Engineering Evaluation Report

Prepared by:
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Registration Number: #29296

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

Product Description:
PW5540 Series Impact-Resistant, Vinyl, Fixed Casement Window with Diamond Glass, (LM), FL-29700

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.

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 PW5540-DG, signed and sealed by A. Lynn Miller, P.E.

2. Test Reports:
FTL-7892-7894, 7896, 7910 & 8096, Fenestration Testing Laboratories, Medley, FL
ASTM E1886-05/1995-12

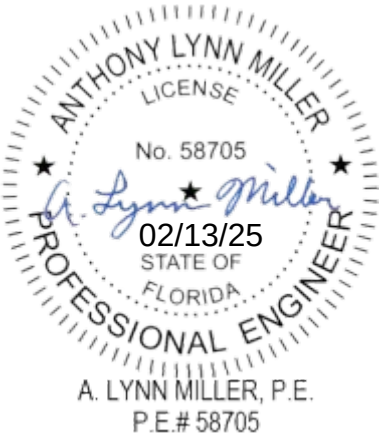
FTL-7892-7894, 7896, 7910 & 8166, Fenestration Testing Laboratories, Medley, FL
AAMA/WDMA/CSA 101/IS2/A440-11

QAI NOK 0112-0117 signed and sealed by Idalmis Ortega P.E.; 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. Miami-Dade RER Product Control Section NOA’s; PVB and/or SG Interlayer by Kuraray America, Inc.

Limitations and Conditions of use:
• Units must be glazed per ASTM E1300-09, 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 material to be extruded Vinyl.
• Units must be installed in accordance with approval document.



SERIES FW5540 IMPACT RESISTANT, VINYL FIXED CASEMENT WINDOW WITH DIAMOND GLASS

FLORIDA PRODUCT APPROVAL #

IMPACT RATING	DESIGN PRESSURE RATING
LARGE & SMALL MISSILE IMPACT RESISTANT	VARIES PER GLASS TYPE, SEE TABLES

1) THIS PRODUCT HAS BEEN DESIGNED AND 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 WINDBORNE DEBRIS REGIONS. FOR INSULATED GLASS INSTALLATIONS ABOVE 30' IN THE HVHZ, THE OUTBOARD LITE (CAP) MUST BE TEMPERED.

3) 1BX OR 2BX WOOD BUCKS & BUCK FASTENERS BY OTHERS, MUST BE DESIGNED AND INSTALLED ADEQUATELY TO TRANSFER APPLIED PRODUCT LOADS TO THE BUILDING STRUCTURE.

4) ANCHORS SHALL BE CORROSION RESISTANT, SPACED AS SHOWN ON DETAILS AND INSTALLED PER MANUFACTURERS INSTRUCTIONS. SPECIFIED EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

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

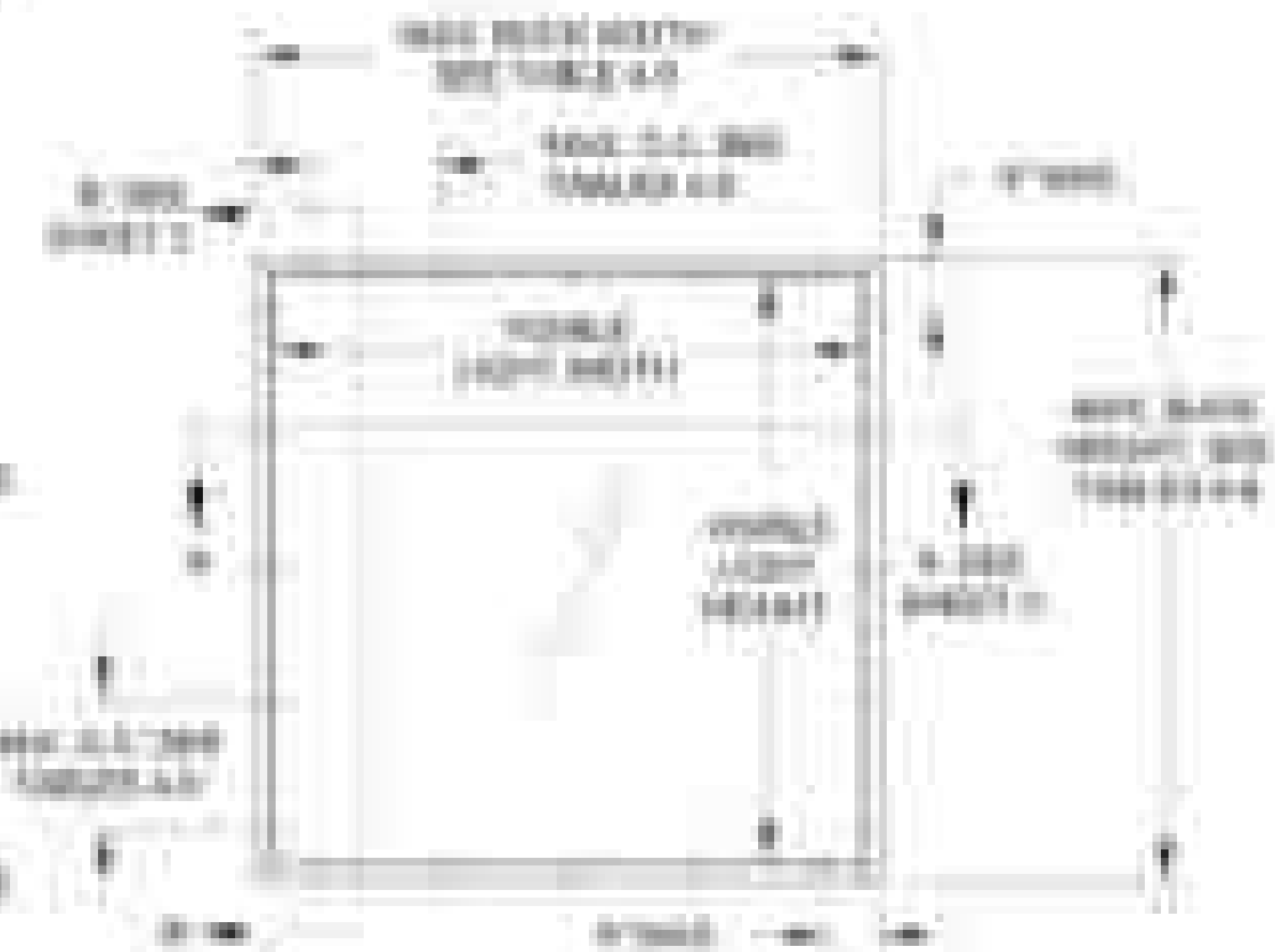
6) ALL SHIMS TO BE HIGH-IMPACT, NON-METALLIC AND NON-COMPRESSIBLE.

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

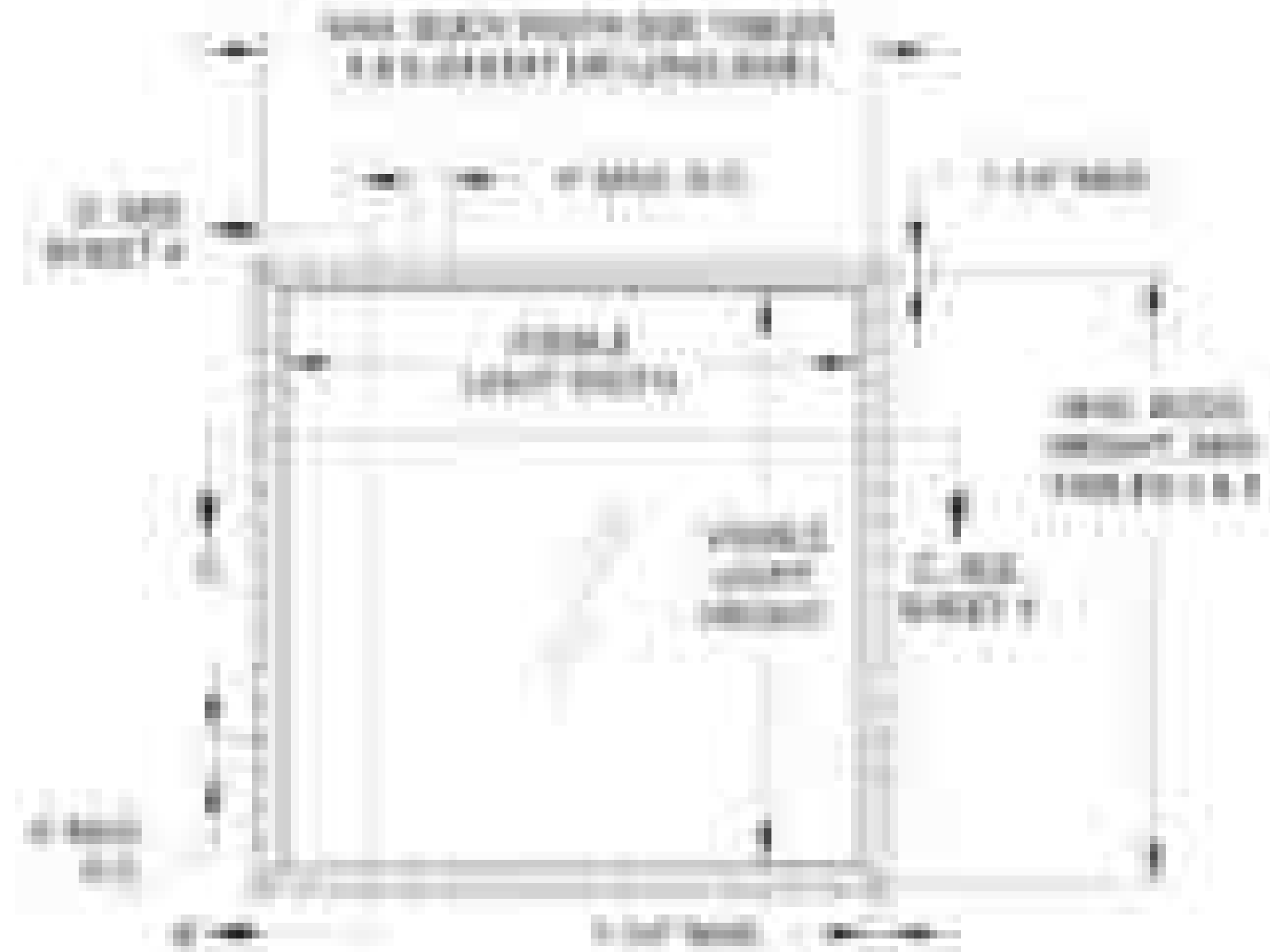
8) THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR THE SITE-SPECIFIC PROJECTS INCLUDING CONSIDERATIONS FOR LIFE SAFETY, STRUCTURAL ADEQUACY FOR ACCOMMODATING THIS PRODUCT AND THE EFFECTIVENESS OF SEALING AROUND THE OPENINGS TO RESIST WATER INFILTRATION.

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

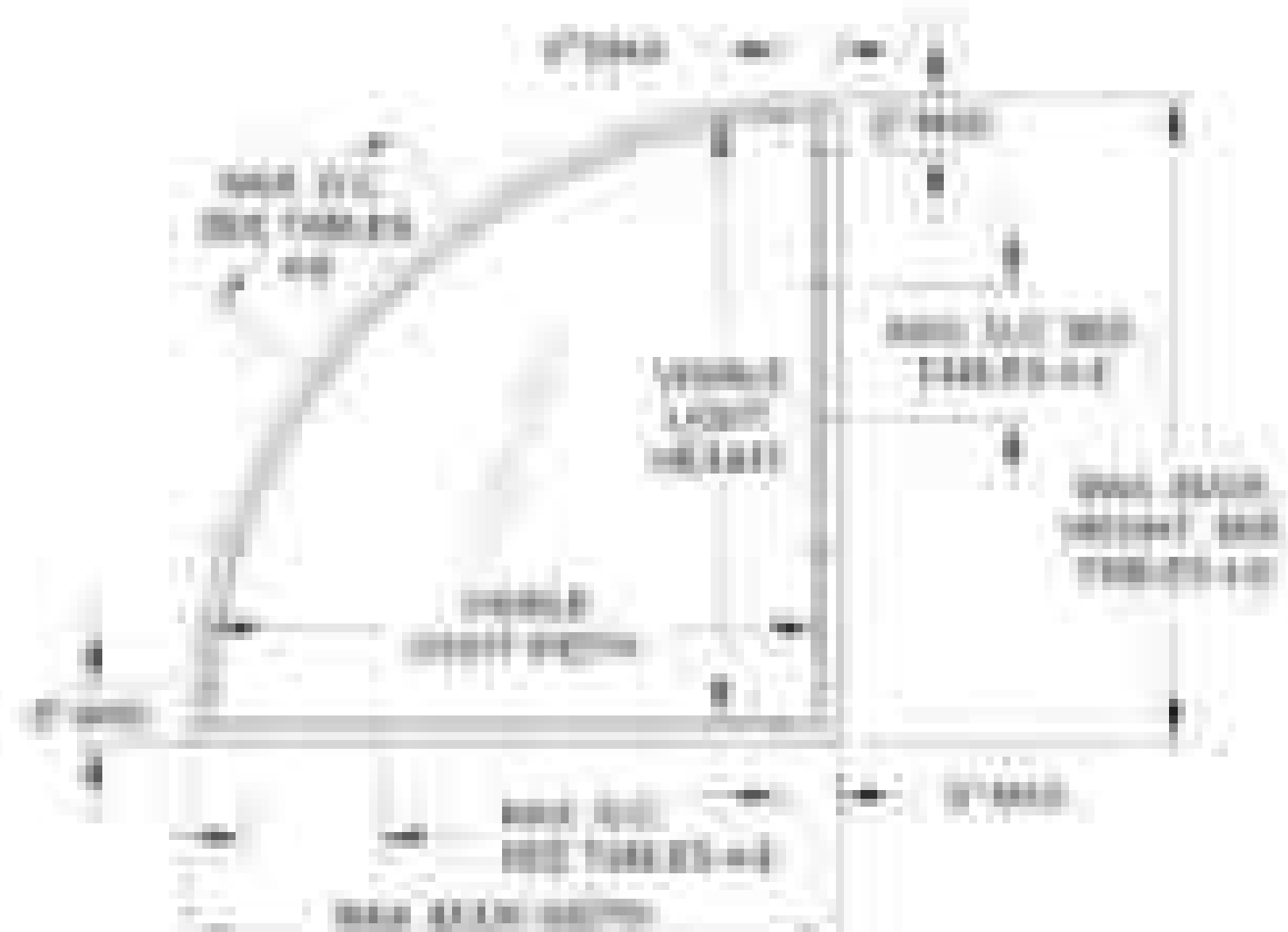
10) FRAME FLANGES OR INTEGRAL FINS MAY BE TRIMMED IN FIELD TO CREATE AN EQUAL LEG FRAME.



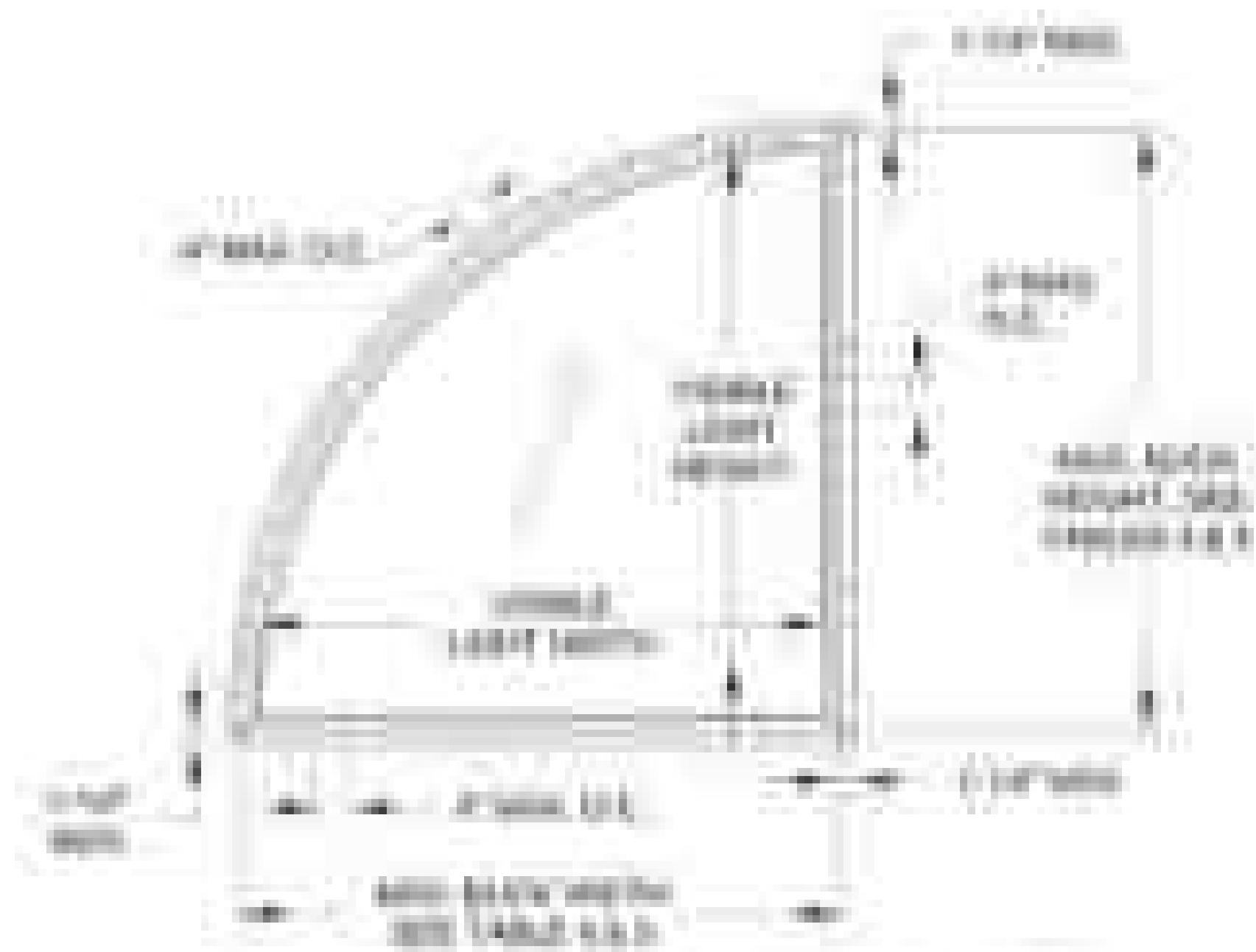
TYP. EQUAL LEG/BOX & FLANGE FRAME (90° CORNERS)



TYP. INTEGRAL FIN & J-CHANNEL FRAME (90° CORNERS) (ANCHORED THROUGH NAIL FIN)



TYP. EQUAL LEG/BOX & FLANGE FRAME (CURVED OR ANGLED CORNERS)



TYP. INTEGRAL FIN & J-CHANNEL FRAME (CURVED OR ANGLED CORNERS) (ANCHORED THROUGH NAIL FIN)

GENERAL NOTES & ELEVATIONS	1
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THIS SYSTEM HAS BEEN TESTED TO MEET THE KINETIC ENERGY IMPACT LOADING REQUIREMENTS OF WHEN USING GLASS TYPES

GLASS USED ABOVE 30 FEET IN THE HVHZ MUST HAVE A TEMPERED CAP.

VISIBLE LIGHT FORMULAS

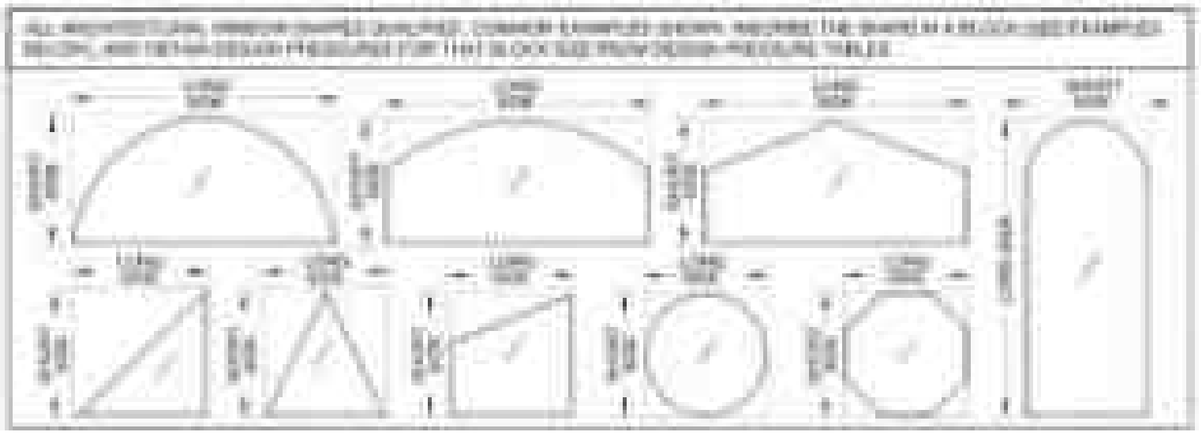
WIDTH: BUCK WIDTH

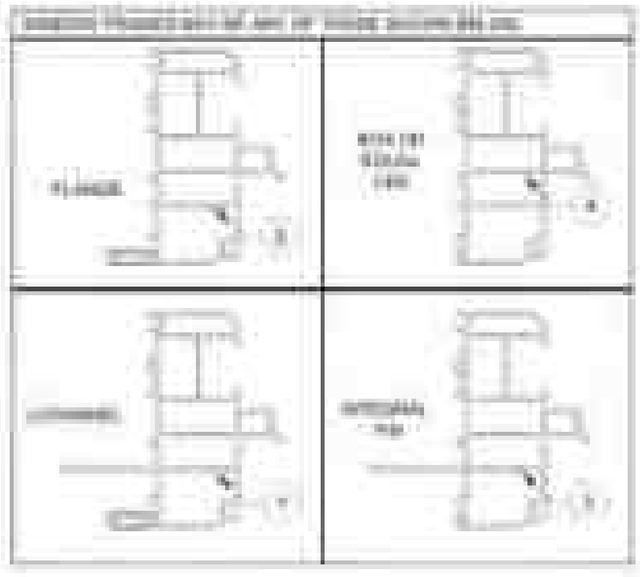
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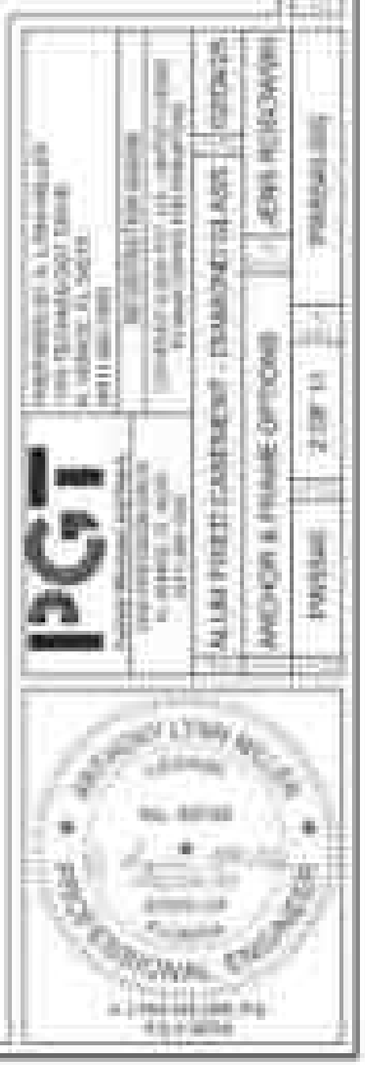
ELEVATIONS & GENERAL NOTES

PROFESSIONAL ENGINEER

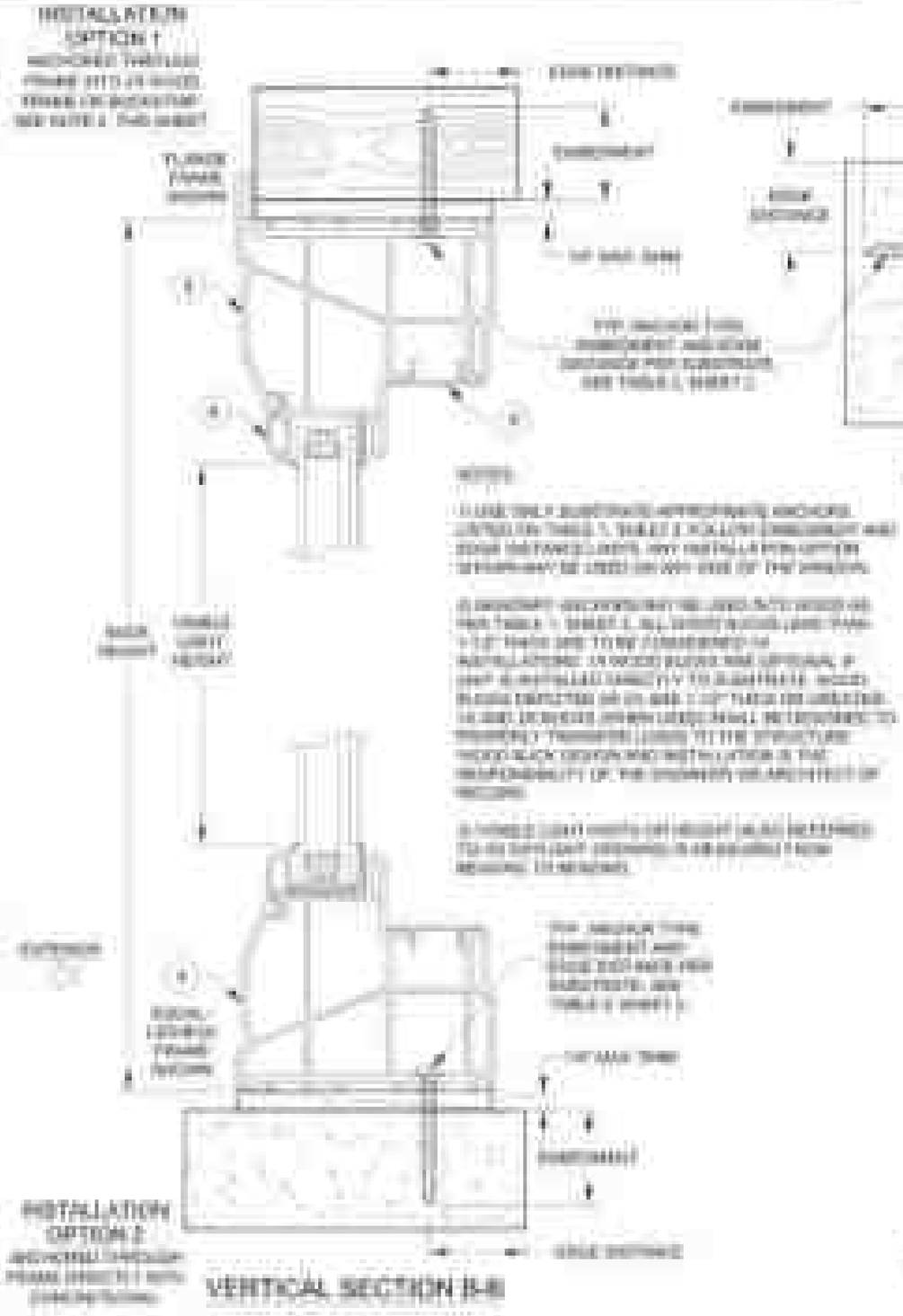
Group	Anchor	Substrate	Min. Edge Distance	Min. Embedment
1	0.131" x 3.0" Common Nail	Southern Pine (SG=0.55)	3.0"	2.75"
	0.131" Ring-shank Roofing Nail	Southern Pine (SG=0.55)	3.0"	2.5"
	#12 Truss-head SMS (Diam. 19.8 S.S. or #10 S.S.)	Southern Pine (SG=0.55)	1.0"	1.25"
		Aluminum, 6063-T6	3.0"	2.125"
		Steel 1018, G= 33"	3.0"	0.060" (16 Ga.)
		Steel, A36	3.0"	0.060"
	#12 SMS (Diam. 19.8 S.S. or #10 S.S.) Flathead or Panhead	Southern Pine (SG=0.55)	9.18"	1.125"
		Aluminum, 6063-T6	3.0"	2.125"
		Steel 1018, G= 33"	3.0"	0.060" (16 Ga.)
		Steel, A36	3.0"	0.060"



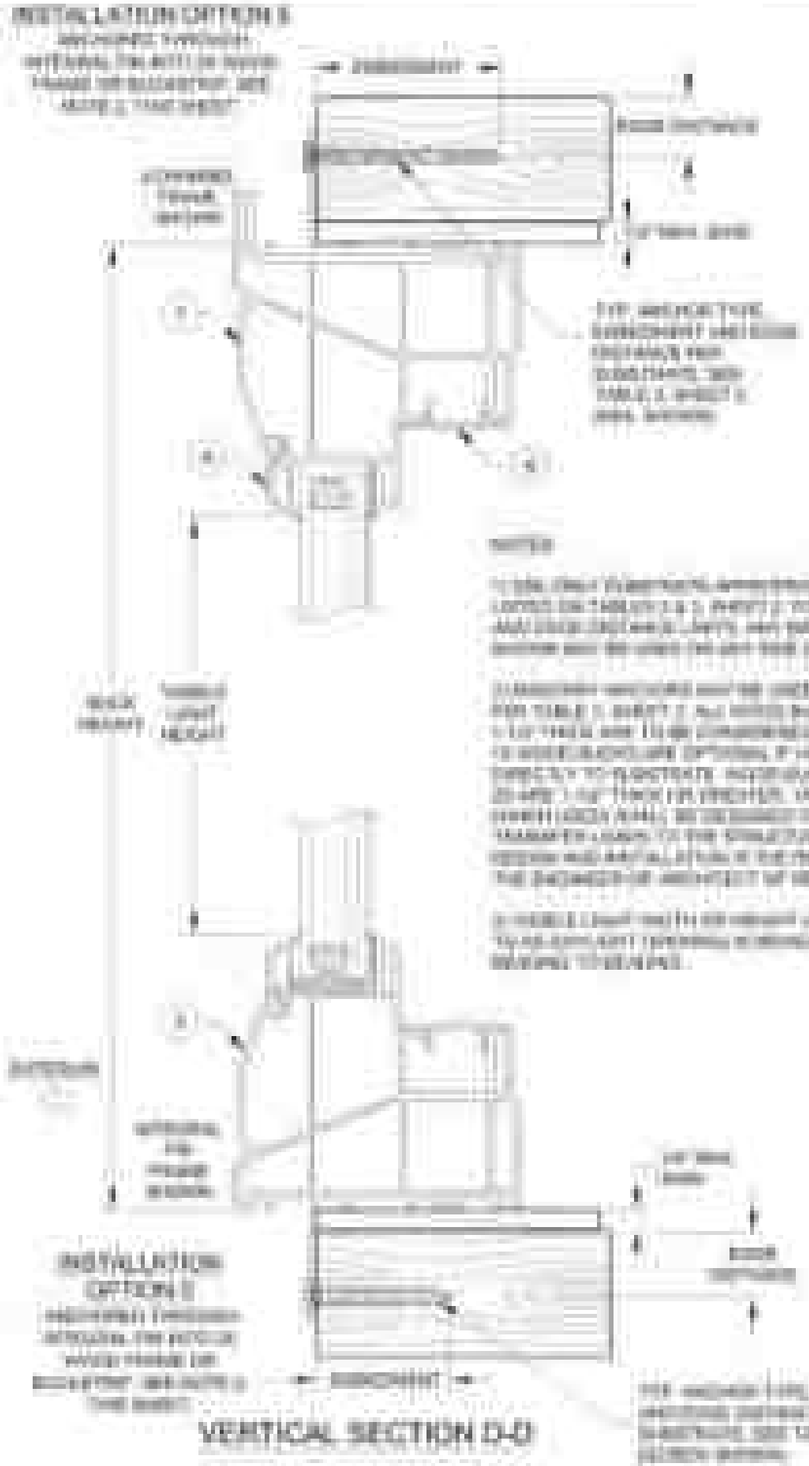




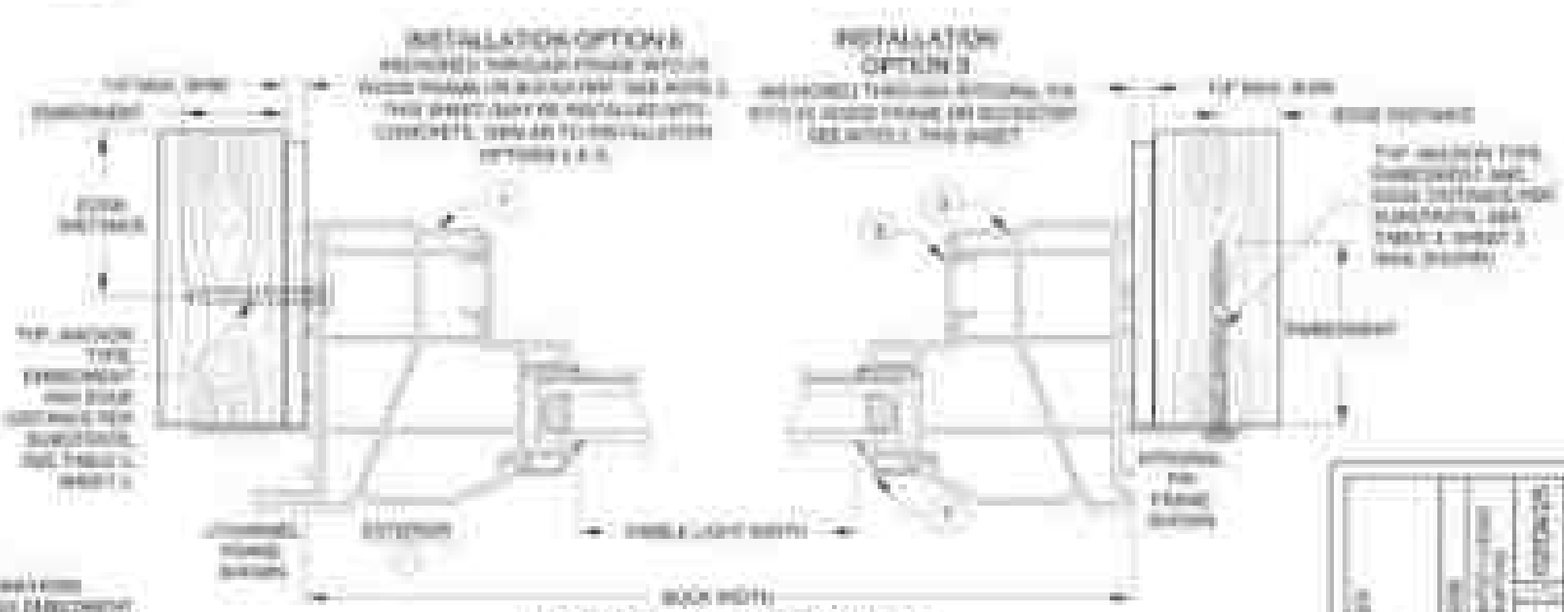
INSTALLATION DETAILS FOR FLANGE & EQUAL-LEG/BOX FRAMES



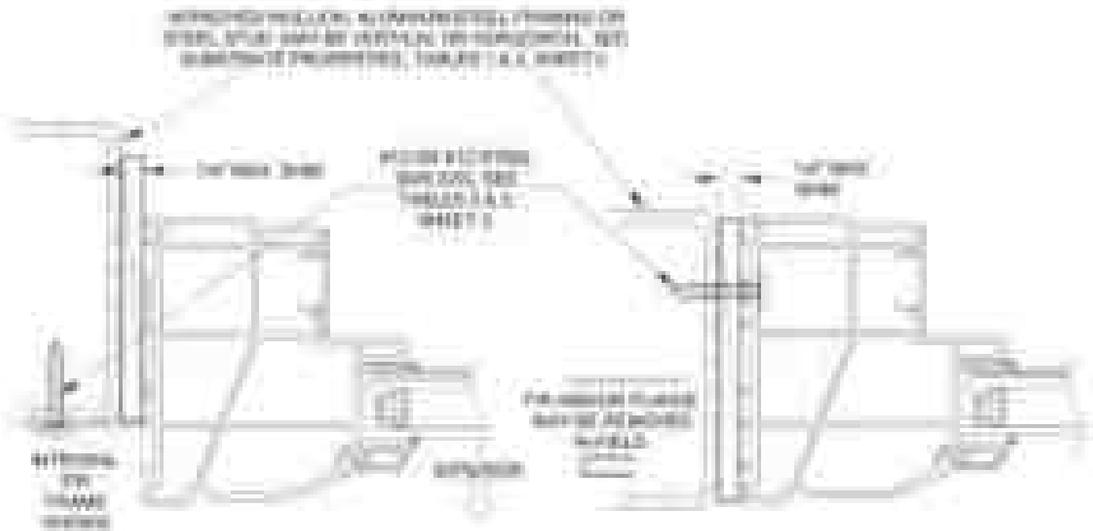
INSTALLATION DETAILS FOR INTEGRAL FIN & J-CHANNEL FRAMES



VERTICAL SECTION D-D



HORIZONTAL SECTION C-C



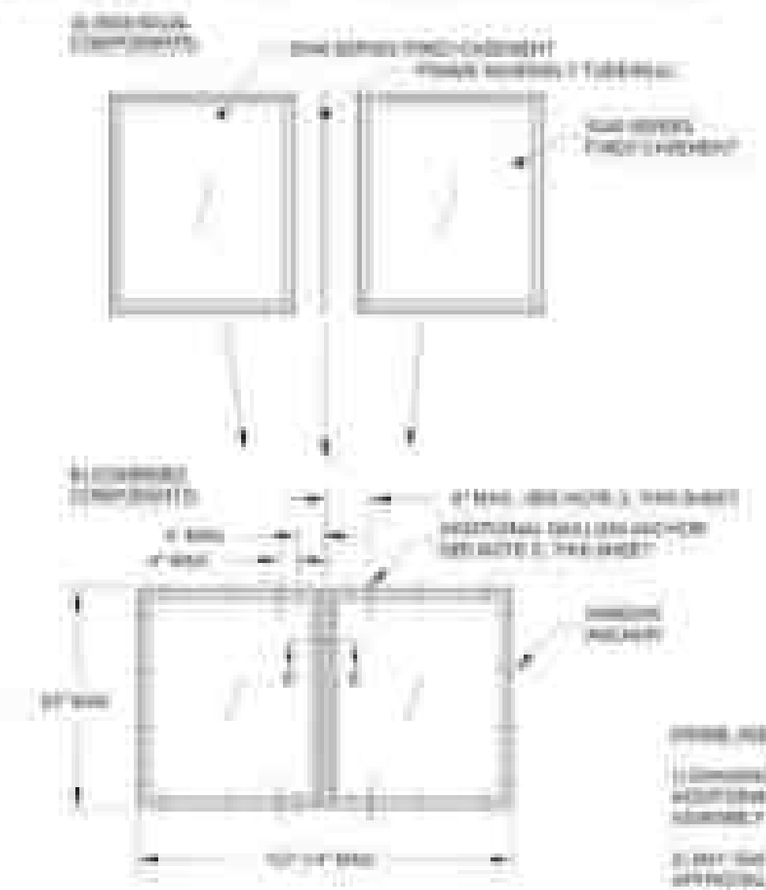
INSTALLATION OPTION 7

INSTALLATION OPTION 8

PGT

ILLUSTRATION OF FIXED CASEMENT-TO-FIXED CASEMENT (OO)

(EQUAL LEGACY FRAME WITH IDENTICAL PRODUCTS COMBINED)



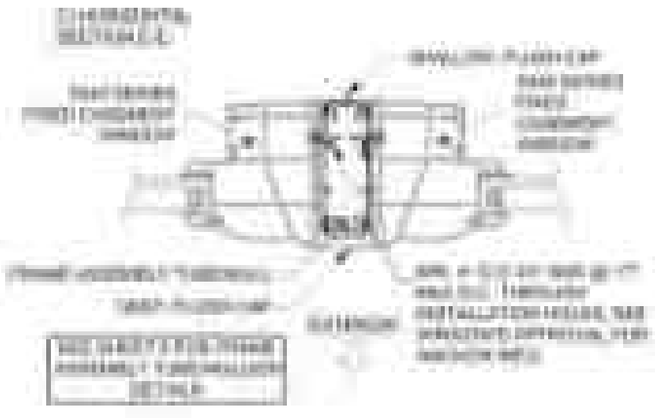
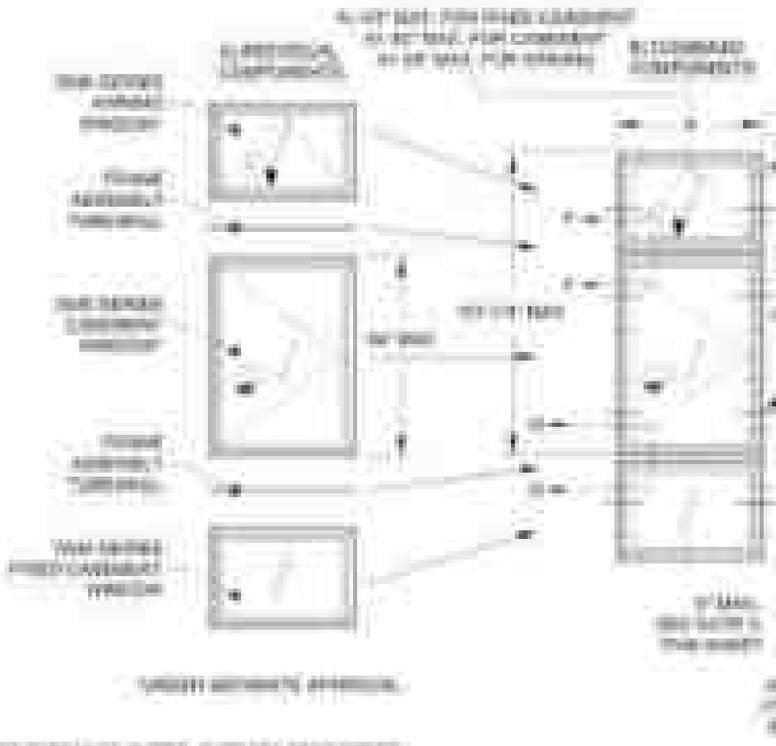


ILLUSTRATION OF AWNING-TO-CASEMENT-TO-FIXED CASEMENT (XOO)

(FLANGE FRAME WITH DIFFERENT XAC SERIES PRODUCTS COMBINED)



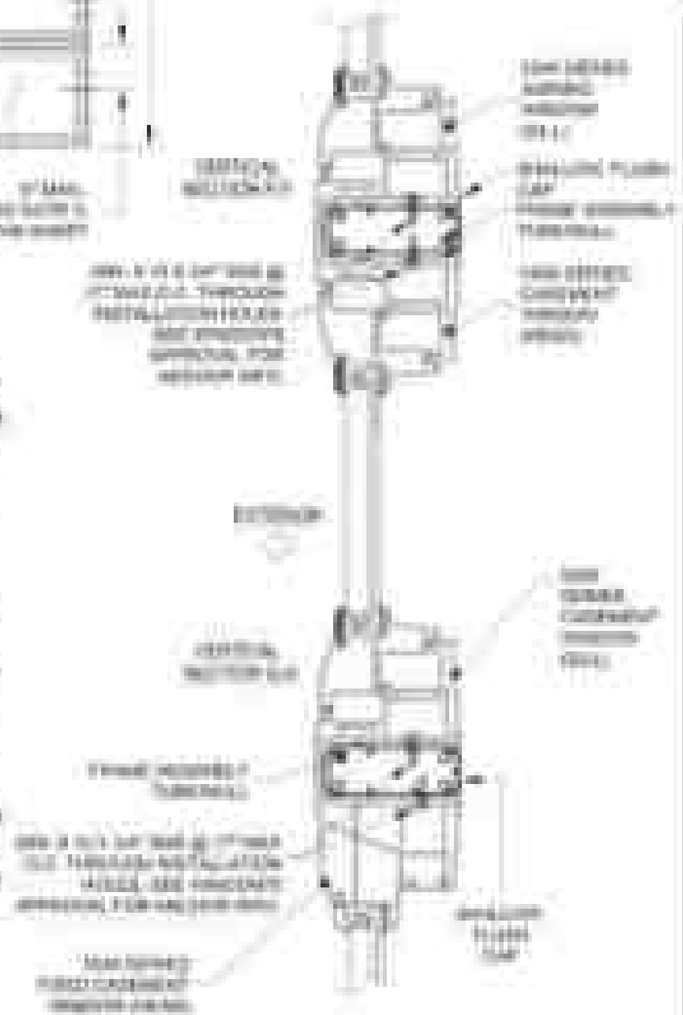
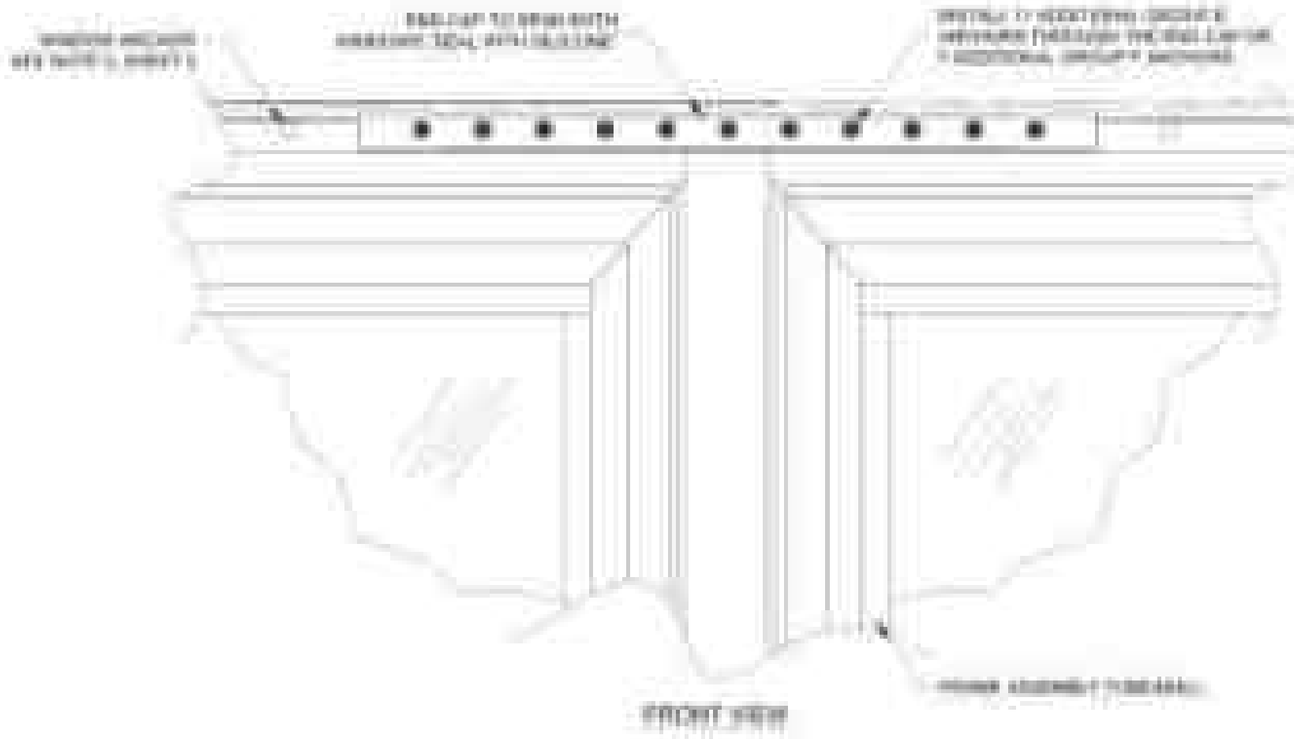


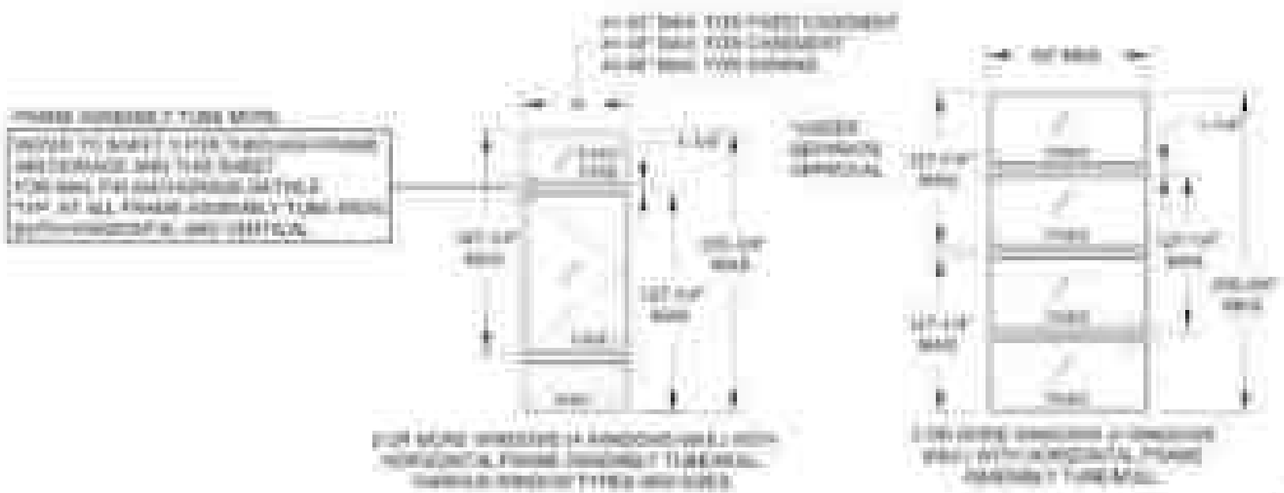
ILLUSTRATION OF END CAP USE WITH FIN AND J-CHANNEL FRAMES

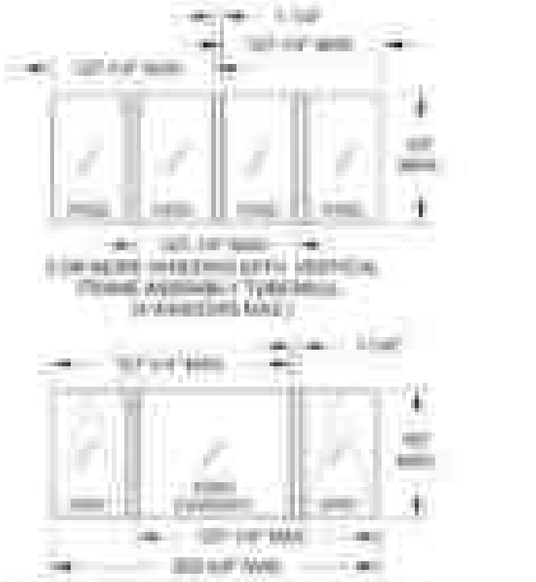


FRONT VIEW



SIDE VIEW



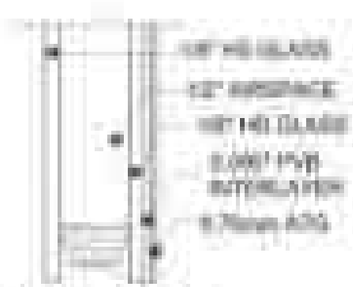




GLASS TYPE 1
1/8" NOM. GLASS STACK



GLASS TYPE 2
1/8" NOM. GLASS STACK



GLASS TYPE 3
1/8" NOM. GLASS STACK



GLASS TYPE 4
1/8" NOM. GLASS STACK



GLASS TYPE 5
1/8" NOM. GLASS STACK



GLASS TYPE 6
1" NOM. GLASS STACK



GLASS TYPE 7
1" NOM. GLASS STACK



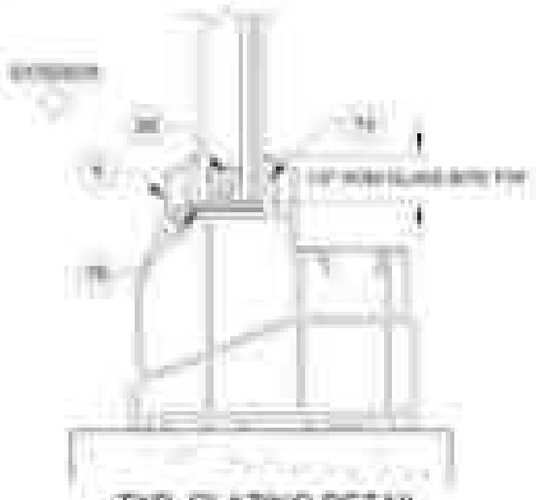
GLASS TYPE 8
1" NOM. GLASS STACK



GLASS TYPE 9
1" NOM. GLASS STACK

Glass Type	Description (Listed from Exterior to Interior)
1	1/4" Lami #3, 1/2" #16 Cap - 1/2" Airspace - 1/8" #4 - 0.060" PVB Interlayer - 6.76mm ATG
2	1/8" Lami #2, 1/8" TP Cap - 1/2" Airspace - 1/8" #4 - 0.060" PVB Interlayer - 6.76mm ATG
3	1/4" Lami #3, 1/4" HS Cap - 1/2" Airspace - 1/8" HS - 0.060" PVB Interlayer - 6.76mm ATG
4	1/8" Lami #2, 1/8" TP Cap - 1/2" Airspace - 1/8" HS - 0.060" PVB Interlayer - 6.76mm ATG
5	1/8" Lami #2, 1/8" TP Cap - 1/2" Airspace - 1/8" TP - 0.060" SG Interlayer - 6.76mm ATG
6	1" Lami #3, 3/16" #4 Cap - 1/2" Airspace - 3/16" #4 - 0.060" PVB Interlayer - 6.76mm ATG
7	1" Lami #2, 3/16" TP Cap - 1/2" Airspace - 3/16" #4 - 0.060" PVB Interlayer - 6.76mm ATG
8	1" Lami #3, 3/16" HS Cap - 1/2" Airspace - 3/16" HS - 0.060" PVB Interlayer - 6.76mm ATG
9	1" Lami #2, 3/16" TP Cap - 1/2" Airspace - 3/16" HS - 0.060" PVB Interlayer - 6.76mm ATG

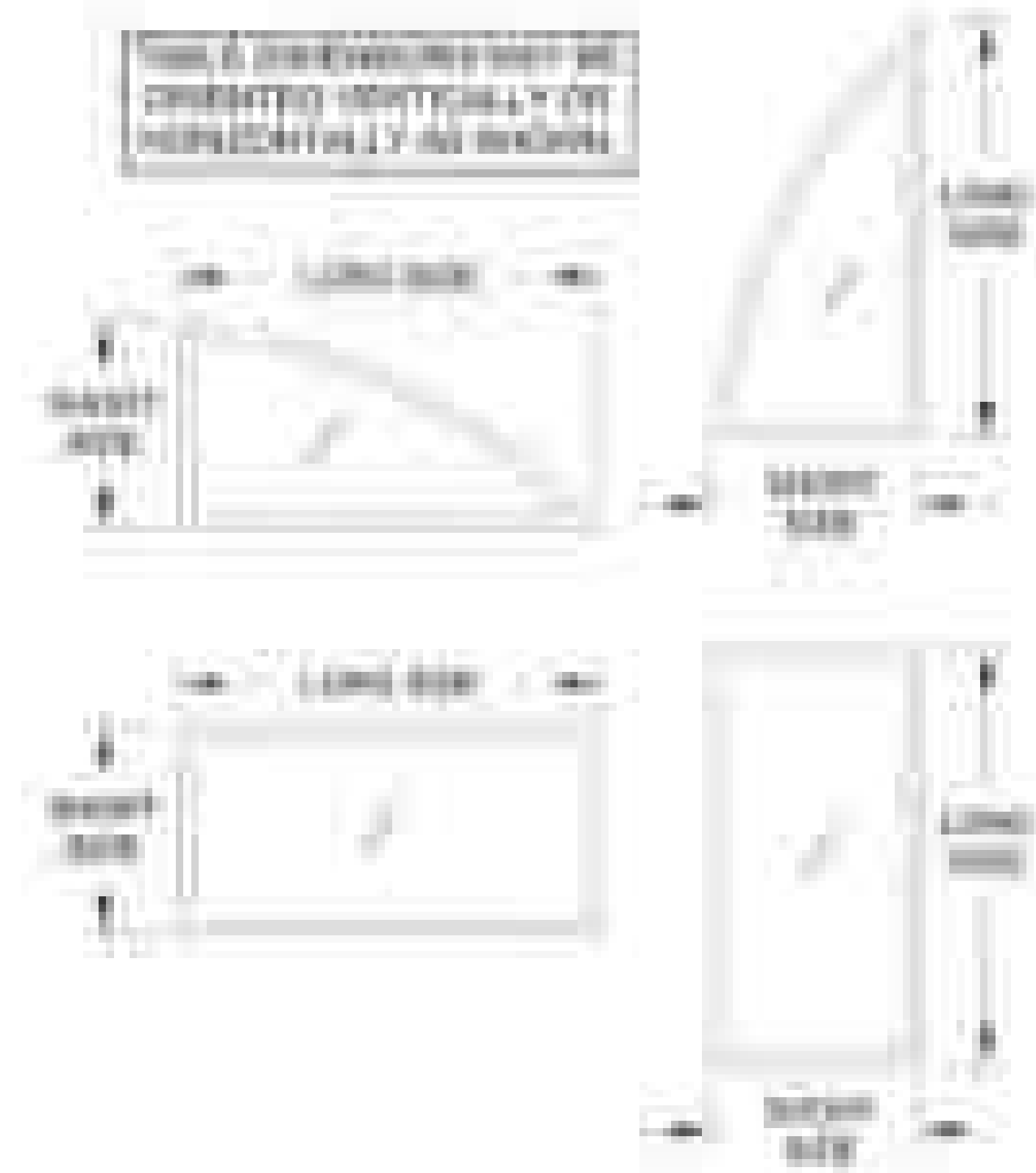
GLASS USED ADJOINING IN-FILL IN THE PAINT MUST HAVE A SUPPRESSED CAP



TYP. GLAZING DETAIL

Design Pressure (+/-, psf)

[illegible]



Design Pressure (+/-, psf)

[illegible]

[redacted]

NOTES:

[illegible]

PGT

[illegible]

Table 6

Design Pressure (+/-, psf)

Roof Zone & Effective Area	Wind Speed (3-sec gust, mph)													
	110	120	130	140	150 MPH	160	170	180	190	200	210	220	230	240
1	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55	+51/-63	+58/-72	+65/-80	+72/-89	+80/-98	+88/-108	+96/-119	+105/-130
2	+28/-37	+34/-45	+41/-54	+48/-64	+56/-74	+64/-85	+73/-97	+82/-111	+92/-123	+102/-137	+112/-152	+123/-168	+134/-185	+146/-203
3	+28/-37	+34/-45	+41/-54	+48/-64	+56/-74	+64/-85	+73/-97	+82/-111	+92/-123	+102/-137	+112/-152	+123/-168	+134/-185	+146/-203
4	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55	+51/-63	+58/-72	+65/-80	+72/-89	+80/-98	+88/-108	+96/-119	+105/-130
5	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55	+51/-63	+58/-72	+65/-80	+72/-89	+80/-98	+88/-108	+96/-119	+105/-130
7a	+28/-37	+34/-45	+41/-54	+48/-64	+56/-74	+64/-85	+73/-97	+82/-111	+92/-123	+102/-137	+112/-152	+123/-168	+134/-185	+146/-203
7c	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55	+51/-63	+58/-72	+65/-80	+72/-89	+80/-98	+88/-108	+96/-119	
8a	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55	+51/-63	+58/-72	+65/-80	+72/-89	+80/-98			
8b	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55	+51/-63	+58/-72	+65/-80	+72/-89				
9	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55	+51/-63							
10a	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48	+45/-55								
10b	+20/-24	+24/-29	+29/-35	+34/-41	+39/-48									
10c	+20/-24	+24/-29	+29/-35	+34/-41										
11	+20/-24	+24/-29	+29/-35											
12	+20/-24	+24/-29												
13	+20/-24													

Note 1: [illegible] applicable for [illegible] ft² [illegible]

Note 2: [illegible] applicable for [illegible] ft²

N/A



Table 7

Design Pressure (+/-, psf)

Wind Speed 3-sec gust (mph) [illegible]

Roof Zone & Effective Area	Wind Speed (3-sec gust, mph)															
	110	120	130	140	150 MPH	160	170	180	190	200	210	220	230	240	250	260
1	+/-20	+/-24	+/-29	+/-34	+/-39	+/-45	+/-51	+/-58	+/-65	+/-72	+/-80	+/-88	+/-96	+/-105	+/-114	+/-124
2	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146	+/-158	+/-171
3	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
4	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
5	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
7a	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
7c	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
8a	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
8b	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
9	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
10a	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
10b	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
10c	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
11	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
12	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		
13	+/-28	+/-34	+/-41	+/-48	+/-56	+/-64	+/-73	+/-82	+/-92	+/-102	+/-112	+/-123	+/-134	+/-146		

Note 1: [illegible] applicable for [illegible] ft² [illegible]

Note 2: [illegible] applicable for [illegible] ft²

N/A

NOTES:

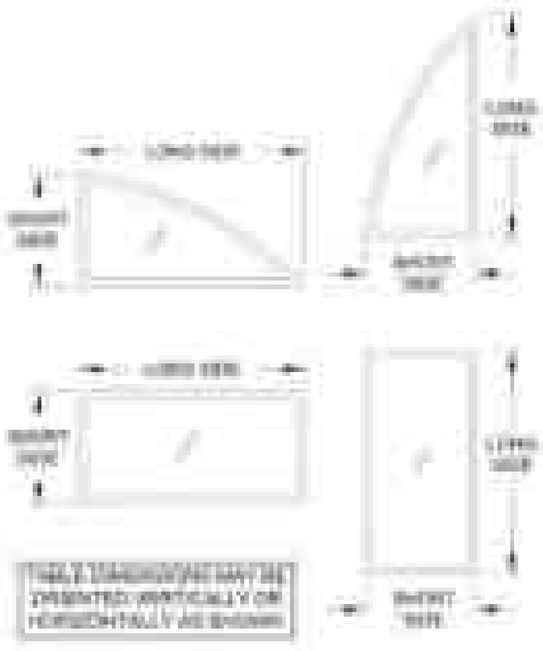
1. [illegible]
2. [illegible]
3. [illegible]

ICC

TABLE 1

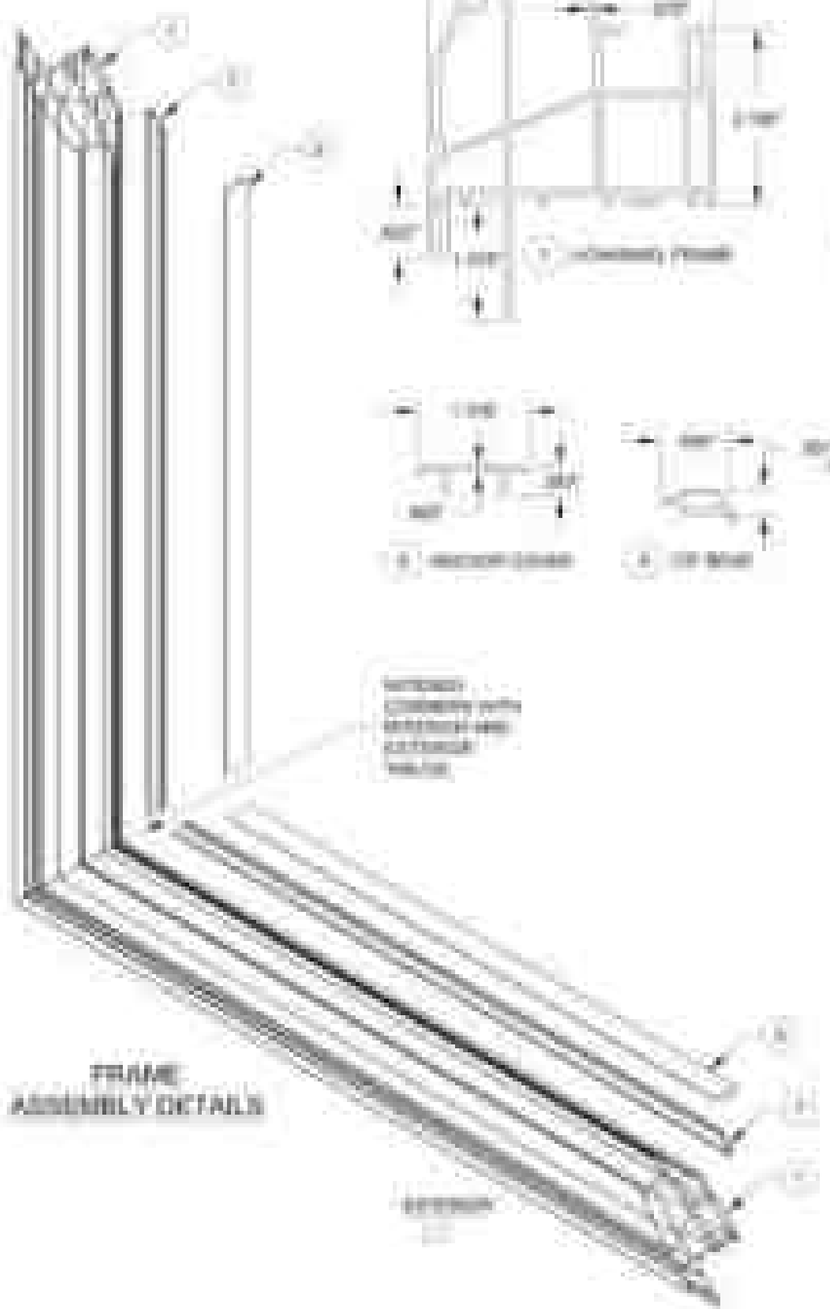
Design Pressure (+/-, psf)																	
Mean Roof Height (ft)	Zone	10 or less	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
Gable Roof Angles 7° to 27°	1	+19.4/-20.1	+19.4/-21.1	+19.4/-21.9	+19.4/-22.6	+19.4/-23.2	+19.4/-23.8	+19.4/-24.3	+19.4/-24.8	+19.4/-25.3	+19.4/-25.7	+19.4/-26.1	+19.4/-26.5	+19.4/-26.9	+19.4/-27.3	+19.4/-27.6	+19.4/-28.0
	2	+19.4/-30.1	+19.4/-31.6	+19.4/-32.8	+19.4/-33.9	+19.4/-34.8	+19.4/-35.7	+19.4/-36.5	+19.4/-37.2	+19.4/-37.9	+19.4/-38.6	+19.4/-39.2	+19.4/-39.8	+19.4/-40.4	+19.4/-41.0	+19.4/-41.4	+19.4/-42.0
	3	+19.4/-30.1	+19.4/-31.6	+19.4/-32.8	+19.4/-33.9	+19.4/-34.8	+19.4/-35.7	+19.4/-36.5	+19.4/-37.2	+19.4/-37.9	+19.4/-38.6	+19.4/-39.2	+19.4/-39.8	+19.4/-40.4	+19.4/-41.0	+19.4/-41.4	+19.4/-42.0
	1	+19.4/-20.1	+19.4/-21.1	+19.4/-21.9	+19.4/-22.6	+19.4/-23.2	+19.4/-23.8	+19.4/-24.3	+19.4/-24.8	+19.4/-25.3	+19.4/-25.7	+19.4/-26.1	+19.4/-26.5	+19.4/-26.9	+19.4/-27.3	+19.4/-27.6	+19.4/-28.0
	2	+19.4/-30.1	+19.4/-31.6	+19.4/-32.8	+19.4/-33.9	+19.4/-34.8	+19.4/-35.7	+19.4/-36.5	+19.4/-37.2	+19.4/-37.9	+19.4/-38.6	+19.4/-39.2	+19.4/-39.8	+19.4/-40.4	+19.4/-41.0	+19.4/-41.4	+19.4/-42.0
	3	+19.4/-30.1	+19.4/-31.6	+19.4/-32.8	+19.4/-33.9	+19.4/-34.8	+19.4/-35.7	+19.4/-36.5	+19.4/-37.2	+19.4/-37.9	+19.4/-38.6	+19.4/-39.2	+19.4/-39.8	+19.4/-40.4	+19.4/-41.0	+19.4/-41.4	+19.4/-42.0
	1	+19.4/-20.1	+19.4/-21.1	+19.4/-21.9	+19.4/-22.6	+19.4/-23.2	+19.4/-23.8	+19.4/-24.3	+19.4/-24.8	+19.4/-25.3	+19.4/-25.7	+19.4/-26.1	+19.4/-26.5	+19.4/-26.9	+19.4/-27.3	+19.4/-27.6	+19.4/-28.0
	2	+19.4/-30.1	+19.4/-31.6	+19.4/-32.8	+19.4/-33.9	+19.4/-34.8	+19.4/-35.7	+19.4/-36.5	+19.4/-37.2	+19.4/-37.9	+19.4/-38.6	+19.4/-39.2	+19.4/-39.8	+19.4/-40.4	+19.4/-41.0	+19.4/-41.4	+19.4/-42.0
	3	+19.4/-30.1	+19.4/-31.6	+19.4/-32.8	+19.4/-33.9	+19.4/-34.8	+19.4/-35.7	+19.4/-36.5	+19.4/-37.2	+19.4/-37.9	+19.4/-38.6	+19.4/-39.2	+19.4/-39.8	+19.4/-40.4	+19.4/-41.0	+19.4/-41.4	+19.4/-42.0



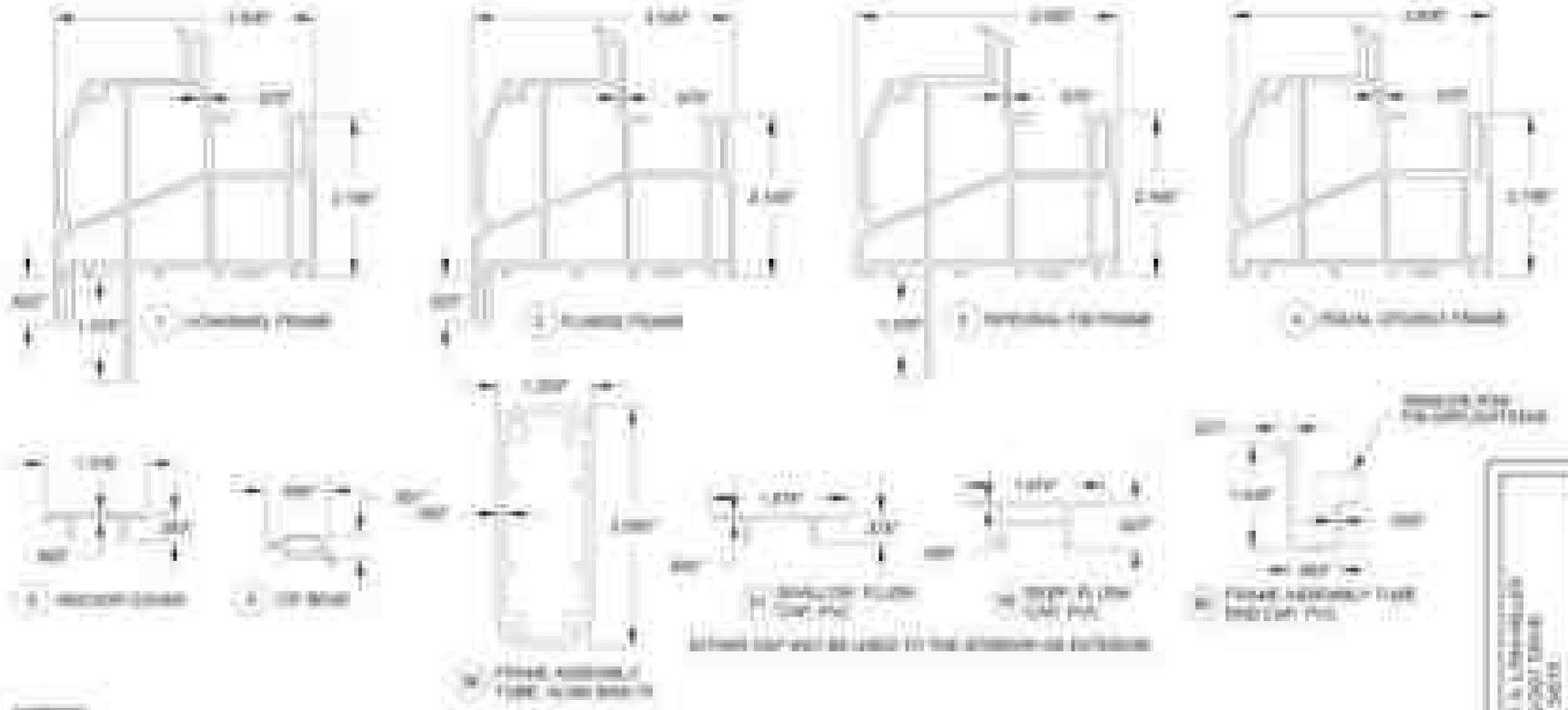


NOTES:

ACT



TRIM
ASSEMBLY DETAILS



#	Part #	Description	Material
1	[illegible]	[illegible] Fillrite	PVC
2	[illegible]	Flange Frame	PVC
3	[illegible]	Weather Fin Finish	PVC
4	[illegible]	Blind Leg/Hex Frame	PVC
5	[illegible]	Anchor Cover	PVC
6	[illegible]	1/8" ID Glazing Bead	PVC
7a		Backbedding, UC 1100 or Dow 791 or [illegible] 995	Silicone
7b	[illegible]	Spring Block (1/8" x 1" x 1/8"), 80 m/ 3 dia.	PVC
8	[illegible]	#8 x SuperScrew or Metal Screw	Varies
9	[illegible]	Frame Assembly Tube	Alum. Bare
10	[illegible]	Stable Finish Cap	PVC
11	[illegible]	Deep Fish Cap	PVC
12	[illegible]	Frame Assembly Tube End Cap	PVC

NOTES:
1. SOME PARTS MAY BE REMOVED FOR CLARITY.
2. [illegible]

PGT