



**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: HI5000 (6' Monolithic Insulated & Laminated Glass) Aluminum Window Wall System

APPROVAL DOCUMENT: Drawing No. **001_HI5000_Im**, titled "HI 5000 Large Missile", sheets 1 through 14 of 14, dated 06/28/04, prepared by manufacturer, signed and sealed by Lee A. Granquisi, 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, E-2, E-3, and E-4, as well as approval document mentioned above

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

*JG
8/4/04*



**NOA No 04-0217.08
Expiration Date: August 26, 2009
Approval Date: August 26, 2004
Page 1**

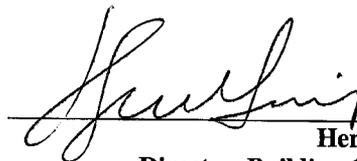
NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

A. DRAWINGS

1. Manufacturer's die drawings and sections.
2. Drawing No. **001_HI5000_Im**, titled "HI 5000 Large Missile", sheets 1 through 14 of 14, dated 06/28/04, prepared by manufacturer, signed and sealed by Lee A. Granquisi, 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
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-0319-1102-02**, dated 11/06/02, signed and sealed by Vinu J. Abraham, P.E.
2. 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 2), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1211-02**, dated 12/10/02, 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) Water Resistance Test, per FBC, TAS 202-94
4) Large Missile Impact Test per FBC, TAS 201-94
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 3), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1102-02**, dated 11/07-12/11/02, 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 3), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1211-02**, dated 11/07/-12/11/02, 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
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 5), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1102-02**, dated 11/07-8/02, signed and sealed by Vinu J. Abraham, P.E.



Herminio F. Gonzalez, P.E.
Director, Building Code Compliance Office
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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 5), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1211-02**, dated 12/16/02, signed and sealed by Vinu J. Abraham, P.E.
7. 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
along with marked-up drawings and installation diagram of an aluminum window wall system (specimen 6), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1102-02**, dated 12/16/02, signed and sealed by Vinu J. Abraham, P.E.
8. 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 7), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0107-03**, dated 1/08/-2/13/03, signed and sealed by Vinu J. Abraham, P.E.
9. 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 8), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1102-02**, dated 11/11-12/02, signed and sealed by Vinu J. Abraham, P.E.
10. 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 9), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-1102-02**, dated 11/12-13/02, signed and sealed by Vinu J. Abraham, P.E.
11. 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), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0906-03**, dated 09/09-10/03, signed and sealed by Vinu J. Abraham, P.E.



Herminio F. Gonzalez, P.E.

Director, Building Code Compliance Office

NOA No 04-0217.08

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12. 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 1), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0724-03**, dated 07/21-23/03, signed and sealed by Vinu J. Abraham, P.E.
13. 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-0319-0906-03**, dated 09/04-08/03, signed and sealed by Vinu J. Abraham, P.E.
14. 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 2), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0724-03**, dated 06/18-7/28/03, signed and sealed by Vinu J. Abraham, P.E.

C. CALCULATIONS

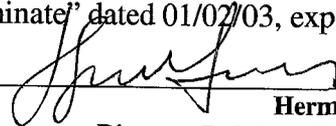
1. Anchor Calculations, ASTM-E1300, and structural analysis, prepared by Larson Engineering of Minnesota, dated 06/07/04, signed and sealed by Lee A. Ganquist, P.E.

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 III 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 12/6/08.



Herminio F. Gonzalez, P.E.
Director, Building Code Compliance Office
NOA No 04217.08
Expiration Date: August 6, 2009
Approval Date: August 6, 2004

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

12. 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 1), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0724-03**, dated 07/21-23/03, signed and sealed by Vinu J. Abraham, P.E.
13. 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-0319-0906-03**, dated 09/04-08/03, signed and sealed by Vinu J. Abraham, P.E.
14. 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 2), prepared by Hurricane Test Laboratory, Inc., Test Report No. **HTL-0319-0724-03**, dated 06/18-7/28/03, signed and sealed by Vinu J. Abraham, P.E.

C. CALCULATIONS

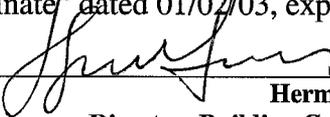
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3. Notice of Acceptance No. **03-0415.13** issued to Solutia, Inc. for "Vanceva Composites Interlayer for Laminated Glass" dated 12/11/03, expiring on 12/11/08.
4. Notice of Acceptance No. **02-1205.03** issued to Sercurity Impact Glass Holding L.L.C. for "SAF-GLAS Polycarbonate Laminate" dated 01/02/03, expiring on 12/16/08.



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

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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**

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HARMON HI 5000 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 @ +90/-90 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 6" (MONOLITHIC GLASS)
 2 1/2" X 6 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
2	MATERIAL LISTS
3	GLAZING DETAILS - RE-GLAZING DETAILS
4	ELEVATION - SIMPLE SPAN
5	GLASS SCHEDULE - LARGE MISSILE
6	GLASS SCHEDULE - SMALL MISSILE & ADDITIONAL TESTING
7	MULLION APPLICATION CHART - ANCHOR REVIEW
8	DETAILS OF TYPICAL HEADS, SILLS & INTERMEDIATE HORIZONTALS
9	DETAILS OF TYPICAL VERTICALS
10	DETAILS OF DOOR AND SEGMENTED VERTICAL
11	DETAIL OF 90 DEGREE OUTSIDE CORNER
12	STRAP ANCHOR & THRU-FRAME ANCHOR
13	ANGLES IN VERTICAL ANCHOR & ALUMINUM LUG IN VERTICAL ANCHOR
14	JAMB ANCHORS

NOTE:

FOR SYSTEM SELECTION SEE SHEET 4.



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



HI 5000 LARGE MISSILE
 COVER SHEET

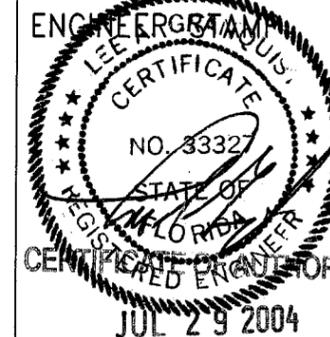
DATE: 06/28/04

DWG. NO. 001_HI5000_1m

SHEET 01 OF 14

DADE CO. STAMP

Approved as complying with the
 Florida Building Code
 Date 08/26/04
 NOAH 04-0217-08
 Miami Dade Product Control
 Division
 By *[Signature]*



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		1/4"	PART # 770301	85 DUR. SILICONE	INTERIOR FIXED GASKET FOR 5/8" & 1 3/8" THICK GLASS (1/4" THICK SEAL)	(1) FEMALE VERTICAL MULLION	304001	6063-T6	.110		
(B)	TYPICAL HORIZONTAL FRAME ASSEMBLY SCREW	#12 X 1 1/2" HWH "A" POINT XYLAN COATED	(4) REQUIRED PER JOINT			PART # 750301	70 DUR. SILICONE	VERTICAL WHISKER GASKET	(2) MALE VERTICAL MULLION	304002	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			PART # 720301	70 DUR. EPDM	EXTERIOR SLIDE IN VERTICAL PRESSURE PLATE	(3) INTERMEDIATE HORIZONTAL	304101	6063-T5	.100		
(D)	ANCHOR STEEL FIXING PLATE INTO HORIZONTAL	#17 X 1" STRIPPER BOLT	(1) REQUIRED PER PLATE			PART # 730301	70 DUR. EPDM	EXTERIOR WEDGE	(4) JAMB - MONOLITHIC GLASS	304004	6063-T6	.110		
(E)	TEMPORARY ANCHOR FOR CORNER END CAPS	#10 X 1 1/4" TEK SCREW	(1) REQUIRED PER END CAP			PART # 790301	70 DUR. EPDM	THERMAL BREAK FOR PRESSURE PLATE	(5) HEAD & SILL - MONOLITHIC GLASS	304103	6063-T5	.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		5/16"	PART # 770302	85 DUR. SILICONE	INTERIOR FIXED GASKET FOR 9/16" & 1 5/16" THICK GLASS (5/16" THICK SEAL)	(6) JAMB - INSULATED GLASS	304003	6063-T6	.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 HORIZONTAL			PART # 790303	90 DUR. EPDM	ALL PERIMETERS	(7) HEAD & SILL - INSULATED GLASS	304102	6063-T5	.110		
						PART # 790302	90 DUR. EPDM	PERIMETER THERMAL BREAK	(8) JAMB COVER	300203	6063-T5	.100		
						PART # 780301	70 DUR. SILICONE	ZONE DAM FOR MONOLITHIC GLASS 2 1/2" LONG	(9) HEAD & SILL EXTERIOR COVER	300202	6063-T5	.100		
						PART # 780302	70 DUR. SILICONE	ZONE DAM FOR INSULATED GLASS 2 1/2" LONG	(10) HEAD & SILL INTERIOR FILLER	304401	6063-T5	.080		
						PART # 700303	90 DUR. EPDM	5" LONG SETTING BLOCK. (TEAR IN HALF FOR MONOLITHIC GLASS)	(11) HORIZONTAL COVER	300201	6063-T5	.100		
						PART # 740301	70 DUR. EPDM	AT BUTT JOINT FOR MONOLITHIC GLASS	(12) VERTICAL COVER	600201	6063-T5	.060		
						PART # 740302	70 DUR. EPDM	AT BUTT JOINT FOR INSULATED GLASS	(13) VERTICAL PRESSURE PLATE	300701	6105-T5	.100		
					STICKY SIDE 1/4" X 3/8"	POLYURETHANE FOAM ADHESIVE ONE SIDE	HARD. SHORE A	INTERIOR FIXED TAPE FOR 5/8" & 1 3/8" THICK GLASS (1/4" THICK SEAL)	(14) PERIMETER ADAPTOR - MONOLITHIC GLASS	300305	6105-T5	.080		
					STICKY SIDE 3/8" X 3/8"	POLYURETHANE FOAM ADHESIVE ONE SIDE	HARD. SHORE A	INTERIOR FIXED TAPE FOR 9/16" & 1 5/16" THICK GLASS (5/16" THICK SEAL)	(15) PERIMETER ADAPTOR - INSULATED GLASS	300304	6105-T5	.080		
					.060 X 3/8"	POLYURETHANE FOAM ADHESIVE ONE SIDE	HARD. SHORE A	SPACER TAPE FOR SEGMENTED MULLION	(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. 12	
									(23) STRAP ANCHOR MALE	930106	6105-T5	.187	SEE DET. 1-4 SHT. 12	
									(24) SLIDING ANCHOR FEMALE	930105	6105-T5	.250	SEE DET. 5-8 SHT. 13	
									(25) SLIDING ANCHOR MALE	930103	6105-T5	.435	SEE DET. 5-8 SHT. 13	

DADE CO. STAMP
 Approved as complying with the Florida Building Code
 Date 08/26/04
 NOAH 04-0217-08
 Miami Dade Product Control Division
 By *[Signature]*

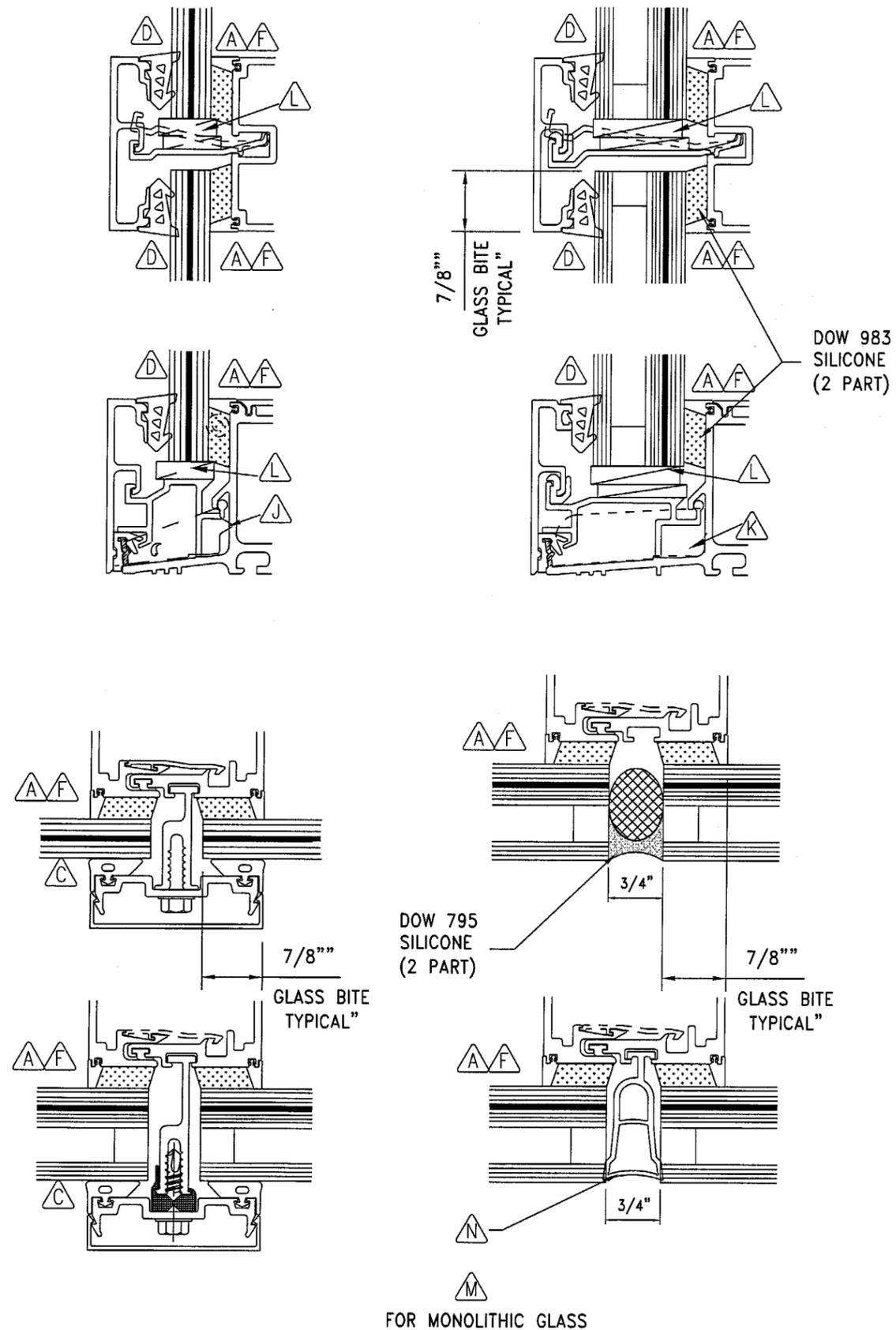
Larson Engineering of Minnesota
 3524 Labore Road
 White Bear Lake, MN 55110

Harmon
 HI 5000 LARGE MISSILE MATERIAL LISTS

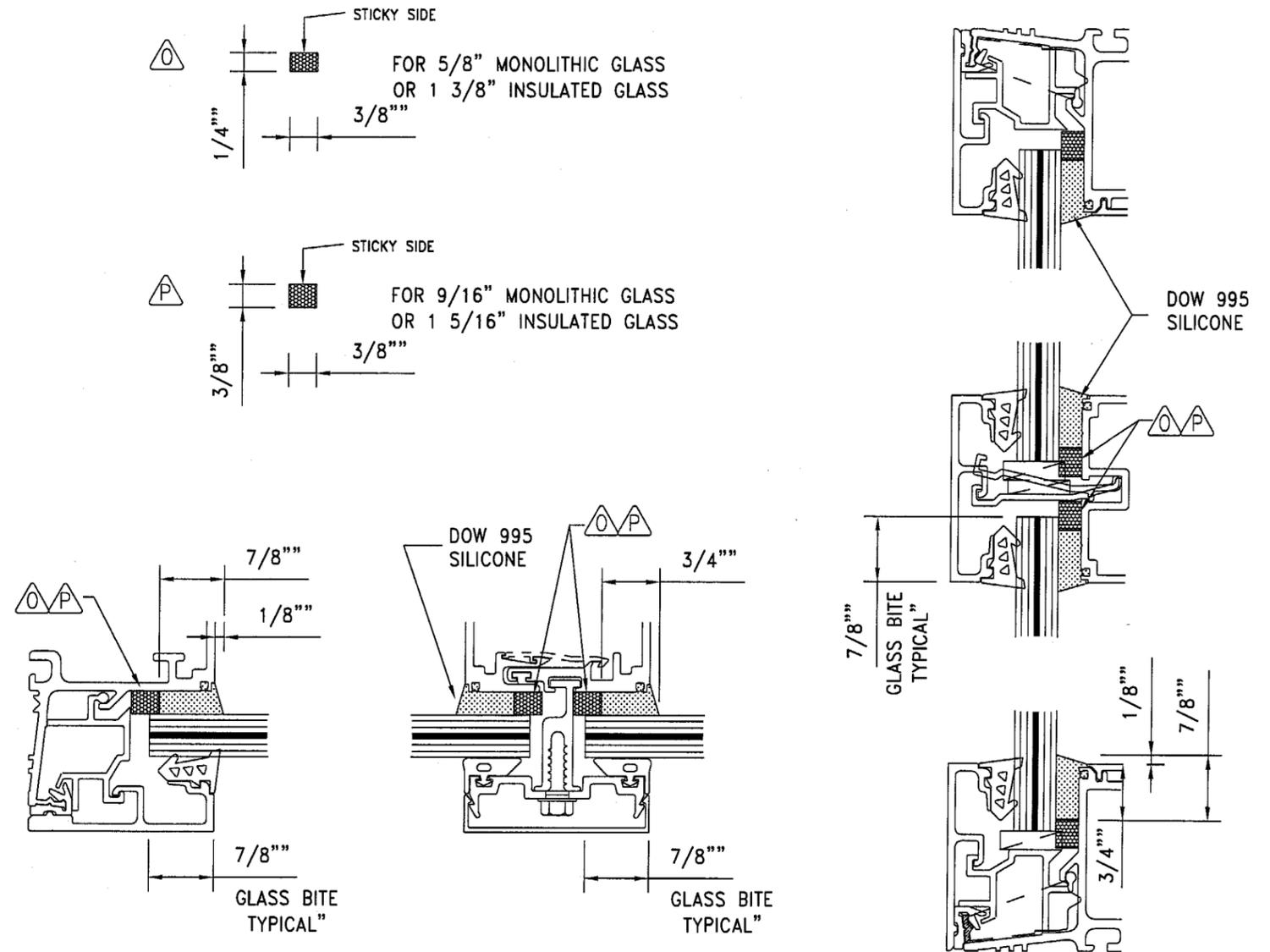
DATE: 06/28/04
 DWG. NO. 002_HI5000_lm
 SHEET 02 OF 14

ENGINEER STAMP
 LEE A. GRANQUIST
 CERTIFICATE NO. 33327
 STATE OF FLORIDA
 REGISTERED ENGINEER
 JUL 25 2004

GLAZING DETAILS



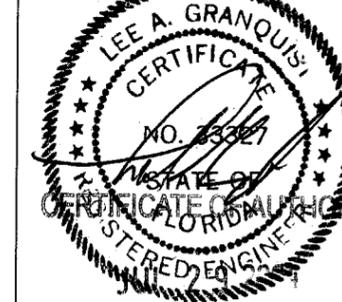
RE-GLAZING DETAILS



DADE CO. STAMP

Approved as complying with the Florida Building Code
 Date 08/26/04
 NOA# 04-0213-08
 Miami Dade Product Control Division
 By *[Signature]*

ENGINEER STAMP



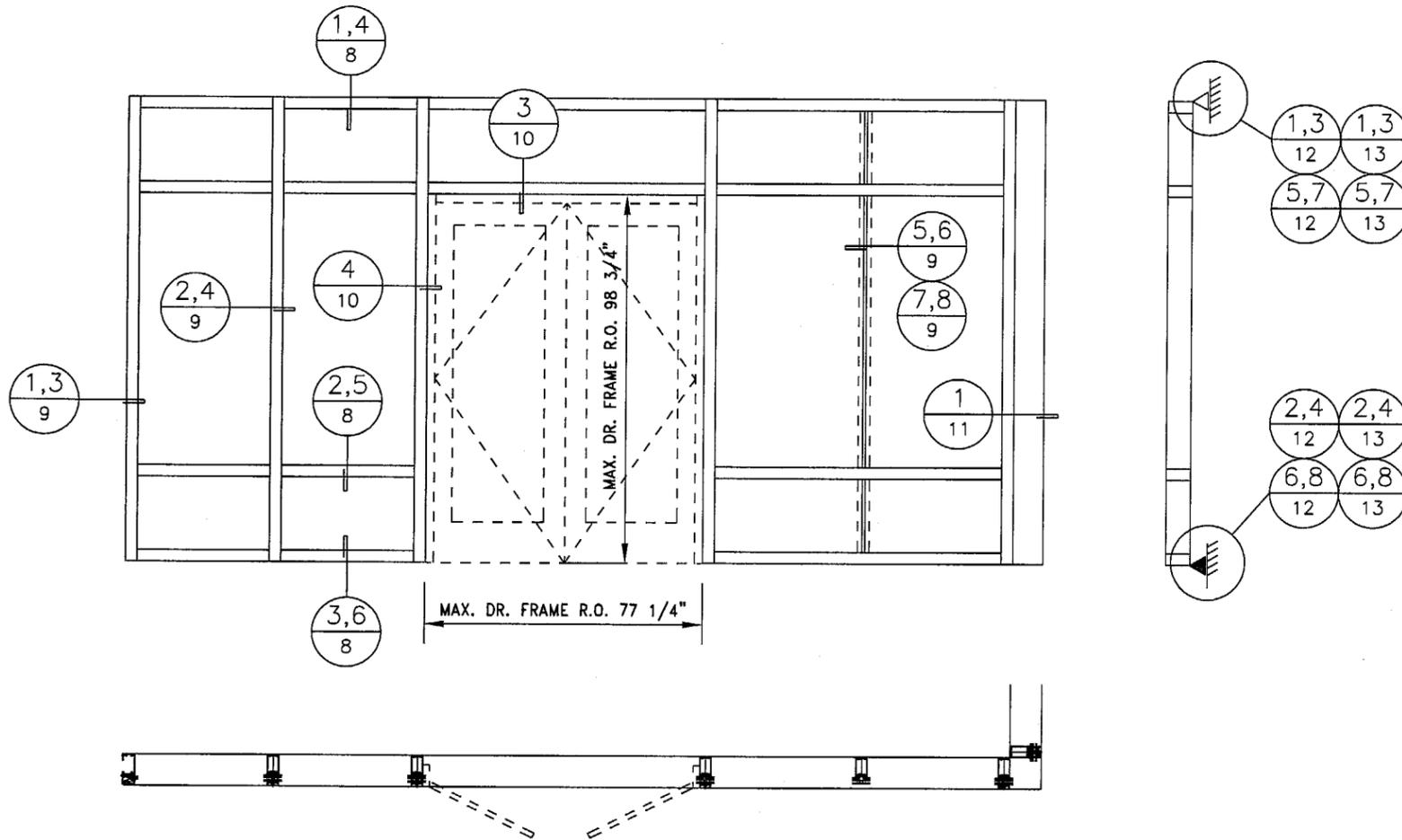
Harmon

HI 5000 LARGE MISSILE
 GLAZING DETAILS
 RE-GLAZING DETAILS

DATE: 10/31/03
 DWG. NO. 003_HI5000_lm

SYSTEM APPLICATION GUIDELINES:

- 1 SELECT GLASS FROM CHARTS ON SHEET 5 & 6. NOTE GLASS THICKNESS AND 4-SIDE CAPTURED VERSES CAPTURED/SSG OPTIONS.
- 2 SELECT MULLION & REINFORCING AS REQUIRED FROM CHARTS ON SHEET 7 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 7. 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 7.

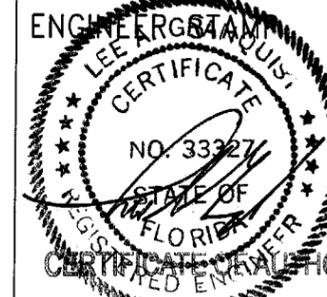


GENERAL NOTES:

- 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 06/26/04
 NOA# 04-0217-08
 Miami-Dade Product Control Division
 By [Signature]



JUL 29 2004



HI 5000 LARGE MISSILE SINGLE SPAN APPLICATIONS

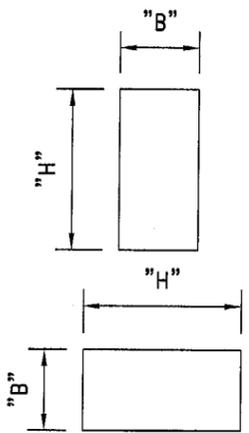
DATE: 06/28/04 1

DWG. NO. 004_HI5000_lm 3

SHEET 04 OF 14

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

MONOLITHIC GLASS - LARGE MISSILE				INSULATED GLASS- LARGE MISSILE																																																															
<p>2 9/16" (.100) SAFLEX H P HS / HS TEST PRESSURE: +/-90 PSF 5,476 SQ. IN.</p> <p>COMPATIBLE SIZES</p> <table border="1"> <tr><th>"B" - DLO</th><th>"H" - DLO MAX</th></tr> <tr><td>UP TO 39 1/2"</td><td>120"</td></tr> <tr><td>40 - 45 1/2"</td><td>114"</td></tr> <tr><td>46 - 51 1/2"</td><td>102"</td></tr> <tr><td>52 - 57 1/2"</td><td>95 1/4"</td></tr> <tr><td>58 - 63 1/2"</td><td>84"</td></tr> <tr><td>64 - 69 1/2"</td><td>78"</td></tr> <tr><td>70 - 74"</td><td>74"</td></tr> </table> <p>1/4" HS .100 SOLUTIA SAFLEX HP</p>	"B" - DLO	"H" - DLO MAX	UP TO 39 1/2"	120"	40 - 45 1/2"	114"	46 - 51 1/2"	102"	52 - 57 1/2"	95 1/4"	58 - 63 1/2"	84"	64 - 69 1/2"	78"	70 - 74"	74"	<p>16 9/16" (.075) VS02 H.S. / H.S. TEST PRESSURE: +/-90 PSF 5,476 SQ. IN.</p> <p>COMPATIBLE SIZES</p> <table border="1"> <tr><th>"B" - DLO</th><th>"H" - DLO MAX</th></tr> <tr><td>UP TO 39 1/2"</td><td>120"</td></tr> <tr><td>40 - 45 1/2"</td><td>114"</td></tr> <tr><td>46 - 51 1/2"</td><td>102"</td></tr> <tr><td>52 - 57 1/2"</td><td>95 1/4"</td></tr> <tr><td>58 - 63 1/2"</td><td>84"</td></tr> <tr><td>64 - 69 1/2"</td><td>78"</td></tr> <tr><td>70 - 74"</td><td>74"</td></tr> </table> <p>1/4" HS .075 VS02</p>	"B" - DLO	"H" - DLO MAX	UP TO 39 1/2"	120"	40 - 45 1/2"	114"	46 - 51 1/2"	102"	52 - 57 1/2"	95 1/4"	58 - 63 1/2"	84"	64 - 69 1/2"	78"	70 - 74"	74"	<p>5 1 5/16" (.090) SGP IG HS / HS - HS TEST PRESSURE: +/-90 PSF 5,476 SQ. IN.</p> <p>COMPATIBLE SIZES</p> <table border="1"> <tr><th>"B" - DLO</th><th>"H" - DLO MAX</th></tr> <tr><td>UP TO 39 1/2"</td><td>120"</td></tr> <tr><td>40 - 45 1/2"</td><td>114"</td></tr> <tr><td>46 - 51 1/2"</td><td>102"</td></tr> <tr><td>52 - 57 1/2"</td><td>95 1/4"</td></tr> <tr><td>58 - 63 1/2"</td><td>84"</td></tr> <tr><td>64 - 69 1/2"</td><td>78"</td></tr> <tr><td>70 - 74"</td><td>74"</td></tr> </table> <p>1/4" HS .090 DUPONT IONOPLAST</p>	"B" - DLO	"H" - DLO MAX	UP TO 39 1/2"	120"	40 - 45 1/2"	114"	46 - 51 1/2"	102"	52 - 57 1/2"	95 1/4"	58 - 63 1/2"	84"	64 - 69 1/2"	78"	70 - 74"	74"	<p>17 1 5/16" (.075) VS02 HS / HS - HS TEST PRESSURE +/-90 PSF 5,476 SQ. IN.</p> <p>COMPATIBLE SIZES</p> <table border="1"> <tr><th>"B" - DLO</th><th>"H" - DLO MAX</th></tr> <tr><td>UP TO 39 1/2"</td><td>120"</td></tr> <tr><td>40 - 45 1/2"</td><td>114"</td></tr> <tr><td>46 - 51 1/2"</td><td>102"</td></tr> <tr><td>52 - 57 1/2"</td><td>95 1/4"</td></tr> <tr><td>58 - 63 1/2"</td><td>84"</td></tr> <tr><td>64 - 69 1/2"</td><td>78"</td></tr> <tr><td>70 - 74"</td><td>74"</td></tr> </table> <p>1/4" HS .075 VS02</p>	"B" - DLO	"H" - DLO MAX	UP TO 39 1/2"	120"	40 - 45 1/2"	114"	46 - 51 1/2"	102"	52 - 57 1/2"	95 1/4"	58 - 63 1/2"	84"	64 - 69 1/2"	78"	70 - 74"	74"
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<p>10 5/8" (.180) HRG-2 HS / HS TEST PRESSURE +/-90 PSF 6,540 SQ. IN.</p> <p>COMPATIBLE SIZES</p> <table border="1"> <tr><th>"B" - DLO</th><th>"H" - DLO MAX</th></tr> <tr><td>UP TO 45 1/2"</td><td>144"</td></tr> <tr><td>46 - 51 1/2"</td><td>126"</td></tr> <tr><td>52 - 57 1/2"</td><td>113 3/4"</td></tr> <tr><td>58 - 63 1/2"</td><td>102"</td></tr> <tr><td>64 - 69 1/2"</td><td>94"</td></tr> <tr><td>70 - 75 1/2"</td><td>86 1/2"</td></tr> <tr><td>70 - 80 1/2"</td><td>80 1/2"</td></tr> </table> <p>1/4" HS .050 POLYURETHANE .080 POLYCARBONATE .050 POLYURETHANE</p>	"B" - DLO	"H" - DLO MAX	UP TO 45 1/2"	144"	46 - 51 1/2"	126"	52 - 57 1/2"	113 3/4"	58 - 63 1/2"	102"	64 - 69 1/2"	94"	70 - 75 1/2"	86 1/2"	70 - 80 1/2"	80 1/2"		<p>7 1 5/16" (.090) SAFLEX IG HS / HS - HS TEST PRESSURE +/-90 PSF 5,476 SQ. IN.</p> <p>COMPATIBLE SIZES</p> <table border="1"> <tr><th>"B" - DLO</th><th>"H" - DLO MAX</th></tr> <tr><td>UP TO 39 1/2"</td><td>95 1/2"</td></tr> <tr><td>40 - 45 1/2"</td><td>83"</td></tr> <tr><td>46 - 51 1/2"</td><td>73 1/4"</td></tr> <tr><td>52 - 57 1/2"</td><td>65 3/4"</td></tr> <tr><td>58 - 63 1/2"</td><td>59 1/2"</td></tr> <tr><td>64 - 69 1/2"</td><td>54 1/4"</td></tr> </table> <p>1/4" HS .090 SOLUTIA SAFLEX PVB</p>	"B" - DLO	"H" - DLO MAX	UP TO 39 1/2"	95 1/2"	40 - 45 1/2"	83"	46 - 51 1/2"	73 1/4"	52 - 57 1/2"	65 3/4"	58 - 63 1/2"	59 1/2"	64 - 69 1/2"	54 1/4"																																			
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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.

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

GENERAL NOTES:

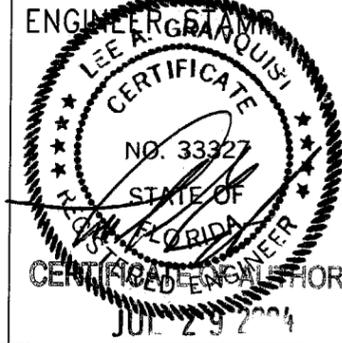
- THE ABOVE GLASS TYPES HAVE BEEN TESTED FOR LARGE MISSILE.
- SYSTEM HAS A 2 1/2" FACE DIMENSION THEREFORE A 60" C/L TO C/L HAS A 57 1/2" DLO
- INSULATED GLASS HAS A 1/2" AIR SPACE
- HS - HEAT STRENGTHENED
- TEMP - TEMPERED

GLASS FORMULA:

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

DADE CO. STAMP

Approved as complying with the Florida Building Code
Date 08/26/04
NOA# 04-0217-08
Miami Dade Product Control Division
By *[Signature]*



HI 5000 LARGE MISSILE GLASS APPLICATIONS LARGE MISSILE

DATE: 06/28/04

DWG. NO. 005_HI5000_lm

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

DADE CO. STAMP

Approved as complying with the
 Florida Building Code
 Date 08/26/04
 NOA# 04-0217-08
 Miami-Dade Product Control
 Division
 By [Signature]

ENGINEER STAMP



HI 5000 LARGE MISSILE
 GLASS APPLICATIONS
 SMALL MISSILE

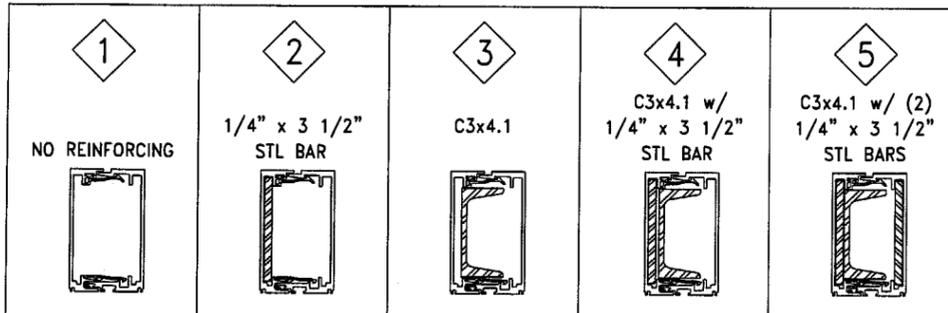
DATE: 06/28/04

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2

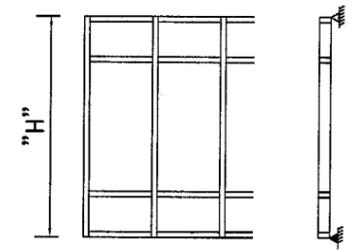
3

DWG. NO. 008_HI5000_1m



SINGLE SPAN APPLICATION

OPTION W.L.	1	2	3	4	5
	"W"	"H"	"H"	"H"	"H"
UP TO MAXIMUM 60 psf POS. OR NEGATIVE LOAD	3'-0" / 4'-0"	9'-4" / 8'-6"	10'-9" / 9'-9"	11'-9" / 10'-8"	12'-8" / 11'-6"
UP TO MAXIMUM 70 psf POS. OR NEGATIVE LOAD	3'-0" / 4'-0"	8'-11" / 7'-10"	10'-3" / 9'-4"	11'-2" / 10'-2"	12'-10" / 11'-8"
UP TO MAXIMUM 80 psf POS. OR NEGATIVE LOAD	3'-0" / 4'-0"	8'-6" / 7'-4"	9'-9" / 8'-11"	10'-8" / 9'-8"	12'-3" / 11'-2"
UP TO MAXIMUM 90 psf POS. OR NEGATIVE LOAD	3'-0" / 4'-0"	8'-0" / 6'-11"	9'-5" / 8'-6"	10'-3" / 9'-4"	11'-10" / 10'-9"



ANCHOR TYPE	STRAP ANCHOR	THRU-FRAME ANCHOR	STEEL ANGLES IN VERTICAL	ALUMINUM LUG IN VERTICAL	JAMB ANCHOR
WOOD					
CONC.					
STEEL					
STUD					
	MAXIMUM END REACTION (2) STRAPS-5" LONG = 1880# (2) STRAPS-11" LONG = 2230# SEE SHEET 12 FOR DETAILS	MAXIMUM END REACTION = 1880# SEE SHEET 12 FOR DETAILS	MAXIMUM END REACTION (2) ANGLES = 2335# REIN. ANGLES w/ (1) FAST. SEE SHEET 13 FOR DETAILS	MAXIMUM END REACTION = 2230# SEE SHEET 13 FOR DETAILS	MAXIMUM END REACTION (1) STRAP-25" LONG w/ (2) 5" KEEPERS = 1225# SEE DETAIL 2/14

GENERAL NOTES:

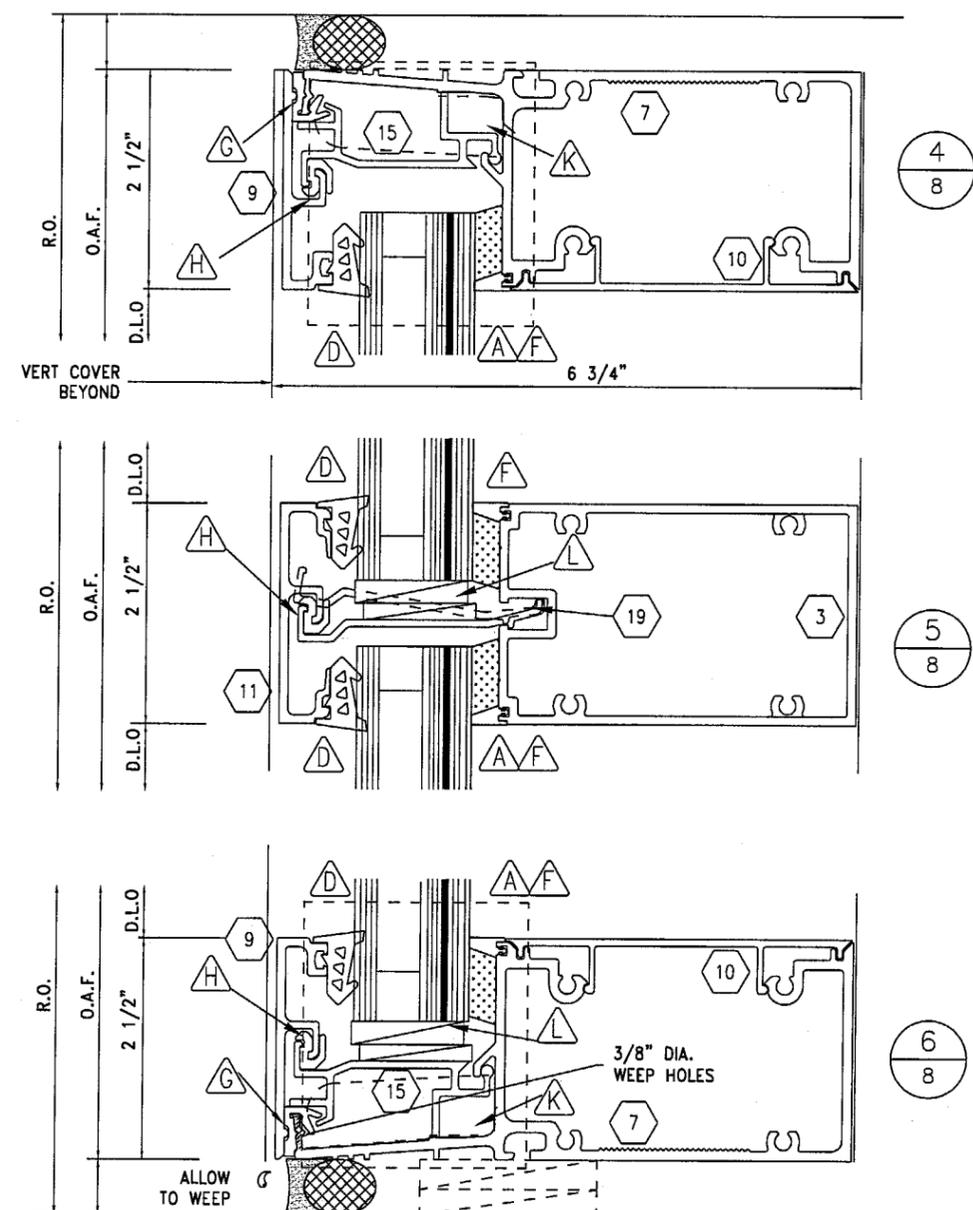
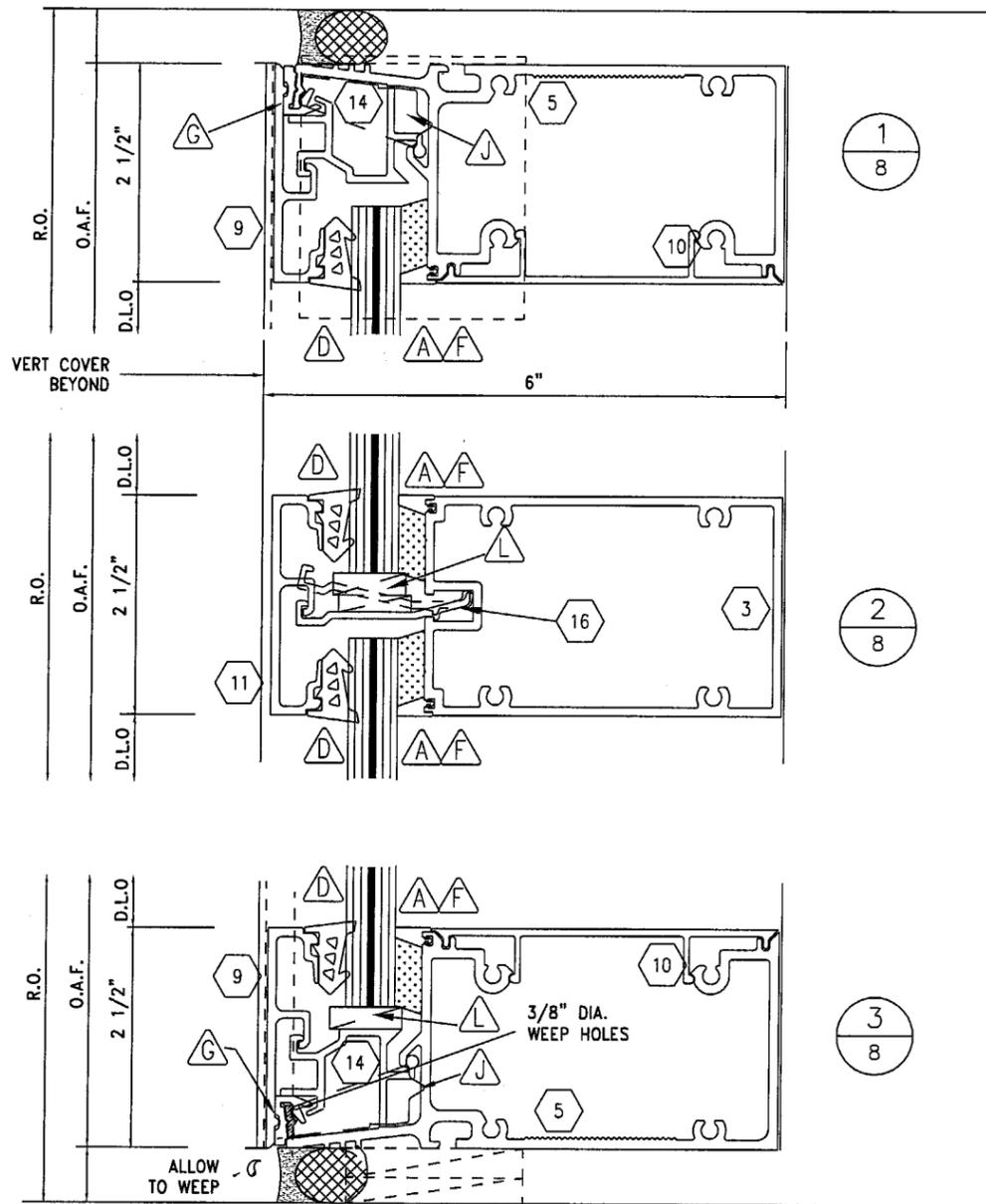
- "H" = MAXIMUM MULLION SPAN
- "W" = C/L TO C/L SPACING
- $W = \frac{W1 + W2}{2}$
- FOR SINGLE SPAN MAXIMUM DEFL. = L/180 or 1"
- (WHEN STEEL REINF. IS USED, LENGTH OF STEEL IS PER SIGNED CALCS ON A PER JOB BASIS)
- SPANS ARE LIMITED BY MAXIMUM TESTED END REACTIONS

DADE CO. STAMP
Approved as complying with the Florida Building Code
Date 08/26/04
NOA# 04-0217-08
Miami Dept Product Control
By *[Signature]*

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

Harmon
HI 5000 LARGE MISSILE MULLION APPLICATIONS ANCHOR REVIEW
DATE: 06/28/04
DWG. NO. 007_HI5000_lm
SHEET 07 OF 14

ENGINEER'S STAMP
LEE A. AQUINO
CERTIFICATE NO. 33327
STATE OF FLORIDA
REGISTERED PROFESSIONAL ENGINEER
JUL 29 2004



GENERAL NOTES:

- FOR ANCHOR DETAILS REFER TO SHEET 7
- FOR PART IDENTIFICATION REFER TO SHEET 2

- FASTENERS
- △ GASKETS
- ⬡ ALUMINUM EXTRUSIONS

- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 2.

DADE CO. STAMP

Approved as complying with the
 Florida Building Code
 Date 06/26/04
 NOA# 04-0213-08
 Miami Dade Product Control
 Division
 By *[Signature]*

ENGINEER STAMP



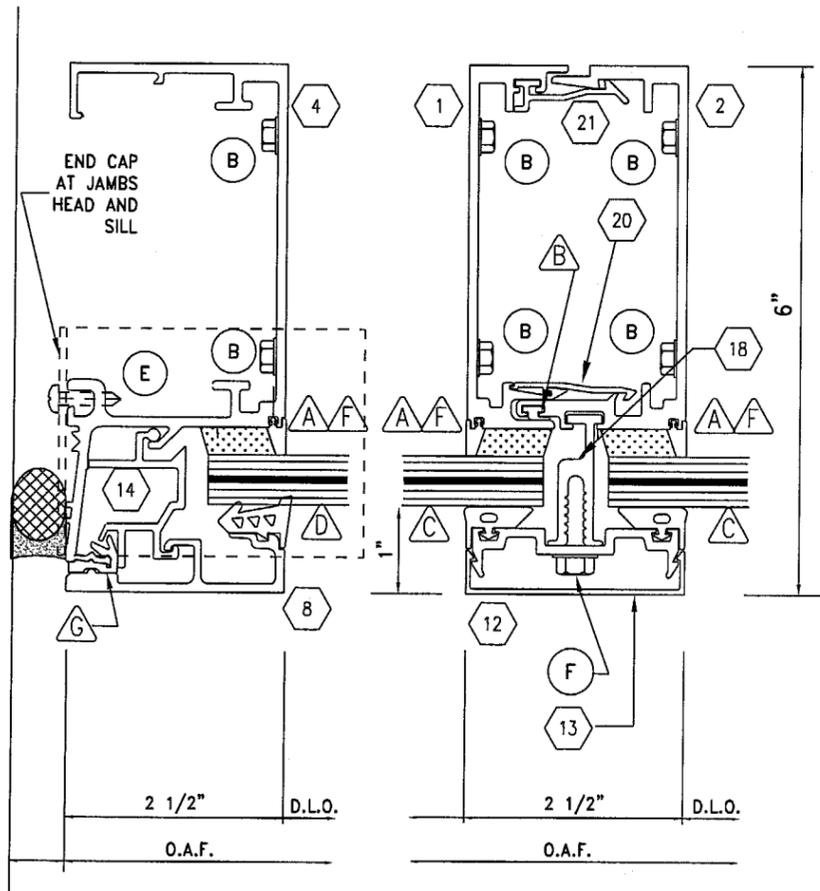
Larson Engineering of Minnesota
 3524 Labore Road
 White Bear Lake, MN 55110



HI 5000 LARGE MISSILE
 HORIZONTAL DETAILS

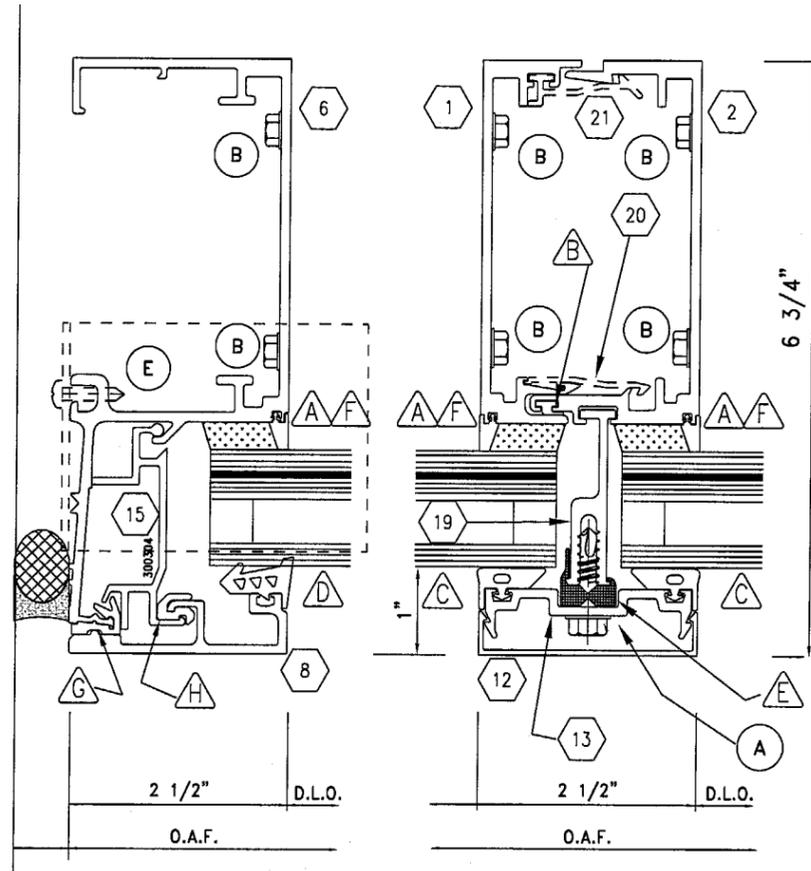
DATE: 06/28/04 1

DWG. NO. 008_HI5000_lm 3



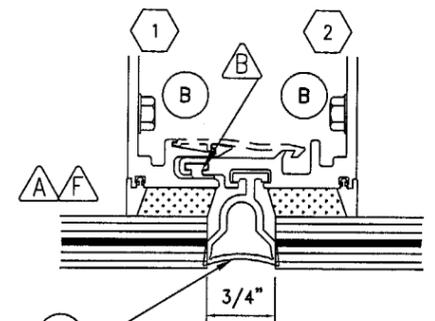
1/9

2/9



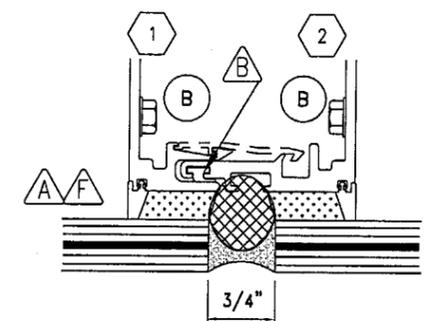
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4/9



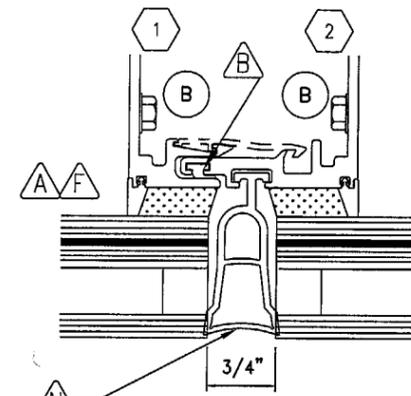
MONOLITHIC GLASS GASKETED VERTICAL JOINT

5/9



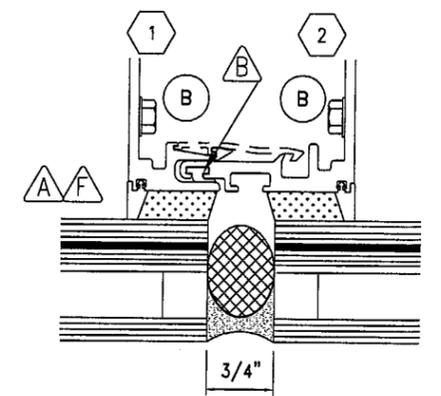
MONOLITHIC GLASS SILICONED VERTICAL JOINT

6/9



INSULATED GLASS GASKETED VERTICAL JOINT

7/9



INSULATED GLASS SILICONED VERTICAL JOINT

8/9

GENERAL NOTES:

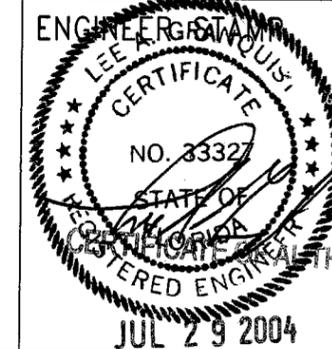
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- FASTENERS
- △ GASKETS
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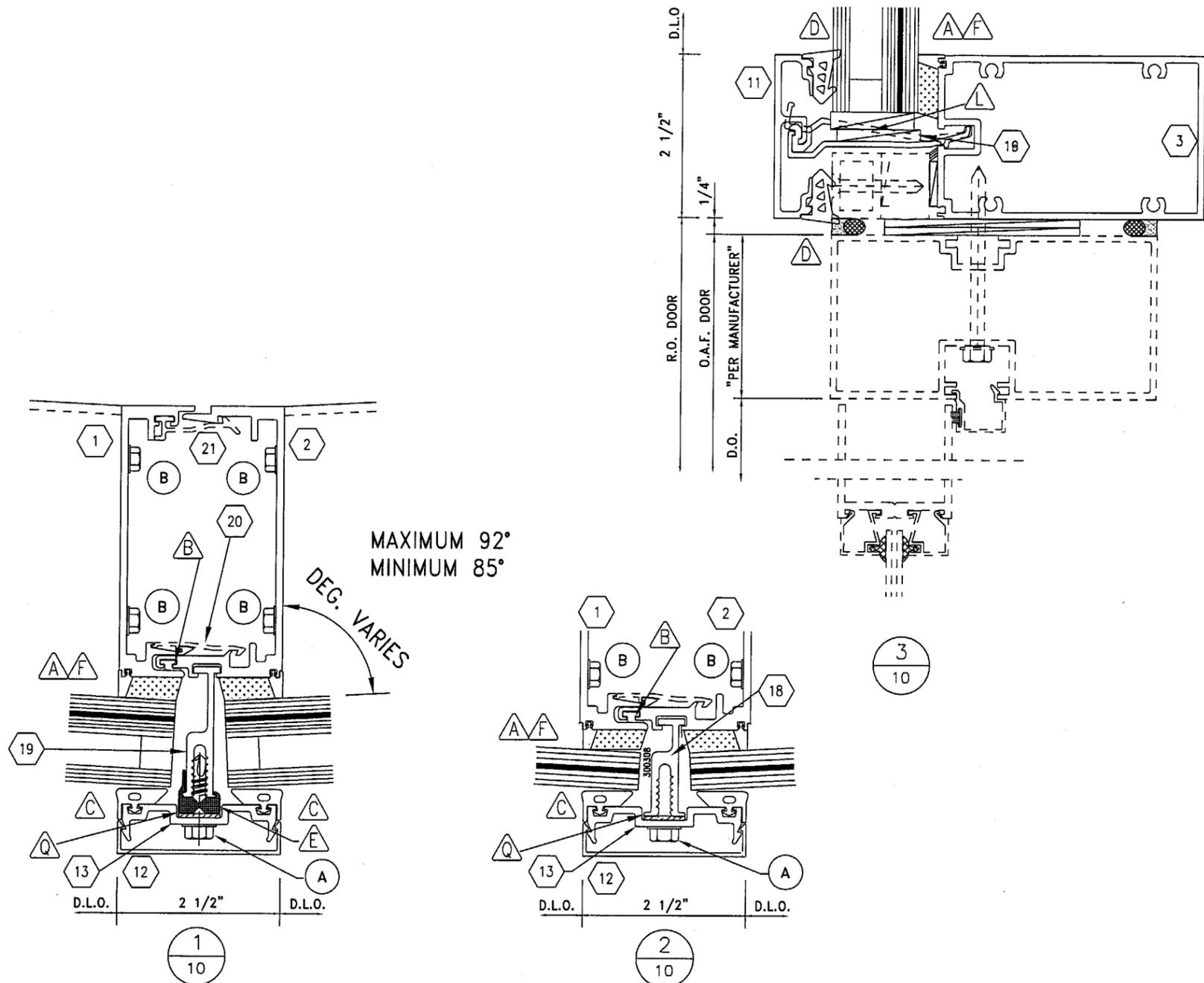


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 3524 Labore Road
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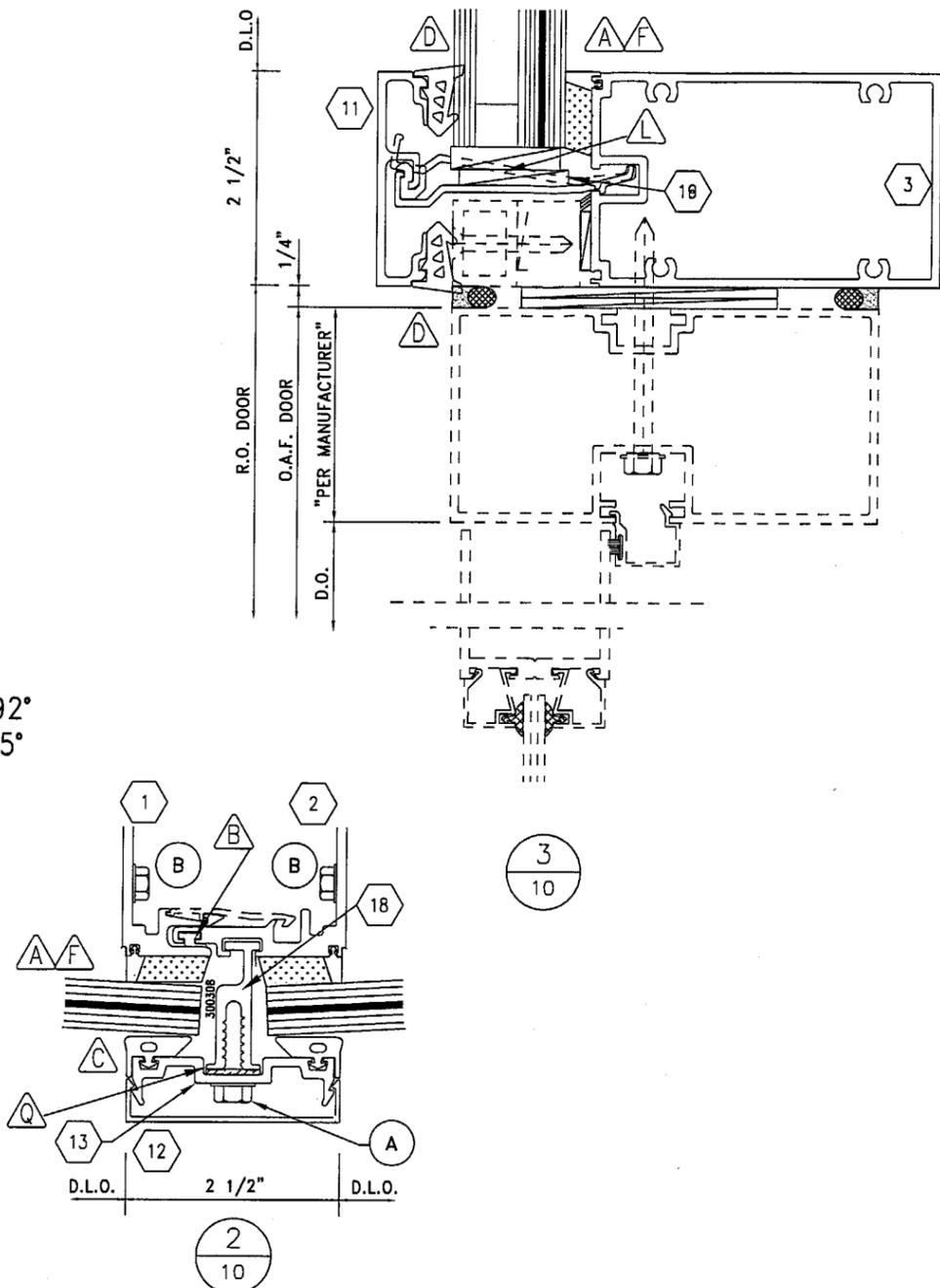
Harmon

HI 5000 LARGE MISSILE VERTICAL DETAILS

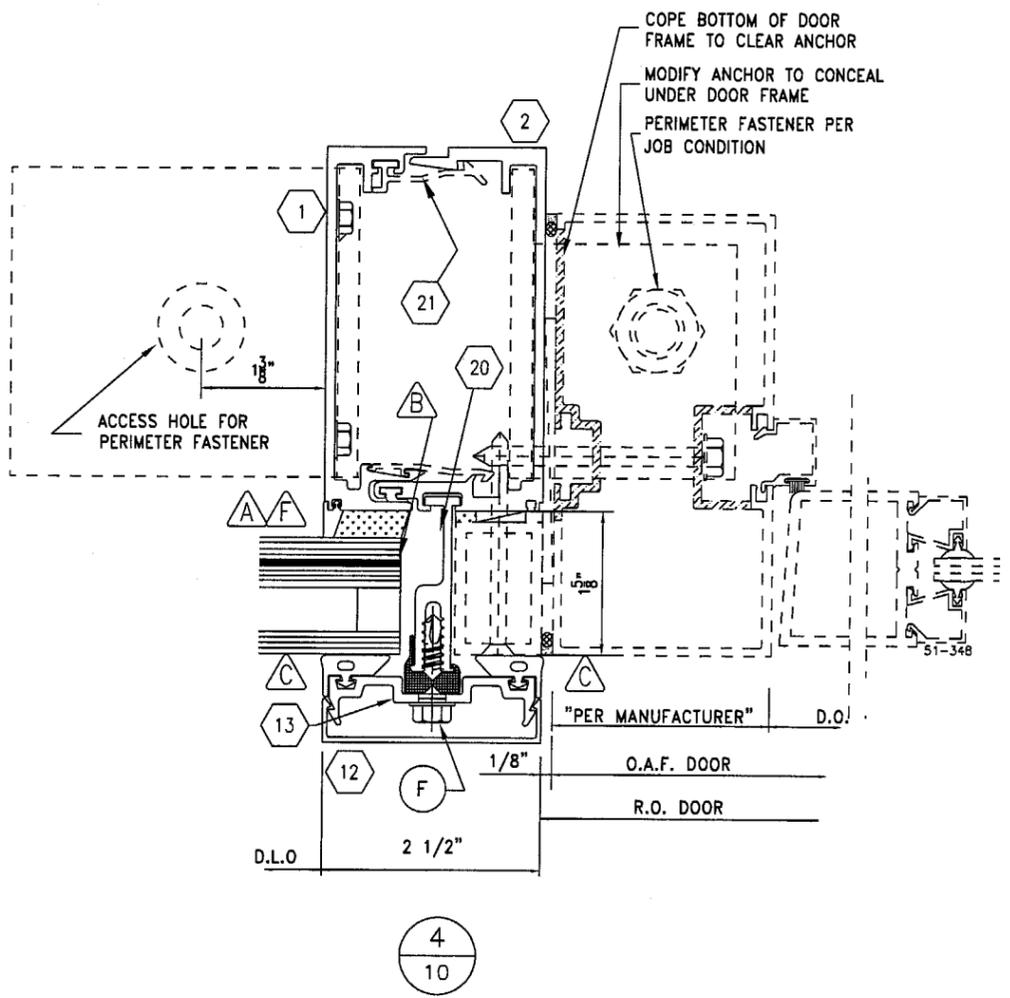
DATE: 06/28/04
 DWG. NO. 009_HI5000_lm
 SHEET 09 OF 14



SEGMENTED MULLION
INSULATED GLASS



SEGMENTED MULLION
MONOLITHIC GLASS



GENERAL NOTES:

- FOR ANCHOR DETAILS REFER TO SHEET 7
- FOR PART IDENTIFICATION REFER TO SHEET 2

- FASTENERS
- △ GASKETS
- ⬡ ALUMINUM EXTRUSIONS

- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 2.

DADE CO. STAMP

Approved as complying with the
Florida Building Code
Date 08/26/04
NOAH 04-0217-08
Miami Dade Product Control
Division
By [Signature]

ENGINEER STAMP



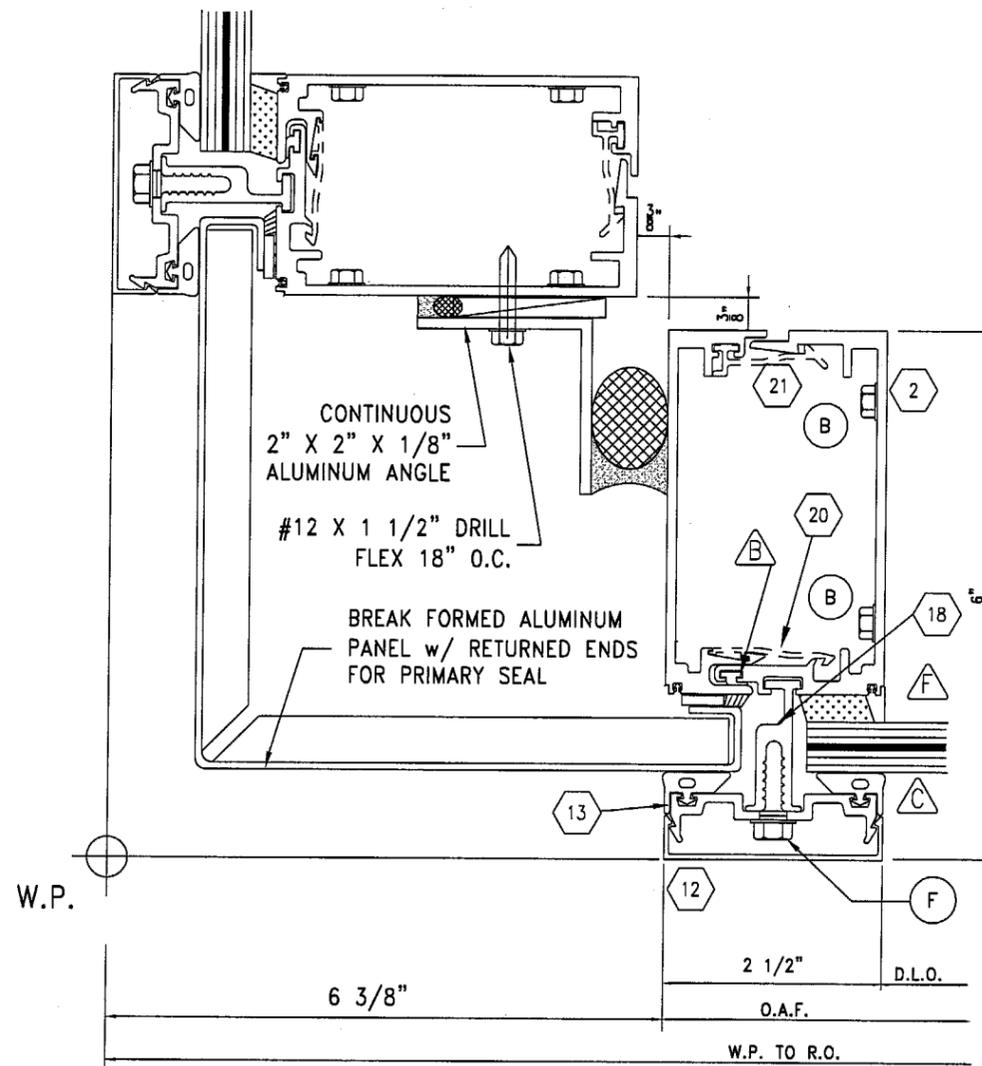
Larson Engineering of Minnesota
3524 Labore Road
White Bear Lake, MN 55110



HI 5000 LARGE MISSILE
SEGMENTED MULLION &
DOOR DETAILS

DATE: 06/28/04

DWG. NO. 010_HI5000_lm



1
11

GENERAL NOTES:

- FOR PART IDENTIFICATION REFER TO SHEET 2

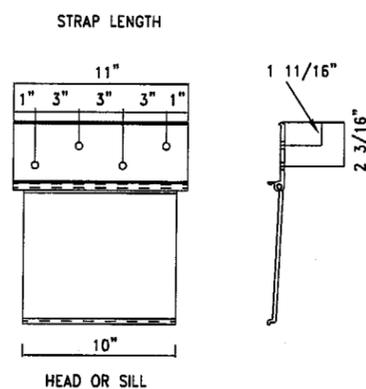
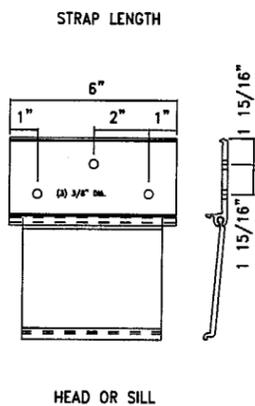
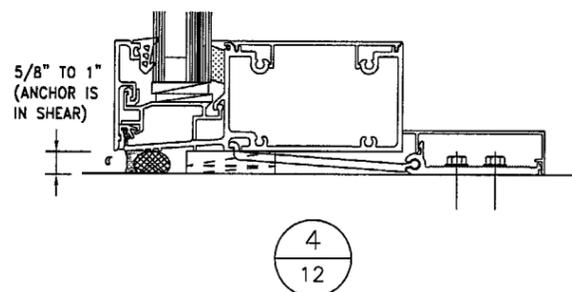
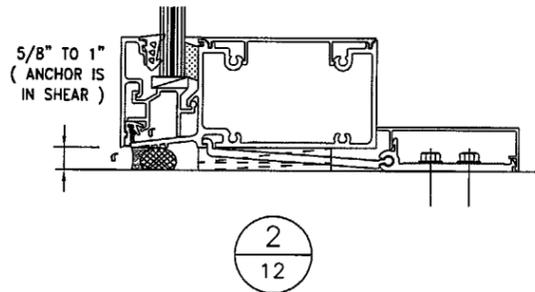
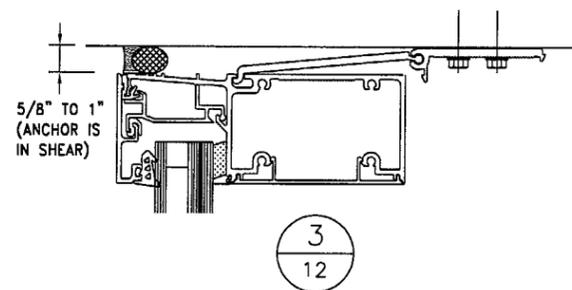
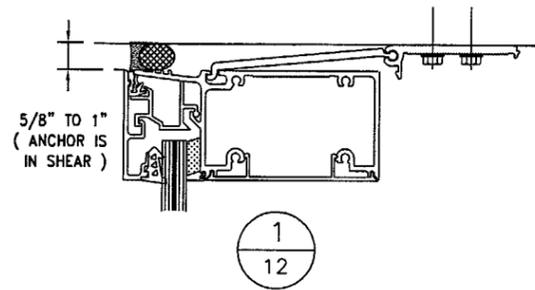
- FOR GLAZING DETAILS, GLASS BITE & GASKET CONFIGURATIONS SEE SHEET 3.

-  FASTENERS
-  GASKETS
-  ALUMINUM EXTRUSIONS

DADE CO. STAMP

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Date 08/26/04
NOA# 04-0217-08
Miami Dade Product Control
Division
By [Signature]

 Larson Engineering of Minnesota 3524 Labore Road White Bear Lake, MN 55110	
	 HI 5000 LARGE MISSILE 90° OUTSIDE CORNER DETAIL
DATE: 06/28/04	
DWG. NO. 011_HI5000_lm	
SHEET 11 OF 14	



ANCHOR FASTENER REQUIREMENTS

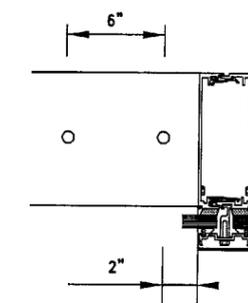
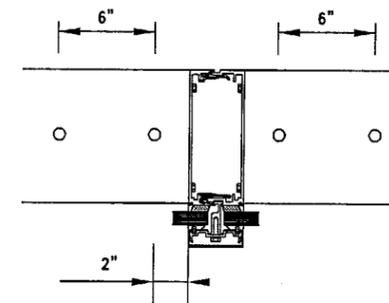
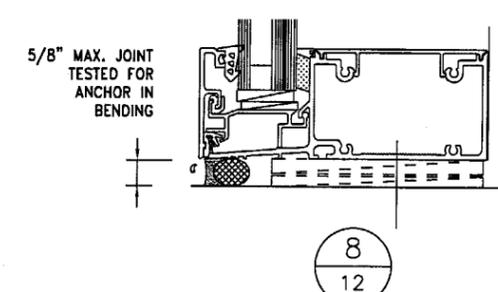
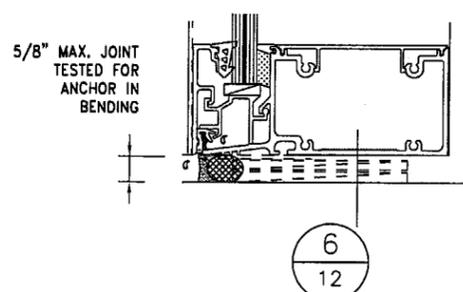
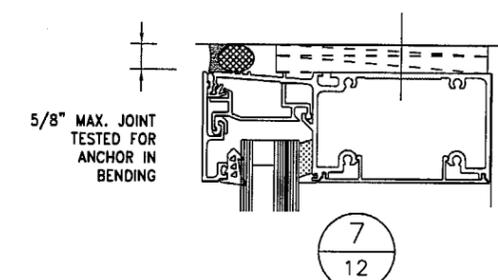
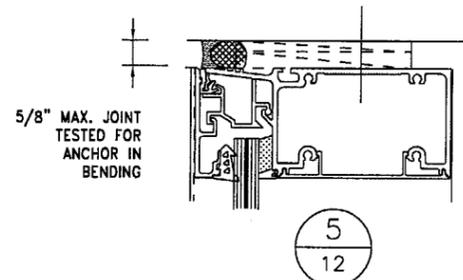
SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD		3/8"x3 1/2" LAG BOLT	3		
CONCRETE					
STEEL	1,880 #	#14 DRILL FLEX	3		
METAL STUD		#14 DRILL FLEX	4		

TESTED CONDITIONS SHOWN ABOVE.

- (2) 5" STRAPS TESTED TO 1880# END REACTION
- (2) 11" STRAPS TESTED TO 2230# END REACTION
- ANCHORS MAY BE MADE LONGER TO ACCOMMODATE FASTENERS BASED ON JOB SPECIFIC PERIMETER CONDITIONS.
- FASTENER LENGTH VARIES WITH SHIM AND BLOCKING THICKNESS

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.

- (2) FASTENERS EACH SIDE @ INTER. VERTICAL
- (2) FASTENERS ON SAME SIDE @ JAMBS
- FASTENER SPACING AND QUANTITY MAY CHANGE BASED ON JOB SPECIFIC PERIMETER CONDITIONS.
- FASTENER LENGTH VARIES WTH SHIM AND BLOCKING THICKNESS

ANCHOR FASTENER REQUIREMENTS

SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD					
CONCRETE	1,160 #	3/8" DIA.	2	1 1/2"	2 11/16"
STEEL	1,880 #	3/8" DIA	2		
METAL STUD					

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

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Miami Dade Product Control
Division
By *[Signature]*

ENGINEER STAMP



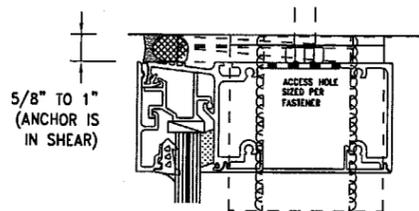
Harmon

HI 5000 LARGE MISSILE
ANCHOR APPLICATIONS
STRAP & THRU-FRAME

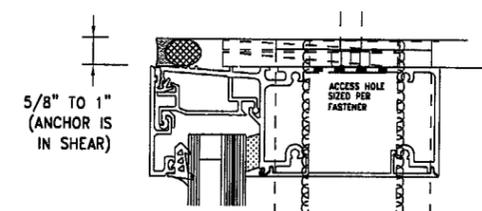
DATE: 06/28/04

DWG. NO. 012_HI5000_lm

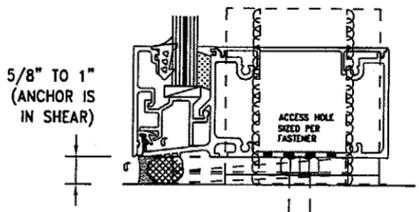
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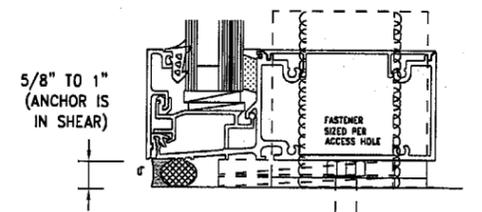
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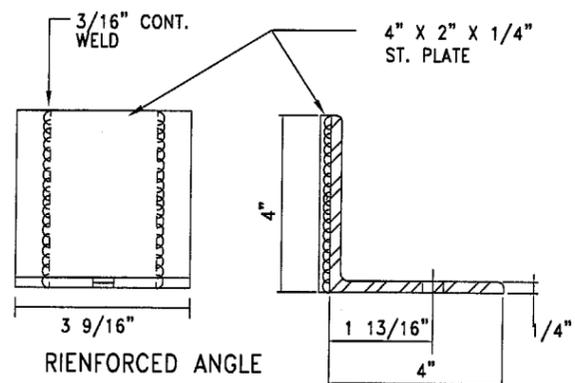
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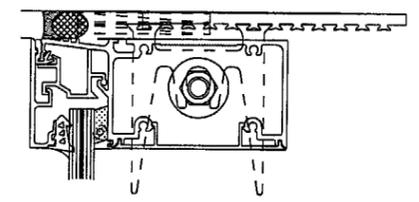
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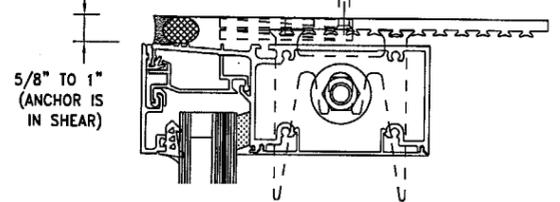
ANCHOR FASTENER REQUIREMENTS					
SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD	.	.	.	.	.
CONCRETE	2,355 #	3/8" DIA	2	3"	2 11/16"
STEEL	2,355 #	3/8" DIA	2	.	.
METAL STUD	.	.	.	.	.

TESTED CONDITIONS SHOWN ABOVE
 - (2) ANGLES TESTED TO 2,335# END REACTIN
 - REINFORCED ANGLE USED w/ (1) FASTENER.
 REINFORCING PLATE ADDED TO PREVENT TWIST
 IMPOSED BY ONLY (1) FASTENER

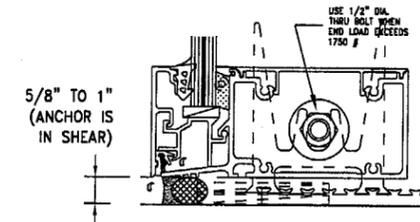
GENERAL NOTES:
 - SIZES OF ANCHOR COMPONENTS LISTED ABOVE ARE A MINIMUM.
 - ACTUAL LENGTH AND NUMBER & SIZE OF HOLES TO BE
 DETERMINED BY PROJECT SPECIFIC PERIMETER
 CONDITIONS AND TYPES OF FASTENERS USED.



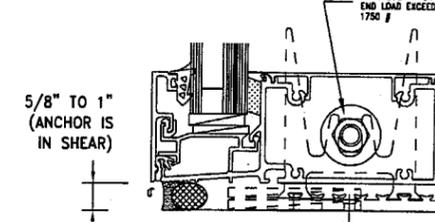
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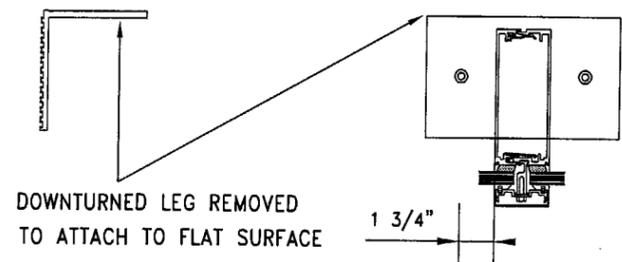
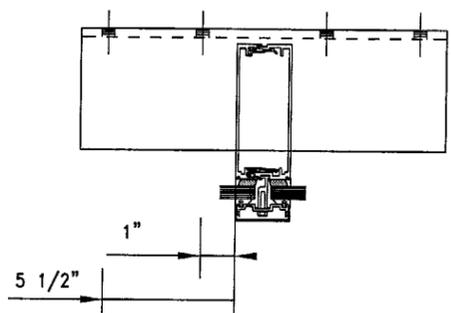
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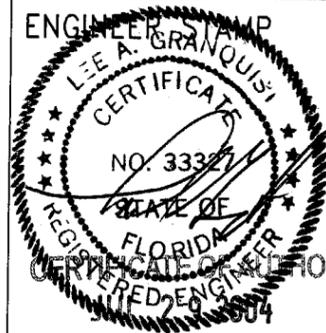


TESTED CONDITIONS SHOWN ABOVE
 - LUG TESTED TO 2,230# END REACTION
 - TYPICAL ANCHOR USED w/ (4) FASTENERS
 IN DOWNTURNED LEG AS SHOWN
 - MODIFIED ANCHOR USE w/ (2) FASTENERS
 IN TOP LEG AS SHOWN

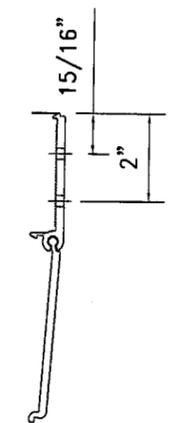
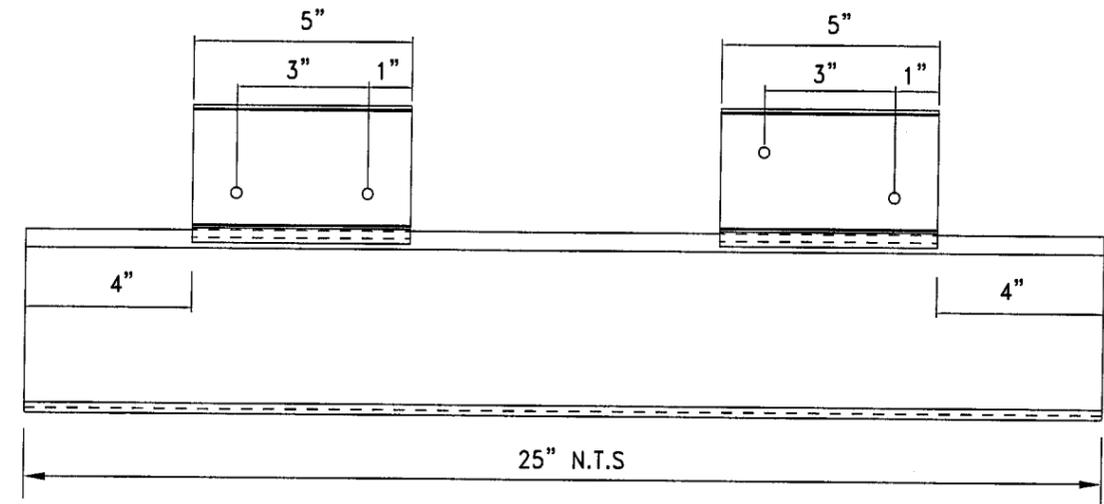
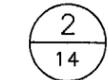
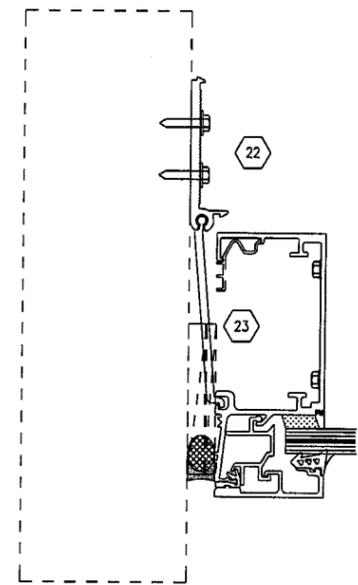
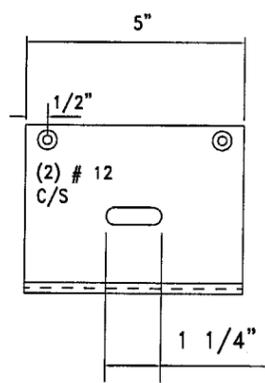
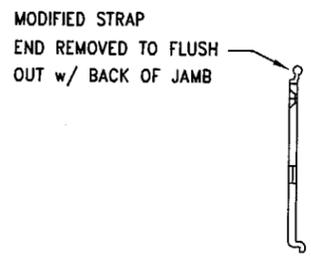
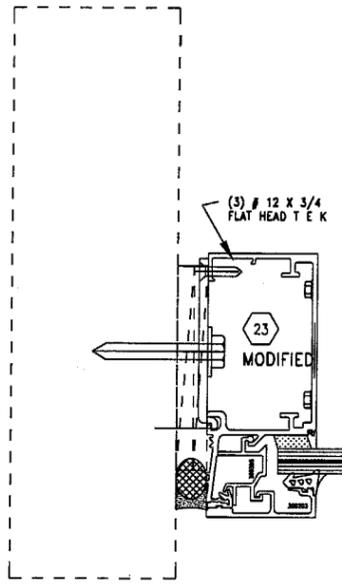
ANCHOR FASTENER REQUIREMENTS					
SUBSTRATE	REACTION	FASTENER TYPE	QTY.	MIN. EMBED.	MIN. EDGE DIST.
WOOD	.	.	.	.	.
CONCRETE	2,230 #	1/2" DIA.	2	3"	3 15/16"
STEEL	2,230 #	1/2" DIA	2	.	.
METAL STUD	.	.	.	.	.

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

DADE CO. STAMP
 Approved as complying with the
 Florida Building Code
 Date 08/26/04
 NOAH 04-0277.08
 Miami Dade Product Control
 Division
 By *[Signature]*



Harmon
 HI 5000 LARGE MISSILE
 ANCHOR APPLICATIONS
 STRAP & THRU-FRAME
 DATE: 06/28/04
 AUTHORIZATION #9803
 DWG. NO. 013_HI5000_lm
 SHEET 13 OF 14



TESTED CONDITIONS SHOWN ABOVE.

- (1) 25" STRAP w/ (2) 5" KEEPERS TESTED TO 1225# END REACTION
- (1) 5" MODIFIED STRAP TESTED TO 765# END REACTION
- ANCHORS MAY BE MADE LONGER TO ACCOMMODATE MORE FASTENERS BASED ON JOB SPECIFIC PERIMETER CONDITIONS.

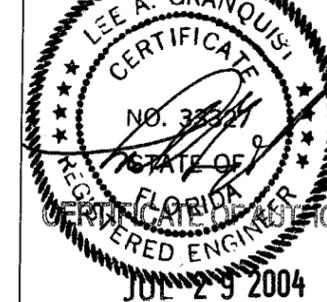
GENERAL NOTES:

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DADE CO. STAMP

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 NOA04-0217-03
 Miami Dade Product Control
 Division
 By *[Signature]*

ENGINEER'S STAMP



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



HI 5000 LARGE MISSILE ANCHOR APPLICATIONS JAMBS

DATE: 06/28/04

CERTIFICATE OF AUTHORIZATION #9803

DWG. NO. 014_HI5000_lm

SHEET 14 OF 14