Permit # _____
User ID _____

PRODUCT APPROVAL SPECIFICATION SHEET

As required by Florida Statute 553.842 and Florida Administrative Code 9B-72, please provide the information and approval numbers on the building components listed below if they will be utilized on the construction project for which you are applying for a building permit. We recommend you contact your local product supplier should you not know the product approval number for any of the applicable listed products. Statewide approved products are listed online @ www.floridabuilding.org

Category/Subcategory	Manufacturer	Product Description	Approval Number(s)	X
1. EXTERIOR DOORS				
A. SWINGING	Masonite	Entry Door	FL 19.1	
B. SLIDING	HR Danvid	Glass Door	FI6396.1,6396.2	
C. SECTIONAL/ROLL UP	Overhead Door	Garage door	FL 674	
D. OTHER				
2. WINDOWS				
A. SINGLE/DOUBLE HUNG	HR	340	FL 4358.2	
B. HORIZONTAL SLIDER				
C. CASEMENT				
D. FIXED	HR	341	FL 5087	
E. MULLION	HR	340	FL 5872	
F. SKYLIGHTS				
G. OTHER / GLASS BLOCK	Hy-Lite	Glass Block window	FL 1956.3	
3. PANEL WALL				
A. SIDING				
B. SOFFITS	Kaycan	Aluminum soffits	FL 1146.5	
C. STOREFRONTS				
D. GLASS BLOCK				
F. OTHER				
4. ROOFING PRODUCTS				
A. ASPHALT SHINGLES	Tamko	Heritage 38-R	FL 1956.3	
B. NON-STRUCT METAL				
C. ROOFING TILES				
D. SINGLE PLY ROOF				
E. OTHER				
5. STRUCT COMPONENTS				
A. WOOD CONNECTORS				
B. WOOD ANCHORS	Simpson	Truss anchors	1901.17 1901.45	
C. TRUSS PLATES			1901.25 1901.21	
D. INSULATION FORMS				
E. LINTELS	Cenemt Precast	Concrete lintels	FI 3048	
F. TRUSSES	Thomas E. Miller	engineer	PE 56877	
6. NEW EXTERIOR				
ENVELOPE PRODUCTS				
A.				

The products listed below did not demonstrate product approval at plan review. I understand that at the time of inspection of these products, the following information must be available to the inspector on the jobsite: 1) copy of the product approval, 2) performance characteristics which the product was tested and certified to comply with, 3) copy of the applicable manufacturers installation requirements. Further, I understand these products may have to be removed if approval cannot be demonstrated during inspection.

J Harrington
APPLICANT SIGNATURE

1/2/06
DATE

ATTACHMENT INFORMATION

Accessories

Technical

Fax 256 454-3622

PULLOUT IN CONCRETE (3146 PSI, cured 40 days)

Anchor Diameter	Depth of Embedment in Solid Material (inches) 1	1-1/4	1-1/2	1-3/4
3/16"	341 lbs.	581 lbs.	883 lbs.	1059 lbs.
1/4"	718 lbs.	1138 lbs.	1537 lbs.	1880 lbs.

Test Number CH3932/Pittsburgh Testing Laboratories

PULLOUT IN HOLLOW BLOCK

Anchor Diameter	Depth of Embedment in Solid Material (inches) 1	1-1/4	1-1/2	1-3/4
3/16"	200 lbs.	357 lbs.	[illegible] lbs.	[illegible] lbs.
1/4"	406 lbs.	615 lbs.	851 lbs.	[illegible] lbs.

Test Number CH3748/Pittsburgh Testing Laboratories

SHEAR STRENGTH

Anchor Diameter	Anchor Embedment	Shear Strength 3146 PSI Hard Rock Concrete	Shear Strength Lightweight Hollow Block
3/16"	1-1/4"	852 lbs.	731 lbs.
1/4"	1-1/4"	1604 lbs.	1058 lbs.

Test Number CH3932/Pittsburgh Testing Laboratories

Fixture Thickness	Recommended Anchor Length	Drill Bit Length
0" to 1/4"	1-1/4"	3-1/2"
1/4" to 3/4"	1-3/4"	3-1/2"
3/4" to 1-1/4"	2-1/4"	4-1/2"
1-1/4" to 1-3/4"	2-3/4"	4-1/2"
1-3/4" to 2-1/4"	3-1/4"	5-1/2"
2-1/4" to 2-3/4"	3-3/4"	5-1/2"
2-1/2" to 3"	4"	5-1/2"

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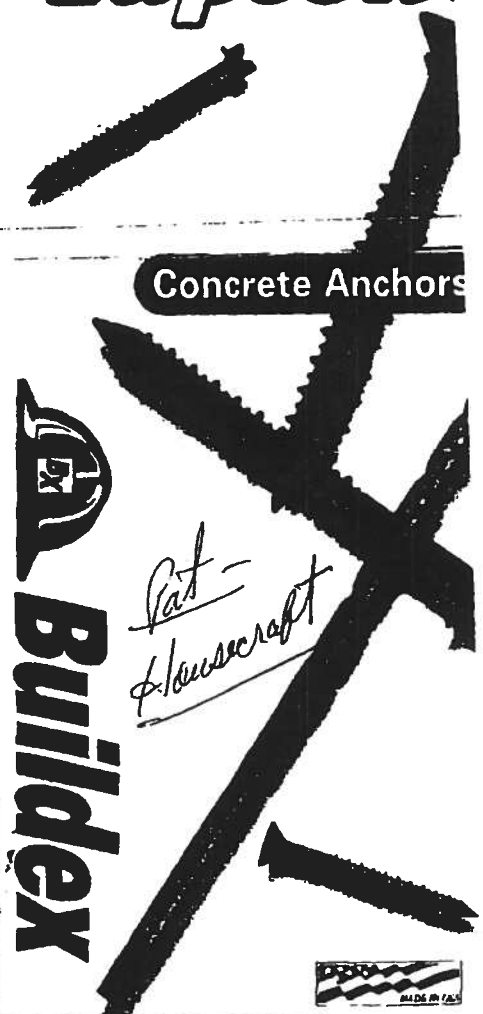
Feel free to contact us:

www.itwbrands.com

or call us toll free at:
800 727.5633

E-1131

Tapcon



Concrete Anchors

Pat – Housecraft

Buildex

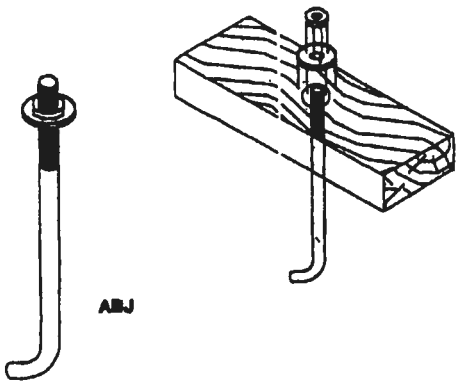
SEMCO™
METAL CONNECTORS
Technical Support (800) SE SPECS - (800) 737-7327

ANCHOR BOLT WITH NUT & 1" WASHER

Design Features:
- Bolt only with code minimum embedment with 3000 PSI concrete will resist 4,800 lbs, see washer capacity below.

Materials: Black and galvanized steel

Footnote: Other sizes available on request. All references to bolts or MB's are structural quality through bolts equal to or better than ASTM Standard A307.



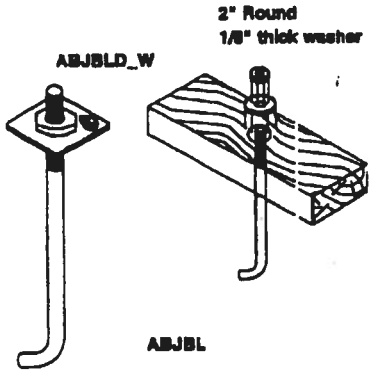
SIZE	PRODUCT CODE	DESCRIPTION	PER CTN
1/2 X8	ABJBL8C	Black	50
1/2 X9	ABJBL9C	Black	50
1/2 X10	ABJBL10C	Black	50
1/2 X12	ABJBL12C	Black	50
1/2 X14	ABJBL14C	Black	50
1/2 X16	ABJBL16C	Black	50
1/2 X18	ABJBL18C	Black	50
1/2 X8	ABJGA8	Galv.	50
1/2 X9	ABJGA9	Galv.	50
5/8 X10	ABJBL10D	Black	50
5/8 X12	ABJBL12D	Black	50

ANCHOR BOLT (WITH NUT & 2"X2"X1/8" WASHER)

Design Features:
- 6" minimum embedment with 3000 PSI concrete will resist 1,635 lbs.

Materials: Black steel

Footnote: *Supplied with a 2" round washer 1/8" thick. Wind uplift loads are based on the shear capacity of No. 2 Southern Pine. Compression perpendicular to grain 565 (psi).



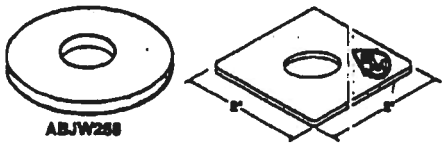
SIZE	PRODUCT CODE	DESCRIPTION	PER CTN
1/2x8	ABJBL8W	Black	50
1/2x9	ABJBL9W	Black	50
1/2x10	ABJBL10W	Black	50
5/8x10	ABJBL10DW*	Black	50
5/8x12	ABJBL12DW*	Black	50

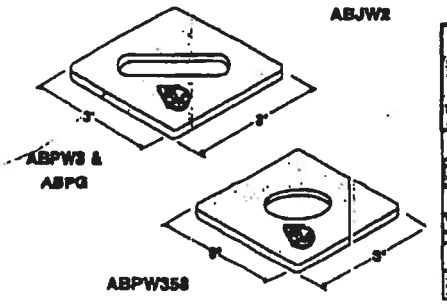
ANCHOR BOLT WASHER/PLATE

Design Features:
- The washer/plate adds increased resistance to wind uplift for bottom sill plate anchor bolt.

Materials: 10 Gauge Galvanized & 1/8 & 1/4 Black steel

Footnote: *Also available in 50# ctn approximately 345 pcs. Wind uplift loads are based on the shear capacity of No. 2 Southern Pine. Compression perpendicular to grain 565 (psi). +Round hole in washer.

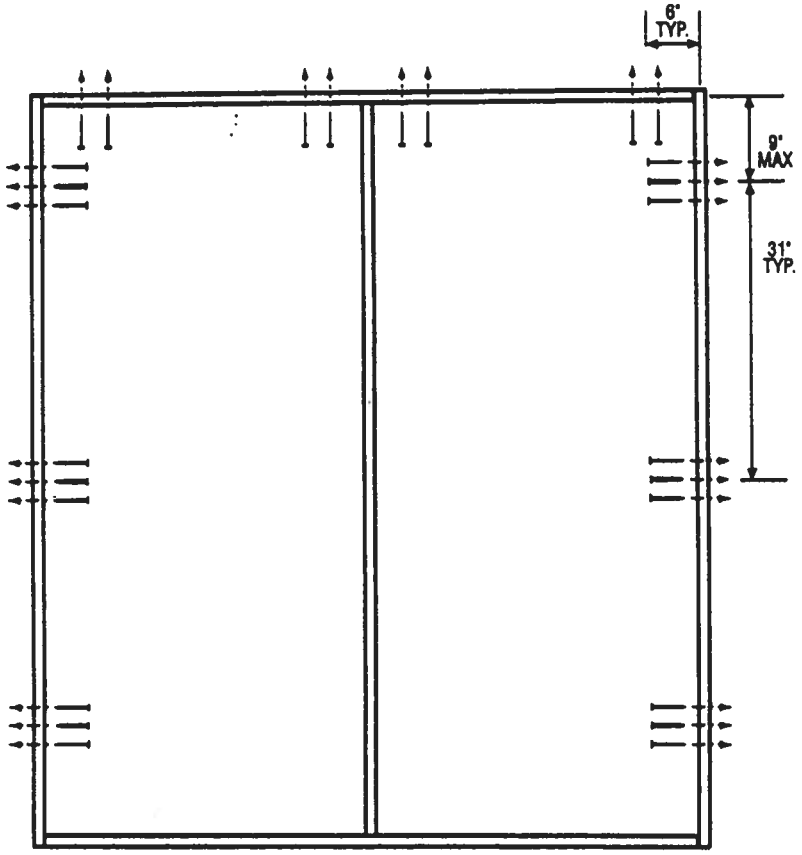




SIZE (INCHES)	GAUGE	PRODUCT CODE	ANCHOR BOLT (DIAMETER)	ALLOWABLE LOADS WIND / EARTHQUAKE UPLIFT 133%	UPLIFT 100%	PER CTN
2x2	1/8	ABJW2*	1/2"	1635	1635	50
2x2sq	1/4	ABJW2SS*	5/8"	1470	1470	50
3x3	10	ABPG12	1/2"	3675	3675	40
3x3sq	10	ABPG5S	5/8"	3675	3675	40
3x3	1/4	ABPW3	1/2"	4800	4800	40
3x3sq	1/4	ABPW3SS	5/8"	4800	4800	40

WINDOWS, DOORS, AND MULL BARS INFORMATION

DOUBLE DOOR



Minimum Fastener Count

- 6 per vertical framing member for 7'0" heights and smaller
- 8 per vertical framing member for heights greater than 7'0"
- 8 per horizontal framing member

Hinge and strike plates require two 2-1/2" long screws per location.

Rough Opening (RO)

- Width of door unit plus 1/2"
- Height of door unit plus 1/4"

Test Data Review Certificate #3026447A; #3026447B; #3026447C and COP/Test Report Validation Matrix #3026447A-001, 002, 003, 004; #3026447B-001, 002, 003, 004; #3026447C-001, 002, 003, 004 provides additional information - available from the ITS/WH website (www.ctsemko.com), the Masonite website (www.masonite.com) or the Masonite technical center.

Latching Hardware:

- Compliance requires that GRADE 3 or better (ANSI/BHMA A156.2) cylindrical and deadlock hardware be installed.
- **UNITS COVERED BY COP DOCUMENT 0247*, 0267*, 3242*, 3247, 3262* or 3267**
  Compliance requires that 8" GRADE 1 (ANSI/BHMA A156.16) surface bolts be installed on latch side of active door panel – (1) at top and (1) at bottom.

*Based on required Design Pressure – see COP sheet for details.

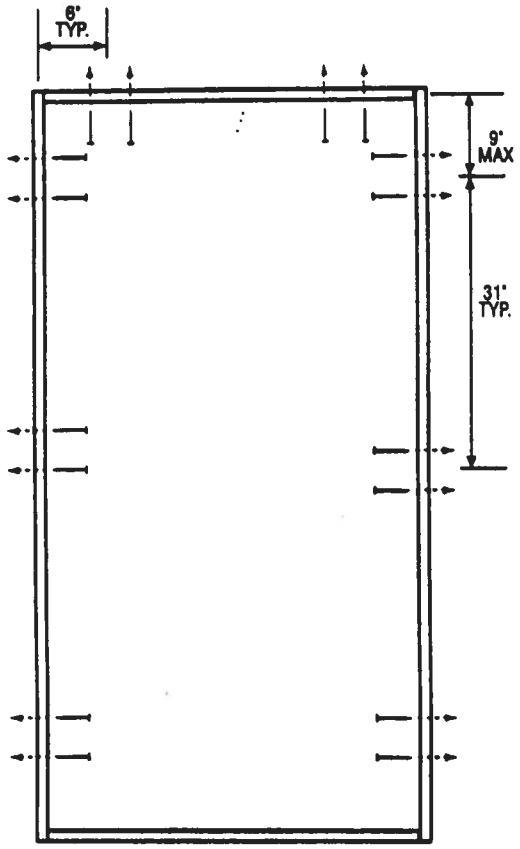
Notes:

1. Anchor calculations have been carried out with the fastener rating from the different fasteners being considered for use. Jamb and head fasteners analyzed for this unit include #8 wood screws and 10d common nails. Threshold fasteners analyzed for this unit include Liquid Nails Builders Choice 490 (or equal structural adhesive).
2. The wood screw and common nail single shear design values come from ANSI/AF & PA NDS for southern pine lumber with a side member thickness of 1-1/4" and achievement of minimum embedment of 1-1/4".
3. Wood bucks by others, must be anchored properly to transfer loads to the structure.

March 10, 2003
Our continuing program of product improvement makes specifications, design and product detail subject to change without notice.

Masonite

SINGLE DOOR



Minimum Fastener Count

- 6 per vertical framing member for 7'0" height and smaller
- 8 per vertical framing member for heights greater than 7'0"
- 4 per horizontal framing member

Hinge and strike plates require two 2-1/2" long screws per location.

Rough Opening (RO)

- Width of door unit plus 1/2"
- Height of door unit plus 1/4"

Test Data Review Certificate #30264474; #30264478; #30264476 and COP/Test Report Validation Matrix #30264474-001, 002, 003, 004; #30264478-001, 002, 003, 004; #30264476-001, 002, 003, 004 provides additional information - available from the ITS/WH website (www.etsemko.com), the Masonite website (www.masonite.com) or the Masonite technical center.

Latching Hardware:

- Compliance requires that GRADE 3 or better (ANSI/BHMA A156.2) cylindrical and deadlock hardware be installed.
- **UNITS COVERED BY COP DOCUMENT 8246*, 8266*, 3241*, 3246, 3261* or 3266**
  Compliance requires that 8" GRADE 1 (ANSI/BHMA A156.16) surface bolts be installed on latch side of active door panel – (1) at top and (1) at bottom.

*Based on required Design Pressure – see COP sheet for details.

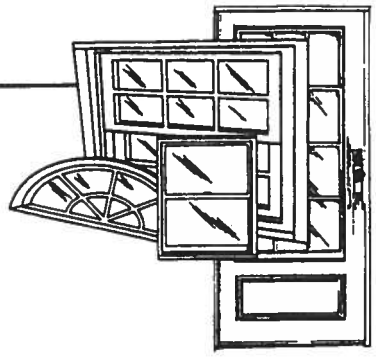
Notes:

1. Anchor calculations have been carried out with the fastener rating from the different fasteners being considered for use. Jamb and head fasteners analyzed for this unit include 10d common nails. Threshold fasteners analyzed for this unit include Liquid Nails Builders Choice 490 (or equal structural adhesive).
2. The common nail single shear design values come from ANSI/AF & PA NDS for southern pine lumber with a side member thickness of 1-1/4" and achievement of minimum embedment of 1-1/4".
3. Wood bucks by others, must be anchored properly to transfer loads to the structure.

Masonite

CERTIFIED TESTING LABORATORIES

Architectural Division • 7252 Narcoossee Rd. • Orlando, FL 32822
(407) 384-7744 • Fax (407) 384-7751
Web Site: www.ctlarch.com
E-mail: ctlarch.com



Report Number: CTLA-809W-1
Test Date: December 19,2001
Report Date: January 28,2002

STRUCTURAL PERFORMANCE TEST REPORT

Client: NORANDEX
4504 - 30th STREET WEST
BRADENTON, FLORIDA 34207

Product Type and Series: **SERIES 437 SINGLE HUNG ALUMINUM WINDOW H-LC 35 (53" x 77")**

Test Specification: AAMA 101/I.S.2-97 "Voluntary Specification for Aluminum, Vinyl (PVC)and Wood Windows and Glass Doors".

Test Specimen

Frame: The flange frame was 52.5" x 76.75" overall and of coped corner construction. The header jamb corners used one (1) # 6 x 1" P.H. S.M.S. fastener. The sill jamb corner employed two (2) # 6 x 1" P.H. S.M.S. fasteners. The fixed meeting rail employed two (2) # 6 x 1" P.H. S.M.S. fasteners into each jamb. The sill riser was riveted to each jamb on the interior surface.

Ventilators: The active sash measured 50.5" x 39.0". A fixed light glazed at the top with a clear opening of 48.5"x 35". The active sash corners were fastened with one (1) # 6 x 1" P.H., S.M.S. fastener.

Weatherstripping: A single strip of center fin pile weatherstrip .220" high was used in the fixed rail, and left and right stiles, a .312 o.d. bulb vinyl was used in the sash bottom rail.

Hardware & Location: A block and tackle balance system was employed. One take out clip on the interior of each jamb track 5" from frame header. A rigid vinyl sash stop was located at the top of each interior jamb track. An injection molded plastic sash guide was used at the top of each sash stile. Two (2) metallic cam locks were fastened to the sash meeting rail 14" from each end, locking into metallic keepers fastened to the fixed rail.

Glazing: 3/16" Annealed glass, interior glazed using a silicone bedding compound and rigid vinyl snap in glazing bead.

Sealant: A narrow joint seam sealer was used on jamb sill corners. A foam rubber gasket was employed at all four main frame corners.

PE
1/31/02

Weepholes: Sash and screen retaining leg notched .500" x lg. ht. each sill corner.

Muntins: None

Reinforcement: None

Additional Description: Unit tested had a sill height of 1.940" drawing # XFLA 3K

Screen: Insect screen with plastic corner keys, vinyl pull tabs, fiberglass mesh, and vinyl spline. Two (2) retainer springs.

Installation: Test specimen was fastened to the header with three (3) # 6 x .875" P.P.H. screws, 4.5" from each corner and at center span. Each jamb was fastened with six (6) #6 x 2" P.P.H., SMS. located measuring from head to sill 8", 23", 42", 52.25", 70" and 88".

Surface Finish: Bronze

Performance Test Results

Paragraph No.	Title of Test	Test Method	Measured	Allowed
2.1.2	Air Infiltration @ 1.57 psf	**ASTM E283-91**	.05 cfm/ft²	.3 cfm/ft²
	The tested specimen exceeds the performance requirements in AAMA/NWWDA 101/I.S.2-97. Results recorded in two (2) decimals at the clients request			
2.1.3/4.3	Water Resistance	**ASTM E547-86**		
	5.0 gpf/ft²	Four (4) five minute cycles	No Entry	No Entry
	WTP=6.75 psf	**ASTM E331-96**		
		Fifteen (15) minute cycle	No Entry	No Entry
	Tested with and without insect screen			
2.1.4.2/4.4.2*	Uniform Load Structural	**ASTM E330-90**		
	Permanent Deformation	Ten (10) second Loading		
	@ 67.5 psf Exterior		.073"	.202"
	@ 67.5 psf Interior		.051"	.202"
2.1.8*	Forced Entry Resistance	**AAMA 1302.5-76**		
	Test A		0"	1/2"
	Test B		0"	1/2"
	Test C		0"	1/2"
	Test D,E & F		0"	1/2"
	Test G		0"	1/2"
2.2.2.5.1	Operating force	**ANSI/AMMA 101-93**	10 LBS	35 LBS
2.2.3.5.2*	Deglazing	**ASTM E987-88**		
	Top Rail (70 lbs)		2.8%	(.014)<100%
	Bottom Rail (70 lbs)		2.6%	(.013)<100%
	Left Stile (50 lbs)		1.4%	(.007)<100%
	Right Stile (50 lbs)		1.2%	(.006)<100%

P.E
1/31/02

Test Completion Date: December 20, 2001

Remarks: Detail drawings were available for laboratory records and comparison to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by CTL for a period of four (4) years. The results obtained apply only to the specimen tested.

This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

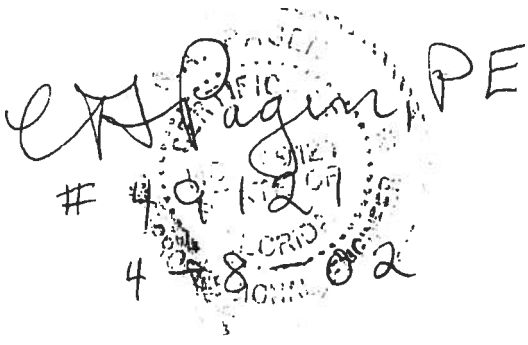
Certified Testing Laboratories assumes that all information provided by the client is accurate and that the physical and chemical properties of the components are as stated by the manufacturer.

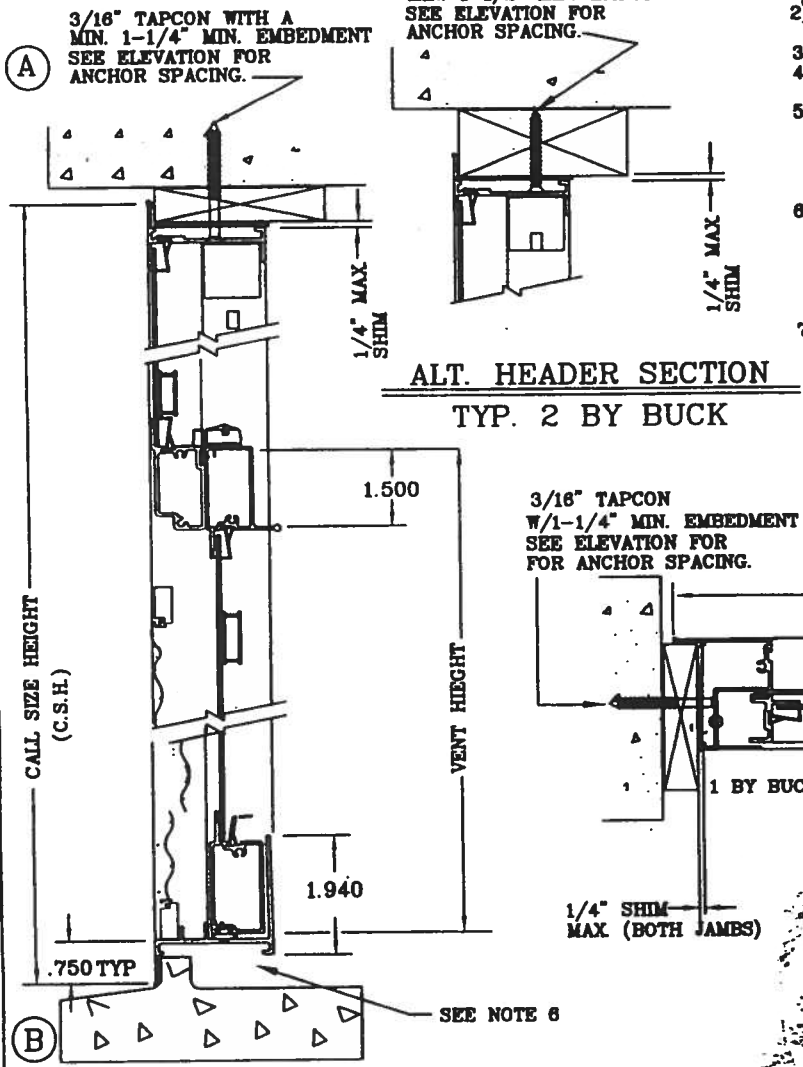
Certified Testing Laboratories, Inc.

James Blakely
Vice President

cc: NORANDEX (2)
A.L.I. (2)
Ramesh Patel, P.E. (1)
File (1)

Ramesh Patel, P.E.
Florida Reg. #20224
1/31/02



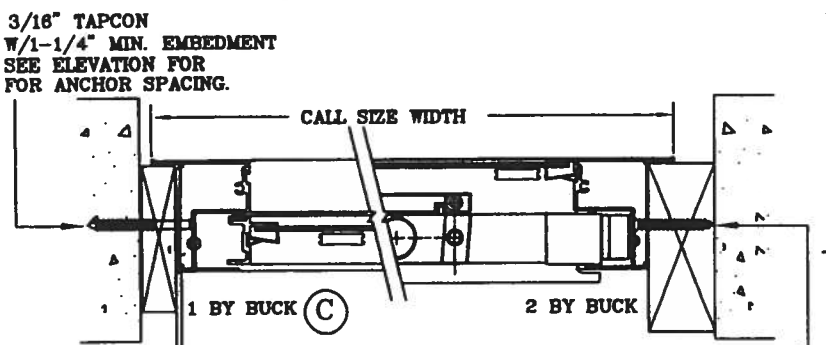


HEADER AND SILL SECTION
TYP. 1 BY BUCK

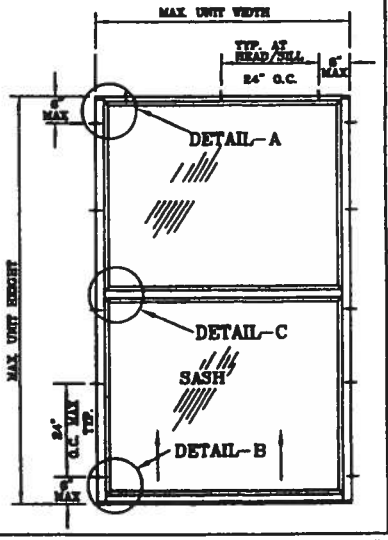
ALT. HEADER SECTION
TYP. 2 BY BUCK

NOTES:
1) SHIM AS REQUIRED, MAX. SHIM STACK 1/4".
2) ALL ALUMINUM EXTRUSIONS ARE ALLOY 6063-T5 OR T6 WITH TYPICAL WALL THICKNESS OF 0.62".
3) USE HIGH QUALITY CAULK BEHIND WINDOW FLANGE.
4) GLASS THICKNESS BASED ON TABLE E1300 GLASS CHARTS, AND MAY VARY DEPENDING ON SIZE.
5) THE RESPONSIBILITY FOR SELECTION OF NORANDEX PRODUCTS TO MEET ANY APPLICABLE LOCAL LAWS, BUILDING CODES, ORDINANCES OR OTHER SAFETY REQUIREMENTS REST SOLELY WITH THE ARCHITECT, BUILDING OWNER OR CONTRACTOR.
6) A PRESSURE TREATED WOODEN BUCK OR MARBLE SILL SHALL BE ADDED UNDER THE PRODUCT TO FULLY SUPPORT UNIT. THIS SUPPORT SHALL BE FIRMLY ATTACHED INTO MASONARY AND SUPPORT THE PRODUCT OVER ITS FULL LENGTH (SUPPLIED BY OTHERS).
7) CONCRETE COMPRESSIVE STRENGTH = 3,000 PSI AT 28 DAYS.

WINDOW DIMENSIONS		FASTENER SCHEDULE	
WIDTH (INCHES)	HEIGHT (INCHES)	NO. ANCHORS HEAD 35 (PSF) AND 45 (PSF)	NO. ANCHORS JAMB 35 (PSF) AND 45 (PSF)
19-1/8"	26"	2	2
26-1/2"		2	2
37"		2	2
53-1/8"		3	2
19-1/8"	38-1/4"	2	3
26-1/2"		2	3
37"		2	3
53-1/8"		3	3
19-1/8"	50-5/8"	2	3
26-1/2"		2	3
37"		2	3
53-1/8"		3	3
19-1/8"	63"	2	3
26-1/2"		2	3
37"		2	3
53-1/8"		3	3
19-1/8"	76-3/4"	2	4
26-1/2"		2	4
37"		2	4
53-1/8"		3	4



TYP. JAMB SECTION
1 BY BUCK 2 BY BUCK



CHARLES A. PAGEN, P.E.
FL. REG. ENG. # 49127
DATE: 9/21/02

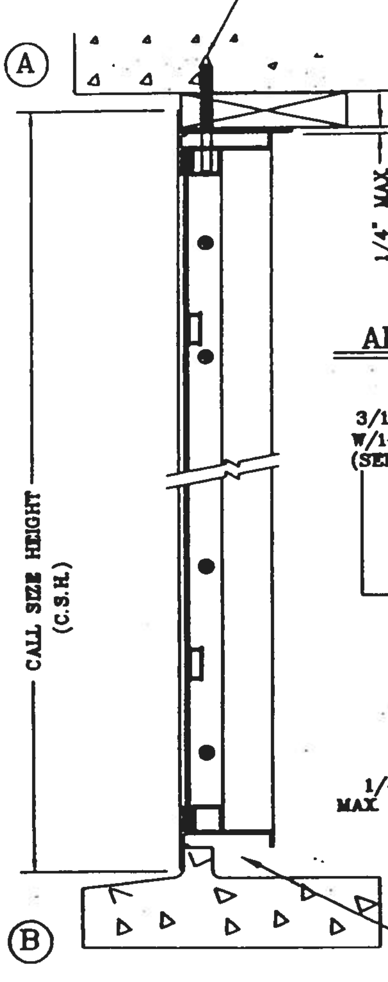
437 SINGLE HUNG
INSTALLATION DETAIL
AND
FASTENER SCHEDULE

SERIES: 437
ALUMINUM SINGLE HUNG

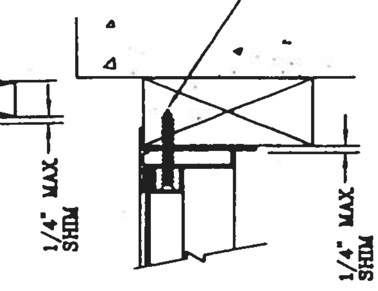
NORANDEX
4606 30th STREET WEST
BRADENTON, FL. 34207
PHONE: (941) 755-1691

NO.	DATE	REVISIONS DESCRIPTION

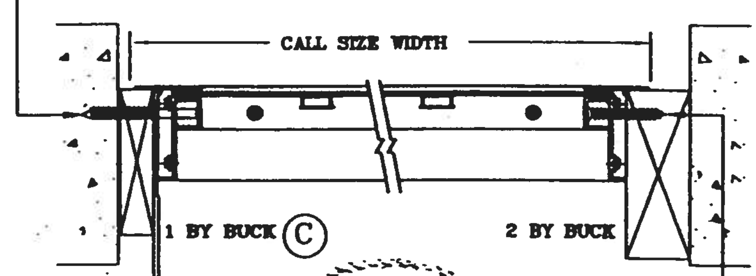
DATE: 12/22/01
SCALE: N.T.S.
DWG. BY: J.R.M.
CHK. BY: R.L.F.
DWG. NO.: FBC-008



HEADER AND SILL SECTION
TYP. 1 BY BUCK



ALT. HEADER SECTION
TYP. 2 BY BUCK

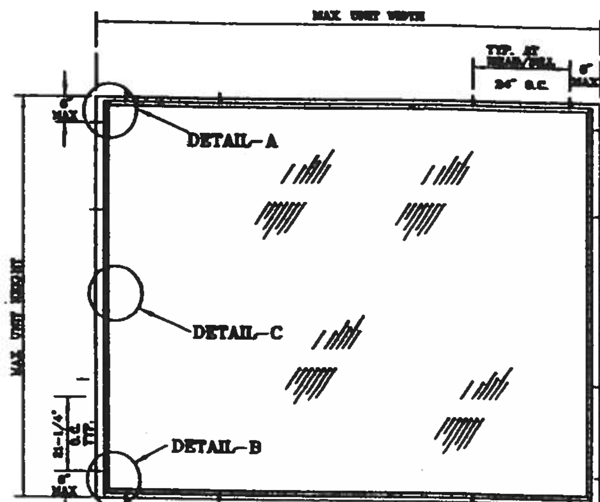


TYP. JAMB SECTION
1 BY / 2 BY BUCK

CHARLES A. PAGE P.E.
FL. REG. ENG. # 40121
DATE: 12/4/01

NOTES:
1) SHIM AS REQUIRED, MAX SHIM STACK 1/4".
2) ALL ALUMINUM EXTRUSIONS ARE ALLOY 6063-T5 OR T6 WITH TYPICAL WALL THICKNESS OF 0.62".
3) USE HIGH QUALITY CAULK BEHIND WINDOW FLANGE.
4) GLASS THICKNESS BASED ON TABLE E1300 GLASS CHARTS, AND MAY VARY DEPENDING ON SIZE.
5) THE RESPONSIBILITY FOR SELECTION OF NORANDEX PRODUCTS TO MEET ANY APPLICABLE LOCAL LAWS, BUILDING CODES, ORDINANCES OR OTHER SAFETY REQUIREMENTS REST SOLELY WITH THE ARCHITECT, BUILDING OWNER OR CONTRACTOR.
6) A PRESSURE TREATED WOODEN BUCK OR MARBLE SILL SHALL BE ADDED UNDER THE PRODUCT TO FULLY SUPPORT UNIT. THIS SUPPORT SHALL BE FIRMLY ATTACHED INTO MASONARY AND SUPPORT THE PRODUCT OVER ITS FULL LENGTH (SUPPLIED BY OTHERS).
7) CONCRETE COMPRESSIVE STRENGTH = 3,000 PSI AT 28 DAYS.
8) NOTE * INDICATES THAT EQUAL FASTENERS AT HEAD AND SILL ARE REQUIRED.

WINDOW DIMENSIONS		FASTENER SCHEDULE			
		NO. ANCHORS HEAD/SILL SEE NOTE 8		NO. ANCHORS JAMB	
WIDTH (INCHES)	HEIGHT (INCHES)	35 (PSF)	45-60 (PSF)	35 (PSF)	45-60 (PSF)
19-1/8"	26"	2	2*	2	2
26-1/2"		2	2*	2	2
37"		2	3*	2	2
53-1/8"		3	3*	2	2
19-1/8"	38-1/4"	2	2*	2	3
26-1/2"		2	2*	2	3
37"		2	3*	2	3
53-1/8"		3	4*	2	3
19-1/8"	50-5/8"	2	2*	3	3
26-1/2"		2	2*	3	3
37"		2	3*	3	3
53-1/8"		3	4*	3	3
19-1/8"	63"	2	2*	3	4
26-1/2"		2	2*	3	4
37"		2	3*	3	4
53-1/8"		3	4*	3	4
19-1/8"	76-3/4"	2	2*	3	4
26-1/2"		2	2*	3	4
37"		2	3*	3	4
53-1/8"		3	4*	3	4



437 FIXED WINDOW
INSTALLATION DETAIL
AND
FASTENER SCHEDULE

SERIES: 437
ALUMINUM FIXED WINDOW

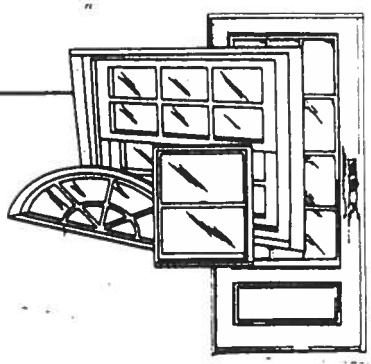
NORANDEX
4606 30th STREET WEST
BRADENTON, FL. 34207
PHONE: (941) 756-1601

NO.	DATE	REVISIONS DESCRIPTION

DATE: 12/22/01
SCALE: N.T.S.
DWG. BY: J.R.M.
CHK. BY: RLK
DWG. NO.: PBC-021

CERTIFIED TESTING LABORATORIES

Architectural Division • 7252 Narcoossee Rd. • Orlando, FL 32822
(407) 384-7744 • Fax (407) 384-7751
Web Site: www.ctlarch.com
E-mail: ctlarch.com



Report Number: CTLA-399W
Report Date: June 11, 1999

STRUCTURAL PERFORMANCE TEST REPORT

Client: NORANDEX
4504 - 30th STREET WEST
BRADENTON, FLORIDA 34207

Product Type and Series: Series 437 Aluminum Horizontal Slider
XOX (HS-LC 30) 111" x 63"

Test Specification: AAMA/NWWDA 101/I.S.2-97 "Voluntary Specification for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors".

Test Specimen

Frame: The extruded aluminum flange main frame was 111" x 63" overall. Coped and butted corner construction, incorporating a form gasket at each frame corner, secured with one (1) #6 x 1" P.H. Pan Head fastener in the head/jamb and two (2) #6 x 1" P.H. Pan Head fasteners in the sill/jamb. The fixed meeting stiles were secured to the frame sill with two (2) #6 x 3" P.H. Pan Head fasteners, and to the head with one (1) #6 x 3" P.H. Pan Head fastener.

Configuration: XOX

Ventilators: Both sash measured 37.5" x 59.75" overall. Coped and butted corner construction. Each corner secured with one (1) #6 x 1" P.H. Pan Head fastener. Fixed lite opening measured 37" x 63" high.

Weatherstripping: Interior face of each fixed meeting rail one (1) strip of woolpile with integral plastic fin .250" high. Top and bottom of each active sash utilized one (1) strip of woolpile with integral plastic fin .250" high. The lead stile in each active sash utilized bulb vinyl measuring .300 o.d.

Hardware & Location: A rigid plastic sash guide was used at each corner of the active sash top rail. A rigid plastic single roller housing was used at each corner of the active sash bottom rail. One (1) cam lock assembly was located at mid-span of each lock stile, fastening into a metallic keeper mid-span of fixed meeting stiles. Two (2) holes 3/16" dia., 1/2" apart drilled into fixed meeting stiles behind keeper. A rigid plastic sill track insert running the full length of sill.

P.E
6/19/99

Glazing: 3/16" annealed glass, interior glazed with adhesive back bedding compound and extruded vinyl bead.

Sealant: Clear joint sealant was used at the frame sill/jamb assembly screw and corners.

Weep Systems: A rigid plastic sill track insert with twelve (12) sets of 3/16" holes 9" o.c. drained in sub-sill. Five (5) 1.150" long by .250" high weep-holes with plastic flap covers measuring from left jamb to right jamb 4", 31", 56", 82" and 107". These drained sub-sill to exterior. The plastic track insert was cut .250" short at each jamb/sill.

Reinforcement: N/A

Additional Description: Unit tested with a standard sill, and one (1) lock on each sash.

Screen: Roll formed aluminum screen with fiberglass mesh, vinyl spline, plastic corner keys, two (2) pull tabs and two (2) springs clips.

Installation: Twenty (20) #10 x 1-½" P.H., S.S. fasteners were used to secure the specimen to the wooden test buck. Six (6) in the head and sill measuring from left jamb to right jamb 5", 27.5", 45", 65", 83" and 106". Four (4) in each jamb measuring from head to sill 5", 22.", 36", and 57".

Surface Finish: White

Comment: Nominal 2 mil polyethylene film was used to seal against air leakage during structural loads. The film was used in a manner that did not influence the test results performance.

Performance Test Results

Paragraph No.	Title of Test	Test Method	Measured	Allowed
2.1.2	Air Infiltration @ 1.57 psf	**ASTM E283-91**	.16 cfm/ft	.34 cfm/ft
	The tested specimen exceeds the performance requirements specified in AAMA/NWWDA 101/I.S.2-97. Results recorded in two (2) decimals at the clients request.			
2.1.3/4.3	Water Resistance 5.0 gph/ft² WTP=7 psf	**ASTM E547-86** Four (4) five minute cycles	No Entry	No Entry
		ASTM E331-86 Fifteen (15)minute duration	No Entry	No Entry
	Tested with and without insect screen			
2.1.4.2/4.4.2	Uniform Load Structural Permanent Deformation	**ASTM E-330-90** Ten (10) second duration		
	@ 45 psf Exterior		.097"	.232"
	@ 45 psf Interior		.035"	.232"
2.1.8	Forced Entry Resistance	**AAMA 1302.5-76**		
	Test A		0"	1/2"
	Test B		0"	1/2"
	Test C		0"	1/2"
	Test D, E and F		0"	1/2"
	Test G		0"	1/2"

P.E
6/16/99

Performance Test Results (Cont.)

Paragraph No.	Title of Test	Test Method	Measured	Allowed
2.2.2.5.1	Operating Force	AMMA/NWWDA 101/I.S.2-97		
	Left Sash		15 lbs	25 lbs
	Right Sash		15 lbs	25 lbs
2.2.2.5.2	Deglazing	ASTM E987-88		
	Top Rail (50 lbs)		.017" = 4.5%	<100%
	Bottom Rail (50 lbs)		.023" = 6.1%	<100%
	Lock Stile (70 lbs)		.029" = 7.7%	<100%
	Lead Stile (70 lbs)		.025" = 6.6%	<100%

Test Date: April 9, 1999

Test Completion Date: June 8, 1999

Remarks: Detail drawings were available for laboratory records and comparison to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by CTL for a period of four (4) years. The results obtained apply only to the specimen tested.

This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Certified Testing Laboratories assumes that all information provided by the client is accurate and that the physical and chemical properties of the components are as stated by the manufacturer.

Certified Testing Laboratories, Inc.

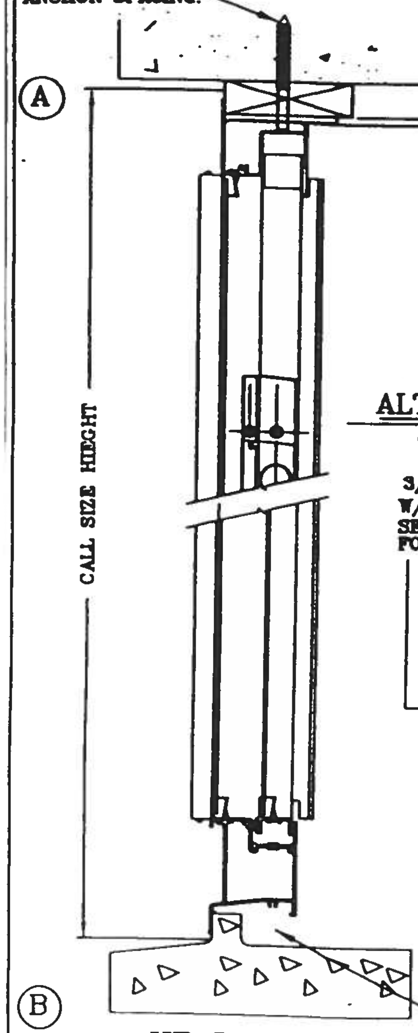
James Blakely
Vice President

cc: NORANDEX (2)
A.L.I. (2)
Ramesh Patel, P.E. (1)
File (1)

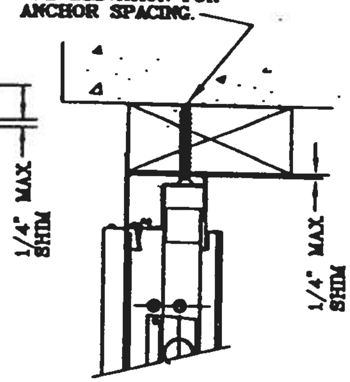
Ramesh Patel, P.E.
Florida Reg. #20224

6/18/99

#49121
4-28-02



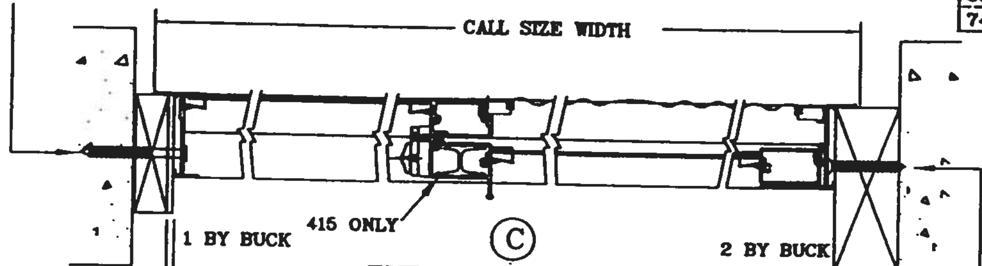
HEADER AND SILL SECTION
TYP. 1 BY BUCK



ALT. HEADER SECTION
TYP. 2 BY BUCK

NOTES:
1) SHIM AS REQUIRED, MAX. SHIM STACK 1/4".
2) ALL ALUMINUM EXTRUSIONS ARE ALLOY 6063-T5 OR T6 WITH TYPICAL WALL THICKNESS OF 0.62".
3) USE HIGH QUALITY CAULK BEHIND WINDOW FLANGE.
4) GLASS THICKNESS BASED ON TABLE E1300 GLASS CHARTS, AND MAY VARY DEPENDING ON SIZE.
5) THE RESPONSIBILITY FOR SELECTION OF NORANDEX PRODUCTS TO MEET ANY APPLICABLE LOCAL LAWS, BUILDING CODES, ORDINANCES OR OTHER SAFETY REQUIREMENTS REST SOLELY WITH THE ARCHITECT, BUILDING OWNER OR CONTRACTOR.
6) A PRESSURE TREATED WOODEN BUCK OR MARBLE SILL SHALL BE ADDED UNDER THE PRODUCT TO FULLY SUPPORT UNIT. THIS SUPPORT SHALL BE FIRMLY ATTACHED INTO MASONARY AND SUPPORT THE PRODUCT OVER ITS FULL LENGTH (SUPPLIED BY OTHERS).
7) CONCRETE COMPRESSIVE STRENGTH = 3,000 PSI AT 28 DAYS.

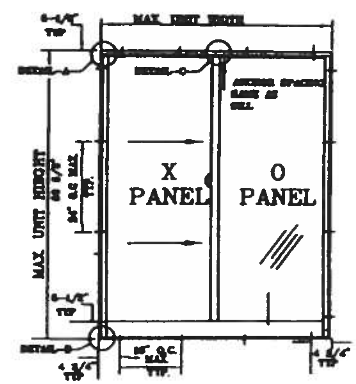
WINDOW DIMENSIONS		FASTENER SCHEDULE			
		NO. ANCHORS HEAD		NO. ANCHORS JAMB	
WIDTH (INCHES)	HEIGHT (INCHES)	35 (PSF)	45 (PSF)	35 (PSF)	45 (PSF)
26-1/2"	26"	2	2	2	2
37"		2	2	2	2
53-1/8"		3	3	2	2
74"		3	4	2	2
26-1/2"	38-1/4"	2	2	3	3
37"		2	2	3	3
53-1/8"		3	3	3	3
74"		3	4	3	3
26-1/2"	50-5/8"	2	2	3	3
37"		2	2	3	3
53-1/8"		3	3	3	3
74"		3	4	3	3
26-1/2"	63"	2	2	3	4
37"		2	2	3	4
53-1/8"		3	3	3	4
74"		3	4	3	4
26-1/2"	72	2	2	3	4
37"		2	2	3	4
53-1/8"		3	3	3	4
74"		3	4	3	4



TYP. JAMB SECTION
1 BY / 2 BY BUCK

10 F.H. S.M.S W/1-1/2" MIN. EMBEDMENT SEE ELEVATION FOR FOR ANCHOR SPACING.

CHARLES A. PAGEN, P.E.
FL REG. ENG. # 49121
DATE 3/22/01



437/415 GLIDER
INSTALLATION DETAIL
OX / XO AND
FASTENER SCHEDULE

SERIES: 437/415
ALUMINUM GLIDER

NORANDEX
4806 30th STREET WEST
BRADENTON, FL 34207
PHONE: (941) 756-1881

DATE: 12/26/01
SCALE: N.T.S.
DWG. BY: J.R.M.
CHK. BY: RAE
DWG. NO.: FBC-017

NO.	DATE	REVISIONS DESCRIPTION

Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

1677 West 31st Place Hialeah, FL 33012 Phone: 305/819-7877 Fax 305/819-7998

e-mail: ftlmiade@aol.com www.ftl-inc.com

OFFICIAL TEST REPORT

MANUFACTURER: Norandex
ADDRESS: 4504 30th Street West
Bradenton, Florida 34207

DESIGNATION: SGD-LC45 - 144 x 80
SPECIFICATIONS: ANSI/AAMA/NWWDA 101/I.S.2.-97

DESCRIPTION OF UNIT

Model Designation: Series: 500; Aluminum Sliding Glass Door
Overall Size: 12' 0" (144") by 6' 8" (80") high by 3.600" deep
Configuration: XXXX
No. & Size of Panels: Four extruded aluminum panels with the outside panels on the exterior track and the inside panels on the interior track. Size of each panel is 3' 1/8" (36 1/8") by 6' 6 ½" (78 ½") high.

MATERIAL CHARACTERISTICS

Frame Construction: Test units have an equal leg type frame, butt joints and a white coated finish. Aluminum alloy is 6063-T5. Frame corners were not fastened with screws. Frame sill has a mill finish and a 2.475" high overall interior sill flange. Size of frame members are as follows: frame head 0.875" by 4.200" by 1.250" with various wall thicknesses; two piece frame sill (drawing No. XSD-11-4-1) 2.475" by 2.395" by 0.600" by 0.062" wall thickness and (drawing No. XSD-25-1B) 0.313" by 2.543" by 0.600" by 0.062" wall thickness; frame jambs 0.955" by 3.600" by 0.050" wall thickness. Frame members are solid extrusions.
Panel Construction: Panels have butt joints and a white coated finish. Aluminum alloy is 6063-T5. Panel corners were fastened with one No. 10 by 7/8" pan head steel sheet metal screw. Size of rails and stiles are as follows: lock stile 1.176" by 1.702" by 1.320"; top rails (solid extrusions) 1.194" by 1.260" by 1.020" with various wall thicknesses; bottom rails (solid extrusions) 2.246" by 1.000" by 1.556"; interlock stiles 1.812" by 1.205" by 1.298" by 0.050" wall thickness; astragal adapter 1.657" by 1.525" with various wall thicknesses. Stiles and rails are hollow extrusions, except where noted. Extrusions have a typical wall thickness of 0.062", except where indicated.
Glazing:
Material: 3/16" tempered glass
Method: Panels are channel glazed with 0.485" glazing penetration using a flexible vinyl glazing channel.
Daylight Opening: Clear opening of each panel, 33 1/8" by 75 1/4" high.
Weatherstripping:

Quantity	*Description*	*Location*
Single row	pile with integral plastic fin	on the interior and exterior of astragal adapter, interlock stiles, top and bottom rails
Single row	vinyl bulb	on the interior and exterior of frame jambs

Hardware:

Four	flush mount two ply hook lock, RD 1968 CAN	at each panel lock stile and female astragal, 40" from bottom
Three	surface mount aluminum keeper, with no ID marks	at each frame jamb and astragal adapter, 38 ½" from bottom

MATERIAL CHARACTERISTICS

Hardware:

Quantity	*Description*	*Location*
Eight	adjustable plastic wheel in aluminum housing, with no ID marks	one at each end of each panel bottom rail
Eight	plastic guide, with no ID marks	one at each end of each panel top rail

Weepholes: None
Reinforcement: None
Sealants: Frame corners, panel corner seams and installation screws were sealed with white colored sealant.
Pads: One ½" by 3/8" by 3/4" long closed cell foam pad inside each wheel stabilizer, total of eight.
Screen: Water resistance test was conducted with and without a fiberglass mesh screen installed. Size of screen, 37" by 79" high.
Additional Description: One aluminum closure with pile weatherstrip, drawing No. SD-136, at bottom of each exterior interlock stile, total of two, fastened to stiles with the corner panel assembly screw. The astragal adapter was fastened to the left center panel astragal stile with a single row of No. 8 by 1" pan head self drilling screws. Location of fasteners from the bottom are as follows: 2 1/4", 26 ½", 51 ½" and 75 ½".
Unit Installation: Units tested in 2 x 12 wood test buck using a 2 x 6 pressure treated buck strip at frame sill. Frame head and frame jambs were installed with a double row of No. 10 by 1 1/4" pan head sheet metal screws. Frame sill was installed with a double row of No. 10 by 1 ½" flat head sheet metal screws. Location of installation screws are as follows: frame head and frame sill from the left, 4 3/4", 16 ½", 28", 39", 51", 63 ½", 78", 92", 106 1/4", 120 3/4" and 138"; frame jambs from the bottom, 5 ½", 35", 43" and 71".
Product Markings: None

OFFICIAL TEST RESULTS

Paragraph Number	Title of Test	Measured	Allowed
2.1.2	Air Infiltration Test: (ASTM E283-96) at 1.57 psf	0.29 cfm/sq.ft. (1.62 cmh)	Passed 0.3 (1.67) maximum

Note: The tested specimen meets or exceeds the performance levels specified in specification reference

2.1.3	Water Resistance Test: (ASTM E547-96/E331-96) with and without screen, no leakage at	8.00 psf (383 pa)	Passed 3.75 (180) minimum

2.1.4.2	Uniform Structural Load Test: (ASTM E330-96) Positive Load	67.5 psf (3232 pa)		Passed 37.5 (1796) minimum
		Deflection	**Permanent Set**	
	Reading at interlock stiles	2.325" (59.12 mm)	0.054" (1.37 mm)	0.314 (7.99) maximum
	Reading at astragal stiles	2.260" (57.47 mm)	0.053" (1.35 mm)	0.314 (7.99) maximum
	Reading at frame jamb	0.025" (0.64 mm)	0.010" (0.25 mm)	
	Reading at frame sill	0.240" (6.10 mm)	0.020" (0.51 mm)	

2.1.4.2	Uniform Structural Load Test: (ASTM E330-96) Negative Load	67.5 psf (3232 pa)		Passed 37.5 (1796) minimum
	Reading at Interlock stiles	2.465" (63.45 mm)	0.058" (1.47 mm)	0.314 (7.99) maximum
	Reading at Astragal stiles	2.280" (57.98 mm)	0.055" (1.40 mm)	0.314 (7.99) maximum
	Reading at Frame jamb	0.040" (1.02 mm)	0.015" (0.38 mm)	
	Reading at Frame sill	0.260" (6.61 mm)	0.022" (0.56 mm)	

2.1.8	Forced Entry Resistance Test AAMA 1303.5-1976, Paragraph 3.1.1 Test A through 3.1.5 Test G	No entry	None Allowed

OFFICIAL TEST RESULTS

Paragraph Number	Title of Test	Measured	Allowed
2.2.19.5.1	Operating Force: *Right Panel:*		Passed
	Breakaway Force	14 pounds (62 n)	30 (133) maximum
	Opening Motion	7 pounds (31 n)	20 (89) maximum
	Closing Motion	10 pounds (44 n)	20 (89) maximum
	Right center panel:		Passed
	Breakaway Force	15 pounds (67 n)	30 (133) maximum
	Opening Motion	8 pounds (36 n)	20 (89) maximum
	Closing Motion	9 pounds (40 n)	20 (89) maximum
	Left center panel:		Passed
	Breakaway Force	13 pounds (58 n)	30 (133) maximum
	Opening Motion	6 pounds (27 n)	20 (89) maximum
	Closing Motion	8 pounds (36 n)	20 (89) maximum
	Left panel:		Passed
	Breakaway Force	10 pounds (44 n)	30 (133) maximum
	Opening Motion	9 pounds (40 n)	20 (89) maximum
	Closing Motion	8 pounds (36 n)	20 (89) maximum
2.2.19.5.2	Deglazing Test: (ASTM E987)		
	Right Center Panel		
	No disengagement at:		
	Vertical Stiles	70 pounds (311)	70 (311) minimum
	Horizontal Rails	50 pounds (222)	50 (222) minimum
	Percent Deglazement	5 percent	99 maximum
	Left Center Panel		
	No disengagement at:		
	Vertical Stiles	70 pounds (311)	70 (311) minimum
	Horizontal Rails	50 pounds (222)	50 (222) minimum
	Percent Deglazement	4 percent	99 maximum

SECTION 4, OPTIONAL PERFORMANCE CLASS:

4.3	Water Resistance Test: (ASTM E547-96/E331-96) with and without screen, no leakage at	8.00 psf (383 pa)	Passed 4.50 (215) minimum
4.4.2.	Uniform Structural Load Test: (ASTM E330-96)		Passed
	Positive Load	67.5 psf (3232 pa)	45.0 (2155) minimum
		Deflection / **Permanent Set**	
	Reading at interlock stiles	2.325" (59.12 mm) / 0.054" (1.37 mm)	0.314 (7.99) maximum
	Reading at astragal stiles	2.260" (57.47 mm) / 0.053" (1.35 mm)	0.314 (7.99) maximum
	Reading at frame jamb	0.025" (0.64 mm) / 0.010" (0.25 mm)	
	Reading at frame sill	0.240" (6.10 mm) / 0.020" (0.51 mm)	

OFFICIAL TEST RESULTS

Paragraph Number	Title of Test	Measured		Allowed
	SECTION 4, OPTIONAL PERFORMANCE CLASS:			
4.4.2	Uniform Structural Load Test: (ASTM E330-96)			Passed
	Negative Load	67.5 psf (3232 pa)		45.0 (2155) minimum
		Deflection	**Permanent Set**	
	Reading at Interlock stiles	2.465" (63.45 mm)	0.058" (1.47 mm)	0.314 (7.99) maximum
	Reading at Astragal stiles	2.280" (57.98 mm)	0.055" (1.40 mm)	0.314 (7.99) maximum
	Reading at Frame jamb	0.040" (1.02 mm)	0.015" (0.38 mm)	
	Reading at Frame sill	0.260" (6.61 mm)	0.022" (0.56 mm)	

Note: At conclusion of above tests, there was no apparent damage to unit, fasteners or glass and the panels were operable.

Temperature: 80.0 F
Barometric: 33.09

Test Began - June 13, 2000
Test Completed - June 23, 2000
Test Report Expires - June 23, 2004

Remarks: This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and the performance requirements (paragraphs as listed) of the above referenced specifications. As per manufacturer, unit complies with section 3, material and component requirements.

Detailed assembly drawings showing wall thickness of all members, corner construction and hardware application are on file and have been compared to the sample submitted. A test sample will be retained at the test laboratory. A copy of this report and detailed drawings will be forwarded to the Validator.

Note: When load tests are performed on test specimens, they are covered with a 1.5 ml plastic sheeting to seal from air leakage, however, this has no effect on the test results obtained.

Witnessed by:
Mr. Antonio Acevedo, P. E.
Mr. Jim Moore

FENESTRATION TESTING LABORATORY, INC.

Manny Sanchez
President

Author of Report:
Leigh B. Sanchez

Laboratory Technicians:
Roque Zavala
Nelson Erazo, Jr.

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2 - ALI

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4-8-02

NORANDEX
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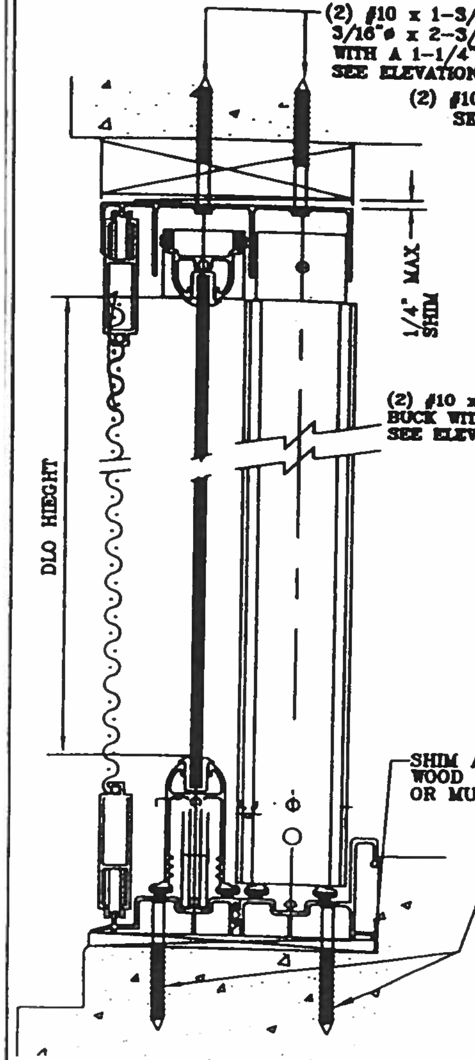
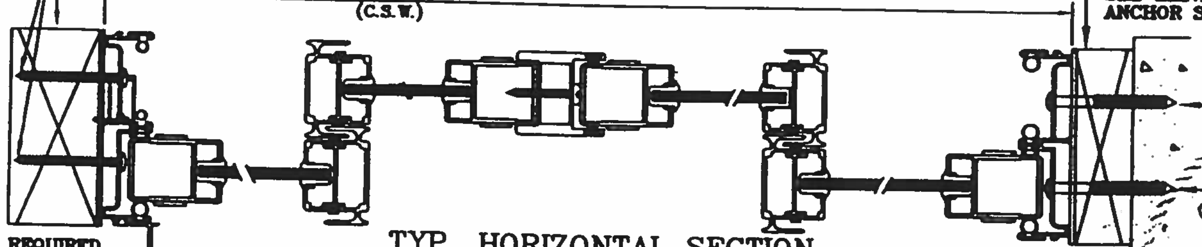


HEADER AND SILL SECTION
TYP. 1 BY BUCK

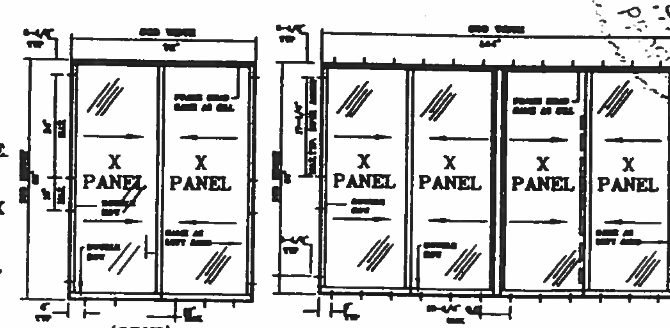
3/16" TEMPERED GLASS						
PANEL SIZE INCHES	DESIGN LOAD CAPACITY-PSF		NO. OF ANCHOR SCREWS IN FRAME			
			HEAD AND SILL			JAMB
WIDTH/HEIGHT	EXTERNAL	INTERNAL	XX	XXX	XXXX	ALL
30 1/16" x 59 1/2"	53.3	55.8	10	16	18	6
36 1/16" x 59 1/2"	49.8	49.8	12	18	22	6
30 1/16" x 79 1/2"	49.7	49.7	10	16	20	8
36 1/16" x 79 1/2"	45	45	12	18	22	8

SERIES 500 ALUMINUM SLIDING GLASS DOOR. ALL OPERABLE PANELS
FASTENER CHART



TYP. HORIZONTAL SECTION
1 BY / 2 BY BUCK

NOTES:
1) SHIM AS REQUIRED, MAX. SHIM STACK 1/4".
2) ALL ALUMINUM EXTRUSIONS ARE ALLOY 6063-T5 OR T6 WITH TYPICAL WALL THICKNESS OF 0.62".
3) USE HIGH QUALITY CAULK BEHIND WINDOW FLANGE.
4) GLASS THICKNESS BASED ON TABLE E1300 GLASS CHARTS, AND MAY VARY DEPENDING ON SIZE.
5) THE RESPONSIBILITY FOR SELECTION OF NORANDEX PRODUCTS TO MEET ANY APPLICABLE LOCAL LAWS, BUILDING CODES, ORDINANCES OR OTHER SAFETY REQUIREMENTS REST SOLELY WITH THE ARCHITECT, BUILDING OWNER OR CONTRACTOR.
6) CONCRETE COMPRESSIVE STRENGTH = 3,000 PSI AT 28 DAYS.



(2BY2) TYPICAL ELEVATION
(4BY2) TYPICAL ELEVATION

600 SLIDING GLASS DOOR
INSTALLATION DETAIL
XOX, OX ,XO AND
FASTENER SCHEDULE

SERIES: 600
ALUMINUM SLIDING GLASS DOOR

NORANDEX
4606 30th STREET WEST
BRADENTON, FL 34207
PHONE: (941) 756-1691

CHARLES A. FAGEN, P.E.
FL. REG. ENG. # 40127
DATE: 5/21/02

NO.	DATE	REVISIONS DESCRIPTION

DATE: 2/1/02
SCALE: N.T.S.
DWG. BY: J.R.M.
CHK. BY: RLK
DWG. NO.: PBC-023

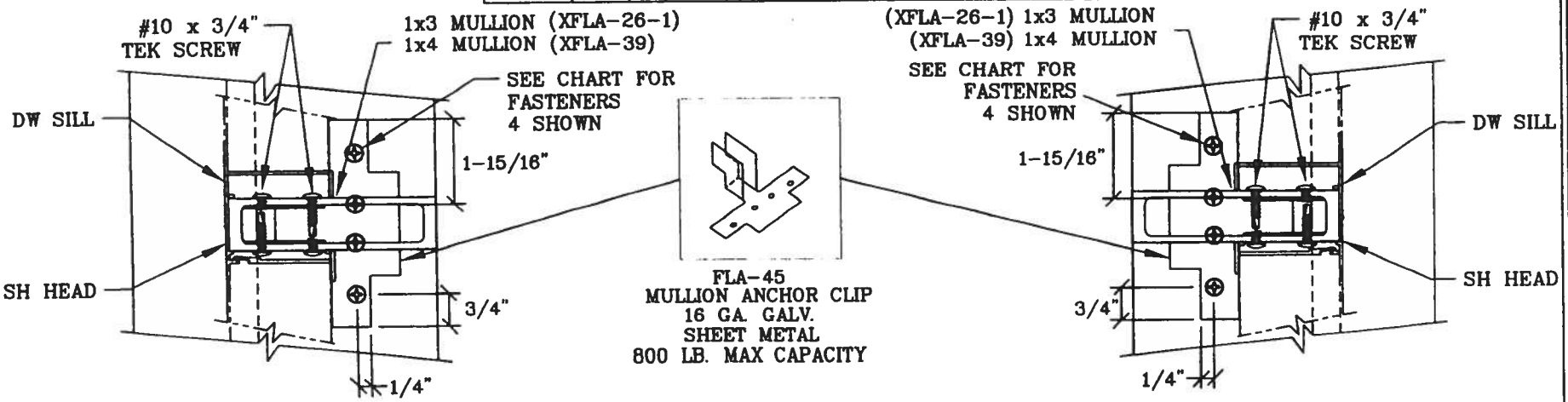
NOTES:

1) ALL ALUMINUM EXTRUSIONS ARE ALLOY 6063 T6, OR 6063 T5.
2) WHEN THERE IS ONE TAPCON (1/4ø" X 1-1/2") ON EACH ANGLE LEG, THE TAPCON SHALL BE PLACED ON MULLION CLIP CENTERLINE.
3) CONCRETE COMPRESSIVE STRENGTH = 3,000 PSI AT 28 DAYS.

G.A. PAGE
CERTIFICATE
CHARLES A. PAGEN P.E.
FL. REG. ENG. # 49161
DATE: 3/21/02
ENGINEER

HORIZONTAL MULLION SCHEDULE

SINGLE UNIT WINDOW WIDTH INCH	SINGLE UNIT WINDOW HEIGHT INCH	TYPE OF MULLION DESIGN PRESSURE 35 PSF	TYPE OF CLIP FLA-45	NUMBER AND TYPE OF FASTENERS
19-1/8"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
26-1/2"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
37"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
53-1/8"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(2) 1/4ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(2) 1/4ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 3.0	OK	(2) 1/4ø" x 1-1/2" TAPCONS



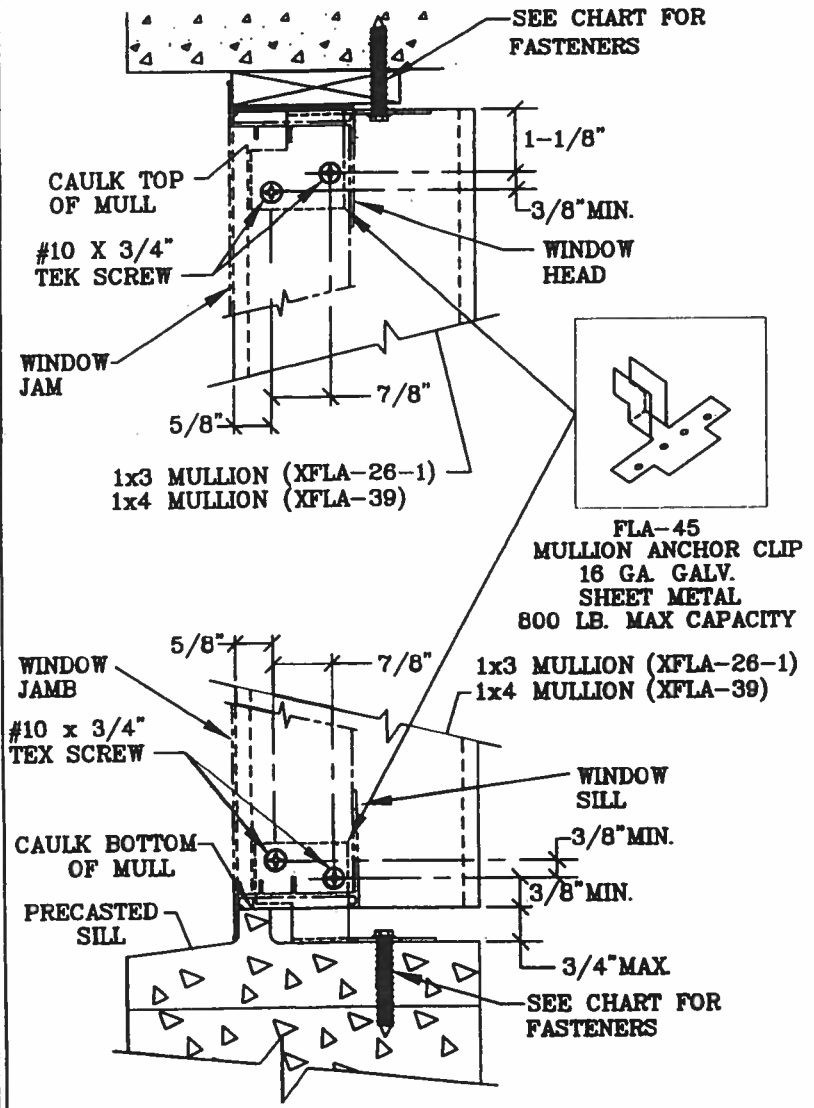
HORIZONTAL MULLION
FLA-45 ANCHOR CLIP
INSTALLATION DETAIL AND
FASTENER SCHEDULE

SERIES: MULLION
ALUMINUM SINGLE HUNG

NORANDEX
4606 30th STREET WEST
BRADENTON, FL 34207
PHONE: (941) 755-1591

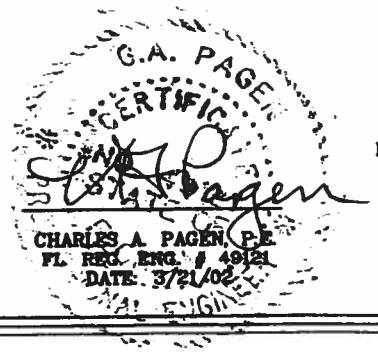
NO.	DATE	REVISIONS DESCRIPTION

3/11/02
SCALE: N.T.S.
DWG. BY: RLF
CHK. BY: RLF
DWG. NO.: FSC-030



VERTICAL MULLION SCHEDULE

SINGLE UNIT WINDOW WIDTH INCH	SINGLE UNIT WINDOW HEIGHT INCH	TYPE OF MULLION DESIGN PRESSURE 35 PSF	TYPE OF CLIP FLA-45	NUMBER AND TYPE OF FASTENERS
19-1/8"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
26-1/2"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
37"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 4.0	OK	(4) 1/4ø" x 1-1/2" TAPCONS
53-1/8"	26"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	38-1/4"	1.0 x 3.0	OK	(4) 3/16ø" x 1-1/2" TAPCONS
	50-5/8"	1.0 x 3.0	OK	(2) 1/4ø" x 1-1/2" TAPCONS
	63"	1.0 x 3.0	OK	(2) 1/4ø" x 1-1/2" TAPCONS
	76-3/4"	1.0 x 4.0	OK	(2) 1/4ø" x 1-1/2" TAPCONS



NOTES:
1) ALL ALUMINUM EXTRUSIONS ARE ALLOY 6063 T6, OR 6063 T5.
2) WHEN THERE IS ONE TAPCON (1/4ø" X 1-1/2") ON EACH ANGLE LEG, THE TAPCON SHALL BE PLACED ON MULLION CLIP CENTERLINE.
3) CONCRETE COMPRESSIVE STRENGTH = 3,000 PSI AT 28 DAYS.

VERTICAL MULLION
FLA-45 ANCHOR CLIP
INSTALLATION DETAIL AND
FASTENER SCHEDULE

SERIES: MULLION
ALUMINUM SINGLE HUNG

NORANDEX
4655 36th STREET WEST
BRADENTON, FL 34207
PHONE: (941) 755-1681

NO.	DATE	REVISIONS DESCRIPTION

3/11/02
SCALE: N.T.S.
DWG. BY: RAF
CHK. BY: RAF
DWG. NO.: FSC-045

EXTERIOR FINISHES INFORMATION

ACRO CRETE
ARCHITECTURAL FINISHES

In order to use the Acrocrete ES System in the southern part of Florida it became necessary to obtain a Miami-Dade County Product Listing. This can only be obtained after the product passes very strict testing for wind loads and impact resistance. Since often our systems are designed to perform in high wind load areas the information and testing data will be revilant.

The criteria for Miami-Dade County Approval is all based on a wall system staying in tact during severe weather conditions. Not only, are wall samples subjected to wind loads ranging from 176 MPH to 242 MPH, but both large and small missiles are shot at the wall to evaluate their ability to prevent flying objects from penetrating the wall. Four systems were tested as follows:

1) Acrocrete ES adhesively attached to CMU construction. This system passed the 150 PSF windload (242MPH) and also passed the large missile test (2X4 stud shot out of a cannon).
Compliance # 00-1114.04

2) Acrocrete ES adhesively attached to gypsum sheathing on steel studs. This system passed the 80 PSF windload (176 MPH) and also passed the large missile test. Please note, that this wall sample incorporated high impact mesh in its design
Compliance # 00-114-05

3) Acrocrete ES adhesively attached to gypsum board on steel studs. This system passed the 85 PSF windload (182 MPH) and also, passed the small missile impact test. This was the standard ES system using only standard mesh.
Compliance # 00-1114.03

4) Acrocrete ES adhesively attached to plywood over wood studs. This system passed the 110 PSF (207 MPH) windload, as well as, the large missile test.
Compliance # 00-1114.06

Enclosed is the documentation for each of these four systems. These tests were conducted at the "Hurricane Test Laboratory, Inc., in Riviera Beach, Florida and are certified by W. W. Schaeffer Engineering and Consulting, P.A. There are four separate sets of documentation, one for each system. The first page outlines the method of wall construction, the wind load passed and the impact results. The following pages describe the construction details.

In a competitive situation please pay close attention to the method of wall construction. Other companies also have these approvals, but in many instances you have a competitive advantage. As an example our Acrocrete ES wall over gypsum board was constructed using 3-5/8" studs of 18 gauge thickness. One competitor has the same test but needs to use 6" studs. Make sure you compare the design of the wall.

ACRO CRETE
ARCHITECTURAL FINISHES

ACROMESH

STANDARD - STARTER - JOINT TAPE

WRAP YARN		**ECG 37 1/0**
COUNT, NOMINAL, PER INCH		**12**
FILLING YARN		**ECK 18 1/0**
COUNT, NOMINAL, PER INCH		**6**
TENSILE. LB./IN. MIN.	**WRAP**	**150**
	FILL	**150**
THICKNESS, INCHES		**0.0135 + 10%**
WEIGHT, OZ./YD		**4.5 + 10%**
IGNITION LOSS		**10-14%**
FINISH		**ALKALI RESISTANT**
WEAVE		**LENO**
SELVAGE		**SLIT EDGE**
PUT-UP		**50 YARD ROLLS** **4 ROLLS/CARTON**

ACROCRETE
ARCHITECTURAL FINISHES

ACROBASE 90

DESCRIPTION

ACROBASE 90 is an acrylic based product which is field mixed with Portland cement to produce an adhesive and base coat combination. **ACROBASE 90** is formulated to achieve optimum adhesion, hardness and crack resistant characteristics, when properly mixed with most type I or II Portland cements.

USES

ACROBASE 90 is used to adhere EPS board to an approved substrate and to embed **ACROMESH** reinforcing mesh as part of the base coat of the **ACROWALL** systems. **ACROBASE 90** can be used as a skim coat to produce a smooth level surface on masonry or concrete.

ACROBASE 90 IS A MULTI-USE PRODUCT

1. For use as an adhesive to affix insulation board to an approved substrate.
2. As a base coat or bed coat for glass fiber **ACROMESH.**
3. As a base coat over block or poured-in-place concrete.
4. For use as the base coat in all of **ACROCRETE's** approved systems.

Properties

Working Time — After mixing, the working time of **ACROBASE 90** is approximately one hour depending on ambient conditions.

Excessive heat on substrate can cause product failure, wall surface temperatures must be maintained between 40 and 100°F during application.

Drying Time — When used to bond insulation board to approved substrate, a period of 24 hours must elapse to allow the **ACROBASE 90** to form a positive bond. The insulation board should not be worked on while the **ACROBASE** is curing. Drying of the **ACROBASE 90** base coat is dependent on the air temperature and relative humidity. Under average drying conditions (70°Fm 55% R.H.), **ACROBASE 90** should be ready to receive the finish in 24 hours. Protect work from rain for at least 24 hours.

Temporary Preparation — Protection shall be provided at all times until base coat, finish, and permanent flashings, sealants, etc. are completed to protect the wall from weather and other damage.

Substrate Preparation — **ACROCRETE** recommended substrates: Typically, these include exterior grade gypsum sheathing on either steel or wood studs, Celotex Quick-R® sheathing, Georgia-Pacific Dens-Glass Gold® sheathing, clean unpainted concrete block, and stucco. All substrates must be flat within 1/4" within any four foot radius.

Surface preparation — Surfaces must be above 40°F and rising and must remain so for at least 24 hours. Surfaces must be clean, dry, structurally sound and free of efflorescence, grease, oil, form release agents and curing compounds.

Mixing — Proper mixing of this product is essential to the quality and durability that is expected of this product.

The most important part of the mix is the ratio to which **ACROBASE 90** and cement are mixed together.

ACROBASE 90 adhesive is distributed in 5 gallon pails that weigh approximately 60 lbs.

Proper mix ratio is 60 lbs, **ACROBASE 90** to 94 lbs. Portland cement (1 pail to 1 bag).

PRIOR TO MIXING ACROBASE WITH CEMENT, YOU MUST PRE-BLEND THE CONTENTS OF THE PAIL TO INSURE THAT SEPARATION HAS NOT OCCURRED DURING SHIPPING.

The easiest method of mixing the product, if not using a portable mixer, is to divide 1 pail **ACROBASE 90** in thirds by poring equal parts into 2 empty pails and leaving the remainder in the original pail.

Next, equally divide 1 bag of Portland cement in thirds. Use a ½ or 3/4 inch drill and Jiffler paddle. Slowly add 1 portion of the cement while mixing with the drill and Jiffler mixing paddle.

You will need to add a small amount of clean potable water to this mix while blending to eliminate all lumps and ensure proper mix.

Easy to Handle:
Dens-Glass Gold Sheathing is easy to handle and cut as ordinary gypsum sheathing – and its superior flexural strength in the 4' direction makes it far more resistant to damage in handling.

Embedded Glass Mats:
Glass mats actually penetrate right into the panel itself, creating an integrated unit that withstands delamination, deterioration, warping, and job-site damage far more effectively than paper-faced gypsum sheathing.

Warranty:
G-P Gypsum backs Dens-Glass Gold Sheathing with the best limited warranty in the industry: Dens-Glass Gold Sheathing is warranted for six months exposure from purchase date against delamination deterioration from weather exposure with a five-year limited warranty against manufacturing defects and a 10-year limited warranty when used as a substrate for architecturally specified Exterior Insulated Finish Systems (EIFS). Our confidence in Dens-Glass Gold Sheathing's superiority over any other gypsum sheathing is so strong we put it in writing. Read our warranties on page 14 of this publication for full details.

Standards and Code Compliance

Dens-Glass Gold Sheathing conforms to ASTM C 1177. Application standards where applicable are in accordance with Gypsum Association Publication GA-253 for gypsum sheathing.

- ICBO ES 4305
- SBCCI PST and ESI #9540A
- BOCA ES #95-28
- N.Y. City MEA 244-88-M
- CCMC-12064-R
- Wisconsin DII-L-960015-S
- Los Angeles RR-25008

DENS-GLASS GOLD APPLICATIONS

1. Exterior finish systems with insulation (EIFS)
Dens-Glass Gold Sheathing panels are treated with an exclusive "gold" primer coating. This coating, proprietary to G-P Gypsum and developed especially for Dens-Glass Gold Sheathing, has several important advantages for EIFS applications:

- Eliminates the need for a sealer/primer with adhesively applied EIFS
- Strengthens the bond between panel and surfacing product
- Makes the panel more resistant to surface water. The result: labor cost and callbacks go down – while customer satisfaction on each project goes up.

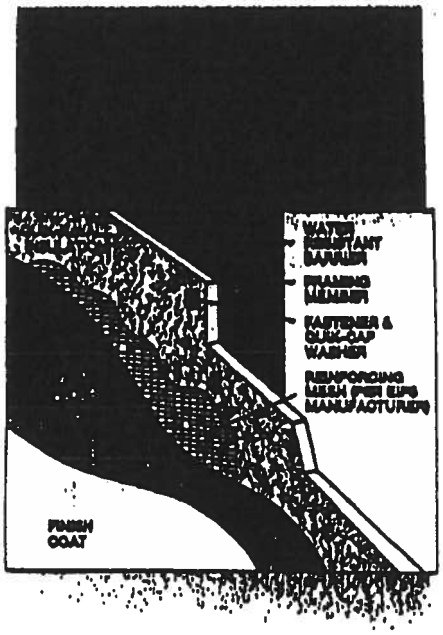
2. Brick veneer with cavity wall

- Moisture-resistant
- Fire-resistant – 1- and 2-hour fire assemblies
- Six-month weather exposure
- Building felt not required, unless specified by designing authority or code
- Provides water and air barrier with joint protection

3. Single-ply backing for traditional cladding

- Wood, vinyl or composition siding
- Wood shakes or shingles
- Stone or brick cavity walls
- Conventional stucco system
- Plywood siding panels

4. Exterior ceilings and soffits



Quik-R should be installed with a maximum 1 perm vapor retarder or as required by local building codes.

Quik-R can be used with conventional Portland cement stucco provided the stucco is reinforced with metal lath.

Within 14 days after the application of Quik-R Wall insulation, a EIFS base coat shall be trowel applied over the insulation board surface. If application will begin after 14 days, protect the Quik-R from the weather. If the 14 day limit will be exceeded, the EIFS manufacturer and their applicator must determine the proper protection for the Quik-R. Before applying the base coat, all roofing materials should be evenly distributed on the roof. Gypsum board or other interior finish materials should be distributed on the interior to prevent settling cracks. Thickness of base coat application shall be as specified by the EIFS manufacturer or minimum 1/8" maximum 1/4". Prior to full base coat application, glass fiber reinforcement mesh as specified by the coating manufacturer must be embedded into freshly applied base coat over all insulation board joints, all corners and edges including bottom edge, door and window openings. Spot each Quik-Cap washer with base coat.

Wood Or Steel Studs Application

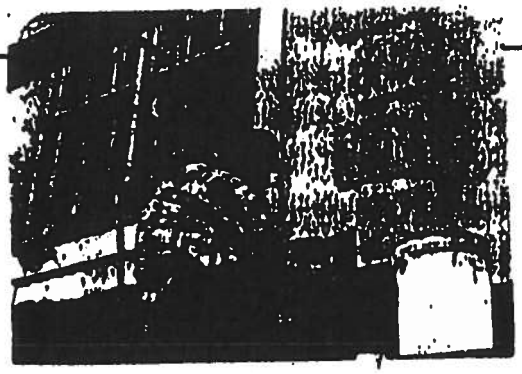
Quik-R™ 1" Thickness Or Greater

16" Span - Install boards vertically or horizontally with long edge running parallel to and over a maximum 16" o.c. framing or supports, with each board spanning a minimum of 3 supports or framing members. All butt joints shall terminate over a framing support member.

24" Span - In spans 24" o.c. for either vertical or horizontal applications the Quik-R board must be backed by a minimum 1/2" gypsum, plywood, oriented strand board or Celotex Wood Fiberboard. All butt joints shall terminate over a framing support member.

Quik-R Less Than 1" Thickness

16" & 24" Span. In spans 16" and 24" o.c. for either vertical or horizontal applications, the Quik-R board must be backed by 1/2" gypsum, plywood, oriented strand board or Celotex Wood Fiberboard. All butt joints shall terminate over a framing or support member.



performance test

Quik-R Wall Insulation has passed the requirements of UL 1715 (UBC 26-3) for walls only applications for exposed applications in attics and crawl spaces.

EIFS incorporating Quik-R Wall Insulation have:

- Passed the radiant panel test method for ignitibility characteristics of exterior wall systems.
- Met the requirements for a nonload-bearing 1-hour fire resistance rating (ASTM E 119, UBC 7-1, UL 263) for both interior and exterior fire exposure.
- Been tested for wind load structural performance (ASTM E 330) for both positive and negative wind loads.

typical physical properties

compressive strength	ASTM D 1621	25 psi min
dimensional stability	ASTM D 2126 70°C/90% RH	1% change max
product density	ASTM D 1622	nominal 2 pcf
water vapor permeability	ASTM E 96	3.0 max (perm - in)
water absorption 24 hrs	ASTM C 209	1% by volume

Application

General Information

Storage: Quik-R™ Wall Insulation should be stored dry and protected from weather.

Quik-R Wall Insulation is not a structural load bearing product; code approved corner bracing must be used.

All board joints (vertical or horizontal) must be over framing, blocking, or solid backing.

Quik-R shall be installed 6" or more from soil and/or grade. Regular extermination of insects and pests is recommended to prevent damage to the insulation.

Prior to attachment of Quik-R a water resistant barrier, such as 15 lb. felt, kraft waterproof building paper, or equivalent, must be applied to the total wall surface.

Quik-R must be mechanically fastened by placing corrosion-resistant fasteners through a Celotex Quik-Cap Washer. This washer is specifically designed for use with Celotex Quik-R Wall Insulation. Quik-Cap Washers are available in hot dipped galvanized steel or plastic.

Before application of EIFS coating begins, suitable caulking materials shall be used to seal irregular trim cuts/board joints and irregular wall penetrations to provide a level and closed surface. All Quik-R edges and joints between Quik-R and other materials shall be protected from water penetration. Caulking specifications shall be as required by the EIFS manufacturer.

Type and design, location and installation specifications for expansions and/or contraction joints shall be in accordance with the requirements and recommendations of the EIFS manufacturer to deal with mechanical movement anticipated in the structural/framing system or thermal expansion/contraction responses.

Large wall areas can be aesthetically enhanced by installing "architectural breaks" such as a strip of Quik-R applied horizontally over the wall surface.

In the event of rain after Quik-R Wall Insulation has been installed, allow exterior insulation board surfaces to thoroughly air dry before applying exterior finish coatings.

Negative Uniform Lateral Loads

Thickness, Inches	Board Orientation	Stud Spacing, in./o.c.	Maximum Load (psf)
1/2"	Vertical	16	65
1/2"	Horizontal	16	70
5/8"	Vertical	24	69
5/8"	Horizontal	24	85
5/8"	Vertical	16	96

*(WIND LOAD) ASTM E 330 (Bugle head screws, 8" o.c.) *TPI Report 989-047.

Fastener Chart

Fastener	Fastener Length 1/2" Thick	Fastener Length 5/8" Thick	Description	Application
	1"	1 1/4"	Bugle head fine thread, rust-resistant, drill point drywall screw (Type S-12)	Dens-Glass Gold to heavy steel gauge (12-22 gauge)
	1"	1 1/4"	Bugle head fine thread, sharp point rust-resistant drywall screw (Type S)	Dens-Glass Gold to light gauge metal framing or furring
	1 1/4"	1 1/4"	Bugle head rust-resistant coarse thread sharp point screw (Type W)	Dens-Glass Gold to wood framing
	1 1/4"	1 1/4"	Wafer head, rust-resistant screw, Type S-12 drill or hi-lo	Dens-Glass Gold heavy or light gauge metal, wood, respectively
	1 1/4"	1 1/4"	Hot dip 11 gauge, galvanized, 1/4" head nail or equivalent	Dens-Glass Gold to wood framing

Air Infiltration and Static Water Penetration Test Results

Joint Method	ASTM E 283-84, CFM Air Infiltration @ 6.24 PSF[1]	Allowable	ASTM E 331-86, Water Penetration @ 6.24 PSF[1]	@ 12 PSF[2]	Allowable[3]
#1	0	6.0	None	None	1/2 oz.
#2	.50	6.0	None	None	1/2 oz.

1. 6.24 PSF is equivalent to approx. 49 mph wind.
2. 12 PSF is equivalent to approx. 69 mph wind. This pressure differential is typically used for high-performance glass enclosures for high-rise buildings. Normally only 6.24 PSF pressure is required for a water barrier. These are constant wind ratings.
3. Test method allows for one leak at no greater than 1/2 oz. of water in 15 minutes.

GARAGE DOORS INFORMATION

Garage Door Wind Load Guide
Based On The 2001 Florida Building Code (ASCE 7-98) Exposure B

Mean Roof Height	Door Size	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
Less than 30 Feet	Single	12.8	15.8	19.1	22.8	26.7	31.0	35.6
	9' x 7'	-14.5	-17.9	-21.6	-25.8	-30.2	-35.1	-40.2
	Double	[illegible]	[illegible]	18.3	[illegible]	25.6	29.7	34.1
	16' x 7'	-13.7	-16.9	-20.4	-24.3	-28.5	-33.1	-38.0

Design pressures above are in Pounds per Square Foot (PSF)

Testing, if required by local authority, may be performed to ASTM E-330, or preferably DASMA 108.
Impact and cyclic wind pressure testing on glazed doors may be performed to ASTM E-1886, or preferably DASMA 115.

Test conditions:

1. Garage doors shall be tested to both negative and positive pressures. Doors shall be installed simulating normal conditions (i.e., top roller in track radius, other rollers in tracks, all hinges in place, reinforcing hardware in place)
2. Total test duration for each test direction shall be as follows:
   A. Total of 3600/V seconds, at design pressure; where V is fastest-mile design wind speed.
   B. Pressure equal to 1.5 times the design pressure shall be included for 10 seconds during each test.

The door successfully passes the test if it remains safely operable through the full travel up and down, and recovers at least 75% of its maximum deflection. Standard engineering principles may be used to interpolate or extrapolate test results to door sizes not specifically tested. Doors shall include a manufacturer's label certifying compliance to specific load.

This guide is provided for reference purposes only. In all cases the local building authority is the sole and final determiner of the structural and safety requirements, and suitability of the garage door.

Notes

- Basic Wind Speeds above are three second peak-gust values
- Negative pressures assume door has 2 feet of width in building's end zone.
- Garage doors evaluated as attached to enclosed buildings with a Use Factor 1.0
- Doors larger than 100 square feet should use the 16 x 7 loads. Doors less than 100 square feet may be interpolated.
- Garage doors evaluated as Components and Cladding
- Installation details vary. Consult manufacturer's instructions.

For more information, contact DASMA, 1300 Sumner Avenue, Cleveland OH 44115-2851
Phone (216) 241-7333 E-mail: dasma@dasma.com Fax (216) 241-0105 URL: www.dasma.com

Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

This Technical Data Sheet was prepared by the members of DASMA's Commercial & Residential Garage Door Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

LTR	DESCRIPTION	DATE	APPROVAL
–	RFP PER EN 10083	8/19/98	DF
A	REV PER EN 10332	9/8/98	DF
B	REV PER EN 10880	10/18/00	[illegible]

NOTES

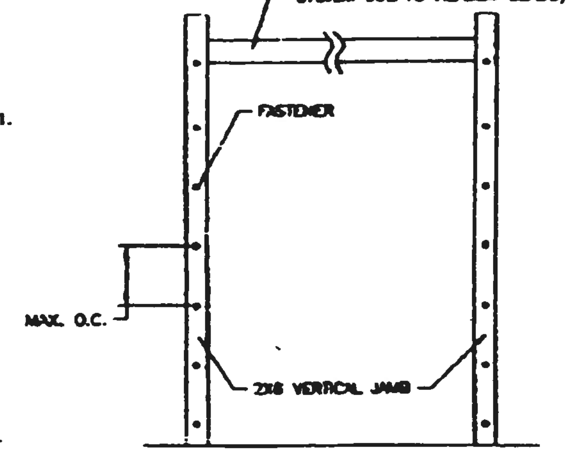
1. ALL THE LOAD FROM THE DOOR IS TRANSFERRED TO THE TRACK AND THEN FROM THE TRACK TO THE VERTICAL JAMBS (SPF STUD GRADE OR BETTER). NO LOAD FROM THE DOOR IS TRANSFERRED TO THE HORIZONTAL (TOP) JAMB WITH STANDARD WINDLOAD SYSTEM. WITH VERTICAL WINDLOAD POST. PART OF THE FORCE IS TRANSFERRED TO THE HORIZONTAL GARAGE DOOR HEADER.
2. EACH VERTICAL JAMB SEES A MAXIMUM DESIGN LOAD OF +2980 LB & -2980 LB AND A MAXIMUM TEST LOAD OF +4480 LB & -4480 LB. THE HORIZONTAL GARAGE DOOR HEADER SEES A MAX TEST LOAD OF 1200# FOR SINGLE POST. AND MAX COMBINED LOAD OF 2970# FOR MULTIPLE POSTS.
3. ALL JAMB FASTENERS MAY BE (BUT NOT REQUIRED) COUNTERSUNK TO PROVIDE A FLUSH MOUNTING SURFACE.

WOOD FRAME BUILDINGS

STUD WALLS OF DOOR OPENING SHALL BE FRAMED SOLID BY NOT LESS THAN 2 FULL LENGTH STUDS AND 2 HEADERSTUDS USING SPF STUD GRADE OR BETTER WOOD.
STUD WALLS TO BE CONTINUOUS FROM FOOTING TO TIE BEAMS AND IN ACCORDANCE WITH SFBC SECTION 2905.1.
INSTALLATION IN ACCORDANCE WITH DWG 409783 IS AN ACCEPTABLE ALTERNATIVE.

BLOCK WALL OR CONCRETE

2X6 MIN. WOOD JAMB SHALL BE ANCHORED TO GROUT REINFORCED BLOCK WALL OR CONCRETE COLUMN. BLOCK WALL CELLS SHALL BE FILLED WITH CONCRETE AND REINFORCED WITH #5 BAR EXTENDING INTO THE FOOTING AND INTO THE BEAMS. (STRENGTH IS ASSUMED TO BE 2500 PSI). ALL BARS SHALL BE CONTINUOUS FROM THE TIE BEAMS TO FOOTING PER BLOCK WALL OR CONCRETE COLUMN. BLOCK WALLS AND CONCRETE COLUMNS TO BE DESIGNED BY BUILDING PROFESSIONAL OF RECORD AND IN ACCORDANCE WITH SFBC SECTION 2704.2.



2X6 JAMB TO SUPPORTING STRUCTURE ATTACHMENT

(NOT TO BE USED FOR ATTACHMENT OF TRACK BRACKETS TO 2X6 VERTICAL JAMBS OR SUPPORTING STRUCTURE)

BUILDING TYPE	FASTENER TYPE	MIN. NO. OF FASTENERS PER VERTICAL JAMB 7' HIGH	MIN. NO. OF FASTENERS PER VERTICAL JAMB 8' HIGH	MAXIMUM ON CENTER DISTANCE BETWEEN FASTENERS	STEEL WASHERS REQUIRED?
WOOD FRAME (SPF)	5/16" X 3" LAG SCREW (ASTM A307, GRADE A), 1-5/8" MIN. EMBED.	7	8	16"	YES
C-90 BLOCK (2,500 PSI GROUT)	1/4" x 4" ITW TAPCON CONCRETE ANCHOR, 1-3/4" MIN. EMBED.*	7	8	16"	YES
C-90 BLOCK (2,500 PSI GROUT)	3/8" X 4" RAWL LOK/BOLT ANCHOR BOLT, 1-5/8" MIN. EMBED.*	6	7	16"	NO
CONCRETE COLUMN (2,500 PSI)	3/8" X 4" RAWL LOK/BOLT ANCHOR BOLT, 1-5/8" MIN. EMBED.*	6	7	16"	NO

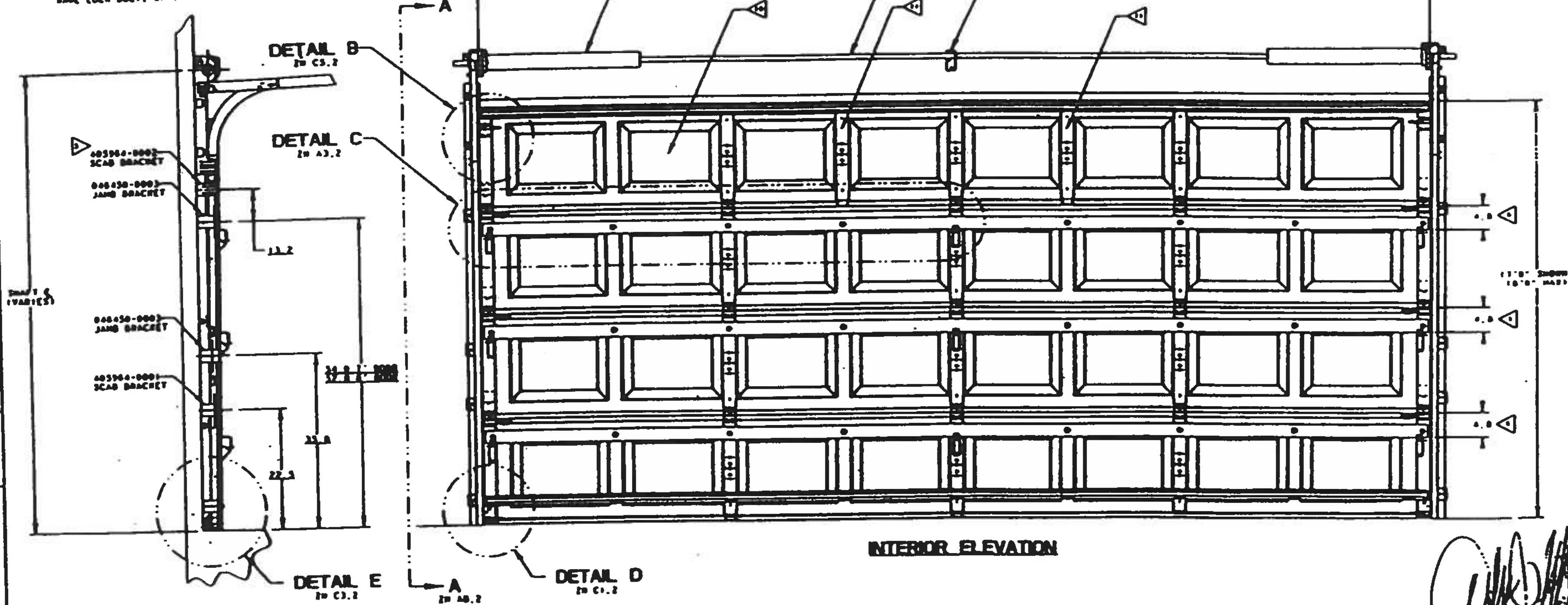
* - TAPCONS/ANCHOR BOLTS CAN BE INSTALLED DIRECTLY THROUGH TRACK BRACKETS/ANGLE IN LIEU OF 5/16" X 1-5/8" LAG SCREWS. RAWL LOK/BOLT SHALL BE TORQUED AS SPECIFIED BY THE RAWL DRILLING AND ANCHORING SYSTEMS DESIGN MANUAL.

APPROVED

MATERIAL: N/A	DRAWN BY: G. FINERAN	8/12/98	RESIDENTIAL JAMB DETAIL
FINISH: N/A	CHECKED BY: PE VESSELS	8/19/98	DRAWING NUMBER: C-409431
UNIT OF MEASURE: N/A	APPROVED BY: DAVID FAW	8/19/98	SCALE: FULL / SHEET 1 of 1

NOTES:
1 TESTED IN ACCORDANCE WITH DASMA 108
2 FOUR SECTION 7' TALL DOOR SHOWN. 8' DOORS HAVE 5 SECTIONS. SECTION HEIGHTS OF 20.88, 19.00 AND 16.75 ARE AVAILABLE AND MAY BE USED IN COMBINATION TO ACHIEVE VARIOUS DOOR HEIGHTS.
3 EMBOSSMENT PATTERN OF 14.5 X 20.4 SHOWN. ALTERNATE PATTERNS OF 12.5 X 43.4 AND 12.5 X 20.4 MAY BE USED.
4 ADVANTAGE/REVOLUTION COUNTERBALANCE SHOWN. TORSION AND EXTENSION COUNTERBALANCE SYSTEMS AVAILABLE. 405964-0002 REQUIRED AT TRACK INTERFACE ON TORSION AND EXTENSION SYSTEMS.
5 USE THIS BRACKET 405964-0002 ON 8' HIGH DOORS ONLY.
6 LOCATE 409317 CHANNELS AS SHOWN. VERTICAL PLACEMENT CAN VARY PLUS/MINUS 3 INCHES.
7 ON THE MIDDLE CENTER STILE THERE IS NO TOOL CLEARANCE HOLE FOR THE UPPER 805911-0001 SCREW. INSTALL FROM BELOW.
8. USE 805911-0001 AB POINT SCREWS FOR ALL COMPONENT INSTALLATION UNLESS OTHERWISE NOTED.
9 JAMB DETAIL TO BE IN ACCORDANCE WITH DRAWING 409783. JAMB/SCAB BRACKET ATTACHING HARDWARE SHALL BE AS FOLLOWS: 805570-0001 SCREW, LAG 5/16 X 1-3/4 - WOOD JAMB; BAR LOCK BOLT, 5/16 X 1-1/2 EMBEDMENT - CONCRETE BLOCK
10 WINDOW INSTALLATION ALLOWED. WINDOWS MUST BE INSTALLED IN TOP SECTION.
11 EXTRA CENTER STILES ARE NOT REQUIRED ON DOORS WITHOUT A WINDOW SECTION.
12 USE 18 GAUGE CHANNEL

OHD/GENIE DOOR EQUIVALENCY CHART		
OHD DOOR SERIES No.	GENIE DOOR SERIES No.	PAN STEEL THICKNESS
SERIES 180	SERIES GDS300	24 GA
SERIES 189	SERIES GDS300	24 GA
SERIES 201	SERIES GDS200	25 GA
SERIES 200	SERIES GDS300	25 GA

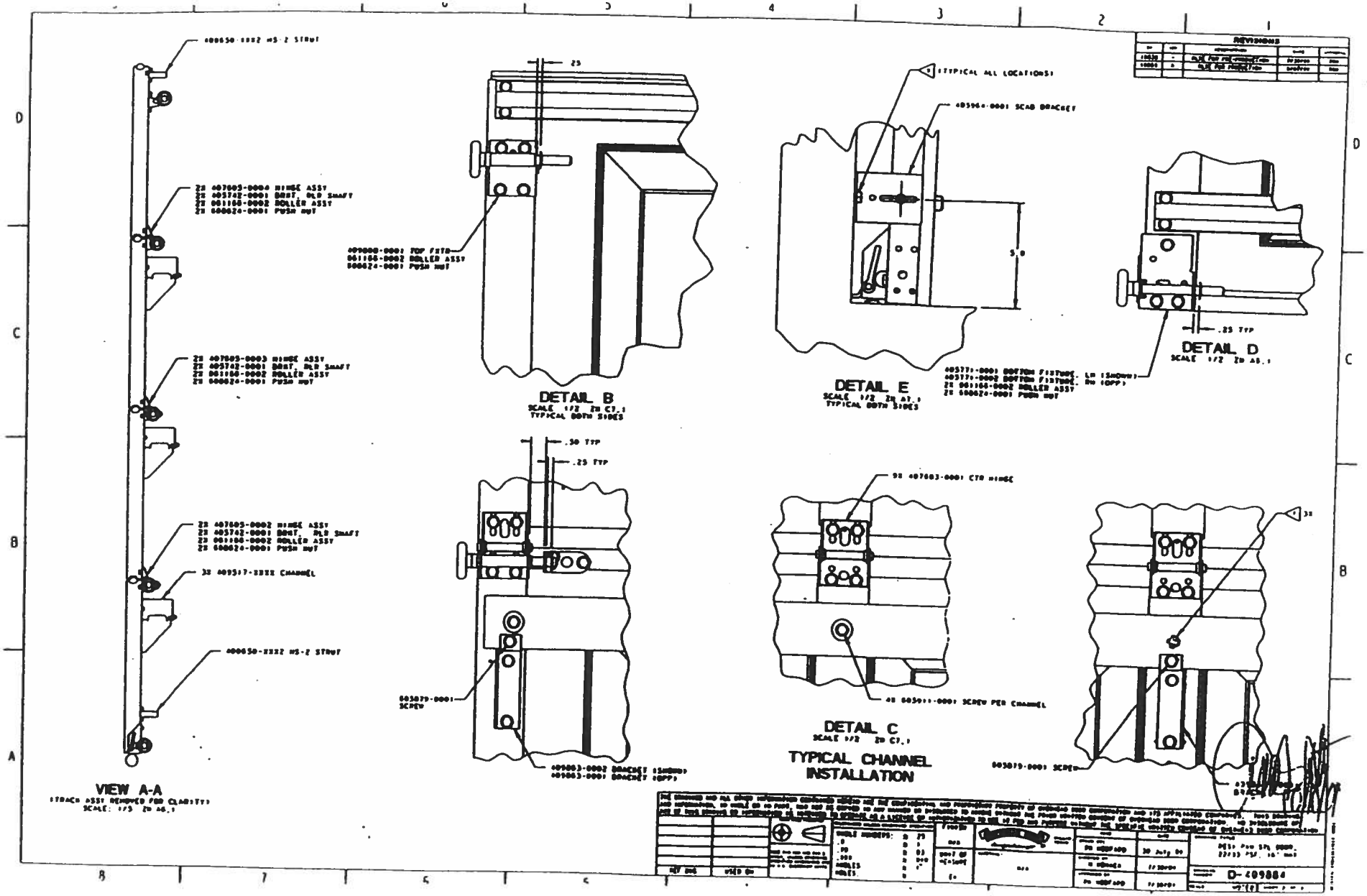


INTERIOR ELEVATION

STD TRACK DETAIL FOR 16' WIDE DOOR

DOOR WIDTH	CENTER STILE	END STILE	OLD SHAFT BRACKET	STRUTS/SECT	ROLLER	VERT TRK GA	JAMB LOAD
16	1	SINGLE	YES	[illegible]	[illegible]	...	116

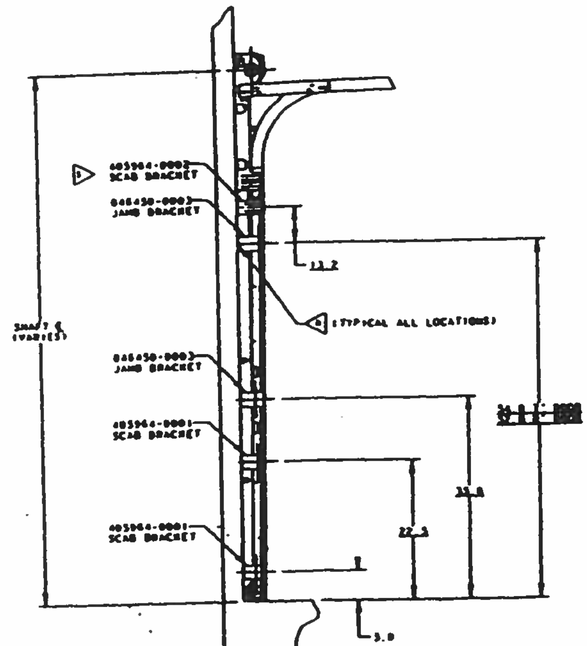
D-40988C


VIEW A-A
DETAIL B
DETAIL C
TYPICAL CHANNEL INSTALLATION
DETAIL D
DETAIL E
(TYPICAL ALL LOCATIONS)
.25 TYP
.50 TYP
5.0

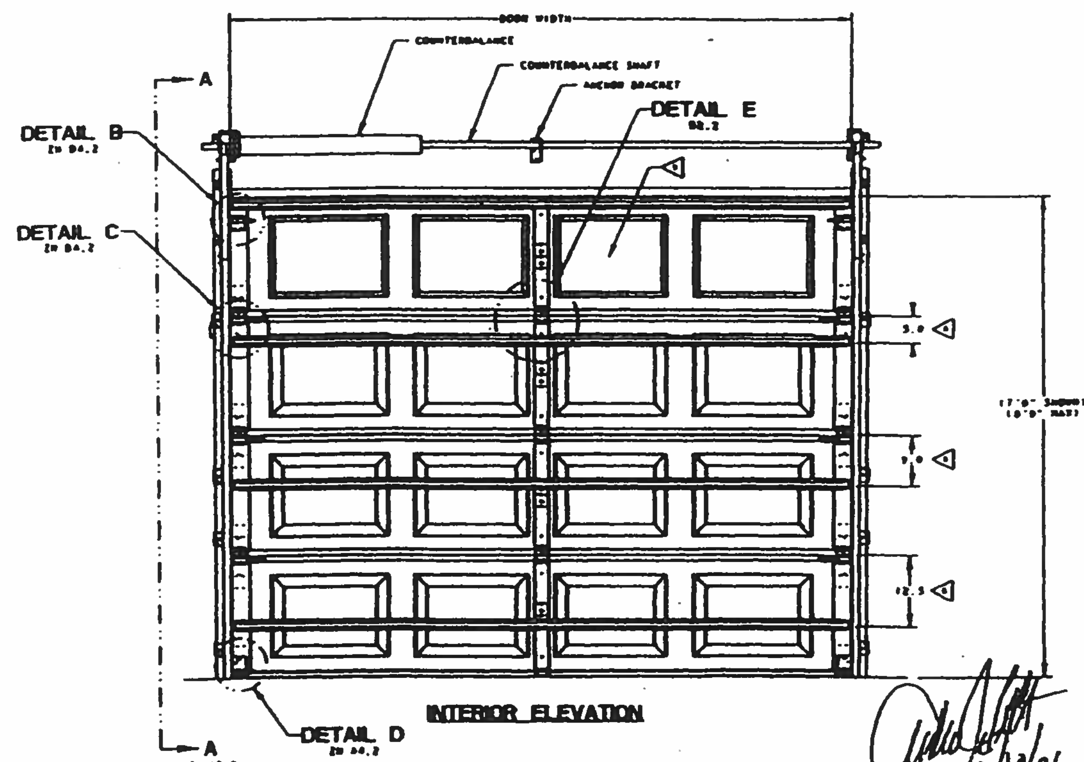
NOTES:
1. TESTED IN ACCORDANCE WITH DASMA 108.
2. FOUR SECTION 7' TALL DOOR SHOWN. 8' DOORS HAVE 5 SECTIONS. SECTION HEIGHTS OF 20.00, 19.00 AND 18.75 ARE AVAILABLE AND MAY BE USED IN COMBINATION TO ACHIEVE VARIOUS DOOR HEIGHTS.
3. EMBOSSMENT PATTERN OF 14.5 X 20.4 SHOWN. ALTERNATE PATTERNS OF 12.5 X 43.4 AND 12.5 X 20.4 MAY BE USED.
4. ARMORTITE/REVOLUTION COUNTERBALANCE SHOWN. TORSION AND EXTENSION COUNTERBALANCE SYSTEMS AVAILABLE. 405964-0002 REQUIRED AT TRACK INTERFACE ON TORSION AND EXTENSION SYSTEMS.
5. USE THIS BRACKET 405964-0002 ON 8' HIGH DOORS ONLY.
6. LOCATE 400050 STRUTS AS SHOWN. VERTICAL PLACEMENT CAN VARY PLUS/MINUS 3 INCHES.
7. USE 609011-0001 AB POINT SCREWS FOR ALL COMPONENT INSTALLATION UNLESS OTHERWISE NOTED.
8. JAMB DETAIL TO BE IN ACCORDANCE WITH DRAWING 409783. JAMB/SCAB BRACKET ATTACHING HARDWARE SHALL BE AS FOLLOWS: 605574-0001 SCREW, LAG 5/16 X 1-3/4 - WOOD JAMB; PAWL LOCK BOLT, 5/16 X 1-1/2 EMBEDMENT - CONCRETE BLOCK

9. WINDOW INSTALLATION ALLOWED. WINDOWS MUST BE INSTALLED IN TOP SECTION.

OVERHEAD DOOR EQUIVALENCY CHART		
OHD DOOR SERIES No.	GENIE DOOR SERIES No.	PAN STEEL THICKNESS
SERIES 100	SERIES GDS300	24 GA
SERIES 100	SERIES GDS300	24 GA
SERIES 201	SERIES GDS200	25 GA
SERIES 200	SERIES GDS300	25 GA



STD TRACK DETAIL
FOR 9' WIDE DOOR



INTERIOR ELEVATION

DOOR WIDTH	CENTER STILE	END STILE	FLD SHAFT BRACKET	STRUTS/SECT	ROLLER	VERT TRK GA	JAMB LOAD
9	1	SINGLE	YES	[illegible]	STL	.049"	99

D-409887

ROOFING INFORMATION

TAMKO
ROOFING PRODUCTS

Application Instructions for

- Glass-Seal
- Glass-Seal AR
- Elite Glass-Seal®
- Elite Glass-Seal® AR

THREE-TAB ASPHALT SHINGLES

THESE ARE THE MANUFACTURER'S APPLICATION INSTRUCTIONS FOR THE ROOFING CONDITIONS DESCRIBED. TAMKO ROOFING PRODUCTS, INC. ASSUMES NO RESPONSIBILITY FOR LEAKS OR OTHER ROOFING DEFECTS RESULTING FROM FAILURE TO FOLLOW THE MANUFACTURER'S INSTRUCTIONS.
THIS PRODUCT IS COVERED BY A LIMITED WARRANTY, THE TERMS OF WHICH ARE PRINTED ON THE WRAPPER.
IN COLD WEATHER (BELOW 40°F), CARE MUST BE TAKEN TO AVOID DAMAGE TO THE EDGES AND CORNERS OF THE SHINGLES.

IMPORTANT: It is not necessary to remove the plastic strip from the back of the shingles.

1. ROOF DECK

These shingles are for application to roof decks capable of receiving and retaining fasteners, and to inclines of not less than 2 in. per foot. For roofs having pitches 2 in. per foot to less than 4 in. per foot, refer to special instructions titled "Low Slope Application". Shingles must be applied properly. TAMKO assumes no responsibility for leaks or defects resulting from improper application, or failure to properly prepare the surface to be roofed over.

NEW ROOF DECK CONSTRUCTION: Roof deck must be smooth, dry and free from warped surfaces. It is recommended that metal drip edges be installed at eaves and rakes.

PLYWOOD: All plywood shall be exterior grade as defined by the American Plywood Association. Plywood shall be a minimum of 3/8 in. thickness and applied in accordance with the recommendations of the American Plywood Association.

SHEATHING BOARDS: Boards shall be well-seasoned tongue-and-groove boards and not over 6 in. nominal width. Boards shall be a 1 in. nominal minimum thickness. Boards shall be properly spaced and nailed.

2. VENTILATION

Inadequate ventilation of attic spaces can cause accumulation of moisture in winter months and a build up of heat in the summer. These conditions can lead to:

1. Vapor Condensation
2. Buckling of shingles due to deck movement.
3. Rotting of wood members.
4. Premature failure of roof.

To insure adequate ventilation and circulation of air, place louvers of sufficient size high in the gable ends and/or install continuous ridge and soffit vents.
FHA minimum property standards require one square foot of net free ventilation area to each 150 square feet of space to be vented, or one square foot per 300 square feet if a vapor barrier is installed on the warm side of the ceiling or if at least one half of the ventilation is provided near the ridge. If the ventilation openings are screened, the total area should be doubled.

IT IS PARTICULARLY IMPORTANT TO PROVIDE ADEQUATE VENTILATION.

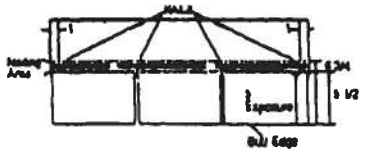
3. FASTENING

NAILS: TAMKO recommends the use of nails as the preferred method of application.
WIND CAUTION: Extreme wind velocities can damage these shingles after application when proper sealing of the shingles does not occur. This can especially be a problem if the shingles are applied in cooler months or in areas on the roof that do not receive direct sunlight. These conditions may impede the sealing of the adhesive strips on the shingles. The inability to seal down may be compounded by prolonged cold weather conditions and/or blowing dust. In these situations, hand sealing of the shingles is recommended. Shingles must also be fastened according to the fastening instructions described below.

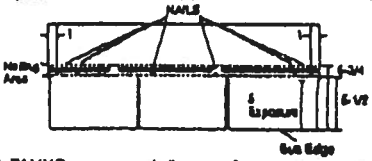
Correct placement of the fasteners is critical to the performance of the shingle. If the fasteners are not placed as shown in the diagram and described below, TAMKO will not be responsible for any shingles blown off or displaced. TAMKO will not be responsible for damage to shingles caused by winds or gusts exceeding gale force. Gale force shall be the standard as defined by the U.S. Weather Bureau.

FASTENING PATTERNS: Fasteners must be placed above or below the factory applied sealant in an area between 5- 1/2" and 6-3/4" from the butt edge of the shingle. Fasteners should be located horizontally according to the diagram below. Do not nail into the sealant. TAMKO recommends nailing below the sealant whenever possible for greater wind resistance.

1) Standard Fastening Pattern. (For use on decks with slopes 2 in. per foot to 21 in. per foot.) One fastener 1 in. back from each end and one 12 in. back from each end of the shingle for a total of 4 fasteners. (See standard fastening pattern illustrated below).



2) Mansard or High Wind Fastening Pattern. (For use on decks with slopes greater than 21 in. per foot.) One fastener 1 in. back from each end and one fastener 10-1/2 in. back from each end and one fastener 13-1/2 in. back from each end for a total of 6 fastener per shingle. (See Mansard fastening pattern illustrated below.)



NAILS: TAMKO recommends the use of nails as the preferred method of application. Standard type roofing nails should be used. Nail shanks should be made of minimum 12-gauge wire, and a minimum head diameter of 3/8 in. Nails should be long enough to penetrate 3/4 in.

(Continued)

(CONTINUED from Pg. 1)

TAMKO ROOFING PRODUCTS

- Glass-Seal
- Glass-Seal AR
- Elite Glass-Seal®
- Elite Glass-Seal® AR

THREE-TAB ASPHALT SHINGLES

into the roof deck. Where the deck is less than 3/4 in. thick, the nails should be long enough to penetrate completely through plywood decking and extend at least 1/8 in. through the roof deck. Drive nail head flush with the shingle surface.

STAPLES: If staples are used in the attaching process, follow the above instructions for placement. All staples must be driven with pneumatic staplers. The staple must meet the following minimum dimensional requirements. Staples must be made from a minimum 16 gauge galvanized wire. Crown width must be at least 15/16 in. (staple crown width is measured outside the legs). Leg length should be a minimum of 1-1/4 in. for new construction and 1-1/2 in. for reroofing thus allowing a minimum deck penetration of 3/4 in. The crown of the staple must be parallel to the length of the shingle. The staple crown should be driven flush with the shingle surface. Staples that are crooked, underdriven or overdriven are considered improperly applied.

CAUTION: DO NOT FASTEN INTO THE FACTORY APPLIED ADHESIVE.

4. UNDERLAYMENT

UNDERLAYMENT: An underlayment consisting of asphalt saturated felt must be applied over the entire deck before the installation of TAMKO shingles. Failure to add underlayment can cause premature failure of the shingles which is not covered by TAMKO's limited warranty. Apply the felt when the deck is dry. On roof decks 4 in. per foot and greater apply the felt parallel to the eaves lapping each course of the felt over the lower course at least 2 in. Where ends join, lap the felt 4 in. If left exposed, the underlayment felt may be adversely affected by moisture and weathering. Laying of the underlayment and the shingle application must be done together.

Products which are acceptable for use as underlayment are:

- TAMKO No. 15 Asphalt Saturated Organic Felt
- A non-perforated asphalt saturated organic felt which meets ASTM: D226, Type I
- Any TAMKO non-perforated asphalt saturated organic felt

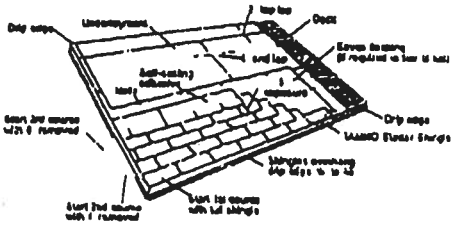
In areas where ice builds up along the eaves or a back-up of water from frozen or clogged gutters is a potential problem, TAMKO's Moisture Guard Plus® waterproofing underlayment (or any specialty eaves flashing product) may be applied to eaves, rakes, ridges, valleys, around chimneys, skylights or dormers to help prevent water damage. Contact TAMKO's Technical Services Department for more information.

TAMKO does not recommend the use of any substitute products as shingle underlayment.

5. APPLICATION INSTRUCTIONS

STARTER COURSE: A starter course may consist of TAMKO Shingle Starter, self-sealing type shingles or a 9 inch wide strip of mineral surface roll roofing. If self-sealing shingles are used, remove the exposed tab portion and install with the factory applied adhesive adjacent to the eaves. Attach the starter course with approved fasteners along a line parallel to and 3 in. to 4 in. above the eaves edge. The starter course should overhang both the eaves and rake edges 1/4 in. to 3/8 in. If a roll roofing is used, seal down the shingles in the first course by applying adhesive cement in four spots equally spaced to the surface of the starter strip and press the shingle down on the spots of cement. Plastic cement should be used sparingly, as excessive amounts may cause blistering.

SHINGLE APPLICATION: There are three different offset methods for applying strip shingles: the 4-inch method, the 5-inch method and the 6-inch method. By removing different lengths from the first shingle, cutouts in one course of shingles do not line up directly with those of the course below. It is recommended that the shingles be laid according to one of these methods consistent with procedures outlined in ARMA's Residential Asphalt Roofing Manual. This panel will feature the 4-inch method. For information regarding the other methods, please refer to the ARMA Residential Asphalt Roofing Manual.
CAUTION: Never use an alignment system where shingle joints are closer than 4 in. to one another.



6. LOW SLOPE APPLICATION

On pitches 2 in. per foot to 4 in. per foot cover the deck with two layers of asphalt saturated felt. Begin by applying the felt in a 19 in. wide strip along the eaves and overhanging the drip edge by 1/4 in. to 3/4 in. Place a full 36 in. wide sheet over the 19 in. wide starter piece, completely overlapping it. All succeeding courses will be positioned to overlap the preceding course by 19 in. If winter temperatures average 25°F or less, thoroughly cement the laps to each other with plastic cement from eaves and rakes to a point of at least 24 in. inside the interior wall line of the building. As an alternative, TAMKO's Moisture Guard Plus® self-adhering waterproofing underlayment may be used in lieu of the cemented laps.

7. MANSARD ROOF OR STEEP SLOPE ROOF

If the slope exceeds 21 in. per foot (60°), each shingle must be sealed

(Continued)

(CONTINUED from Pg. 2)

TAMKO ROOFING PRODUCTS

• Glass-Seal • Elite Glass-Seal®
• Glass-Seal AR • Elite Glass-Seal® AR

THREE-TAB ASPHALT SHINGLES

with quick setting asphalt adhesive cement immediately upon installation. Spots of cement must be equivalent in size to a 3.25 piece and applied to shingles with a 5 in. exposure, use 6 fasteners per shingle. See Section 3 for the Mansard Fastening Pattern.

9. RE-ROOFING

Before re-roofing, be certain to inspect the roof decks. All plywood shall meet the requirements listed in Section 1.

Nail down or remove curled or broken shingles from the existing roof. Replace all missing shingles with new ones to provide a smooth base. Shingles that are buckled usually indicate warped decking or protruding nails. Hammer down all protruding nails or remove them and refasten in a new location. Remove all drip edge metal and replace with new.

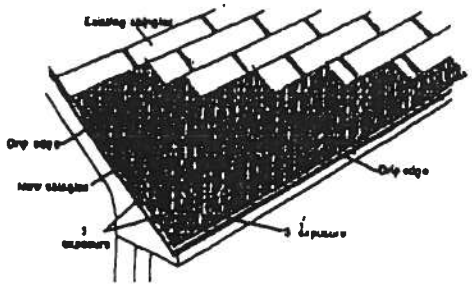
If re-roofing over an existing roof where new flashing is required to protect against ice dams (freeze/thaw cycle of water and/or the backup of water in frozen or clogged gutters), remove the old roofing to a point at least 24 in. beyond the interior wall line and apply TAMKO's Moisture Guard Plus® waterproofing underlayment. Contact TAMKO's Technical Services Department for more information.

The nesting procedure described below is the preferred method for re-roofing over square tab strip shingles with a 5 in. exposure.

Starter Course: Begin by using TAMKO Shingle Starter or by cutting shingles into 5 x 36 inch strips. This is done by removing the 5 in. tabs from the bottom and approximately 2 in. from the top of the shingles so that the remaining portion is the same width as the exposure of the old shingles. Apply the starter piece so that the self-sealing adhesive lies along the eaves and is even with the existing roof. The starter strip should be wide enough to overhang the eaves and carry water into the gutter. Remove 3 in. from the length of the first starter shingle to ensure that the joints from the old roof do not align with the new.

First Course: Cut off approximately 2 in. from the bottom edge of the shingles so that the shingles fit beneath the existing third course and align with the edge of the starter strip. Start the first course with a full 36 in. long shingle and fasten according to the instructions printed in Section 3.

Second and Succeeding Courses: According to the cut-out application method you choose to use, remove the appropriate length from the rake end of the first shingle in each succeeding course. Place the top edge of the new shingle against the butt edge of the old shingles in the courses above. The full width shingle used on the second course will reduce the exposure of the first course to 3 in. The remaining courses will automatically have a 5 in. exposure.



8. VALLEY APPLICATION

Over the shingle underlayment, center a 36 in. wide sheet of TAMKO Nail-Fast® or a minimum 50 lb. roll roofing in the valley. Nail the felt only where necessary to hold it in place and then only nail the outside edges.

IMPORTANT: PRIOR TO INSTALLATION WARM SHINGLES TO PREVENT DAMAGE WHICH CAN OCCUR WHILE BENDING SHINGLES TO FORM VALLEY.

- Apply the first course of shingles along the eaves of one of the intersecting roof planes and across the valley.

Note: For proper flow of water over the trimmed shingle, always start applying the shingles on the roof plane that has the lower slope or less height.

- Extend the end shingle at least 12 in. onto the adjoining roof. Apply succeeding courses in the same manner, extending them across the valley and onto the adjoining roof.
- Do not trim if the shingle length exceeds 12 in. Lengths should vary.
- Press the shingles tightly into the valley.
- Use normal shingle fastening methods.

Note: No fastener should be within 6 in. of the valley centerline, and two fasteners should be placed at the end of each shingle crossing the valley.

- To the adjoining roof plane, apply one row of shingles extending it over previously applied shingles and trim a minimum of 2 in. back from the centerline of the valley.

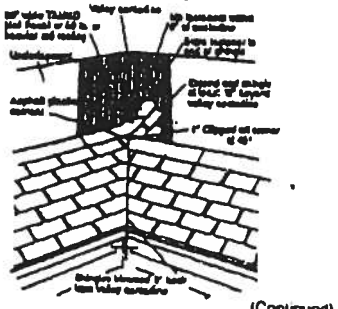
Note: For a neater installation, snap a chalkline over the shingles for guidance.

- Clip the upper corner of each shingle at a 45-degree angle and embed the end of the shingle in a 3 in. wide strip of asphalt plastic cement. This will prevent water from penetrating between the courses by directing it into the valley.

- *CAUTION: Adhesive must be applied in smooth, flat, even layers.*

Excessive use of adhesive will cause blistering to this product.

TAMKO assumes no responsibility for blistering.



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(CONTINUED from Pg. 3)

TAMKO
ROOFING PRODUCTS

• Glass-Seal • Elite Glass-Seal®
• Glass-Seal AR • Elite Glass-Seal® AR

THREE-TAB ASPHALT SHINGLES

FOR ALTERNATE VALLEY APPLICATION METHODS, PLEASE CONTACT TAMKO'S TECHNICAL SERVICES DEPARTMENT.

16. HIP AND RIDGE FASTENING DETAIL
Apply the shingles with a 5 in. exposure beginning at the bottom of the hip or from the end of the ridge opposite the direction of the prevailing winds. Secure each shingle with one fastener 5-1/2 in. back from the exposed end and 1 in. up from the edge. Do not nail directly into the sealant.

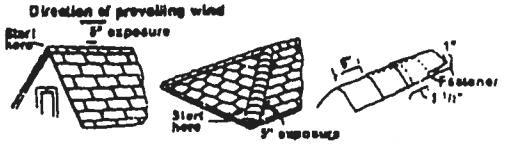
TAMKO recommends the use of TAMKO Hip & Ridge shingle products. Where matching colors are available, it is acceptable to use TAMKO's Glass-Seal or Elite Glass-Seal shingles cut down to 12 in. pieces.

NOTE: AR type shingle products should be used as Hip & Ridge on Glass-Seal AR and ERe Glass-Seal AR shingles.

Fasteners should be 1/4 in. longer than the one used for shingles.

IMPORTANT: PRIOR TO INSTALLATION, CARE NEEDS TO BE TAKEN TO PREVENT DAMAGE WHICH CAN OCCUR WHILE BENDING SHINGLES IN COOL WEATHER.

THESE ARE THE MANUFACTURER'S APPLICATION INSTRUCTIONS FOR THE ROOFING CONDITIONS DESCRIBED. TAMKO ROOFING PRODUCTS, INC. ASSUMES NO RESPONSIBILITY FOR LEAKS OR OTHER ROOFING DEFECTS RESULTING FROM FAILURE TO FOLLOW THE MANUFACTURER'S INSTRUCTIONS.



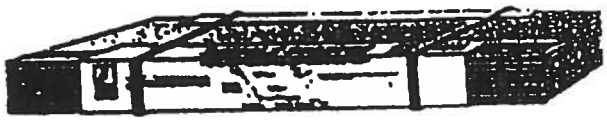
THIS PRODUCT IS COVERED BY A LIMITED WARRANTY. THE TERMS OF WHICH ARE PRINTED ON THE WRAPPER.

IMPORTANT - READ CAREFULLY BEFORE OPENING BUNDLE
In this paragraph "You" and Your" refer to the installer of the shingles and the owner of the building on which these shingles will be installed. This is a legally binding agreement between You and TAMKO Roofing Products, Inc. ("TAMKO"). By opening this bundle You agree: (a) to install the shingles strictly in accordance with the instructions printed on this wrapper; or (b) that shingles which are not installed strictly in accordance with the instructions printed on this wrapper are sold "AS IS" and are not covered by the limited warranty that is also printed on this wrapper, or any other warranty, including, but not limited to (except where prohibited by law) implied warranties of MERCHANTABILITY and FITNESS FOR USE.

TAMKO®

PRODUCT DA

SHINGLE STARTER



Manufactured in Joplin, MO., Phillipsburg, KS., Frederick, MD., & Tuscaloosa, AL.

TAMKO® SHINGLE STARTER Universal Starter Course Shingles are factory cut starter strips made of tough organic mat saturated with asphalt and coated on both sides with coating grade asphalt and surfaced with ceramic granules for protection from ultraviolet degradation.

USES

For application to the eaves and rakes, prior to shingle application. Allows for proper alignment of the courses of shingles.

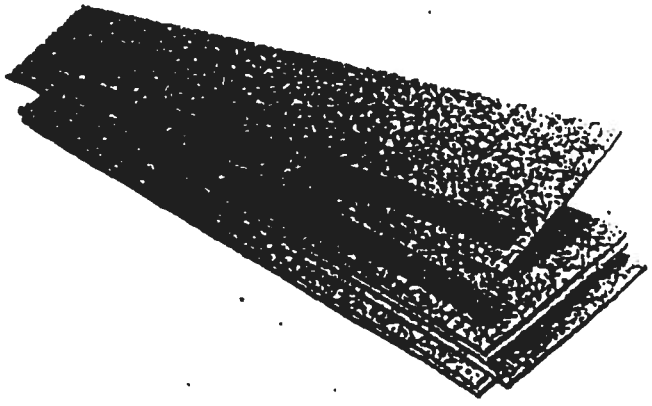
ADVANTAGES

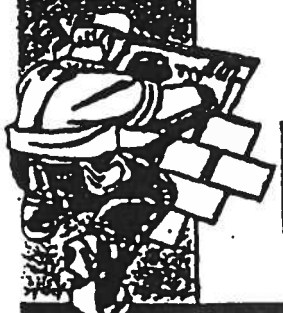
- Pre-cut, thereby reduces the labor and eliminates the difficulty of field cutting other materials
- Cuts Waste
- Straighter first course runs
- Faster installation time
- Sealant strip to seal first course of shingles. Eliminates the need for plastic cement.

PRODUCT DATA*

Shingle Size:	7" X 36"
Shingles per bundle:	34
Coverage per bundle (lineal feet)	102

*All values stated as nominal





CAUTION: The National Institute for Occupational Safety and Health (NIOSH) has concluded that fumes of heated asphalt are a potential occupational carcinogen. Do not heat or burn this product.

TAMKO
ROOFING PRODUCTS

TAMKO® is a registered trademark of TAMKO Roofing Products, Inc.

Visit our Web Site at www.tamko.com

Central District	220 West 4th St., Joplin, MO	64801	800-641-
Northeast District	4500 Tamko Dr., Frederick, MD	21701	800-368-
Southeast District	2300 35th St., Tuscaloosa, AL	35401	800-228-
Southwest District	7910 S. Central Exp., Dallas, TX	75216	800-443-
Western District	6300 East 43rd Ave., Denver, CO	80216	800-530-

INTERIOR WALL INSULATION INFORMATION

R-Matte® Plus-3

Sheathing Insulation

07212/RMRP

MANUFACTURER

Rmax, Inc.
13524 Welch Road; Dallas, Texas 75244-5291
Phone - 972-387-4500 800-627-0690 (Central)
800-845-4455 (Eastern) 800-762-8462 (Western)
Email: rmax@rmaxinc.com
Web Site: http://www.rmaxinc.com

PRODUCT DESCRIPTION

R-Matte® Plus-3 is a rigid foam plastic thermal insulation board composed of polyisocyanurate foam bonded to a durable white-matte non-glare aluminum facer and a reflective reinforced aluminum facer.

R-Matte® Plus-3 utilizes a new and environmentally friendly blowing agent. This sheathing insulation is suitable for use in wall applications in new residential, commercial, agricultural and industrial buildings and in thermal retrofit construction within existing buildings.

R-Matte® Plus-3 is available in standard four (4) foot wide panels. Standard panel lengths are eight (8) and nine (9) feet. Custom length panels are available for special orders. See "Thermal Properties" for standard thicknesses and thermal resistance values of R-Matte® Plus-3.

R-Matte® Plus-3 is shipped in bundles that are approximately 48 inches high and wrapped in plastic for easy handling.

NOTE: All Rmax products must be tarped, placed on skids, and kept dry before and throughout construction.

Technical Data

TYPICAL PHYSICAL PROPERTIES:		
Property	Test Method	Results
Density, Overall, Nominal	ASTM D1622	2.0 pcf
Compressive Strength	ASTM D1621	20 psi (Avg.)
Flame Spread, Core	ASTM E84	35 or less
Smoke Developed	ASTM E84	40 - 110
Water Vapor Transmission	ASTM E96	< 1 perm
Water Absorption	ASTM C209	< 1% Vol.
Dimensional Stability	ASTM D2126 7 days, 158°F, 95% rh	<2% Linear Change
Service Temperatures		-40°F to +250°F
Note: Physical Properties shown are based on data obtained under controlled conditions and are subject to normal manufacturing tolerances. Flame spread numbers are shown for comparison purposes only and are not intended to represent the performance of R-Matte® Plus-3 and related components under actual fire conditions.		

APPLICABLE STANDARDS

R-Matte® Plus-3 is manufactured to meet the physical property requirements of Product Specification ASTM C1289, Type I.

R-Matte® Plus-3 is accepted as a nonstructural insulative sheathing board by the following major model building codes: National Building Code (BOCA), Section 2603; Standard Building Code (SBCCI), Section 2603; Uniform Building Code (ICBO), Section 2602.

APPLICATION / INSTALLATION

Applications - This product is designed to be covered with siding materials of wood, wood-based products, hardboard, aluminum, vinyl, brick or stucco veneers. The white-matte finished (non-glare) side of this sheathing panel is installed facing to the outside of the wall structure when the exterior siding will be either wood, wood-based products, hardboard, aluminum or vinyl sidings. The reflective aluminum side of the sheathing panel is installed to the outside of the wall when the exterior finish will be either brick or stucco.

Stud Wall Construction - R-Matte® Plus-3 is applied to the exterior face of wood or metal studs to cover all studs, sills, plates and header constructions in order to provide insulation over details not normally covered by insulation products. R-Matte® Plus-3 may be secured to the studs with bugle-head screws, galvanized roofing nails, or common nails driven through cap washers. The interior of the stud wall system should be protected with a suitable vapor retarder.

R-Matte® Plus-3 may be applied to the interior face of studs, metal or wood, to cover the interior face of these framing members. R-Matte® Plus-3 may be secured with bugle-head screws, galvanized roofing nails, or construction adhesives. The interior of the stud wall system should be protected with a suitable vapor retarder and thermal barrier.

Cavity Wall Construction - R-Matte® Plus-3 is secured to the dry face of the masonry block wall with a high grade adhesive. R-Matte® Plus-3 can be cut by simple methods to fit between masonry joint reinforcements placed to tie the brick veneer to the concrete block back-up. R-Matte® Plus-3 is an excellent cavity insulation product fitting between the masonry block and finished brick veneer of any residential or commercial product.

Masonry Wall Construction - R-Matte® Plus-3 is applied to either the exterior face or interior face of concrete or concrete masonry walls to provide an insulation layer over the entire surface. R-Matte® Plus-3 may be secured to the inside face of a concrete or concrete masonry wall, either over or under the furring members, and covered with a minimum 1/2 inch gypsum wallboard interior finish. Adhesives may be used to hold the R-Matte® Plus-3 in place against the wall temporarily. However, permanent attachment of the R-Matte® Plus-3, furring, or gypsum wallboard with adhesives is not acceptable. The gypsum wallboard must be secured with suitable screws or nails.

Re-Siding Construction - R-Matte® Plus-3 is applied over existing sound and solid siding. It is then covered with a suitable new siding of aluminum, vinyl, wood or wood fiber based products. The R-Matte® Plus-3 is secured with galvanized nails of sufficient length to penetrate the old sidings and sheathings below by at least one inch into the existing wall studs.

Exterior Stucco Construction - R-Matte® Plus-3 may be used as the insulative sheathing under hard coat stucco finishes. First, cover the R-Matte® Plus-3 with a suitable separation layer such as an organic or inorganic felt. Then, attach conventional metal wire lath and expansion joints with appropriate fasteners as dictated by the local building code. R-Matte® Plus-3 may be secured to the studs with bugle-head screws, galvanized roofing nails, or common nails driven through cap washers. The interior of the stud wall system should be protected with a suitable vapor retarder. Rmax does not recommend the direct attachment of stucco, portland cement or polymer-modified types, directly to the face of the insulation product. Consult stucco manufacturers for details.

WARRANTY

See "Sales Policy" for warranty conditions. Rmax does not assume any responsibility or liability for the performance of any products other than those manufactured by Rmax.

AVAILABILITY

Rmatte® Plus-3 is available through an extensive distribution network. Contact Rmax Sales for product availability, pricing information, and the nearest distribution center.

WARNING

DO NOT leave R-Matte® Plus-3 exposed. Polyisocyanurate foam is an organic material which will burn when exposed to an ignition source of sufficient heat and intensity, and may contribute to flames spreading. Installations utilizing Rmax R-Matte® Plus-3 must be fully protected on the interior side of walls and roofs by a minimum of 1/2 inch gypsum board or equivalent. Masonry or concrete that is a minimum of one-inch thick or plywood that is a minimum of one-inch nominal thickness is recognized as a suitable thermal barrier. Consult the Local Building Official for specific governing codes and requirements.

LIMITATIONS

R-Matte® Plus-3 is not recommended, nor warranted, for use as a commercial roofing insulation for use directly under membrane systems. See Rmax, Inc. for suitable commercial roofing insulation products.

R-Matte® Plus-3 is not a structural panel. Stud walls insulated with R-Matte® Plus-3 must be properly braced for lateral loads according to the requirements of the local building codes.

THERMAL PROPERTIES/PRODUCT DATA "R" means resistance to heat flow. The higher the R-value, the greater the insulating power

Nominal Thickness	Thermal[1] R-Value	Bundle Data (48" x 96")		Truckload Data (48" x 96")	
		Pieces	Sq. Ft.	Pieces	Sq. Ft.
0.5"	3.2	96	3,072	2,304	73,728
0.625"	4.0	76	2,432	1,824	58,368
0.75"	5.0	60	1,920	1,440	46,080
1.0"	6.4	48	1,536	1,152	36,864

[1]Thermal values are determined by using ASTM C518 test method at 75°F mean temperature on material conditioned according to PIMA Technical Bulletin No. 101.

LINTEL
INFORMATION

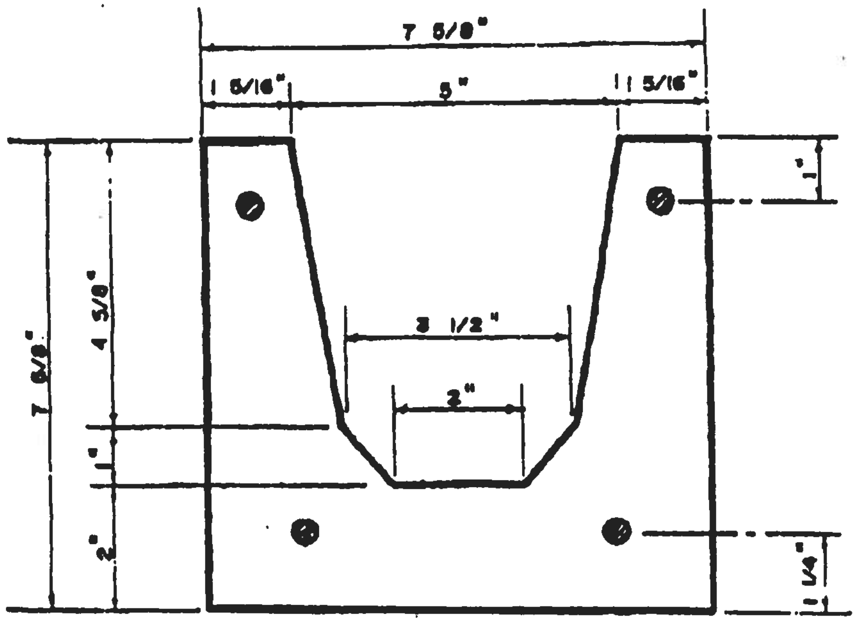
DOORWAY HEADER
ROOF TRUSS SPAN TABLE

DOOR SIZE	TYPE	EMPTY	FILLED	FILLED + BEAM
2'-00"	A	66'-00"+	66'-00"+	66'-00"+
2'-04"	A	63'-09"	66'-00"+	66'-00"+
2'-06"	A	57'-10"	66'-00"+	66'-00"+
2'-08"	A	52'-08"	66'-00"+	66'-00"+
3'-00"	A	44'-03"	66'-00"+	66'-00"+
4'-00"	A	28'-04"	66'-00"+	66'-00"+
5'-00"	B	33'-00"	61'-00"	66'-00"+
6'-00"	C	24'-02"	51'-03"	66'-00"+

SPAN CARRIED is the total length of truss (including overhangs), half of which can be supported by the designated header. Includes live load of 20 psf.

FILLED = Header filled with 3000 psi concrete with 1 - #5 rebar

FILLED + BEAM = Acting as composite beam with an 8" perimeter beam 1 - #5 rebar in lintel, 1 - #5 rebar in perimeter beam



Lintel Concrete Strength = 4000 psi
Fill Concrete Strength = 3000 psi
Steel Strength = Grade 60 (#6), Grade 40 (#2 - #5)

TYPE	TOP BARS	BOTTOM BARS
A	NONE	2 - #3
B	2 - #2	2 - #4
C	2 - #3	2 - #4
D	2 - #3	2 - #5
E	2 - #4	2 - #6