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(Subject to Renew July 1, 2026 or next code cycle)

EVALUATION SUBJECT: CARRIER/BRYANT/MIDEA CABINET SIZE X2 UNITS**TER-24-72515****REPORT HOLDER:**CARRIER CORPORATION
C/O IBM GLOBAL SERVICES,
SOURCING & PROCUREMENT
P.O. BOX 9007
ENDICOTT, NY 13761-9007, USA**SCOPE OF EVALUATION (compliance with the following codes):****THIS IS A STRUCTURAL (WIND) PERFORMANCE EVALUATION ONLY.
NO ELECTRICAL OR TEMPERATURE PERFORMANCE RATINGS OR
CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.
UNDER NO CIRCUMSTANCE DOES THIS PERFORMANCE EVALUATION
GUARANTEE, IMPLY, OR STATE PERFORMANCE OF THE UNIT IS
MAINTAINED DURING OR AFTER A DESIGN EVENT.**

This Product Evaluation Report is being issued in accordance with the requirements of the **Eighth Edition (2023)** per ASCE 7, FBC Building Ch. 16, FBC Building Sections 104.11 & 1522.2, FBC Existing Building Sections 707.1 & 707.2, FBC Mechanical 301.15, FBC Residential M1202.1 & M1301.1, FS 471.025, and Broward County Administrative Provisions 107.3.4. This report is also in accordance with the **International Building & Residential Codes (2012, 2015, 2018, & 2021)**. The product noted in this report has been tested and/or evaluated as summarized herein.

**IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS
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SEAL OF THE EVALUATING ENGINEER.****SUBSTANTIATING DATA:****• Product Evaluation Documents**

Substantiating documentation has been submitted to provide this TER and is summarized in the sections below.

• Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

- Max. allowable lateral & uplift wind pressures certified herein
- Max. allowable sliding forces, uplift forces, & overturning moments (see Unit Reactions from Wind Guide on last page)
- Tie-down configuration and anchor capacity for concrete, aluminum, and steel host substrates (host by others).
- Unit panel wind pressure connection integrity

Calculation summary is included in this TER and appears herein.

LIMITATIONS & CONDITIONS OF USE:

Use of the product(s) listed herein shall be in strict accordance with this TER as noted herein and manufacturer-provided model specifications. Installation shall conform to the minimum standards stated in the referenced building code(s) in addition to the specifications and limitations stated herein. See herein for complete limitations & conditions of use.

OPTIONS:

This evaluation is valid for the models described herein. The critical unit designs have been determined and used in this evaluation. Any structural changes outside of the design as described herein would void this certification.

UNIT CASING MATERIALS:

Exterior panels shall be UTS = 37 ksi (260 MPa) minimum, DXD51D+Z through DX54D+Z steel. See "Panel Designations" section herein for individual panel thicknesses. Panels shall be secured with ST3.9-C-H self-tapping screws (ISO 7049), UTS = 35 ksi min. Knockouts provided for utility and control connections. Unit base/chassis and integrated feet shall be 0.8 mm min. thick, UTS = 37 ksi min. steel. Contact Report Holder for further unit construction information.

**NOTE: THE GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR
ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER IN APPEARANCE.****STRUCTURAL PERFORMANCE:**

Models referenced herein are subject to the following design limitations:

**Maximum-Rated ASD Wind Pressures*:
± 140 psf Lateral, 111 psf Uplift**

- Required design wind pressures shall be determined according to the guide provided in the Appendix (see last page of this report) or on a site-specific basis in accordance with ASCE 7 and applicable sections of the building code(s) being referenced in accordance with ASD methodology.
- Required design wind pressures shall be less than or equal to the maximum pressures listed herein.
- *Maximum-Rated ASD Wind Pressures indicate the maximum pressures that all units listed herein are approved for. Valid for at-grade, wall-mounted, and rooftop applications. See limitations herein.
- Valid for use inside and outside the High-Velocity Hurricane Zone (HVHZ).
- Site-specific wind analysis may produce alternate limitations provided that the maximum-rated wind pressures stated herein are not exceeded.

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MODEL INFORMATION

Cabinet "X2" models included in this evaluation are as follows:

38MARBQ06AA3	37MAHAQ06AA3
38MARBQ09AA3	37MARAQ09AA3
38MARBQ12AA1	37MARAQ12AA1
38MARBQ12AA3	37MARAQ12AA3
38MHRCC18AA3	37MHRAC18AA3
38MHRCQ09AA1	37MHRAQ09AA1
38MHRCQ09AA3	37MHRAQ09AA3
38MHRCQ12AA1	37MHRAQ12AA1
38MHRCQ12AA3	37MHRAQ12AA3
38MHRDC18AA3	37MVRAQ18AA3
38MVRAQ18AA3	

MODEL INFORMATION NOTES

Overall cabinet size "X2" net dimensions were considered as the following:

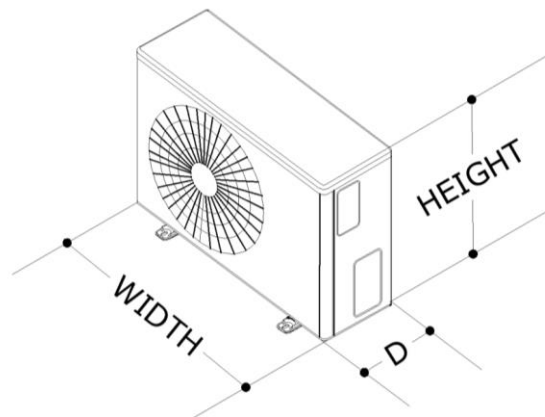
- 30.12" width x 11.93" depth x 21.85" height

Width, depth, and height are as defined herein. See Detail 1 below for definitions of unit dimensions. (In Detail 1, "D" is short for depth).

All unit net/operating weights shall be between 50 lb and 200 lb, typ.

Model information listed herein is based on information provided by the client. Unit appearance may vary. Please contact Report Holder for more information on unit construction.

See Details 2-5 for unit integrated feet information. See Panel Designations section herein for the exterior unit panel layout considered (related to the Panel Integrity evaluation summarized herein).



1 UNIT DIMENSIONS
SCALE: NTS ISOMETRIC VIEW

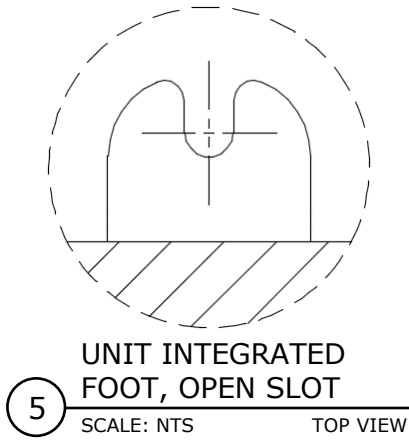
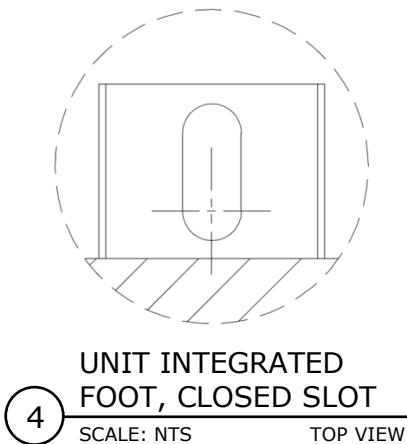
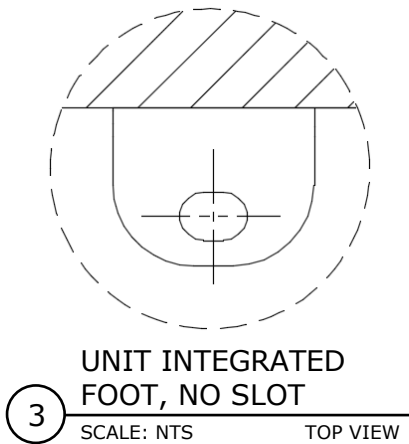
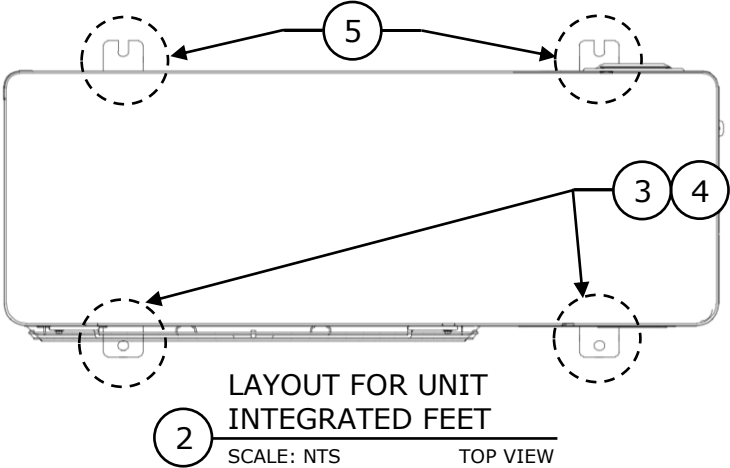
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UNIT INTEGRATED FEET

UNIT INTEGRATED FEET NOTES

Fasten unit to host structure using anchors per the Tie-Down Schedule and Notes section herein. Position anchors at the crosshairs shown in Details 3 - 5, typ. Details 2 - 5 are for illustrative purposes only. Unit and integrated feet may vary in appearance.

All units were considered to have (2) unit integrated feet with open slots per Detail 5, and (2) fully enclosed feet, as shown in Details 3 & 4. A reverse configuration to that shown in Detail 2 is also permitted, with open-slotted feet at the unit front side and fully enclosed feet at the unit back side. It is also permitted for units to have (4) fully enclosed feet with no open slots, per Details 3 & 4.



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TIE-DOWN SCHEDULE & NOTES

Max. ASD Wind Pressures Lateral (Uplift)	Anchor Schedule to Host Structure			# of Tie- Down Clips Required	# of Tie- Down Cables Required	Min. WLL per Cable
	3000 psi min. Concrete Host	1/8" min. thick Fy = 36 ksi min. Steel Host	1/8" min. thick 6061-T6 Aluminum Host			
± 22 psf (18 psf)	A	N/A	N/A	0	0	N/A
± 55 psf (44 psf)	A	N/A	N/A	2	2	500 lb
± 90 psf (72 psf)	N/A	B	B	2	2	600 lb
± 120 psf (95 psf)	N/A	B	B	3	3	500 lb
± 140 psf (111 psf)	N/A	B	B	4	3	600 lb

TIE-DOWN SCHEDULE DIRECTIVE: Site-specific wind pressures up to ± 22 psf lateral & 18 psf uplift shall use, at-minimum, the tie-down specifications as stated in the ± 22 psf lateral (18 psf uplift) pressure tier. Site-specific wind pressures that fall in-between pressure tiers shall use, at-minimum, the tie-down specifications as specified by the higher pressure tier. Tie-down specifications from pressure tiers beyond the minimum required pressure tier are permitted for use. This schedule applies to all units described in this evaluation. See tie-down specifications and Details herein.

ANCHOR SCHEDULE NOTES: In all cases, host structure is by others. Anchor shall be selected per site-specific wind pressures and host substrate. Utilize (1) anchor for every mounting hole/slot - (4) mounting holes/slots per unit. Utilize (1) anchor per tie-down clip (clip quantities specified above). Anchor specifications as represented in the Tie-Down Schedule are as follows:

A: 1/4" Ø ITW Tapcon or equivalent with 5/8" min. OD washer, 1-3/4" embedment, 4" min. edge distance to edge of concrete, and 2" min. spacing from neighboring concrete anchors, typ.

B: 3/8" Ø SAE GR. 5 Thru-Bolt with 0.812" min OD washers top and bottom, 1" min. edge distance to edge of host structure, and 1" min. spacing from neighboring Thru-Bolts, typ.

N/A: Not applicable.

TIE-DOWN CLIP NOTES: For at-grade installations to concrete host structures up to ± 22 psf lateral & 18 psf uplift wind pressures, tie-down clips are not required. Tie-down clips shall be 1.5" min. wide, 6"-10" tall, 14 GA min. thick, UTS = 45 ksi min. galv. steel. Fasten clip to host structure with (1) anchor per tie-down clip according to the "Anchor Schedule to Host Structure" specifications described herein. Ensure anchor is placed at center of tie-down clip leg to provide 3/4" min. edge distance. Fasten clip to unit base rail with (6) #10 SS316 self-drilling screws with 1/2" min. OD washers, typ. Utilize any (6) slots that have flush, solid contact with unit, (1) screw per slot, typ. Ensure all screws fully engage with unit. Tie-down clips shall sit flush on host structure and flush against unit. Distribute quantity of tie-down clips as evenly as is achievable between long sides U.N.O. (long sides = Front/Back sides as described herein). Provide the required anchor spacing between neighboring tie-down clips and mounting holes as specified herein. For each long side, distribute tie-down clips between left and right sides as much as is feasible. See tie-down clip Details on the following pages.

- Note: For the ± 55 psf (44 psf) wind pressure tier, it is permissible to attach (1) of the (2) tie-down clips to either of the unit short sides. (short sides = Left/Right sides as described herein). See Detail 10 for an example. Verify all conditions as described herein are met.
- Note: For the ± 120 psf (95 psf) and ± 140 (111 psf) wind pressure tiers, it is permissible to attach (1) of the total number of tie-down clips to either of the unit short sides (i.e. Left/Right sides). See Detail 14 for an example. Verify all conditions as described herein are met.

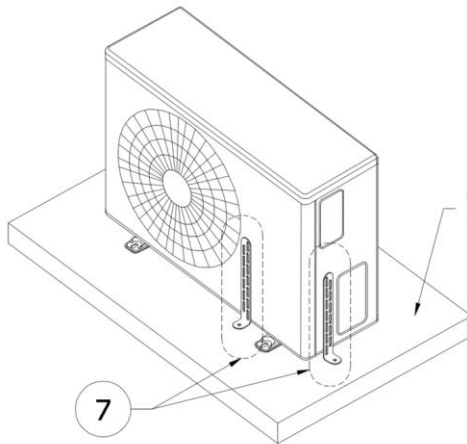
To provide adequate clearance for tie-down clip placement, it may be necessary to add support angle(s) to aluminum/steel host structures. If needed, support angle(s) shall be added as depicted in Details 14 and 15. Support angle(s) shall be 3" x 3" x 1/8" thick 6061-T6 aluminum and shall attach to the aluminum / steel host structure member (roof stand rails or wall brackets) using (1) 3/8" Ø SS Thru-Bolt per crossing, (2) per angle. Provide lock nut and 0.812" min. OD washer top and bottom, typ. Provide 3/4" min. edge distance to any edge of both members in contact.

TIE-DOWN CABLE NOTES: For at-grade installations to concrete host structures up to ± 22 psf lateral & 18 psf uplift wind pressures, tie-down cables are not required. Working load limit (WLL) is per cable's manufacturer, specified per cable. Cable length shall be verified on-site for all units. If cable is rated to a capacity or breaking strength instead of WLL, the capacity or breaking strength shall be divided by 3 to obtain an equivalent WLL that complies with the schedule above. Cables shall be galvanized, wrapped over the unit, and tightened to 50 lb using a turnbuckle, (1) cable per turnbuckle. If a snug fit is not achieved with 50 lb, continue incrementally tightening cable using the turnbuckle until a secure, snug fit is achieved. Turnbuckle shall have a WLL equal to or greater than the WLL of the tie-down cable. Neoprene pads may be placed between the unit and cables to protect the unit from damage/distortion.

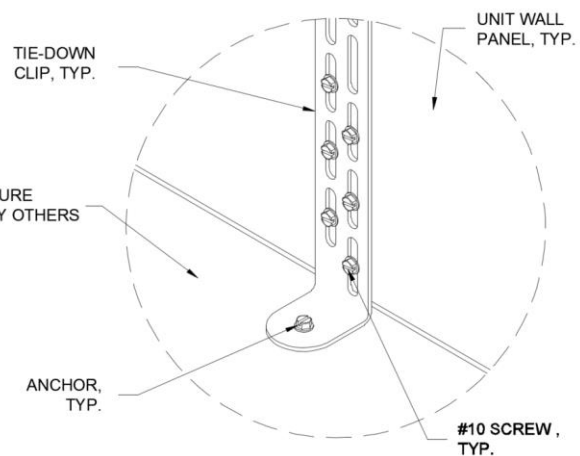
- Attach each tie-down cable to concrete host structures with (2) 2" x 2" x 1/8" min. thick x 2" min. long, UTS = 58 ksi min. galv. steel angles, (1) per long side, typ. See Details 11 – 15 herein. Attach each angle to the concrete host structure with (1) 3/8" Ø Hilti Kwik Bolt 3 or equivalent with 1-5/8" embedment, 2-1/2" min. edge distance to edge of concrete and 4" min. spacing from neighboring concrete anchors. Position anchor at center of angle leg to ensure 1" edge distance to any edge of steel angle.
- Attach each tie-down cable to aluminum/steel host structures with (2) 5/8" Ø, SAE GR. 5 eyebolts, (1) per side, typ. Each eyebolt shall have 2" min. OD, 1/8" min. thick fender washers top and bottom and a 5/8" Ø, SAE GR. 5 locking nut, typ. Provide 1-1/4" min. edge distance from any edge of host structure and 2" min. spacing from neighboring eyebolts, typ.

Attach cable to steel angle or eyebolt per above with a carabiner, hook, or cable loop. Ensure eyebolt/carabiner/hook if used have WLL's equal to or greater than the cable WLL. If the component is rated to a capacity or breaking strength instead of WLL, the capacity or breaking strength shall be divided by 3 to obtain an equivalent WLL that complies with the parameters above. See tie-down cable Details on the following pages.

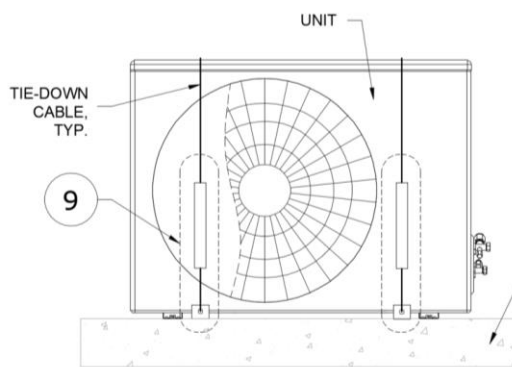
TIE-DOWN DETAILS, 6-7 (For All Applications: At-Grade & Rooftop)



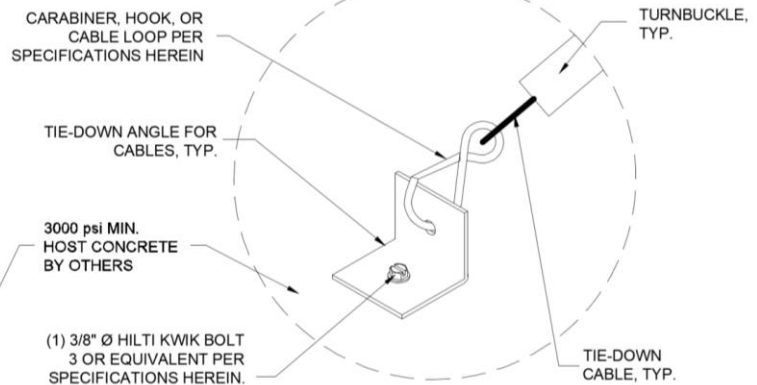
6 SAMPLE TIE-DOWN
CLIP PLACEMENT
SCALE: NTS ISOMETRIC VIEW



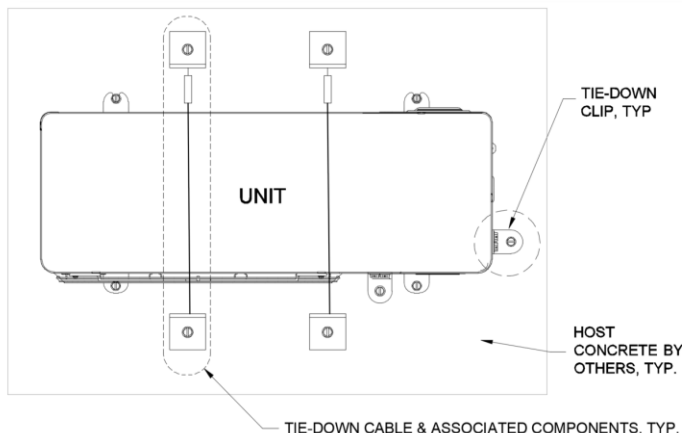
7 TIE-DOWN CLIP
ATTACHMENT, TYP.
SCALE: NTS ISOMETRIC VIEW

TIE-DOWN DETAILS, 8-10 (*For At-Grade Applications up to ± 55 psf Lateral & 44 psf Uplift ASD Wind Pressure)

8 TIE-DOWN CABLES
TO CONCRETE, TYP.
SCALE: NTS FRONT VIEW



9 CABLE ATTACHMENT
TO CONCRETE, TYP.
SCALE: NTS ISOMETRIC VIEW



10 SAMPLE CONCRETE
TIE-DOWN LAYOUT
SCALE: NTS TOP VIEW

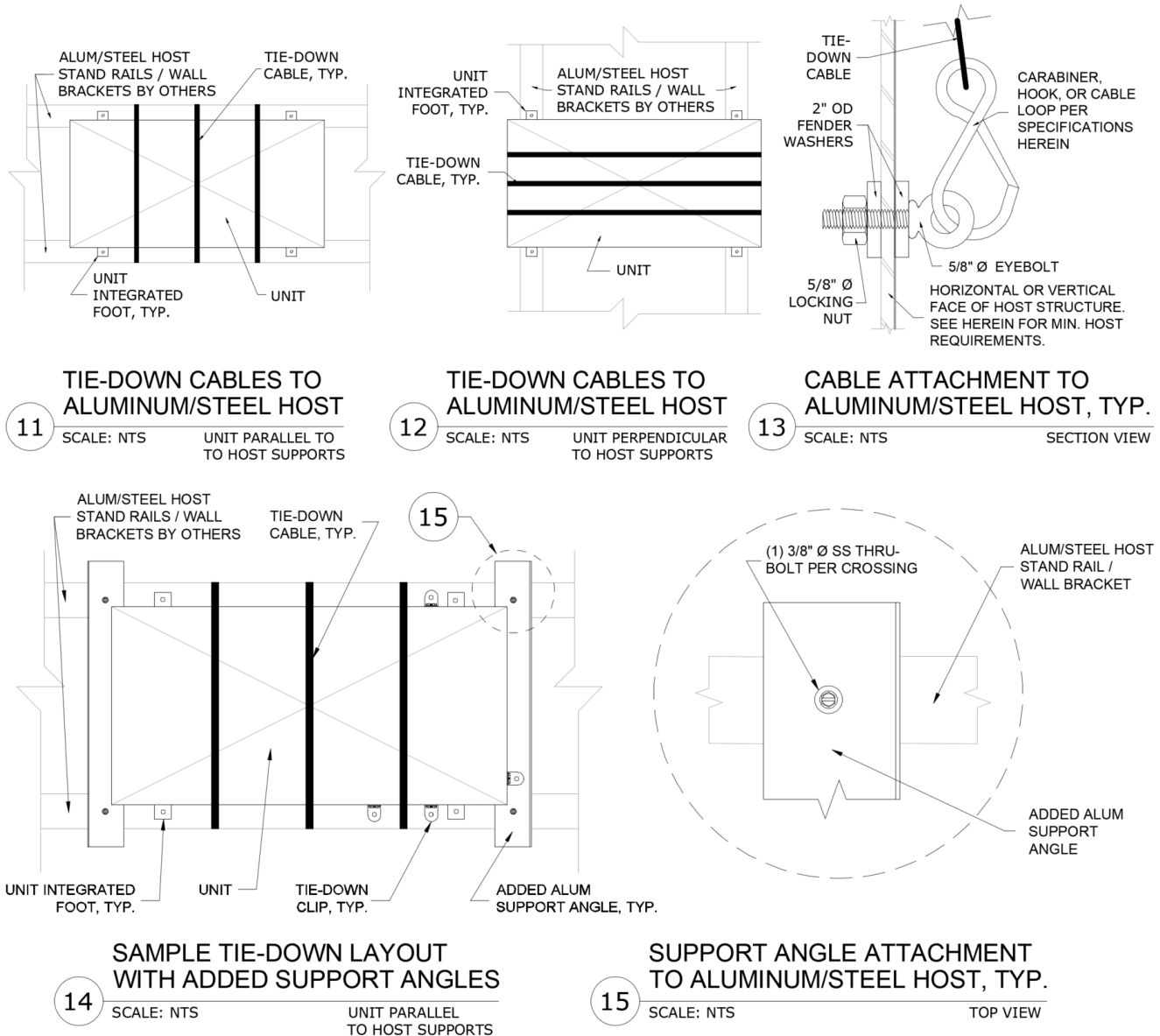
TIE-DOWN DETAILS 6-10 NOTES

For each Detail in this section, consult Tie-Down Schedule and Notes on the previous page for all tie-down components and specifications required.

*NOTE: Details 8-10 may also apply for rooftop applications to concrete up to ± 55 psf lateral and 44 psf uplift.

The units depicted in the Details on this page are for illustrative purposes only. Units may vary in appearance. Tie-down system may not be depicted in full.

Sample tie-down layouts shown in Details 6, 8, and 10 are for illustrative purposes only. Tie-down locations may vary per the specifications of the Tie-Down Schedule and Notes on the previous page.

TIE-DOWN DETAILS 11-15 (*For Rooftop Applications up to ± 140 psf Lateral & 111 psf Uplift ASD Wind Pressure)**TIE-DOWN DETAILS 11-15 NOTES,**

For each Detail, consult Tie-Down Schedule on page 3 for all tie-down components and specifications required.

*NOTE: Details 11-15 may also apply for at-grade applications to aluminum/steel host structures up to ± 140 psf lateral and 111 psf uplift.

The units depicted in the Details on this page are for illustrative purposes only. Units may vary in appearance. Tie-down system may not be depicted in full.

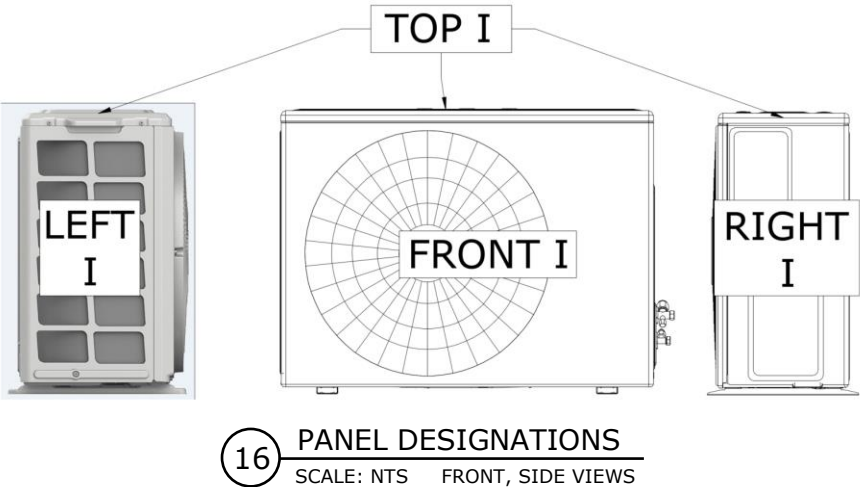
See Details 6 and 7 on the previous page for tie-down clip attachment and sample tie-down clip placement illustrations. See page 3 for required tie-down clip quantities.

Sample tie-down layouts shown in Details 11, 12, and 14 are for illustrative purposes only. Tie-down locations may vary per the specifications of the Tie-Down Schedule and Notes on page 3.

For Detail 14, only (1) aluminum support angle is required to support the (1) tie-down clip on the right side. (The left side aluminum support angle shown may be omitted because it is not needed for tie-down clip placement).

In other scenarios, it may be necessary to add (2) aluminum support angles in order to accommodate placement for all tie-down clips. For example, (2) angles would likely be needed for scenarios in which the unit is oriented perpendicularly to the host structure members, as oriented in Detail 12.

PANEL DESIGNATIONS



PANEL DESIGNATIONS NOTES

Unit appearance may vary. Panel layouts are as follows:

The unit, as shown in Detail 16, is characterized by a single "Front I" panel that wraps slightly into the left and right sides of the unit. Panel "Right I" covers most of the right side, bends around the right-back corner, and extends into part of the unit back side. Panel "Left I" covers most of the left side, bends around the left-back corner, and extends into part of the unit back side. Panel "Top I" covers the entire roof of the unit. The remainder of the unit back side not covered by the Left and Right Panels were assumed to be majority (>50%) porous/open.

Individual panel thicknesses are as follows:

- Front I Panel, Left I Panel: 0.5 mm min. thick.
- Right I Panel, Top I Panel: 0.6 mm min. thick.

PANEL INTEGRITY SUMMARY

No additional screws are required for ASD wind pressures up to ± 103 psf lateral & 82 psf uplift.

Up to ± 140 psf Lateral & 111 psf Uplift Wind Pressures		
Panel Designation	Addtl. Screws Required	Additional Screws Directive
Front I Panel	6	Install (3) screws into unit base / chassis at bottom of panel. Install (3) screws at top to join with Top Panel.
Left I Panel	0	No additional screws required for Left I Panel.
Right I Panel	3	Install (2) screws into unit base / chassis at bottom of panel. Install (1) screw at top to join with Top Panel.
Top I Panel	0*	*No additional screws required beyond the additional screws specified herein for joining individual wall panels to the Top Panel. See other panel directives.
(9) Additional Screws Required in Total		

PANEL INTEGRITY SUMMARY NOTES

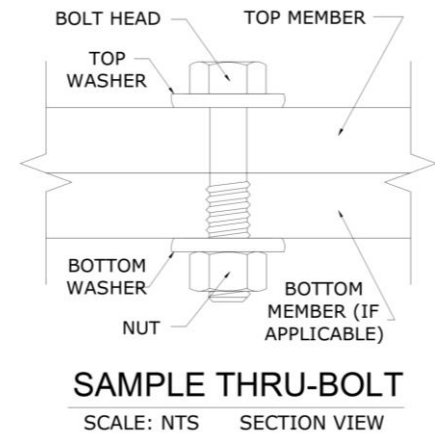
Panel integrity calculations were based on information provided by the client and manufacturer-listed specifications. All exterior panels were considered in the calculations and are covered by this certification. The Panel Integrity Summary tables on the previous page display results on the main exterior panels comprising the unit. Panels were assigned various porosities depending on the ratio of louver/aperture area to total panel area, for the purposes of calculating the acting wind force on each panel. Screw sizes, quantities on panels, and panel characteristics were considered according to client-provided information. Screw quantities were checked to reinforce unit panels as needed. See the "Model Information" section herein for approved unit models.

Additional screw(s) shall be #6 min. Ø, SAE GR. 2 or stronger SMS. Position additional screw(s) as directed by the respective "Additional Screws Directive" specifications for the panel in question. Provide 1" min. spacing between neighboring screws (existing or additional). Validate that each additional screw joins the panel in question to the other specified member (as specified in the "Additional Screws Directive" where applicable). 1000 hours of ASTM B117 with zero red rust is required for all additional screws.

Panel Integrity Summary Note: Wind Pressures shown are ASD Wind Pressures.

TERMINOLOGY

The following abbreviations may appear in this report: "Addtl." for "additional", "AHJ" for "Authority Having Jurisdiction", "alum" for "aluminum", "ASCE" for "American Society of Civil Engineers", "ASD" for "Allowable Stress Design", "ASTM" for "American Society for Testing and Materials", "EA." for "each", "E.D." for "edge distance", "EDDS" for "extra deep drawing steel", "e.g." for "exempli gratia" or "for example", "equiv." for "equivalent", "FBC" for "Florida Building Code", "FEA" for "Finite Element Analysis", "FLCA" for "Florida Certificate of Authorization", "FS" for "Florida Statutes", "Fu" for "ultimate tensile strength" or "ultimate tensile stress", "Fy" for "yield strength" or "yield stress", "GA" for "gauge", "GR." or "Gr." for "grade", "HVAC" for "heating, ventilation, and air conditioning", "HVHZ" for "High-Velocity Hurricane Zone", "i.e." for "id est" or "in other words", "in" for "inch", "lb" for "pound (force)", "max." for "maximum", "min." for "minimum", "mm" for "millimeter", "NTS" for "not to scale", "O.C." for "on center", "OD" for "outer diameter", "pcf" for "pounds (force) per cubic foot", "PE" for "Professional Engineer", "qty" for "quantity", "SAE" for "Society of Automotive Engineering", "SMS" for "sheet metal screws", "SS" for "stainless steel", "TER" for "Technical Evaluation Report", "typ." for "typical", "ult" for "ultimate loads", "U.N.O." for "unless noted otherwise", "UTS" for "ultimate tensile strength" or "ultimate tensile stress", "WLL" for "working load limit", "w/o" for "without", "YS" for "yield strength" or "yield stress", "#" for "number", "&" for "and", and "Ø" for "diameter". Please visit ecalculator.io/glossary for additional abbreviation clarifications.



Note: The term "Thru-Bolt" or through bolt, if used herein, refers to a bolt passing through the member(s) in contact and is fastened by a nut at the end opposite the screw head. Nut shall be equivalent to or exceed the strength of the bolt U.N.O. Nut shall be sized to accommodate the same nominal diameter as the bolt U.N.O. See diagram above-right for a sample thru-bolt configuration.

Note: For instances herein which list material specifications as "[material type] or stronger": U.N.O. herein, the term "stronger" refers to a material with a UTS value equal to or greater than the UTS value of the stated material type. Consult appropriate literature for established material UTS values.

Note: Equivalent steel gauge thicknesses as used in this evaluation, U.N.O., are as follows: 22 GA (.030"), 20 GA (.036"), 18 GA (.048"), 16 GA (.060"), 14 GA (.075"), 12 GA (.098").

LIMITATIONS & CONDITIONS OF USE, CONTINUED

Use of this product shall be in strict accordance with this TER as noted herein. The supporting host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the authority having jurisdiction. Host structure conditions that are not accounted for in this product's respective anchor schedule shall be designed for on a site-specific basis by a registered Professional Engineer. No evaluation is offered for the host supporting structure by use of this document. Adjustment factors noted herein and the applicable building codes must be considered, where applicable. Product components shall be of the material(s) specified in the manufacturer-provided product specifications. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. All fasteners and anchors shall be installed in accordance with the applicable provisions specified herein in addition to the anchor/fastener manufacturers' published installation instructions. Fasteners must penetrate the supporting members such that the full length of the threaded portion is embedded within the main member.

All of the wind-resisting exterior panels (with accompanying retrofits) individually meet or exceed their capacity to resist the design wind loads as stated in the calculations as required by the codes and standards stated herein. Due to the indeterminate nature of these units, distortion, deflection, and material deformation cannot be accurately evaluated, but with the diaphragm action of external components and internal stiffeners, the base unit (with accompanying retrofits stated herein as applicable) has the capacity to withstand the design wind loads without detaching from the unit and becoming flying debris.

Survivability: Evaluation reports are valid for a newly installed unit and do not include certification of the product beyond a design event or if impacted by any debris. Inspections shall be implemented annually by the end user and after every named storm. All fasteners and cabinet components are to be verified, and all damaged, loose, corroded and/or broken fasteners and cabinet components shall be replaced to ensure structural integrity against hurricane wind forces. Contact this office for any reevaluation needs or as designated by the Authority Having Jurisdiction.

Durability: Components or component assemblies shall not deteriorate, crack, fail, or lose functionality due to galvanic corrosion or weathering. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. Each component or component assembly shall be supported and oriented in its intended installation position. All exposed plastic components shall be certified to resist sunlight exposure as specified by ASTM B117, or ASTM G155 in Broward or Miami-Dade counties.

Extent of Certification: Certification pertains to the overall structural integrity of the unit components listed within the evaluation as required by code, subject to the limitations and criteria stated herein. Operability during or after a design event is not included in this certification. Water infiltration is outside the bounds of this certification. No other certifications are intended other than as described herein. This evaluation alone does not offer any evaluation for large missile impact debris or cyclic wind requirements unless specifically stated herein.

Proj. #	Remarks	By	Checked	Date	Proj. #	Remarks	By	Checked	Date
21-36633	Base Evaluation	EPR	RWN	03/08/21	24-72515	2023 FBC Update	MRT	RWN	02/26/24
22-54612	X2 Initial Issue	EPR	RWN	08/15/22	24-72515	Add new models	MARH	EPR	07/03/24
22-54612	Cabinet X2 Brands & Models Update	MRT	EPR	11/18/22					

APPENDIX A: DESIGN WIND PRESSURE GUIDE

Max. Ult. Wind Speed (V _{ult})	Max. MRH (Roof Height)	Exposure Category	Required Design Wind Pressures (ASD)	
			Lateral Pressure	Uplift Pressure
140 mph	At-Grade (0 ft)	C	± 26 psf	0* psf
		D	± 31 psf	0* psf
	100 ft	C	± 63 psf	50 psf
		D	± 71 psf	56 psf
	200 ft	C	± 72 psf	57 psf
		D	± 80 psf	63 psf
175 mph	At-Grade (0 ft)	C	± 40 psf	0* psf
		D	± 49 psf	0* psf
	100 ft	C	± 98 psf	77 psf
		D	± 111 psf	87 psf
	200 ft	C	± 113 psf	89 psf
		D	± 124 psf	98 psf
186 mph	At-Grade (0 ft)	C	± 46 psf	0* psf
		D	± 54 psf	0* psf
	100 ft	C	± 111 psf	87 psf
		D	± 125 psf	99 psf
	200 ft	C	± 127 psf	100 psf
		D	± 140 psf	111 psf

100 psf

Note: Any table values with the format shown left, if present, indicate design wind pressures and site conditions that are **not approved for use** by this evaluation. Seek additional engineering or contact this firm for design solutions.

DIRECTIVE: This design pressure guide is for reference only and shall be approved for use by the Authority Having Jurisdiction (AHJ). If the design pressures listed in this guide are not used, required design pressures shall be calculated separately. For site-specific scenarios classified as Exposure Category B, the required design pressures stated for Exposure Category C in the above guide shall be used or design pressures shall be calculated separately. For heights and parameters beyond the parameters listed in this guide, visit our Online Calculator via the website link (<https://ecalc.io/forces>) or QR Code below, or obtain calculations separately by others.

The required ASD design pressures listed in this guide were calculated per the table's listed corresponding site conditions. The project design professional or permitting contractor shall verify that the site-specific conditions are equal to or less than the approved design parameters listed in the guide. Per the note below table: any values shown as "XX psf", indicate wind pressures and corresponding site conditions that are **not valid for use** with this evaluation (exceeds the max. rated pressures).

*Note: Per the codes and standards referenced herein, uplift is not required for mechanical equipment at-grade. If uplift at-grade is required by the AHJ, contact this firm for a site-specific evaluation.

At-Grade (0 ft MRH) Required Design Pressures:

- o ASCE 7 "Design Wind Loads: Other Structures"
- o Structure Shape = Square, flat terrain
- o Height of structure (unit + stand or curb, if used) = 6 ft max.
- o Width of unit = 1 ft min., Depth of unit = 11 in min.

Rooftop (>15 ft MRH) Required Design Pressures:

- o ASCE 7 "Design Wind Loads: Other Structures: Rooftop Structures and Equipment for Buildings"
- o Structure Shape = Square, flat terrain
- o z = up to 7 ft, where z = height of stand or curb + ½ unit height
- o Lateral GC_f = 1.90; Uplift GC_f = 1.50

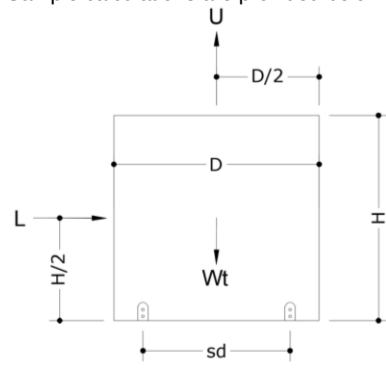
VISIT [ECALC.IO/FORCES](https://ecalc.io/forces)

FOR DESIGN AID CALCULATORS AND RESOURCES RELATED TO THIS TER & GUIDES HEREIN, OR SCAN THE QR CODE RIGHT >



UNIT REACTIONS FROM WIND GUIDE

DIRECTIVE: This guide is intended for use by a design professional. Design parameters shall abide all specifications and limitations stated in this report. Design professional shall consider all forces, including seismic and snow loads, per the governing building code. Unit reactions obtained from this guide shall be verified by a registered Professional Engineer. Reactions are applicable for unit-to-host connections only. Sample calculations are provided below.

**Design Parameters:**

- Lateral Wind Pressure, P_{lat}
- Unit Height, H
- Unit Width, W
- Support Spacing across Depth, sd
- Uplift Wind Pressure, P_{up}
- Unit Depth, D
- Unit Weight, Wt
- Support Spacing across Width, sw

Unit Reaction Equations:**Long Side (Width x Height):**

- Sliding Force, L = P_{lat} x W x H
- Uplift Force, U = P_{up} x W x D
- Total Tension per Long Side = (L x H/2 + U x sd/2 - Wt x 0.6 x sd/2) / sd

Short Side (Depth x Height):

- Sliding Force, L = P_{lat} x D x H
- Uplift Force, U = P_{up} x W x D
- Total Tension per Short Side = (L x H/2 + U x sw/2 - Wt x 0.6 x sw/2) / sw

Example: A (48" W x 36" D x 42" H), 250 lb net weight unit at wind pressures of 120 psf lateral and 95 psf uplift, on a 24" wide roof stand, shall have the following unit reactions:

Long Side (Width x Height):

1. Sliding Force, L = P_{lat} x W x H
= (120 psf) x (48 in) x (42 in) x (1 in² / 144 ft²) = **1680 lb**
2. Uplift Force, U = P_{up} x W x D
= (95 psf) x (48 in) x (36 in) x (1 in² / 144 ft²) = **1140 lb**
3. Total Tension per Long Side =
= (L x H/2 + U x sd/2 - Wt x 0.6 x sd/2) / sd
= ((1680 lb x 42/2 in) + (1140 lb x 24/2 in) - (250 lb x 0.6 x 24/2 in)) / 24 in = **1965 lb**

Short Side (Depth x Height):

1. Sliding Force, L = P_{lat} x D x H
= (120 psf) x (36 in) x (42 in) x (1 in² / 144 ft²) = **1260 lb**
2. Uplift Force, U = P_{up} x W x D
= (95 psf) x (48 in) x (36 in) x (1 in² / 144 ft²) = **1140 lb**
3. Total Tension per Short Side =
= (L x H/2 + U x sw/2 - Wt x 0.6 x sw/2) / sw
= ((1260 lb x 42/2 in) + (1140 lb x 48/2 in) - (250 lb x 0.6 x 48/2 in)) / 48 in = **1046 lb**

IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING THE RATED GRAVITY, LATERAL, AND UPLIFT FORCES BY SITE-SPECIFIC DESIGN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY DESIGN FORCE LOADS INCURRED BY THIS UNIT.