



MIAMI-DADE COUNTY, FLORIDA
METRO-DADE FLAGLER BUILDING

BUILDING CODE COMPLIANCE OFFICE
METRO-DADE FLAGLER BUILDING
140 WEST FLAGLER STREET, SUITE 1603
MIAMI, FLORIDA 33130-1563
(305) 375-2901 FAX (305) 375-2908

CONTRACTOR LICENSING SECTION
(305) 375-2527 FAX (305) 375-2558

CONTRACTOR ENFORCEMENT SECTION
(305) 375-2966 FAX (305) 375-2908

PRODUCT CONTROL DIVISION
(305) 375-2902 FAX (305) 372-6339

PRODUCT CONTROL NOTICE OF ACCEPTANCE

Roller Star Corporation
6351 NW 28 Way,
Ft.Lauderdale FL 33309

Your application for Product Approval of:

Roll Up Shutter RE 1000

under Chapter 8 of the Code of Miami-Dade County governing the use of Alternate Materials and Types of Construction, and completely described herein, has been recommended for acceptance by the Miami-Dade County Building Code Compliance Office (BCCO) under the conditions specified herein.

This approval shall not be valid after the expiration date stated below. BCCO reserves the right to secure this product or material at anytime from a jobsite or manufacturer's plant for quality control testing.

If this product or material fails to perform in the approved manner, BCCO may revoke, modify, or suspend the use of such product or material immediately. BCCO reserves the right to revoke this approval, if it is determined BCCO that this product or material fails to meet the requirements of the South Florida Building Code.

The expense of such testing will be incurred by the manufacturer.

Acceptance No.: 99-0823.01

Expires: 01/21/2003

Raul Rodriguez
Chief Product Control Division

**THIS IS THE COVERSHEET, SEE ADDITIONAL PAGES FOR SPECIFIC AND GENERAL
CONDITIONS**

BUILDING CODE & PRODUCT REVIEW COMMITTEE

This application for Product Approval has been reviewed by the BCCO and approved by the Building Code and Product Review Committee to be used in Dade County, Florida under the conditions set forth above.

Francisco J. Quintana, R.A.

Director
Miami-Dade County
Building Code Compliance Office

Approved: 01/21/2000



Roller Star Corporation.

ACCEPTANCE No. : 99-0823.01

APPROVED : JAN 21 2000

EXPIRES : JAN 21 2003

NOTICE OF ACCEPTANCE: SPECIFIC CONDITIONS

1. SCOPE

This approves an aluminum slat roll-up shutter, as described in Section 2 of this Notice of Acceptance, designed to comply with the South Florida Building Code, 1994 Edition for Miami-Dade County (SFBC). For the locations where the pressure requirements, as determined by SFBC Chapter 23, do not exceed the Design Pressure Rating values indicated in the approved drawings.

2. PRODUCT DESCRIPTION

The **Extruded Aluminum Roll-Up Shutter** and its components shall be constructed in strict compliance with the following documents: Drawing No. 078-99, titled "RE 1000 Series Roll Shutters" prepared by EngCo, Inc., dated 06/26/99, revised on 09/22/99 & 11/23/99, sheets 1 through 6 of 6. They bear the Miami-Dade County Product Control Approval stamp with the Notice of Acceptance number and approval date by the Miami-Dade County Product Control Division. These documents shall hereinafter be referred to as the approved drawings.

3. LIMITATIONS

3.1 Minimum slat engagement shall be 1.125".

3.2 Minimum separation from interior of slat to glass being protected shall be as shown on sheet 2 of 6.

3.3 The operating mechanism, not part of this approval shall be certified by a recognized testing agency.

3.4 All permanent set components, included but not limited to embedded anchor bolts, threaded cones, metal shields, etc., must be protected against corrosion, contamination and damage at all time.

4. INSTALLATION

The Aluminum Slat Roll-Up Shutter and its components shall be installed in strict compliance with the approved drawings.

5. LABELING

Each shutter shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved".

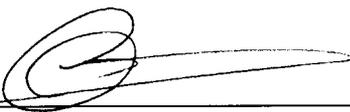
6. BUILDING PERMIT REQUIREMENTS

6.1 Application for building permit shall be accompanied by copies of the following:

6.1.1 This Notice of Acceptance.

6.1.2 Duplicate copies of the approved drawings, as identified in Section 2 of this Notice of Acceptance, clearly marked to show the components selected for the proposed installation.

6.1.3 Any other documents required by the Building Official or the South Florida Building Code (SFBC) in order to properly evaluate the installation of this system.



Candido F. Font, P.E., Sr. Product Control Examiner
Product Control Division

Roller Star Corporation.

ACCEPTANCE No. : 99-0823.01

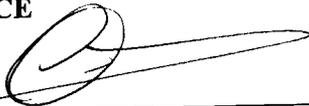
APPROVED : JAN 21 2000

EXPIRES : JAN 21 2003

NOTICE OF ACCEPTANCE: STANDARD CONDITIONS

1. Renewal of this Acceptance (approval) shall be considered after a renewal application has been filed and the original submitted documents, including test-supporting data, engineering documents, are no older than eight (8) years.
2. Any and all approved products shall be permanently labeled with the manufacturer's name, city, state, and the following statement: "Miami-Dade County Product Control Approval", or as specifically stated in the specific conditions of this Acceptance.
3. Renewals of Acceptance will not be considered if:
 - a. There has been a change in the South Florida Building Code affecting the evaluation of this product and the product is not in compliance with the code changes.
 - b. The product is no longer the same product (identical) as the one originally approved.
 - c. If the Acceptance holder has not complied with all the requirements of this acceptance, including the correct installation of the product.
 - d. The engineer who originally prepared, signed and sealed the required documentation initially submitted, is no longer practicing the engineering profession.
4. Any revision or change in the materials, use, and/or manufacture of the product or process shall automatically be cause for termination of this Acceptance, unless prior written approval has been requested (through the filing of a revision application with appropriate fee) and granted by this office.
5. Any of the following shall also be grounds for removal of this Acceptance:
 - a. Unsatisfactory performance of this product or process.
 - b. Misuse of this Acceptance as an endorsement of any product, for sales, advertising or any other purposes.
6. The Notice of Acceptance 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 Notice of Acceptance is displayed, then it shall be done in its entirety.
7. A copy of this Acceptance as well as approved drawings and other documents, where it applies, shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at all time. The engineer need not reseal the copies.
8. Failure to comply with any section of this Acceptance shall be cause for termination and removal of Acceptance.
9. This Notice of Acceptance consists of pages 1, 2 and this last page 3.

END OF THIS ACCEPTANCE



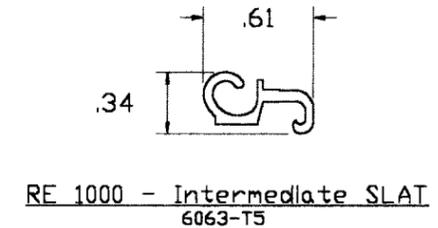
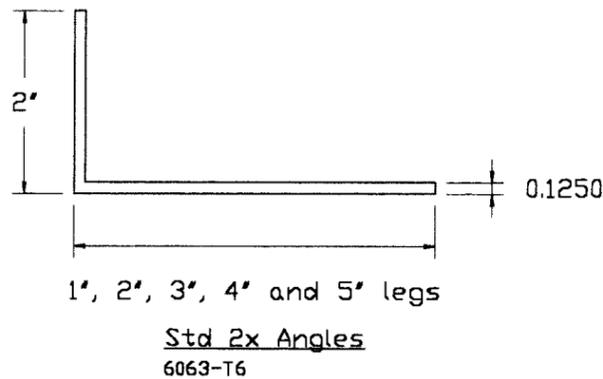
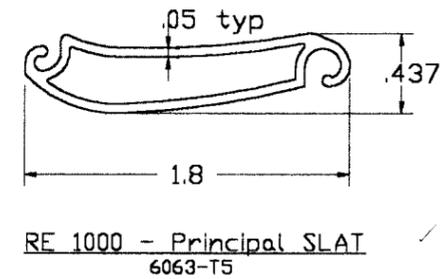
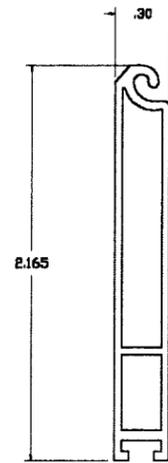
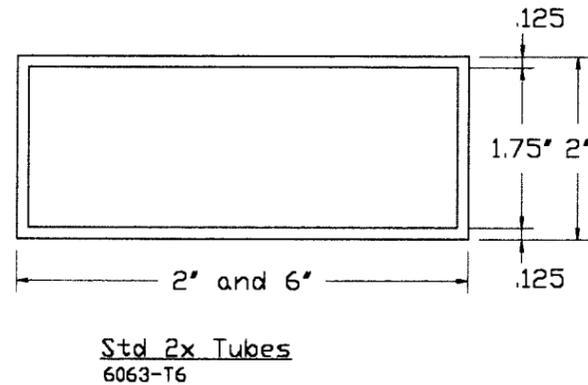
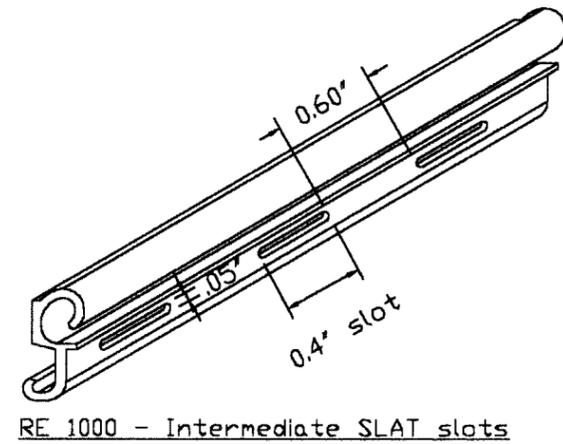
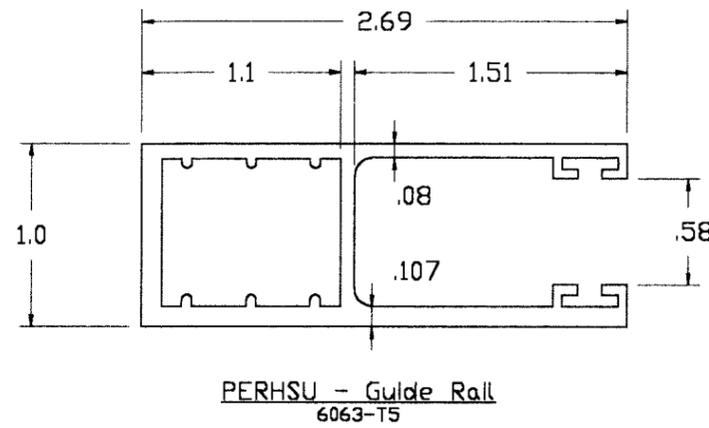
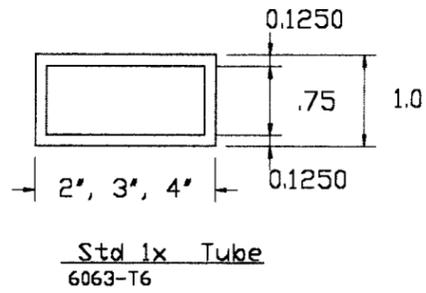
Candido F. Font, P.E., Sr. Product Control Examiner
Product Control Division

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 - MULTIPLE SPAN CRITERIA

General Notes:

- 1- CODE: This product has been tested and designed in accordance with the South Florida Building Code, Dade County 94 edition, under Chapters 23 and 35.
- 2- DEFINITION: This product is an aluminum rolling type Shutter, designed, constructed and erected to easily enclose an area, providing protection from Hurricane force winds within the Designed Allowable Pressures and Limitations stated in this Approval.
- 3- POSTING: A permanent legible decal shall be placed at readily visible location (See Sheet 2) reading the following:
 "RE 1000 SERIES ROLL SHUTTER
 ROLLER STAR
 FT. LAUDERDALE - FLORIDA
 DADE COUNTY PRODUCT CONTROL APPROVED"
- 4- LOADS: Each installation must meet the Design Load calculated by a professional Engineer. The Designed Load MUST comply with Chapter 23 (SFBC-section 2309) and ASCE 7-88 (section 6). BASIC WIND SPEED = 110 MPH
- 5- MATERIAL: All aluminum structure and components shall be designed as per section 30 of the SFBC. Aluminum extrusions shall be 6063-T5 or as noted. Vertical bars, headers and Mullions shall be designed by rational analysis using the Aluminum Construction Manual and SFBC as references.
- 6- FASTENERS: Assembly screws and anchors shall be as specified at current set of drawings. Installation and loads as per manufacturer specifications.



APPROVED AS COMPLYING WITH THE
 SOUTH FLORIDA BUILDING CODE
 DATE January 21, 2000
 BY [Signature]
 PRODUCT CONTROL DIVISION
 BUILDING CODE COMPLIANCE OFFICE
 ACCEPTANCE NO. 99-0823.01

EngCo, Inc.
 Engineering Services
 CA# 8118
 9957 NW 7th St.
 Plantation - Florida - 33324
 Tel.: 954 424-4064

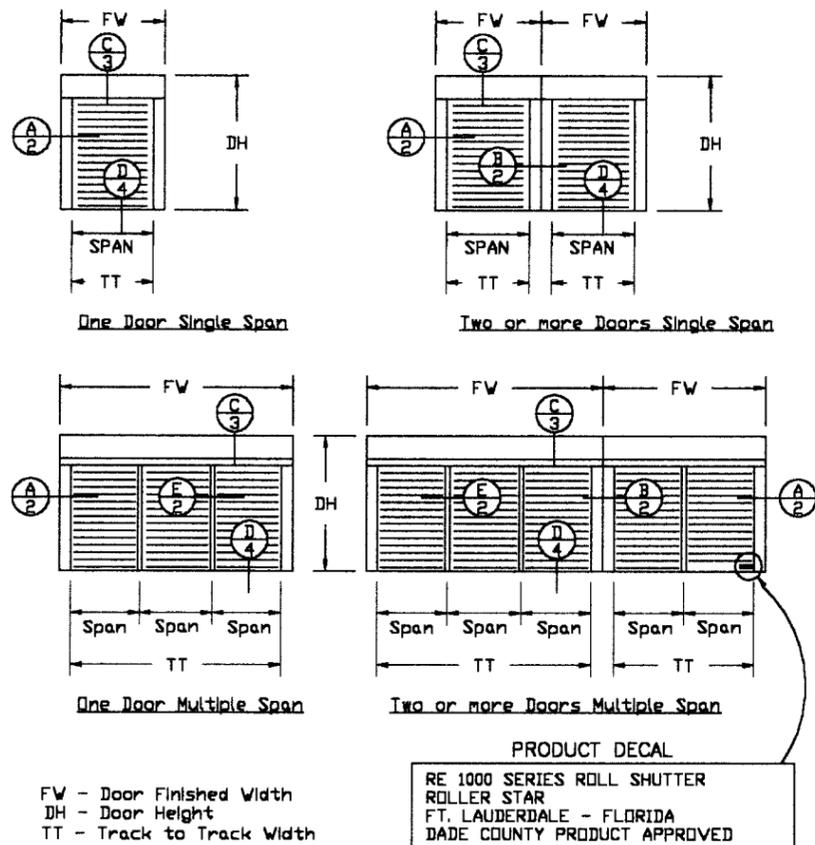
[Signature]
 9/22/99
 Pedro De Figueiredo
 PE 62809

RE 1000 Series Roll Shutters
 Roller Star
 Roller Star
 6351 NW 28th Way Suite C
 Ft Lauderdale - Florida - 33309
 Tel.: 954 972-4772

| Date: 6/26/99 | | Scale: none | | Designed by: PPMF | |
|---------------|------------------|-------------|--------|-------------------|------|
| Rev. # | Description | Date | Rev. # | Description | Date |
| 1 | Slat Terminology | 9/22/99 | | | |
| | | | | | |
| | | | | | |

SHEET
 1 of 6
 Drawing Number
 078-99

Typical Elevations



| Minimum Separation from glass surface | |
|---------------------------------------|---------------------|
| Below 30' elevation | Above 30' elevation |
| 5" - TT >= 66" | 3' |
| 4 5/8" - TT >= 48" | |
| 4" - TT >= 38" | |
| 3 3/8" - TT >= 30" | |

Under Impact Load

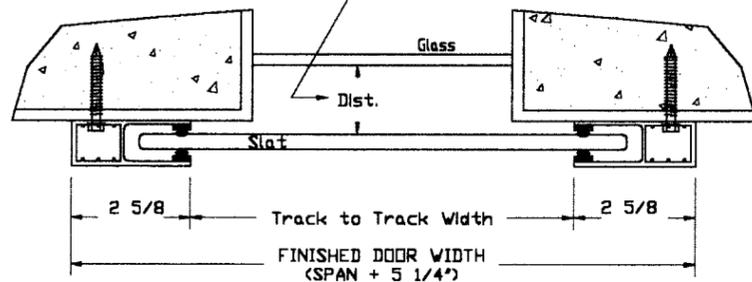


TABLE 1/2

RE 1000 SLAT
Maximum Track To Track Width

| Design Load (Psf) | Maximum Track to Track | | |
|-------------------|------------------------|-----------|-------------|
| | Single Span | Two Spans | Three Spans |
| 30 | 64 | 133 | 199 |
| 45 | 58 | 133 | 199 |
| 55 | 54 | 133 | 195 |
| 65 | 51 | 132 | 187 |
| 75 | 49 | 128 | 180 |
| 85 | 47 | 121 | 173 |
| 95 | 45 | 114 | 166 |
| 105 | 43 | 109 | 161 |
| 115 | 42 | 104 | 156 |
| 125 | 41 | 100 | 152 |
| 135 | 40 | 96 | 148 |
| 145 | 39 | 92 | 145 |
| 155 | 38 | 89 | 141 |
| 165 | 37 | 87 | 138 |
| 175 | 37 | 84 | 136 |
| 185 | 36 | 82 | 133 |
| 195 | 35 | 80 | 131 |
| 205 | 35 | 78 | 129 |

Notes: 1- It is allowable to interpolate values in this table.
2- Multiple span conditions to be engineered as per job basis. See design criteria on sheet 6/6.

Detail Sections Track Mounts

Allowable Design Pressures X Anchor Spacing

| s | A | B | C |
|----|-----|-----|-----|
| 12 | 200 | 89 | 157 |
| 9 | 200 | 108 | 200 |
| 6 | 200 | 200 | 200 |
| 3 | 200 | 200 | 200 |

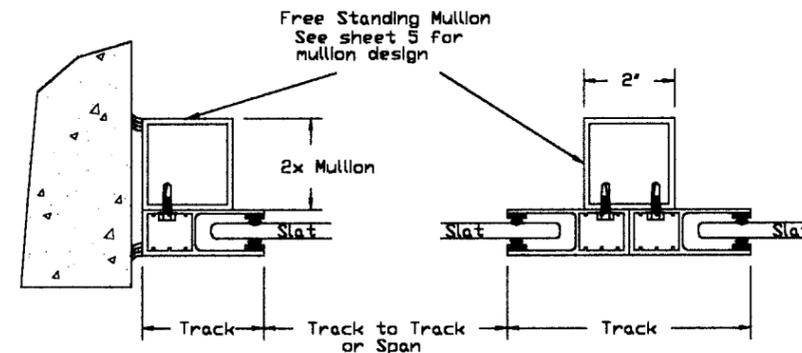
s- anchor spacing

Allowable Design Pressures X Anchor Spacing

| s | Pd |
|----|-----|
| 12 | 52 |
| 9 | 78 |
| 6 | 145 |
| 3 | 200 |

s- anchor spacing
Pd- Design Load
#10-16 Drill-Flex by Elco

Detail A/2 Built-Out Mount



Detail A/2 End Mullion Mount

Detail B/2 Center Mullion Mount

ANCHOR SCHEDULE

| Type | Description |
|------|---|
| A | 1/4" Tapcon- 1 3/4" embed into concrete by Elco. |
| B | 1/4" Tapcon - 1 1/4" embed into Hollow Block by Elco. |
| C | #14 s.s. wood screws w/ 1 1/2" embed into wood (SG=.55) |

EDGE DISTANCE = 3"

Allowable Design Pressures X Anchor Spacing

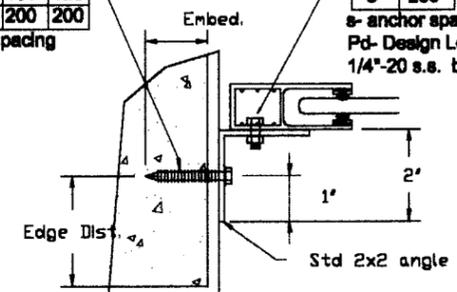
| s | A | B | C |
|----|-----|-----|-----|
| 12 | 94 | 35 | 44 |
| 9 | 145 | 55 | 89 |
| 6 | 200 | 101 | 125 |
| 3 | 200 | 200 | 200 |

s- anchor spacing

Allowable Design Pressures X Anchor Spacing

| s | Pd |
|----|-----|
| 12 | 78 |
| 9 | 125 |
| 6 | 200 |
| 3 | 200 |

s- anchor spacing
Pd- Design Load 300 series
1/4"-20 s.s. bolt & nut

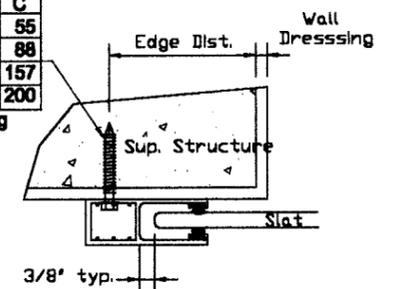


Detail A/2 Inside Mount

Allowable Design Pressures X Anchor Spacing

| s | A | B | C |
|----|-----|-----|-----|
| 12 | 83 | 28 | 55 |
| 9 | 125 | 37 | 88 |
| 6 | 200 | 69 | 157 |
| 3 | 200 | 200 | 200 |

s- anchor spacing



Detail A/2 Wall Mount

APPROVED AS COMPLYING WITH THE SOUTH FLORIDA BUILDING CODE
DATE January 21, 2000
BY [Signature]
PRODUCT CONTROL DIVISION
BUILDING CODE COMPLIANCE OFFICE
ACCEPTANCE NO. 99-0823.01

Detail E/2 Vertical Bars

EngCo, Inc.
Engineering Services
CAF 8116
9957 NW 7th St.
Plantation - Florida - 33324
Tel.: 954 424-4084

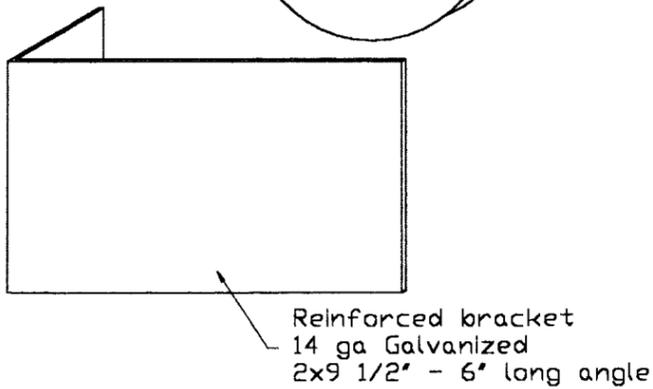
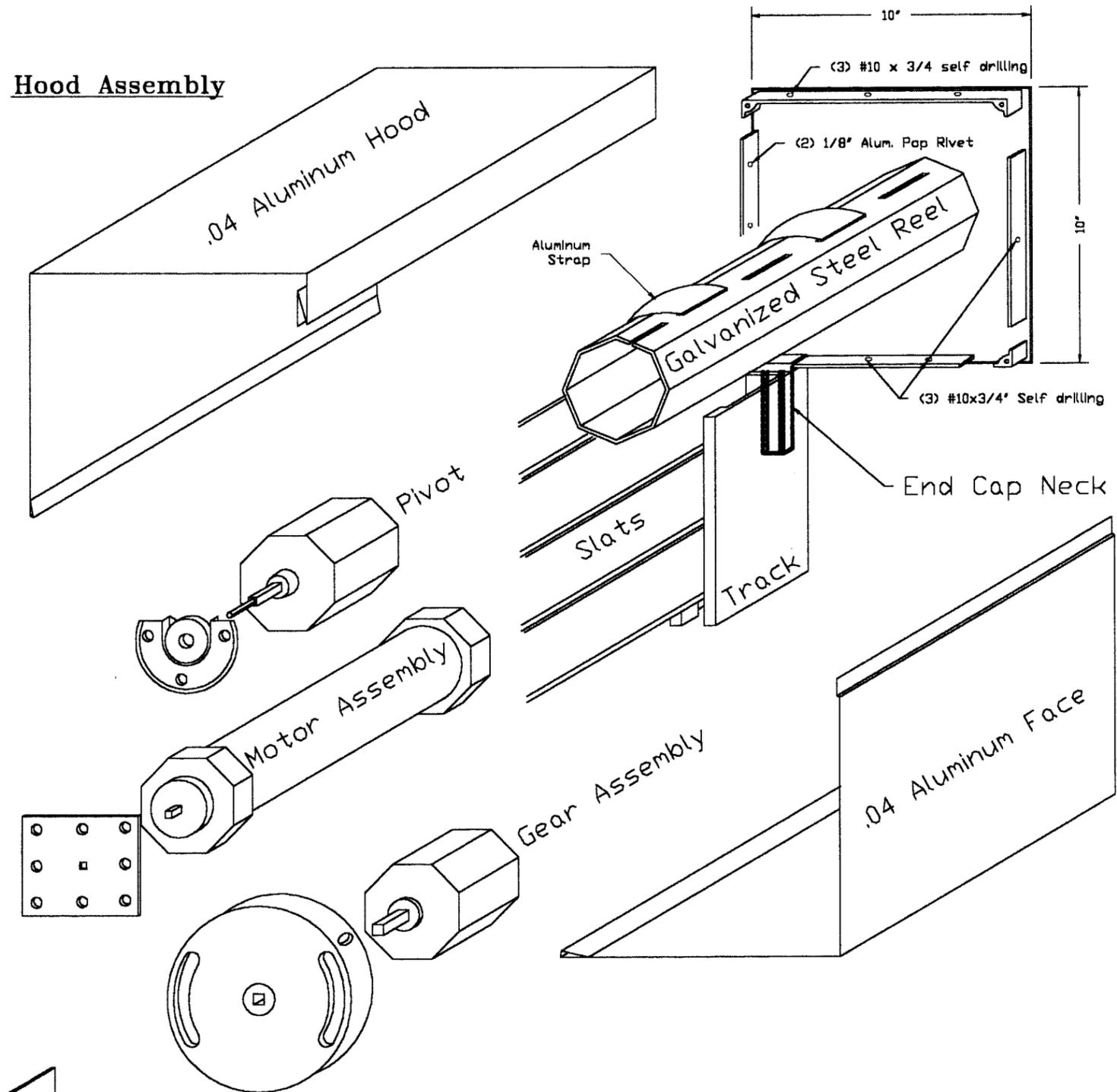
1/26/99
Pedro De Figueiredo
PE 52609

RE 1000 Series Roll Shutters
Roller Star
6351 NW 28th Way Suite C
Ft Lauderdale - Florida - 33309
Tel.: 954 972-4772

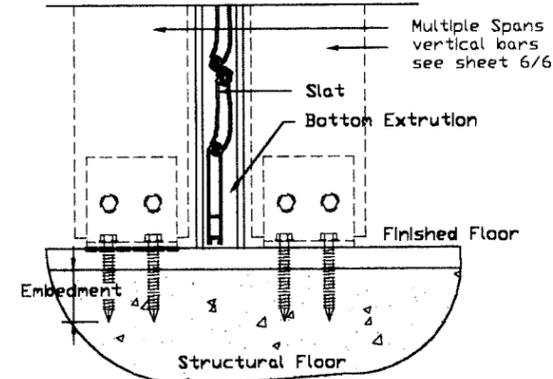
| Date: | Scale: | Designed by: |
|-------------|--------------------------------------|--------------|
| 6/26/99 | 1/2"-1" | PPMF |
| Description | | Date |
| 1 | Span Table 1/2, wood anchors tables. | 11/23/99 |

SHEET
2 of 6
Drawing Number
078-99

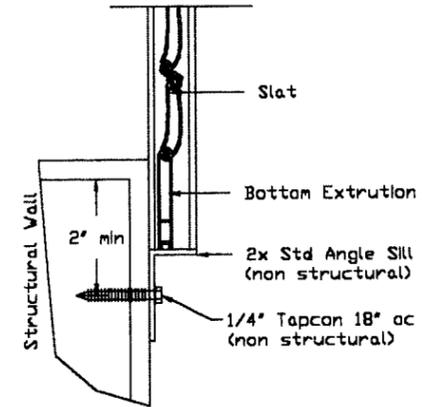
Hood Assembly



**Detail D/4
Sill Option 1**

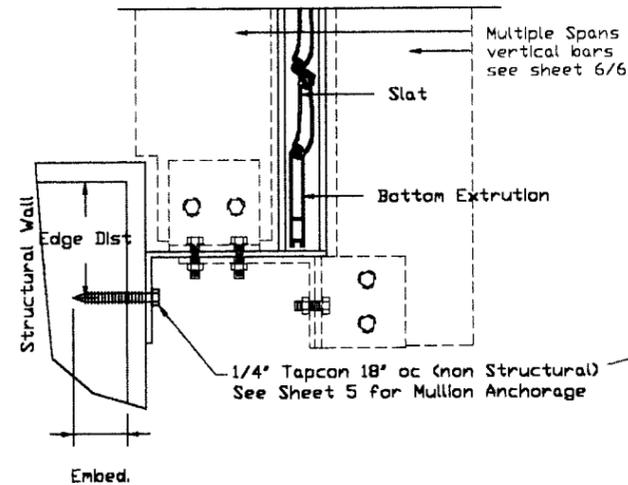


**Detail D/4
Sill Option 2**

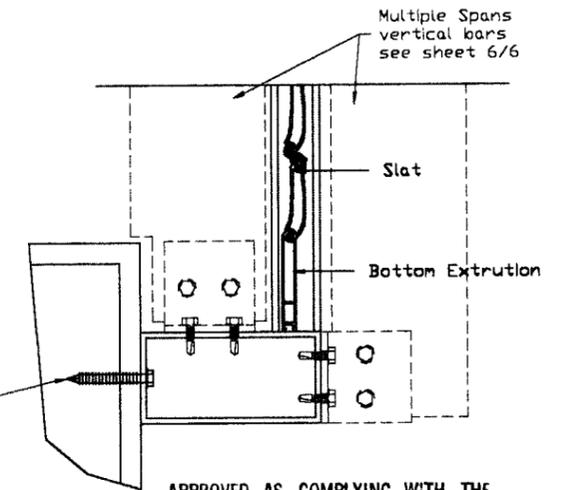


**Detail Sections
Sill Mount**

**Detail D/4
Sill Option 3**



**Detail D/4
Sill Option 4**



APPROVED AS COMPLYING WITH THE
SOUTH FLORIDA BUILDING CODE
DATE January 21, 2000
BY [Signature]
PRODUCT CONTROL DIVISION
BUILDING CODE COMPLIANCE OFFICE
ACCEPTANCE NO. 99-0823.01

EngCo, Inc.
Engineering Services
CA# 8118
9957 NW 7th St.
Plantation - Florida - 33324
Tel.: 954 424-4084

9/22/99
Pedro De Figueiredo
PE 62609

RE 1000 Series Roll Shutters
Roller Star
Roller Star
6351 NW 28th Way Suite C
Ft Lauderdale - Florida - 33309
Tel.: 954 972-4772

| Date: 6/26/99 | | Scale: 1/2"-1" | | Designed by: PPMF | |
|---------------|-------------|----------------|--------|-------------------|------|
| Rev. # | Description | Date | Rev. # | Description | Date |
| 1 | box screws | 9/22/99 | | | |
| | | | | | |
| | | | | | |

SHEET
4 of 6
Drawing Number
078-99

Mullion Height Selection Tables

Allowable Mullion Height

2x2 MULLION

| DW | Design Load (Pd) | | | | | | | | |
|-----|------------------|----|----|----|-----|-----|-----|-----|-----|
| | 45 | 55 | 65 | 75 | 100 | 125 | 150 | 175 | 200 |
| 168 | 35 | 33 | 31 | 29 | 27 | 24 | 22 | 20 | 19 |
| 152 | 36 | 34 | 32 | 30 | 28 | 25 | 23 | 21 | 20 |
| 136 | 38 | 35 | 33 | 32 | 29 | 27 | 24 | 23 | 21 |
| 120 | 39 | 37 | 35 | 33 | 30 | 28 | 26 | 24 | 22 |
| 104 | 41 | 38 | 36 | 35 | 31 | 29 | 27 | 26 | 24 |
| 88 | 44 | 41 | 38 | 37 | 33 | 31 | 29 | 27 | 26 |
| 72 | 47 | 44 | 41 | 39 | 36 | 33 | 31 | 29 | 28 |
| 56 | 51 | 47 | 45 | 43 | 39 | 36 | 34 | 32 | 31 |
| 40 | 57 | 53 | 50 | 48 | 43 | 40 | 38 | 36 | 34 |
| 24 | 67 | 63 | 60 | 57 | 52 | 48 | 45 | 43 | 41 |

2X3 MULLION

| DW | Design Load (Pd) | | | | | | | | |
|-----|------------------|----|----|----|-----|-----|-----|-----|-----|
| | 45 | 55 | 65 | 75 | 100 | 125 | 150 | 175 | 200 |
| 168 | 49 | 46 | 43 | 41 | 36 | 32 | 29 | 27 | 25 |
| 152 | 50 | 47 | 45 | 42 | 38 | 34 | 31 | 29 | 27 |
| 136 | 52 | 49 | 46 | 44 | 40 | 36 | 33 | 30 | 28 |
| 120 | 55 | 51 | 48 | 46 | 42 | 38 | 35 | 32 | 30 |
| 104 | 57 | 54 | 51 | 48 | 44 | 41 | 38 | 35 | 32 |
| 88 | 61 | 57 | 54 | 51 | 46 | 43 | 40 | 38 | 35 |
| 72 | 65 | 61 | 57 | 55 | 50 | 46 | 43 | 41 | 39 |
| 56 | 71 | 66 | 62 | 59 | 54 | 50 | 47 | 45 | 43 |
| 40 | 79 | 74 | 70 | 67 | 60 | 56 | 53 | 50 | 48 |
| 24 | 94 | 88 | 83 | 79 | 72 | 67 | 63 | 59 | 57 |

2X4 MULLION

| DW | Design Load (Pd) | | | | | | | | |
|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | 45 | 55 | 65 | 75 | 100 | 125 | 150 | 175 | 200 |
| 168 | 62 | 58 | 55 | 52 | 45 | 40 | 36 | 34 | 31 |
| 152 | 64 | 60 | 57 | 54 | 47 | 42 | 38 | 35 | 33 |
| 136 | 66 | 62 | 59 | 56 | 50 | 44 | 41 | 37 | 35 |
| 120 | 69 | 65 | 61 | 58 | 53 | 47 | 43 | 40 | 37 |
| 104 | 73 | 68 | 64 | 61 | 56 | 51 | 46 | 43 | 40 |
| 88 | 77 | 72 | 68 | 65 | 59 | 55 | 50 | 47 | 44 |
| 72 | 82 | 77 | 73 | 69 | 63 | 58 | 55 | 52 | 48 |
| 56 | 89 | 84 | 79 | 75 | 68 | 63 | 60 | 57 | 54 |
| 40 | 100 | 94 | 88 | 84 | 77 | 71 | 67 | 63 | 61 |
| 24 | 119 | 111 | 105 | 100 | 91 | 84 | 79 | 75 | 72 |

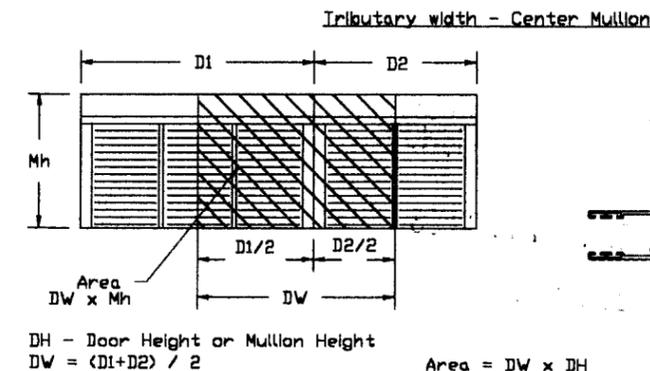
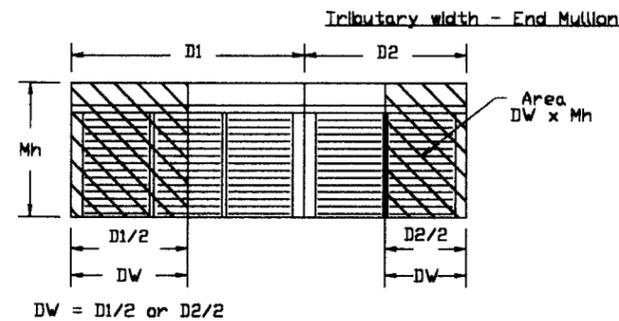
2X5 MULLION

| DW | Design Load (Pd) | | | | | | | | |
|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | 45 | 55 | 65 | 75 | 100 | 125 | 150 | 175 | 200 |
| 168 | 75 | 70 | 66 | 61 | 53 | 47 | 43 | 40 | 37 |
| 152 | 77 | 72 | 68 | 64 | 56 | 50 | 45 | 42 | 39 |
| 136 | 80 | 75 | 71 | 67 | 59 | 53 | 48 | 44 | 41 |
| 120 | 83 | 78 | 74 | 70 | 63 | 56 | 51 | 47 | 44 |
| 104 | 88 | 82 | 77 | 74 | 67 | 60 | 55 | 51 | 48 |
| 88 | 93 | 87 | 82 | 78 | 71 | 66 | 60 | 55 | 52 |
| 72 | 99 | 93 | 88 | 83 | 76 | 70 | 66 | 61 | 57 |
| 56 | 108 | 101 | 95 | 91 | 82 | 76 | 72 | 68 | 65 |
| 40 | 121 | 113 | 107 | 102 | 92 | 86 | 81 | 76 | 73 |
| 24 | 143 | 134 | 126 | 121 | 110 | 102 | 96 | 91 | 87 |

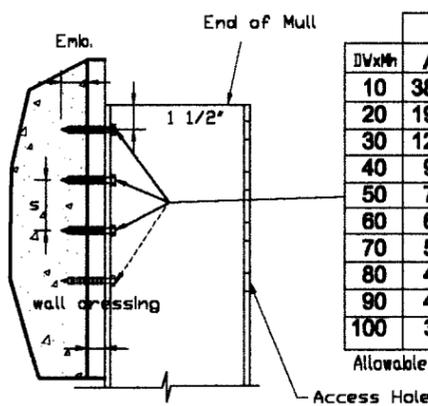
2X6 MULLION

| DW | Design Load (Pd) | | | | | | | | |
|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | 45 | 55 | 65 | 75 | 100 | 125 | 150 | 175 | 200 |
| 168 | 87 | 81 | 76 | 71 | 61 | 55 | 50 | 46 | 43 |
| 152 | 90 | 84 | 80 | 74 | 64 | 57 | 52 | 48 | 45 |
| 136 | 94 | 87 | 83 | 78 | 68 | 61 | 55 | 51 | 48 |
| 120 | 98 | 91 | 86 | 82 | 72 | 65 | 59 | 55 | 51 |
| 104 | 102 | 96 | 90 | 86 | 78 | 69 | 63 | 59 | 55 |
| 88 | 108 | 101 | 96 | 91 | 83 | 75 | 69 | 64 | 60 |
| 72 | 116 | 108 | 102 | 98 | 89 | 82 | 76 | 71 | 66 |
| 56 | 126 | 118 | 111 | 106 | 96 | 89 | 84 | 80 | 75 |
| 40 | 141 | 132 | 125 | 119 | 108 | 100 | 94 | 89 | 85 |
| 24 | 167 | 156 | 148 | 141 | 128 | 119 | 112 | 106 | 101 |

Note: Due to many combinations, the mullion tables were designed using a conservative approach. If necessary the design can be reevaluated in a job basis, upon presentation of proper calculation, signed and sealed by the engineer of record.



Mullion Anchored to Wall



| DWxMh | 3 ANCHORS | | | 4 ANCHORS | | |
|-------|-----------|-----|-----|-----------|-----|-----|
| | A | B | C | A | B | C |
| 10 | 388 | 174 | 299 | 515 | 233 | 399 |
| 20 | 193 | 87 | 150 | 258 | 116 | 200 |
| 30 | 129 | 58 | 100 | 172 | 78 | 133 |
| 40 | 97 | 44 | 75 | 129 | 58 | 100 |
| 50 | 77 | 35 | 60 | 103 | 47 | 80 |
| 60 | 64 | 29 | 50 | 86 | 39 | 67 |
| 70 | 55 | 25 | 43 | 74 | 33 | 57 |
| 80 | 48 | 22 | 37 | 64 | 29 | 50 |
| 90 | 43 | 19 | 33 | 57 | 26 | 44 |
| 100 | 39 | 17 | 30 | 52 | 23 | 40 |

Allowable Tributary Area - (DW x Mh)

s = 10 diameters typical (2 1/2")

Mullion Anchored to Angle or Tube

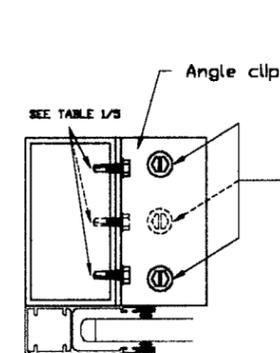
Allowable Design Load per clip (Pd)

#10-16x3/4" Drill-Flex Anchor

| DWxMh | 2 | 3 | 4 | 5 | 6 |
|-------|----|----|-----|-----|-----|
| 10 | 55 | 79 | 113 | 133 | 150 |
| 20 | 28 | 40 | 57 | 67 | 75 |
| 30 | 18 | 26 | 38 | 44 | 50 |
| 40 | 14 | 20 | 28 | 33 | 37 |
| 50 | 11 | 16 | 23 | 27 | 30 |
| 60 | 9 | 13 | 19 | 22 | 25 |
| 70 | 8 | 11 | 16 | 19 | 21 |
| 80 | 7 | 10 | 14 | 17 | 19 |
| 90 | 6 | 9 | 13 | 15 | 17 |
| 100 | 6 | 8 | 11 | 13 | 15 |

Note:
1- Multiply the Pd load by 2 if mullion used two clips.
2- Use 2 anchors for 2" and 3" clips
3- Use 3 anchors for 4", 5" and 6" clips
4- Tributary Area - (DW x Mh)

Mullion Anchored to Floor/Ceiling



| DWxMh | ANCHOR TYPE A | | | | | ANCHOR TYPE C | | | | |
|-------|---------------|-----|-----|-----|-----|---------------|----|----|-----|-----|
| | 2 | 3 | 4 | 5 | 6 | 2 | 3 | 4 | 5 | 6 |
| 10 | 68 | 102 | 153 | 175 | 239 | 61 | 67 | 78 | 110 | 117 |
| 20 | 33 | 51 | 76 | 87 | 119 | 30 | 34 | 38 | 55 | 58 |
| 30 | 22 | 34 | 51 | 58 | 80 | 20 | 22 | 25 | 37 | 39 |
| 40 | 16 | 26 | 38 | 44 | 60 | 15 | 17 | 19 | 28 | 29 |
| 50 | 13 | 20 | 31 | 35 | 48 | 12 | 13 | 15 | 22 | 23 |
| 60 | 11 | 17 | 25 | 29 | 40 | 10 | 11 | 13 | 18 | 19 |
| 70 | 9 | 15 | 22 | 25 | 34 | 9 | 10 | 11 | 16 | 17 |
| 80 | 8 | 13 | 19 | 22 | 30 | 8 | 9 | 10 | 14 | 15 |
| 90 | 7 | 11 | 17 | 19 | 27 | 7 | 8 | 9 | 12 | 13 |
| 100 | 7 | 10 | 15 | 17 | 24 | 6 | 7 | 8 | 11 | 12 |

Note:
1- Multiply the allowable load by 2 if mullion used two clips.
2- Use 2 anchors for 2", 3" and 4" clips
3- Use 3 anchors for 5" and 6" clips
4- Allowable Tributary Area - (DW x Mh)

ANCHOR SCHEDULE

| Type | Description |
|------|---|
| A | 1/4" Tapcon - 1 3/4" embed into concrete |
| B | 1/4" Tapcon - 1 1/4" embed into Hollow Block |
| C | #14 ss wood screws w/ 1 1/2" embed into wood (SG=.55) |

Mullion Anchored to Clip

TABLE 1/5 - Allowable Loads per # of anchors per Clip

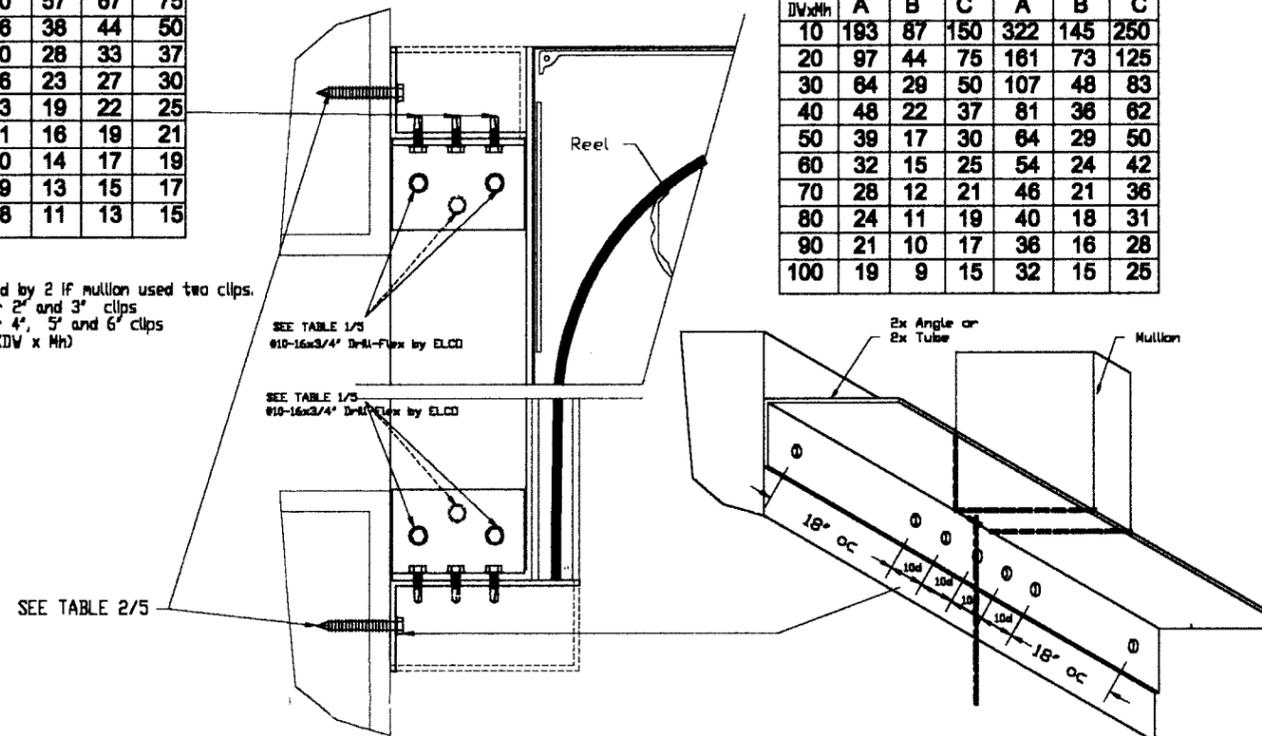
| DWxMh | # of ANCHOR | |
|-------|-------------|-----|
| | 2 | 3 |
| 10 | 227 | 341 |
| 20 | 114 | 170 |
| 30 | 76 | 114 |
| 40 | 57 | 85 |
| 50 | 45 | 68 |
| 60 | 38 | 57 |
| 70 | 32 | 49 |
| 80 | 28 | 43 |
| 90 | 25 | 38 |
| 100 | 23 | 34 |

Note:
1- Multiply the allowable load by 2 if mullion used two clips.
2- Allowable Tributary Area - (DW x Mh)

Angle/Tube anchored to wall

Table 2/5 - Allowable Loads

| DWxMh | 3 ANCHORS | | | 5 ANCHORS | | |
|-------|-----------|----|-----|-----------|-----|-----|
| | A | B | C | A | B | C |
| 10 | 193 | 87 | 150 | 322 | 145 | 250 |
| 20 | 97 | 44 | 75 | 161 | 73 | 125 |
| 30 | 64 | 29 | 50 | 107 | 48 | 83 |
| 40 | 48 | 22 | 37 | 81 | 36 | 62 |
| 50 | 39 | 17 | 30 | 64 | 29 | 50 |
| 60 | 32 | 15 | 25 | 54 | 24 | 42 |
| 70 | 28 | 12 | 21 | 46 | 21 | 36 |
| 80 | 24 | 11 | 19 | 40 | 18 | 31 |
| 90 | 21 | 10 | 17 | 36 | 16 | 28 |
| 100 | 19 | 9 | 15 | 32 | 16 | 25 |



APPROVED AS COMPLYING WITH THE SOUTH FLORIDA BUILDING CODE
DATE: January 21, 2000
BY: [Signature]
PRODUCT CONTROL DIVISION
BUILDING CODE COMPLIANCE OFFICE
ACCEPTANCE NO. 99-0823.01

EngCo, Inc.
Engineering Services
C# 6116
9957 NW 7th St.
Plantation - Florida - 33324
Tel.: 954 424-4064

11/26/99
Pedro De Figueiredo
PE 62609

RE 1000 Series Roll Shutters
Roller Star
Roller Star
6351 NW 28th Way Suite C
Ft Lauderdale - Florida - 33309
Tel.: 954 972-4772

| Rev. # | Description | Date |
|--------|----------------------|----------|
| 1 | Wood anchors tables. | 11/23/99 |

SHEET
5 of 6
Drawing Number
078-99

MULTIPLE SPAN CRITERIA

Storm Bars

Criteria for rational analysis

Storm bars shall be standard tubular extruded aluminum sections designed for windloads under ASCE 7-88 using rational analysis based on the Aluminum Association's Construction Manual Series - Section 1 "Specifications for Aluminum Structures" per the South Florida Building Code with the following criteria:

Positive Pressure:

- a- Maximum deflection allowed at design Load to be combined with Header and Slat and shall not exceed L/30 or 2", whichever is less.
- b- Not to exceed stress limit.

Negative Pressure:

- a- Maximum deflection allowed at design Load to be combined with Header and Slat and shall not exceed L/30.
- b- Not to exceed stress limit.

Headers

Criteria for rational analysis

Headers shall be standard tubular extruded aluminum sections designed for windloads under ASCE 7-88 using rational analysis based on the Aluminum Association's Construction Manual Series - Section 1 "Specifications for Aluminum Structures" per the South Florida Building Code with the following criteria:

Positive Pressure:

- a- Maximum deflection allowed at design Load to be combined with Storm bars and Slat and shall not exceed L/30.
- b- Not to exceed stress limit.

Negative Pressure:

- a- Maximum deflection allowed at design Load to be combined with Storm Bars and Slat and shall not exceed L/30.
- b- Not to exceed stress limit.

Total Shutter Deflection on Multiple Spans

Positive Pressure:

- a- Maximum deflection allowed at design Load to be combined with Header and Storm bars and shall not exceed TT/30 or 2", whichever is less.

Total Def = Header Def/4 + Storm Bars Def/2 + Slat Def.

Slat Def (2 span) = $Pd \times \text{Span}^4 / 620789700$

Slat Def (3 span) = $Pd \times \text{Span}^4 / 486229338$

Pd - Design pressure in Pdf - Span - Slat Span in inches

- b- Not to exceed maximum Track to Track sizes on Table 1/2 on sheet 2 of 6.

Negative Pressure:

- a- Maximum deflection allowed at design Load to be combined with Header and Storm bars and shall not exceed TT/30.

Total Def = Header Def/4 + Storm Bars Def/2 + Slat Def.

Slat Def (2 span) = $Pd \times \text{Span}^4 / 620789700$

Slat Def (3 span) = $Pd \times \text{Span}^4 / 486229338$

Pd - Design pressure in Pdf - Span - Slat Span in inches

- b- Not to exceed maximum Track to Track sizes on Table 1/2 on sheet 2 of 6.

Multiple Span Calculation Guideline

- 1- Calculate the required Wind load Pressure, base on ASCE-7 and the South Florida Building Code.
- 2- Verify on table 1/2, sheet 2 of 6, if the Track to Track(TT) dimension are less than the Maximum Allowable.
- 3- Calculate the Slat deflection based on the following formulas:

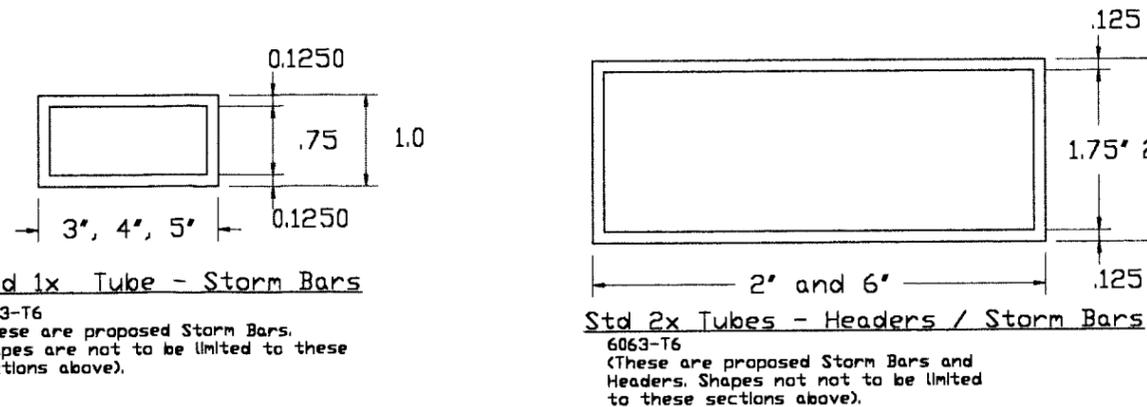
$$\text{Slat Def (2 span)} = Pd \times \text{Span}^4 / 620789700$$

$$\text{Slat Def (3 span)} = Pd \times \text{Span}^4 / 486229338$$

Pd - Design pressure in Pdf - Span - Slat Span in inches
- 4- Select by rational analysis the Storm Bar that meets the criteria of this product approval and calculate the deflection.
- 5- Select by rational analysis the Header that meets the criteria of this product approval and calculate the deflection.
- 6- Calculate the Total Deflection:

$$\text{Total Def} = \text{Slat Def} + \text{Storm Bar Def}/2 + \text{Header Def}/4$$

- 7- Total Inward Deflection shall not exceed TT/30 or 2", whichever is less.
- 8- Total Outward Deflection shall not exceed TT/30.
- 9- All calculations, anchorage and drawing for multiple spans shall be made for each specific job and must be signed and sealed by a professional engineer registered in the state of Florida.



APPROVED AS COMPLYING WITH THE
 SOUTH FLORIDA BUILDING CODE
 DATE January 21, 2000
 BY [Signature]
 PRODUCT CONTROL DIVISION
 BUILDING CODE COMPLIANCE OFFICE
 ACCEPTANCE NO. 99-0823.01

| | | | | | |
|---|--|--|----------------|-------------------|---|
| EngCo, Inc. Engineering Services CA# 6116 9957 NW 7th St. Plantation - Florida - 33324 Tel.: 954 424-4064 | RE 1000 Series Roll Shutters Roller Star Roller Star 8351 NW 28th Way Suite C Ft Lauderdale - Florida - 33309 Tel.: 954 972-4772 | Date: 6/26/99 | Scale: 1/2"-1" | Designed by: PPMF | SHEET 6 of 6 Drawing Number 078-99 |
| | | Rev. # Description Date Rev. # Description Date | | | |