



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

**MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION**

11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599

www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

Metallum Enterprises, Inc.
7500 NW 68 Street
Miami, Florida 33176

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 Division (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

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

DESCRIPTION: Aluminum Roof Stand Frame Support for A/C Condensing Units.

APPROVAL DOCUMENT: Drawing No. 23-196, titled "Aluminum Stands for Roof Top Equipment", sheets 1 through 22 of 22, prepared by Tilteco, Inc., dated 09/01/2023, revision #1 on 09/01/2023, signed and sealed by Walter A. Tillit Jr., P.E., on 09/01/2023, bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and the expiration date by the Miami-Dade County Product Control Section

MISSILE IMPACT RATING: None

LABELING: Each stand frame shall bear a permanent label with the manufacturer's name or logo, city, state and the 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 #22-0721.02 and consists of this page 1, evidence submitted pages E-1, E-2, E-3, E-4, E-5 & E-6 as well as approval document mentioned above.

The submitted documentation was reviewed by **Helmy A. Makar, P.E., M.S.**



Helmy A. Makar
11/09/2023

NOA No. 23-0913.14
Expiration Date: 06/28/2027
Approval Date: 11/09/2023
Page 1

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 07-0322.13

A. DRAWINGS:

1. *Drawing No 06-MEE-0002, titled "Aluminum A/C Stand", sheets 1 through 3 of 3, prepared by Engineering Express, dated 03/09/07, signed and sealed by Frank L. Bennardo, P.E.*

B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Aluminum A/C Stands Calculations", dated 03/14/2007, sheets 1 through 11 of 11, signed and sealed by Frank L. Bennardo, P.E.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Review Request Letter issued by Metallum Enterprises, Inc., dated June 09, 2007, signed by Victor Toyos.*
2. *Code Compliance Letter issued by Engineering Express, dated March 16, 2007, signed and sealed by Frank L. Bennardo, P.E.*
3. *No financial Interest Letter issued by Engineering Express, dated March 16, 2007, signed and sealed by Frank L. Bennardo, P.E.*

2. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 09-0720.01

A. DRAWINGS:

1. *Drawing No. 06-MEE-0002, titled "Aluminum A/C Stand", sheets 1 through 4 of 4, prepared by Engineering Express, dated March 09, 2007, last revision dated February 03, 2009, signed and sealed by Frank L. Bennardo, P.E., on May 13, 2010.*

B. TESTS:


1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Aluminum A/C Stands Calculations", dated 03/29/2010, sheets 1 through 122 of 122, signed and sealed by Frank L. Bennardo, P.E.*

D. QUALITY ASSURANCE:

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



**Helmy A. Makar, P.E., M.S.
Product Control Section Supervisor**

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E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Code Compliance Letter with the FBC 2007 issued by Engineering Express, dated March 29, 2010, signed and sealed by Frank L. Bennardo, P.E.*

3. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 12-0327.02

A. DRAWINGS:

1. *Drawing No. 12-MEE-01, titled "Aluminum Stand for Mechanical Units", sheets 1 through 7 of 7, prepared by Engineering Express, dated March 09, 2007, revision dated May 21, 2012, signed & sealed by Frank L. Bennardo, P.E., on June 14, 2012.*

B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Aluminum Telescopic Roof Top Stands", dated 06/12/2012, sheets 1 through 104 of 104, signed and sealed by Frank L. Bennardo, P.E.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Code Compliance Letter with the FBC, 2010 Edition, issued by Engineering Express, dated June 14, 2012, signed and sealed by Frank L. Bennardo, P.E.*

4. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 14-0123.13

A. DRAWINGS:

1. *Drawing No. 12-MEE-01, titled "Aluminum Stand for Mechanical Units", sheets 1 through 7 of 7, prepared by Engineering Express, dated March 09, 2007, last revision dated January 10, 2014, signed and sealed by Frank L. Bennardo, P.E.*

B. TESTS:


1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Aluminum Telescopic Roof Top Stands", dated 04/10/2014, sheets 1 through 104 of 104, signed and sealed by Frank L. Bennardo, P.E.*

D. QUALITY ASSURANCE:

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



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E. MATERIAL CERTIFICATIONS:

1. *None.*

5. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 14-1224.10

A. DRAWINGS:

1. *Drawing No. 14-074, titled "Aluminum Stands for Roof Top Equipment", sheets 1 through 20 of 20, prepared by Tilteco, Inc., dated September 25, 2014, last revision dated May 12, 2015, signed and sealed by Walter A. Tillit Jr., P.E.*

B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Structural Design of A/C equipment Stands", dated 9/17/2014, 239 sheets, signed and sealed by Walter A. Tillit Jr., P.E., on 12/21/2014.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

6. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 17-0320.02

A. DRAWINGS:

1. *None.*

B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *None.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

7. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 17-1023.17

A. DRAWINGS:

1. *Drawing No. 17-087, titled "Aluminum Stands for Roof Top Equipment", sheets 1 through 20 of 20, prepared by Tilteco, Inc., dated July 21, 2017, last revision dated July 21, 2017, signed and sealed by Walter A. Tillit Jr., P.E.*



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B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Structural Design of A/C equipment Stands", dated 9/21/2017, 21 sheets, signed and sealed by Walter A. Tillit Jr., P.E., on 9/21/2017.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Code Compliance Letter with the FBC, 2017 Edition, prepared by Tilteco, Inc., dated July 21, 2017, signed and sealed by Walter A. Tillit Jr., P.E.*

8. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 20-0302.05

A. DRAWINGS:

1. *Drawing No. 17-087, titled "Aluminum Stands for Roof Top Equipment", sheets 1 through 29 of 29, prepared by Tilteco, Inc., dated December 20, 2019, signed and sealed by Walter A. Tillit Jr., P.E., on February 18, 2020.*

B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Structural Design of A/C equipment Stands", dated 02/18/20, 230 sheets, signed and sealed by Walter A. Tillit Jr., P.E., on 02/18/2020.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Code Compliance Letter with the FBC, 2017 Edition, prepared by Tilteco, Inc., dated February 17, 2020, signed and sealed by Walter A. Tillit Jr., P.E.*

9. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 20-0922.03

A. DRAWINGS:

1. *Drawing No. 20-248, titled "Aluminum Stands for Roof Top Equipment", sheets 1 through 29 of 29, prepared by Tilteco, Inc., dated August 12, 2020, signed and sealed by Walter A. Tillit Jr., P.E., on August 17, 2020.*



Helmy A. Makar, P.E., M.S.
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B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *None.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Code Compliance Letter with the FBC, 2020 Edition, prepared by Tilteco, Inc., dated August 12, 2020, signed and sealed by Walter A. Tillit Jr., P.E.*

10. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 21-0504.03

A. DRAWINGS:

1. *Drawing No. 20-248, titled "Aluminum Stands for Roof Top Equipment", sheets 1 through 22 of 22, prepared by Tilteco, Inc., dated August 12, 2020, revision #1 on April 01, 2021, signed & sealed by Walter A. Tillit Jr., P.E., on April 07, 2021.*

B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *Calculation titled "Revision to Structural Design of A/C equipment Stands", dated 04/07/21, 31 sheets, signed and sealed by Walter A. Tillit Jr., P.E., on 04/07/2021.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

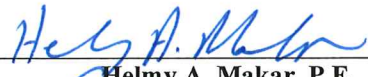
F. STATEMENTS:

1. *Code Compliance Letter with the FBC, 2020 Edition, prepared by Tilteco, Inc., dated April 05, 2021, signed and sealed by Walter A. Tillit Jr., P.E.*

11. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 22-0721.02

A. DRAWINGS:

1. *None.*



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B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *None.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Code Compliance Letter with the FBC, 2020 Edition, prepared by Tilteco, Inc., dated April 05, 2021, signed and sealed by Walter A. Tillit Jr., P.E.*

12. NEW EVIDENCE SUBMITTED

A. DRAWINGS:

1. *Drawing No. 23-196, titled "Aluminum Stands for Roof Top Equipment", sheets 1 through 22 of 22, prepared by Tilteco, Inc., dated 09/01/2023, revision #1 on 09/01/2023, signed and sealed by Walter A. Tillit Jr., P.E., on 09/01/2023.*

B. TESTS:

1. *None.*

C. CALCULATIONS:

1. *None.*

D. QUALITY ASSURANCE:

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

E. MATERIAL CERTIFICATIONS:

1. *None.*

F. STATEMENTS:

1. *Code Compliance Letter with the FBC, 2020 Edition, prepared by Tilteco, Inc., dated April 05, 2021, signed and sealed by Walter A. Tillit Jr., P.E.*
2. *Code Compliance Letter with the FBC, 2023 Edition, prepared by Tilteco, Inc., dated September 01, 2023, signed and sealed by Walter A. Tillit Jr., P.E.*


Helmy A. Makar, P.E., M.S.

Product Control Section Supervisor

NOA No. 23-0913.14

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PRODUCT APPROVAL FOR ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

1- THIS EQUIPMENT UNIT STAND SYSTEM HAS BEEN VERIFIED FOR CODE COMPLIANCE IN ACCORDANCE WITH THE 2020 (7th EDITION) AND 2023 (8th EDITION) OF THE FLORIDA BUILDING CODE, FOR USE WITHIN THE HIGH VELOCITY HURRICANE ZONE (HVHZ) AND OUT OF IT. DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED SEPARATELY ON A JOB-SPECIFIC BASIS IN ACCORDANCE WITH THE GOVERNING CODE USING ASD METHODOLOGY, IN ACCORDANCE WITH ASCE 7-16 (FBC 2020) AND ASCE 7-22 (FBC 2023) AND SECTIONS 1616.1, 1620.1 & 1620.6 OF THE FLORIDA BUILDING CODE, AND SHALL BE LESS THAN OR EQUAL TO THE LATERAL AND UPLIFT DESIGN PRESSURE CAPACITY VALUES LISTED HEREIN FOR ANY ASSEMBLY AS SHOWN.

2- THE ARCHITECT/ENGINEER OF RECORD FOR THE EXISTING STRUCTURE THAT WILL SUPPORT THESE ALUMINUM STANDS SHALL BE RESPONSIBLE FOR ITS INTEGRITY AND SHALL VERIFY THE ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND THE SUPERIMPOSED LOADS (ASD) - REF "REACTION SCHEDULE" INDICATED ON SHEET 6, WHERE REACTION FORCES ARE LISTED FOR USE WITH EXISTING STRUCTURE. DESIGN PROFESSIONAL OF RECORD SHALL VERIFY APPLICABILITY AND/OR ADDITIONAL FACTORS FOR USE WITH EXISTING STRUCTURE VERIFICATION.

3- STAND SHALL BE INSTALLED WITH MINIMUM CLEAR HEIGHT AS SPECIFIED IN THE ABOVE-NOTED BUILDING CODE. "STAND HEIGHT" AS USED HEREIN IS NOT NECESSARILY EQUIVALENT TO "STAND CLEAR HEIGHT" AS SPECIFIED IN THE BLDG CODE. STANDS SHALL BE INSTALLED WITH A MINIMUM CLEAR HEIGHT IN ACCORDANCE WITH SECTION 1522 TABLE 1522.3 OF THE FLORIDA BUILDING CODE.

4- VIBRATION ISOLATOR PADS SHALL BE PROVIDED BY OTHERS BETWEEN UNITS & STAND.

5- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT FASTENING AS SHOWN HEREIN WILL NOT VOID THE EQUIPMENT MANUFACTURER'S WARRANTY, ESPECIALLY WHERE UNITS ARE INSTALLED WITH OVERHANG PAST RAIL (SEE TIE-DOWN DETAILS).

6- ELECTRICAL GROUND, WHEN REQUIRED, TO BE DESIGNED & INSTALLED BY OTHERS. ALL MECHANICAL SPECIFICATIONS (CLEAR SPACE, TONNAGE, ETC.) SHALL BE AS PER MANUFACTURER RECOMMENDATIONS AND ARE THE EXPRESS RESPONSIBILITY OF THE CONTRACTOR.

7- MAXIMUM DIMENSIONS AND WEIGHT OF MECHANICAL UNITS SHALL CONFORM TO SPECIFICATIONS STATED HEREIN, SEE SHEETS 6 & 17 FOR LIMITATIONS.

8- ALL SCREWS & BOLTS SHALL BE AS SPECIFIED ON THIS DRAWING, AND SHALL COMPLY WITH SECTION 2411.3.3.4 OF THE FLORIDA BUILDING CODE.

9- ALL ALUMINUM EXTRUSIONS SHALL BE 6061-T6 ALLOY & TEMPER, UNLESS NOTED OTHERWISE. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D 1.2 REQUIREMENTS, USING 5356 FILLER ALLOYS.

10- ALL EXISTING CONCRETE SUBSTRATE SHALL HAVE MINIMUM f_c COMPRESSIVE STRENGTH OF 3000 PSI AS VERIFIED BY OTHERS.

11- ALL ALUMINUM EXTRUSIONS IN CONTACT WITH DISSIMILAR MATERIALS SHALL COMPLY WITH SECTION III-6 OF THE 2015 AND 2020 ALUMINUM DESIGN MANUAL.

12- ENGINEER SEAL AFFIXED HERETO VALIDATE STRUCTURAL DESIGN AS SHOWN ONLY. USE OF THIS SPECIFICATION BY CONTRACTOR, et. al. INDEMNIFIES & SAVES HARMLESS THIS ENGINEER FOR ALL COST & DAMAGES INCLUDING LEGAL FEES & APPELLATE FEES RESULTING FROM MATERIAL FABRICATION, SYSTEM ERECTION, CONSTRUCTION PRACTICES BEYOND THAT WHICH IS CALLED FOR BY LOCAL, STATE, & FEDERAL CODES & FROM DEVIATIONS OF THIS PLAN. EXCEPT AS EXPRESSLY PROVIDED HEREIN, NO ADDITIONAL CERTIFICATIONS OR AFFIRMATIONS ARE INTENDED ON THIS DOCUMENT.

13- WATER-TIGHTNESS OF EXISTING HOST SUBSTRATE SHALL BE THE FULL RESPONSIBILITY OF THE INSTALLING CONTRACTOR. CONTRACTOR SHALL ENSURE THAT ANY REMOVED OR ALTERED WATERPROOFING MEMBRANE IS RESTORED AFTER FABRICATION AND INSTALLATION OF STRUCTURE PROPOSED HEREIN. THIS ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY WATERPROOFING OR LEAKAGE ISSUES WHICH MAY OCCUR AS WATER-TIGHTNESS SHALL BE THE FULL RESPONSIBILITY OF THE INSTALLING CONTRACTOR.

THIS DRAWING SHALL ONLY BE USED TO OBTAIN PERMITS IN THE STATE OF FLORIDA

14- (a) THIS P.A.D. (PRODUCT APPROVAL DOCUMENT) PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT; i.e. WHERE THE SITE CONDITIONS DEVIATE FROM THE P.A.D.

(b) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS P.A.D., PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT. CONSTRUCTION SAFETY AT SITE IS THE CONTRACTOR'S RESPONSIBILITY.

(c) THIS P.A.D. WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.

(d) 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.A.D.

(e) ORIGINAL P.A.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

15- PRODUCT MANUFACTURER'S LABEL SHALL BE PLACED ON AN EXPOSED SURFACE OF STAND IN ACCORDANCE W/ SECTION 1703.5 OF THE FLORIDA BUILDING CODE.

SHEET #	INDEX
	DESCRIPTION
1	GENERAL NOTES AND INDEX
2	BILL OF MATERIALS AND COMPONENTS: STANDS W/O DIAGONAL BRACE
3	ASSEMBLY DETAILS FOR STANDS W/O DIAGONAL BRACE
4	STAND ASSEMBLY DETAILS VALID FOR STANDS W/O DIAGONAL BRACE
5	EQUIPMENT UNIT ANCHORAGE TO RAILS STANDS WITH OR W/O DIAGONAL BRACE
6	SCHEDULE NOTES/ANCHOR SCHEDULE/REACTION SCHEDULE/STANDS W/O DIAGONAL BRACE
7	SCHEDULE FOR MAX. PRESSURE DS=20"; HU=24",28",32" STANDS W/O DIAGONAL BRACE
8	SCHEDULE FOR MAX. PRESSURE RATING W/ DS>20" UP TO 60"; HU=24",28",32" STANDS W/O DIAGONAL BRACE
9	SCHEDULE FOR MAX. PRESSURE DS=20"; HU=36" STANDS W/O DIAGONAL BRACE
10	SCHEDULE FOR MAX. PRESSURE DS>20" UP TO 60"; HU=36" STANDS W/O DIAGONAL BRACE
11	SCHEDULE FOR MAX. PRESSURE DS≥20" UP TO 60"; HU=42" STANDS W/O DIAGONAL BRACE
12	SCHEDULE FOR MAX. PRESSURE DS≥20" UP TO 60"; HU=48" STANDS W/O DIAGONAL BRACE
13	SCHEDULE FOR MAX. PRESSURE DS≥20" UP TO 60"; HU=56" STANDS W/O DIAGONAL BRACE
14	BILL OF MATERIALS AND COMPONENTS: STANDS WITH DIAGONAL BRACE
15	ASSEMBLY DETAILS FOR STANDS WITH DIAGONAL BRACE
16	STAND ASSEMBLY DETAILS: VALID FOR STANDS WITH DIAGONAL BRACE
17	SCHEDULE NOTES/ANCHOR SCHEDULE/REACTION SCHEDULE/STANDS W/ DIAGONAL BRACE
18	SCHEDULE FOR MAX. PRESSURE, DS≥24" UP TO 60"; HU≤57". STANDS WITH DIAGONAL BRACE
19	SCHEDULE FOR MAX. PRESSURE, DS≥24" UP TO 60"; HU≤70". STANDS WITH DIAGONAL BRACE
20	BILL OF MATERIALS AND COMPONENTS: STANDS W/ OR W/O DIAGONAL BRACE
21	ASSEMBLY DETAILS FOR STANDS WITH CROSS BARS
22	EQUIPMENT UNIT ANCHORAGE FOR STANDS WITH CROSS BARS

PRODUCT REVISED as complying with the Florida Building Code Acceptance No 23-0913.14 Expiration Date 06/28/2027 By [Signature] Miami Dade Product Control

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)	DRAWN BY: Y.M.	DATE	23-196	SHEET 1 OF 22
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT	09/01/2023		DRAWING NO	
METALLUM ENTERPRISES INC.	7500 NW 68 STREET MIAMI, FLORIDA 33166	DATE		
	PH: (305)884-7076; FAX: (305)884-7073	DESCRIPTION		
		REV. NO		
		DATE		
		8/1/23		
		OLD 20-148		

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TILTECO INC.

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CA-0006719
WALTER A. TILIT Jr., P.E.
FLORIDA Lic. # 44167

P.E. SEAL/SIGNATURE/DATE

[Signature]

WALTER A. TILIT JR.
No. 44167
FLORIDA
PROFESSIONAL ENGINEER
STATE OF

COMPONENT No.	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	NOTES
①.	RAIL (I-BEAM)	2.50" X 1.375" X 3"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	SUPPORT FOR ROOF TOP EQUIPMENT FIT AND ADJUSTED INTO ③
②A	LARGE STRUT TUBING	1.75" X 1.75" X 0.094"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WIND BRACING COMPONENT WELDED TO ④
②B	SMALL STRUT TUBING	1.50" X 1.50" X 0.125"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WIND BRACING COMPONENT WELDED TO ④
③.	TOP CHANNEL	2.00" X 0.570" X 0'-3"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WELDED TO TOP OF ④ TO RECEIVE ①
④.	POST	1.90" X 0.145" THK.	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WELDED TO ⑤, ②A, ②B & ③
⑤.	BASE PLATE	5" X 5" X 1/4"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WELDED TO ④ & ANCHORED TO EXISTING STRUCTURE

Technical drawing of a square plate. The width is labeled as 1.750". The height is labeled as 1.750". The thickness is labeled as .094".

Technical drawing of a bracket assembly. The drawing shows a side view of a bracket with a base and a vertical support. Dimensions are provided in inches:

- Top horizontal dimension: .130"
- Second horizontal dimension from left: .220"
- Third horizontal dimension from left: .220"
- Fourth horizontal dimension from left: .130"
- Vertical dimension from top to base: .330"
- Horizontal dimension from left to right: 1.420"
- Horizontal dimension from left to right: 2.000"
- Horizontal dimension from left to right: .196"
- Horizontal dimension from left to right: .384"
- Horizontal dimension from left to right: .560"
- Horizontal dimension from left to right: .180"

Callouts and notes:

- 1/4" Ø - 20 x 1/2" THUMBSCREW TIGHTEN TO REFUSAL ①

A diagram of a square plate. The top horizontal edge is dimensioned as 1.500" with arrows pointing to the corners. The right vertical edge is dimensioned as 1.500" with arrows pointing to the corners. The left vertical edge is dimensioned as .125" with arrows pointing to the top and bottom edges, indicating the thickness of the plate.

1.900" O.D.

.145"

④ **POST**

$1/2'' = 0' - 1''$

POST ④ LOCATION
(CENTERED) W/ OPTIONAL 1.9"
DIAM HOLE AT CENTER TO FIT ④

5.000"

5.000"

1/4"
THICKNESS

1.000"
MP

HOLE FOR ANCHOR
WITH DIAMETER 1/16"
LARGER THAN ANCHOR DIAMETER

⑤ **BASE PLATE**

3/8" = 0'- 1" **PRODUCT REVISION**

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/24/2027
By: H. G. A. M. L.
Miami-Dade Product Control


FLORIDA BUILDING CODE (High Velocity Hurricane Zone)									
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT				DRAWN BY: Y.M.		09/01/2023		DATE	
METALLUM ENTERPRISES Inc. 7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073				23-196		DRAWING No		SHEET 2 OF 22	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE				
-	OLD 20-248	9/1/23	-	-	-				
-	-	-	-	-	-				

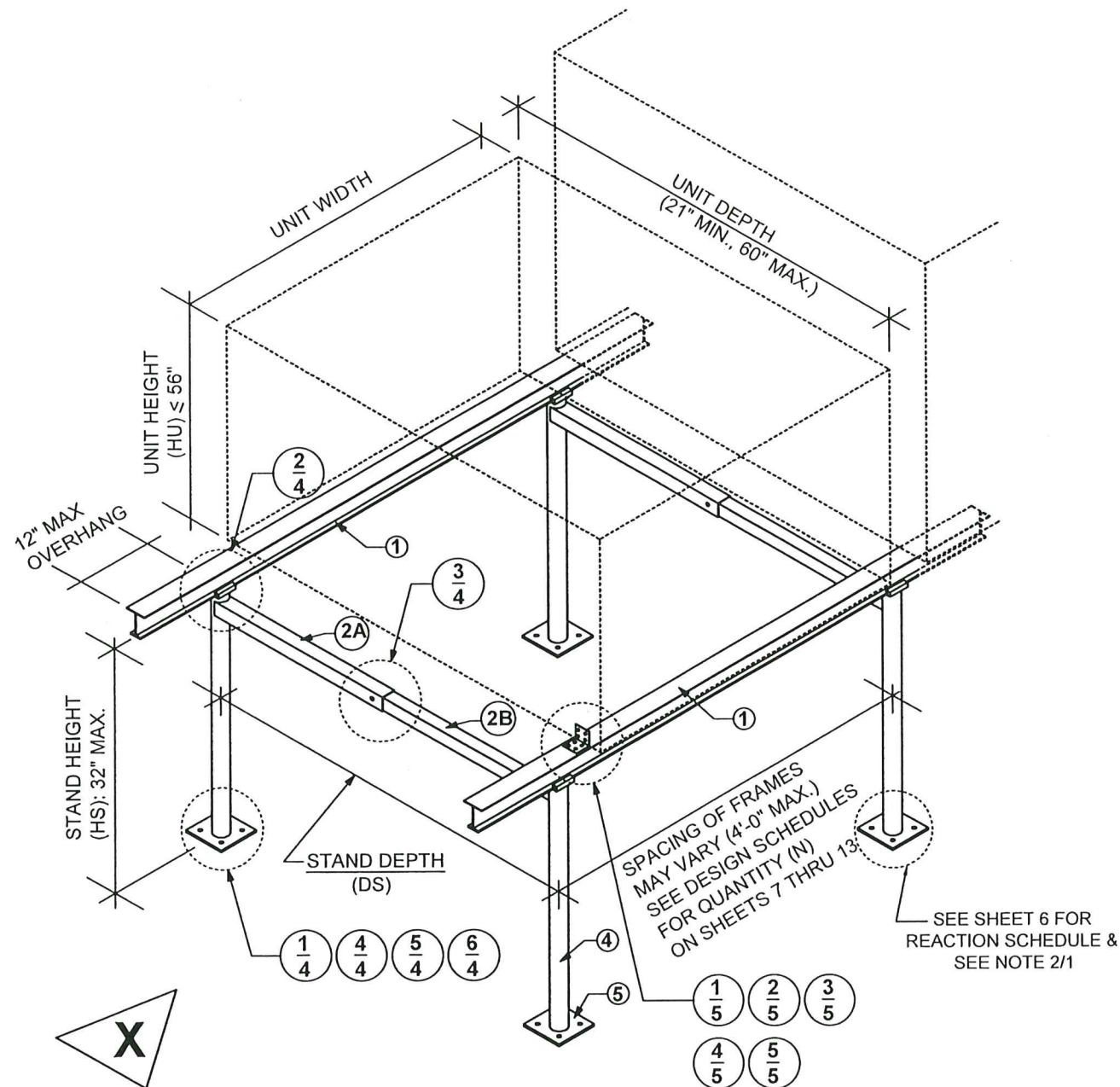
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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
35355 N.W. 36th, Ste. 305, VIRGINIA GARDENS, FL 33166
Phone: (305)871-1300 • Fax: (305)871-1331
e-mail: info@tilteco.com

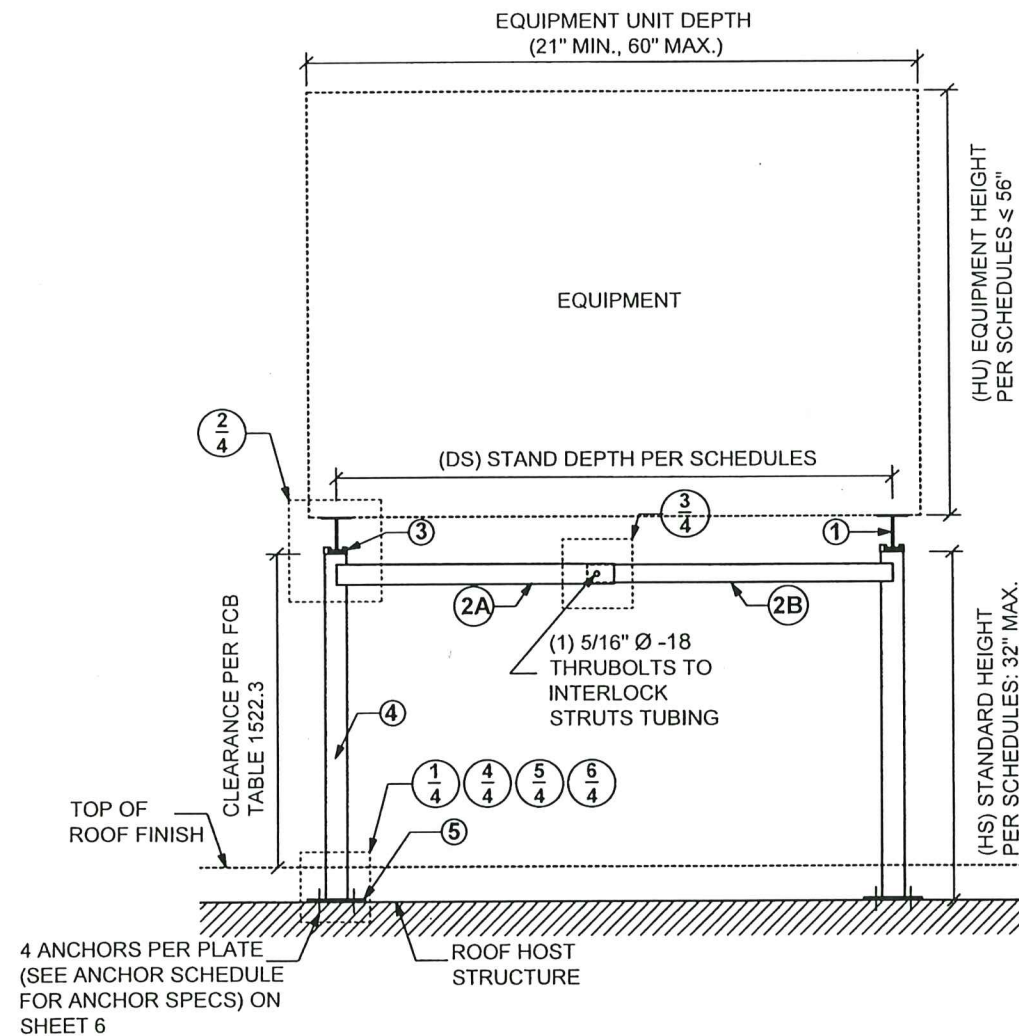
WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167





ASSEMBLY FOR STANDS W/O DIAGONAL BRACE REINFORCEMENT

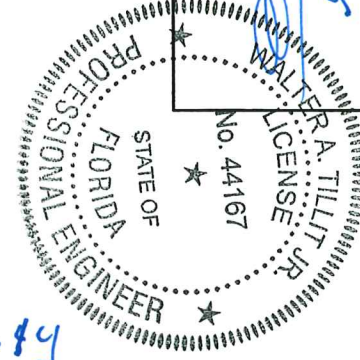
SCALE: 1/16"= 0'-1"



ELEVATION

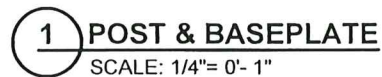
SCALE: 1/16"= 0'-1"

PRODUCT REVISED
as complying with the Florida
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Acceptance No. 23-0913.44
Expiration Date 06/24/2027
By: [Signature]
Miami Dade Product Control



TILECO INC.
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e-mail: tileco@ol.com
CA-0006719
WALTER A. TILLIT Jr., P.E.
FLORIDA Lic. # 44167

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)										DRAWN BY: Y.M.		DATE		23-196 DRAWING No		SHEET 3 OF 22			
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT										METALLUM ENTERPRISES INC.									
7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073																			
REV. No		DESCRIPTION		DATE		REV. No		DESCRIPTION		DATE									
-		OLD 20-246		8/7/23		--		-		-									
-																			



TYPICAL ASSEMBLY DETAILS VALID ONLY FOR STANDS W/O DIAGONAL BRACE REINFORCEMENT

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)		DRAWN BY: Y.M.		DATE	
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT		09/01/2023		23-196	
METALLUM ENTERPRISES INC.		7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073		DRAWING No	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
-	OLD 20-248	9/1/23	-	-	-
				SHEET 4 OF 22	

TILECO INC.

TILLIT TESTING & ENGINEERING COMPANY
13335 N.W. 36th Ave., Ft. Myers, FL 33916
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CA-0006719
WALTER A. TILLIT JR., P.E.
FLORIDA LIC. # 44167

STATE OF FLORIDA
PROFESSIONAL ENGINEER

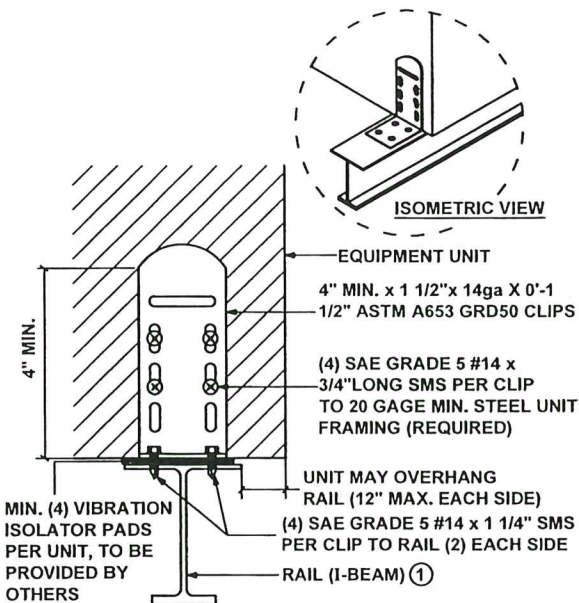
WALTER A. LITTLER
No. 44167

EE 6)

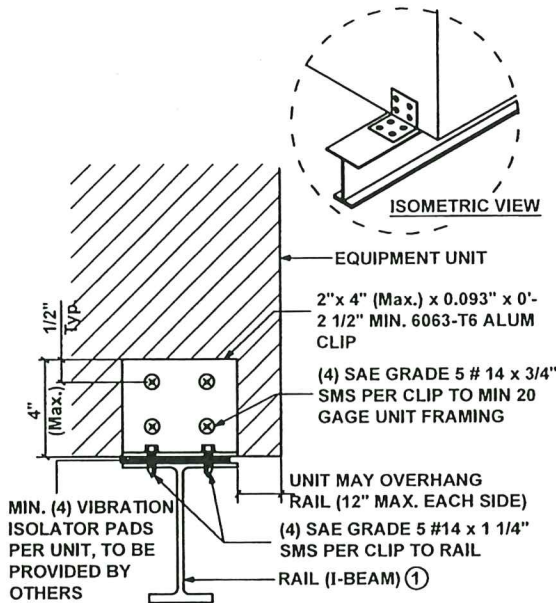
P.E. SEAL/SIGNATURE/DATE

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Building Code
Acceptance No. 23-0913.14
Expiration Date 06/28/2027
By H. G. D. M. M.
Miami Dade Product Control

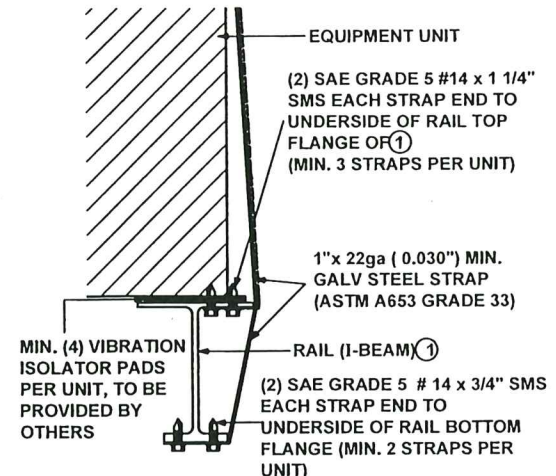
EQUIPMENT UNIT ANCHORAGE TO RAIL ①: VALID FOR STANDS WITH OR WITHOUT DIAGONAL BRACE REINFORCEMENT
SEE SHEET 22 FOR CONNECTIONS TO CROSS BARS (WHEN USED)



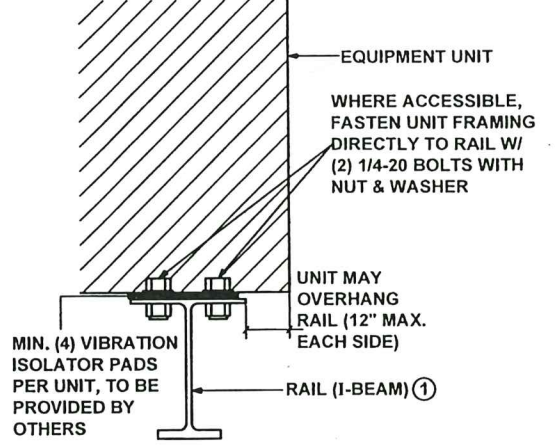
TYPICAL CONNECTION:
-MINIMUM (4) PER UNIT-



TYPICAL CONNECTION:
-MINIMUM (4) PER UNIT-



TYPICAL CONNECTION:
-MINIMUM (4) PER UNIT-



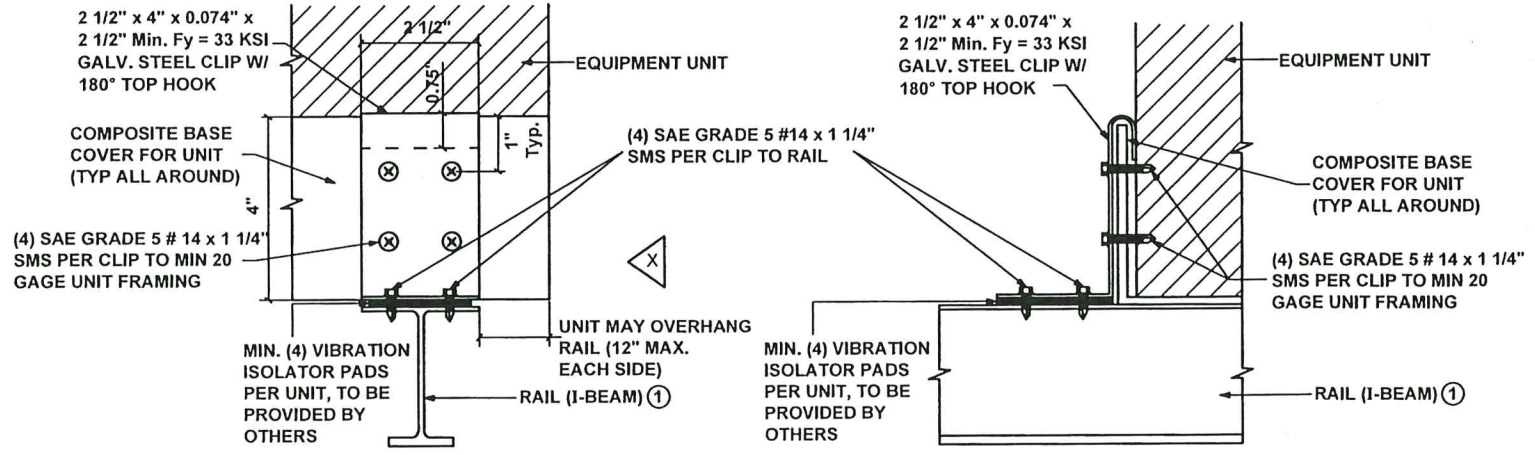
TYPICAL CONNECTION:
-MINIMUM (4) PER UNIT-

1 CLIPPED UNIT CONNECTION
SCALE: 1/4"= 0'- 1" ELEVATION

2 CLIPPED UNIT CONNECTION
SCALE: 1/4"= 0'- 1" ELEVATION

3 STRAPPED UNIT CONNECTION
SCALE: 1/4"= 0'- 1" ELEVATION

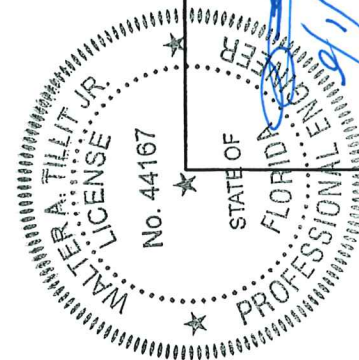
4 DIRECT UNIT CONNECTION
SCALE: 1/4"= 0'- 1" ELEVATION



TYPICAL CONNECTION:
-MINIMUM (4) PER UNIT-

5 ALTERNATE CLIPPED UNIT WITH COMPOSITE BASE
SCALE: 1/4"= 0'- 1" ELEVATION

VIEW X



PRODUCT REVISED
as complying with the Florida
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Acceptance No. 23-0913.14
Expiration Date 06/28/2027
By *H. J. [Signature]*
Miami Data Product Control

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)		DRAWN BY: Y.M.	DATE 09/01/2023
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT		DATE 23-196	DRAWING No 23-196
METALLUM ENTERPRISES INC.		DATE 9/1/23	DESCRIPTION OLD 20-248
7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073		DATE 9/1/23	DESCRIPTION OLD 20-248
SHEET 5 OF 22		DATE 9/1/23	DESCRIPTION OLD 20-248

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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6335 S.W. 38th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone: (305)871-1530 • Fax: (305)871-1531
e-mail: tillit@tillit.com
WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

SCHEDULE NOTES: VALID ONLY FOR STANDS W/O DIAGONAL BRACE REINFORCEMENT

1. SCHEDULES ON SHEETS 7 THRU 20 PROVIDE MAXIMUM A.S.D LATERAL & UPLIFT WIND LOADS FOR EACH COMBINATION OF TOTAL UNIT FRONTAL AREA (AF), STAND DEPTH (DS), EQUIPMENT HEIGHT(HU), STAND HEIGHT (HS) AND NUMBER OF POST FRAMES (N) PER STAND.
2. TOTAL FRONT AREA IS TOTAL FRONTAL AREA OF EQUIPMENT UNIT FACE PARALLEL TO RAIL① (EQUAL TO TOTAL SUM OF UNIT HEIGHT (IN) x UNIT WIDTH (IN) FOR ALL UNITS ON STAND), AS DEPICTED HEREIN.
3. UNIT HEIGHT (HU) INCHES INCLUDED IN SCHEDULE SHALL BE DEFINED AS FOLLOWS: AVERAGE HEIGHT IF ALL UNITS IF THE DIFFERENCE IN HEIGHT BETWEEN TWO ADJACENT UNITS DOES NOT EXCEED 8", OR MAX UNIT HEIGHT OF INSTALLATION IF THE ABOVE CONDITION IS NOT COMPLIED WITH. MAX. UNIT HEIGHT IS 56"
4. STAND HEIGHT (HS), INCHES, IS AS DEPICTED HEREIN.
5. "FRAMES" HERE DENOTES ASSEMBLAGE OF 2 POSTS ④ WITH STRUTS ②A, ②B).
6. EACH EQUIPMENT UNIT SHALL HAVE A MAXIMUM WEIGHT OF 500 lbs & A MIN.WEIGHT OF 75 LBS.
7. SPACING BETWEEN UNITS MAY VARY.
8. REFERENCE ANCHOR SCHEDULE BELOW FOR ALLOWABLE ANCHORS AND INSTALLATION CRITERIA.
9. EQUIPMENT UNITS SHALL BE ATTACHED TO RAILS ① PER UNIT CONNECTION DETAILS ON SHEET 5.

ANCHORS SCHEDULE

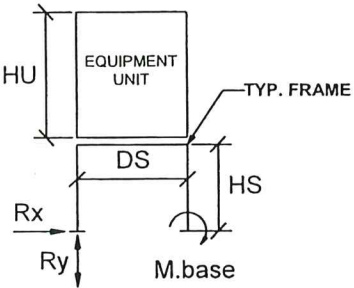
SUBSTRATE											
CONCRETE △				STEEL △				WOOD △			
MANUFACTURER	DIAMETER	MIN. E.D	MIN. EMB'D'T	MANUFACTURER	DIAMETER	MIN. E.D	MIN. EMB'D'T	MANUFACTURER	DIAMETER	MIN. E.D	MIN. EMB'D'T
DEWALT	3/8"	4 1/2"	3 1/2"	ELCO CONSTRUCTION PRODUCTS	5/16"-24	5/8"	FULL THREAD ENGAGEMENT	N/A	3/8"	1 1/2"	3 1/2"
WEDGE BOLT				HEX WASHER HEAD DRILL FLEX STRUCTURAL DRILL SCREWS				NDS LAG SCREWS			

- △ NOTES: 1 - CONCRETE TO BE MIN $f'_c = 3$ KSI
2 - STEEL TO BE MIN ASTM A-36, 1/4" MIN THICK.
3 - WOOD TO BE G=0.55 SOUTHERN YELLOW PINE # 2.

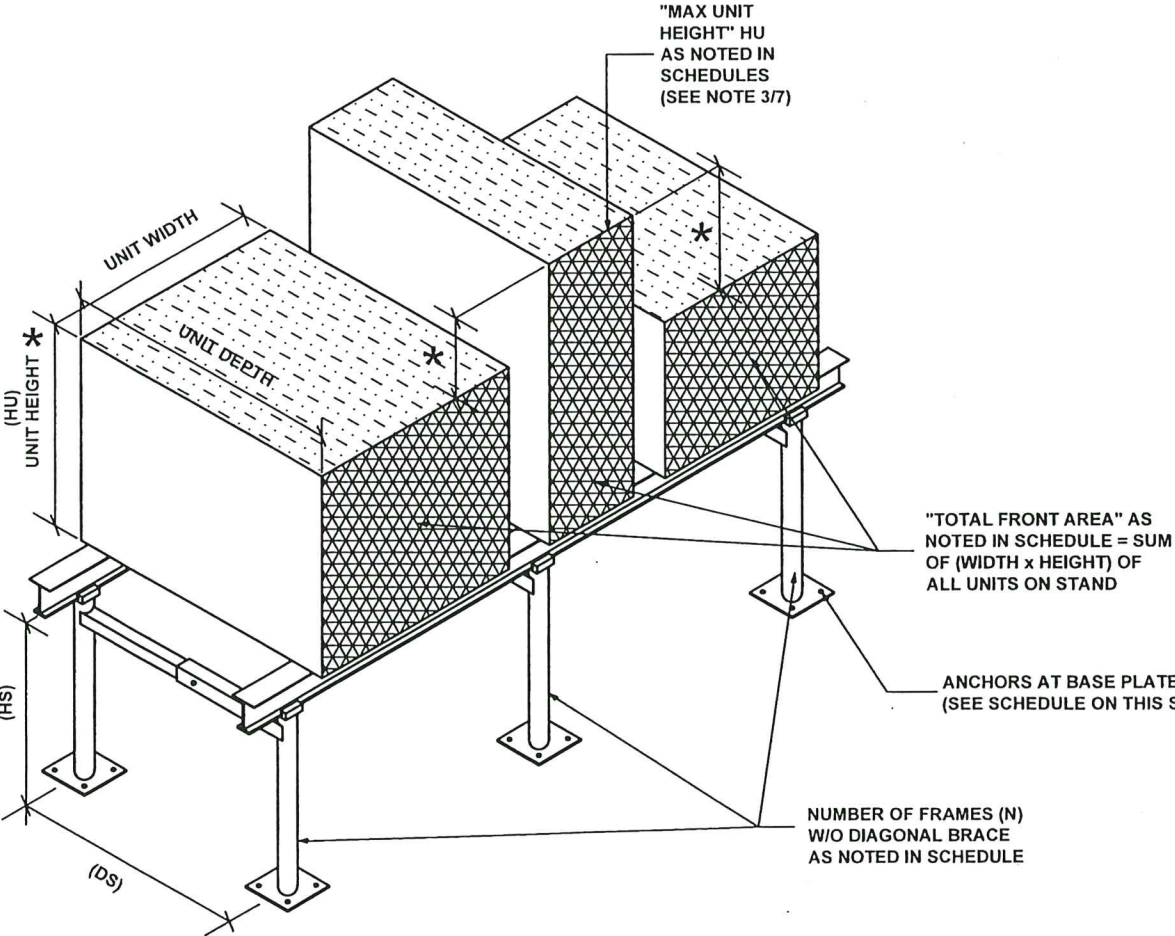
**REACTION SCHEDULE: SEE NOTE 2/1

STAND HEIGHT (HS)	REACTION AT BASE Rx	REACTION AT BASE Ry	REACTION AT BASE M.base
18"	358 LB	600 LB	3.5 K-IN
24"	268 LB	600 LB	3.5 K-IN
32"	202 LB	600 LB	3.5 K-IN

** REACTIONS CORRESPOND TO THE WORST CASE FORCE APPLIED AT BASE PLATE FOR ANY COMBINATION OF DS OF HU FOR AN HS DIMENSION



SIDE VIEW



UNIT SIZES & CONFIGURATION (FOR USE WITH DESIGN SCHEDULES)

SCALE: 1/4" = 1'-0" ISOMETRIC

* SEE NOTE 3

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

METALLUM ENTERPRISES INC.

7500 NW 68 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX:(305)884-7073

DRAWN BY: Y.M.
09/01/2023
DATE
23-196
DRAWING No
SHEET 6 OF 22

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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th Ave., Suite 100, Virginia Beach, VA 23462-1151
Phone: 757-461-1311
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FLORIDA Lic. # 44167

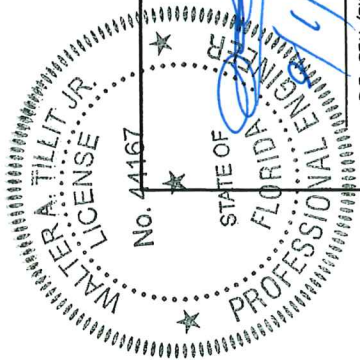
WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER

2023/11/14
P.E. SEAL/SIGNATURE/DATE

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 23-0913.14
Expiration Date 06/28/2027
By Hedy A. Miller
Miami Dade Product Control

MAX. ASD DESIGN LATERAL (WL) & UPLIFT (WU) PRESSURE RATING (psf) SCHEDULE GIVEN A STAND W/O DIAGONAL BRACE, WITH STAND'S DEPTH (DS), TOTAL EQUIPMENT UNIT FRONT AREA (AF), EQUIPMENT UNIT HEIGHT (HU), STAND HEIGHT (HS) AND NUMBER OF REQUIRED FRAMES (N)

DS = 20"		AF (IN ²)	HU (IN)	HS (IN)	N = 2		N = 3		N = 4		N = 5		N = 6		N = 7		N = 8		N = 9		N = 10		N = 11		N = 12	
					WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU
576	24	18	268.2	211.7																						
		24	268.2	211.7																						
		32	201.1	158.8	301.7	238.2																				
864	28	18	174.1	137.5	225.2	177.8																				
		24	174.1	137.5	225.2	177.8																				
		32	134.1	105.9	201.1	158.8																				
1152	32	18	125.3	99.0	167.2	132.0	230.7	182.2																		
		24	125.3	99.0	167.2	132.0	201.1	158.8	293.6	231.8																
		32	100.6	79.4	150.9	119.1	230.7	182.2	251.4	198.5																
1440	32	18	100.3	79.2	135.0	106.6	185.7	146.6	236.0	186.3																
		24	100.3	79.2	135.0	106.6	185.7	146.6	236.0	186.3	286.1	225.8														
		32	80.5	63.5	120.7	95.3	160.9	127.0	201.1	158.8	241.4	190.6														
1728	32	18	83.6	66.0	113.6	89.7	155.8	123.0	197.6	156.0	239.3	188.9														
		24	83.6	66.0	113.6	89.7	156.2	123.3	197.6	156.0	239.3	188.9														
		32	67.0	52.9	100.6	79.4	134.1	105.9	167.6	132.3	201.1	158.8	234.7	185.3												
2304	32	18	62.6	49.5	88.5	70.0	118.3	93.4	149.6	118.1	180.8	142.8	212.0	167.4												
		24	62.6	49.5	88.5	70.0	118.8	93.8	149.6	118.1	180.8	142.8	212.0	167.4												
		32	-	-	75.8	57.8	100.6	79.4	125.7	99.3	150.9	119.1	176.0	138.9												
2880	32	18					80.0	63.2	120.8	95.4	145.7	115.1	170.7	134.7	195.6	154.4										
		24					80.0	63.2	120.8	95.4	145.7	115.1	170.7	134.7	195.6	154.4										
		32					80.0	63.2	100.6	79.4	120.7	95.28	140.8	111.2	160.9	127.0										
3600	32	18					31.3	24.7	82.0	64.7	117.7	92.9	137.6	108.6	157.5	124.4	177.4	140.1	197.3	155.8						
		24					-	-	82.0	64.7	117.7	92.9	137.6	108.6	157.5	124.4	177.4	140.1	197.3	155.8						
		32					-	-	80.5	63.5	96.5	76.2	112.6	88.9	128.7	101.6	144.8	114.3	160.9	127.0						
4320	32	18							45.1	35.6	83.0	65.5	115.6	91.2	132.1	104.3	148.7	117.4	165.3	130.5						
		24							-	-	83.0	65.5	115.6	91.2	132.1	104.3	148.7	117.4	165.3	130.5						
		32							-	-	80.5	63.5	93.9	74.1	107.3	84.7	120.7	95.3	134.1	105.9						
5184	32	18									48.0	37.9	78.0	61.6	106.0	83.7	124.8	98.5	138.6	109.4						
		24									-	-	78.0	61.6	106.0	83.7	124.8	98.5	138.6	109.4	152.4	120.3				
		32									-	-	78.0	61.6	89.4	70.6	100.6	79.4	111.7	88.2	122.9	97.0	134.1	105.9		
5760	32	18											58.3	46.0	84.0	66.3	108.6	85.8	125.3	98.9	137.7	108.7	150.1	118.5		
		24											-	-	84.0	66.3	108.6	85.8	125.3	98.9	137.7	108.7	150.1	118.5		
		32											-	-	80.5	63.5	90.5	71.5	100.6	79.4	110.6	87.3	120.7	95.3		
6480	32	18													62.0	49.0	84.3	66.6	105.9	83.6	123.0	97.1	134.0	105.8		
		24													62.0	49.0	84.3	66.6	105.9	83.6	123.0	97.1	134.0	105.8		
		32													62.0	49.0	80.5	63.5	89.4	70.6	98.3	77.6	107.3	84.7		
7700	32	18															53.5	42.2	72.1	56.9	90.2	71.2	107.9	85.2		
		24															-	-	72.1	56.9	90.2	71.2	107.9	85.2		
		32															-	-	72.1	56.9	82.8	65.3	90.3	71.3		



PRODUCT REVISED
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Expiration Date 06/28/2027
By *Heidi Allen*
Miami Dade Product Control

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

METALLUM ENTERPRISES INC.
7500 NW 88 STREET MIAMI, FLORIDA 33166
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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6335 N.W. 36th Ave., Suite 150, Fort Lauderdale, FL 33309
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e-mail: tilteco@aol.com
WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167

DRAWN BY:
Y.M.
09/01/2023

DATE

23-196
DRAWING No

SHEET 7 OF 22

REV. No. DESCRIPTION DATE

1 9/1/23

2 9/1/23

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DS > 20"
UP TO 60"

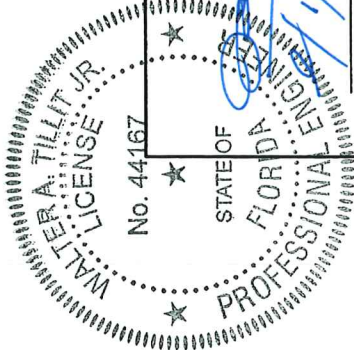
[illegible]

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0813.14
Expiration Date 06/28/2027
By H. G. J. [Signature]
Miami Dept. Product Control

MAX. ASD DESIGN LATERAL (WL) & UPLIFT (WU) PRESSURE RATING (psf) SCHEDULE GIVEN A STAND W/O DIAGONAL BRACE, WITH STAND'S DEPTH (DS), TOTAL EQUIPMENT UNIT FRONT AREA (AF), EQUIPMENT UNIT HEIGHT (HU), STAND HEIGHT (HS) AND NUMBER OF REQUIRED FRAMES (N)

DS = 20"			N = 2		N = 3		N = 4		N = 5		N = 6		N = 7		N = 8		N = 9		N = 10		N = 11		N = 12	
AF (IN ²)	HU (IN)	HS (IN)	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU
1440	36	18	95.5	75.4	130.7	103.2	178.9	141.2																
		24	95.5	75.4	130.7	103.2	178.9	141.2																
		32	80.5	63.5	120.7	95.3	160.9	127.0																
1728	36	18	79.6	62.8	106.2	83.9	149.9	118.3	189.7	149.8														
		24	79.6	62.8	106.2	83.9	149.9	118.3	189.7	149.8														
		32	67.0	52.9	100.6	79.4	134.1	105.9	167.6	132.3														
2304	36	18			79.5	62.8	105.7	83.4	143.5	113.3	173.2	136.7												
		24			79.5	62.8	105.7	83.4	143.5	113.3	173.2	136.7												
		32			75.8	59.8	100.6	79.4	125.7	99.3	150.9	119.1												
2880	36	18					65.2	51.5	105.4	83.2	139.5	110.1	163.2	128.8										
		24					65.2	51.5	105.4	83.2	139.5	110.1	163.2	128.8										
		32					65.2	51.5	100.6	79.4	120.7	95.3	140.8	111.2										
3600	36	18							67.2	53.1	97.9	77.3	126.9	100.2	150.4	118.8	169.4	133.7						
		24							67.2	53.1	97.9	77.3	126.9	100.2	150.4	118.8	169.4	133.7						
		32							67.2	53.1	96.5	76.2	112.6	88.9	128.7	101.6	144.8	114.3						
4320	36	18									68.4	54.0	93.2	73.6	117.0	92.4	140.3	110.8	157.7	124.5	173.4	136.9		
		24									68.4	54.0	93.2	73.6	117.0	92.4	140.3	110.8	157.7	124.5	173.4	136.9		
		32									68.4	54.0	93.2	73.6	107.3	84.7	120.7	95.3	134.1	105.9	147.5	116.5		
5184	36	18									65.0	51.4	85.4	67.4	105.1	83.0	124.5	98.3	143.6	113.4	158.4	125.1		
		24									65.0	51.4	85.4	67.4	105.1	83.0	124.5	98.3	143.6	113.4	158.4	125.1		
		32									65.0	51.4	85.4	67.4	100.6	79.4	111.7	88.2	122.9	97.0	134.1	105.9		
5760	36	18											69.6	54.9	87.5	69.1	105.1	83.0	122.4	96.6	139.5	110.2		
		24											69.6	54.9	87.5	69.1	105.1	83.0	122.4	96.6	139.5	110.2		
		32											69.6	54.9	87.5	69.1	100.6	79.4	110.6	87.3	120.7	95.3		
6480	36	18													69.9	55.2	85.7	67.7	101.2	79.9	116.5	92.0		
		24													69.9	55.2	85.7	67.7	101.2	79.9	116.5	92.0		
		32													69.9	55.2	85.7	67.7	101.2	79.9	116.5	92.0		
7700	36	18															61.1	48.2	74.4	58.7	87.4	69.0		
		24															61.1	48.2	74.4	58.7	87.4	69.0		
		32															61.1	48.2	74.4	58.7	87.4	69.0		
7920	36	18																	70.4	55.6	83.1	65.6		
		24																	70.4	55.6	83.1	65.6		
		32																	70.4	55.6	83.1	65.6		

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 23-0913.14
Expiration Date 06/24/2027
By *[Signature]*
Miami Dade Product Control



FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

METALLUM ENTERPRISES INC.
7500 NW 68 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX: (305)884-7073

REV. No. -
DATE -
DESCRIPTION -
OLD 20-248 -

REV. No. -
DATE -
DESCRIPTION -
OLD 20-248 -

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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6335 N.W. 30th St., Ste. 305, VIRGINIA GARDENS, FL 33186
Phone : (305)871-1330 ; Fax : (305)871-1331
e-mail: tilteco@ttil.com
CA-0006719
WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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REV. No. -
DATE -
DESCRIPTION -
OLD 20-248 -

REV. No. -
DATE -
DESCRIPTION -
OLD 20-248 -

DS > 20"
UP TO 60"

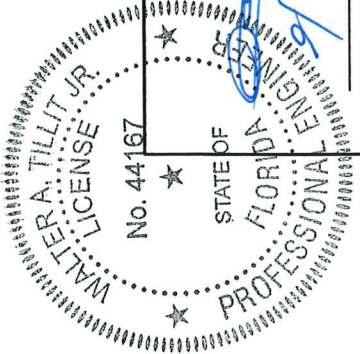
PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/28/2027
By: *[Signature]*
Miami Dade Product Control

MAX. ASD DESIGN LATERAL (WL) & UPLIFT (WU) PRESSURE RATING (psf) SCHEDULE GIVEN A STAND W/O DIAGONAL BRACE, WITH STAND'S DEPTH (DS), TOTAL EQUIPMENT UNIT FRONT AREA (AF), EQUIPMENT UNIT HEIGHT (HU), STAND HEIGHT (HS) AND NUMBER OF REQUIRED FRAMES (N)

DS ≥ 20"
UP TO 60"

AF (IN ²)	HU (IN)	HS (IN)	N = 2		N = 3		N = 4		N = 5		N = 6		N = 7		N = 8		N = 9		N = 10		N = 11		N = 12	
			WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU
1440	42	18	116.4	91.7	135.4	106.9	194.3	153.4																
		24	107.3	84.7	135.4	106.9	194.3	153.4																
		32	80.5	63.5	120.7	95.3	160.4	127.0																
1728	42	18	97.0	76.6	113.6	89.7	162.7	128.4																
		24	89.4	70.6	113.6	89.7	162.7	128.4																
		32	67.0	52.9	100.6	79.4	134.1	105.9																
2304	42	18			86.4	68.2	123.2	97.2	159.6	126.0														
		24			86.4	68.2	123.2	97.2	151.6	126.0														
		32			75.4	59.5	100.6	79.4	125.7	99.3														
2880	42	18			70.1	55.3	99.5	78.5	128.6	101.5	157.7	124.5												
		24			70.1	55.3	99.5	78.5	128.6	101.5	157.7	124.5												
		32			60.3	47.6	80.5	63.5	100.6	79.4	120.7	95.3												
3600	42	18			57.0	45.0	80.5	63.6	103.8	82.0	127.0	100.3	150.2	118.6	173.4	136.9								
		24			57.0	45.0	80.5	63.6	103.8	82.0	127.0	100.3	150.2	118.6	171.6	135.5								
		32			48.3	38.1	64.4	50.8	80.5	63.5	96.5	76.2	112.6	88.9	128.7	101.6								
4320	42	18					67.9	53.6	87.3	68.9	106.6	84.2	125.9	99.4	145.2	114.7	164.5	129.9						
		24					67.9	53.6	87.3	68.9	106.6	84.2	125.2	98.8	143.0	112.9	160.9	127.0						
		32					53.6	42.4	67.0	52.9	80.5	63.5	93.8	74.1	107.3	84.7	120.7	95.3						
5184	42	18									89.6	70.7	105.7	83.4	121.8	96.1	137.8	108.8	153.9	121.5				
		24									89.4	70.6	104.3	82.3	119.2	94.1	134.1	105.9	149.0	117.6				
		32									67.0	52.9	78.2	61.8	89.4	70.6	100.6	79.4	111.7	88.2				
5760	42	18									81.1	64.0	95.6	75.5	110.0	86.9	124.5	99.3	138.9	109.7	159.4	125.8	167.8	132.0
		24									80.5	63.5	93.9	74.1	107.3	84.7	120.7	95.3	134.1	105.9	147.5	116.5	160.9	127.0
		32									60.3	47.6	70.4	55.6	80.5	63.5	90.5	71.5	100.6	79.4	110.6	87.3	120.0	95.3
6480	42	18									85.5	67.5	98.3	77.6	111.2	87.8	124.0	97.9	136.8	108.0	190.7	150.6		
		24									83.4	65.9	95.4	75.3	107.3	84.6	119.2	94.1	131.1	103.5	143.0	112.9		
		32									62.6	49.4	71.5	56.5	80.5	63.5	89.4	70.6	98.8	78.0	107.3	84.7		
7700	42	18									72.6	57.3	83.4	65.9	94.4	74.4	105.4	83.2	119.9	91.5	160.5	126.7		
		24									70.2	55.4	80.2	63.4	90.3	71.3	100.3	79.2	110.3	87.1	120.4	95.0		
		32									52.7	41.6	60.2	47.5	67.7	53.5	75.2	59.4	82.8	65.3	90.3	71.3		
7920	42	18									84.0	66.4	91.7	72.4	102.3	80.7	112.8	89.0	155.9	123.0				
		24									78.0	61.6	87.8	69.3	97.5	77.0	107.3	84.7	116.7	92.5				
		32									-	-	65.8	52.0	73.1	57.7	80.5	63.5	87.7	69.2				
8640	42	18									87.3	69.0	94.1	74.3	103.7	81.9	143.0	112.9						
		24									80.5	63.5	89.4	70.6	98.3	77.6	107.3	84.7						
		32									60.3	47.6	67.0	52.9	73.8	58.2	80.5	63.5						
9360	42	18									80.9	63.8	90.1	71.1	96.1	75.9	132.0	104.2						
		24									74.3	58.6	82.5	65.2	90.8	71.7	99.0	78.2						
		32									-	-	61.9	48.9	68.1	53.8	74.3	58.6						

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/28/2027
By H. G. A. Miller
Miami Dade Product Control



FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

METALLUM ENTERPRISES INC.
7500 NW 68 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX:(305)884-7073

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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305, Virginia Gardens, FL 33166
Phone: (305)871-1531
e-mail: info@tilteco.com
WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

DRAWN BY: T.M.
09/01/2023
DATE

23-196
DRAWING No

SHEET 11 OF 22

REV. No. DESCRIPTION DATE REV. No. DESCRIPTION DATE

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DS ≥ 20"
UP TO 60"

MAX. ASD DESIGN LATERAL (WL) & UPLIFT (WU) PRESSURE RATING (psf) SCHEDULE GIVEN A STAND W/O
DIAGONAL BRACE, WITH STAND'S DEPTH (DS), TOTAL EQUIPMENT UNIT FRONT AREA (AF), EQUIPMENT
UNIT HEIGHT (HU), STAND HEIGHT (HS) AND NUMBER OF REQUIRED FRAMES (N)

AF (IN ²)	HU (IN)	HS (IN)	N = 2		N = 3		N = 4		N = 5		N = 6		N = 7		N = 8		N = 9		N = 10		N = 11		N = 12	
			WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU
1728	48	18	100.2	79.1	119.6	94.4	170.4	134.5																
		24	89.4	70.6	119.6	94.4	170.4	134.5																
		32	67.0	52.9	100.6	79.4	134.1	105.9																
2304	48	18	75.1	59.3	90.8	71.7	128.9	101.7	166.6	131.5														
		24	67.0	52.9	90.8	71.7	128.9	101.7	166.6	131.5														
		32	50.3	39.7	75.4	59.5	100.6	79.4	125.7	99.2														
2880	48	18			73.5	58.0	103.9	82.1	134.1	105.9	164.1	129.6												
		24			73.5	58.0	103.9	82.1	134.1	105.9	164.9	127.0												
		32			60.3	47.6	80.5	63.5	100.6	79.4	120.7	95.3												
3600	48	18			59.7	47.1	84.0	60.3	108.1	85.4	132.1	104.3												
		24			59.7	47.1	84.0	60.3	107.3	84.7	128.7	101.6												
		32			-	-	64.4	50.8	80.5	63.5	96.5	76.2												
4320	48	18					70.7	55.8	90.8	71.7	110.8	87.5	130.8	103.2	150.7	119.0								
		24					70.7	55.8	89.4	70.6	107.3	84.7	125.2	98.8	143.0	112.9								
		32					-	-	67.0	52.9	80.5	63.5	93.9	74.1	107.3	84.7								
5184	48	18									93.0	73.4	109.6	86.6	128.3	101.3	142.9	112.8	159.6	125.9				
		24									89.4	70.6	104.3	82.3	119.2	96.1	134.1	105.9	149.0	117.6				
		32									67.0	52.9	78.2	61.8	89.4	70.6	100.6	79.4	111.7	88.2				
5760	48	18									84.1	66.4	99.1	78.2	114.0	90.0	129.0	101.8	143.9	113.6	158.8	125.4		
		24									80.5	63.5	93.9	74.1	107.3	84.7	120.7	95.3	134.1	105.9	147.5	116.5		
		32									60.3	47.6	70.4	55.6	80.5	63.5	90.5	71.5	100.6	79.4	110.6	87.3		
6480	48	18									75.3	59.4	88.5	69.9	101.8	80.4	115.1	90.9	128.4	101.4	141.6	111.8	154.9	122.3
		24									71.5	56.5	83.4	65.9	95.4	75.3	107.3	84.7	119.2	94.1	131.1	103.5	143.0	112.9
		32									-	-	62.6	49.4	71.5	56.5	80.5	63.5	89.4	70.6	98.3	77.6	107.3	84.7
7700	48	18									64.0	50.5	75.2	59.3	86.3	68.2	97.5	77.0	108.7	85.8	119.8	94.6	131.0	103.4
		24									60.2	47.5	70.2	55.4	80.2	63.4	90.3	71.3	100.3	79.2	110.3	87.1	120.4	95.0
		32									-	-	-	-	60.2	47.5	67.7	53.5	75.2	59.4	82.8	65.3	90.3	71.3
7920	48	18									73.2	57.8	84.0	66.4	94.9	74.9	105.6	83.5	116.6	92.1	127.5	109.6		
		24									68.3	53.9	78.0	61.6	87.8	69.3	97.5	77.0	107.3	84.7	117.0	92.4		
		32									-	-	-	-	65.8	52.0	73.1	57.7	80.5	63.5	87.8	69.3		
8640	48	18									67.4	53.2	77.4	61.1	87.3	69.0	97.3	76.8	107.2	84.7	117.2	92.5		
		24									62.6	49.4	71.5	56.5	80.5	63.5	89.4	70.6	98.3	77.6	107.3	84.7		
		32									-	-	-	-	60.3	47.6	67.0	52.9	73.7	58.2	80.5	63.5		
9360	48	18									62.6	49.4	71.7	56.6	80.9	63.8	90.1	71.1	99.3	78.4	108.5	85.6		
		24									-	-	-	-	74.3	58.6	82.5	65.2	90.8	71.7	99.0	78.2		
		32									-	-	-	-	-	-	61.9	48.9	68.1	53.8	74.3	58.6		

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No _____
Expiration Date _____
By *[Signature]*
Miami Dade Product Control

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF
TOP EQUIPMENT

METALLUM ENTERPRISES INC.
7500 NW 68 STREET MIAMI, FLORIDA 33166
PH: (305)884-7076; FAX:(305)884-7073

REV. No. DATE DESCRIPTION
- - - - -
- - - - -
- - - - -

DRAWN BY:
Y.M.

09/01/2023

DATE

23-196
DRAWING No

SHEET 12 OF 22

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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6335 N.W. 34th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone: (305)871-1530 • Fax: (305)871-1531
e-mail: tilteco@aol.com
CA-0006719
WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167

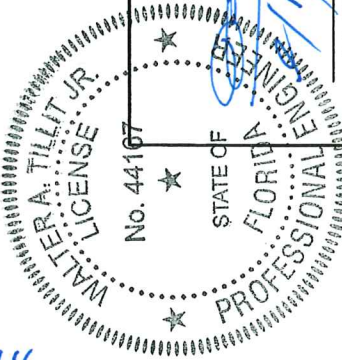
WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

[Signature]
P.E. SEAL/SIGNATURE/DATE

MAX. ASD DESIGN LATERAL (WL) & UPLIFT (WU) PRESSURE RATING (psf) SCHEDULE GIVEN A STAND W/O DIAGONAL BRACE, WITH STAND'S DEPTH (DS), TOTAL EQUIPMENT UNIT FRONT AREA (AF), EQUIPMENT UNIT HEIGHT (HU), STAND HEIGHT (HS) AND NUMBER OF REQUIRED FRAMES (N)

DS ≥ 20" UP TO 60"		AF (IN ²)	HU (IN)	HS (IN)	N = 2		N = 3		N = 4		N = 5		N = 6		N = 7		N = 8		N = 9		N = 10		N = 11		N = 12	
					WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU
2880	56	18					76.3	60.2	107.3	84.7	138.0	108.9														
		24					76.3	60.2	107.3	84.7	134.1	105.9														
		32					60.3	47.6	80.5	63.5	100.6	79.4														
3600	56	18					61.8	48.8	86.6	68.4	111.1	87.1	135.5	107.0												
		24					61.8	48.8	85.8	67.8	107.3	84.7	128.7	101.6												
		32					-	-	64.4	50.8	88.5	63.5	96.5	76.2												
4320	56	18							72.8	57.5	93.2	73.6	113.5	89.6	133.5	105.7										
		24							71.5	56.5	89.4	70.6	107.3	84.7	125.2	98.1										
		32							-	-	67.0	52.9	80.5	63.5	93.9	74.1										
5184	56	18							61.3	48.4	78.3	61.8	95.2	75.2	112.1	88.5	129.0	101.9								
		24							59.6	47.1	74.5	58.8	89.9	74.6	104.3	82.3	119.2	74.1								
		32							-	-	-	-	67.0	52.9	78.2	61.8	89.4	70.6								
5760	56	18									70.8	55.9	86.1	68.0	101.3	80.0	116.5	92.0	131.7	103.9						
		24									67.0	52.9	80.5	63.5	93.9	74.1	107.3	84.7	120.7	95.3						
		32									-	-	60.3	47.6	70.4	55.6	80.5	63.5	90.5	71.5						
6480	56	18									63.4	50.0	78.9	62.3	90.4	71.4	103.9	82.0	117.4	92.7	130.5	103.4				
		24									59.6	47.1	71.5	56.5	83.4	65.9	95.4	75.3	107.3	84.6	119.2	94.1				
		32									-	-	-	-	62.6	49.4	71.5	56.5	80.5	63.6	89.4	70.6				
7700	56	18											65.3	51.6	78.7	62.1	88.0	69.5	99.4	78.5	110.7	87.4	122.1	96.4	133.4	105.3
		24											60.2	47.5	70.2	55.3	80.2	63.4	90.3	71.3	100.3	79.2	110.3	87.1	120.4	95.0
		32											-	-	-	-	60.2	47.5	67.1	53.5	75.2	59.4	82.8	65.3	90.3	71.3
7920	56	18											63.6	50.2	74.6	58.9	85.6	67.6	96.6	76.3	107.7	85.1	118.8	93.8	129.8	102.5
		24											-	-	68.3	53.9	78.0	61.6	87.7	69.2	97.5	77.0	107.3	84.7	117.0	92.4
		32											-	-	-	-	-	-	65.8	51.9	73.1	57.7	80.5	63.5	87.8	69.3
8640	56	18													68.7	54.3	78.8	62.2	89.0	70.2	99.1	78.2	108.2	85.4	119.3	94.2
		24													62.6	49.4	71.5	56.5	80.5	63.5	89.4	70.6	98.3	77.6	107.3	84.7
		32													-	-	-	-	60.3	47.6	67.0	52.9	73.8	58.2	80.5	63.5
9360	56	18															73.0	57.7	82.4	65.0	91.7	72.4	101.0	79.8	110.9	87.1
		24															66.0	52.1	74.3	58.6	82.5	65.2	90.8	71.9	99.0	78.2
		32															-	-	-	-	61.9	48.9	68.1	53.8	74.3	58.6

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/24/2027
By *Halcyon*
Miami Data Product Control



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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6555 NW 36th St., Ste. 305, Virginia Gardens, FL 33166
Phone: (305) 884-7076 Fax: (305) 884-7073
e-mail: tilteco@tilteco.com
CA-0006719
WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF
TOP EQUIPMENT

METALLUM ENTERPRISES Inc.

7500 NW 68 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX:(305)884-7073

DRAWN BY: Y.M. 09/01/2023

DATE

23-196
DRAWING No

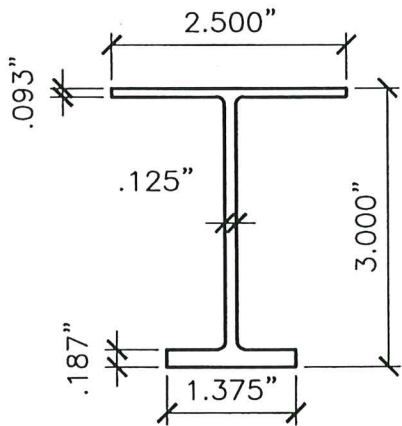
SHEET 13 OF 22

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
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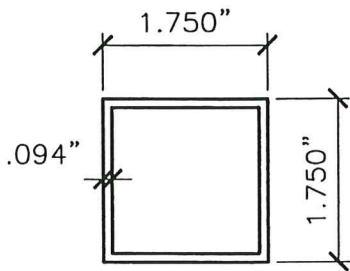
BILL OF MATERIALS: VALID ONLY FOR STANDS WITH DIAGONAL BRACE REINFORCEMENT

COMPONENT No.	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	NOTES
①	RAIL (I-BEAM)	2.50" X 1.375" X 3"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	SUPPORT FOR ROOF TOP EQUIPMENT FIT AND ADJUSTED INTO ③
②A	LARGE STRUT TUBING	1.75" X 1.75" X 0.094"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WIND BRACING COMPONENT WELDED TO ④
②B	SMALL STRUT TUBING	1.50" X 1.50" X 0.125"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WIND BRACING COMPONENT WELDED TO ④
③	TOP CHANNEL	2.00" X 0.570" X 0'-3"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WELDED TO TOP OF ④ TO RECEIVE ①
④	POST	1.90" X 0.145" THK.	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WELDED TO ⑤, ②A, ②B & ③
⑤	BASE PLATE	5" X 5" X 1/4" THK.	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	WELDED TO ④ & ANCHORED TO EXISTING STRUCTURE
⑥	DIAGONAL BRACE	2.00" X 2.00" X 0.125"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	BOLTED TO ④ W/ ⑦
⑦	THRU BOLT	3/8"Ø-16	ASTM A-307 GALV. STL.	-	USE (2) EACH PAIR OF ⑦ SEE DETAILS SHEET 16

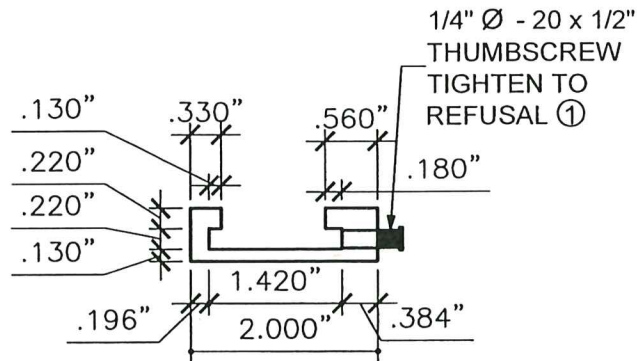
COMPONENTS



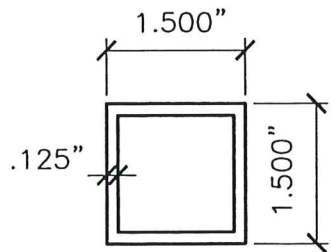
① RAIL (I-BEAM)
1/2"= 0'- 1"



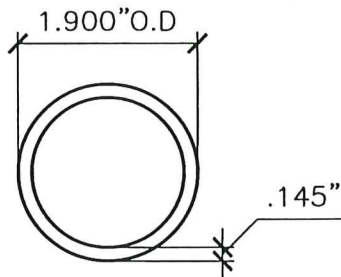
②A LARGE STRUT TUBING
1/2"= 0'- 1"



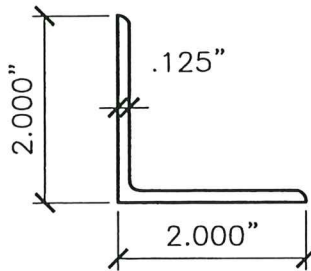
③ TOP CHANNEL (3" LONG)
1/2"= 0'- 1"



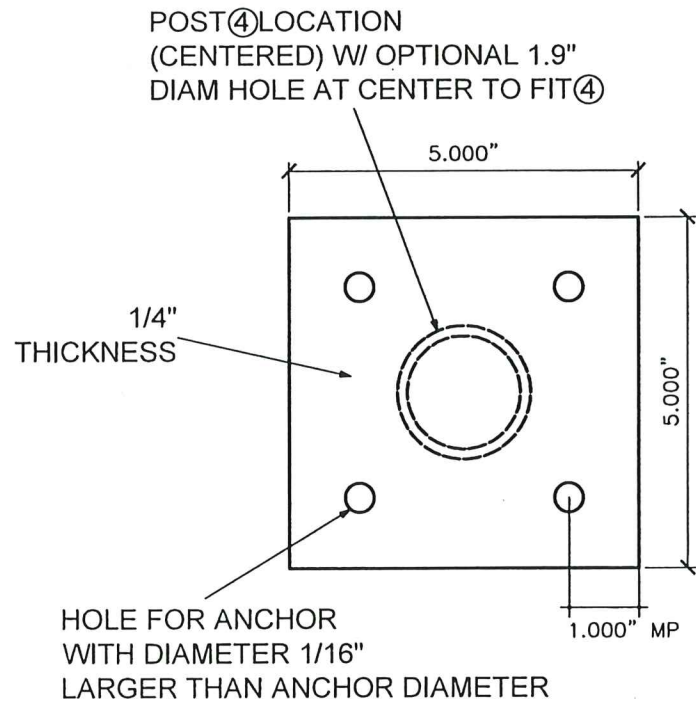
②B SMALL STRUT TUBING
1/2"= 0'- 1"



④ POST
1/2"= 0'- 1"



⑥ DIAGONAL BRACE
1/2"= 0'- 1"



⑤ BASE PLATE
3/8"= 0'- 1"

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/24/2027
By *Halley A. Miller*
Miami Data Product Control

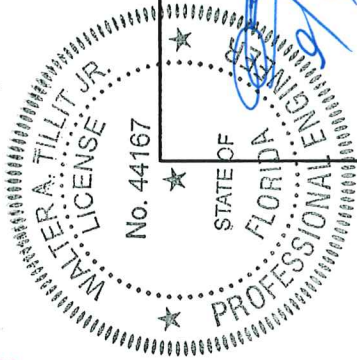
FLORIDA BUILDING CODE (High Velocity Hurricane Zone)		DRAWN BY: Y.M.	09/01/2023	DATE	23-196	DRAWING No	SHEET 14 OF 22
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT		METALLUM ENTERPRISES INC. 7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073					
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION
-	-	-	-	-	-	-	-

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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone : (305)971-1530 Fax : (305)971-1531
e-mail: ttilt@ttilt.com

WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167





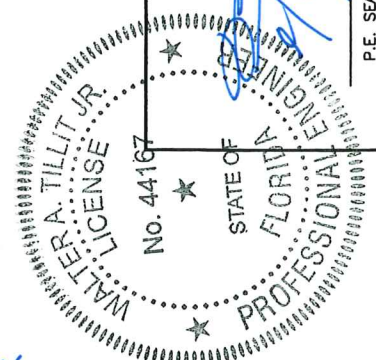
PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.64
Expiration Date 06/29/2027
By H. G. A. Miller
Miami-Dade Product Control

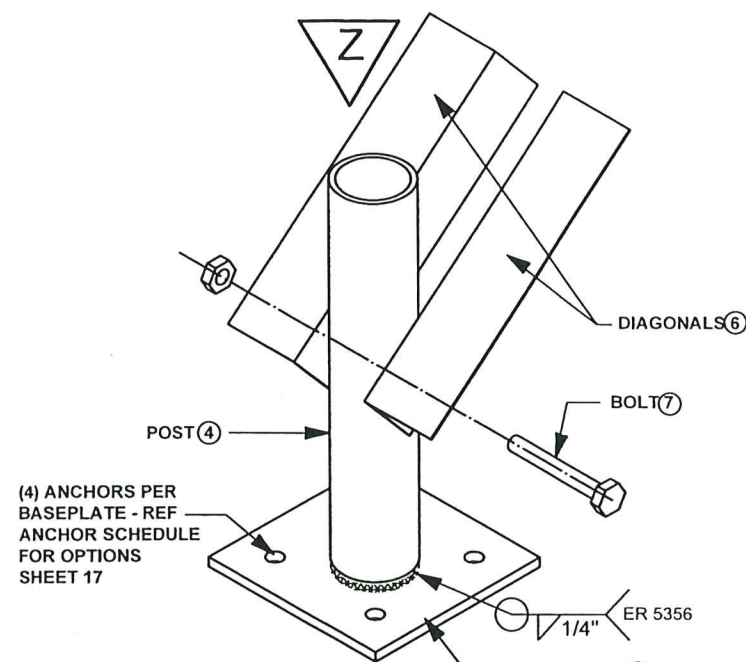
FLORIDA BUILDING CODE (High Velocity Hurricane Zone)					
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT			DRAWN BY: Y.M. 09/01/2023		
METALLUM ENTERPRISES INC.			DATE		
7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073			23-196 DRAWING No		
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
-	OLD 20-248	9/1/23	-	-	-
-	-	-	-	-	-
					SHEET 15 OF 22

TILTECO INC.

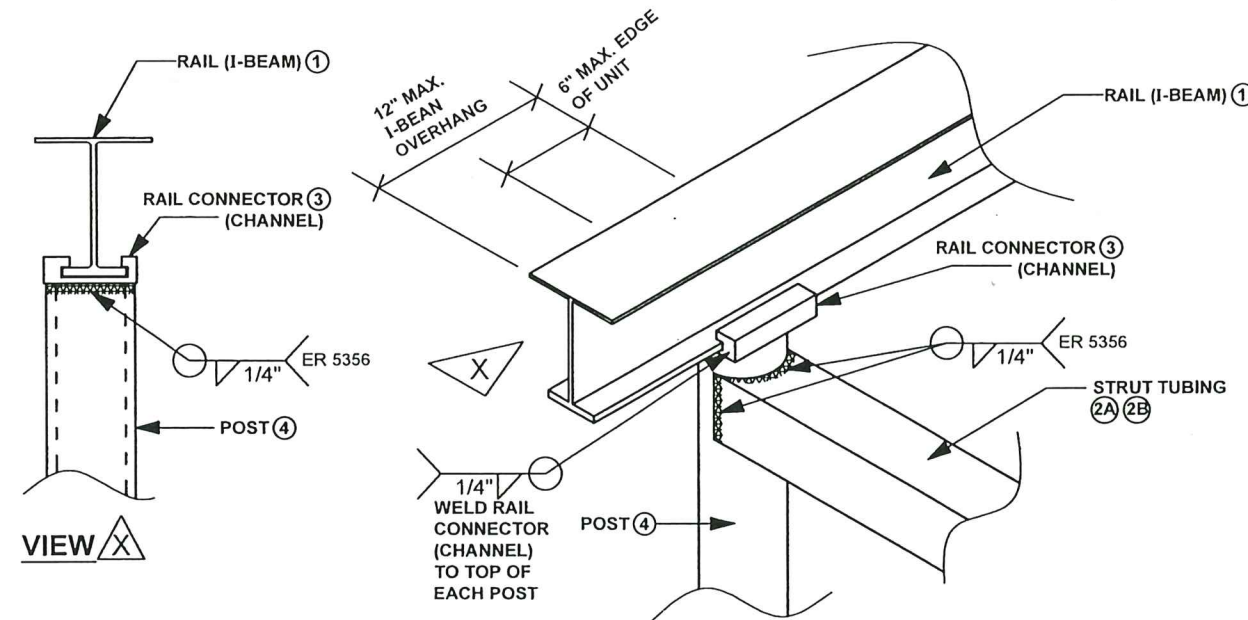
TILTIT TESTING & ENGINEERING COMPANY
144 S. W. 5th St., Suite 200, Ocala, FL 32668
Phone: (352) 333-5335 Fax: (352) 333-5330
e-mail: titeco@aol.com
CA-0006719
WALTER A. TILIT Jr. P.E.
FLORIDA Lic. # 44167

P.E. SEAL/SIGNATURE/DATE

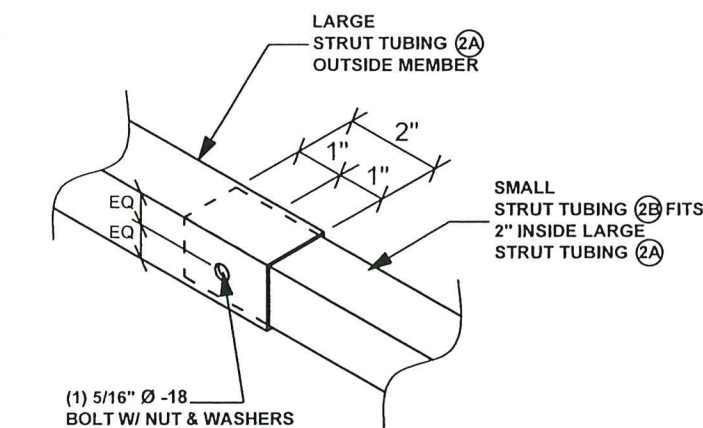




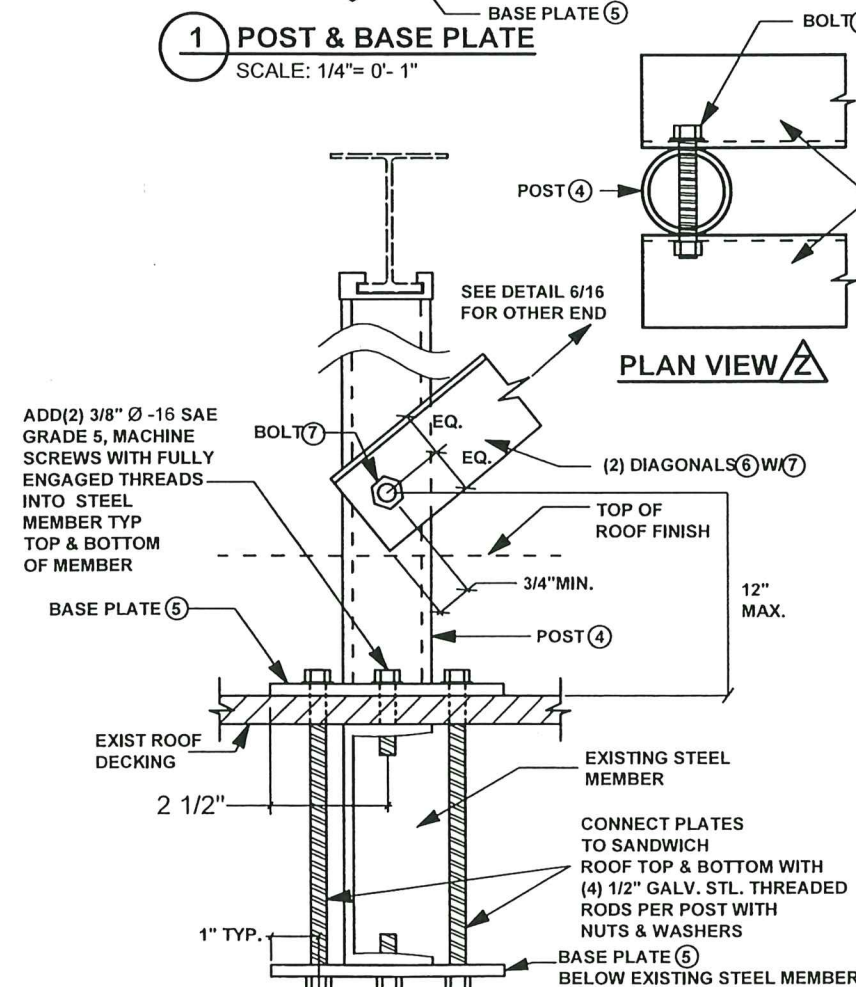
1 POST & BASE PLATE
SCALE: 1/4" = 0'-1"



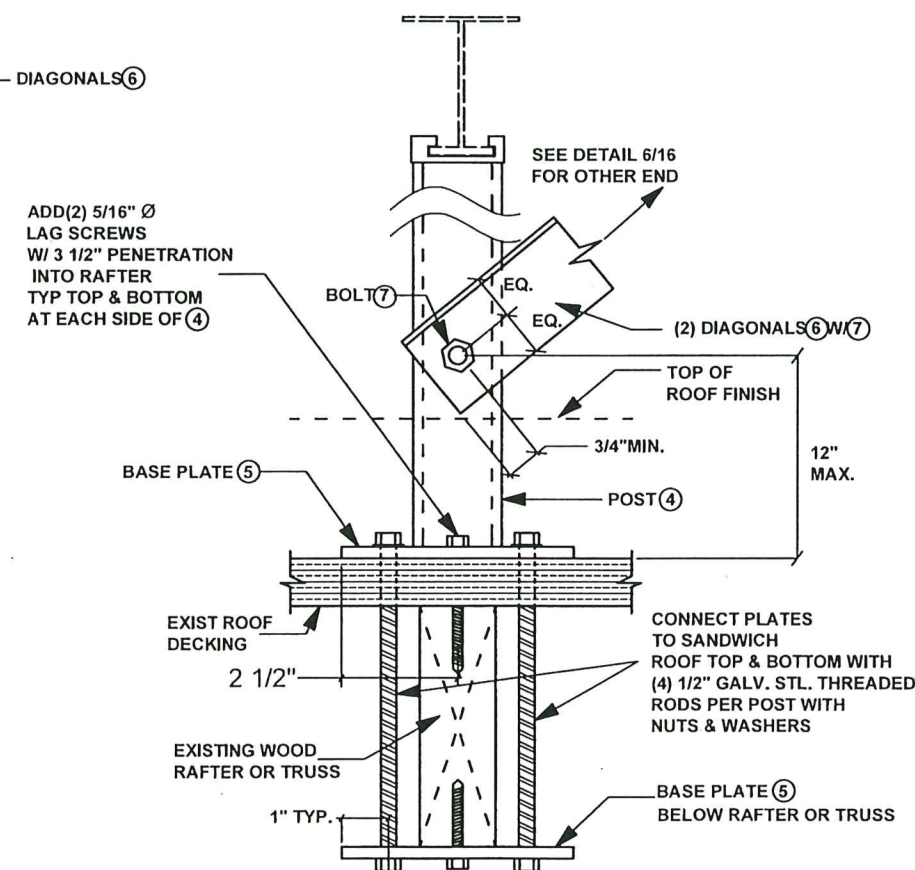
2 POST, STRUT TUBING & TOP CHANNEL CONNECTION
SCALE: 1/4" = 0'-1"



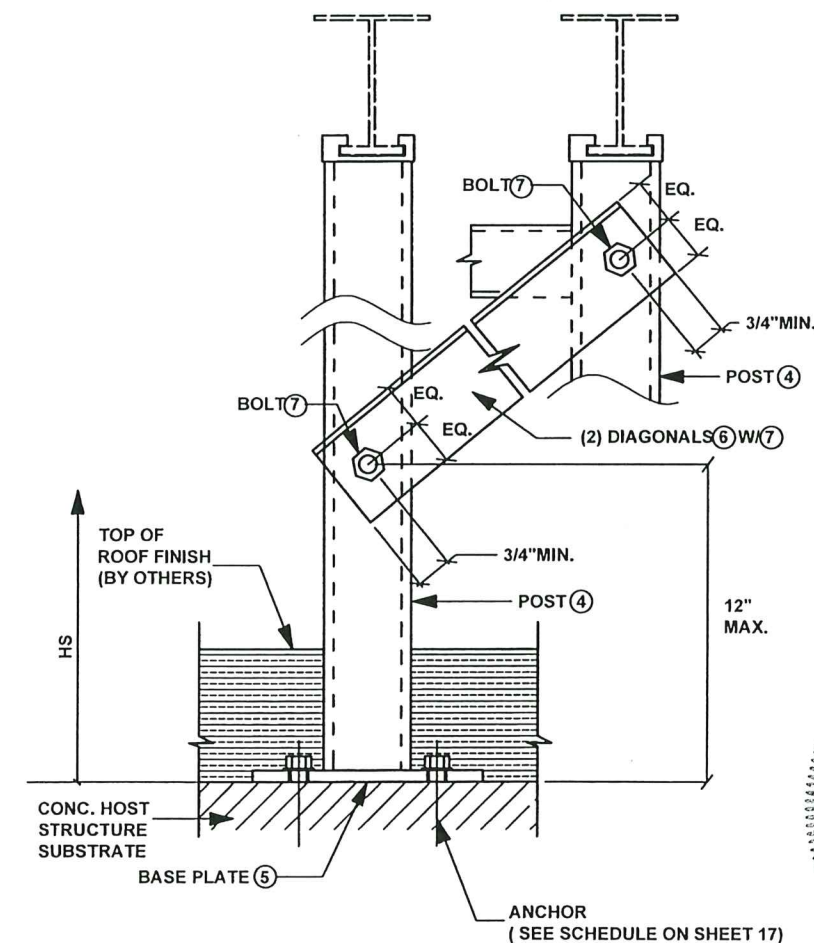
3 STRUT SPLICE
SCALE: 1/4" = 0'-1"



4 BASE PLATE ATTACHMENT TO EXISTING STEEL TRUSS OR STEEL BEAM ROOF
SCALE: 1/4" = 0'-1" ELEVATION



5 BASE PLATE ATTACHMENT TO EXISTING WOOD TRUSS OR WOOD RAFTER ROOF
SCALE: 1/4" = 0'-1" ELEVATION



6 BASE PLATE ATTACHMENT TO EXIST CONCRETE STRUCTURAL SLAB
SCALE: 1/4" = 0'-1" ELEVATION

TYPICAL ASSEMBLY DETAILS VALID ONLY FOR STANDS WITH DIAGONAL BRACE REINFORCEMENT

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)		DRAWN BY: Y.M.	DATE: 09/01/2023
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT		23-196	DRAWING No
METALLUM ENTERPRISES INC.		7500 NW 68 STREET MIAMI, FLORIDA 33166	ph: (305)884-7076; FAX: (305)884-7073
REV. No	DESCRIPTION	DATE	REV. No
1	OLD 20-248	9/7/23	-
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3	-	-	-
4	-	-	-
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TILECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6335 NW 13th St. 355 VICTORIA ESTATES, FL 33166
Phone: (305)671-1530 Fax: (305)671-1531
e-mail: tileco@aol.com
CA-0006719
WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167

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No. 44167
STATE OF FLORIDA
WALTER A. TILLIT JR.
PROFESSIONAL ENGINEER
P.E. SEAL/SIGNATURE/DATE
2023/1/2023

PRODUCT REVISED as complying with the Florida Building Code
Acceptance No. 23-0913.14
Expiration Date 06/29/2027
By: *Walter A. Tillit Jr.*
Miami, FL Product Control

SCHEDULE NOTES: VALID ONLY FOR STANDS WITH DIAGONAL BRACE REINFORCEMENT

1. SCHEDULES ON SHEETS 18 & 19 PROVIDE MAXIMUM A.S.D LATERAL & UPLIFT WIND LOADS FOR EACH COMBINATION OF TOTAL UNIT FRONTAL AREA (AF), DIAGONALLY REINFORCED STAND, WITH STAND DEPTH (DS), EQUIPMENT HEIGHT(HU), STAND HEIGHT (HS) AND NUMBER OF POST FRAMES (N) PER STAND.
2. TOTAL FRONT AREA IS TOTAL FRONTAL AREA OF EQUIPMENT UNIT FACE PARALLEL TO RAIL① (EQUAL TO TOTAL SUM OF UNIT HEIGHT (IN) x UNIT WIDTH (IN) FOR ALL UNITS ON STAND), AS DEPICTED HEREIN.
3. UNIT HEIGHT (HU) INCHES INCLUDED IN SCHEDULE SHALL BE DEFINED AS FOLLOWS: AVERAGE HEIGHT IF ALL UNITS IF THE DIFFERENCE IN HEIGHT BETWEEN TWO ADJACENT UNITS DOES NOT EXCEED 8", OR MAX UNIT HEIGHT OF INSTALLATION IF THE ABOVE CONDITION IS NOT COMPLIED WITH. MAX. UNIT HEIGHT IS 70".
4. STAND HEIGHT (HS), INCHES, IS AS DEPICTED HEREIN.
5. "FRAMES" HERE DENOTES ASSEMBLAGE OF 2 POSTS ④ WITH STRUTS ②A), ②B). & ②) DIAGONAL BRACE ⑥W/⑦BOLTS
6. EACH EQUIPMENT UNIT SHALL HAVE A MAXIMUM WEIGHT OF 825 lbs & A MIN. WEIGHT OF 75 LBS.
7. SPACING BETWEEN UNITS MAY VARY.
8. REFERENCE ANCHOR SCHEDULE BELOW FOR ALLOWABLE ANCHORS AND INSTALLATION CRITERIA.
9. EQUIPMENT UNITS SHALL BE ATTACHED TO RAILS ① PER UNIT CONNECTION DETAILS ON SHEET 5.

ANCHORS SCHEDULE

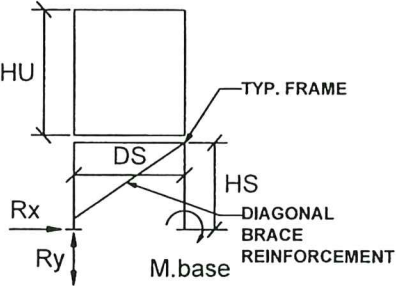
SUBSTRATE											
CONCRETE △				STEEL △				WOOD △			
MANUFACTURER	DIAMETER	MIN. E.D	MIN. EMBD'T	MANUFACTURER	DIAMETER	MIN. E.D	MIN. EMBD'T	MANUFACTURER	DIAMETER	MIN. E.D	MIN. EMBD'T
DEWALT	3/8"	4 1/2"	3 1/2"	ELCO CONSTRUCTION PRODUCTS	5/16"-24	5/8"	FULL THREAD ENGAGEMENT	N/A	3/8"	1 1/2"	3 1/2"
WEDGE BOLT				HEX WASHER HEAD DRILL FLEX STRUCTURAL DRILL SCREWS				NDS LAG SCREWS			

- △ NOTES: 1 - CONCRETE TO BE MIN $f'_c = 3$ KSI
2 - STEEL TO BE MIN ASTM A-36, 1/4" MIN THICK.
3 - WOOD TO BE G=0.55 SOUTHERN YELLOW PINE # 2.

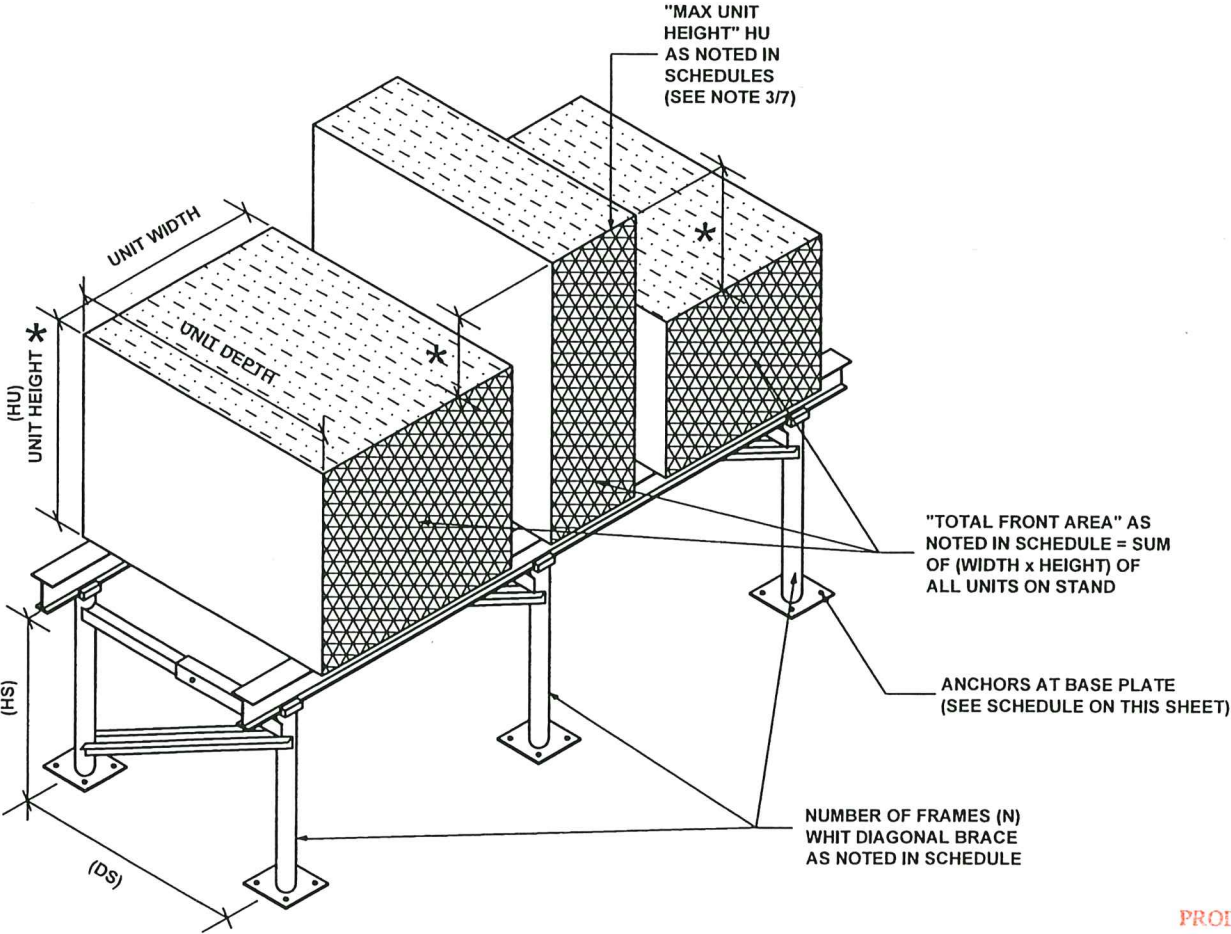
REACTION SCHEDULE: SEE NOTE 2/1

STAND HEIGHT (HS)	REACTION AT BASE Rx	REACTION AT BASE Ry	REACTION AT BASE M.base
24"	450 LB	746 LB	3.5 K-IN
32"	399 LB	926 LB	6.6 K-IN

** REACTIONS CORRESPOND TO THE WORST CASE FORCE APPLIED AT BASE PLATE FOR ANY COMBINATION OF DS OF HU FOR AN HS DIMENSION



SIDE VIEW



UNIT SIZES & CONFIGURATION (FOR USE WITH DESIGN SCHEDULES)

SCALE: 1/4" = 1'-0" ISOMETRIC

* SEE NOTE 3

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

METALLUM ENTERPRISES INC.

7500 NW 88 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX:(305)884-7073

DRAWN BY: Y.M. 09/01/2023 DATE: 23-196 DRAWING No: SHEET 17 OF 22

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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 38th St., Ste. 305 VIRGINIA GARDENS, FL 33166
Phone : (305)871-1530 . Fax : (305)871-1531
e-mail: tilteco@aol.com

WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167

WALTER A. TILLIT JR. LICENSE No. 44167

STATE OF FLORIDA PROFESSIONAL ENGINEER

1/2023

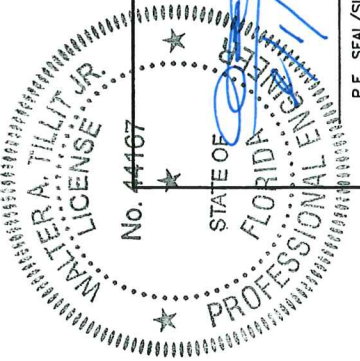
P.E. SEAL/SIGNATURE/DATE

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 23-0913.14
Expiration Date 06/28/2027
By Healy Product Control

DS ≥ 24"
UP TO 60"

AF (IN ²)	HU (IN)	HS (IN)	N = 3		N = 4		N = 5		N = 6		N = 7		N = 8		N = 9		N = 10		N = 11		N = 12	
			WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU
2880	≤ 57	24	71.0	56.1	95.0	75.0	118.0	94.0	102.0	112.0	160.0	126.0										
		32	63.3	50.0	84.4	66.7	105.5	83.3	126.6	100.0	147.7	116.7										
3600	≤ 57	24	57.0	45.0	76.0	60.0	95.0	75.0	114.0	90.1	133.0	105.1										
		32	50.6	40.0	67.5	53.3	84.4	66.7	101.3	80.0	118.2	95.4										
4320	≤ 57	24	48.0	38.0	64.0	50.6	80.0	63.2	96.0	75.8	112.0	88.5										
		32	47.2	33.3	56.3	24.4	70.4	55.6	84.5	66.7	95.6	77.9										
5184	≤ 57	24	39.5	31.5	52.7	41.6	65.9	52.0	79.1	62.5	92.3	72.9	105.5	83.3								
		32	35.0	27.7	46.9	37.1	58.6	46.3	70.3	55.6	82.0	64.8	93.7	74.0								
5760	≤ 57	24			47.4	37.5	59.3	46.8	71.2	56.2	83.1	65.6	95.0	75.0	106.9	84.4						
		32			42.2	33.3	52.8	41.7	63.4	50.0	74.0	58.4	84.6	66.8	95.2	75.1						
6480	≤ 57	24			42.1	33.3	52.6	41.6	63.1	49.9	73.6	58.2	84.1	66.5	94.6	74.1	105.1	83.0	115.6	91.3	126.1	99.6
		32			37.5	29.6	46.9	37.0	56.3	44.5	65.6	51.9	75.2	59.4	84.6	66.8	77.0	60.8	103.4	81.6	112.8	89.1
7700	≤ 57	24			35.4	28.0	44.3	35.0	53.2	42.0	62.0	49.0	70.9	56.0	79.8	63.0	88.7	70.0	97.6	77.1	106.4	84.1
		32			27.4	21.6	34.2	27.0	41.0	32.4	47.9	37.8	54.7	43.2	61.5	48.5	68.4	68.0	75.2	58.8	88.0	69.5
7920	≤ 57	24					43.1	34.0	51.7	40.9	60.3	47.7	68.9	54.4	77.5	61.2	86.1	67.2	94.7	73.9	103.3	81.6
		32					33.3	26.3	40.0	31.6	46.7	38.9	53.4	42.2	60.1	47.5	66.8	62.4	73.5	58.7	80.2	63.3
8640	≤ 57	24					39.5	31.2	47.4	37.4	55.3	43.6	63.2	49.9	71.1	56.2	79.0	61.6	86.9	53.0	94.8	74.9
		32					30.5	24.1	36.6	28.9	42.7	33.7	48.8	38.6	54.9	43.4	61.0	48.2	67.1	52.3	73.2	57.8
9360	≤ 57	24					36.5	28.8	43.8	34.6	51.1	40.4	58.4	46.1	65.7	51.9	73.0	57.7	80.3	63.4	87.6	69.2
		32					28.2	22.2	33.8	26.7	39.4	31.1	45.0	35.6	50.6	40.0	56.2	44.4	61.8	48.8	67.4	53.3

MAX. ASD DESIGN LATERAL (WL) & UPLIFT (WU) PRESSURE RATING (psf) SCHEDULE GIVEN A
DIAGONAL BRACE REINFORCED STAND WITH STAND'S DEPTH (DS), TOTAL EQUIPMENT UNIT FRONT AREA
(AF), MAX. EQUIPMENT UNIT HEIGHT (HU), STAND HEIGHT (HS) AND NUMBER OF REQUIRED FRAMES (N)
(VALID ONLY FOR INSTALLATION CONDITIONS WITH BASE PLATE ATTACHMENT TO EXISTING ROOF'S
CONCRETE STRUCTURAL SLAB, PER DETAIL 6/16)



PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/24/2027
By *Heidi Miller*
Miami Dade Product Control

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)	
ALUMINUM STANDS FOR ROOF TOP EQUIPMENT	DRAWN BY: Y.M. 09/01/2023
METALLUM ENTERPRISES Inc. 7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073	DATE 23-196 DRAWING No
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DS ≥ 24"
UP TO 60"

MAX. ASD DESIGN LATERAL (WL) & UPLIFT (WU) PRESSURE RATING (psf) SCHEDULE GIVEN A
DIAGONAL BRACE REINFORCED STAND WITH STAND'S DEPTH (DS), TOTAL EQUIPMENT UNIT FRONT AREA
(AF), MAX. EQUIPMENT UNIT HEIGHT (HU), STAND HEIGHT (HS) AND NUMBER OF REQUIRED FRAMES (N)
(VALID ONLY FOR INSTALLATION CONDITIONS WITH BASE PLATE ATTACHMENT TO EXISTING ROOF'S
CONCRETE STRUCTURAL SLAB, PER DETAIL 6/16)

AF (IN ²)	HU (IN)	HS (IN)	N = 3		N = 4		N = 5		N = 6		N = 7		N = 8		N = 9		N = 10		N = 11		N = 12	
			WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU	WL	WU
3600	≤ 70	24	55.0	43.5	73.3	57.9	91.6	72.4	109.9	86.8	128.2	101.3										
		32	49.6	39.2	66.1	52.2	82.6	65.5	82.6	60.3	96.4	76.1										
4320	≤ 70	24	46.5	36.7	62.0	49.0	77.5	61.2	93.0	73.5	100.5	85.7										
		32	41.3	32.6	55.1	43.5	68.9	54.4	82.7	65.3	96.5	76.2										
5184	≤ 70	24	37.5	29.6	50.7	40.0	63.3	50.1	76.0	60.0	88.7	70.0	101.4	80.1								
		32	34.4	27.2	45.9	36.2	57.4	43.3	57.4	45.3	67.0	52.9	76.6	60.5								
5760	≤ 70	24			45.6	36.0	51.0	45.0	68.4	54.0	79.8	63.0	91.2	72.0	102.6	81.1						
		32			41.3	32.6	51.6	40.8	61.9	48.9	72.2	57.1	82.5	65.2	92.8	73.3						
6480	≤ 70	24			40.5	32.0	50.6	40.0	60.7	48.0	70.8	55.9	80.9	64.0	91.0	71.9	101.1	79.9	111.2	89.9	122.4	96.7
		32			36.7	29.0	45.9	36.2	55.1	43.5	64.3	50.8	73.5	58.1	82.8	65.3	92.0	72.9	101.2	79.9	110.4	87.2
7700	≤ 70	24			34.4	27.0	42.6	33.7	51.1	40.4	59.6	47.1	68.1	53.8	76.6	60.5	85.1	67.2	93.6	74.0	102.1	80.7
		32			-	-	-	-	46.4	36.7	54.1	42.8	61.8	48.8	69.5	54.9	77.2	61.0	84.9	67.1	92.6	73.2
7920	≤ 70	24					41.4	32.7	49.7	39.2	58.0	45.8	66.3	52.4	74.6	58.9	82.9	65.5	91.2	72.0	99.5	78.6
		32					-	-	45.1	35.7	52.6	41.6	60.1	47.5	67.6	53.4	75.1	59.3	82.6	65.3	90.1	71.2
8640	≤ 70	24					38.0	30.0	45.6	36.0	53.2	42.0	60.8	48.0	68.4	54.0	76.0	60.0	83.6	66.0	91.2	72.6
		32					-	-	-	-	48.2	38.1	55.0	43.5	61.9	48.9	68.8	54.3	75.7	60.0	82.6	65.2
9360	≤ 70	24					35.0	27.7	42.0	33.2	49.0	38.7	56.0	44.2	63.0	49.8	70.0	55.3	77.0	60.8	84.0	66.4
		32					-	-	-	-	44.5	35.1	59.9	40.2	57.3	45.2	68.7	50.3	70.6	55.6	76.5	60.4
10500	≤ 70	24							37.4	29.6	43.6	34.5	49.8	39.6	56.0	44.3	62.2	49.2	68.4	54.1	74.6	58.0
		32					-	-	-	-	-	-	45.4	35.8	51.1	40.3	56.8	44.9	62.5	49.4	68.2	53.0

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

METALLUM ENTERPRISES INC.
7500 NW 68 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX:(305)884-7073

DRAWN BY: Y.M.
09/01/2023
DATE
23-196
DRAWING No
SHEET 19 OF 22

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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Suite 305, Virginia Gardens, FL 33166
Phone: (305)884-7076; Fax: (305)884-7073
E-mail: info@tilteco.com
WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

WALTER A. TILLIT JR.
LICENSE
No. 44167

STATE OF FLORIDA
PROFESSIONAL ENGINEER

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METALLUM ENTERPRISES Inc.		09/01/2023	
		DATE	
7500 NW 68 STREET MIAMI, FLORIDA 33166 ph: (305)884-7076; FAX:(305)884-7073		23-196 DRAWING No	
REV. No	DESCRIPTION	DATE	REV. No
-	OLD 20-248	8/1/23	-
-	-	-	-
-	-	-	-
SHEET 20 OF 22			

COMPONENT No.	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	NOTES
①	RAIL (I-BEAM)	2.50" X 1.375" X 3"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	SUPPORT FOR ROOF TOP EQUIPMENT FIT AND ADJUSTED INTO ③
②	ANGLE FOR ④⑤ & ⑥	1.00" X 1.00" X 1/8" THK. X 0'-2"	6063-T5 ALLOY	METALLUM ENTERPRISES INC.	USE PER DETAILS SHEET 21
③	CROSS BAR	3" X 3" X 1/8"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	USE SHEET 21 FOR CONNECTION DETAILS TO RAILS
④	CROSS BAR	3" X 3" X 3/16"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	USE SHEET 21 FOR CONNECTION DETAILS TO RAILS
⑤	CROSS BAR	3" X 3" X 1/4"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	USE SHEET 21 FOR CONNECTION DETAILS TO RAILS
⑥	CROSS BAR	4" X 4" X 1/4"	6061-T6 ALLOY	METALLUM ENTERPRISES INC.	USE SHEET 21 FOR CONNECTION DETAILS TO RAILS
⑦	TEK-SCREW	1/4"Ø X 3/4"	AISI 401 SERIES S.S	METALLUM ENTERPRISES INC.	USE SHEET 21 FOR CONNECTION DETAILS TO RAILS
⑧	TIE DOWN STRAP	1.00" X 0.036"	ASTM A-653 GRADE 33, G-90 GALV. STEEL	METALLUM ENTERPRISES INC.	UNIT TIE DOWN TO CROSS BARS SEE DETAILS
⑨	TIE DOWN CLIP	4" MIN. X 1" X 0'-1" X 12 GAUGE	ASTM A653 GR. 50 G-60 GALV. STL.	-	UNIT TIE DOWN TO CROSS BARS SEE DETAILS

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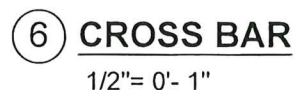
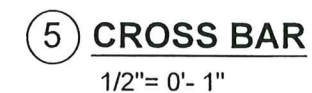
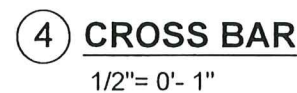
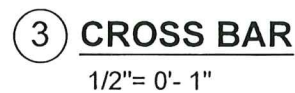
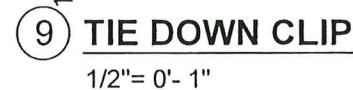
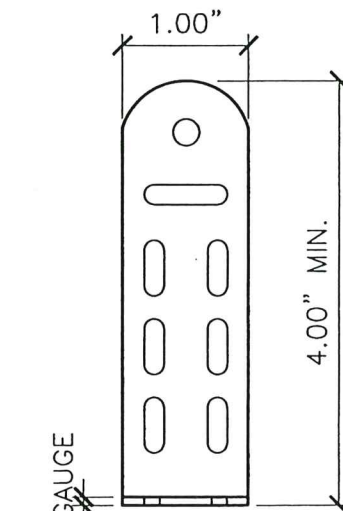
TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th, St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone : (305)871-530 . Fax : (305)871-1531
e-mail: tilteco@aol.com
CA-0008719

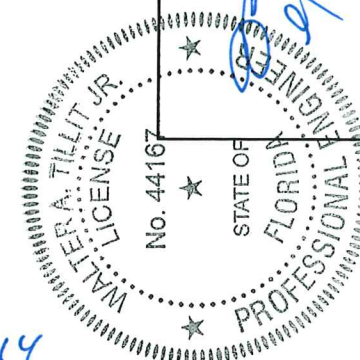
WALTER A. TILLIT Jr. P.E.
FLORIDA Lic. # 44167

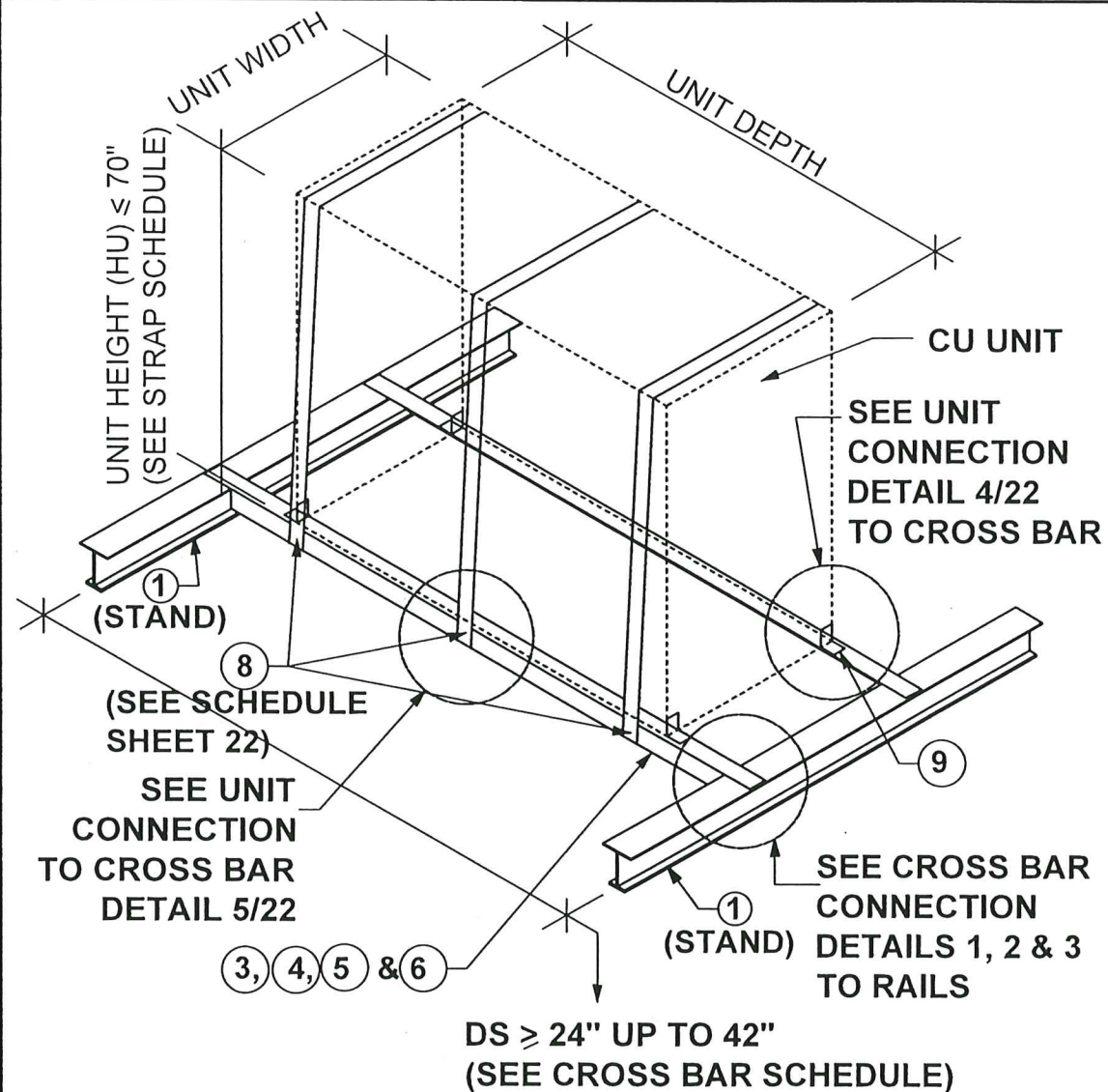
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2/1/2023

P.E. SEAL/SIGNATURE/DATE



PRODUCT REVISED
as complying with the Florida:
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/29/2027
By Heidi A. Miller
Miami Dept. Product Control



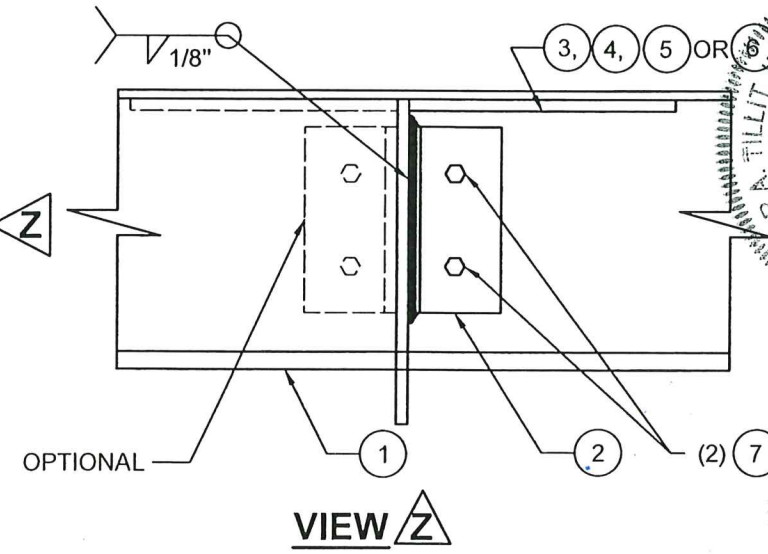
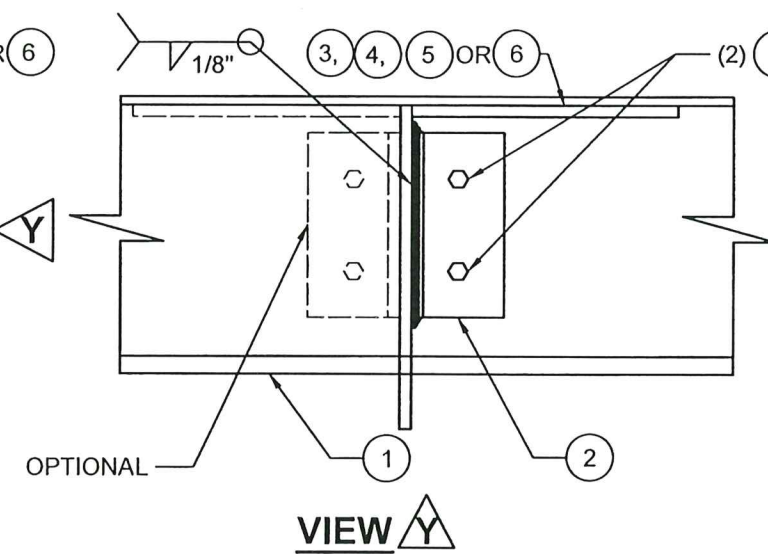
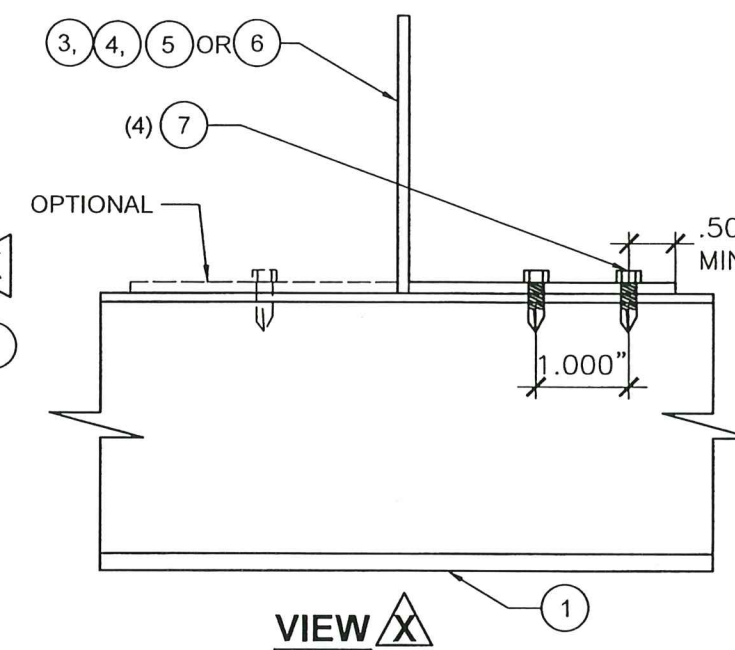
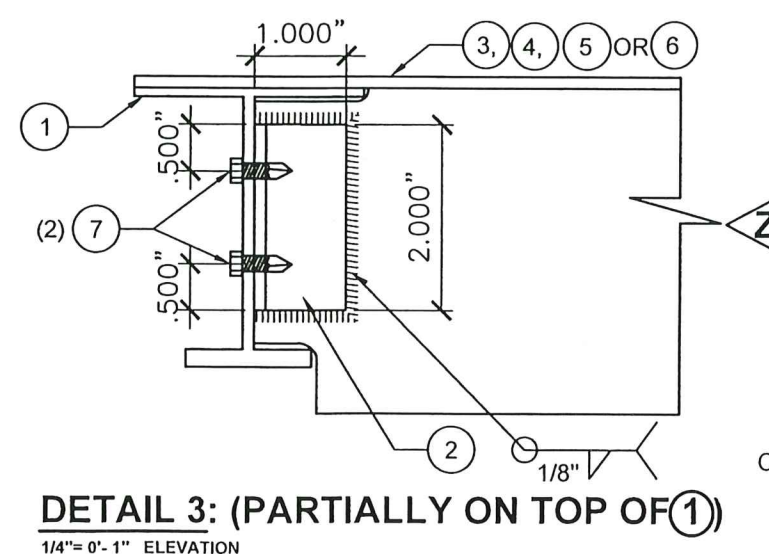
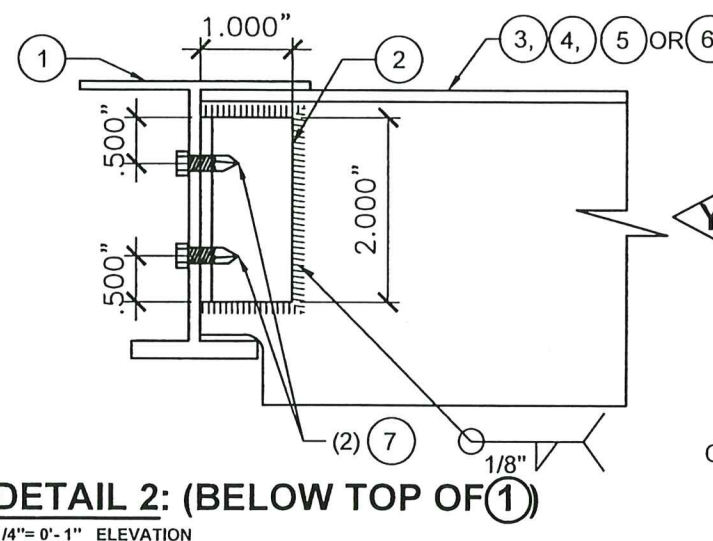
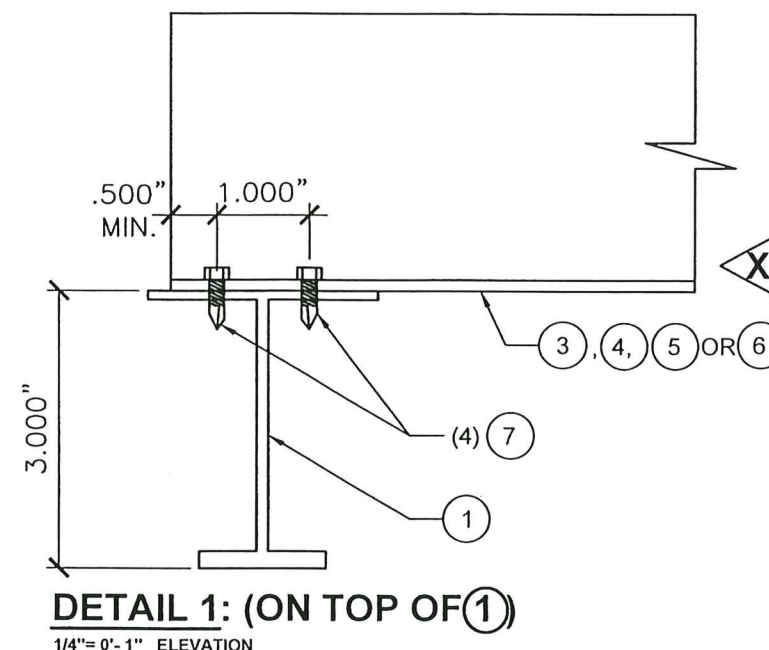


ASSEMBLY DETAIL FOR CROSS BARS AT STANDS

SCALE: N.T.S

CROSS BAR	MAX. DS	MAX. PRESSURE RATING		UNIT DIMENSION (MAX.)
		WL	WU	
(3)	≤ 24"	100.0	79.0	36"H (MAX.) X 36"D (MAX.) X 14" W (MIN.)
(3)	≤ 34"	100.0	79.0	25"H (MAX.) X 35"D (MAX.) X 13" W (MIN.)
(4)	≤ 42"	100.0	79.0	25"H (MAX.) X 35"D (MAX.) X 13" W (MIN.)
(4)	≤ 36"	100.0	79.0	36"H (MAX.) X 36"D (MAX.) X 14" W (MIN.)
(5)	≤ 42"	120.0	99.0	32"H (MAX.) X 35"D (MAX.) X 13" W (MIN.)
(5)	≤ 40"	100.0	79.0	56"H (MAX.) X 36"D (MAX.) X 24" W (MIN.)
(6)	≤ 42"	120.0	95.0	70"H (MAX.) X 38"D (MAX.) X 42" W (MIN.)

CROSS BAR SCHEDULE



FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

ALUMINUM STANDS FOR ROOF TOP EQUIPMENT

METALLUM ENTERPRISES Inc.

7500 NW 68 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX:(305)884-7073

DRAWN BY: Y.M. 09/01/2023
DATE: 23-196
DRAWING No: 21 OF 22

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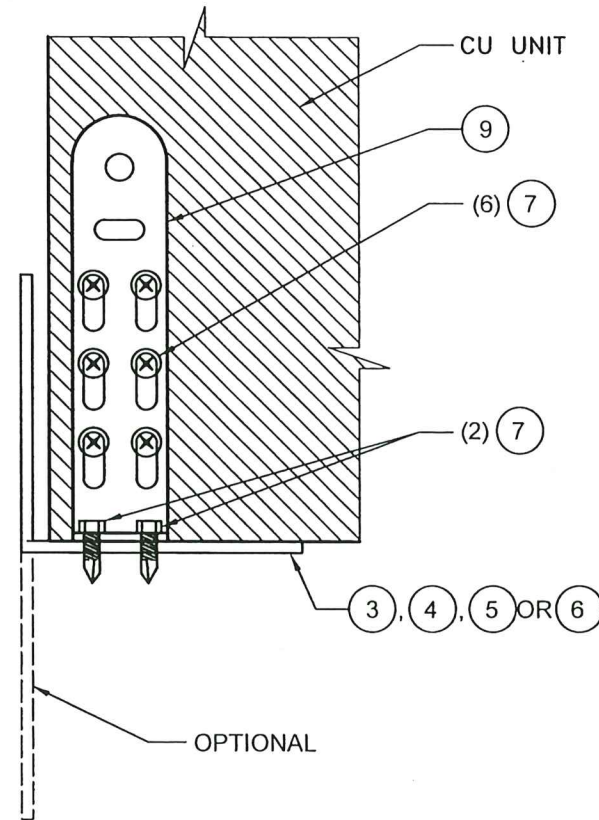
TILLIT TESTING & ENGINEERING COMPANY
6335 N.W. 34th St., Ste. 305, VIRGINIA, CA 90605, FL 33166
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e-mail: tilteco@col.com

WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

STATE OF FLORIDA
PROFESSIONAL ENGINEER
WALTER A. TILLIT JR.
LICENSE NO. 44167

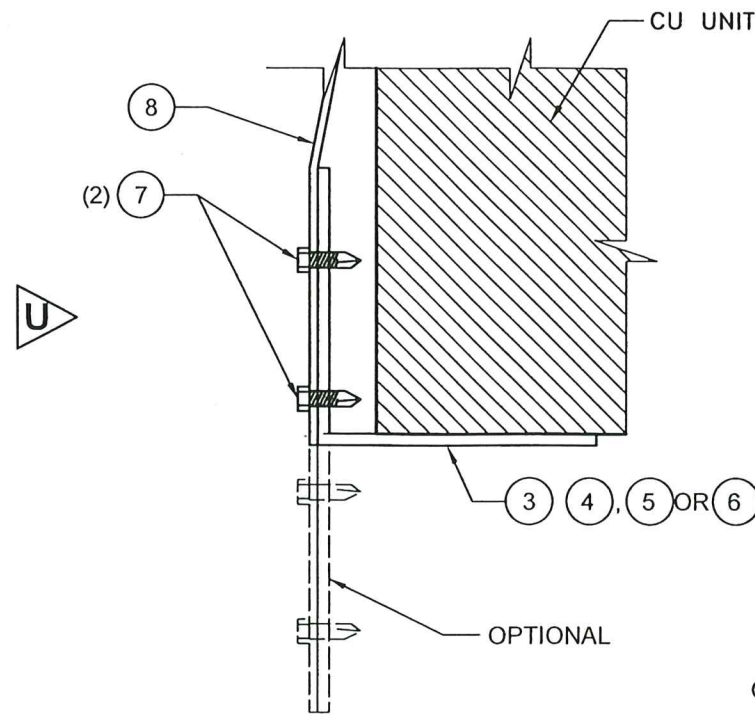
2023

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No. 23-0913.14
Expiration Date 06/28/2027
By: [Signature]
Miami Dade Product Control



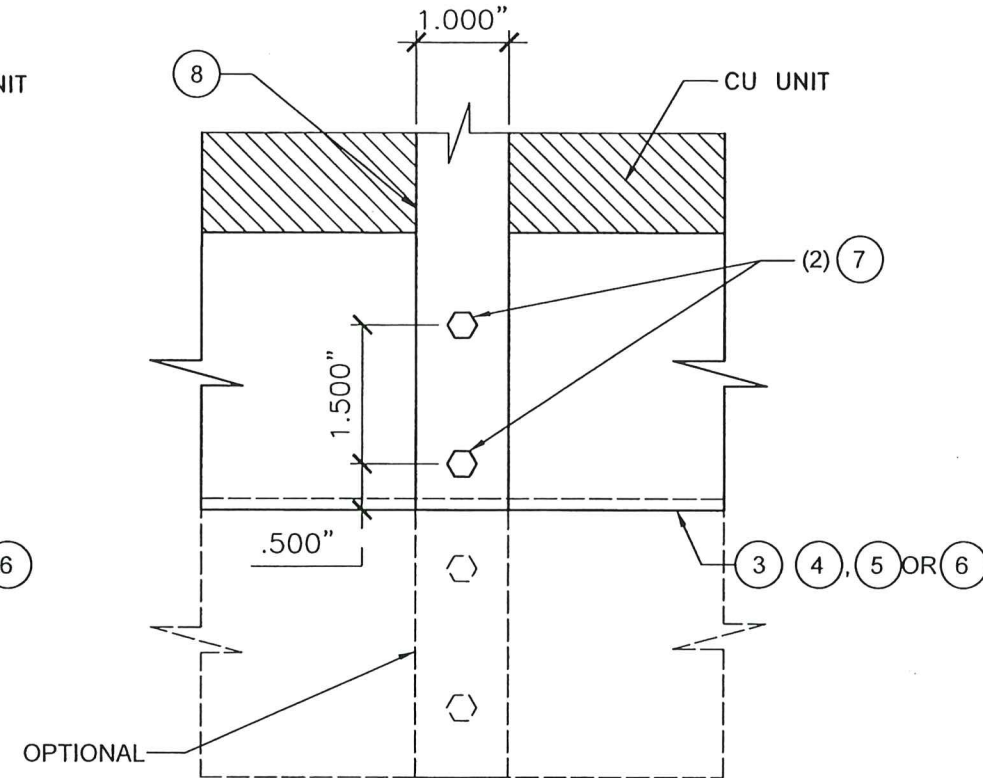
DETAIL 4

1/2"= 0'-1" ELEVATION



DETAIL 5

1/2"= 0'-1" ELEVATION

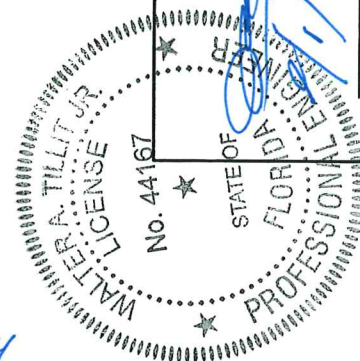


VIEW U

REQ'D QUANTITY OF STRAPS	MAX. PRESSURE RATING		UNIT DIMENSION
	WL	WU	
2	100.0	79.0	32"H (MAX.) X 35"D (MAX.) X 13" W (MIN.)
4	120.0	95.0	56"H (MAX.) X 38"D (MAX.) X 32" W (MIN.)
4	120.0	95.0	70"H (MAX.) X 38"D (MAX.) X 42" W (MIN.)

STRAP SCHEDULE FOR UNIT TIE DOWN TO CROSS BAR

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as complying with the Florida.
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Acceptance No 06/28/2027
Expiration Date
By Healy A. Miller
Miami Date Product Control



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CA-0008719
WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)
**ALUMINUM STANDS FOR ROOF
TOP EQUIPMENT**
METALLUM ENTERPRISES INC.
7500 NW 68 STREET MIAMI, FLORIDA 33166
ph: (305)884-7076; FAX:(305)884-7073
REV. No. DESCRIPTION DATE REV. No. DESCRIPTION DATE
- - - - -
DRAWN BY: Y.M. 09/01/2023
DATE
23-196
DRAWING No
SHEET 22 OF 22