Engineering Evaluation Report #4110-08132026

Prepared by:
A. Lynn Miller, P.E.
3400 Precision Dr.
N. Venice, FL 34275
(941) 480-1600
Florida Registration: #29296

Manufacturer:
PGT Industries, LLC
3400 Precision Drive
N. Venice, FL 34275

Product Description:
HR4110 Series Impact-resistant Aluminum Horizontal Roller Window, (LM & SM), FL-1844

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 the requirements of the current Florida Building Code.

This product has been evaluated and is in compliance with the current Florida Building Code, including the “High Velocity Hurricane Zone” (HVHZ).

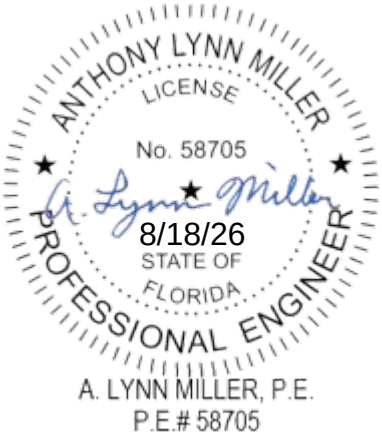
Supporting Technical Documentation:
1. Approval document: drawing number HR4110-LM-HVHZ, signed and sealed by A. Lynn Miller, P.E.

2. Test Report(s) No. FTL 17-7535, 18-7858, & 20-2108.1-6, QAI NOK-0144, NOK-0152, & NOK-0155 signed and sealed by Idalmis Ortega, P.E.
Fenestration Testing Laboratories, Medley, FL 33166
QAI Laboratories, Nokomis, FL
TAS 201-94 Large Missile Impact Test
TAS 202-94 Uniform Static Air Pressure Test
TAS 203-94 Cyclic Pressure Loading Test

3. Anchor calculations, signed and sealed by A. Lynn Miller, P.E., dated 10/9/18, 8/28/20 & 7/7/26

4. Miami-Dade RER Product Control Section NOA’s; PVB Interlayer by Kuraray America, Inc.

Limitations and Conditions of use:
• Units must be glazed per ASTM E1300-24, refer to approval document for glazing details.
• This product is rated to be used in the HVHZ.
• This product is impact resistant and does not require impact protection in wind borne debris regions.
• Frame and sash material to be extruded Aluminum.
• Units must be installed in accordance with approval document.



SERIES 4110
IMPACT RESISTANT HORIZONTAL ROLLER

FLORIDA PRODUCT APPROVAL #1844

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

2) SHUTTERS ARE NOT REQUIRED WHEN USED IN WIND-BORNE DEBRIS REGIONS.

3) ALL WOOD BUCKS LESS THAN 1-1/2" THICK ARE TO BE CONSIDERED 1X INSTALLATIONS. 1X WOOD BUCKS ARE OPTIONAL IF UNIT IS INSTALLED DIRECTLY TO SUBSTRATE. WOOD BUCKS DEPICTED AS 2X ARE 1-1/2" THICK OR GREATER. 1X AND 2X BUCKS (WHEN USED) SHALL BE DESIGNED AND SECURED TO PROPERLY TRANSFER LOADS TO THE STRUCTURE. WOOD BUCK DESIGN AND INSTALLATION IS THE RESPONSIBILITY OF THE ENGINEER, (EOR) OR ARCHITECT OF RECORD, (AOR).

4) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO. USE ANCHORS OF SUFFICIENT LENGTH TO ACHIEVE EMBEDMENT. OVERALL SEALING/FLASHING STRATEGY FOR WATER RESISTANCE OF INSTALLATION SHALL BE DONE BY OTHERS AND IS BEYOND THE SCOPE OF THESE INSTRUCTIONS.

5) MAX. 1/4" SHIMS ARE REQUIRED AT EACH ANCHOR LOCATION WHERE THE PRODUCT IS NOT FLUSH TO THE SUBSTRATE. USE SHIMS CAPABLE OF TRANSFERRING APPLIED LOADS. FOR INTEGRAL FIN FRAMES INSTALL SHIMS AT MAX. 18" O.C.

6) DESIGN PRESSURES:
A. NEGATIVE DESIGN LOADS BASED ON STRUCTURAL/CYCLE TEST PRESSURE, FRAME ANALYSIS AND GLASS PER ASTM E1300.
B. POSITIVE DESIGN LOADS BASED ON WATER TEST PRESSURE, STRUCTURAL/ CYCLE TEST PRESSURE, FRAME ANALYSIS AND GLASS PER ASTM E1300.
C. DESIGN LOADS ARE BASED ON ALLOWABLE STRESS DESIGN, ASD.

7) THE ANCHORAGE METHODS SHOWN HAVE BEEN DESIGNED TO RESIST THE WINDLOADS CORRESPONDING TO THE REQUIRED DESIGN PRESSURE. THE 33-1/3% STRESS INCREASE HAS NOT BEEN USED IN THE DESIGN OF THIS PRODUCT. THE 1.6 LOAD DURATION FACTOR WAS USED FOR THE EVALUATION OF ANCHORS INTO WOOD. ANCHORS THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE FLORIDA BUILDING CODE FOR CORROSION RESISTANCE.

8) REFER TO CURRENT FLORIDA BUILDING CODE FOR EGRESS REQUIREMENTS.

USER INSTRUCTIONS:

1) DETERMINE THE SITE SPECIFIC WINDOW OPENING'S DESIGN PRESSURE REQUIREMENT USING WINDLOAD STANDARD ASCE 7.

2) KNOWING YOUR WINDOW CONFIGURATION (OX, XO, XOX), SIZE AND GLASS TYPE, DETERMINE YOUR WINDOW'S DESIGN PRESSURE. REQUIREMENT FOR THE WINDOW OPENING USING TABLE 2. IT MUST EQUAL OR EXCEED THE DESIGN PRESSURE REQUIREMENT FOR THE WINDOW OPENING OBTAINED IN STEP 1.

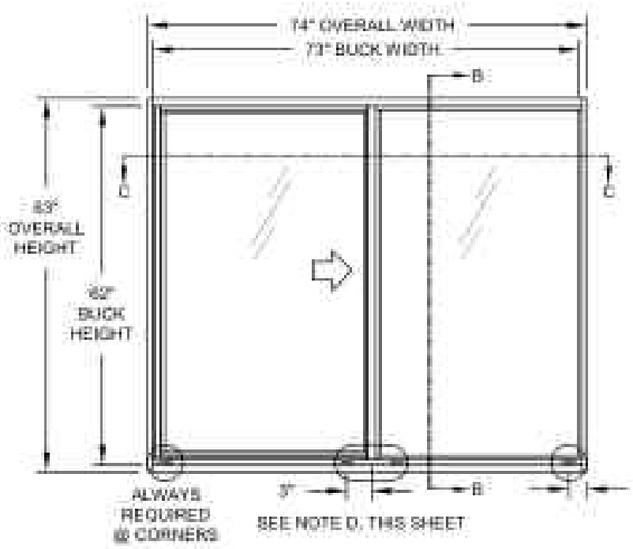
3) DETERMINE THE MOST SUITABLE ANCHOR GROUP FROM TABLE1 ACCORDING TO THE INSTALLATION CONDITIONS.

4) DETERMINE THE ANCHOR QUANTITY FROM SHEET 2. VERIFY THAT THE ANCHOR/SUBSTRATE WILL MEET REQUIREMENTS FOR YOUR OPENING'S CONDITION FROM TABLE 1. AND THAT ALL MIN. REQUIREMENTS FROM THIS SHEET SET ARE MET.

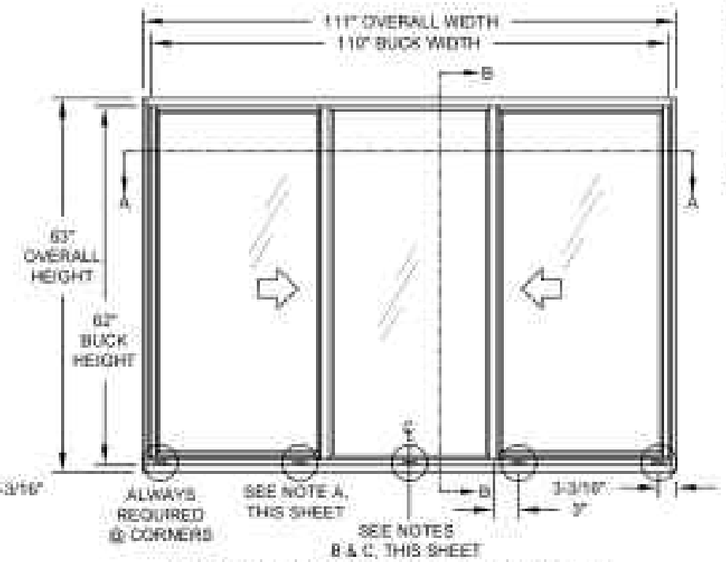
5) INSTALL AS PER SHEET 3.

GENERAL NOTES 1
ELEVATIONS 1
ANCHOR SPECIFICATIONS 2
ANCHOR SPACING/QUANTITIES 2
INSTALLATION 3
DESIGN PRESSURES 4
GLAZING DETAILS 4
CORNER ASSEMBLY 5
EXTRUSION PROFILES 6
PARTS LIST 8

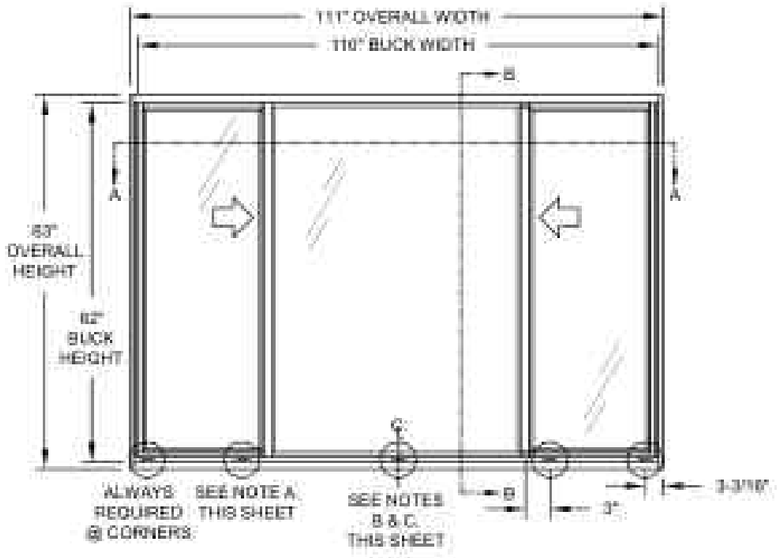
WHERE THE PRODUCT WILL BE INSTALLED WITHIN 3,000 FEET OF A SALTWATER COASTLINE, IT MUST COMPLY WITH SECTION 1711 OF THE FBC, BUILDING OR R332 OF THE FBC, RESIDENTIAL.



TYP. XO ELEVATION (OX SIM.)



TYP. XOX (1/3-1/3-1/3) ELEVATION



TYP. XOX (1/4-1/2-1/4) ELEVATION

WEEPHOLE NOTES:
A. REQUIRED IF WINDOW WIDTH IS OVER 67".
B. REQUIRED IF WINDOW WIDTH IS OVER 45" AND UP TO 67".
C. REQUIRED IF WINDOW WIDTH IS OVER 89".
D. REQUIRED IF WINDOW WIDTH IS OVER 45".

DESIGN PRESSURE RATING
SEE SHEET 4
WATER TEST PRESSURE
15% OF (+) DP
IMPACT RATING
LARGE AND SMALL MISSILE IMPACT RESISTANT MISSILE LEVEL D, WIND ZONE 4

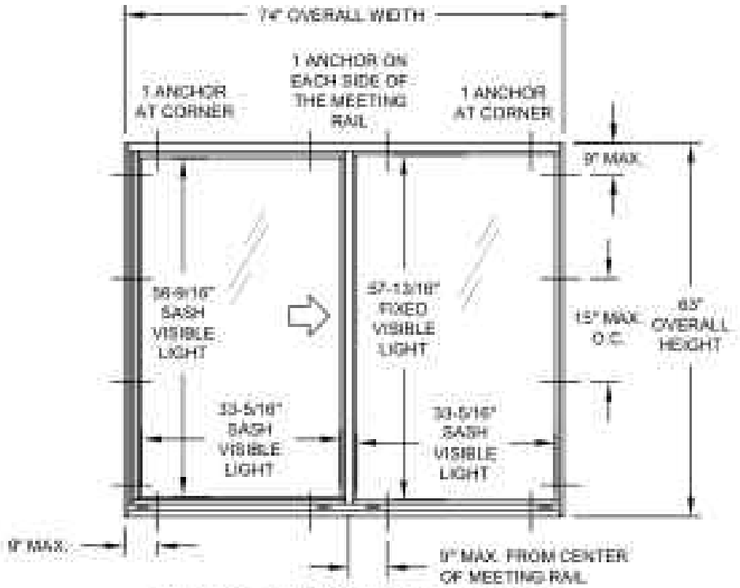
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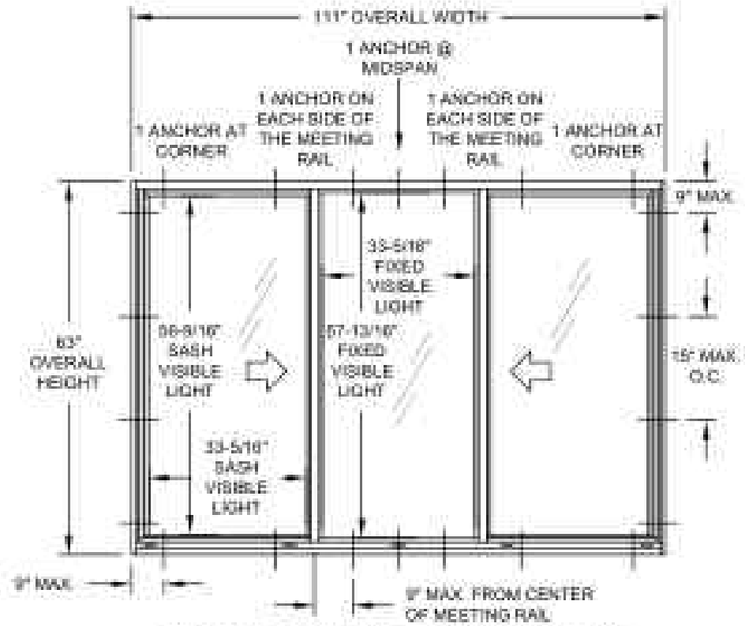
DATE	07/07/26
DRAWN BY	JENS ROSOWSKI
TITLE	ALUMINUM HORIZONTAL ROLLER
SUBTITLE	NOTES, ELEVATION
SERIES	HR4110
SHEET	1 OF 6
DRAWING NO.	HR4110-LM-HVHZ

PGT WINDOWS
1070 PGT DRIVE
3800 PRECISION DRIVE
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REGISTRATION #12028

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TYP. XO ANCHORAGE (OX SIM.)
& MAX. VISIBLE LIGHT OPENING

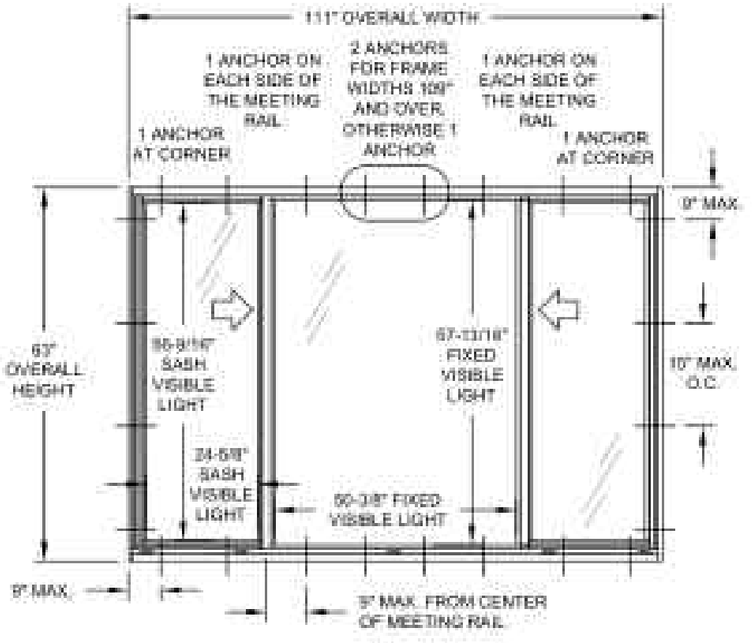


TYP. XOX (1/3-1/3-1/3) ANCHORAGE
& MAX. VISIBLE LIGHT OPENING

TABLE 1

Anchor Type	Frame Member	Substrate	Min. Edge Distance	Min. O.C. Distance	Min Embedment or Metal Thickness
#12 SMS Carbon Steel or 18-8, 316, 410 SS	A3	Southern Pine (SG = 0.55)	5/16"	7/8"	1-3/8"
		Aluminum, 6063-T5 min.	3/8"	5/16"	0.090"
		A36 Steel	3/8"	5/16"	0.090"
		Steel Stud, Gr. 33 min.	3/8"	5/16"	0.045" (20 Ga)
1/4" Steel Tapcon	Jamb	Ungrouted Block, (ASTM C90)	1-3/8"	8"	1-1/4"
	Jamb	Grouted Blank, (ASTM C90)	1"	8"	1-3/4"
	A3	Concrete (min. 2.85 ksi)	1-1/4"	4"	1"
	A3	Southern Pine (SG = 0.55)	1"	1"	1-3/8"
1/4" 410 SS ConcPlex	Jamb	Ungrouted Block, (ASTM C90)	1-3/4"	8"	1-1/4"
	A3	Concrete (min. 2.85 ksi)	2-1/2"	4"	1-3/4"
1/4" 304 SS Aggre-Gator	Jamb	Ungrouted Block, (ASTM C90)	2"	8"	1-1/4"
	A3	Concrete (min. 2.32 ksi)	1-1/2"	3"	1-3/8"
	A3	Southern Pine (SG = 0.55)	1"	1"	1-3/8"

1) MIN. OF 3 THREADS BEYOND THE METAL SUBSTRATE.
2) ALL SCREWHEAD TYPES ARE APPLICABLE.
3) 18-8 FASTENERS SHALL BE MANUFACTURED FROM TYPE 304 OR 305 STAINLESS STEEL PER ASTM A240.
4) "UNGROUTED CMU" VALUES MAY BE USED FOR GROUTED CMU APPLICATIONS.
5) IF THE FRAME CONTAINS A FACTORY COUNTERSINK, ONLY USE FLATHEAD ANCHORS AT THAT LOCATION.



TYP. XOX (1/4-1/2-1/4) ANCHORAGE
& MAX. VISIBLE LIGHT OPENING

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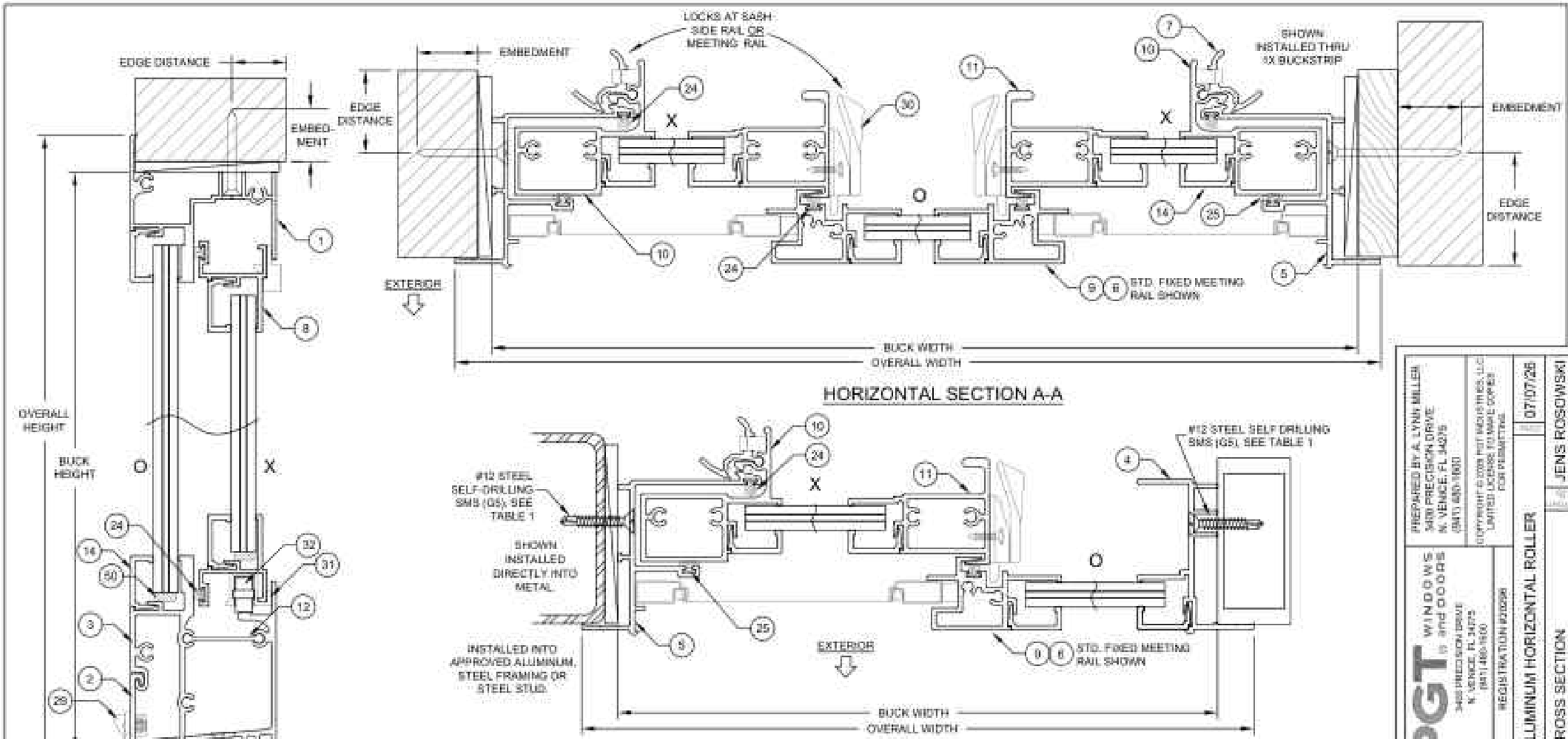
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REGISTRATION #26098

DRAWN BY	JENS ROSOWSKI
DATE	07/07/26
ALUMINUM HORIZONTAL ROLLER	
ANCHOR SPACING	HR4110
SHEET	2 OF 6
DRAWING NO.	HR4110-LM-HWHZ

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HORIZONTAL SECTION A-A

VERTICAL SECTION B-B

HORIZONTAL SECTION C-C

MULLION SECTION

APPROVED MULLION, MAY BE VERTICAL OR HORIZONTAL.

NOTES:

1) USE ONLY SUBSTRATE APPROPRIATE ANCHORS LISTED IN TABLE 1. FOLLOW EMBEDMENT AND EDGE DISTANCE LIMITS. ANY INSTALLATION OPTION SHOWN MAY BE USED ON ANY SIDE OF THE WINDOW.

2) MASONRY ANCHORS MAY BE USED INTO WOOD AS PER TABLE 1. ALL WOOD BUCKS LESS THAN 1-1/2" THICK ARE TO BE CONSIDERED 1X INSTALLATIONS. 1X WOOD BUCKS ARE OPTIONAL IF UNIT IS INSTALLED DIRECTLY TO SUBSTRATE. WOOD BUCKS DEPICTED AS 2X ARE 1-1/2" THICK OR GREATER. 1X AND 2X BUCKS (WHEN USED) SHALL BE DESIGNED TO PROPERLY TRANSFER LOADS TO THE STRUCTURE. WOOD BUCK DESIGN AND INSTALLATION IS THE RESPONSIBILITY OF THE ENGINEER OR ARCHITECT OF RECORD.

3) SEE SHEET 2 & TABLE 1 FOR SPACING REQUIREMENTS.

4) MAX. SHIM THICKNESS TO BE 1/4".

5) GLASS SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER TO MEET DESIGN REQUIREMENTS.

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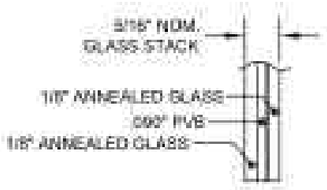
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APPROVED BY	
DRAWING NO.	HR4110-LM-HWHZ
ALUMINUM HORIZONTAL ROLLER	
CROSS SECTION	3 OF 6
HR4110	

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TABLE 2

DESIGN PRESSURE (psf)		Config.	Overall Height							
			38-3/8"		43-1/2"		50-5/8"		63"	
			Glass Type 1	Glass Type 2	Glass Type 1	Glass Type 2	Glass Type 1	Glass Type 2	Glass Type 1	Glass Type 2
Overall Width	26-1/2"	XO or OX	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	37"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	40"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	49"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	53-1/8"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	61"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	66"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	74"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55.0/-63.2	+55/-65
	83-1/8"	XOX (1/3 - 1/3 - 1/3)	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	61"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	74"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	86"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	97"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	111"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55.0/-63.2	+55/-65
	53-1/8"	XOOX (1/4 - 1/2 - 1/4)	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65
	74"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-64.0	+55/-65
	86"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-57.9	+55/-65
	97"		+55/-63	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+53.3/-63.5	+55/-65
	105"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+50.4/-60.4	+65/-65
	111"		+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+55/-65	+52/-60	+65/-65



5/16" LAMI. GLAZING
GLASS TYPE 1



5/16" LAMI. GLAZING
GLASS TYPE 2

TABLE 3

Laminated Glass Types	
1	1/8" Annealed, 0.090" PVB, 1/8" Annealed
2	1/8" Heat-strengthened, 0.090" PVB, 1/8" Heat-strengthened

INTERLAYER MAY BE SAFLEX PVB OR TROSIFOL PVB

NOTES:

1) FOR SIZES NOT SHOWN, ROUND UP TO THE NEXT AVAILABLE WIDTH OR HEIGHT DIMENSION SHOWN ON THE TABLE.

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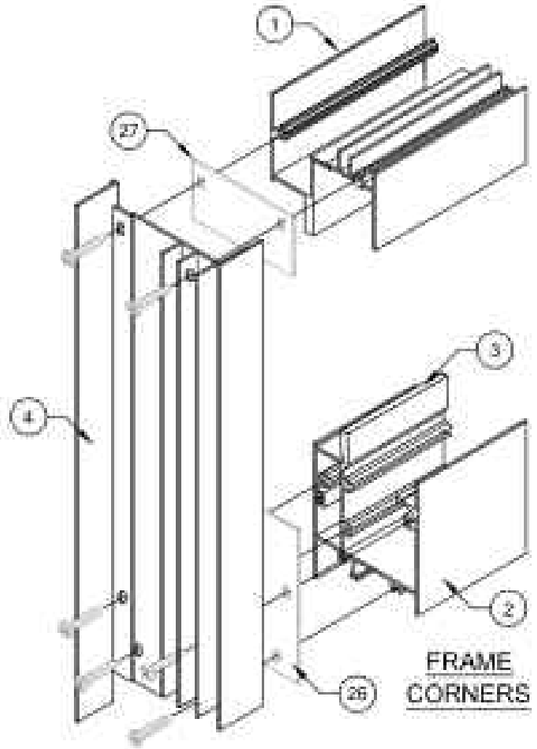
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CHECKED BY: A. MILLER
APPROVED BY: A. MILLER

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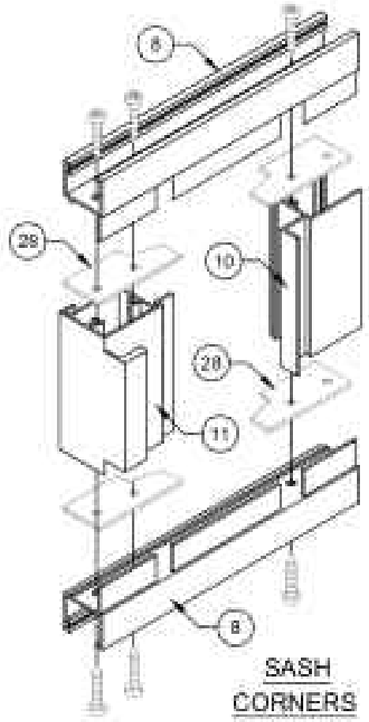
ALUMINUM HORIZONTAL ROLLER
DESIGN PRESSURE
HR4110

HR4110-LM-HWHZ
4 OF 6

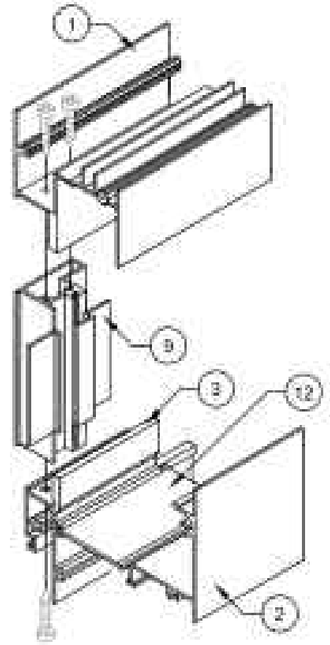
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FRAME CORNERS

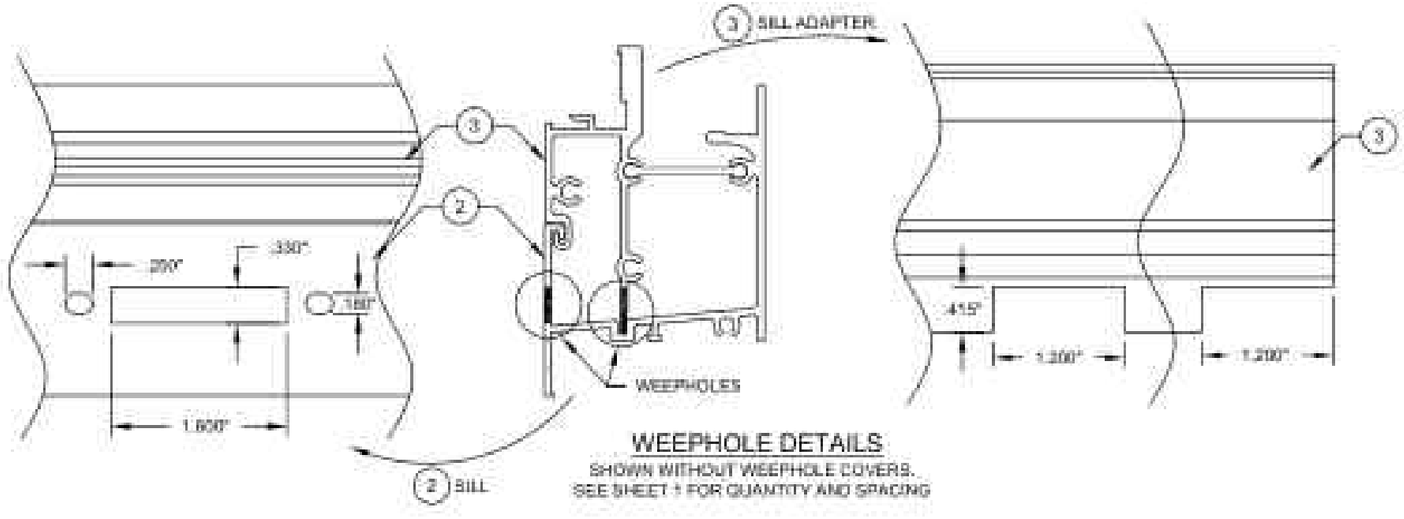


SASH CORNERS



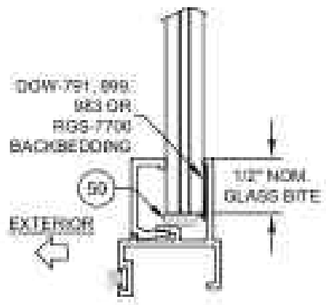
STD. MEETING RAIL (HD SIMILAR)

ASSEMBLY DETAILS



WEEPHOLE DETAILS

SHOWN WITHOUT WEEPHOLE COVERS.
SEE SHEET 1 FOR QUANTITY AND SPACING



TYP. GLAZING DETAIL

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JENS ROSOWSKI

HR4110-LM-HWHZ

ALUMINUM HORIZONTAL ROLLER

ASSEMBLY & WEEPHOLE INFO

5 OF 6

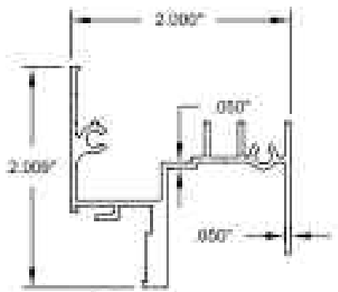
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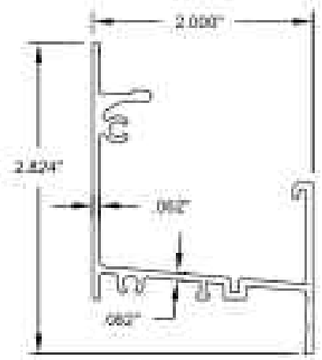
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Table E-4

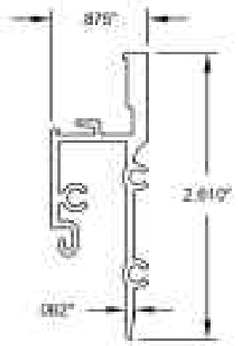
Item	Description
1	Frame Head
2	Frame Sill
3	Sill Adapter
4	Frame Jamb (Fixed)
5	Frame Jamb (Operable)
6	Heavy Duty Fixed Meeting Rail
7	Side Rail Lock
8	Sash Top & Bottom Rail
9	Standard Fixed Meeting Rail
10	Sash Side Rail
11	Sash Meeting Rail
12	Dogbone Reinforcement
13	Sash Stop
23	.190" X .200" G-Ion Wstp. (Frame)
24	.187" X .230" Fin Wstp.
25	Bulb Vinyl Wstp. (Sash)
26	Frame Sill Gasket, Polyethelyne, opt.
27	Frame Head Gasket, Polyethelyne, opt.
28	Sash Gasket, Polyethelyne, opt.
29	Weephole Cover
30	Sweep Latch
31	Roller Housing & Guide
32	Roller
33	Frame/Sash Corner Sealant, opt.
50	Setting Block 3/32" X 1/4" X 1"
70	Kommerling Kodispace 4SG TPS



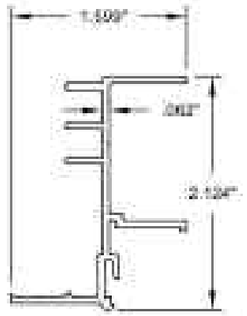
1 FRAME HEAD
6063-T6 ALUMINUM



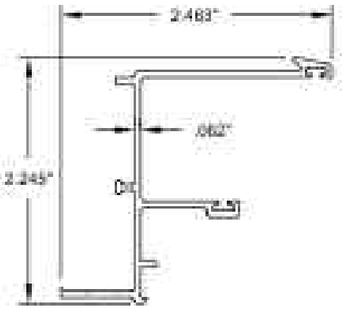
2 FRAME SILL
6063-T5 ALUMINUM



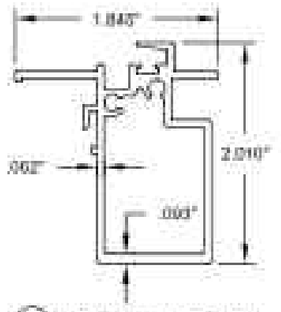
3 SILL ADAPTER
6063-T6 ALUMINUM



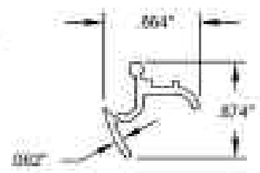
4 FRAME JAMB (FIXED)
6063-T6 ALUMINUM



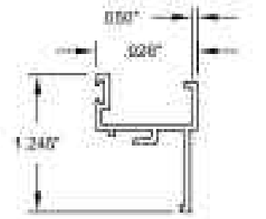
5 FRAME JAMB (OPERABLE)
6063-T6 ALUMINUM



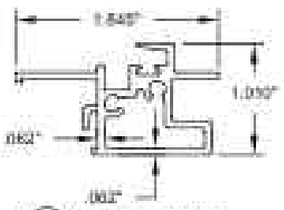
6 HD FIXED MEETING RAIL
6063-T6 ALUMINUM



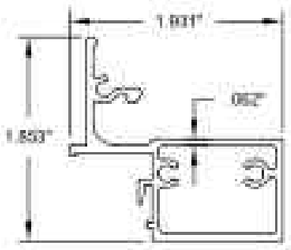
7 SIDE RAIL LOCK
6063-T6 ALUMINUM



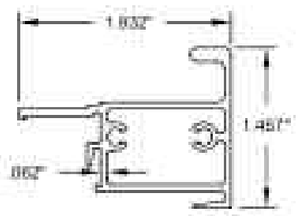
8 SASH TOP & BOTTOM RAIL
6063-T6 ALUMINUM



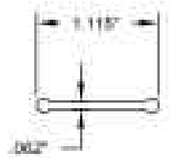
9 STD. MEETING RAIL
6063-T6 ALUMINUM



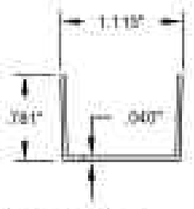
10 SASH SIDE RAIL
6063-T6 ALUMINUM



11 SASH MEETING RAIL
6063-T6 ALUMINUM



12 DOGBONE REINFORCEMENT
6063-T6 ALUMINUM



13 SASH STOP
6063-T6 ALUMINUM



14 LAMB BEADING
PVC

PREPARED BY A. LYNN MILLER
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REGISTRATION #26098

ALUMINUM HORIZONTAL ROLLER

BOM / EXTRUSIONS

HR4110

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			HR4110-LM-HWHZ
			6 OF 6

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07/07/26
STATE OF FLORIDA
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