



**BUILDING CODE COMPLIANCE OFFICE (BCCO)  
PRODUCT CONTROL DIVISION**

**MIAMI-DADE COUNTY, FLORIDA  
METRO-DADE FLAGLER BUILDING  
140 WEST FLAGLER STREET, SUITE 1603  
MIAMI, FLORIDA 33130-1563  
(305) 375-2901 FAX (305) 375-2908**

**NOTICE OF ACCEPTANCE (NOA)**

**Harmon, Inc.  
2104 Corporate Drive  
Boynton Beach, FL 33426**

**SCOPE:**

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) 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 Division (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. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division 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 Florida Building Code, including the High Velocity Hurricane Zone.

**DESCRIPTION: HI7000 (8" Monolithic & Insulated Laminated Glass) Aluminum Window Wall System**

**APPROVAL DOCUMENT:** Drawing No. 001\_HI7000\_Lm, titled "HI 7000 Large Missile", sheets 1 through 20 of 20, dated 06/28/04, prepared by manufacturer, signed and sealed by Lee A. Granquist, P.E., bearing the Miami-Dade County Product Control Approval stamp with the Notice of Acceptance number and approval date by the Miami-Dade County Product Control Division.

**MISSILE IMPACT RATING: Large and Small Missile Impact**

**LABELING:** Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and 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.

This NOA consists of this page 1 and evidence pages E-1, and E-2, as well as approval document mentioned above

The submitted documentation was reviewed by **Herminio F. Gonzalez, P.E., Director, BCCO**

*JGJ*  
*8/12/04*  


**NOA No 04-0217.11  
Expiration Date: September 02, 2009  
Approval Date: September 02, 2004  
Page 1**

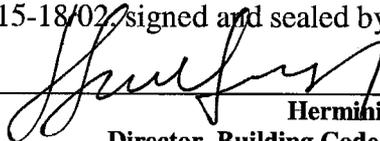
**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**A. DRAWINGS**

1. Manufacturer's die drawings and sections.
2. Drawing No. **001\_HI7000\_Lm**, titled "HI 7000 Large Missile", sheets 1 through 20 of 20, dated 06/28/04, prepared by manufacturer, signed and sealed by Lee A. Granquist, P.E.

**B. TESTS**

1. Test reports on 1) Air Infiltration Test, per FBC, TAS 202-94  
2) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94  
3) Water Resistance Test, per FBC, TAS 202-94  
4) Large Missile Impact Test per FBC, TAS 201-94  
5) Cyclic Wind Pressure Loading per FBC, TAS 203-94  
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 10,11,12 & 13), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0107-03**, various dates, signed and sealed by Vinu J. Abraham, P.E.
2. Test reports on 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94  
2) Large Missile Impact Test per FBC, TAS 201-94  
3) Cyclic Wind Pressure Loading per FBC, TAS 203-94  
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 1), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0511-03**, dated 5/06-08/03, signed and sealed by Vinu J. Abraham, P.E.
3. Test reports on 1) Air Infiltration Test, per FBC, TAS 202-94  
2) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94  
3) Large Missile Impact Test per FBC, TAS 201-94  
4) Cyclic Wind Pressure Loading per FBC, TAS 203-94  
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 1), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0711-03**, dated 7/7-16/03, signed and sealed by Vinu J. Abraham, P.E.
4. Test reports on 1) Cyclic Wind Pressure Loading per FBC, TAS 203-94  
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen W1), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0627-03**, dated 06/23/03, signed and sealed by Vinu J. Abraham, P.E.
5. Test reports on 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94  
2) Large Missile Impact Test per FBC, TAS 201-94  
3) Cyclic Wind Pressure Loading per FBC, TAS 203-94  
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 2,3,4), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1122-02**, dated 11/15-18/02, signed and sealed by Vinu J. Abraham, P.E.



Herminio F. Gonzalez, P.E.  
Director, Building Code Compliance Office  
NOA No 04-0217.11

Expiration Date: September 02, 2009  
Approval Date: September 02, 2004

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

6. Test reports on 1) Large Missile Impact Test per FBC, TAS 201-94  
2) Cyclic Wind Pressure Loading per FBC, TAS 203-94  
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 1,2), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1125-03**, dated 11/24-26/03, signed and sealed by Vinu J. Abraham, P.E.
- C. CALCULATIONS**
1. Anchor Calculations, ASTM-E1300, and structural analysis, prepared by Larson Engineering of Minnesota, dated 06/07/04, signed and sealed by Lee A. Granquist, P.E.
  2. Anchor Calculations, ASTM-E1300, and structural analysis, prepared by Larson Engineering of Minnesota, dated 11/06/03, signed and sealed by Lee A. Granquist, P.E.
- D. QUALITY ASSURANCE**
1. Miami Dade Building Code Compliance Office (BCCO).
- E. MATERIAL CERTIFICATIONS**
1. Notice of Acceptance No. **03-0421.01** issued to Solutia, Inc. for "Saflex HP" dated 05/22/03, expiring on 04/14/08.
  2. Notice of Acceptance No. **01-0205.02** issued to Solutia, Inc. for "Saflex IIIIG PVB" dated 05/21/01, expiring on 05/21/06.
  3. Notice of Acceptance No. **03-0415.13** issued to Solutia, Inc. for "Vanceva Composites Interlayer for Laminated Glass" dated 12/11/03, expiring on 12/11/08.
  4. Notice of Acceptance No. **02-1205.03** issued to Security Impact Glass Holding L.L.C. for "SAF-GLAS Polycarbonate Laminate" dated 01/02/03, expiring on 12/16/08.
- F. STATEMENTS**
1. Statement letter of conformance, dated February 05, 2004 signed by Lee A. Granquist, P.E.
  2. Statement letter of no financial interest, dated February 05, 2004, signed and sealed by Lee A. Granquist, P.E.
- G. OTHER**
1. Letter from the consultant stating that the product is in compliance with the Florida Building Code (Code).



Herminio F. Gonzalez, P.E.  
Director, Building Code Compliance Office

NOA No 04-0217.11

Expiration Date: September 02, 2009

Approval Date: September 02, 2004

# HARMON HI 7000 LARGE MISSILE PREGLAZED AND UNITIZED

## DESIGN PARAMETERS

FLORIDA BUILDING CODE (HVHZ) REQUIREMENTS  
 TAS-201 - LARGE & SMALL MISSILE IMPACT  
 TAS-202 - AIR LEAKAGE, WATER PENETRATION & STRUCTURAL PERFORMANCE  
 (WATER @ 20 psf, STRUCTURAL @ +110/-130 psf & +79.2/-148.9 psf)  
 TAS-203 - CYCLING

ASTM STANDARDS (MIAMI)  
 E283 - AIR LEAKAGE  
 E330 - STRUCTURAL PERFORMANCE  
 E331 - WATER PENETRATION  
 E1886 LEVEL "D" - IMPACT BY "MISSILE" & CYCLIC PRESSURES  
 E1996 - IMPACT BY WINDBORNE DEBRIS

## SYSTEM DIMENSIONS

2 1/2" X 8" (MONOLITHIC GLASS)  
 2 1/2" X 8 3/4" (INSULATED GLASS)

## FINISH

ON A PER JOB BASIS (EXPOSED AREAS)  
 CLEAR ANODIZED (NON-EXPOSED AREAS)  
 MILL FINISH (NON-EXPOSED AREAS) SETTING CHAIRS, ANCHORS, ETC.  
 ALUMINUM IN CONTACT WITH DISSIMILAR MATERIALS SHALL BE PROTECTED  
 AS SPECIFIED IN SECTION 2003.8.4 OF THE FLORIDA BUILDING CODE

## ALUMINUM ALLOY

6063-T5 6063-T6 6005-T5 6105-T5  
 SEE ALSO ALUMINUM MATERIAL LIST ON SHT 2

## STEEL

ALL CLIP ANGLES OR REINFORCING STEEL SHALL BE PER ASTM-36 (PRIME PAINTED)

## WELDING

CURRENT ASTM STANDARDS E70 - XX ELECTRODES UNLESS OTHERWISE NOTED

## GLASS

SEE SHEET 7 & 8

## GASKETS

SILICONE OR EPDM --- SEE GASKET CHART ON SHEET 2

## SEALANTS

STRUCTURAL SILICONE - DOW CORNING 983 (TWO PART) / RE-GLAZING - DOW CORNING 995  
 FRAME ASSEMBLY SEALS - DOW CORNING 795  
 PERIMETER WEATHER SEAL, BACKER ROD AND SEALANT ON A PER JOB BASIS

## ANCHORAGE

FASTENERS TO BE CORROSION RESISTANT AS DETAILED HEREIN AND CONFORM TO F.B.C.  
 SEE ASSEMBLY SCREW CHART ON SHEET 2

## INDEX OF DRAWINGS

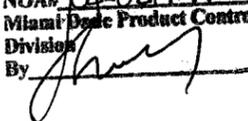
PAGE	DESCRIPTION
1	COVER SHEET - DESIGN PARAMETERS
2	MATERIAL LISTS
3	GLAZING DETAILS & RE-GLAZING DETAILS
4	ELEVATION - SIMPLE SPAN
5	ELEVATION - TWIN SPAN
6	ELEVATION - TWIN SPAN w/ STACK HORIZONTAL
7	GLASS SCHEDULE - LARGE MISSILE
8	GLASS SCHEDULE - SMALL MISSILE & ADDITIONAL TESTING
9	MULLION APPLICATION CHARTS
10	ANCHOR REVIEW
11	DETAILS OF TYPICAL HEADS, SILLS, & INTERMEDIATE HORIZONTALS
12	DETAILS OF TYPICAL VERTICALS
13	DETAIL OF DOOR, HEAD & JAMB AND SEGMENTED VERTICAL
14	DETAIL OF 90 DEGREE OUTSIDE CORNER
15	DETAIL OF STACK HORIZONTAL
16	STRAP ANCHOR & THRU-FRAME ANCHOR
17	ANGLES IN VERTICAL ANCHOR & ALUMINUM LUG IN VERTICAL ANCHOR
18	MID-SPAN ANCHOR & STACK WALL ANCHOR
19	STACK WALL ANCHOR - EXPLODED ISOMETRIC VIEW
20	JAMB ANCHORS

## NOTE:

FOR SYSTEM SELECTION  
 SEE SHEETS 4, 6 or 9.

 Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

## DADE CO. STAMP

Approved as complying with the  
 Florida Building Code  
 Date 09/02/04  
 NOAH DE-0217-11  
 Miami Dade Product Control  
 Division  
 By 



 **Harmon**

HI 7000 LARGE MISSILE  
 COVER SHEET

DATE: 06/28/04 

DWG. NO. 001\_HI7000\_lm 

SHEET 01 OF 20

FRAME ASSEMBLY FASTENER LIST				GASKET LIST				ALUMINUM MATERIAL LIST						
								DESCRIPTION	PART #	ALLOY	TYPICAL THICK.	REMARKS	REV	
A	PRESSURE PLATE BOLT FOR INSULATED GLASS SYSTEM	#14 X 1" HWH S.S. "A" POINT XYLAN COATED	2 1/2" FROM END AND 9" ON CENTER	A		PART # 770301	85 DUR. SILICONE	INTERIOR FIXED GASKET FOR 5/8" & 1 3/8" THICK GLASS (1/4" THICK SEAL)						
B	TYPICAL HORIZONTAL FRAME ASSEMBLY SCREW	#12 X 1 1/2" HWH "A" POINT XYLAN COATED	(4) REQUIRED PER JOINT	B		PART # 750301	70 DUR. SILICONE	VERTICAL WHISKER GASKET	1	FEMALE VERTICAL MULLION	306001	6063-T6	.110	
C	NON-TYPICAL HORIZONTAL ASSEMBLY SCREW TO BYPASS STEEL	#12 X 1 1/2" PFH "A" POINT XYLAN COATED	(4) REQUIRED PER JOINT	C		PART # 720301	70 DUR. EPDM	EXTERIOR SLIDE IN VERTICAL PRESSURE PLATE	2	MALE VERTICAL MULLION	306002	6063-T6	.110	
D	ANCHOR STEEL FIXING PLATE INTO HORIZONTAL	#17 X 1" STRIPPER BOLT	(1) REQUIRED PER PLATE	D		PART # 730301	70 DUR. EPDM	EXTERIOR WEDGE	3	INTERMEDIATE HORIZONTAL	306101	6063-T5	.100	
E	TEMPORARY ANCHOR FOR CORNER END CAPS	#10 X 1 1/4" TEK SCREW	(1) REQUIRED PER END CAP	E		PART # 790301	70 DUR. EPDM	THERMAL BREAK FOR PRESSURE PLATE	4	JAMB - MONOLITHIC GLASS	306004	6063-T6	.110	
F	PRESSURE PLATE BOLT FOR MONOLITHIC GLASS SYSTEM	#14 X 3/4" HWH S.S. "A" POINT XYLAN COATED	2 1/2" FROM END AND 9" ON CENTER	F		PART # 770302	85 DUR. SILICONE	INTERIOR FIXED GASKET FOR 9/16" & 1 5/16" THICK GLASS (5/16" THICK SEAL)	5	HEAD & SILL - MONOLITHIC GLASS	306103	6063-T5	.110	
G	ALLEN HEAD SCREW FOR ANCHOR USED w/ STACK HORIZONTAL	1/4-20 ALLEN HEAD BOLT GRADE 5	LOCATED AT TOP & BOTTOM OF ANCHOR	G		PART # 790303	90 DUR. EPDM	ALL PERIMETERS	6	JAMB - INSULATED GLASS	306003	6063-T6	.110	
				H		PART # 790302	90 DUR. EPDM	PERIMETER THERMAL BREAK	7	HEAD & SILL - INSULATED GLASS	306102	6063-T5	.110	
				J		PART # 780301	70 DUR. SILICONE	ZONE DAM FOR MONOLITHIC GLASS 2 1/2" LONG	8	JAMB COVER	300203	6063-T5	.100	
				K		PART # 780302	70 DUR. SILICONE	ZONE DAM FOR INSULATED GLASS 2 1/2" LONG	9	HEAD & SILL EXTERIOR COVER	300202	6063-T5	.100	
				L		PART # 700303	90 DUR. EPDM	5" LONG SETTING BLOCK. (TEAR IN HALF FOR MONOLITHIC GLASS)	10	HEAD & SILL INTERIOR FILLER	306401	6063-T5	.080	
				M		PART # 740301	70 DUR. EPDM	AT BUTT JOINT FOR MONOLITHIC GLASS	11	HORIZONTAL COVER	300201	6063-T5	.100	
				N		PART # 740302	70 DUR. EPDM	AT BUTT JOINT FOR INSULATED GLASS	12	VERTICAL COVER	600201	6063-T5	.060	
				O				INTERIOR FIXED TAPE FOR 5/8" & 1 3/8" THICK GLASS (1/4" THICK SEAL)	13	VERTICAL PRESSURE PLATE	300701	6105-T5	.100	
				P				INTERIOR FIXED TAPE FOR 9/16" & 1 5/16" THICK GLASS (5/16" THICK SEAL)	14	PERIMETER ADAPTOR - MONOLITHIC GLASS	300305	6105-T5	.080	
				Q				SPACER TAPE FOR SEGMENTED MULLION	15	PERIMETER ADAPTOR - INSULATED GLASS	300304	6105-T5	.080	
									16	HORIZONTAL ADAPTOR - MONOLITHIC GLASS	300303	6105-T5	.080	
									17	HORIZONTAL ADAPTOR - INSULATED GLASS	300302	6105-T5	.080	
									18	VERTICAL ADAPTOR - MONOLITHIC GLASS	300308	6105-T5	.093	
									19	VERTICAL ADAPTOR - INSULATED GLASS	300301	6105-T5	.093	
									20	ANTI-BUCKLING CLIP (EXTERIOR SIDE)	300306	6105-T5	.060	4" LONG 30" O.C. MAX.
									21	ANTI-BUCKLING CLIP (INTERIOR SIDE)	300310	6105-T5	.060	4" LONG 30" O.C. MAX.
									22	STRAP ANCHOR FEMALE	930102	6105-T5	.177	SEE DET. 1-4 SHT. 16
									23	STRAP ANCHOR MALE	930106	6105-T5	.187	SEE DET. 1-4 SHT. 16
									24	SLIDING ANCHOR FEMALE	930105	6105-T5	.250	SEE DET. 5-8 SHT. 17
									25	SLIDING ANCHOR MALE	930104	6105-T5	.435	SEE DET. 5-8 SHT. 17
									26	"STACK" SPLICE PLATE	930107	6005-T5	.187	SEE DET. 1 SHT. 15
									27	SERRATED PLATE	930110	6005-T5	.191	SEE DET. 3 & 4 SHT. 18
									28	"KNUCKLE" ANCHOR	930109	6005-T5	.250	SEE DET. 3 & 4 SHT. 18
									29	HOOK ANCHOR	930108	6005-T5	.250	SEE DET. 3 & 4 SHT. 18
									30	FLOOR EDGE PLATE	930111	6005-T5	.685	SEE DET. 3 & 4 SHT. 18
									31	ANTI-WALK ANGLE	.	6105-T5	.125	SEE DET. 3 & 4 SHT. 18

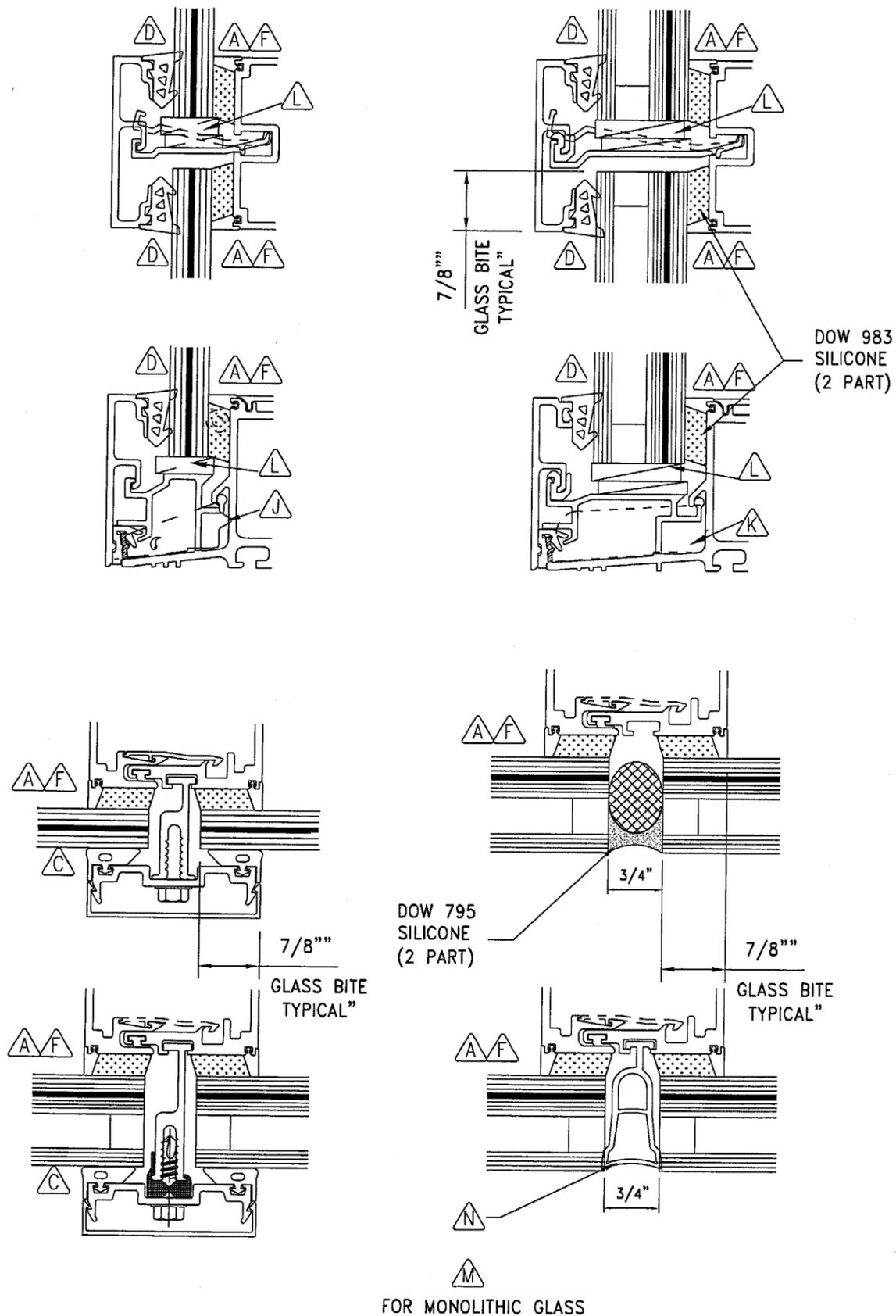
Larson Engineering of Minnesota  
3524 Labore Road  
White Bear Lake, MN 55110

DADE CO. STAMP  
Approved as complying with the  
Florida Building Code  
Date 09/02/04  
NOAH 04-0217-11  
Miami Dade Product Control  
Division  
By *[Signature]*

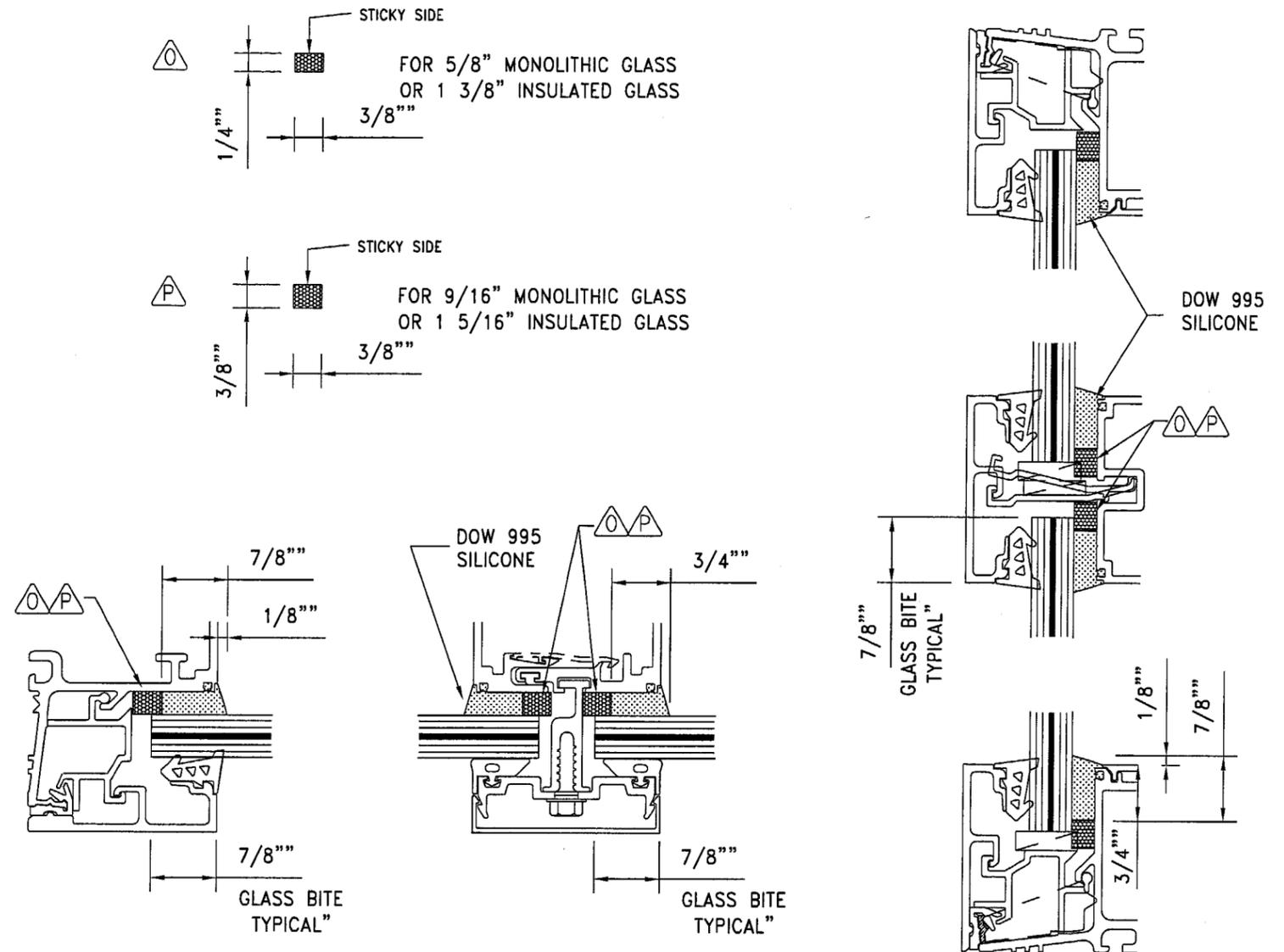
ENGINEER STAMP  
LEE A. GRANQUIST  
CERTIFICATE NO. 33327  
STATE OF FLORIDA  
REGISTERED ENGINEER  
JUL 29 2004  
CERTIFICATE OF AUTHORIZATION #9803

**Harmon**  
HI 7000 LARGE MISSILE  
MATERIAL LISTS  
DATE: 06/28/04  
DWG. NO. 002\_HI7000\_Im  
SHEET 02 OF 20

GLAZING DETAILS

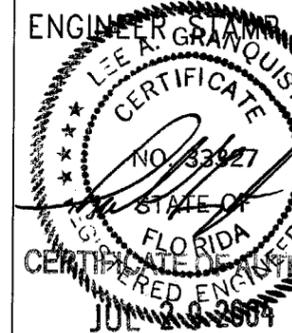


RE-GLAZING DETAILS



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**Harmon**

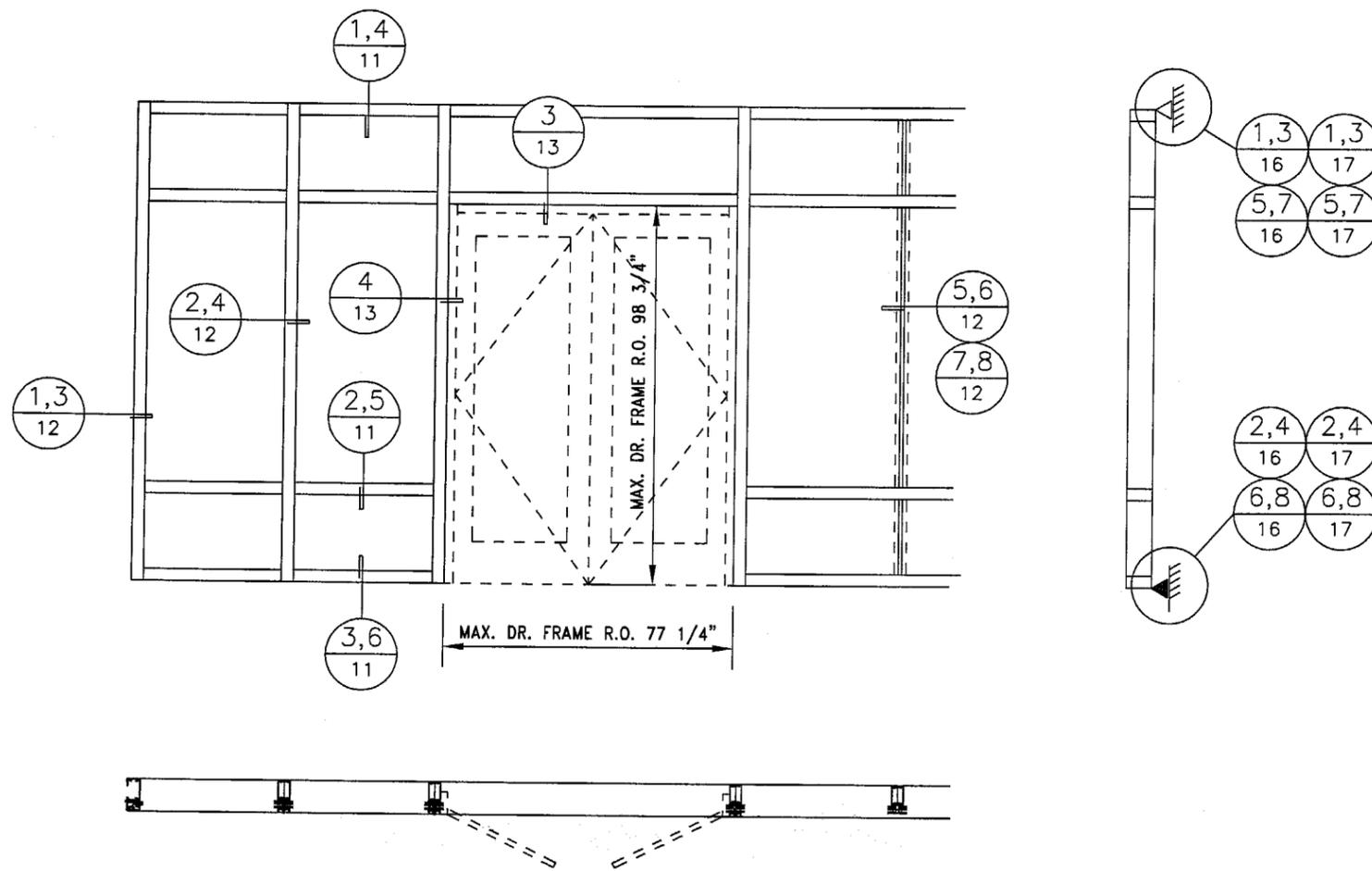
HI 7000 LARGE MISSILE  
 GLAZING DETAILS  
 RE-GLAZING DETAILS

DATE: 06/28/04

FLORIDA LICENSE #9803

DWG. NO. 003\_HI7000\_lm

SHEET 03 OF 20



**SYSTEM APPLICATION GUIDELINES:**

- 1 SELECT GLASS FROM CHARTS ON SHEET 7 & 8. NOTE GLASS THICKNESS AND 4-SIDE CAPTURED VERSES CAPTURED/SSG OPTIONS.
- 2 SELECT MULLION & REINFORCING AS REQUIRED FROM CHARTS ON SHEET 9 FOR SINGLE SPAN APPLICATION. APPLICATION BASED ON WIND LOAD, MODULE "W", AND SPAN "H". REFER TO GENERAL NOTES AND GUIDELINES REGARDING SPAN LIMITATIONS AND COMBINATIONS.
- 3 SELECT ANCHOR APPLICATIONS FROM SHEET 10. MAKE SELECTION BASED ON PERIMETER CONDITION AND END REACTIONS. NOTE MAXIMUM TESTED END REACTIONS FOR PROPER APPLICATION.
- 4 SELECT APPROPRIATE DETAILS FROM ELEVATION AT LEFT, BASED ON GLASS APPLICATION AND MULLION REINFORCING REQUIREMENTS. FOR SPECIFIC ANCHOR DETAILS, SEE DETAILS REFERENCED ON ANCHOR APPLICATION SHEET 10.

**GENERAL NOTES:**

- DOOR AREA TESTED IS 90 PSF.
- DOORS AND DOOR FRAMES ARE NOT PART OF THIS SUBMISSION. ANY DOOR USED MUST MEET DADE COUNTY NOA.

**DADE CO. STAMP**

Approved as complying with the Florida Building Code  
 Date 09/02/04  
 NOA# 04-0213.11  
 Miami Dade Product Control Division  
 By *[Signature]*

**ENGINEER STAMP**

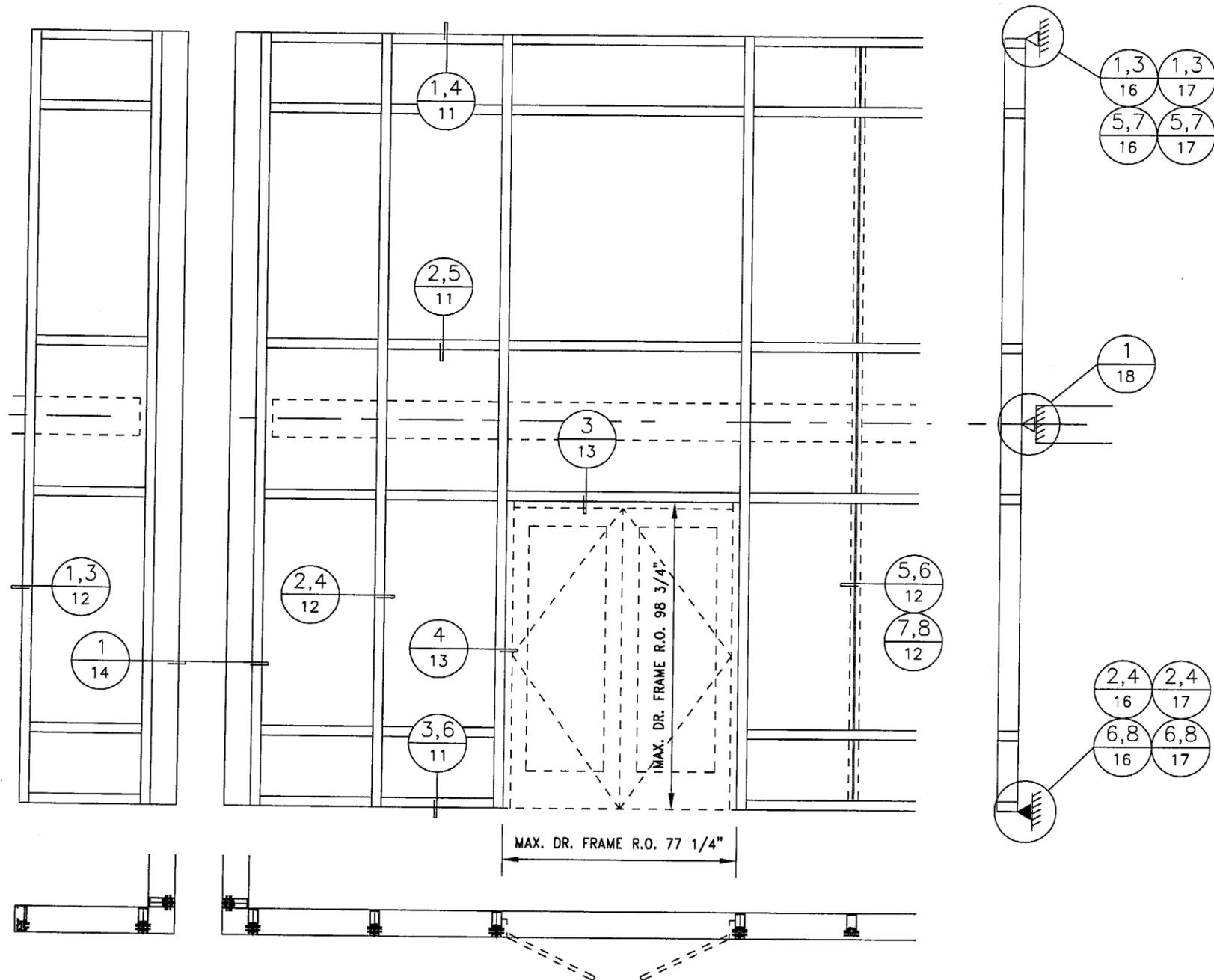
LEE A. GRANQUIST  
 CERTIFICATE NO. 28347  
 REGISTERED ENGINEER  
 STATE OF FLORIDA  
 JUL 29 2004

Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

**Harmon**

HI 7000 LARGE MISSILE  
 SINGLE SPAN APPLICATION  
 JAMBS

DATE: 06/28/04	1
CERTIFICATE OF AUTHORIZATION #9803	3
DWG. NO. 004_HI7000_lm	
SHEET 04 OF 20	



**SYSTEM APPLICATION GUIDELINES:**

- 1 SELECT GLASS FROM CHARTS ON SHEET 7 & 8. NOTE GLASS THICKNESS AND 4-SIDE CAPTURED VERSES CAPTURED/SSG OPTIONS.
- 2 SELECT MULLION & REINFORCING AS REQUIRED FROM CHARTS ON SHEET 9 FOR TWIN SPAN APPLICATION. APPLICATION BASED ON WIND LOAD, MODULE "W", AND SPAN "H". REFER TO GENERAL NOTES AND GUIDELINES REGARDING SPAN LIMITATIONS AND COMBINATIONS.
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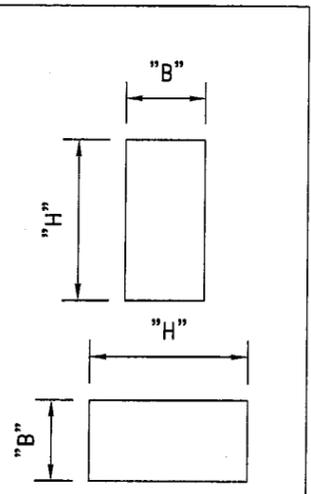
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 STATE OF  
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 06/28/04

**Harmon**  
 HI 7000 LARGE MISSILE  
 TWIN SPAN APPLICATION  
 DATE: 06/28/04  
 DWG. NO. 005\_HI7000\_lm  
 SHEET 05 OF 20

MONOLITHIC GLASS - LARGE MISSILE		
9/16" (.090) SAFLEX HS / HS		
COMPATIBLE SIZES		
"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE
UP TO 39 1/2"	120"	+/- 60 PSF
40 - 45 1/2"	114"	+/- 60 PSF
46 - 51 1/2"	102"	+/- 60 PSF
52 - 57 1/2"	95 1/4"	+/- 60 PSF
58 - 63 1/2"	84"	+/- 60 PSF
64 - 69 1/2"	78"	+/- 60 PSF
70 - 74"	74"	+/- 60 PSF
1/4" HS  .090 SOLUTIA SAFLEX		
9/16" (.100) SGP w/ FRIT HS / HS		
COMPATIBLE SIZES		
"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE
UP TO 39 1/2"	81"	+110/-130 PSF
40 - 45 1/2"	71"	+110/-130 PSF
46 - 51 1/2"	62 1/2"	+110/-130 PSF
52 - 56"	56"	+110/-130 PSF
1/4" HS  .100 DUPONT IONOPLAST		
5/8" (.180) HRG-2 TEMP / TEMP	TEST PRESSURE +110/-130 PSF	5,476 SQ IN.
COMPATIBLE SIZES		
"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE
UP TO 39 1/2"	120"	+110/-130 PSF
40 - 45 1/2"	110"	+110/-130 PSF
46 - 51 1/2"	98"	+110/-130 PSF
52 - 57 1/2"	89 1/2"	+110/-130 PSF
58 - 63 1/2"	83"	+110/-130 PSF
64 - 69 1/2"	78"	+110/-130 PSF
70 - 74"	74"	+110/-130 PSF
1/4" TEMP  .050 POLYURETHANE		
1/4" TEMP  .080 POLYCARBONATE		
1/4" TEMP  .050 POLYURETHANE		

MONOLITHIC GLASS - LARGE MISSILE		
9/16" (.075) VS02 HS / HS		
COMPATIBLE SIZES		
"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE
UP TO 39 1/2"	120"	+110/-130 PSF
40 - 45 1/2"	110"	+/- 108 PSF
46 - 51 1/2"	98"	+/- 97 PSF
52 - 57 1/2"	89 1/2"	+/- 88.6 PSF
58 - 63 1/2"	83"	+/- 89.4 PSF
64 - 69 1/2"	78"	+/- 89.2 PSF
70 - 74"	74"	+/- 93.4 PSF
1/4" HS  .075 VS02		

INSULATED GLASS - LARGE MISSILE					
1 3/8" (.180) HRG 2 IG HS / HS - HS			1 5/16" (.075) VS02 HS / HS-HS		
COMPATIBLE SIZES			COMPATIBLE SIZES		
"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE	"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE
UP TO 39 1/2"	120"	+110 / -143 PSF	UP TO 39 1/2"	120"	+110 / -130 PSF
40 - 45 1/2"	110"	+110 / -117 PSF	40 - 45 1/2"	110"	+110 / -117 PSF
46 - 51 1/2"	98"	+/- 103 PSF	46 - 51 1/2"	98"	+/- 103 PSF
52 - 57 1/2"	89 1/2"	+/- 95.6 PSF	52 - 57 1/2"	89 1/2"	+/- 95.6 PSF
58 - 63 1/2"	83"	+/- 91.9 PSF	58 - 63 1/2"	83"	+/- 91.9 PSF
64 - 69 1/2"	78"	+/- 91.7 PSF	64 - 69 1/2"	78"	+/- 91.7 PSF
70 - 74"	74"	+/- 96 PSF	70 - 74"	74"	+/- 96 PSF
1/4" HS  .050 POLYURETHANE			1/4" HS  .075 VS02		
1/4" HS  .080 POLYCARBONATE			1/4" HS		
1/4" HS  .050 POLYURETHANE			1/4" HS		
1 3/8" (.180) HRG 2 IG HS / HS - HS					
COMPATIBLE SIZES			COMPATIBLE SIZES		
"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE	"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE
UP TO 39 1/2"	110 1/4"	+110 / -143 PSF	UP TO 39 1/2"	120"	+110 / -130 PSF
40 - 45 1/2"	95"	+110 / -126 PSF	40 - 45 1/2"	110"	+110 / -117 PSF
46 - 51 1/2"	84"	+110 / -118 PSF	46 - 51 1/2"	98"	+/- 103 PSF
52 - 57 1/2"	75 3/4"	+110 / -114 PSF	52 - 57 1/2"	89 1/2"	+/- 95.6 PSF
58 - 63 1/2"	68 1/2"	+110 / -115 PSF	58 - 63 1/2"	83"	+/- 91.9 PSF
64 - 66"	66"	+110 / -115 PSF	64 - 69 1/2"	78"	+/- 91.7 PSF
1/4" HS  .050 POLYURETHANE			1/4" HS  .100 DUPONT IONOPLAST		
1/4" HS  .080 POLYCARBONATE			1/4" HS		
1/4" HS  .050 POLYURETHANE			1/4" HS		
1 5/16" (.100) SGP IG HS / HS - HS					
COMPATIBLE SIZES			COMPATIBLE SIZES		
"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE	"B" - DLO	"H" - DLO MAX	DESIGN PRESSURE
UP TO 39 1/2"	120"	+110 / -143 PSF	UP TO 39 1/2"	120"	+110 / -130 PSF
40 - 45 1/2"	110"	+110 / -117 PSF	40 - 45 1/2"	110"	+110 / -117 PSF
46 - 51 1/2"	98"	+/- 103 PSF	46 - 51 1/2"	98"	+/- 103 PSF
52 - 57 1/2"	89 1/2"	+/- 95.6 PSF	52 - 57 1/2"	89 1/2"	+/- 95.6 PSF
58 - 63 1/2"	83"	+/- 91.9 PSF	58 - 63 1/2"	83"	+/- 91.9 PSF
64 - 69 1/2"	78"	+/- 91.7 PSF	64 - 69 1/2"	78"	+/- 91.7 PSF
70 - 74"	74"	+/- 96 PSF	70 - 74"	74"	+/- 96 PSF



DIM. "B" AND "H" REFER TO DLO ON SHOP DRAWINGS

**NOTE:**  
ALL GLASS TYPES HAVE BEEN TESTED FOR 4-SIDE CAPTURED APPLICATION.

**ONLY GLASS TYPES 16 & 17 HAVE BEEN TESTED FOR VERTICAL SSG APPLICATION.**

**GENERAL NOTES:**

- THE ABOVE GLASS TYPES HAVE BEEN TESTED FOR LARGE MISSILE.
- SYSTEM HAS A 2 1/2" FACE DIMENSION THEREFORE A 60" C/L TO C/L HAS A 57 1/2" DLO
- INSULATED GLASS HAS A 1/2" AIR SPACE
- HS - HEAT STRENGTHENED
- TEMP - TEMPERED

**GLASS FORMULA:**

- DLO + 1 3/4" EQUALS ACTUAL GLASS SIZE HORIZONTALLY & VERTICALLY

**DADE CO. STAMP**

Approved as complying with the Florida Building Code  
 Date 09/02/04  
 NOA# 04-0217-11  
 Miami Dade Product Control Division  
 By *[Signature]*

Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

**Harmon**  
 HI 7000 LARGE MISSILE GLASS APPLICATIONS  
 LARGE MISSILE

DATE: 06/28/04  
 DWG. NO. 007\_HI7000\_lm  
 SHEET 07 OF 20

**ENGINEER STAMP**  
 CERTIFICATE OF AUTHORIZATION #9803  
 NO. 33327  
 STATE OF FLORIDA  
 REGISTERED ENGINEER  
 JUL 29 2004

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Larson Engineering of Minnesota  
3524 Labore Road  
White Bear Lake, MN 55110

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By [Signature]

ENGINEER STAMP



CERTIFICATE OF AUTHORIZATION #0803

JUL 29 2004



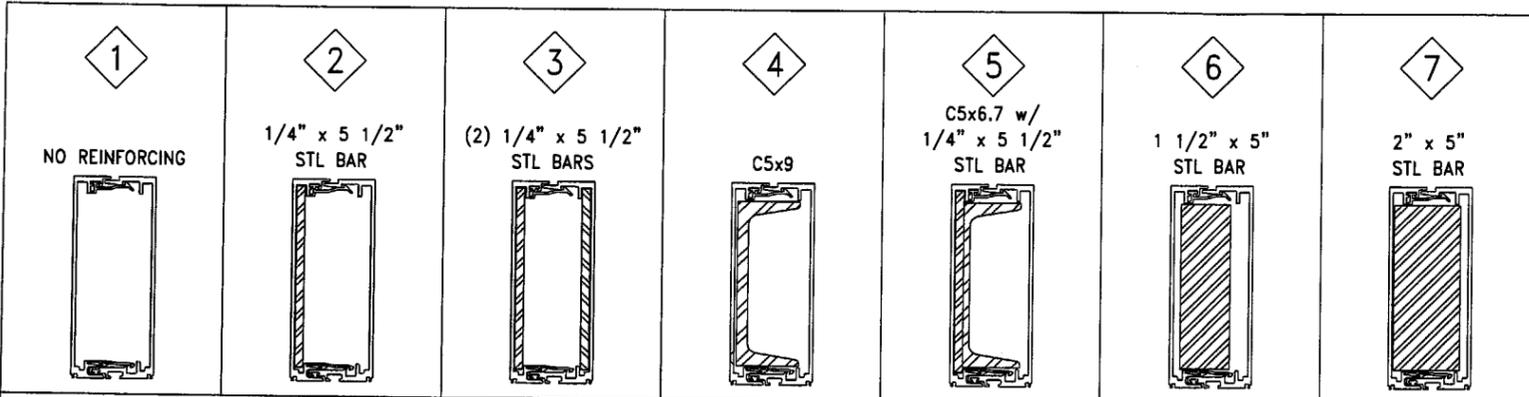
HI 7000 LARGE MISSILE  
GLASS APPLICATIONS  
SMALL MISSILE

DATE: 06/28/04

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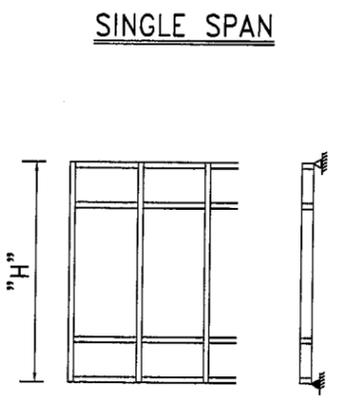
DWG. No: 008\_HI7000\_Im

SHEET 08 OF 20



**GENERAL NOTES:**

- "H" = MAXIMUM MULLION SPAN
- "W" = C/L TO C/L SPACING
- $W = \frac{W1 + W2}{2}$
- FOR SINGLE SPAN MAXIMUM DEFL. = L/180 or 1"
- FOR TWIN SPAN MAXIMUM DEFL. = L/175 or 3/4"
- (WHEN STEEL RIENF. IS USED, LENGTH OF STEEL IS PER SIGNED CALCS ON A PER JOB BASIS)



SINGLE SPAN APPLICATION								
OPTION W.L.	1	2	3	4	5	6	7	7
	"W"	"H"						
UP TO MAXIMUM 60 psf POS. OR NEGATIVE LOAD	3'-0"	11'-11"	15'-5"	16'-11"	17'-7"	18'-3"	19'-6"	20'-8"
	4'-0"	10'-4"	13'-9"	15'-9"	16'-4"	17'-0"	18'-2"	19'-2"
	5'-0"	9'-3"	12'-4"	14'-9"	15'-6"	16'-0"	17'-2"	18'-2"
	6'-0"	8'-5"	11'-3"	13'-6"	14'-7"	15'-4"	16'-5"	17'-4"
UP TO MAXIMUM 70 psf POS. OR NEGATIVE LOAD	3'-0"	11'-0"	14'-9"	16'-3"	16'-11"	17'-6"	18'-9"	19'-10"
	4'-0"	9'-7"	12'-9"	15'-2"	15'-9"	16'-4"	17'-5"	18'-6"
	5'-0"	8'-6"	11'-5"	13'-8"	14'-10"	15'-5"	16'-6"	17'-6"
	6'-0"	7'-9"	10'-5"	12'-6"	13'-6"	14'-6"	15'-9"	16'-8"
UP TO MAXIMUM 80 psf POS. OR NEGATIVE LOAD	3'-0"	10'-4"	13'-9"	15'-9"	16'-4"	17'-0"	18'-2"	19'-2"
	4'-0"	8'-11"	11'-11"	14'-4"	15'-3"	15'-9"	16'-10"	17'-10"
	5'-0"	8'-0"	10'-8"	12'-9"	13'-10"	14'-10"	15'-11"	16'-11"
	6'-0"	7'-3"	9'-9"	11'-8"	12'-8"	13'-7"	15'-3"	16'-2"
UP TO MAXIMUM 90 psf POS. OR NEGATIVE LOAD	3'-0"	9'-9"	13'-0"	15'-3"	15'-11"	16'-6"	17'-7"	18'-8"
	4'-0"	8'-5"	11'-3"	13'-6"	14'-7"	15'-4"	16'-5"	17'-4"
	5'-0"	7'-6"	10'-1"	12'-1"	13'-1"	14'-0"	15'-6"	16'-5"
	6'-0"	6'-10"	9'-2"	11'-0"	11'-11"	12'-10"	14'-7"	15'-8"
UP TO MAXIMUM 100 psf POS. OR NEGATIVE LOAD	3'-0"	9'-3"	12'-4"	14'-9"	15'-6"	16'-0"	17'-2"	18'-2"
	4'-0"	8'-0"	10'-8"	12'-9"	13'-10"	14'-10"	15'-11"	16'-11"
	5'-0"	7'-2"	9'-6"	11'-5"	12'-5"	13'-4"	15'-1"	16'-0"
	6'-0"	6'-6"	8'-8"	10'-5"	11'-4"	12'-2"	13'-10"	15'-0"
UP TO MAXIMUM 110 psf POS. OR NEGATIVE LOAD	3'-0"	8'-10"	11'-9"	14'-1"	15'-1"	15'-8"	16'-9"	17'-9"
	4'-0"	7'-7"	10'-2"	12'-2"	13'-2"	14'-2"	15'-7"	16'-6"
	5'-0"	6'-10"	9'-1"	10'-11"	11'-10"	12'-8"	14'-6"	15'-7"
	6'-0"	6'-2"	8'-3"	9'-11"	10'-9"	11'-7"	13'-3"	13'-8"
UP TO MAXIMUM +110 / -120 psf LOAD	3'-0"	8'-5"	11'-3"	13'-6"	14'-7"	15'-4"	16'-5"	17'-4"
	4'-0"	7'-3"	9'-9"	11'-8"	12'-8"	13'-7"	15'-3"	16'-2"
	5'-0"	6'-6"	8'-8"	10'-5"	11'-4"	12'-2"	13'-10"	15'-0"
	6'-0"	5'-11"	7'-11"	9'-6"	10'-4"	11'-1"	12'-6"	13'-2"
UP TO MAXIMUM +110 / -130 psf LOAD	3'-0"	8'-1"	10'-9"	12'-11"	14'-0"	15'-0"	16'-1"	17'-0"
	4'-0"	7'-0"	9'-4"	11'-2"	12'-2"	13'-0"	14'-11"	15'-10"
	5'-0"	6'-3"	8'-4"	10'-0"	10'-10"	11'-8"	13'-4"	13'-10"
	6'-0"	5'-8"	7'-7"	9'-2"	9'-11"	10'-8"	11'-6"	12'-2"

TWIN SPAN APPLICATION									
OPTION W.L.	1	2	3	4	5	6	7	7	
	"W"	"H"	"H"	"H"	"H"	"H"	"H"	"H"	
UP TO MAXIMUM 60 psf POS. OR NEGATIVE LOAD	3'-0"	14'-7"							
	4'-0"	12'-8"	14'-7"						
	5'-0"	11'-4"	13'-11"	14'-7"					
	6'-0"	10'-4"	12'-8"	14'-7"					
UP TO MAXIMUM 70 psf POS. OR NEGATIVE LOAD	3'-0"	13'-6"	14'-7"						
	4'-0"	11'-9"	14'-5"	14'-7"					
	5'-0"	10'-6"	12'-11"	14'-7"					
	6'-0"	9'-7"	11'-9"	14'-1"	14'-7"				
UP TO MAXIMUM 80 psf POS. OR NEGATIVE LOAD	3'-0"	12'-8"	14'-7"						
	4'-0"	10'-11"	13'-6"	14'-7"					
	5'-0"	9'-10"	12'-1"	14'-5"	14'-7"				
	6'-0"	8'-11"	11'-0"	13'-2"	14'-7"				
UP TO MAXIMUM 90 psf POS. OR NEGATIVE LOAD	3'-0"	11'-11"	14'-7"						
	4'-0"	10'-4"	12'-8"	14'-7"					
	5'-0"	9'-3"	11'-4"	13'-7"	14'-7"				
	6'-0"	8'-5"	10'-4"	12'-5"	14'-1"	14'-6"	14'-7"		
UP TO MAXIMUM 100 psf POS. OR NEGATIVE LOAD	3'-0"	11'-4"	13'-11"	14'-7"					
	4'-0"	9'-10"	12'-1"	14'-5"	14'-7"				
	5'-0"	8'-9"	10'-9"	12'-11"	14'-7"				
	6'-0"	8'-0"	9'-10"	11'-9"	13'-5"	13'-9"	14'-7"		
UP TO MAXIMUM 110 psf POS. OR NEGATIVE LOAD	3'-0"	10'-9"	13'-3"	14'-7"					
	4'-0"	9'-4"	11'-6"	13'-9"	14'-7"				
	5'-0"	8'-4"	10'-3"	12'-4"	14'-0"	14'-4"	14'-7"		
	6'-0"	7'-7"	9'-4"	11'-3"	12'-9"	13'-1"	14'-5"		
UP TO MAXIMUM +110 / -120 psf LOAD	3'-0"	10'-4"	12'-8"	14'-7"					
	4'-0"	8'-11"	11'-0"	13'-2"	14'-7"				
	5'-0"	8'-0"	9'-10"	11'-9"	13'-5"	13'-9"	14'-7"		
	6'-0"	7'-3"	9'-0"	10'-9"	12'-3"	12'-6"	13'-2"		
UP TO MAXIMUM +110 / -130 psf LOAD	3'-0"	9'-11"	12'-2"	14'-7"					
	4'-0"	8'-7"	10'-7"	12'-8"	14'-5"	14'-7"			
	5'-0"	7'-8"	9'-5"	11'-4"	12'-10"	13'-2"	14'-7"		
	6'-0"	7'-0"	8'-7"	10'-4"	11'-9"	12'-0"	12'-2"		

TWIN SPAN w/ STACK RAIL APPLICATION									
OPTION W.L.	1	2	3	4	5	6	7	7	
	"W"	"H"	"H"	"H"	"H"	"H"	"H"	"H"	
UP TO MAXIMUM 60 psf POS. OR NEGATIVE LOAD	3'-0"	14'-2"	16'-5"	17'-11"	18'-8"	19'-4"	20'-8"	21'-11"	
	4'-0"	12'-5"	15'-3"	16'-8"	17'-3"				
	5'-0"	11'-2"	13'-9"						
	6'-0"	10'-2"	11'-6"						
UP TO MAXIMUM 70 psf POS. OR NEGATIVE LOAD	3'-0"	13'-4"	15'-9"	17'-3"	17'-11"	18'-7"	19'-11"	21'-1"	
	4'-0"	11'-6"	14'-8"	16'-1"	16'-8"	17'-3"			
	5'-0"	10'-4"	13'-9"						
	6'-0"	9'-5"	11'-6"						
UP TO MAXIMUM 80 psf POS. OR NEGATIVE LOAD	3'-0"	12'-5"	15'-3"	16'-8"	17'-4"	18'-0"	19'-3"	20'-5"	
	4'-0"	10'-9"	14'-2"	15'-6"	16'-2"	16'-9"	17'-3"		
	5'-0"	9'-8"	12'-10"	13'-9"					
	6'-0"	8'-9"	11'-6"						
UP TO MAXIMUM 90 psf POS. OR NEGATIVE LOAD	3'-0"	11'-9"	14'-10"	16'-2"	16'-10"	17'-6"	18'-8"	19'-9"	
	4'-0"	10'-2"	13'-7"	15'-1"	15'-8"	16'-3"	17'-3"		
	5'-0"	9'-1"	12'-1"	13'-9"					
	6'-0"	8'-3"	11'-1"	11'-6"					
UP TO MAXIMUM 100 psf POS. OR NEGATIVE LOAD	3'-0"	11'-2"	14'-5"	15'-9"	16'-5"	17'-0"	18'-2"	19'-3"	
	4'-0"	9'-8"	12'-10"	14'-8"	15'-3"	15'-10"	16'-11"	17'-3"	
	5'-0"	8'-7"	11'-6"	13'-9"					
	6'-0"	7'-10"	10'-6"	11'-6"					
UP TO MAXIMUM 110 psf POS. OR NEGATIVE LOAD	3'-0"	10'-7"	14'-1"	15'-5"	16'-0"	16'-7"	17'-9"	18'-10"	
	4'-0"	9'-2"	12'-3"	14'-4"	14'-11"	15'-6"	16'-6"	17'-3"	
	5'-0"	8'-2"	10'-11"	13'-2"	13'-9"				
	6'-0"	7'-6"	10'-0"	11'-6"					
UP TO MAXIMUM +110 / -120 psf LOAD	3'-0"	10'-2"	13'-7"	15'-1"	15'-8"	16'-3"	17'-5"	18'-5"	
	4'-0"	8'-9"	11'-9"	14'-0"	14'-7"	15'-2"	16'-2"	17'-2"	
	5'-0"	7'-10"	10'-6"	12'-7"	13'-8"	13'-9"			
	6'-0"	7'-2"	9'-7"	11'-6"					
UP TO MAXIMUM +110 / -130 psf LOAD	3'-0"	9'-9"	13'-0"	14'-9"	15'-5"	15'-11"	17'-0"	18'-1"	
	4'-0"	8'-5"	11'-3"	13'-6"	14'-4"	14'-10"	15'-10"	16'-9"	
	5'-0"	7'-7"	10'-1"	12'-1"	13'-1"	13'-9"			
	6'-0"	6'-11"	9'-2"	11'-0"	11'-6"				

- SPANS ARE LIMITED BY MAXIMUM TESTED END REACTIONS

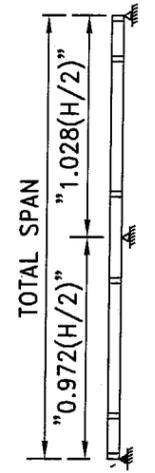
**TWIN SPAN**

NO "TOTAL SPAN" SHALL BE GREATER THAN 28'-4 3/4" (TESTED)

TESTED LENGTHS ARE 165 3/4" (LOWER) AND 175" (UPPER).  
TOTAL LENGTH OF MULLION = (H)  
 $(H) = \left( \frac{\text{CHART "L"}}{1.028} \right)^2$

THESE LENGTHS ARE BASED ON THE TESTED "TWIN-SPAN" LENGTH RATIOS.

CENTER ANCHOR IS PERMITTED TO BE LOCATED @ H/2 +/- 2.8% (H/2)



**TWIN SPAN w/ STACK RAIL**

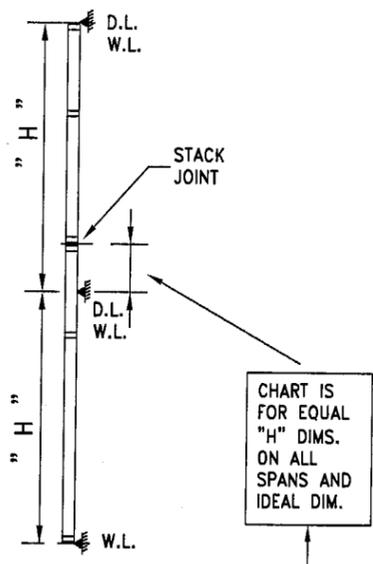


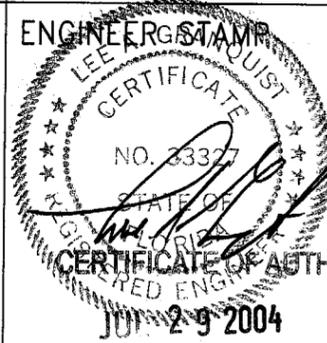
CHART IS FOR EQUAL "H" DIMS. ON ALL SPANS AND IDEAL DIM.

IDEAL DIM. IS 17% OF "H"

Larson Engineering of Minnesota  
3524 Labore Road  
White Bear Lake, MN 55110

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Date 09/02/04  
NOA# 04-0212-11  
Miami Dade Product Control Division  
By *[Signature]*



**Harmon**

HI 7000 LARGE MISSILE MULLION APPLICATIONS LOAD TABLES

DATE: 06/28/04  
DWG. NO. 009\_HI7000\_lm  
SHEET 09 OF 20

ANCHOR TYPE / SUBSTRATE	STRAP ANCHOR	THRU-FRAME ANCHOR	STEEL ANGLES IN VERTICAL	ALUMINUM LUGS IN VERTICAL	TWIN SPAN MID-SPAN ANCHOR	TWIN-SPAN w/ STACK HORIZ. INTER. ANCHOR	JAMB ANCHOR
WOOD							  MAXIMUM END REACTION (1) STRAP-5" LONG = 1870#  SEE DETAIL 1/20
CONC.							
STEEL							
METAL STUD							
	MAXIMUM END REACTION (2) STRAPS-8" LONG = 2,715#  SEE SHEET 16 FOR DETAILS	MAXIMUM END REACTION = 3,540#  SEE SHEET 16 FOR DETAILS	MAXIMUM END REACTION (2) ANGLES = 4,520# TYP. ANGLES w/ (2) FASTENERS REIN. ANGLES w/ (1) FASTENER  SEE SHEET 17 FOR DETAILS	MAXIMUM END REACTION = 2,715# (PER TEST ELEV. 12)  SEE SHEET 17 FOR DETAILS	MAXIMUM WL REACTION = 11,550#  SEE SHEET 18 FOR DETAILS	MAXIMUM WL REACTION = 10,500#  SEE SHEET 18 FOR DETAILS	

GENERAL NOTES:

- SIZES OF ANCHOR COMPONENTS LISTED ABOVE ARE A MINIMUM.
- ACTUAL LENGTH AND NUMBER & SIZE OF HOLES TO BE DETERMINED BY PROJECT SPECIFIC PERIMETER CONDITIONS AND TYPES OF FASTENERS USED.

DADE CO. STAMP

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 Florida Building Code  
 Date 09/02/04  
 NOA# 04-0217-11  
 Miami Dade Product Control  
 Division  
 By *[Signature]*

Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

ENGINEER STAMP

LEE A. GRANQUIST  
 CERTIFICATE  
 NO. 33327  
 STATE OF FLORIDA  
 REGISTERED ENGINEER  
 06/28/04

**Harmon**

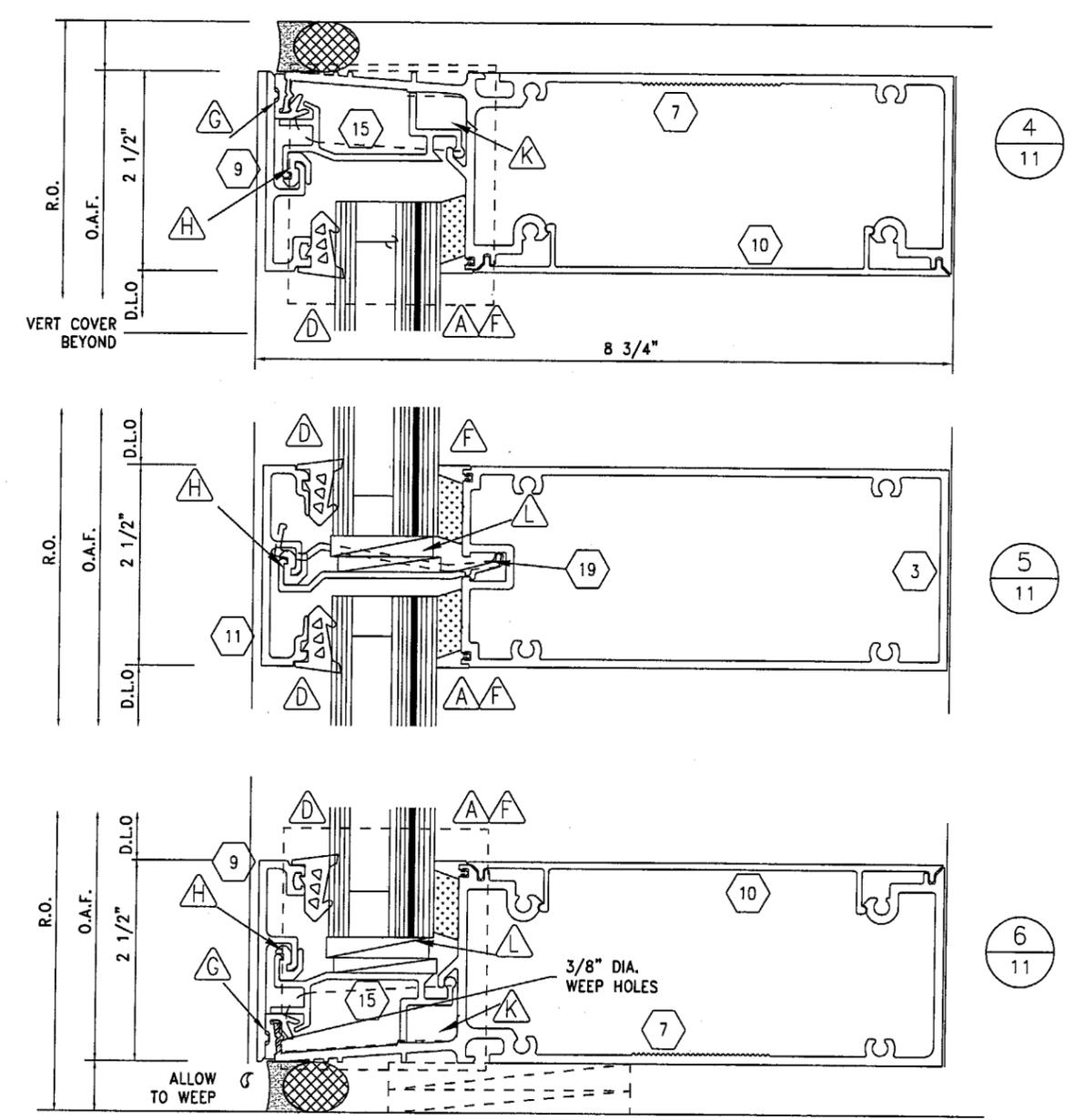
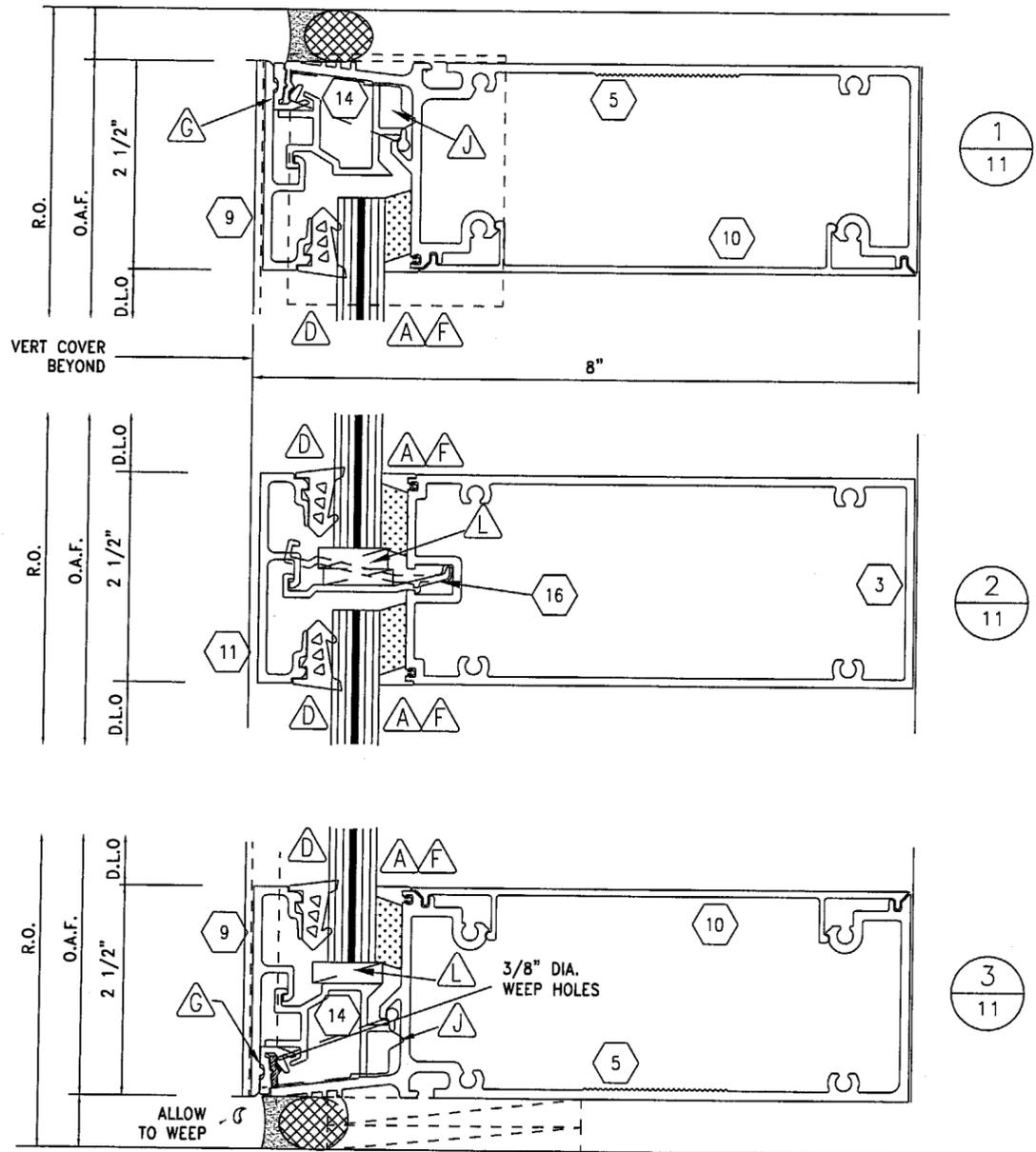
HI 7000 LARGE MISSILE ANCHOR APPLICATIONS

DATE: 06/28/04 1

REGISTRATION #9803 3

DWG. NO. 010\_HI7000\_lm

SHEET 10 OF 20



**GENERAL NOTES:**

- FOR ANCHOR DETAILS REFER TO SHEET 10
- FOR PART IDENTIFICATION REFER TO SHEET 2

- FASTENERS
- △ GASKETS
- ⬡ ALUMINUM EXTRUSIONS

- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 3.

**DADE CO. STAMP**

Approved as complying with the  
 Florida Building Code  
 Date 09/02/04  
 NOA# 04-0217.11  
 Miami Dade Product Control  
 Division  
 By *[Signature]*

**ENGINEER STAMP**

LEE R. STAMM  
 CERTIFICATE  
 NO. 33327  
 STATE OF  
 FLORIDA  
 REGISTERED PROFESSIONAL ENGINEER  
 JUL 29 2004

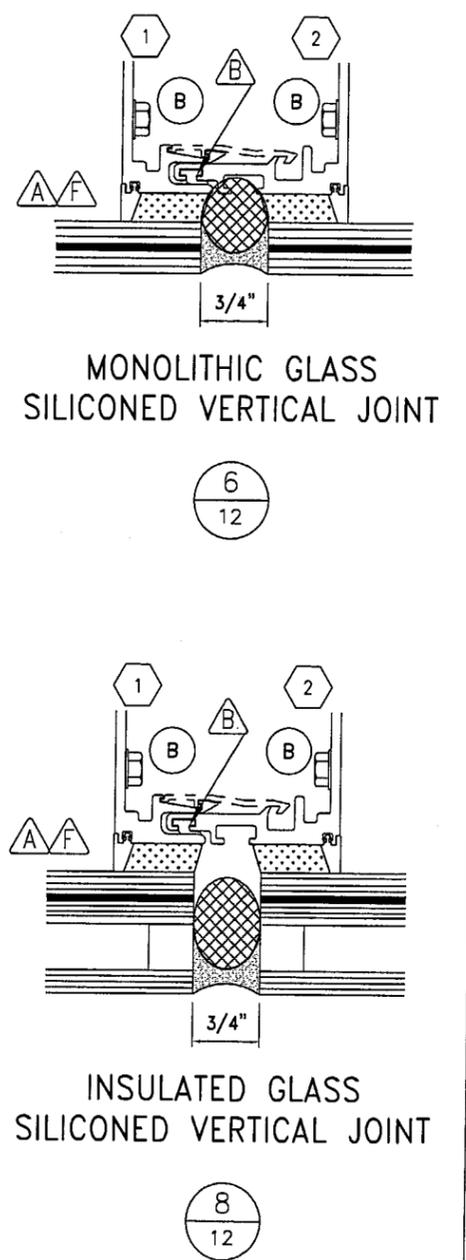
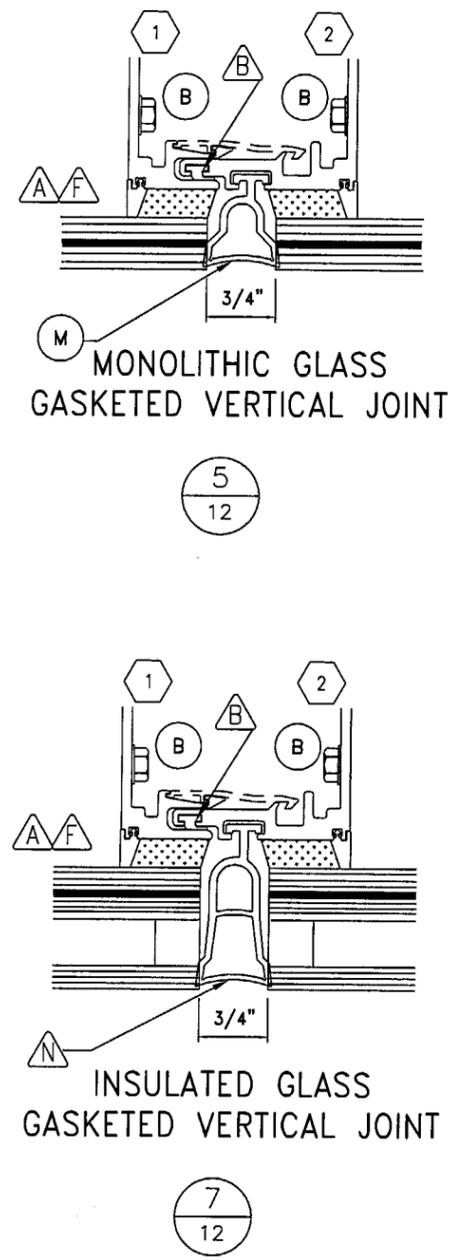
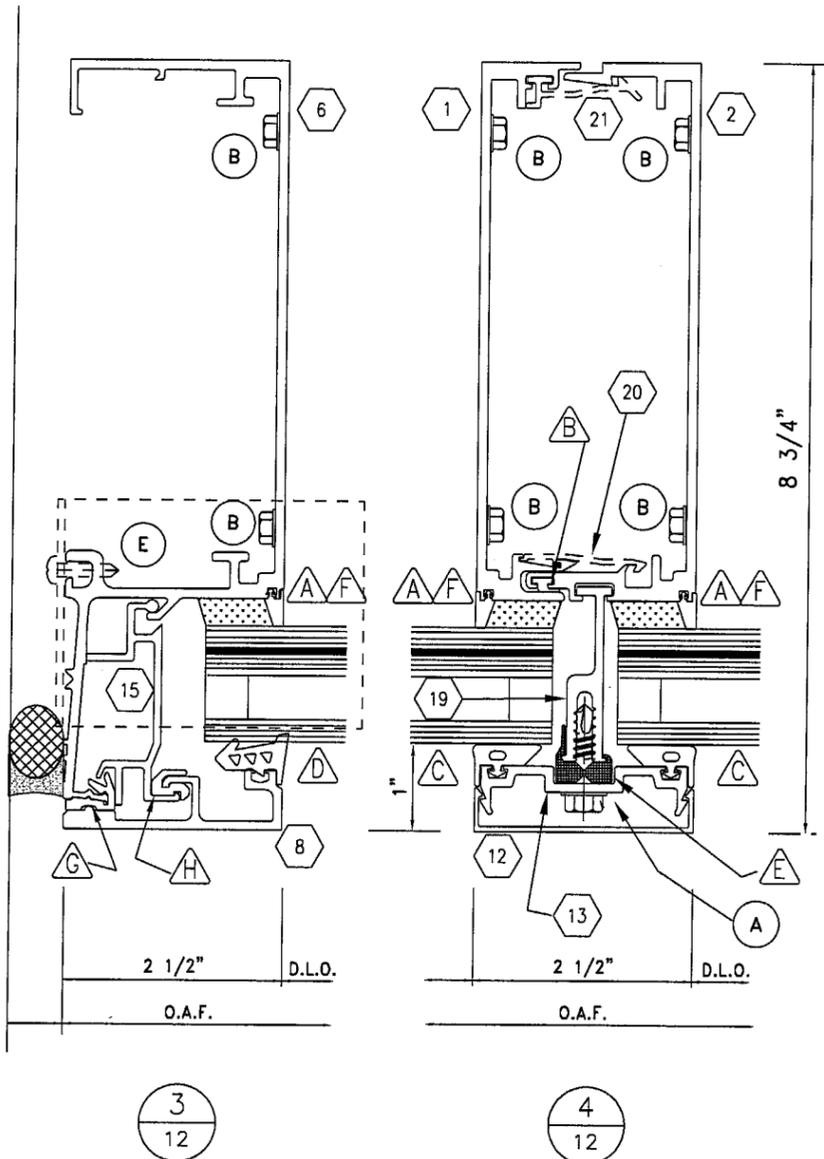
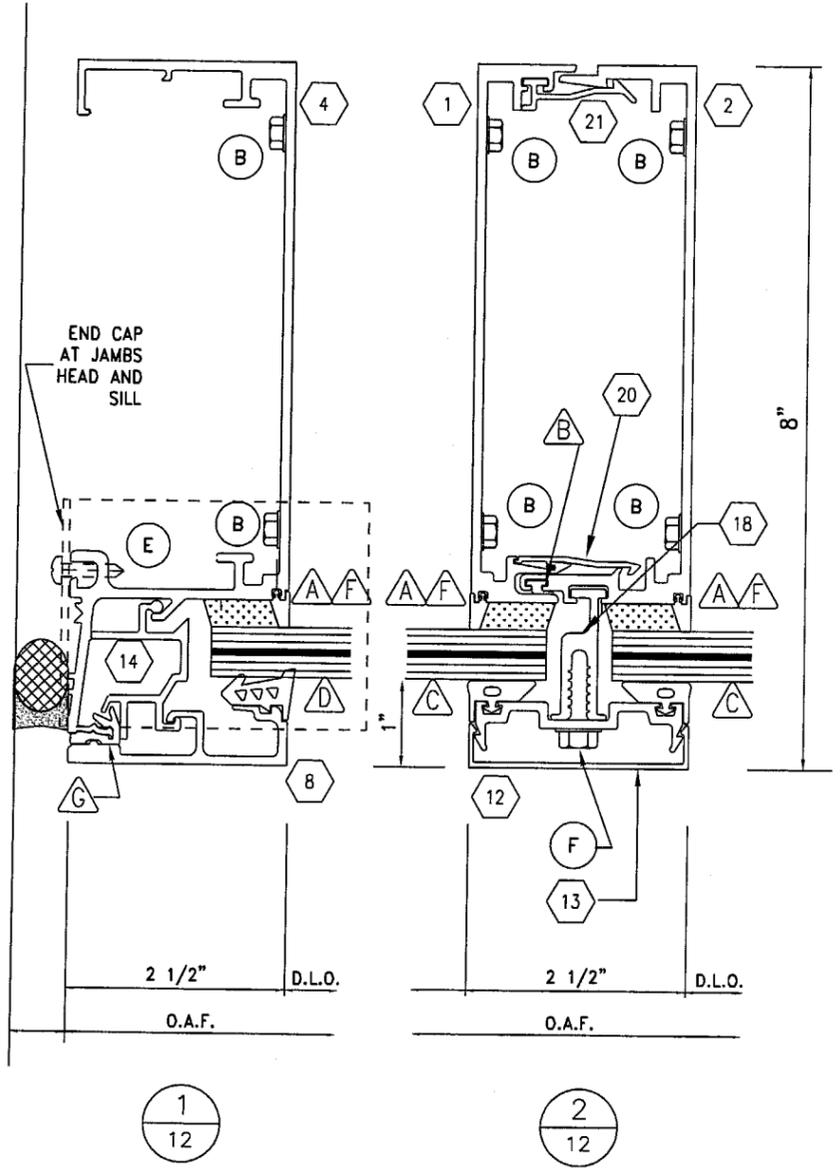
Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

**Harmon**

HI 7000 LARGE MISSILE  
 HORIZONTAL DETAILS

DATE: 06/28/04

DWG. NO. 011\_HI7000\_lm



**GENERAL NOTES:**

- FOR ANCHOR DETAILS REFER TO SHEET 10
- FOR PART IDENTIFICATION REFER TO SHEET 2

- FASTENERS
- △ GASKETS
- ⬡ ALUMINUM EXTRUSIONS

- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 3.

**DADE CO. STAMP**

Approved as complying with the  
 Florida Building Code  
 Date 09/02/04  
 NOA# 04-0217-11  
 Miami Dade Product Control  
 Division  
 By *[Signature]*

**ENGINEER STAMP**

LEE A. GRANQUIST  
 CERTIFICATE  
 NO. 33321  
 STATE OF  
 FLORIDA  
 REGISTERED ENGINEER  
 JUN 28 2004

**Harmon**

HI 7000 LARGE MISSILE  
 VERTICAL DETAILS

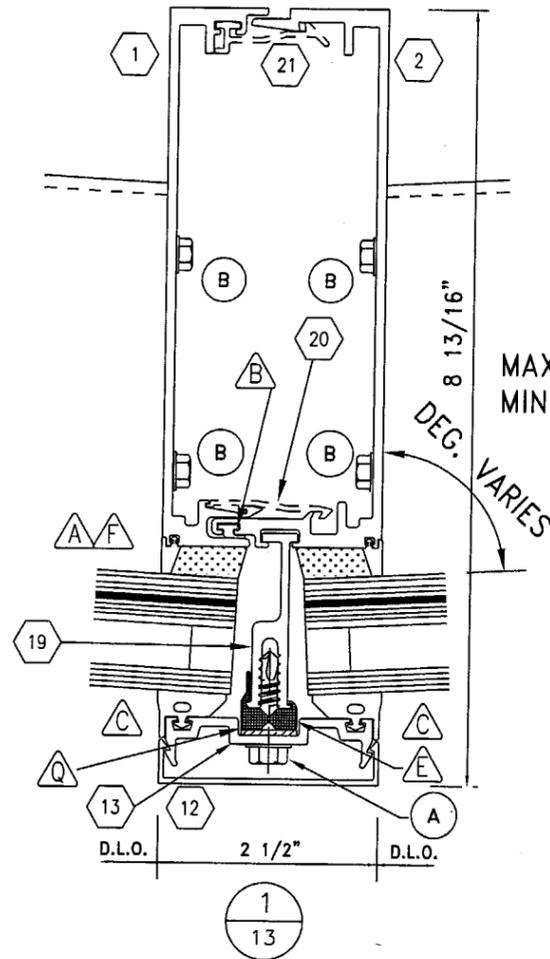
DATE: 06/28/04

DWG. NO. 012\_HI7000\_lm

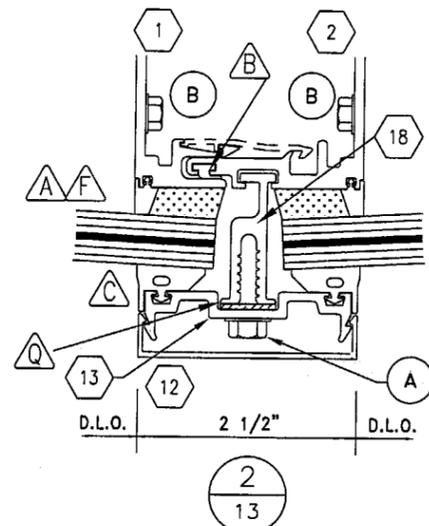
Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

NOTE: SHALLOW HORIZONTALS MAY BE DESIRED TO AVOID EXPOSED EDGES AT VERTICALS DUE TO MITRE.

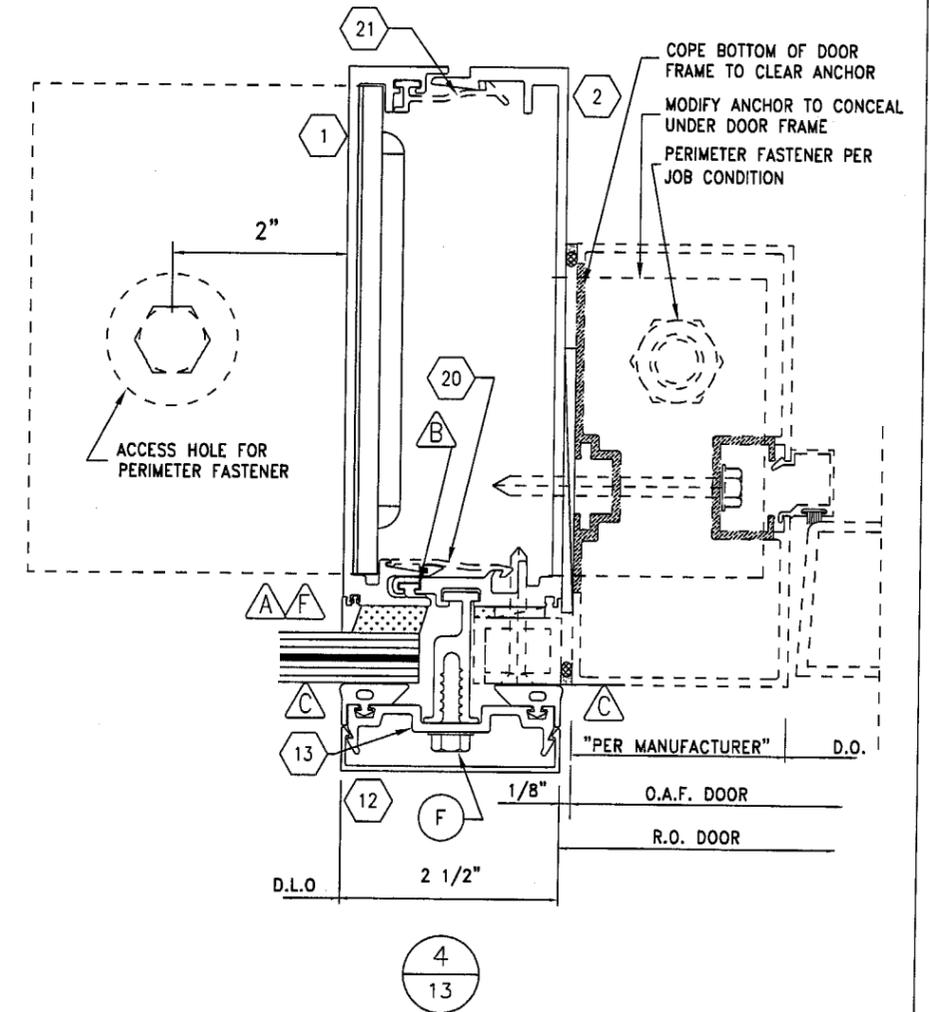
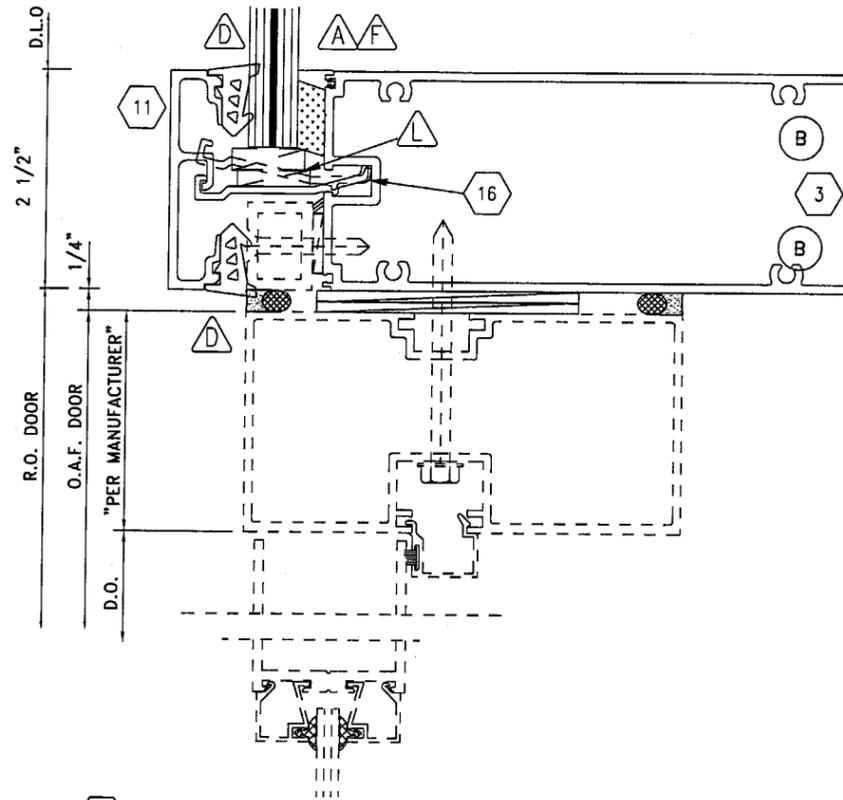
MAX. 90 P S F WITH THE SHORT HORIZ.



SEGMENTED MULLION INSULATED GLASS



SEGMENTED MULLION MONOLITHIC GLASS



GENERAL NOTES:

- FOR ANCHOR DETAILS REFER TO SHEET 10
- FOR PART IDENTIFICATION REFER TO SHEET 2

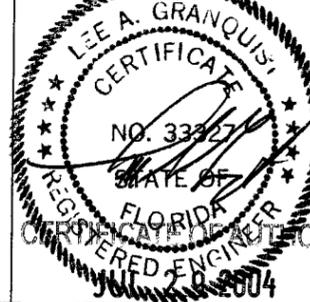
- FASTENERS
- △ GASKETS
- ⬡ ALUMINUM EXTRUSIONS

- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 3.

DADE CO. STAMP

Approved as complying with the Florida Building Code  
 Date 09/10/04  
 NOA# 04-0217-11  
 Miami Dade Product Control Division  
 By *[Signature]*

ENGINEER STAMP

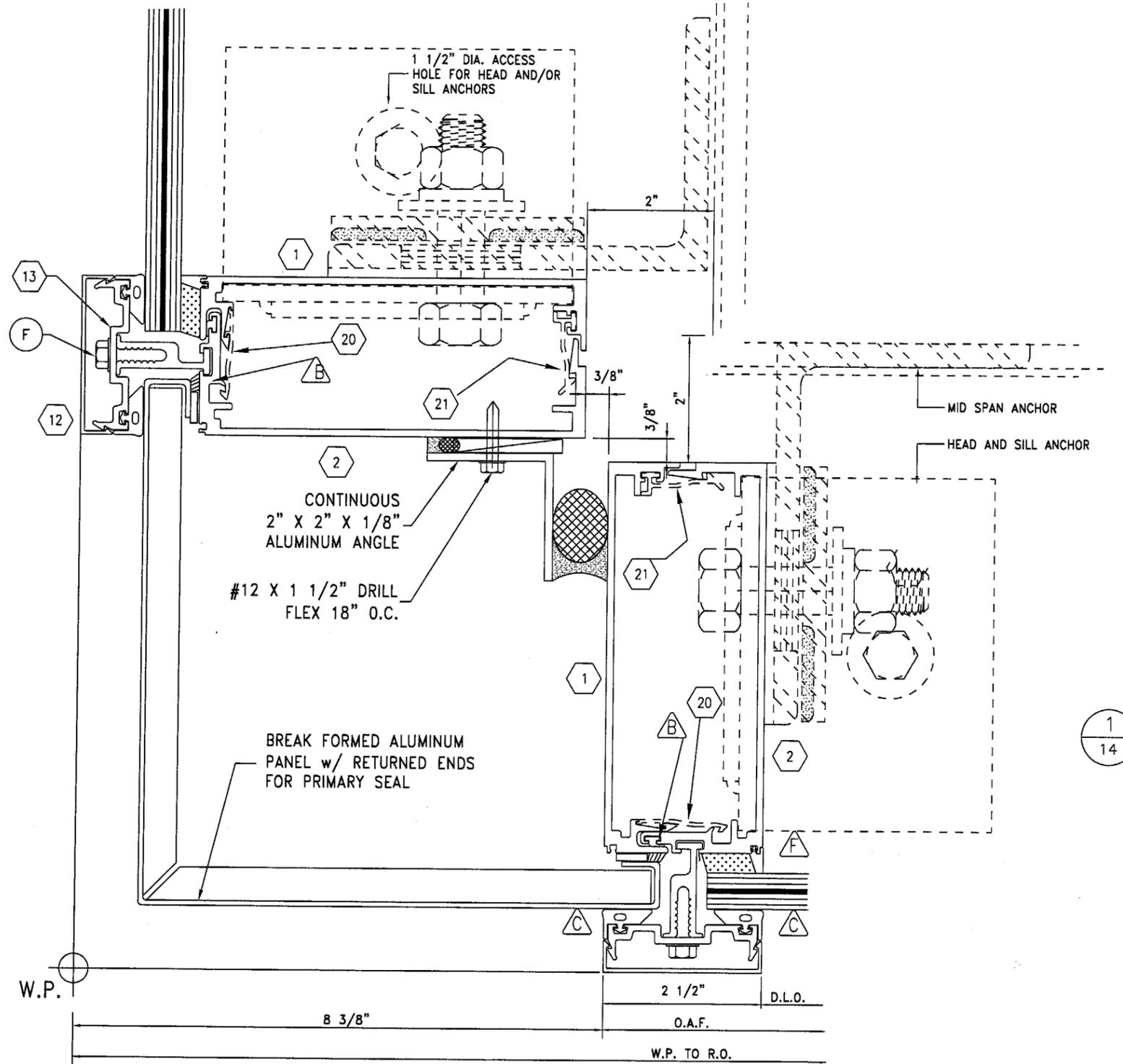


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 White Bear Lake, MN 55110

**Harmon**

HI 7000 LARGE MISSILE SEGMENTED MULLION & DOOR DETAILS

DATE: 06/28/04  
 DWG. NO. 013\_HI7000\_lm



**GENERAL NOTES:**

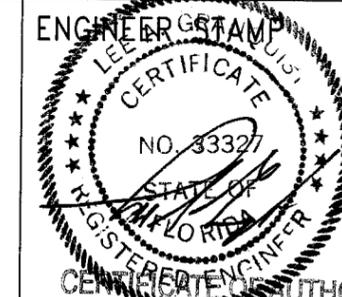
- FOR PART IDENTIFICATION REFER TO SHEET 2

- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 3.

- FASTENERS
- △ GASKETS
- ⬡ ALUMINUM EXTRUSIONS

**DADE CO. STAMP**

Approved as complying with the  
 Florida Building Code  
 Date 09/02/04  
 NOAH 04-0217-11  
 Miami-Dade Product Control  
 Division  
 By *[Signature]*

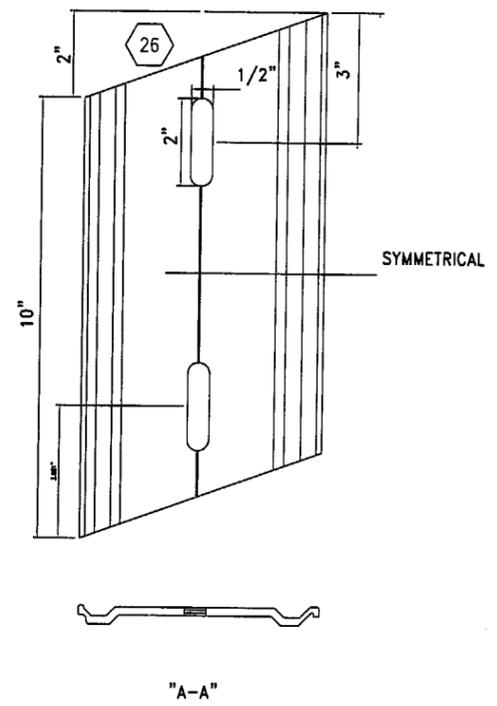
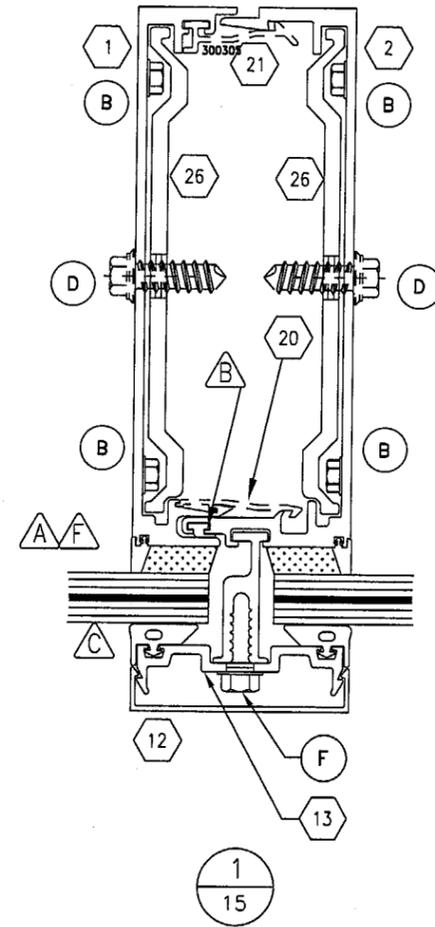
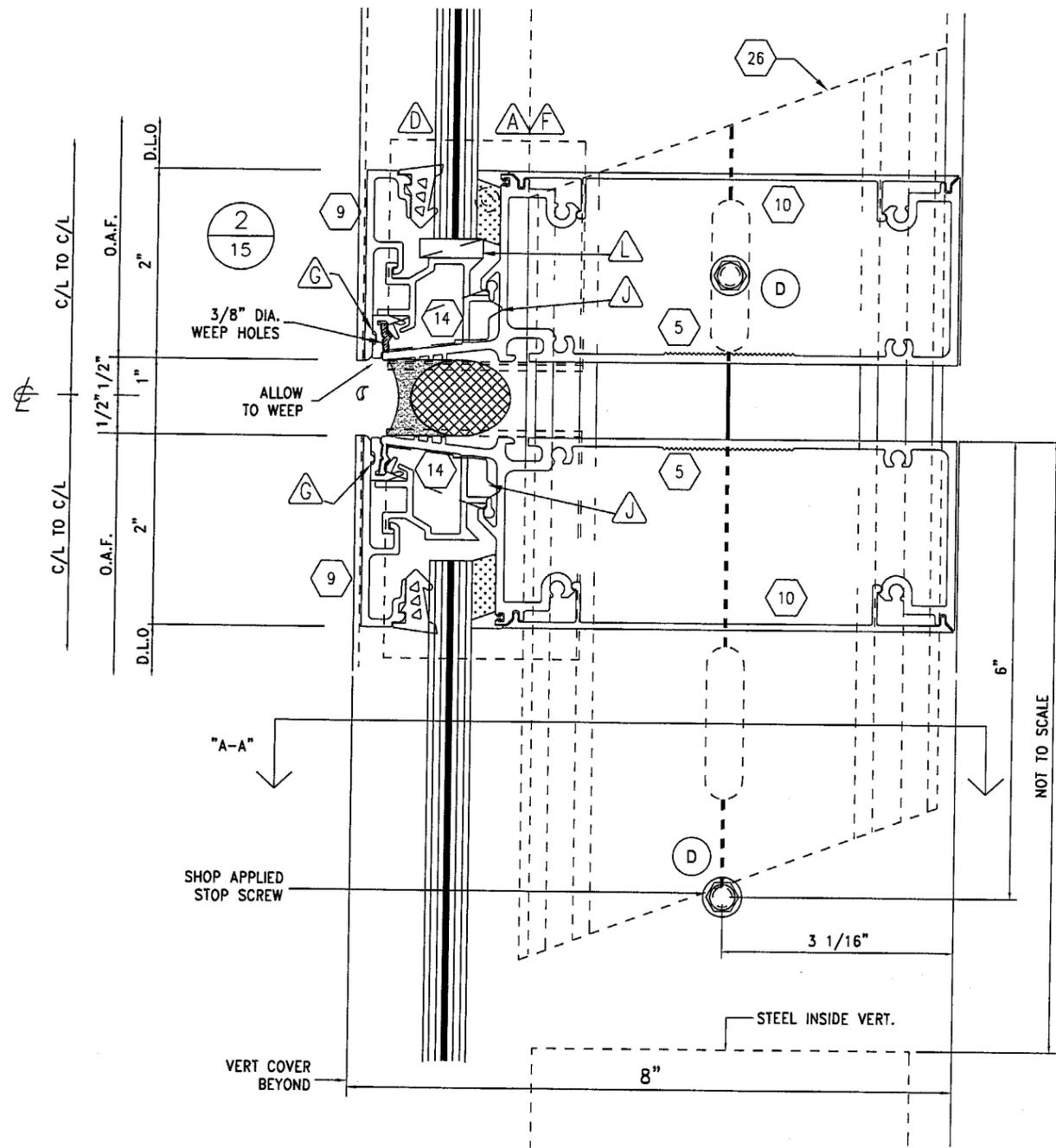


JUL 29 2004



HI 7000 LARGE MISSILE  
 90° OUTSIDE CORNER DETAIL

DATE: 06/28/04	1
2	3
SHEET 14 OF 20	



**GENERAL NOTES:**

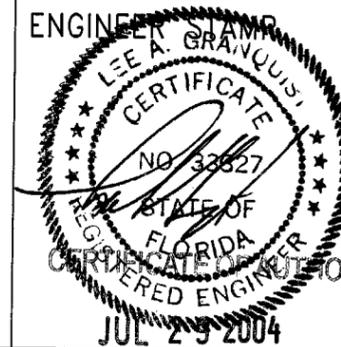
- FOR PART IDENTIFICATION REFER TO SHEET 2

- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 3.

- (?) FASTENERS
- (△) GASKETS
- (⬡) ALUMINUM EXTRUSIONS

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 Florida Building Code  
 Date 09/02/04  
 NOA# 04-0213-11  
 Miami Dade Product Control  
 Division  
 By *[Signature]*



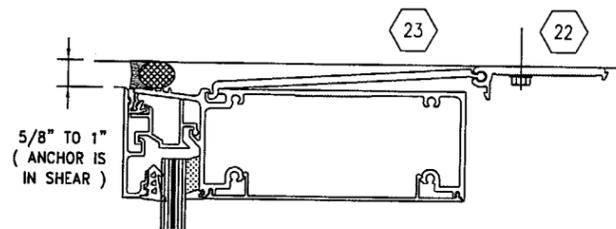
Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110



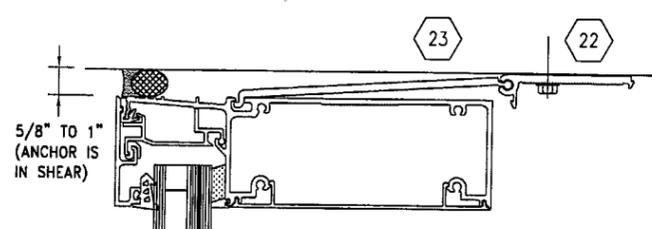
HI 7000 LARGE MISSILE  
 MULLION SPLICE DETAIL

DATE: 06/28/04

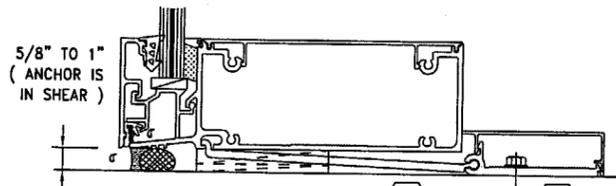
DWG. NO. 015\_HI7000\_lm



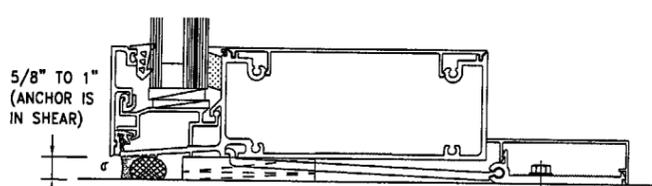
1  
16



3  
16

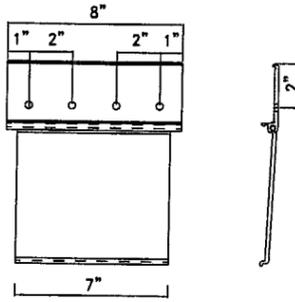


2  
16



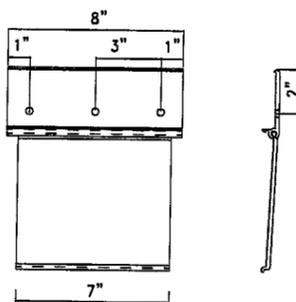
4  
16

STRAP LENGTH



HEAD OR SILL

STRAP LENGTH



HEAD OR SILL

TESTED CONDITIONS SHOWN ABOVE.

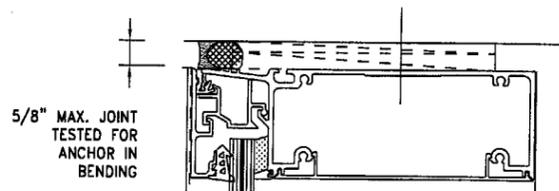
- (2) 8" STRAPS TESTED TO 2715# END REACTION
- (1) 8" STRAP TESTED TO 1,345# END REACTION
- ANCHORS MAY BE MADE LONGER TO ACCOMMODATE FASTENERS BASED ON PERIMETER CONDITIONS.
- A MINIMUM OF TWO (2) FASTENERS SHALL ALWAYS BE USED.

ANCHOR FASTENER REQUIREMENTS

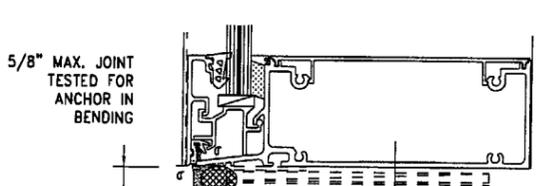
SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD	2,715 #	3/8"x3 1/2" LAG BOLT	3		
CONCRETE	.	.	.	.	.
STEEL	2,715 #	#14 DRILL FLEX	3		
METAL STUD	2,230 #	#14 DRILL FLEX	4		

GENERAL NOTES:

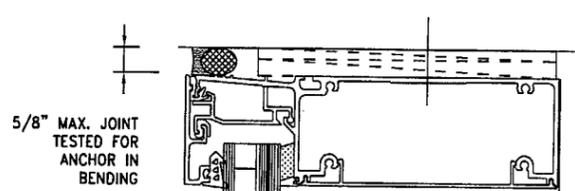
- SIZES OF ANCHOR COMPONENTS LISTED ABOVE ARE A MINIMUM.
- ACTUAL LENGTH AND NUMBER & SIZE OF HOLES TO BE DETERMINED BY PROJECT SPECIFIC PERIMETER CONDITIONS AND TYPES OF FASTENERS USED.



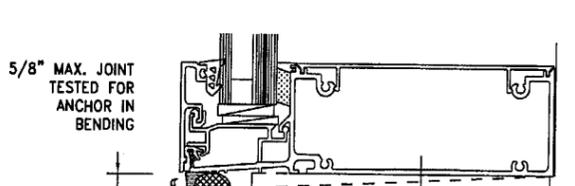
5  
16



6  
16



7  
16



8  
16

TESTED CONDITIONS SHOWN ABOVE.

- (2) FASTENERS, (1) EITHER SIDE @ INTERMEDIATE VERTICAL TESTED TO 3540# END REACTION
- (1) FASTENER ON SAME SIDE @ JAMBS TESTED TO 1845# END REACTION
- FASTENER SPACING AND QUANTITY MAY CHANGE BASED ON PERIMETER CONDITIONS.
- A MINIMUM OF TWO (2) FASTENERS SHALL ALWAYS BE USED (EXCEPT AT JAMBS).

ANCHOR FASTENER REQUIREMENTS

SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD	.	.	.	.	.
CONCRETE	3,540 #	3/8" DIA.	2	3"	2 11/16"
STEEL	3,540	3/8" DIA	2		
METAL STUD	.	.	.	.	.

Larson Engineering of Minnesota  
3524 Labore Road  
White Bear Lake, MN 55110

DADE CO. STAMP

Approved as complying with the  
Florida Building Code  
Date: 09/02/04  
NOA# 04-0213-11  
Miami Dept. Product Control  
Division  
By: *[Signature]*

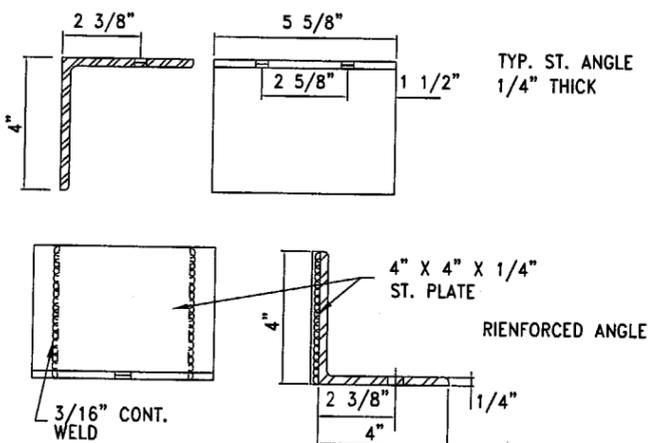
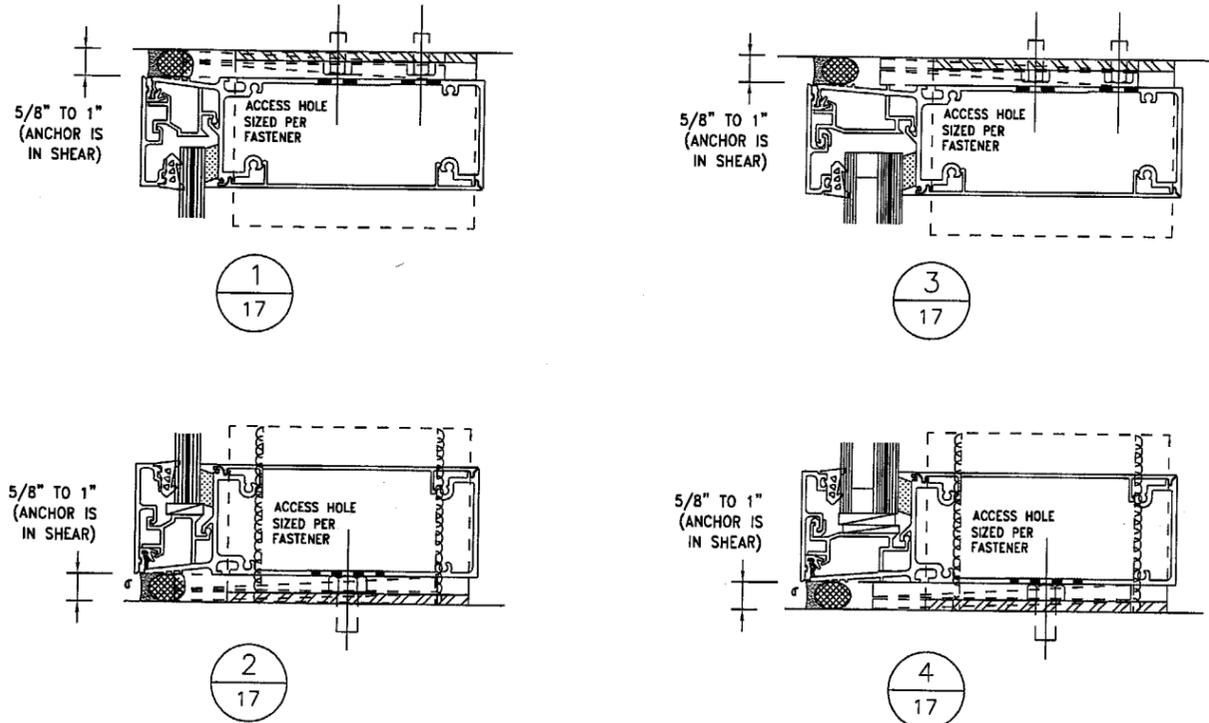


HI 7000 LARGE MISSILE  
ANCHOR APPLICATIONS  
STRAP & THRU-FRAME

DATE: 06/28/04

2 3

DWG. NO. 006 HI7000\_Im



ANCHOR FASTENER REQUIREMENTS FOR TYP. ANGLE

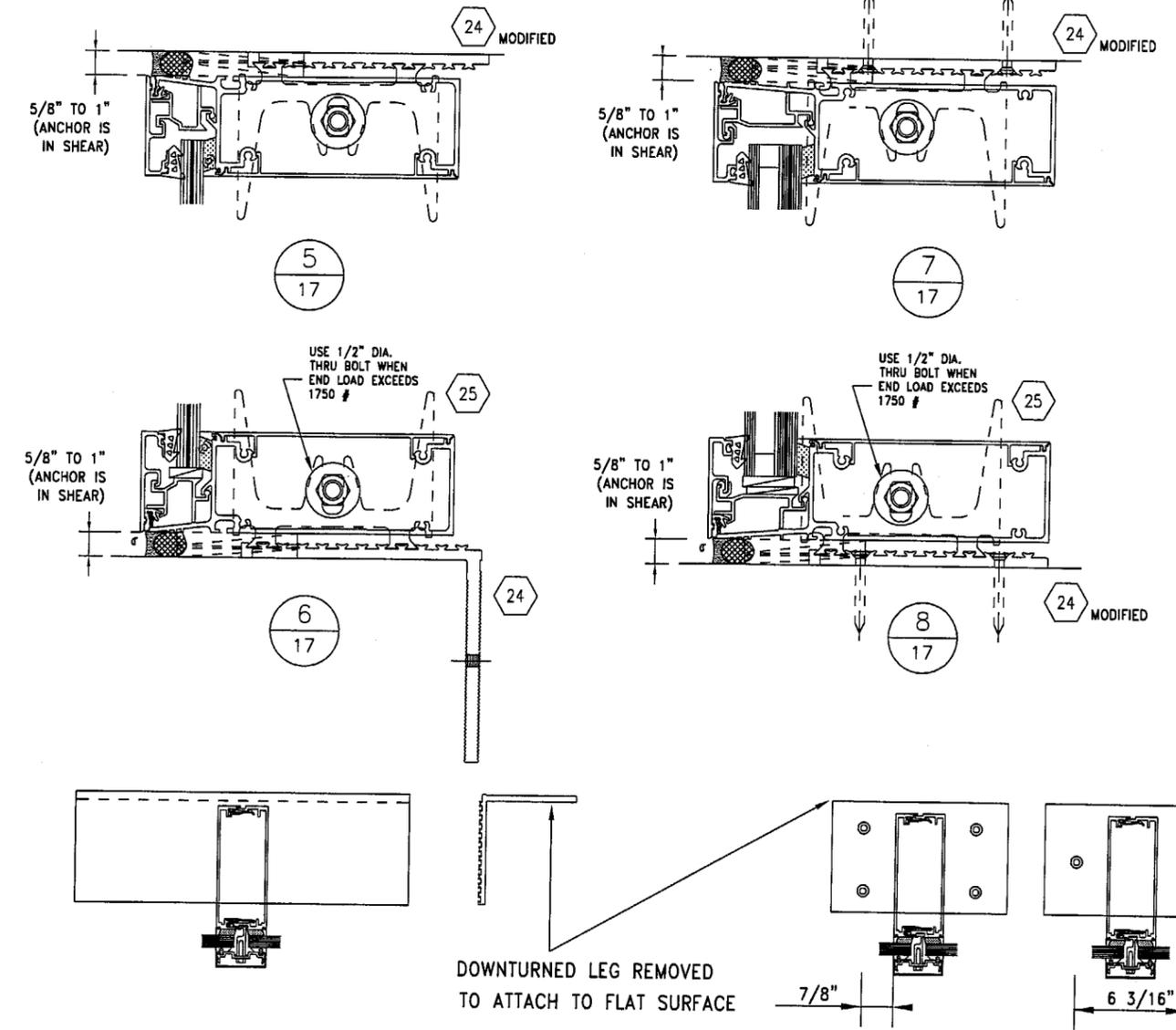
SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD	.	.	.	.	.
CONCRETE	.	.	.	.	.
STEEL	4,520 #	3/8" DIA	4	.	.
METAL STUD	.	.	.	.	.

ANCHOR FASTENER REQUIREMENTS FOR REIN. ANGLE

SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD	.	.	.	.	.
CONCRETE	4,520 #	5/8" DIA	2	4"	4 13/16"
STEEL	.	.	.	.	.
METAL STUD	.	.	.	.	.

TESTED CONDITIONS SHOWN ABOVE  
 - TYPICAL ANCHOR USED w/ (2) FASTENERS  
 - REINFORCED ANGLE USED w/ (1) FASTENER. REINFORCING PLATE ADDED TO PREVENT TWIST IMPOSED BY ONLY (1) FASTENER  
 - ANCHORS OCCUR ON EACH SIDE OF VERTICAL, (1) @ JAMB

GENERAL NOTES:  
 - SIZES OF ANCHOR COMPONENTS LISTED ABOVE ARE A MINIMUM.  
 - ACTUAL LENGTH AND NUMBER & SIZE OF HOLES TO BE DETERMINED BY PROJECT SPECIFIC PERIMETER CONDITIONS AND TYPES OF FASTENERS USED.



TESTED CONDITIONS SHOWN ABOVE  
 - LUG ANCHOR NOT TESTED AT A HEAD CONDITION  
 - WHEN TYPICAL ANCHOR IS USED QUANTITY AND SPACING OF FASTENERS IN DOWN-TURNED LEG TO BE DETERMINED BY PERIMETER CONDITIONS.  
 - MODIFIED ANCHOR USE w/ (4) FASTENERS IN TOP LEG AS SHOWN

ANCHOR FASTENER REQUIREMENTS

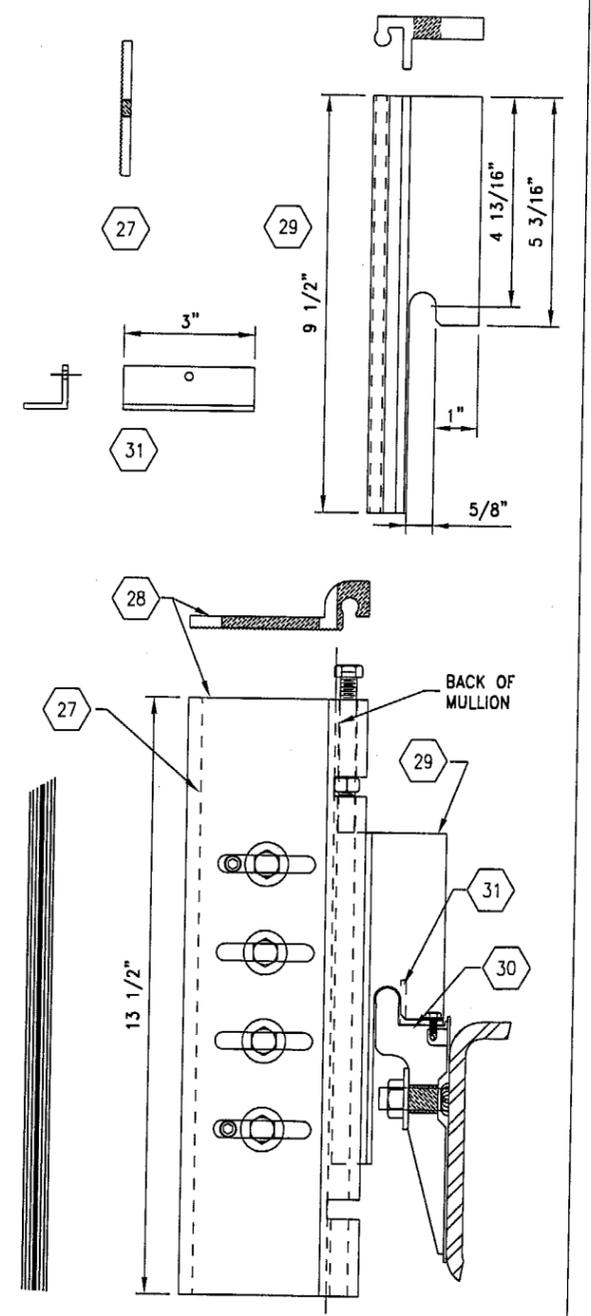
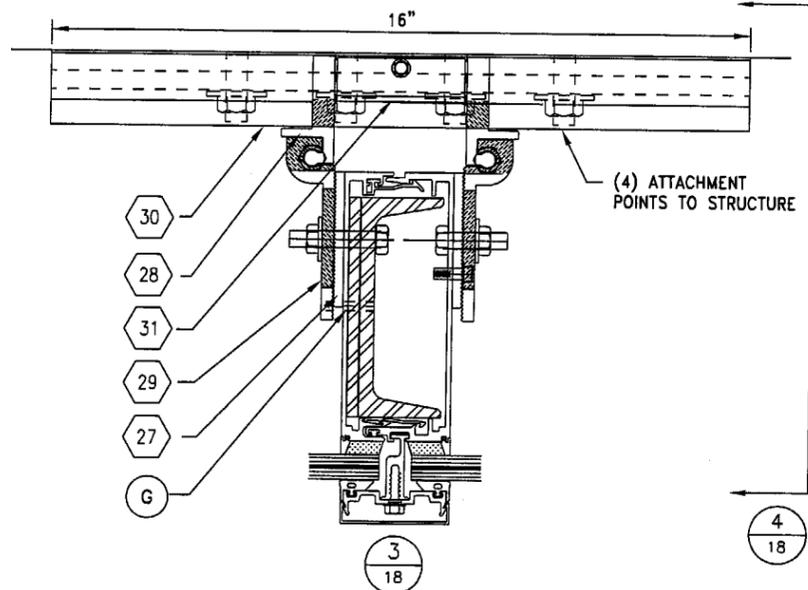
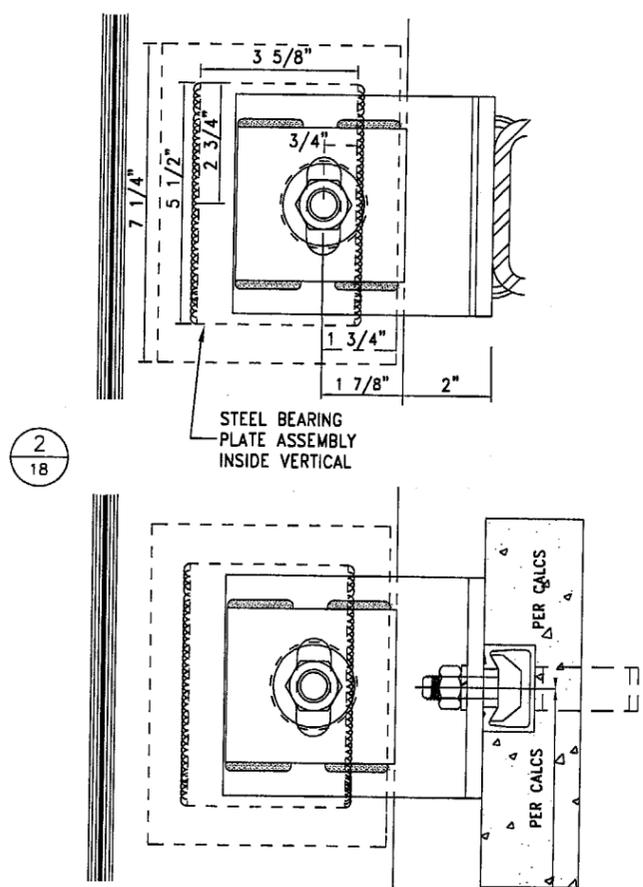
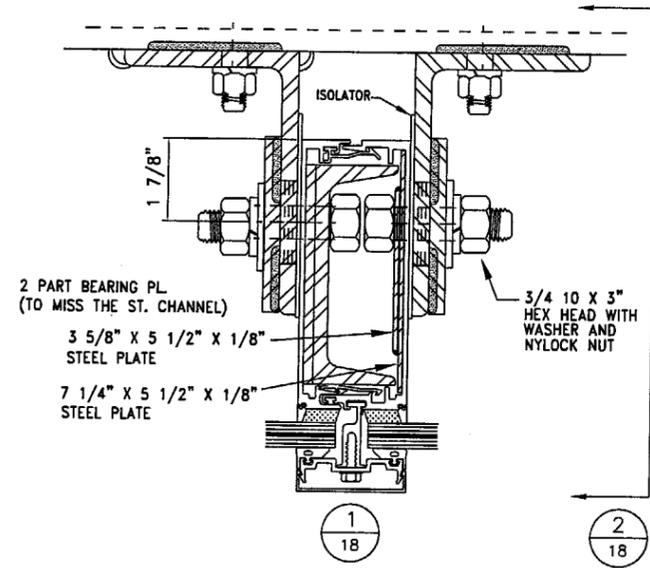
SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD	.	.	.	.	.
CONCRETE	2,715 #	1/2" DIA	2	4 1/8"	3 1/8"
STEEL	2,715 #	#14 DRILL FLEX	4	.	.
METAL STUD	.	.	.	.	.

Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

DADE CO. STAMP  
 Approved as complying with the Florida Building Code  
 Date 09/02/04  
 NOAH 04-0213-11  
 Miami Dade Product Control  
 Division  
 By *[Signature]*

ENGINEER STAMP  
 LEE A. GRANQUIST  
 CERTIFICATE NO. 33327  
 STATE OF FLORIDA  
 REGISTERED ENGINEER  
 JUL 29 2004

**Harmon**  
 HI 7000 LARGE MISSILE ANCHOR APPLICATIONS  
 STEEL ANGLES & ALUMINUM LUGS  
 DATE: 06/28/04  
 DWG. NO. 017-HI7000\_lm  
 SHEET 17 OF 20



TESTED CONDITION SHOWN ABOVE.  
 - ANCHOR ACCOMODATED 11550# WL REACTION  
 - ANCHORS MAY BE MADE LONGER TO ACCOMMADATE MORE FASTENERS BASED ON PERIMETER CONDITIONS.  
 - WELD SIZES TO BE DETERMINED ON A PER JOB BASIS.

GENERAL NOTES:  
 - SIZES OF ANCHOR COMPONENTS LISTED ABOVE ARE A MINIMUM.  
 - ACTUAL LENGTH AND NUMBER & SIZE OF HOLES TO BE DETERMINED BY PROJECT SPECIFIC PERIMETER CONDITIONS AND TYPES OF FASTENERS USED.

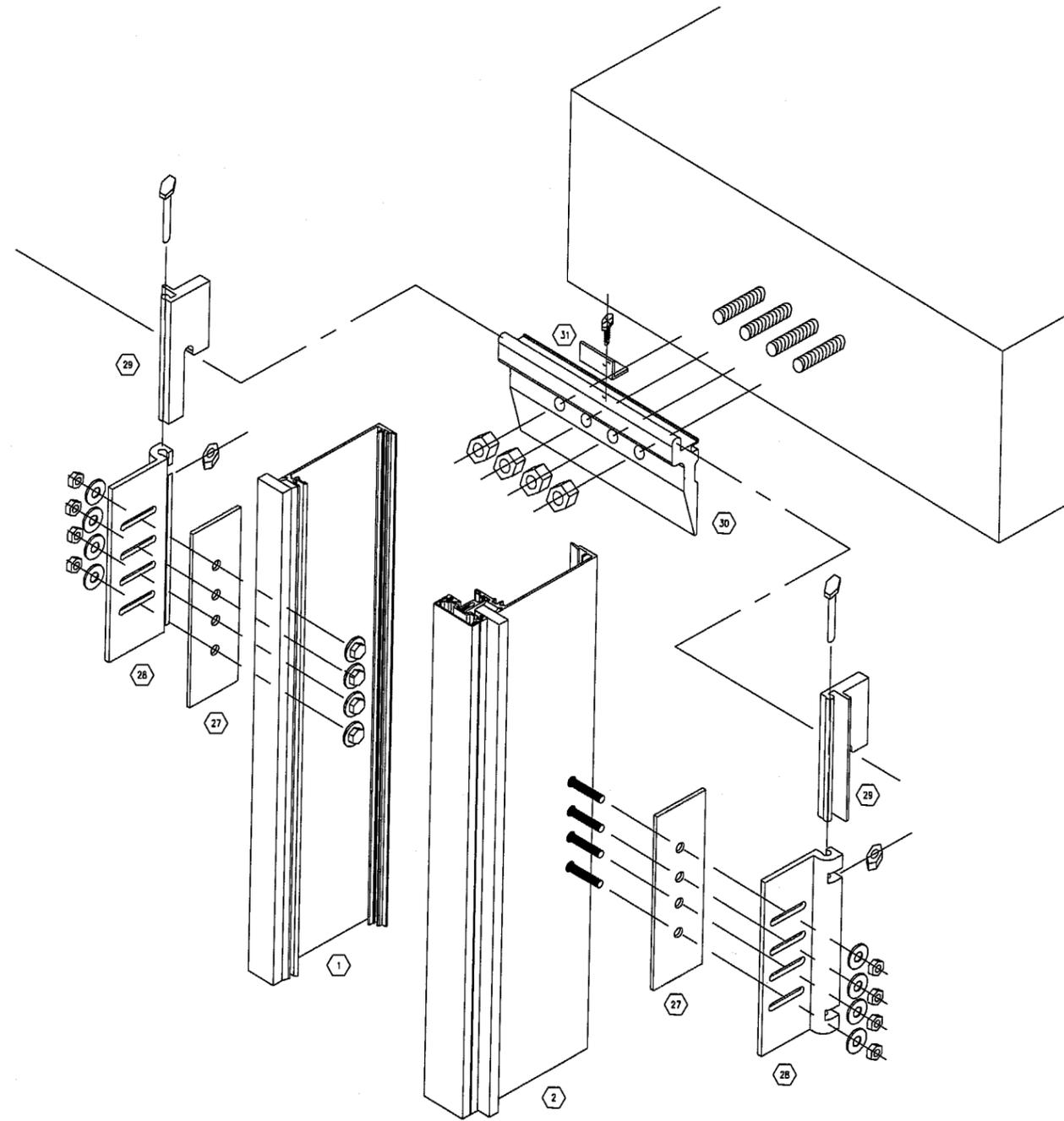
TESTED CONDITION SHOWN ABOVE.  
 - ANCHOR ACCOMODATED 10,500# WL REACTION, 1,000# DL REACTION  
 - ANCHORS MAY BE MADE LONGER TO ACCOMMADATE MORE FASTENERS BASED ON PERIMETER CONDITIONS.

DADE CO. STAMP  
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 Date 09/02/04  
 NOAH 04-0213-11  
 Miami Dade Product Control Division  
 By *[Signature]*

Larson Engineering of Minnesota  
 3524 Labore Road  
 White Bear Lake, MN 55110

ENGINEER STAMP  
 LEE A. GRANQUIST  
 CERTIFICATE NO. 33327  
 REGISTERED ENGINEER  
 STATE OF FLORIDA  
 JUL 29 2004

**Harmon**  
 HI 7000 LARGE MISSILE ANCHOR APPLICATIONS  
 EDGE OF SLAB  
 DATE: 06/28/04  
 DWG. NO. 018\_HI7000\_lm  
 SHEET 18 OF 20



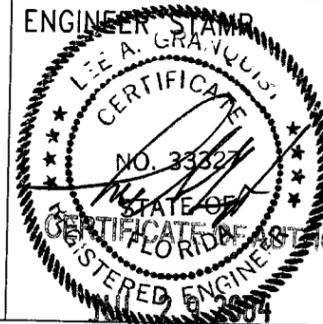
1	FEMALE VERTICAL MULLION	306001
2	MALE VERTICAL MULLION	306002
27	SERRATED PLATE	930110
28	"KNUCKLE" ANCHOR	930109
29	HOOK ANCHOR	930108
30	FLOOR EDGE PLATE	930111
31	ANTI-WALK ANGLE	.

GENERAL NOTES:

- EXPLODED VIEW OF TYPICAL MULLION ANCHOR FOR CURTAIN WALL APPLICATION WITH STACK HORIZONTAL

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 NOA# 04-0213-11  
 Miami Dade Product Control  
 Division  
 By [Signature]



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 White Bear Lake, MN 55110

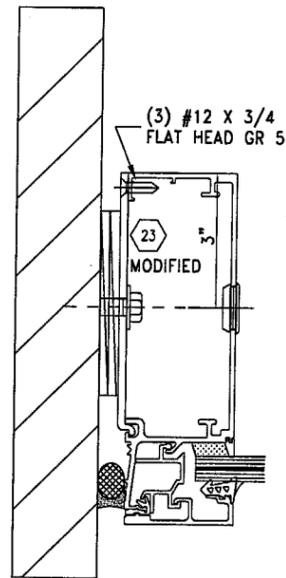
**Harmon**

HI 7000 LARGE MISSILE  
 ANCHOR APPLICATIONS  
 JAMBS

DATE: 06/28/04  
 ORGANIZATION #9803

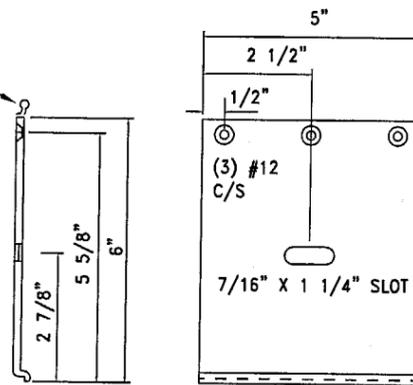
DWG. NO. 019\_HI7000\_lm

SHEET 19 OF 20



1  
18

MODIFIED STRAP  
END REMOVED TO FLUSH  
OUT w/ BACK OF JAMB



TESTED CONDITIONS SHOWN ABOVE.

- (1) 5" MODIFIED STRAP TESTED TO 1870# END REACTION
- ANCHORS MAY BE MADE LONGER TO ACCOMMODATE MORE FASTENERS BASED ON JOB SPECIFIC PERIMETER CONDITIONS.

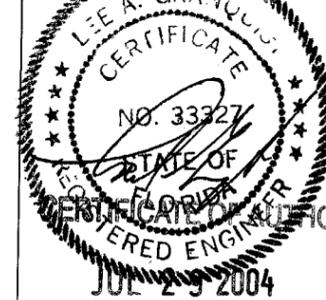
GENERAL NOTES:

- SIZES OF ANCHOR COMPONENTS LISTED ABOVE ARE A MINIMUM.
- ACTUAL LENGTH AND NUMBER & SIZE OF HOLES TO BE DETERMINED BY PROJECT SPECIFIC PERIMETER CONDITIONS AND TYPES OF FASTENERS USED.

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Date 09/02/04  
NOA# 04-0212-11  
Miami Dade Product Control  
Division  
By [Signature]

ENGINEER STAMP



HI 7000 LARGE MISSILE  
ANCHOR APPLICATIONS  
JAMBS

DATE: 06/28/04

AUTHORIZATION #9803

DWG. NO. 019\_HI7000\_Im

SHEET 20 OF 20

Larson Engineering of Minnesota  
3524 Labore Road  
White Bear Lake, MN 55110