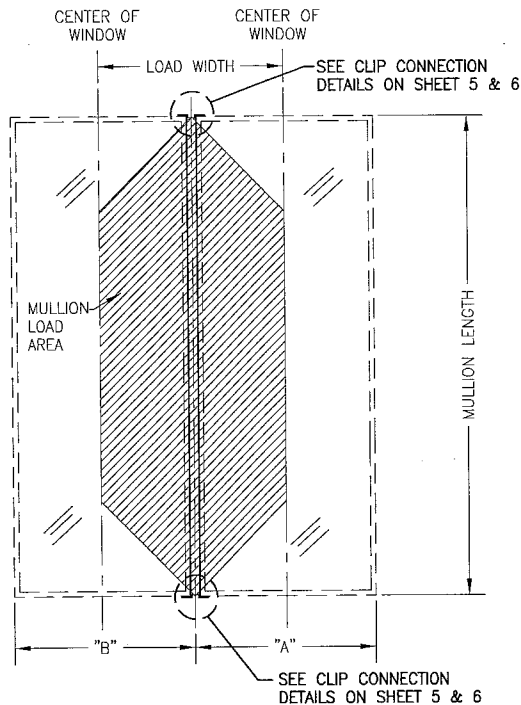




FIXED WINDOW TO FIXED WINDOW

$$\text{LOAD WIDTH} = (A + B)/2$$

NOTE: MULLION MAY BE HORIZONTAL OR VERTICAL

FIXED WINDOW TO FIXED WINDOW TABLE

LENGTH (IN.)	LOAD WIDTH (IN.)	ALLOWABLE PRESSURES (PSF)	
		4X2X1/4 TUBE	
	A+B 2	CONN. "A"	CONN. "B"
72	24	100.0	100.0
	30	100.0	100.0
	36	100.0	95.2
	42	100.0	89.1
84	48	100.0	84.6
	54	100.0	81.5
	60	100.0	79.3
	66	100.0	77.3
96	72	100.0	75.0
	78	100.0	73.6
	84	98.9	73.6
	90	93.1	69.2
108	96	88.7	65.9
	102	85.3	63.5
	108	100.0	100.0
	114	100.0	98.3
120	120	100.0	84.6
	126	100.0	75.0
	132	91.4	68.0
	138	84.3	62.7
144	144	78.8	58.6
	150	74.5	55.4
	156	71.1	52.9
	162	71.1	52.9

ALL TUBES SHALL BE A46 STEEL

EVALUATION OF THIS PRODUCT IS BASED ON APPLICABLE STANDARDS AND/OR INFORMATION & RESULTS FROM APPLICABLE TEST REPORTS. THE FLORIDA BUILDING CODE VERSION CONSIDERED WITH THIS EVALUATION WAS THAT IN FORCE AT THE TIME OF THE EVALUATION. IN THE EVENT OF CODE VERSION CHANGES/UPDATES OR IN THE EVENT THAT NEW OR ADDITIONAL TESTING IS COMPLETED ON THIS PRODUCT, PRIOR TO STATING CODE COMPLIANCE WITH THE STATE, THE MANUFACTURER SHALL CONFIRM WITH THE EVALUATION ENGINEER OF RECORD THAT EVERYTHING SPECIFIED HERE-IN IS CURRENT WITH ALL CURRENT TESTING, CODES AND APPLICABLE STANDARDS.

FIXED WINDOW TO FIXED WINDOW TABLE

LENGTH (IN.)	LOAD WIDTH (IN.)	ALLOWABLE PRESSURES (PSF)	
		4X2X1/4 TUBE	
	A+B 2	CONN. "A"	CONN. "B"
24	24	100.0	100.0
	30	100.0	87.0
	36	100.0	74.7
	42	88.7	65.9
30	48	80.0	59.5
	54	73.4	54.6
	60	68.3	50.8
	66	64.2	47.7
36	72	61.0	45.3
	78	58.0	43.0
	84	55.0	42.0
	90	52.0	40.0
42	96	50.5	39.7
	102	48.5	38.5
	108	46.5	37.3
	114	44.5	36.1
48	120	42.5	35.0
	126	40.5	33.9
	132	38.5	32.8
	138	36.5	31.7
54	144	34.5	30.6
	150	32.5	29.5
	156	30.5	28.4
	162	28.5	27.3

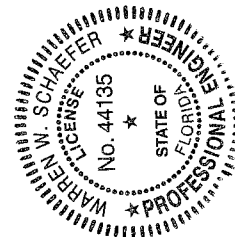
CONN "A" = CONNECTION METHOD "A". SEE SHEET 5 & 6 FOR DETAIL.
CONN "B" = CONNECTION METHOD "B". SEE SHEET 5 & 6 FOR DETAIL.

NOTE: TUBE TO TUBE CONNECTION, AS DETAILED ON SHEET 5 & 6, IS ACCEPTABLE FOR ALL CONN. "A" LOADS.

GENERAL NOTES (ALL DRAWING SHEETS):

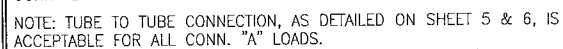
1. THE PRODUCT HERE-IN IS A CLIPPED MULLION APPROVAL. FOR POTENTIAL UNCLIPPED MULLION CONDITIONS, SEE RESPECTIVE PRODUCTS APPROVAL(S) WHERE APPLICABLE.
2. CONDITIONS OUTSIDE OF THOSE SPECIFIED HERE-IN SHALL BE SUBJECT TO JOB SPECIFIC REVIEW AND CERTIFICATION BY A FLORIDA LICENSED STRUCTURAL ENGINEER.
3. ALL HARDWARE & FASTENERS SHALL BE IN ACCORDANCE WITH THESE DRAWINGS & SHALL NOT VARY UNLESS SPECIFICALLY MENTIONED ON THE DRAWINGS. SPECIFIED ANCHOR EMBED TO BASE MATERIAL SHALL BE BEYOND WALL FINISH OR STUCCO.
4. THIS PRODUCT HAS BEEN DESIGNED IN ACCORDANCE WITH AND MEETS THE REQUIREMENTS OF THE FLORIDA BUILDING CODE (FBC) INCLUDING HIGH VELOCITY HURRICANE ZONES (HVHZ) & IS LARGE MISSILE IMPACT RATED.
5. IMPACT SHUTTERS ARE NOT REQUIRED WITH THIS PRODUCT.
6. THESE MULLION SYSTEMS HAVE BEEN TESTED, ANALYZED & APPROVED FOR DESIGN PRESSURES NOT TO EXCEED THOSE SHOWN IN THE "ALLOWABLE DESIGN PRESSURE TABLE(S)".
7. ALL ANCHORS SECURING PRODUCT FRAMES TO PRESSURE TREATED BUCKS OR WOOD FRAMING SHALL BE CAPABLE OF RESISTING CORROSION CAUSED BY THE PRESSURE TREATING CHEMICALS IN THE WOOD.
8. DETERMINE THE POSITIVE & NEGATIVE DESIGN LOADS TO USE WHEN REFERENCING THESE DOCUMENTS IN ACCORDANCE WITH THE GOVERNING CODE AND GOVERNING WIND VELOCITY. FOR WIND LOAD CALCULATIONS IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, A DIRECTIONALITY FACTOR OF $K_d = 0.85$ MAY BE APPLIED PER THE ASCE-7 STANDARD.
9. ALL OPENINGS AND SUPPORTING SUBSTRATE MUST BE DESIGNED AND CONSTRUCTED TO WITHSTAND ALL LOADS TRANSFERRED FROM THE MULLIONS AND SUPPORTED WINDOWS/DOORS.
10. THIS MULLION PRODUCT HAS BEEN TESTED IN ACCORDANCE WITH FBC PROTOCOLS TAS-201, TAS-202 & TAS-203 FOR LARGE MISSILE IMPACT, STRUCTURAL AND CYCLIC TESTING.
11. ALL SIERRA PACIFIC WINDOW & DOOR PRODUCTS ARE APPLICABLE FOR USE WITH THESE MULLIONS PROVIDING THEY HOLD AN IMPACT OR NON-IMPACT FLORIDA APPROVAL.

12. ALLOWABLE PRESSURE ON THE MULLIONED UNIT SHALL BE THE LESSER OF THAT ALLOWABLE PRESSURE STATED FOR THE MULLION OR THE WINDOWS/DOORS IT IS TO SUPPORT.
13. FOR WINDOW OR DOOR FRAME TO OPENING ATTACHMENT, SEE THE RESPECTIVE WINDOW OR DOOR APPROVAL.
14. WINDOWS AND DOORS SHALL BE ANCHORED TO THE MULLION PER THEIR RESPECTIVE PRODUCT APPROVAL AS SPECIFIED FOR AN ALUMINUM SUBSTRATE. IF NOT SPECIFIED FOR ATTACHMENT TO AN ALUMINUM SUBSTRATE, THE WINDOW/DOOR SHALL BE DIRECT FRAME SCREWED TO THE MULLION THE SAME AS SPECIFIED FOR A WOOD SUBSTRATE EXCEPT THE SCREWS SHALL BE SELF TAP/DRILL SCREWS. IF NEITHER OF THESE SITUATIONS APPLY, ATTACHMENT OF THE WINDOW/DOOR TO THE MULLION SHALL BE DETERMINED BY A FLORIDA LICENSED ENGINEER.
15. THE LOADS IN THESE TABLES CONSIDER WORSE CASE OF DEFLECTION, STRESS & END REACTION.
16. ALL TUBES SHALL BE A46 STEEL. ALL END CLIPS AND CONNECTION ANGLES SHALL BE MINIMUM 6063-T5 ALUMINUM OR MIN. 36 KSI STEEL.
17. MATERIALS, INCLUDING BUT NOT LIMITED TO STEEL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF FLORIDA BUILDING CODE.
18. TO THE BEST OF OUR KNOWLEDGE, THE PRODUCT SHOWN HEREIN IS QUALITY ASSURED BY A FLORIDA STATE APPROVED CERTIFICATION/QA ENTITY & SHALL BE LABELED IN ACCORDANCE WITH THE FBC AND THE FLORIDA DEPARTMENT OF BUSINESS & PROFESSIONAL REGULATION SPECIFICATIONS. THESE DRAWINGS SHOW ALL APPLICABLE ELEVATION, COMBINATION, INSTALLATION & COMPARATIVE ANALYSIS CONDITIONS AS DETERMINED THROUGH TESTING & ENGINEERING RATIONAL ANALYSIS. PRODUCT ASSEMBLY SHALL BE IN ACCORDANCE WITH THESE DRAWINGS, THE MANUFACTURER'S QUALITY ASSURANCE SPECIFICATIONS & TESTING REPORTS.
19. CERTIFICATION OF THIS PRODUCT SHALL BE CONSIDERED VOID IF IT IS INSTALLED WITHOUT A BUILDING PERMIT FROM THE APPLICABLE LOCAL BUILDING DEPARTMENT OR IF IT IS INSTALLED BY ANYONE OTHER THAN A LICENSED CONTRACTOR EXPERIENCED WITH INSTALLATIONS OF THIS TYPE OF PRODUCT.

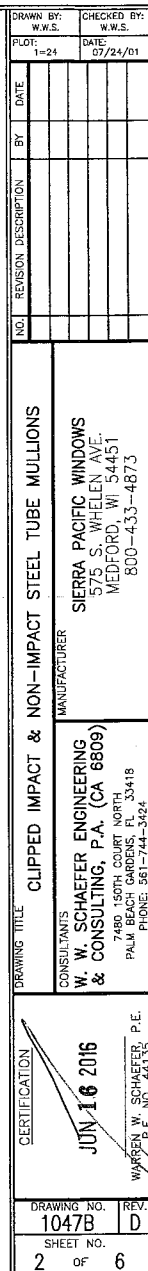


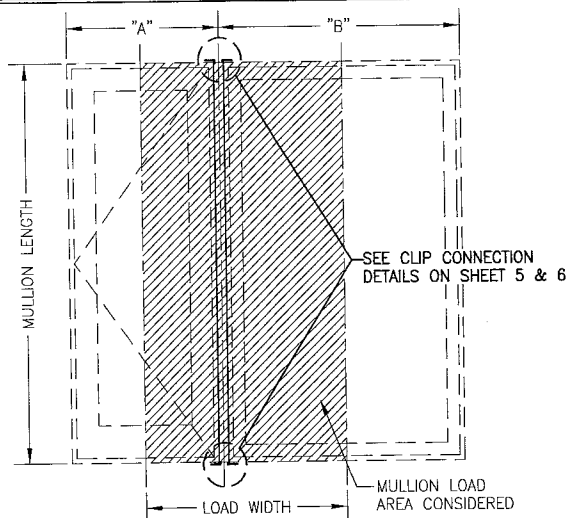
THESE DRAWINGS ARE APPLICABLE ONLY TO THE PRODUCT SPECIFIED. THEY MAY NOT BE USED FOR THE ASSEMBLY AND/OR INSTALLATION OF ANY OTHER PRODUCT NOR MAY THEY BE USED FOR RATIONAL AND/OR LOCAL APPROVAL OF ANY PRODUCT NOT PRODUCED BY THE MANUFACTURER STATED ON THESE DRAWINGS.

DRAWN BY: W.W.S.		CHECKED BY: W.W.S.	
PLOT: 1-24		DATE: 07/24/01	
NO.	REVISION	DATE	BY
1	UPDATE TO 2004 CODE	07/26/05	W.W.S.
2	UPDATE TO CURRENT STANDARDS	10/03/11	W.W.S.
3	UPDATE TO CURRENT STANDARDS	12/06/14	W.W.S.
4	CHANGE TO STATE ONLY APPROVAL	06/16/18	W.W.S.
CLIPPED IMPACT & NON-IMPACT STEEL TUBE MULLIONS MANUFACTURER SIERRA PACIFIC WINDOWS 375 S. WHELEN AVE. MEDFORD, WI 54451 800-433-4873 CONSULTANTS W. W. SCHAEFER ENGINEERING & CONSULTING, P.A. (CA 6809) 7480 150TH COURT NORTH PALM BEACH GARDENS, FL 33418 PHONE: 381-741-3424 CERTIFICATION JUN 10 2016 WARREN W. SCHAEFER, P.E. No. 44135 DRAWING NO. 1047B REV. D SHEET NO. 1 OF 6			



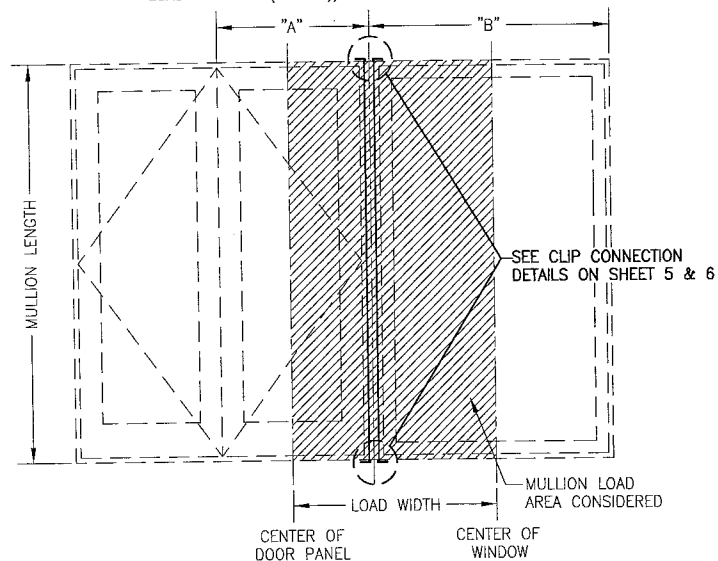
ALL TUBES SHALL BE A46 STEEL





**SINGLE OPERABLE DOOR/WINDOW TO A
SINGLE OPERABLE OR FIXED DOOR/WINDOW**

$$\text{LOAD WIDTH} = (A + B)/2$$



MULTI-PANEL DOOR/WINDOW TO A SINGLE DOOR OR FIXED SIDELIGHT

$$\text{LOAD WIDTH} = (A + B)/2$$

MULTI-PANEL DOOR/WINDOW NEXT TO A
MULTI-PANEL DOOR/WINDOW ALSO APPLIES
WHERE-BY THE LOAD WIDTH WILL BE THE DISTANCE
BETWEEN THE DOOR/WINDOW PANEL CENTERLINES.

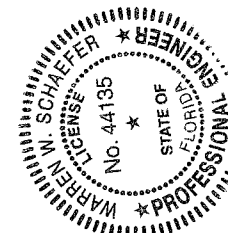
DOOR OR CASEMENT WITH SIDELIGHT			
LENGTH (IN.)	LOAD WIDTH (IN.)	ALLOWABLE PRESSURES (PSF)	
		4X2X1/4 TUBE	
	A+B 2	CONN. "A"	CONN. "B"
48	54	100.0	100.0
	60	100.0	95.2
	48	100.0	100.0
54	54	100.0	94.0
	60	100.0	84.6
	42	100.0	100.0
60	48	100.0	95.2
	54	100.0	84.6
	60	100.0	76.2
66	36	100.0	100.0
	42	100.0	98.9
	48	100.0	86.5
72	54	100.0	76.9
	60	93.1	69.2
	36	100.0	100.0
72	42	100.0	90.7
	48	100.0	79.3
	54	94.8	70.5
	60	85.3	63.5

DOOR OR CASEMENT WITH SIDELIGHT			
LENGTH (IN.)	LOAD WIDTH (IN.)	ALLOWABLE PRESSURES (PSF)	
		4X2X1/4 TUBE	
	A+B 2	CONN. "A"	CONN. "B"
78	30	100.0	100.0
	36	100.0	97.6
	42	100.0	83.7
	48	98.5	73.2
	54	87.5	65.1
80	60	78.8	58.6
	30	100.0	100.0
	36	100.0	95.2
	42	100.0	81.6
	48	96.0	71.4
84	54	85.3	63.5
	60	76.8	57.1
	30	100.0	100.0
	36	100.0	90.7
	42	100.0	77.7
92	48	91.4	68.0
	54	81.3	60.4
	60	73.1	54.4
	24	100.0	100.0
	30	100.0	99.3
96	36	100.0	82.8
	42	95.4	71.0
	48	83.5	62.1
	54	74.2	55.2
	60	66.8	49.7
96	24	100.0	100.0
	30	100.0	95.2
	36	100.0	79.3
	42	91.4	68.0
	48	80.0	59.5
96	54	71.1	52.9
	60	64.0	47.6

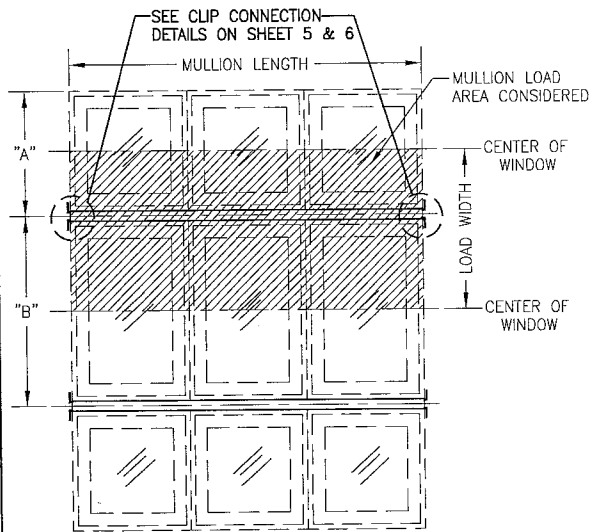
ALL TUBES SHALL BE A46 STEEL

CONN "A" = CONNECTION METHOD "A". SEE SHEET 5 & 6 FOR DETAIL.
CONN "B" = CONNECTION METHOD "B". SEE SHEET 5 & 6 FOR DETAIL.

NOTE: TUBE TO TUBE CONNECTION, AS DETAILED ON SHEET 5 & 6, IS
ACCEPTABLE FOR ALL CONN. "A" LOADS.

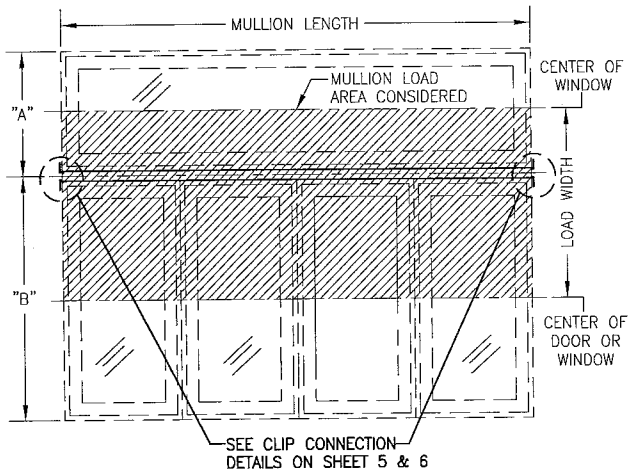


DRAWN BY: W.W.S.		CHECKED BY: W.W.S.	
PLT: 1-24		DATE: 07/24/01	
DATE	BY	REVISION DESCRIPTION	NO.
CLIPPED IMPACT & NON-IMPACT STEEL TUBE MULLIONS			
SIERRA PACIFIC WINDOWS 575 S. WHELEN AVE. MEDFORD, WI 54451 800-433-4873			
MANUFACTURER			
CONSULTANTS W. W. SCHAEFER ENGINEERING & CONSULTING, P.A. (CA 6809) 7480 150TH COURT NORTH PALM BEACH GARDENS, FL 33418 PHONE: 561-744-3624			
CERTIFICATION			
JUN 16 2016			
WARREN W. SCHAEFER, P.E. E. NO. 44135			
DRAWING NO. 1047B		REV. D	
SHEET NO. 3		OF 6	



MULTIPLE WINDOWS/DOORS WITH TRANSOM

LOAD WIDTH = $(A + B)/2$
(CONTINUOUS MULLION MAY BE HORIZONTAL OR VERTICAL (HORIZONTAL SHOWN))



MULTIPLE WINDOWS/DOORS WITH TRANSOM

- LOAD WIDTH = $(A + B)/2$
1. TRANSOM MAY BE SINGLE OR MULTIPLE WINDOWS.
2. CONTINUOUS MULLION MAY BE HORIZONTAL OR VERTICAL (HORIZONTAL SHOWN).

MULTIPLE WINDOWS/DOORS			
LENGTH (IN.)	LOAD WIDTH (IN.)	ALLOWABLE PRESSURES (PSF)	
		4X2X1/4 TUBE	
		CONN. "A"	CONN. "B"
36	72	100.0	100.0
	78	100.0	97.6
42	60	100.0	100.0
	66	100.0	98.9
	72	100.0	90.7
	78	100.0	83.7
48	54	100.0	100.0
	60	100.0	95.2
	66	100.0	86.5
	72	100.0	79.3
	78	98.5	73.2
	48	100.0	100.0
54	54	100.0	94.0
	60	100.0	84.6
	66	100.0	76.9
	72	94.8	70.5
	78	87.5	65.1
60	42	100.0	100.0
	48	100.0	95.2
	54	100.0	84.6
	60	100.0	76.2
	66	93.1	69.2
	72	85.3	63.5
	78	78.8	58.6
72	36	100.0	100.0
	42	100.0	90.7
	48	100.0	79.3
	54	94.8	70.5
	60	85.3	63.5
	66	77.6	57.7
	72	71.1	52.9
	78	65.6	48.8
84	30	100.0	100.0
	36	100.0	90.7
	42	100.0	77.7
	48	91.4	68.0
	54	81.3	60.4
	60	73.1	54.4
	66	66.5	49.5
	72	61.0	45.3
	78	56.3	41.8

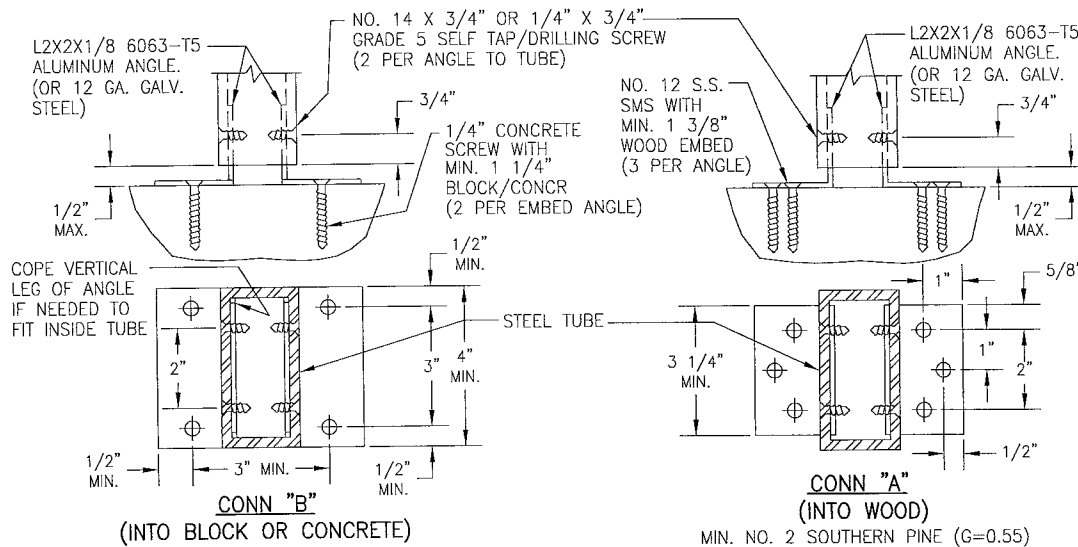
ALL TUBES SHALL BE A46 STEEL

MULTIPLE WINDOWS/DOORS			
LENGTH (IN.)	LOAD WIDTH (IN.)	ALLOWABLE PRESSURES (PSF)	
		4X2X1/4 TUBE	
		CONN. "A"	CONN. "B"
96	24	100.0	100.0
	30	100.0	95.2
	36	100.0	79.3
	42	91.4	68.0
	48	80.0	59.5
	54	71.1	52.9
	60	64.0	47.6
	66	58.2	43.3
	72	53.3	39.7
108	78	49.2	36.6
	24	100.0	100.0
	30	100.0	84.6
	36	94.8	70.5
	42	81.3	60.4
	48	71.1	52.9
	54	63.2	47.0
	60	56.9	42.3
	66	51.7	38.5
120	72	47.4	35.3
	78	43.8	32.5
	24	100.0	95.2
	30	100.0	76.2
	36	85.3	63.5
	42	73.1	54.4
	48	64.0	47.6
	54	56.9	42.3
	60	51.2	38.1
132	66	46.5	34.6
	72	42.7	31.7
	78	39.4	29.3
	24	100.0	86.5
	30	93.1	69.2
	36	77.6	57.7
	42	66.5	49.5
	48	58.2	43.3
	54	51.7	38.5
144	60	46.5	34.6
	66	42.3	31.5
	72	38.8	28.8
	78	35.8	26.6
	24	100.0	79.3
	30	85.3	63.5
	36	71.1	52.9
	42	61.0	45.3
	48	53.3	39.7
	54	47.4	35.3
	60	42.7	31.7
	66	38.8	28.8
	72	35.6	26.4
	78	32.8	24.4

CONN "A" = CONNECTION METHOD "A". SEE SHEET 5 & 6 FOR DETAIL.
CONN "B" = CONNECTION METHOD "B". SEE SHEET 5 & 6 FOR DETAIL.
NOTE: TUBE TO TUBE CONNECTION, AS DETAILED ON SHEET 5 & 6, IS ACCEPTABLE FOR ALL CONN. "A" LOADS.



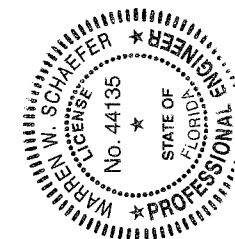
DRAWN BY: W.W.S.		CHECKED BY: W.W.S.	
PLOT: 1-24		DATE: 07/24/01	
NO.	REVISION	DESCRIPTION	DATE
CLIPPED IMPACT & NON-IMPACT STEEL TUBE MULLIONS			
MANUFACTURER			
SIERRA PACIFIC WINDOWS 575 S. WHELEN AVE. MEDFORD, WI 54451 800-433-4873			
CONSULTANTS			
W. W. SCHAEFER ENGINEERING & CONSULTING, P.A. (CA 6809) 7480 130TH COURT NORTH, SUITE 304B PALM BEACH GARDENS, FL 33418 PHONE: 381-747-3424			
JUN 16 2016			
WARREN W. SCHAEFER, P.E. P.E. NO. 44135			
DRAWING NO.		REV.	
1047B		D	
SHEET NO.			
4		OF 6	



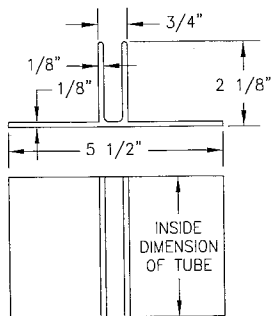
NOTE: CLIPS MAY BE PLACED INSIDE OR OUTSIDE OF THE TUBE.

FASTENER EDGE DISTANCE REQUIRED (TO WOOD/CONCR./BLOCK)	
(1) 1/4" CONCRETE SCREWS	2 1/4"
NO. 12 SMS OR WOOD SCREWS	3/4"
(1) CONCRETE SCREWS SHALL BE ELCO ULTRACONS, ELCO CRETE-FLEX, OR HILTI KWIK-CON II (HARDENED STEEL OR S.S.).	

MULLION END CONNECTION DETAILS USING CLIP ANGLES



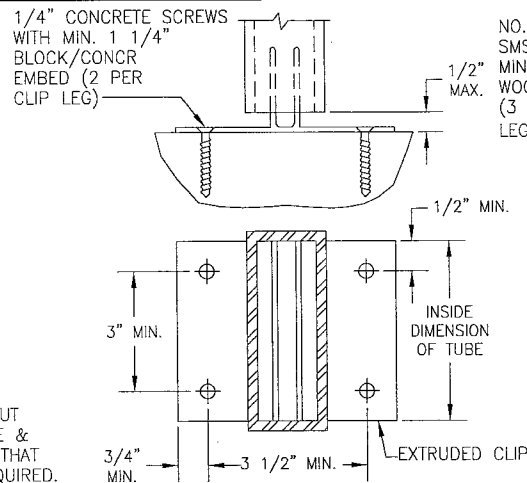
DRAWN BY: W.W.S.		CHECKED BY: W.W.S.	
PLOT: 1-3		DATE: 07/24/01	
DATE	BY	REVISION DESCRIPTION	NO.
DRAWING TITLE: CLIPPED IMPACT & NON-IMPACT STEEL TUBE MULLIONS			
CONSULTANTS: W. W. SCHAEFER ENGINEERING & CONSULTING, P.A. (CA 6809)		MANUFACTURER: SIERRA PACIFIC WINDOWS	
7480 150TH COURT NORTH PALM BEACH GARDENS, FL 33418 PHONE: 561-741-3424		575 S. WHELENN AVE. MEDFORD, WI 54451 800-433-4873	
CERTIFICATION	JUN 16 2016		
DRAWING NO. 1047B		REV. D	
SHEET NO. 5		OF 6	



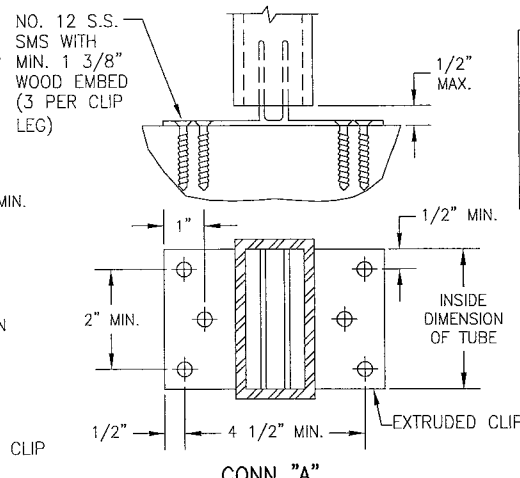
EXTRUDED CLIP
6063-T5 ALUMINUM

INSTALLATION INSTRUCTION:

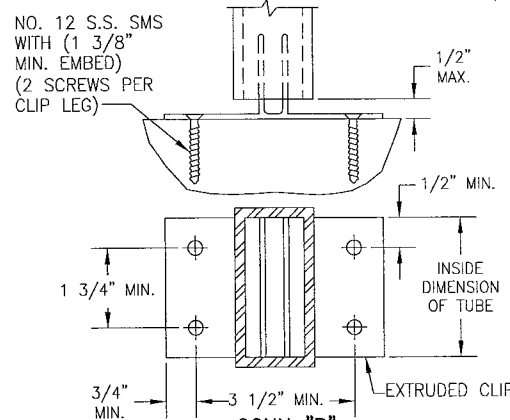
1. SLIP CLIP INTO TUBE (CLIP MUST BE CUT TO THE INSIDE DIMENSION OF THE TUBE & BE CENTERED WITH THE TUBE). NOTE THAT NO SCREWING OF TUBE TO CLIP IS REQUIRED.
2. SECURE CLIP TO STRUCTURE USING FASTENING METHOD DESCRIBED WITH EACH CONNECTION TYPE "A" & "B" AND THE APPLICABLE OPTION CONSIDERING ALL DIMENSION REQUIREMENTS SPECIFIED AS MIN & MAX.



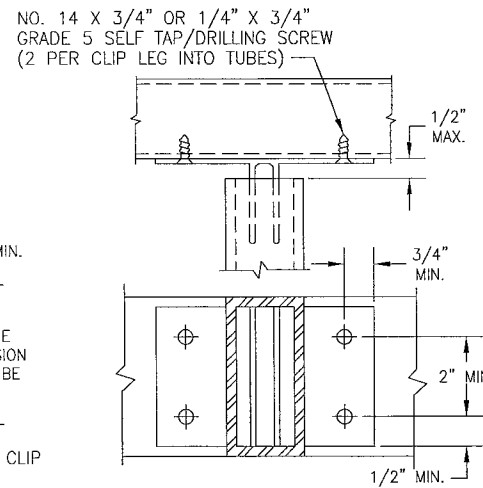
CONN "B"
(INTO BLOCK OR CONCRETE)
IF REQUIRED TO FIT INSIDE A 4" TUBE,
THE VERTICAL LEGS MAY BE TRIMMED
TO FIT INSIDE THE TUBE.



CONN "A"
(INTO WOOD)
MIN. NO. 2 SOUTHERN PINE (G=0.55)



CONN "B"
(INTO WOOD)
WOOD = MIN. NO. 2 SOUTHERN PINE (G=0.55)



TYP. TUBE TO TUBE CONNECTION

FASTENER EDGE DISTANCE REQUIRED (TO WOOD/CONCR./BLOCK)	
(1) 1/4" CONCRETE SCREWS	2 1/4"
NO. 12 SMS OR WOOD SCREWS	3/4"
(1) CONCRETE SCREWS SHALL BE ELCO ULTRACONS, ELCO CRETE-FLEX, OR HILTI KWIK-CON II (HARDENED STEEL OR S.S.).	



**MULLION END CONNECTION DETAILS
USING EXTRUDED CLIP**

DRAWN BY: W.W.S.	CHECKED BY: W.W.S.
PLOT: 1=3	DATE: 07/24/01
DATE	BY
REVISION	DESCRIPTION
NO.	
CLIPPED IMPACT & NON-IMPACT STEEL TUBE MULLIONS	
MANUFACTURER SIERRA PACIFIC WINDOWS 575 S. WHELEN AVE. MEDFORD, WI 54451 800-433-4873	
CONSULTANTS W. W. SCHAEFER ENGINEERING & CONSULTING, P.A. (CA 6809) 7480 150TH COURT NORTH PALM BEACH GARDENS, FL 33418 PHONE: 561-744-3924	
CERTIFICATION WARREN W. SCHAEFER, P.E. LICENSE NO. 44135 STATE OF FLORIDA JUN 16 2016	
DRAWING NO. 1047B	REV. D
SHEET NO. 6	OF 6