Approval Date: 11/16/2023

HARDWARE AND GLASS GROUP, LLC.

STL9642B GLASS SPIGOT RAILING



HARDWARE AND GLASS GROUP, LLC.
8 THE GREEN SUITE #7407
DOVER, DE 19901
PH: (323) 647-5800

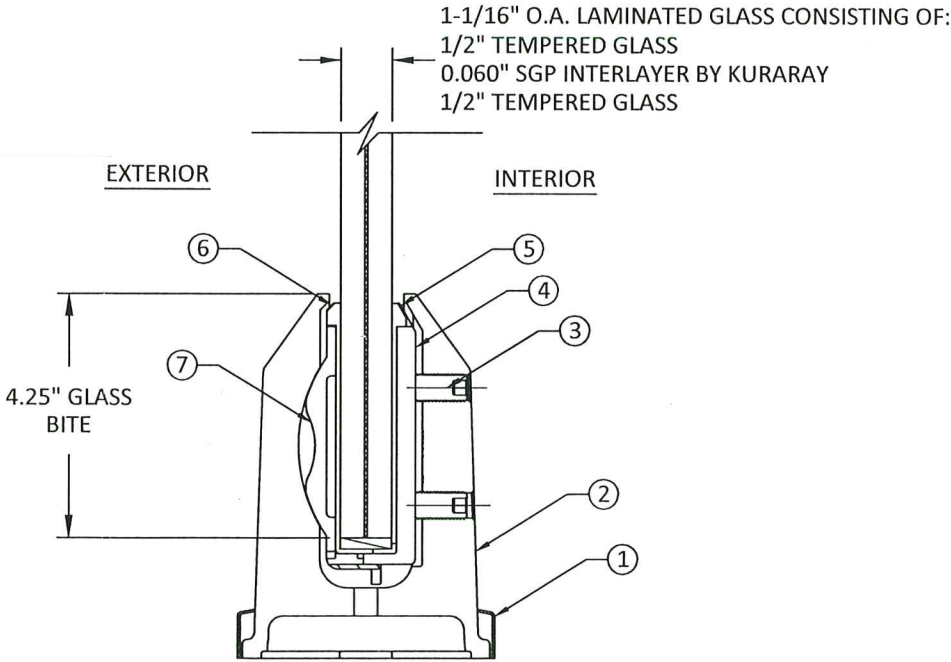
GENERAL NOTES:

1. THE PRODUCT SHOWN HEREIN IS DESIGNED AND MANUFACTURED TO COMPLY WITH THE 8TH EDITION FLORIDA BUILDING CODE (FBC), **INCLUDING** HVHZ AND HAS BEEN EVALUATED ACCORDING TO THE FOLLOWING:
 - ANSI Z97.1
 - TAS 201-94
 - TAS 202-94
2. ADEQUACY OF THE EXISTING STRUCTURAL CONCRETE/MASONRY AND 2X FRAMING AS A MAIN WIND FORCE RESISTING SYSTEM CAPABLE OF WITHSTANDING AND TRANSFERRING APPLIED PRODUCT LOADS TO THE FOUNDATION IS THE RESPONSIBILITY OF THE ENGINEER OR ARCHITECT OF RECORD FOR THE PROJECT OF INSTALLATION.
3. THE INSTALLATION DETAILS DESCRIBED HEREIN ARE GENERIC AND MAY NOT REFLECT ACTUAL CONDITIONS FOR A SPECIFIC SITE. IF SITE CONDITIONS CAUSE INSTALLATION TO DEVIATE FROM THE REQUIREMENTS DETAILED HEREIN, A LICENSED ENGINEER OR ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE WITH THIS DOCUMENT.
4. APPROVED IMPACT PROTECTIVE SYSTEM **IS NOT REQUIRED** ON THIS PRODUCT IN AREAS REQUIRING IMPACT RESISTANCE.
5. SPIGOT MATERIAL: DUPLEX 2205 STAINLESS STEEL
6. GLASS MEETS THE REQUIREMENTS OF ASTM E 1300 GLASS CHARTS. SEE SHEET 1 FOR GLAZING DETAIL.

INSTRUCTIONS FOR USE:

1. DETERMINE DESIGN WIND LOAD REQUIREMENTS BASED ON WIND VELOCITY, BUILDING HEIGHT, AND WIND ZONE USING THE APPLICABLE ASCE 7 STANDARD.
2. SEE DESIGN PRESSURE TABLE ON SHEET 3 FOR DESIGN LOAD CAPACITY OF DESIRED GLASS SIZE AND THE MAXIMUM RAILING HEIGHT BASED ON THE CONCENTRATED AND DISTRIBUTED LIVE LOADS.
3. SEE ANCHOR SPECIFICATIONS ON SHEET 3.

TABLE OF CONTENTS	
SHEET	SHEET DESCRIPTION
1	GENERAL NOTES AND GLAZING DETAIL
2	ELEVATION
3	ANCHOR DETAILS AND DESIGN PRESSURE TABLE
4	BILL OF MATERIALS & COMPONENTS



GLAZING DETAIL

GLAZING NOTES:

1. GLASS TYPE COMPLIES WITH ASTM E1300 REQUIREMENTS. PER THE FBC TEMPER AND SAFETY GLAZING REQUIREMENTS SHALL BE REVIEWED ON A SITE SPECIFIC BASIS.
2. SETTING BLOCK DUROMETER HARDNESS OF 70-90 (SHORE A) AS REFERENCED IN FBC CHAPTER 24.
3. SETTING BLOCKS TO BE LOCATED AT 1/4 SPAN LENGTH FOR GLASS WIDER THAN 36" AS PER FBC CHAPTER 24.
4. D.L.O. AND DESIGN PRESSURES MAY NOT EXCEED MAX VALUES SHOWN HEREIN.

Approved as complying with the
Florida Building Code
Date 11/16/2023
NOA# 23-0714-07
Miami Dade Product Control
By *Hedy A. Norero*

TITLE: STL9642B GLASS SPIGOT RAILING

GENERAL NOTES AND GLAZING DETAIL

PREPARED BY: BUILDING DROPS, INC.

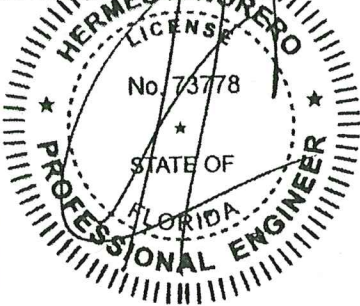
398 E. DANIA BEACH BLVD., STE. 338
DANIA BEACH, FL 33004
PH: (954) 399-8478
FAX: (954) 744-4738
WEB: www.buildingdrops.com



REMARKS	BY	DATE

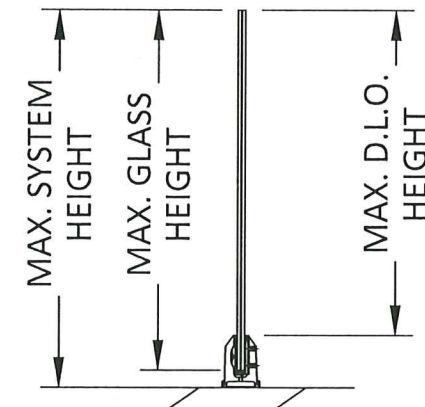
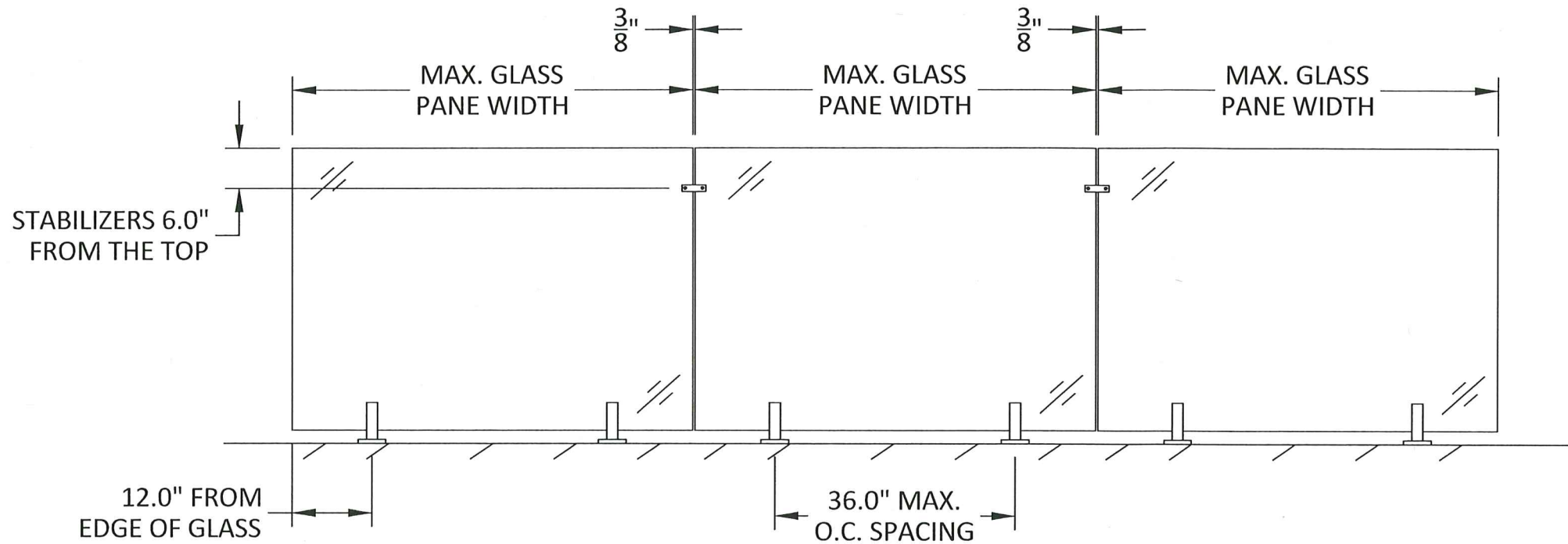
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Digitally signed by Hermes F. Norero, P.E.
Reason: I am approving this document
Date: 2023.06.11 11:06:11 -0400

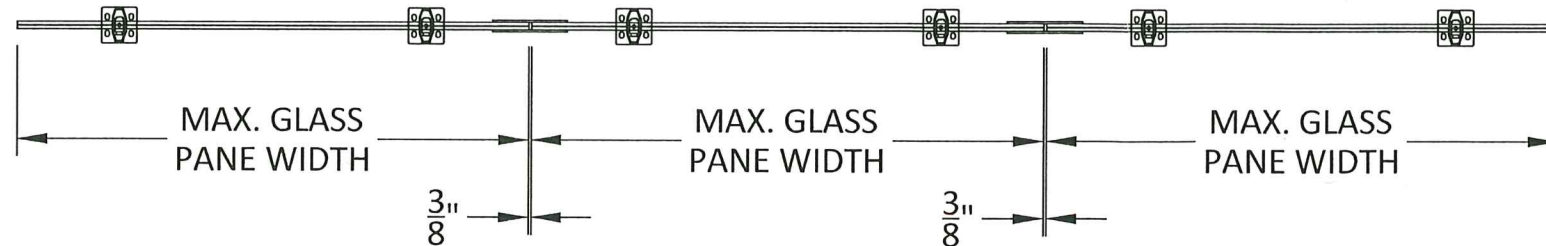


HERMES F. NORERO, P.E.
FLORIDA P.E. No. 73778
BUILDING DROPS, INC
398 E. DANIA BEACH BLVD. # 338
DANIA BEACH, FL 33004
FBPE CERT. OF AUTHORIZATION No. 29578

DATE: 05.09.23	
DWG. BY: SH	CHK. BY: HFN
SCALE: NTS	
DWG. #: HWG002	
SHEET:	



NOTE: SEE SHEET 3 FOR DESIGN PRESSURE TABLE AND ANCHOR DETAILS.



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Florida Building Code
Date 11/16/2023
NOA# 23-0714.07
Miami Dade Product Control
By H. J. Allen



HARDWARE AND GLASS GROUP, LLC.
8 THE GREEN SUITE #7407
DOVER, DE 19901
PH: (323) 647-5800

TITLE: STL9642B GLASS
SPIGOT RAILING

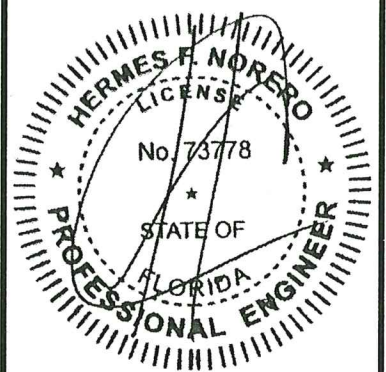
ELEVATION &
DESIGN PRESSURE TABLES

PREPARED BY:
BUILDING DROPS, INC.
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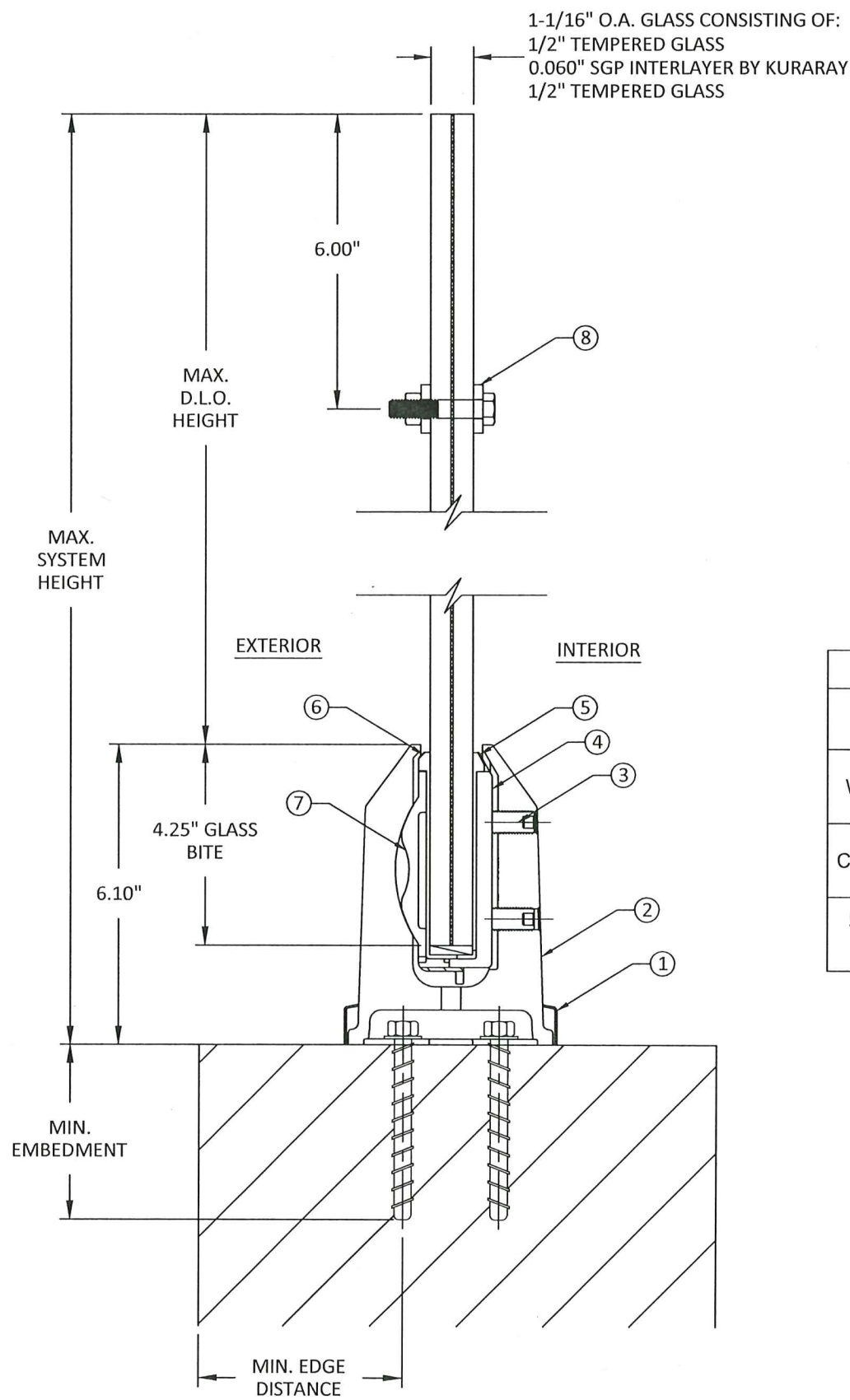


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FLORIDA P.E. No. 73778
BUILDING DROPS, INC
398 E. DANIA BEACH BLVD. # 338
DANIA BEACH, FL 33004
FBPE CERT. OF AUTHORIZATION No. 29578

DATE: 05.09.23	
DWG. BY: SH	CHK. BY: HFN
SCALE: NTS	
DWG. #: HWG002	
SHEET:	

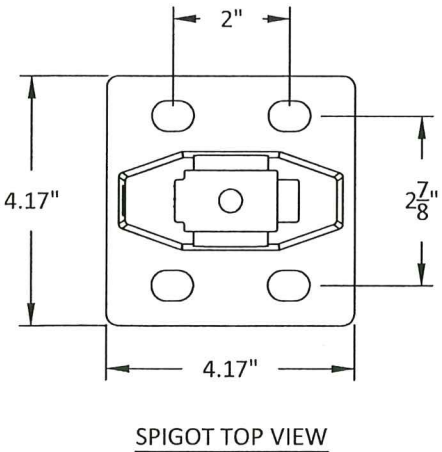
2

OF 4



DESIGN PRESSURE TABLE (PSF)				
GLASS HEIGHT (IN)	GLASS PANE WIDTH (IN)			
	36	42	54	60
42	50.0	50.0	50.0	50.0
48	50.0	50.0	-	-
54	50.0	50.0	-	-
60	49.1	42.0	-	-

ANCHOR SCHEDULE				
SUBSTRATE	ANCHOR SCHEDULE	MIN. EMBEDMENT	MIN. EDGE DISTANCE	QUANTITY
WOOD: MIN. SG = 0.55	3/8" FLANGED HEX HEAD WOOD SCREW	2.50"	1.25"	4 PER SPIGOT
CONCRETE: f _c =3000PSI	3/8" DEWALT SCREW-BOLT+	2.50"	2.25"	4 PER SPIGOT
STEEL: F _y = 33KSI MIN. (16 GAUGE MIN.)	3/8" SELF-DRILLING OR SELF-TAPPING SCREW	THREE THREADS MIN. PENETRATION PAST STRUCTURE	0.75"	4 PER SPIGOT



Approved as complying with the
Florida Building Code
Date 11/16/2023
NOA# 23-0714.07
Miami Dade Product Control
By Helga A. Mohr



HARDWARE AND GLASS GROUP, LLC.
8 THE GREEN SUITE #7407
DOVER, DE 19901
PH: (323) 647-5800

TITLE: STL9642B GLASS SPIGOT RAILING

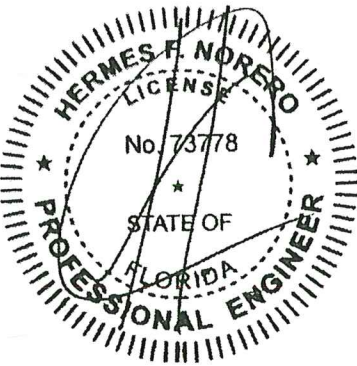
ANCHOR LAYOUTS

PREPARED BY: BUILDING DROPS, INC.
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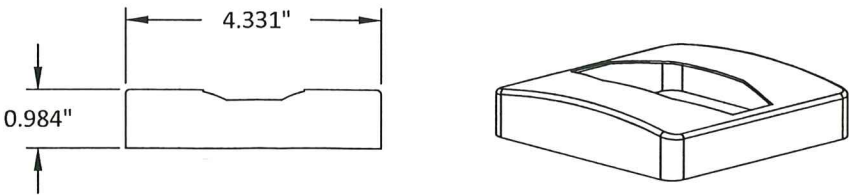
HERMES F. NORERO, P.E.
FLORIDA P.E. No. 73778
BUILDING DROPS, INC.
398 E. DANIA BEACH BLVD. # 338
DANIA BEACH, FL 33004
FBPE CERT. OF AUTHORIZATION No. 29578

DATE: 05.09.23	
DWG. BY: SH	CHK. BY: HFN
SCALE: NTS	
DWG. #: HWG002	
SHEET:	

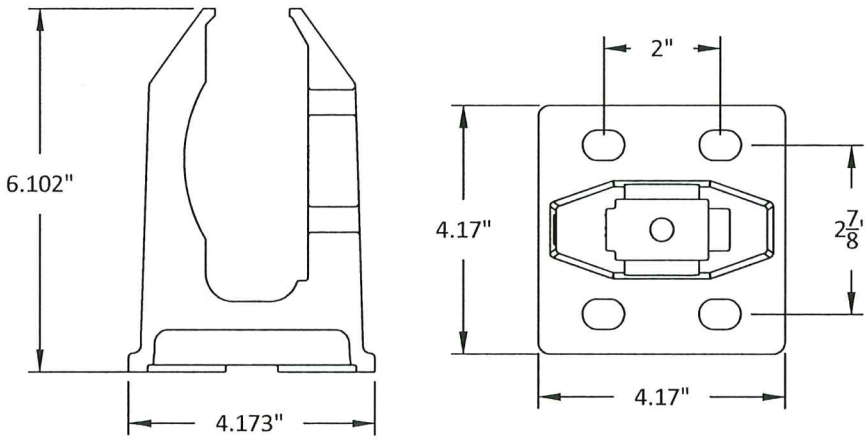
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OF 4

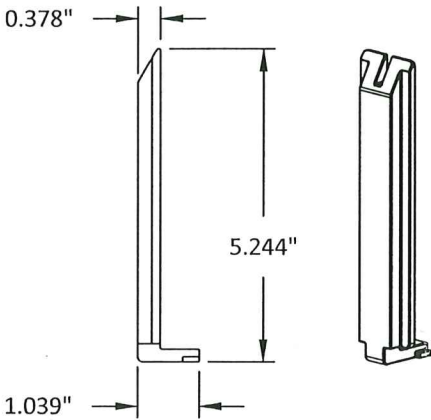
BILL OF MATERIALS			
ITEM	PART NO.	DESCRIPTION	MATERIAL
1	STL9642B-CP	SPIGOT COVER PLATE	DUPLEX 2205 STAINLESS STEEL
2	STL9642B	SPIGOT	DUPLEX 2205 STAINLESS STEEL
3	M12 X 22MM	GRUB SCREW	STEEL
4	TL-SSPI	I-SHAPED PLATE INSERT	DUPLEX 2205 STAINLESS STEEL
5	PACKER I	I-SHAPED PACKER	DUPLEX 2205 STAINLESS STEEL
6	PACKER L	L-SHAPED PACKER	DUPLEX 2205 STAINLESS STEEL
7	TL-SSPL	L-SHAPED PLATE INSERT	DUPLEX 2205 STAINLESS STEEL
8	SB180-22	STABILIZER	DUPLEX 2205 STAINLESS STEEL



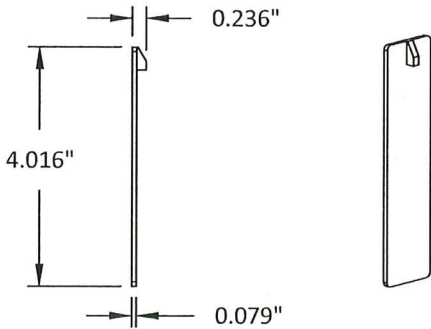
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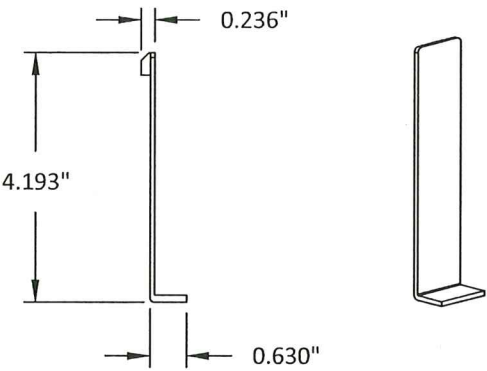
2 STL9642B



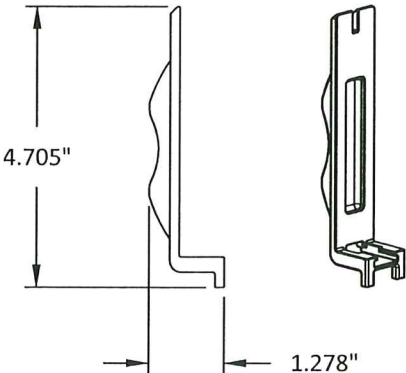
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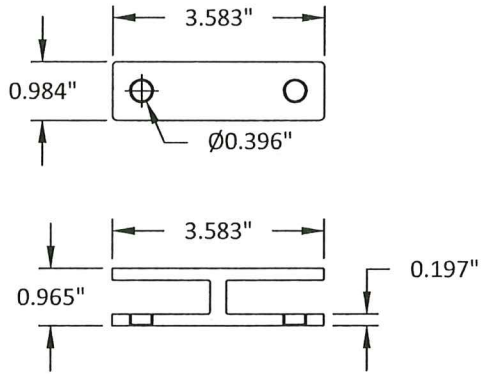
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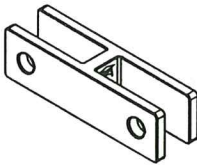
6 PACKER L



7 TL-SSPL



8 SB180-22



Approved as complying with the
Florida Building Code
Date 11/16/2023
NOA# 23-6714.07
Miami Dade Product Control
By *[Signature]*



HARDWARE AND GLASS GROUP, LLC.
8 THE GREEN SUITE #7407
DOVER, DE 19901
PH: (323) 647-5800

TITLE: STL9642B GLASS SPIGOT RAILING

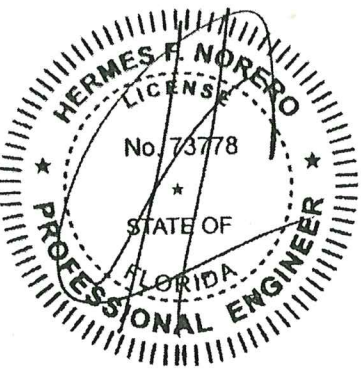
VERTICAL SECTIONS

PREPARED BY:
BUILDING DROPS, INC.
398 E. DANIA BEACH BLVD., STE. 338
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REMARKS	BY	DATE

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398 E. DANIA BEACH BLVD. # 338
DANIA BEACH, FL 33004
FBPE CERT. OF AUTHORIZATION No. 29578

DATE:	05.09.23
DWG. BY:	SH
CHK. BY:	HFN
SCALE:	NTS
DWG. #:	HWG002
SHEET:	4



Model Designation: Standoff Glass Railing

Client Package

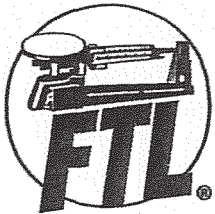
Fenestration Testing Laboratory
8148 N.W. 74th Avenue
Medley, Florida 33166
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Fax: (305) 885-3329
Toll: (888) 819-7877

Remote Offices:
Tampa, FL (813) 200-5886

Schaumburg, Illinois (312) 253-7203
Pensacola, FL (850) 454-1734

Las Vegas, NV (702) 922-7142
Houston, TX (281) 763-0401

Test Report and Drawings



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877

e-mail: clientservices@ftl-inc.com

www.ftl-inc.com

Report Date:

10/5/2020

Completion Date:

9/9/2020

Expiration Date:

9/9/2024

Page No.

1 of 5

Lab. Number:

9145

Project Number:

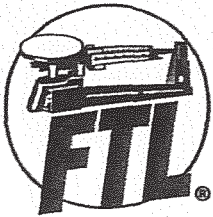
16-6710

OFFICIAL TEST REPORT

SPECIFICATIONS: Florida Building Code
Concentrated Load Test and ANSI Z97.1

PROJECT: 8460 NW 164th St Miami Lakes

Sample A-1		Page	Rev
Revision Table		2	
Notes Table		2	
Remarks Table		2	
Description of Test Sample		2	
Glazing		3	
Additional Information		3	
Test Sample Installation		3	
Results Sample A-1			
Concentrated Load Test	1607.8.1/1607.8.1.1	3	
Concentrated Load Test	1607.8.1/1607.8.1.1	4	
Drop Test	ANSI Z97.1	4	
Drop Test	ANSI Z97.1	5	
Drop Test	ANSI Z97.1	5	



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877

e-mail: clientservices@ftl-inc.com www.ftl-inc.com

Report Date: 10/5/2020
Completion Date: 9/9/2020
Expiration Date: 9/9/2024
Page No. 2 of 4
Lab. Number: 9145
Project Number: 16-6710

OFFICIAL TEST REPORT

Revision	Description	Author	Effective Date
0	Initial Release	Ms. Lusinda Delgado	10/5/2020

Notes

- * designates measurements by laboratory
- ** as per manufacturer

Fenestration Testing Laboratory Inc., does not have, nor does it intend to acquire or will acquire, a financial interest in any company manufacturing or distributing products tested or labeled by the Fenestration Testing Laboratory Inc. Fenestration Testing Laboratory Inc., is not owned, operated or controlled by any company manufacturing or distributing products it tests or labels.

Drawings referenced in this document are an integral part of this report, therefore, are required when distributing this test report. Test results obtained represent the actual value of the tested specimens and do not constitute opinion, endorsement or certification by this laboratory.

This test report is considered the exclusive property of the client named herein and is applicable to the sample tested. This report may not be reproduced without the approval of Fenestration Testing Laboratory, Inc.

At conclusion of above tests, there was no apparent damage to the concrete slab or fasteners and after the impact the glass did break, but remained in place and there wasn't any apparent tear in the inter layer film.

Remarks

Detailed drawings will be retained by Fenestration Testing Laboratory for a period of one year from the original test date, and test report for a period of four years. Due to the code cycle change it is recommended that this report be evaluated during the lifespan of this document.

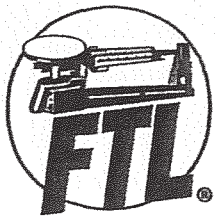
This product was tested in accordance with ANSI Z-97.1-09 (FBC section 1618.4.6.3) with no deviations.

This product was tested in accordance with the Florida Building Code section 1607.8.1/1607.8.1.1 (concentrated load test) with no deviations.

Testing was conducted as per instructions received from the manufacturer's company representative.

DESCRIPTION OF SAMPLE

Model Designation:	Standoff Glass Railing
Overall Size:	4'-0" (48") by 4'-2" (50") high
Sample A-1	



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877

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Completion Date:

9/9/2020

Expiration Date:

9/9/2024

Page No.

3 of 5

Lab. Number:

9145

Project Number:

16-6710

OFFICIAL TEST REPORT

Glazing

Glazing Location	Glazing Material	Glazing Compound	Compound Color
One lite of glass	**9/16 nominal glass composed of (2) 1/4" **tempered glass	None	N/A
Interlaying Film: *0.090" **Kuraray SentryGlas®		Laminator: **Ready Glass	
Glazing Method: The glass was secured using stainless steel glass clamps. Each clamp had two protective neoprene washers on the interior and two rigid plastic projective washers on the exterior.			
Daylight Opening:	48" by 50" high		

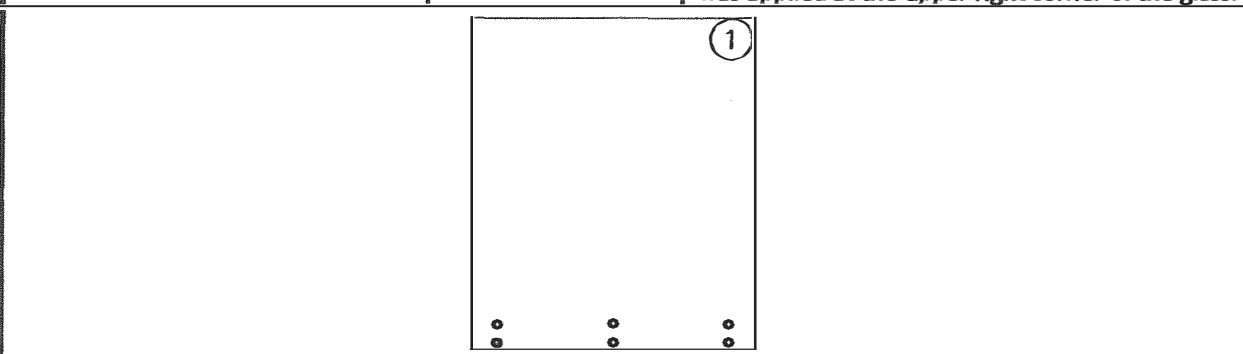
Additional Information

The glass was secured to the concrete test slab using two stainless steel adjustable glass clamps located 5", 25", and 45" from left and 2 1/2" and 5 1/2" from bottom.

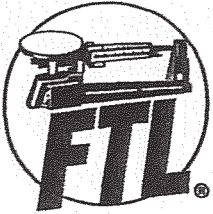
Sample Installation

The railing was installed into the face of a concrete test slab. The mounting stub of the glass clamp consists of one 1/2-20 by 4 1/2" long threaded rod and a drop in anchor. The standoff of the glass clamp consists of one 8-3/16 by 1" long threaded rod.

Sample: A-1	Temperature: 89.0°F	Barometric Reading: 30.11 inches Hg
Title of Test	Load	Notes
Concentrated Load Test	200 lbf	As per FBC section 1607.8.1/1607.8.1.1. The load was applied at the upper right corner of the glass.



Reading#	Deflection	Permanent Set	Results	Add. Info
1	5.75"	None	Passed	



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877

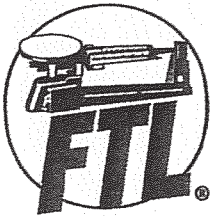
e-mail: clientservices@ftl-inc.com www.ftl-inc.com

Report Date: 10/5/2020
Completion Date: 9/9/2020
Expiration Date: 9/9/2024
Page No. 4 of 5
Lab. Number: 9145
Project Number: 16-6710

OFFICIAL TEST REPORT

Sample: A-1	Temperature: 89.0°F	Barometric Reading: 30.11 inches Hg		
Title of Test	Load	Notes		
Concentrated Load Test	200 lbf	As per FBC section 1607.8.1/1607.8.1.1. The load was applied at the center of the glass.		
② ○ ○ ○				
Reading#	Deflection	Permanent Set	Results	Add. Info
2	3.187"	None	Passed	

Sample: A-1	Temperature: 89.0°F	Barometric Reading: 30.11 inches Hg
Title of Test	Notes	
Drop Test	As per FBC section 1618.4.6.3	
① ○ ○ ○		
Drop #	Results	Add. Info
1	Passed	Impacted center of lite. After impact the glass did break but remained in the place and there wasn't any apparent tear in the inter layer film.



Quality Accuracy Assurance

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9/9/2024

Page No.

5 of 5

Lab. Number:

9145

Project Number:

16-6710

OFFICIAL TEST REPORT

Sample: A-1	Temperature: 89.0°F	Barometric Reading: 30.11 inches Hg
Title of Test		Notes
Drop Test		As per FBC section 1618.4.6.3
② ○ ○ ○		
Drop #	Results	Add. Info
2	Passed	Impacted center of lite. After impact the glass did break but remained in the place and there wasn't any apparent tear in the inter layer film.

Sample: A-1	Temperature: 89.0°F	Barometric Reading: 30.11 inches Hg
Title of Test		Notes
Drop Test		As per FBC section 1618.4.6.3
③ ○ ○ ○		
Drop #	Results	Add. Info
3	Passed	Impacted center of lite. After impact the glass did break but remained in the place and there wasn't any apparent tear in the inter layer film.

Witnessed by:

Ms. Idalmis Ortega, FTL P.E.

Mr. David Viera

FENESTRATION TESTING LABORATORY, INC.

Technicians:

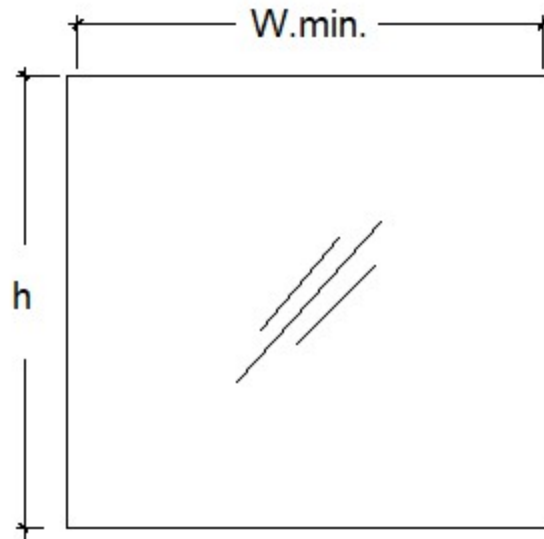
Mr. Michael Chala

Mr. Manny Sanchez

Chief Executive Officer

Project Name: 9601 RESIDENCE.

Min.Glass Panel Width:



$P_{200} := 200.00$ Single Concentrated Load (lbs)
Railing P=200.00, Fence P=0.00

$q_{50} := 50.00$ Uniform Distributed Load (plf)
Railing q=50.00, Fence q=0.00

Load Processing:

$F_{b.Glass} := 6000.00$ (psi)

$h := 46$ (in)

$t := \frac{9}{16}$ (in)

$M_{200} := P_{200} \cdot h$ $M_{200} = 9200.00$ in - lb

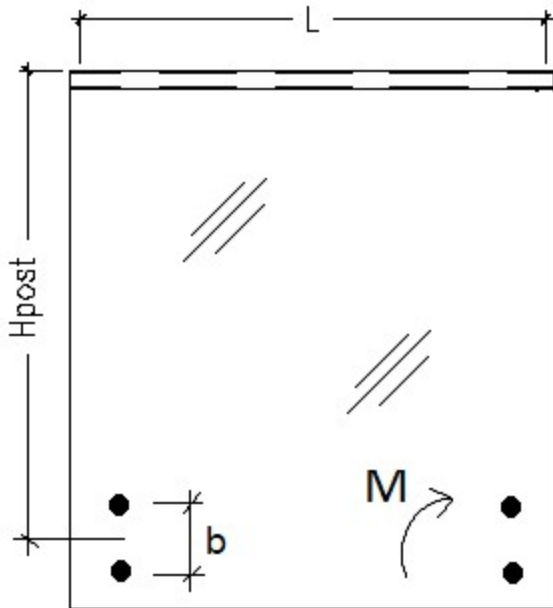
$S_x := \frac{M_{200}}{F_{b.Glass}}$ $S_x = 1.53$ (in^3)

$w := \frac{S_x \cdot 6}{t^2}$ $w = 29.08$ (in)

Using 30" width min.

Project Name: 9601 RESIDENCE.

Glass Railing Design:



Geometric Glass Railing Data:

$h := 42.00$ Height of Glass Lite Pannel in Cantilever (in)

$t := 0.5625$ Thickness of Glass Pannel (in)

$w_{min} := 30.00$ Minimum Width of Glass Pannel (in)

$w_{max} := 60.00$ Maximum Width of Glass Pannel (in)

General Loads:

$q_{wind} := 0.00$ Wind Pressure (psf)

$P_{200} := 200.00$ Single Concentrated Load (lbs)
Railing P=200.00, Fence P=0.00

$q_{50} := 50.00$ Uniform Distributed Load (plf)
Railing q=50.00, Fence q=0.00

Glass Data:

$E_{PT} := 10100.00$ Modulus of Elasticity of Glass (psi)

$Mr_{flexure} := 24000.00$ Modulus of Rupture of Glass in Flexure (psi)

$Mr_{shear} := 12000.00$ Modulus of Rigidity of glass in Shear (psi)

$SF := 4.00$ Safety Factor

$N_{bolt} := 4$ Quantity of Bolt or screw used in the standoff with tension

$F_b := \frac{Mr_{flexure}}{SF}$ $F_b = 6000.00$ (psi)

$F_v := \frac{Mr_{shear}}{SF}$ $F_v = 3000.00$ (psi)

$L := \begin{cases} h \\ \text{if } w_{min} < h \\ w_{min} \end{cases}$ $L = 30.00$ (in)

$$S_x := \frac{L \cdot t^2}{6} \quad S_x = 1.58 \quad (in^3)$$

$$I_x := \frac{L \cdot t^3}{12} \quad I_x = 0.44 \quad (in^4)$$

$$A := L \cdot t \quad A = 16.88 \quad (in^2)$$

$$P = 200 \text{ lbs.} \quad M_{200} := P_{200} \cdot h \quad M_{200} = 8400.00 \quad \text{in - lb}$$

$$q = 50 \text{ plf} \quad M_{50} := q_{50} \cdot \frac{L \cdot h}{12} \quad M_{50} = 5250.00 \quad \text{in - lb}$$

$$\text{For Wind Pressure} \quad M_{wind} := \frac{q_{wind} \cdot L \cdot h^2}{144 \cdot 2} \quad M_{wind} = 0.00 \quad \text{in - lb}$$

$$M_{Glass} := \max(\max(M_{200}, M_{50}, M_{wind})) \quad M_{Glass} = 8400.00 \quad \text{in - lb}$$

$$P = 200 \text{ lbs.} \quad V_{200} := P_{200} \quad V_{200} = 200.00 \quad \text{in - lb}$$

$$q = 50 \text{ plf} \quad V_{50} := q_{50} \cdot \frac{L}{12} \quad V_{50} = 125.00 \quad \text{in - lb}$$

$$\text{For Wind Pressure} \quad V_{wind} := \frac{q_{wind} \cdot L \cdot h}{144} \quad V_{wind} = 0.00 \quad \text{in - lb}$$

$$V_{Glass} := \max(\max(V_{200}, V_{50}, V_{wind})) \quad V_{Glass} = 200.00 \quad \text{in - lb}$$

$$S_{glass} := \frac{M_{Glass}}{F_b} \quad S_{glass} = 1.40 \quad in^3$$

$$A_{Glass} := \frac{V_{Glass}}{F_v} \quad A_{Glass} = 0.07 \quad in^2$$

$$C_1 := \text{if}(S_{glass} \geq S_x, \text{"NO BENDING RESIST"}, \text{"BENDING RESIST"}) \quad C_1 = \text{"BENDING RESIST"}$$

$$C_2 := \text{if}(A_{Glass} \geq A, \text{"NO SHEAR RESIST"}, \text{"SHEAR RESIST"}) \quad C_2 = \text{"SHEAR RESIST"}$$

$$b := 3.1875 \quad \text{in}$$

$$T_{Bolt} := \frac{M_{Glass}}{b \cdot 0.9} \quad T_{Bolt} = 2928.10 \quad \text{lbs}$$

$$T_{bybolt} := \frac{T_{Bolt}}{N_{bolt}} = 732.03 \quad \text{lbs} \quad \text{Tension on each bolt or screw}$$

GENERAL INFORMATION

SCREW-BOLT+™

High Performance Screw Anchor

PRODUCT DESCRIPTION

The Screw-Bolt+ anchor is a one piece, heavy duty screw anchor with a finished hex head or flat head (countersunk). Suitable base materials include normal-weight concrete, sand-lightweight concrete, concrete over steel deck, concrete masonry and solid clay brick. It is simple to install, easy to identify and fully removable. The patented thread design, designed for use with standard ANSI drill bits, reduces installation torque and enhances productivity. The steel threads along the anchor body tap into the hole during installation to provide keyed engagement and allow for reduced edge and spacing distances. The Screw-Bolt+ is available with a standard bright zinc-plated finish or mechanically galvanized plating which offers more corrosion resistance.

GENERAL APPLICATIONS AND USES

- Racking, shelving and material handling
- Support ledgers and sill plate attachments
- Barriers, guards and temporary supports
- Glazing and window attachments
- Retrofits, repairs and maintenance
- Fencing, railing and stair stringers
- Cracked and uncracked concrete
- Wind and seismic loading (SDC A - F)

FEATURES AND BENEFITS

- + Designed for use with ANSI standard tolerance drill bits
- + Patented thread design offers toughened threads for tapping high strength concrete
- + Low installation torque in concrete and masonry base materials
- + Universal product for concrete and grouted/solid masonry
- + Fast installation with powered impact wrench, but can also be installed manually
- + Can be installed closer to a free edge than traditional expansion anchors
- + Fully removable and reinstallable in same hole (see www.DEWALT.com)
- + Ratchet teeth on underside of hex washer head lock against fixture
- + Diameter, length and identifying marking stamped on head of each anchor

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-3889 for concrete
- International Code Council, Evaluation Service (ICC-ES), ESR-4042 for masonry
- Code Compliant with the International Building Code/International Residential Code: 2021 IBC/IRC, 2018 IBC/IRC, 2015 IBC/IRC, and 2012 IBC/IRC
- Tested in accordance with ACI 355.2/ASTM E488 and ICC-ES AC193 for use in concrete under the design provisions of ACI 318 (-19 and -14) Chapter 17 or ACI 318-11 Appendix D
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (anchor Category 1 for all sizes)
- Evaluated and qualified by an accredited independent testing laboratory for sensitivity and reliability against brittle failure, e.g. hydrogen embrittlement
- City of Los Angeles, LABC Supplement (within ESR-3889 and ESR-4042)
- Florida Building Code, FBC Supplement including HVHZ (within ESR-3889 and ESR-4042)

GUIDE SPECIFICATIONS

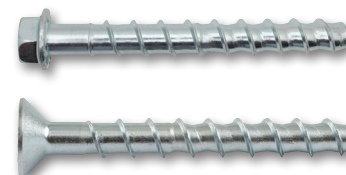
CSI Divisions: 03 16 00 - Concrete Anchors, 04 05 19.16 - Masonry Anchors and 05 05 19 - Post-Installed Concrete Anchors. Screw anchors shall be Screw-Bolt+ as supplied by DEWALT, Towson, MD. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATIONS

Anchor component		Specification
Anchor Body and hex washer head		Case hardened carbon steel
Plating	Standard zinc plated version	Zinc plating according to ASTM B633, SC1 Type III (Fe/Zn 5). Minimum plating requirements for Mild Service Condition
	Mechanically galvanized version	Mechanically Galvanized zinc plating according to ASTM B695, Class 55

SECTION CONTENTS

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Installation Instructions	2
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Strength Design Information	10
Design Strength Tables (SD)	16
Ordering Information	18



SCREW-BOLT+

HEAD STYLES

- Hex Washer Head or Flat Head

ANCHOR MATERIALS

- Zinc plated carbon steel or mechanically galvanized plating

ANCHOR SIZE RANGE (TYP.)

- 1/4" through 3/4" diameters

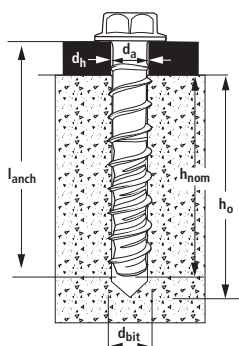
SUITABLE BASE MATERIALS

- Normal-weight concrete
- Lightweight concrete
- Concrete over steel deck
- Grouted Concrete Masonry (CMU)
- Brick Masonry



INSTALLATION SPECIFICATIONS

Screw-Bolt+ Anchor Detail (Hex Head Shown)



Nomenclature

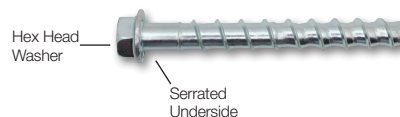
d_a = Diameter of Anchor
 d_{bit} = Diameter of Drill Bit
 d_h = Diameter of Clearance Hole
 h = Base Material Thickness.
 h_{nom} = Minimum Nominal Embedment
 h_o = Minimum Hole Depth

Head Marking



Legend

Diameter and Length Identification Mark



Legend

Diameter and Length Identification Mark



Installation Specifications for Screw-Bolt+ in Concrete and Supplemental Information

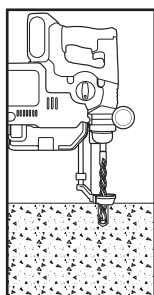
Anchor Property/ Setting Information	Notation	Units	Nominal Anchor Diameter (inch)				
			1/4	3/8	1/2	5/8	3/4
Anchor outside diameter	d_a (d)	in. (mm)	0.250 (6.4)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)
Nominal drill bit diameter (ANSI)	d_{bit}	in.	1/4	3/8	1/2	5/8	3/4
Minimum diameter of hole clearance in fixture	d_h	in. (mm)	11/32 (8.7)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)	7/8 (22.2)
Minimum embedment depth ¹	h_{nom}	in. (mm)	1 (25)	1-1/2 (38)	1-3/4 (44)	2-1/2 (64)	2-1/2 (64)
Minimum hole depth	h_o	in. (mm)	$h_{nom} + 3/8$ (9.5)				
Minimum member thickness	h_{min}	in. (mm)	$h_{nom} + 2$ (51)				
Minimum edge distance	c_{min}	in. (mm)	1-1/2 (38)	1-1/2 (38)	1-3/4 (44)	1-3/4 (44)	1-3/4 (44)
Minimum spacing	s_{min}	in. (mm)	1-1/2 (38)	2 (51)	2-3/4 (70)	2-3/4 (70)	3 (76)
Max manual installation torque	$T_{inst,max}$	ft.-lb. (N-m)	19 (26)	25 (34)	45 (61)	60 (81)	70 (95)
Max impact wrench power (torque)	$T_{impact,max}$	ft.-lb. (N-m)	150 (203)	300 (407)	300 (407)	700 (950)	700 (950)
Hex Head	Impact wrench socket size	in.	7/16	9/16	3/4	15/16	1-1/8
	Maximum head height	in.	21/64	3/8	31/64	37/64	43/64
	Maximum washer diameter	in.	37/64	3/4	1-1/16	1-1/8	1-13/32
Flat Head	Driver Size	in.	T-30	T-50	T-55	-	-
	Max head height	in.	13/64	21/64	11/32	-	-
	Max head diameter	in.	17/32	57/64	1	-	-
	Countersunk angle	in.	82	82	82	-	-
Effective tensile stress area (screw anchor body)	A_{se}	in ²	0.045	0.094	0.176	0.274	0.399
Minimum ultimate strength	f_{uta}	psi	100,000	105,000	115,000	95,000	95,000
Minimum yield strength	f_y	psi	80,000	84,000	92,000	76,000	76,000

See Strength Design Information for installation specifications in strict accordance with ICC-ES ESR-3889.

1. See load capacities for Screw-Bolt+ in normal weight concrete for additional nominal embedment depths.

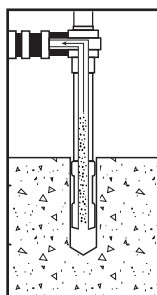
INSTALLATION INSTRUCTIONS

Installation Instructions for Screw-Bolt+ (Hex Head Version Illustrated, Flat Head Version Not Shown)



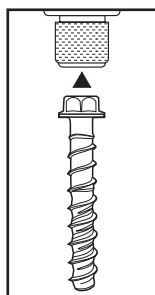
Step 1

Using the proper drill bit size, drill a hole into the base material to the required depth. The tolerances of the drill bit used should meet the requirements of ANSI standard B212.15



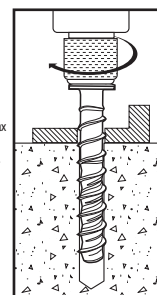
Step 2

Remove dust and debris from hole during drilling (e.g. dust extractor, hollow bit) or following drilling (e.g. suction, forced air) to extract loose particles created during drilling.



Step 3

Select a torque wrench or powered impact wrench and do not exceed the maximum torque, $T_{inst,max}$ or $T_{impact,max}$ respectively for the selected anchor diameter and embedment. Attach an appropriate sized hex socket/driver to the impact wrench. Mount the screw anchor head into the socket.



Step 4

Drive the anchor into the hole until the head of the anchor comes into contact with the fixture. The anchor must be snug after installation. Do not spin the hex socket off the anchor to disengage.

PERFORMANCE DATA (ASD)
Ultimate Load Capacities for Screw-Bolt+ in Normal-Weight Concrete^{1,2}

Nominal Anchor Diameter in.	Minimum Nominal Embedment Depth in. (mm)	Minimum Concrete Compressive Strength									
		f'c = 2,500 psi (17.3 MPa)		f'c = 3,000 psi (20.7 MPa)		f'c = 4,000 psi (27.6 MPa)		f'c = 6,000 psi (41.4 MPa)		f'c = 8,000 psi (55.2 MPa)	
		Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)
1/4	1 (25)	1,325 (5.9)	1,660 (7.4)	1,400 (6.2)	1,755 (7.8)	1,530 (6.8)	1,910 (8.5)	1,725 (7.7)	2,080 (9.3)	1,725 (7.7)	2,080 (9.3)
	1-5/8 (41)	2,835 (12.6)	1,660 (7.4)	2,995 (13.3)	1,755 (7.8)	3,265 (14.5)	1,910 (8.5)	3,265 (14.5)	2,080 (9.3)	3,265 (14.5)	2,080 (9.3)
	2-1/2 (64)	3,650 (16.2)	2,025 (9.0)	3,855 (17.1)	2,140 (9.5)	4,200 (18.7)	2,335 (10.4)	4,270 (19.0)	2,545 (11.3)	4,270 (19.0)	2,545 (11.3)
3/8	1-1/2 (38)	2,630 (11.7)	3,550 (15.8)	2,880 (12.8)	3,890 (17.3)	3,330 (14.8)	4,490 (20.0)	4,075 (18.1)	5,500 (24.5)	4,075 (18.1)	6,355 (28.3)
	2 (51)	3,670 (16.3)	4,320 (19.2)	4,020 (17.9)	4,735 (21.1)	Tmax = 732.03 lbs Tallow = 3855 lbs OK				5,455 (24.3)	6,345 (28.2)
	2-1/2 (64)	5,175 (23.0)	4,320 (19.2)	5,670 (25.2)	4,740 (21.1)					7,420 (33.0)	6,340 (28.2)
	3-1/4 (83)	7,420 (33.0)	6,325 (28.1)	8,130 (36.2)	6,930 (30.8)	9,065 (40.3)	8,000 (35.6)	9,065 (40.3)	8,565 (38.1)	10,350 (46.0)	8,565 (38.1)
	4-1/2 (114)	10,905 (48.5)	6,325 (28.1)	11,945 (53.1)	6,930 (30.8)	13,795 (61.4)	8,000 (35.6)	15,075 (67.1)	8,565 (38.1)	15,075 (67.1)	8,565 (38.1)
1/2	1-3/4 (44)	2,840 (12.6)	5,985 (26.6)	3,115 (13.9)	6,555 (29.2)	3,595 (16.0)	7,570 (33.7)	4,400 (19.6)	9,270 (41.2)	4,400 (19.6)	10,705 (47.6)
	2-1/2 (64)	6,680 (29.7)	8,035 (35.7)	7,320 (32.6)	8,800 (39.1)	8,450 (37.6)	10,160 (45.2)	8,450 (37.6)	11,545 (51.4)	8,450 (37.6)	11,545 (51.4)
	3 (76)	8,560 (38.0)	8,040 (35.8)	9,375 (41.7)	8,800 (39.1)	10,750 (47.8)	10,160 (45.2)	10,750 (47.8)	11,540 (51.3)	10,750 (47.8)	11,540 (51.3)
	4-1/4 (108)	13,260 (59.0)	9,395 (41.8)	14,525 (64.6)	10,290 (45.8)	16,480 (73.3)	11,885 (52.9)	16,480 (73.3)	13,520 (60.1)	16,480 (73.3)	13,520 (60.1)
	5-1/2 (140)	15,730 (70.0)	9,395 (41.8)	17,235 (76.7)	10,290 (45.8)	19,900 (88.5)	11,885 (52.9)	21,310 (94.8)	13,520 (60.1)	21,310 (94.8)	13,520 (60.1)
5/8	2-1/2 (64)	5,735 (25.5)	10,615 (47.2)	6,285 (28.0)	11,630 (51.7)	7,255 (32.3)	13,425 (59.7)	8,885 (39.5)	16,445 (73.2)	8,885 (39.5)	17,170 (76.4)
	3-1/4 (83)	9,755 (43.4)	12,065 (53.7)	10,685 (47.5)	13,220 (58.8)	12,340 (54.9)	15,265 (67.9)	12,340 (54.9)	17,170 (76.4)	12,340 (54.9)	17,170 (76.4)
	4 (102)	11,770 (52.4)	12,060 (53.6)	12,890 (57.3)	13,220 (58.8)	14,880 (66.2)	15,260 (67.9)	15,325 (68.2)	17,180 (76.4)	16,600 (73.8)	17,180 (76.4)
	5 (127)	14,455 (64.3)	13,675 (60.8)	15,830 (70.4)	14,980 (66.6)	18,280 (81.3)	17,295 (76.9)	19,295 (85.8)	19,485 (86.7)	22,280 (99.1)	19,485 (86.7)
	6-1/4 (159)	20,520 (91.3)	13,675 (60.8)	22,475 (100.0)	14,980 (66.6)	25,955 (115.5)	17,295 (76.9)	31,785 (141.4)	19,485 (86.7)	31,785 (141.4)	19,485 (86.7)
3/4	2-1/2 (64)	6,035 (26.8)	11,615 (51.7)	6,610 (29.4)	12,725 (56.6)	7,635 (34.0)	14,690 (65.3)	9,350 (41.6)	17,995 (80.0)	9,350 (41.6)	20,775 (92.4)
	4-1/4 (108)	11,900 (52.9)	17,055 (75.9)	13,035 (58.0)	18,685 (83.1)	15,050 (66.9)	21,575 (96.0)	17,745 (78.9)	24,270 (108.0)	20,490 (91.1)	24,270 (108.0)
	5 (127)	19,020 (84.6)	17,055 (75.9)	20,835 (92.7)	18,685 (83.1)	24,055 (107.0)	21,575 (96.0)	29,460 (131.0)	24,270 (108.0)	29,460 (131.0)	24,270 (108.0)
	6-1/4 (159)	20,495 (91.2)	17,055 (75.9)	22,450 (99.9)	18,685 (83.1)	25,920 (115.3)	21,575 (96.0)	31,750 (141.2)	24,270 (108.0)	31,750 (141.2)	24,270 (108.0)
1. Tabulated load values are for anchors installed in uncracked concrete with no edge or spacing considerations. Concrete compressive strength must be at the specified minimum at the time of installation. 2. Ultimate load capacities must be reduced by a minimum safety factor of 4.0 or greater to determine allowable working load.											


Allowable Load Capacities for Screw-Bolt+ in Normal-Weight Concrete^{1,2,3,4,5}

Nominal Anchor Diameter in.	Minimum Nominal Embedment Depth in. (mm)	Minimum Concrete Compressive Strength									
		f'c = 2,500 psi (17.3 MPa)		f'c = 3,000 psi (20.7 MPa)		f'c = 4,000 psi (27.6 MPa)		f'c = 6,000 psi (41.4 MPa)		f'c = 8,000 psi (55.2 MPa)	
		Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)	Tension lbs (kN)	Shear lbs (kN)
1/4	1 (25)	330 (1.5)	415 (1.8)	350 (1.6)	440 (2.0)	385 (1.7)	480 (2.1)	430 (1.9)	520 (2.3)	430 (1.9)	520 (2.3)
	1-5/8 (41)	710 (3.2)	415 (1.8)	750 (3.3)	440 (2.0)	815 (3.6)	480 (2.1)	815 (3.6)	520 (2.3)	815 (3.6)	520 (2.3)
	2-1/2 (64)	915 (4.1)	505 (2.2)	965 (4.3)	535 (2.4)	1,050 (4.7)	585 (2.6)	1,070 (4.8)	635 (2.8)	1,070 (4.8)	635 (2.8)
3/8	1-1/2 (38)	660 (2.9)	890 (4.0)	720 (3.2)	975 (4.3)	835 (3.7)	1,125 (5.0)	1,020 (4.5)	1,375 (6.1)	1,020 (4.5)	1,590 (7.1)
	2 (51)	920 (4.1)	1,080 (4.8)	1,005 (4.5)	1,185 (5.3)	Tmax = 732.03 lbs Tallow = 965 lbs OK				1,365 (6.1)	1,585 (7.1)
	2-1/2 (64)	1,295 (5.8)	1,080 (4.8)	1,415 (6.3)	1,185 (5.3)					1,855 (8.3)	1,585 (7.1)
	3-1/4 (83)	1,855 (8.3)	1,580 (7.0)	2,035 (9.1)	1,735 (7.7)	2,265 (10.1)	2,000 (8.9)	2,265 (10.1)	2,140 (9.5)	2,590 (11.5)	2,140 (9.5)
	4-1/2 (114)	2,725 (12.1)	1,580 (7.0)	2,985 (13.3)	1,735 (7.7)	3,450 (15.3)	2,000 (8.9)	3,770 (16.8)	2,140 (9.5)	3,770 (16.8)	2,140 (9.5)
1/2	1-3/4 (44)	710 (3.2)	1,495 (6.7)	780 (3.5)	1,640 (7.3)	900 (4.0)	1,895 (8.4)	1,100 (4.9)	2,320 (10.3)	1,100 (4.9)	2,675 (11.9)
	2-1/2 (64)	1,670 (7.4)	2,010 (8.9)	1,830 (8.1)	2,200 (9.8)	2,115 (9.4)	2,540 (11.3)	2,115 (9.4)	2,885 (12.8)	2,115 (9.4)	2,885 (12.8)
	3 (76)	2,140 (9.5)	2,010 (8.9)	2,345 (10.4)	2,200 (9.8)	2,690 (11.9)	2,540 (11.3)	2,690 (11.9)	2,885 (12.8)	2,690 (11.9)	2,885 (12.8)
	4-1/4 (108)	3,315 (14.7)	2,350 (10.5)	3,630 (16.1)	2,575 (11.5)	4,120 (18.3)	2,970 (13.2)	4,120 (18.3)	3,380 (15.0)	4,120 (18.3)	3,380 (15.0)
	5-1/2 (140)	3,935 (17.5)	2,350 (10.5)	4,310 (19.2)	2,575 (11.5)	4,975 (22.1)	2,970 (13.2)	5,330 (23.7)	3,380 (15.0)	5,330 (23.7)	3,380 (15.0)
5/8	2-1/2 (64)	1,435 (6.4)	2,655 (11.8)	1,570 (7.0)	2,910 (12.9)	1,815 (8.1)	3,355 (14.9)	2,220 (9.9)	4,110 (18.3)	2,220 (9.9)	4,295 (19.1)
	3-1/4 (83)	2,440 (10.9)	3,015 (13.4)	2,670 (11.9)	3,305 (14.7)	3,085 (13.7)	3,815 (17.0)	3,085 (13.7)	4,295 (19.1)	3,085 (13.7)	4,295 (19.1)
	4 (102)	2,940 (13.1)	3,015 (13.4)	3,225 (14.3)	3,305 (14.7)	3,720 (16.5)	3,815 (16.9)	3,830 (17.0)	4,295 (19.1)	4,150 (18.5)	4,295 (19.1)
	5 (127)	3,615 (16.1)	3,420 (15.2)	3,960 (17.6)	3,745 (16.7)	4,570 (20.3)	4,325 (19.2)	4,825 (21.5)	4,870 (21.7)	5,570 (24.8)	4,870 (21.7)
	6-1/4 (159)	5,130 (22.8)	3,420 (15.2)	5,620 (25.0)	3,745 (16.7)	6,490 (28.9)	4,325 (19.2)	7,945 (35.3)	4,870 (21.7)	7,945 (35.3)	4,870 (21.7)
3/4	2-1/2 (64)	1,510 (6.7)	2,905 (12.9)	1,655 (7.4)	3,180 (14.1)	1,910 (8.5)	3,675 (16.3)	2,340 (10.4)	4,500 (20.0)	2,340 (10.4)	5,195 (23.1)
	4-1/4 (108)	2,975 (13.2)	4,265 (19.0)	3,260 (14.5)	4,670 (20.8)	3,765 (16.7)	5,395 (24.0)	4,435 (19.7)	6,070 (27.0)	5,125 (22.8)	6,070 (27.0)
	5 (127)	4,755 (21.2)	4,265 (19.0)	5,210 (23.2)	4,670 (20.8)	6,015 (26.8)	5,395 (24.0)	7,365 (32.8)	6,070 (27.0)	7,365 (32.8)	6,070 (27.0)
	6-1/4 (159)	5,125 (22.8)	4,265 (19.0)	5,615 (25.0)	4,670 (20.8)	6,480 (28.8)	5,395 (24.0)	7,940 (35.3)	6,070 (27.0)	7,940 (35.3)	6,070 (27.0)

1. Tabulated load values are for anchors installed in uncracked concrete. Concrete compressive strength must be at the specified minimum at the time of installation.
2. Allowable load capacities are calculated using an applied safety factor of 4.0 to average ultimate load capacities.
3. Allowable load capacities must be multiplied by reduction factors when anchor spacing or edge distances are less than critical distances.
4. Linear interpolation may be used to determine allowable loads for intermediate embedments and compressive strengths.
5. For lightweight concrete multiply tabulated allowable load values by a reduction factor of 0.60.