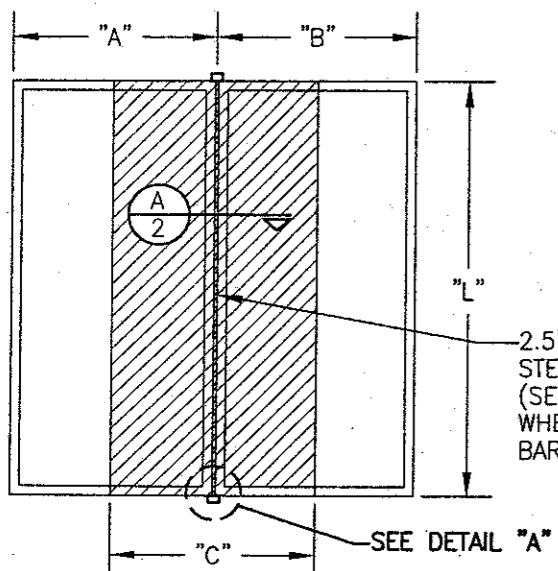


VERTICAL MULLION;
MULTIPLE WINDOWS

HORIZONTAL MULLION;
MULTIPLE WINDOWS



VERTICAL/HORIZONTAL MULLION;
SINGLE WINDOW EACH SIDE

"A" = WINDOW WIDTH
 "B" = WINDOW WIDTH
 $"C" = \frac{A + B}{2}$
 "L" = MULLION LENGTH

2.5" OR 3" X 5/16"
 STEEL BAR MULLION
 (SEE LOAD TABLES
 WHEN CHOOSING
 BAR SIZE).

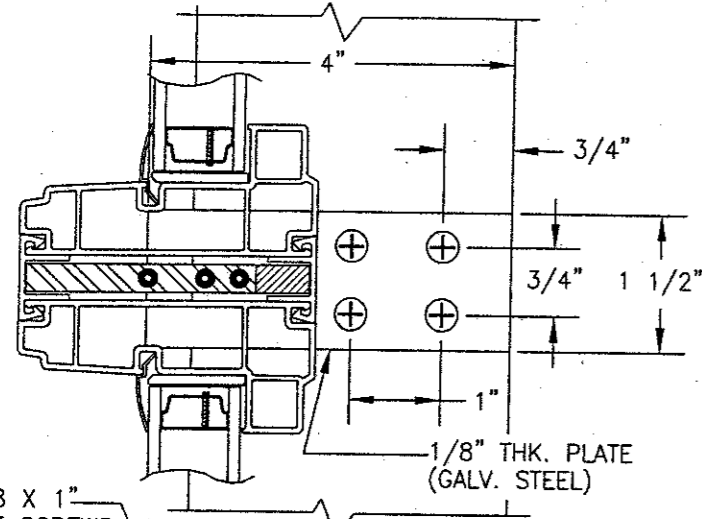
- NOTES:**
1. THESE MULLIONS ARE ACCEPTABLE WITH ALL HURD MILLWORK VINYL WINDOW PRODUCTS.
 2. MULLION STEEL MUST BE MIN $F_y = 36$ ksi.
 3. METAL CLIP STEEL MUST BE MIN. $F_y = 33$ ksi.
 4. ANY COMBINATION OF WINDOWS ARE ACCEPTABLE PROVIDING THE ALLOWABLE LOAD ON THE MULLION IS ACCEPTABLE FOR THE JOB CONDITION OF THE MULLION (LENGTH & LOAD WIDTH "C").
 5. UP TO 4 ROWS OF WINDOWS MAY BE MULLED HORIZONTALLY OR VERTICALLY IN ONE OPENING. IF MULLED VERTICALLY, THE MANUFACTURER/INSTALLER MUST INSURE THAT THE DEAD WEIGHT OF THE WINDOWS ABOVE DO NOT CAUSE ANY FAILURE TO THOSE BELOW. IF REQUIRED TO INSURE NO DEAD WEIGHT FAILURE OR FRAME SAG, A STRUCTURAL MULLION SHALL BE PLACED BETWEEN HORIZONTAL ROWS OF WINDOWS TO CARRY THE DEAD LOAD OF THE WINDOWS AND SHALL BE DESIGNED BY OTHERS.

ALLOWABLE DESIGN PRESSURE TABLE

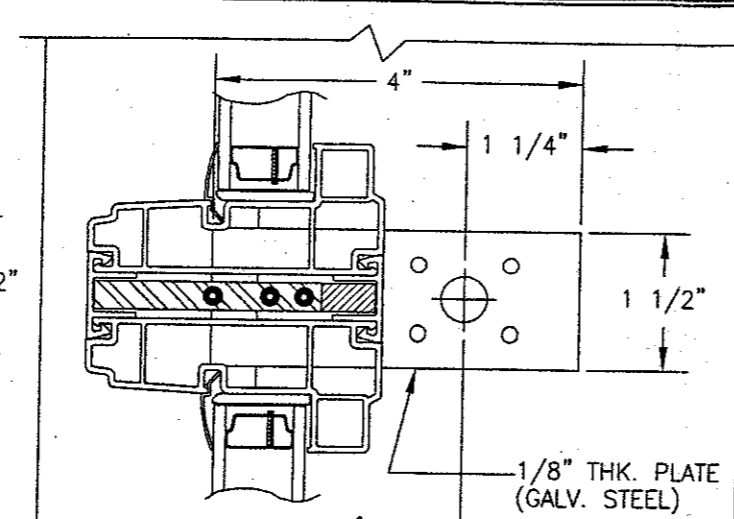
MULLION LENGTH "L" (IN.)	LOAD WIDTH "C" (IN.)	(1) ALLOWABLE DESIGN PRESSURE		MULLION LENGTH "L" (IN.)	LOAD WIDTH "C" (IN.)	(1) ALLOWABLE DESIGN PRESSURE	
		2.5" MULL BAR (PSF)	3" MULL BAR (PSF)			2.5" MULL BAR (PSF)	3" MULL BAR (PSF)
48	60	64.0	64.0	84	60	-	35.2
	54	71.1	71.1		54	22.7	39.1
	48	80.0	80.0		48	25.5	44.0
54	60	56.9	56.9		42	29.1	50.3
	54	63.2	63.2		36	34.0	58.7
	48	71.1	71.1		30	40.8	70.5
60	42	80.0	80.0		24	51.0	80.0
	60	49.9	51.2		18	68.0	80.0
	54	55.4	56.9		90	60	-
	48	62.3	64.0	54		-	31.8
42	71.2	73.1	48	20.7		35.8	
36	80.0	85.3	42	23.7		40.9	
66	60	41.2	46.5	36		27.6	47.7
	54	45.8	51.7	30		33.2	57.3
	48	51.5	58.2	24		41.4	71.6
	42	58.9	66.5	18		55.3	80.0
72	30	80.0	93.1	96		60	-
	60	32.4	42.7		54	-	26.2
	54	36.0	47.4		48	-	29.5
	48	40.5	53.3		42	-	33.7
	42	46.2	61.0		36	22.8	39.3
	36	54.0	71.1		30	27.3	47.2
78	30	64.7	80.0		24	34.1	59.0
	24	80.0	80.0		18	45.5	78.7
	60	25.5	39.4		(1) PRESSURES APPLY TO POSITIVE & NEGATIVE DIRECTIONS.		
	54	28.3	43.8				
	48	31.8	49.2				
	42	36.4	56.3				
36	42.4	65.6					
30	50.9	78.8					
84	24	63.7	80.0	(1) PRESSURES APPLY TO POSITIVE & NEGATIVE DIRECTIONS.			
	18	80.0	80.0				
	18	80.0	80.0				

DRAWN BY: W.W.S.	CHECKED BY: W.W.S.
PLOT: 1=2	DATE: 06/05/02
DATE	BY
REVISION DESCRIPTION	
NO.	
VINYL WINDOW STEEL BAR MULLION	
MANUFACTURER HURD MILLWORK CO., INC. 575 S. WHELEN AVE. MEDFORD, WI 54451 800-433-4873	
CONSULTANTS W. W. SCHAEFER ENGINEERING & CONSULTING, P.A. 600 SANDTREE DRIVE, SUITE 203B PALM BEACH GARDENS, FL 33403 PHONE: 561-775-4902 FAX: 561-775-4903	
DRAWING TITLE	
CERTIFICATION JUL 19 2002 WARREN W. SCHAEFER, P.E. P.E. NO. 44135	
DRAWING NO. 1110	REV.
SHEET NO. 1	OF 2

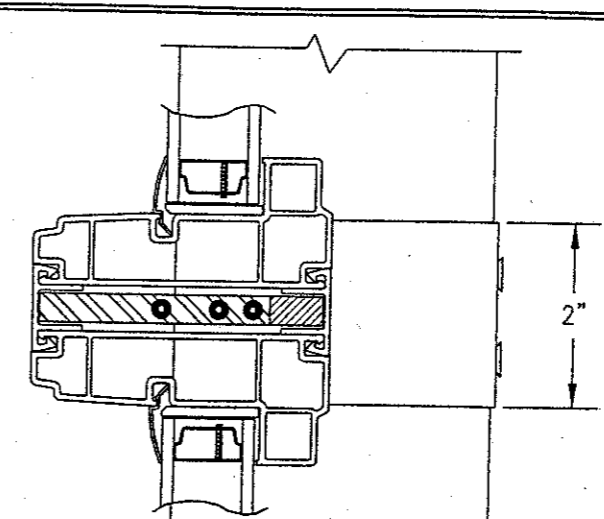
FIXED WINDOW FRAMES ARE SHOWN IN THESE DETAILS; OTHER VINYL WINDOW PRODUCTS MULLION CONDITIONS ARE SIMILAR.



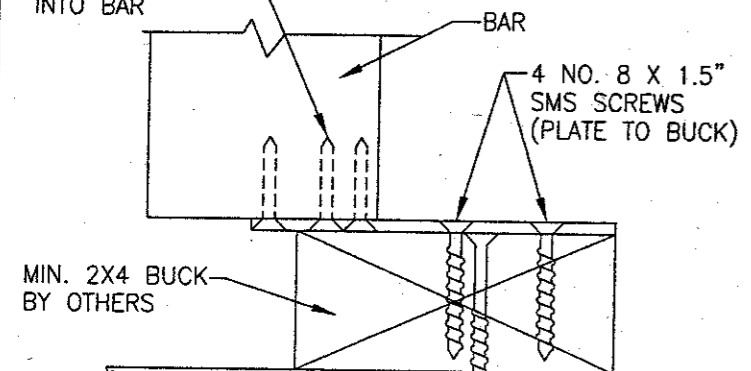
3 NO. 8 X 1" MACHINE SCREWS INTO BAR



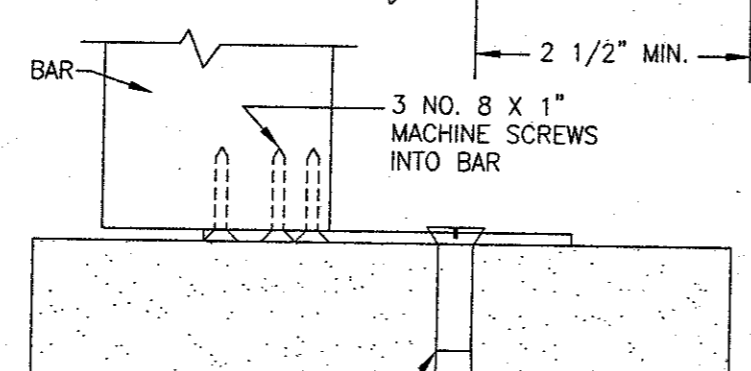
1/8" THK. PLATE (GALV. STEEL)



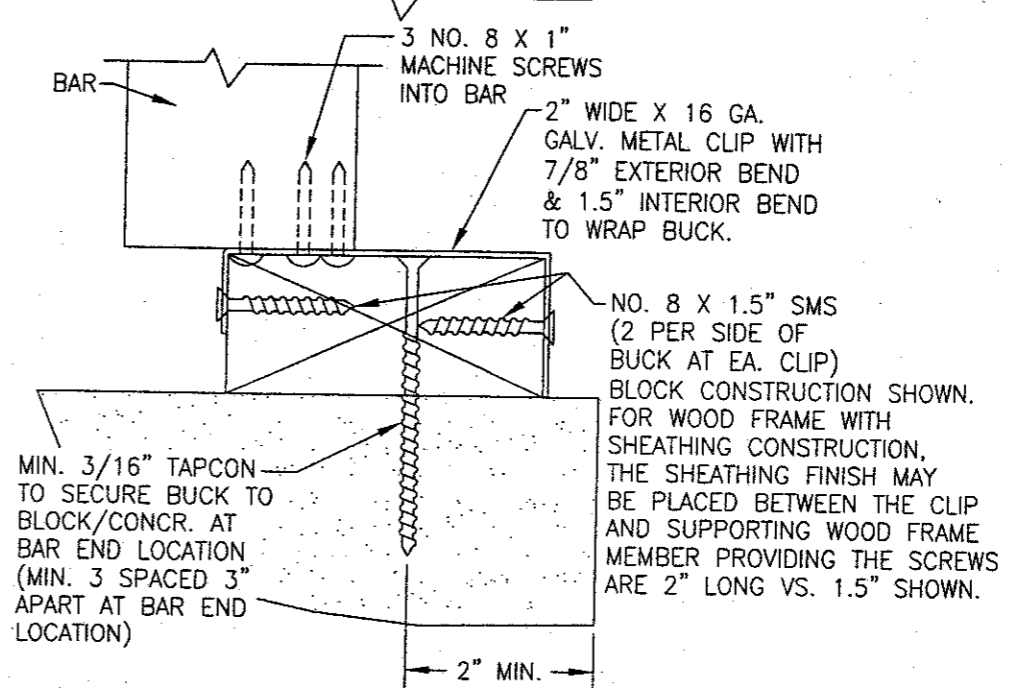
3 NO. 8 X 1" MACHINE SCREWS INTO BAR
2" WIDE X 16 GA. GALV. METAL CLIP WITH 7/8" EXTERIOR BEND & 1.5" INTERIOR BEND TO WRAP BUCK.



DETAIL "A"
(FLAT CLIP TO WOOD)

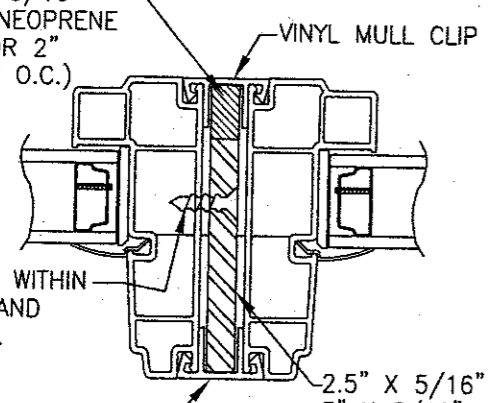


DETAIL "A"
(FLAT CLIP TO BLOCK/CONCR.)



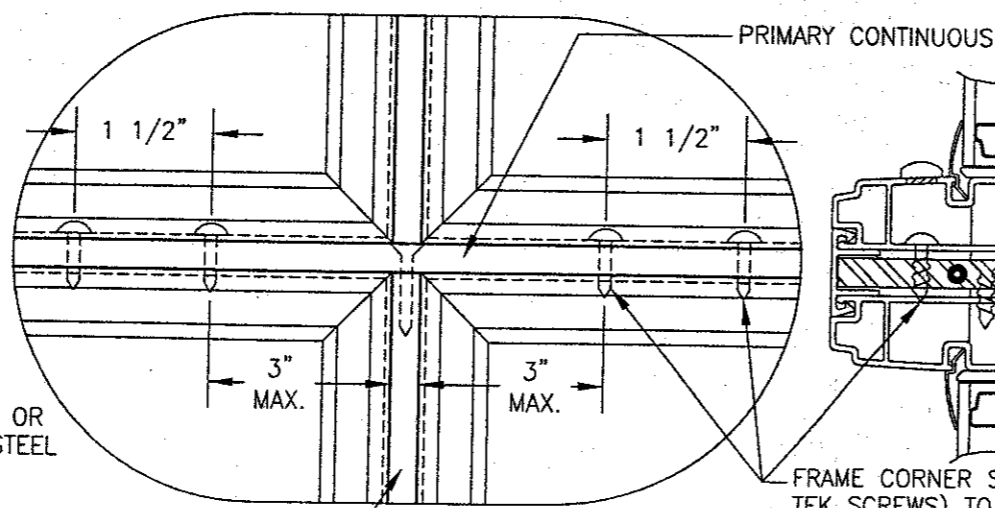
DETAIL "A"
(BENT CLIP TO WOOD)

FILL VOID WITH 5/16" PVC OR RIGID NEOPRENE (CONTINUOUS OR 2" BLOCKS AT 16" O.C.)

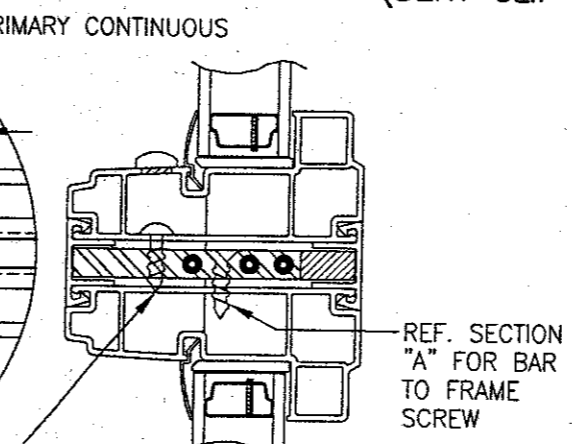


SECTION
SCALE: 1/2 FULL

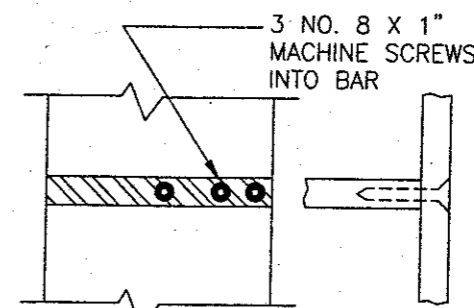
FIXED WINDOW FRAME SHOWN; SIMILAR FOR ALL OTHER WINDOWS.



DETAIL "B"
(BAR TO BAR "T" CONNECTION FROM TWO SIDES)



FRAME CORNER SCREWS (NO. 8 X 3/4" TEK SCREWS) TO BE USED WHEN BAR TO BAR DIRECT CONNECTION CAN NOT BE MADE. ONE (1) PER SIDE FOR SECONDARY MULLION SPANS 54" & LESS; 2 PER SIDE FOR SECONDARY MULLION SPANS GREATER THAN 54".



DETAIL "B"
(BAR TO BAR "T" CONNECTION FROM ONE SIDE)

NOTE: MAY OPTION TO USE OTHER DETAIL "B" CONNECTION IN LIEU OF THIS DIRECT CONNECTION.

DRAWING BY: W.W.S.		CHECKED BY: W.W.S.	
PLOT: 1=2		DATE: 06/05/02	
NO.	REVISION DESCRIPTION	BY	DATE
VINYL WINDOW STEEL BAR MULLION			
CONSULTANTS W. W. SCHAEFER ENGINEERING & CONSULTING, P.A. 600 SANDTREE DRIVE, SUITE 203B PALM BEACH GARDENS, FL 33403 PHONE: 561-775-4902 FAX: 561-775-4903		MANUFACTURER HURD MILLWORK CO., INC. 575 S. WHELEN AVE. MEDFORD, WI 54451 800-433-4873	
CERTIFICATION			
JUL 19 2002			
DRAWING NO. 1110		REV.	
SHEET NO. 2 OF 2			



HURD MILLWORK COMPANY – MULLION EVALUATIONS

Evaluations based on structural analyses and mullions tested as individual units under ATI project 06-30311.01

Table of maximum allowable individual window widths of mullied windows in twins and triples, based on mullion strength only, with steel mullion stiffeners, a flat bar 5/16" thick by 2-1/2" wide.

Window Height	Allow. Design Wind Press. 55 psf	Allow. Design Wind Press. 47 psf	Allow. Design Wind Press. 40 psf	Allow. Design Wind Press. 30 psf	Allow. Design Wind Press. 20 psf	Number Of #8 Screws Required In Each Mullion End Clip Leg
8' 0"	1' 3"	1' 6"	1' 9"	2' 4"		2
7' 0" total in triple with transom					2' 8"	2
7' 0"	1' 11"	2' 2-1/2"	2' 7-1/2"	3' 6"		2
6' 0"	3' 0"	3' 6-1/2"	4' 2"	5' 6-1/2"		3
5' 0"	4' 6"	5' 3"	6' 2"	8' 3"		4
4' 0"	7' 1"	8' 3-1/2"	9' 8-1/2"	12' 11-1/2"		5

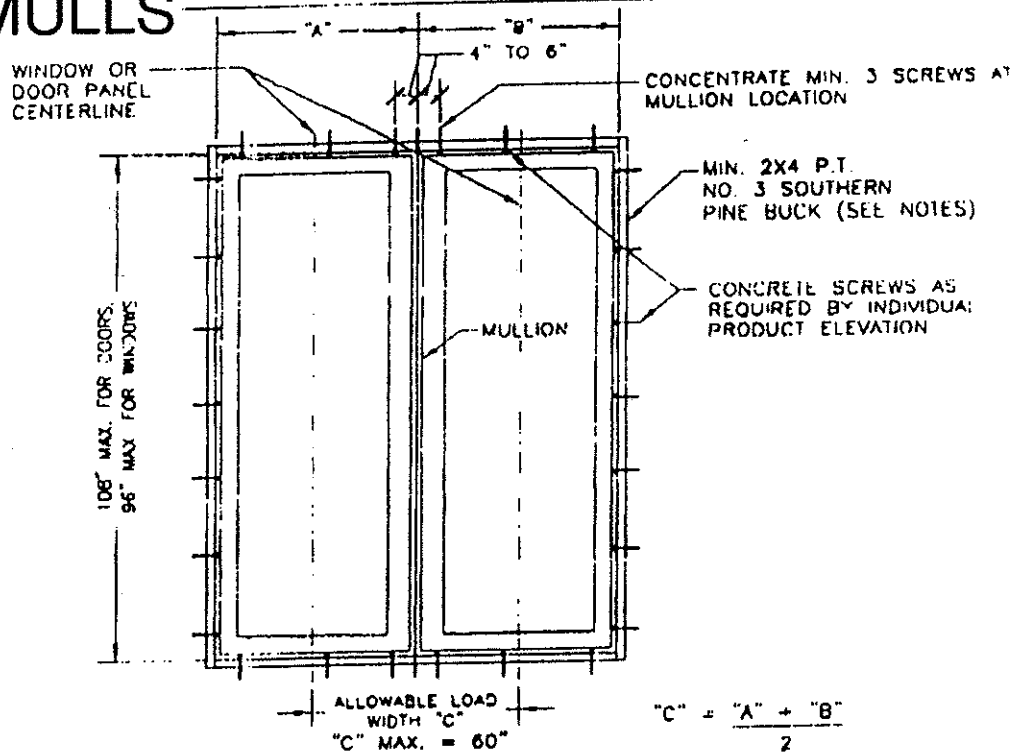
W. W. SCHAEFER ENGINEERING & CONSULTING, P.A.
600 SANDTREE DRIVE; SUITE 203B
PALM BEACH GARDENS, FL 33403

STANDARD BUCKING DETAILS FOR AREAS WITH MAXIMUM REQUIRED PRESSURE ON OPENING OF +/-37 PSF

NOTES:

1. CONCRETE SCREWS MAY BE HARDENED STEEL OR STAINLESS STEEL ITW RAMSET REDHEAD TAPCONS, POWERS RAWL TAPPERS, OR MILTI KWIK-CON II.
2. BUCKING MUST BE CONTINUOUS ALONG EACH SIDE OF OPENING.
3. CONCRETE SCREWS MUST PENETRATE THE BLOCK/CONCRETE MINIMUM 1 1/4" AND HAVE MIN BLOCK/CONCR. EDGE DISTANCE OF 1 7/8" (NOT TO INCLUDE FINISHES).
4. IF BUCKING TO WOOD FRAMING, THE CONCRETE SCREWS MAY BE USED OR SUBSTITUTED WITH NO. 10 SCREWS OF EQUAL OR GREATER DIAMETER AND THE FRAME SCREW MUST PENETRATE THROUGH THE BUCK INTO THE BLOCK/CONCRETE MIN. 1 1/4".
5. IF BUCK IS TO BE LESS IN THICKNESS THAN 1 1/2", THE BUCK SHALL BE PRENAILED TO THE OPENING. THE FRAME SCREWS (AS SPECIFIED FOR THE WINDOW PRODUCT) SHALL BE REPLACED WITH A CONCRETE SCREW OF EQUAL OR GREATER DIAMETER AND THE FRAME SCREW MUST PENETRATE THROUGH THE BUCK INTO THE BLOCK/CONCRETE MIN. 1 1/4". IF THIS SITUATION OCCURS WHEN INSTALLING TO WOOD FRAMING, THE FRAME SCREW SHALL BE OF A LENGTH TO PENETRATE THROUGH THE BUCK AND INTO THE WOOD FRAMING MIN. 1 1/4".
6. IF THE MANUFACTURER'S SPECIFICATIONS OR ENGINEER/ARCHITECT OF RECORD CALL FOR BUCKING DIFFERENT THAN SPECIFIED HERE-IN, THE MANUFACTURER'S/ENGINEER'S SPECIFICATIONS SHALL CONTROL.
7. IF SHIM SPACING BETWEEN THE BUCK & FRAME OR FRAME & OPENING IS GREATER THAN 1/4", A WOOD SPACER MAY BE USED PROVIDING THE SPACER IS A CONTINUOUS MEMBER, THE SPACER IS OF EQUAL OR GREATER DEPTH TO THE FRAME WITH FRAME FULLY BEARING ON THE SPACER AND THE FRAME SCREWS RUN THROUGH THE SPACER AND INTO THE BUCK/OPENING THE REQUIRED EMBEDMENT.
8. DIRECT MULLED UNITS MUST BE APPROVED AS SUCH. THE BUCKING DETAIL IN NO WAY IMPLIES THAT THE PRODUCTS MAY BE MULLED TOGETHER.
9. IF MAX. DIMENSIONS SHOWN ARE EXCEEDED, THE MULLION MUST BE CLIPPED DIRECTLY TO THE STRUCTURE AND WITH A CONNECTION ENGINEERED SEPERATELY FROM THESE DRAWINGS.

DIRECT MULLS



MULTIPLE WINDOWS/DOORS DIRECT MULLED TOGETHER
(SEE NOTES B & D ABOVE)

DRAWING #1005
SHEET 1 OF 1

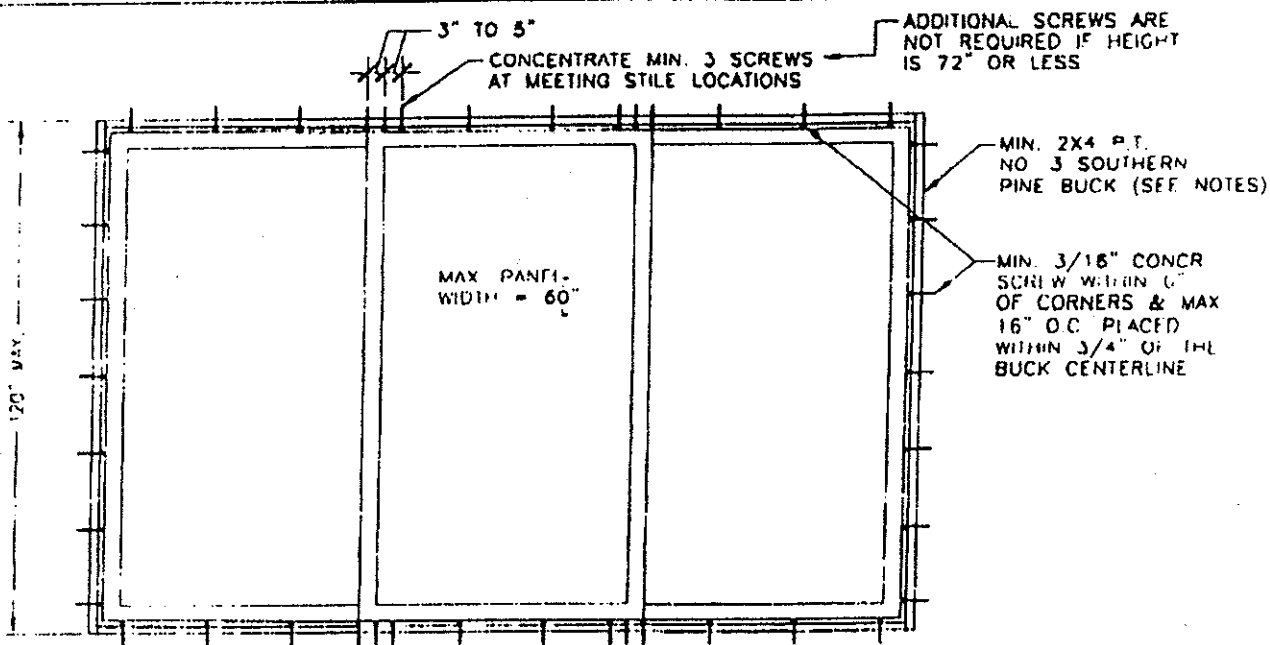
W. W. SCHAEFER ENGINEERING & CONSULTING, P.A.
 600 SANDTREE DRIVE; SUITE 203B
 PALM BEACH GARDENS, FL 33403

STANDARD BUCKING DETAILS
 FOR AREAS WITH MAXIMUM REQUIRED PRESSURE ON OPENING OF +/-37 PSF

NOTES

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6. IF THE MANUFACTURER'S SPECIFICATIONS OR ENGINEER/ARCHITECT OF RECORD CALL FOR BUCKING DIFFERENT THAN SPECIFIED HERE-IN, THE MANUFACTURER'S/ENGINEER'S SPECIFICATIONS SHALL CONTROL.
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SLIDING PATIO DOORS AND WINDOWS



SLIDING DOORS OR WINDOWS
 (UNLIMITED NUMBER OF PANELS SIDE-BY-SIDE)

DRAWING #1004
 SHEET 1 OF 1

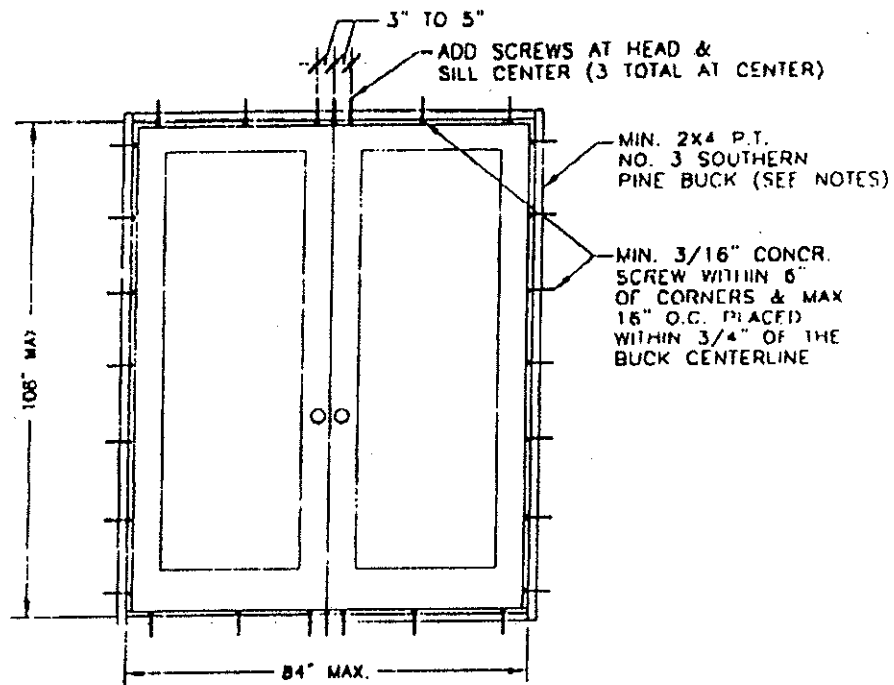
W. W. SCHAEFER ENGINEERING & CONSULTING, P.A.
 600 SANDTREE DRIVE; SUITE 203B
 PALM BEACH GARDENS, FL 33403

STANDARD BUCKING DETAILS
 FOR AREAS WITH MAXIMUM REQUIRED PRESSURE ON OPENING OF +/-37 PSF

NOTES.

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6. IF THE MANUFACTURER'S SPECIFICATIONS OR ENGINEER/ARCHITECT OF RECORD CALL FOR BUCKING DIFFERENT THAN SPECIFIED HERE-IN, THE MANUFACTURER'S/ENGINEER'S SPECIFICATIONS SHALL CONTROL.
7. IF SHIM SPACING BETWEEN THE BUCK & FRAME OR FRAME & OPENING IS GREATER THAN 1/4", A WOOD SPACER MAY BE USED PROVIDING THE SPACER IS A CONTINUOUS MEMBER, THE SPACER IS OF EQUAL OR GREATER DEPTH TO THE FRAME WITH FRAME FULLY BEARING ON THE SPACER AND THE FRAME SCREWS RUN THROUGH THE SPACER AND INTO THE BUCK/OPENING THE REQUIRED EMBEDMENT.

DOUBLE PATIO DOORS



DOUBLE DOORS

DRAWING #1003
 SHEET 1 OF 1

HURD MILLWORK

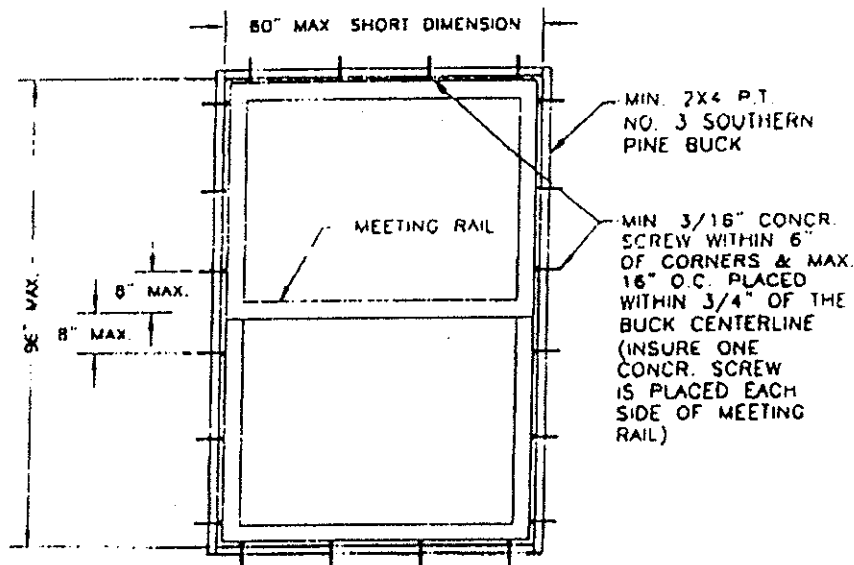
W. W. SCHAEFER ENGINEERING & CONSULTING, P.A.
 600 SANDTREE DRIVE; SUITE 203B
 PALM BEACH GARDENS, FL 33403

STANDARD BUCKING DETAILS
 FOR AREAS WITH MAXIMUM REQUIRED PRESSURE ON OPENING OF +/-37 PSF

NOTES:

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- 2 BUCKING MUST BE CONTINUOUS ALONG EACH SIDE OF OPENING.
- 3 CONCRETE SCREWS MUST PENETRATE THE BLOCK/CONCRETE MINIMUM $1\frac{1}{4}$ " AND HAVE MIN BLOCK/CONCR. EDGE DISTANCE OF $1\frac{7}{8}$ " (NOT TO INCLUDE FINISHES).
- 4 IF BUCKING TO WOOD FRAMING, THE CONCRETE SCREWS MAY BE USED OR SUBSTITUTED WITH NO. 10 SCREWS.
- 5 IF BUCK IS TO BE LESS IN THICKNESS THAN $1\frac{1}{2}$ ", THE BUCK SHALL BE PRENAILED TO THE OPENING. THE FRAME SCREWS (AS SPECIFIED FOR THE WINDOW PRODUCT) SHALL BE REPLACED WITH A CONCRETE SCREW OF EQUAL OR GREATER DIAMETER AND THE FRAME SCREW MUST PENETRATE THROUGH THE BUCK INTO THE BLOCK/CONCRETE MIN. $1\frac{1}{4}$ ". IF THIS SITUATION OCCURS WHEN INSTALLING TO WOOD FRAMING, THE FRAME SCREW SHALL BE OF A LENGTH TO PENETRATE THROUGH THE BUCK AND INTO THE WOOD FRAMING MIN. $1\frac{1}{4}$ ".
- 6 IF THE MANUFACTURER'S SPECIFICATIONS OR ENGINEER/ARCHITECT OF RECORD CALL FOR BUCKING DIFFERENT THAN SPECIFIED HERE-IN, THE MANUFACTURER'S/ENGINEER'S SPECIFICATIONS SHALL CONTROL.
- 7 IF SHIM SPACING BETWEEN THE BUCK & FRAME OR FRAME & OPENING IS GREATER THAN $\frac{1}{4}$ ", A WOOD SPACER MAY BE USED PROVIDING THE SPACER IS A CONTINUOUS MEMBER, THE SPACER IS OF EQUAL OR GREATER DEPTH TO THE FRAME WITH FRAME FULLY BEARING ON THE SPACER AND THE FRAME SCREWS RUN THROUGH THE SPACER AND INTO THE BUCK/OPENING THE REQUIRED EMBEDMENT.

SINGLE AND DOUBLE HUNG CASEMENTS AND SLIDING



HUNG OR FIXED/PROJECT-OUT WINDOWS

(PROJECT-OUT ALSO INCLUDES AWNING WINDOWS)

DRAWING #1002
 SHEET 1 OF 1

HURD MILLWORK

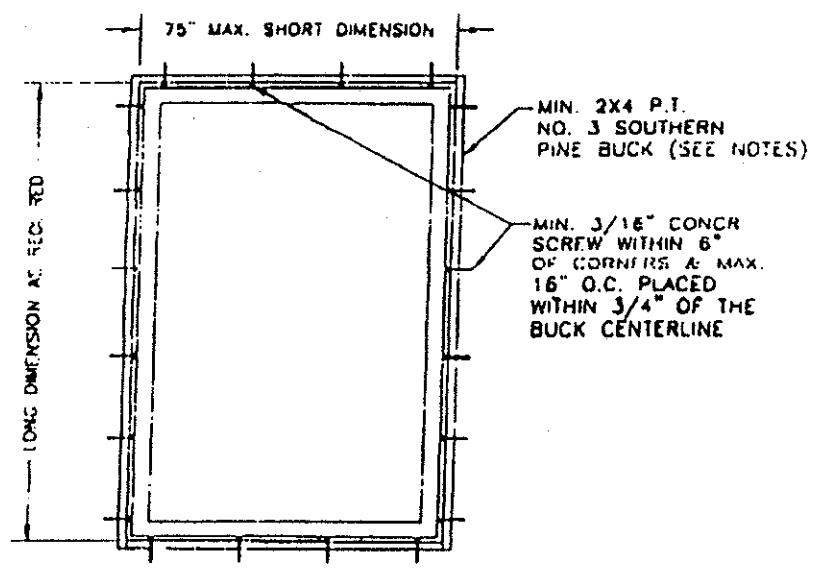
W. W. SCHAEFER ENGINEERING & CONSULTING, P.A.
600 SANDTREE DRIVE; SUITE 203B
PALM BEACH GARDENS, FL 33403

STANDARD BUCKING DETAILS
FOR AREAS WITH MAXIMUM REQUIRED PRESSURE ON OPENING OF +/-37 PSF

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FIXED WINDOWS



FIXED WINDOWS

(ALSO APPLICABLE FOR SINGLE CASEMENT WINDOWS & SINGLE DOORS)

INSTALLATION, MULLING AND BUCK APPLICATION FOR VINYL, WOOD AND CLAD WOOD WINDOWS AND DOORS. FOR THE STATE OF FLORIDA'S UNIFIED BUILDING CODE.

DRAWING #1001
SHEET 1 OF 1