CITY OF OPA-LOCKA

The City of Bright Opportunities

HISTORIC ENVIRONMENTAL PRESERVATION BOARD
Agenda

Tuesday, July 30, 2024
7:00 PM

Commission Chamber
780 Fisherman Street, 3rd Floor
Opa-locka, FL 33054

Opa-locka Historic Environmental Preservation Board

Mykeshia A. Fenn, Chairwoman
Zamarr Brown, Board Member
Romer Ferguson, Board Member
Frances Dolly MacIntyre, Board Member
William Robert Smith III, Board Member
Alexander Van Mecl, Board Member
Nikisha Williams, Board Member

PROCEDURES FOR PUBLIC PARTICIPATION

FLORIDA STATUTES, CHAPTER 285.0105
“If a person decides to appeal any decision made by the Board, Agency or Commission with respect to the proceedings, and that, for such purpose, that person may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.”

PROCEDURES FOR PUBLIC PARTICIPATION
How to watch the meeting: Members of the public can watch public meetings and public hearings at https://www.youtube.com/user/CityofOpaLocka

Historic Environmental Preservation Board Meetings are held in-person while allowing virtual participation. Members of the public wishing to address the Commission may do so in person or virtually.

To participate virtually, please register by the meeting start time on the scheduled meeting date via the City of Opa-locka website at www.opalockafl.gov.

Diana Cheng
Historic Environmental Preservation Clerk

CITY OF OPA-LOCKA

"The City of Bright Opportunities"

AGENDA
HISTORIC ENVIRONMENTAL PRESERVATION BOARD
July 30, 2024
7:00 PM

1. CALL TO ORDER:

2. ROLL CALL:

3. MOMENT OF SILENCE:

4. PLEDGE OF ALLEGIANCE:

5. ADD-ON ITEM(S)

6. APPROVAL OF MINUTES:

Approval of Minutes HEPB 04-11-2024

7. PUBLIC COMMENTS:
Agenda Items Only

8. RESOLUTIONS:

1. A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, APPROVING THE RECOMMENDATION OF THE HISTORIC ENVIRONMENTAL PRESERVATION BOARD TO ISSUE A SPECIAL CERTIFICATE OF APPROPRIATENESS FOR THE STRUCTURE AT 721 SHARAR AVENUE FOR THE INSTALLATION OF 19 WINDOWS AND 2 DOORS ON THIS REGISTERED HISTORIC PROPERTY; PROVIDING FOR AN EFFECTIVE DATE.

2. A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, APPROVING THE RECOMMENDATION OF THE HISTORIC ENVIRONMENTAL PRESERVATION BOARD TO ISSUE A SPECIAL CERTIFICATE OF APPROPRIATENESS FOR THE STRUCTURE AT 806 JANN AVENUE TO ALLOW FOR THE INSTALLATION OF A PHOTOVOLTAIC SOLAR SYSTEM ON THE ROOF OF THIS REGISTERED HISTORIC PROPERTY; PROVIDING FOR AN EFFECTIVE DATE.

9. DISCUSSIONS & PRESENTATIONS:

10. BOARD COMMENTS:

11. ADJOURNMENT:

All interested persons are invited to attend this meeting. For additional information, please contact the Opa-locka Historic Environmental Preservation Board @ 305.953.2868 ext. 1504

In accordance with the Americans with Disabilities Act of 1990, persons needing special accommodations to participate in the proceeding should contact the Office of the City Clerk at 305.953.2800 for assistance no later than seventy-two (72) hours prior to the proceeding. If hearing impaired, you may telephone the Florida Relay Service at 1.800.955.8771 (TTY), 1.800.955.8770 (Voice), 1.877.955.8773 (Spanish) or 1.877.955.8707 (Creole).

DRAFT

MEETING MINUTES
CITY OF OPA-LOCKA
HISTORIC ENVIRONMENTAL PRESERVATION BOARD
THURSDAY, APRIL 11, 2024
7:00 P.M.

1. CALL TO ORDER

The Historic Environmental Preservation Board (HEPB) meeting was called to order at 7:07 p.m. on Thursday, April 11, 2024.

An opportunity was given to the public to email the HEPB Clerk prior to the HEPB meeting with any questions/comments/concerns on items to be heard on this evening's Agenda.

2. ROLL CALL

The following members of the Opa-locka Historic Environmental Preservation Board were present: Vice Chair Alexander Van Mecl, Board Member Romer Ferguson III, Board Member Frances MacIntyre, Board Member William Robert Smith, and Board Member Nikisha Williams. Also present were Planning and Community Development Director Gregory Gay, Assistant City Attorney Candice Cobb Bell, City Planner Randall Robinson, Board Clerk Diana Cheng.

Absent Board Members: Chair Mykeshia Fenn and Board Member Zamarr Brown.

3. MOMENT OF SILENCE

All present observed a moment of silence.

4. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was recited.

5. ADD-ON ITEM(S)

None.

6. APPROVAL OF MINUTES

None.

7. PUBLIC COMMENTS (Agenda Items Only)

At this time Vice Chair Van Mecl opened public comment, which he closed upon receiving no input.

8. **RESOLUTIONS:**

1. **A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, APPROVING AND AUTHORIZING THE CITY OF OPA-LOCKA'S APPLICATION TO THE SURVEY AND REGISTRATION SECTION OF THE BUREAU OF HISTORIC PRESERVATION FOR THE CITY'S INCLUSION IN THE FLORIDA CERTIFIED LOCAL GOVERNMENT PROGRAM; PROVIDING FOR INCORPORATION OF RECITALS; PROVIDING FOR AN EFFECTIVE DATE.**

Planning and Community Development Director Gregory Gay announced that City Planner Randall Robinson has worked diligently to advance this application, which will help the City seek out historic preservation grants.

Planner Robinson gave a presentation on the application, explaining that grant funding is an incentive for municipal governments to bring their historic preservation programs into line with the standards of the U.S. Department of the Interior. The application process for Certified Local Government status can show a municipality the areas in which their processes should improve, provides for basic managerial activity, and brings historic preservation programs into line with best practices. The application is currently before the Board for recommendation to the City Commission.

Vice Chair Van Mecl commented that this application is aligned with the Division of Historical Resources and other programs at the state level. He felt there will be greater credibility and respect for the City's goals under the Certified Local Government program.

Motion made by Board Member MacIntyre, seconded by Board Member Williams, to present the application to the City for approval. In a roll call vote, the **motion** passed unanimously (5-0).

2. **A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, DESIGNATING THE HARRY HURT HOUSE LOCATED AT 305 DUNAD AVENUE WITHIN THE CITY AS A HISTORIC SITE, PURSUANT TO ORDINANCE 15-03 HISTORIC PRESERVATION; PROVIDING FOR AN EFFECTIVE DATE.**

Planner Robinson explained that this property will be the first historic designation in the City of Opa-locka since 1991. It is one of the City's signature buildings.

As Vice Chair Van Mecl had written the designation report, he recused himself from voting upon the Item, ceded the gavel temporarily to Board Member Williams, and left the dais at this time. He gave a brief presentation on the Item from the floor.

Vice Chair Van Mecl acknowledged the assistance of others before him in seeking the designation of the Harry Hurt House, including individuals who were active in the City's historic preservation movement of the late 1980s. This work has not been revisited since 1991. A handful of the City's original Moorish Revival structures which did not have historic preservation status were identified. Approximately 24 buildings are still listed on the local registry of historic buildings, with roughly 17 buildings listed on the National Register of Historic Places.

Vice Chair Van Mecl continued that May 2024 will be Historic Preservation Month, and emphasized the importance of preservation activities to the Opa-locka community. A team from the University of Florida studied Opa-locka at the City's invitation and documented the conditions of registered and non-registered historic homes.

In the process of this documentation, resident Maritza Hernandez, owner of the Harry Hurt House, provided the team with the opportunity for further examination of her property. Vice Chair Van Mecl strongly emphasized the importance of the Harry Hurt House as a heritage landmark and historic site within the Opa-locka community. The state of Florida has added the property to its Master Site file.

Board Member Smith asked if the Harry Hurt House would be designated with a plaque or other visible marking. Vice Chair Van Mecl replied that his recommendation was to continue the same style of plaque as provided for previously designated properties. Planner Robinson added that he would bring an informational item before the Board regarding plaques in the coming months.

Acting Chair (A/Chair) Williams asked if the homeowner has signed documentation agreeing to the historic designation of the property. Vice Chair Van Mecl explained that this has been done and the appropriate documentation will be included in forthcoming designation items.

Motion made, seconded by Board Member Ferguson, to approve. In a roll call vote, the **motion** passed unanimously (4-0) (Vice Chair Van Mecl recused).

Vice Chair Van Mecl resumed his seat on the dais at this time.

3. **A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, APPROVING AND AUTHORIZING THE CITY OF OPA-LOCKA'S APPLICATION TO THE NATIONAL ARBOR DAY FOUNDATION FOR THE 2024 TREE CITY USA RECOGNITION; PROVIDING FOR**

INCORPORATION OF RECITALS; PROVIDING FOR AN EFFECTIVE DATE.

Board Attorney Candice Bell advised that this Item would be pulled from tonight's Agenda, as it has already been passed by the City Commission.

Planner Robinson explained that Opa-locka has been named a Tree City USA multiple times since 2014. Prerequisites for Tree City USA status include a tree board, which is the Historic Environmental Preservation Board; the municipality's expense of 2% per capita on trees, which totals approximately $32,000 in Opa-locka; and observance of Arbor Day, which is planned for Friday, April 26, 2024. The City will receive a new flag as part of its designation as a Tree City USA.

Board Member MacIntyre advised that the Tropical Flowering Tree Society will work with Vice Chair Van Mecl on the planting of poincianas in the City in June 2024. This will be part of the annual Royal Poinciana Fiesta.

It was clarified that no vote was necessary on the Resolution, as it has already been passed by the City Commission.

4. **A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, APPROVING THE RECOMMENDATION OF THE HISTORIC ENVIRONMENTAL PRESERVATION BOARD TO APPROVE THE ANNUAL REPORT FROM JANUARY 1, 2023 THROUGH DECEMBER 31, 2023; PROVIDING FOR SEVERABILITY; PROVIDING FOR A CONFLICT AND REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.**

Director Gay stated that this Item was also approved by the City Commission at their April 10, 2024 meeting. It is presented to the Board as an informational item.

Director Gay explained that municipalities are typically required to submit their annual reports at the end of March; however, the City fell slightly behind schedule in 2024.

Board Member Williams requested additional information on an allocation of $100,000 mentioned in the members' backup materials, which would fund a competitive grant program. Director Gay confirmed that the City has not yet given away these funds, but is still working on an application for this purpose. Once the application has been reviewed, it will be released in May or June 2024.

It was noted that fliers announcing a grant workshop have been distributed not only to the owners of historically designated properties, but also to houses with the potential for historic designation. These owners may be able to apply for historic designation in 2025.

Miami-Dade County requires a fully functional process for historic designation. In 2023, there were no such designations, although some Certificates of Appropriateness were issued. These items are included in the members' backup materials, along with copies of Board Agendas and minutes.

Motion made by Board Member MacIntyre, seconded by Board Member Williams, for approval of the annual report after the fact. In a roll call vote, the **motion** passed unanimously (5-0).

9. DISCUSSIONS & PRESENTATIONS

Board Member MacIntyre proposed that the Board ask the Opa-locka City Commission to pass a Proclamation recognizing May 2024 as Historic Preservation Month.

Motion made by Board Member MacIntyre, seconded by Vice Chair Van Mecl, to present the Proclamation to the Commission. In a roll call vote, the **motion** passed unanimously (5-0).

Board Member MacIntyre continued that the National Alliance of Preservation Commissions will hold its annual meeting in Palm Beach, Florida from July 31 through August 4, 2024. She recommended that Board members and other interested parties make an effort to attend this meeting, and provided basic information to the other Board members. Vice Chair Van Mecl added that he will give a presentation on Opa-locka at this meeting on August 4.

10. BOARD COMMENTS

It was clarified that the Board's regular meeting date is the fourth Thursday of each month, although they have not always adhered to this schedule. The Board is required to meet a minimum of six times per year.

Board Member Williams asked if the City's website could include information about historic preservation, such as listings and descriptions of the City's historic structures. Director Gay replied that the City's website is currently being updated, and there will be a subsection for historic preservation under the Planning and Community Development Department. He would keep the Board apprised of when the updated site will go public.

Board Member Williams also requested that the Board include more items regarding trees on its future Agendas. She hoped the Board, as well as the City Commission, would address this issue on a more regular basis going forward, and asked for recommendations on how the Board can engage in future discussions.

Planner Robinson noted that the memorandum in the Board members' backup materials regarding the Tree City USA application includes a suggestion on how to better engage the Board in the City's ongoing work involving its urban forest. He suggested that the City Staff member who oversees Opa-locka's urban forestry program could address a future Board meeting on the work his team has done in recent months.

Director Gay recalled that over the past two years, the City's Urban Forester has been very active in planting trees throughout the City. A series of tree plantings have been held along Opa-locka Boulevard and in the City's parks, resulting in the addition of 120 to 130 new trees. The City hopes to double this number in the next year. As more information on planned plantings is brought forward, the Board will be kept informed.

Director Gay continued that the Board's purview includes entertaining Certificates of Appropriateness regarding the removal of trees. There are only a few pending applications at this time. The granting of a Certificate of Appropriateness depends primarily on whether or not a tree is an invasive or a native species: most invasive trees may not require a permit for removal, but native trees must go through a mitigation process which will be brought before the Board.

Board Member Ferguson asked if it would be possible to relocate some trees rather than removing them. Director Gay replied that this has been done a few times, but advised that this presents a delicate situation regarding the tree's maintenance, particularly if it is a native species. This is typically negotiated as part of the tree mitigation process.

Board Member Ferguson also asked if the City or the homeowner would be responsible for the expense of relocating a tree. Director Gay replied that this would be addressed on a case-by-case basis.

Vice Chair Van Mecl noted that there is ongoing discussion of one of the City's slash pines which may date back to the City's founding. It is located on a vacant lot on Sharazad Boulevard which is slated for development. This tree has become an issue of interest for arborists and environmentalists in South Florida. He asked if an update is available on the status of the proposed development on the subject parcel.

Director Gay stated that the site is still being reviewed for development and has not yet come before the City Commission for consideration, as a portion of the site is also being considered as a potential part of a joint project. It is hoped that the developer can be convinced to build around the tree; if a mitigation process is necessary, relocation may be one option, and additional landscaping could also be required.

Board Member Williams requested clarification of the development planned for the subject parcel. Director Gay replied that it is a mixed-use multi-family development.

Vice Chair Van Mecl continued that some time ago, he had identified Opa-locka as a bird sanctuary, and asked if this status requires regular renewal or if there is gateway signage available to announce this designation. Planner Robinson replied that he will bring answers to the Vice Chair's questions back to the next Board meeting.

Vice Chair Van Mecl also expressed concern with a property on Sesame Street which is included in the City's historic registry but does not appear to have a roof, although the surrounding land is occupied. He emphasized the need for the City to be mindful of the condition of its historic properties, pointing out that the individuals occupying the property have erected a fence around it, which may have required a building permit and inspection.

Director Gay stated that one of the factors under the Board's purview is demolition by neglect. In some cases, properties may be acquired as investments rather than for purposes of home ownership. This means the City must take care in approaching property owners. There are tools that are part of Code Compliance as well as the City's permitting process. He concluded that the subject site will be brought to the attention of the appropriate City Departments for follow-up.

Vice Chair Van Mecl continued that Miami-Dade County and other municipalities have adopted a matrix of administrative approvals for permits rather than requiring these permits to go through Board review. He requested a status update on this issue. Director Gay replied that the City needs to revisit this process. He estimated that it would be brought forward at one of the Board's meetings over summer 2024.

Vice Chair Van Mecl also addressed the City's protocols and incentives, noting that property owners may not want additional City oversight of their properties which would prevent them from making improvements to their homes. He asked for identification of the instances in which a permit would be approved for a historic property or must come before the Board for approval. Director Gay replied that at present, any aspect of a historic property that is visible from the public right-of-way is subject to Board approval.

Vice Chair Van Mecl explained that he was in favor of a compromise in which concessions are made to homeowners, but the homeowners are provided with informed decisions regarding the character and uniqueness of Opa-locka's landmarks. He concluded that he hoped the Board would be valuable as an advisory entity, with its members able to view examples of period-appropriate upgrades and for homeowners to know that many decisions regarding aspects of historic preservation are not cost-prohibitive.

Director Gay advised that because the City was aware of a previous application approved by the Board, City administration determined that some specific items had already been dealt with by the Board and were able to make administrative approval.

Vice Chair Van Mecl confirmed that his intent was to enable Staff to do this when appropriate.

Vice Chair Van Mecl concluded that the Florida Trust for Historic Preservation recently released a historic preservation toolkit which is available on their website, FloridaTrust.org. The Trust is considering holding a workshop for Opa-locka historic homeowners in the coming months to provide a resource for historic property owners.

Board Member Williams requested clarification of the length of the Board's terms for Officers. Director Gay estimated that the position of Chair is intended to be addressed annually, but noted that he would need to check the Board's calendar to determine when elections should be held. Board Member Williams requested that the election of officers be an Agenda Item at the next scheduled meeting.

Board Member Smith asked what entity is responsible for monitoring Board members' attendance, noting that many advisory bodies remove members who exceed a number of unexcused absences. Director Gay replied that there have been numerous internal discussions of absences from multiple City advisory body meetings. He noted that a package will be brought forward at a later Board meeting reviewing new rules and criteria for Board members to meet. The package will include a section on absenteeism and the protocols addressing excused absences. Additional considerations will be changing the number of Board members or seating alternate members.

Board Member Smith asked if the rules for advisory bodies are regulated by State Statute rather than municipal or county regulations. Planner Robinson advised that these regulations are included in membership applications, adding that many best practices for a historic preservation program may be set by the U.S. Department of the Interior.

Vice Chair Van Mecl encouraged all present to attend the upcoming Middle Eastern and North African (MENA) Fest scheduled for Saturday, April 13, 2024.

11. ADJOURNMENT

The meeting was adjourned at 8:10 p.m.

City of Opa-locka
Agenda Cover Memo

Department Director:	Gregory Gay, Planning & Community Development Department Director	Date
City Manager:	Darvin Williams, Interim City Manager	Date

Department:	Planning and Community Development	**Sponsor Name:**	Darvin Williams
Meeting Date:	July 30, 2024	**Item Type:**	Resolution
Strategic Plan Related:	No	**Strategic Plan Priority Area:**	Enhanced Organizational Business and economic development Public Safety Quality of Education Quality of Life and City Image Communication
Strategic Plan Objective/Strategy:			

Short Title:

A SPECIAL CERTIFICATE OF APPROPRIATENESS FOR THE STRUCTURE AT 721 SHARAR AVENUE

Staff Summary:

Fiscal Impact: No

Funding Source: *(Account Number)*	**Advertising Requirement:** No
Contract/P.O. Required: No	**RFP/RFQ/Bid#:**

Proposed Action:

Attachment(s):

None

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, APPROVING THE RECOMMENDATION OF THE HISTORIC ENVIRONMENTAL PRESERVATION BOARD TO ISSUE A SPECIAL CERTIFICATE OF APPROPRIATENESS FOR THE STRUCTURE AT 721 SHARAR AVENUE FOR THE INSTALLATION OF 19 WINDOWS AND 2 DOORS ON THIS REGISTERED HISTORIC PROPERTY; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City of Opa-Locka, Florida, ("City") has established a Historic Preservation Ordinance, and established the Historic Environmental Tree Preservation Board by Ordinance 16-13 in order to preserve and protect the City's historic and cultural heritage and to foster civic pride; and

WHEREAS, the Historic Environmental Preservation Board also established to protect the green environment especially, the preservation of trees in the City in order to support Arbor Day principles; and

WHEREAS, the City is required to have a fully functional process, as required by Miami-Dade County, in order to maintain a separate, independent Historic Preservation Ordinance and Board; and

WHEREAS, the Historic Environmental Preservation Board has received an application for the issuance of a certificate of appropriateness; and

WHEREAS, pursuant to City Ordinance 2022-02, Section 2-570.84 (2) (B) *Special certificate of appropriateness*: "For all applications for a special certificate of appropriateness involving the demolition, removal, reconstruction or new construction at an individual site or in a district, a special certificate of appropriateness is required that is issued by recommendation of the Historic Environmental Preservation Board" and review and approval by the City Commission; and

WHEREAS, pursuant to Chapter 2, Article XI, Division 13, Sec. 2-570.82(3) of the City of Opa-Locka Code of Ordinances, the duties and responsibilities of the Historic

Environmental Preservation Board shall include responsibilities to "issue or deny certificates of appropriateness and certificates to dig"; and

WHEREAS, further, the City has adopted Ordinance 2022-02 to establish minimum standards for municipal historic preservation programs, as set forth in the Miami-Dade County Historic Preservation Ordinance Section 16A-3.1; and

WHEREAS, the Historic Preservation Ordinance permits issuance of a Special Certificate of Appropriateness to replace nineteen windows and two doors on the structure at 721 Sharar Avenue, within the City, after an approval recommendation from the Historic Environmental Preservation Board, and review and approval by the City Commission in accordance with Ordinance 2022-02; and

WHEREAS, on July 30, 2024, the Historic Environmental Preservation Board held a meeting to, among other business matters, consider a request for a certificate of appropriateness approval for the structure at 721 Sharar Avenue, within the City, to allow for the installation of 19 windows and 2 doors on this historic property. After presentation and discussion, the Historic Environmental Preservation Board recommended approval of the Certificate of Appropriateness by _-_ vote; and

WHEREAS, the City desires to approve the application for and the issuance of a certificate of appropriateness for the subject registered historic property.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA:

Section 1. **ADOPTION OF RECITALS:** The recitals to the preamble herein are incorporated by reference.

Section 2. **AUTHORIZATION:** The City Commission of the City of Opa-Locka, Florida hereby approves the recommendation of the Historic Environmental Preservation Board to issue a certificate of appropriateness to allow for the installation of 19 windows and 2 doors on this registered historic property located at 721 Sharar Avenue, within the City.

Section 3. **SCRIVENER'S ERRORS.**
Sections of this Resolution may be renumbered or re-lettered and corrections of

typographical errors which do not affect the intent may be authorized by the City Manager, following review by the City Attorney, without the need for public hearing, by filing a corrected copy of same with the City Clerk.

Section 4. EFFECTIVE DATE.

This Resolution shall take effect upon the adoption and is subject to the approval of the Governor or Governor's Designee.

PASSED AND ADOPTED this _____ day of _____, 2024.

_____
John Taylor, Mayor

ATTEST:

_____
Joanna Flores, City Clerk

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:

_____
Burnadette Norris-Weeks, P.A.
City Attorney

Moved by: _____

Seconded by:_____

VOTE:

Commissioner Williams

Commissioner Kelley

Commissioner Bass

Vice Mayor Ervin

Mayor Taylor

CERTIFICATE OF APPROPRIATENESS

HISTORIC AND ENVIRONMENTAL PRESERVATION BOARD
HEPB COA APPLICATION-CITY OF OPA-LOCKA
PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
780 FISHERMAN STREET, OPA-LOCKA, FL 33054

721 Sharar Avenue Helms House
PROPERTY ADDRESS **HISTORIC PROPERTY NAME**

Deborah Marcano
OWNERS NAME

2430 Ocean View Avenue #501
Los Angeles CA 90057
OWNER'S ADDRESS, CITY, STATE, ZIP CODE

646-245-8375
OWNER'S DAYTIME PHONE NUMBER

APPLICANT /AUTHORIZED REPRESENTATIVE (NAME & TITLE)

APPLICANT'S ADDRESS, CITY, STATE, ZIP CODE

APPLICANT'S DAYTIME PHONE NUMBER **APPLICANT'S EMAIL**

DATE RECEIVED

APPLICATION # 24-7-30-1

HEPB MEETING DATE 7/30/24

RESOLUTION #

STAFF INITIALS

☐ APPROVED

☐ W. CONDITIONS

☐ DENIED

☐ CONTINUED TO:

HEPB APPLICATION

☒ SPECIAL COA

☐ SPECIAL CERTIFICATE TO DIG

☐ SPECIAL CERTIFICATE OF APPROVAL

☐ WAIVER

APPLICATION TYPE (CHOOSE AS MANY AS APPLICABLE)

☐ NEW CONSTRUCTION ☐ ADDITION ☐ DEMOLITION ☐ AFTER-THE FACT WORK

☐ ALTERATION ☐ LANDSCAPING/PAVING ☐ CONCEPTUAL ☒ OTHER Installation of 19 windows & 2 doors.

☐ PARKING WAIVER ☐ SETBACK WAIVER ☐ WAIVER (OTHER)

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED.

The property owner should be present at the HEPB hearing. It is preferred that the owner personally present the project to the HEPB at the meeting. If the owner should choose to have a paid representative present the project on their behalf, that representative must be a registered lobbyist with the City of Opa-locka. For more information on becoming a registered lobbyist, please call the City Clerk's Office at 305.688.4611. (Lobbyist will be asked to provide proof of registration.)

OWNERS ATTESTATION:

I HAVE READ AND UNDERSTAND THE ABOVE INFORMATION AND I CERTIFY TO THE BEST OF MY ABILITY THAT ALL INFORMATION PROVIDED IN THIS APPLICATION AND ATTACHMENTS ARE CORRECT.

Deborah Marcano June 25, 2024

SIGNATURE OF PROPERTY OWNER **DATE**

SIGNATURE OF APPLICANT (IF OTHER THAN PROPERTY OWNER DATE

Scanned with CamScanner

CITY OF Opa-locka

BUILDING DEPARTMENT
780 Fisherman St
Opa-locka, FL 33054
Office: 305-953-2868
www.opalockafl.gov

CITY OF OPA-LOCKA
Community Development & Planning Dept.
6/27/24

Date: 6/26/2024 Clerk: MS

☑ Master Permit 24060081

☐ Sub-Permit

JOB ADDRESS 721 Sharar Ave

PERMIT APPLICATION

1. OWNER INFORMATION
Owner DEBORAH MARCANO
Address 721 SHARAR AVENUE
City OPA-LOCKA ST FL Zip 33054
Driver License No. /I.D. M625-178-64-781-1
Phone No. 6462458375

2. CONTRACTOR INFORMATION
Company Name Green Solution Solar
Qualifier Name Eliana Gilbert
Address 1041 Ives Dairy Rd
City Miami ST FL Zip 33179
Lic. No. CGC1526795 Phone No. 9417990164

3. PERMIT TYPE (Choose only One)
☑ Building
☐ Electrical
☐ Mechanical
☐ Plumbing/Gas
☐ Sign
☐ Roofing

4. CHANGE TO AN EXISTING PERMIT (Choose only One)
☐ Change Contractor
☐ Extension
☐ Renewal
☐ Shop Drawing
☐ Lost Plans

5. TYPE OF IMPROVEMENT (Choose only One)
☐ New Construction ☐ Re-roof ☐ Pool
☐ Addition Attached ☐ Driveway ☐ Shed
☐ Alteration Interior ☐ Fence ☐ Other:
☑ Alteration Exterior ☑ Window
☐ Repair/Replace ☑ Door
☐ Demolition/Partial ☐ Shutters

6. ARCHITECT/ ENGINEER INFO
Name
Address
City ST Zip Code
Lic. No. Discipline
Phone No.

7. CONTACT
Name Zinaida Stoleard
E-mail Zinaidastoleard@gmail.com
Phone No. 9417990164

8. LEGAL/USE/WORK VALUE
Folio No. 08-2121-005-0170 No. of Units
Lot Block Subdivision
Current Use of Property residential
Description of Work Installation of windows (19) doors (2)
Square FT. Linear FT.
Work Value 17981 Building Value
Flood Zone Base Flood Elevation

Application is hereby made to obtain a permit to do the work and/or installations as indicated. I certify that no work or installation has commenced prior to the issuance of a permit and that all work will be performed to meet the standards of all laws regulating construction in this jurisdiction. I understand that a separate permit must be secured for Electrical, Plumbing, Signs, Wells, Pools, Furnaces, Boilers, Heaters, Tanks, Air Conditioning, Driveways, Portable Storage Units, etc.

Owner's Affidavit: I certify that all the foregoing information is accurate, and that work will be done in compliance with all applicable laws regulating construction and zoning.

NOTICE REGARDING BUILDING PERMIT APPLICATIONS

The Completion and submission of a Building Permit Application is a requirement of securing a City Building Permit. The City will rely upon the information contained in the Application in determining whether a City Building Permit should be issued. The submission of inaccurate, misleading, or misrepresented information in the Application shall subject the Building Permit to denial, suspension or revocation, and the individual applying for the permit, to all appropriate fines, penalties and other punishments authorized by law. KINDLY GOVERN YOURSELF ACCORDINGLY.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCMENT MAY RESULT IN YOU PAYING TWICE FOR IMPROVMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

OWNER INFORMATION

DEBORAH MARCANO — Deborah Marcano
PRINT NAME — OWNERS SIGNATURE

SWORN TO AND SUBSCRIBED BEFORE ME BY: (PRINT OWNER NAME)

FLDL

BY MEANS OF [ ] PHYSICAL PRESENCE OR [☑] ONLINE NOTARIZATION AND PRODUCED

_____ OR IS PERSONALLY KNOWN.

As identified on this 29 day of May 20 24

Notary's Signatures L. Canaveral

Printed Name of Notary Luna Canaveral.

NOTARY PUBLIC - STATE OF FLORIDA
LUNA CANAVERAL
COMMISSION # HH 472688

QUALIFIER INFORMATION

Eliana Gilbert — Eliana Gilbert
PRINT NAME — OWNERS SIGNATURE

SWORN TO AND SUBSCRIBED BEFORE ME BY: (PRINT QUALIFIER NAME)

FLDL

BY MEANS OF [☑] PHYSICAL PRESENCE OR [ ] ONLINE NOTARIZATION AND PRODUCED

FLDL OR IS PERSONALLY KNOWN.

As identified on this 29 day of 04 20 24

Notary's Signatures Zinaida Stoleard

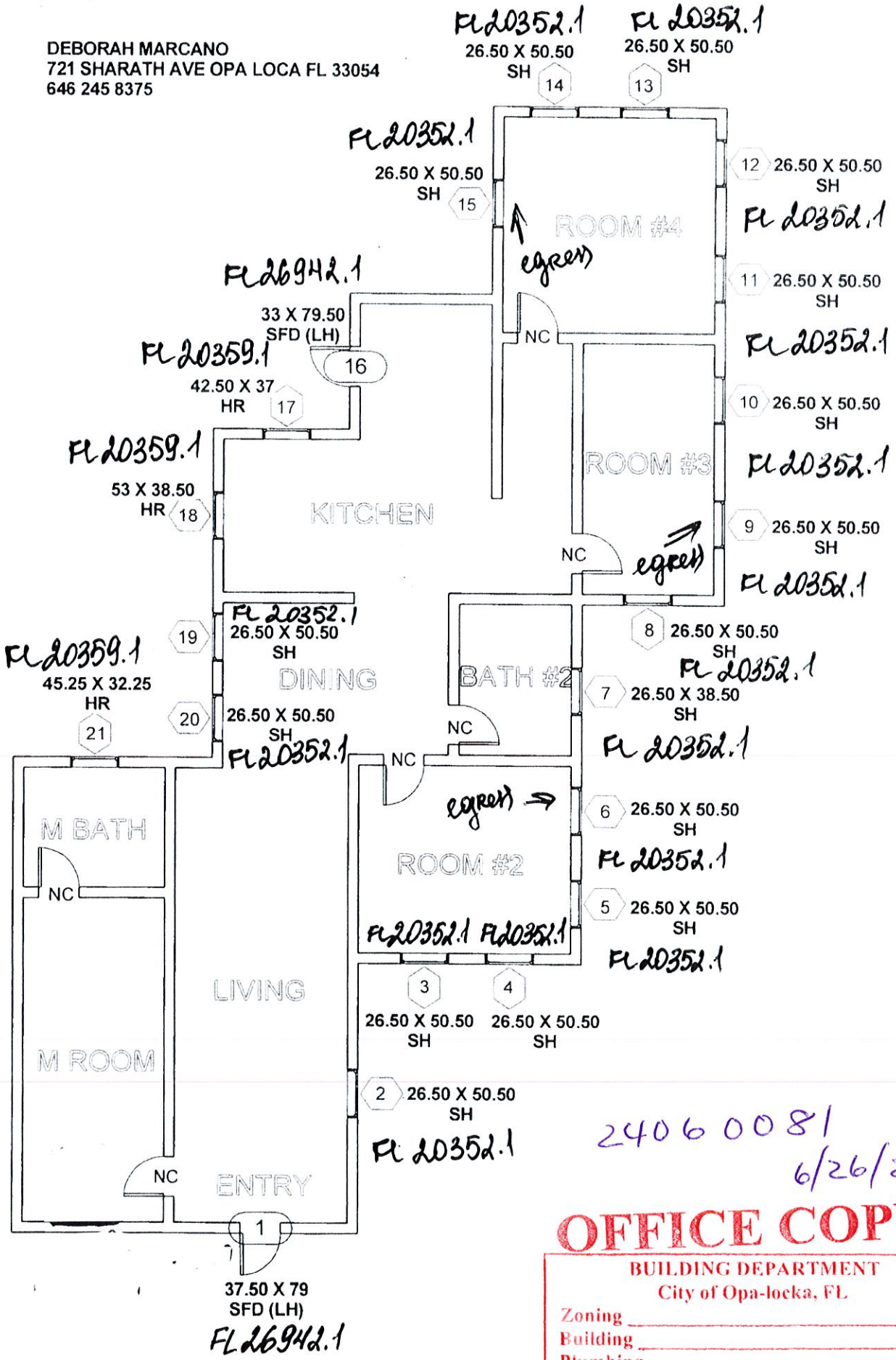
Printed Name of Notary Zinaida Stoleard

Notary Public State of Florida
Zinaida Stoleard
My Commission HH 356257
Expires 10/27/2026

DO NOT WRITE BELOW – FOR OFFICE USE ONLY

✓	TRADE	APPROVED/DATE	DISAPPROVED/DATE	APPLICATION INCLUDES	FEES $	.00
	Zoning			Zoning		
	Structural			Structural		
	Building			Base Fee		
	Electrical			Scanning		
	Mechanical			Technology		
	Plumbing			Rework		
	Roofing			Violation		
	Flood			DBPR/DCA		
	Publics Works			Code Compliance		
				(-) Upfront Fee		
				Balance Due		

DEBORAH MARCANO
721 SHARATH AVE OPA LOCA FL 33054
646 245 8375



24060081
6/26/24

OFFICE COPY

BUILDING DEPARTMENT
City of Opa-locka, FL
Zoning _____
Building _____
Plumbing _____
Electrical _____
Mechanical _____
Public Works _____

MIAMI-DADE COUNTY, FLORIDA
HERBERT S. SAFFIR PERMITTING AND INSPECTION CENTER

Department of Regulatory and Economic Resources
Board and Code Administration Division
11805 SW 26th Street (Coral Way) • Room 230
MIAMI, FLORIDA 33175-2474
(786) 315-2509 FAX (786) 315-2560

MEMORANDUM

TO: All Building Officials in Miami-Dade County

FROM: Jaime Gascon, P.E., Director
Board and Code Administration Division

DATE: January 26, 2024

SUBJECT: BORA Interpretation
Wind Load Table for Openings in Walls –
One – and Two – Family Detached and Multiple Single-Family Dwellings with Mean Roof Height of 30-feet or less

---

At their meeting of January 25, 2023 the Board of Rules and Appeals (BORA) considered an interpretation of the Code to provide guidance on wind pressures to be used in the replacement of windows, doors, and overhead sectional (garage) doors, to include French doors, solid doors and sliding glass doors, in one- and two-family detached dwellings and multiple single-family dwellings (townhouses) with a mean roof height of 30-feet or less.

The interpretation was sought in order to make such replacements easier for homeowners and contractors to meet the minimum requirements of the Code.

The attached Miami-Dade County Wind Load Chart for Openings meets the minimum requirements of the Code and can be used throughout Miami-Dade County. The values contained in the attached reference document were determined to be in accordance with ASCE 7-22 Chapter 30 and the 2023 FBC, Building sections 1620.2 and 1620.3 (175 mph (3-second gust)/ Exposure C).

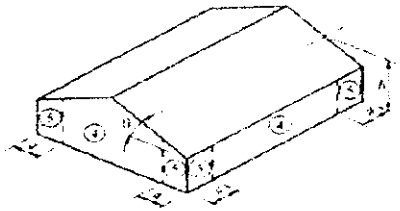
If you have any additional questions on this matter, please contact Jeanne (Lundy) Clarke, Senior Code Officer at 305-299-6775 (Mobile), 786-315-2057 (Land line) or via email at Jeanne.Clarke@miamidade.gov.

Miami-Dade County Wind Load Chart for Openings

Based on ASCE 7-22 for Detached One- and Two-Family Dwellings and Multiple Single-Family Dwellings (Townhouses) with a mean roof height <- 30 feet
175 mph (3-second gust) /Exposure C/ K_d=.85, / Pressures in PSF / ASD

These tables are to be used only for one- and two-family detached dwellings and multiple single-family dwellings (townhouses) with a mean roof height of 30 feet or less. They are to be used for replacement windows. These tables can be used for French doors, sliding glass doors, solid doors, and for sectional (overhead) garage doors. They may not be used for roll-up doors due to catenary forces acting on the supports that must be checked.

The pressures are provided in pounds per square foot (psf) for allowable stress design (ASD). A positive (+) pressure acts towards the structure; negative pressure (-) acts away from the structure (suction).



The width of zone 5 is the 'a' distance; it is either 10% of the least horizontal dimension of the structure - or - 0.4 times the mean roof height, but not less than 4% of the least horizontal distance -or- 3 feet. It is measured from the corner of the structure. Note that 3-feet is not the default value, it is the minimum width.

To determine the least horizontal dimension, inscribe a box around the entire structure and use the smallest dimension of the resulting rectangle.

Windows

The effective wind area of a window is based on the size of a single pane of glass. Likewise, a sliding glass door or French door would use the size of one of the leaves, not the size of the opening.

Garage Doors

The wind area of a sectional door is based on the size of a single panel, usually no more than 24" deep, and the width of the door.

Dual Pressure Zones

A common placement for a garage door is near a corner of a residence, which would put a portion of the door in zone 5, leaving the remainder in zone 4. You can select the door based on the zone 5 pressure, or you may use a weighted average. For example, if you have a 10-ft wide door and 2-ft are in zone 5, the zone 5 suction is -50 and the zone 4 suction is -42: ((2 x 50) + (10-2) x 42))/ 10 = (100 + 336)/10 = 436/10 = -43.6 psf. (Round up to -44 psf)

If a window is placed in zone 4 and zone 5, use the zone 5 pressure.

A_{eff} (ft^2)	15 ft Mean Roof Height				20 ft Mean Roof Height				25 ft Mean Roof height				30 ft Mean Roof Height			
	Zone 4		Zone 5		Zone 4		Zone 5		Zone 4		Zone 5		Zone 4		Zone 5	
	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
10	40	43	40	54	43	46	43	57	45	48	45	60	46	50	46	62
20	38	42	38	50	41	44	41	53	43	46	43	56	44	48	44	58
50	36	39	36	45	38	42	38	48	40	44	40	50	42	45	42	52
100	34	37	34	42	36	40	36	44	38	42	38	46	39	43	39	48
500	30	33	30	33	32	35	32	35	33	37	33	37	35	38	35	38

Wind analysis per MecaWind Pro V2335

dbpr **Product Approval**
USER: Public User

Opening #2;3;4;5;6;7;8;9;10;11;12;13;14;15;19;20;

FL #	FL20352-R4
Application Type	Revision
Code Version	2023
Application Status	Approved
Comments	
Archived	
Product Manufacturer Address/Phone/Email	Mr-Glass Doors & Windows Manufacturing, LLC 8051 NW 79th Place Medley, FL 33166 (305) 470-8284 ulises@mrglasswindows.com
Authorized Signature	Ulises Senaris ulises@mrglasswindows.com
Technical Representative Address/Phone/Email	Augusto Arias 8120 NW 84th St Medley, FL 33166 (305) 470-8284 aarias@mrglasswindows.com
Quality Assurance Representative Address/Phone/Email	
Category	Windows
Subcategory	Single Hung
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer Evaluation Report - Hardcopy Received
Florida Engineer or Architect Name who developed the Evaluation Report	Jalal Farooq
Florida License	PE-81223
Quality Assurance Entity	Keystone Certifications, Inc.
Quality Assurance Contract Expiration Date	08/27/2025
Validated By	Abel Carrasco, PE Validation Checklist - Hardcopy Received
Certificate of Independence	FL20352_R4_COI_SS - Certificate of Independence 2023.pdf

Referenced Standard and Year (of Standard)

Standard	Year
TAS 201	1994
TAS 202	1994
TAS 203	1994

Equivalence of Product Standards Certified By

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	07/25/2023
Date Validated	07/26/2023
Date Pending FBC Approval	07/28/2023
Date Approved	10/17/2023

Summary of Products

FL #	Model, Number or Name	Description
20352.1	Series MG-200 Aluminum Single Hung Window	Large missile impact resistant aluminum single hung window.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** Yes **Design Pressure:** +80/-140 **Other:** See attached drawing W16-20 for span vs. load combination and installation details.		**Installation Instructions** FL20352_R4_II_SS - MG-200 SH (LMI) -DWG W16-20 (2023).pdf Verified By: Jalal Farooq PE 81223 Created by Independent Third Party: Yes **Evaluation Reports** FL20352_R4_AE_SS - MG-200 SH (LMI) -PAE 2023.pdf Created by Independent Third Party: Yes
20352.2	Series MG-200 Aluminum Single Hung Window	Small missile impact resistant aluminum single hung window.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** Yes **Design Pressure:** +80/-140 **Other:** See attached drawing W16-21 for span vs. load combination and installation details.		**Installation Instructions** FL20352_R4_II_SS - MG-200 SH (SMI) -DWG W16-21 (2023).pdf Verified By: Jalal Farooq PE 81223 Created by Independent Third Party: Yes **Evaluation Reports** FL20352_R4_AE_SS - MG-200 SH (SMI) -PAE 2023.pdf Created by Independent Third Party: Yes

Contact Us :: 2601 Blair Stone Road, Tallahassee FL 32399 Phone: 850-487-1824

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Under Florida law, email addresses are public records. If you do not want your e-mail address released in response to a public-records request, do not send electronic mail to this entity. Instead, contact the office by phone or by traditional mail. If you have any questions, please contact 850.487.1395. *Pursuant to Section 455.275(1), Florida Statutes, effective October 1, 2012, licensees licensed under Chapter 455, F.S. must provide the Department with an email address if they have one. The emails provided may be used for official communication with the licensee. However email addresses are public record. If you do not wish to supply a personal address, please provide the Department with an email address which can be made available to the public. To determine if you are a licensee under Chapter 455, F.S., please click here .

Product Approval Accepts:

Credit Card
Safe
securityMETRICS

THESE WINDOWS ARE RATED FOR LARGE & SMALL MISSILE IMPACT.
SHUTTERS ARE NOT REQUIRED.

SERIES MG-200
ALUMINUM SINGLE HUNG WINDOW

DESIGN LOAD RATINGS FOR THESE WINDOWS TO BE AS PER CHARTS SHOWN ON SHEET 3.

APPROVAL APPLIES TO SINGLE UNITS OR SIDE BY SIDE COMBINATIONS OF S.H./S.H. OR SINGLE HUNG WITH OTHER WINDOW TYPES IN MODULES OF TWO OR MORE WINDOWS USING F.B.C. APPROVED MULLIONS IN BETWEEN.
LOWER DESIGN PRESSURE FROM WINDOWS OR MULLION APPROVAL WILL APPLY TO ENTIRE SYSTEM.

THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 2020 (7TH EDITION)/2023 (8TH EDITION) FLORIDA BUILDING CODE INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).

1BY OR 2BY WOOD BUCKS & BUCK FASTENERS BY OTHERS, MUST BE DESIGNED AND INSTALLED ADEQUATELY TO TRANSFER APPLIED PRODUCT LOADS TO THE BUILDING STRUCTURE.

ANCHORS SHALL BE CORROSION RESISTANT, SPACED AS SHOWN ON DETAILS AND INSTALLED PER MANUF'S INSTRUCTIONS. SPECIFIED EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

A LOAD DURATION INCREASE IS USED IN DESIGN OF ANCHORS INTO WOOD ONLY.

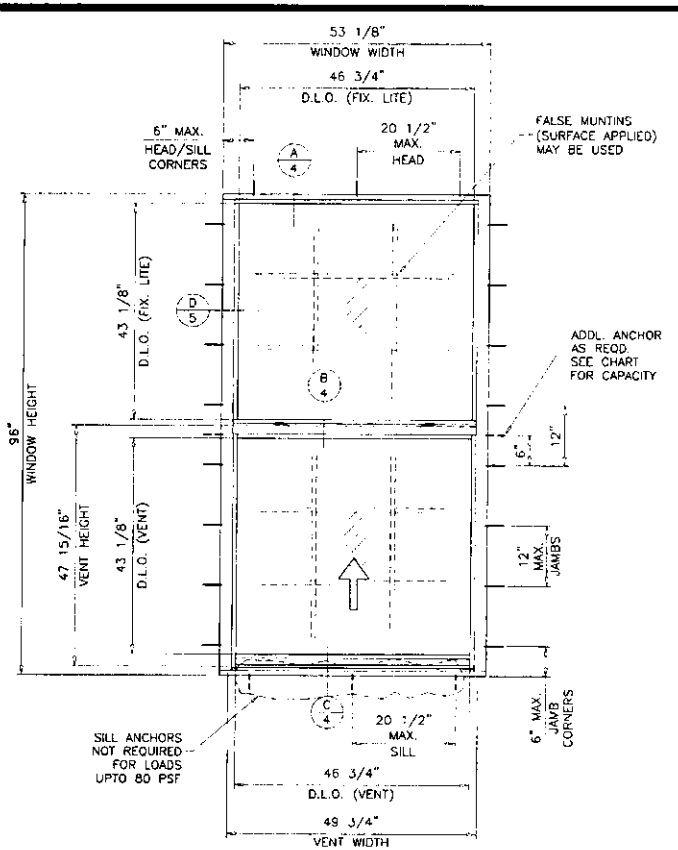
ALL SHIMS TO BE HIGH IMPACT, NON-METALLIC AND NON-COMPRESSIBLE.

MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE 2020/2023 FLORIDA BLDG. CODE & ADOPTED STANDARDS.

THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT, i.e. LIFE SAFETY OF THIS PRODUCT, ADEQUACY OF STRUCTURE RECEIVING THIS PRODUCT AND SEALING AROUND OPENING FOR WATER INFILTRATION RESISTANCE ETC.
CONDITIONS NOT SHOWN IN THIS DRAWING ARE TO BE ANALYZED SEPARATELY, AND TO BE REVIEWED BY BUILDING OFFICIAL.

DESIGN LOADS SHOWN ARE BASED ON 'ALLOWABLE STRESS DESIGN (ASD)'.

MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION IN ACCORDANCE WITH SECTION 1709.9.3 OF FLORIDA BUILDING CODE. LABELING TO COMPLY WITH SECTION 1709.9.2.



TYPICAL ELEVATION
TESTED UNIT

Sealed: 7/24/2023

FL #20352.1

A- CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION OF THIS PRODUCT BASED ON THIS PRODUCT EVALUATION PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT.

B- THIS PRODUCT EVALUATION DOCUMENT WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.

C- SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A FLORIDA REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.E.D. ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE P.E.D. ENGINEER SHALL SUBMIT TO THIS LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW.

D- THIS P.E.D SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT

JALAL FAROOQ LICENSE No. 81223 STATE OF FLORIDA

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.V. 33386)
TEL. (305) 264 8100 FAX. (305) 262-6978

COMP-ANL\W16-20MG

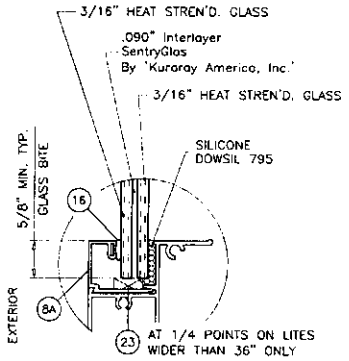
MG-200 ALUM. SINGLE HUNG WINDOW (L.M.I.)

MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
8051 N.W. 79th Place
Medley, FL. 33166
Tel. (305) 764-3963 fax. (305) 470-8285

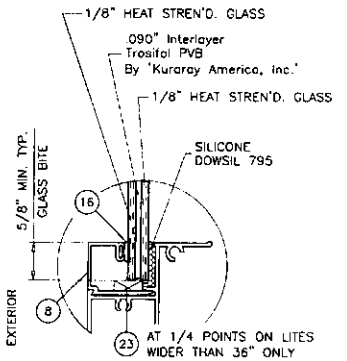
revisions:			
no.	date	by	description
A	01.12.18		UPDATED TO 2017 FBC
B	07.24.20		UPDATED TO 2020 FBC
C	07.21.23		UPDATED TO 2023 FBC

date: 04-15-16
scale: 1/2"=1'-0"
dr by: TAFQ
chk by:

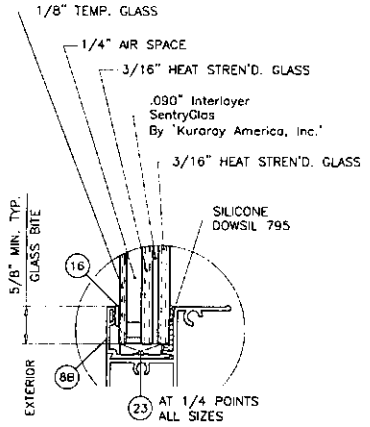
drawing no.
W16-20
sheet 1 of 8



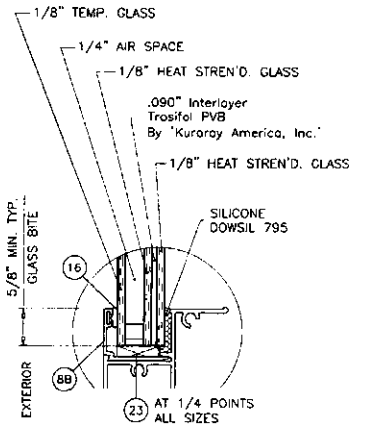
GLASS TYPE 'A'
7/16" OVERALL LAM. GLASS



GLASS TYPE 'B'
5/16" OVERALL LAM. GLASS



GLASS TYPE 'A1'
7/8" OVERALL INSUL. LAM. GLASS

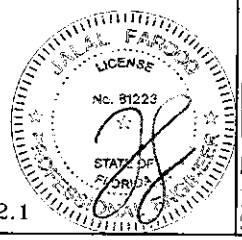


GLASS TYPE 'B1'
11/16" OVERALL INSUL. LAM. GLASS

GLAZING OPTIONS

1/4" AIR SPACE CONSISTING OF:
SPACER:
'HELIMA' LOW PROFILE ALUMINUM SPACER
BY 'LINGERMANN GMBH'
AROUND THE PERIMETER OF THE GLASS.
PERIMETER SEALANT:
SILICONE
DOWSIL 791
GE 2000
OR
'DURASEAL' EDGE SEAL SYSTEM
BY 'QUANEX'

Sealed: 7/24/2023



FL #20352.1

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revisions: no. date by description

date: 04-15-16
scale: 1/2" = 1"
dr by: TAFO
chk. by:

drawing no. W16-20
sheet 2 of 8

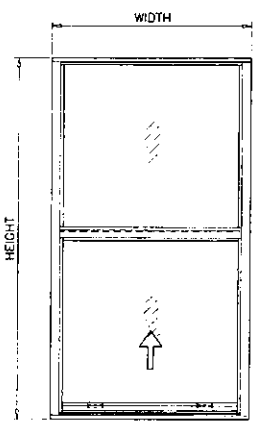
EQUAL LITES WINDOWS

DESIGN LOAD CAPACITY - PSF

FLANGE DIMS. WIDTH	FLANGE DIMS. HEIGHT	GLASS TYPES 'A' & 'A1' EXT.(+)	GLASS TYPES 'A' & 'A1' INT.(-)	GLASS TYPES 'B' & 'B1' EXT.(+)	GLASS TYPES 'B' & 'B1' INT.(-)
19-1/8"		80.0	140.0	80.0	80.0
26-1/2"		80.0	140.0	80.0	80.0
30"	38-3/8" (4)	80.0	140.0	80.0	80.0
37"		80.0	140.0	80.0	80.0
48"		80.0	140.0	80.0	80.0
53-1/8"		80.0	140.0	80.0	80.0
19-1/8"		80.0	140.0	80.0	80.0
26-1/2"		80.0	140.0	80.0	80.0
30"	50-5/8" (6)	80.0	140.0	80.0	80.0
37"		80.0	140.0	80.0	80.0
48"		80.0	140.0	80.0	80.0
53-1/8"		80.0	140.0	80.0	80.0
19-1/8"		80.0	140.0	80.0	80.0
26-1/2"		80.0	140.0	80.0	80.0
30"	63" (6)	80.0	140.0	80.0	80.0
37"		80.0	140.0	80.0	80.0
48"		80.0	140.0	80.0	80.0
53-1/8"		80.0	140.0	80.0	80.0
19-1/8"		80.0	140.0	80.0	80.0
26-1/2"		80.0	140.0	80.0	80.0
30"	74-1/4" (8)	80.0	140.0	80.0	80.0
37"		80.0	140.0	80.0	80.0
48"		80.0	140.0	80.0	80.0
53-1/8"		80.0	129.6	80.0	80.0
19-1/8"		80.0	140.0	80.0	80.0
26-1/2"		80.0	140.0	80.0	80.0
30"	76" (8)	80.0	140.0	80.0	80.0
37"		80.0	140.0	80.0	80.0
48"		80.0	140.0	80.0	80.0
53-1/8"		80.0	128.5	80.0	80.0
19-1/8"		80.0	140.0	-	-
26-1/2"		80.0	140.0	-	-
30"	84" (8)	80.0	140.0	-	-
37"		80.0	140.0	-	-
48"		80.0	140.0	-	-
53-1/8"		80.0	124.7	-	-
19-1/8"		80.0	140.0	-	-
26-1/2"		80.0	140.0	-	-
30"	90" (8)	80.0	140.0	-	-
37"		80.0	140.0	-	-
48"		80.0	140.0	-	-
53-1/8"		80.0	123.1	-	-
19-1/8"		80.0	140.0	-	-
26-1/2"		80.0	140.0	-	-
30"	96" (8)	80.0	140.0	-	-
37"		80.0	140.0	-	-
48"		80.0	140.0	-	-
53-1/8"		80.0	122.4	-	-
53-1/8"	74-1/4"	80.0	140.0	-	-
53-1/8"	76"	80.0	140.0	-	-
53-1/8"	84"	80.0	140.0	-	-
53-1/8"	90"	80.0	140.0	-	-
53-1/8"	96"	80.0	140.0	-	-

NO. IN PARENTHESIS INDICATE NO. OF ANCHORS PER JAMB.

ADDL. ANCHOR AT MTG. RAIL



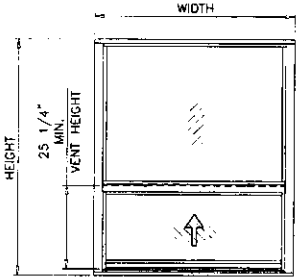
EQUAL LITES

UNEQUAL LITES WINDOWS

DESIGN LOAD CAPACITY - PSF

FLANGE DIMS. WIDTH	FLANGE DIMS. HEIGHT	GLASS TYPES 'A' & 'A1' EXT.(+)	GLASS TYPES 'A' & 'A1' INT.(-)
19-1/8"		80.0	140.0
26-1/2"		80.0	140.0
37"		80.0	140.0
40"	63" (7)	80.0	140.0
43"		80.0	140.0
48"		80.0	140.0
50"		80.0	140.0
52"		80.0	140.0
53-1/8"		80.0	140.0
19-1/8"		80.0	140.0
26-1/2"		80.0	140.0
37"		80.0	140.0
40"	74-1/4" (8)	80.0	140.0
43"		80.0	140.0
48"		80.0	140.0
50"		80.0	140.0
52"		80.0	140.0
19-1/8"		80.0	140.0
26-1/2"		80.0	140.0
37"	76" (8)	80.0	140.0
40"		80.0	140.0
43"		80.0	140.0
48"		80.0	140.0
50"		80.0	140.0
19-1/8"		80.0	140.0
26-1/2"		80.0	140.0
37"	84" (8)	80.0	140.0
40"		80.0	140.0
43"		80.0	140.0
19-1/8"		80.0	140.0
26-1/2"	90" (9)	80.0	140.0
37"		80.0	140.0
40"		80.0	140.0
19-1/8"		80.0	140.0
26-1/2"	96" (9)	80.0	140.0
37"		80.0	140.0

NO. IN PARENTHESIS INDICATE NO. OF ANCHORS PER JAMB.



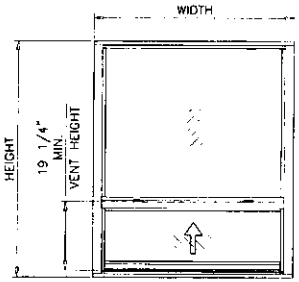
UNEQUAL LITES (ORIEL TYPE)

UNEQUAL LITES WINDOWS

DESIGN LOAD CAPACITY - PSF

FLANGE DIMS. WIDTH	FLANGE DIMS. HEIGHT	GLASS TYPES 'B' & 'B1' EXT.(+)	GLASS TYPES 'B' & 'B1' INT.(-)
19-1/8"		80.0	80.0
26-1/2"		80.0	80.0
30"		80.0	80.0
32"		80.0	80.0
36"	50-5/8" (6)	80.0	80.0
37"		80.0	80.0
46"		80.0	80.0
48"		80.0	80.0
53-1/8"		80.0	80.0
19-1/8"		80.0	80.0
26-1/2"		80.0	80.0
30"		80.0	80.0
32"	63" (6)	80.0	80.0
36"		80.0	80.0
37"		80.0	80.0
46"		80.0	80.0
19-1/8"		80.0	80.0
26-1/2"		80.0	80.0
30"	74-1/4" (8)	80.0	80.0
32"		80.0	80.0
36"		80.0	80.0
37"		80.0	80.0
19-1/8"		80.0	80.0
26-1/2"		80.0	80.0
30"	76" (8)	80.0	80.0
32"		80.0	80.0
36"		80.0	80.0
19-1/8"		80.0	80.0
26-1/2"	84" (8)	80.0	80.0
30"		80.0	80.0
32"		80.0	80.0

NO. IN PARENTHESIS INDICATE NO. OF ANCHORS PER JAMB.



UNEQUAL LITES (ORIEL TYPE)

NOTE:
GLASS CAPACITIES ON THIS SHEET ARE BASED ON ASTM E1300-09 (3 SEC. GUSTS) AND FLORIDA BUILDING COMMISSION DECLARATORY STATEMENT DCA05-DEC-219

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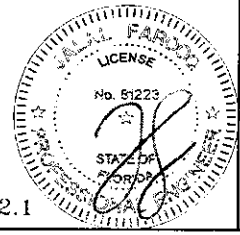

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COMP. ANL \ W16-20MG

MG-200 ALUM SINGLE HUNG WINDOW (L.M.I.)

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revisions:

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chk. by:

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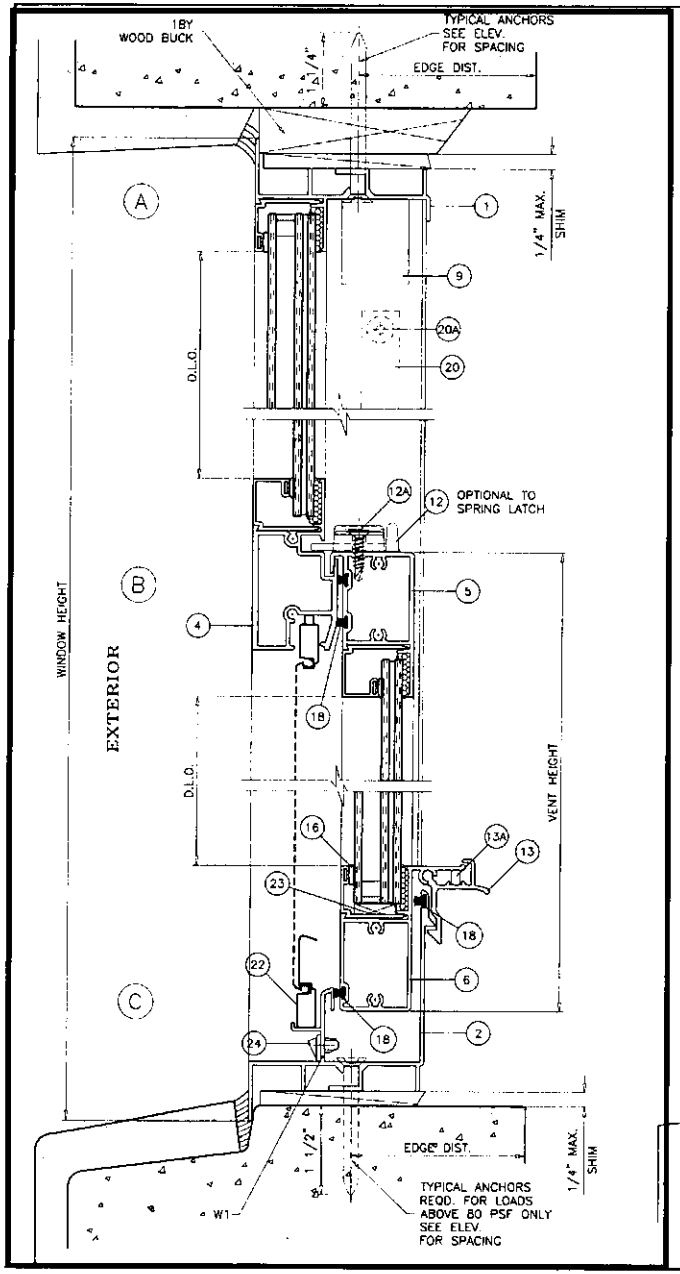
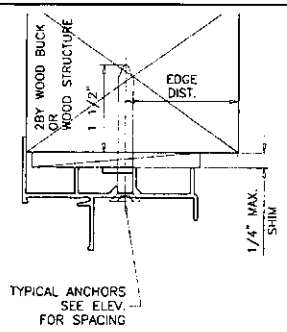
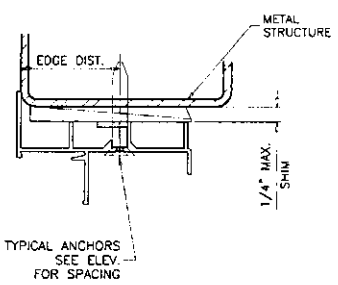
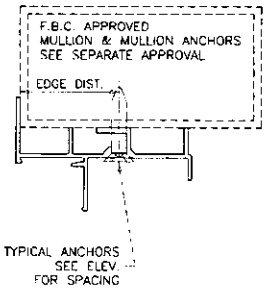








WOOD BUCKS AND METAL STRUCTURE NOT BY 'MR-GLASS' MUST SUSTAIN LOADS IMPOSED BY GLAZING SYSTEM AND TRANSFER THEM TO THE BUILDING STRUCTURE.

WEEPHOLES:

W1 = 1-1/2" X 5/16" WEEPHOLES AT 5-1/2" FROM EACH END

TYPICAL ANCHORS: SEE ELEV. FOR SPACING

1/4" DIA. ULTRACON+ BY 'DEWALT' (Fu=164 KSI, Fy=148 KSI)
INTO 2BY WOOD BUCKS OR WOOD STRUCTURES
1-1/2" MIN. PENETRATION INTO WOOD (HEAD/SILL/JAMBS)

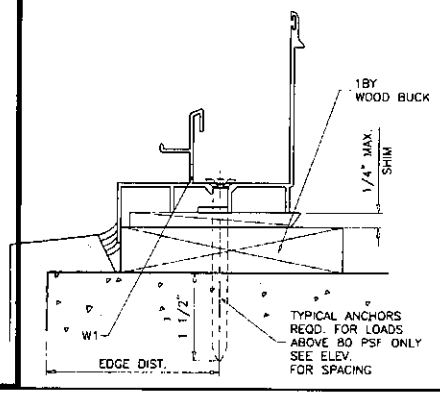
THRU 1BY BUCKS INTO CONC. OR BLOCKS
1-1/4" MIN. EMBED INTO CONCRETE (HEAD/SILL/JAMBS)
1-1/4" MIN. EMBED INTO BLOCKS (JAMBS)

DIRECTLY INTO CONCRETE OR BLOCKS
1-1/2" MIN. EMBED INTO CONCRETE (HEAD/SILL/JAMBS)
1-1/4" MIN. EMBED INTO BLOCKS (JAMBS)

#14 SMS OR SELF-DRILLING SCREWS (GRADE 2 CRS)
INTO F.B.C. APPROVED MULLIONS
OR
INTO METAL STRUCTURES (HEAD/SILL/JAMBS)
(3) THREADS MIN. TO EXTEND BEYOND METAL THICKNESS
ALUMINUM: 1/8" THK. MIN. (6063-T5 MIN.)
STEEL: 1/8" THK. MIN. (Fy = 36 KSI MIN.)
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

CRITICAL EDGE DISTANCE
INTO CONCRETE AND BLOCKS = 2-1/2" MIN.
INTO WOOD STRUCTURE = 1" MIN.
INTO METAL STRUCTURE = 3/4" MIN.

WOOD AT HEAD, SILL OR JAMBS SG = 0.55 MIN.
CONCRETE AT HEAD, SILL OR JAMBS f'c = 3000 PSI MIN.
C-90 HOLLOW/FILLED BLOCK AT JAMBS f'm = 2000 PSI MIN.



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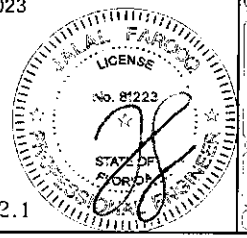

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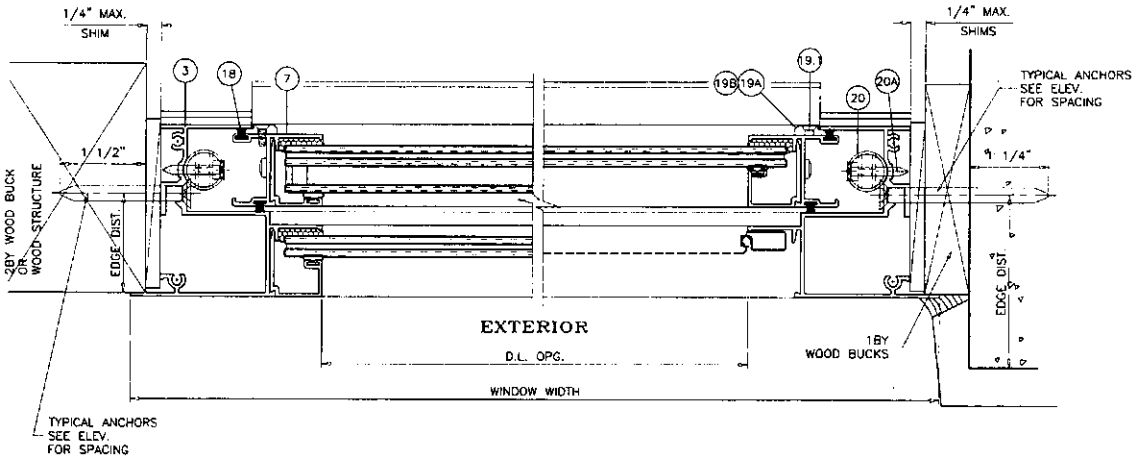

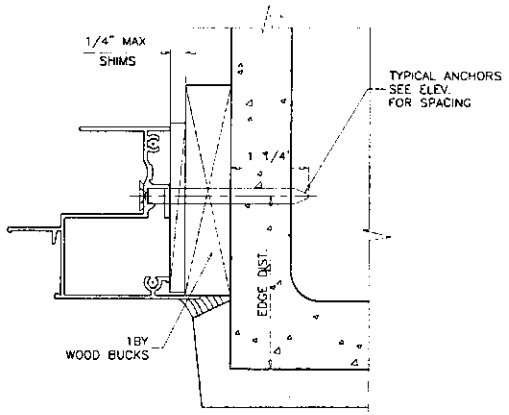

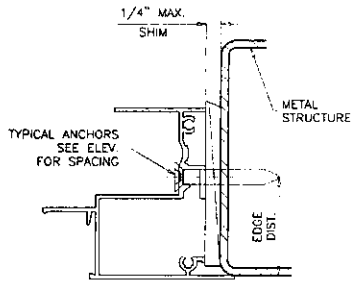

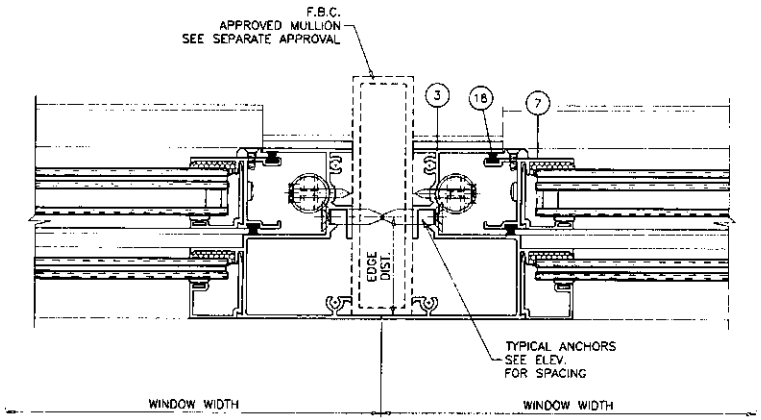

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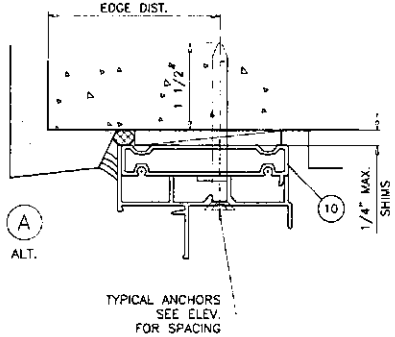

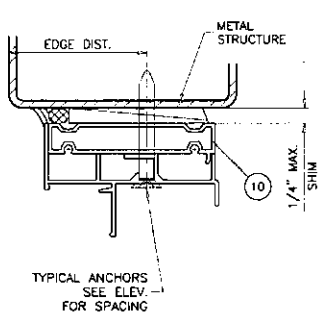

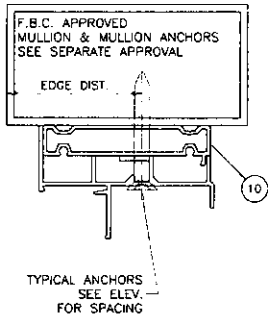

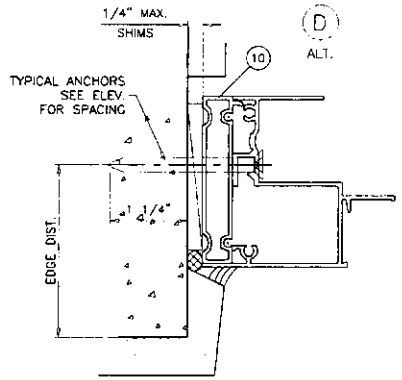

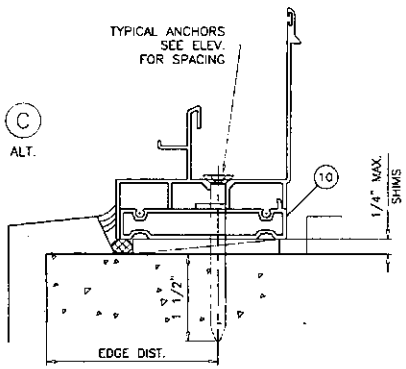

INSTALLATION DETAILS WITH FLUSH FRAME ADAPTER

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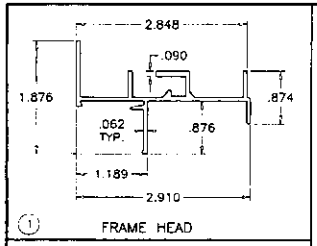
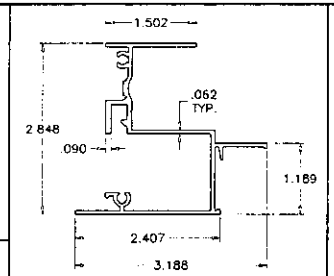
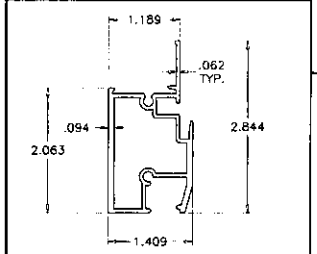


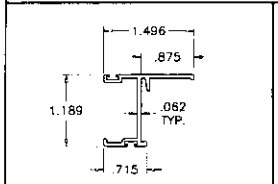
① FRAME HEAD



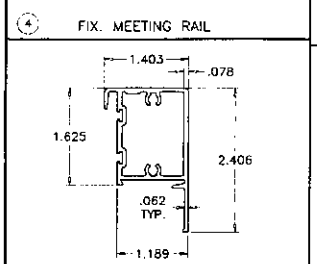
③ FRAME JAMB



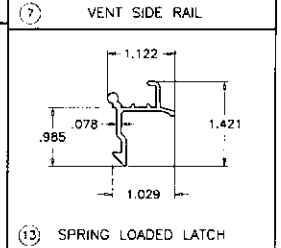
④ FIX. MEETING RAIL



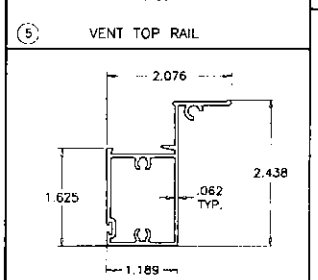
⑦ VENT SIDE RAIL



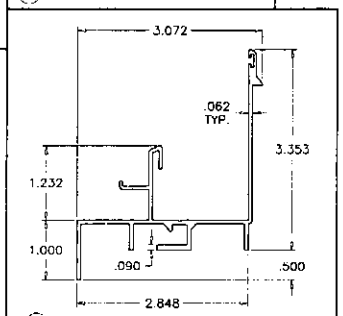
⑤ VENT TOP RAIL



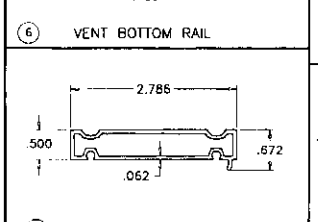
⑬ SPRING LOADED LATCH



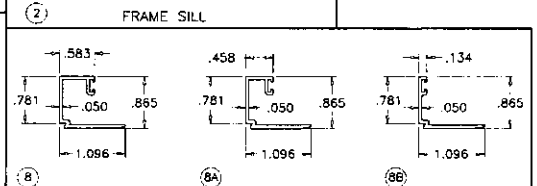
⑥ VENT BOTTOM RAIL



② FRAME SILL



⑩ FLUSH FRAME ADAPTER



⑧ ⑧A ⑧B GLAZING BEADS

ITEM #	PART #	REQD.	DESCRIPTION	MATERIAL	MANF./SUPPLIER/REMARKS
1	MG201	1	FRAME HEAD	6063-T6	-
2	MG202	1	FRAME SILL	6063-T6	-
3	MG203	2	FRAME JAMB	6063-T6	-
4	MG204	1	FIXED MTG. RAIL	6063-T6	-
5	MG205	1	VENT TOP RAIL	6063-T6	-
6	MG206	1	VENT BOTTOM RAIL	6063-T6	-
7	MG207	2	VENT SIDE RAIL	6063-T6	-
8	MG208	AS REQD.	GLAZING BEAD (5/16" GLASS)	6063-T6	-
8A	MG209	AS REQD.	GLAZING BEAD (7/16" GLASS)	6063-T6	-
8B	MG210	AS REQD.	GLAZING BEAD (INSUL. LAM. GLASS)	6063-T6	-
9	-	2/VENT	SASH STOP	6063-T6	-
10	MG212	AS REQD.	FLUSH FRAME ADAPTER	6063-T6	-
11	-	-	-	-	-
12	SL203P	2/ VENT	SWEEP LATCH	ZAMAK	SULLIVAN & ASSOC.
12A	#8 X 5/8"	2/ LATCH	LATCH INST. SCREWS	ST. STEEL	OH SMS
13	MG211	2/ VENT	SPRING LOADED LATCH	6063-T6	ALTERNATE TO SWEEP LATCH
13A	-	2/ LATCH	LATCH SPRING	ST. STEEL	-
14	#10 X 1"	AS REQD.	FRAME & VENT ASSEMBLY SCREWS	CRS	PH SMS
16	E202	AS REQD.	GLAZING BEAD BULB	NEOPRENE	ULTRAFAB
18	W73231NK0008	AS REQD.	SIDE RAIL FIN SEAL W/STRIPPING	-	ULTRAFAB
19A	MG221	2/ VENT	VENT BOTTOM GUIDE	CELCON	M&M PLASTICS
19B	MG222	2/ VENT	VENT TOP GUIDE	CELCON	M&M PLASTICS
19.1	#6 X 5/8"	1/ GUIDE	SASH GUIDE INST. SCREW	CRS	FH SMS TYPE B
20	SL-14A-044	2/VENT	ULTRALIFT SPIRAL BALANCE	-	CALDWELL
20A	#10 X 1-1/4"	1/ BALANCE	BALANCE INST. SCREW	-	OH SMS TYPE B
22	-	1	5/16" BOX SCREEN	-	OPTIONAL
23	-	2/ LITE	SETTING BLOCK AT 1/4 POINTS	EPDM	DUROMETER 80±5 SHORE A
24	-	2	HI-FLOW WEEPER	-	PREFERRED ENGINEERING PRODUCTS

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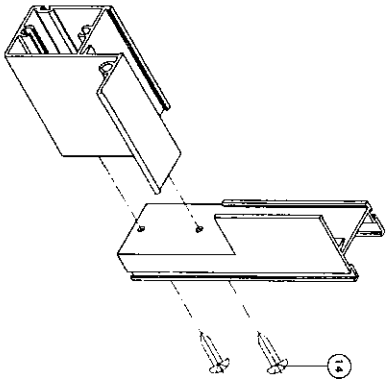
VENT BOTTOM CORNER



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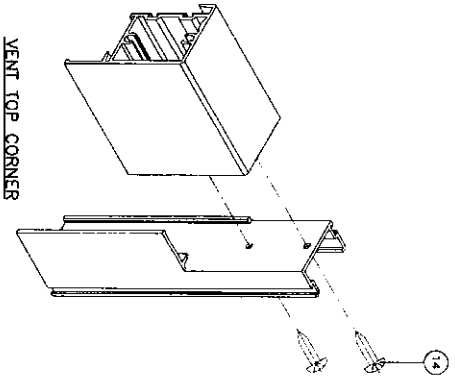

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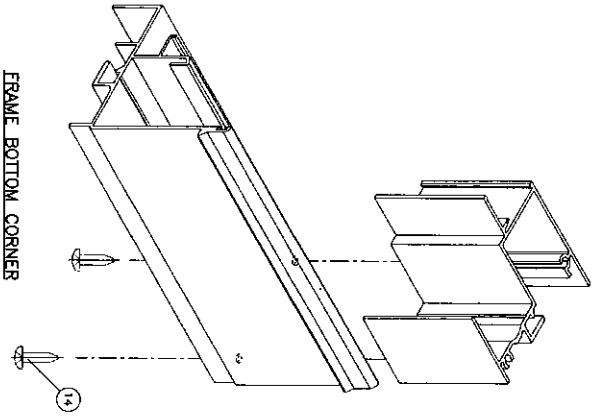

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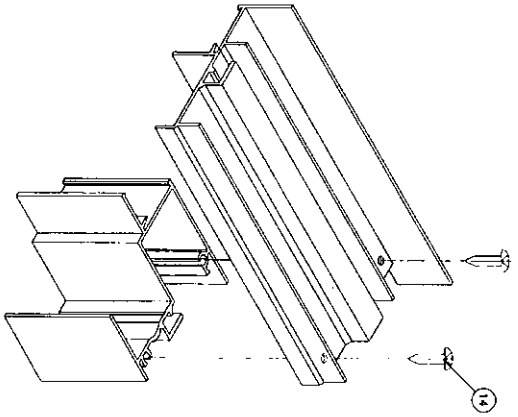

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AL-FAROOQ CORPORATION

CONSULTING ENGINEERS & PRODUCT DEVELOPMENT

PRODUCT APPROVAL EVALUATION
RULE CHAPTER #61G20-3 • METHOD 1 OPTION D

FL 20352
Date: 07/24/2023

Detailed Product Description:

Manufacturer: MR-GLASS DOORS & WINDOWS MANUFACTURING LLC.

Manufacturer Address: 8051 NW 79th PLACE, MEDLEY, FL 33166

Model Name: SERIES MG-200 ALUMINUM SINGLE HUNG WINDOW

Maximum Load: +80 PSF, -140 PSF (Large Missile Impact)

Installation Drawings # W16-20

This product complies with the High Velocity Hurricane Zone (HVHZ) testing requirements.

For maximum sizes, combination of span vs loads and anchor type refer to installation drawings.

Comparative analysis used X Yes ___ No

Mandatory Tests (Tested in accordance with AAMA 101/I.S.2/NAFS/TAS-202)

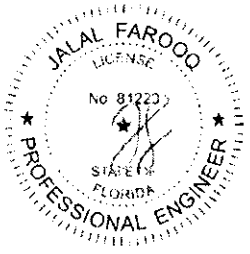
TEST	DESCRIPTION	TEST LOCATION	TEST REPORT DATE	TEST REPORT #	Test Sealed by
ASTM E283	Air Infiltration Leakage	Fenestration Testing Laboratory, Inc.	03/11/2016	FTL-8827	Idalmis Ortega, P.E.
ASTM E331 OR ASTM 547 & TAS 202	Water Penetration	Fenestration Testing Laboratory, Inc.	03/11/2016	FTL-8827	Idalmis Ortega, P.E.
ASTM E330 & TAS 202	Uniform Static Air Press.	Fenestration Testing Laboratory, Inc.	03/11/2016	FTL-8827	Idalmis Ortega, P.E.
ASTM F 588	Forced Entry	Fenestration Testing Laboratory, Inc.	03/11/2016	FTL-8827	Idalmis Ortega, P.E.

Supplemental Tests (Tested in accordance with TAS-201 and TAS-203)

TEST	DESCRIPTION	TEST LOCATION	TEST REPORT DATE	TEST REPORT #	Test Sealed by
FBC 1626.2 (TAS 201 & 203)	Large Missile Impact & Cyclic	Fenestration Testing Laboratory, Inc.	03/11/2016	FTL-8827	Idalmis Ortega, P.E.

Under the limitations of the attached installation drawings, to the best of my knowledge and ability, the above product conforms to the requirements of the 2023 Florida Building Code.

Evaluation Report Engineer:



Jalal Farooq PE # 81223
Al-Farooq Corporation EB # 3538

Sealed: 7/24/2023

9360 Sunset Drive, Ste 220 | Miami, FL 33173 | T: 305.264.8100 | F: 305.262.6978 | www.afceng.com | alfarooq@afceng.com

dbpr **Product Approval**
USER: Public User

Opening# 17;18;21

FL20359.1

FL #	FL20359-R5
Application Type	Revision
Code Version	2023
Application Status	Approved
Comments	
Archived	
Product Manufacturer	Mr-Glass Doors & Windows Manufacturing, LLC
Address/Phone/Email	8051 NW 79th Place Medley, FL 33166 (305) 470-8284 ulises@mrglasswindows.com
Authorized Signature	Ulises Senaris ulises@mrglasswindows.com
Technical Representative	Augusto Arias
Address/Phone/Email	8120 NW 84th St Medley, FL 33166 (305) 470-8284 aarias@mrglasswindows.com
Quality Assurance Representative	
Address/Phone/Email	
Category	Windows
Subcategory	Horizontal Slider
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer Evaluation Report - Hardcopy Received
Florida Engineer or Architect Name who developed the Evaluation Report	Jalal Farooq
Florida License	PE-81223
Quality Assurance Entity	Keystone Certifications, Inc.
Quality Assurance Contract Expiration Date	08/27/2025
Validated By	Abel Carrasco, PE Validation Checklist - Hardcopy Received
Certificate of Independence	FL20359_R5_COI_SS - Certificate of Independence 2023.pdf

Referenced Standard and Year (of Standard)

Standard	Year
TAS 201	1994
TAS 202	1994
TAS 203	1994

Equivalence of Product Standards Certified By

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	07/25/2023
Date Validated	07/26/2023
Date Pending FBC Approval	07/27/2023
Date Approved	10/17/2023

Summary of Products

FL #	Model, Number or Name	Description
20359.1	Series MG-300 Aluminum Horizontal Sliding Window	Large missile impact resistant aluminum horizontal sliding window.

Limits of Use
Approved for use in HVHZ: Yes
Approved for use outside HVHZ: Yes
Impact Resistant: Yes
Design Pressure: +90/-140
Other: See attached drawing W16-26 for span vs. load combination and installation details.

Installation Instructions
FL20359_R5_II_SS - Series MG-300 HR (LMI) - DWG W16-26 (2023).pdf
Verified By: Jalal Farooq PE # 81223
Created by Independent Third Party: Yes

Evaluation Reports
FL20359_R5_AE_SS - Series MG-300 HR (LMI) - PAE 2023.pdf
Created by Independent Third Party: Yes

20359.2	Series MG-300 Aluminum Horizontal Sliding Window	Small missile impact resistant aluminum horizontal sliding window.

Limits of Use
Approved for use in HVHZ: Yes
Approved for use outside HVHZ: Yes
Impact Resistant: Yes
Design Pressure: +90/-140
Other: See attached drawing W16-28 for span vs. load combination and installation details.

Installation Instructions
FL20359_R5_II_SS - Series MG-300 HR (SMI) - DWG W16-28 (2023).pdf
Verified By: Jalal Farooq PE # 81223
Created by Independent Third Party: Yes

Evaluation Reports
FL20359_R5_AE_SS - Series MG-300 HR (SMI) - PAE 2023.pdf
Created by Independent Third Party: Yes

Contact Us :: 2601 Blair Stone Road, Tallahassee FL 32399 Phone: 850-487-1824

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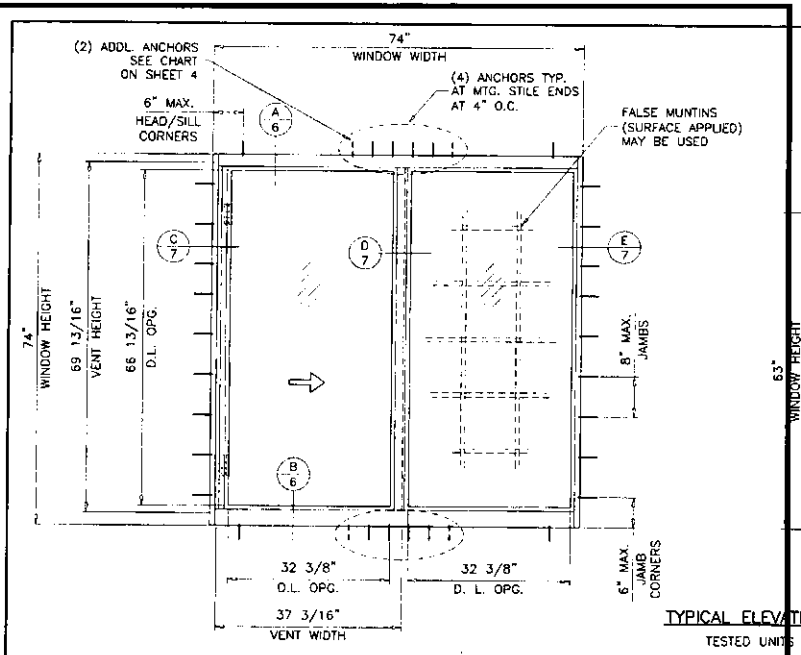
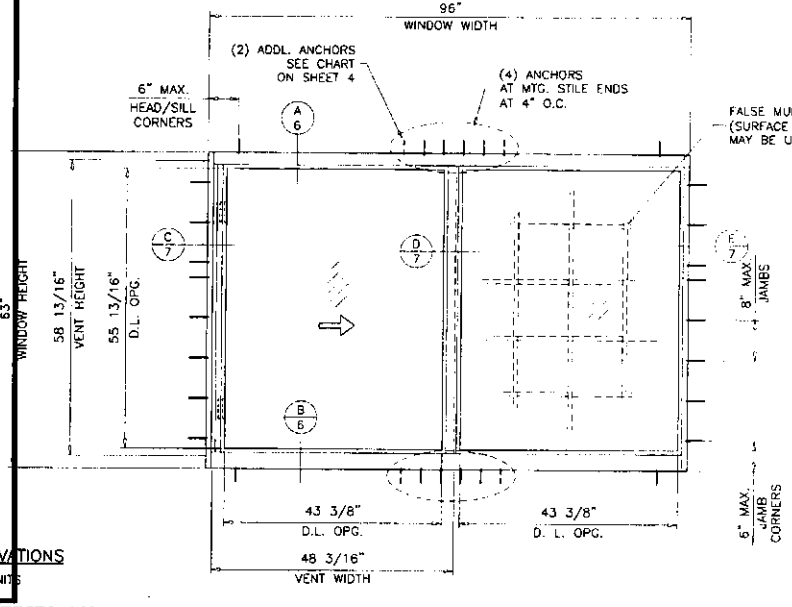
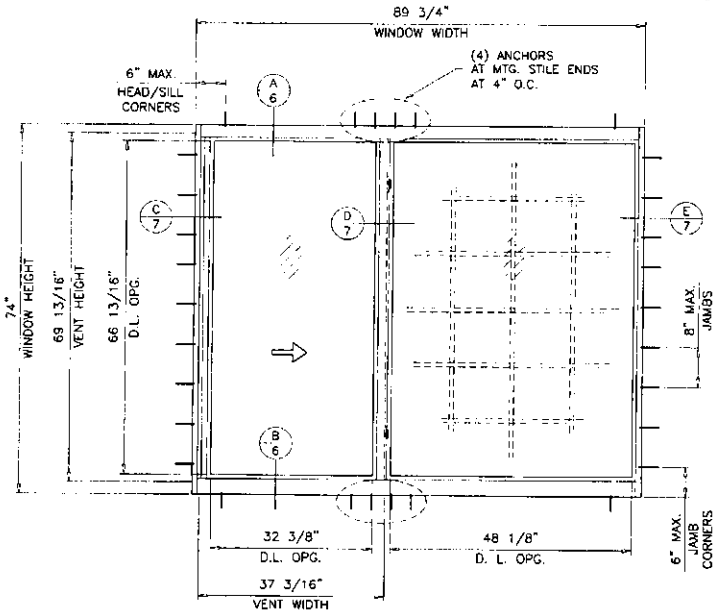
Product Approval Accepts:

Credit Card
Safe
securityMETRICS



TYPICAL ELEVATIONS
TESTED UNITS





SERIES MG-300
ALUMINUM HORIZONTAL SLIDING WINDOW

DESIGN LOAD RATINGS FOR THESE WINDOWS TO BE AS PER CHARTS SHOWN ON SHEETS 4 & 5.

APPROVAL APPLIES TO SINGLE UNITS OR SIDE BY SIDE COMBINATIONS OF H.R./H.R. OR HORIZ. ROLLING WITH OTHER WINDOW TYPES IN MODULES OF TWO OR MORE WINDOWS USING F.B.C. APPROVED MULLIONS IN BETWEEN.
LOWER DESIGN PRESSURE FROM WINDOWS OR MULLION APPROVAL WILL APPLY TO ENTIRE SYSTEM.

THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 2020 (7TH EDITION)/2023 (8TH EDITION) FLORIDA BUILDING CODE INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).

1BY OR 2BY WOOD BUCKS & BUCK FASTENERS BY OTHERS, MUST BE DESIGNED AND INSTALLED ADEQUATELY TO TRANSFER APPLIED PRODUCT LOADS TO THE BUILDING STRUCTURE.

ANCHORS SHALL BE CORROSION RESISTANT, SPACED AS SHOWN ON DETAILS AND INSTALLED PER MANUF'S INSTRUCTIONS. SPECIFIED EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

A LOAD DURATION INCREASE IS USED IN DESIGN OF ANCHORS INTO WOOD ONLY.

ALL SHIMS TO BE HIGH IMPACT, NON-METALLIC AND NON-COMPRESSIBLE.

MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE 2020/2023 FLORIDA BLDG. CODE & ADOPTED STANDARDS.

THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT, i.e. LIFE SAFETY OF THIS PRODUCT, ADEQUACY OF STRUCTURE RECEIVING THIS PRODUCT AND SEALING AROUND OPENING FOR WATER INFILTRATION RESISTANCE ETC.
CONDITIONS NOT SHOWN IN THIS DRAWING ARE TO BE ANALYZED SEPARATELY, AND TO BE REVIEWED BY BUILDING OFFICIAL.

DESIGN LOADS SHOWN ARE BASED ON 'ALLOWABLE STRESS DESIGN (ASD)'.

MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION IN ACCORDANCE WITH SECTION 1709.9.3 OF FLORIDA BUILDING CODE. LABELING TO COMPLY WITH SECTION 1709.9.2.

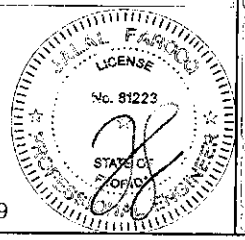
THESE WINDOWS ARE RATED FOR LARGE & SMALL MISSILE IMPACT. SHUTTERS ARE NOT REQUIRED.

A- CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION OF THIS PRODUCT BASED ON THIS PRODUCT EVALUATION PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT.

B- THIS PRODUCT EVALUATION DOCUMENT WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.

C- SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A FLORIDA REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THIS P.E.D. ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE P.E.D. ENGINEER SHALL SUBMIT TO THIS LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW.

D- THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.



Sealed: 7/24/2023

FL #20359

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 15378)
TEL. (305) 264-8100 • FAX. (305) 262-6978

COMP-ANL.W16-26MG

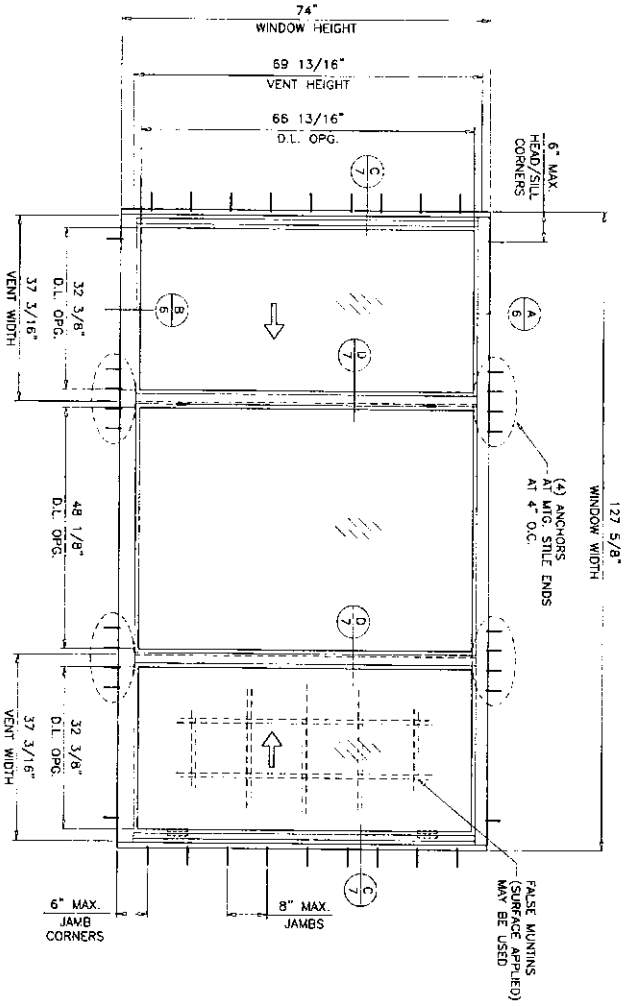
MG-300 ALUM HORIZ. ROLLING WDW. (L.M.I.)

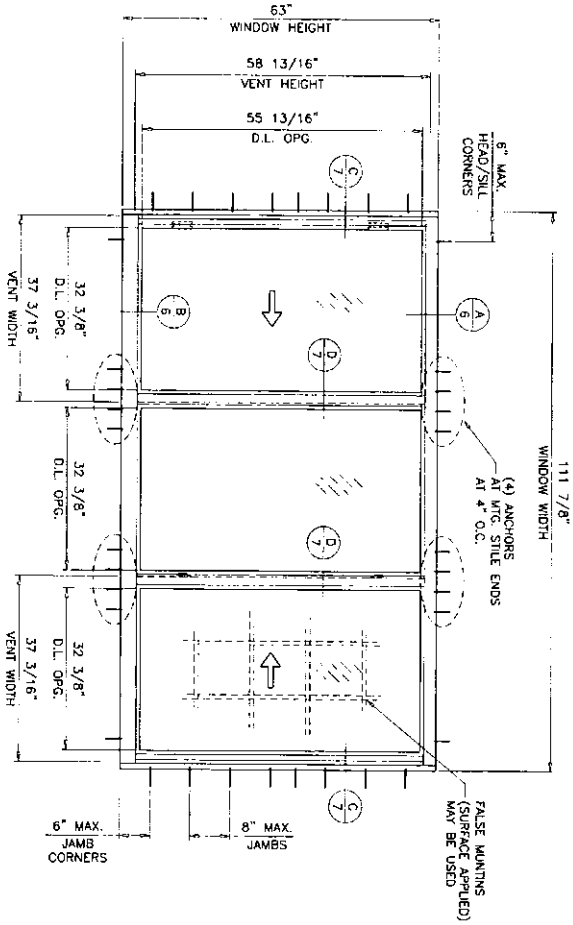
MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
8051 N.W. 79th Place
Medley, FL. 33166
Tel. (305) 764-3963 Fax. (305) 470-8285

revisions:			
no.	date	by	description
A	01.12.18		UPDATED TO 2017 FBC
B	07.24.20		UPDATED TO 2020 FBC
C	09.29.21		NOA EQUAL LITE CHART REV.
D	07.21.23		UPDATED TO 2023 FBC

date: 04-18-16
scale: 1/2"=1'-0"
dr. by: TARIQ
chk. by:

drawing no.
W16-26
sheet 1 of 10





TYPICAL ELEVATIONS

TESTED UNITS

Sealed: 7/24/2023

FL #20359

STATE OF FLORIDA
No. 91223
LICENSE
REGISTERED
PROFESSIONAL
ENGINEER

sheet	drawing no.	date	scale	dr by	chk by
sheet 2 of 10	W16-26	04-18-16	1/2"=1'-0"	TARIQ	

revisions:

no	date	by	description

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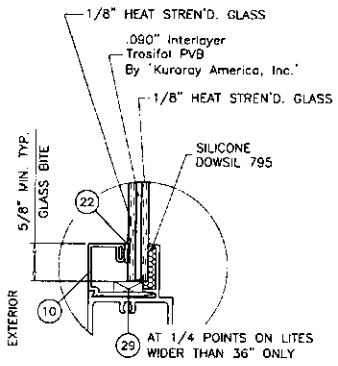
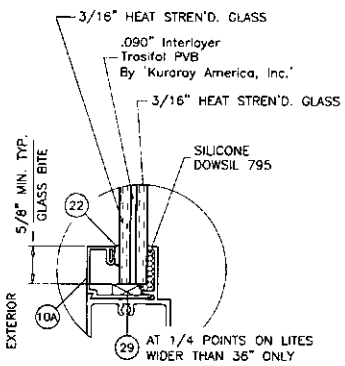
afc

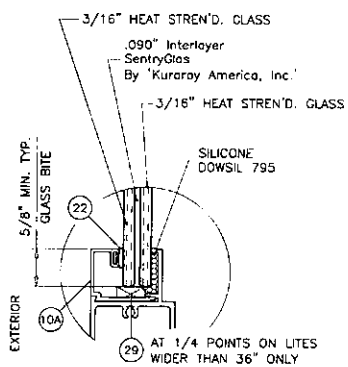
COMP-ANL\W16-26MG



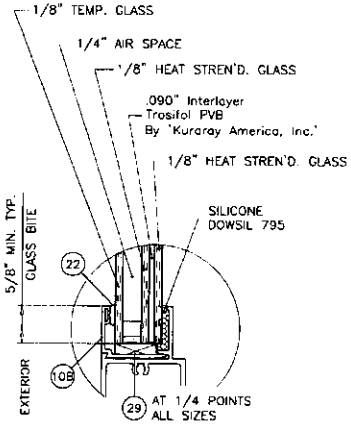
GLASS TYPE 'A'
5/16" OVERALL LAM. GLASS



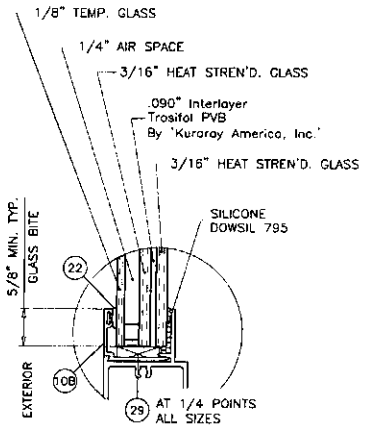
GLASS TYPE 'B'
7/16" OVERALL LAM. GLASS



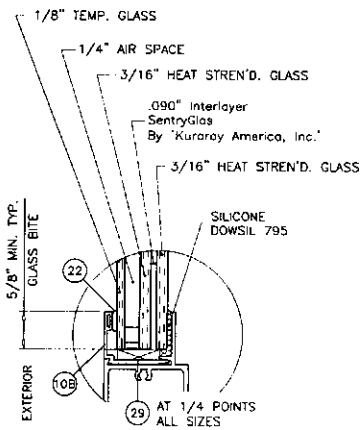
GLASS TYPE 'C'
7/16" OVERALL LAM. GLASS



GLASS TYPE 'A1'
11/16" OVERALL INSUL. LAM. GLASS



GLASS TYPE 'B1'
7/8" OVERALL INSUL. LAM. GLASS



GLASS TYPE 'C1'
7/8" OVERALL INSUL. LAM. GLASS

GLAZING OPTIONS

1/4" AIR SPACE CONSISTING OF:
'DURASEAL' EDGE SEAL SYSTEM
BY 'QUANEX'

Sealed: 7/24/2023

FL #20359

AL-FAROOQ CORPORATION
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9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 3548)
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COMP-ANL\W16-26MG

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revisions:
no. date by description

date: 3-18-16
scale: 1/2" = 1"
dr. by: TARIQ
chk. by:

drawing no.
W16-26

sheet 3 of 10

DESIGN LOAD CAPACITY – PSF (XO OR OX SIZES)

FRAME DIMS.		GLASS TYPES 'A' & 'A1'		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)
26-1/2"	26"	80.0	80.0	80.0	80.0	90.0	140.0
37"		80.0	80.0	80.0	80.0	90.0	140.0
53-1/8"		80.0	80.0	80.0	80.0	90.0	140.0
63"		80.0	80.0	80.0	80.0	90.0	140.0
74"		80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		–	–	80.0	80.0	90.0	140.0
26-1/2"	38-3/8"	80.0	80.0	80.0	80.0	90.0	140.0
37"		80.0	80.0	80.0	80.0	90.0	140.0
53-1/8"		80.0	80.0	80.0	80.0	90.0	140.0
63"		80.0	80.0	80.0	80.0	90.0	140.0
74"		80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		–	–	80.0	80.0	90.0	140.0
26-1/2"	50-5/8"	80.0	80.0	80.0	80.0	90.0	140.0
37"		80.0	80.0	80.0	80.0	90.0	140.0
53-1/8"		80.0	80.0	80.0	80.0	90.0	140.0
63"		80.0	80.0	80.0	80.0	90.0	140.0
74"		80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	136.7
96"		–	–	80.0	80.0	90.0	121.4
26-1/2"	63"	80.0	80.0	80.0	80.0	90.0	140.0
37"		80.0	80.0	80.0	80.0	90.0	140.0
53-1/8"		80.0	80.0	80.0	80.0	90.0	140.0
63"		80.0	80.0	80.0	80.0	90.0	140.0
74"		80.0	80.0	80.0	80.0	90.0	126.5
84"		80.0	80.0	80.0	80.0	90.0	111.5
96"		–	–	–	–	90.0	97.5
26-1/2"	74"	–	–	80.0	80.0	–	–
37"		–	–	80.0	80.0	–	–
53-1/8"		–	–	80.0	80.0	–	–
63"		–	–	80.0	80.0	–	–
74"		–	–	80.0	80.0	–	–
84"	50-5/8"	–	–	–	–	90.0	140.0
96"		–	–	–	–	90.0	140.0
74"	63"	–	–	–	–	90.0	140.0
84"		–	–	–	–	90.0	132.7
96"		–	–	–	–	90.0	125.0

ADDL. ANCHORS AT MTG. STILES

DESIGN LOAD CAPACITY – PSF (XO OR OX SIZES)

FRAME DIMS.		GLASS TYPES 'A' & 'A1'		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)
24"	24"	80.0	80.0	80.0	80.0	90.0	140.0
36"		80.0	80.0	80.0	80.0	90.0	140.0
48"		80.0	80.0	80.0	80.0	90.0	140.0
60"		80.0	80.0	80.0	80.0	90.0	140.0
72"		80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		–	–	80.0	80.0	90.0	140.0
24"	36"	80.0	80.0	80.0	80.0	90.0	140.0
36"		80.0	80.0	80.0	80.0	90.0	140.0
48"		80.0	80.0	80.0	80.0	90.0	140.0
60"		80.0	80.0	80.0	80.0	90.0	140.0
72"		80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		–	–	80.0	80.0	90.0	140.0
24"	48"	80.0	80.0	80.0	80.0	90.0	140.0
36"		80.0	80.0	80.0	80.0	90.0	140.0
48"		80.0	80.0	80.0	80.0	90.0	140.0
60"		80.0	80.0	80.0	80.0	90.0	140.0
72"		80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		–	–	80.0	80.0	90.0	128.0
24"	60"	80.0	80.0	80.0	80.0	90.0	140.0
36"		80.0	80.0	80.0	80.0	90.0	140.0
48"		80.0	80.0	80.0	80.0	90.0	140.0
60"		80.0	80.0	80.0	80.0	90.0	140.0
72"		80.0	80.0	80.0	80.0	90.0	136.5
84"		80.0	80.0	80.0	80.0	90.0	117.0
96"		–	–	–	–	90.0	102.4
24"	72"	–	–	80.0	80.0	–	–
36"		–	–	80.0	80.0	–	–
48"		–	–	80.0	80.0	–	–
60"		–	–	80.0	80.0	–	–
72"		–	–	80.0	80.0	–	–
84"		–	–	–	–	–	–
96"	48"	–	–	–	–	90.0	140.0
72"	60"	–	–	–	–	90.0	140.0
84"		–	–	–	–	90.0	140.0
96"		–	–	–	–	90.0	128.0

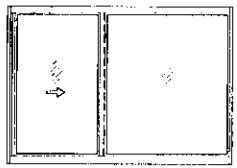
ADDL. ANCHORS AT MTG. STILES

DESIGN LOAD CAPACITY – PSF (XO OR OX SIZES)

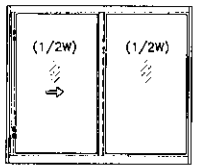
FRAME DIMS.		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)
55-1/2"	26"	80.0	80.0	90.0	140.0
79-11/16"		80.0	80.0	90.0	140.0
83-1/4"		80.0	80.0	90.0	140.0
94-1/4"		80.0	80.0	90.0	140.0
55-1/2"	38-3/8"	80.0	80.0	90.0	140.0
79-11/16"		80.0	80.0	90.0	140.0
83-1/4"		80.0	80.0	90.0	140.0
94-1/4"		80.0	80.0	90.0	140.0
55-1/2"	50-5/8"	80.0	80.0	90.0	140.0
79-11/16"		80.0	80.0	90.0	140.0
83-1/4"		80.0	80.0	90.0	140.0
94-1/4"		80.0	80.0	90.0	121.4
55-1/2"	63"	80.0	80.0	90.0	140.0
79-11/16"		80.0	80.0	90.0	111.5
83-1/4"		80.0	80.0	90.0	97.5
55-1/2"	74"	80.0	80.0	70.9	98.5
79-11/16"		80.0	80.0	62.2	86.4

DESIGN LOAD CAPACITY – PSF (XO OR OX SIZES)

FRAME DIMS.		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)
54"	24"	80.0	80.0	90.0	140.0
63"		80.0	80.0	90.0	140.0
72"		80.0	80.0	90.0	140.0
81"		80.0	80.0	90.0	140.0
90"		80.0	80.0	90.0	140.0
54"	36"	80.0	80.0	90.0	140.0
63"		80.0	80.0	90.0	140.0
72"		80.0	80.0	90.0	140.0
81"		80.0	80.0	90.0	140.0
90"		80.0	80.0	90.0	140.0
54"	48"	80.0	80.0	90.0	140.0
63"		80.0	80.0	90.0	140.0
72"		80.0	80.0	90.0	140.0
81"		80.0	80.0	90.0	140.0
90"		80.0	80.0	90.0	140.0
54"	60"	80.0	80.0	90.0	140.0
63"		80.0	80.0	90.0	140.0
72"		80.0	80.0	90.0	140.0
81"		80.0	80.0	90.0	117.0
90"		–	–	90.0	102.4
54"	72"	80.0	80.0	90.0	140.0
63"		80.0	80.0	80.6	111.9
72"		80.0	80.0	69.4	96.4
81"		–	–	61.9	85.9



OPERATING VENTS TO BE 1/4 TO 1/3 OF THE WINDOW WIDTH
'XO OR OX'

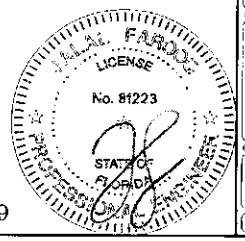


OPERATING VENTS TO BE 1/2 OF THE WINDOW WIDTH
'XO OR OX'

NOTE:
GLASS CAPACITIES ON THIS SHEET ARE BASED ON ASTM E1300-09 (3 SEC. GUSTS) AND FLORIDA BUILDING COMMISSION DECLARATORY STATEMENT DCA05-DEC-219

Sealed: 7/24/2023

FL #20359



AL-FAROOQ CORPORATION
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9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 3538)
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COMP-ANL\W16-26MG

MG-300 ALUM HORIZ. ROLLING WDW. (L.M.I.)

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8051 N.W. 79th Place
Medley, FL. 33166
Tel. (305) 764-3963 Fax. (305) 470-8285

revisions:
no. date by description

date: 04-18-16
scale: –
dr. by: TARIQ
chk. by:

drawing no.
W16-26

sheet 4 of 10

DESIGN LOAD CAPACITY – PSF
(XOX SIZES)

FRAME DIMS.		GLASS TYPES 'A' & 'A1'		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)
74"	26"	80.0	80.0	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	80.0	80.0	90.0	140.0
111"		80.0	80.0	80.0	80.0	90.0	140.0
126"		80.0	80.0	80.0	80.0	90.0	140.0
74"	38–3/8"	80.0	80.0	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	80.0	80.0	90.0	140.0
111"		80.0	80.0	80.0	80.0	90.0	140.0
126"		80.0	80.0	80.0	80.0	90.0	140.0
74"	50–5/8"	80.0	80.0	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	80.0	80.0	90.0	140.0
111"		80.0	80.0	80.0	80.0	90.0	140.0
126"		80.0	80.0	80.0	80.0	90.0	138.7
74"	63"	80.0	80.0	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	80.0	80.0	90.0	129.0
111"		80.0	80.0	80.0	80.0	90.0	125.7
126"		80.0	80.0	80.0	80.0	–	–
74"	74"	80.0	80.0	80.0	80.0	–	–
106–1/4"		80.0	80.0	80.0	80.0	–	–
111"		80.0	80.0	80.0	80.0	–	–
126"		–	–	80.0	80.0	–	–

DESIGN LOAD CAPACITY – PSF
(XOX SIZES)

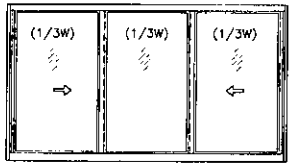
FRAME DIMS.		GLASS TYPES 'A' & 'A1'		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)
72"	24"	80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		80.0	80.0	80.0	80.0	90.0	140.0
108"		80.0	80.0	80.0	80.0	90.0	140.0
120"		80.0	80.0	80.0	80.0	90.0	140.0
72"	36"	80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		80.0	80.0	80.0	80.0	90.0	140.0
108"		80.0	80.0	80.0	80.0	90.0	140.0
120"		80.0	80.0	80.0	80.0	90.0	140.0
72"	48"	80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		80.0	80.0	80.0	80.0	90.0	140.0
108"		80.0	80.0	80.0	80.0	90.0	140.0
120"		80.0	80.0	80.0	80.0	90.0	140.0
72"	60"	80.0	80.0	80.0	80.0	90.0	140.0
84"		80.0	80.0	80.0	80.0	90.0	140.0
96"		80.0	80.0	80.0	80.0	90.0	140.0
108"		80.0	80.0	80.0	80.0	90.0	136.5
120"		80.0	80.0	80.0	80.0	–	–
72"	72"	80.0	80.0	80.0	80.0	–	–
84"		80.0	80.0	80.0	80.0	–	–
96"		80.0	80.0	80.0	80.0	–	–
108"		80.0	80.0	80.0	80.0	–	–
120"		–	–	80.0	80.0	–	–

DESIGN LOAD CAPACITY – PSF
(XOX SIZES)

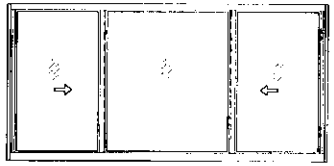
FRAME DIMS.		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)
74"	26"	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	90.0	140.0
111"		80.0	80.0	90.0	140.0
126"		80.0	80.0	90.0	140.0
74"	38–3/8"	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	90.0	140.0
111"		80.0	80.0	90.0	140.0
126"		80.0	80.0	–	–
74"	50–5/8"	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	–	–
111"		80.0	80.0	–	–
126"		80.0	80.0	–	–
74"	63"	80.0	80.0	90.0	140.0
106–1/4"		80.0	80.0	–	–
111"		80.0	80.0	–	–
74"	74"	80.0	80.0	–	–
106–1/4"		80.0	80.0	–	–

DESIGN LOAD CAPACITY – PSF
(XOX SIZES)

FRAME DIMS.		GLASS TYPES 'B' & 'B1'		GLASS TYPES 'C' & 'C1'	
WIDTH	HEIGHT	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)
72"	24"	80.0	80.0	90.0	140.0
84"		80.0	80.0	90.0	140.0
96"		80.0	80.0	90.0	140.0
108"		80.0	80.0	90.0	140.0
120"		80.0	80.0	90.0	140.0
72"	36"	80.0	80.0	90.0	140.0
84"		80.0	80.0	90.0	140.0
96"		80.0	80.0	90.0	140.0
108"		80.0	80.0	90.0	140.0
120"		80.0	80.0	90.0	140.0
72"	48"	80.0	80.0	90.0	140.0
84"		80.0	80.0	90.0	140.0
96"		80.0	80.0	–	–
108"		80.0	80.0	–	–
120"		80.0	80.0	–	–
72"	60"	80.0	80.0	–	–
84"		80.0	80.0	–	–
96"		80.0	80.0	–	–
108"		80.0	80.0	–	–
120"		80.0	80.0	–	–
72"	72"	80.0	80.0	–	–
84"		80.0	80.0	–	–
96"		80.0	80.0	–	–
108"		80.0	80.0	–	–



OPERATING VENTS TO BE 1/3 OF THE WINDOW WIDTH
'XOX'



OPERATING VENTS TO BE 1/4 TO 1/3 OF THE WINDOW WIDTH
'XOX'

NOTE:
GLASS CAPACITIES ON THIS SHEET ARE
BASED ON ASTM E1300–09 (3 SEC. GUSTS)
AND FLORIDA BUILDING COMMISSION
DECLARATORY STATEMENT DCA05–DEC–219

Sealed: 7/24/2023

FL #20359

AL-FAROOQ CORPORATION
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COMP-ANL\W16-26MG

MG-300 ALUM HORIZ. ROLLING WDW. (L.M.I.)

MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
8051 N.W. 79th Place
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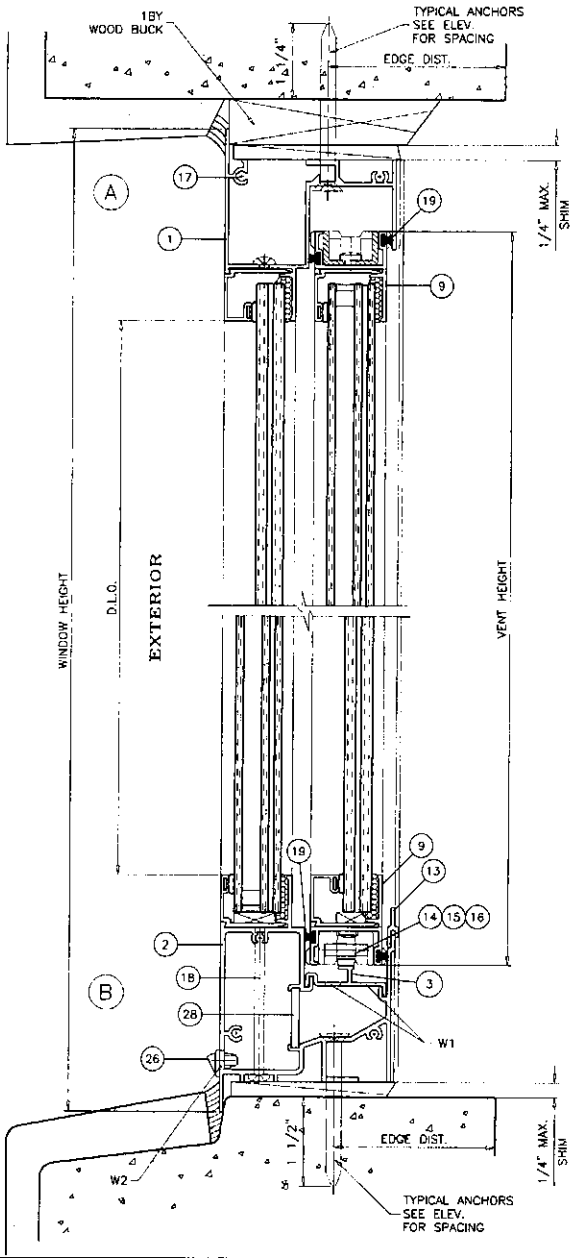
Tel. (305) 764-3963 Fax. (305) 470-8285

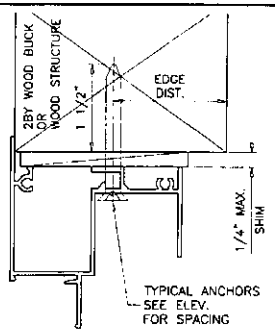
revisions:
no	date	by	description

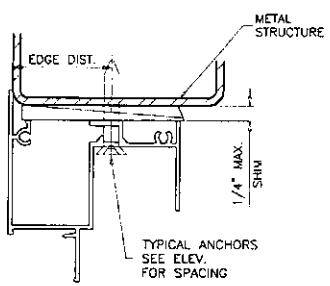
date: 04-18-16
scale: –
dr. by: TARO
chk. by:

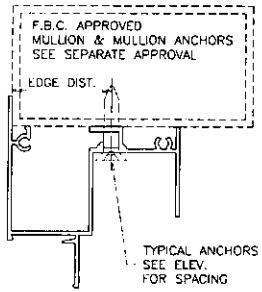
drawing no.
W16–26

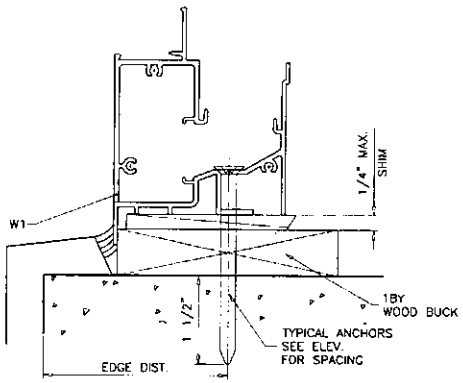
sheet 5 of 10











WOOD BUCKS AND METAL STRUCTURE NOT BY 'MR-GLASS' MUST SUSTAIN LOADS IMPOSED BY GLAZING SYSTEM AND TRANSFER THEM TO THE BUILDING STRUCTURE.

WEEPHOLES:

W1 = 1" X 1/4" WEEPHOLES AT 2-1/4" FROM EACH END

W2 = 1-3/4" X 3/8" WEEPHOLES AT 5-1/2" FROM EACH END WITH PLASTIC BAFFLE

SEALANTS:

ALL FRAME CORNERS, FIXED MEETING RAIL TRACK INSERT AT EACH END AND INSTALLATION SCREWS IN SILL SEALED WITH ALUMINUM COLORED SEALANT.

TYPICAL ANCHORS: SEE ELEV. FOR SPACING

1/4" DIA. ULTRACON+ BY 'DEWALT' (Fu=164 KSI, Fy=148 KSI)

INTO 2BY WOOD BUCKS OR WOOD STRUCTURES
1-1/2" MIN. PENETRATION INTO WOOD (HEAD/SILL/JAMBS)

THRU 1BY BUCKS INTO CONC. OR BLOCKS
1-1/4" MIN. EMBED INTO CONCRETE (HEAD/SILL/JAMBS)
1-1/4" MIN. EMBED INTO BLOCKS (JAMBS)

DIRECTLY INTO CONCRETE OR BLOCKS
1-1/2" MIN. EMBED INTO CONCRETE (HEAD/SILL/JAMBS)
1-1/4" MIN. EMBED INTO BLOCKS (JAMBS)

#14 SMS OR SELF-DRILLING SCREWS (GRADE 2 CRS)
INTO F.B.C. APPROVED MULLIONS
OR
INTO METAL STRUCTURES (HEAD/SILL/JAMBS)
(3) THREADS MIN. TO EXTEND BEYOND METAL THICKNESS
ALUMINUM: 1/8" THK. MIN. (6063-T5 MIN.)
STEEL: 1/8" THK. MIN. (Fy = 36 KSI MIN.)
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

CRITICAL EDGE DISTANCE
INTO CONCRETE AND BLOCKS = 2-1/2" MIN.
INTO WOOD STRUCTURE = 1" MIN.
INTO METAL STRUCTURE = 3/4" MIN.

WOOD AT HEAD, SILL OR JAMBS SG = 0.55 MIN.
CONCRETE AT HEAD, SILL OR JAMBS f'c = 3000 PSI MIN.
C-90 HOLLOW/FILLED BLOCK AT JAMBS f'm = 2000 PSI MIN.

Sealed: 7/24/2023

FL #20359

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COMP-ANL\W16-26MG

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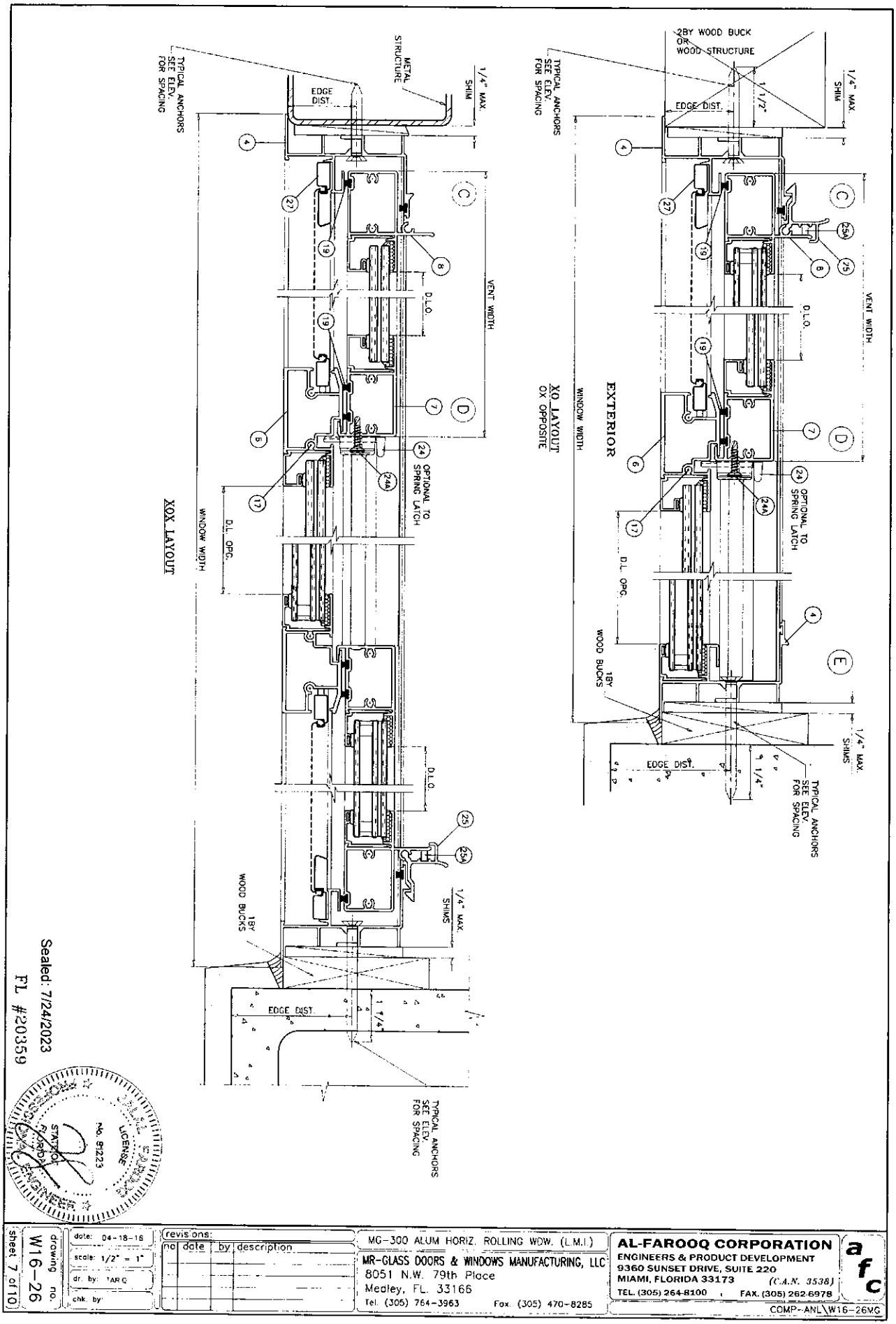
revisions:
no. | date | by, description

date: 24-18-16
scale: 1/2" = 1"
dr. by: TARQ
chk. by:

drawing no.
W16-26

sheet 6 of 10



Sealed: 7/24/2023
FL #20359

STATE OF FLORIDA
LICENSE
No. 81223
REGISTERED
PROFESSIONAL ENGINEER

sheet 7 of 10	drawing no. W16-26	date: 04-18-16	revisions: no / date / by / description
		scale: 1/2" = 1"	
		dr. by: TARQ	
		chk. by:	

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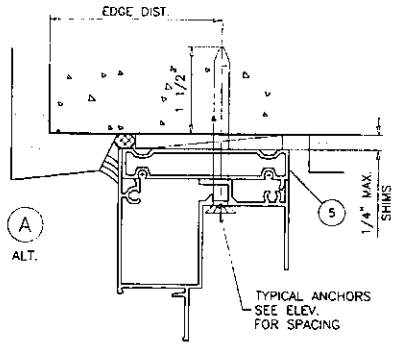
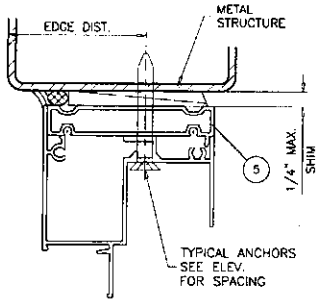
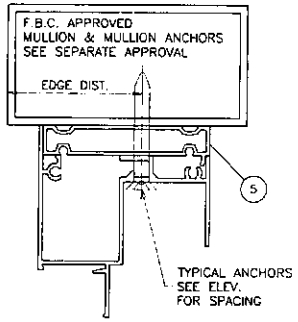
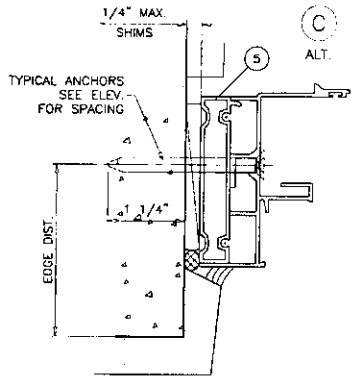
afc

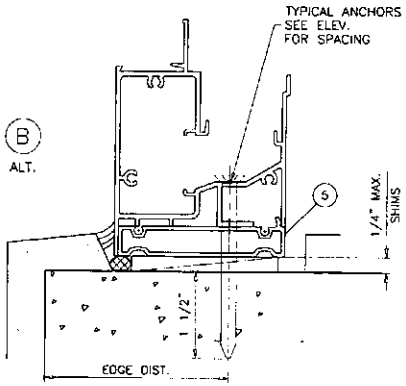
COMP-ANL\W16-26MG











INSTALLATION DETAILS WITH FLUSH FRAME ADAPTER

Sealed: 7/24/2023

FL #20359

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 35318)
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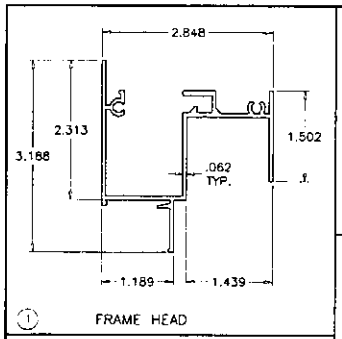
revisions:			
no.	date	by	description

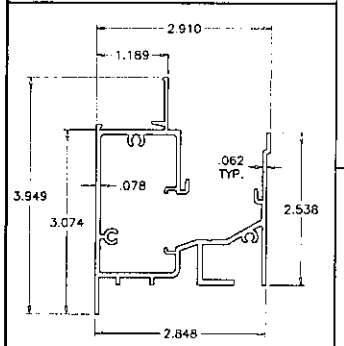
date: 04-18-16
scale: 1/2" = 1"
dr. by: TARO
chk. by

drawing no.
W16-26

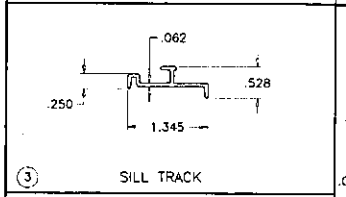
sheet 8 of 10



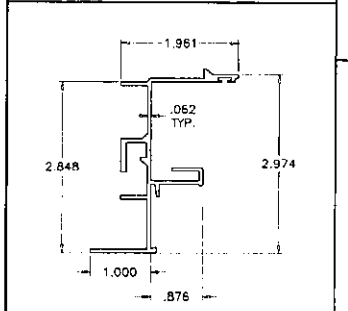
① FRAME HEAD



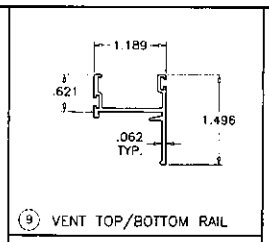
② FRAME SILL



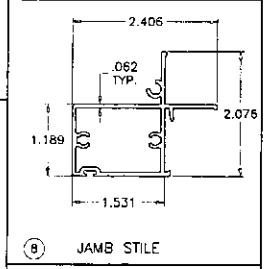
③ SILL TRACK



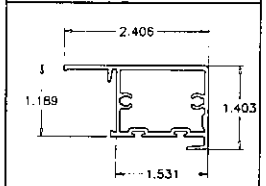
④ FRAME JAMB



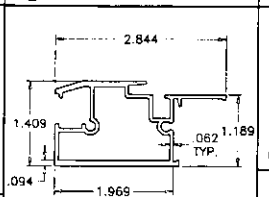
⑨ VENT TOP/BOTTOM RAIL



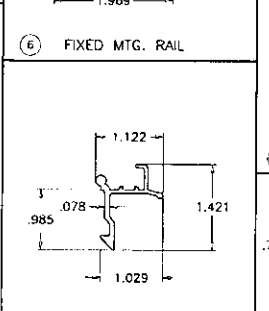
⑧ JAMB STILE



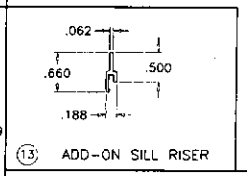
⑦ VENT INTERLOCK



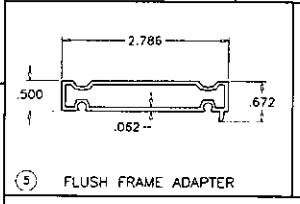
⑥ FIXED MTG. RAIL



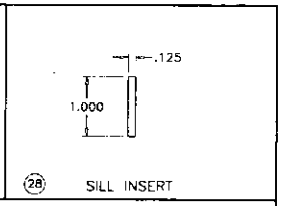
㉕ SPRING LOADED LATCH



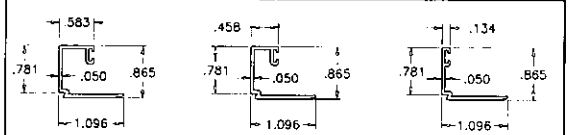
⑬ ADD-ON SILL RISER



⑤ FLUSH FRAME ADAPTER



㉘ SILL INSERT



⑩ ⑩A ⑩B GLAZING BEADS

ITEM	PART #	QUANTITY	DESCRIPTION	MATERIAL	MANF./SUPPLIER/REMARKS
1	MG203	1	FRAME HEAD	6063-T6	-
2	MG301	1	FRAME SILL	6063-T6	-
3	MG302	1	SILL TRACK INSERT	6063-T6	-
4	MG303	AS REQD.	FRAME JAMB	6063-T6	-
5	MG212	AS REQD.	FLUSH FRAME ADAPTER	6063-T6	-
6	MG204	1/ VENT	FIXED MTG. RAIL	6063-T6	-
7	MG205	1/ VENT	VENT INTERLOCK	6063-T6	-
8	MG304	1/ VENT	JAMB STILE	6063-T6	-
9	MG207	2/ VENT	TOP AND BOTTOM RAIL	6063-T6	-
10	MG208	AS REQD.	GLAZING BEAD (5/16" GLASS)	6063-T6	-
10A	MG209	AS REQD.	GLAZING BEAD (7/16" GLASS)	6063-T6	-
10B	MG210	AS REQD.	GLAZING BEAD (INSUL. LAM. GLASS)	6063-T6	-
13	MG305	AS RTEQD.	ADD-ON SILL RISER	6063-T6	-
14	MG321	4/ VENT	ROLLER HOUSING & GUIDE	CELCON	-
15	MG322	2/ VENT	ROLLER	BRASS	-
16	MG323	2/ VENT	ROLLER PIN	ST. STEEL	-
17	#10 X 1"	AS REQD.	FRAME/VENT ASSEMBLY SCREWS	CRS	PH SMS
18	#10 X 3-1/2"	2/ VENT	FIX. RAIL SILL SCREWS (SILL END)	CRS	PH SMS
19	W222322	AS REQD.	FIN SEAL W'STRIPPING	-	ULTRAFAB
22	E202	AS REQD.	GLAZING BEAD BULB	NEOPRENE	ULTRAFAB
24	SL203P	2/ VENT	SWEEP LATCH, AT 10-1/4" FROM EACH END	ZAMAK	SULLIVAN & ASSOC.
24A	#8 X 5/8"	2/ LATCH	LATCH INST. SCREW	ST. STEEL	FH SMS
25	MG211	2/ VENT	SPRING LOADED LATCH	6063-T6	ALTERNATE TO SWEEP LATCH
25A	-	1/ LATCH	LATCH SPRING	ST. STEEL	-
26	-	2/ WDW.	HI-FLOW WEEPER	-	PREFERRED ENGINEERING PRODUCTS
27	-	1/ VENT	5/16" BOX SCREEN	-	OPTIONAL
28	-	AS REQD.	SILL INSERT, 2" LONG	6063-T6	AT MTG. STILE LOCATION
29	-	AS REQD.	SETTING BLOCK AT 1/4 POINTS	EPDM	DUROMETER 80±5 SHORE A

Sealed: 7/24/2023

FL #20359

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 3538)
TEL. (305) 264-8100 • FAX. (305) 262-6978
COMP-ANL\W16-26MG

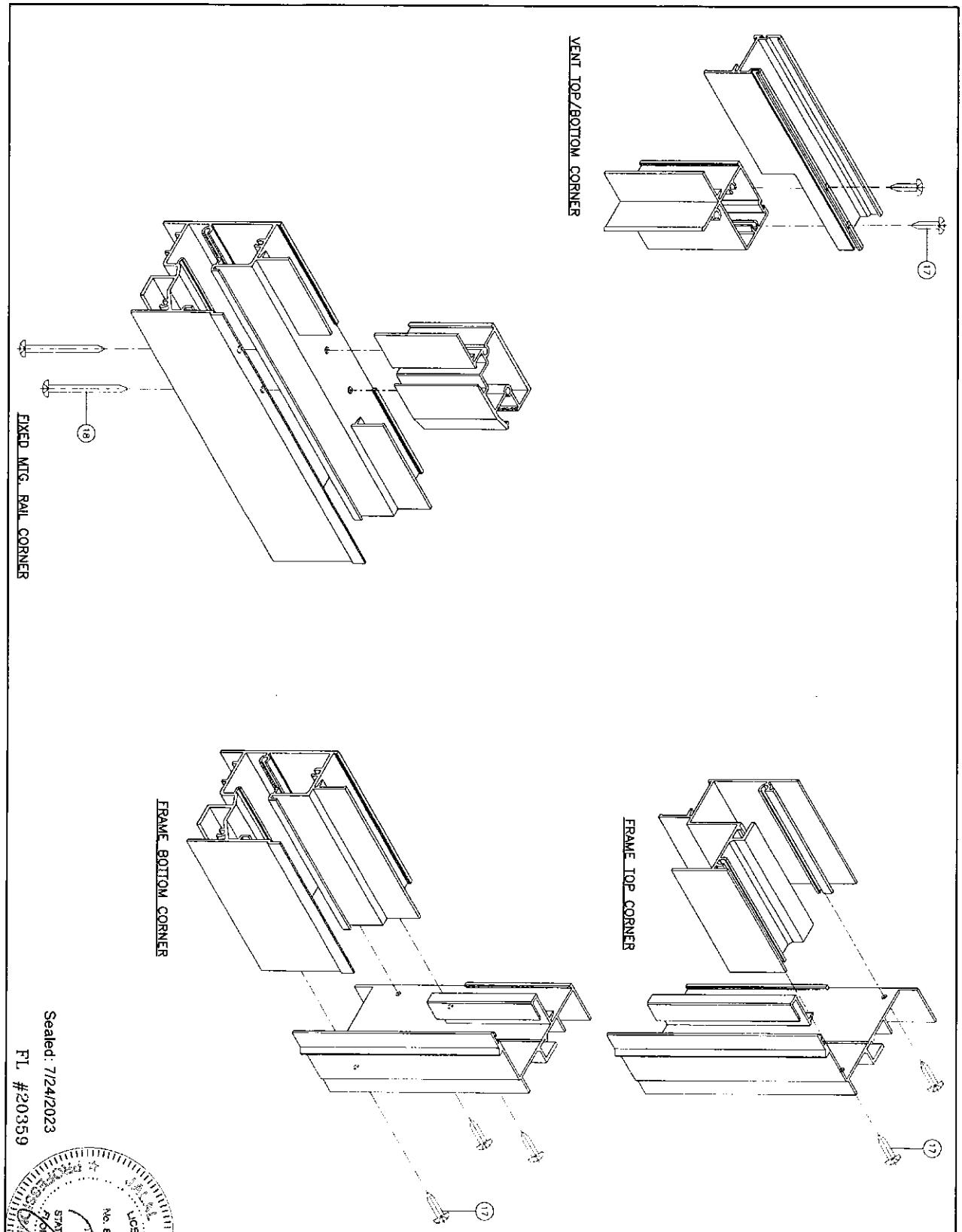
MG-300 ALUM. HORIZ. ROLLING WDW. (L.M.I.)

MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
8051 N.W. 79th Place
Medley, FL. 33166
Tel: (305) 764-3963 Fax. (305) 470-8285

revisions: no	date	by	description

date: 04-18-16
scale: 1/2" = 1"
dr. by: TARIQ
chk. by:

drawing no. W16-26
sheet 9 of 10



Sealed: 7/24/2023

FL #20359

STATE OF FLORIDA — No. 81223 — LICENSE — CIVIL — ENGINEER — REGISTERED — PROFESSIONAL

drawing no. W16-26	date: 04-18-16	revisions:	MG-300 ALUM HORIZ. ROLLING WDW. (L.M.I.)
sheet 10 of 10	scale: 1/2" = 1"	no. date by description	MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
	dr. by: TARQ		8051 N.W. 79th Place
	chk. by:		Medley, FL. 33166
			Tel. (305) 764-3963 Fax. (305) 470-8285

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 3538)
TEL. (305) 264-8100 FAX. (305) 262-6978

afc

COMP-ANL\W16-26MG

AL-FAROOQ CORPORATION

CONSULTING ENGINEERS & PRODUCT DEVELOPMENT

PRODUCT APPROVAL EVALUATION
RULE CHAPTER #61G20-3 • METHOD 1 OPTION D

FL 20359
Date: 07/24/2023

Detailed Product Description:

Manufacturer: MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC.

Manufacturer Address: 8051 NW 79th PLACE, MEDLEY, FL 33166

Model Name: SERIES MG-300 ALUMINUM HORIZONTAL SLIDING WINDOW

Maximum Load: +90 PSF, -140 PSF (Large Missile Impact)

Installation Drawings # W16-26

This product complies with the High Velocity Hurricane Zone (HVHZ) testing requirements.

For maximum sizes, combination of span vs loads and anchor type refer to installation drawings.

Comparative analysis used _X_ Yes ___ No

Mandatory Tests (Tested in accordance with AAMA 101/I.S.2/NAFS/TAS-202)

TEST	DESCRIPTION	TEST LOCATION	TEST REPORT DATE	TEST REPORT	Test Sealed by
ASTM E283	Air Infiltration Leakage	Fenestration Testing Laboratory, Inc.	03/29/2016	FTL-8856	Idalmis Ortega, P.E.
ASTM E331 OR ASTM 547 & TAS 202	Water Penetration	Fenestration Testing Laboratory, Inc.	03/29/2016	FTL-8856	Idalmis Ortega, P.E.
ASTM E330 & TAS 202	Uniform Static Air Press.	Fenestration Testing Laboratory, Inc.	03/29/2016	FTL-8856	Idalmis Ortega, P.E.
ASTM F 588	Forced Entry	Fenestration Testing Laboratory, Inc.	03/29/2016	FTL-8856	Idalmis Ortega, P.E.

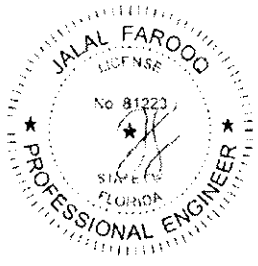
Supplemental Tests (Tested in accordance with TAS-201 and TAS-203)

TEST	DESCRIPTION	TEST LOCATION	TEST REPORT DATE	TEST REPORT #	Test Sealed by
FBC 1626.2 (TAS 201 & 203)	Large Missile Impact & Cyclic	Fenestration Testing Laboratory,	03/29/2016	FTL-8856	Idalmis Ortega, P.E.

Under the limitations of the attached installation drawings, to the best of my knowledge and ability, the above product conforms to the requirements of the 2023 Florida Building Code.

Evaluation Report Engineer:

Jalal Farooq PE # 81223
Al-Farooq Corporation EB # 3538



Sealed: 7/24/2023

9360 Sunset Drive, Ste 220 | Miami, FL 33173 | T: 305.264.8100 | F: 305.262.6978 | www.afceng.com | alfarooq@afceng.com

dbpr **Product Approval**
USER: Public User

Opening #1; 16

FL26942.1

FL #	FL26942-R5
Application Type	Revision
Code Version	2023
Application Status	Approved
Comments	
Archived	
Product Manufacturer	Mr-Glass Doors & Windows Manufacturing, LLC
Address/Phone/Email	8051 NW 79th Place Medley, FL 33166 (305) 470-8284 ulises@mrglasswindows.com
Authorized Signature	Ulises Senaris ulises@mrglasswindows.com
Technical Representative	Augusto Arias
Address/Phone/Email	8120 NW 84th St Medley, FL 33166 (305) 470-8284 aarias@mrglasswindows.com
Quality Assurance Representative	
Address/Phone/Email	
Category	Exterior Doors
Subcategory	Swinging Exterior Door Assemblies
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer Evaluation Report - Hardcopy Received
Florida Engineer or Architect Name who developed the Evaluation Report	Jalal Farooq
Florida License	PE-81223
Quality Assurance Entity	Keystone Certifications, Inc.
Quality Assurance Contract Expiration Date	08/27/2025
Validated By	Abel Carrasco, PE Validation Checklist - Hardcopy Received
Certificate of Independence	FL26942_R5_COI_SS - Certificate of Independence 2023.pdf

Referenced Standard and Year (of Standard)

Standard	Year
ASTM E1886	2013
ASTM E1996	2014
TAS-201	1994
TAS-202	1994
TAS-203	1994

Equivalence of Product Standards Certified By

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	08/15/2023
Date Validated	08/17/2023
~~Date Pending FBC Approval~~	~~08/18/2023~~
Date Approved	10/17/2023

Summary of Products

FL #	Model, Number or Name	Description
26942.1	Series 3000 Aluminum Outswing Entrance Door	Large missile impact resistant aluminum outswing entrance door.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** Yes **Design Pressure:** +80/-80 **Other:** See drawing 18-36F for span vs load combinations and installation details.		**Installation Instructions** FL26942_R5_II_SS - MG 3000 Alum OS Door (LMI) - DWG 18-36F 2023.pdf Verified By: Jalal Farooq PE # 81223 Created by Independent Third Party: Yes **Evaluation Reports** FL26942_R5_AE_SS - MG 3000 Alum OS Door (LMI) - PAE 2023.pdf Created by Independent Third Party: Yes
26942.2	Series MG3500 Residential Outswing Entry Door	Large missile impact resistant aluminum outswing entrance door
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** Yes **Design Pressure:** +80/-80 **Other:** See drawing 23-29F for span vs load combinations and installation details		**Installation Instructions** FL26942_R5_II_SS - MG 3500 Resd Entry Door (LMI) - DWG 23-29F 2023.pdf Verified By: Jalal Farooq PE # 81223 Created by Independent Third Party: Yes **Evaluation Reports** FL26942_R5_AE_SS - MG 3500 Resd Entry Door (LMI) - PAE 2023.pdf Created by Independent Third Party: Yes

Contact Us :: 2601 Blair Stone Road, Tallahassee FL 32399 Phone: 850-487-1824

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Product Approval Accepts:

Credit Card
Safe
SECURITYMETRICS

AL-FAROOQ CORPORATION

CONSULTING ENGINEERS & PRODUCT DEVELOPMENT

PRODUCT APPROVAL EVALUATION
RULE CHAPTER #61G20-3 • METHOD 1 OPTION D

FL 26942
Date: 07/24/2023

Detailed Product Description:
Manufacturer: MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC.
Manufacturer Address: 8051 NW 79th PLACE, MEDLEY, FL 33166
Model Name: SERIES 3000 ALUMINUM OUTSWING ENTRANCE DOOR
Maximum Load: +80 PSF, -80 PSF (Large Missile Impact)
Installation Drawings # 18-36F

This product complies with the High Velocity Hurricane Zone (HVHZ) testing requirements.

For maximum sizes, combination of span vs loads and anchor type refer to installation drawings.

Comparative analysis used _X_ Yes ___ No

Mandatory Tests (Tested in accordance with AAMA 101/I.S.2/NAFS/TAS-202)

Test	Description	Test Location	Test Report Date	Test Report #	Test Sealed By
ASTM E283	Air Infiltration Leakage	Hurricane Engineering & Testing, Inc	2/13/2018	HETI-18-6004	Rafael E. Droz-Seda, P.E.
			2/13/2018	HETI-18-6011	
			10/29/2021	HETI-21-7089	Ram N. Tewari, P.E.
			3/13/2023	HETI-23-8014	
			3/13/2023	HETI-23-8016	
			5/26/2023	HETI-23-8024	
ASTM E331 OR ASTM 547 & TAS 202	Water Penetration	Hurricane Engineering & Testing, Inc	2/13/2018	HETI-18-6002	Rafael E. Droz-Seda, P.E.
			2/13/2018	HETI-18-6004	
			2/13/2018	HETI-18-6011	
			10/29/2021	HETI-21-7089	Ram N. Tewari, P.E.
			3/13/2023	HETI-23-8014	
			3/13/2023	HETI-23-8016	
			5/26/2023	HETI-23-8024	
ASTM E330 & TAS 202	Uniform Static Air Press.	Hurricane Engineering & Testing, Inc	2/13/2018	HETI-18-6001	Rafael E. Droz-Seda, P.E.
			2/13/2018	HETI-18-6002	
			2/13/2018	HETI-18-6004	
			2/13/2018	HETI-18-6011	
			10/29/2021	HETI-21-7089	Ram N. Tewari, P.E.
			10/19/2021	HETI-21-7086	
			3/13/2023	HETI-23-8014	
			3/13/2023	HETI-23-8016	
			5/26/2023	HETI-23-8024	

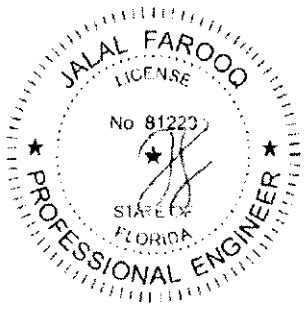
ASTM 1304	Forced Entry Test	Hurricane Engineering & Testing, Inc	2/13/2018	HETI-18-6001	Rafael E. Droz-Seda, P.E.
			2/13/2018	HETI-18-6002	
			2/13/2018	HETI-18-6004	
			2/13/2018	HETI-18-6011	
			10/29/2021	HETI-21-7089	Ram N. Tewari, P.E.
			10/19/2021	HETI-21-7086	
			3/13/2023	HETI-23-8014	
			3/13/2023	HETI-23-8016	
			5/26/2023	HETI-23-8024	

Supplemental Tests (Tested in accordance with TAS-201 and TAS-203)

Test	Description	Test Location	Test Report Date	Test Report#	Test Sealed By
FBC 1626.2 (TAS 201 & 203) ASTM E1886 & E1996	Large Missile Impact & Cyclic	Hurricane Engineering & Testing, Inc	2/13/2018	HETI-18-6003	Rafael E. Droz-Seda, P.E.
			2/13/2018	HETI-18-6005	
			2/13/2018	HETI-18-6012	
			10/29/2021	HETI-21-7089	Ram N. Tewari, P.E.
			10/19/2021	HETI-21-7086	
			3/13/2023	HETI-23-8014	
			3/13/2023	HETI-23-8016	
			5/26/2023	HETI-23-8024	

Under the limitations of the attached installation drawings, to the best of my knowledge and ability, the above product conforms to the requirements of the 2023 Florida Building Code.

Evaluation Report Engineer:



Sealed: 7/27/2023

Jalal Farooq PE # 81223
Al-Farooq Corporation EB # 3538

THESE DOORS ARE RATED FOR LARGE & SMALL MISSILE IMPACT. SHUTTERS ARE NOT REQUIRED.

SERIES 3000
ALUMINUM OUTSWING ENTRANCE DOOR

SINGLE (X) AND DOUBLE (XX) LEAF DOORS SEE SHEET 2.

STAND ALONE SINGLE SIDELITE SEE SHEET 3.

SINGLE AND DOUBLE LEAF DOORS WITH SIDELITES COMBINATIONS SEE SHEET 4.

LOWER VALUES FROM DOOR CAPACITY, SIDELITE CAPACITY OR MULLION CAPACITY WILL APPLY TO ENTIRE SYSTEM.

DOORS APPROVED FOR INSTALLATION WHERE WATER INFILTRATION RESISTANCE IS REQUIRED.

THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 2020 (7TH EDITION)/2023 (8TH EDITION) FLORIDA BUILDING CODE INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).

1BY OR 2BY WOOD BUCKS & BUCK FASTENERS BY OTHERS, MUST BE DESIGNED AND INSTALLED ADEQUATELY TO TRANSFER APPLIED PRODUCT LOADS TO THE BUILDING STRUCTURE.

ANCHORS SHALL BE CORROSION RESISTANT, SPACED AS SHOWN ON DETAILS AND INSTALLED PER MANUF'S INSTRUCTIONS. SPECIFIED EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

A LOAD DURATION INCREASE IS USED IN DESIGN OF ANCHORS INTO WOOD ONLY.

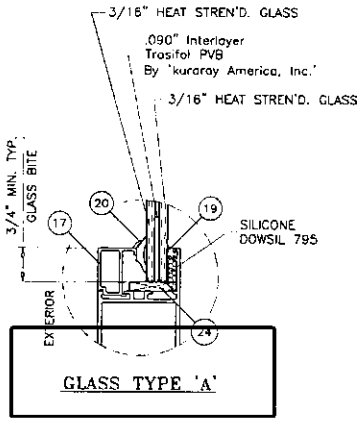
ALL SHIMS TO BE HIGH IMPACT, NON-METALLIC AND NON-COMPRESSIBLE.

MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE 2020/2023 FLORIDA BLDG. CODE & ADOPTED STANDARDS.

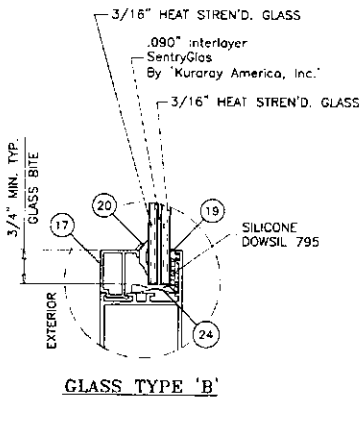
THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT, i.e. LIFE SAFETY OF THIS PRODUCT, ADEQUACY OF STRUCTURE RECEIVING THIS PRODUCT AND SEALING AROUND OPENING FOR WATER INFILTRATION RESISTANCE ETC.
CONDITIONS NOT SHOWN IN THIS DRAWING ARE TO BE ANALYZED SEPARATELY, AND TO BE REVIEWED BY BUILDING OFFICIAL.

DESIGN LOADS SHOWN ARE BASED ON 'ALLOWABLE STRESS DESIGN (ASD)'.

MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION IN ACCORDANCE WITH SECTION 1709.9.3 OF FLORIDA BUILDING CODE. LABELING TO COMPLY WITH SECTION 1709.9.2.



GLASS TYPE 'A'



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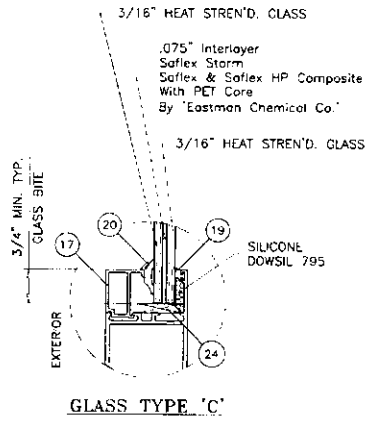
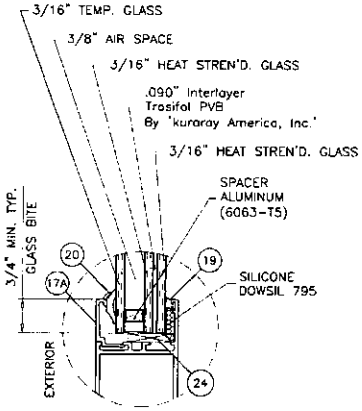
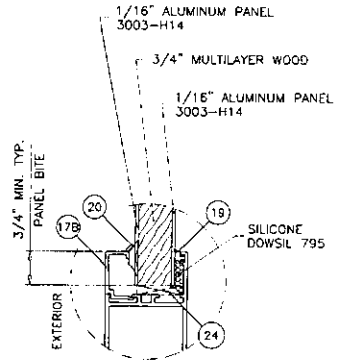


GLASS TYPE 'C'



GLASS TYPE 'Ai'



7/8" OVERALL GLUED CLADDED PANEL

EXTERIOR AND INTERIOR ALUMINUM CLADDING GLUED TO CENTER CORE WITH MRG-A-30-013

Sealed:7/27/2023

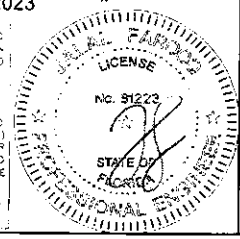
FL #26942

A- CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION OF THIS PRODUCT BASED ON THIS PRODUCT EVALUATION PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT.

B- THIS PRODUCT EVALUATION DOCUMENT WIL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS

C- SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A FLORIDA REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.E.D. ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE P.E.D. ENGINEER SHALL SUBMIT TO THIS LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW

D- THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.



AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 3538)
TEL. (305) 264-8100 FAX. (305) 262-6978
COVP-ANL\18-36F-MG

SERIES 3000 ALUMINUM OUTSWING DOOR (L.M.I.)

MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
8051 N.W. 79th Place
Medley, FL. 33166
Tel. (305) 764-3963 Fax. (305) 470-8285

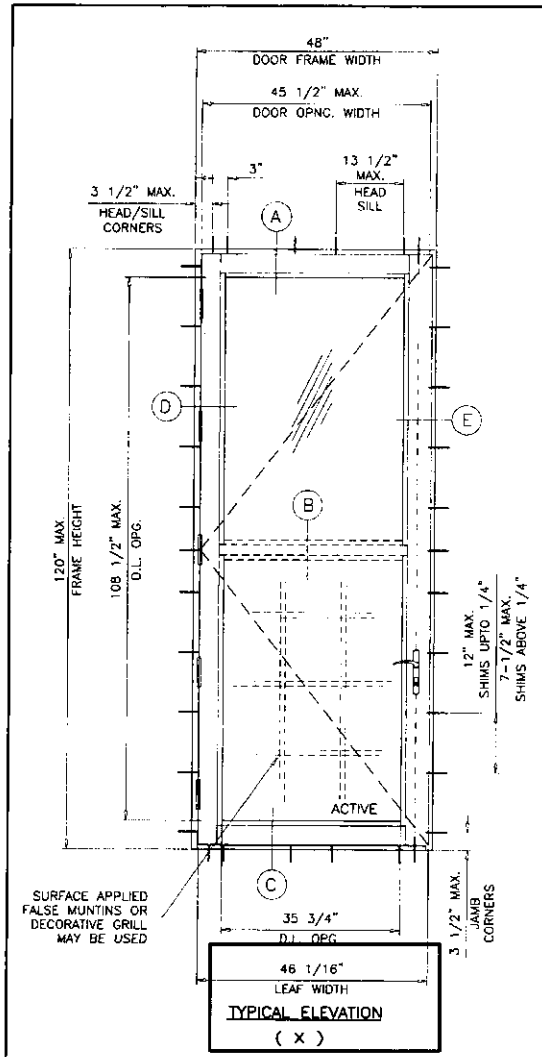
revisions:

no.	date	by	description
A	07.22.20		UPDATED TO 2020 FBC
B	11.24.21		NEW TESTS ADDED
C	06.15.23		GENERAL REVISION
D	07.21.23		UPDATED TO 2023 FBC

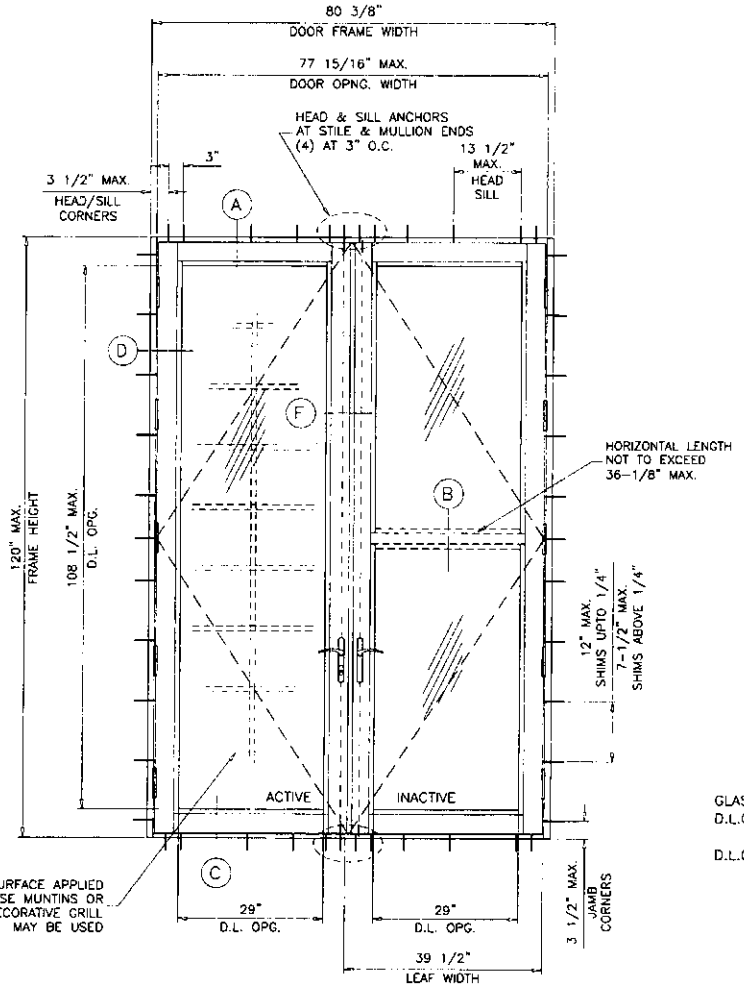
date 03-20-18
scale: 3/8" = 1'
dr. by: TASNO
chk. by:

drawing no.
18-36F

sheet 1 of 10



TYPICAL ELEVATION
(X)



TYPICAL ELEVATION
(XX)

NOTE:
EGRESS REQUIREMENTS TO BE REVIEWED BY BUILDING OFFICIAL.

GLASS D.L.O. FORMULAE:
D.L.O. WIDTH = FRAME WIDTH - 12.438" (X DOORS)
= (FRAME WIDTH - 22.0")/2 (XX DOORS)
D.L.O. HEIGHT = FRAME HEIGHT - 11.50"

NOTE:
GLASS CAPACITIES ON THIS SHEET ARE BASED ON ASTM E1300-09 (3 SEC. GUSTS) AND FLORIDA BUILDING COMMISSION DECLARATORY STATEMENT DCA05-DEC-219

Sealed:7/27/2023

AL AL FAROOQ LICENSE No. 81223 STATE OF FLORIDA PROFESSIONAL ENGINEER

FL #26942

DOORS LOAD CAPACITY - PSF
SINGLE (X) DOORS

SINGLE DOOR (X) DIMS.		GLASS						GLUED CLADDED PANEL	
		TYPE 'A' & 'Ai'		TYPE 'B'		TYPE 'C'			
FRAME WIDTH	FRAME HEIGHT	EXT.(+)	INT.(-)	EXT.(+)	INT.(-)	EXT.(+)	INT.(-)	EXT.(+)	INT.(-)
40-1/2"	98"	80.0	80.0	65.0	70.0	60.0	60.0	80.0	80.0
41-3/8"	120"	-	-	65.0	70.0	60.0	60.0	80.0	80.0
48"	120"	-	-	65.0	70.0	60.0	60.0	80.0	80.0

DOORS LOAD CAPACITY - PSF
DOUBLE (XX) DOORS

DOUBLE DOOR (XX) DIMS.		GLASS						GLUED CLADDED PANEL	
		TYPE 'A' & 'Ai'		TYPE 'B'		TYPE 'C'			
FRAME WIDTH	FRAME HEIGHT	EXT.(+)	INT.(-)	EXT.(+)	INT.(-)	EXT.(+)	INT.(-)	EXT.(+)	INT.(-)
78-1/2"	98"	80.0	80.0	65.0	70.0	60.0	60.0	80.0	80.0
80-3/8"	120"	-	-	-	-	60.0	60.0	60.0	60.0

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revisions: no. date by description

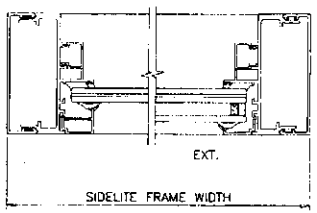
date 03-20-18
scale 1/2"=1'-0"
dr. by TAPIO
chk. by:

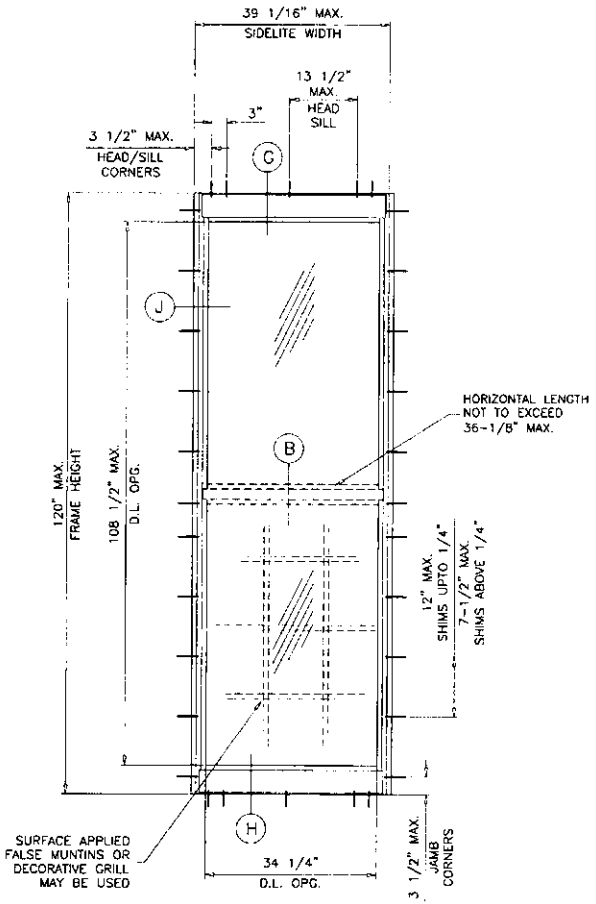
drawing no. 18-36F

sheet 2 of 10

DESIGN LOAD CAPACITY – PSF
STAND ALONE SINGLE SIDELITES

SIDELITE FRAME WIDTH INCHES	SIDELITE FRAME HEIGHT INCHES	GLASS TYPES 'A' & 'Ai'		GLASS TYPE 'B'		GLASS TYPE 'C'		GLUED CLADDED PANEL	
		EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)
24	84	80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
30		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
36		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
39–1/16		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
42		74.3	74.3	74.3	74.3	55.8	55.8	80.0	80.0
24	90	80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
30		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
36		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
39–1/16		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
42		74.3	74.3	74.3	74.3	55.8	55.8	80.0	80.0
24	96	80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
30		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
36		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
39–1/16		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
42		–	–	–	–	55.8	55.8	80.0	80.0
24	98	80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
30		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
36		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
39–1/16		80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0
42		–	–	–	–	55.8	55.8	80.0	80.0
24	102	–	–	–	–	60.0	60.0	80.0	80.0
30		–	–	–	–	60.0	60.0	80.0	80.0
36		–	–	–	–	60.0	60.0	80.0	80.0
39–1/16		–	–	–	–	60.0	60.0	80.0	80.0
42		–	–	–	–	55.8	55.8	80.0	80.0
24	108	–	–	–	–	60.0	60.0	80.0	80.0
30		–	–	–	–	60.0	60.0	80.0	80.0
36		–	–	–	–	60.0	60.0	80.0	80.0
39–1/16		–	–	–	–	60.0	60.0	80.0	80.0
42		–	–	–	–	55.8	55.8	80.0	80.0
24	114	–	–	–	–	60.0	60.0	80.0	80.0
30		–	–	–	–	60.0	60.0	80.0	80.0
36		–	–	–	–	60.0	60.0	80.0	80.0
39–1/16		–	–	–	–	60.0	60.0	80.0	80.0
24	120	–	–	–	–	60.0	60.0	80.0	80.0
30		–	–	–	–	60.0	60.0	80.0	80.0
36		–	–	–	–	60.0	60.0	80.0	80.0
39–1/16		–	–	–	–	60.0	60.0	80.0	80.0



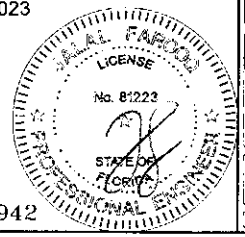


TYPICAL ELEVATION
(O)
STAND ALONE SIDELITE

NOTE:
GLASS CAPACITIES ON THIS SHEET ARE BASED ON ASTM E1300–09 (3 SEC. GUSTS) AND FLORIDA BUILDING COMMISSION DECLARATORY STATEMENT DCA05–DEC–219

GLASS D.L.O. DIMS.
D.L.O. HEIGHT (SIDELITE) = FRAME HEIGHT – 11.50"
D.L.O. WIDTH (SIDELITE) = FRAME WIDTH – 4.813"

Sealed:7/27/2023



FL #26942

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COMP-ANL\18-36F-MG

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tel. (305) 764-3963 fax. (305) 470-8285

revisions:
no. date by description

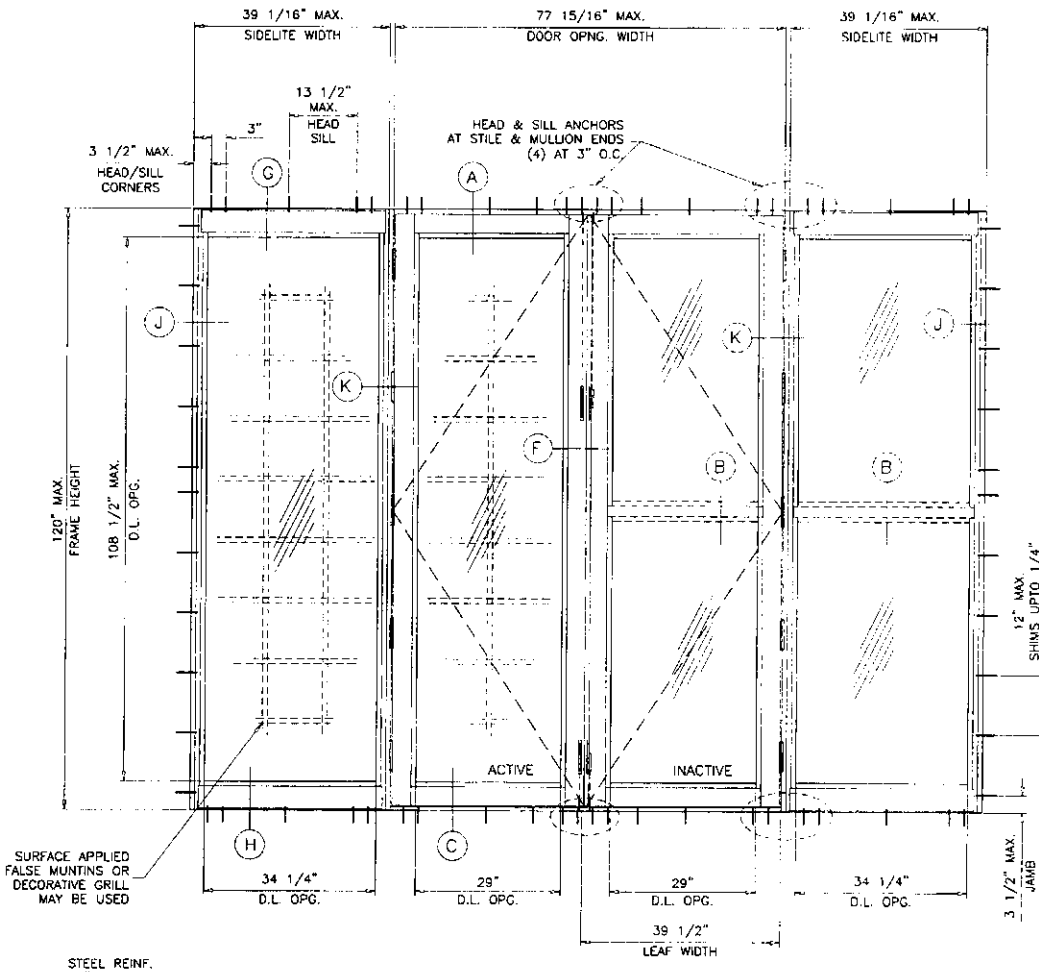
date 03-20-18
scale 1/2"=1'-0"
dr. by: TARIQ
chk. by

drawing no.
18-36F

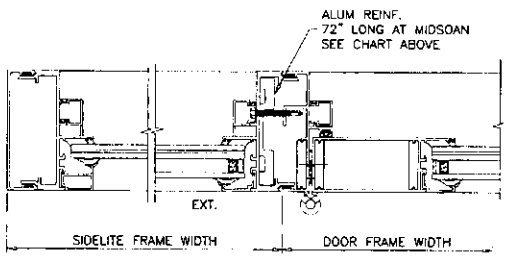
sheet 3 of 10

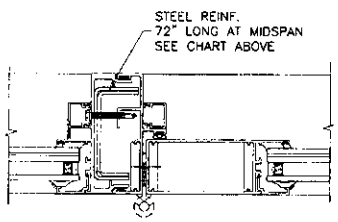
DESIGN LOAD CAPACITY – PSF
SIDELITES WITH SINGLE OR DOUBLE LEAF DOORS
(SEE NOTE BELOW)

SIDELITE FRAME WIDTH INCHES	SIDELITE FRAME HEIGHT INCHES	DOOR MULLION WITHOUT REINF.		DOOR MULLION ALUM REINF.		DOOR MULLION STEEL REINF.	
		EXT.(+)	INT.(−)	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)
24	84	80.0	80.0	80.0	80.0	80.0	80.0
30		80.0	80.0	80.0	80.0	80.0	80.0
36		80.0	80.0	80.0	80.0	80.0	80.0
39-1/16		80.0	80.0	80.0	80.0	80.0	80.0
42		80.0	80.0	80.0	80.0	80.0	80.0
24	90	80.0	80.0	80.0	80.0	80.0	80.0
30		80.0	80.0	80.0	80.0	80.0	80.0
36		80.0	80.0	80.0	80.0	80.0	80.0
39-1/16		80.0	80.0	80.0	80.0	80.0	80.0
42		78.2	78.2	80.0	80.0	80.0	80.0
24	96	80.0	80.0	80.0	80.0	80.0	80.0
30		77.9	77.9	80.0	80.0	80.0	80.0
36		71.7	71.7	80.0	80.0	80.0	80.0
39-1/16		69.0	69.0	80.0	80.0	80.0	80.0
42		–	–	60.0	60.0	60.0	60.0
24	98	80.0	80.0	80.0	80.0	80.0	80.0
30		73.2	73.2	80.0	80.0	80.0	80.0
36		67.4	67.4	80.0	80.0	80.0	80.0
39-1/16		64.8	64.8	80.0	80.0	80.0	80.0
42		–	–	60.0	60.0	60.0	60.0
24	102	–	–	60.0	60.0	60.0	60.0
30		–	–	60.0	60.0	60.0	60.0
36		–	–	60.0	60.0	60.0	60.0
39-1/16		–	–	60.0	60.0	60.0	60.0
42		–	–	60.0	60.0	60.0	60.0
24	108	–	–	60.0	60.0	60.0	60.0
30		–	–	60.0	60.0	60.0	60.0
36		–	–	60.0	60.0	60.0	60.0
39-1/16		–	–	60.0	60.0	60.0	60.0
42		–	–	60.0	60.0	60.0	60.0
24	114	–	–	60.0	60.0	60.0	60.0
30		–	–	60.0	60.0	60.0	60.0
36		–	–	58.0	58.0	60.0	60.0
39-1/16		–	–	55.7	55.7	60.0	60.0
24	120	–	–	58.9	58.9	60.0	60.0
30		–	–	53.8	53.8	60.0	60.0
36		–	–	49.6	49.6	60.0	60.0
39-1/16		–	–	47.7	47.7	60.0	60.0



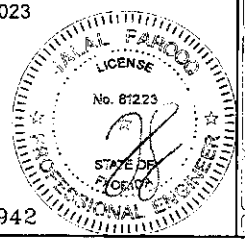
TYPICAL ELEVATION
(O–XX–O)





NOTE:
FOR DOORS CAPACITIES SEE SHEET 2.
FOR SIDELITE CAPACITY SEE SHEET 3.
FOR SIDELITE MULLION CAPACITIES SEE CHART ABOVE.
LOWER VALUES FROM DOOR, SIDELITE OR MULLION CHART WILL APPLY TO ENTIRE SYSTEM.

Sealed:7/27/2023



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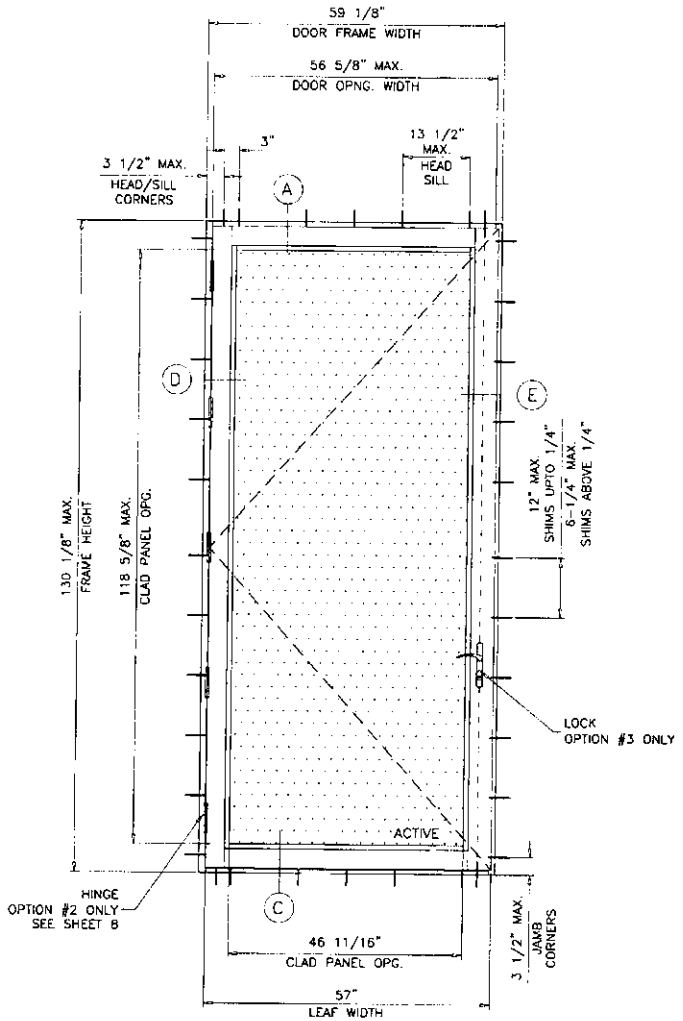
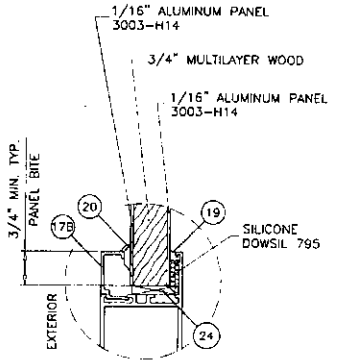
SERIES 3000 ALUMINUM OUTSWING DOOR (I.M.I.)

revisions: no. date by description
date: 03-20-18
scale: –
dr. by: TAFQ
chk by:
drawing no. 18–36F
sheet 4 of 10



TYPICAL ELEVATION
(X)



7/8" OVERALL GLUED CLADDED PANEL

EXTERIOR AND INTERIOR ALUMINUM CLADDING GLUED TO CENTER CORE WITH MRG-A-30-013

CLADDED PANEL DOOR

MAXIMUM DESIGN LOAD RATING = + 80.0 PSF
− 80.0 PSF

(FOR SIZE SHOWN ON THIS SHEET ONLY OR SMALLER)

Sealed:7/27/2023

WALI FAROOQ LICENSE No. 91223 STATE OF FLORIDA PROFESSIONAL ENGINEER

FL #26942

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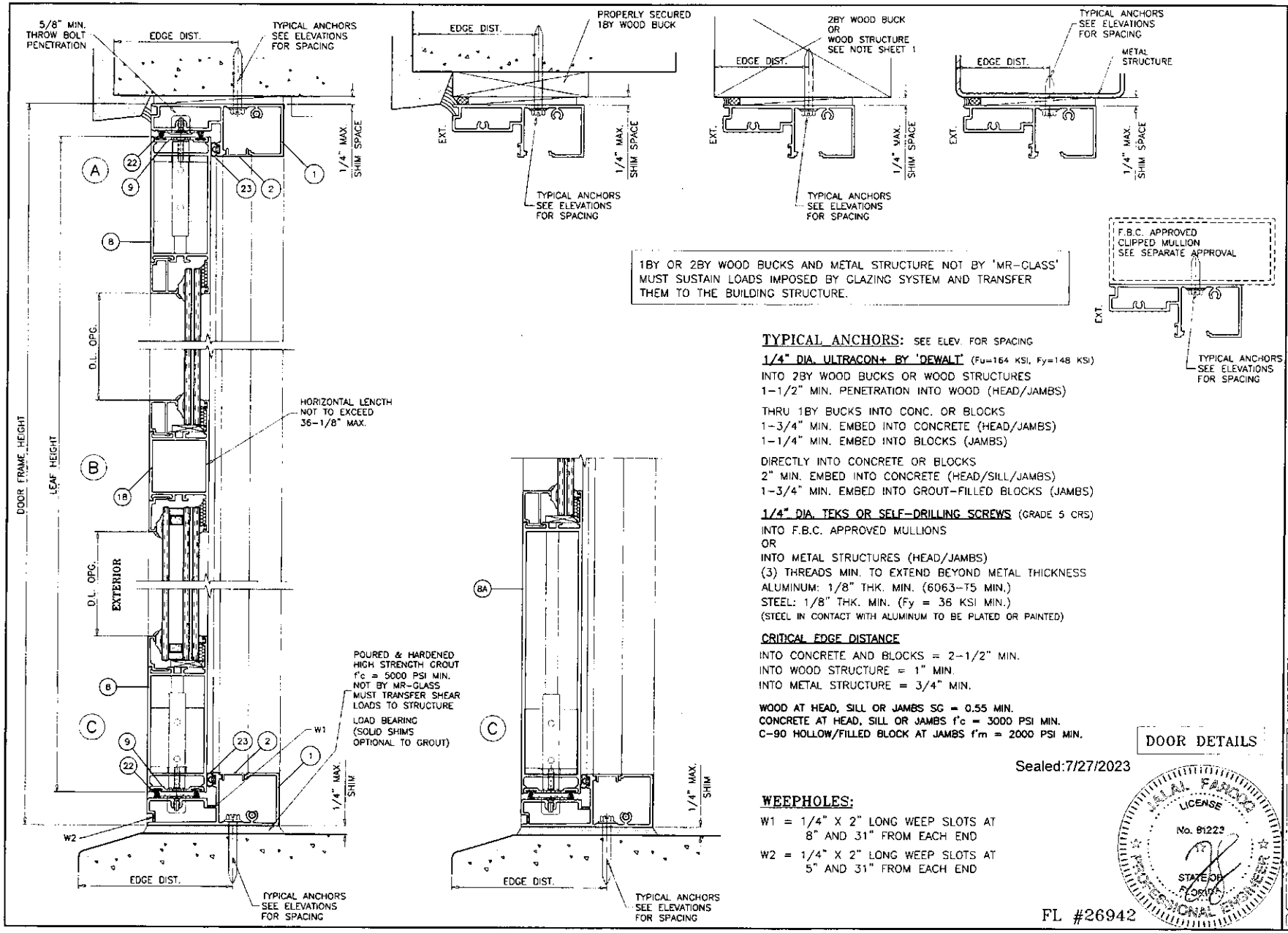
revisions:
no. date by description

date 03-20-18
scale
dr. by: IARIO
chk. by:

drawing no. 18-36F

sheet 4.1 of 10



1BY OR 2BY WOOD BUCKS AND METAL STRUCTURE NOT BY 'MR-GLASS' MUST SUSTAIN LOADS IMPOSED BY GLAZING SYSTEM AND TRANSFER THEM TO THE BUILDING STRUCTURE.

TYPICAL ANCHORS: SEE ELEV. FOR SPACING

1/4" DIA. ULTRACON+ BY 'DEWALT' (Fu=164 KSI, Fy=148 KSI)

INTO 2BY WOOD BUCKS OR WOOD STRUCTURES
1-1/2" MIN. PENETRATION INTO WOOD (HEAD/JAMBS)

THRU 1BY BUCKS INTO CONC. OR BLOCKS
1-3/4" MIN. EMBED INTO CONCRETE (HEAD/JAMBS)
1-1/4" MIN. EMBED INTO BLOCKS (JAMBS)

DIRECTLY INTO CONCRETE OR BLOCKS
2" MIN. EMBED INTO CONCRETE (HEAD/SILL/JAMBS)
1-3/4" MIN. EMBED INTO GROUT-FILLED BLOCKS (JAMBS)

1/4" DIA. TEKS OR SELF-DRILLING SCREWS (GRADE 5 CRS)

INTO F.B.C. APPROVED MULLIONS
OR
INTO METAL STRUCTURES (HEAD/JAMBS)
(3) THREADS MIN. TO EXTEND BEYOND METAL THICKNESS
ALUMINUM: 1/8" THK. MIN. (6063-T5 MIN.)
STEEL: 1/8" THK. MIN. (Fy = 36 KSI MIN.)
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

CRITICAL EDGE DISTANCE

INTO CONCRETE AND BLOCKS = 2-1/2" MIN.
INTO WOOD STRUCTURE = 1" MIN.
INTO METAL STRUCTURE = 3/4" MIN.

WOOD AT HEAD, SILL OR JAMBS SG = 0.55 MIN.
CONCRETE AT HEAD, SILL OR JAMBS f'c = 3000 PSI MIN.
C-90 HOLLOW/FILLED BLOCK AT JAMBS f'm = 2000 PSI MIN.

WEEPHOLES:

W1 = 1/4" X 2" LONG WEEP SLOTS AT 8" AND 31" FROM EACH END

W2 = 1/4" X 2" LONG WEEP SLOTS AT 5" AND 31" FROM EACH END

DOOR DETAILS

Sealed:7/27/2023

FL #26942

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MIAMI, FLORIDA 33173 (C.A.N. 3538)
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COMP-ANL 18-36F-MG

SERIES 3000 ALUMINUM OUTSWING DOOR (L.M.I.)

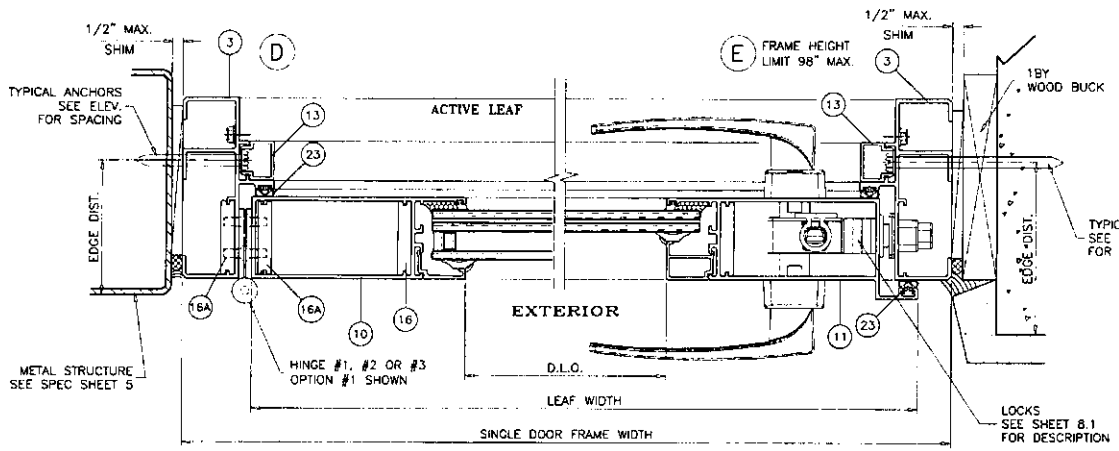
MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
8051 N.W. 79th Place
Medley, FL. 33166
Tel. (305) 764-3953 Fax. (305) 470-8285

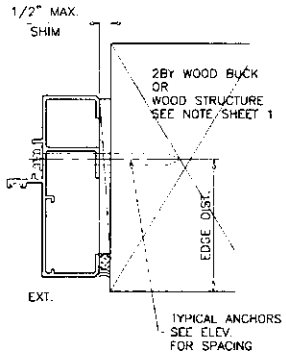
revisions: no. | date | by | description

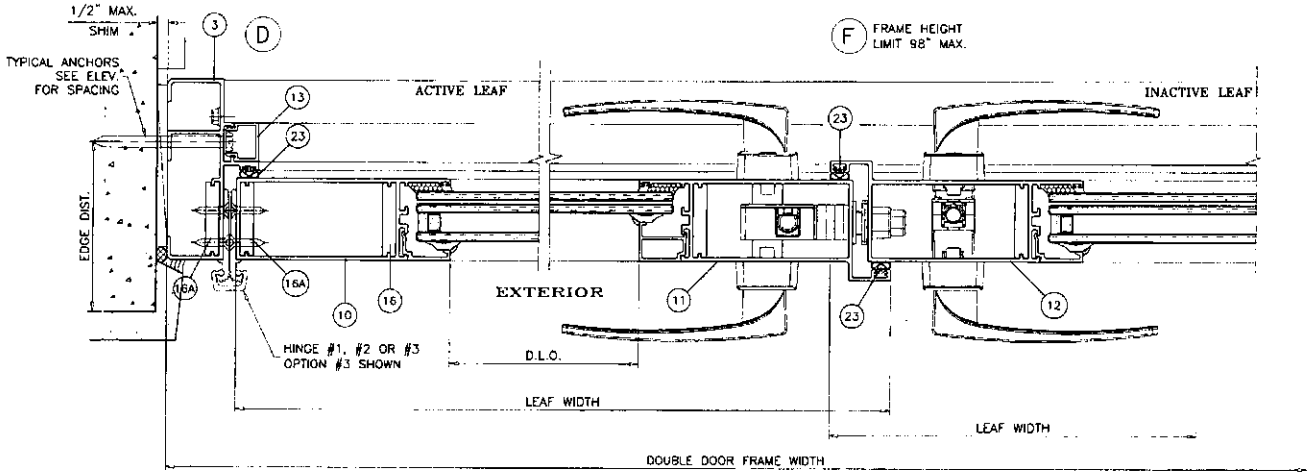
date 03-20-18 | scale 3/8" = 1" | dr. by: TAR Q | chk. by:

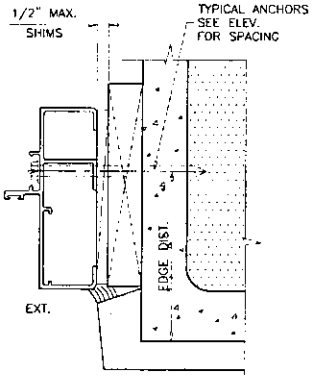
drawing no. 18-36F

sheet 5 of 10









DOOR DETAILS

Sealed:7/27/2023

FL #26942

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220 (C.A.N. 3538)
MIAMI, FLORIDA 33173
TEL. (305) 264 8100 FAX. (305) 262-6978
COMP-ANL\18-36F-MD

SERIES 3000 ALUMINUM OUTSWING DOOR (L.M.I.)

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8051 N.W. 79th Place
Medley, FL. 33166
Tel. (305) 764-3963 Fax. (305) 470-8285

revisions: no date by description

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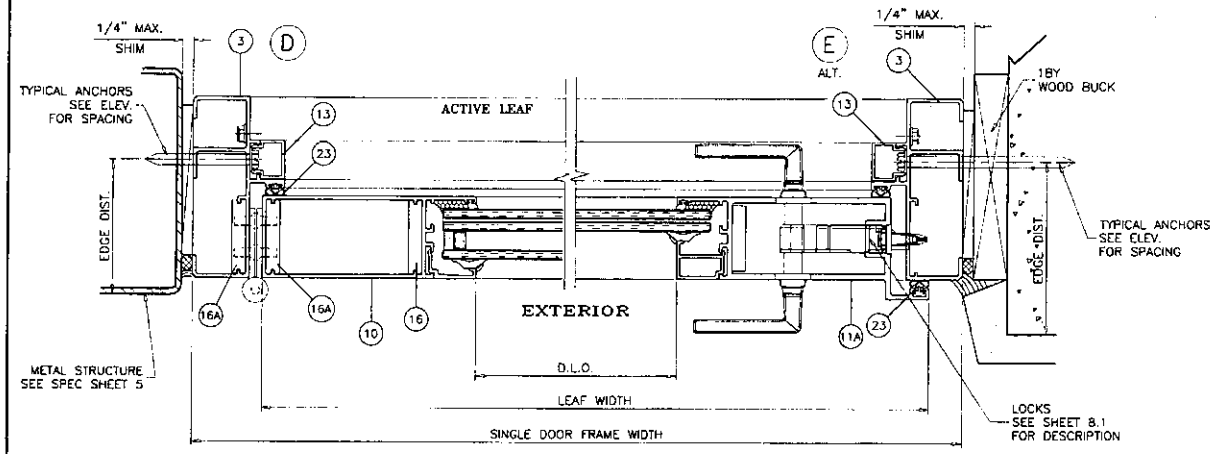
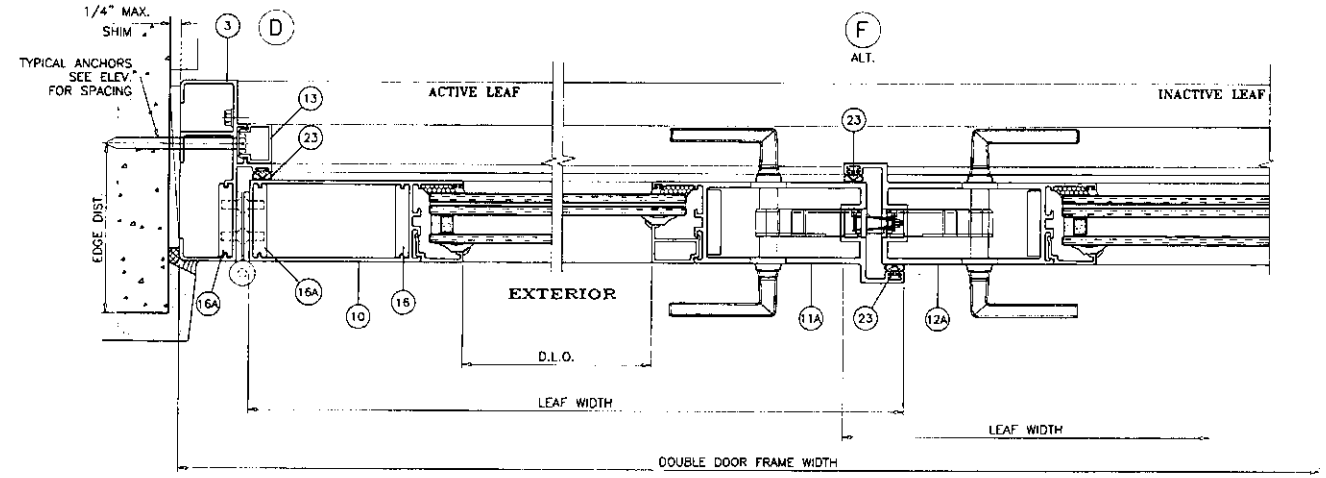
scale: 3/8" = 1'
dr. by: TAFAQ
chk. by:

drawing no. 18-36F

sheet 6 of 10





DOOR DETAILS

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FL #26942

AL-FAROOQ CORPORATION
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9360 SUNSET DRIVE, SUITE 220
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revisions
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date 03-20-18
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dr. by TARIQ
chk. by

drawing no.
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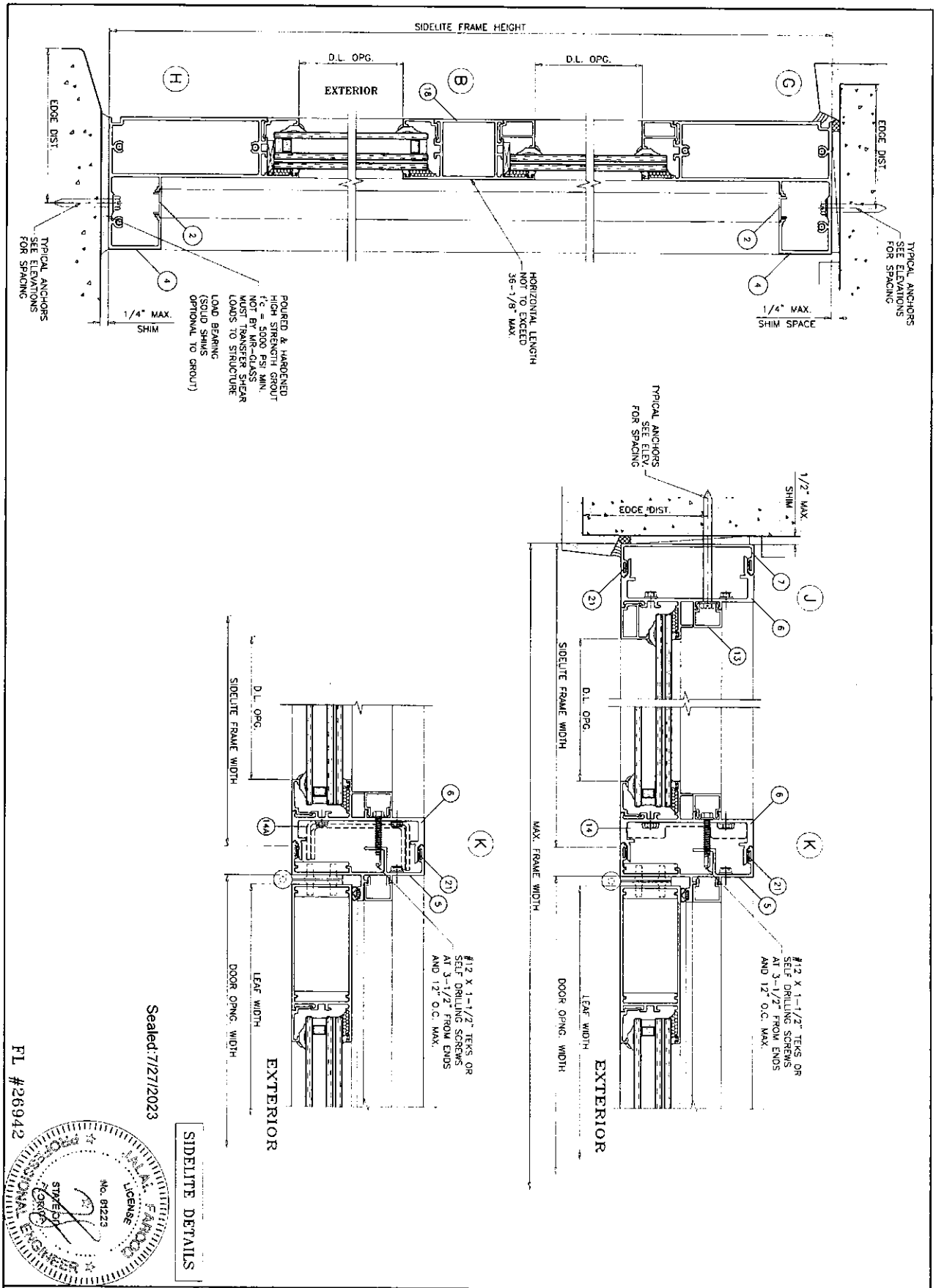
sheet 6.1 of 10



Sealed: 7/27/2023

FL #26942

SIDELITE DETAILS

sheet 7 of 10	drawing no. 18-36F	date: 03-20-18	revisions: no. date by description
		scale: 3/8" = 1"	
		dr. by: FARID	
		chk. by:	

SERIES 3000 ALUMINUM OUTSWING DOOR (L.M.I.)

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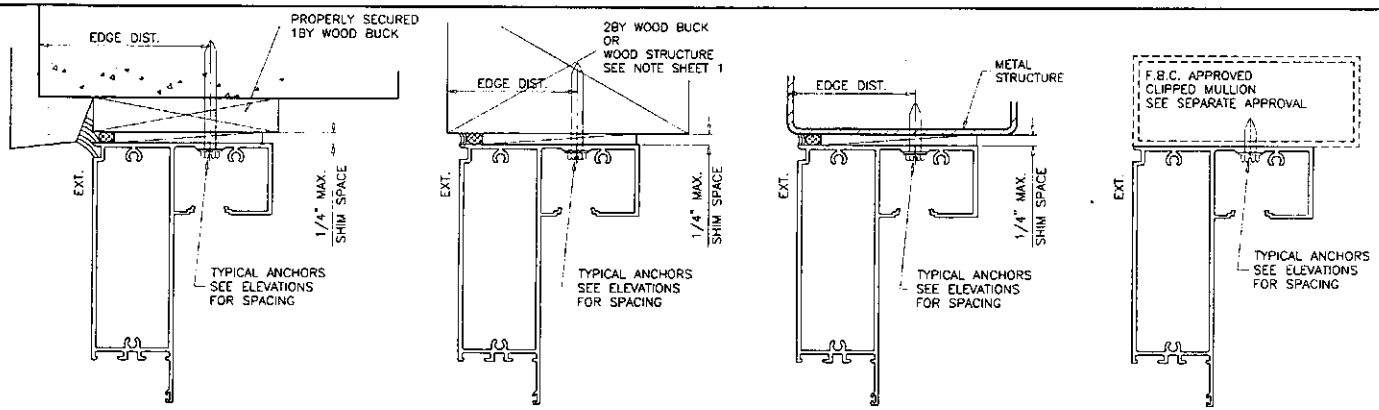

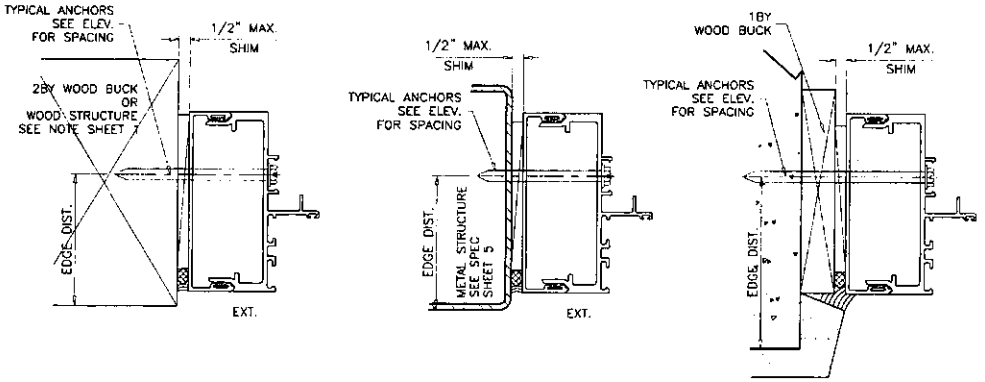

SIDELITE DETAILS

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FL #26942

AL-FAROOQ CORPORATION
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9360 SUNSET DRIVE, SUITE 220
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TEL. (305) 264-8100 FAX. (305) 262-6978
COMP-ANL\18-36F-WG

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drawing no. 18-36F
sheet 7.1 of 10

ITEM #	PART #	REQD.	DESCRIPTION	MATERIAL	MANF./SUPPLIER/REMARKS
1	E3008	AS REQD.	DOOR FRAME HEAD/SILL	6063-T6	-
2	E1018	AS REQD.	FRAME COVER	6063-T6	-
3	E3006	AS REQD.	DOOR FRAME JAMB	6063-T6	-
4	E3011	AS REQD.	SIDELITE TOP & BOTTOM FRAME	6063-T6	-
5	E3007	AS REQD.	SIDELITE JAMB FEMALE	6063-T6	-
6	E3009	AS REQD.	SIDELITE JAMB MALE	6063-T6	-
7	E3010	AS REQD.	SIDELITE SLIP ON JAMB	6063-T6	-
8	E3001	AS REQD.	LEAF TOP & BOTTOM RAIL	6063-T6	-
8A	E3020	AS REQD.	HIGH BOTTOM RAIL	6063-T6	-
9	E3005	AS REQD.	LEAF W'STRIP ADAPTER	6063-T6	-
10	E3002	AS REQD.	HINGE STILE	6063-T6	-
11	E3003	AS REQD.	LOCK STILE	6063-T6	FOR LOCK OPTIONS #1 & #2
11A	E3024	AS REQD.	ALT. LOCK STILE	6063-T6	FOR LOCK OPTION #3
12	E3004	AS REQD.	ASTRAGAL STILE	6063-T6	FOR LOCK OPTIONS #1 & #2
12A	E3023	AS REQD.	ALT. ASTRAGAL STILE	6063-T6	FOR LOCK OPTION #3
13	E3014	AS REQD.	SNAP COVER	6063-T5	-
14	E3013	AS REQD.	SIDELITE ALUM REINF, 72" LONG, CENTERED IN SPAN	6063-T6	-
14A	-	AS REQD.	SIDELITE STEEL REINF, 72" LONG, CENTERED IN SPAN	STEEL	A36, Fu MIN. = 58 KSI
15	E3015	AS REQD.	SHEAR BLOCK	6063-T6	3" LONG
15A	E3019	AS REQD.	SHEAR BLOCK	6063-T6	3" LONG
16	E3016	AS REQD.	SHEAR BLOCK NUT	6063-T6	3" LONG
16A	E3016	2/ HINGE	HINGE BACK-UP PLATE	6063-T6	8-1/2" LONG @ FRAME, 4-3/4" LONG @ LEAF
17	E9001	AS REQD.	GLAZING BEAD (LAM. GLASS)	6063-T6	-
17A	E9002	AS REQD.	GLAZING BEAD (INSUL. LAM. GLASS)	6063-T6	-
17B	E9003	AS REQD.	GLAZING BEAD (CLADDED PANEL)	6063-T6	-
18	E3012	AS REQD.	INTERMEDIATE HORIZONTAL	6063-T6	-
19	G30-01	AS REQD.	INTERIOR GLAZING SPACER	SANTOPRENE	DUROMETER 70±5 SHORE A
20	G10-04	AS REQD.	EXTERIOR GLAZING GASKET	SANTOPRENE	DUROMETER 70±5 SHORE A
21	G30-02	AS REQD.	DOUBLE FIN AIR SEAL W'STRIPPING	SANTOPRENE	DUROMETER 70±5 SHORE A
22	W71325NK	AS REQD.	PILE W'STRIPPING	WOOL	ULTRAFAB
23	G10-05	AS REQD.	BULB W'STRIPPING	SANTOPRENE	EPDM
24	-	2/ LITE	SETTING BLOCK, 1/8" X 1" X 4" LONG	EPDM	AT 6" FROM EACH END, DUROMETER 80±5
26	#12 X 1-1/2"	AS REQD.	FRAME ASSEMBLY SCREWS	ST. STEEL	HWH SMS
27	3/8 X 1"	AS REQD.	SHEAR BLOCK FASTENERS	ST. STEEL	HEX SOCKET HEAD SCREWS
28	#12 X 1-1/2"	AS REQD.	SHEAR BLOCK FASTENERS	ST. STEEL	HWH SMS

HINGES:

OPTION #1:

7-1/2" LONG ALUMINUM BUTT HINGES F107 BY 'SULLIVAN & ASSOC.'
(3) FOR DOORS UPTO 98" HEIGHTS
(5) FOR DOORS ABOVE 98" HEIGHTS
TOP AND BOTTOM HINGES AT 8" FROM ENDS
INTERMEDIATE HINGES EQUALLY SPACED
FASTENED TO FRAME WITH
(6) #10 X 3/4" FH SELF DRILLING SCREWS
FASTENED TO LEAF WITH
(5) #10 X 3/4" PH SELF DRILLING SCREWS

OPTION #2:

4" X 4-1/2" ST. STEEL BALL BEARING HINGES BY 'REGENT/IDH'
(3) FOR DOORS UPTO 98" HEIGHTS
(4) FOR DOORS UPTO 120" HEIGHTS
(5) FOR DOORS ABOVE 120" HEIGHTS
TOP AND BOTTOM HINGES AT 6-5/8" FROM ENDS
INTERMEDIATE HINGES EQUALLY SPACED
FASTENED TO FRAME WITH
(4) #12 X 1/2" FH SELF DRILLING SCREWS
FASTENED TO LEAF WITH
(4) #12 X 1/2" FH SELF DRILLING SCREWS

OPTION #3:

CONTINUOUS ALUMINUM GEARED HINGE FM-SLF BY 'PEMKO'
FASTENED TO FRAME AND LEAF WITH
(22) #12 X 1/2" FH SELF DRILLING SCREWS

SEALANTS:

ALL JOINTS AND FRAME CONNECTIONS SEALED WITH WHITE/ALUMINUM COLORED SILICONE.

Sealed:7/27/2023

JALAL FAROOQ LICENSE No. 61223 STATE OF FLORIDA PROFESSIONAL ENGINEER

FL #26942

AL-FAROOQ CORPORATION
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9360 SUNSET DRIVE, SUITE 220
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chk. by

drawing no. 18-36F
sheet 8 of 10

LOCKS:

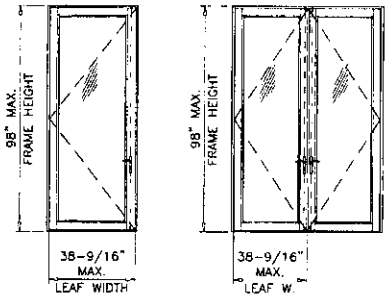
OPTION #1:

ACTIVE LEAF:

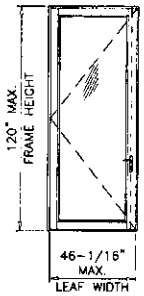
3 POINT LOCK ASSEMBLY DL01-6065 BY 'INTERLOCK USA INC.'
(1) LOCKING POINTS ENGAGING AT INACTIVE LEAF AT STRIKE PLATE
1/2" DIA. BOLTS WITH 5/8" THROW (1) AT TOP ENGAGING FRAME HEAD AND (1) AT BOTTOM ENGAGING FRAME SILL
THROW BOLTS ATTACHED TO LOCK BY 3/8" CONNECTING RODS
LOCK HANDLE LOCATED AT 42-1/2" FROM BOTTOM

INACTIVE LEAF:

2 POINT LOCK ASSEMBLY BY 'INTERLOCK USA INC.'
1/2" DIA. BOLTS WITH 5/8" THROW AT TOP AND BOTTOM ENGAGING FRAME HEAD AND FRAME SILL
THROW BOLTS ATTACHED TO LOCK BY 3/8" CONNECTING RODS
LOCK LOCATED AT 42-1/2" FROM BOTTOM



MAX. DESIGN LOAD = +80 PSF
-80 PSF



MAX. DESIGN LOAD = +65 PSF
-70 PSF

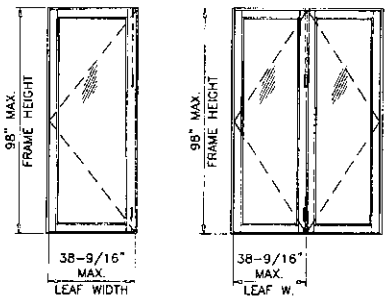
OPTION #2:

ACTIVE LEAF:

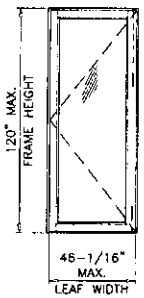
SURFACE BOLTS BY 'SULLIVAN & ASSOC.'
MANUALLY OPERATED LEVERS MOUNTED ON STILE FACE, LOCATED AT 12" AND 68" FROM BOTTOM
FASTENED TO LOCK STILE WITH
#8 X 3/4" FH SMS (2) SCREWS PER BOLT

INACTIVE LEAF

CONCEALED FLUSH BOLTS BY 'SULLIVAN & ASSOC.'
MANUALLY OPERATED LEVERS MOUNTED ON INSIDE FACE OF LEAF STILE LOCATED AT 28" FROM TOP AND 12" FROM BOTTOM
FASTENED TO LOCK STILE WITH
#8 X 3/4" FH SMS (2) PER BOLT



MAX. DESIGN LOAD = +80 PSF
-80 PSF



MAX. DESIGN LOAD = +65 PSF
-70 PSF

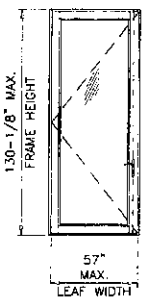
OPTION #3:

ACTIVE LEAF:

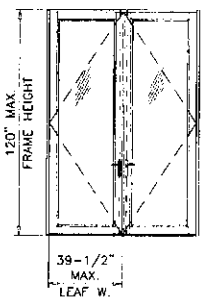
MULTI POINT LOCK ASSEMBLY DL01-6065 BY 'INTERLOCK USA INC.'
(3) LOCKING POINTS ENGAGING AT JAMB STRIKE PLATE
LOCATED AT 22", 39" AND 54-1/2" FROM BOTTOM
1/2" DIA. BOLTS WITH 5/8" THROW
(1) AT TOP ENGAGING FRAME HEAD AND
(1) AT BOTTOM ENGAGING FRAME SILL
THROW BOLTS ATTACHED TO LOCK BY 3/8" CONNECTING RODS
LOCK HANDLE LOCATED AT 42-1/2" FROM BOTTOM

INACTIVE LEAF:

2 POINT LOCK ASSEMBLY BY 'INTERLOCK USA INC.'
1/2" DIA. BOLTS WITH 5/8" THROW AT TOP AND BOTTOM ENGAGING FRAME HEAD AND FRAME SILL
THROW BOLTS ATTACHED TO LOCK BY 3/8" CONNECTING RODS
LOCK LOCATED AT 42-1/2" FROM BOTTOM



MAX. DESIGN LOAD = +80 PSF
-80 PSF



MAX. DESIGN LOAD = +60 PSF
-60 PSF

DOOR HANDLES:

SURFACE MOUNT METALLIC HANDLES AT 42-1/2" FROM BOTTOM
FASTENED TO ACTIVE AND INACTIVE LEAF LOCK STILES WITH
(2) 1/4-20 X 1-13/16" CONE HEAD MS
(4) 1/4-20 X 5/16" SET SCREWS

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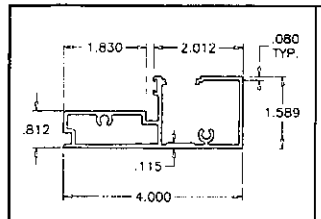
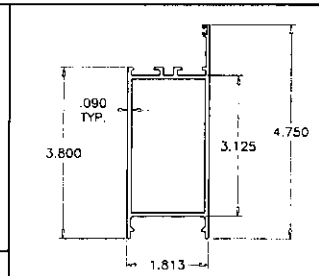
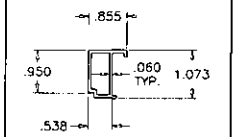


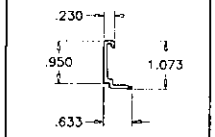
(1) DOOR FRAME HEAD/SILL



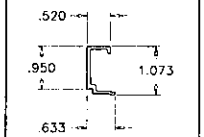
(8) LEAF TOP/BOTTOM RAIL



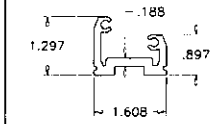
(17) GLAZING BEAD
LAM. GLASS



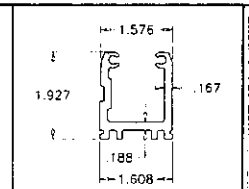
(17A) GLAZING BEAD
INSUL. LAM. GLASS



(17B) GLAZING BEAD
CLADDED PANEL



(15) SHEAR BLOCK



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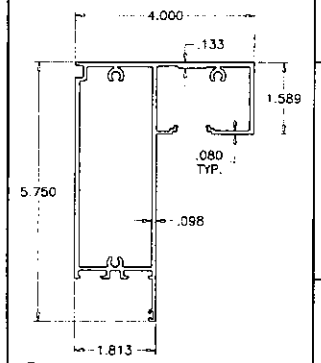
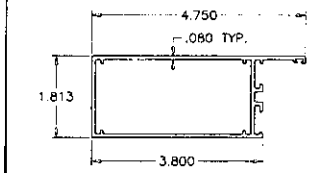
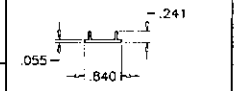


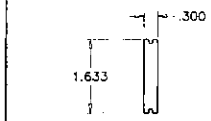
(4) SIDELITE TOP & BOTTOM FRAME



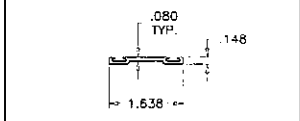
(10) HINGE STILE



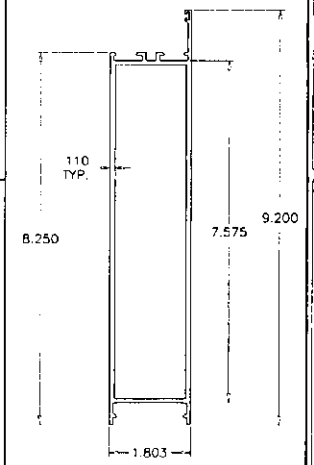
(2) FRAME COVER



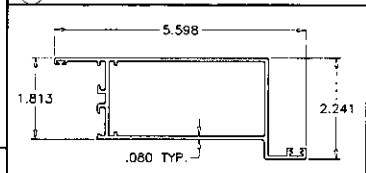
(16) SHEAR BLOCK NUT
(16A) HINGE BACK-UP PLATE



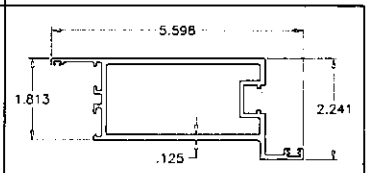
(9) LEAF W'STRIP ADAPTER



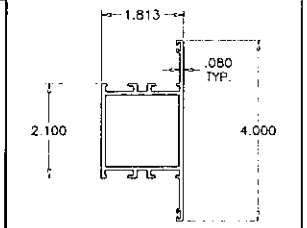
(8A) HIGH BOTTOM RAIL



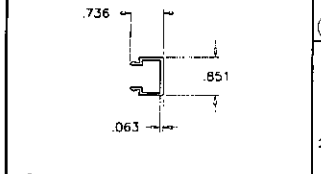
(11) LOCK STILE



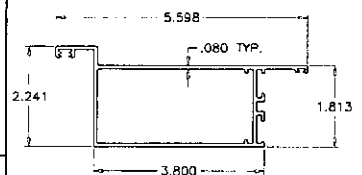
(11A) ALT. LOCK STILE



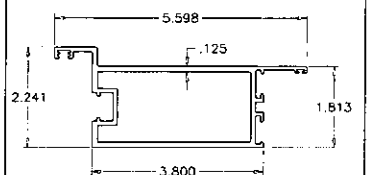
(18) INTERMEDIATE HORIZONTAL



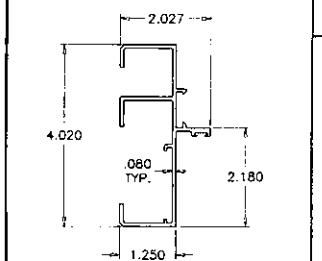
(13) SNAP COVER



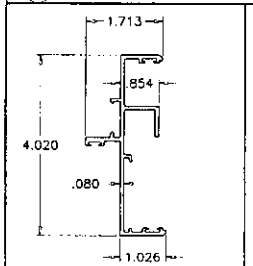
(12) ASTRAGAL STILE



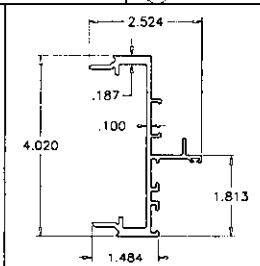
(12A) ALT. ASTRAGAL STILE



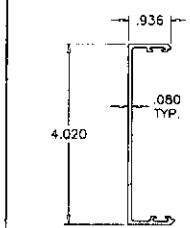
(3) DOOR FRAME JAMB



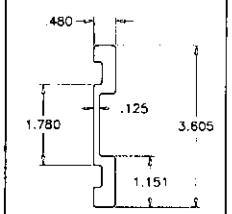
(5) SIDELITE JAMB FEMALE



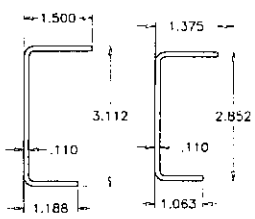
(6) SIDELITE JAMB MALE



(7) SIDELITE JAMB COVER



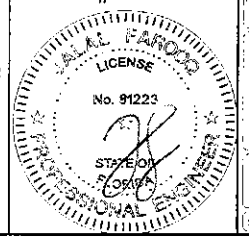
(14) SIDELITE REINFORCING



(14A) SIDELITE REINFORCING

Sealed:7/27/2023

FL #26942



AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220 (C.A.N. 3538)
MIAMI, FLORIDA 33173
TEL. (305) 284-8100 FAX. (305) 262-6978
COMP-ANL\18-36F-MG

SERIES 3000 ALUMINUM OUTSWING DOOR (L.M.I.)

MR-GLASS DOORS & WINDOWS MANUFACTURING, LLC
8051 N.W. 79th Place
Medley, FL. 33166
Tel. (305) 764-3983 Fax (305) 470-8285

revisions:
no. date by description

date 03-26-18
scale 3/8" = 1'
dr. by TARID
chk by

drawing no.
18-36F

sheet 9 of 10

DOOR FRAME CORNER

LEAF CORNER

SIDELITE FRAME CORNER

Sealed:7/27/2023

FL #26942

sheet 10 of 10	drawing no. 18-36F	date: 03-20-18	revisions: no. date by description
		scale: 3/8" = 1"	
		dr. by: TARIQ	
		chk. by:	

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ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 3538)
TEL. (305) 264 8100 FAX. (305) 262-6978

afc

COMP-ANL\18-36F-MG

ITEM #	PART #	REQD.	DESCRIPTION	MATERIAL	MANF./SUPPLIER/REMARKS
1	E3008	AS REQD.	DOOR FRAME HEAD/SILL	6063-T6	-
2	E1018	AS REQD.	FRAME COVER	6063-T6	-
3	E3006	AS REQD.	DOOR FRAME JAMB	6063-T6	-
4	E3011	AS REQD.	SIDELITE TOP & BOTTOM FRAME	6063-T6	-
5	E3007	AS REQD.	SIDELITE JAMB FEMALE	6063-T6	-
6	E3009	AS REQD.	SIDELITE JAMB MALE	6063-T6	-
7	E3010	AS REQD.	SIDELITE SLIP ON JAMB	6063-T6	-
8	E3001	AS REQD.	LEAF TOP & BOTTOM RAIL	6063-T6	-
8A	E3020	AS REQD.	HIGH BOTTOM RAIL	6063-T6	-
9	E3005	AS REQD.	LEAF W'STRIP ADAPTER	6063-T6	-
10	E3002	AS REQD.	HINGE STILE	6063-T6	-
11	E3003	AS REQD.	LOCK STILE	6063-T6	-
11A	E3024	AS REQD.	ALT. LOCK STILE	6063-T6	-
12	E3004	AS REQD.	ASTRAGAL STILE	6063-T6	-
12A	E3023	AS REQD.	ALT. ASTRAGAL STILE	6063-T6	-
13	E3014	AS REQD.	SNAP COVER	6063-T5	-
14	E3013	AS REQD.	SIDELITE ALUM REINF. 72" LONG, CENTERED IN SPAN	6063-T6	-
14A	-	AS REQD.	SIDELITE STEEL REINF. 72" LONG, CENTERED IN SPAN	STEEL	A36, Fu MIN. = 58 KSI
15	E3015	AS REQD.	SHEAR BLOCK	6063-T6	3" LONG
15A	E3019	AS REQD.	SHEAR BLOCK	6063-T6	3" LONG
16	E3016	AS REQD.	SHEAR BLOCK NUT	6063-T6	3" LONG
16A	E3016	2/ HINGE	HINGE BACK-UP PLATE	6063-T6	8-1/2" LONG @ FRAME, 4-3/4" LONG @ LEAF
17	E9001	AS REQD.	GLAZING BEAD (LAM. GLASS)	6063-T6	-
17A	E9002	AS REQD.	GLAZING BEAD (INSUL. LAM. GLASS)	6063-T6	-
17B	E9003	AS REQD.	GLAZING BEAD (CLADDED PANEL)	6063-T6	-
18	E3012	AS REQD.	INTERMEDIATE HORIZONTAL	6063-T6	-
19	G30-01	AS REQD.	INTERIOR GLAZING SPACER	SANTOPRENE	DUROMETER 70±5 SHORE A
20	G10-04	AS REQD.	EXTERIOR GLAZING GASKET	SANTOPRENE	DUROMETER 70±5 SHORE A
21	G30-02	AS REQD.	DOUBLE FIN AIR SEAL W'STRIPPING	SANTOPRENE	DUROMETER 70±5 SHORE A
22	W71325NK	AS REQD.	PILE W'STRIPPING	WOOL	ULTRAFAB
23	G10-05	AS REQD.	BULB W'STRIPPING	SANTOPRENE	EPDM
24	-	2/ LITE	SETTING BLOCK, 1/8" X 1" X 4" LONG	EPDM	AT 6" FROM EACH END, DUROMETER 80±5
26	#12 X 1-1/2"	AS REQD.	FRAME ASSEMBLY SCREWS	ST. STEEL	HWH SMS
27	3/8 X 1"	AS REQD.	SHEAR BLOCK FASTENERS	ST. STEEL	HEX SOCKET HEAD SCREWS
28	#12 X 1-1/2"	AS REQD.	SHEAR BLOCK FASTENERS	ST. STEEL	HWH SMS

HINGES:

OPTION #1:

7-1/2" LONG ALUMINUM BUTT HINGES F107 BY 'SULLIVAN & ASSOC.'
(3) FOR DOORS UPTO 98" HEIGHTS
(5) FOR DOORS ABOVE 98" HEIGHTS
TOP AND BOTTOM HINGES AT 8" FROM ENDS
INTERMEDIATE HINGES EQUALLY SPACED
FASTENED TO FRAME WITH
(6) #10 X 3/4" FH SELF DRILLING SCREWS
FASTENED TO LEAF WITH
(5) #10 X 3/4" PH SELF DRILLING SCREWS

OPTION #2:

4" X 4-1/2" ST. STEEL BALL BEARING HINGES BY 'REGENT/IDH'
(3) FOR DOORS UPTO 98" HEIGHTS
(4) FOR DOORS UPTO 120" HEIGHTS
(5) FOR DOORS ABOVE 120" HEIGHTS
TOP AND BOTTOM HINGES AT 6-5/8" FROM ENDS
INTERMEDIATE HINGES EQUALLY SPACED
FASTENED TO FRAME WITH
(4) #12 X 1/2" FH SELF DRILLING SCREWS
FASTENED TO LEAF WITH
(4) #12 X 1/2" FH SELF DRILLING SCREWS

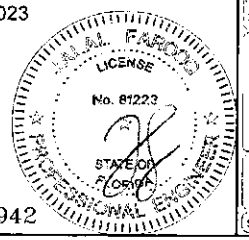
OPTION #3:

CONTINUOUS ALUMINUM GEARED HINGE FM-SLF BY 'PEMKO'
FASTENED TO FRAME AND LEAF WITH
(22) #12 X 1/2" FH SELF DRILLING SCREWS

SEALANTS:

ALL JOINTS AND FRAME CONNECTIONS SEALED WITH WHITE/ALUMINUM COLORED SILICONE.

Sealed:7/27/2023



FL #26942

AL-FAROOQ CORPORATION
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COMP-ANL\18-36F-MC

SERIES 3000 ALUMINUM OUTSWING DOOR (L.M.I.)

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revisions: no. date by description

date: 03-20-18
scale: 3/8" = 1'
dr. by: TAR/O
chk. by:

drawing no. 18-36F

sheet 8 of 10

Opening #22 and 22A 721 SHARAR AVE

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/building

DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

NOTICE OF ACCEPTANCE (NOA)

CGI Windows and Doors, Inc.
3780 W 104th Street
Hialeah, FL 33018

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 Florida Building Code, including the High Velocity Hurricane Zone.

DESCRIPTION: Series Clipped, Extruded Aluminum Tube Mullion – L.M.I.

APPROVAL DOCUMENT: Drawing No. **TUBEMULL-CGI**, titled "Aluminum Tube Mullions, Clipped (LM)", sheets 1 through 23 of 23, dated 02/02/23, with revision **A** dated 08/23/2023, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E., bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and expiration date by the 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, model/series, and following statement: "Miami-Dade County Product Control Approved", 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 NOA No. 23-0221.03** and consists of this page 1 and evidence pages E-1, E-2, and E -3, as well as approval document mentioned above.

The submitted documentation was reviewed by **Sifang Zhao, P.E.**

MIAMI-DADE COUNTY APPROVED

S.Z.
10/26/2023

NOA No. 23-0913.04
Expiration Date: March 28, 2028
Approval Date: October 26, 2023
Page 1

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS NOA's

A. DRAWINGS

1. Manufacturer's die drawings and sections. ***(Submitted under NOA No. 95-0929.39)***
2. Drawing No. TUBEMULL-CGI, titled "Aluminum Tube Mullions, Clipped (LM)", sheets 1 through 23 of 23, dated 02/02/23, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E. ***(Submitted under NOA No.23-0221.03)***

B. TESTS

1. Test reports on: 1) Air Infiltration Test, per FBC, TAS 201-94
   2) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94
   3) Water Resistance Test, per FBC, TAS 202-94
   4) Small Missile Impact Test per FBC, TAS 201-94
   5) Large Missile Impact Test per FBC, TAS 201-94

   along with marked-up drawings and installation diagram of casement windows mulled using a 1"x 2"x 1/8" aluminum tube mullion, prepared by Hurricane Testing Lab, Inc., Test Report No. **HTL-0080-0105-08**, dated 03/26/08 for Specimens No. 1 and 2, signed and sealed by Vinu J. Abraham, P.E. ***(Submitted under NOA No. 08-0331.07)***
2. Test reports on: 1) Large Missile Impact Test, Loading per SFBC, PA 201-94
   along with marked-up drawings and installation diagram of an aluminum fixed window, prepared by Hurricane Test Laboratory, Inc. Test Report No. **HTL-0080-0303-96**, dated 03/06/96, signed and sealed by Timothy S. Marshall, P.E.
   (Submitted under NOA No. 95-0929.39)
3. Test reports on: 1) Uniform Static Air Pressure Test, Loading per SFBC, PA 202-94
   along with marked-up drawings and installation diagram of fixed windows mulled using a 1"x 2"x 1/8" aluminum tube mullion, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-96-525**, dated 02/12/96, signed and sealed by Hector M. Medina, P.E. ***(Submitted under NOA No. 95-0929.39)***
4. Test reports on: 1) Air Infiltration Test, per FBC, TAS 202-94
   2) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94
   3) Water Resistance Test, per FBC, TAS 202-94
   4) Large Missile Impact Test per FBC, TAS 201-94
   5) Cyclic Wind Pressure Loading per FBC, TAS 203-94
   6) Forced Entry Test, per FBC 2411.3.2.1, and TAS 202-94

   along with marked-up drawings and installation diagram of clipped aluminum mullions, prepared by Fenestration Testing Lab, Inc., Test Report No. **FTL-6443** (samples A-1 thru E-1), dated 02/28/11, and addendum letter dated 05/05/11, signed and sealed by Marlin D. Brinson, P.E. ***(Submitted under NOA's No. 17-0630.11 and 20-0406.08)***

Sifang Zhao, P.E.
Product Control Examiner
NOA No. 23-0913.04
Expiration Date: March 28, 2028
Approval Date: October 26, 2023

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

B. TESTS (CONTINUED)

5. Test reports on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94
   2) Large Missile Impact Test per FBC, TAS 201-94
   3) Cyclic Wind Pressure Loading per FBC, TAS 203-94
   along with marked-up drawings and installation diagram of two series 1000 fixed windows mulled together, prepared by Fenestration Testing Laboratory, Inc. Test Report No. **FTL-18-8511**, dated 11/27/18, signed and sealed by Idalmis Ortega, P.E. ***(Submitted under NOA's No. 15-0728.01 and 20-0826.03)***

C. CALCULATIONS

1. Mullion calculations, clip details, anchor verification calculations and structural analysis, adding additional mullions and clip options from NOA No. **20-0826.03,** also adding different clip styles from NOA's No. **20-0406.08** and No. **20-0610.10**, all complying with **FBC 7th Edition (2020)**, dated 02/15/23 by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

D. QUALITY ASSURANCE

1. Miami-Dade Department of Regulatory and Economic Resources (RER).

E. MATERIAL CERTIFICATIONS

1. None.

F. STATEMENTS

1. Statement letter of successor engineer per 61G15-27.001 Florida Administrative Code. ***(Submitted under NOA No. 20-0610.10)***
2. Statement letter of conformance, of complying with **FBC 7th Edition (2020)** dated 02/15/23, issued by manufacturer, signed and sealed by Anthony Lynn Miller, P.E. ***(Submitted under NOA No.23-0221.03)***
3. Statement letter of no financial interest dated 02/15/23, issued by manufacturer, signed and sealed by Anthony Lynn Miller, P.E. ***(Submitted under NOA No.23-0221.03)***
4. Private labeling agreement between WinDoor, Inc. and CGI Windows and Doors, Inc. document in conformance of RER guideline dated 02/15/23. ***(Submitted under NOA No.23-0221.03)***

G. OTHERS

1. Notice of Acceptance No. **20-0610.10**, issued to CGI Windows and Doors, Inc. for their Series Clipped Mullion - L.M.I., approved on 09/24/20 and expiring on 03/28/23.

Sifang Zhao, P.E.
Product Control Examiner
NOA No. 23-0913.04
Expiration Date: March 28, 2028
Approval Date: October 26, 2023

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

2. NEW EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing No. TUBEMULL-CGI, titled "Aluminum Tube Mullions, Clipped (LM)", sheets 1 through 23 of 23, dated 02/02/23, with revision **A** dated 08/23/23, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

B. TESTS

1. None.

C. CALCULATIONS

1. None.

D. QUALITY ASSURANCE

1. Miami-Dade Department of Regulatory and Economic Resources (RER)

E. MATERIAL CERTIFICATIONS

1. None.

F. STATEMENTS

1. Statement letter of conformance, of complying with **FBC 7th Edition (2020)** and with **FBC 8th Edition (2023)**, dated 08/23/2023, issued by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.
2. Statement letter of no financial interest dated 08/23/2023, issued by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

G. OTHERS

1. Notice of Acceptance No. **23-0221.03**, issued to CGI Windows and Doors, Inc. for their Series Clipped Mullion - L.M.I., approved on 03/23/23 and expiring on 03/28/28.

Sifang Zhao, P.E.
Product Control Examiner
NOA No. 23-0913.04
Expiration Date: March 28, 2028
Approval Date: October 26, 2023

IMPACT-RESISTANT, CLIPPED, ALUMINUM TUBE MULLIONS

1) MULLIONS AND CLIPS HAVE BEEN DESIGNED & TESTED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE, AND ARE APPROVED FOR IMPACT AND NON-IMPACT APPLICATIONS IN THE HVHZ. MULLIONS ARE ONLY TO BE USED WITH THE MANUFACTURER'S FENESTRATION PRODUCTS.

2) INSTALLATION DETAILS SHOWN ARE FOR THE MULLION ONLY. ANCHORS SHOWN ARE IN ADDITION TO ANY ANCHORS REQUIRED FOR THE FENESTRATION PRODUCT INSTALLATION. TYPICAL APPLICATIONS ARE SHOWN. EACH SITUATION IS UNIQUE AND SHOULD BE EVALUATED BY AN EXPERIENCED INSTALLER FOR THE BEST INSTALLATION METHOD. OPTIONAL 1X OR 2X WOOD BUCKS IF USED, MUST BE ANCHORED PROPERLY TO TRANSFER LOADS AND ARE TO BE DESIGNED BY OTHERS.

3) THE TYPE AND NUMBER OF ANCHORS IS CRITICAL TO THE STRUCTURAL PERFORMANCE OF THE MULLED UNITS. MULLIONS HAVE BEEN TESTED AS "FREE-FLOATING" AND DO NOT NEED TO BE DIRECTLY ATTACHED TO THE MULLION CLIPS, BUT SHALL NOT HAVE A GAP OF MORE THAN 1/4" FROM THE CLIP. SEE FIG. 1, SHEET 4.

4) THE ANCHORAGE METHODS SHOWN HAVE BEEN DESIGNED TO RESIST THE WINDLOADS CORRESPONDING TO THE REQUIRED DESIGN PRESSURE. MULLIONS ARE CALCULATED TO DEFLECT NO MORE THAN L/180. THE 1/3 STRESS INCREASE WAS NOT USED IN THIS ANCHOR EVALUATION. THE 1.6 LOAD DURATION FACTOR WAS USED FOR THE EVALUATION OF WOOD SCREWS.

5) PROPER SEALING OF ENTIRE ASSEMBLY IS THE RESPONSIBILITY OF OTHERS AND IS BEYOND THE SCOPE OF THESE INSTRUCTIONS.

6) USE THE COMBINED WIDTH OR HEIGHT OF ONLY TWO ADJACENT FENESTRATION PRODUCTS TO DETERMINE PRESSURES AND ANCHORAGE FOR THE COMMON MULLION. FOR MULTIPLE UNITS, CONSIDER ONLY TWO ADJACENT UNITS AT A TIME WHEN USING THE DESIGN PRESSURE AND ANCHORAGE TABLES. THE LOWEST DESIGN PRESSURE OF MULTIPLE MULLIONS OR FENESTRATION PRODUCTS SHALL APPLY.

7) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO, WOOD BUCKS BY OTHERS, MUST BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE STRUCTURE. ANCHORS SHALL BE COATED OR CORROSION RESISTANT AS APPROPRIATE FOR SUBSTRATE MATERIAL. DISSIMILAR MATERIALS SHALL BE PROTECTED AS REQUIRED TO PREVENT REACTIONS.

8) REFERENCE: DEWALT ULTRACON+, AGGRE-GATOR & CRETEFLEX NOA'S.

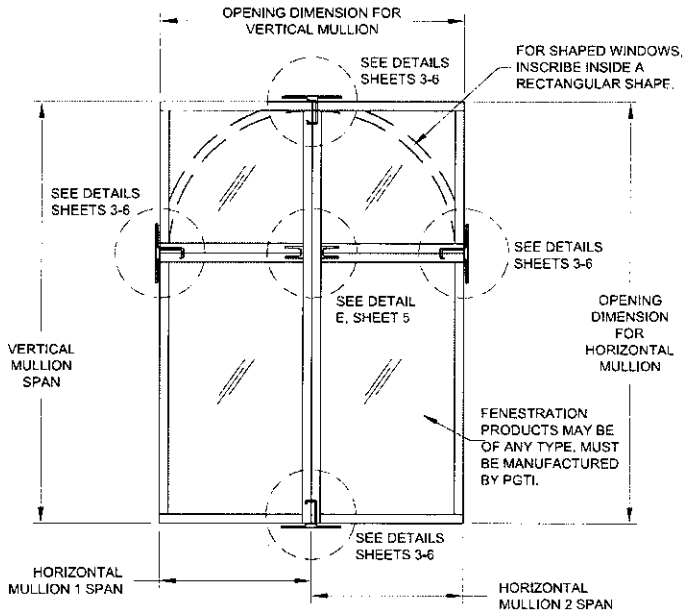
9) QUANTITY OF UNITS WITHIN A MULTIPLE MULLED ASSEMBLY IS UNLIMITED PROVIDED THAT THE SPAN AND OPENING WIDTH/HEIGHT OF EACH INDIVIDUAL MULLION COMPLIES WITH THE REQUIREMENTS OF THIS APPROVAL.

10) SUBSTRATES: CONCRETE SHALL CONFORM TO ACI 301 SPECIFICATIONS. HOLLOW AND GROUT-FILLED CONCRETE BLOCK UNIT (CMU) SHALL CONFORM TO ASTM C-90. WOOD SHALL HAVE A MIN. SG OF 0.55. ALUMINUM SHALL BE 6063-T5 AND BE A MINIMUM OF .125" THICK, STEEL STUDS TO BE A MINIMUM GRADE 33 AND 0.045" THICK (18 GAUGE). STRUCTURAL STEEL TO BE AT LEAST .125" THICK AND A36. ALL ANCHORS INTO METAL SHALL EXTEND AT LEAST 3 SCREW THREADS BEYOND THE MATERIAL. #12 & #14 ANCHORS INTO WOOD MAY BE STEEL, 18-8 S.S. OR 410 S.S.

CODES / STANDARDS USED:

- 2023 FLORIDA BUILDING CODE (FBC), 8TH EDITION
- 2020 FLORIDA BUILDING CODE (FBC), 7TH EDITION
- ANSI/AF&PA NDS-2018 FOR WOOD CONSTRUCTION
- ALUMINUM DESIGN MANUAL, ADM-2020
- AISI S100-16
- AISC 360-16

FIGURE 1: MULTIPLE MULLIONS



DESIGN PRESSURE RATING
SEE TABLES 1A - 14A

IMPACT RATING
RATED FOR LARGE & SMALL MISSILE IMPACT RESISTANCE

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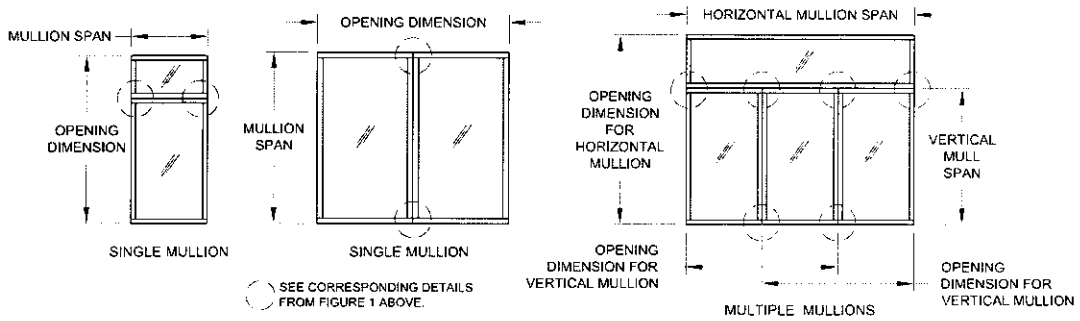
FIGURE 2: ADDITIONAL EXAMPLES OF MULLION CONFIGURATIONS:



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PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
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(941) 480-1600

REGISTRATION #29296

02/02/23

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

ALUMINUM TUBE MULLIONS, CLIPPED (LM)

GENERAL NOTES & ELEVATIONS

JENS ROSOWSKI

MULLS	NTS	1 OF 23	TUBEMULL-1	A

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

INSTRUCTIONS:

1) DETERMINE THE ALLOWABLE STRESS DESIGN PRESSURE REQUIREMENT (LBS/FT²) FOR THE OPENING USING THE **ASCE-7 STANDARD**.

2) TO FIND THE DESIGN PRESSURE OF THE MULLION, USE TABLES 1A THROUGH 14A. THE MULLION DESIGN PRESSURE OBTAINED SHALL MEET OR EXCEED THE DESIGN PRESSURE REQUIREMENT FOR THE OPENING OBTAINED IN STEP 1. NOTE THAT YOU MUST FIRST DETERMINE WHETHER YOU HAVE A SINGLE MULLION OR CROSSING MULLIONS.

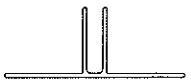
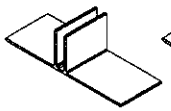
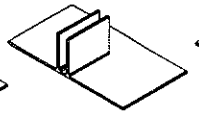
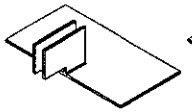
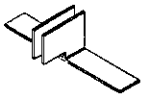
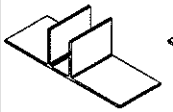
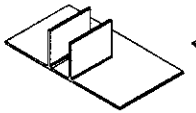
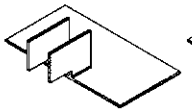
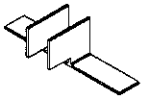
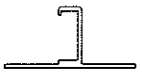
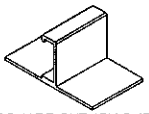
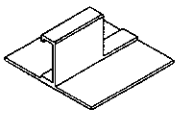
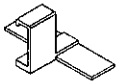
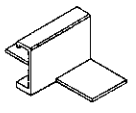
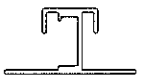
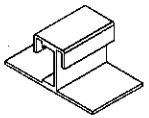
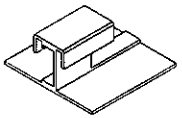
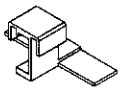
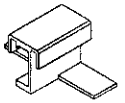
3) AFTER OBTAINING THE MULLION'S DESIGN PRESSURE, FIND THE VALUE IN THE COLUMN TITLED "ANCHOR CAPACITY REQUIRED (LBS)". THIS VALUE REPRESENTS THE CLIP/ANCHOR CAPACITY THAT MUST BE MET TO ATTAIN THE MULLION DESIGN PRESSURE.

4) FROM THE ANCHOR/CLIP CAPACITY TABLE ON THE SAME SHEET, CHOOSE AN ANCHOR/CLIP/SUBSTRATE CONDITION THAT MEETS OR EXCEEDS THE VALUE OBTAINED FROM STEP 3.

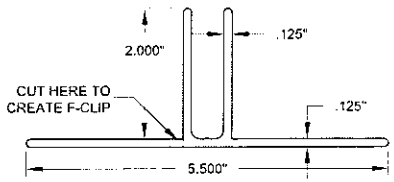
5) VERIFY THE DESIGN PRESSURE OF THE FENESTRATION PRODUCT TO BE USED AND COMPARE WITH THE FINAL DESIGN PRESSURE FOR THIS MULLION SYSTEM. THE LOWER OF THE TWO SHALL APPLY FOR THE ENTIRE MULLED ASSEMBLY.

6) HIGHLIGHT OPTION USED AND TABLE VALUES USED IN A SPECIFIC APPLICATION WHEN USING THIS APPROVAL TO APPLY FOR A PERMIT.

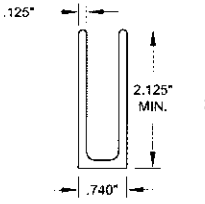
7) OPTIONALLY, IF THE MULLION DESIGN PRESSURE OBTAINED IN THE TABLE IS MUCH HIGHER THAN THE DESIGN PRESSURE REQUIREMENT FOR THE OPENING, YOU MAY USE THE **"ANCHOR CAPACITY ADJUSTMENT FORMULA"** ON SHEET 1 TO OBTAIN A LOWER ANCHOR/CLIP CAPACITY.

IF USING THIS TYPE OF CLIP.....	.....THESE CLIP STYLE OPTIONS MAY BE USED INTERCHANGEABLY PROVIDED THAT THE SAME ANCHOR HOLE QUANTITY AND HOLE SPACING IS MAINTAINED.			
 STANDARD 1BY CLIP	 SQUARE-CUT 1BY CLIP	 1BY FULL LOAD CLIP	 1BY CLEARANCE CLIP*	 1BY OFFSET CLIP*
STANDARD 2BY CLIP	 SQUARE-CUT 2BY CLIP	 2BY FULL LOAD CLIP	 2BY CLEARANCE CLIP*	 2BY OFFSET CLIP*
 HOOK-TYPE 1BY CLIP	 SQUARE-CUT 1BY CLIP	 1BY FULL LOAD CLIP	 1BY CLEARANCE CLIP*	 1BY OFFSET CLIP*
 HOOK-TYPE 2BY CLIP	 SQUARE-CUT 2BY CLIP	 2BY FULL LOAD CLIP	 2BY CLEARANCE CLIP*	 2BY OFFSET CLIP*

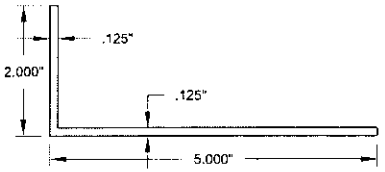
* THE CLEARANCE OR OFFSET CLIPS ARE RECOMMENDED FOR FIN-FRAMED WINDOWS, BUT MAY ALSO BE USED FOR OTHER FRAME TYPES.



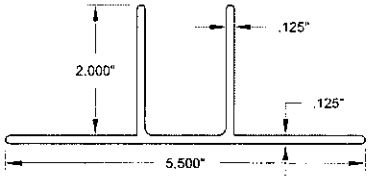
STANDARD 1BY MULLION CLIP



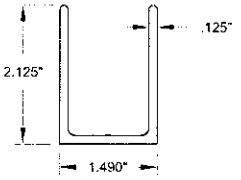
STANDARD 1BY U-CLIP



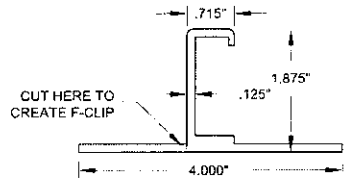
STOCK 2" X 5" ANGLE CLIP



STANDARD 2BY MULLION CLIP



STANDARD 2BY U-CLIP
FOR MULLIONS WITH 1/4" SIDE WALLS



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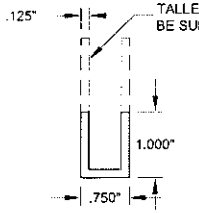
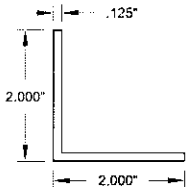
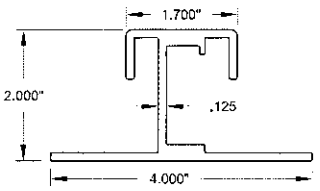


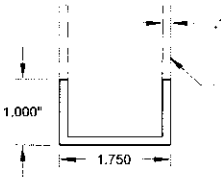
STOCK 1BY U-CLIP



STOCK 2" X 2" ANGLE CLIP



HOOK-TYPE 2BY MULLION CLIP



STOCK 2BY U-CLIP
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Impact Resistant Windows & Doors
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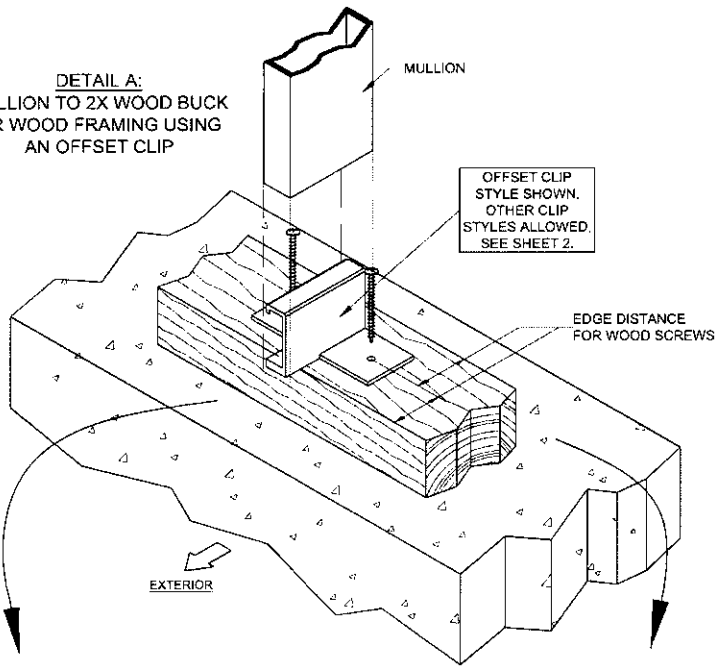
ALUMINUM TUBE MULLIONS, CLIPPED (LM) | INSTRUCTIONS & CLIP INFO | 2 OF 23

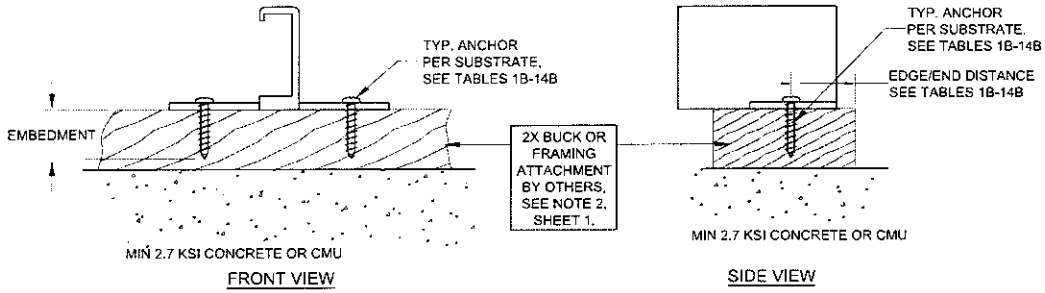
MULLS | NTS

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

DETAIL A:
MULLION TO 2X WOOD BUCK OR WOOD FRAMING USING AN OFFSET CLIP

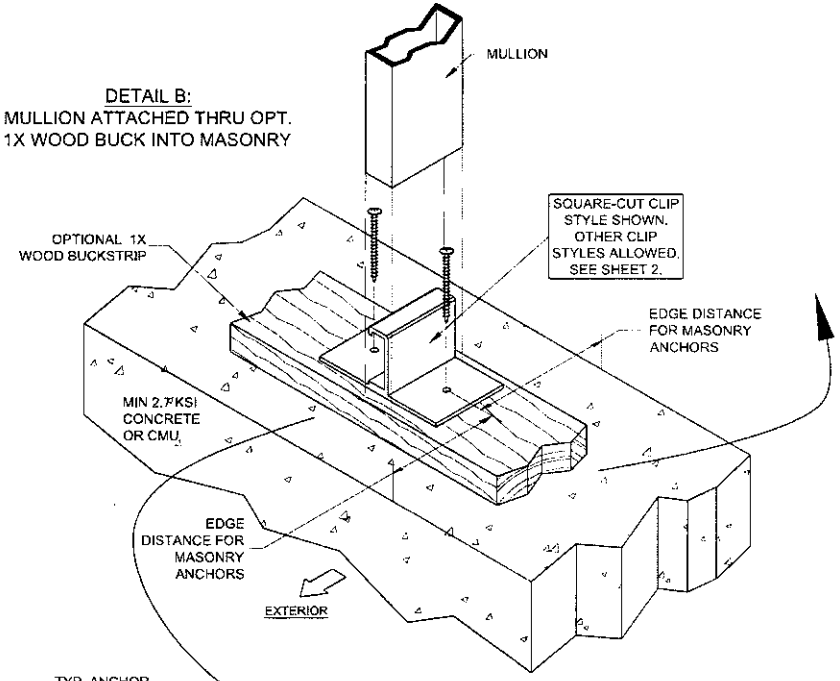


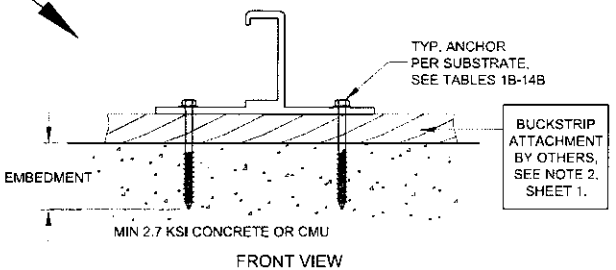


FRONT VIEW

SIDE VIEW

DETAIL B:
MULLION ATTACHED THRU OPT. 1X WOOD BUCK INTO MASONRY





FRONT VIEW

INSTALLATION NOTES:

1) ANCHOR EMBEDMENT TO SUBSTRATE SHALL BE BEYOND WALL DRESSING OR STUCCO. SUBSTRATE MAY VARY FROM DETAILS. SEE TABLES 1B-14B FOR SUBSTRATE PROPERTIES. ANCHOR HEAD TYPE MAY BE PANHEAD, HEXHEAD OR FLATHEAD.

2) QUANTITY OF ANCHORS, MULLION TYPES AND MULLION CLIP TYPES AND STYLES SHOWN ABOVE ARE FOR PICTORIAL REPRESENTATION ONLY. BECAUSE THE ANCHOR CAPACITY IS BASED PARTLY ON THE ANCHOR TO ANCHOR DISTANCE, THE CORRECT QUANTITY AND LOCATION OF ANCHORS MUST BE FOLLOWED. REFER TO THE TABLES ON THE FOLLOWING SHEETS.

3) MULLIONS MAY BE INSTALLED HORIZONTALLY OR VERTICALLY. 2X2 OR 2X5 ANGLE CLIPS, IF USED, MUST BE INSTALLED IN PAIRS AND PULLED AGAINST THE MULLION'S INSIDE WALL FOR A SECURE FIT.

4) FOR MASONRY APPLICATIONS IN MIAMI-DADE COUNTY, USE ONLY MIAMI-DADE COUNTY APPROVED DEWALT ULTRACON, DEWALT ULTRACON+, DEWALT 1/4" AGGREGATOR OR DEWALT CRETEFLEX MASONRY ANCHORS AS LISTED IN TABLES 1B-14B.

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

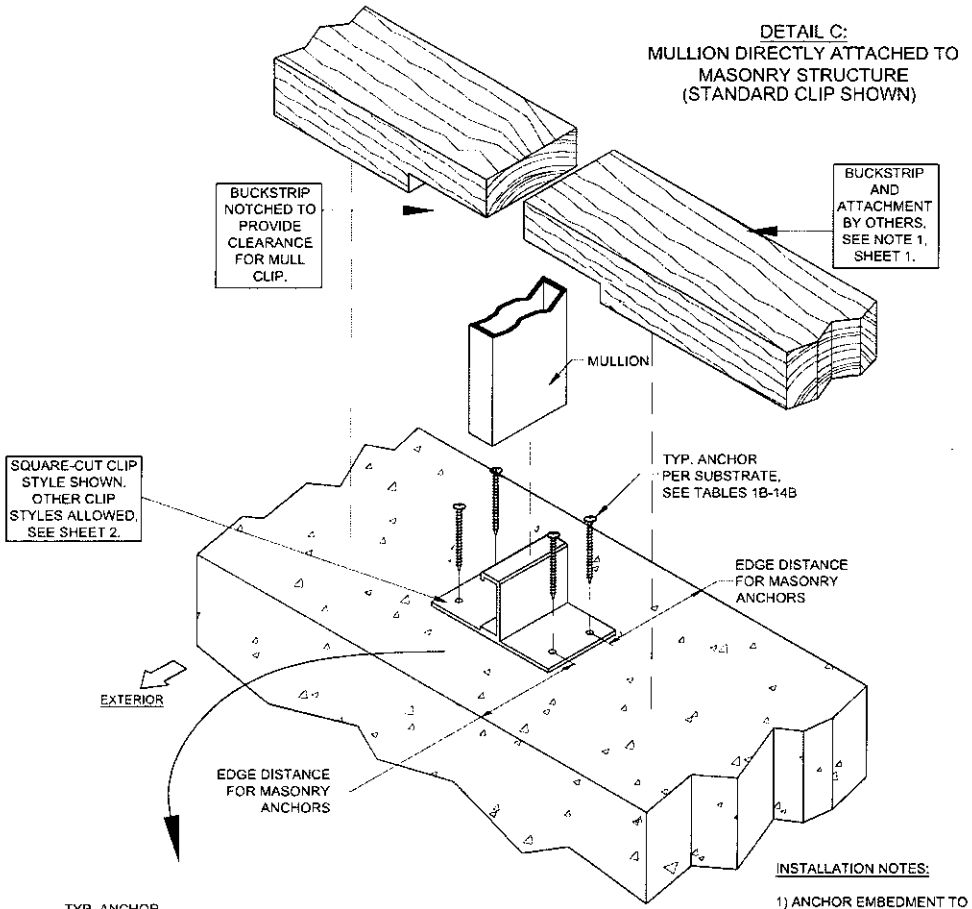
DRAWN	02/02/23
CHK'D	JENS ROSOWSKI
APP'D	TUBEMULL-1
DWG.	A
SHEET	3 OF 23
SCALE	NTS
SUBJECT	MULLS

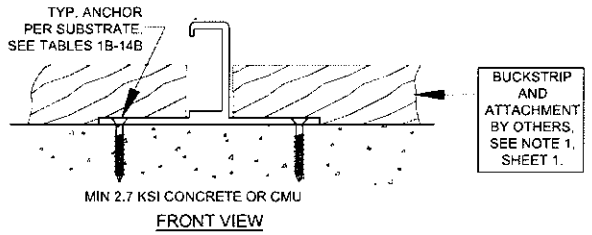
ALUMINUM TUBE MULLIONS, CLIPPED (LM)
INSTALLATION INSTRUCTIONS

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

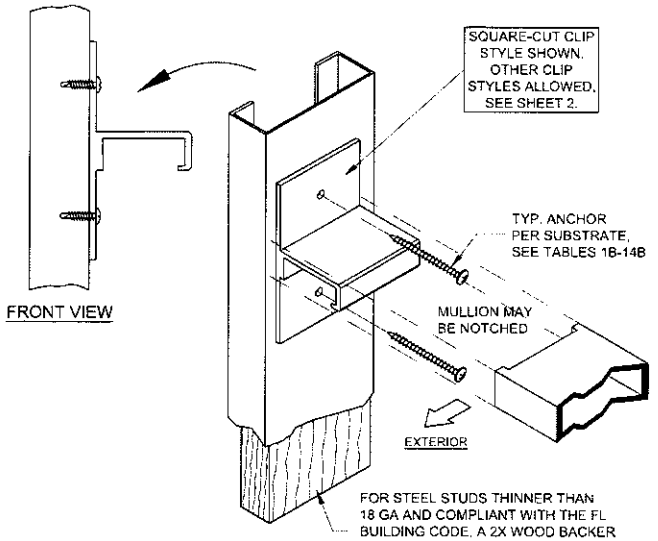
A. LYNN MILLER, P.E. P.E.# 58705

DETAIL C:
MULLION DIRECTLY ATTACHED TO
MASONRY STRUCTURE
(STANDARD CLIP SHOWN)





FRONT VIEW



DETAIL D:
MULLION ATTACHED
TO STEEL STUD

INSTALLATION NOTES:

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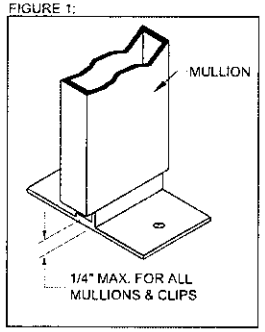
FIGURE 1:



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Revisions

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02/02/23

JENS ROSOWSKI

TUBEMULL-1

A

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ALUMINUM TUBE MULLIONS, CLIPPED (LM)

INSTALLATION INSTRUCTIONS

4 OF 23

NTS

MULLS

ANTHONY LYNN MILLER
LICENSE
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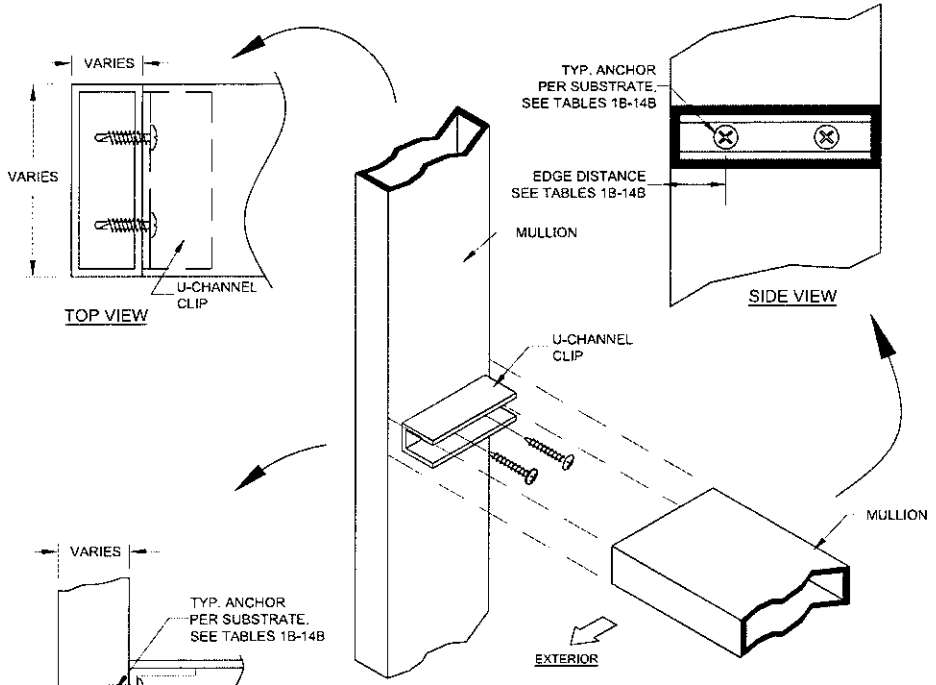
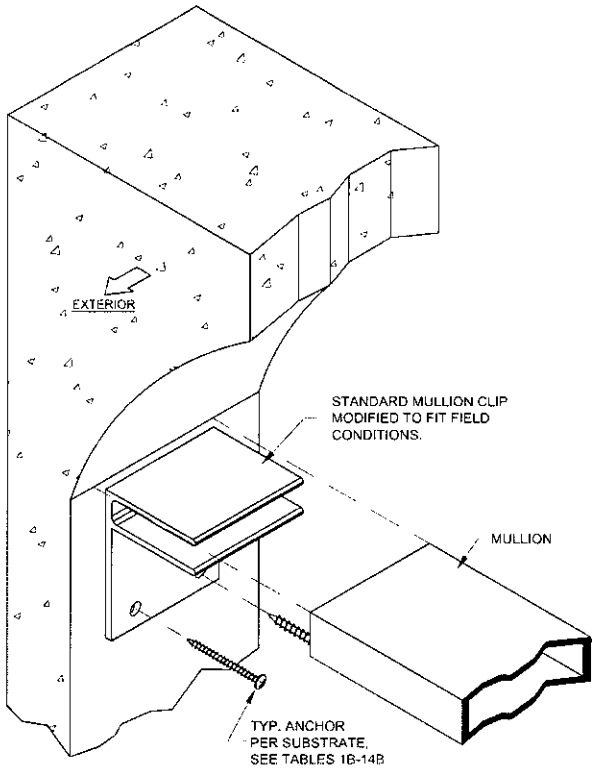
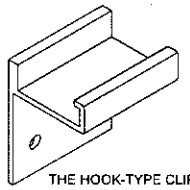


DETAIL E:
MULLION TO MULLION INTERSECTION

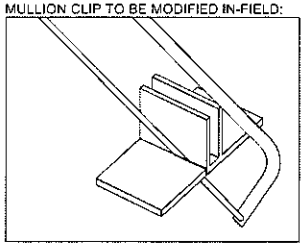


DETAIL F:
OPTIONAL FIELD-MODIFIED
MULLION F-CLIP



THE HOOK-TYPE CLIP MAY ALSO BE MODIFIED AND USED AS AN F-CLIP.

MULLION CLIP TO BE MODIFIED IN-FIELD:



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REGISTRATION #29296

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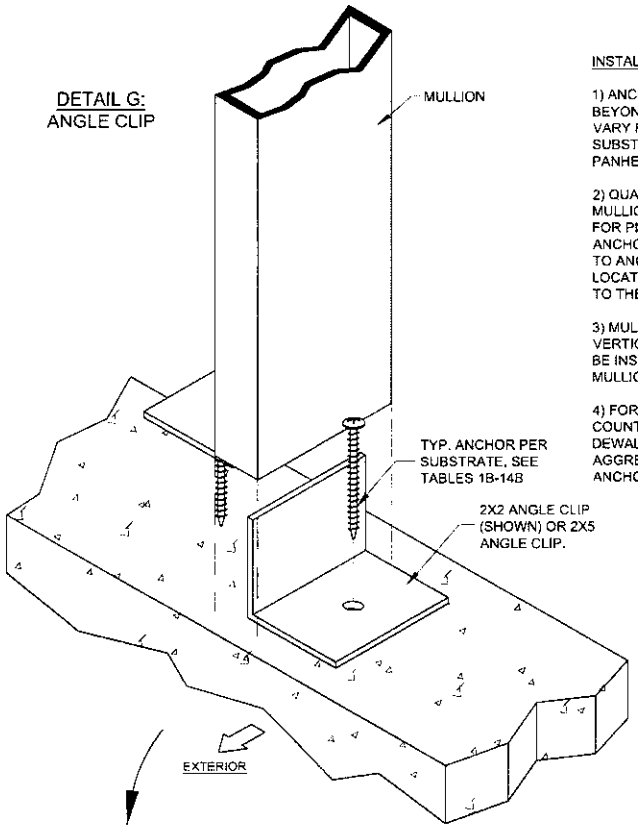
(305) 593-6590

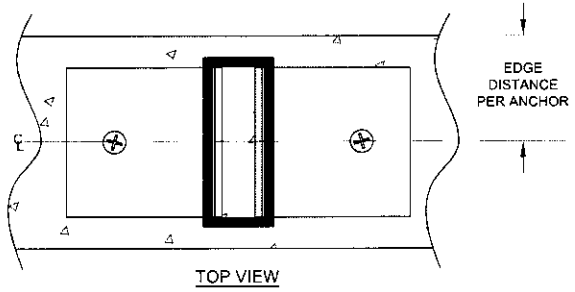
DRAWN	02/02/23
CHECKED	JENS ROSOWSKI
TITLE	ALUMINUM TUBE MULLIONS, CLIPPED (LM)
	INSTALLATION INSTRUCTIONS
SERIES	MULLS
SCALE	NTS
SHEET	5 OF 23
DRAWING	TUBEMULL-1
REVISION	A

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

DETAIL G:
ANGLE CLIP





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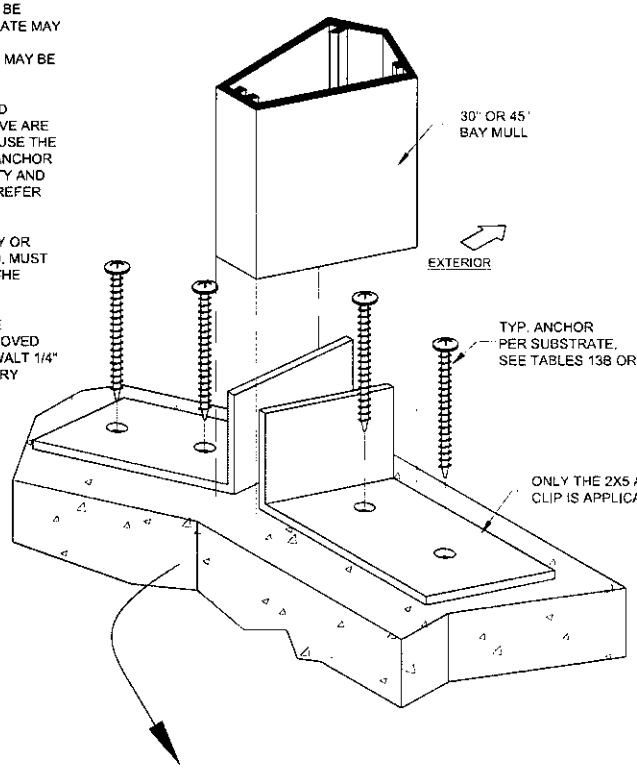
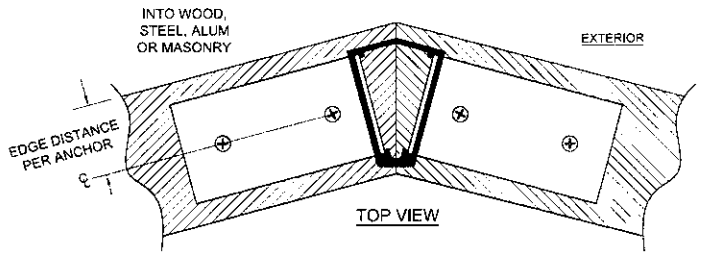
DETAIL H:
BAY MULLION
INSTALLATION





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REGISTRATION #29296

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Date:	02/02/23
Drawn:	JENS ROSOWSKI
Title:	ALUMINUM TUBE MULLIONS, CLIPPED (LM)
	INSTALLATION INSTRUCTIONS
Scale:	NTS
Sheet:	6 OF 23
Job No.:	TUBEMULL-1
Rev:	A

MULLS

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER
8/23/23

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 1A:

1" x 2" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																															
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Triang Loading	
		Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	111.8	408	129.4	331	93.2	408	115.5	325	79.8	408	107.7	321	69.9	408	104.3	319	62.1	408	104.0	318	55.9	408	104.0	318	46.6	408	104.0	318	39.9	408	104.0	318	34.9	408	104.0	318
	48 in	74.9	312	83.7	268	62.4	312	73.4	252	53.5	312	66.9	248	46.8	312	63.1	246	41.6	312	61.3	244	37.4	312	60.9	244	31.2	312	60.9	244	26.7	312	60.9	244	23.4	312	60.9	244
	50-5/8 in	63.8	281	70.6	234	53.2	281	61.5	228	45.6	281	55.7	224	39.9	281	52.1	222	35.5	281	50.1	220	31.9	281	49.3	219	26.6	281	49.3	219	22.8	281	49.3	219	19.9	281	49.3	219
	54 in	52.6	247	57.4	207	43.8	247	49.8	202	37.6	247	44.8	199	32.9	247	41.5	196	29.2	247	39.4	194	26.3	247	38.3	193	21.9	247	38.0	193	18.8	247	38.0	193	16.4	247	38.0	193
	60 in	38.3	200	41.2	170	32.0	200	35.4	166	27.4	200	31.5	163	24.0	200	28.9	160	21.3	200	27.0	158	19.2	200	25.9	157	16.0	200	25.0	156	13.7	200	25.0	156	12.0	200	25.0	156
	63 in	33.1	181	35.3	155	27.6	181	30.3	151	23.7	181	26.9	149	20.7	181	24.5	146	18.4	181	22.8	144	16.6	181	21.7	143	13.8	181	20.6	142	11.8	181	20.5	142	10.4	181	20.5	142
	66 in	28.8	165	30.5	142	24.0	165	26.1	139	20.6	165	23.1	136	18.0	165	21.0	134	16.0	165	19.4	132	14.4	165	18.4	131	12.0	165	17.2	129	10.3	165	17.1	129	9.0	165	17.1	129
	72 in	22.2	139	23.3	120	18.5	139	19.9	118	15.8	139	17.5	116																								
	76 in	18.9	124	19.7	109	15.7	124	16.8	106																												
	78 in	17.5	118	18.2	103																																

TABLE 1B:

Anchor/Clip Capacity (lbs) when using a 1" x 2" x 1/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU							Filled CMU				Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in)	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 2)		310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 0.97" Min. O.C. / Mullion Clip (Fig. 3)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
4 Anchors @ 1.53" Min. O.C. / Mullion Clip (Fig. 4)		420 lbs	1260 lbs	400 lbs	1700 lbs	N/A	320 lbs	740 lbs	380 lbs	960 lbs	852 lbs	N/A	340 lbs	400 lbs	N/A	885 lbs	1073 lbs	1073 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 5)		310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	389 lbs	946 lbs	442 lbs	537 lbs	536 lbs
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 6)		310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	230 lbs	370 lbs	320 lbs	580 lbs	517 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 0.97" O.C. thru 2x2 Angle Clip Pair (Fig. 7)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 8)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 0.875" Min. O.C. / U-Clip (Fig. 9 & 10)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs
1 Anchor / F-Clip (Fig. 11 & 12)		155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 0.97" Min. O.C. / F-Clip (Fig. 13)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs
2 Anchors @ 1.53" Min. O.C. / F-Clip (Fig. 14)		210 lbs	630 lbs	200 lbs	850 lbs	N/A	160 lbs	370 lbs	190 lbs	480 lbs	426 lbs	N/A	170 lbs	200 lbs	N/A	442 lbs	537 lbs	536 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

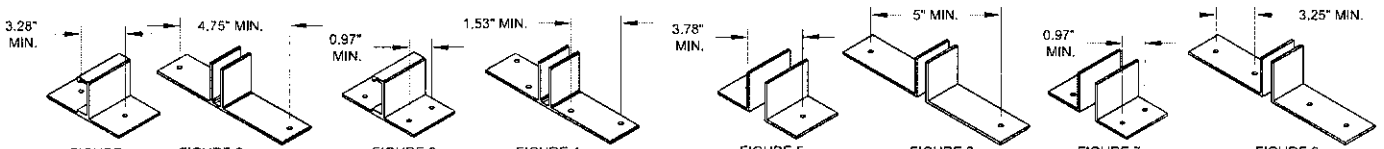


FIGURE 1 FIGURE 2 FIGURE 3 FIGURE 4 FIGURE 5 FIGURE 6 FIGURE 7 FIGURE 8

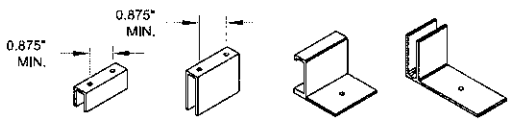


FIGURE 9 FIGURE 10 FIGURE 11 FIGURE 12

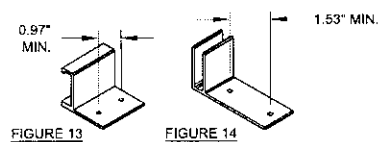


FIGURE 13 FIGURE 14

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

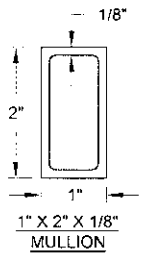
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{TABLE}}}{\text{MULLION CAP.}_{\text{TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2" X 1/8" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

DRWG	ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23	A
DWN BY	1 X 2 X 1/8 CAPACITIES	JENS ROSOWSKI	
CHK'D			
SHEET	MULLS	NTS	7 OF 23	TUBEMULL-1	

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E. P.E.# 58705

TABLE 2A:

1" x 2" x 3/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																													
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in			
		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
		Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	151.3	662	170.0	478	129.7	662	170.0	506	113.5	662	169.5	518	100.9	662	168.9	517	90.8	662	168.9	517	75.7	662	168.9	517	64.9	662	168.9	517	56.7	662	168.9	517
	48 in	121.6	507	136.0	419	101.4	507	119.2	410	86.9	507	108.7	403	76.0	507	102.6	396	67.6	507	99.6	397	60.8	507	99.0	396	50.7	507	99.0	396	43.4	507	99.0	396	38.0	507	99.0	396
	50-5/8 in	103.7	456	114.6	379	86.4	456	99.9	371	74.1	456	90.5	364	64.8	456	84.6	360	57.6	456	81.3	357	51.8	456	80.0	356	43.2	456	80.0	356	37.0	456	80.0	356	32.4	456	80.0	356
	54 in	85.4	400	93.3	336	71.2	400	80.9	328	61.0	400	72.7	322	53.4	400	67.3	318	47.5	400	64.0	315	42.7	400	62.3	314	35.6	400	61.8	313	30.5	400	61.8	313	26.7	400	61.8	313
	60 in	62.3	324	66.9	276	51.9	324	57.5	270	44.5	324	51.2	264	38.9	324	46.9	260	34.6	324	43.9	257	31.1	324	42.0	255	26.0	324	40.5	253	22.2	324	40.5	253	19.5	324	40.5	253
	63 in	53.8	294	57.4	252	44.8	294	49.2	245	38.4	294	43.6	241	33.6	294	39.8	237	29.9	294	37.1	234	26.9	294	35.2	232	22.4	294	33.5	230	19.2	294	33.4	230	16.8	294	33.4	230
	66 in	46.8	268	49.6	230	39.0	268	42.4	225	33.4	268	37.5	221	29.2	268	34.1	218	26.0	268	31.6	215	23.4	268	29.8	212	19.5	268	28.0	210	16.7	268	27.7	209	14.6	268	27.7	209
	72 in	36.0	225	37.9	196	30.0	225	32.2	191	25.7	225	28.4	188	22.5	225	25.6	185	20.0	225	23.5	182	18.0	225	22.1	180	15.0	225	20.3	177	12.9	225	19.6	176	11.3	225	19.6	176
	76 in	30.6	202	32.0	177	25.5	202	27.2	173	21.9	202	23.9	170	19.2	202	21.5	167	17.0	202	19.7	165	15.3	202	18.4	163	12.8	202	16.7	160								
	78 in	28.3	192	29.6	168	23.6	192	25.1	165	20.2	192	22.0	162	17.7	192	19.7	159	15.7	192	18.1	157	14.2	192	16.8	155												
	90 in	18.5	144	19.0	128	15.4	144	16.1	126																												

TABLE 2B:

Anchor/Clip Capacity (lbs) when using a 1" x 2" x 3/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1):		310 lbs	830 lbs	220 lbs	670 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.3" Min. O.C. / Mullion Clip (Fig. 2):		353 lbs	1260 lbs	380 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 3):		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 0.437" Min. O.C. / U-Clip (Fig. 4):		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	536 lbs
1 Anchor / F-Clip (Fig. 5):		155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 1.3" Min. O.C. / F-Clip (Fig. 6):		177 lbs	630 lbs	190 lbs	N/A	N/A	N/A	370 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

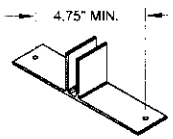


FIGURE 1

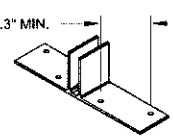


FIGURE 2

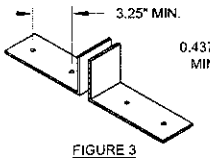


FIGURE 3

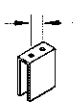


FIGURE 4

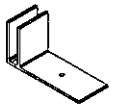


FIGURE 5

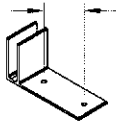


FIGURE 6

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

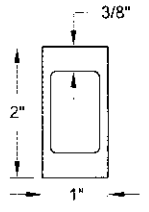
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req.}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{MULLION SPAN}}}{\text{MULLION CAP.}_{\text{MULLION SPAN}}}\right) = \text{ANCHOR CAP.}_{req.}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2" X 3/8" MULLION

PRODUCT REVISED
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NOA-No. 23-0913.04
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Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
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(941) 480-1600

REGISTRATION #29296

02/02/23

Impact Resistant Windows & Doors
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HIALEAH, FL 33018
(305) 593-6590

ALUMINUM TUBE MULLIONS, CLIPPED (LM) | 1 X 2 X 3/8 CAPACITIES | MULLS

JENS ROSOWSKI | TUBEMULL-1 | A

8 OF 23 | NTS

ANTHONY LYNN MILLER LICENSE No. 58705 8/23/23 STATE OF FLORIDA PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 3A:

1" x 2-1/2" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																											
		50 in				60 in				70 in				80 in				90 in				100 in				120 in			
		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading	
		Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	163.1	714	170.0	478	139.8	714	170.0	506	122.4	714	170.0	519	108.8	714	170.0	521	97.9	714	170.0	521	81.6	714	170.0	521
	48 in	131.2	546	146.6	452	109.3	546	128.5	442	93.7	546	117.3	435	82.0	546	110.6	430	72.9	546	107.3	428	65.6	546	106.7	427	54.6	546	106.7	427
	50-5/8 in	111.8	491	123.6	409	93.2	491	107.7	400	79.9	491	97.6	393	69.9	491	91.2	388	62.1	491	87.7	385	55.9	491	86.3	384	46.6	491	86.3	384
	54 in	92.1	432	100.6	382	76.8	432	87.2	354	65.8	432	78.4	348	57.6	432	72.6	343	51.2	432	69.0	340	46.1	432	67.1	338	38.4	432	66.6	337
	60 in	67.2	350	72.1	297	56.0	350	62.0	291	48.0	350	55.2	285	42.0	350	50.5	281	37.3	350	47.3	277	33.6	350	45.3	275	28.0	350	43.7	273
	63 in	58.0	317	61.9	271	48.3	317	53.1	265	41.4	317	47.1	260	36.3	317	42.9	256	32.2	317	39.9	253	29.0	317	38.0	250	24.2	317	36.1	248
	66 in	50.5	289	53.5	248	42.0	289	45.8	243	36.0	289	40.5	238	31.5	289	36.7	235	28.0	289	34.1	231	25.2	289	32.2	229	21.0	289	30.2	226
	72 in	38.9	243	40.8	211	32.4	243	34.8	206	27.8	243	30.6	203	24.3	243	27.6	199	21.6	243	25.4	196	19.4	243	23.8	194	16.2	243	21.8	191
	76 in	33.0	218	34.5	190	27.5	218	29.3	186	23.6	218	25.7	183	20.7	218	23.1	180	18.4	218	21.2	177	16.5	218	19.8	175	13.8	218	18.0	172
	78 in	30.6	207	31.9	181	25.5	207	27.1	178	21.8	207	23.7	174	19.1	207	21.3	171	17.0	207	19.5	169	15.3	207	18.1	167	12.7	207	16.4	164
	90 in	19.9	155	20.5	138	16.6	155	17.3	136																				
	96 in	16.4	137	16.8	122																								

1" x 2-1/2" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		140 in				160 in			
		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading	
		Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)
Mullion Span	42 in	69.9	714	170.0	521	61.2	714	170.0	521
	48 in	46.8	546	106.7	427	41.0	546	106.7	427
	50-5/8 in	39.9	491	86.3	384	34.9	491	86.3	384
	54 in	32.9	432	66.6	337	29.8	432	66.6	337
	60 in	24.0	350	43.7	273	21.0	350	43.7	273
	63 in	20.7	317	36.0	248	18.1	317	36.0	248
	66 in	18.0	289	29.9	226	15.8	289	29.9	226
	72 in	13.9	243	21.1	190	12.1	243	21.1	190
	76 in	11.8	218	17.1	171	10.3	218	17.0	170
	78 in								
	90 in								
	96 in								

TABLE 3B:

Anchor/Clip Capacity (lbs) when using a 1" x 2-1/2" x 1/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in)	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in)	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.47" Min. O.C. / Mullion Clip (Fig. 2)		403 lbs	1260 lbs	395 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 3)		310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	369 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 1.47" O.C. thru 2x2 Angle Clip Pair (Fig. 4)		403 lbs	1260 lbs	395 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 1.47" Min. O.C. / U-Clip (Fig. 5)		202 lbs	630 lbs	198 lbs	N/A	N/A	N/A	370 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 0.734" Min. O.C. / U-Clip (Fig. 6)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
1 Anchor / F-Clip (Fig. 7)		155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 1.47" Min. O.C. / F-Clip (Fig. 8)		202 lbs	630 lbs	198 lbs	N/A	N/A	N/A	370 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

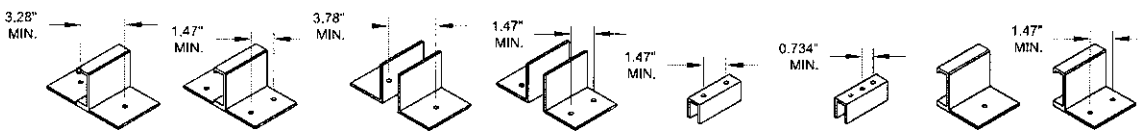


FIGURE 1 FIGURE 2 FIGURE 3 FIGURE 4 FIGURE 5 FIGURE 6 FIGURE 7 FIGURE 8

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

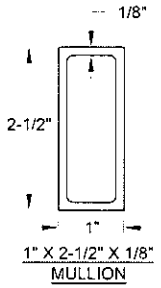
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ.}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM CLIP}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2-1/2" X 1/8" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3760 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

ALUMINUM TUBE MULLIONS, CLIPPED (LM) | 02/02/23 | JENS ROSOWSKI | TUBEMULL-1 | A
1 X 2-1/2 X 1/8 CAPACITIES | 9 OF 23
MULLS | NTS

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E. P.E.# 58705

TABLE 4A:

1" x 3" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																															
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading	
		Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	476	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	157.6	1149	170.0	521	131.3	1149	170.0	521	112.6	1149	170.0	521	98.5	1149	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	584	150.8	880	170.0	630	132.0	880	170.0	661	117.3	880	170.0	677	105.6	880	170.0	680	88.0	880	170.0	680	75.4	880	170.0	680	66.0	880	170.0	680
	50-5/8 in	170.0	747	170.0	563	150.0	791	170.0	631	128.6	791	157.1	632	112.5	791	146.9	625	100.0	791	141.1	620	90.0	791	138.9	618	75.0	791	138.9	618	64.3	791	138.9	618	56.2	791	138.9	618
	54 in	148.3	695	161.9	583	123.6	695	140.4	570	105.9	695	126.2	560	92.7	695	116.9	552	82.4	695	111.1	547	74.2	695	108.1	544	61.8	695	107.3	543	53.0	695	107.3	543	46.3	695	107.3	543
	60 in	108.1	563	116.1	479	90.1	563	99.8	466	77.2	563	88.9	459	67.6	563	81.4	452	60.1	563	76.2	447	54.1	563	72.9	443	45.0	563	70.4	440	38.6	563	70.4	440	33.8	563	70.4	440
	63 in	93.4	511	99.6	437	77.8	511	85.4	427	66.7	511	75.8	419	58.4	511	69.0	412	51.9	511	64.3	407	46.7	511	61.1	403	38.9	511	58.1	400	33.4	511	57.9	399	29.2	511	57.9	399
	66 in	81.2	465	86.1	400	67.7	465	73.7	391	58.0	465	65.1	384	50.8	465	59.1	378	45.1	465	54.8	373	40.6	465	51.8	369	33.8	465	48.6	365	29.0	465	48.1	364	25.4	465	48.1	364
	72 in	62.6	391	65.7	339	52.1	391	56.0	332	44.7	391	49.2	326	39.1	391	44.4	321	34.8	391	40.9	316	31.3	391	38.3	312	26.1	391	35.2	308	22.3	391	34.0	306	19.6	391	33.9	305
	76 in	53.2	351	55.6	306	44.3	351	47.3	300	38.0	351	41.5	295	33.2	351	37.3	290	29.6	351	34.2	286	26.6	351	31.9	282	22.2	351	28.9	277	19.0	351	27.6	275	16.6	351	27.3	274
	78 in	49.2	333	51.3	292	41.0	333	43.6	286	35.1	333	38.2	281	30.8	333	34.3	276	27.3	333	31.4	272	24.6	333	29.2	269	20.5	333	26.4	264	17.6	333	25.0	261	15.4	333	24.6	260
	90 in	32.0	250	33.0	222	26.7	250	27.9	218	22.9	250	24.3	214	20.0	250	21.7	211	17.8	250	19.7	208	16.0	250	18.2	205	13.3	250	16.1	201								
	96 in	26.4	220	27.1	197	22.0	220	22.9	193	18.9	220	19.9	190	16.5	220	17.7	187	14.7	220	16.0	184																
	108 in	18.5	174	18.9	157																																
	111 in	17.1	165	17.4	149																																

TABLE 4B:

Anchor/Clip Capacity (lbs) when using a 1" x 3" x 1/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in)	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in)	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	945 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.97" Min. O.C. / Mullion Clip (Fig. 2)		537 lbs	1260 lbs	412 lbs	1712 lbs	556 lbs	361 lbs	740 lbs	456 lbs	1018 lbs	892 lbs	N/A	340 lbs	474 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 0.984" Min. O.C. / Mullion Clip (Fig. 3)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 4)		310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	389 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 1.97" O.C. thru 2x2 Angle Clip Pair (Fig. 5)		537 lbs	1260 lbs	412 lbs	1712 lbs	559 lbs	361 lbs	740 lbs	456 lbs	1018 lbs	892 lbs	N/A	340 lbs	474 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 0.984" O.C. thru 2x2 Angle Clip Pair (Fig. 6)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Anchors @ 1.97" Min. O.C. / U-Clip (Fig. 7)		268 lbs	630 lbs	206 lbs	856 lbs	279 lbs	180 lbs	370 lbs	228 lbs	509 lbs	446 lbs	N/A	170 lbs	237 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 0.984" Min. O.C. / U-Clip (Fig. 8)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
1 Anchor / F-Clip (Fig. 9)		155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 1.97" Min. O.C. / F-Clip (Fig. 10)		268 lbs	630 lbs	206 lbs	856 lbs	279 lbs	180 lbs	370 lbs	228 lbs	509 lbs	446 lbs	N/A	170 lbs	237 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 0.984" Min. O.C. / F-Clip (Fig. 11)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

CIRCLED VALUES ARE USED IN THE EXAMPLES ON SHEETS 21 & 22.

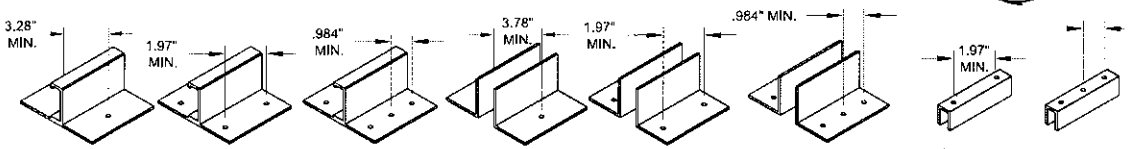


FIGURE 1 FIGURE 2 FIGURE 3 FIGURE 4 FIGURE 5 FIGURE 6 FIGURE 7 FIGURE 8

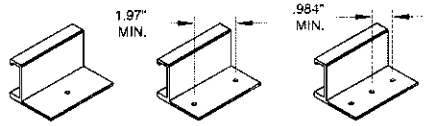


FIGURE 9 FIGURE 10 FIGURE 11

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

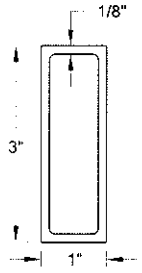
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{req'd}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 3" X 1/8" MULLION

PRODUCT REVISED
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NOA-No. 23-0913.04
Expiration Date 03/28/2028
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Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

02/02/23 JENS ROSOWSKI

ALUMINUM TUBE MULLIONS, CLIPPED (LM)
1 X 3 X 1/8 CAPACITIES

TUBEMULL-1 | A
10 OF 23
NTS
MULLS

ANTHONY LYNN MILLER LICENSE No. 58705 8/23/23 STATE OF FLORIDA PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 5A:

1" x 4" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																													
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading	
		Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	564	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680	163.7	1910	170.0	680	143.3	1910	170.0	680
	50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756	162.8	1717	170.0	756	139.6	1717	170.0	756	122.1	1717	170.0	756
	54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837	161.0	1509	170.0	856	134.2	1509	170.0	861	115.0	1509	170.0	861	100.6	1509	170.0	861
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	167.7	1223	170.0	878	146.7	1223	170.0	944	130.4	1223	165.5	970	117.4	1223	158.3	962	97.8	1223	152.8	955	83.8	1223	152.8	955	73.4	1223	152.8	955
	63 in	170.0	930	170.0	745	169.0	1109	170.0	850	144.6	1109	164.5	910	126.7	1109	149.8	995	112.6	1109	139.6	884	101.4	1109	132.7	875	84.5	1109	126.2	867	72.4	1109	125.7	866	63.4	1109	125.7	866
	66 in	170.0	974	170.0	789	147.0	1010	160.0	850	[illegible]	[illegible]	141.4	834	110.2	1010	128.3	820	98.0	1010	119.0	809	88.2	1010	112.5	801	73.5	1010	105.5	792	63.0	1010	104.4	789	55.1	1010	104.4	789
	72 in	135.8	849	142.7	737	113.2	849	121.5	7[illegible]	[illegible]	[illegible]	116.9	708	84.9	849	96.4	696	75.5	849	88.8	686	67.9	849	83.1	678	56.6	849	76.3	668	48.5	849	73.8	654	42.4	849	73.7	663
	76 in	115.5	762	120.7	665	96.2	762	102.6	652	[illegible]	[illegible]	90.0	640	72.2	762	80.9	629	64.2	762	74.2	620	57.7	762	69.2	612	48.1	762	62.5	602	41.2	762	59.9	597	36.1	762	59.4	595
	78 in	106.8	723	111.4	633	89.0	723	94.6	621	76.3	723	82.9	609	66.8	723	74.4	599	59.4	723	68.1	591	53.4	723	63.4	583	44.5	723	57.3	573	38.2	723	54.3	567	33.4	723	53.5	565
	90 in	89.5	543	71.8	483	58.0	543	60.6	474	49.7	543	52.8	466	43.5	543	47.1	458	38.6	543	42.8	452	34.8	543	39.5	446	29.0	543	34.9	436	24.8	543	32.1	430	21.7	543	30.7	426
	96 in	57.3	478	58.9	427	47.8	478	49.7	419	40.9	478	43.2	412	[illegible]	478	38.5	406	31.8	478	34.8	400	28.7	478	32.0	395	23.9	478	28.1	386	20.5	478	25.6	380	17.9	478	24.2	376
	108 in	40.2	377	41.1	341	33.5	377	34.6	335	28.7	377	30.0	330	[illegible]	377	26.6	325	22.4	377	24.0	321	20.1	377	22.0	317	16.8	377	19.0	309	14.4	377	17.1	304				
	111 in	37.1	357	37.8	323	30.9	357	31.8	316	26.5	357	27.6	313	23.2	357	24.4	309	20.6	357	22.0	305	18.5	357	20.1	301	15.4	357	17.4	294								
	120 in	29.3	306	29.8	278	24.5	306	25.1	274	21.0	306	21.7	270	18.3	306	19.2	267	16.3	306	17.3	263																
	144 in	17.0	212	17.2	196																																

TABLE 5B:

Anchor/Clip Capacity (lbs) when using a 1" x 4" x 1/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 2.97" Min. O.C. / Mullion Clip (Fig. 2)		620 lbs	1260 lbs	438 lbs	1738 lbs	1817 lbs	454 lbs	740 lbs	629 lbs	1152 lbs	982 lbs	N/A	340 lbs	642 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 1.48" Min. O.C. / Mullion Clip (Fig. 3)		605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 4)		310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	389 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 2.97" O.C. thru 2x2 Angle Clip Pair (Fig. 5)		620 lbs	1260 lbs	438 lbs	1738 lbs	1817 lbs	454 lbs	740 lbs	629 lbs	1152 lbs	982 lbs	N/A	340 lbs	642 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 1.48" O.C. thru 2x2 Angle Clip Pair (Fig. 6)		605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Anchors @ 2.97" Min. O.C. / U-Clip (Fig. 7)		310 lbs	630 lbs	219 lbs	869 lbs	909 lbs	227 lbs	370 lbs	315 lbs	576 lbs	491 lbs	N/A	170 lbs	321 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.48" Min. O.C. / U-Clip (Fig. 8)		303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
1 Anchor / F-Clip (Fig. 9)		155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 2.97" Min. O.C. / F-Clip (Fig. 10)		310 lbs	630 lbs	219 lbs	869 lbs	909 lbs	227 lbs	370 lbs	315 lbs	576 lbs	491 lbs	N/A	170 lbs	321 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.48" Min. O.C. / F-Clip (Fig. 11)		303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

CIRCLED VALUES ARE USED IN THE EXAMPLES ON SHEETS 21 & 22.

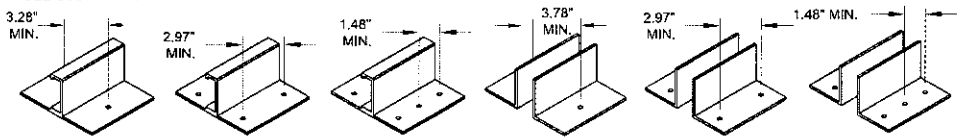


FIGURE 1 FIGURE 2 FIGURE 3 FIGURE 4 FIGURE 5 FIGURE 6 FIGURE 7 FIGURE 8

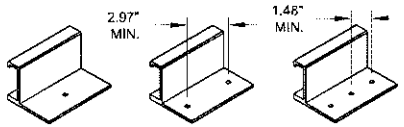


FIGURE 9 FIGURE 10 FIGURE 11

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

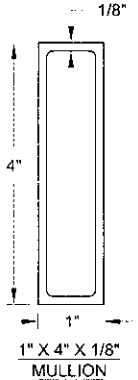
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req.}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ'D}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 4" X 1/8" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
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Revisions:
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JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

DWG	02/02/23	ALUMINUM TUBE MULLIONS, CLIPPED (LM)	A
DRAWN	JENS ROSOWSKI	1 X 4 X 1/8 CAPACITIES	TUBEMULL-1
CHKD			
SCALE	NTS	MULLS	11 OF 23

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER
8/23/23
A. LYNN MILLER, P.E., P.E.# 58705

TABLE 6A:

1" x 4" x 3/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement

Mullion Span	Opening Dimension: 50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
	Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading	
	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1736	170.0	521	170.0	1983	170.0	521
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	861	170.0	1913	170.0	861	170.0	2231	170.0	861	166.4	2346	170.0	861
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996	170.0	1771	170.0	1033	152.0	1900	170.0	1063	130.3	1900	170.0	1063	114.0	1900	170.0	1063
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	170.0	1673	170.0	1076	157.6	1723	170.0	1122	131.3	1723	170.0	1169	112.6	1723	170.0	1171	98.5	1723	170.0	1171
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1556	170.0	1086	152.3	1570	170.0	1155	137.0	1570	170.0	1210	114.2	1570	164.0	1230	97.9	1570	162.2	1227	85.7	1570	162.2	1227
72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	150.8	1320	166.2	1101	132.0	1320	149.9	1082	117.3	1320	137.9	1067	105.6	1320	129.2	1054	88.0	1320	118.7	1036	75.4	1320	114.7	1032	66.0	1320	114.5	1031
78 in	170.0	1122	170.0	937	149.6	1184	159.4	1013	128.2	1184	139.9	994	112.2	1184	125.7	978	99.7	1184	115.3	964	89.8	1184	107.5	952	74.8	1184	97.6	935	64.1	1184	93.1	927	56.1	1184	92.3	925
78 in	166.1	1124	170.0	967	138.4	1124	147.0	965	118.6	1124	128.8	947	103.8	1124	115.6	931	92.3	1124	105.8	918	83.0	1124	98.5	906	69.2	1124	89.0	890	59.3	1124	84.3	881	51.9	1124	83.2	878
90 in	108.1	844	111.5	750	90.1	844	94.3	736	77.2	844	82.1	724	67.6	844	73.3	712	60.1	844	65.5	702	54.0	844	61.4	693	45.0	844	54.2	678	38.6	844	50.0	668	33.8	844	47.7	662
96 in	89.1	742	91.5	663	74.2	742	77.2	652	63.6	742	67.2	641	55.7	742	59.8	631	49.5	742	54.1	622	44.5	742	49.8	614	37.1	742	43.6	600	31.8	742	39.8	590	27.8	742	37.5	584
108 in	62.6	586	63.9	530	52.1	586	53.6	521	44.7	586	46.6	513	39.1	586	41.4	505	34.8	586	37.3	498	31.3	586	34.2	492	26.1	586	29.6	481	22.3	586	26.6	472	19.5	586	24.7	466
114 in	52.8	555	58.8	503	48.0	555	49.5	495	41.2	555	42.9	487	36.0	555	38.0	480	32.0	555	34.2	473	28.8	555	31.3	467	24.0	555	27.1	457	20.6	555	24.3	448	18.0	555	22.4	442
120 in	45.6	475	46.4	433	38.0	475	39.0	426	32.6	475	33.7	420	28.5	475	29.8	414	25.3	475	26.8	409	22.8	475	24.5	404	19.0	475	21.1	395	16.3	475	18.7	387	14.3	475	17.2	381
144 in	26.4	330	26.7	305	22.0	330	22.4	301	18.9	330	19.3	297	16.5	330	17.0	293																						

TABLE 6B:

Anchor/Clip Capacity (lbs) when using a 1" x 4" x 3/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in)	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in)	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 2.375" Min. O.C. / Mullion Clip (Fig. 2)		620 lbs	1260 lbs	440 lbs	1740 lbs	1109 lbs	402 lbs	740 lbs	532 lbs	1077 lbs	931 lbs	N/A	340 lbs	547 lbs	N/A	885 lbs	1073 lbs	1073 lbs
8 Anchors @ 1.25" Min. O.C. / Mullion Clip (Fig. 3)		707 lbs	1420 lbs	760 lbs	N/A	N/A	N/A	1480 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 4)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 3" O.C. thru 2x5 Angle Clip Pair (Fig. 5)		930 lbs	1890 lbs	660 lbs	2610 lbs	2644 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1482 lbs	1122 lbs	510 lbs	978 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
4 Anchors @ 0.79" Min. O.C. / U-Clip (Fig. 6)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1073 lbs
2 Anchors @ 2.375" Min. O.C. / F-Clip (Fig. 7)		310 lbs	630 lbs	212 lbs	862 lbs	555 lbs	201 lbs	370 lbs	266 lbs	536 lbs	466 lbs	N/A	170 lbs	274 lbs	N/A	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.25" Min. O.C. / F-Clip (Fig. 8)		353 lbs	1260 lbs	380 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

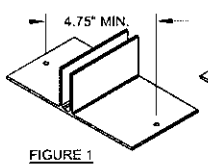
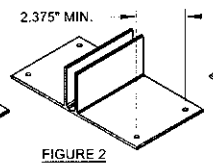


FIGURE 1



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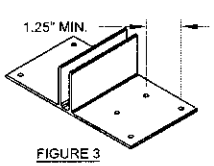

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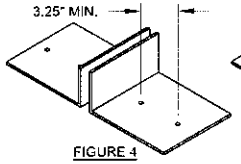

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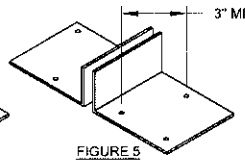

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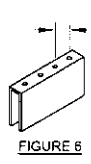

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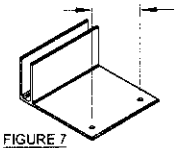

FIGURE 7

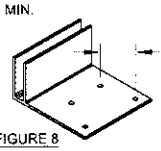

FIGURE 8

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

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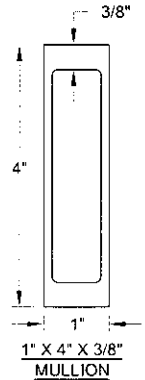
$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ'D}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 4" X 3/8" MULLION

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REGISTRATION #29296

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DRAWN	JENS ROSOWSKI
CHKD	TUBEMULL-1
APVD	A
DATE	02/02/23
SCALE	NTS
SHEET	12 OF 23

ALUMINUM TUBE MULLIONS, CLIPPED (LM)
1 X 4 X 3/8 CAPACITIES
MULLS

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
8/23/23
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 7A:

1" x 2-1/8" x 1/8" Fin Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement	Opening Dimension																													
	50 in				60 in				70 in				80 in		90 in		100 in		120 in		140 in		160 in							
	Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading	Trap/Triang. Loading	Rectangular Loading	Trap/Triang Loading	Rectangular Loading	Trap/Triang Loading	Rectangular Loading	Trap/Triang. Loading	Rectangular Loading	Trap/Triang. Loading	Rectangular Loading	Trap/Triang Loading						
	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft)	Anchor Capacity Required (lbs)
Mullion Span 42 in	144.2	526	167.0	426	120.2	526	148.9	419	103.0	526	136.9	414	90.1	526	134.5	411	80.1	526	134.1	411	72.1	526	134.1	411	60.1	526	134.1	411	51.5	526	134.1	411	45.1	526	134.1	411
48 in	96.6	403	108.0	333	80.5	403	94.7	325	69.0	403	86.4	320	60.4	403	61.4	317	53.7	403	79.1	315	48.3	403	78.6	314	40.3	403	78.6	314	34.5	403	78.6	314	30.2	403	78.6	314
50-5/8 in	82.3	362	91.0	301	68.6	362	79.3	294	58.8	362	71.9	289	51.5	362	67.2	286	45.7	362	64.6	284	41.2	362	63.6	283	34.3	362	63.5	283	29.4	362	63.5	283	25.7	362	63.5	283
54 in	67.8	318	74.1	267	56.5	318	64.2	261	48.5	318	57.7	258	42.4	318	53.5	253	37.7	318	50.8	250	33.9	318	49.5	249	28.3	318	49.1	248	24.2	318	49.1	248	21.2	318	49.1	248
60 in	49.5	258	53.1	219	41.2	258	45.7	214	35.3	258	40.7	210	30.9	258	37.2	207	27.5	258	34.9	204	24.7	258	33.4	203	20.6	258	32.2	201	17.7	258	32.2	201	15.5	258	32.2	201
63 in	42.7	234	45.6	200	35.6	234	39.1	195	30.5	234	34.7	192	26.7	234	31.6	189	23.7	234	29.4	186	21.4	234	28.0	184	17.8	234	26.6	183	15.3	234	26.5	183	13.4	234	26.5	183
66 in	37.2	213	39.4	183	31.0	213	33.7	179	26.5	213	29.8	176	23.2	213	27.0	173	20.6	213	25.1	170	18.6	213	23.7	169	15.5	213	22.2	167	13.3	213	22.0	166	11.6	213	22.0	166
72 in	28.6	179	30.1	155	23.9	179	25.6	152	20.4	179	22.5	149	17.9	179	20.3	147	15.9	179	16.7	145	14.3	179	17.5	143	11.9	179	18.1	141								
76 in	24.3	161	25.4	140	20.3	161	21.6	137	17.4	161	19.0	135	15.2	161	17.0	133																				
78 in	22.5	152	23.5	133	18.8	152	19.9	131	16.1	152	17.5	128																								

TABLE 7B:

Anchor/Clip Capacity (lbs) when using a 1-1/4" x 2-1/8" x 1/8" Fin Tube Mullion	Substrate	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 1):		310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	230 lbs	370 lbs	320 lbs	580 lbs	517 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 2):		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

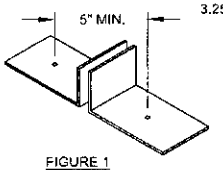


FIGURE 1

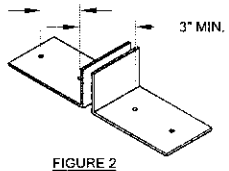


FIGURE 2

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

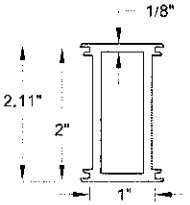
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req'd}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{ANCHOR TABLE}}}{\text{MULLION CAP.}_{\text{MULLION TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{req'd}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2-1/8" X 1/8" FIN MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

DATE	02/02/23
DRAWN BY	JENS ROSOWSKI
APPROVED BY	TUBEMULL-1
SCALE	NTS
SHEET	13 OF 23
DESCRIPTION	ALUMINUM TUBE MULLIONS, CLIPPED (LM)
	1 X 2-1/8 X 1/8 FIN CAPACITIES
	MULLS
REVISION	A

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 8A:

2" x 4" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement	Opening Dimension																															
	50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in	
	Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading	Trap/Tnang. Loading
Mullion Span	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856	170.0	1913	170.0	861	165.9	2177	170.0	861	145.2	2177	170.0	861
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996	169.3	1764	170.0	1033	141.1	1764	170.0	1063	120.9	1764	170.0	1063	105.8	1764	170.0	1063
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	162.5	1600	170.0	1076	146.3	1600	170.0	1122	121.9	1600	170.0	1169	104.5	1600	170.0	1171	91.4	1600	170.0	1171
66 in	170.0	974	170.0	789	170.0	1189	170.0	903	170.0	1364	170.0	1002	159.0	1458	170.0	1086	141.3	1456	170.0	1155	127.2	1458	162.3	1155	106.0	1456	152.3	1142	90.9	1458	150.6	1139	79.5	1458	150.6	1139
72 in	170.0	1063	170.0	878	163.3	1225	170.0	1009	140.0	1225	154.2	1022	122.5	1225	139.1	1005	108.9	1225	128.0	990	98.0	1225	120.9	979	81.7	1225	110.1	964	70.0	1225	105.9	958	61.2	1225	105.3	957
76 in	165.6	1099	170.0	937	138.9	1099	148.0	940	119.0	1099	129.8	923	104.1	1099	116.7	908	92.6	1099	107.0	895	83.3	1099	99.8	864	69.4	1099	90.6	868	59.5	1099	86.4	861	52.1	1099	85.6	859
78 in	154.1	1044	160.7	914	128.4	1044	136.5	896	110.1	1044	119.6	879	96.3	1044	107.3	865	85.6	1044	98.2	852	77.1	1044	91.4	841	64.2	1044	82.6	826	55.0	1044	78.3	818	48.2	1044	77.2	815
90 in	100.3	784	103.5	696	83.6	784	87.5	684	71.7	784	76.2	672	62.7	784	68.0	661	55.7	784	61.8	651	50.2	784	57.0	643	41.8	784	50.3	629	35.8	784	46.4	620	31.4	784	44.3	615
96 in	82.7	689	85.0	616	68.9	689	71.7	605	59.1	689	62.3	595	51.7	689	55.5	586	45.9	689	50.3	577	41.3	689	46.2	570	34.4	689	40.5	557	29.5	689	37.0	548	25.8	689	34.8	542
108 in	58.1	544	59.3	492	48.4	544	49.9	484	41.5	544	43.3	476	36.3	544	38.4	469	32.3	544	34.6	463	29.0	544	31.7	457	24.2	544	27.5	446	20.7	544	24.7	438	18.1	544	22.9	432
111 in	53.5	515	54.6	467	44.6	515	45.9	459	38.2	515	39.8	452	33.4	515	35.2	446	29.7	515	31.8	439	26.7	515	29.1	434	22.3	515	25.1	424	19.1	515	22.5	416	16.7	515	20.8	410
120 in	42.3	441	43.1	402	35.3	441	36.2	396	30.2	441	31.3	390	26.5	441	27.7	384	23.5	441	24.9	379	21.2	441	22.7	375	17.6	441	19.5	366	15.1	441	17.4	359				
144 in	24.5	306	24.8	282	20.4	306	20.8	279	17.5	306	17.9	275																								

TABLE 8B:

Anchor/Clip Capacity (lbs) when using a 2" x 4" x 1/8" Tube Mullion	Substrate	3k Concrete				3 5k Conc	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
4 Anchors @ 2.94" Min. O.C. / Mullion Clip (Fig. 1):		620 lbs	1260 lbs	437 lbs	1737 lbs	1739 lbs	448 lbs	740 lbs	618 lbs	1143 lbs	977 lbs	N/A	340 lbs	631 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 1.47" Min. O.C. / Mullion Clip (Fig. 2):		605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
4 Total Anchors @ 2.94" O.C. thru 2x5 Angle Clip Pair (Fig. 3):		620 lbs	1260 lbs	437 lbs	1737 lbs	1739 lbs	448 lbs	740 lbs	618 lbs	1143 lbs	977 lbs	N/A	340 lbs	631 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 1.47" O.C. thru 2x5 Angle Clip Pair (Fig. 4):		605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Anchors @ 2.94" Min. O.C. / U-Clip (Fig. 5):		310 lbs	630 lbs	218 lbs	868 lbs	869 lbs	224 lbs	370 lbs	309 lbs	572 lbs	488 lbs	N/A	170 lbs	316 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.47" Min. O.C. / U-Clip (Fig. 6):		303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
4 Anchors @ 0.98" Min. O.C. / U-Clip (Fig. 7):		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 2.94" Min. O.C. / F-Clip (Fig. 8):		310 lbs	630 lbs	218 lbs	868 lbs	869 lbs	224 lbs	370 lbs	309 lbs	572 lbs	488 lbs	N/A	170 lbs	316 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.47" Min. O.C. / F-Clip (Fig. 9):		303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

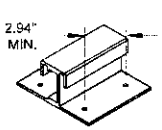


FIGURE 1

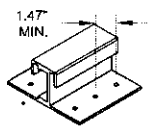
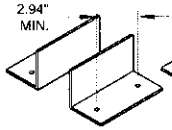


FIGURE 2



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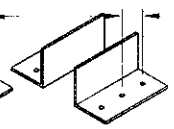

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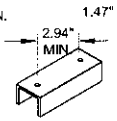
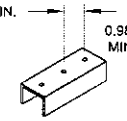


FIGURE 5



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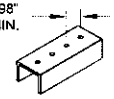


FIGURE 7

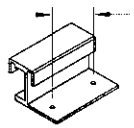


FIGURE 8

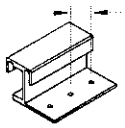


FIGURE 9

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

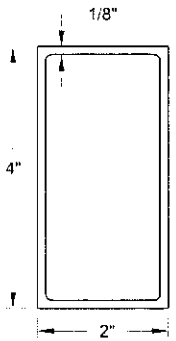
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ.}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 4" X 1/8" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29286

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

ALUMINUM TUBE MULLIONS, CLIPPED (LM) | 02/02/23 | JENS ROSOWSKI | TUBEMULL-1 | A
2 X 4 X 1/8 CAPACITIES | 14 OF 23
MULLS | NTS

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER 8/23/23

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 9A:

2" x 4" x 1/4" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement	Opening Dimension																													
	50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
	Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading		Rectangular Loading		Trap/Tnang. Loading	
Mullion Span	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/in²)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1736	170.0	521	170.0	1983	170.0	521
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856	170.0	1913	170.0	861	170.0	2231	170.0	861	170.0	2550	170.0	861
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996	170.0	1771	170.0	1033	170.0	2125	170.0	1063	170.0	2479	170.0	1063	170.0	2833	170.0	1063
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	170.0	1673	170.0	1076	170.0	1859	170.0	1122	170.0	2231	170.0	1160	170.0	2603	170.0	1171	163.0	2853	170.0	1171
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1558	170.0	1086	170.0	1753	170.0	1155	170.0	1948	170.0	1210	170.0	2338	170.0	1275	162.0	2599	170.0	1266	141.8	2598	170.0	1266
72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126	170.0	1700	170.0	1228	170.0	1913	170.0	1315	170.0	2125	170.0	1387	145.6	2184	170.0	1488	124.8	2184	170.0	1529	109.2	2184	170.0	1530
75 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209	170.0	1794	170.0	1322	165.1	1960	170.0	1421	148.6	1960	170.0	1505	123.8	1960	161.6	1548	106.1	1960	154.0	1535	92.9	1960	152.7	1531
78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250	170.0	1842	170.0	1369	152.7	1861	170.0	1474	137.4	1861	163.1	1500	114.5	1861	147.3	1473	98.2	1861	139.6	1459	85.9	1861	137.6	1454
90 in	170.0	1328	170.0	1144	149.1	1398	156.0	1219	127.8	1398	136.0	1198	111.8	1398	121.3	1179	99.4	1398	110.2	1162	89.5	1398	101.6	1147	74.5	1398	89.8	1122	63.9	1398	82.7	1105	55.9	1398	78.9	1096
96 in	147.4	1229	151.5	1098	122.9	1229	127.6	1079	105.3	1229	111.2	1061	92.1	1229	98.9	1044	81.9	1229	89.6	1029	73.7	1229	82.4	1016	61.4	1229	72.2	993	52.7	1229	65.9	977	46.1	1229	62.1	967
108 in	103.5	971	105.8	877	86.3	971	89.0	862	74.0	971	77.2	849	64.7	971	68.4	837	57.5	971	61.8	825	51.8	971	56.5	815	43.1	971	49.0	796	37.0	971	44.0	782	32.4	971	40.8	771
111 in	95.4	919	97.3	832	79.5	919	81.9	819	68.1	919	70.9	806	59.6	919	62.9	794	53.0	919	56.7	784	47.7	919	51.8	774	39.7	919	44.8	756	34.1	919	40.2	742	29.8	919	37.1	732
120 in	75.5	786	76.8	716	62.9	786	64.5	705	53.9	786	55.8	695	47.2	786	49.4	686	41.9	786	44.4	677	37.7	786	40.5	668	31.5	786	34.9	653	27.0	786	31.0	641	23.6	786	28.4	631
144 in	43.7	546	44.2	504	36.4	546	37.0	498	31.2	546	31.9	491	27.3	546	28.2	485	24.3	546	25.3	479	21.8	546	22.9	474	18.2	546	19.5	464	15.6	546	17.2	455				

TABLE 9B:

Anchor/Clip Capacity (lbs) when using a 2" x 4" x 1/4" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU					Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in)	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.334"
	Embedment (in)	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	945 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 2.66" Min. O.C. / Mullion Clip (Fig. 2)		620 lbs	1260 lbs	430 lbs	1730 lbs	1424 lbs	425 lbs	740 lbs	575 lbs	1110 lbs	954 lbs	N/A	340 lbs	589 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 1.71" Min. O.C. / Mullion Clip (Fig. 3)		705 lbs	1890 lbs	608 lbs	2558 lbs	N/A	506 lbs	1110 lbs	619 lbs	1478 lbs	1304 lbs	N/A	510 lbs	647 lbs	N/A	1327 lbs	1610 lbs	1609 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 4)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 3" O.C. thru 2x5 Angle Clip Pair (Fig. 5)		930 lbs	1890 lbs	660 lbs	2610 lbs	2844 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1482 lbs	1122 lbs	510 lbs	978 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
3 Anchors @ 1.34" Min. O.C. / U-Clip (Fig. 6)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	805 lbs
6 Anchors @ 0.64" Min. O.C. / U-Clip (Fig. 7)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1609 lbs
2 Anchors @ 2.68" Min. O.C. / F-Clip (Fig. 8)		310 lbs	630 lbs	215 lbs	865 lbs	712 lbs	213 lbs	370 lbs	288 lbs	565 lbs	477 lbs	N/A	170 lbs	295 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.71" Min. O.C. / F-Clip (Fig. 9)		353 lbs	945 lbs	304 lbs	1279 lbs	N/A	253 lbs	555 lbs	309 lbs	739 lbs	652 lbs	N/A	255 lbs	324 lbs	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

CIRCLED VALUES ARE USED IN THE EXAMPLES ON SHEETS 21 & 22.

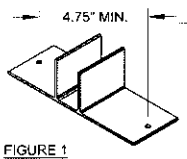


FIGURE 1

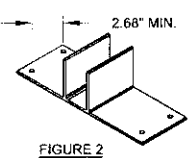


FIGURE 2

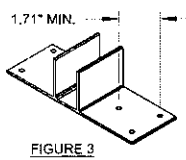


FIGURE 3

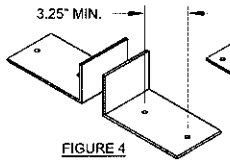


FIGURE 4

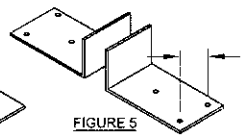


FIGURE 5

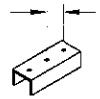


FIGURE 6

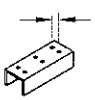


FIGURE 7

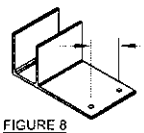


FIGURE 8

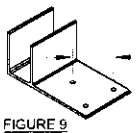


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TABLE NOTES:

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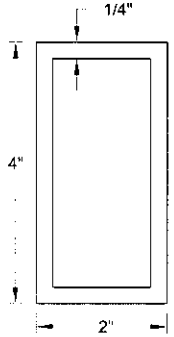
ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{REQ}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 4" X 1/4" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
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(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
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HIALEAH, FL 33018
(305) 593-6590

DRAWN	02/02/23
CHKD	JENS ROSOWSKI
APVD	TUBEMULL-1
DWG NO	A
SCALE	NTS
SHEET	15 OF 23

ALUMINUM TUBE MULLIONS, CLIPPED (LM)
2 X 4 X 1/4 CAPACITIES
MULLS

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER 8/23/23
A. LYNN MILLER, P.E., P.E.# 58705

TABLE 10A:

2" x 6" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																															
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
		Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
	50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
	54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856	170.0	1913	170.0	861	170.0	2231	170.0	861	170.0	2550	170.0	861
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996	170.0	1771	170.0	1033	170.0	2125	170.0	1063	170.0	2479	170.0	1063	170.0	2833	170.0	1063
	63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	170.0	1673	170.0	1076	170.0	1859	170.0	1122	170.0	2231	170.0	1169	170.0	2603	170.0	1171	170.0	2975	170.0	1177
	66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1558	170.0	1086	170.0	1753	170.0	1155	170.0	1948	170.0	1210	170.0	2338	170.0	1275	170.0	2727	170.0	1286	170.0	3117	170.0	1286
	72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126	170.0	1700	170.0	1228	170.0	1913	170.0	1315	170.0	2125	170.0	1387	170.0	2550	170.0	1488	170.0	2975	170.0	1529	170.0	3400	170.0	1530
	76 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209	170.0	1794	170.0	1322	170.0	2019	170.0	1421	170.0	2243	170.0	1505	170.0	2692	170.0	1629	165.5	3057	170.0	1694	144.8	3057	170.0	1705
	78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250	170.0	1842	170.0	1369	170.0	2072	170.0	1474	170.0	2302	170.0	1564	170.0	2763	170.0	1700	153.1	2902	170.0	1777	133.9	2902	170.0	1796
	90 in	170.0	1328	170.0	1144	170.0	1594	170.0	1328	170.0	1859	170.0	1498	170.0	2125	170.0	1653	155.0	2180	170.0	1793	139.5	2180	158.4	1788	116.2	2180	140.0	1749	99.6	2180	128.9	1724	87.2	2180	123.1	1706
	96 in	170.0	1417	170.0	1232	170.0	1700	170.0	1434	164.2	1916	170.0	1622	143.7	1916	154.3	1628	127.7	1916	139.8	1605	114.9	1916	128.5	1584	95.8	1916	112.6	1549	82.1	1916	102.6	1523	71.8	1916	96.9	1507
	108 in	161.5	1514	164.9	1367	134.5	1514	138.8	1345	115.3	1514	120.4	1324	100.9	1514	108.7	1304	89.7	1514	96.3	1287	80.7	1514	88.1	1270	67.3	1514	78.4	1241	57.7	1514	68.7	1219	50.5	1514	63.6	1202
	111 in	148.7	1433	151.7	1297	123.9	1433	127.6	1276	106.2	1433	110.6	1257	92.9	1433	98.0	1239	82.6	1433	88.4	1222	74.4	1433	80.8	1206	62.0	1433	69.9	1179	53.1	1433	62.7	1157	46.5	1433	57.8	1141
	120 in	117.7	1226	119.7	1117	98.1	1226	100.6	1100	84.1	1226	87.0	1084	73.6	1226	77.0	1069	65.4	1226	69.3	1055	58.8	1226	63.2	1042	49.0	1226	54.3	1019	42.0	1226	48.4	1000	36.8	1226	44.3	984
	144 in	88.1	851	88.9	786	56.8	851	57.7	776	48.7	851	49.8	766	42.6	851	43.9	756	37.8	851	39.4	748	34.1	851	35.8	739	28.4	851	30.5	724	24.3	851	26.8	710	21.3	851	24.2	698

TABLE 10B:

Anchor/Clip Capacity (lbs) when using a 2" x 6" x 1/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in)	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in)	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
4 Anchors @ 3.25" Min. O.C. / Mullion Clip (Fig. 1)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	894 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 2.47" Min. O.C. / Mullion Clip (Fig. 2)		930 lbs	1890 lbs	638 lbs	2588 lbs	1782 lbs	611 lbs	1110 lbs	814 lbs	1626 lbs	1406 lbs	N/A	510 lbs	836 lbs	N/A	1327 lbs	1610 lbs	1609 lbs
8 Anchors @ 1.65" Min. O.C. / Mullion Clip (Fig. 3)		907 lbs	2520 lbs	807 lbs	3407 lbs	N/A	663 lbs	1480 lbs	803 lbs	1953 lbs	1727 lbs	N/A	680 lbs	842 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 4" O.C. thru 2x5 Angle Clip Pair (Fig. 4)		620 lbs	1260 lbs	440 lbs	1740 lbs	2952 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	1011 lbs	748 lbs	340 lbs	820 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 2.47" O.C. thru 2x5 Angle Clip Pair (Fig. 5)		930 lbs	1890 lbs	638 lbs	2588 lbs	1782 lbs	611 lbs	1110 lbs	814 lbs	1626 lbs	1406 lbs	N/A	510 lbs	836 lbs	N/A	1327 lbs	1610 lbs	1609 lbs
8 Total Anchors @ 1.65" O.C. thru 2x5 Angle Clip Pair (Fig. 6)		907 lbs	2520 lbs	807 lbs	3407 lbs	N/A	663 lbs	1480 lbs	803 lbs	1953 lbs	1727 lbs	N/A	680 lbs	842 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
2 Anchors @ 4" Min. O.C. / U-Clip (Fig. 7)		310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 2.47" Min. O.C. / U-Clip (Fig. 8)		465 lbs	945 lbs	319 lbs	1294 lbs	891 lbs	306 lbs	555 lbs	407 lbs	814 lbs	703 lbs	N/A	255 lbs	418 lbs	N/A	664 lbs	805 lbs	805 lbs
4 Anchors @ 1.65" Min. O.C. / U-Clip (Fig. 9)		453 lbs	1260 lbs	403 lbs	1703 lbs	N/A	332 lbs	740 lbs	402 lbs	977 lbs	863 lbs	N/A	340 lbs	421 lbs	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 4" Min. O.C. / F-Clip (Fig. 10)		310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 2.47" Min. O.C. / F-Clip (Fig. 11)		465 lbs	945 lbs	319 lbs	1294 lbs	891 lbs	306 lbs	555 lbs	407 lbs	814 lbs	703 lbs	N/A	255 lbs	418 lbs	N/A	664 lbs	805 lbs	805 lbs
4 Anchors @ 1.65" Min. O.C. / F-Clip (Fig. 12)		453 lbs	1260 lbs	403 lbs	1703 lbs	N/A	332 lbs	740 lbs	402 lbs	977 lbs	863 lbs	N/A	340 lbs	421 lbs	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

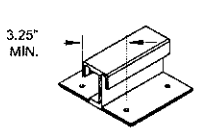


FIGURE 1

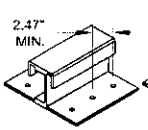


FIGURE 2

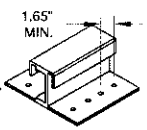
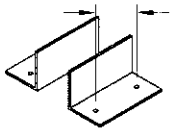


FIGURE 3



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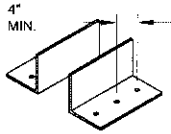


FIGURE 5

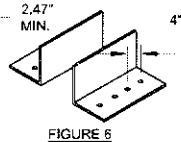


FIGURE 6

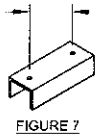


FIGURE 7

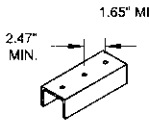


FIGURE 8

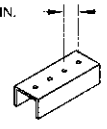


FIGURE 9

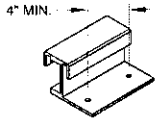


FIGURE 10

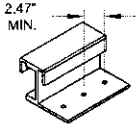


FIGURE 11

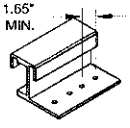


FIGURE 12

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

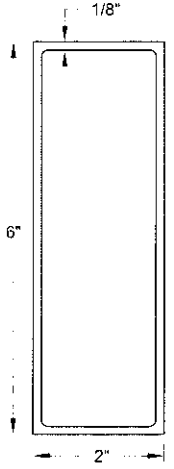
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req.}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ'D}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 6" X 1/8" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3789 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23	JENS ROSOWSKI	TUBEMULL-1	A		
2 X 6 X 1/8 CAPACITIES						
MULLS	NTS		16 OF 23			

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 11A:

2" x 6" x 1/4" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																													
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading		Rectangular Loading		Trap/Tnang Loading	
		Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
	50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
	54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856	170.0	1913	170.0	861	170.0	2231	170.0	861	170.0	2550	170.0	861
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996	170.0	1771	170.0	1033	170.0	2125	170.0	1063	170.0	2479	170.0	1063	170.0	2833	170.0	1063
	63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	170.0	1673	170.0	1076	170.0	1859	170.0	1122	170.0	2231	170.0	1169	170.0	2603	170.0	1171	170.0	2975	170.0	1171
	66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1558	170.0	1086	170.0	1753	170.0	1155	170.0	1948	170.0	1210	170.0	2338	170.0	1275	170.0	2727	170.0	1286	170.0	3117	170.0	1286
	72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126	170.0	1700	170.0	1228	170.0	1913	170.0	1315	170.0	2125	170.0	1387	170.0	2550	170.0	1458	170.0	2975	170.0	1529	170.0	3400	170.0	1530
	75 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209	170.0	1794	170.0	1322	170.0	2019	170.0	1421	170.0	2243	170.0	1505	170.0	2692	170.0	1629	170.0	3140	170.0	1694	170.0	3589	170.0	1705
	78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250	170.0	1842	170.0	1369	170.0	2072	170.0	1474	170.0	2302	170.0	1564	170.0	2763	170.0	1700	170.0	3223	170.0	1777	170.0	3683	170.0	1796
	90 in	170.0	1328	170.0	1144	170.0	1594	170.0	1328	170.0	1859	170.0	1498	170.0	2125	170.0	1653	170.0	2391	170.0	1793	170.0	2656	170.0	1918	170.0	3188	170.0	2125	170.0	3719	170.0	2273	160.2	4004	170.0	2361
	96 in	170.0	1417	170.0	1232	170.0	1700	170.0	1434	170.0	1983	170.0	1622	170.0	2267	170.0	1794	170.0	2550	170.0	1952	170.0	2833	170.0	2095	170.0	3400	170.0	2338	150.8	3519	170.0	2520	132.0	3519	170.0	2644
	108 in	170.0	1594	170.0	1409	170.0	1913	170.0	1647	170.0	2231	170.0	1870	170.0	2550	170.0	2078	164.8	2781	170.0	2271	148.3	2781	161.9	2333	123.6	2781	140.4	2281	105.9	2781	126.2	2239	92.7	2781	116.9	2208
	111 in	170.0	1638	170.0	1454	170.0	1966	170.0	1700	170.0	2293	170.0	1932	170.0	2621	170.0	2149	151.6	2632	162.3	2245	136.6	2632	148.4	2216	113.8	2632	128.4	2168	97.6	2632	115.1	2126	85.4	2632	106.3	2096
	120 in	170.0	1771	170.0	1586	170.0	2125	170.0	1859	154.4	2252	159.9	1991	135.1	2252	141.4	1964	120.1	2252	127.2	1938	108.1	2252	116.1	1915	90.1	2252	99.8	1872	77.2	2252	88.9	1836	67.6	2252	81.4	1808
	144 in	125.1	1564	126.6	1445	104.3	1564	106.1	1425	89.4	1564	91.5	1407	78.2	1564	80.7	1390	69.5	1564	72.3	1373	62.6	1564	65.7	1358	52.1	1564	56.0	1330	44.7	1564	49.2	1305	39.1	1564	44.4	1283

TABLE 11B:

Anchor/Clip Capacity (lbs) when using a 2" x 6" x 1/4" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in)	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in)	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 4.68" Min. O.C. / Mullion Clip (Fig. 2)		620 lbs	1260 lbs	440 lbs	1740 lbs	3232 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	1025 lbs	748 lbs	340 lbs	820 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
8 Anchors @ 1.71" Min. O.C. / Mullion Clip (Fig. 3)		940 lbs	2520 lbs	810 lbs	3410 lbs	N/A	675 lbs	1480 lbs	825 lbs	1970 lbs	1738 lbs	N/A	680 lbs	863 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 4)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
8 Total Anchors @ 3" O.C. thru 2x5 Angle Clip Pair (Fig. 5)		1240 lbs	2520 lbs	880 lbs	3480 lbs	3792 lbs	920 lbs	1480 lbs	1280 lbs	2320 lbs	1976 lbs	1496 lbs	680 lbs	1304 lbs	3784 lbs	1770 lbs	2146 lbs	2146 lbs
12 Total Anchors @ 2.34" O.C. thru 2x5 Angle Clip Pair (Fig. 6)		1860 lbs	3780 lbs	1265 lbs	5165 lbs	3092 lbs	1186 lbs	2220 lbs	1563 lbs	3205 lbs	2777 lbs	N/A	1020 lbs	1610 lbs	N/A	2654 lbs	3220 lbs	3218 lbs
4 Anchors @ 1.65" Min. O.C. / U-Clip (Fig. 7)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1073 lbs
8 Anchors @ 0.64" Min. O.C. / U-Clip (Fig. 8)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2146 lbs
2 Anchors @ 4.68" Min. O.C. / F-Clip (Fig. 9)		310 lbs	630 lbs	220 lbs	870 lbs	1616 lbs	230 lbs	370 lbs	320 lbs	580 lbs	512 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.71" Min. O.C. / F-Clip (Fig. 10)		470 lbs	1260 lbs	405 lbs	1705 lbs	N/A	338 lbs	740 lbs	413 lbs	985 lbs	869 lbs	N/A	340 lbs	432 lbs	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

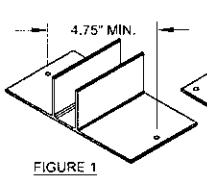


FIGURE 1

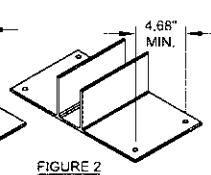


FIGURE 2

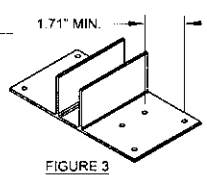


FIGURE 3

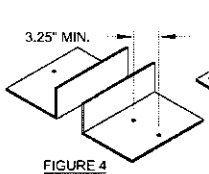


FIGURE 4

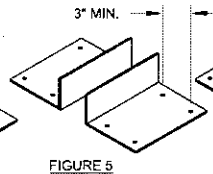


FIGURE 5

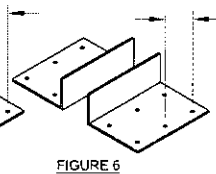


FIGURE 6

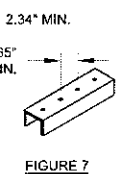


FIGURE 7

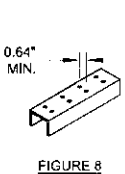


FIGURE 8

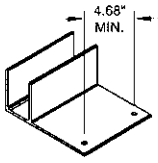


FIGURE 9

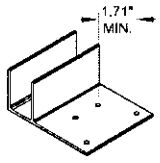


FIGURE 10

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

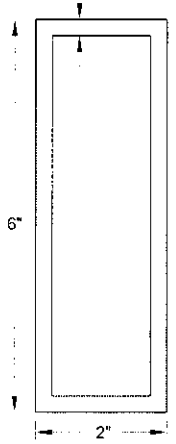
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{req'd}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 6" X 1/4" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions	
	UPDATED TO 2023 BUILDING CODE. JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23	JENS ROSOWSKI	TUBEMULL-1	A	
2 X 6 X 1/4 CAPACITIES					
MULLS	NTS	17 OF 23			

ANTHONY LYNN MILLER LICENSE No. 58705 8/23/23 STATE OF FLORIDA PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E., P.E.# 58705

TABLE 12A:

2" x 8" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																																	
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
		Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
	50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
	54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856	170.0	1913	170.0	861	170.0	2231	170.0	861	170.0	2550	170.0	861
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996	170.0	1771	170.0	1033	170.0	2125	170.0	1063	170.0	2479	170.0	1063	170.0	2833	170.0	1063
	63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	170.0	1673	170.0	1076	170.0	1859	170.0	1122	170.0	2231	170.0	1169	170.0	2603	170.0	1171	170.0	2975	170.0	1171
	66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1558	170.0	1086	170.0	1753	170.0	1155	170.0	1948	170.0	1210	170.0	2338	170.0	1275	170.0	2727	170.0	1266	170.0	3117	170.0	1266
	72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126	170.0	1700	170.0	1228	170.0	1913	170.0	1315	170.0	2125	170.0	1387	170.0	2550	170.0	1488	170.0	2975	170.0	1529	170.0	3400	170.0	1530
	76 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209	170.0	1794	170.0	1322	170.0	2019	170.0	1421	170.0	2243	170.0	1505	170.0	2692	170.0	1629	170.0	3140	170.0	1694	170.0	3589	170.0	1705
	78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250	170.0	1842	170.0	1369	170.0	2072	170.0	1474	170.0	2302	170.0	1564	170.0	2763	170.0	1709	170.0	3223	170.0	1777	170.0	3683	170.0	1796
	90 in	170.0	1328	170.0	1144	170.0	1594	170.0	1328	170.0	1859	170.0	1498	170.0	2125	170.0	1653	170.0	2391	170.0	1793	170.0	2656	170.0	1918	170.0	3188	170.0	2125	170.0	3719	170.0	2273	170.0	4250	170.0	2361
	96 in	170.0	1417	170.0	1232	170.0	1700	170.0	1434	170.0	1983	170.0	1622	170.0	2267	170.0	1794	170.0	2550	170.0	1952	170.0	2833	170.0	2095	170.0	3400	170.0	2338	170.0	3967	170.0	2520	151.5	4039	170.0	2644
	108 in	170.0	1594	170.0	1409	170.0	1913	170.0	1647	170.0	2231	170.0	1870	170.0	2550	170.0	2078	170.0	2869	170.0	2271	170.0	3185	170.0	2450	141.8	3192	161.1	2618	121.6	3192	144.8	2570	106.4	3192	134.2	2534
	111 in	170.0	1638	170.0	1454	170.0	1966	170.0	1700	170.0	2293	170.0	1932	170.0	2621	170.0	2149	170.0	2948	170.0	2351	156.8	3021	170.0	2538	130.7	3021	147.4	2467	112.0	3021	132.1	2440	98.0	3021	122.0	2406
	120 in	170.0	1771	170.0	1586	170.0	2125	170.0	1859	170.0	2479	170.0	2118	155.1	2585	162.3	2254	137.9	2585	146.0	2225	124.1	2585	133.2	2197	103.4	2585	114.6	2149	88.6	2585	102.0	2108	77.6	2585	93.4	2075
	144 in	143.6	1795	145.3	1658	119.7	1795	121.7	1636	102.6	1795	105.0	1615	89.8	1795	92.6	1595	79.8	1795	83.0	1578	71.8	1795	75.4	1558	59.8	1795	64.3	1526	51.3	1795	56.5	1497	44.9	1795	51.0	1473

TABLE 12B:

Anchor/Clip Capacity (lbs) when using a 2" x 8" x 1/8" Tube Mullion	Substrate	3k Concrete				3.5k Conc	Hollow or Filled CMU						Filled CMU			Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
4 Anchors @ 3.25" Min. O.C. / Mullion Clip (Fig. 1)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 3.25" Min. O.C. / Mullion Clip (Fig. 2)		930 lbs	1890 lbs	660 lbs	2610 lbs	3316 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1491 lbs	1122 lbs	510 lbs	1041 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
8 Anchors @ 2.313" Min. O.C. / Mullion Clip (Fig. 3)		1240 lbs	2520 lbs	843 lbs	3443 lbs	2061 lbs	792 lbs	1480 lbs	1042 lbs	2137 lbs	1851 lbs	N/A	680 lbs	1073 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 4" O.C. thru 2x5 Angle Clip Pair (Fig. 4)		620 lbs	1260 lbs	440 lbs	1740 lbs	2952 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	1011 lbs	748 lbs	340 lbs	820 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 3.47" O.C. thru 2x5 Angle Clip Pair (Fig. 5)		930 lbs	1890 lbs	660 lbs	2610 lbs	3670 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1497 lbs	1122 lbs	510 lbs	1088 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
8 Total Anchors @ 2.313" O.C. thru 2x5 Angle Clip Pair (Fig. 6)		1240 lbs	2520 lbs	843 lbs	3443 lbs	2061 lbs	792 lbs	1480 lbs	1042 lbs	2137 lbs	1851 lbs	N/A	680 lbs	1073 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
2 Anchors @ 4" Min. O.C. / U-Clip (Fig. 7)		310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 3.47" Min. O.C. / U-Clip (Fig. 8)		465 lbs	945 lbs	330 lbs	1305 lbs	1835 lbs	345 lbs	555 lbs	480 lbs	870 lbs	748 lbs	561 lbs	255 lbs	544 lbs	1419 lbs	664 lbs	805 lbs	805 lbs
4 Anchors @ 2.313" Min. O.C. / U-Clip (Fig. 9)		620 lbs	1260 lbs	422 lbs	1722 lbs	1031 lbs	396 lbs	740 lbs	521 lbs	1068 lbs	926 lbs	N/A	340 lbs	537 lbs	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 4" Min. O.C. / F-Clip (Fig. 10)		310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 3.47" Min. O.C. / F-Clip (Fig. 11)		465 lbs	945 lbs	330 lbs	1305 lbs	1835 lbs	345 lbs	555 lbs	480 lbs	870 lbs	748 lbs	561 lbs	255 lbs	544 lbs	1419 lbs	664 lbs	805 lbs	805 lbs
4 Anchors @ 2.313" Min. O.C. / F-Clip (Fig. 12)		620 lbs	1260 lbs	422 lbs	1722 lbs	1031 lbs	396 lbs	740 lbs	521 lbs	1068 lbs	926 lbs	N/A	340 lbs	537 lbs	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

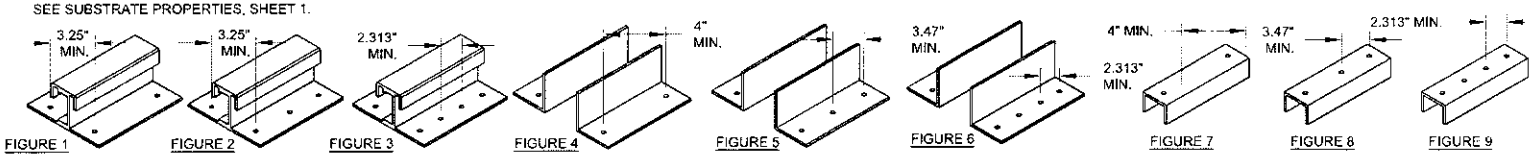


FIGURE 1 FIGURE 2 FIGURE 3 FIGURE 4 FIGURE 5 FIGURE 6 FIGURE 7 FIGURE 8 FIGURE 9

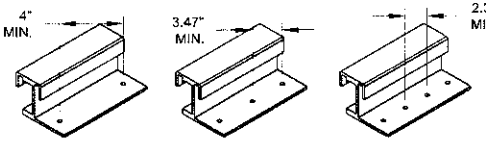


FIGURE 10 FIGURE 11 FIGURE 12

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

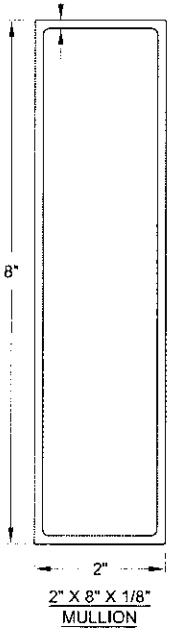
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{TABLE VALUE}}}{\text{MULLION CAP.}_{\text{TABLE VALUE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ'D}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 8" X 1/8" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

DWG	02/02/23
APP'D	JENS ROSOWSKI
DWG NO.	TUBEMULL-1
REV	A
SCALE	NTS
SHEET	18 OF 23

ALUMINUM TUBE MULLIONS, CLIPPED (LM)
2 X 8 X 1/8 CAPACITIES
MULLS

ANTHONY LYNN MILLER LICENSE No. 58705 8/23/23 STATE OF FLORIDA PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 13A:

30 Degree Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																													
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading	
		Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	183.5	1670	170.0	521	143.1	1670	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	153.4	1278	170.0	680	127.8	1278	170.0	680	109.6	1276	170.0	680	95.9	1278	170.0	680
	50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	664	163.4	1149	170.0	723	145.3	1149	170.0	747	130.7	1149	170.0	756	109.0	1149	170.0	756	93.4	1149	170.0	756	81.7	1149	170.0	756
	54 in	170.0	797	170.0	612	170.0	956	170.0	691	153.9	1010	170.0	754	134.7	1010	169.8	802	119.7	1010	161.5	795	107.7	1010	157.1	791	89.8	1010	155.9	789	76.9	1010	155.9	789	67.3	1010	155.9	789
	60 in	157.1	818	168.6	695	130.9	818	145.0	680	112.2	818	129.1	667	98.2	818	118.2	657	87.3	818	110.7	649	78.5	818	105.9	644	65.4	818	102.3	639	56.1	818	102.3	639	49.1	818	102.3	639
	63 in	135.7	742	144.7	634	113.1	742	124.1	620	96.9	742	110.1	609	84.8	742	100.3	599	75.4	742	93.4	591	67.8	742	88.8	586	56.5	742	84.4	580	48.5	742	84.1	580	42.4	742	84.1	580
	66 in	118.0	676	125.1	581	98.3	676	107.0	569	84.3	676	94.6	558	73.8	676	85.9	549	65.6	676	79.6	541	59.0	676	75.3	536	49.2	676	70.6	530	42.1	676	69.6	528	36.9	676	69.6	528
	72 in	90.9	568	95.5	493	75.7	568	81.3	483	64.9	568	71.5	474	56.8	568	64.5	466	50.5	568	59.4	459	45.4	568	55.6	454	37.9	568	51.1	447	32.5	568	49.4	444	28.4	568	49.3	444
	76 in	77.3	510	80.8	445	64.4	510	68.6	436	55.2	510	60.2	426	48.3	510	54.1	421	42.9	510	49.6	415	38.6	510	46.3	410	32.2	510	42.0	403	27.6	510	40.1	399	24.2	510	39.7	398
	78 in	71.5	484	74.5	424	59.6	484	63.3	415	51.1	484	55.5	408	44.7	484	49.8	401	39.7	484	45.6	395	35.7	484	42.4	390	29.8	484	38.3	383	25.5	484	36.3	379	22.3	484	35.8	378
	90 in	46.5	364	48.0	323	38.8	364	40.6	317	33.2	364	35.4	312	29.1	364	31.5	307	25.9	364	28.7	302	23.3	364	26.4	298	19.4	364	23.3	292	16.6	364	21.5	288	14.5	364	20.5	286
	96 in	38.3	320	39.4	266	32.0	320	33.3	261	27.4	320	28.9	276	24.0	320	25.7	272	21.3	320	23.3	268	19.2	320	21.4	264	16.0	320	18.8	258	13.7	320	17.1	254	12.0	320	16.2	251
	108 in	26.9	252	27.5	228	22.4	252	23.2	224	19.2	252	20.1	221	16.8	252	17.8	218	15.0	252	16.1	215																
	111 in	24.8	239	25.3	216	20.7	239	21.3	213	17.7	239	18.5	210	15.5	239	16.3	207																				
	120 in	19.6	205	20.0	186	16.4	205	16.8	183																												

TABLE 13B:

Anchor/Clip Capacity (lbs) when using a 30 Degree Tube Mullion	Substrate	3k Concrete				3.5k Conc	Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	442 lbs	537 lbs	535 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 2)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 2.71" O.C. thru 2x5 Angle Clip Pair (Fig. 3)		930 lbs	1890 lbs	648 lbs	2598 lbs	2254 lbs	1327 lbs	1610 lbs	1609 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

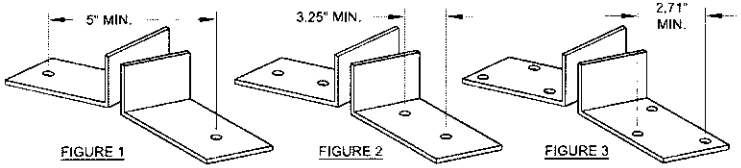


FIGURE 1 FIGURE 2 FIGURE 3

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

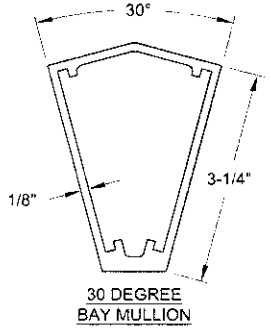
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 21-23. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{req}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{req'd}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



30 DEGREE BAY MULLION

PRODUCT REVISED
as complying with the Florida Building Code
NOA No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

DATE	02/02/23
DRAWN	JENS ROSOWSKI
JOB	TUBEMULL-1
REV	A
SCALE	NTS
SHEET	19 OF 23

ALUMINUM TUBE MULLIONS, CLIPPED (LM)
30 DEGREE BAY CAPACITIES
MULLS

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER
8/23/23
A. LYNN MILLER, P.E., P.E.# 58705

TABLE 14A:

45 Degree Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement		Opening Dimension																													
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in			
		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang Loading		Rectangular Loading		Trap/Triang Loading	
		Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	476	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	164.5	1919	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	146.9	1469	170.0	680	125.9	1469	170.0	680	110.2	1469	170.0	680
	50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	664	170.0	1195	170.0	723	167.0	1321	170.0	747	150.3	1321	170.0	756	125.2	1321	170.0	756	107.3	1321	170.0	756	93.9	1321	170.0	756
	54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	154.8	1161	170.0	803	137.6	1161	170.0	837	123.8	1161	170.0	856	103.2	1161	170.0	861	88.4	1161	170.0	861	77.4	1161	170.0	861
	60 in	170.0	885	170.0	701	150.5	940	166.7	782	129.0	940	148.4	767	112.8	940	135.9	755	100.3	940	127.3	746	90.3	940	121.8	740	75.2	940	117.5	735	64.5	940	117.5	735	56.4	940	117.5	735
	63 in	156.0	853	166.3	729	130.0	853	142.6	713	111.4	853	126.5	700	97.5	853	115.3	688	86.6	853	107.4	680	78.0	853	102.1	673	65.0	853	97.0	667	55.7	853	96.7	666	48.7	853	96.7	666
	66 in	135.6	777	143.8	668	113.0	777	123.0	654	96.9	777	108.8	641	84.8	777	98.7	631	75.4	777	91.5	622	67.8	777	88.5	616	56.5	777	81.2	609	48.4	777	80.3	607	42.4	777	80.3	607
	72 in	104.5	853	109.8	587	87.1	853	93.5	555	74.6	853	82.2	545	65.3	853	74.2	536	58.0	853	68.3	528	52.2	853	64.0	522	43.5	853	58.7	514	37.3	853	56.8	511	32.7	853	56.7	510
	76 in	88.8	586	92.8	512	74.0	586	78.9	501	63.5	586	69.2	492	55.5	586	62.2	484	49.4	586	57.1	477	44.4	586	53.2	471	37.0	586	48.3	463	31.7	586	46.1	459	27.8	586	45.7	458
	78 in	82.2	556	85.7	487	68.5	556	72.8	477	58.7	556	63.7	469	51.4	556	57.2	461	45.7	556	52.4	454	41.1	556	48.7	449	34.2	556	44.0	440	29.3	556	41.7	436	25.7	556	41.2	435
	90 in	53.5	418	55.2	371	44.6	418	46.6	364	38.2	418	40.7	358	33.4	418	36.3	352	29.7	418	32.9	347	26.7	418	30.4	343	22.3	418	26.8	335	19.1	418	24.7	330	16.7	418	23.6	328
	96 in	44.1	367	45.3	328	36.7	367	38.2	322	31.5	367	33.2	317	27.5	367	29.6	312	24.5	367	26.8	308	22.0	367	24.6	304	18.4	367	21.6	297	15.7	367	19.7	292	13.8	367	18.6	289
	108 in	31.0	290	31.6	262	25.8	290	26.6	258	22.1	290	23.1	254	19.3	290	20.5	250	17.2	290	18.5	247	15.5	290	16.9	244												
	111 in	28.5	275	29.1	249	23.8	275	24.5	245	20.4	275	21.2	241	17.8	275	18.8	238	15.8	275	16.9	234																
	120 in	22.6	235	23.0	214	18.8	235	19.3	211	16.1	235	16.7	208																								

TABLE 14B:

Anchor/Clip Capacity (lbs) when using a 45 Degree Tube Mullion	Substrate	3k Concrete				3.5k Conc	Wood		Metal
	Anchor Type	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 1)		310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 2)		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 2.71" O.C. thru 2x5 Angle Clip Pair (Fig. 3)		930 lbs	1890 lbs	648 lbs	2598 lbs	2254 lbs	1327 lbs	1610 lbs	1609 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

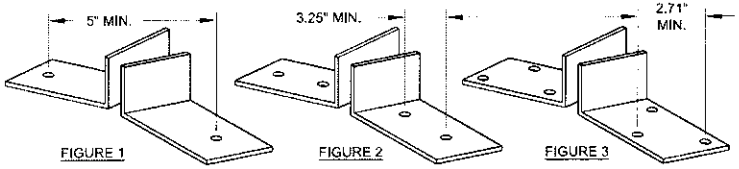


FIGURE 1 FIGURE 2 FIGURE 3

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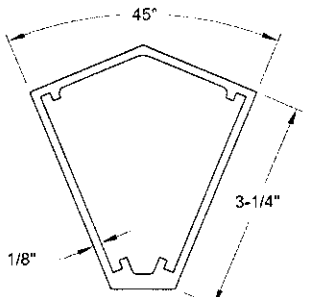

45 DEGREE BAY MULLION

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as complying with the Florida Building Code
NOA-No. 23-0913.04
Expiration Date 03/28/2028
By
Miami-Dade Product Control

Revisions:
UPDATED TO 2023 BUILDING CODE.
JR - 08/23/23

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

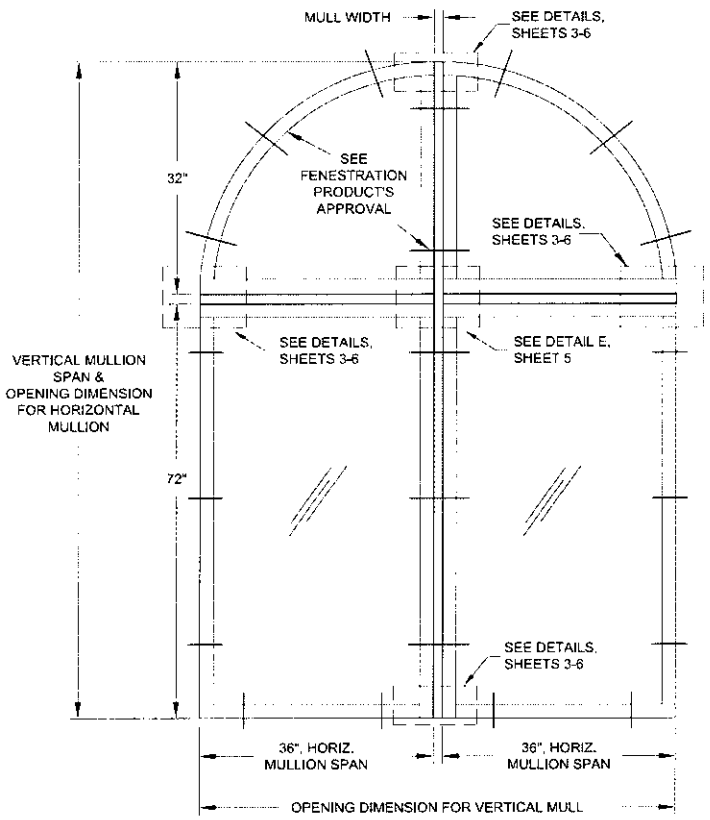
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

DRAWING	ALUMINUM TUBE MULLIONS, CLIPPED (LM)
DATE	02/02/23
DRAWN BY	JENS ROSOWSKI
JOB NO.	TUBEMULL-1
SCALE	NTS
SHEET	20 OF 23
REVISION	A

45 DEGREE BAY CAPACITIES
MULLS

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER
8/23/23
A. LYNN MILLER, P.E., P.E.# 58705



EXAMPLE 1: MULTIPLE MULLIONS

THE BUILDING SUBSTRATE IS KNOWN TO BE CMU ON THE JAMBS AND USES A CONCRETE HEADER AND SILL. THE WINDOW FRAME DEPTH IS 2-3/8". THE OPENING REQUIRES A DESIGN PRESSURE OF +50.0/-55.0 PSF.

FOR THE VERTICAL MULLION:

1) INITIALLY ASSUMING THAT A 1" WIDE MULLION IS SUITABLE, THE MULLION SPAN IS 32"+72"+1"=105" AND THE OPENING DIMENSION IS 36"+36"+1" =73". REFERENCING SHEET 23, THE COLUMN USING RECTANGULAR LOADING SHALL BE USED. SCAN THE MULLION TABLES FOR A MULLION THAT IS AT LEAST THE WINDOW FRAME DEPTH OF 2-3/8" AND WILL MEET OR EXCEED THE REQUIRED DESIGN PRESSURE OF +50.0/-55.0 PSF. IF THE TABLE DOES NOT SHOW THE EXACT SIZE, USE THE NEXT LARGER SIZE AVAILABLE.

FROM TABLE 5A, SHEET 11, THE 1" X 4" X 1/8" MULLION (SPAN = 108", OPENING DIMENSION = 80") MEETS THE DEPTH REQUIRED, HOWEVER THE DESIGN PRESSURE IS ONLY +/-25.2 PSF AND WOULD NOT BE SUITABLE FOR THIS APPLICATION.

FROM TABLE 9A, SHEET 15, THE 2" X 4" X .250" MULLION (SPAN = 108", OPENING DIMENSION = 80") HAS A DESIGN PRESSURE OF +/-64.7 PSF WHICH EXCEEDS THE REQUIREMENTS FOR THE OPENING AND MAY BE USED IN THIS APPLICATION. NOTE THE ANCHOR CAPACITY REQUIRED OF 971 LBS.

BECAUSE IT IS NOW KNOWN THAT THE MULLION WILL ADD 2" TO THE WIDTH OF THE MULLED UNIT INSTEAD OF 1", THE ADJUSTED OPENING DIMENSION IS 36"+36"+2"=74", NOT 73" AS PREVIOUSLY ASSUMED. VERIFY THAT THE DESIGN PRESSURE IS STILL APPLICABLE FOR THE ADJUSTED OPENING. ALTERNATIVELY, THE WINDOW WIDTHS MAY BE REDUCED TO MAINTAIN THE 73" DIMENSION (35-1/2"+35-1/2"+2"=73").

2) USE TABLE 9B TO FIND THE ANCHOR TYPE, ANCHOR QUANTITY AND CLIP TYPE REQUIRED FOR THE CONCRETE SUBSTRATE. IN THIS EXAMPLE, ASSUME THE POURED CONCRETE HEADER AND SILL ARE 8" WIDE. IF THE MULLION CLIP WERE TO BE CENTERED WITHIN THE 8", CARE MUST BE TAKEN TO MAINTAIN THE FASTENER'S EDGE DISTANCE. USING THE STANDARD CLIP WITH (4) 3/16" ULTRACON+ ANCHORS AT AN EDGE DISTANCE OF 2-1/2" GIVES AN ANCHOR CAPACITY OF 1260 LBS WHICH IS GREATER, AND THEREFORE SUITABLE, FOR THE REQUIRED ANCHOR CAPACITY OF 971 LBS.

FOR THE HORIZONTAL MULLIONS:

BECAUSE THE VERTICAL MULL WILL BE A 2" X 4" X .250" MULLION, IN THIS EXAMPLE WE WILL MATCH THE HORIZONTAL AND VERTICAL MULLIONS, ALTERNATIVELY, ANOTHER MULLION TYPE COULD BE CHOSEN.

1) THE MULLION SPAN IS 36" AND THE OPENING DIMENSION IS 32"+72"+2" =106". REFERENCING SHEET 23, THE COLUMN USING TRAPEZOIDAL/TRIANGULAR LOADING MAY BE USED. FROM TABLE 9A, SHEET 15, THE 2" X 4" X .250" MULLION (@ SPAN = 42", OPENING DIMENSION = 120") HAS A DESIGN PRESSURE OF +/-170.0 PSF WHICH EXCEEDS THE REQUIREMENTS FOR THE OPENING AND MAY BE USED IN THIS APPLICATION. NOTE THE ANCHOR CAPACITY REQUIRED OF 521 LBS.

2) USE TABLE 9B TO FIND THE ANCHOR TYPE, ANCHOR QUANTITY AND CLIP TYPE REQUIRED FOR THE CMU SUBSTRATE. IN THIS EXAMPLE, ASSUME THE CMU JAMBS ARE 8" WIDE. IF THE MULLION CLIP WERE TO BE CENTERED WITHIN THE 8", CARE MUST BE TAKEN TO MAINTAIN THE FASTENER'S EDGE DISTANCE. USING THE STANDARD MULL CLIPS WITH (4) 3/16" ULTRACON+ ANCHORS AT AN EDGE DISTANCE OF 2-1/2" GIVES AN ANCHOR CAPACITY OF 740 LBS WHICH IS GREATER, AND THEREFORE SUITABLE, FOR THE REQUIRED ANCHOR CAPACITY OF 521 LBS. THE SAME ANCHOR TYPES WERE CHOSEN AS BEFORE FOR SIMPLICITY, HOWEVER ANY ANCHOR MEETING THE REQUIREMENTS COULD HAVE BEEN USED.

3) FOR THE U-CLIP IN THE HORIZONTAL MULLION TO VERTICAL MULLION, USE THE SAME ANCHOR CAPACITY OF 521 LBS. TABLE 9B FOR THE U-CLIP SHOWS THE ANCHOR CAPACITY IS 805 LBS WHEN USING 3 ANCHORS, WHICH IS GREATER, AND THEREFORE SUITABLE, FOR THE REQUIRED ANCHOR CAPACITY REQUIREMENT OF 521 LBS. THE ANCHOR TYPE IS A #12 STEEL SCREW.

FROM THE ABOVE STEPS, OUR MULLION DESIGN PRESSURE IS:
+/-64.7 PSF FROM THE VERTICAL MULLION;
+/-170.0 PSF FROM THE 36" HORIZONTAL MULLION ATTACHING TO CMU;
+/-170.0 PSF FROM THE 36" HORIZONTAL MULLION ATTACHING TO THE VERTICAL MULLION (INTERSECTION).
THE LOWEST DESIGN PRESSURE IS +/-64.7 PSF AND WOULD APPLY TO ALL OF THE MULLIONS.

VERIFY THE DESIGN PRESSURE OF THE FENESTRATION PRODUCTS USED WITH THIS MULLION SYSTEM. THE LOWER DESIGN PRESSURE, OF MULLIONS OR FENESTRATION PRODUCTS, WILL APPLY TO THE OVERALL ASSEMBLY. FINAL DESIGN PRESSURE REQUIRES THAT THE BOTH THE MULLION AND THE FENESTRATION PRODUCT BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION SPECIFICATIONS INTO RESPECTIVE SUBSTRATES AND FENESTRATION PRODUCTS TO MULLION.

PRODUCT REVISED
as complying with the Florida Building Code
NOA–No. 23-0913.04
Expiration Date 03/28/2028
By Miami–Dade Product Control

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	UPDATED TO 2023 BUILDING CODE. JR - 08/23/23

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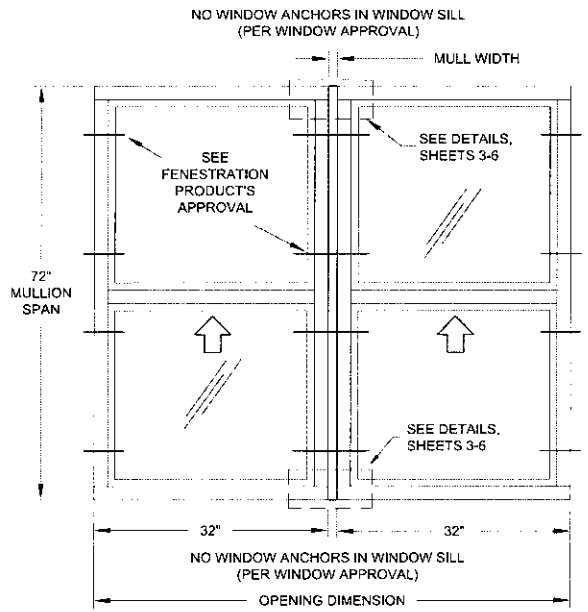
ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23
EXAMPLE 1	JENS ROSOWSKI
MULLS	NTS / 21 OF 23 / TUBEMULL-1 / A

ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705



EXAMPLE 2: SINGLE VERTICAL MULLION

THE BUILDING SUBSTRATE IS KNOWN TO BE WOOD ON ALL FOUR SIDES. THE WINDOW FRAME DEPTH IS 2-3/4". THE OPENING REQUIRES A DESIGN PRESSURE OF +60.0/-60.0 PSF.

1) INITIALLY ASSUMING THAT A 1" WIDE MULLION IS SUITABLE,THE MULLION SPAN IS 72" AND THE OPENING DIMENSION IS 32"+32+1" = 65". REFERENCING SHEET 23, THE COLUMN USING RECTANGULAR LOADING MUST BE USED. SCAN THE MULLION TABLES FOR A MULLION THAT IS AT LEAST THE WINDOW FRAME DEPTH OF 2-3/4" AND WILL MEET OR EXCEED THE REQUIRED DESIGN PRESSURE OF +60.0/-60.0 PSF. IF THE TABLE DOES NOT SHOW THE EXACT SIZE, USE THE NEXT LARGER SIZE AVAILABLE.

FROM TABLE 4A, SHEET 10, THE 1" X 3" X 1/8" MULLION (SPAN = 72", OPENING DIMENSION = 70") MEETS THE DEPTH REQUIRED, HOWEVER THE DESIGN PRESSURE IS ONLY +/-44.7 PSF AND WOULD NOT BE SUITABLE FOR THIS APPLICATION.

FROM TABLE 5A, SHEET 11, THE 1" X 4" X 1/8" MULLION (SPAN = 72", OPENING DIMENSION = 70") HAS A DESIGN PRESSURE OF +/-97.0 PSF WHICH EXCEEDS THE REQUIREMENTS FOR THE OPENING AND MAY BE USED IN THIS APPLICATION. NOTE THE ANCHOR CAPACITY REQUIRED OF 849 LBS.

2) USE TABLE 5B TO FIND THE ANCHOR TYPE, ANCHOR QUANTITY AND CLIP TYPE REQUIRED FOR THE WOOD SUBSTRATE. BOTH THE STANDARD CLIP WITH (4) #12 ANCHORS AND THE 2X5 ANGLE CLIPS WITH (4) #12 ANCHORS HAVE A CAPACITY OF 885 LBS. THOUGH EITHER ONE COULD BE USED, THE STANDARD CLIP IS EASIEST TO INSTALL.

3) VERIFY THE DESIGN PRESSURE OF THE FENESTRATION PRODUCTS USED WITH THIS MULLION SYSTEM. THE LOWER DESIGN PRESSURE, OF MULLIONS OR FENESTRATION PRODUCTS, WILL APPLY TO THE OVERALL ASSEMBLY. FINAL DESIGN PRESSURE REQUIRES THAT THE BOTH THE MULLION AND THE FENESTRATION PRODUCT BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION SPECIFICATIONS INTO RESPECTIVE SUBSTRATES AND FENESTRATION PRODUCTS TO MULLION.

IN THIS EXAMPLE, THE DESIGN PRESSURE REQUIRED WAS +/-60.0 PSF. THE OVERALL MULLION SYSTEM WAS DETERMINED TO BE 97.0 PSF WITH AN ANCHOR CAPACITY OF 885 LBS. ALTERNATIVELY, THE ANCHOR CAPACITY ADJUSTMENT FORMULA COULD HAVE BEEN USED TO CALCULATE THE ANCHOR CAPACITY REQUIRED FOR THE EXACT DESIGN PRESSURE OF 60 PSF:

$$(60\ \text{PSF}) \times \left\{ \frac{885\ \text{LBS}}{97.0\ \text{PSF}} \right\} = 547.4\ \text{LBS}$$ (I.E. YOU COULD USE A LOWER CAPACITY ANCHORAGE OPTION OF 547.4 LBS SINCE YOU ONLY REQUIRE A DESIGN PRESSURE OF 60 PSF.)

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REGISTRATION #29296

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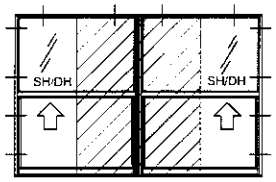
HIALEAH, FL 33018
(305) 593-6590

DESIGN	02/02/23
DRAWN	JENS ROSOWSKI
CHECKED	ALUMINUM TUBE MULLIONS, CLIPPED (LM)
SCALE	EXAMPLE 2
JOB NO.	MULLS
SHEET NO.	NTS
SHEETS	22 OF 23
DWG NO.	TUBEMULL-1
REV	A

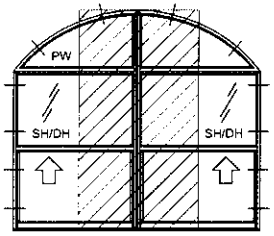
ANTHONY LYNN MILLER
LICENSE
No. 58705
8/23/23
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

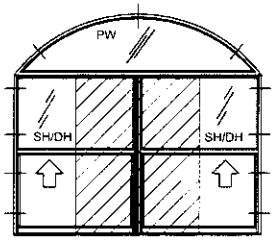
EXAMPLES OF RECTANGULAR LOADING:



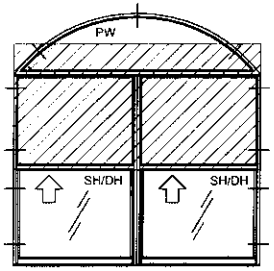
LOADING OF VERTICAL MULLION
SILL OF WINDOWS NOT ANCHORED



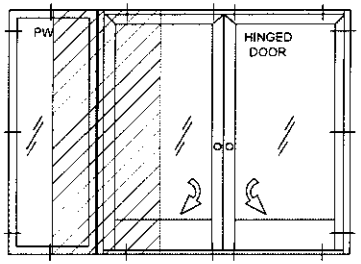
LOADING OF VERTICAL MULLION
WITH INTERSECTING HORIZONTAL MULLIONS



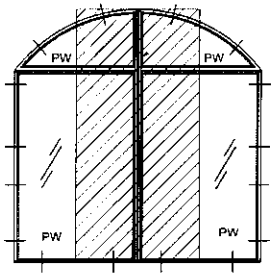
LOADING OF VERTICAL MULLION
SILL OF WINDOWS NOT ANCHORED



LOADING OF HORIZONTAL MULLION
WITH INTERSECTING VERTICAL MULLION

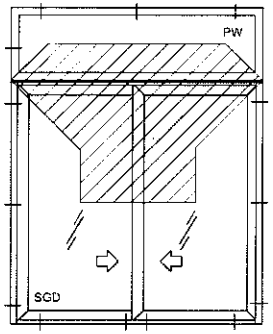


LOADING OF VERTICAL MULLION PANEL OF
HINGED DOOR IS NOT CAPTURED OR ANCHORED

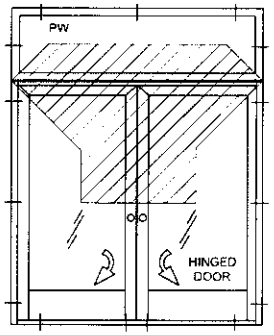


LOADING OF VERTICAL MULLION
WITH INTERSECTING HORIZONTAL MULLIONS

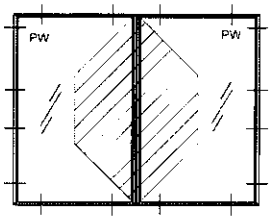
EXAMPLES OF TRAPEZOIDAL/TRIANGULAR LOADING:



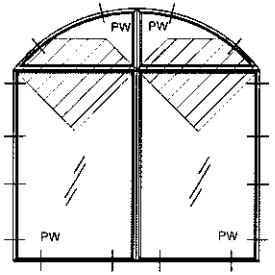
LOADING OF HORIZONTAL MULLION



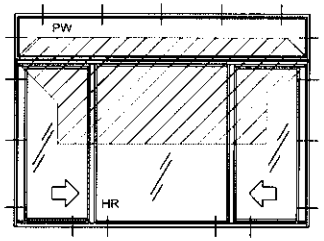
LOADING OF HORIZONTAL MULLION



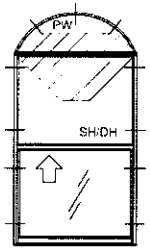
LOADING OF VERTICAL MULLION



LOADING OF (2) HORIZONTAL MULLIONS



LOADING OF HORIZONTAL MULLION



LOADING OF
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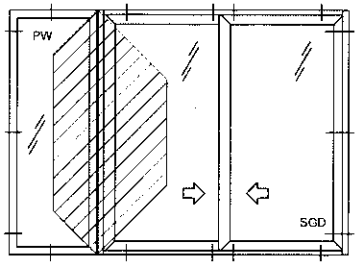
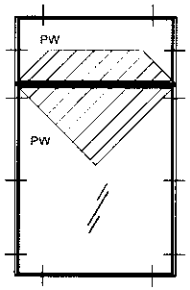


LOADING OF VERTICAL MULLION



LOADING OF
HORIZONTAL MULLION

NOTES:

1) DRAWINGS ARE RERESENTATIONS OF TYPICAL CONFIGURATIONS. CONFIGURATIONS NOT SHOWN MAY BE EXTRAPOLATED FROM THOSE SHOWN.

2) IF THE LOADING TYPE CANNOT BE DETERMINED, USE RECTANGULAR LOADING.

3) SEE PRODUCTS' APPROVAL FOR ACTUAL ANCHOR LOCATIONS.

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ALUMINUM TUBE MULLIONS, CLIPPED (LM)

LOADING AREA EXAMPLES

MULLS

NTS

23 OF 23

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City of Opa-locka
Agenda Cover Memo

Department Director:	Gregory Gay, Planning & Community Development Department Director	Date
City Manager:	Darvin Williams, Interim City Manager	Date

Department:	Planning and Community Development	**Sponsor Name:**	Darvin Williams
Meeting Date:	July 30, 2024	**Item Type:**	Resolution
Strategic Plan Related:	No	**Strategic Plan Priority Area:**	Enhanced Organizational Business and economic development Public Safety Quality of Education Quality of Life and City Image Communication
Strategic Plan Objective/Strategy:			

Short Title:

SPECIAL CERTIFICATE OF APPROPRIATENESS FOR THE STRUCTURE AT 806 JANN AVENUE

Staff Summary:

Fiscal Impact: No

Funding Source: *(Account Number)*	**Advertising Requirement:** No
Contract/P.O. Required: No	**RFP/RFQ/Bid#:**

Proposed Action:

Attachment(s):

None

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA, APPROVING THE RECOMMENDATION OF THE HISTORIC ENVIRONMENTAL PRESERVATION BOARD TO ISSUE A SPECIAL CERTIFICATE OF APPROPRIATENESS FOR THE STRUCTURE AT 806 JANN AVENUE TO ALLOW FOR THE INSTALLATION OF A PHOTOVOLTAIC SOLAR SYSTEM ON THE ROOF OF THIS REGISTERED HISTORIC PROPERTY; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City of Opa-Locka, Florida, ("City") has established a Historic Preservation Ordinance, and established the Historic Environmental Tree Preservation Board by Ordinance 16-13 in order to preserve and protect the City's historic and cultural heritage and to foster civic pride; and

WHEREAS, the Historic Environmental Preservation Board also established to protect the green environment especially, the preservation of trees in the City in order to support Arbor Day principles; and

WHEREAS, the City is required to have a fully functional process, as required by Miami-Dade County, in order to maintain a separate, independent Historic Preservation Ordinance and Board; and

WHEREAS, the Historic Environmental Preservation Board has received an application for the issuance of a certificate of appropriateness; and

WHEREAS, pursuant to City Ordinance 2022-02, Section 2-570.84 (2) (B) *Special certificate of appropriateness*: "For all applications for a special certificate of appropriateness involving the demolition, removal, reconstruction or new construction at an individual site or in a district, a special certificate of appropriateness is required that is issued by recommendation of the Historic Environmental Preservation Board" and review and approval by the City Commission; and

WHEREAS, pursuant to Chapter 2, Article XI, Division 13, Sec. 2-570.82(3) of the City of Opa-Locka Code of Ordinances, the duties and responsibilities of the Historic

Environmental Preservation Board shall include responsibilities to "issue or deny certificates of appropriateness and certificates to dig"; and

WHEREAS, further, the City has adopted Ordinance 2022-02 to establish minimum standards for municipal historic preservation programs, as set forth in the Miami-Dade County Historic Preservation Ordinance Section 16A-3.1; and

WHEREAS, the Historic Preservation Ordinance permits issuance of a Special Certificate of Appropriateness to replace three windows and a door on the structure at 806 Jann Avenue, within the City, after an approval recommendation from the Historic Environmental Preservation Board, and review and approval by the City Commission in accordance with Ordinance 2022-02; and

WHEREAS, on July 30, 2024, the Historic Environmental Preservation Board held a meeting to, among other business matters, consider a request for a certificate of appropriateness approval for the structure at 806 Jann Avenue, within the City, to allow for the installation of a photovoltaic solar system on the roof of this historic property. After presentation and discussion, the Historic Environmental Preservation Board recommended approval of the Certificate of Appropriateness by _-_ vote; and

WHEREAS, the City desires to approve the application for and the issuance of a certificate of appropriateness for the subject registered historic property.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF OPA-LOCKA, FLORIDA:

Section 1. **ADOPTION OF RECITALS:** The recitals to the preamble herein are incorporated by reference.

Section 2. **AUTHORIZATION:** The City Commission of the City of Opa-Locka, Florida hereby approves the recommendation of the Historic Environmental Preservation Board to issue a certificate of appropriateness to allow for the installation of a photovoltaic solar system on the roof of this registered historic property located at 806 Jann Avenue, within the City.

Section 3. SCRIVENER'S ERRORS.

Sections of this Resolution may be renumbered or re-lettered and corrections of typographical errors which do not affect the intent may be authorized by the City Manager, following review by the City Attorney, without the need for public hearing, by filing a corrected copy of same with the City Clerk.

Section 4. EFFECTIVE DATE.

This Resolution shall take effect upon the adoption and is subject to the approval of the Governor or Governor's Designee.

PASSED AND ADOPTED this _____ day of _____, 2024.

_____
John Taylor, Mayor

ATTEST:

_____
Joanna Flores, City Clerk

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:

_____
Burnadette Norris-Weeks, P.A.
City Attorney

Moved by: _____

Seconded by:_____

VOTE:

Commissioner Williams

Commissioner Kelley

Commissioner Bass

Vice Mayor Ervin

Mayor Taylor

CERTIFICATE OF APPROPRIATENESS

HISTORIC AND ENVIRONMENTAL PRESERVATION BOARD
HEPB COA APPLICATION-CITY OF OPA-LOCKA
PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
780 FISHERMAN STREET, OPA-LOCKA, FL 33054

DATE RECEIVED

APPLICATION #_____

HEPB MEETING DATE_____

RESOLUTION #_____

STAFF INITIALS _____

☐ APPROVED

☐ W. CONDITIONS

☐ DENIED

☐ CONTINUED TO: _____

HEPB APPLICATION

☐ SPECIAL COA

☐ SPECIAL CERTIFICATE TO DIG

☐ SPECIAL CERTIFICATE OF APPROVAL

☐ WAIVER

806 JANN AVENUE — DOVE HOUSE
PROPERTY ADDRESS — **HISTORIC PROPERTY NAME**

ALEXANDER JAN VAN MECL
OWNERS NAME

806 JANN AVE, OPA-LOCKA, FL 33054
OWNER'S ADDRESS, CITY, STATE, ZIP CODE

(323) 547-3631
OWNER'S DAYTIME PHONE NUMBER

APPLICANT /AUTHORIZED REPRESENTATIVE (NAME & TITLE)

APPLICANT'S ADDRESS, CITY, STATE, ZIP CODE

APPLICANT'S DAYTIME PHONE NUMBER **APPLICANT'S EMAIL**

APPLICATION TYPE (CHOOSE AS MANY AS APPLICABLE)

☐ NEW CONSTRUCTION ☐ ADDITION ☐ DEMOLITION ☐ AFTER-THE FACT WORK

☐ ALTERATION ☐ LANDSCAPING/PAVING ☐ CONCEPTUAL ☒ OTHER SOLAR INSTALL

☐ PARKING WAIVER ☐ SETBACK WAIVER ☐ WAIVER (OTHER)

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED.

The property owner should be present at the HEPB hearing. It is preferred that the owner personally present the project to the HEPB at the meeting. If the owner should choose to have a paid representative present the project on their behalf, that representative must be a registered lobbyist with the City of Opa-locka. For more information on becoming a registered lobbyist, please call the City Clerk's Office at 305.688.4611. (Lobbyist will be asked to provide proof of registration.)

OWNERS ATTESTATION:

I HAVE READ AND UNDERSTAND THE ABOVE INFORMATION AND I CERTIFY TO THE BEST OF MY ABILITY THAT ALL INFORMATION PROVIDED IN THIS APPLICATION AND ATTACHMENTS ARE CORRECT.

SIGNATURE OF PROPERTY OWNER — 7/13/2024 **DATE**

SIGNATURE OF APPLICANT (IF OTHER THAN PROPERTY OWNER — DATE

CITY OF Opa-locka

BUILDING DEPARTMENT
780 Fisherman St
Opa-locka, FL 33054
Office: 305-953-2868
www.opalockafl.gov

CITY OF OPA-LOCKA
Community Development & Planning Dept.
Date Rec'd 6/26/24
By: [illegible]

Date: 6/26/2024 Clerk: MS

☐ Master Permit 24060078

JOB ADDRESS 806 JANN AVE

PERMIT APPLICATION

☐ Sub-Permit

1. OWNER INFORMATION
Owner Alexander VanMecl
Address 806 JANN AVE
City OPA-LOCKA ST FL Zip 33054
Driver License No. /I.D. V524-010-89-460-0
Phone No. (323) 547-3631

2. CONTRACTOR INFORMATION
Company Name Prosolar Group
Qualifier Name Peter Rosen
Address 1100 W Oakland Park Blvd #8
City Wilton Manors ST FL Zip 33311
Lic. No. CVC57028 Phone No. 954-390-2448

3. PERMIT TYPE (Choose only One)
☒ Building
☐ Electrical
☐ Mechanical
☐ Plumbing/Gas
☐ Sign
☐ Roofing

4. CHANGE TO AN EXISTING PERMIT (Choose only One)
☐ Change Contractor
☐ Extension
☐ Renewal
☐ Shop Drawing
☐ Lost Plans

5. TYPE OF IMPROVEMENT (Choose only One)
☐ New Construction ☐ Re-roof ☐ Pool
☐ Addition Attached ☐ Driveway ☐ Shed
☐ Alteration Interior ☐ Fence ☐ Other:
☐ Alteration Exterior ☐ Window
☐ Repair/Replace ☐ Door
☐ Demolition/Partial ☐ Shutters

6. ARCHITECT/ENGINEER INFO
Name Kimandy Lawrence
Address 6801 Lake Worth Rd. Ste 302
City Lake Worth ST FL Zip Code 33467
Lic. No. PE 83317 Discipline
Phone No. 561-660-5200

7. CONTACT
Name Adolfo Martinez
E-mail Olmo Martinez00@gmail
Phone No. 786 674 0508

8. LEGAL/USE/WORK VALUE
Folio No. 08-2121-005-0130 No. of Units
Lot Block Subdivision LOT 2 BLK 62 OPA LOCKA NO 2 PB 28-72
Current Use of Property
Description of Work Photovoltaic Solar System on rooftop
Square FT. Linear FT.
Work Value 39,710 Building Value
Flood Zone Base Flood Elevation

Application is hereby made to obtain a permit to do the work and/or installations as indicated. I certify that no work or installation has commenced prior to the issuance of a permit and that all work will be performed to meet the standards of all laws regulating construction in this jurisdiction. I understand that a separate permit must be secured for Electrical, Plumbing, Signs, Wells, Pools, Furnaces, Boilers, Heaters, Tanks, Air Conditioning, Driveways, Portable Storage Units, etc.
Owner's Affidavit: I certify that all the foregoing information is accurate, and that work will be done in compliance with all applicable laws regulating construction and zoning.

NOTICE REGARDING BUILDING PERMIT APPLICATIONS

The Completion and submission of a Building Permit Application is a requirement of securing a City Building Permit. The City will rely upon the information contained in the Application in determining whether a City Building Permit should be issued. The submission of inaccurate, misleading, or misrepresented information in this application shall subject the Building Permit to denial, suspension or revocation, and the individual applying for the permit, to all appropriate fines, penalties and other punishments authorized by law. KINDLY GOVERN YOURSELF ACCORDINGLY.
WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

OWNER INFORMATION

Alexander VanMecl
PRINT NAME OWNERS SIGNATURE
SWORN TO AND SUBSCRIBED BEFORE ME BY: (PRINT OWNER'S NAME)
Alexander VanMecl
BY MEANS OF PHYSICAL PRESENCE NOTARIZATION AND PRODUCED
V524-010-89-460-0 OR IS PERSONALLY KNOWN
As identified on this 24 day of Jun 20
Notary's Signatures
Printed Name of Notary Miguel Salazar.

Peter Rosen
PRINT NAME OWNERS SIGNATURE
SWORN TO AND SUBSCRIBED BEFORE ME BY: (PRINT QUALIFIER'S NAME)
~~Carlos Gonzalez~~ Peter Rosen
BY MEANS OF PHYSICAL PRESENCE NOTARIZATION AND PRODUCED
OR IS PERSONALLY KNOWN
As identified on this 24 day of Jun 20
Notary's Signatures
Printed Name of Notary Miguel Salazar.

MIGUEL SALAZAR Notary Public - State of Florida Commission # HH 267853 My Comm. Expires May 24, 2026 Bonded through National Notary Assn.

DO NOT WRITE BELOW – FOR OFFICE USE ONLY

✓	TRADE	APPROVED/DATE	DISAPPROVED/DATE
	Zoning		
	Structural		
	Building		
	Electrical		
	Mechanical		
	Plumbing		
	Roofing		
	Flood		
	Publics Works		

APPLICATION INCLUDES	FEES $	.00
Zoning		
Structural		
Base Fee		
Scanning		
Technology		
Rework		
Violation		
DBPR/DCA		
Code Compliance		
(-) Upfront Fee		
Balance Due		

Alex VanMecl
806 Jann Ave, Opa-locka, FL 33054, USA
+1 (323) 547-3631
alexvanmecl@gmail.com

Solar details

System size
15.355 kW DC

Panels
BSM415M10-54HPH
Inverters
Tesla Solar Inverter 7.6 kW [240V]

CEC-AC rating
14.747 kW AC

Estimated First Year Production
20,368 kWh

Consumption Offset
104%

Array details

Panel: BSM415M10-54HPH

Quantity: 4	**Watts:** 415	**Azimuth:** 150° (SE)	**Tilt:** 18°	**Mounting:** flat

Panel: BSM415M10-54HPH

Quantity: 4	**Watts:** 415	**Azimuth:** 151° (SE)	**Tilt:** 5°	**Mounting:** flat

Panel: BSM415M10-54HPH

Quantity: 20	**Watts:** 415	**Azimuth:** 153° (SE)	**Tilt:** 5°	**Mounting:** flat

Panel: BSM415M10-54HPH

Quantity: 9	**Watts:** 415	**Azimuth:** 151° (SE)	**Tilt:** 5°	**Mounting:** flat

Alex VanMecl
806 Jann Ave, Opa-locka, FL 33054, USA
+1 (323) 547-3631
alexvanmecl@gmail.com

Materials

Material	Description	Data sheet	Quantity
Panels	BSM415M10-54HPH (415 Watts)	-	37
Inverters	Tesla Solar Inverter 7.6 kW [240V]	Download	2

Alex VanMecl
806 Jann Ave, Opa-locka, FL 33054, USA
+1 (323) 547-3631
alexvanmecl@gmail.com

Pricing

	Price	Discounts & rebates	Total price
Base Price for Solar Based on a 15.355 kW installation	$30,710.00		
Gross Cost	$30,710.00		$30,710.00
%		0	
Cost after rebates & incentives*	$30,710.00		$30,710.00

Note:

* Not everyone is eligible for credits, incentives, or rebates or can fully use them. Please consult your tax professional or legal professional for further information.

* Incentives are subject to change. The actual amount can be higher or lower than what is quoted, and may not stay at a fixed rate over time. It can also change based on the tax bracket you are in.

Alex VanMecl
806 Jann Ave, Opa-locka, FL 33054, USA
+1 (323) 547-3631
alexvanmecl@gmail.com

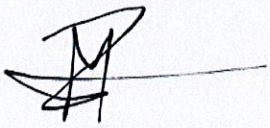
Signature

I hereby agree to move forward with the solar project as described above and agree to the Terms and Conditions below of the contract provided by the installer ProSolar Group LLC joined to this proposal.

06-10-2024

Alex VanMecl

Date of signature (MM-DD-YYYY)



06-11-2024

Date of signature (MM-DD-YYYY)

NOTICE OF COMMENCEMENT

A RECORDED COPY MUST BE POSTED ON THE JOB SITE AT TIME OF FIRST INSPECTION

CFN: 20240478197 BOOK 34285 PAGE 462
DATE:06/24/2024 03:51:43 PM
JUAN FERNANDEZ-BARQUIN
CLERK OF THE COURT & COMPTROLLER
MIAMI-DADE COUNTY, FL

PERMIT NO._____ TAX FOLIO NO. 08-2121-005-0130

STATE OF FLORIDA:
COUNTY OF MIAMI-DADE:

THE UNDERSIGNED hereby gives notice that improvements will be made to certain real property, and in accordance with Chapter 713, Florida Statutes, the following information is provided in this Notice of Commencement.

Space above reserved for use of recording office

1. Legal description of property and street/address: OPA LOCKA NO 2 PB 28-72 LOT 2 BLK 62
806 JANN AVE
2. Description of improvement: Photovoltaic Solar System on rooftop
3. Owner(s) name and address: Alexander VanMecl 806 JANN AVE OPA-LOCKA, FL 33054
Interest in property: Owner
Name and address of fee simple titleholder: _____
4. Contractor's name, address and phone number: _____
5. Surety: (Payment bond required by owner from contractor, if any)
Name, address and phone number: _____
Amount of bond $_____
6. Lender's name and address: _____
7. Persons within the State of Florida designated by Owner upon whom notices or other documents may be served as provided by Section 713.13(1)(a)7., Florida Statutes,
Name, address and phone number: _____
8. In addition to himself, Owners designates the following person(s) to receive a copy of the Lienor's Notice as provided in Section 713.13(1)(b), Florida Statutes.
Name, address and phone number: _____
9. Expiration date of this Notice of Commencement: _____
(the expiration date is 1 year from the date of recording unless a different date is specified)

WARNING TO OWNER: ANY PAYMENTS MADE BY THE OWNER AFTER THE EXPIRATION OF THE NOTICE OF COMMENCEMENT ARE CONSIDERED IMPROPER PAYMENTS UNDER CHAPTER 713, PART I, SECTION 713.13. FLORIDA STATUTES, AND CAN RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE COMMENCING WORK OR RECORDING YOUR NOTICE OF COMMENCEMENT.

Signature(s) of Owner(s) or Owner(s)' Authorized Officer/Director/Partner/Manager

Prepared By _____
Print Name Alexander VanMecl
Title/Office _____

Prepared By _____
Print Name _____
Title/Office _____

STATE OF FLORIDA
COUNTY OF MIAMI-DADE
The foregoing instrument was acknowledged before me this 24 day of June 2024
By Alexander VanMecl
☐ Individually, or ☐ as _____ for _____
☐ Personally known, or ☑ produced the following type of identification: V524-010-89-460-0
Signature of Notary Public: _____
Print Name: Miguel Salazar
(SEAL)

MIGUEL SALAZAR
Notary Public - State of Florida
Commission # HH 267853
My Comm. Expires May 24, 2026
Bonded through National Notary Assn.

VERIFICATION PURSUANT TO SECTION 92.525, FLORIDA STATUTES
Under penalties of perjury, I declare that I have read the foregoing and that the facts stated in it are true, to the best of my knowledge and belief.

Signature(s) of Owner(s) or Owner(s)'s Authorized Officer/Director/Partner/Manager who signed above:

By _____ By _____

123_01-52 PAGE 3 6/12

City of Opa-locka Building Department

780 Fisherman Street 1st Floor Suite 130-B
Opa-locka, Florida 33054
(305) 953-2868 Option 4

NOTICE TO CITY OF OPA-LOCKA BUILDING DEPARTMENT OF EMPLOYMENT AS SPECIAL INSPECTOR UNDER THE FLORIDA BUILDING CODE

I, (We) have been retained by (permit holder) VanMec Residence to perform Inspection services under the Florida Building Code at the (address) 806 Jann Avenue project on the listed permit number _____ as of 06/21/2024 (date). I am a registered architect or professional engineer licensed in the State of Florida with license number _____.

- ☐ SPECIAL INSPECTOR FOR PILING, CMDC sect. 8-22
- ☐ SPECIAL INSPECTOR TRUSSES>35' LONG OR 6' HIGH, CMDC sect. 8-22
- ☐ SPECIAL INSPECTOR FOR REINFORCED MASONRY, FBC 2122.24 & CMDC sect 8.22
- ☐ SPECIAL INSPECTOR FOR STEEL CONNECTIONS, CMDC sect 8.22
- ☐ SPECIAL INSPECTOR FOR SOIL COMPACTION under Concrete Slabs, CMDC sect 8.22
- ☐ SPECIAL INSPECTOR FOR PRECAST UNITS & ATTACHMENTS, CMDC sect 8.22
  (For tilt-up walls systems, inspect reinforcement as well)
- ☐ SPECIAL INSPECTOR FOR CURTAIN WALL, CMDC sect 8.22
- ☐ SPECIAL INSPECTOR FOR STRUCTURAL GLAZING, CMDC sect 8.22
- ☐ SPECIAL INSPECTOR FOR LIGHTWEIGHT INSULATING CONCRETE, CMDC sect 8.22
- ☐ SPECIAL INSPECTOR FOR COMPOSITE FLOOR SYSTEM, CMDC sect 8.22
- ☒ SPECIAL INSPECTOR FOR Solar PV Attachments

Note: Only the marked boxes apply.

The following individual (s) employed by this firm, or me are authorized representatives to perform inspection*

1. Kimandy Lawrence
2. Mindy O'Neal
3. Roger Messenger
4. _____

**Special inspectors utilizing authorized representatives shall insure the authorized representative is qualified by education or licensure to perform the duties assigned by the Special Inspector. The qualifications shall include: licensure as a professional engineer or architect; graduation from an engineering education program in civil or structural engineering; graduation from an architectural education program; successful completion of the NCEES Fundamentals Examination; or registration as building inspector or general contractor.*

I, (we) will notify City of Opa-locka Building Department of any changes regarding authorized personnel performing inspection services.

I, (we) understand that a Special Inspector inspection log for each building must be displayed in a convenient location on the site for reference by the City of Opa-locka Building Department Inspector. All mandatory inspections, as required by the Florida Building Code, must be performed by the City. The City building inspections must be called for on all mandatory inspections. Inspections performed by the Special Inspector hired by the Owner are in addition to the mandatory inspections performed by the Department. Further, upon completion of the work under each Building Permit I will submit to the Building Inspector at the time of final inspection the completed inspection log form and a sealed statement indicating that, to the best of my knowledge, belief and professional judgment those portions of the project outlined above meet the intent of the Florida Building Code and are in substantial accordance with the approved plans.

Engineer/Architect

Print Name Kimandy Lawrence

Address 6801 Lake Worth Rd #302, Lake Worth, FL 33467

Phone # 561-660-5200

Signed and Sealed 06/21/2024

Date

KIMANDY LAWRENCE LICENSE No. 83317 STATE OF FLORIDA PROFESSIONAL ENGINEER

6/21/24

City of Opa-locka Building Department

780 Fisherman Street 1st Floor Suite 130-B
Opa-locka, Florida 33054
(305) 953-2868 Option 4

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1. Kimandy Lawrence
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3. Roger Messenger
4. _____

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Engineer/Architect

Print Name Kimandy Lawrence

Address 6801 Lake Worth Rd #302, Lake Worth, FL 33467

Phone # 561-660-5200

Signed and Sealed 06/21/2024

Date

KIMANDY LAWRENCE LICENSE No. 83317 STATE OF FLORIDA PROFESSIONAL ENGINEER

6/21/24

Product Approval
USER: Public User

OFFICE OF THE SECRETARY

FL #	FL41858-R1
Application Type	Revision
Code Version	2023
Application Status	Approved
Comments	
Archived	☐
Product Manufacturer	IronRidge Inc.
Address/Phone/Email	28357 Industrial Blvd. Hayward, CA 94545 (510) 225-0973 yschwarz@ironridge.com
Authorized Signature	Yann Schwarz yschwarz@ironridge.com
Technical Representative Address/Phone/Email	
Quality Assurance Representative Address/Phone/Email	
Category	Roofing
Subcategory	Products Introduced as a Result of New Technology
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer ☐ Evaluation Report - Hardcopy Received
Florida Engineer or Architect Name who developed the Evaluation Report	Scott Wolters
Florida License	PE-62354
Quality Assurance Entity	Intertek Testing Services NA, Inc. - QA Entity
Quality Assurance Contract Expiration Date	12/31/2026
Validated By	Lucas A. Turner, P.E., MBA ☑ Validation Checklist - Hardcopy Received
Certificate of Independence	FL41858_R1_COI_IronCOI.pdf

Referenced Standard and Year (of Standard)

Standard	Year
ASTM D7147	2018
TAS 100(A)	2023

Equivalence of Product Standards Certified By

Sections from the Code

24060078 MASTER
24060079 6/26/24

OFFICE COPY
BUILDING DEPARTMENT
City of Opa-locka, FL
Zoning
Building
Plumbing
Electrical
Mechanical
Public Works

Product Approval Method	Method 1 Option D
Date Submitted	10/19/2023
Date Validated	10/31/2023
Date Pending FBC Approval	11/02/2023
Date Approved	12/13/2023

Summary of Products

FL #	Model, Number or Name	Description
41858.1	XR PV Panel Racking System	Ironridge XR Flush Mount Photovoltaic Panel Racking System with Ironridge FlashFoot2 Roof Attachments.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** N/A **Other:** Please see Installation Drawings and Eval Report for Limits of Use.		**Installation Instructions** FL41858_R1_II_XR FF2 Dwg2.pdf Verified By: Scott Wolters FLPE# 62354 Created by Independent Third Party: Yes **Evaluation Reports** FL41858_R1_AE_XR FF2 Eval2.pdf Created by Independent Third Party: Yes
41858.2	XR PV Panel Racking System	Ironridge XR Flush Mount Photovoltaic Panel Racking System with Ironridge Flashvue Roof Attacnments.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** N/A **Other:** Please see Installation Drawings and Eval Report for Limits of Use.		**Installation Instructions** FL41858_R1_II_XR FV Dwg2.pdf Verified By: Scott Wolters FLPE# 62354 Created by Independent Third Party: Yes **Evaluation Reports** FL41858_R1_AE_XR FV Eval2.pdf Created by Independent Third Party: Yes
41858.3	XR PV Panel Racking System	Ironridge XR Flush Mount Photovoltaic Panel Racking System with Quickmount L-Mount Roof Attachments.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** N/A **Other:** Please see Installation Instructions and Eval Report for Limits of Use.		**Installation Instructions** FL41858_R1_II_XR LF Dwg2.pdf Verified By: Scott Wolters FLPE# 62354 Created by Independent Third Party: Yes **Evaluation Reports** FL41858_R1_AE_XR LF Eval2.pdf Created by Independent Third Party: Yes
41858.4	XR PV Panel Racking System	Ironridge XR Flush Mount Photovoltaic Panel Racking System with Quickmount Q-Base Roof Attachments.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** N/A **Other:** Please see Installation Instructions and Eval Report for Limits of Use.		**Installation Instructions** FL41858_R1_II_XR QB Dwg2.pdf Verified By: Scott Wolters FLPE# 62354 Created by Independent Third Party: Yes **Evaluation Reports** FL41858_R1_AE_XR QB Eval2.pdf Created by Independent Third Party: Yes
41858.5	XR PV Panel Racking System	Ironridge XR Flush Mount Photovoltaic Panel Racking System with Ironridge Knockout Tile and L-Foot Roof Attachments.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** N/A **Other:** Please see Installation Instructions and Eval Report for Limits of Use.		**Installation Instructions** FL41858_R1_II_XR TKO Dwg2.pdf Verified By: Scott Wolters FLPE# 62354 Created by Independent Third Party: Yes **Evaluation Reports** FL41858_R1_AE_XR TKO Eval2.pdf Created by Independent Third Party: Yes
41858.6	XR PV Panel Racking System	Ironridge XR Flush Mount Photovoltaic Panel Racking System with Quickmount Halo Ultragrip Roof Attachments.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** N/A **Other:** Please see Installation Instructions and Eval Report for Limits of Use.		**Installation Instructions** FL41858_R1_II_XR HUG Dwg2.pdf Verified By: Scott Wolters FLPE# 62354 Created by Independent Third Party: Yes **Evaluation Reports** FL41858_R1_AE_XR HUG Eval2.pdf Created by Independent Third Party: Yes

Back Next

Contact Us :: 2601 Blair Stone Road, Tallahassee FL 32399 Phone: 850-487-1824

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Under Florida law, email addresses are public records. If you do not want your e-mail address released in response to a public-records request, do not send electronic mail to this entity. Instead, contact the office by phone or by traditional mail. If you have any questions, please contact 850.487.1395. *Pursuant to Section 455.275(1), Florida Statutes, effective October 1, 2012, licensees licensed under Chapter 455, F.S. must provide the Department with an email address if they have one. The emails provided may be used for official communication with the licensee. However email addresses are public record. If you do not wish to supply a personal address, please provide the Department with an email address which can be made available to the public. To determine if you are a licensee under Chapter 455, F.S., please click here .

Product Approval Accepts:

Credit Card
Safe
SECURITYMETRICS

WOLTERS ENGINEERING

ENGINEERING, DRAFTING, CONSULTING

15211 97th Road N
West Palm Beach, FL 33412
Ph/Fx: (561) 225-1982

Monday, December 19, 2022

Florida Building Commission
1940 North Monroe Street
Tallahassee, FL 32399

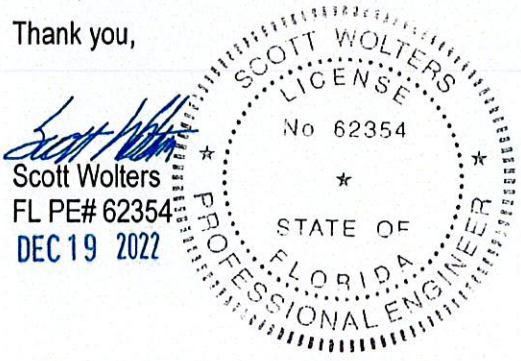
Re: Ironridge PV Panel Racking Systems

Dear Sir or Madam,

This letter is to confirm that I have no financial interest in the Ironridge company, or with any of their employees. I also have no financial interest in Intertek B&C, with Tyler Westerling PE, With Atlantic & Caribbean Roof Consulting, or with Randall Fowler, PE.

If you have any questions or need more information please contact me.

Thank you,



Scott Wolters
FL PE# 62354
DEC 19 2022

WOLTERS ENGINEERING

ENGINEERING, DRAFTING, CONSULTING

15211 97th Road N
West Palm Beach, FL 33412
Ph/Fx: (561) 225-1982

PRODUCT EVALUATION

PRODUCT: IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS

MANUFACTURER: IRONRIDGE
28357 INDUSTRIAL BLVD
HAYWARD, CA 94545

To all concerned,

The XR Flush Mount Photovoltaic Panel Racking System with Quickmount Q-Base Roof Attachments, manufactured by Ironridge, has been tested per ASTM D7147 by Atlantic & Caribbean Roof Consulting and per TAS 100(A) by Intertek B&C, with results shown in test reports ACRC 19-0207 and M9042.04-301, respectively. I have reviewed the testing listed and find it is equivalent to TAS 100(A)-23 and D7147-11(2018).

Technical Documentation:

1. Drawing "XR-QB" dated 10/18/23 (Rev. 1), signed and sealed by Scott Wolters, PE.
2. Test Reports listed above by Intertek B&C. signed and sealed by Tyler Westerling, PE
3. Test Reports listed above by ACRC, signed and sealed by Randall Fowler, PE
4. Supplemental Calculations to support "XR-QB", signed and sealed by Scott Wolters, PE.

I have reviewed this submittal per the requirements of FAC Product Approval Rule Chapter 61G20-3.005 (4). Based on the limitations listed below and those provided in the documents above, this product meets all the requirements of the 8th Edition (2023) Florida Building Code generally, and chapter 15 specifically, including the HVHZ provisions.

Limitations: This PV Panel Racking System is approved for use inside and outside of the HVHZ. Please see Drawing XR-QB for Max Design Pressures and other Limits of Use.

Other Limitations:

1. Fire classification is not a part of this evaluation. Refer to a current Approved Roofing Materials Directory for fire ratings of this product.
2. Design of substrate is by others and is not a part of this evaluation.
3. Existing roofing is not a part of this evaluation.

If you have any questions or need more information concerning this approval, please contact me.

Thank you,

Scott Wolters
FL PE# 62354

STATE OF LICENSE No 62354

OCT 18 2023

IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS

GENERAL NOTES:

1. THIS SYSTEM MEETS ALL OF THE REQUIREMENTS OF THE 8TH EDITION (2023) FLORIDA BUILDING CODE, INCLUDING THE HVHZ PROVISIONS.
2. THIS SYSTEM HAS BEEN TESTED PER TAS 100(A) AND ASTM D7147. IT IS NOT A PART OF THE BUILDING ENVELOPE, AND IMPACT RESISTANCE IS NOT REQUIRED.
3. THIS SYSTEM SHALL BE INSTALLED PER THE IRONRIDGE XR FLUSH MOUNT INSTALLATION MANUAL.
4. THE PV PANELS ARE BY OTHERS AND ARE NOT A PART OF THIS APPROVAL.
5. RAIL SPACING TO BE AS SPECIFIED BY THE PV PANEL MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. THE DESIGN OF THE ROOF SUBSTRATE IS THE RESPONSIBILITY OF THE ENGINEER OF RECORD OR OTHER SPECIALTY ENGINEER, AND IS NOT A PART OF THIS APPROVAL. THE SUBSTRATE MUST SAFELY TRANSMIT THE LOADS APPLIED TO THIS SYSTEM TO THE BUILDING STRUCTURE.
7. FIRE RATINGS OR FIRE RESISTANCE IS NOT A PART OF THIS REVIEW.
8. ALL ANCHORS SECURING THE SYSTEM TO PRESSURE TREATED WOOD SHALL BE CAPABLE OF RESISTING CORROSION CAUSED BY THE CHEMICALS IN THE WOOD.
9. MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL BE PROTECTED PER FBC REQUIREMENTS.
10. NO INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS PRODUCT. Cd=1.6 WAS USED FOR WOOD SCREWS ONLY.

WINDLOAD NOTES:

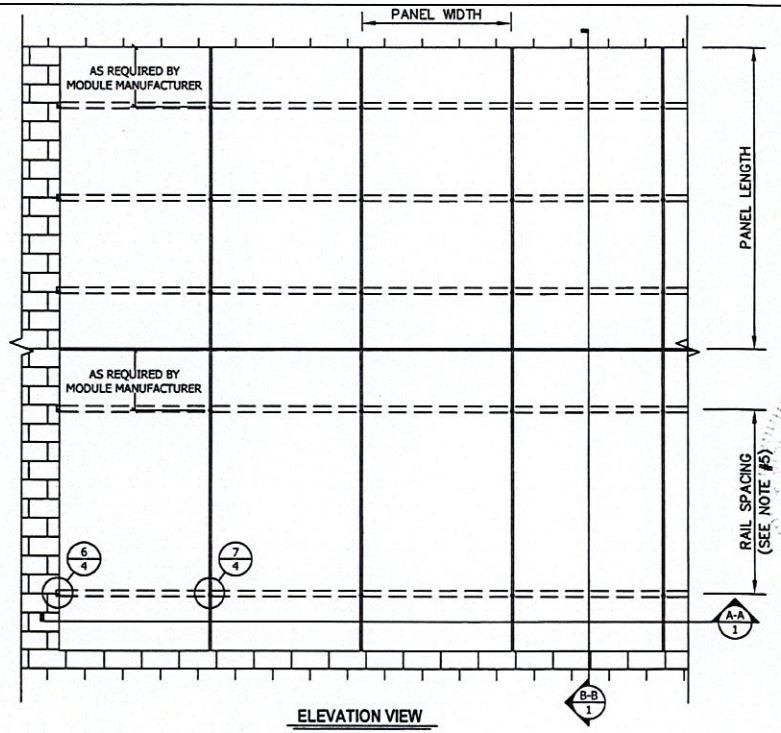
1. DESIGN WINDLOADS MUST BE CALCULATED BY A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT FOR EACH PROJECT, PER ASCE 7-22 SECTION 29.4.4. DESIGN (ASD) WINDLOADS MAY NOT EXCEED THE ALLOWABLE WINDLOADS SHOWN IN THIS CHART.
2. PANEL SYSTEM LOCATION, HEIGHT, AND SPACING MUST MEET THE REQUIREMENTS OF ASCE 7-22 SECTION 29.4.4. WINDLOADS ACT NORMAL TO THE SURFACE OF THE PV PANEL SYSTEM.
3. OTHER CONFIGURATIONS REQUIRE PROJECT SPECIFIC ANALYSIS BY A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT.
4. ALLOWABLE (ASD) WINDLOADS ARE BASED ON ANCHORING IN WOOD RAFTERS WITH S.G.=0.45 MIN.

ALLOWABLE WINDLOADS

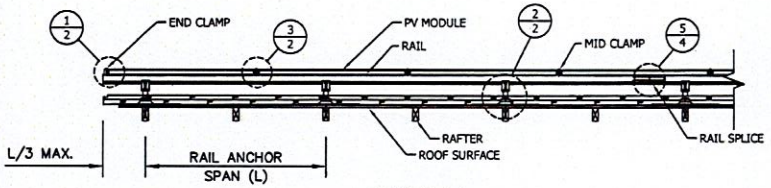
TWO RAIL SYSTEM						THREE RAIL SYSTEM					
PANEL WIDTH (in)	PANEL LENGTH (in)	ANCHOR SPAN (L) (in)	XR-10 RAIL (+/- psf)	XR-100 RAIL (+/- psf)	XR-1000 RAIL (+/- psf)	PANEL WIDTH (in)	PANEL LENGTH (in)	ANCHOR SPAN (L) (in)	XR-10 RAIL (+/- psf)	XR-100 RAIL (+/- psf)	XR-100 RAIL (+/- psf)
45	67 1/2	16	90	90	90	45	67 1/2	16	135.0	135.0	135.0
		24	65.4	90	90			24	98.1	135.0	135.0
		32	56.1	90	90			32	84.2	135.0	135.0
		36	49.9	90	90			36	74.9	135.0	135.0
		48	37.4	85.6	90			48	56.1	128.4	135.0
		64	28.1	64.2	75.9			64	42.2	96.3	113.9
		72	23.7	54	66.1			72	35.6	81.0	99.2
	80	16	75.9	75.9	75.9		80	16	113.9	113.9	113.9
		24	55.2	75.9	75.9			24	82.8	113.9	113.9
		32	47.3	75.9	75.9			32	71.0	113.9	113.9
		36	42.1	75.9	75.9			36	63.2	113.9	113.9
		48	31.6	72.2	75.9			48	47.4	108.3	113.9
		64	23.7	54.2	64.1			64	35.6	81.3	96.2
		72	20	45.6	55.7			72	30.0	68.4	83.6
	86	16	70.6	70.6	70.6		86	16	105.9	105.9	105.9
		24	51.3	70.6	70.6			24	77.0	105.9	105.9
		32	44	70.6	70.6			32	66.0	105.9	105.9
		36	39.1	70.6	70.6			36	58.7	105.9	105.9
		48	29.4	67.2	70.6			48	44.1	100.8	105.9
		64	22	50.4	59.6			64	33.0	75.6	89.4
		72	18.6	42.4	51.9			72	27.9	63.6	77.9
	92 1/2	16	65.7	65.7	65.7		92 1/2	16	98.6	98.6	98.6
		24	47.7	65.7	65.7			24	71.6	98.6	98.6
		32	40.9	65.7	65.7			32	61.4	98.6	98.6
		36	36.4	65.7	65.7			36	54.6	98.6	98.6
		48	27.3	62.5	65.7			48	41.0	93.8	98.6
		64	20.5	46.9	55.5			64	30.8	70.4	83.3
		72	17.3	39.4	48.2			72	26.0	59.1	72.3
LANDSCAPE LAYOUT:											
45	92 1/2	16	65.7	65.7	65.7	45	92 1/2	16	98.6	98.6	98.6
		24	52.9	65.7	65.7			24	79.4	98.6	98.6
		32	40.8	65.7	65.7			32	61.2	98.6	98.6
		36	36	65.7	65.7			36	54.0	98.6	98.6
		48	24.2	55	65.7			48	36.3	82.5	98.6
		64	20.5	46.9	65.7			64	30.8	70.4	98.6
		72	18.2	41.7	65.7			72	27.3	62.6	98.6

THREE RAIL SYSTEM:

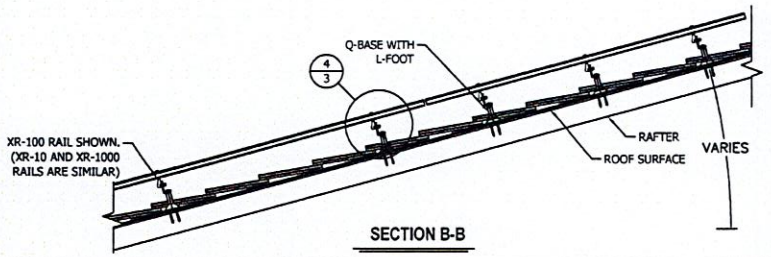
TWO RAIL SYSTEM:



ELEVATION VIEW



SECTION A-A



SECTION B-B

REV.#	DATE	PRINTS ISSUED FOR
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–		
1	10/18/23	2023 CODE UPDATE
–	12/19/22	1ST SUBMITTAL

SEAL: SCOTT WOLTERS FL PE# 82354 STATE OF FLORIDA OCT 18 2023

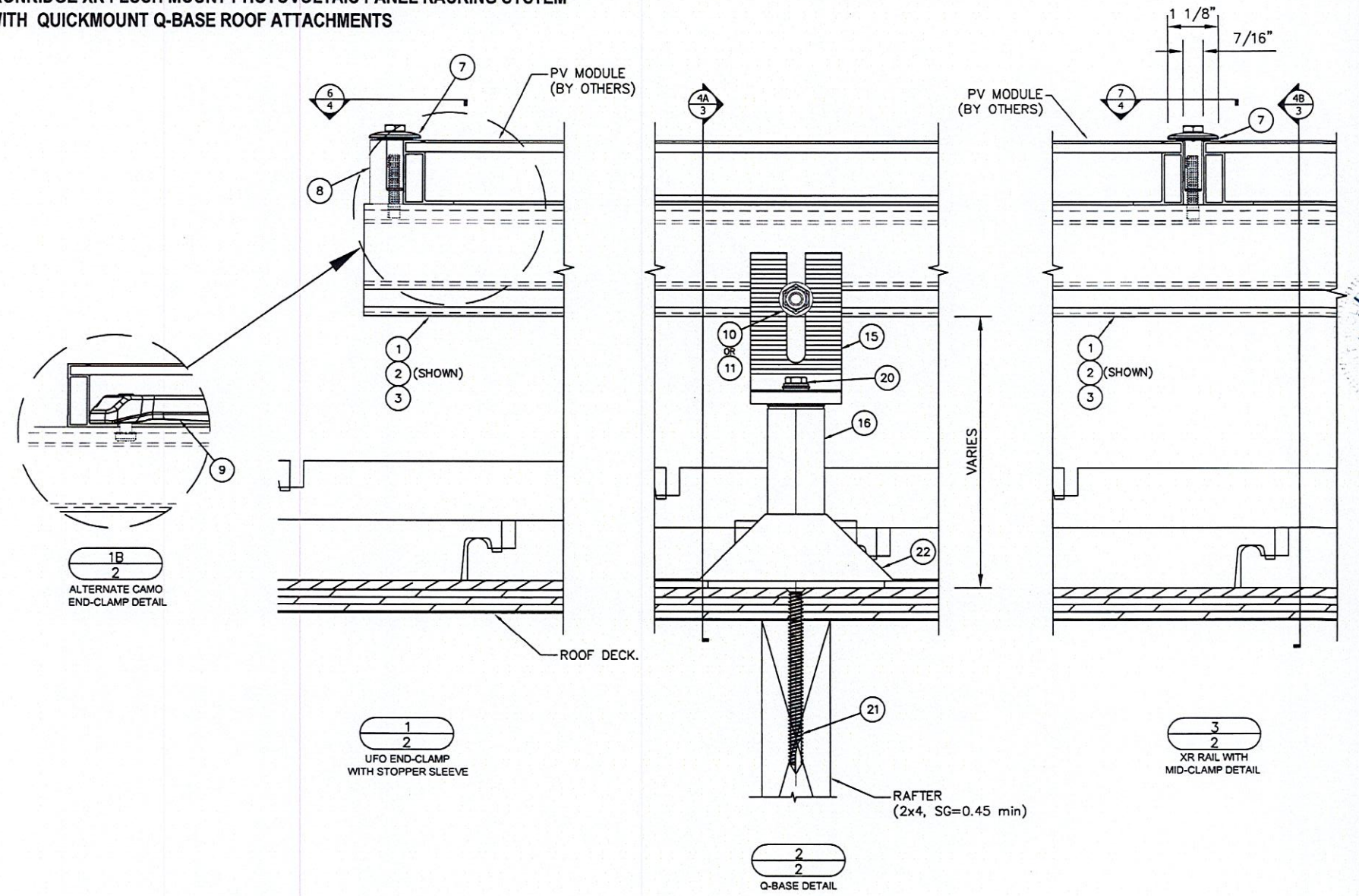
SCOTT WOLTERS
FL PE# 82354
WOLTERS ENGINEERING
(COA# 27194)
15211 97TH ROAD N
WEST PALM BEACH, FL 33412
(561) 225-1982

IRONRIDGE
28357 INDUSTRIAL BLVD.
HAYWARD, CA 94545
PHONE: (800) 227-9523
info@ironridge.com

DWG: XR-QB

SHEET: 1/9

IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS



REV.#	DATE	PRINTS ISSUED FOR
1	10/18/23	2023 CODE UPDATE
–	12/19/22	1ST SUBMITTAL

SCOTT WOLTERS
FL PE# 82354

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SEAL:

STATE OF FLORIDA
SCOTT WOLTERS
No. 82354
10/18/2023

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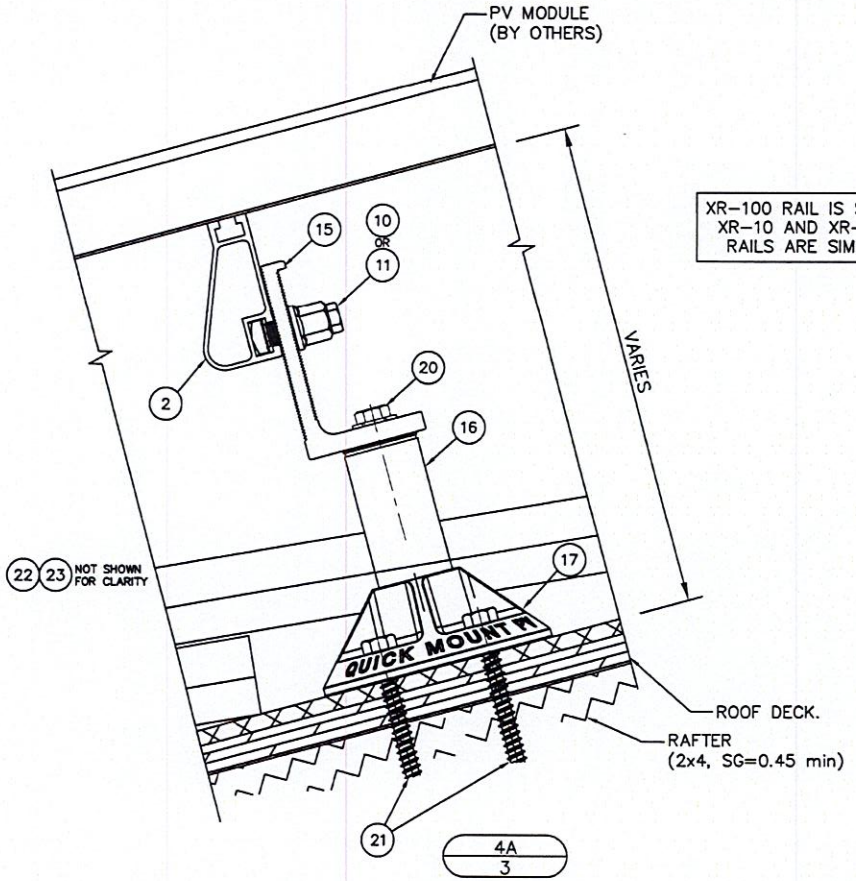
DWG: XR-QB

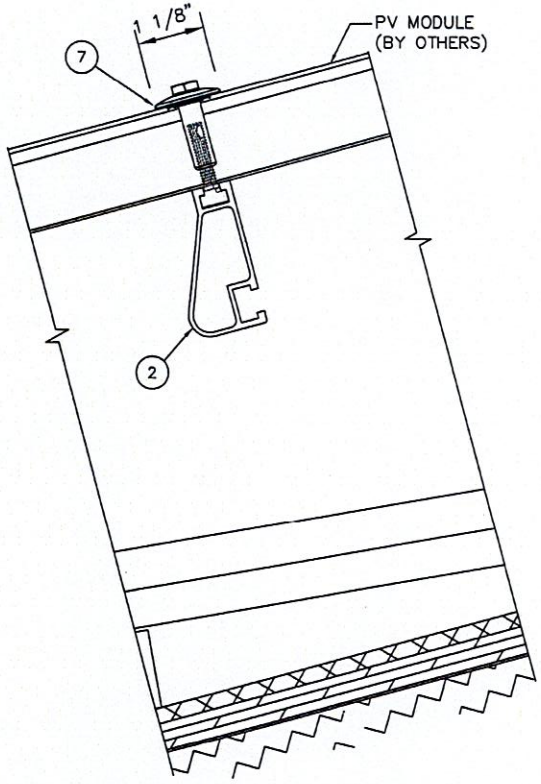
SHEET: 2/9

IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS



4A
3
XR RAIL AND
Q-BASE DETAIL

XR-100 RAIL IS SHOWN.
XR-10 AND XR-1000
RAILS ARE SIMILAR.



4B
3
XR RAIL AND
MID-CLAMP DETAIL

REV.#	DATE	PRINTS ISSUED FOR
1	10/18/23	2023 CODE UPDATE
–	12/19/22	1ST SUBMITTAL

SEAL: STATE OF FLORIDA SCOTT WOLTERS 62354 OCT 18 2023

SCOTT WOLTERS
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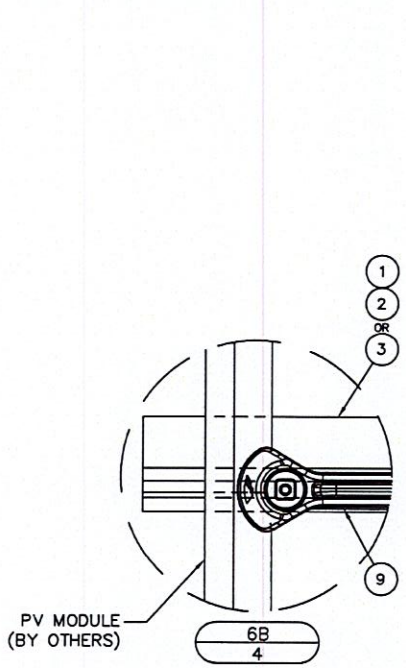
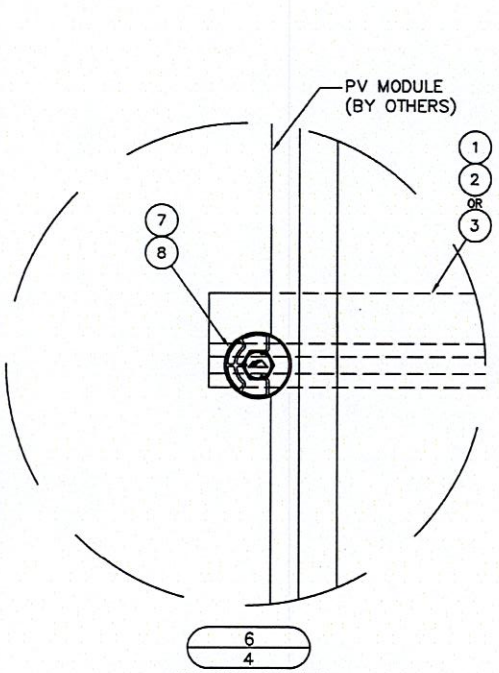
DWG: XR-QB

SHEET: 3/9

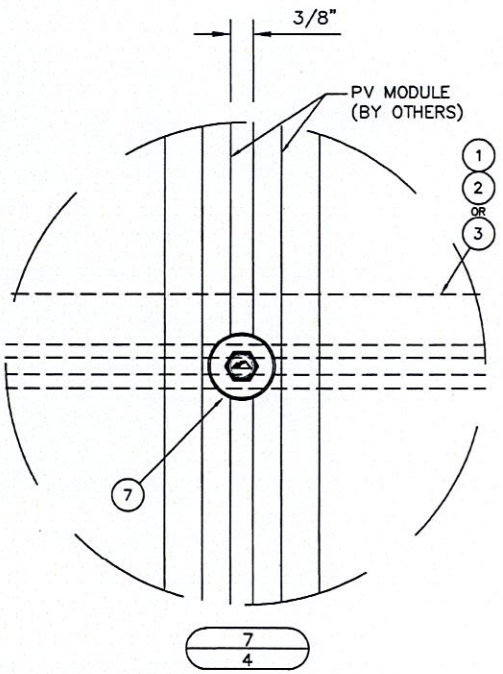
IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS



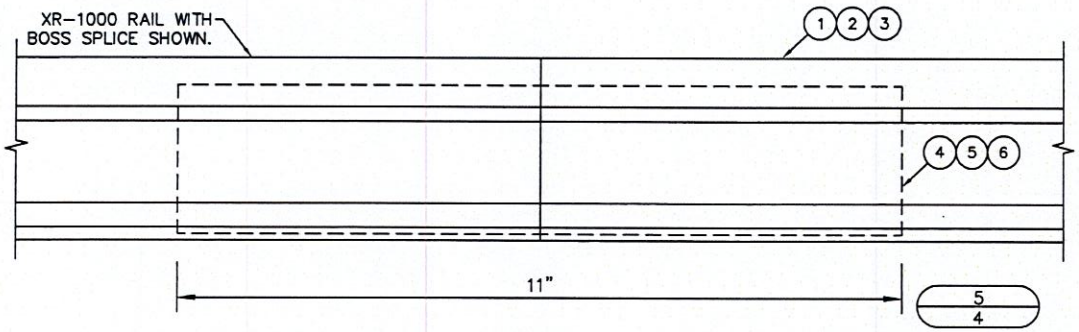
6B/4 ALTERNATE CAMO END-CLAMP DETAIL



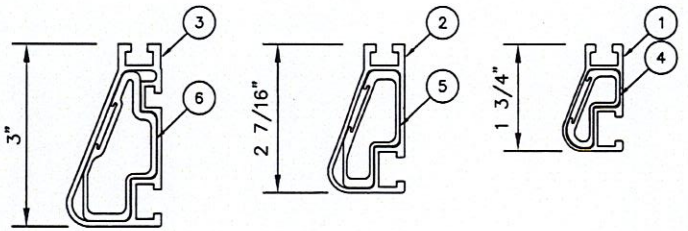
6/4 UFO END-CLAMP WITH STOPPER SLEEVE DETAIL



7/4 IRONRIDGE UFO MID-CLAMP DETAIL



5/4 XR BOSS SPLICE DETAIL



SPLICE MAY NOT BE LOCATED IN A CANTILEVER.

REV.#	DATE	PRINTS ISSUED FOR
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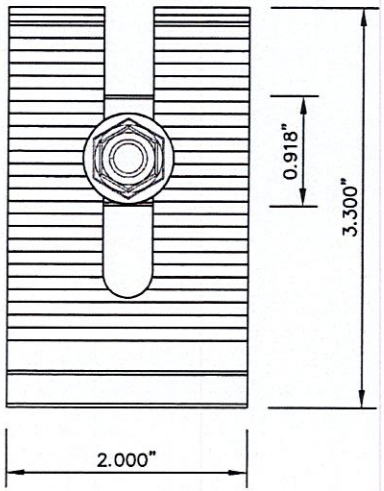
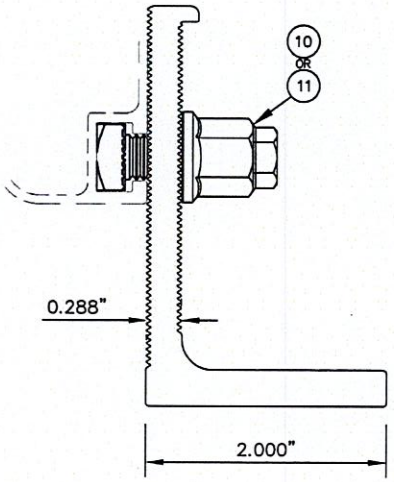
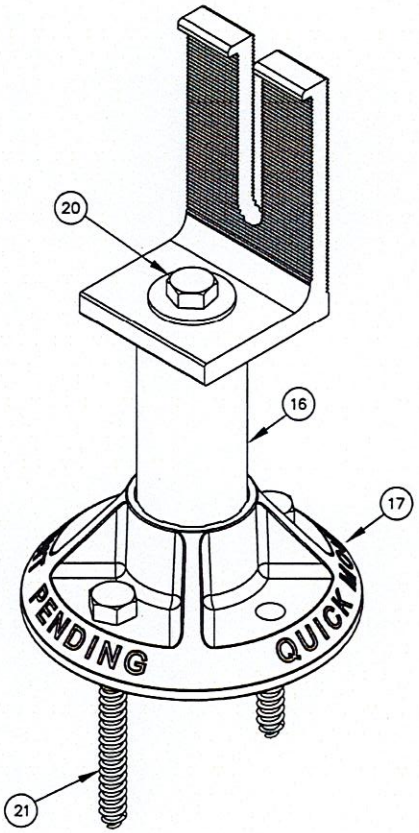
IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS

BILL OF MATERIALS- QuickMount Q-Base		
#	DESCRIPTION	MATERIALS/NOTES
15	OPEN SLOT L-FOOT, MILL OR BLACK	6000 SERIES AL
16	1 1/4" DIAMETER POST (3 1/4" MIN 12" MAX)	6000 SERIES AL
17	QBASE BASE	300 SERIES AL
18	5/16" X 3/4" CAP SCREW, HEX	COATED STEEL
19	5/16" X 1 1/4" OD WASHER	300 SERIES SS & EPDM
20	5/16" X 1" CAP SCREW, HEX	300 SERIES SS
21	5/16" X 3" HEX HEAD LAG SCREW	300 SERIES SS
22	QBASE FLASHING	3000 SERIES AL
23	COUNTER-FLASHING CAP	EPDM







15

REV.#	DATE	PRINTS ISSUED FOR
–	12/19/22	1ST SUBMITTAL
1	10/18/23	2023 CODE UPDATE

SEAL: STATE OF FLORIDA OCT 18 2023

SCOTT WOLTERS
FL PE# 82354

WOLTERS ENGINEERING
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15211 97TH ROAD N
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IRONRIDGE

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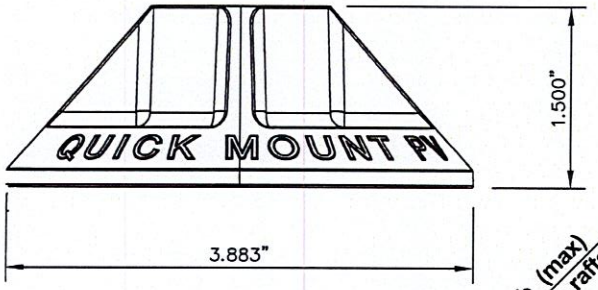
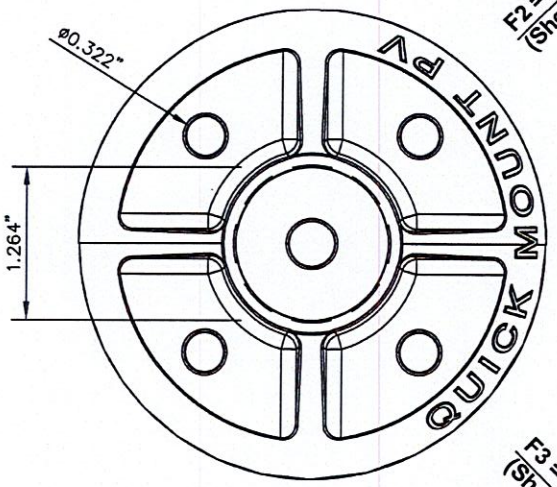
PHONE: (800) 227-9523
info@ironridge.com

DWG: XR-QB

SHEET: 5/9

IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM
WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS



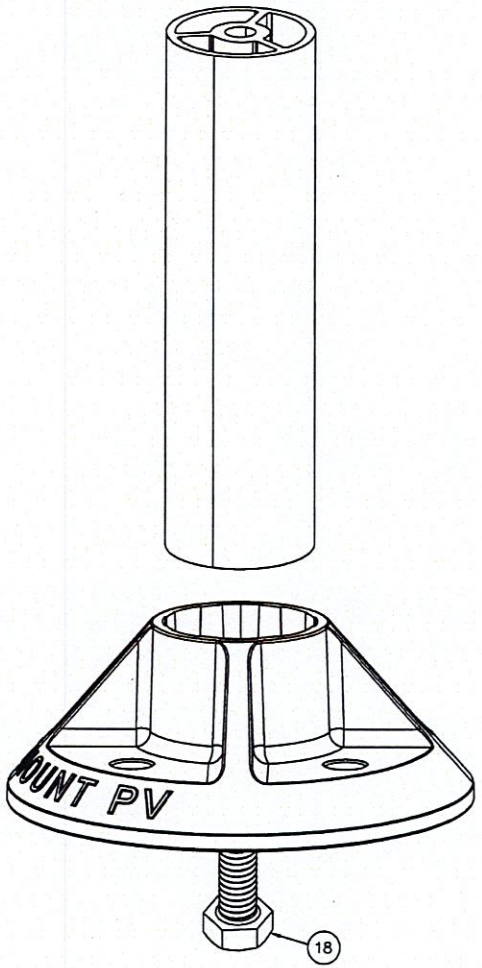


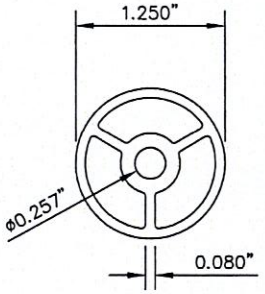
17

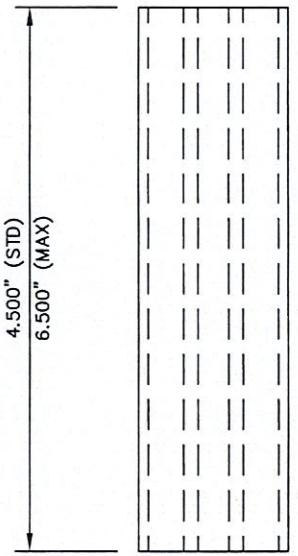
F2 = 687.5 lb (max)
(Shear perp. to rafter)

F3 = 950 lb (max)
(Shear along rafter)

F1 = 1212.5 lb (max)
(Direct Tension/Uplift)







16

ANCHOR CAPACITY:

ANCHOR CAPACITIES LISTED ARE PER FLPA# 29846.

REV.#	DATE	PRINTS ISSUED FOR
–	12/19/22	1ST SUBMITTAL
1	10/18/23	2023 CODE UPDATE

SEAL: STATE OF FLORIDA SCOTT WOLTERS No. 62354 OCT 18 2023

SCOTT WOLTERS
FL PE# 62354

WOLTERS ENGINEERING
(CoA # 27194)
1521 17TH ROAD N.
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IRONRIDGE
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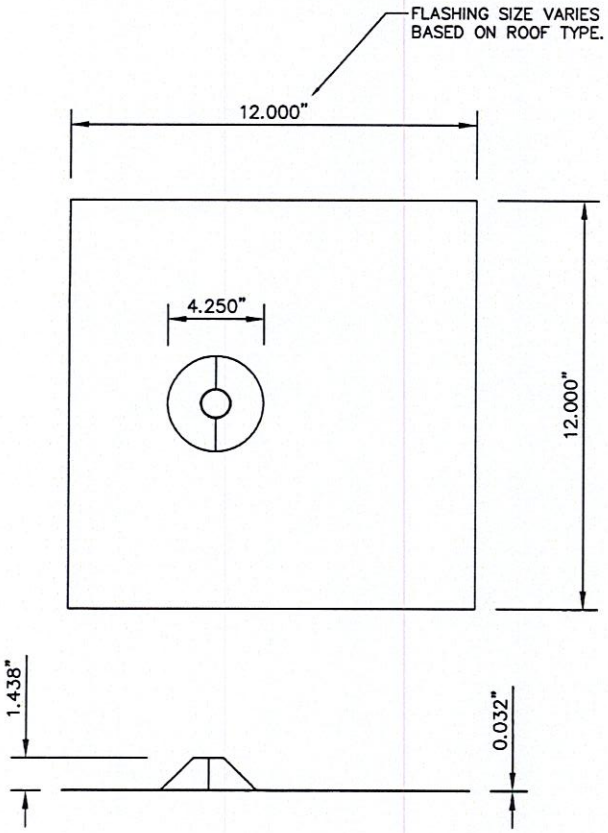
HAYWARD, CA 94545
PHONE: (800) 227-9523
info@ironridge.com

DWG: XR-QB
SHEET: 6/9

IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS



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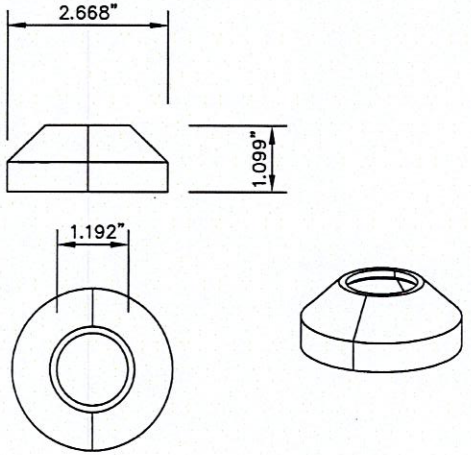

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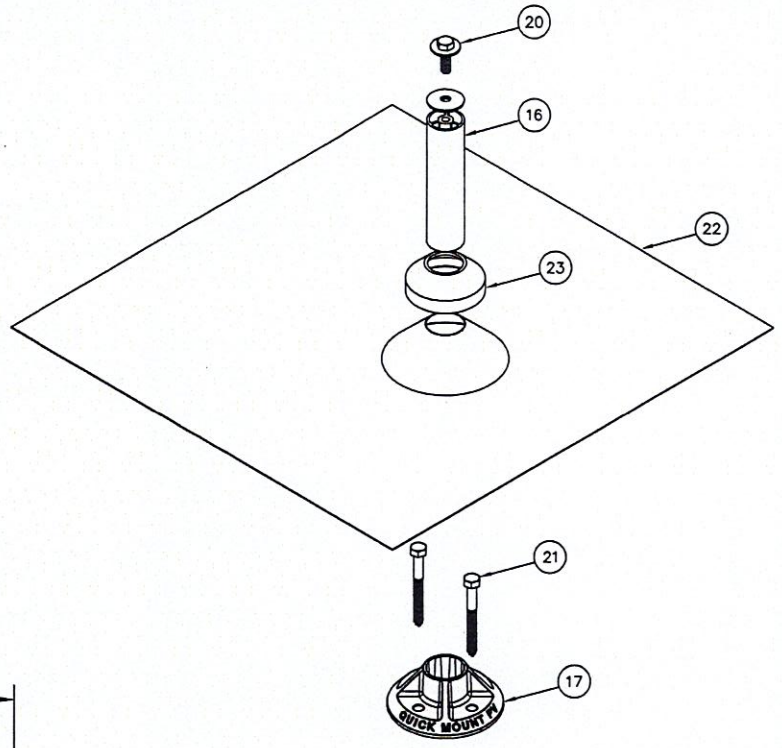

REV.#	DATE	PRINTS ISSUED FOR
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—	—	
—	—	
1	10/18/23	2023 CODE UPDATE
—	12/19/22	1ST SUBMITTAL

SEAL: STATE OF FLORIDA 62354 OCT 18 2023

SCOTT WOLTERS
FL PE# 62354

WOLTERS ENGINEERING
(COA# 27194)
15211 97TH ROAD N.
WEST PALM BEACH, FL 33412
(561) 225-1982

IRONRIDGE

28357 INDUSTRIAL BLVD.
HAYWARD, CA 94545

PHONE: (800) 227-9523
info@ironridge.com

DWG: XR-QB

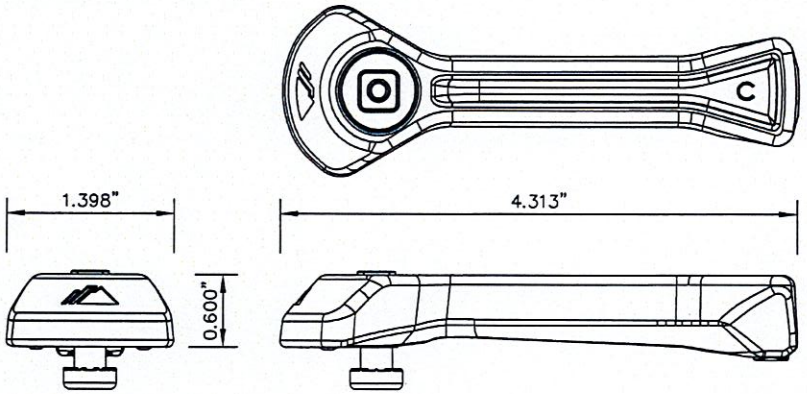
SHEET: 7/9

IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS

BILL OF MATERIALS- XR System		
#	DESCRIPTION	MATERIALS/NOTES
1	XR-10 RAIL	6000 SERIES AL
2	XR-100 RAIL	6000 SERIES AL
3	XR-1000 RAIL	6000 SERIES AL
4	XR-10 BOSS SPLICE	6000 SERIES AL & 300 SERIES SS
5	XR-100 BOSS SPLICE	6000 SERIES AL & 300 SERIES SS
6	XR-1000 BOSS SPLICE	6000 SERIES AL & 300 SERIES SS
7	UFO UNIVERSAL MODULE CLAMP	300 SERIES SS
8	STOPPER SLEEVE	6000 SERIES AL
9	CAMO HIDDEN END CAM	300 SERIES AL & 300 SERIES SS
10	3/8" X 1" SQUARE BOLT BONDING HARDWARE	300 SERIES SS
11	3/8" X 1" T-BOLT BONDING HARDWARE	300 SERIES SS
12	XR-10 RAIL END CAP (OPTIONAL)	POLYMERIC
13	XR-100 RAIL END CAP (OPTIONAL)	POLYMERIC
14	XR-1000 RAIL END CAP (OPTIONAL)	POLYMERIC

FOR 6000 SERIES EXTRUSIONS F_{UT}=38 ksi min, F_Y=34 ksi min.

FOR 300 SERIES STAINLESS STEEL F_Y=65 ksi min.



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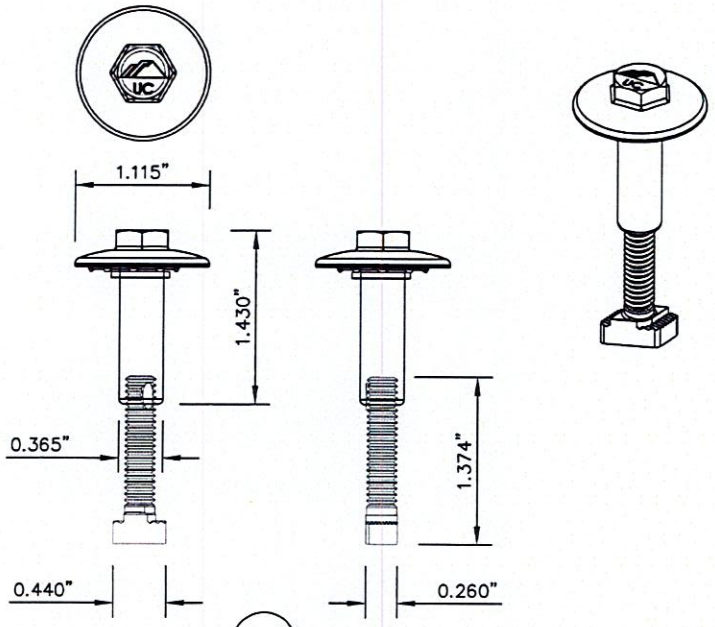

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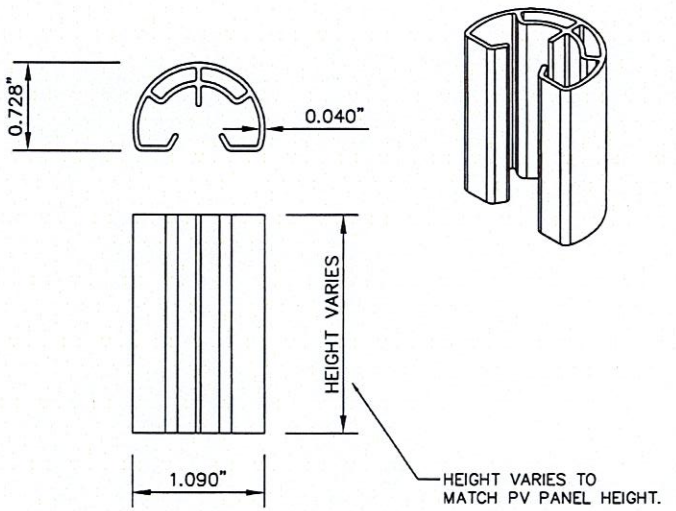

8

REV.#	DATE	
–	10/18/23	2023 CODE UPDATE
1	12/19/22	1ST SUBMITTAL
–		PRINTS ISSUED FOR

SCOTT WOLTERS
FL PE# 82354

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STATE OF FLORIDA
SCOTT WOLTERS
No. 82354
OCT 18 2023

IRONRIDGE

28357 INDUSTRIAL BLVD.
HAYWARD, CA 94545

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DWG: XR-QB

SHEET: 8/9

IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT Q-BASE ROOF ATTACHMENTS

DATE	REV.#	PRINTS ISSUED FOR
10/18/23	1	2023 CODE UPDATE
12/19/22	-	1ST SUBMITTAL
-	-	
-	-	
-	-	
-	-	
-	-	

SCOTT WOLTERS
FL PE# 82354
SEAL
STATE OF
OCT 18 2023

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VANMEC, ALEX
NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM
DC SYSTEM SIZE (15.36 KW)

GENERAL NOTES

SCOPE OF WORK
1. THE PROJECT IS NEW PHOTOVOLTAIC SYSTEM CONSISTING OF SOLAR ARRAY(S) AND ASSOCIATED POWER CONDITIONING EQUIPMENT.
2. ALL CONSTRUCTION SHALL COMPLY WITH THE ADOPTED EDITION OF THE FLORIDA BUILDING CODE AND NATIONAL ELECTRICAL CODE AS SPECIFIED IN THE PROJECT-SPECIFIC NOTES. ALL CONSTRUCTION SHALL ALSO COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE AND LOCAL ELECTRICAL UTILITY CODES, RULES AND REGULATIONS.
3. THE SYSTEM WILL BE INTERCONNECTED TO THE ELECTRICAL UTILITY GRID IN ACCORDANCE WITH THE REQUIREMENTS OF THE ADOPTED ELECTRIC AND THE ELECTRICAL UTILITY COMPANY.
4. THE CONTRACTOR SHALL PROVIDE LABOR FOR CONSTRUCTION OF THE ARRAY AND INSTALLATION OF ALL ELECTRICAL EQUIPMENT. THE CONTRACTOR WILL PROVIDE COMPETENT SUPERVISION FOR THE WORK TO BE ACCOMPLISHED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY OWNER AS REQUESTED.
5. THERE WILL BE NO SUBMISSION FOR ANY EQUIPMENT WITH THE VENDOR PART NUMBER ON THE DRAWING WITHOUT WRITTEN APPROVAL OF THE PROFESSIONAL ENGINEER. COMMON ITEMS SUCH AS CONDUITS, WIRE, FITTINGS, ETC. ARE NOT SPECIFIED BY VENDOR BUT THE SIZES CANNOT BE REDUCED.
6. THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS AGREE THAT IN ACCORDANCE WITH THE GENERALLY ACCEPTED CONSTRUCTION PRACTICES CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SAFETY OF ALL PERSON AND PROPERTY, AND THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
7. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE DESIGN PROFESSIONAL FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PERSONNEL.
8. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRE TO REPAIR ANY DAMAGE DONE TO BUILDINGS, GROUNDS OR UTILITIES AT NO ADDITIONAL COST TO THE CUSTOMER. DEFECTIVE MATERIAL OR WORKMANSHIP WILL NOT BE ALLOWED ON THIS PROJECT.RESONABLE HOUSEKEEPING AND CLEAN UP SHALL BE CONDUCTED BOTH DURING THE EXECUTION OF AND AT THE CONCLUSION OF THE PROJECT.
9. CONTRACTOR SHALL LOCATE ALL POST TENSION CABLES ON CONCRETE ROOFS AND SHALL VERIFY THAT SUCH CABLES DO NOT INTERFERE WITH THE LOCATIONS OF FASTENERS AS SHOWN IN THE ATTACHMENT DETAILS.

GENERAL
1. THE ACTUAL SYSTEM EQUIPMENT SPECIFICATIONS FOR THE PHOTOVOLTAIC SYSTEM ARE INCLUDED IN THE PV SYSTEM SPECIFICATION ON THE TITLE PAGE AND THROUGHOUT THE DRAWING AS NECESSARY FOR CLARITY.IN ADDITION THE ACTUAL VENDOR SPECIFICATION DATA SHEETS WILL BE INCLUDED AS PART OF THE PERMIT SUBMITTAL.
2. ONLY NEW MATERIAL WILL BE INSTALLED AS PART OF THE PROJECT. ALL NEW INSTALLED EQUIPMENT WILL BE APPROPRIATELY LISTED AND NEMA RATED. ALL NEW EQUIPMENT SHALL HAVE PERMANENT PLASTIC ENGRAVED IDENTIFICATION TAGS INSTALLED.
3. ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF NEW RACEWAYS AND EQUIPMENT SHALL BE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL WORK SHALL BE PERFORMED BY TRADESMAN EXPERIENCED IN WORK REQUIRED. ALL FINISHES SHALL MATCH THE EXISTING ADJACENT FINISHES. OPENING IN FIRE RATED WALLS WILL BE PATCHED IN A MANNER MAINTAINING THE ORIGINAL FIRE AND SMOKE RATING.
4. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CANNOT SHOW EVERY CONNECTION, JUNCTION BOX, WIRE,CONDUIT, ETC THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM.
5. CONTRACTOR SHALL COORDINATE ALL POWER OUTAGES WITH THE OWNER'S REPRESENTATIVE IN ADVANCE.
6. PANEL DESIGNATIONS SHOWN ON THESE DRAWINGS ARE GIVEN FOR CLARIFICATION OF THE CIRCUITING ONLY AND MAY NOT CORRESPOND TO THE DESIGNATIONS FOUND IN THE FIELD.
7. ELECTRICAL TESTING SHALL BE IN COMPLIANCE WITH NFPA 70E
8. SMOKE ALARMS SHALL BE INSTALLED INSIDE ALL SLEEPING ROOMS AND OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BEDROOMS. ADDITIONALLY, EACH STORY WITHIN THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS, SHALL CONTAIN A SMOKE ALARM. SMOKE ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. PHYSICAL INTERCONNECTION OF SMOKE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM. INSTALL CARBON MONOXIDE ALARMS WITHIN 10 FEET OF EACH ROOM USED FOR SLEEPING PURPOSES WHEN THE HOME CONTAINS AN ATTACHED GARAGE OR FUEL-BURNING APPLIANCES. SMOKE ALARMS AND CARBON MONOXIDE ALARMS THAT ARE NOT HARDWIRED SHALL BE POWERED BY 10-YEAR, NON- REMOVABLE BATTERIES. FBCR 314.3, FBCR 314.6 [EXCEPTION 2], FBCR 315.1.

CONDUIT AND WIRE
1. ALL EXISTING CONDUIT RUNS ARE NOT SHOWN. CONTRACTOR SHALL VERIFY EXISTING CONDUIT LOCATIONS IN FIELD.
2. ALL CONDUCTORS SHALL BE INSTALLED IN A RACEWAY AS SPECIFIED IN THE DRAWINGS. THE EXCEPTION IS PV SOURCE CIRCUIT CONDUCTORS MADE OF PV WIRE CABLE. THESE CONDUCTORS MAY BE EXPOSED WITHIN THE PV ARRAY.
3. INDOOR EMT FITTINGS MAY BE COMPRESSION TYPE OR STEEL SET SCREW TYPE. OUTDOOR EMT FITTINGS MUST BE COMPRESSION RAINTIGHT TYPE.
4. A PULL ROPE SHALL BE INSTALLED IN ALL EMPTY CONDUITS.
5. CONDUCTORS MATERIAL, EITHER COPPER OR ALUMINUM IN SPECIFIED IN THE DRAWINGS. CONDUCTOR INSULATION TYPE SHALL BE THWN - 2 UNLESS OTHERWISE NOTED.

EQUIPMENT
1. ALL ELECTRICAL COMPONENTS INSTALLED OUTDOORS, EXPOSED TO WEATHER OR IN DAMP LOCATIONS SHALL BE RATED FOR NEMA 3R OR GREATER. INSTALLATION OF THESE COMPONENTS MUST COMPLY WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. ALL RACEWAYS, CABINETS, BOXES, FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER.
3. AT THE COMPLETION OF THE PROJECT NEATLY TYPED ACCURATE PANEL BOARD DIRECTORIES INDICATING ALL BRANCH CIRCUITS AND SPARES WILL BE PROVIDED. ALL SPARES SHALL BE LEFT IN THE OFF POSITION.
4. ALL SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE WITH COVER INTERLOCK AND HANDLE LOCK OFF PROVISIONS. SWITCHES SHALL BE MANUFACTURED BY A COMPANY CONSISTENT WITH OTHER INSTALLED EQUIPMENT WHENEVER POSSIBLE. PART NUMBERS, RATING AND FUSING SHALL BE AS SHOWN ON THE DRAWINGS.
5. CONTRACTOR SHALL ENSURE ALL NEC AND MAINTENANCE CLEARANCE REQUIREMENTS ARE MET FOR NEW EQUIPMENT AND MAINTAINED FOR EXISTING EQUIPMENT.
6. CONTRACTOR SHALL FIELD VERIFY EQUIPMENT CLEARANCE AND PLACEMENTS WHILE COORDINATING LOCATORS WITH OTHER TRADES, CONSTRUCTION MANAGERS, AND SITE SUPERVISORS PRIOR TO PURCHASING AND INSTALLING EQUIPMENT.
EVERY STRUCTURE AND PORTION THEREOF, INCLUDING NONSTRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS, SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7, EXCLUDING CHAPTER 14 AND APPENDIX 11A. THE SEISMIC DESIGN CATEGORY FOR A STRUCTURE IS PERMITTED TO BE DETERMINED IN ACCORDANCE WITH SECTION 1613 OR ASCE 7.
7. ALL CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCE AND COOLING, HEATING AN D VENTILATING EQUIPMENT, SHALL BE LOCATED
NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE JUNCTION OR DEVICE BOX NOR LESS THAN 15 INCHES MEASURED TO THE BOTTOM OF THE JUNCTION OR DEVICE BOX ABOVE THE FINISHED FLOOR.
8. ALL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 - AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES MEASURED TO THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING ABOVE FINISHED FLOOR.

GROUNDING
1. THE GROUNDING SYSTEM SHALL MEET THE REQUIREMENTS OF THE NEC AND THE LOCAL ADOPTED CODE. ALL ELECTRICAL EQUIPMENT AND RACEWAYS SHALL BE PROPERLY GROUNDED.
2. AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, IN ACCORDANCE WITH NEC CODE , SHALL BE PROVIDED IN ALL CONDUITS WITH CURRENT CARRYING CONDUCTORS. ALL LUGS AND CONNECTORS SHALL BE RATED FOR THE CONDUCTOR MATERIAL AND THE CONDITIONS OF USE.
3. THE GROUNDING RESISTIVITY WILL BE TESTED AFTER INSTALLATION TO CONFIRM 5 OHM OR LESS RESISTANCE FROM RACKING TO GROUND. IF GROUND RESISTANCE IS GREATER THAN 5 OHMS ADDITIONAL GROUNDING WILL BE INSTALLED UNTIL RESISTANCE IS LESS THAN 5 OHMS.

WIRING DEVICES
1. RECEPTACLES SHALL BE AS DESIGNED ON THE DRAWINGS AND SHOULD BE A BRAND CONSISTENT WITH OTHERS IN THE VICINITY WHENEVER POSSIBLE.
2. ALL WIRING DEVICES SHALL BE PROVIDED WITH APPROPRIATE COVER-PLATES. ANY EMPTY BOXES SHALL HAVE BLANK COVER PLATES. COVER-PLATES SHALL BE LEXAN, PLASTIC OR STAINLESS STEEL IN FINISHED AREA. GALVANIZED COVER-PLATES MAY BE USED IN EQUIPMENT ROOMS.

LABELING AND PHASING
1. FOR LABELING USE NUMBERED UV RATED LABELS TO INDICATE STRING NUMBER.
2. AS A SUBSTITUTE FOR LABELS YELLOW TAPE MAY BE USED FOR PHASING.
EACH METHOD DESCRIBED ABOVE WILL NEED TO BE PERFORMED ON BOTH POSITIVE AND NEGATIVE AT POINTS WHERE CONDUCTORS ARE TERMINATED.

SYSTEM DETAILS

DESCRIPTION	NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM
DC RATING OF SYSTEM	SYSTEM SIZE : 15.36 KW DC STC
AC RATING OF SYSTEM	15.2KW
MAX. AC OUT. CURRENT	64 A
NO. OF MODULES	(37) BSM415M10-54HPH(415W) BLUESUN SOLAR MODULES
NO. OF INVERTERS	(2) TESLA- 1538000-XX-Y 7.6 INVERTER
NO. OF RSDS	(13) TESLA MCI-2
POINT OF CONNECTION	LINE SIDE TAP IN THE MSP
ARRAY STRINGING	(1) BRANCH OF 10 MODULES , (3) BRANCHES OF 9 MODULES
UTILITY COMPANY	FPL (FLORIDA POWER & LIGHT)
AC GROSS POWER RATING (GPR)	13.056 KW
PV SYSTEM TIER	II (10 KW AC < GPR ≤ 100 KW AC)

SITE DETAILS

ASHRAE EXTREME LOW	5°C
ASHRAE 2% HIGH	33°C
GROUND SNOW LOAD	3 PSF
WIND SPEED	175 MPH (ASCE 7-22)
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	C

GOVERNING CODES

FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)
FLORIDA BUILDING CODE, 8TH EDITION 2023 (FBC)
FLORIDA FIRE PREVENTION CODE, 8TH EDITION 2023 (FFPC)
NATIONAL ELECTRICAL CODE, NEC 2020 CODE BOOK

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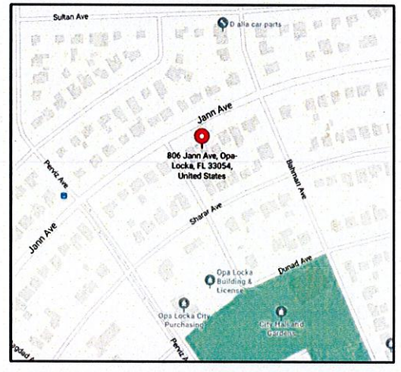
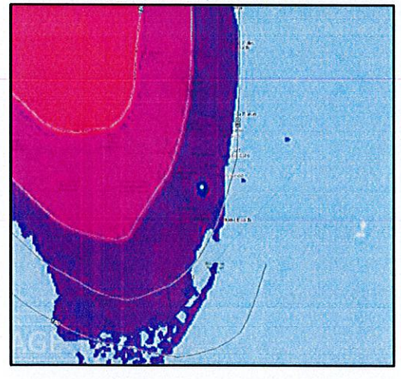
PV-13	SEALANT DATASHEET
PV-14	GROUNDING & BONDING DATASHEET
PV-15	INSULATION PIERCING DATASHEET

SITE MAP (N.T.S)

VICINITY MAP



WIND FLOW MAP



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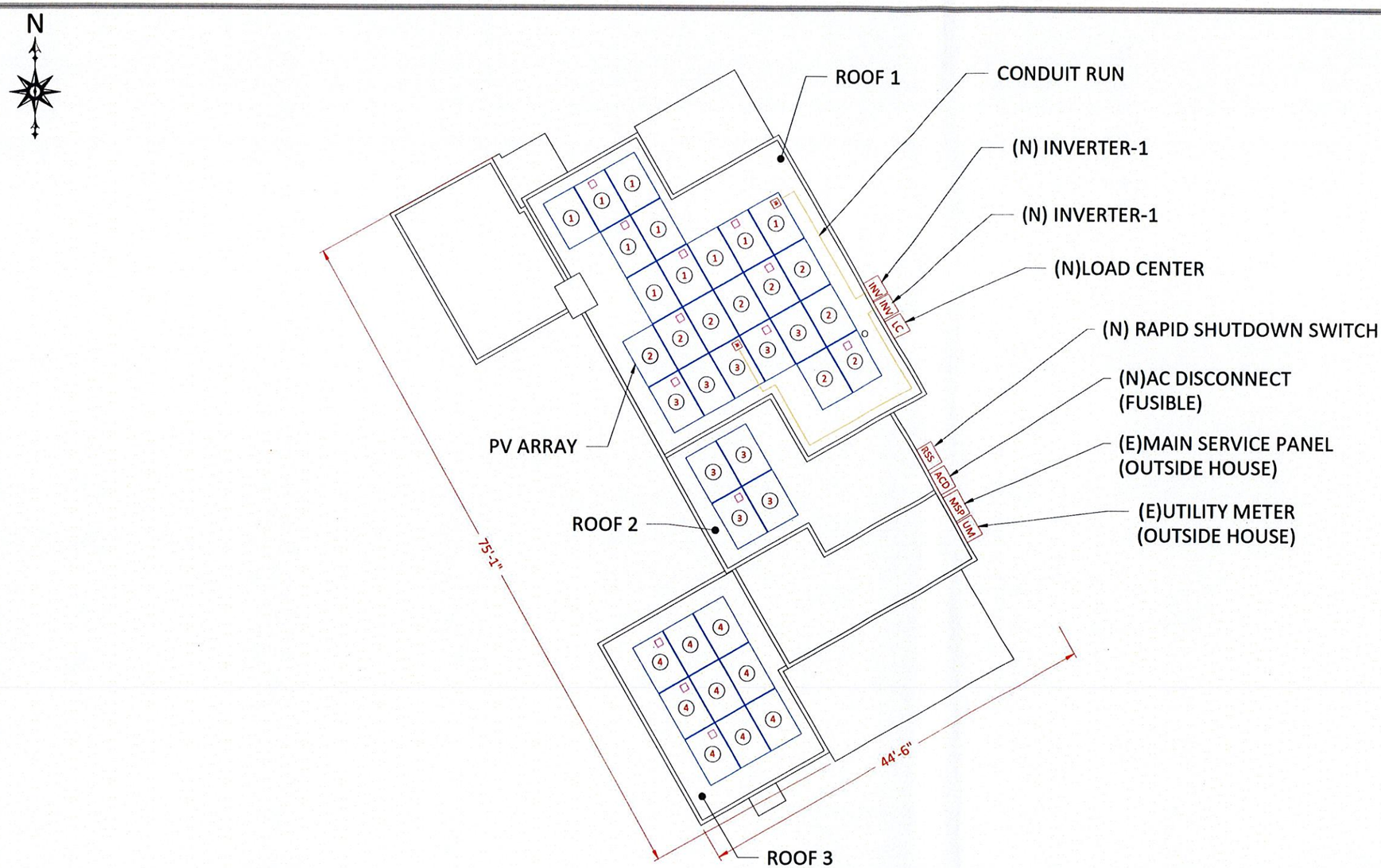
COVER PAGE
PV-1



EQUIPMENT SPECIFICATIONS		
EQUIPMENT	DESCRIPTION	QUANTITY
MODULE	BSM415M10-54HPH(415W) BLUESUN SOLAR MODULES	37
INVERTER	TESLA- 1538000-XX-Y 7.6 INVERTER	2
RSD	TESLA MCI-2	13
JUNCTION BOX	GENERIC, NEMA 3R	2
LOAD CENTER	125A LOAD CENTER 120/240V NEMA 3R	1
AC DISCONNECT	AC DISCONNECT 240V, 100 AMP FUSED WITH 80 AMP FUSES, NEMA 3R, UL LISTED	1
ATTACHMENT FOR LOW SLOPE ROOF	QUICKMOUNT (QMLSH)	104
RACKING SYSTEM	IRONRIDGE (XR100) RAILS	-

ROOF INFORMATION			
ROOF	QUANTITY	SLOPE	AZIMUTH
ROOF 1	24	4.6°(1/12)	150°
ROOF 2	04	4.6°(1/12)	150°
ROOF 3	09	4.6°(1/12)	150°

ROOF SPECIFICATIONS	
ROOF MATERIAL	FLAT MODIFIED BITUMEN
ROOF CONDITION	GOOD
TRUSSES	2"x4"@24" O.C.

SYSTEM INFORMATION	
DC SYSTEM SIZE	15.36KW
AC SYSTEM SIZE	15.2KW

NOTES:

1. LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
2. ROOF ACCESS (POINTS), PATHWAYS, AND FIRE ACCESS PATHWAY SETBACKS NOT REQUIRED IN ACCORDANCE WITH 2023 FBC R 8TH EDITION SECTION 324.6 EXCEPTION 3 AS ROOF SLOPE IS 2/12 (9.46 DEGREES) OR LESS.

LEGENDS

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- - MID CIRCUIT INTERRUPTER
- LC - LOAD CENTER
- JB - JUNCTION BOX
- INV - INVERTER
- ACD - AC DISCONNECT
- (1) - STRING TAG
- - CONDUIT RUN
- - FIRE SETBACK
- - ROOF OBSTRUCTION

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6/4/24

FIRE SAFETY PLAN

PV-2

CONDUCTOR AND CONDUIT SCHEDULE

SR. NO.	DESCRIPTION	CONDUIT SIZE
A	PV WIRES, (1) #10 AWG THWN-2 (G)	
1	(2) #10 AWG THWN-2 (DC+) ,(2) #10 AWG THWN-2 (DC-) , (1) #10 AWG THWN-2 (G)	IN 3/4" CONDUIT RUN
2	(3) #8 AWG THWN-2 (L1,L2,N) , (1) #10 AWG THWN-2 (G)	IN 3/4" CONDUIT RUN
3	(3) #4 AWG THWN-2 (L1,L2,N) , (1) #8 AWG THWN-2 (G)	IN 1" CONDUIT RUN
4	(3) #4 AWG THWN-2 (L1,L2,N)	IN 1" CONDUIT RUN
5	(E) (3) 2/0 AWG THWN-2 (L1,L2,N) CU	EXISTING CONDUIT RUN
6	(2) #12 AWG THWN-2 (L1,L2)	IN 3/4" CONDUIT RUN

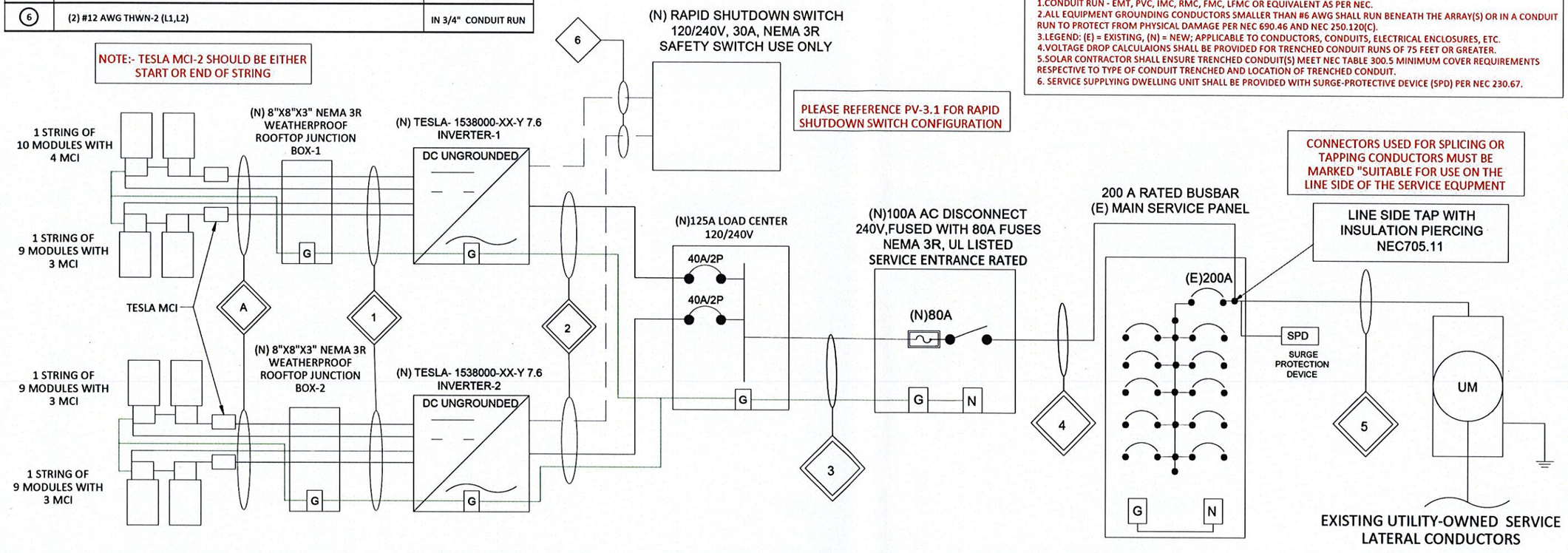
MODULE SPECIFICATION	
MANUFACTURER	BLUESUN SOLAR
MODEL NO.	BSM415M10-54HPH(415W)
PEAK POWER (Pmpp)	415 W
PEAK VOLTAGE (Vmpp)	31.63 V
PEAK CURRENT (Impp)	13.13 A
OPEN CIRCUIT VOLTAGE (Voc)	37.75 V
SHORT CIRCUIT CURRENT (Isc)	14.02 A
TOTAL QUANTITY	37

INVERTER SPECIFICATION	
MANUFACTURER	TESLA
MODEL NO.	TESLA- 1538000-XX-Y 7.6
MAX. DC INPUT VOLTAGE RANGE	60-550 VDC
MAX. CONT. OUTPUT POWER	7.68 KVA
NOMINAL AC OUTPUT VOLTAGE	240V
MAX. CONT. OUTPUT CURRENT	32 A
TOTAL QUANTITY	2

ARRAY DETAILS	
DC SYSTEM SIZE	15.36 KW
AC SYSTEM SIZE	15.2 KW
TOTAL NO. OF MODULES	37
NO. OF MODULE PER STRING	01@10, 03@09
NO. OF STRING	04

NOTE:
1.CONDUIT RUN - EMT, PVC, IMC, RMC, FMC, LFMC OR EQUIVALENT AS PER NEC.
2.ALL EQUIPMENT GROUNDING CONDUCTORS SMALLER THAN #6 AWG SHALL RUN BENEATH THE ARRAY(S) OR IN A CONDUIT RUN TO PROTECT FROM PHYSICAL DAMAGE PER NEC 690.46 AND NEC 250.120(C).
3.LEGEND: (E) = EXISTING, (N) = NEW; APPLICABLE TO CONDUCTORS, CONDUITS, ELECTRICAL ENCLOSURES, ETC.
4.VOLTAGE DROP CALCULAIONS SHALL BE PROVIDED FOR TRENCHED CONDUIT RUNS OF 75 FEET OR GREATER.
5.SOLAR CONTRACTOR SHALL ENSURE TRENCHED CONDUIT(S) MEET NEC TABLE 300.5 MINIMUM COVER REQUIREMENTS RESPECTIVE TO TYPE OF CONDUIT TRENCHED AND LOCATION OF TRENCHED CONDUIT.
6. SERVICE SUPPLYING DWELLING UNIT SHALL BE PROVIDED WITH SURGE-PROTECTIVE DEVICE (SPD) PER NEC 230.67.

NOTE:- TESLA MCI-2 SHOULD BE EITHER START OR END OF STRING



PLEASE REFERENCE PV-3.1 FOR RAPID SHUTDOWN SWITCH CONFIGURATION

CONNECTORS USED FOR SPLICING OR TAPPING CONDUCTORS MUST BE MARKED "SUITABLE FOR USE ON THE LINE SIDE OF THE SERVICE EQUPMENT

ENCLOSURE FILL CALCULATIONS PER NEC 312.7 & NEC 312.8(A)

CROSS SECTIONAL AREA AVAILABLE IN ENCLOSURE	8.00	in	x	4.00	in	x	0.75	=	**24.00 sq in.**
CROSS SECTIONAL AREA OF EXISTING CONDUCTORS	(2/0 THWN-2)		=	0.222	sq in.	x	3	=	0.67 sq in.
CROSS SECTIONAL AREA OF NEW CONDUCTORS	(4 THWN-2)		=	0.082	sq in.	x	3	=	0.25 sq in.
IPC-250-4/0 INSULATION PIERCING	1.87	in	x	2.56	in	x	3	=	14.36 sq in.
TOTAL AREA OF CONDUCTORS AND CONNECTORS			0.67	+	0.25	+	14.36	=	**15.28 sq in.**

PERCENTAGE OF AVAILABLE AREA FILLED: 15.28 < 24.00 **PASS - TAPS DO NOT EXCEED ALLOWABLE AREA**

NOTE:
MINIMUM #6 AWG COPPER GEC FROM UTILITY METER RUN TO TWO 5/8" X 8' GROUND RODS ARE AT A MINIMUM SEPARATION OF 6' . BOND TO COLD WATER PIPE AND INTER-SYSTEM BONDING JUMPER PER NEC 250.66(A) AND 250.52 (A)(5).

PER FL. STATUE 377.705 (REVISED 7/1/2017) I, KIMANDY LAWRENCE PE#83317, AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE PV ELECTRICAL SYSTEM AND ELECTRICAL COMPONENTS ARE DESIGNED AND APPROVED USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE.

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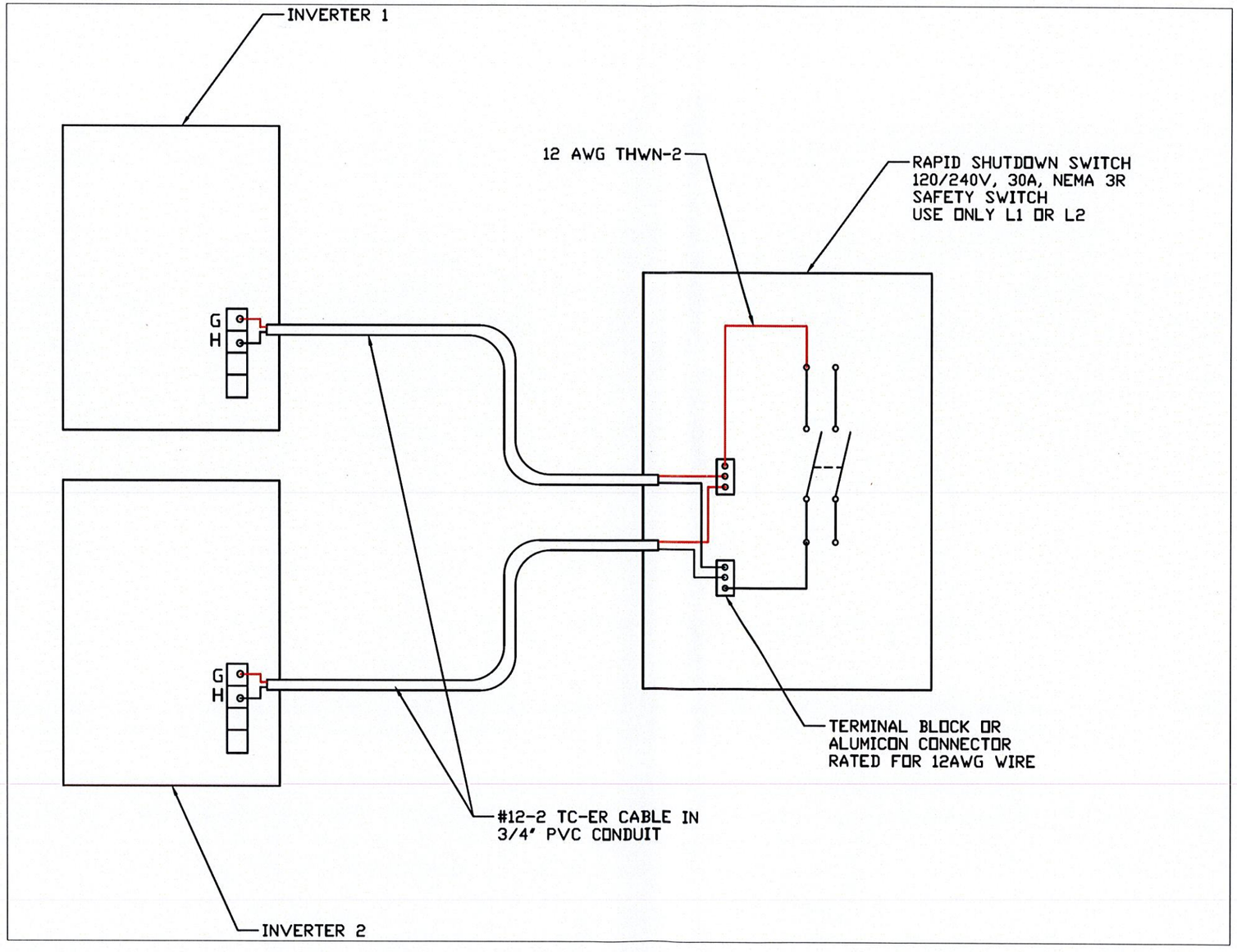
ELECTRICAL LINE DIAGRAM

PV-3

RAPID SHUTDOWN SWITCH CONFIGURATION



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6/4/25

ELECTRICAL LINE DIAGRAM

PV-3.1

ELECTRICAL CALCULATIONS:

1) CURRENT-CARRYING CONDUCTORS

1) BEFORE INVERTER :

AMBIENT TEMPERATURE = 33°C
CONDUIT INSTALLED AT MINIMUM DISTANCE OF 7/8 INCHES ABOVE ROOF .....NEC 310.15(B)(2)
TEMPERATURE DERATE FACTOR - (0.96) .....NEC 310.15(B)(1)
GROUPING FACTOR - (0.8) .....NEC 310.15(C)(1)

CONDUCTOR AMPACITY
= (MODULE ISC CURRENT) / A.T.F / G.F ...NEC 690.8(A)(1)(E) AND NEC 690.8(B)(2)
= 14.02/ 0.96 / 0.8
= 18.26A .....SELECTED CONDUCTOR - #10 THWN-2 ...NEC 310.16

2A) BEFORE LOAD CENTER

TEMPERATURE DERATE FACTOR - 0.96
GROUPING FACTOR - 1

CONDUCTOR AMPACITY
= (TOTAL INV O/P CURRENT) x 1.25 ...NEC 690.8(A)(1)(E) AND NEC 690.8(B)(1)
= 32 x 1.25
= 40.00 A .....SELECTED CONDUCTOR - #8 THWN-2 ....NEC 310.16 AND 240.4(D)(7)

2B) AFTER LOAD CENTER

TEMPERATURE DERATE FACTOR - 0.96
GROUPING FACTOR - 1

CONDUCTOR AMPACITY
= (TOTAL INV O/P CURRENT) x 1.25 ...NEC 690.8(A)(1)(E) AND NEC 690.8(B)(1)
= 2X32 x 1.25
= 80.00 A .....SELECTED CONDUCTOR - #4 THWN-2 ....NEC 310.16 AND 240.4(D)(7)

2) PV OVERCURRENT PROTECTION .....NEC 690.9(B)

= (TOTAL INV O/P CURRENT) x 1.25
= 2X32 x 1.25
= 80.00 A
SELECTED OCPD IS 80A

SELECTED EQUIPMENT GROUNDING CONDUCTOR (EGC) = #8THWN-2 ...NEC 250.122

GENERAL ELECTRICAL NOTES:

1. THE DC AND AC CONNECTORS OF TESLA- 1538000-XX-Y 7.6 INVERTER ARE LISTED TO MEET REQUIREMENTS AN EQUIPMENT DISCONNECTING MEANS SHALL BE PERMITTED TO BE REMOTE FROM THE EQUIPMENT WHERE THE EQUIPMENT DISCONNECTING MEANS CAN BE REMOTELY OPERATED FROM WITHIN 3 M (10 FT) OF THE EQUIPMENT BY NEC 690.15(A).
2. MCI-2 BRANCH CIRCUIT CONDUCTORS ARE MANUFACTURED PV WIRE LISTED . THEY ARE ROHS, OIL RESISTANT, AND UV RESISTANT. THEY CONTAIN 10 AWG CONDUCTORS OF TYPE THHN/THWN-2 DRY/WET AND CERTIFIED TO UL3003 AND UL 9703. THE CABLE'S DOUBLE INSULATED RATING REQUIRES NO NEUTRAL OR GROUNDED CONDUCTOR.
3. ALL METAL ENCLOSURES, RACEWAYS, CABLES AND EXPOSED NONCURRENT-CARRYING METAL PARTS OF EQUIPMENT SHALL BE GROUNDED TO EARTH AS REQUIRED BY NEC 250.4(B) AND PART III OF NEC ARTICLE 250 AND EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45. THE GROUNDING ELECTRODE SYSTEM SHALL ADHERE TO 690.47(A).
4. PV SYSTEM DISCONNECT SHALL BE READILY ACCESSIBLE.
5. POINT-OF-CONNECTION SHALL BE MADE IN COMPLIANCE WITH NEC 705.11 or 705.12
6. UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
7. MODULES CONFORM TO AND ARE LISTED UNDER UL 1703, UL 61730 , 61730-1 AND 61730-2. OPTIMIZERS CONFORM TO AND ARE LISTED UNDER UL 1741 AND IEEE 1547 - 2018.
8. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6(C)(1) AND ARTICLE 310.10 (D).
9. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).
10. LINE SIDE TAP DISCONNECTS MUST BE LOCATED NO MORE THAN 10 FEET FROM THE TAP POINT PER NEC 690.15(A)
11. ALL PHOTOVOLTAIC SYSTEM DC CIRCUITS RAN INSIDE OR ON ALL BUILDINGS AND STRUCTURES SHALL BE ENCLOSED IN METALLIC CONDUIT IN COMPLIANCE WITH NEC 690.31(D). THIS REQUIREMENT SHALL APPLY TO OPTIMIZER-BASED SYSTEMS, BUT SHALL NOT APPLY TO OPTIMIZER-BASED SYSTEMS.
12. A 10 AWG COPPER EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC 690.45 SHALL BE USED TO BOND RAILS AND OTHER ROOFTOP EQUIPMENT. THE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE IN ACCORDANCE WITH NEC 250.120(C) BY RUNNING WITHIN THE HOLLOW SPACE BENEATH THE SOLAR STRUCTURE OR BY RUNNING WITHIN AN IDENTIFIED RACEWAY OR CABLE ARMOR. IF THE EQUIPMENT GROUNDING CONDUCTOR IS UNPROTECTED FROM PHYSICAL DAMAGE AT ANY POINT IN ITS CONDUCTOR RUN THE CONDUCTOR SHALL BE INCREASED TO A MINIMUM OF 6 AWG COPPER IN ACCORDANCE WITH NEC 250.120(C).

GROUNDING NOTES:

PV MODULE AND RACKING GROUNDING AS PER APPROVED INSTALLATION PRACTICE AND IN LINE WITH MANUFACTURE'S GUIDELINES.

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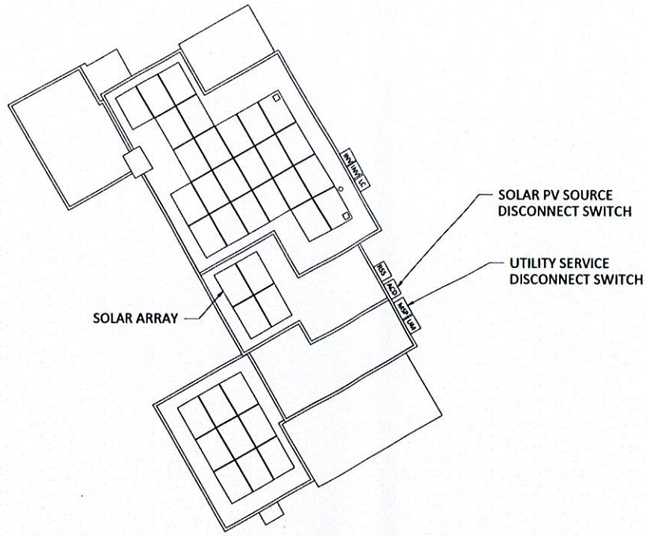
ELECTRICAL CALCULATIONS

PV-4

CAUTION:MULTIPLE SOURCES OF POWER

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH THE DISCONNECTS LOCATED AS SHOWN



SITE-SPECIFIC DIRECTORY PLACARD(S) SHALL BE INSTALLED AT THE FOLLOWING LOCATION(S):
UTILITY SERVICE DISCONECT SWITCH (MSP) AND SOLAR PV SOURCE DISCONNECT SWITCH (ACD)
NEC 2020 EDITION 705.10

SOLAR AC DISCONNECT

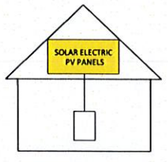
NOTICE

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

NEC 2020 EDITION 690.56(C)(2)

SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY



NEC 2020 EDITION 690.56(C)

EMERGENCY RESPONDER: THIS SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSTION TO SHUTDOWN ENTIRE PV SYSTEM.

FLORIDA FIRE PREVENTION CODE EIGHTH EDITION 11.12.2.1.1.1.1
NFPA 1 2021 EDITION 11.12.2.1.1.1.1 AND FIGURE A.11.12.2.1.1.1.1(a)

LOAD CENTER

NOTICE

LOAD CENTER AND DATA ACQUISITION FOR SOLAR PV SYSTEM ONLY.
DO NOT ADD LOADS.

STRING INVERTER (FOR BOTH)

WARNING

AC VOLTAGE : 240V

MAX. CURRENT: 32 A

EMERGENCY CONTACT

PROSOLAR SYSTEMS
(888) 462-5005

FLORIDA FIRE PREVENTION CODE EIGHTH EDITION 11.12.2.1.5

DC CONDUIT

WARNING

PHOTOVOLTAIC POWER SOURCE

DISPLAYED EVERY 10 FEET, NEC 2020 EDITION 690.31(G)(3)

NOTES:
1.THE MATERIAL USED FOR THE PHOTOVOLTAIC SYSTEM LABELS SHALL BE REFLECTIVE, WEATHER RESISTANT, AND CONSTRUCTED OF DURABLE ADHESIVE MATERIAL OR ANOTHER APPROVED MATERIAL SUITABLE FOR THE ENVIRONMENT IN COMPLIANCE WITH NFPA 1-11.12.
2. FONT, TEXT HEIGHT , CAPITALIZATION , FONT COLOR(S), BACKGROUND COLOR(S), DIAGRAM COLOR(S)AND CONTEXT OF PHOTOVOLTAIC SYSTEMS LABELS SHALL COMPLY WITH NFPA 1-11.12 AND NEC 2020 690.56 AS APPLICABLE FOR THE PHOTOVOLTAIC SYSTEM TO BE INSTALLED.

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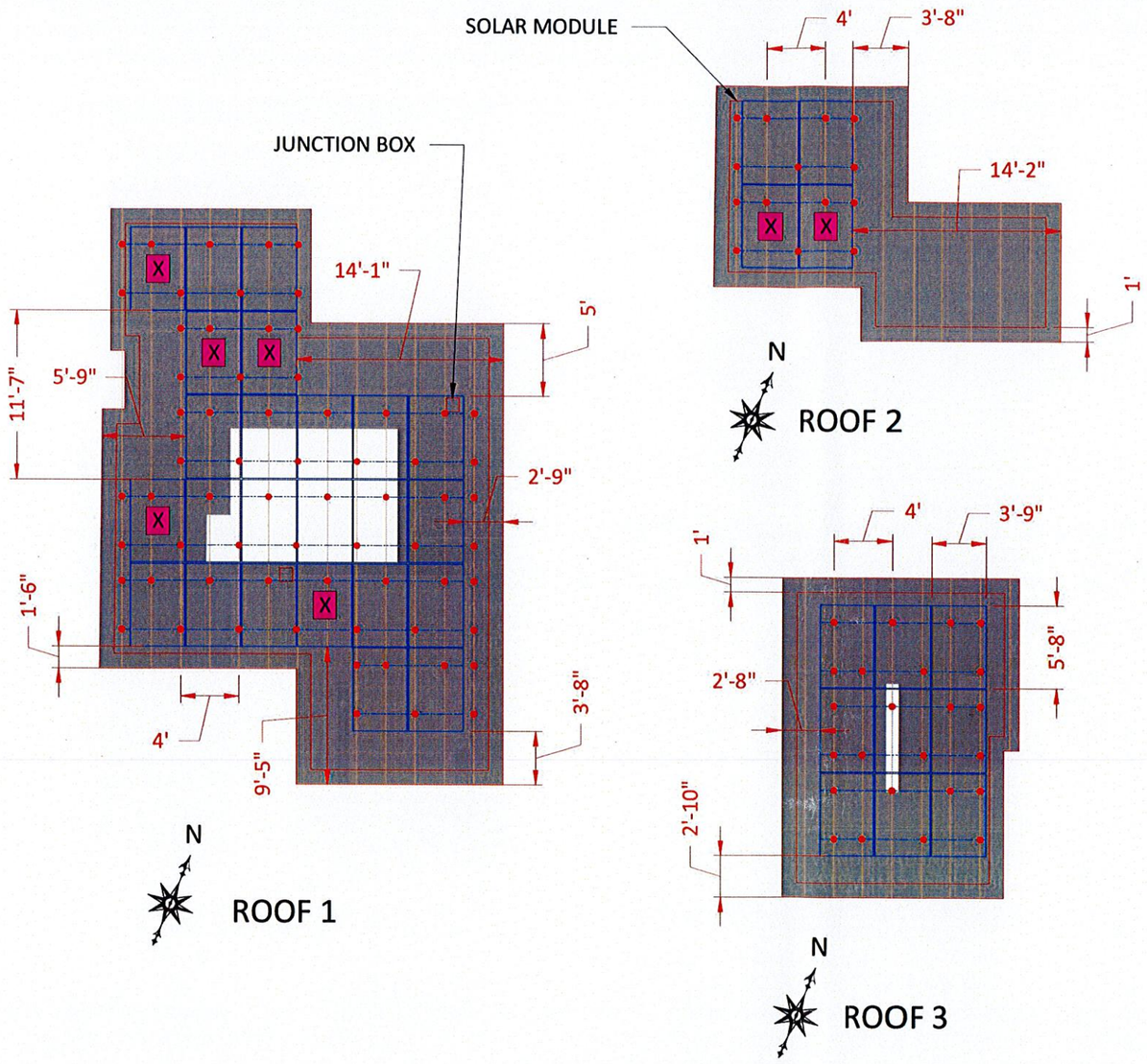
LABELS
PV-5



LEGENDS

- WIND ZONE 1
- WIND ZONE 1'

WIND ZONE 2

- WIND ZONE (2)

WIND ZONE 3

- WIND ZONE (3)

WIND LOAD INFORMATION:
THIS SYSTEM HAS BEEN DESIGN TO MEET THE REQUIREMENTS OF THE 8TH EDITION OF THE FLORIDA BUILDING CODE AND USED THE FOLLOWING DESIGN PARAMETERS:
ULTIMATE WIND SPEED: 175 MPH
EXPOSURE CATEGORY: C
RISK CATEGORY: II
MEAN ROOF HEIGHT: 12 FT
ROOF SLOPE: 0°-7°

EQUIPMENT SPECIFICATIONS

EQUIPMENT	DESCRIPTION	QUANTITY
MODULE	BSM415M10-54HPH(415W) BLUESUN SOLAR MODULES	37
INVERTER	TESLA- 1538000-XX-Y 7.6 INVERTER	2
RSD	TESLA MCI-2	13
JUNCTION BOX	GENERIC, NEMA 3R	2
LOAD CENTER	125A LOAD CENTER 120/240V NEMA 3R	1
AC DISCONNECT	AC DISCONNECT 240V, 100 AMP FUSED WITH 80 AMP FUSES, NEMA 3R, UL LISTED	1
ATTACHMENT FOR LOW SLOPE ROOF	QUICKMOUNT (QMLSH)	104
RACKING SYSTEM	IRONRIDGE (XR100) RAILS	-

ROOF INFORMATION

ROOF	QUANTITY	SLOPE	AZIMUTH
ROOF 1	24	4.6°(1/12)	150°
ROOF 2	04	4.6°(1/12)	150°
ROOF 3	09	4.6°(1/12)	150°

ROOF SPECIFICATIONS

ROOF MATERIAL	FLAT MODIFIED BITUMEN
ROOF CONDITION	GOOD
TRUSSES	2"x4"@24" O.C.

SYSTEM INFORMATION

DC SYSTEM SIZE	15.36KW
AC SYSTEM SIZE	15.2KW

NOTES:
1. LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
2. TRUSS LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED "MAX. MOUNT SPACING"

LEGENDS

- PV ROOF ATTACHMENT
- RAILS
- RAFTERS/TRUSSES
- ROOF OBSTRUCTION
- JUNCTION BOX
- FIRE SETBACK
- X - EXPOSED MODULE

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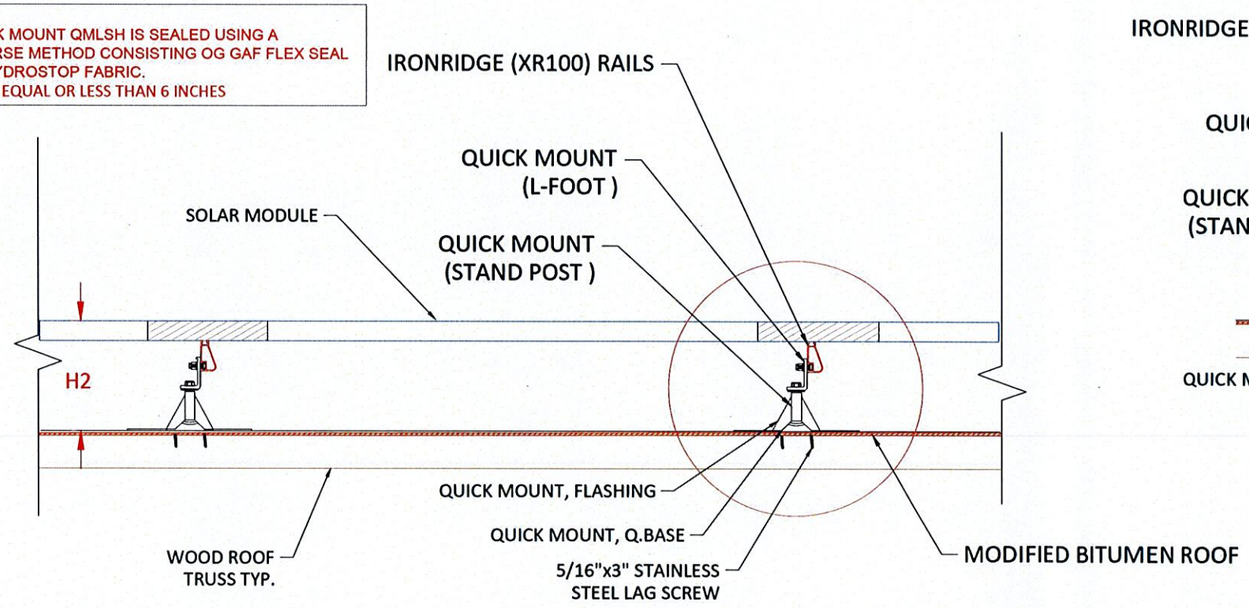
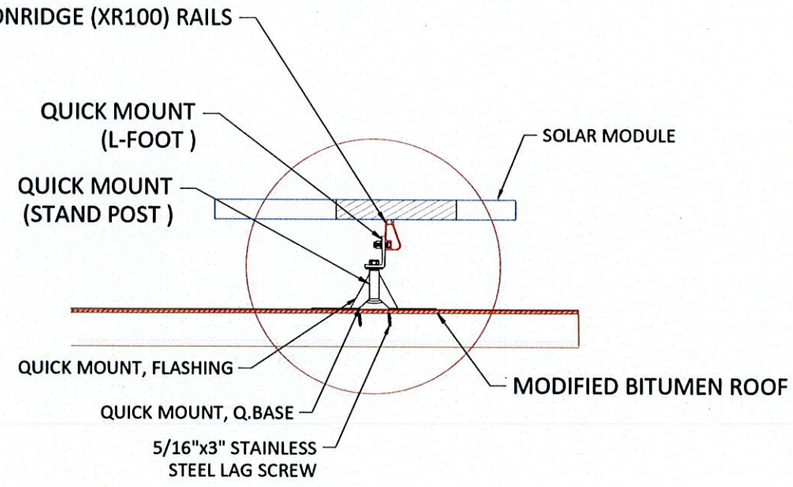
RACKING LAYOUT
PV-6

NOTE:
MAX. RAIL CANTILIVER SHALL BE 16 INCHES (L/3) PER APPROVAL DETAILS ON SHEET 1/9 of XR-QB FROM FL PRODUCT APPROVAL FL41858.4

I CERTIFY THAT THE EXISTING ROOF AND BUILDING STRUCTURE CAN WITHSTAND ALL DEAD LOADS IMPOSED BY THE PHOTOVOLTAIC SYSTEM AND ALL WIND LOADS OF SPECIFIED INTENSITY IN ACCORDANCE WITH THE FLORIDA BUILDING CODE.

NOTE:
1.QUICK MOUNT QMLSH IS SEALED USING A 3-COURSE METHOD CONSISTING OG GAF FLEX SEAL AND HYDROSTOP FABRIC.
2. H2 IS EQUAL OR LESS THAN 6 INCHES





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STRUCTURAL DETAILS

PV-7

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'
BASED ON ASCE 7-22 AND FBC 2023, 8TH EDITION, CHAPTER 16, HVHZ

SITE INFORMATION

BUILDING CODE VERSION	2023 FLORIDA BUILDING CODE	RISK CATEGORY	II	
MEAN ROOF HEIGHT (ft)	12	EXPOSURE CATEGORY	C	PITCH
LEAST HORIZONTAL DIMENSION (ft)	45	ROOF SLOPE (°)	4.8	1 / 12
PARAPET HEIGHT (ft)	0	ROOF TYPE	LOW SLOPE	
MODULE	BlueSun BSMxxxM10-54HPH	ULTIMATE WIND SPEED	175 mph	
MODULE LENGTH (in)	67.80	NOMINAL WIND SPEED	136 mph	
MODULE WIDTH (in)	44.65	K_D	0.85	
MODULE DEPTH (mm)	30	K_{ZT}	1.00	
MODULE DEPTH (in)	1.18	K_z	0.85	
MODULE VERTICAL AREA = A_E (ft^2)	21.02	K_e	1.00	
MODULE HORIZONTAL AREA = A_h (ft^2)	0.56	γ_E	1.0 OR 1.5	
HIGH VELOCITY HURRICANE ZONE?	YES	γ_a	0.67	
RACKING SYSTEM	IRONRIDGE: XR100			
MIN. MODULE SPACING (in)	0.37			

DESIGN CALCULATIONS PER ASCE 7-22 SECTION 29.4.4

VELOCITY PRESSURE (q_h) = $.00256*K_zK_{ZT}K_DV^2$ — VELOCITY PRESSURE (ASD) = 33.9 psf

WIDTH OF PRESSURE COEFFICIENT	45' * 10%	=	4.5'	ZONE WIDTH 'a'	4.5FT
	12' * 40%	=	4.8'		

EXTERNAL PRESSURE COEFFICIENT

Zone 1'	0.57	-0.9
Zone 1	0.57	-1.57
Zone 2	0.57	-2.13
Zone 3	0.57	-2.86

DESIGN PRESSURES

	EDGE OR EXPOSED MODULES?	DOWN	UP NORMAL	UP EDGE/EXPOSED	
Zone 1'	YES	19.4	-20.4	-30.5	(psf)
Zone 1	YES	19.4	-35.4	-53.2	(psf)
Zone 2	YES	19.4	-48.2	-72.2	(psf)
Zone 3	NO	19.4	-64.6	-64.6	(psf)

MODULE ALLOWABLE PRESSURE **75.0** psf

RAILS

RAILS PER MODULE	2-RAIL SYSTEM		
RAIL ORIENTATION	PORTRAIT		
PV SYSTEM TOTAL WEIGHT		1968.51	(lb)
PV SYSTEM DISTRIBUTED WEIGHT		2.5	(psf)

ATTACHMENTS

ATTACHMENT TYPE	QUICKMOUNT QBASE LOW SLOPE POST			
NOMINAL RAFTER SPACING	24" O.C.			
	NORMAL MODULES		EDGE/EXPOSED MODULES	
MAX DISTANCE BETWEEN ATTACHMENTS ZONE 1'	48.0		48.0	(in)
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1'	230.0		345.0	(lb)
MAX DISTANCE BETWEEN ATTACHMENTS ZONE 1	48.0		48.0	(in)
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1	400.5		600.7	(lb)
MAX DISTANCE BETWEEN ATTACHMENTS ZONE 2	48.0		48.0	(in)
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 2	544.1		816.2	(lb)
MAX DISTANCE BETWEEN ATTACHMENTS ZONE 3	48.0		48.0	(in)
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 3	730.4		730.4	(lb)
ALLOWABLE UPLIFT FORCE PER ATTACHMENT	1010.0	(lb)		
MIN. LAG PENETRATION INTO TRUSS	2.50	(in)		
SCREW WITHDRAWAL RESISTANCE	2302	(lb)		
MAX LATERAL FORCE PER ATTACHMENT	36	(lb)		
ALLOWABLE LATERAL FORCE PER ATTACHMENT	657	(lb)		
ALLOWABLE UPLIFT PER MID/END CLAMP	945.5	(lb)		

*WITHDRAWAL = 8100*G^(3/2)*D^(3/4)*L*
G = Specific gravity of wood (0.55 for Southern Pine)
L = Depth of penetration
D = Diameter of lag screw

NOTES

1. MODULE ALLOWABLE WIND PRESSURE OBTAINED FROM MANUFACTURER DATASHEET.
2. SEE ATTACHMENT PLAN FOR ACTUAL ATTACHMENT SPACING IN EACH ZONE
3. HVHZ DEFINED AS MIAMI-DADE AND BROWARD COUNTIES
4. LAG SCREW WITHDRAWAL RESISTANCE OBTAINED FROM THE USDA WOOD HANDBOOK, WOOD AS AN ENGINEERING MATERIAL.
5. ROOF TRUSSES ARE #2 SOUTHERN YELLOW PINE
6. USE INCLUDED 5/16" x 3" LAG SCREWS TO SECURE MOUNT TO CENTER OF EACH TRUSS. MINIMUM SCREW PENETRATION ITO TRUSS IS 2.5" USE TWO SCREWS PER ATTACHMENT.
7. RAIL SPANS OBTAINED FROM MANUFACTURER'S PUBLISHED DATA.
8. ANY EDGE AND/OR EXPOSED MODULES PRESENT IN PROPOSED INSTALLATION WHERE ANY WIND ZONE'S DESIGN PRESSURE EXCEEDS THE MODULE ALLOWABLE PRESSURE SHALL BE VERIFIED WITH WEIGHTED AVERAGE PRESSURE CALCULATIONS RESPECTIVE TO EACH MODULE CASE, AS APPLICABLE.

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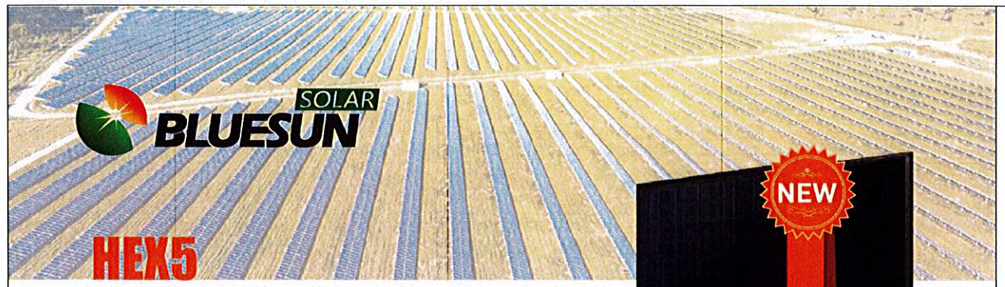
WIND LOAD CALCULATIONS

PV-8



BSM415M10-54HPH

182 Bifacial Module With Transparent Backsheet
10BB Half-cut Mono Perc

Made In Thailand

- Long Beach Stock
- US Local Service
- Same Day Shipping

- Dimensions:1722*1134*30mm
- Weight:21.5kg
- Max. System Voltage: 1000V/1500 V (IEC/UL)

PERFORMANCE WARRANTY

25 Years — Enhanced Product Warranty on Materials and Workmanship*

30 Years — Linear Power Performance Warranty*
*According to the applicable Bluesun Solar Limited Warranty Statement.

GREAT PERFORMANCE AND RELIABILITY

★ **10BB Half-cut Cell Technology**
New circuit design, lower internal current, lower Rs loss
Ga dopped wafer, attenuation < 2% (1st year) / ≤0.55% (Linear)

★ **Industry Leading High Yield**
Bifacial PERC cell technology,
5%-25% more yield depends on different conditions

★ **Excellent Anti-PID Performance**
2 times of industry standard Anti-PID test by TUV SUD

★ **Lower LCOE**
2% more power generation, lower LCOE

★ **IP68 Junction Box**
High waterproof level

MANAGEMENT SYSTEM CERTIFICATES

- ISO 9001: 2015 Quality Management System
- ISO 14001: 2015 Environment Management System
- ISO 45001: 2018 Occupational Health and Safety Management Systems

PRODUCT CERTIFICATES

- IEC 61215 / IEC 61730 / UL 61730

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E-mail:info@bluesunpv.com Http://www.bluesunpv.com
US Warehouse Location: Long Beach, Chicago, New Jersey Etc

ELECTRICAL CHARACTERISTICS

Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power (Pmax/W)	400	298	405	302	410	306	415	309	420	313
Operating Voltage (Vmpp/V)	31.05	29.0	31.24	29.2	31.43	29.3	31.63	29.5	31.82	29.7
Operating Current (Impp/A)	12.89	10.30	12.97	10.36	13.05	10.42	13.13	10.49	13.21	10.55
Open-Circuit Voltage (Voc/V)	37.00	34.8	37.25	35.1	37.50	35.3	37.75	35.6	38.00	35.8
Short-Circuit Current (Isc/A)	13.78	11.11	13.86	11.17	13.94	11.24	14.02	11.31	14.10	11.38
Module Efficiency (%)	20.50		20.70		21.00		21.25		21.51	

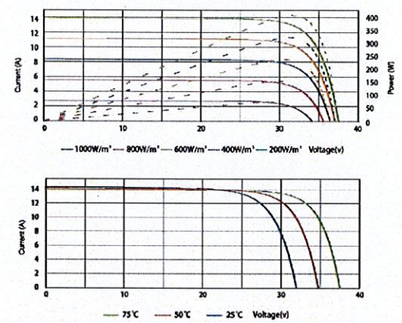
STC: Irradiance 1000W/m², Spectra at AM1.5, Module Temperature 25℃,Power output tolerance: 0~+5W, Test uncertainty for Pmax : ±3%
NMOT: Irradiance 800W/m², Spectra at AM1.5, Ambient Temperature 20 ℃, Wind speed 1m/s

MECHANICAL CHARACTERISTICS

Solar Cell	Monocrystalline182*182mm
No. of Cells	108 (6*18)
Module Dimensions	1722*1134*30mm (67.80*44.65*1.18inches)
Weight	21.5kg (47.4lbs.)
Front Glass	3.2mm AR Coating Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68, 3 Bypass Diodes
Output Cables	4mm² (IEC), 12AWG(UL) 300mm in Length or Customized Length
Connectors	T01/LJQ-3-CSY/MC4/MC4-EVO2

I-V CURVE

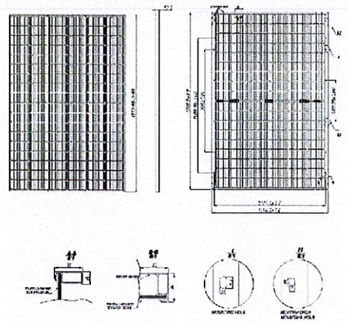
TP7G54M/410W



APPLICATION CONDITIONS

Maximun System Voltage	1000V/1500VDC/(IEC)
Operating Temperature	-40°C~+85°C
Maximun Series Fuse	25A
Safety Protection Class	Class II
Mechanical Load	Front side 5400Pa, Back side 4000Pa
Refer. Bifaciality Factor	70%(+5%~10%)

TECHNICAL DRAWINGS



TEMPERATURE CHARACTERISTICS

Temperature Coefficient of Pmax	-0.35%/°C
Temperature Coefficient of Voc	-0.26%/°C
Temperature Coefficient of Isc	+0.048%/°C
Nominal Module Operating Temperature(NMOT)	43±2°C

PACKING CONFIGURATION

Pieces Per Pallet	31
Pieces Per Container(40'HQ)	806

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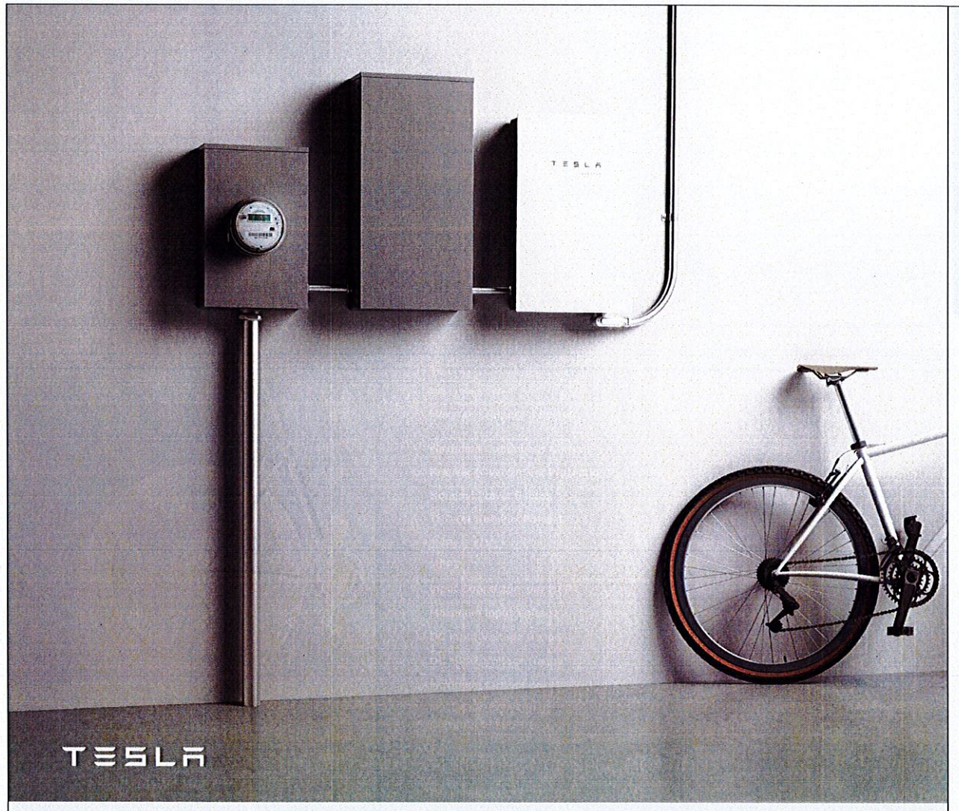
MODULE DATASHEET
PV-9



SOLAR INVERTER

3.8 kW | 7.6 kW

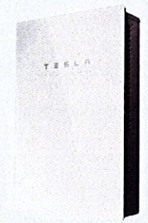
Tesla Solar Inverter completes the Tesla home solar system, converting DC power from solar to AC power for home consumption. Tesla's renowned expertise in power electronics has been combined with robust safety features and a simple installation process to produce an outstanding solar inverter that is compatible with both Solar Roof and traditional solar panels. Once installed, homeowners use the Tesla mobile app to manage their solar system and monitor energy consumption, resulting in a truly unique ecosystem experience.

KEY FEATURES

- Built on Powerwall 2 technology for exceptional efficiency and reliability
- Wi-Fi, Ethernet, and cellular connectivity with easy over-the-air updates
- Designed to integrate with Tesla Powerwall and Tesla App
- 3.8 kW and 7.6 kW models available

SOLAR INVERTER

Tesla Solar Inverter provides DC to AC conversion and integrates with the Tesla ecosystem, including Solar Panels, Solar Roof, Powerwall, and vehicle charging, to provide a seamless sustainable energy experience.



KEY FEATURES

- Integrated rapid shutdown, arc fault, and ground fault protection
- No neutral wire simplifies installation
- 2x the standard number of MPPTs for high production on complex roofs

ELECTRICAL SPECIFICATIONS

OUTPUT (AC)	3.8 kW	7.6 kW
Nominal Power	3,800 W	7,600 W
Maximum Apparent Power	3,328 VA at 208 V 3,840 VA at 240 V	6,656 VA at 208 V 7,680 VA at 240 V
Maximum Continuous Current	16 A	32 A
Breaker (Overcurrent Protection)	20 A	40 A
Nominal Power Factor	1 - 0.85 (leading / lagging)	
THD (at Nominal Power)	<5%	
INPUT (DC)		
MPPT	2	4
Input Connectors per MPPT	1-2	1-2-1-2
Maximum Input Voltage	600 VDC	
DC Input Voltage Range	60 - 550 VDC	
DC MPPT Voltage Range[1]	60 - 480 VDC	
Maximum Current per MPPT (I_{mp})	11 A	
Maximum Short Circuit Current per MPPT (I_{sc})	15 A	

PERFORMANCE SPECIFICATIONS

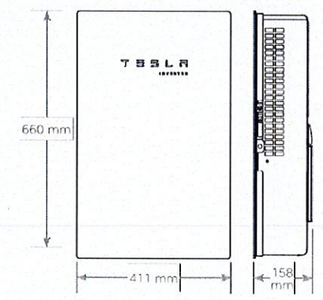
Peak Efficiency[2]	97.5%	98.0%
CEC Efficiency[2]	97.5%	
Allowable DC/AC Ratio	1.4	
Customer Interface	Tesla Mobile App	
Internet Connectivity	Wi-Fi (2.4 GHz, 802.11 b/g/n), Ethernet, Cellular (LTE/4G)[3]	
AC Remote Metering Support	Wi-Fi (2.4 GHz, 802.11 b/g/n), RS-485	
Protections	Integrated arc fault circuit interrupter (AFCI), Rapid Shutdown	
Supported Grid Types	60 Hz, 240 V Split Phase 60 Hz, 208 V Wye	
Required Number of Tesla Solar Shutdown Devices per Solar Module	See *Solar Shutdown Device Requirements per Module* on page 3	
Warranty	12.5 years	

[1] Maximum current.
[2] Expected efficiency pending final CEC listing.
[3] Cellular connectivity subject to network operator service coverage and signal strength.

MECHANICAL SPECIFICATIONS

Dimensions	650 mm x 411 mm x 158 mm (26 in x 16 in x 6 in)
Weight	52 lb[4]
Mounting options	Wall mount (bracket)

[4] Door and bracket can be removed for a mounting weight of 37 lb.



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature[5]	-30°C to 45°C (-22°F to 113°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Ingress Rating	IP55 (Wiring compartment)
Pollution Rating	PD2 for power electronics and terminal wiring compartment, PD3 for all other components
Operating Noise @ 1 m	< 40 db(A) nominal, < 50 db(A) maximum

[5] For the 7.6 kW Solar Inverter, performance may be de-rated to 6.2 kW at 240 V or 5.37 kW at 208 V when operating at temperatures greater than 45°C.

COMPLIANCE INFORMATION

Grid Certifications	UL 1741, UL 1741 SA, IEEE 1547, IEEE 1547.1
Safety Certifications	UL 1699B, UL 1741, UL 1998 (US)
Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)

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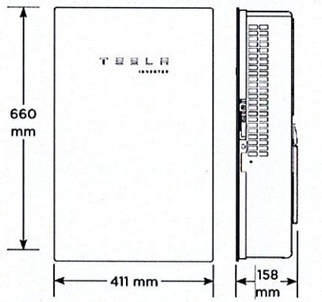
INVERTER DATASHEET

PV-10

Tesla Solar Inverter Technical Specifications

Mechanical Specifications

Dimensions	660 mm x 411 mm x 158 mm (26 in x 16 in x 6 in)
Weight	52 lb[4]
Mounting Options	Wall mount (bracket)



[4]Door and bracket can be removed for a mounting weight of 37 lb.

Environmental Specifications

Operating Temperature	-30°C to 45°C (-22°F to 113°F)[5]
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Ingress Rating	IP55 (Wiring compartment)
Pollution Rating	PD2 for power electronics and terminal wiring compartment, PD3 for all other components
Operating Noise @ 1 m	< 40 db(A) nominal, < 50 db(A) maximum

[5]Performance may be de-rated to 6.2 kW at 240 V when operating at temperatures greater than 45°C.

Compliance Information

Grid Certifications	UL 1741, UL 1741 SA, UL 1741 SB, UL 1741 PCS, IEEE 1547-2018, IEEE 1547.1
Safety Certifications	UL 1741 PVRSS, UL 1699B, UL 1998 (US), UL 3741
Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)

Solar Shutdown Device Technical Specifications

—

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with Tesla Solar Inverter, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications

Model	**MCI-1**	**MCI-2**
Nominal Input DC Current Rating (I_{MP})	12 A	13 A
Maximum Input Short Circuit Current (I_{SC})	19 A	17 A
Maximum System Voltage (PVHCS)	600 V DC	1000 V DC[6]

[6]Maximum System Voltage is limited by Tesla Solar Inverter to 600 V DC.

RSD Module Performance

Maximum Number of Devices per String	5	5
Control	Power Line Excitation	Power Line Excitation
Passive State	Normally Open	Normally Open
Maximum Power Consumption	7 W	7 W
Warranty	25 years	25 years

Environmental Specifications

Operating Temperature	-40°C to 50°C (-40°F to 122°F)	-45°C to 70°C (-49°F to 158°F)
Storage Temperature	-30°C to 70°C (-22°F to 158°F)	-30°C to 70°C (-22°F to 158°F)
Enclosure Rating	NEMA 4X / IP65	NEMA 4X / IP65

Mechanical Specifications

Electrical Connections	MC4 Connector	MC4 Connector
Housing	Plastic	Plastic
Dimensions	125 x 150 x 22 mm (5 x 6 x 1 in)	173 x 45 x 22 mm (6.8 x 1.8 x 1 in)
Weight	350 g (0.77 lb)	120 g (0.26 lb)
Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw	Wire Clip

Compliance Information

Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
RSD Initiation Method	PV System AC Breaker or Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

The following categories of solar module meet the UL 3741 PVHCS listing when installed with Tesla Solar Inverter and Solar Shutdown Devices.

Tesla Solar Roof	PV Hazard Control System: BIPV compliance document
Tesla or Hanwha (Q.Peak Duo BLK or BLK-G6+) Modules certified for use with ZEP racking	PV Hazard Control System: ZS PVHCS compliance document
Other module and racking combinations	PV Hazard Control System: Generic PV Array compliance document

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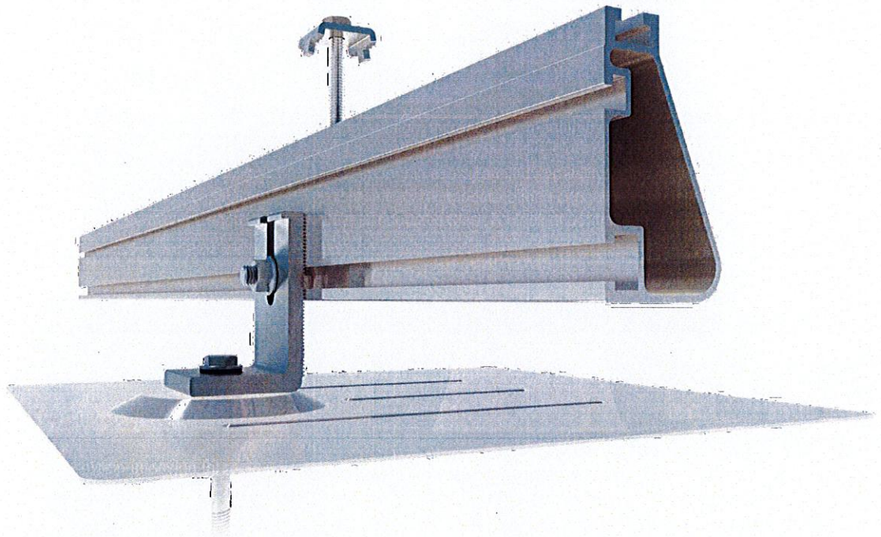
PV-10.1

Datasheet

IRONRIDGE

Roof Mount System



Built for solar's toughest roofs.

IronRidge builds the strongest roof mounting system in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 20-year warranty.

Strength Tested
All components evaluated for superior structural performance.

PE Certified
Pre-stamped engineering letters available in most states.

Class A Fire Rating
Certified to maintain the fire resistance rating of the existing roof.

Design Software
Online tool generates a complete bill of materials in minutes.

Integrated Grounding
UL 2703 system eliminates separate module grounding components.

20 Year Warranty
Twice the protection offered by competitors.

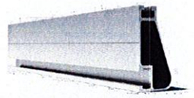
Datasheet

XR Rails

XR10 Rail

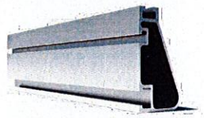
A low-profile mounting rail for regions with light snow.
- 6' spanning capability
- Moderate load capability
- Clear & black anod. finish

XR100 Rail



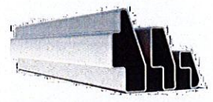
The ultimate residential solar mounting rail.
- 8' spanning capability
- Heavy load capability
- Clear & black anod. finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.
- 12' spanning capability
- Extreme load capability
- Clear anodized finish

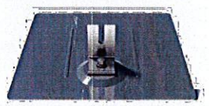
Internal Splices



All rails use internal splices for seamless connections.
- Self-tapping screws
- Varying versions for rails
- Grounding Straps offered

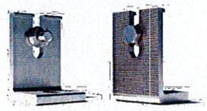
Attachments

FlashFoot



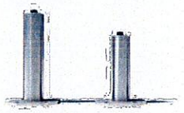
Anchor, flash, and mount with all-in-one attachments.
- Ships with all hardware
- IBC & IRC compliant
- Certified with XR Rails

Slotted L-Feet



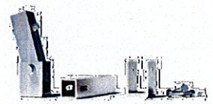
Drop-in design for rapid rail attachment.
- High-friction serrated face
- Heavy-duty profile shape
- Clear & black anod. finish

Standoffs



Raise flush or tilted systems to various heights.
- Works with vent flashing
- Ships pre-assembled
- 4" and 7" Lengths

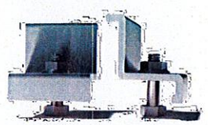
Tilt Legs



Tilt assembly to desired angle, up to 45 degrees.
- Attaches directly to rail
- Ships with all hardware
- Fixed and adjustable

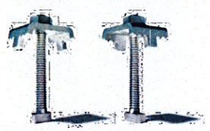
Clamps & Grounding

End Clamps



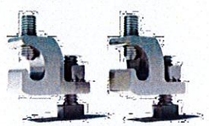
Slide in clamps and secure modules at ends of rails.
- Mill finish & black anod.
- Sizes from 1.22" to 2.3"
- Optional Under Clamps

Grounding Mid Clamps



Attach and ground modules in the middle of the rail.
- Parallel bonding T-bolt
- Reusable up to 10 times
- Mill & black stainless

T-Bolt Grounding Lugs



Ground system using the rail's top slot.
- Easy top-slot mounting
- Eliminates pre-drilling
- Swivels in any direction

Accessories

Provide a finished and organized look for rails.
- Snap-in Wire Clips
- Perfected End Caps
- UV-protected polymer

Free Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
Go to IronRidge.com/rm

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to IronRidge.com/training

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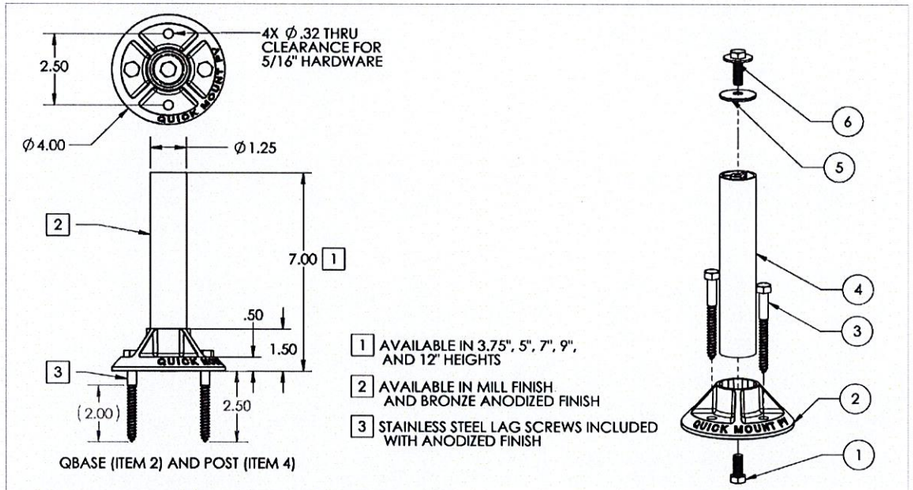
RACKING DATASHEET
PV-11

QBase Low Slope Mount | QMLSH



QBASE (ITEM 2) AND POST (ITEM 4)

ITEM NO.	DESCRIPTION	QTY.
1	CAP SCREW, HEX HEAD, 5/16"-18 X 3/4" UNC-2A, GRADE 8, MAGNI	1
2	QBASE, 1-1/4" ID, FOR 5/16" HARDWARE, A360 CAST AL	1
3	LAG SCREW, HEX HEAD, 5/16" X 3", ZINC	2
4	POST, 1.25" OD X 6.5", 6063-T5/6063-T6, MILL	1
5	WASHER, SEALING, 5/16" ID X 1-1/4" OD, EPDM BONDED SS	1
6	CAP SCREW, HEX HEAD, 5/16"-18 X 1" UNC-2A, NYLON PATCH, W/ CAPTIVE WASHER, T'OD, 18-8 SS	1

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DO NOT SCALE DRAWING

Quick Mount PV

TITLE: QMLSH: QBASE LOW SLOPE MOUNT

UNLESS OTHERWISE SPECIFIED:	SIZE	DRAWN BY: RAD	REV
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/8 TWO PLACE DECIMAL ± .19 THREE PLACE DECIMAL ± .094	A	DATE: 8/9/2019	10
	SCALE: 1:3	WEIGHT: 1.02	SHEET 1 OF 1

5 4 3 2 1

Lag pull-out (withdrawal) capacities (lbs) in typical lumber:

	Lag Bolt Specifications		
	Specific Gravity	2/ea 5/16" shaft per 2.5" thread depth	5/16" shaft per 1" thread depth
Douglas Fir, Larch	.50	1330	266
Douglas Fir, South	.46	1175	235
Engelmann Spruce, Lodgepole Pine (MSR 1650 f & higher)	.46	1175	235
Hem, Fir	.43	1060	212
Hem, Fir (North)	.46	1175	235
Southern Pine	.55	1535	307
Spruce, Pine, Fir	.42	1025	205
Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	.50	1330	266

Sources: American Wood Council, NDS 2005, Table 11.2 A, 11.3.2 A

Notes:

1) Thread must be embedded in a rafter or other structural roof member.
2) See IBC for required edge distances.

Quick Mount PV®
RESPECT THE ROOF

BI 7.2.3-5 Aug-2019, Rev 10

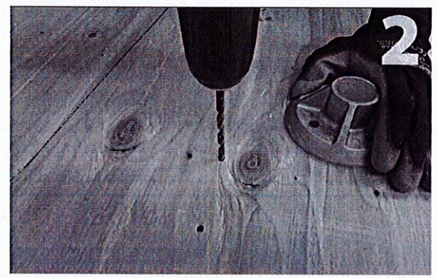
QBase Low Slope Mount Instructions

WARNING: Quick Mount PV products are NOT designed and should NOT be used to anchor fall protection equipment.

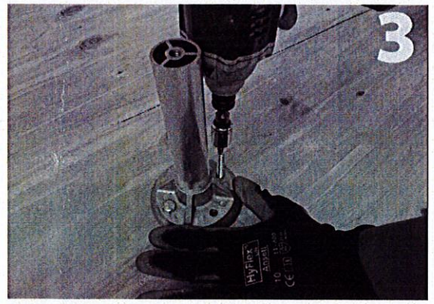
Installation Tools Required: Drill with 7/32" bit, impact gun with 1/2" socket, 1 tube of sealant compatible with roofing materials, pencil, chalk line

CAUTION: Prior to installation, check that proper screw embedment will be achieved for the necessary site load and roofing configurations.

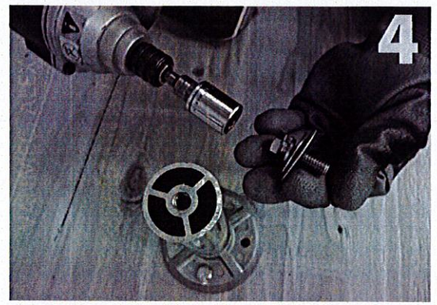
Locate the desired mount placement over a rafter (or custom wood blocking). Using the base as a template, mark the two penetration points with either a pen or light drilling. Use two opposing holes on the base plate, parallel to the structural member.



Drill both pilot holes with a 7/32-inch bit. Make sure to hold the drill square to the rafter. The lag bolts must be anchored into a structural member, so it is very important to hit the center of the rafter with your pilot holes. Fill the pilot holes with a sealant compatible with roofing materials.



Prior to attaching the base to the roof, place the grade-8 hex bolt (item 1) in the bottom of the base (item 2) and screw the post (item 4) in. This is easier than adding the post after securing the base to the roof. Attach the base/post assembly to the roof with two lag bolts (item 3).



Attach the hardware (items 5-8) to the top of the post. (Be sure to seal off the post from weather exposure with the sealing washer (item 5), in the interim before racks are installed.) You are now ready to flash the mount, roof around it, and attach racking. Aluminum flashings for built-up roofs are available from Quick Mount PV in 4" and 8" cones (sold separately). For membrane roofs, be sure to use manufacturer-specified flashing and utilize the services of a certified roofer.

LA RESEARCH REPORTS (LARR): Approved for use in the City of Los Angeles per LARR #26194

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ATTACHMENT DATASHEET

PV-12

HYDROSTOP
PremiumCoat® Fabric
Product Data Sheet

PRODUCT DESCRIPTION

PremiumCoat® Fabric is a tough, non-woven, stitch-bonded, heat-set polyester designed for roofing and flashing applications of all types.

PACKAGING

PremiumCoat® Fabric is available in 300 ft long rolls, with the following widths: 4", 6", 8", 12", 16", 20", 24".

PremiumCoat® Fabric is available in 336 ft long rolls, with the following widths: 40".

BASIC USES

PremiumCoat® Fabric is designed for use in conjunction with either the PremiumCoat® or BarrierGuard® systems. It acts as a reinforcing material, increasing the long-term strength of either system. It also allows the stresses of normal building movement to be spread over a wider area.

PHYSICAL PROPERTIES

PREMIUMCOAT® FABRIC	
Weight	3.0 (± 10%) ounces/yd² 10.0 (± 10%) grams/m²
Tensile Strength	MD: 124 lbs (56 kg) avg value CD: 77 lbs (35 kg) (ASTM D5034)
Elongation @ Break	MD: 26% avg value CD: 64% (ASTM D5034)

Ball Burst	109 lbs (49 kg) avg value (ASTM D3787)
Trapezoid	MD: 17 lbs (7.7 kg) avg value CD: 20 lbs (9.1 kg) (ASTM D117)
Thickness	0.018 inches (0.457 mm) avg value (ASTM D1777)

For specific physical property information on PremiumCoat® Foundation Coat and Finish Coat components or information on PremiumCoat® System or BarrierGuard®, please refer to individual Product Data Sheets.

APPLICATION INSTRUCTIONS

PremiumCoat® System: Refer to GAF **PremiumCoat® System** specifications regarding surface preparation, cleaning, priming instructions, application information, coverage rates, and minimum membrane mil thickness required.

Apply one coat of **PremiumCoat® Foundation Coat ("Foundation Coat")** to the substrate at the rate of 50 to 80 ft²/gallon (1.2 to 2 m²/liter), with **PremiumCoat® Fabric ("Fabric")** (sizes vary) laid into the wet **Foundation Coat**, and a second coat of **Foundation Coat** immediately applied over the top at the rate of 50 to 80 ft²/gallon (1.2 to 2.0 m²/liter) to saturate the **Fabric. Fabric** should be laid out smooth side down. When rolled out, lettering on **Fabric** should be distinct and able to be read left to right.

Foundation Coat is applied at a total rate of 25 to 40 ft²/gallon (.6 to 1.0 m²/liter), depending on the texture and porosity of the substrate. **Foundation Coat** should only be applied using approved roof brushes. Rolling and/or spraying **Foundation Coat** is strictly prohibited.

To complete the **PremiumCoat® System**, apply specified number of coats of **PremiumCoat® Finish Coat ("Finish Coat")** by brush, roller, or airless sprayer.

BarrierGuard® System: Refer to GAF **BarrierGuard®** specifications regarding surface preparation, cleaning, priming instructions, application information, coverage rates, etc.

Mix **BarrierGuard®** slurry material in accordance with GAF specifications. A light misting of water on masonry surfaces may be necessary prior to applying **BarrierGuard®** slurry on hot and/or sunny days.

Apply first coat of **BarrierGuard®** slurry and embed **Fabric** into still-wet slurry coat, immediately followed by a saturation coat of slurry, and allow to dry. The **PremiumCoat® Fabric** should be installed vertically (like wallpaper).

Apply a final additional coat of **BarrierGuard®** slurry and allow to cure.

SAFETY & HANDLING

Keep **Fabric** in a clean, dry location. For specific information regarding safe handling of this material, please refer to the Safety Data Sheet (SDS).

See applicable warranties and guarantees for complete coverage and restrictions.

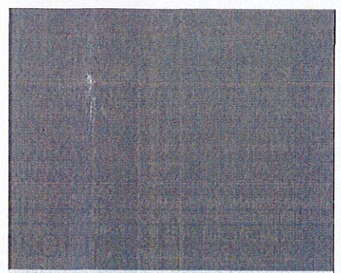
GAF
1 Campus Drive
Parsippany, NJ 07054
1-800-ROOF-411
gaf.com

GAF Liquid-Applied

January 2016, supercedes March 2015

For technical, system, and warranty information, visit gaf.com or call 1-800-766-3411.

FlexSeal™ Caulk Grade Sealant
Product Data Sheet



PRODUCT DESCRIPTION

FlexSeal™ Caulk Grade Sealant is a white solvent-based synthetic elastomeric sealant. FlexSeal is extremely flexible and durable, but with a higher viscosity formulation than Standard FlexSeal. Like all solvent-based products, the surface must be clean, completely free of moisture and residual contaminants before application. FlexSeal™ Caulk Grade Sealant is especially suited for use in any application where caulk is typically used.

WARRANTY

See applicable warranties and guarantees for complete coverage and restrictions.

PACKAGING & SHELF LIFE

10 oz. cartridge

Shelf life 12 months if unopened containers stored between 50°F and 80°F. Storage outside this temperature range may shorten shelf life.

BASIC USES

FlexSeal™ Caulk Grade Sealant is designed for use on metal, copper, concrete, wood, asphalt shingles, SBS, APP, EPDM, BUR, TPO and PVC substrates. Especially designed for use where elastomeric caulks are required; like term bar applications, or around clamping rings at penetrations. FlexSeal™ Caulk Grade Sealant may be used for cold weather applications provided that the material is stored properly and the substrate is dry prior to application.

Advantages

- Extremely flexible and durable
- Ideal for termination bar, railing, step flashings, or edge metal
- Durable and UV resistant; will not chalk, crack or peel
- Joint movement capability maximum ± 25%
- Bonds to multiple substrates including; metal, copper, concrete, wood, asphalt shingles, SBS, APP, EPDM, BUR, TPO, and PVC.
- Paintable

PHYSICAL PROPERTIES

FLEXSEAL™ CAULK GRADE SEALANT	
Application Rate	Approximately 1/4 -3/8 inch (6 - 10 mm) bead
Application Method	Caulk Gun
Application Temp (air, surface)	32°F - 120°F (0°C - 48.9°C)
Drying Time (75°F, 50% RH)	24 - 48 hrs; Skins in less than 1 hour; Full Cure - approx. 48 hours

Total Solids (by weight	77% ± 2%
Specific Gravity	1.24 ± 0.1
Weight per Gallon	10.3 ± 0.5 lbs.
Viscosity (75°F)	1,200,000 cps ± 10%
Tensile Strength	>250 psi (>1.72 N/sq mm)

APPLICATION INSTRUCTIONS

For application questions, please contact GAFMC Contractor Services at 1-800-766-3411.

Applicable Standards: FlexSeal™ Caulk Grade Sealant meets ASTM. D-412 and D-920; and is tested in accordance with D-2196 and D-1475.

Application Considerations: FlexSeal™ Caulk Grade Sealant is not a structural component and it is not intended to bridge large voids. Joint depth should not exceed 1/2" wide by 1/2" deep (13 mm x 13 mm).

If joint exceeds 1/2" (13 mm) deep, the sealant depth should be controlled by a closed cell backer rod. The number of joints and width of joints should be designed to accommodate a maximum of 25% movement. Note: Apply only as directed. Over-application may result in slumping, dripping, or unsightly appearance.

Note: Repair leaks promptly to avoid adverse effects, including mold growth.

LIMITATIONS & PRECAUTIONS

Store in well-ventilated area at 50°F to 90°F. This product is easiest to apply at temperatures above 32°F (0°C). Substrate temperatures must be below 120°F (48.9°C) when applying product.

SAFETY & HANDLING

For specific information regarding safe handling of this material please refer to OSHA guidelines and product Safety Data Sheet (SDS).

CLEAN UP

Clean-Up: Mineral Spirits, Toluene, Xylene

See applicable warranties and guarantees for complete coverage and restrictions.

GAF
1 Campus Drive
Parsippany, NJ 07054
1-800-ROOF-411
gaf.com

GAF Liquid-Applied

January 2016

For technical, system, and warranty information, visit gaf.com or call 1-800-766-3411.

BUILDING DEPARTMENT SEAL STAMP

LORD & LAWRENCE CONSULTING ENGINEERS
CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809

prosolar SYSTEMS
CONTACT: 888-462-5005
1100 W OAKLAND PARK BLVD,#8
WILTON MANORS, FL 33311
SOLAR CONTRACTOR LICENSE: CVC57028

VANMEC, ALEX

806 JANN AVE,
OPA-LOCKA, FL 33054
25.907862, -80.254127

SIGNATURE WITH SEAL

SEALANT DATASHEET
PV-13

Tech Brief

IRONRIDGE

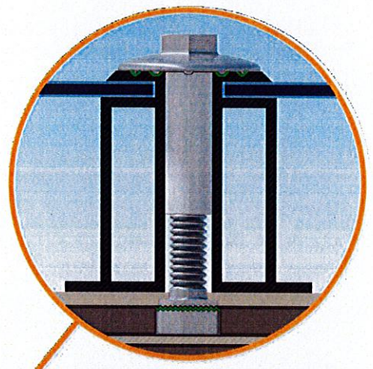
UFO® Family of Components

Simplified Grounding for Every Application

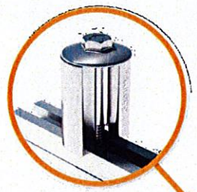
The UFO® family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge® XR Rails®. All system types that feature the UFO® family—Flush Mount®, Tilt Mount® and Ground Mount®—are fully listed to the UL 2703 standard.

UFO® hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.

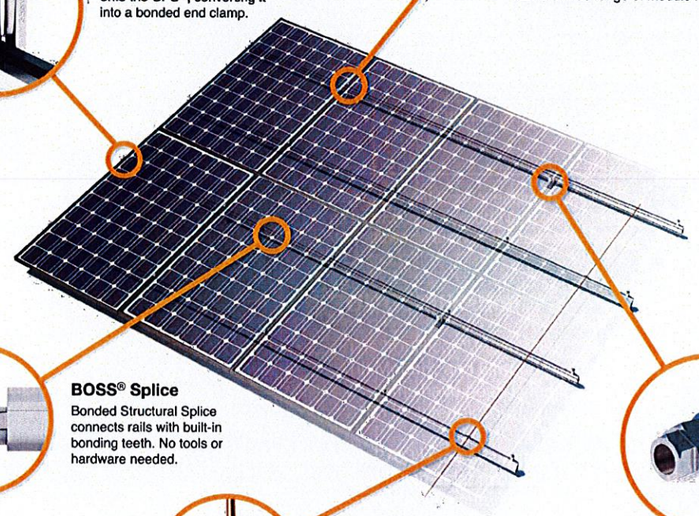
Only for installation and use with IronRidge products in accord with written instructions. See IronRidge.com/UFO

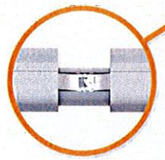


Universal Fastening Object (UFO®)
The UFO® securely bonds solar modules to XR Rails®. It comes assembled and lubricated, and can fit a wide range of module heights.

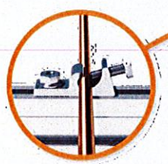


Stopper Sleeve
The Stopper Sleeve snaps onto the UFO®, converting it into a bonded end clamp.





BOSS® Splice
Bonded Structural Splice connects rails with built-in bonding teeth. No tools or hardware needed.

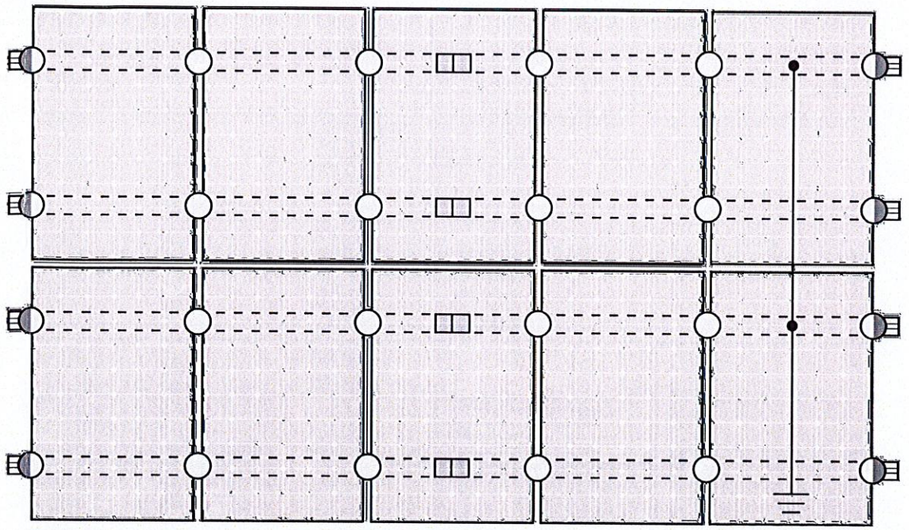


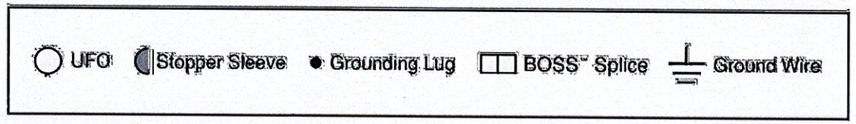
Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Bonded Attachments
The bonding bolt attaches and bonds the L-foot® to the rail. It is installed with the same socket as the rest of the system.

Tech Brief

System Diagram





Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge® Flush Mount®, Tilt Mount®, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to IronRidge.com/UFO

Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails®	✔	✔	XR100 & XR1000
UFO®/Stopper	✔	✔	✔
BOSS® Splice	✔	✔	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Compatible with most MLPE manufacturers. Refer to system installation manual.		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

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BUILDING DEPARTMENT SEAL STAMP

LORD & LAWRENCE
CONSULTING ENGINEERS
CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809

prosolar SYSTEMS
CONTACT: 888-462-5005
1100 W OAKLAND PARK BLVD,#8
WILTON MANORS, FL 33311
SOLAR CONTRACTOR LICENSE: CVC57028

VANMEC, ALEX

806 JANN AVE,
OPA-LOCKA, FL 33054
25.907862, -80.254127

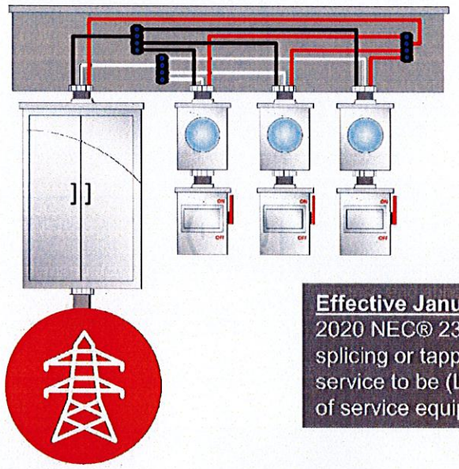
SIGNATURE WITH SEAL

GROUNDING & BONDING DATASHEET

PV-14

nVent | ILSCO

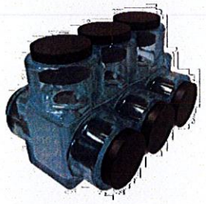
nVent ILSCO Solutions for 2020 NEC 230.46



NFPA 70 National Electrical Code 2020

Effective January 1, 2023

2020 NEC® 230.46 requires wire connectors used for splicing or tapping conductors on the line side of the service to be (Listed) as "suitable for use on the line side of service equipment" or equivalent.

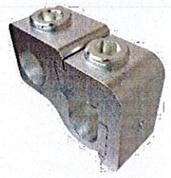


AVAILABLE NOW

Clear Insulated Nimbus

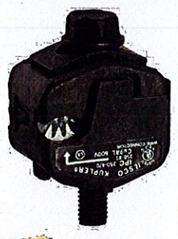
AVAILABLE NOW

Black Insulated Nimbus



AVAILABLE NOW

GTA Series



AVAILABLE NOW

Insulation Piercing - IPC

Suitable for Use on the Line-Side of the Service Disconnect

nVent

4701 Creek Road, Suite 110
Cincinnati, Ohio 45242
nVent.com/ILSCO

nVent ILSCO Insulation Piercing Connector: First in the Industry to Meet New NEC Requirement for Service Entrance Connections

nVent is excited to announce that **nVent ILSCO Insulation Piercing Copper Connector, IPC-250-4/0** is now UL Listed as suitable for use on the line side of service equipment. It **meets the 2020 NEC 230.46 requirement** that went into effect on January 1, 2023, requiring pressure connectors installed on service entrance splices and taps be listed and marked "suitable for use on the line side of service equipment." nVent ILSCO connectors were tested to UL 486A-486B Annex H which is the test standard required to meet 2020 NEC 230.46.

nVent ILSCO is the first manufacturer to meet the NEC 230.46 requirement. This is the second announcement by nVent ILSCO regarding its product performance and ability to meet this important standard. nVent ILSCO now offers its customers **293 SKUs** of pressure connectors, parallel tap connectors and insulation piercing connector for the 2020 NEC 230.46 requirement:

NIMBUS DOUBLE SIDE ENTRY		NIMBUS SINGLE SIDE ENTRY		CLEARTAP DOUBLE SIDE		CLEARTAP SINGLE SIDE ENTRY	
PBTD-3-1/0-SR	PBTD-3-600-SR	PBTS-3-1/0-SR	PBTS-3-600-SR	ECTD-3-1/0-SR	ECTD-3-600-SR	ECTS-3-1/0-SR	ECTS-3-600-SR
PBTD-4-1/0-SR	PBTD-4-600-SR	PBTS-4-1/0-SR	PBTS-4-600-SR	ECTD-4-1/0-SR	ECTD-4-600-SR	ECTS-4-1/0-SR	ECTS-4-600-SR
PBTD-5-1/0-SR	PBTD-5-600-SR	PBTS-5-1/0-SR	PBTS-5-600-SR	ECTD-5-1/0-SR	ECTD-5-600-SR	ECTS-5-1/0-SR	ECTS-5-600-SR
PBTD-6-1/0-SR	PBTD-6-600-SR	PBTS-6-1/0-SR	PBTS-6-600-SR	ECTD-6-1/0-SR	ECTD-6-600-SR	ECTS-6-1/0-SR	ECTS-6-600-SR
PBTD-7-1/0-SR	PBTD-7-600-SR	PBTS-7-1/0-SR	PBTS-7-600-SR	ECTD-7-1/0-SR	ECTD-7-600-SR	ECTS-7-1/0-SR	ECTS-7-600-SR
PBTD-8-1/0-SR	PBTD-8-600-SR	PBTS-8-1/0-SR	PBTS-8-600-SR	ECTD-8-1/0-SR	ECTD-8-600-SR	ECTS-8-1/0-SR	ECTS-8-600-SR
PBTD-9-1/0-SR	PBTD-9-600-SR	PBTS-9-1/0-SR	PBTS-9-600-SR	ECTD-9-1/0-SR	ECTD-9-600-SR	ECTS-9-1/0-SR	ECTS-9-600-SR
PBTD-10-1/0-SR	PBTD-10-600-SR	PBTS-10-1/0-SR	PBTS-10-600-SR	ECTD-10-1/0-SR	ECTD-10-600-SR	ECTS-10-1/0-SR	ECTS-10-600-SR
PBTD-11-1/0-SR	PBTD-11-600-SR	PBTS-11-1/0-SR	PBTS-11-600-SR	ECTD-11-1/0-SR	ECTD-11-600-SR	ECTS-11-1/0-SR	ECTS-11-600-SR
PBTD-12-1/0-SR	PBTD-12-600-SR	PBTS-12-1/0-SR	PBTS-12-600-SR	ECTD-12-1/0-SR	ECTD-12-600-SR	ECTS-12-1/0-SR	ECTS-12-600-SR
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PBTD-7-3/0-SR	PBTD-7-750-SR	PBTS-7-3/0-SR	PBTS-7-750-SR	ECTD-7-3/0-SR	ECTD-7-750-SR	ECTS-7-3/0-SR	ECTS-7-750-SR
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RUN TAP CONNECTORS	GTA-250-250 | GTA-250-250-W/C | GTA-250-0 | GTA-250-0-W/C						
INSULATION PIERCING	IPC-250-4/0						

Please contact nVent ILSCO for your next power connections project's need. To learn more, visit www.nVent.com/ILSCO.

BUILDING DEPARTMENT SEAL STAMP

LORD & LAWRENCE CONSULTING ENGINEERS
CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809

prosolar SYSTEMS
CONTACT: (561) 215-6015
1100 PALM BEACH LAKES BLVD. #8
WEST PALM BEACH, FL 33401
SOLAR CONTRACTOR LICENSE: CVC57028

VANMEC, ALEX

806 JANN AVE,
OPA-LOCKA, FL 33054
25.907862, -80.254127

SIGNATURE WITH SEAL

INSULATION PIERCING DATASHEET

PV-15