MIAMI-DADE COUNTY
DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599
www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

Croci North America
11600 Adelmo Lane
Fort Myers, Fl. 33966

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER- Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: ES 55 Extruded Aluminum Roll-Up Shutter

APPROVAL DOCUMENT: Drawing No. 13-017, titled "ES 55 Extruded Aluminum Roll-up Shutter", prepared by EngCo., Inc., dated January 16, 2013, sheets 1 through 14 of 14 with no revisions, signed and sealed by Pedro De Figueiredo P.E., on March 11, 2013, bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and expiration date by Miami-Dade County Product Control Section.

MISSILE IMPACT RATING: Large and Small Missile Impact Resistant

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state, the following statement: "Miami-Dade County Product Control Approved", and NOA number, per TAS-201, TAS-202, and TAS-203, unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA **revises & renews NOA #08-0324.13** and consists of this page 1, evidence submitted pages E1 & E-2 as well as approval document mentioned above.
The submitted documentation was reviewed by **Helmy A. Makar, P.E., M.S.**

MIAMI-DADE COUNTY APPROVED

07/04/2013

NOA No. 13-0327.03
Expiration Date: 07/03/2018
Approval Date: 07/04/2013

Croci North America

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 08-0324.13

A. DRAWINGS

1. *Drawing No. 08-049, titled "ES 55 Extruded Aluminum Roll-up Shutter", prepared by EngCo, Inc. dated 02/26/08 sheets 1 through 14 of 14 with no revisions, signed and sealed on 03/14/08 by Pedro De Figueiredo P.E.*

B. TESTS

1. *Fenestration Testing Laboratory, Inc. Test Report # 5448 dated 12/17/07 for testing standard TAS 201, TAS 202 & TAS 203 signed and sealed by Carlos S. Rionda, P.E.*
2. *National Certified Testing Laboratories Test Report # 210-2963-1 dated 12/21/03 for Testing standard TAS 201, TAS 202 and TAS 203, signed and sealed by Gerald J. Ferrara, P.E.*
3. *Construction Testing Corporation Test Report #05-011 dated 05/31/05For testing Standard TAS 202, signed and sealed by Yamil G. Kuri, P.E.*
4. *Fenestration Testing Laboratory, Inc. Test Report # 5611 dated 05/03/08 for testing standard TAS 201, and TAS 203 signed and sealed by Carlos S. Rionda, P. E.*

C. CALCULATIONS

1. *Structural Calculations and design for Slat, Track Anchorage, Header, Mullion, Storm Bars and analysis of test results prepared by EngCo, Inc. dated 03/07/08 signed and sealed by Pedro De Figueiredo P.E.*

D. MATERIAL CERTIFICATIONS

1. *None.*

E. STATEMENTS

1. *Code Compliance and no financial interest letter by EngCo Inc .signed and sealed on March 07, 2008 by Pedro De Figueiredo, P.E.*
2. *Code Compliance letter for the tests performed by National Certified Laboratories, signed and sealed by Gerald J. Ferrara, P.E.*

F. QUALITY ASSURANCE

1. *Miami-Dade County Building Code Compliance Office.*

2. NEW EVIDENCE SUBMITTED

A. DRAWINGS

1. *Drawing No. 13-017, titled "ES 55 Extruded Aluminum Roll-up Shutter", prepared by EngCo., Inc., dated January 16, 2013, sheets 1 through 14 of 14 with no revisions, signed and sealed by Pedro De Figueiredo P.E., on March 11, 2013.*

Helmy A. Makar, P.E, M.S.
Product Control Unit Supervisor
NOA No. 13-0327.03
Expiration Date: 07/03/2018
Approval Date: 07/04/2013

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

B. TESTS

1. None.

C. CALCULATIONS

1. None.

D. QUALITY ASSURANCE

1. By Miami-Dade County Department of Regulatory and Economic Resources.

E. MATERIAL CERTIFICATIONS

1. None.

F. STATEMENTS

1. Code Compliance and no financial interest letter by EngCo., Inc., signed and sealed by Pedro De Figueiredo, P.E., on March 11, 2013.

Helmy A. Makar, P.E, M.S.
Product Control Unit Supervisor
NOA No. 13-0327.03
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GENERAL NOTES:

1- DEFINITION: THIS PRODUCT IS A ROLL-UP TYPE SHUTTER; DESIGNED, CONSTRUCTED AND ERECTED TO EASILY ENCLOSE AN AREA, PROVIDING PROTECTION FROM HIGH VELOCITY HURRICANE FORCE WINDS WITHIN THE ALLOWABLE DESIGNED PRESSURES AND LIMITATIONS STATED IN THIS APPROVAL.

2- CODE: THIS PRODUCT HAS BEEN TESTED UNDER THE TAS 201, 202 AND 203 (LARGE & SMALL MISSILE) STANDARDS AND DESIGNED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, 2010 EDITION, HVHZ (HIGH VELOCITY HURRICANE ZONES).

3- POSTING: A LEGIBLE DECAL SHALL BE PLACED AT A READILY VISIBLE LOCATION STATING THE FOLLOWING:

"ES55 ROLL-UP SHUTTER
CROCI NORTH AMERICA - FORT MYERS, FLORIDA
MIAMI-DADE COUNTY PRODUCT APPROVED"

4- LOADS: DESIGNED LOAD CALCULATED BASED ON THE ASCE 7-10 AND PROVIDED BY A PROFESSIONAL ARCHITECT OR ENGINEER FOR EACH SPECIFIC PROJECT. THE CALCULATED DESIGNED PRESSURE MUST NOT EXCEED THE ALLOWABLE PRESSURES HERE IN SPECIFIED. THE DESIGN PRESSURES, AS DETERMINED FROM ASCE 7-10, ARE TO BE MULTIPLE BY 0.6

5- MATERIAL: ALL EXTRUDED ALUMINUM SHAPES SHALL BE MADE OF 6063-T6 OR AS NOTED.

6- FASTENERS: ASSEMBLY SCREWS AND ANCHORS SHALL BE AS SPECIFIED IN THE CURRENT SET OF DRAWINGS. INSTALLATION AND LOADS AS PER THIS APPROVAL. NO 33 1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS PRODUCT. ANCHORS INTO WOOD WERE DESIGNED WITH 1.6 LOAD DURATION. (Kd=.85)

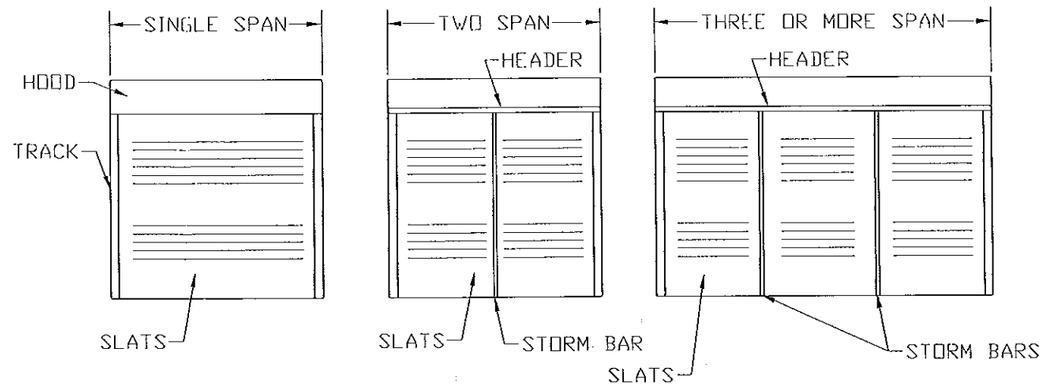
7- MULTIPLE SPAN SHUTTERS: MULTIPLE SPAN COMPONENTS SUCH AS STORM BARS, MULLIONS AND HEADERS, TO BE DESIGNED AS PER THIS SET OF DRAWINGS.

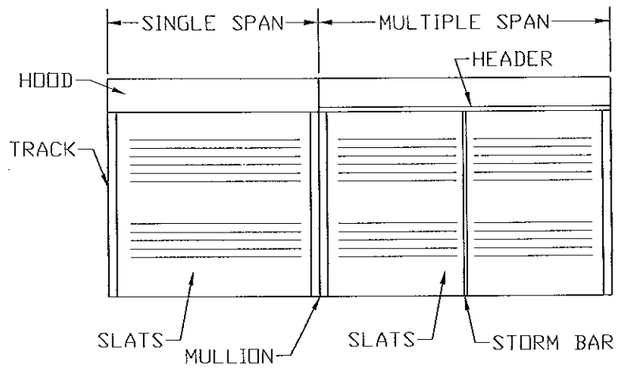
8- USE: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, ARCHITECT OR ENGINEER OF RECORD TO VERIFY THE FOLLOWING:
8.1- THE STABILITY OF THE STRUCTURE WHERE THE SHUTTER IS TO BE ATTACHED INSURING PROPER ANCHORAGE.
8.2- THE SITE SPECIFIC PROJECT CRITERIA, SUCH AS BUT NOT LIMITED TO, WIND LOADS, LOCAL CODE REQUIREMENTS, DESIGNED PRESSURES ETC.
8.3- THAT THIS APPROVAL IS ADEQUATE TO THE SPECIFIC PROJECT.

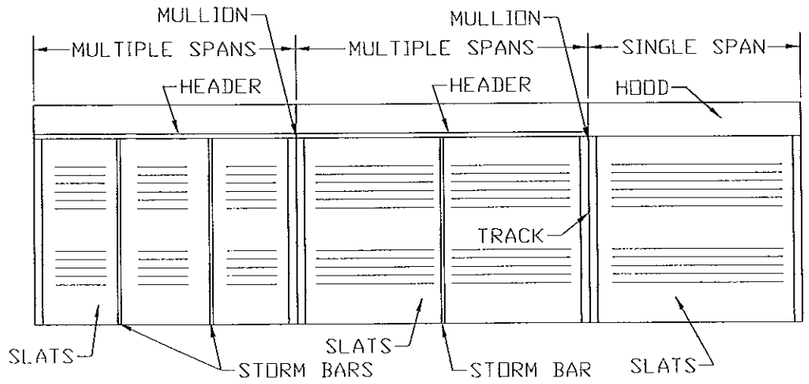
DESIGNED PRESSURE	
COMPONENT	REF. SHEET
SLAT SPAN	3
TRACK ANCHORAGE	4
STORM BARS	5-8
HEADERS	9
MULLIONS	10-14

NOTES:
1- ALLOWABLE DESIGNED PRESSURE FOR MULTIPLE SPANS SHUTTERS ARE FUNCTION OF THE LOWEST ALLOWABLE DESIGNED LOAD FOR THE SLATS, STORM BARS, HEADERS, MULLIONS.

TYPICAL SHUTTER CONFIGURATIONS







Manufacturer:
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PEDRO M. DE FIGUEIREDO
LICENSE
No 52609
STATE OF FLORIDA
PROFESSIONAL ENGINEER
3/11/13

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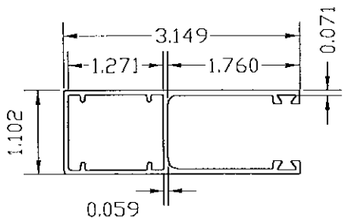
Date: 01/16/13
Scale: NA
Design by: PPMF

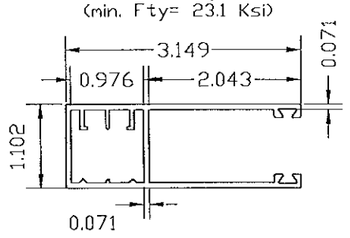
Drawing Number
13-017

Sheet
1 of 14

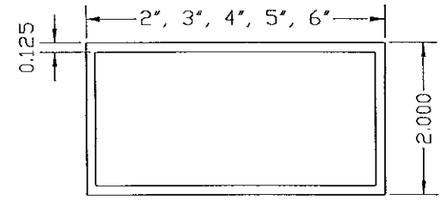
BASIC SHUTTER COMPONENTS



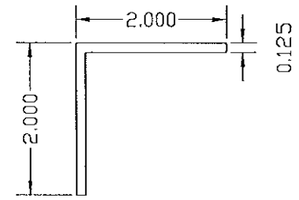
1- TRACK TYPE A
6063-T6 Alloy
(min. Fty= 23.1 Ksi)



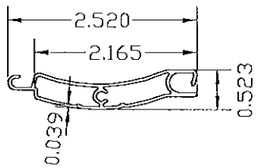
1a- TRACK TYPE B
6063-T6 Alloy
(min. Fty= 23.1 Ksi)



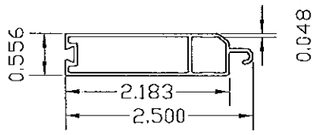
4- 1/8-2x ALUMINUM TUBE
6063-T6 Alloy
(min Fty=25 Ksi)



3- 1/8-2x2 ANGLE
6063-T6 Alloy
(min Fty=25 Ksi)

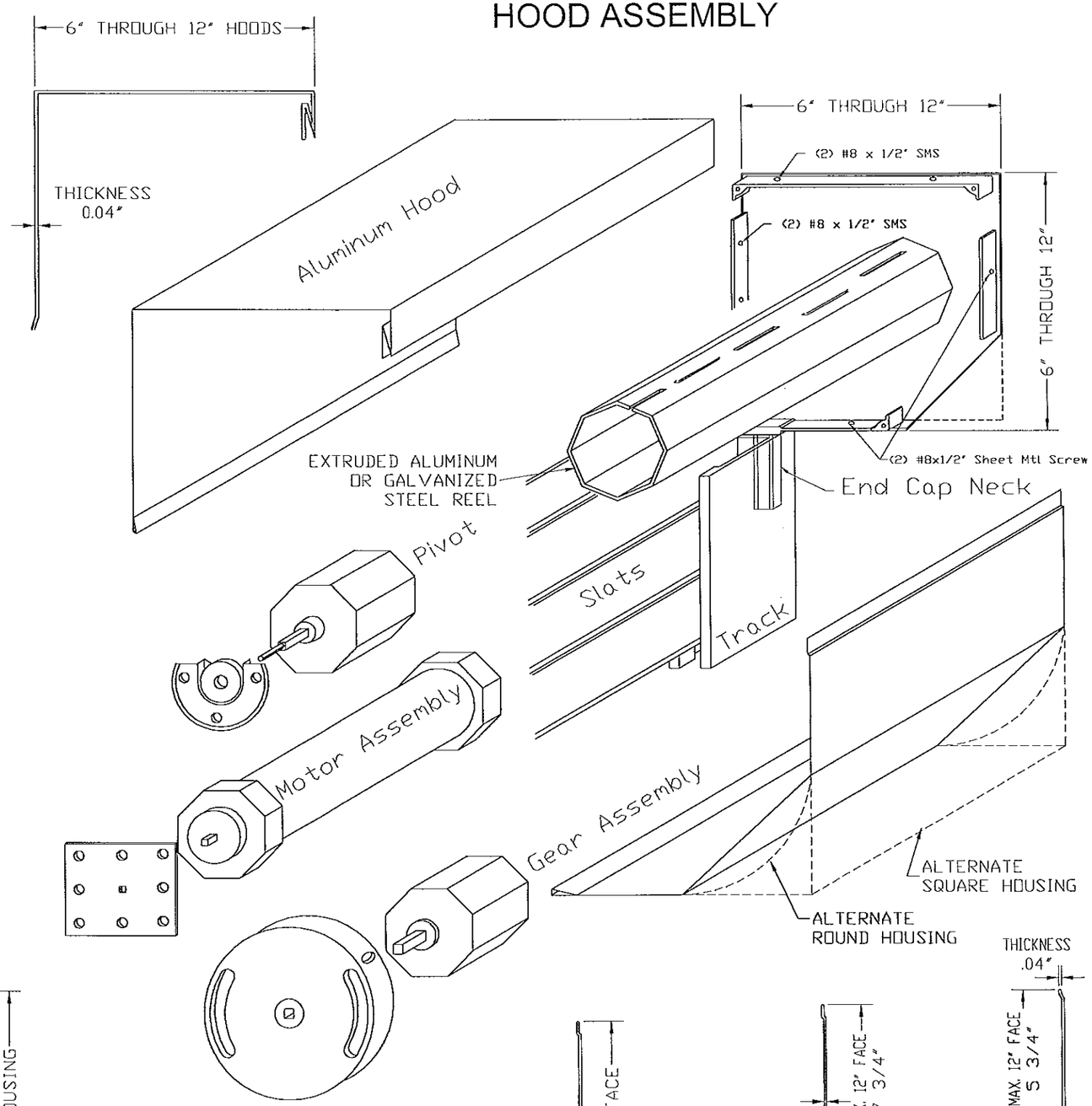


2- ES 55 BLADE
6063-T6 Alloy
(min. Fty= 23.1 Ksi)



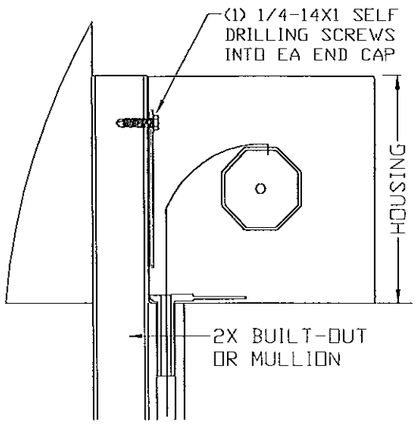
2a- BOTTOM BLADE
6063-T6 Alloy
(min. Fty= 23.1 Ksi)

HOOD ASSEMBLY

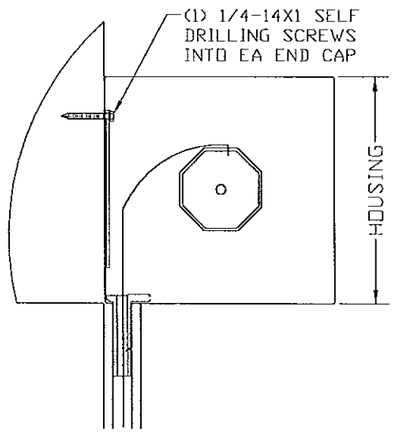


HOOD ANCHORAGE

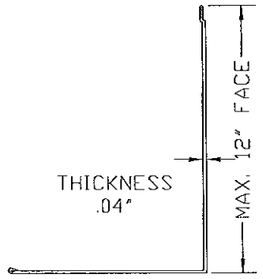
BUILT-OUT MOUNT OR INSIDE MOUNT

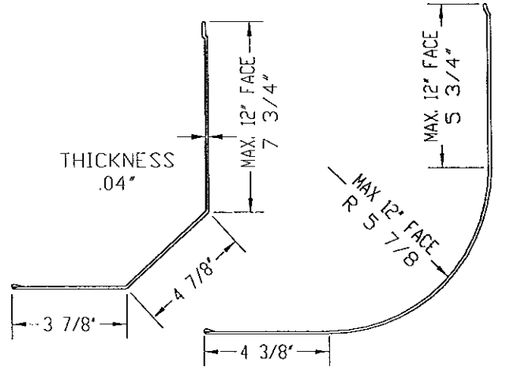


WALL MOUNT



NOTES:
1- THE ROLL-UP MECHANISM (GEARS, MOTORS, SUPPORTING END PLATES) ARE NOT PART OF THIS APPROVAL.
2- MANUFACTURER IS RESPONSIBLE TO SPECIFY THESE COMPONENTS FOR PROPER SHUTTER OPERATION.





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Date: 01/16/13
Scale: NA
Design by: PPMF

Drawing Number
13-017

TABLE 1 - SLATS SPAN X DESIGN LOAD

POSITIVE & NEGATIVE LOADS (PSF)
X
MAXIMUM SLAT SPAN (IN)

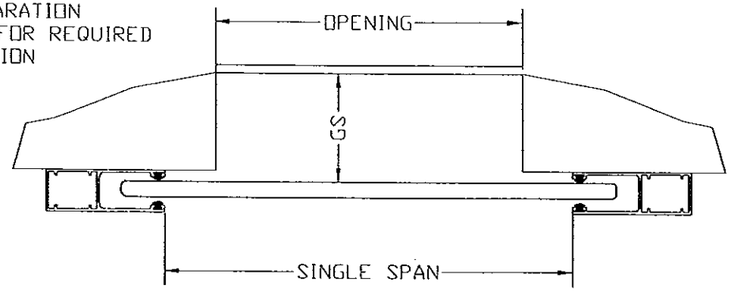
Pd PSF	1 SPAN	2 SPAN	3 SPAN
100	46	46	46
95	47	47	47
90	48	48	48
85	48	48	48
80	49	49	49
75	51	51	51
70	52	52	52
65	53	53	53
60	54	54	54
55	56	56	56
50	58	58	58
45	60	60	60
40	62	62	62
35	64	64	64

Pd= Design load in Psf
SPAN= Slat span in inches

TABLE 1A - GLASS SEPARATION

SHUTTER SPAN	UNIT ELEVATION	
	<=30 FEET	>30 FEET
> 48"	3"	3"
<=48"	2 5/8"	2 5/8"

GS: GLASS SEPARATION
SEE TABLE 1A FOR REQUIRED
GLASS SEPARATION



GS: GLASS SEPARATION
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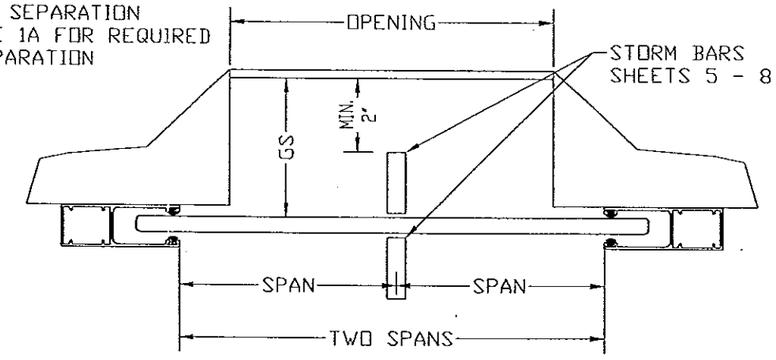

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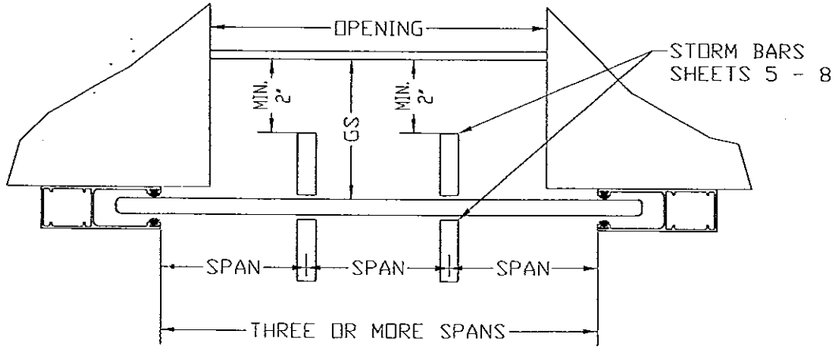

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MAR 11 2013
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TRACK ANCHORAGE OPTIONS

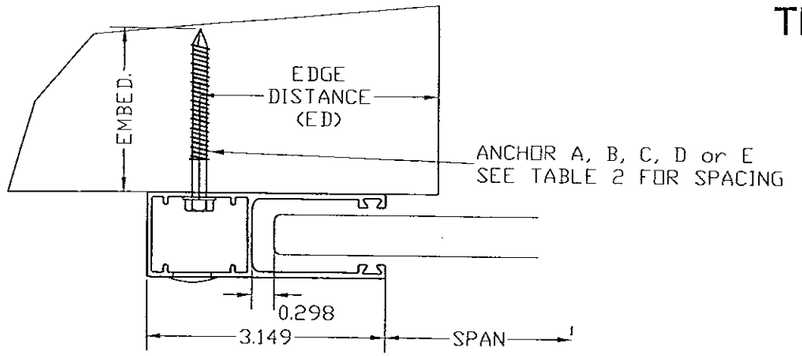

TABLE 2 - WALL MOUNT TRACK ANCHORAGE SPACING

	SLAT SPAN (inches)																									
	64in					58in					54in					51in					48in					46in				
Pd	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
35	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
50	6	5	6	6	6	6	5	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
60	-	-	-	-	-	6	4	6	6	6	6	4	6	6	6	6	5	6	6	6	6	5	6	6	6	6	5	6	6	6
75	-	-	-	-	-	-	-	-	-	-	6	3	6	5	6	6	4	6	5	6	6	4	6	6	6	6	4	6	6	6
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	3	6	4	6	6	3	6	5	6	6	3	6	5	6
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	3	6	4	6	6	3	6	4	6

Pd= Design load in Psf // SPAN= Slat span in inches
Anchor spacing in inches on center

ANCHOR SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	EMBEDMENT	ED	BASE MATERIAL
A	1/4" TAPCON	ITW	1 3/4"	3"	3000 psi CONCRETE
B	1/4" TAPCON	ITW	1"	3"	HOLLOW BLOCK
C	5/16" TAPCON	ITW	2 1/4"	4"	GF BLOCK
D	5/16" TAPCON	ITW	1 3/4"	4"	HOLLOW BLOCK
E	1/4" TAPCON/ LAGS	ITW	1 3/4"	1"	WOOD (SG)=.55)

NOTE: 1- ED - EDGE DISTANCE
2- EMBEDMENT IS BEYOND THE WALL DRESSING

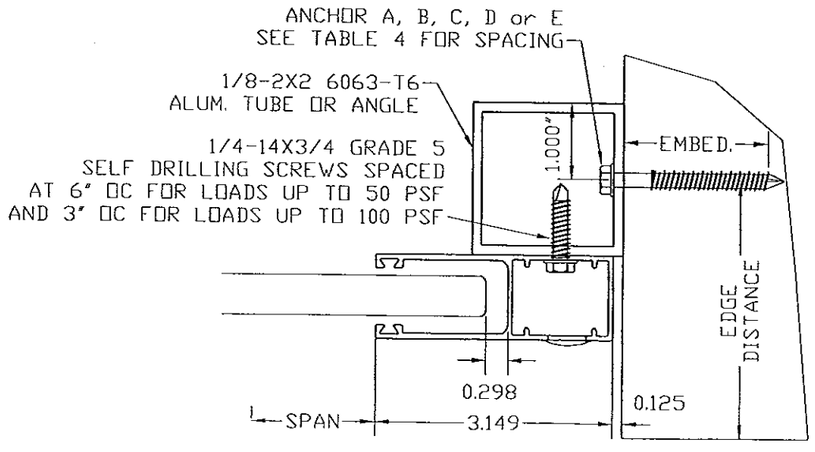

TABLE 3 - BUILT-OUT MOUNT TRACK ANCHORAGE SPACING

	SLAT SPAN (inches)																									
	64in					58in					54in					51in					48in					46in				
Pd	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
35	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
50	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
60	-	-	-	-	-	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
75	-	-	-	-	-	-	-	-	-	-	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	6	6	6	6	5	6	6	6	6	5	6	6	6
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	4	6	6	6	6	5	6	6	6

Pd= Design load in Psf // SPAN= Slat span in inches
Anchor spacing in inches on center

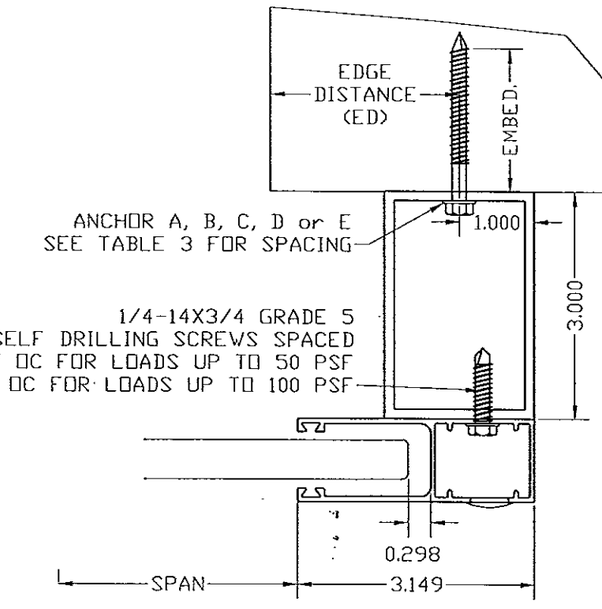

TABLE 4 - INSET MOUNT TRACK ANCHORAGE SPACING

	SLAT SPAN (inches)																									
	64in					58in					54in					51in					48in					46in				
Pd	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
35	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
50	6	5	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
60	-	-	-	-	-	6	4	6	6	6	6	5	6	6	6	6	5	6	6	6	6	5	6	6	6	6	6	6	6	6
75	-	-	-	-	-	-	-	-	-	-	6	4	6	6	6	6	4	6	6	6	6	4	6	6	6	6	4	6	6	6
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	3	6	5	6	6	3	6	5	6	6	4	6	6	6
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	3	6	5	6	6	3	6	5	6

Pd= Design load in Psf // SPAN= Slat span in inches
Anchor spacing in inches on center

Manufacturer:
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PRODUCT:
ES 55
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ROLL-UP SHUTTER

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PEDRO M. DE FIGUEIREDO
LICENSE
No. 52609
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MAR 11 2013
MIAMI-DADE BCCO:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 13-0327.03
Expiration Date 01/03/2018
By
Miami Dade Product Control

Date: 01/16/13
Scale: NA
Design by: PPMF

Drawing Number
13-017

STORM BARS SELECTION TABLES
ALLOWABLE DESIGN LOAD - Pd (Psf)

2x2 STORM BAR - 2 SPANS

SLAT	STORM BAR HEIGHT				
Span	36	48	60	72	84
46	100	71	46	31	--
48	90	69	44	30	--
51	75	65	41	--	--
54	60	60	39	--	--
58	50	50	36	--	--
64	35	35	33	--	--

2x2 STORM BAR - 3+ SPANS

SLAT	STORM BAR HEIGHT				
Span	36	48	60	72	84
46	100	81	52	35	--
48	90	78	50	35	--
51	75	74	46	--	--
54	60	60	45	--	--
58	50	50	41	--	--
64	35	35	35	--	--

2x3 STORM BAR - 2 SPANS

SLAT	STORM BAR HEIGHT				
Span	48	60	72	84	96
46	100	82	56	41	31
48	90	78	54	39	30
51	75	74	50	37	--
54	60	60	48	35	--
58	50	50	45	33	--
64	35	35	35	30	--

2x3 STORM BAR - 3+ SPANS

SLAT	STORM BAR HEIGHT				
Span	48	60	72	84	96
46	100	93	64	46	35
48	90	88	61	45	34
51	75	75	57	42	32
54	60	60	55	40	30
58	50	50	50	37	--
64	35	35	35	34	--

2x4 STORM BAR - 2 SPANS

SLAT	STORM BAR HEIGHT				
Span	72	84	96	108	120
46	86	62	47	37	--
48	82	60	46	35	--
51	75	56	42	34	--
54	60	53	40	31	--
58	50	50	38	30	--
64	35	35	34	--	--

2x4 STORM BAR - 3+ SPANS

SLAT	STORM BAR HEIGHT				
Span	72	84	96	108	120
46	97	71	54	42	31
48	90	68	52	40	30
51	75	64	48	38	--
54	60	60	45	35	--
58	50	50	43	34	--
64	35	35	35	30	--

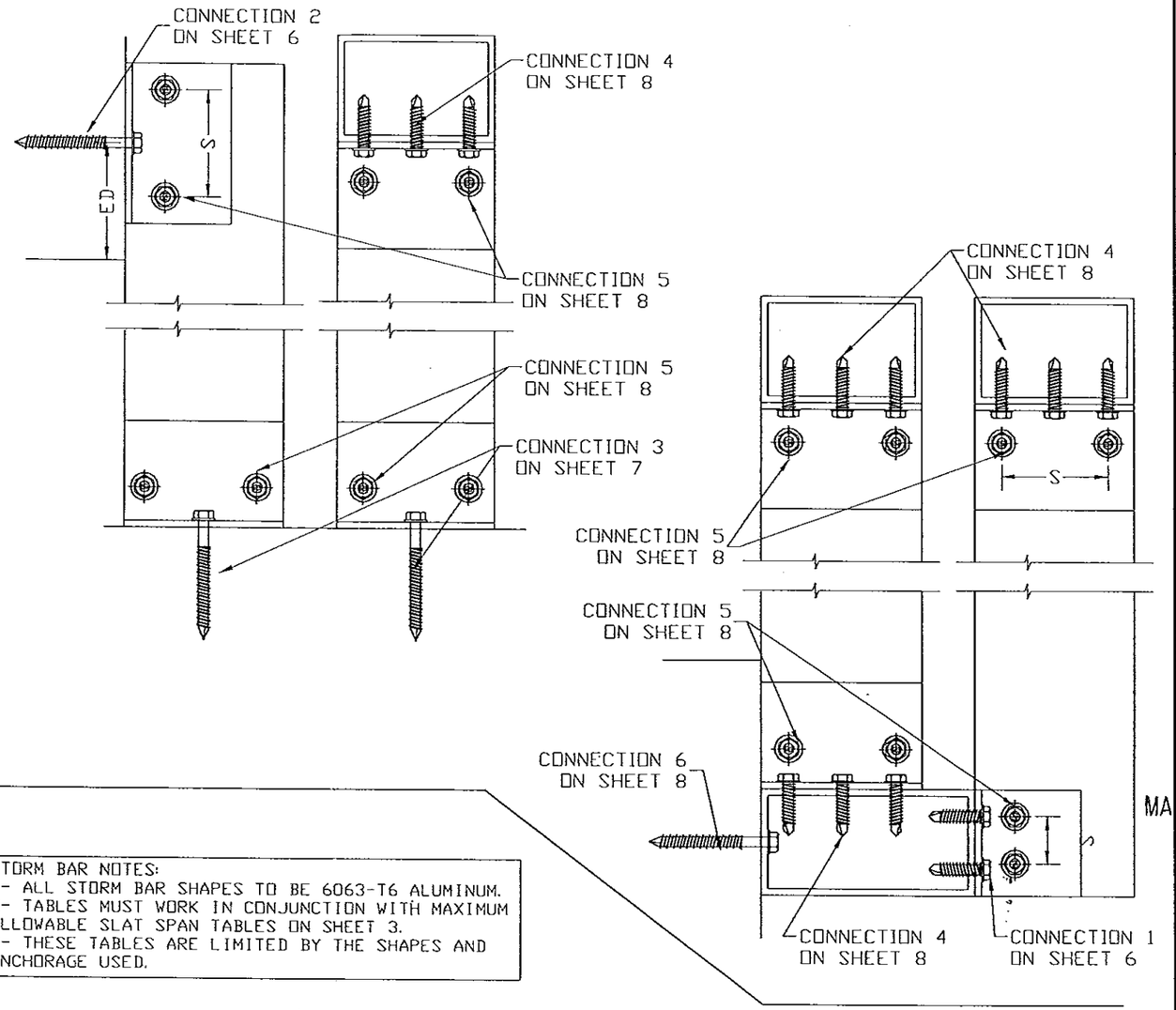
2x5 STORM BAR - 2 SPANS

SLAT	STORM BAR HEIGHT				
Span	72	84	96	108	120
46	100	87	66	52	42
48	90	83	63	50	40
51	75	75	59	46	38
54	60	60	56	44	35
58	50	50	50	41	33
64	35	35	35	35	30

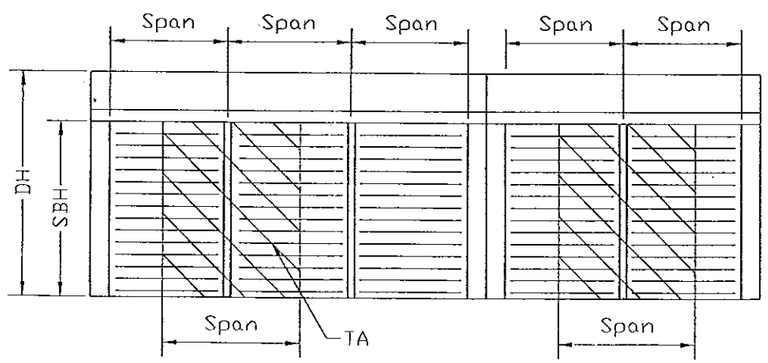
2x5 STORM BAR - 3+ SPANS

SLAT	STORM BAR HEIGHT				
Span	72	84	96	108	120
46	100	99	75	59	47
48	90	90	72	56	45
51	75	75	67	53	43
54	60	60	60	50	40
58	50	50	50	46	37
64	35	35	35	35	34

STORM BARS MOUNTING OPTIONS



STORM BAR NOTES:
1- ALL STORM BAR SHAPES TO BE 6063-T6 ALUMINUM.
2- TABLES MUST WORK IN CONJUNCTION WITH MAXIMUM ALLOWABLE SLAT SPAN TABLES ON SHEET 3.
3- THESE TABLES ARE LIMITED BY THE SHAPES AND ANCHORAGE USED.



DH - DOOR HEIGHT
SBH - STORM BAR HEIGHT
TA - STORM BAR TRIBUTARY AREA

Manufacturer:
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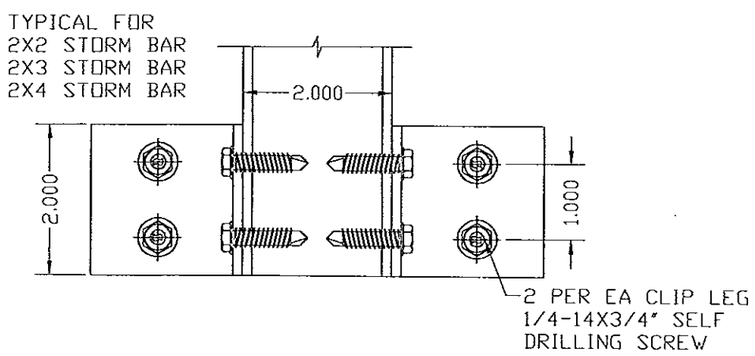
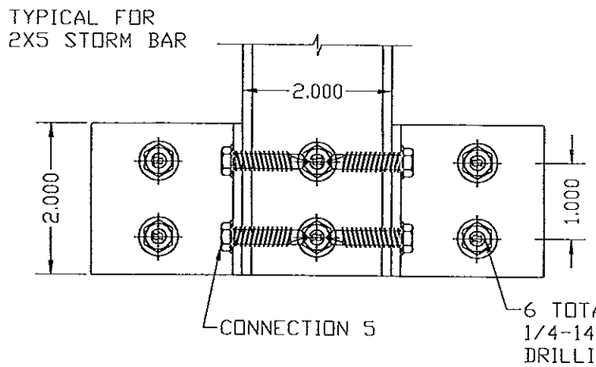
Date: 01/16/13
Scale: NA
Design by: PPMF

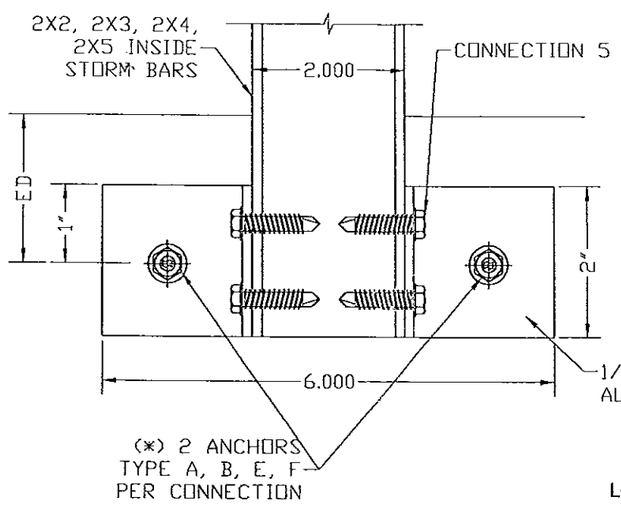
Drawing Number
13-017

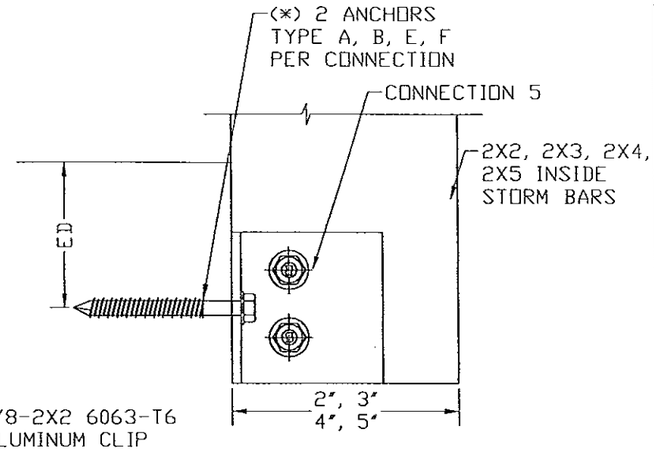
CONNECTION 1
STORM BARS ANCHORAGE
WALL MOUNTED TO ALUMINUM TUBE





CONNECTION 2
STORM BARS ANCHORAGE
TO WALL



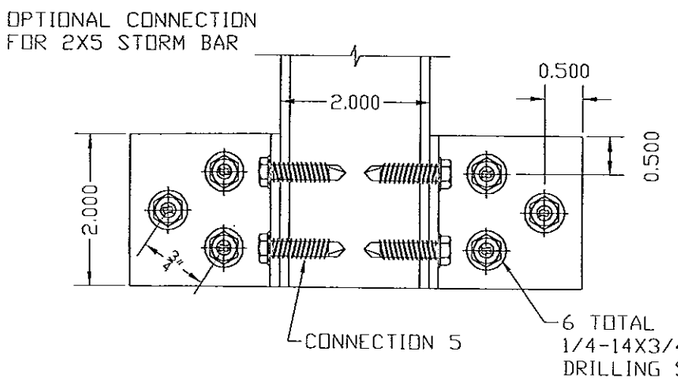


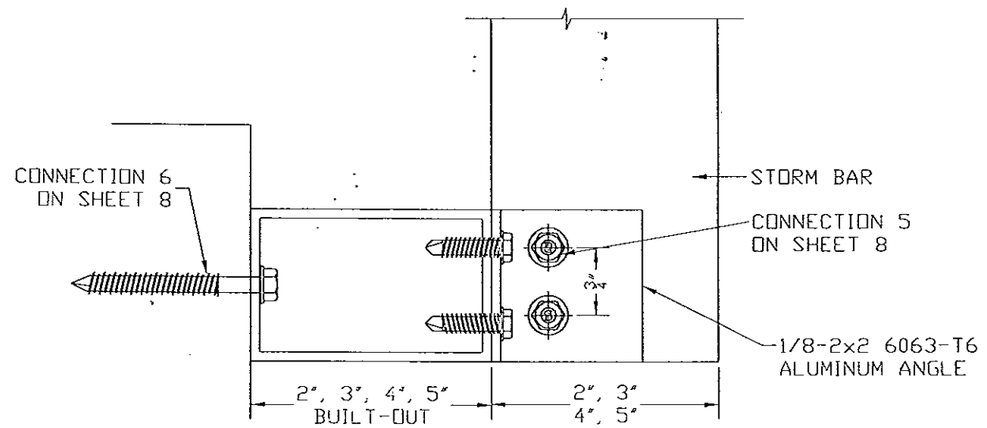
(*) CONDITION IS ONLY APPLICABLE
FOR POSITIVE LOAD ON INSIDE STORM BARS
LOAD TRANFERED BY BEARING TO SUPPORTING STRUCTURE

ANCHOR SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	EMBEDMENT	ED	BASE MATERIAL
A	1/4" TAPCON	ITW	1 3/4"	2 1/2"	3192 psi CONCRETE
B	1/4" TAPCON	ITW	1 1/4"	2 1/2"	HOLLOW BLOCK
E	1/4" TAPCON	ITW	1 3/4"	1"	WOOD (SG>=.55)
F	1/4-20 CALKIN	POWERS	7/8"	3"	3000 psi CONCRETE

ED - EDGE DISTANCE





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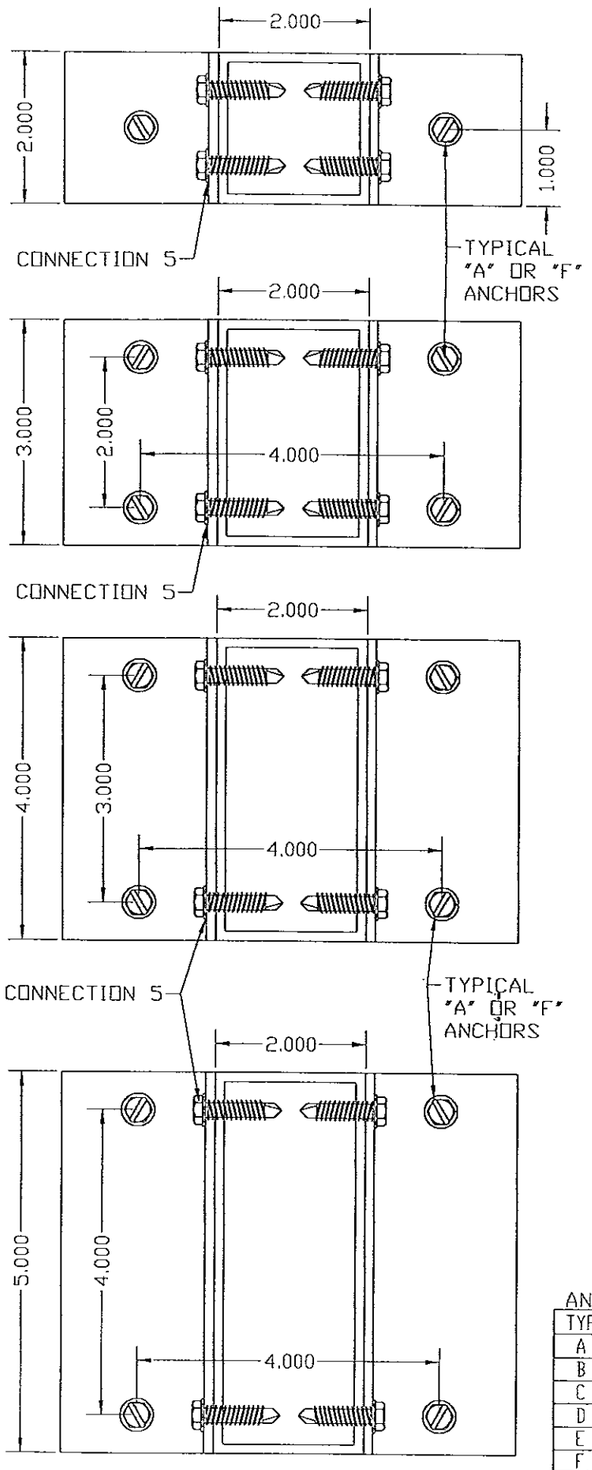
By
Miami Dade Product Control

Date: 01/16/13
Scale: NA
Design by: PPMF

Drawing Number
13-017

Sheet
6 of 14

CONNECTION 3
STORM BARS ANCHORAGE
FLOOR/CEILING MOUNTED TO CONCRETE



		MAXIMUM ALLOWABLE DESIGN PRESSURE (PSF)										
		TYPE "A" ANCHORS						TYPE "F" ANCHORS				
BAR	SLAT	STORM BAR HEIGHT					SLAT	STORM BAR HEIGHT				
	Span	36	48	60	72	84	Span	36	48	60	72	84
2	46	71	53	42	35	30	46	64	48	38	32	--
	48	68	51	40	34	--	48	62	46	37	31	--
X	51	64	48	38	32	--	51	58	43	35	--	--
	54	60	45	36	30	--	54	55	41	33	--	--
2	58	50	42	33	--	--	58	51	38	30	--	--
	64	35	35	30	--	--	64	46	34	--	--	--

	SLAT	STORM BAR HEIGHT					SLAT	STORM BAR HEIGHT				
BAR	Span	48	60	72	84	96	Span	48	60	72	84	96
2	46	71	57	47	40	35	46	77	62	51	44	38
	48	68	54	45	39	34	48	74	59	49	42	37
X	51	64	51	43	36	32	51	70	56	46	40	35
	54	60	48	40	34	30	54	60	52	44	37	33
3	58	50	45	37	32	--	58	50	49	41	35	30
	64	35	35	34	--	--	64	35	35	35	31	--

	SLAT	STORM BAR HEIGHT					SLAT	STORM BAR HEIGHT				
BAR	Span	72	84	96	108	120	Span	72	84	96	108	120
2	46	80	68	60	53	48	46	72	62	54	48	43
	48	76	65	57	51	46	48	69	59	52	46	41
X	51	72	61	54	48	43	51	65	56	49	43	39
	54	60	58	51	45	40	54	60	53	46	41	37
4	58	50	50	47	50	38	58	50	49	43	38	34
	64	35	35	35	35	--	64	35	35	35	34	31

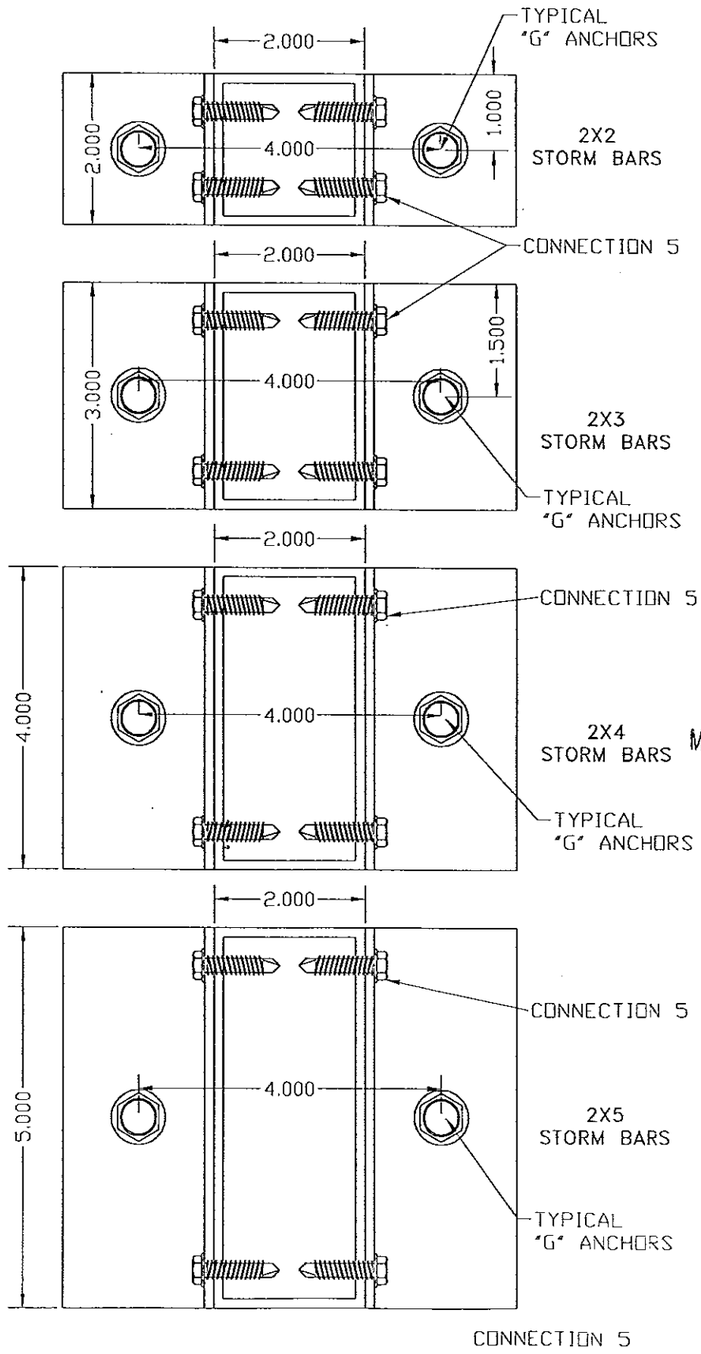
	SLAT	STORM BAR HEIGHT					SLAT	STORM BAR HEIGHT				
BAR	Span	72	84	96	108	120	Span	72	84	96	108	120
2	46	85	73	64	56	51	46	77	66	58	51	46
	48	81	70	61	54	49	48	74	63	55	49	44
X	51	75	66	57	51	46	51	70	60	52	46	42
	54	60	60	54	48	43	54	60	56	49	44	39
5	58	50	50	50	45	40	58	50	50	46	41	36
	64	35	35	35	35	35	64	35	35	35	35	33

ANCHOR SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	EMBEDMENT	ED	BASE MATERIAL
A	1/4" TAPCON	ITW	1 3/4"	2 1/2"	3192 psi CONCRETE
B	1/4" TAPCON	ITW	1 1/4"	2 1/2"	HOLLOW BLOCK
C	5/16" TAPCON	ITW	2 1/4"	4"	GF BLOCK
D	5/16" TAPCON	ITW	1 3/4"	4"	HOLLOW BLOCK
E	1/4" TAPCON	ITW	1 3/4"	1"	PT WOOD (SG)=.55)
F	1/4-20 CALKIN	POWERS	7/8"	3"	3000 psi CONCRETE
G	3/8" WEDGE BOLTS	POWERS	2 1/2"	4"	3000 psi CONCRETE

ED - EDGE DISTANCE

TYPE "G" ANCHORS APPLICABLE FOR ALL CASES
MUST NOT EXCEED STORM BAR DESIGNED LOAD



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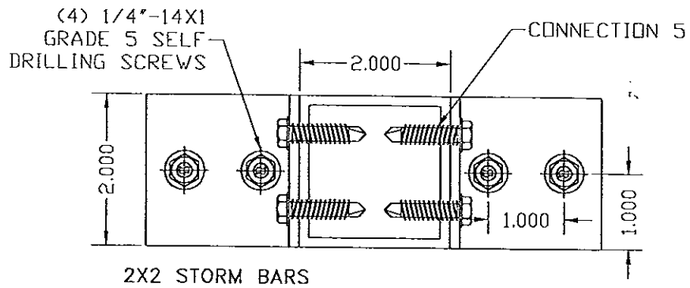
Miami Dade Product Con.:

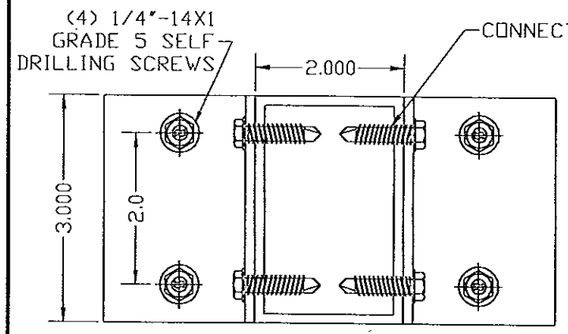
Date: 01/16/13
Scale: NA
Design by: PPMF

Drawing Number
13-017

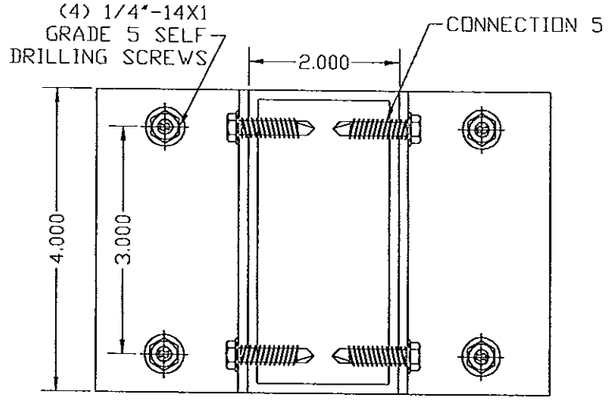
CONNECTION 4
STORM BARS ANCHORAGE FLOOR/CEILING TO BUILT-OUT TUBE OR HEADER



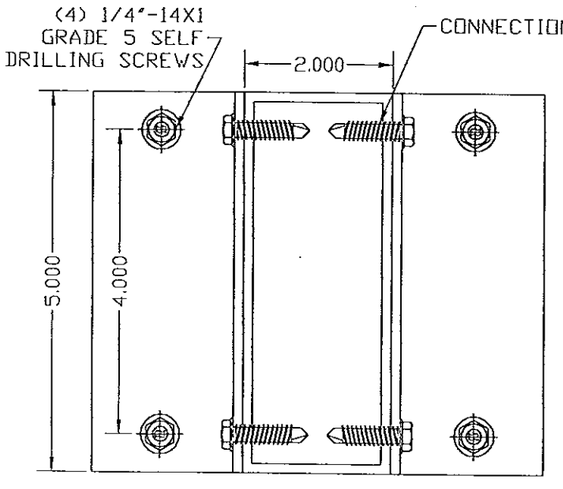
2X2 STORM BARS
ACCEPTABLE FOR ALL CASES
MUST NOT EXCEED STORM BAR DESIGNED LOAD



2X3 STORM BARS
ACCEPTABLE FOR ALL CASES
MUST NOT EXCEED STORM BAR DESIGNED LOAD

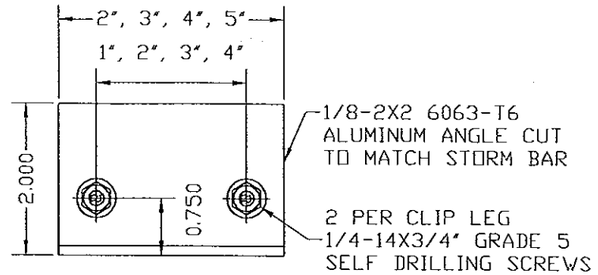


2X4 STORM BARS
ACCEPTABLE FOR ALL CASES
MUST NOT EXCEED STORM BAR DESIGNED LOAD

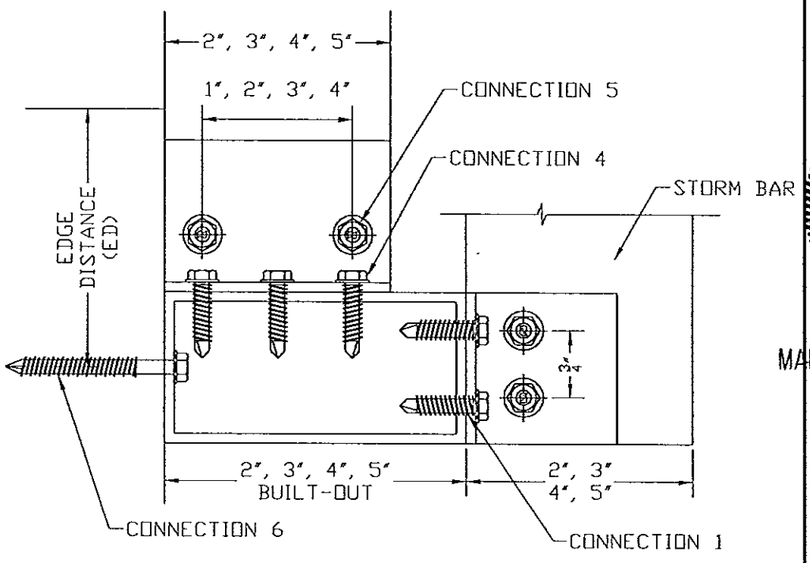


2X5 STORM BARS
ACCEPTABLE FOR ALL CASES
MUST NOT EXCEED STORM BAR DESIGNED LOAD

CONNECTION 5
CLIP ANCHORED TO STORM BAR



CONNECTION 6
BUILT-OUT WALL ANCHORAGE



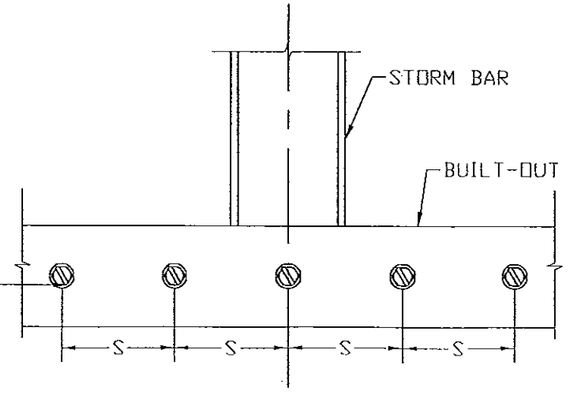
CONNECTION 6
MINIMUM NUMBER OF ANCHORS TO SECURE BUILT-OUT TO WALL

STORM BARS	ANCHOR TYPE			
	A	B	E	D
2x2	2	4	2	3
2x3	2	5	2	4
2x4	3	7	3	5
2x5	3	8	3	6

	ANCHOR TYPE			
	A	B	E	D
S	3.0	3.0	2.0	3.75
ED	2.5	2.5	1.0	4.0

S - ANCHOR SPACING
ED - EDGE DISTNCE

QUANTITY OF ANCHORS FROM TABLE ARE TO BE EQUALLY DIVIDED FROM CENTER LINE OF STORM BAR



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Miami Dade Product Control

Date: 01/16/13
Scale: NA
Design by: PPMF

Drawing Number
13-017

HEADER SELECTION TABLES

ALLOWABLE DESIGN LOAD - Pd (Psf)

MAXIMUM DESIGN PRESSURE
FOR 2X3 HEADER - 2 SPANS

SLAT	STORM BAR HEIGHT					
TT	36	48	60	72	84	96
92	88	66	53	44	38	33
96	81	61	49	40	35	30
102	72	54	43	36	31	--
108	64	48	38	32	--	--
116	55	41	33	--	--	--
128	45	34	--	--	--	--

MAXIMUM DESIGN PRESSURE
FOR 2X3 HEADER - 3+ SPANS

SLAT	STORM BAR HEIGHT					
TT	36	48	60	72	84	96
108	82	61	49	41	35	30
120	66	50	40	33	--	--
126	60	45	36	30	--	--
138	49	37	--	--	--	--
144	41	31	--	--	--	--
153	32	--	--	--	--	--

MAXIMUM DESIGN PRESSURE
FOR 2X4 HEADER - 2 SPANS

SLAT	STORM BAR HEIGHT					
TT	48	60	72	84	96	108
92	100	81	67	57	50	45
96	90	74	62	53	46	41
102	75	65	54	47	41	36
108	60	58	49	42	36	32
116	50	50	42	36	31	--
128	35	35	34	--	--	--

MAXIMUM DESIGN PRESSURE
FOR 2X4 HEADER - 3+ SPANS

SLAT	STORM BAR HEIGHT					
TT	48	60	72	84	96	108
108	94	75	62	53	47	41
120	76	60	50	43	38	33
138	57	46	38	32	--	--
144	52	42	35	30	--	--
153	46	37	31	--	--	--
162	39	31	--	--	--	--

MAXIMUM DESIGN PRESSURE
FOR 2X5 HEADER - 2 SPANS

SLAT	STORM BAR HEIGHT					
TT	60	72	84	96	108	120
92	100	94	80	70	62	56
96	90	86	74	65	57	52
102	75	75	65	57	51	46
108	60	60	58	51	45	41
116	50	50	50	44	39	35
128	35	35	35	35	32	--

MAXIMUM DESIGN PRESSURE
FOR 2X5 HEADER - 3+ SPANS

SLAT	STORM BAR HEIGHT					
TT	60	72	84	96	108	120
120	85	70	60	53	47	42
138	64	53	45	40	35	32
144	59	49	42	36	32	--
153	52	43	37	32	--	--
162	46	38	33	--	--	--
174	40	33	--	--	--	--

MAXIMUM DESIGN PRESSURE
FOR 2X6 HEADER - 2 SPANS

SLAT	STORM BAR HEIGHT					
TT	60	72	84	96	108	120
92	100	100	100	93	83	75
96	90	90	90	86	76	69
102	75	75	75	75	67	61
108	60	60	60	60	60	54
116	50	50	50	50	50	47
128	35	35	35	35	35	35

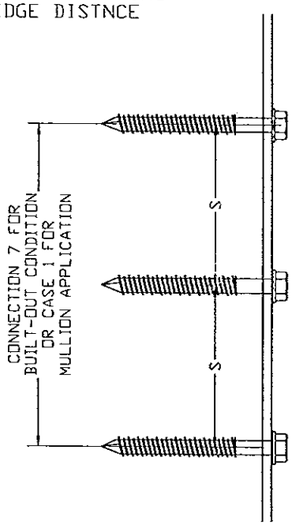
MAXIMUM DESIGN PRESSURE
FOR 2X6 HEADER - 3+ SPANS

SLAT	STORM BAR HEIGHT					
TT	60	72	84	96	108	120
138	85	71	60	53	47	42
144	78	65	56	49	43	39
153	69	57	49	43	38	34
162	60	51	44	38	34	30
174	50	44	38	33	--	--
192	35	35	31	--	--	--

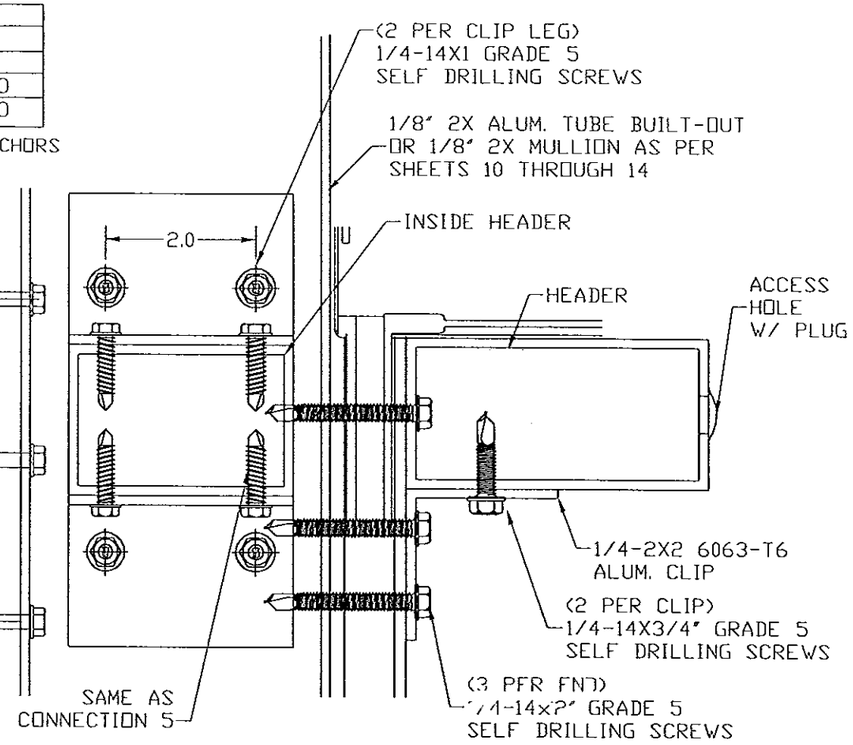
CONNECTION 7
MINIMUM NUMBER OF ANCHORS
TO SECURE BUILT-OUT TO WALL
AT HEADER CONNECTION

	ANCHOR TYPE			
	A	B	E	G
n	2	5	2	2
S	3.0	3.0	1.0	4.0
ED	2.5	2.5	1.0	4.0

n - MINIMUM NUMBER OF ANCHORS
S - ANCHOR SPACING
ED - EDGE DISTNCE



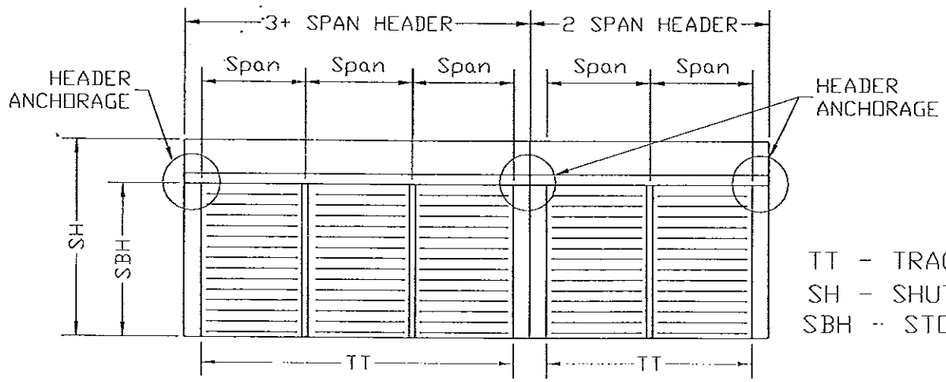
HEADER MOUNT



ANCHOR SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	EMBEDMENT	ED	BASE MATERIAL
A	1/4" TAPCON	ITW	1 3/4"	2 1/2"	3192 psi CONCRETE
B	1/4" TAPCON	ITW	1 1/4"	2 1/2"	HOLLOW BLOCK
C	5/16" TAPCON	ITW	2 1/4"	4"	GF BLOCK
D	5/16" TAPCON	ITW	1 3/4"	4"	HOLLOW BLOCK
E	1/4" TAPCON	ITW	1 3/4"	1"	PT WOOD (SG)=.55)
F	1/4-20 CALKIN	POWERS	7/8"	3"	3000 psi CONCRETE
G	3/8" WEDGE BOLTS	POWERS	2 1/2"	4"	3000 psi CONCRETE

ED - EDGE DISTANCE



TT - TRACK TO TRACK
SH - SHUTTER HEIGHT
SBH - STORM BAR HEIGHT

Manufacturer:
CROCI
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6360 TOPAZ COURT
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PRODUCT:
ES 55
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ROLL-UP SHUTTER

Engineering:
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Tel.: (954) 585-0304
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PEDRO M. DE FIGUEIREDO
LICENSE
No. 52609
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MAR 11 2013

MIAMI-DADE BCCO:

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 13-0327.03
Expiration Date 07/03/2018
By
Miami Dade Product Control

Date: 01/16/13
Scale: NA
Design by: PPMF

Drawing Number
13-017

MULLION SELECTION TABLES

ALLOWABLE DESIGN LOAD - Pd (Psf)

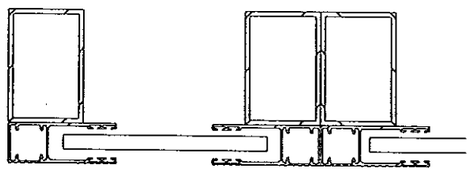
CASE 1 :

SINGLE SPAN SHUTTERS AND MULTIPLE SPAN SHUTTERS
WITH HEADER ANCHORED TO WALL

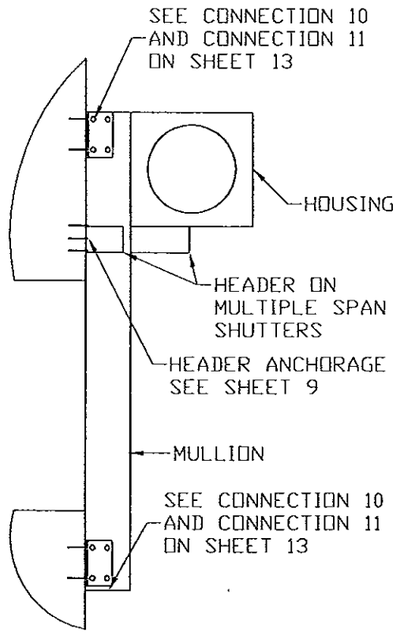
2x2 MULLION

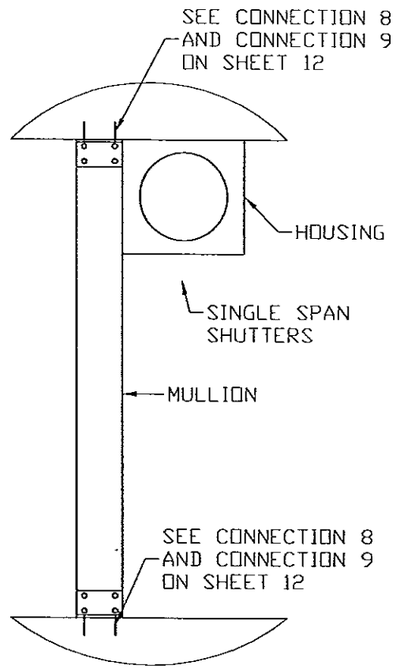
SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	68	39	--	--	--	--
48	90	65	38	--	--	--	--
51	75	61	36	--	--	--	--
54	60	58	34	--	--	--	--
58	50	50	31	--	--	--	--
64	35	35	--	--	--	--	--

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3



END MULLION INTERMEDIATE MULLION





2x3 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	100	100	66	44	31	--
48	90	90	90	63	43	30	--
51	75	75	75	60	40	--	--
54	60	60	60	56	38	--	--
58	50	50	50	50	35	--	--
64	35	35	35	35	32	--	--

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

2x4 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	100	100	100	90	63	46
48	90	90	90	90	86	61	44
51	75	75	75	75	75	57	42
54	60	60	60	60	60	54	39
58	50	50	50	50	50	50	37
64	35	35	35	35	35	35	33

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

2x5 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	100	100	100	100	100	80
48	90	90	90	90	90	90	77
51	75	75	75	75	75	75	73
54	60	60	60	60	60	60	60
58	50	50	50	50	50	50	50
64	35	35	35	35	35	35	35

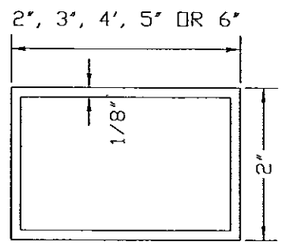
LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

2x6 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	100	100	100	100	100	100
48	90	90	90	90	90	90	90
51	75	75	75	75	75	75	75
54	60	60	60	60	60	60	60
58	50	50	50	50	50	50	50
64	35	35	35	35	35	35	35

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

SHAPES:
1/8-2X2 6063-T6
1/8-2X3 6063-T6
1/8-2X4 6063-T6
1/8-2X5 6063-T6
1/8-2X6 6063-T6



Manufacturer:
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MIAMI-DADE BCCO:

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Date: 01/16/13
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Design by: PPMF

Drawing Number
13-017

Sheet
10 of 14

MULLION SELECTION TABLES

ALLOWABLE DESIGN LOAD - Pd (Psf)

2x2 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	67	40	--	--	--	--	--
48	64	38	--	--	--	--	--
51	60	36	--	--	--	--	--
54	57	34	--	--	--	--	--
58	50	32	--	--	--	--	--
64	35	--	--	--	--	--	--

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

2x3 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	89	67	45	32	--	--
48	90	85	64	43	31	--	--
51	75	75	60	41	--	--	--
54	60	60	57	38	--	--	--
58	50	50	50	36	--	--	--
64	35	35	35	32	--	--	--

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

2x4 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	89	74	64	56	47	36
48	90	85	71	61	54	45	35
51	75	75	67	58	51	42	32
54	60	60	60	55	48	40	31
58	50	50	50	50	44	37	--
64	35	35	35	35	35	34	--

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

2x5 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	89	74	64	56	50	45
48	90	85	71	61	54	48	43
51	75	75	67	58	51	45	41
54	60	60	60	55	48	43	38
58	50	50	50	50	44	40	36
64	35	35	35	35	35	35	32

LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

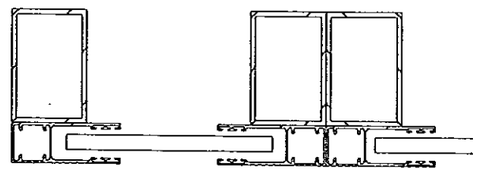
2x6 MULLION

SLAT SPAN	MULLION HEIGHT						
	48	60	72	84	96	108	120
46	100	89	74	64	56	50	45
48	90	85	71	61	54	48	43
51	75	75	67	58	51	45	41
54	60	60	60	55	48	43	38
58	50	50	50	50	44	40	36
64	35	35	35	35	35	35	32

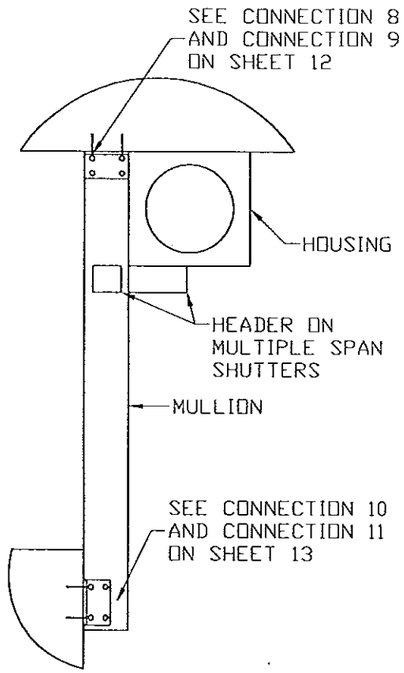
LOADS ARE LIMITED BY THE SLAT SPAN TABLE ON SHEET 3

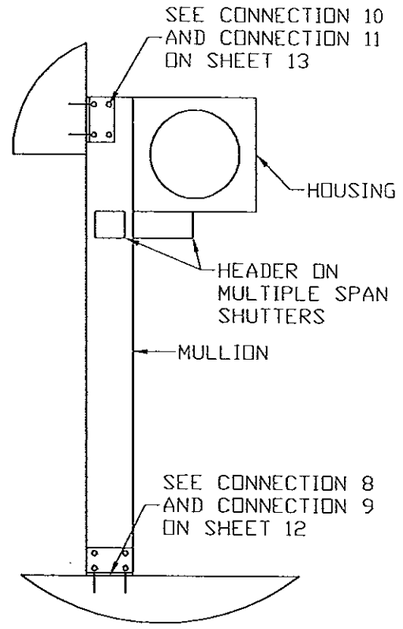
CASE 2:

MULTIPLE SPAN SHUTTERS WITH HEADER ANCHORED TO MULLION

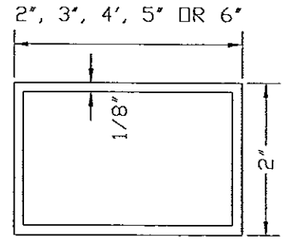


END MULLION INTERMEDIATE MULLION





SHAPES:
1/8-2X2 6063-T6
1/8-2X3 6063-T6
1/8-2X4 6063-T6
1/8-2X5 6063-T6
1/8-2X6 6063-T6



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MIAMI-DADE BCCO:

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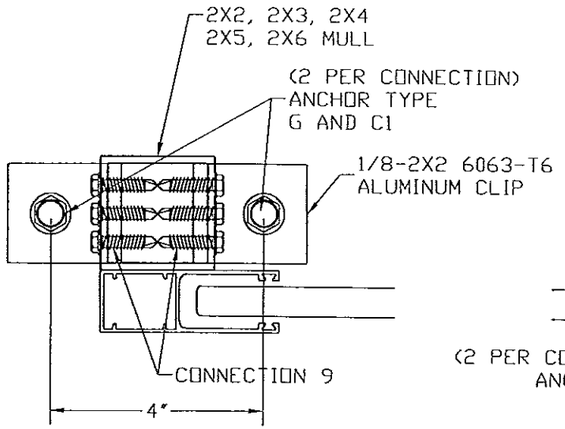
Acceptance No 13-0327.03
Expiration Date 7/03/2016
By
Miami Dade Product Control

Date: 01/16/13
Scale: NA
Design by: PPMF

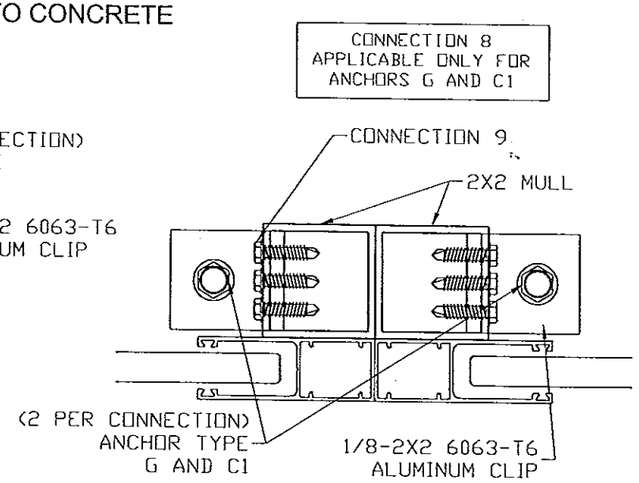
Drawing Number
13-017

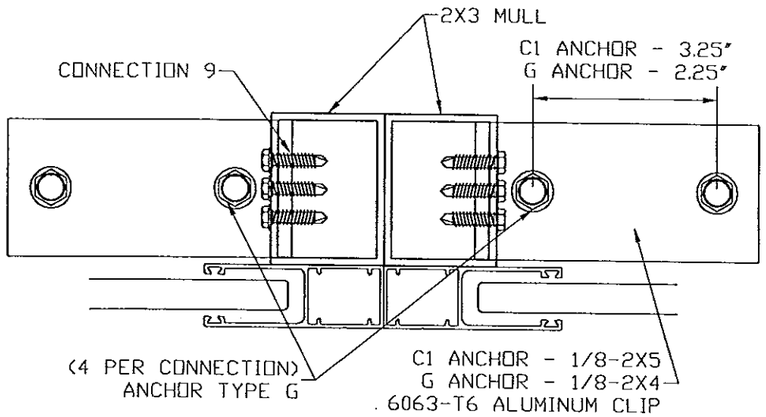
MULLION BARS ANCHORAGE

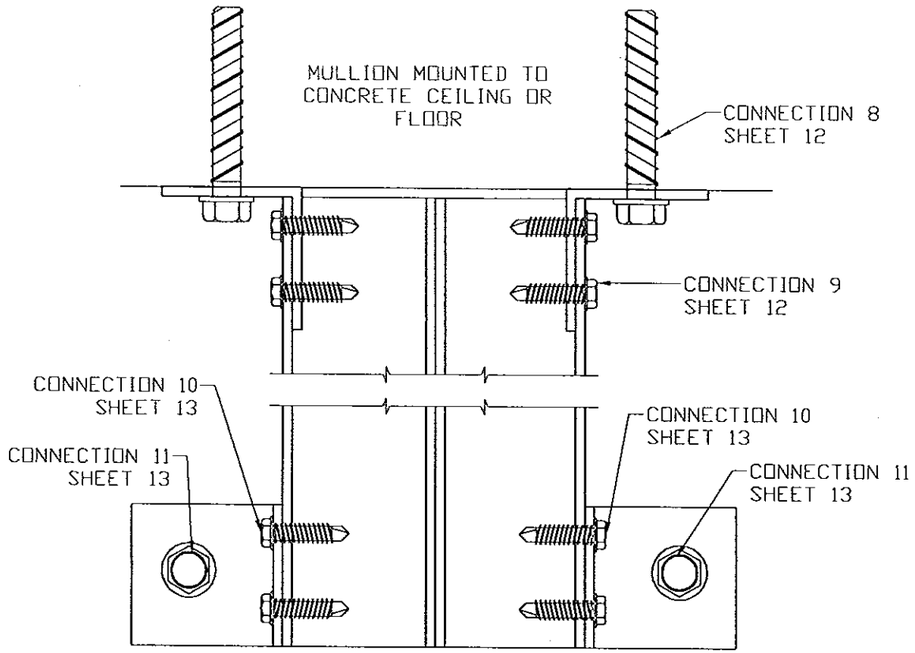
CONNECTION 8
FLOOR/CEILING MOUNTED TO CONCRETE



CONNECTION 8
APPLICABLE ONLY FOR
ANCHORS G AND C1



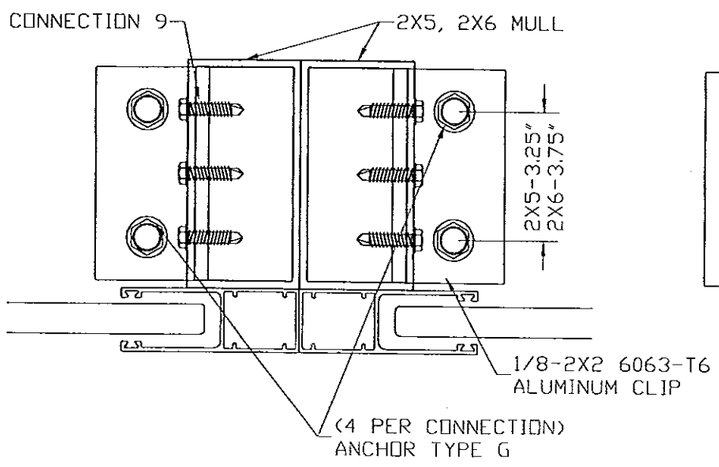


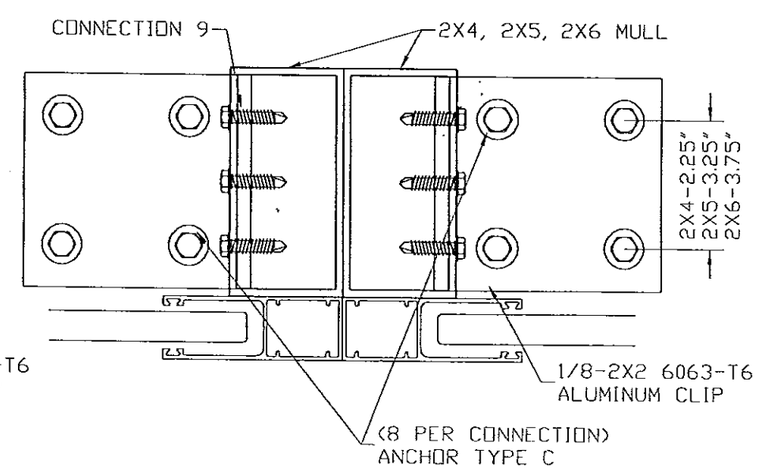


ANCHOR SCHEDULE

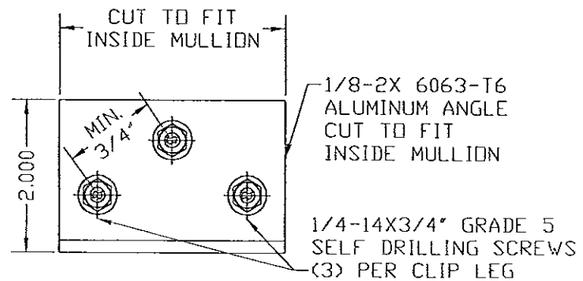
TYPE	DESCRIPTION	MANUFACTURER	EMBEDMENT	ED	BASE MATERIAL
C1	5/16" TAPCON	ITW	2 1/4"	3 1/8"	2899 psi CONCRETE
G	3/8" WEDGE BOLTS	POWERS	2 1/2"	4"	3000 psi CONCRETE

NOTES: 1- ED - EDGE DISTANCE
2- EMBEDMENT DIMENSION ARE TAKEN BEYOND THE WALL DRESSING





CONNECTION 9
CLIP ANCHORED TO MULLION BAR



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Drawing Number
13-017

Sheet
12 of 14

CONNECTION 11
MULLION BARS ANCHORED TO WALL

SINGLE MULLION
CONNECTION 11 SELECTION

MULLION TYPE	TYPE OF ANCHORS			
	A	B	C/C1/G	E
2x2	11.2	11.4	11.1	11.2
2x3	11.2	11.5	11.2	11.2
2x4	11.3	11.5	11.2	11.2
2x5	11.3	----	11.2	11.2
2X6	11.3	----	11.2	11.3

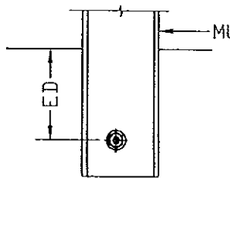
DUAL MULLIONS
CONNECTION 11 SELECTION

MULLION TYPE	TYPE OF ANCHORS			
	A	B	C/C1/G	E
2x2	11.7	11.9	11.6	11.6
2x3	11.7	11.10	11.7	11.7
2x4	11.8	11.10	11.7	11.7
2x5	11.8	----	11.7	11.7
2X6	11.8	----	11.7	11.7

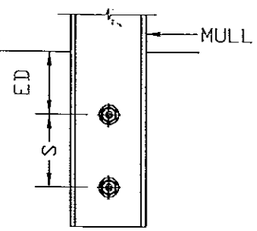
	ANCHOR TYPE			
	A/B	E	C/C1	G
S	3.0	2.0	3.75	4.0
ED	2.5	1.0	4.00	4.0

S - ANCHOR SPACING
ED - EDGE DISTANCE

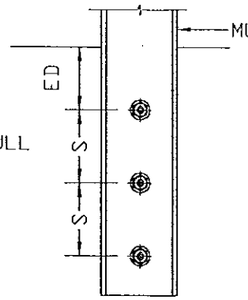
CONNECTION 11.1
SINGLE MULLION
ONE ANCHOR



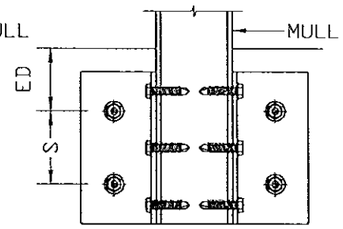
CONNECTION 11.2
SINGLE MULLION
TWO ANCHORS



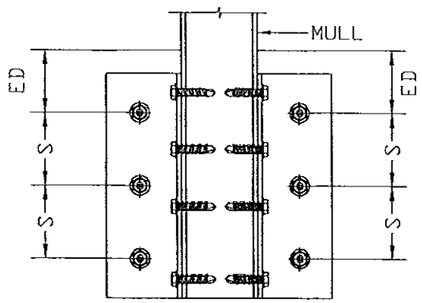
CONNECTION 11.3
SINGLE MULLION
THREE ANCHORS



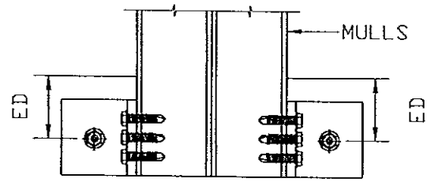
CONNECTION 11.4
SINGLE MULLION
FOUR ANCHORS



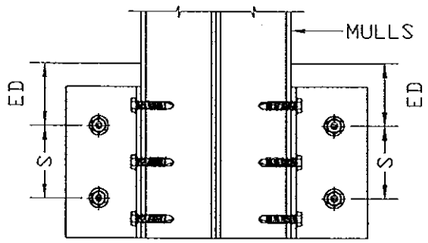
CONNECTION 11.5
SINGLE MULLION
SIX ANCHORS



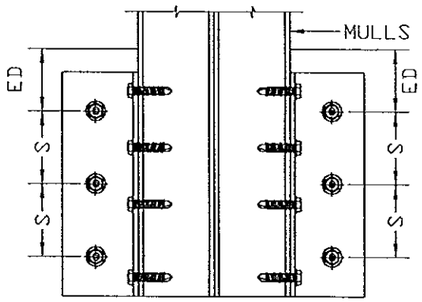
CONNECTION 11.6
DUAL MULLIONS
TWO ANCHORS



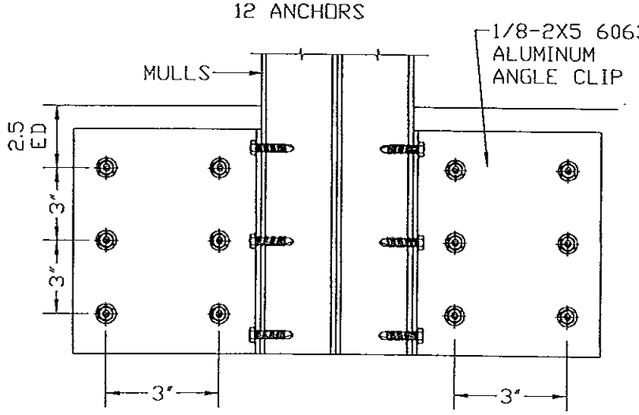
CONNECTION 11.7
DUAL MULLIONS
FOUR ANCHORS



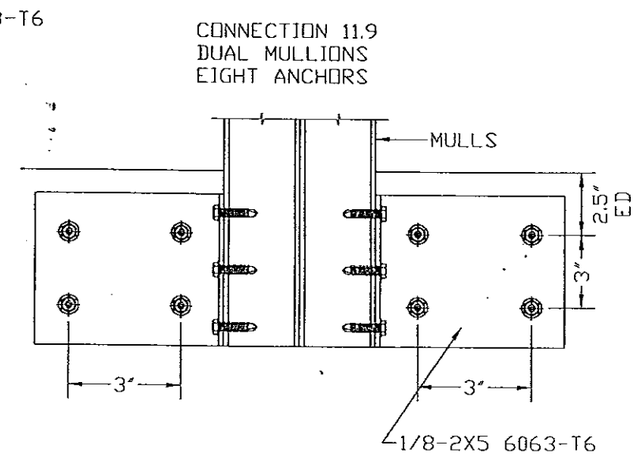
CONNECTION 11.8
DUAL MULLIONS
SIX ANCHORS



CONNECTION 11.10
DUAL MULLIONS
12 ANCHORS



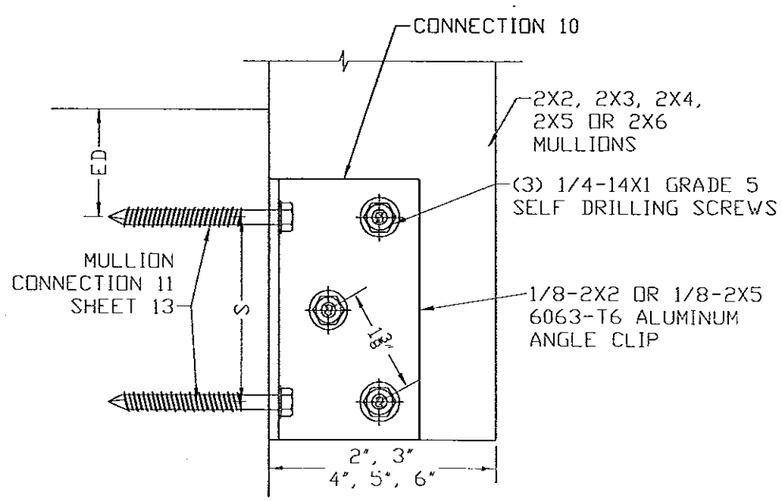
CONNECTION 11.9
DUAL MULLIONS
EIGHT ANCHORS



ANCHOR SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	EMBEDMENT	ED	BASE MATERIAL
A	1/4" TAPCON	ITW	1 3/4"	2 1/2"	3192 psi CONCRETE
B	1/4" TAPCON	ITW	1 1/4"	2 1/2"	HOLLOW BLOCK
C	5/16" TAPCON	ITW	2 1/4"	4"	GF BLOCK
C1	5/16" TAPCON	ITW	2 1/4"	3 1/8"	2899 psi CONCRETE
E	1/4" TAPCON	ITW	1 3/4"	1"	PT WOOD (SG>=.55)
G	3/8" WEDGE BOLTS	POWERS	2 1/2"	4"	3000 psi CONCRETE

CONNECTION 10
CLIP ANCHORED TO MULLION BAR



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6360 TOPAZ COURT
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EMAIL: INFO@CROCIUSA.COM

PRODUCT:
ES 55
EXTRUDED ALUMINUM
ROLL-UP SHUTTER

Engineering:
EngCo Inc.
CA 8116
5595 Orange Dr. 201
Davie, Fl. 33314
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PEDRO M. DE FIGUEIREDO
LICENSE
No. 52609
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MAR 11 2013

MIAMI-DADE BCCO

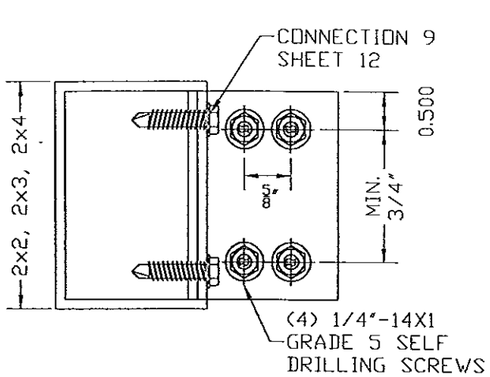
PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 13-0327.03
Expiration Date 07/03/2018
By
Miami Dade Product Control

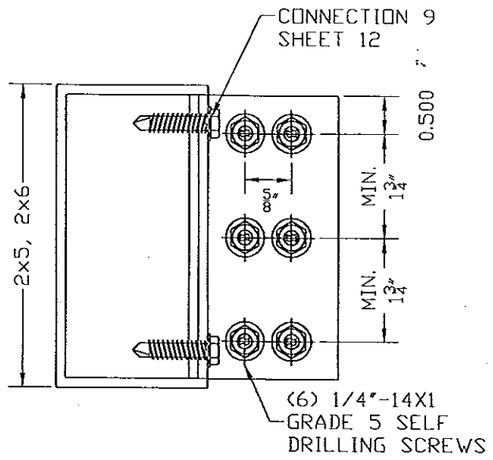
Date: 01/16/13
Scale: NA
Design by: PPMF

Drawing Number
13-017

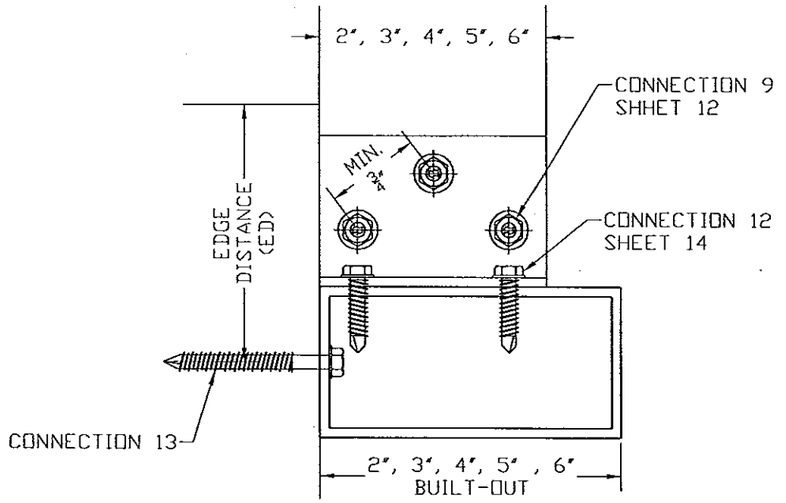
Sheet
13 of 14

CONNECTION 12
MULLION BARS ANCHORAGE FLOOR/CEILING TO BUILT-OUT TUBE





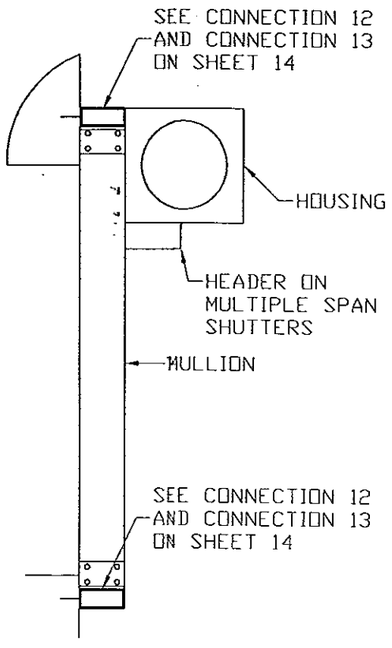
CONNECTION 13
BUILT-OUT WALL ANCHORAGE SUPPORTING MULLIONS



ANCHOR SCHEDULE

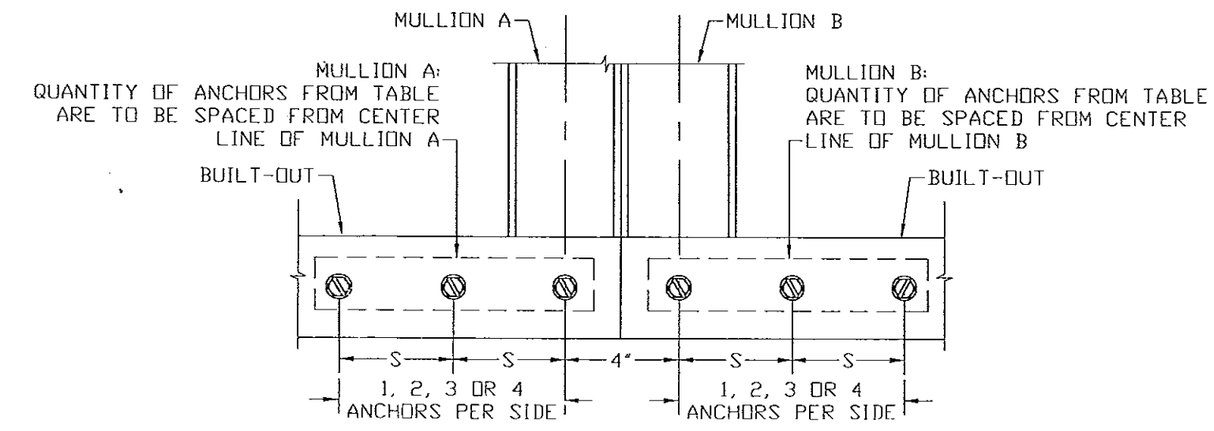
TYPE	DESCRIPTION	MANUFACTURER	EMBEDMENT	ED	BASE MATERIAL
A	1/4" TAPCON	ITW	1 3/4"	2 1/2"	3192 psi CONCRETE
B	1/4" TAPCON	ITW	1 1/4"	2 1/2"	HOLLOW BLOCK
C	5/16" TAPCON	ITW	2 1/4"	4"	GF BLOCK
C1	5/16" TAPCON	ITW	2 1/4"	3 1/8"	2899 psi CONCRETE
E	1/4" TAPCON	ITW	1 3/4"	1"	WOOD (SG>=.55)
G	3/8" WEDGE BOLTS	POWERS	2 1/2"	4"	3000 psi CONCRETE

NOTES: 1- ED - EDGE DISTANCE
2- EMBEDMENT DIMENSION ARE TAKEN BEYOND THE WALL DRESSING



MINIMUM NUMBER OF ANCHORS PER BUILT-OUT

MULLION BARS	ANCHOR TYPE			
	A/E	B	C1/C	G
2x2	3	7	2	2
2x3	4	12	3	2
2x4	4	12	3	3
2x5	4	-	4	3
2x6	5	-	4	3
S	3	3	3.75	4



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