Engineering Evaluation Report #360-092623-02

Prepared by:
A. Lynn Miller, P.E.
1070 Technology Dr.
N. Venice, FL 34275
(941) 480-1600
Registration Number: #29296

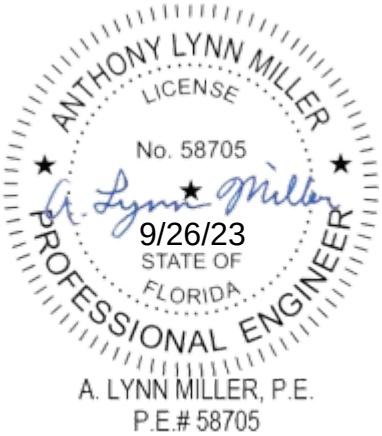
Manufacturer:
WinDoor Incorporated
104 Triple Diamond Blvd.
North Venice, FL 34275
(833) 554-5432

Product Description:
SH360 Series Aluminum SMI HVHZ Single Hung Window – FL14703

Compliance:
The above-mentioned product has been evaluated for compliance with the requirements of the Florida Department of Business and Professional Regulation for Statewide Acceptance per Rule 61 G20-3.005 method 1(d). The product listed herein complies with requirements of the current Florida Building Code.

Supporting Technical Documentation:
1. Approval Document: drawing number SH360SMI-FPA, signed, and sealed by A. Lynn Miller, P.E.
2. Test Report No.:
   a. HTL-0080-0323-04 and HTL-0080-0402-08 signed and sealed by Vinus J. Abraham, P.E.
      Hurricane Test Laboratory, LLC
      TAS 201-94, TAS 202-94, TAS 203-94
   b. CTL-3056 WA, CTL-3056 WB, CTL-3056 WC signed and sealed by Ramesh C. Patel, P.E.
      TAS 201-94, TAS 202-94, TAS 203-94
3. Anchor Calculations and Structural Analysis, dated 07/08/14, prepared by Al-Farooq and signed and sealed by Javad Ahmad, P.E.

Limitations and Conditions of use:
- Units must be glazed per ASTM E1300-04/09, refer to approval document for glazing details.
- This product is rated to be used in the HVHZ.
- This product is small missile impact resistant and does not require impact protection in wind borne debris regions when installed above 30’ height.
- Frame material to be extruded aluminum 6063-T6.
- Units must be installed in accordance with Approval Document.



SERIES 360' ALUMINUM SINGLE HUNG WINDOW

1)- APPROVAL APPLIES TO SINGLE UNITS OR SIDE BY SIDE COMBINATIONS OF SINGLE HUNG/SINGLE HUNG OR SINGLE HUNG WITH OTHER FLORIDA PRODUCT APPROVED WINDOWS USING FLORIDA PRODUCT APPROVED MULLIONS IN BETWEEN.

2)- LOWER DESIGN PRESSURE FROM WINDOWS OR MULLION APPROVAL WILL APPLY TO THE ENTIRE SYSTEM.

3)- THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).

4)- 1BY ON 2BY WOOD BUCKS & BUCK FASTENERS BY OTHERS, MUST BE DESIGNED AND INSTALLED ADEQUATELY TO TRANSFER APPLIED PRODUCT LOADS TO THE BUILDING STRUCTURE.

5)- ANCHORS SHALL BE CORROSION RESISTANT, SPACED AS SHOWN ON DETAILS AND INSTALLED PER MANUF'S INSTRUCTIONS. SPECIFIED EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

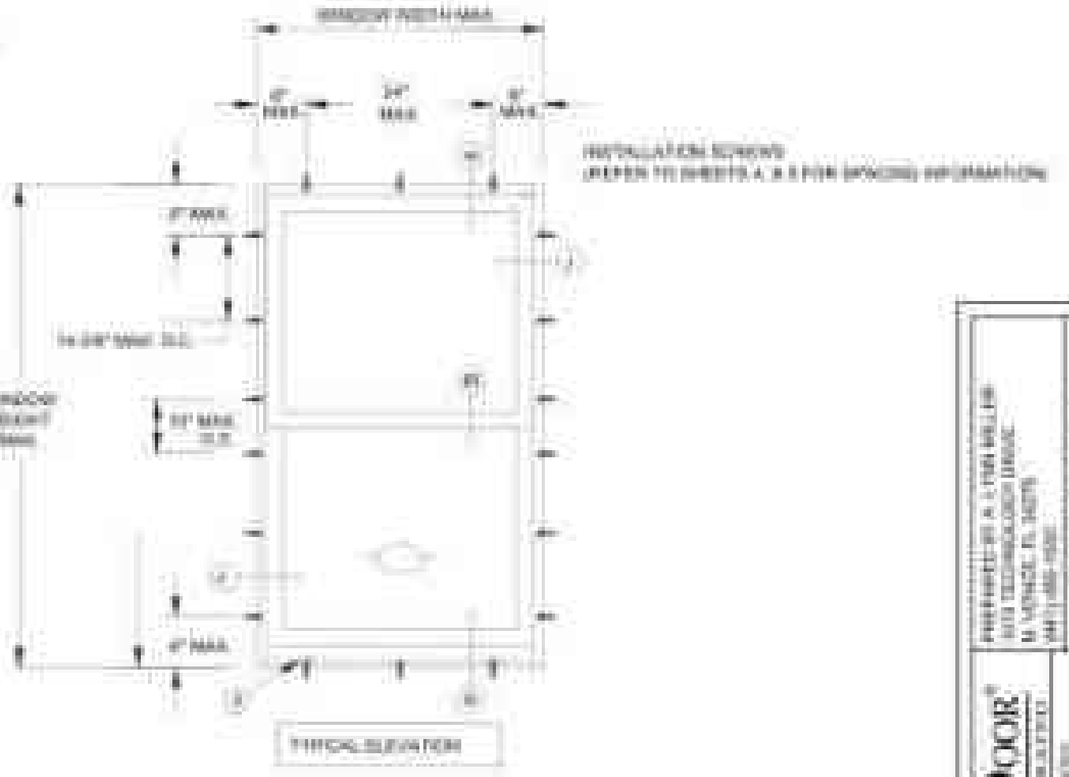
6)- A LOAD DURATION INCREASE IS USED IN DESIGN OF ANCHORS INTO WOOD ONLY.

7)- ALL SHIMS TO BE HIGH IMPACT, NON METALLIC AND NON-COMPRESSIBLE.

8)- MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE FLORIDA BLDG. CODE & ADOPTED STANDARDS.

9)- THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT, i.e. LIFE SAFETY OF THIS PRODUCT, ADEQUACY OF STRUCTURE RECEIVING THIS PRODUCT AND SEALING AROUND OPENING FOR WATER INFILTRATION RESISTANCE ETC.

10)- CONDITIONS NOT SHOWN IN THIS DRAWING ARE TO BE ANALYZED SEPARATELY, AND TO BE REVIEWED BY BUILDING OFFICIAL.



INSTRUCTIONS FOR USING CAPACITY CHARTS:

STEP 1 DETERMINE THE REQUIRED DESIGN PRESSURES FOR A GIVEN WINDOW OPENING.

STEP 2 DETERMINE THE CAPACITY OF THE WINDOW SIZE/CONFIGURATION/GLASS TYPE FROM CHARTS ON SHEET 3.

STEP 3 DETERMINE THE ANCHOR CAPACITY FROM SHEET 6 FOR SINGLE OPENINGS, APPLICABLE TO ANCHORS TYPE A, B OR C SHOWN ON SHEETS 4 AND 5.

STEP 4 IF ALUMINUM BUCKS ARE USED, VERIFY THE BUCK INSTALLATION CAPACITY FROM SHEET 6.

STEP 5 FOR UNEQUIPPED MULLED WINDOWS DETERMINE MULLION/WALL/ANCHORS CAPACITY FOR 144" TUBE MULLION FROM CHARTS ON SHEET 7.

STEP 6 IF ALUMINUM BUCKS ARE USED DETERMINE BUCK ANCHORING REQUIREMENTS FROM CHARTS ON SHEET 6.

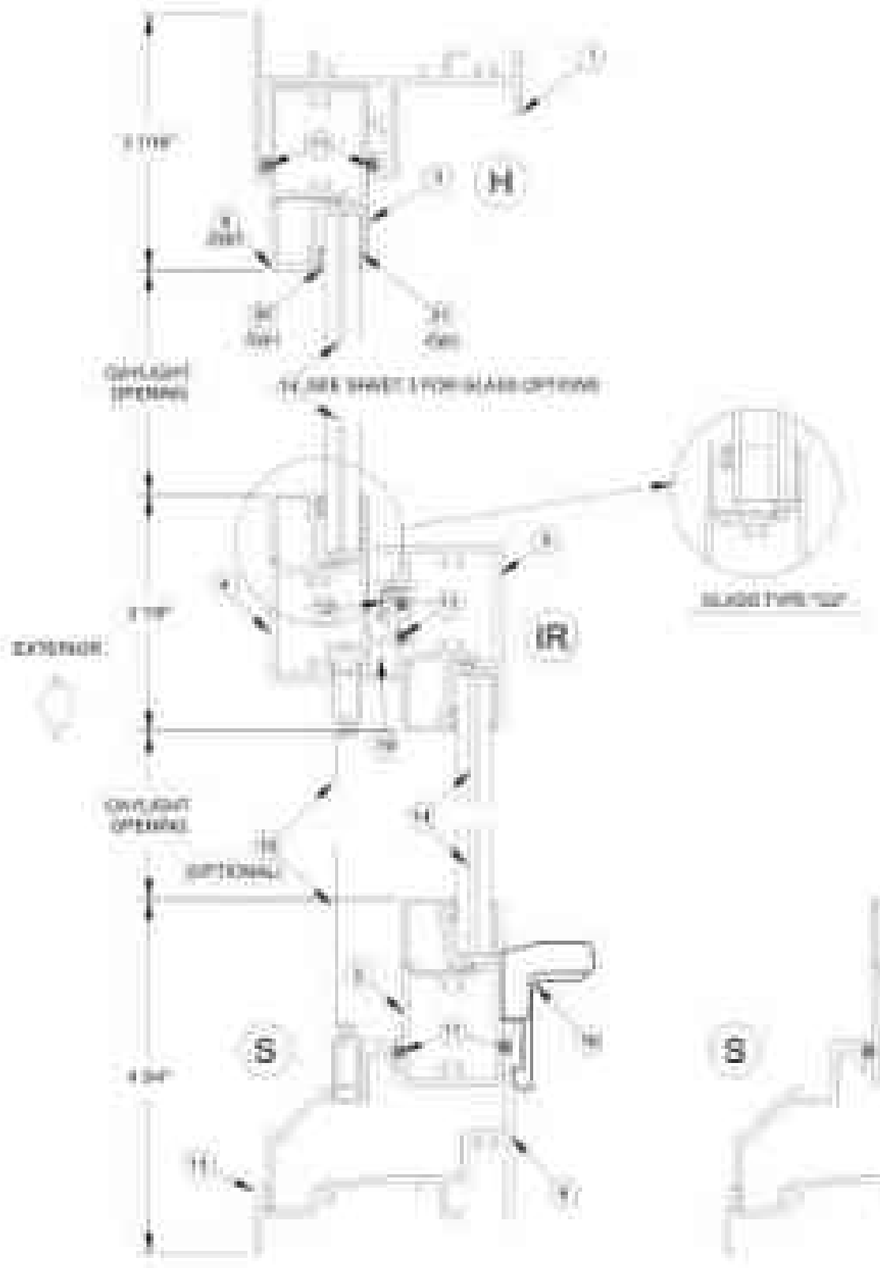
THE LOWEST SELECTED VALUE APPLY TO THE INSTALLATION AND MUST EQUAL OR EXCEED THE REQUIRED DESIGN PRESSURES OBTAINED FROM STEP 1.

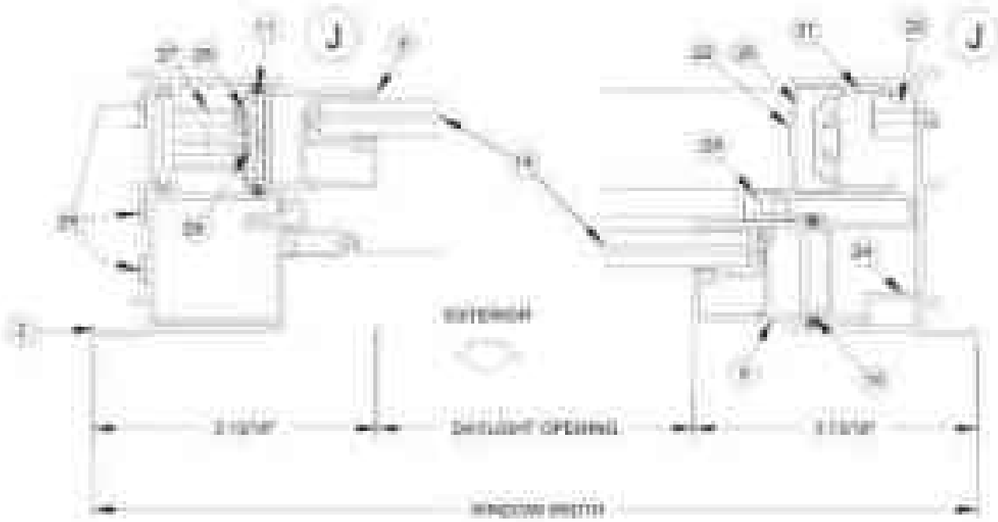
THESE WINDOWS ARE RATED FOR SMALL MISSILE IMPACT. FLORIDA PRODUCT APPROVED IMPACT RESISTANT SHUTTERS REQUIRED FOR INSTALLATIONS UP TO 30 FT. OF GRADE. SHUTTERS NOT REQD. FOR INSTALLATIONS ABOVE 30 FT. OF GRADE.

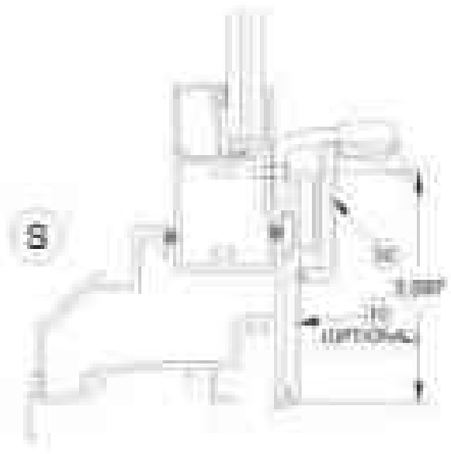
WINDOOR

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER

SERIES	360
SHEET	1 OF 10
ELEVATIONS & GENERAL NOTES	
A. MORRISON	
1/16/20	

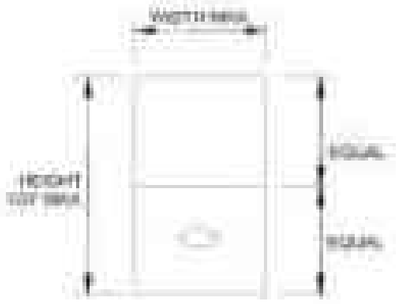






WINDOOR
SERIES 7000 ALUMINUM SINGLE HUNG WINDOW
SECTION DETAILS
A. RODRIGUEZ
ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

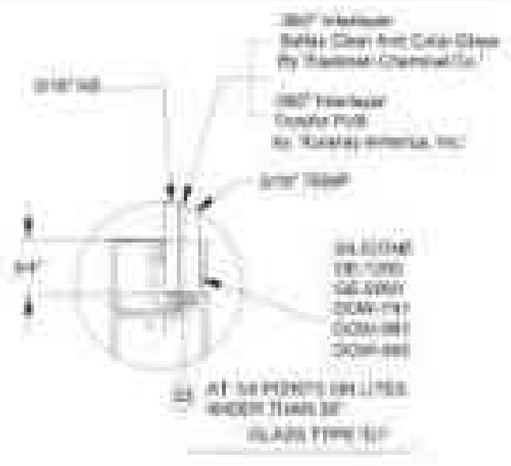
VALUES FOR POSITIVE LOADS (+) SHOWN ARE
FOR SILLNOSE WATERBAR ADAPTER
FOR WINDOWS WITHOUT WATERBAR ADAPTER
LIMIT EXTERIOR (+) LOADS TO 80.0 PSF



EQUAL LITE WINDOW



UNEQUAL LITE WINDOW



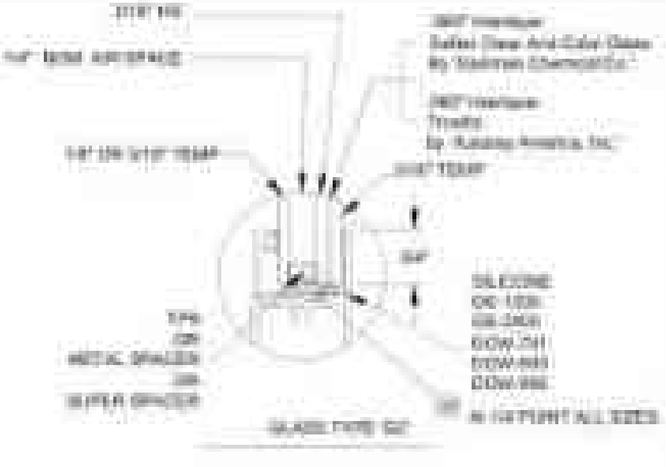


TABLE 1

Nominal Window Size (Width x Height) (in.)		Design Load Capacity (lbs/ft²)																					
		12 x 18		24		24 x 36		30		32		36		37		42		48		52 1/2 x 58		54	
Actual Height (in.)	24	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	36 3/4	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	48	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	53 1/4	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	60	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	64	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	72	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	76	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	84	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	96	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	108	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0				
	120	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0								

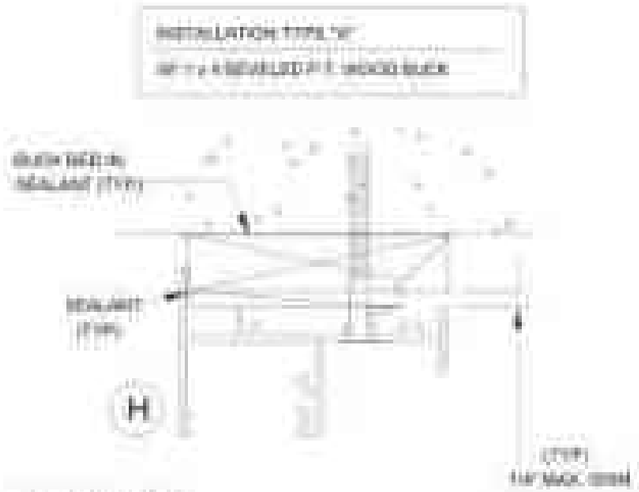
TABLE 2

Nominal Unit Width and Height (in.) Metric Figures Are In Mm	Top Vent Height (in.)	Design Load Capacity (lbs/ft²)																					
		12 x 24		24		24 x 36		30		32		36		37		42		48		52 1/2 x 58		54	
Actual Height (in.)	48	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0
	56	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0		
	60	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0				
	64	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0						
	72	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0								
	76	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0														
	84	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0	+100.0	-100.0														

WINDOW TYPE	CASE
WINDOW SIZE	
DESIGN LOAD TABLES / GLASS	
SERIES	
DRAWN BY	A. MORRISON
DATE	1/16/22
SCALE	
SHEET	3 OF 10

WINDOR

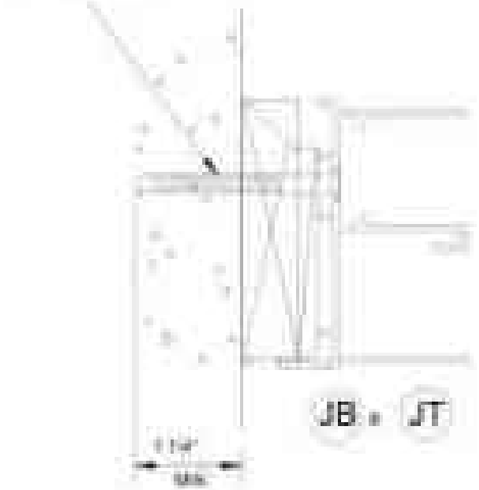
ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER



TYPICAL ANCHORS:

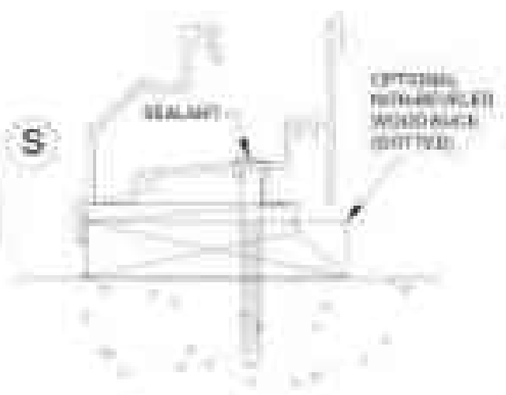
Anchor Type	Substrate	Frame Members	Min. Edge Distance	Min. Embedment or Metal Thickness
1/4" DIA. Ultracon + 1/4" DIA. HWI Kwik-con II	Southern Pine (SG = 0.55)	All	1"	1-1/2"
	Thru 1BY Buck into Concrete	All	2-1/2"	1-1/4"
	Hollow or Grout-filled CMU (ASTM C90)	All	2-1/2"	1-3/4"
	Concrete (min. 3.0 ksi)	All	2-1/2"	1-3/4"
1/4" DIA. TEKS or Self Drilling Screws	A36 Steel	All	3/4"	(3) Threads min. to extended beyond metal thickness
	Steel Stud, Gr 33	All	3/4"	(3) Threads min. to extended beyond metal thickness
	Aluminum 1/8" Thk Min. (6063-T5)	All	3/4"	(3) Threads min. to extended beyond metal thickness
#14 SMS	Aluminum 1/8" Thk Min. (6063-T5) (no Shim)	All	3/4"	(3) Threads min. to extended beyond metal thickness
	Steel Stud, Gr 33	All	3/4"	(3) Threads min. to extended beyond metal thickness

SEE ANCHOR TABLE









VALUES FOR INSTALLATION TYPE "A" APPLY TO THE FOLLOWING INSTALLATION TYPES WITH MAXIMUM SHIM SPACE 1/4":

1) USING 1BY P.T. WOOD BUCKS, MIN. 3/4" THICK.

2) DIRECTLY INTO MASONRY, WITHOUT THE USE OF WOOD BUCKS.

3) DIRECTLY INTO STEEL OR ALUMINUM STRUCTURE.
MIN. 1/8" THICK AND USING #14 TEKS OR SELF DRILLING SCREWS.
STRUCTURE MUST BE DESIGN BY OTHERS TO SUSTAIN THE LOADS IMPOSED BY THE WINDOW.

IMPORTANT NOTE:
WOOD BUCKS MUST SUSTAIN LOADS IMPOSED BY GLAZING SYSTEM AND TRANSFER THEM INTO THE BUILDING STRUCTURE.

WINDOOR
ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER

SERIES 1BY ALUMINUM SINGLE HUNG WINDOW
ANCHORS
SHEET

INSTALLATION TYPE "B"

W/ 2X4 BEVELED P.T. WOOD BUCK

BUCK BED IN SEALANT (TYP)

SEALANT (TYP)

SEE ANCHOR TABLE

1/4" MAX SHIM (TYP)

3 1/2" MIN.

3/4"

1 1/2"

2 3/4"

2 x 4 BEVELED WOOD BUCK (TYP)

JB & JT

S

SEALANT

1" MIN.

2 1/2" MIN.

OPTIONAL PRE-CAST SILL

INSTALLATION TYPE "C"

BASED ON WOOD PENETRATION ONLY

USING 1 x 4 vs 2 x 4 WOOD BUCKS

BUCK BED IN SEALANT (TYP)

SUBSTRATE

SEALANT (TYP)

H

SEE ANCHOR TABLE

1/4" MAX. SHIM (TYP)

1 x 4 & 2 x 4 P.T. WOOD BUCK (TYP)

STRUCTURE

JB & JT

1 1/2" MIN. Case Wood Penetration

SEE INSTALLATION TYPES "A" & "B" FOR 1 x 4 & 2 x 4 P.T. WOOD BUCK STYLE

IMPORTANT NOTE:

WOOD BUCK MUST SUSTAIN LOADS IMPOSED BY GLAZING SYSTEM AND TRANSFER THEM TO THE BUILDING STRUCTURE.

SEALANT

S

SUBSTRATE

REVISIONS	
DRAWN BY	A. MORRISON
SCALE	1 1/2"
ANCHORS	
SHEET	5 OF 10
DATE	

WINDOOR

ANTHONY LYNN MILLER LICENSE No. 59758 STATE OF FLORIDA PROFESSIONAL ENGINEER

TABLE 1

ANCHORS				
DESIGN LOAD CAPACITY - PSF				
[illegible]		NO. OF ANCHORS AT EACH [illegible]	STD. HOLE PATTERN [illegible]	STD. HOLE PATTERN [illegible]
WIDTH	HEIGHT		[illegible]	[illegible]
24"	48"	4	200.0	200.0
30"			200.0	200.0
32"			200.0	200.0
36"			196.0	200.0
42"			174.2	200.0
48"			151.7	196.0
54"			127.1	170.2
24"	60"	6	200.0	200.0
30"			200.0	200.0
32"			200.0	200.0
36"			200.0	200.0
42"			173.1	200.0
48"			134.4	200.0
54"			110.7	196.0
24"	72"	6	200.0	200.0
30"			200.0	200.0
32"			200.0	200.0
36"			200.0	200.0
42"			165.1	200.0
48"			125.4	166.2
54"			101.2	151.7
24"	84"	8	200.0	200.0
30"			200.0	200.0
32"			200.0	200.0
36"			196.1	200.0
42"			164.9	193.0
48"			133.2	176.3
54"			99.0	164.0
24"	96"	8	200.0	200.0
30"			185.8	200.0
32"			179.4	198.5
36"			160.8	180.9
42"			143.4	161.3
48"			122.1	147.0
54"			94.1	139.7
24"	108"	10	200.0	200.0
30"			200.0	200.0
32"			191.7	200.0
36"			174.2	191.8
42"			156.0	169.9
48"			132.1	154.0
24"	120"	10	200.0	200.0
30"			179.2	197.1
32"			169.6	186.6
36"			153.7	168.1
42"			135.8	149.3

TABLE 1A

ANCHORS				
DESIGN LOAD CAPACITY - PSF				
[illegible]		NO. OF ANCHORS AT EACH [illegible]	STD. HOLE PATTERN [illegible]	STD. HOLE PATTERN [illegible]
WIDTH	HEIGHT		[illegible]	[illegible]
19-1/8"	28"	4	200.0	200.0
26-1/2"			200.0	200.0
27"			200.0	200.0
33-1/8"			200.0	200.0
19-1/8"	36-3/8"	4	200.0	200.0
26-1/2"			200.0	200.0
27"			200.0	200.0
33-1/8"			152.1	200.0
19-1/8"	50-3/8"	4	200.0	200.0
26-1/2"			200.0	200.0
27"			178.6	200.0
33-1/8"			126.7	169.5
19-1/8"	63"	6	200.0	200.0
26-1/2"			200.0	200.0
27"			200.0	200.0
33-1/8"			110.7	196.1
19-1/8"	72"	6	200.0	200.0
26-1/2"			200.0	200.0
27"			200.0	200.0
33-1/8"			104.1	156.1
19-1/8"	74"	6	200.0	200.0
26-1/2"			200.0	200.0
27"			200.0	200.0
33-1/8"			102.1	153.1

LOADS APPLY TO INSTALLATION TYPES A, B & C AND INTO ALUMINUM BUCKS FOR ALUMINUM BUCK INSTALLATION SEE SHEETS 8 AND 9.

REFER TO SHEETS 4 & 5 FOR DESCRIPTIONS OF INSTALLATION TYPES A - B - C

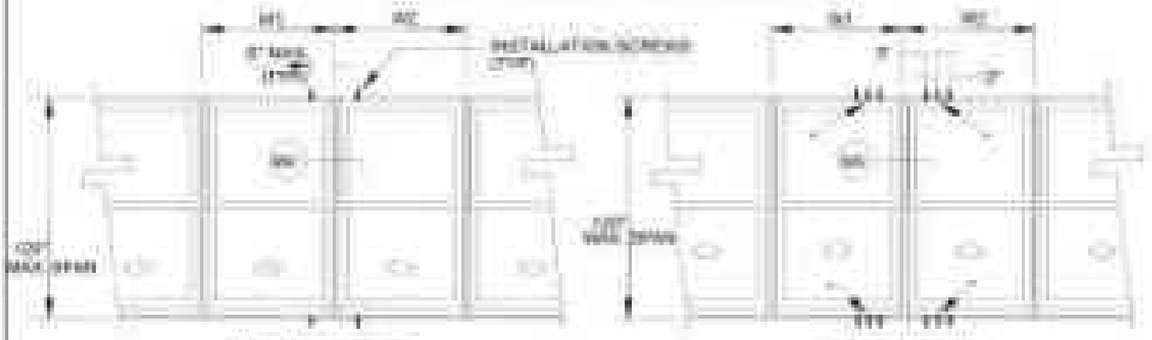
WINDOOR	DESIGN LOAD TABLES
	8 OF 10
	3/12/20

ANTHONY LYNN MILLER
LICENSE
No. 56758
STATE OF FLORIDA
PROFESSIONAL ENGINEER

VERTICAL MULLION PERFORMANCE

TRIBUTARY WIDTH = (W1 + W2) / 2

FOR WINDOW PERFORMANCE, REFER TO SHEET 3



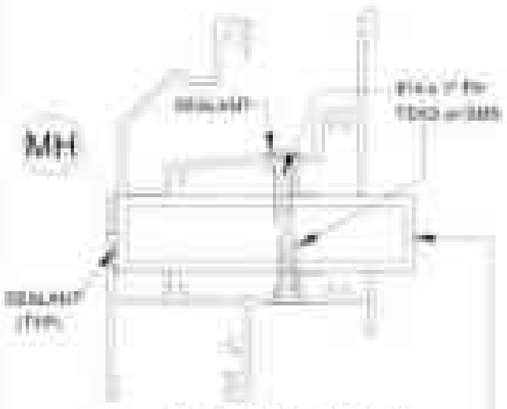
MULTIPLE OPENING
(2 OR MORE WINDOWS)
W = SCREW ON EACH SIDE OF MULLION
STANDARD INSTALLATION

MULTIPLE OPENING
(2 OR MORE WINDOWS)
W = 2 @ 6" SCREWS ON EACH SIDE OF MULLION
HIGH LOAD INSTALLATION

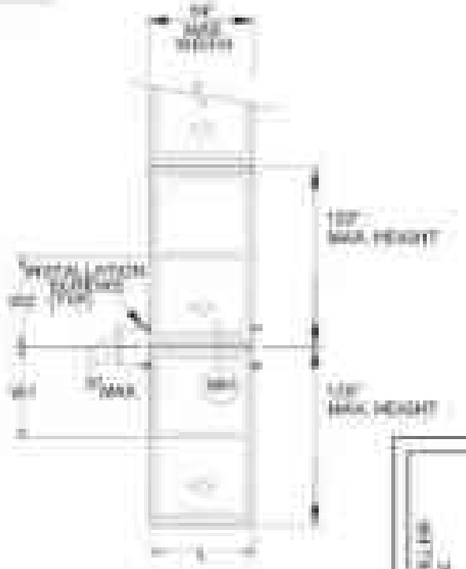
F = ADDITIONAL HOLES TO BE DRILLED BY INSTALLER

HORIZONTAL MULLION PERFORMANCE

FOR WINDOW PERFORMANCE, REFER TO SHEET 3



1" x 4" x 118" THK. ALUMINUM
TUBE MULLION (ENCLIPPED AT ENDS)
WALL LENGTH = WIDTH (REFER TO 1)



1" x 4" x 118" THK. ALUMINUM
TUBE MULLION (ENCLIPPED AT ENDS)
WALL LENGTH = WIDTH (REFER TO 1)

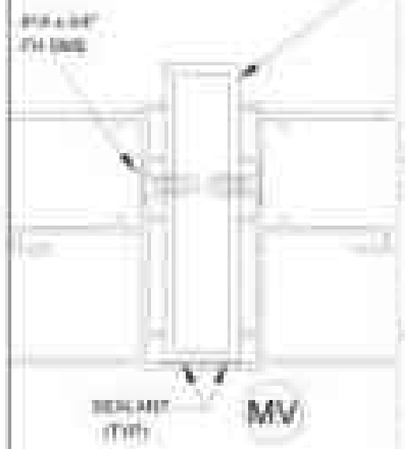


TABLE 1

MULLION DESIGN LOAD CAPACITY - PSF

WINDOW DIMS.		ONE MULLION EACH SIDE	TWO MULLIONS EACH SIDE	THREE MULLIONS EACH SIDE
WIDTH	HEIGHT	PSF (+/-)	PSF (+/-)	PSF (+/-)
24"	48"	150.5	200.0	200.0
30"		130.3	200.0	200.0
32"		124.8	200.0	200.0
36"		120.3	200.0	200.0
42"		114.5	200.0	200.0
48"		112.5	200.0	200.0
54"		112.5	200.0	200.0
24"	60"	112.5	200.0	200.0
30"		96.9	192.3	200.0
32"		92.8	184.1	200.0
36"		85.7	171.4	200.0
42"		79.1	158.2	200.0
48"		75.8	150.5	200.0
54"		72.1	145.6	200.0
24"	72"	90.5	180.0	200.0
30"		75.8	151.6	200.0
32"		72.2	144.8	200.0
36"		66.7	133.3	167.5
42"		60.5	121.0	176.4
48"		56.3	112.5	156.8
54"		53.3	106.7	148.0
24"	84"	75.9	150.2	200.0
30"		62.6	125.2	164.2
32"		59.6	119.1	154.8
36"		54.5	109.1	139.5
42"		49.6	99.0	122.4
48"		45.6	90.0	110.1
54"		42.1	84.2	101.2

TABLE 1A

MULLION DESIGN LOAD CAPACITY - PSF

WINDOW DIMS.		ONE MULLION EACH SIDE	TWO MULLIONS EACH SIDE	THREE MULLIONS EACH SIDE
WIDTH	HEIGHT	PSF (+/-)	PSF (+/-)	PSF (+/-)
24"	86"	64.3	128.6	142.1
30"		52.3	104.7	116.0
32"		50.0	101.2	108.7
36"		46.3	92.7	97.6
42"		41.7	83.3	85.6
48"		37.5	75.0	76.4
54"		34.8	69.6	70.3
24"	108"	56.3	86.3	86.3
30"		46.9	80.3	80.3
32"		44.9	76.9	76.9
36"		40.3	67.8	67.8
42"		35.3	59.1	59.1
48"		32.1	52.8	52.8
24"	120"	50.9	72.1	72.1
30"		41.1	58.2	58.2
32"		38.8	54.7	54.7
36"		35.3	49.0	49.0
42"		31.2	42.8	42.8

TABLE 1B

MULLION DESIGN LOAD CAPACITY - PSF

WINDOW DIMS.		ONE MULLION EACH SIDE	TWO MULLIONS EACH SIDE	THREE MULLIONS EACH SIDE
WIDTH	HEIGHT	PSF (+/-)	PSF (+/-)	PSF (+/-)
0'-1 1/8"	20'	200.0	200.0	200.0
19-1/8"		200.0	200.0	200.0
20'-1/2"	39-3/8"	194.8	200.0	200.0
21"		170.2	200.0	200.0
0'-1 1/8"	59-1/8"	176.0	200.0	200.0
19-1/8"		166.0	200.0	200.0
20'-1/2"		150.9	200.0	200.0
21"		155.0	200.0	200.0
0'-1 1/8"	78-7/8"	151.3	200.0	200.0
19-1/8"		136.8	200.0	200.0
20'-1/2"	83"	98.3	196.6	200.0
21"		78.7	157.4	200.0
0'-1 1/8"		67.0	133.9	200.0
19-1/8"	113"	109.5	200.0	200.0
20'-1/2"		85.2	169.5	200.0
21"		65.5	130.9	183.5
0'-1 1/8"		53.7	107.4	150.3
19-1/8"	118"	102.0	200.0	200.0
20'-1/2"		77.9	155.9	200.0
21"	118"	60.9	121.8	170.6
0'-1 1/8"		49.2	98.3	137.7

WINDOOR

ANTHONY LYNN MILLER
LICENSE
No. 68750
STATE OF FLORIDA
PROFESSIONAL ENGINEER

W	2020		
		HC CANTILEVER TYPE SHEET	
		1 PAGE	
		A. MORRISON	
		01 OF 1	

DESIGN LOAD TABLE MULLIONS

WINDOW & SINGLE PANEL DOOR SERIES

SHEET NO. A-1 (TYP) MULLION

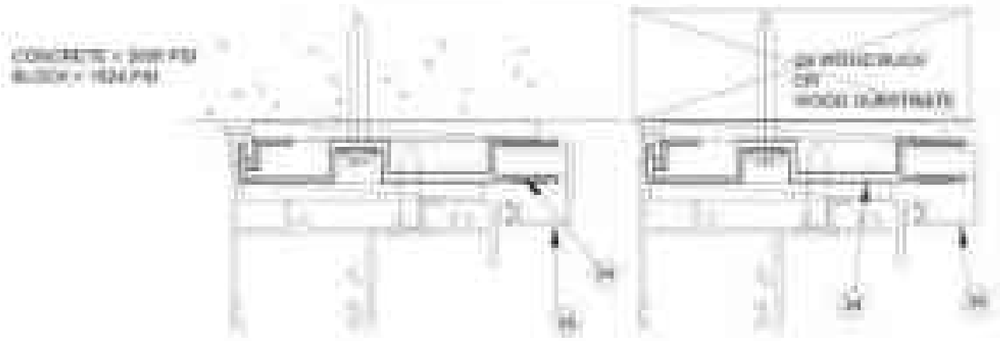
PERFORMANCE VALUES
OF ALUMINUM BUCK
INSTALLATION ANCHORS
PGE (+/- & MIC.)

WINDOW SIZE		PRESSURE SPACING WITH LOAD		PRESSURE SPACING WITH INSTALLATION BUCK		PRESSURE SPACING WITH WOOD	
WIDTH	HEIGHT	PF (+)	PF (-)	PF (+)	PF (-)	PF (+)	PF (-)
24"	48"	200.0	200.0	178.7	200.0	200.0	200.0
30"		200.0	200.0	165.8	200.0	200.0	200.0
32"		200.0	200.0	160.8	200.0	200.0	200.0
36"		200.0	200.0	142.9	200.0	200.0	200.0
42"		200.0	200.0	131.3	200.0	176.3	200.0
48"		200.0	200.0	121.3	200.0	160.0	200.0
54"		198.0	200.0	107.2	187.6	144.0	200.0
24"	60"	200.0	200.0	134.8	200.0	200.0	200.0
30"		179.2	200.0	114.3	200.0	200.0	200.0
32"		171.8	200.0	109.6	191.9	200.0	200.0
36"		160.2	200.0	102.1	178.7	200.0	200.0
42"		147.7	200.0	94.2	164.9	176.3	200.0
48"		140.0	200.0	89.3	156.3	160.0	200.0
54"		135.8	200.0	86.6	151.6	142.2	200.0
24"	72"	200.0	200.0	134.5	200.0	200.0	200.0
30"		176.8	200.0	112.8	200.0	200.0	200.0
32"		168.8	200.0	107.7	193.8	200.0	200.0
36"		156.6	200.0	99.3	178.7	200.0	200.0
42"		141.2	200.0	90.1	162.2	176.3	200.0
48"		131.3	200.0	83.8	150.6	160.0	200.0
54"		124.4	200.0	79.4	142.5	142.2	200.0
24"	84"	200.0	200.0	134.5	200.0	200.0	200.0
30"		175.3	200.0	111.8	199.4	200.0	200.0
32"		166.8	200.0	106.4	177.4	200.0	200.0
36"		152.7	200.0	97.5	162.4	200.0	200.0
42"		137.1	200.0	87.5	145.9	176.3	200.0
48"		126.0	200.0	80.4	134.0	160.0	200.0
54"		117.5	196.5	75.2	125.4	142.2	200.0
24"	96"	200.0	200.0	134.5	200.0	200.0	200.0
30"		174.2	200.0	111.2	199.4	200.0	200.0
32"		165.4	200.0	105.5	189.9	200.0	200.0
36"		150.8	200.0	96.2	164.5	200.0	200.0
42"		134.4	200.0	85.8	147.0	176.3	200.0
48"		122.8	200.0	78.2	134.0	160.0	200.0
54"		113.6	194.5	72.5	124.3	142.2	200.0
24"	108"	183.8	200.0	117.3	200.0	200.0	200.0
30"		161.7	200.0	96.6	176.6	200.0	200.0
32"		143.8	200.0	91.8	170.4	200.0	200.0
36"		130.7	200.0	83.4	154.8	200.0	200.0
42"		115.6	200.0	73.8	137.3	176.3	200.0
48"		105.6	195.0	67.0	124.4	160.0	200.0
24"	120"	180.7	200.0	116.1	200.0	200.0	200.0
30"		160.6	200.0	96.5	163.8	200.0	200.0
32"		140.4	200.0	92.8	173.9	200.0	200.0
36"		127.8	200.0	84.1	157.6	200.0	200.0
42"		116.4	200.0	74.3	138.2	176.3	200.0

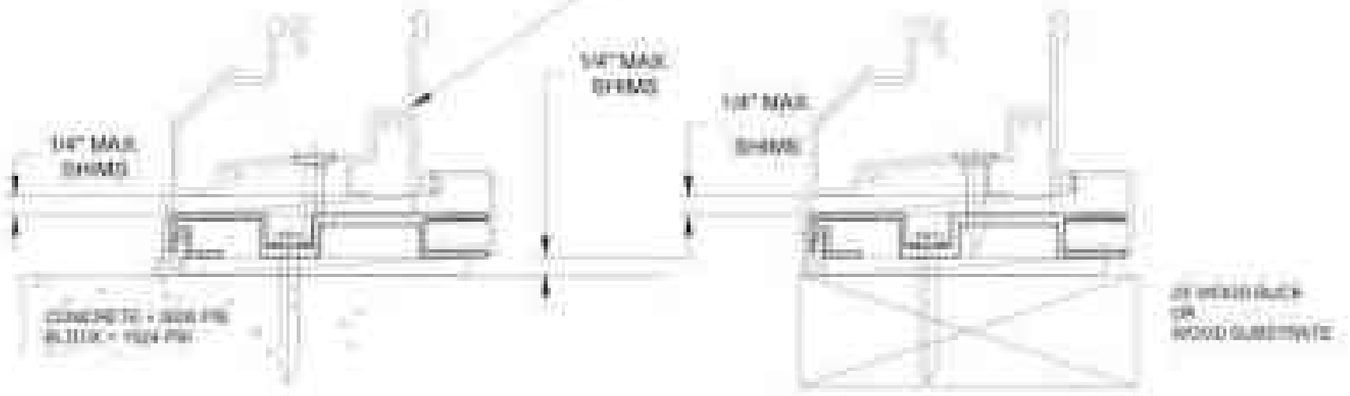
PERFORMANCE VALUES
OF ALUMINUM BUCK
INSTALLATION ANCHORS
PGE (+/- & MIC.)

WINDOW SIZE		PRESSURE SPACING WITH LOAD		PRESSURE SPACING WITH INSTALLATION BUCK		PRESSURE SPACING WITH WOOD	
WIDTH	HEIGHT	PF (+)	PF (-)	PF (+)	PF (-)	PF (+)	PF (-)
19-1/8"	20"	200.0	200.0	205.9	200.0	200.0	200.0
26-1/2"		200.0	200.0	206.9	200.0	200.0	200.0
27"		200.0	200.0	185.5	200.0	200.0	200.0
53-1/8"		200.0	200.0	148.8	200.0	188.8	200.0
19-1/8"	36-3/8"	200.0	200.0	205.9	200.0	200.0	200.0
26-1/2"		200.0	200.0	173.9	200.0	200.0	200.0
27"		200.0	200.0	157.4	200.0	200.0	200.0
53-1/8"		195.8	200.0	116.5	200.0	198.2	200.0
19-1/8"	53-5/8"	200.0	200.0	196.9	200.0	200.0	200.0
26-1/2"		200.0	200.0	155.4	200.0	200.0	200.0
27"		200.0	200.0	126.9	194.8	200.0	200.0
53-1/8"		171.8	200.0	109.8	180.7	147.2	200.0
19-1/8"	62"	200.0	200.0	188.8	200.0	200.0	200.0
26-1/2"		200.0	200.0	146.4	200.0	200.0	200.0
27"		183.7	200.0	117.2	187.5	200.0	200.0
53-1/8"		156.2	200.0	99.7	169.5	146.9	200.0
19-1/8"	72"	200.0	200.0	167.8	200.0	200.0	200.0
26-1/2"		194.2	200.0	133.8	200.0	200.0	200.0
27"		183.8	200.0	97.5	170.5	200.0	200.0
53-1/8"		125.3	200.0	79.8	143.5	149.3	200.0
19-1/8"	76"	200.0	200.0	151.3	200.0	200.0	200.0
26-1/2"		181.9	200.0	116.8	270.0	200.0	200.0
27"		142.1	200.0	90.7	153.3	200.0	200.0
53-1/8"		115.1	200.0	73.5	132.2	146.9	200.0

ALUMINUM BUCK FRAMING DETAILS
REFER TO SHEETS 2 THRU 5 FOR WINDOW CAPACITIES
USE LOWER APPLICABLE VALUES







TYPICAL INSTALLATION DETAIL
ON ALL FOUR SIDES USING ALUMINUM BUCK SYSTEM

WINDOW TYPE	
DESIGN PRESSURE	
TEST PRESSURE	
NOTES	
ALUMINUM BUCK	
SHEET	6 OF 10

WINDOR

ANTHONY LYNN MILLER
LICENSE
No. 58706
STATE OF FLORIDA
PROFESSIONAL ENGINEER

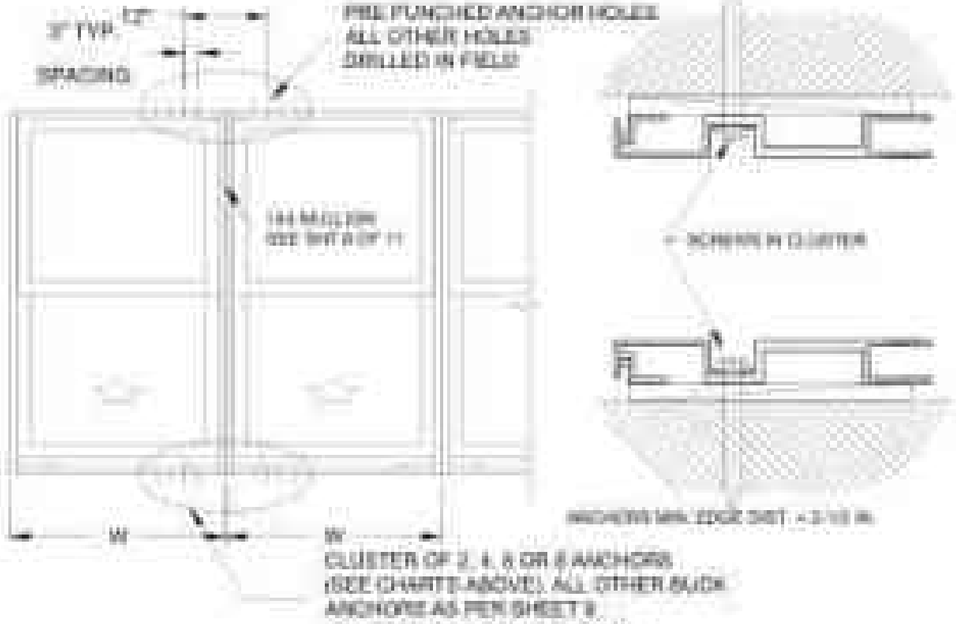
PERFORMANCE VALUES OF ALUMINUM BUCK INSTALLATION ANCHORS PSI (+) & PSI (-)

WIDTH	HEIGHT	ALUMINUM BUCK TO CONCRETE				ALUMINUM BUCK TO WOOD				ALUMINUM BUCK TO BUCK			
		CLUSTER (2)	CLUSTER (4)	CLUSTER (6)	CLUSTER (8)	CLUSTER (2)	CLUSTER (4)	CLUSTER (6)	CLUSTER (8)	CLUSTER (2)	CLUSTER (4)	CLUSTER (6)	CLUSTER (8)
24"	48"	89.6	119.7	200.0	200.0	140.0	200.0	200.0	200.0	120.0	200.0	200.0	200.0
30"		79.6	105.9	200.0	200.0	122.2	200.0	200.0	200.0	104.7	200.0	200.0	200.0
32"		76.4	100.8	200.0	200.0	116.1	200.0	200.0	200.0	101.3	200.0	200.0	200.0
36"		71.5	142.9	200.0	200.0	112.8	200.0	200.0	200.0	96.0	192.0	200.0	200.0
42"		65.1	130.1	226.0	200.0	106.7	200.0	200.0	200.0	87.4	182.8	200.0	200.0
48"		57.0	114.0	200.0	200.0	100.0	200.0	200.0	200.0	80.0	160.0	200.0	200.0
54"		57.0	114.0	200.0	200.0	100.0	200.0	200.0	200.0	80.0	160.0	200.0	200.0
24"	60"	57.0	114.0	200.0	200.0	100.0	200.0	200.0	200.0	80.0	160.0	200.0	200.0
30"		57.2	114.3	171.5	200.0	89.6	178.2	200.0	200.0	78.8	159.6	200.0	200.0
32"		54.8	109.6	164.5	200.0	85.9	171.8	200.0	200.0	73.6	147.3	200.0	200.0
36"		51.8	102.1	153.1	200.0	80.0	160.0	200.0	200.0	69.6	137.1	200.0	200.0
42"		47.1	94.2	141.4	188.5	73.8	147.7	200.0	200.0	63.3	126.6	189.9	200.0
48"		44.7	89.3	134.0	178.7	70.0	140.0	200.0	200.0	60.0	120.0	180.0	200.0
54"		43.0	86.0	129.0	173.3	67.8	135.6	200.0	200.0	58.2	116.4	174.5	200.0
24"	72"	33.6	167.2	160.8	200.0	84.0	168.0	200.0	200.0	72.0	144.0	200.0	200.0
30"		45.1	90.3	135.4	180.5	70.7	141.5	200.0	200.0	60.6	121.3	181.9	200.0
32"		43.1	86.1	129.2	172.3	67.5	135.0	200.0	200.0	57.9	115.7	173.6	200.0
36"		39.7	79.4	119.1	158.8	62.2	124.4	186.7	200.0	53.3	106.7	160.0	200.0
42"		36.0	72.1	108.1	144.1	56.5	112.9	169.4	200.0	48.4	96.8	145.2	193.6
48"		33.5	67.0	100.5	134.0	52.5	105.0	157.5	200.0	45.0	90.0	135.0	180.0
54"		31.8	63.5	95.3	127.1	49.8	99.6	149.3	199.1	42.7	85.3	128.0	170.7
24"	84"	44.1	88.2	134.0	178.7	70.0	140.0	200.0	200.0	60.0	120.0	180.0	200.0
30"		37.3	74.6	111.9	149.1	58.4	116.8	175.3	200.0	50.1	100.2	150.3	200.0
32"		35.5	70.9	106.4	141.9	55.6	111.2	166.8	200.0	47.6	95.3	142.9	190.6
36"		33.5	66.9	97.5	129.9	50.9	101.8	152.7	200.0	43.6	87.3	130.8	174.5
42"		29.2	58.3	87.5	116.7	45.7	91.4	137.1	182.8	39.2	78.4	117.6	156.7
48"		26.8	53.6	80.4	107.2	42.0	84.0	126.0	168.0	36.0	72.0	108.0	144.0
54"		25.1	50.2	75.2	100.3	39.3	78.6	117.8	157.2	33.7	67.4	101.1	134.7
24"	96"	38.3	76.6	114.9	153.1	60.0	120.0	180.0	200.0	51.4	102.8	154.3	200.0
30"		31.6	63.3	95.0	127.1	49.8	99.6	149.3	199.1	42.7	85.3	128.0	170.7
32"		30.1	60.3	90.4	120.6	47.3	94.6	141.7	189.0	40.5	81.0	121.5	162.0
36"		27.9	55.9	83.8	111.8	43.7	87.3	131.0	174.7	37.5	74.9	112.4	149.8
42"		25.5	51.0	76.5	102.0	39.9	79.8	119.7	159.6	34.2	68.3	102.5	136.7
48"		23.5	46.9	70.4	93.8	36.7	73.5	110.2	146.9	31.5	62.9	94.4	125.8
54"		22.0	44.0	66.0	88.0	34.4	68.8	103.2	137.6	29.5	59.0	88.5	118.0
24"	108"	34.5	69.0	103.5	138.0	54.0	108.0	162.0	200.0	46.3	92.5	138.8	185.0
30"		28.5	57.0	85.5	114.0	44.6	89.2	133.8	178.4	38.2	76.5	114.7	153.0
32"		27.1	54.2	81.3	108.4	42.5	85.0	127.5	170.0	36.4	72.7	109.1	145.4
36"		25.1	50.3	75.4	100.6	39.3	78.6	117.9	157.2	33.7	67.4	101.1	134.7
42"		22.9	45.9	68.8	91.8	35.9	71.8	107.7	143.6	30.8	61.5	92.3	123.0
48"		21.1	42.2	63.4	84.5	33.1	66.2	99.3	132.4	28.4	56.7	85.1	113.5
54"		19.8	39.5	59.4	79.0	30.9	61.8	92.8	123.8	26.5	53.1	79.6	106.2
24"	120"	28.8	59.9	89.9	119.7	46.7	93.3	140.0	186.7	40.0	80.0	120.0	160.0
30"		24.5	49.0	73.5	98.0	38.4	76.8	115.2	153.6	32.9	65.9	98.7	131.7
32"		23.2	46.4	69.6	92.8	36.3	72.7	109.0	145.4	31.2	62.3	93.5	124.6
36"		21.5	43.0	64.5	86.1	33.8	67.5	101.3	135.0	29.0	57.9	86.9	115.8
42"		19.6	39.1	58.7	78.3	30.7	61.3	92.0	122.7	26.3	52.6	78.9	105.2

ANCHORS AT
ALUMINUM BUCK FRAMING
(AT MULLION ENDS)

PERFORMANCE VALUES OF ALUMINUM BUCK INSTALLATION ANCHORS PSI (+) & PSI (-)

WIDTH	HEIGHT	ALUMINUM BUCK TO CONCRETE				ALUMINUM BUCK TO WOOD				ALUMINUM BUCK TO BUCK			
		CLUSTER (2)	CLUSTER (4)	CLUSTER (6)	CLUSTER (8)	CLUSTER (2)	CLUSTER (4)	CLUSTER (6)	CLUSTER (8)	CLUSTER (2)	CLUSTER (4)	CLUSTER (6)	CLUSTER (8)
19-1/8"	48"	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
25-1/2"		200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
31"		200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
63-1/8"		200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
19-1/8"	36-5/8"	140.1	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
25-1/2"		115.9	200.0	200.0	200.0	181.7	200.0	200.0	200.0	181.7	200.0	200.0	200.0
31"		105.0	200.0	200.0	200.0	164.5	200.0	200.0	200.0	141.9	200.0	200.0	200.0
63-1/8"		104.8	200.0	200.0	200.0	164.5	200.0	200.0	200.0	140.8	200.0	200.0	200.0
19-1/8"	50-1/8"	98.3	196.6	200.0	200.0	154.6	200.0	200.0	200.0	132.6	200.0	200.0	200.0
25-1/2"		77.9	155.9	200.0	200.0	122.1	200.0	200.0	200.0	104.7	200.0	200.0	200.0
31"		64.9	129.9	194.8	200.0	101.8	200.0	200.0	200.0	87.2	174.5	200.0	200.0
63-1/8"		60.2	120.5	180.7	200.0	94.4	188.9	200.0	200.0	80.9	161.8	200.0	200.0
19-1/8"	63"	55.5	101.3	200.0	200.0	118.4	200.0	200.0	200.0	101.4	200.0	200.0	200.0
25-1/2"		58.5	117.1	175.6	200.0	91.7	183.3	200.0	200.0	78.8	157.5	200.0	200.0
31"		48.8	85.8	146.6	187.3	77.5	146.9	200.0	200.0	62.5	125.0	188.0	200.0
63-1/8"		39.9	79.7	119.6	159.5	62.5	125.0	187.5	200.0	53.6	107.1	160.7	200.0
19-1/8"	72"	84.0	129.2	193.8	200.0	101.3	200.0	200.0	200.0	86.4	173.7	200.0	200.0
25-1/2"		49.8	99.2	148.7	198.3	77.7	155.4	200.0	200.0	66.9	133.2	199.8	200.0
31"		39.0	78.0	117.0	156.0	61.1	122.2	183.3	200.0	52.4	104.8	157.1	200.0
63-1/8"		32.0	64.0	96.0	127.9	50.1	100.2	150.3	200.0	43.0	85.9	128.8	171.8
19-1/8"	78"	80.2	121.5	182.2	200.0	95.2	190.4	200.0	200.0	81.6	163.2	200.0	200.0
25-1/2"		46.4	92.8	139.2	185.7	73.7	146.5	200.0	200.0	62.3	124.7	187.2	200.0
31"		36.5	72.6	108.8	145.1	58.8	113.7	170.6	200.0	48.7	97.5	146.2	194.9
63-1/8"		29.4	58.8	88.2	117.6	46.1	92.1	138.2	184.2	38.9	78.0	116.4	155.2



CLUSTER OF 2, 4, 6 OR 8 ANCHORS
(SEE CHARTS ABOVE). ALL OTHER BUCK
ANCHORS AS PER SHEET 8
(CLUSTER OF 8 BEING SHOWN)

NOTE:
1)- FOR WINDOW ANCHORING TO ALUMINUM BUCKS USE #14 SCREWS SPACED AS PER SHEETS 7 & 8.
2)- ALUMINUM BUCKS ARE SUPPLIED WIDTH CLUSTERS OF 2 (1 SCREW HOLE PER SIDE) STANDARD.
3)- EXTRA HOLES MUST BE FILED DRILLED IF REQUIRED.

WINDOOR

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER

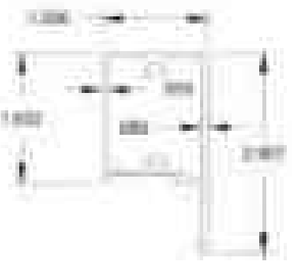
DRAWN BY	A. MORELEON
SCALE	1-1/2"
DATE	
SHEET	



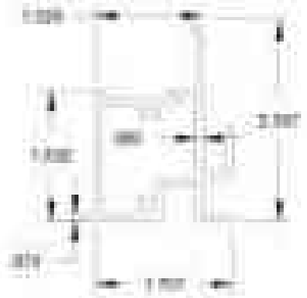
1 | FRAME HEAD



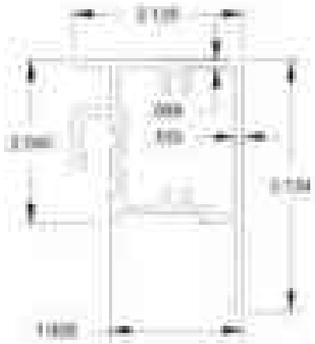
2 | FRAME JAMB



3 | HORIZ. RAIL

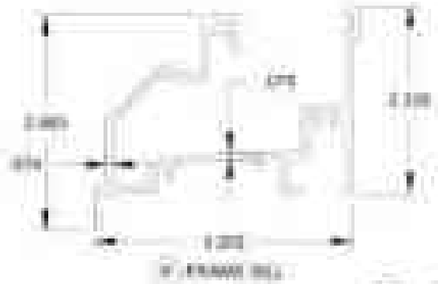


4 | FIXED INTLCK



5 | MOVING INTLCK

ITEM	PART #	DESCRIPTION	MATERIAL
1	800	FRAME HEAD	6063-T6
2	802	FRAME JAMB	6063-T6
3	825	HORIZONTAL RAIL	6063-T6
4	826	FIXED INTERLOCK	6063-T6
5	827	MOVING INTERLOCK	6063-T6
6	801	FRAME SILL	**6063-T6**
7	828	GLAZING BEAD	6063-T6
8	830	GLAZING BEAD	6063-T6
9	838	SIDE RAIL	6063-T6
10	831	WATERBAR	6063-T6
11	W2209WB	WOOL PILE WITH CENTER SOFT FIN (GRAY)	PILE
12	CDI-613P	PLASTIC BUMPER GUIDE	PVC
13	8146-4	WEEP HOLE COVER	NYLON
14	N/A	GLAZING	GLASS
15	N/A	COMPLETE SCREEN	ALUM/MESH
16	CDI-615 & 615C	COMBINATION SCREEN LOCK AND LIFT PULL ATTACHED W/(2) #8 X 3/4" PH SMS	ZINC
17	CDI-615C	TIE DOWN BLOCK	ZINC
20	VARIES	BALANCES (NET OR SPRING)	VARIES
21	CDI-612P	BALANCE COVER @ TOP HALF OF EACH JAMB	PVC
22	CDI-610P	VENT STOP @ TOP OF JAMBS	PVC
24	CDI-611P	FIXED VENT SHIM @ TOP OF FIXED VENT	PVC
25	CDI-616P	TOP GUIDE AT OPERABLE VENT	NYLON
26	CDI-622N	BOTTOM GUIDE/CLIP AT OPERABLE VENT	NYLON
27	CDI-620P & 621N	CARRIER SYSTEM / OPTIONAL - BALANCE ATTACHED TO IT	ZINC
28	N/A	VENT ASSEMBLY SCREWS #10 X 1/2" PH SMS / 2 PER CORNER	S/S
29	N/A	FRAME ASSEMBLY SCREWS #10 X 1/4" PH SMS (2 PER CORNER)	S/S
30	CDI-607	VINYL SEAL	PVC
31	VARIES	STRUCTURAL SILICONE (GE 1200 / GE2200 & DOW 995)	SILICONE
32	CDI-632	COMBINATION SCREEN W/ LOCK & LIFT PULL ATTACHED W/(2) #8 X 3/4" FLAT PH TYPE B	SS
33	-	SETTING BLOCKS DUROMETER 85+-5	DITTO
34	-	ALUMINUM BLOCK	6063-T6
35	-	OPTIONAL COVER	6063-T6



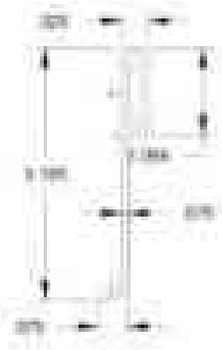
6 | FRAME SILL



7 | GLASS BEAD
FOR GLASS TYPE "CP"



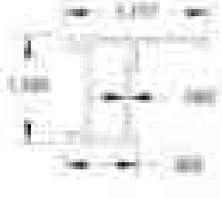
8 | GLASS BEAD
FOR GLASS TYPE "CU"



10 | WATERBAR



11 | OPTIONAL COVER



9 | SIDE RAIL



12 | ALUMINUM BLOCK

WINDOOR
ENGINEERING & DESIGN

SERIES "SW" ALUMINUM SINGLE HUNG WINDOW

HOME / EXTRUSIONS

A. RODRIGUEZ

11/9/22

10 OF 10

SW2022

ANTHONY LYNN MILLER
LICENSE
No. 68705
STATE OF FLORIDA
PROFESSIONAL ENGINEER