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Technical Evaluation Report

DIVISION: 23 08 00 – COMMISSIONING OF HVAC

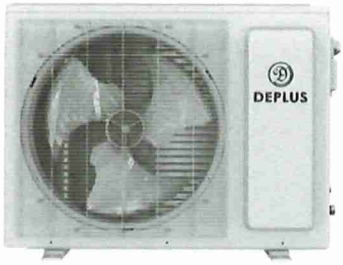
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(Subject to Renew July 1, 2028 or next code cycle)

EVALUATION SUBJECT: **MINI-SPLIT UNITS** TER-26-103841

REPORT HOLDER:
DEPLUS
11005 NW 33RD STREET
DORAL, FL 33172
(305) 800-0804

DEPLUS



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 **Florida Building Code Eighth & Ninth Editions (2023 & 2026)** 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 (2015, 2018, 2021 & 2024).** The product noted in this report has been tested and/or evaluated as summarized herein.
IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS MUST BEAR THE ORIGINAL SIGNATURE & RAISED SEAL OR DIGITAL 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 (ASD) lateral & uplift wind pressures certified herein
- Max. allowable (ASD) 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, unit base, and integrated feet/legs shall be constructed of UTS = 36 ksi min. (or 250 MPa min.) galv. steel. Exterior panels shall be 22 GA min. thick. Unit base and integrated feet/legs shall be 20 GA min. thick. Exterior panels shall be secured with #8 (0.164") min. Ø, UTS = 55 ksi min. (equiv. to AISI 1022 low-carbon steel or stronger) steel, corrosion-resistant sheet metal screws. 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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August 28, 2026

Colby Bennardo, P.E.
ENGINEERING EXPRESS®
FL PE #95197 FLCA #9885

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MODEL INFORMATION (Page 1 of 2)

Model Number	Unit Dimensions (in)		
	Width	Depth	Height
DP-MS12DA-1OU	28.54	9.84	20.87
DP-MS12DA-2OU	25.98	9.84	20.87
DP-MS18DA-OU	30.12	10.63	21.65
DP-MS24DA-OU	32.24	12.17	25.12

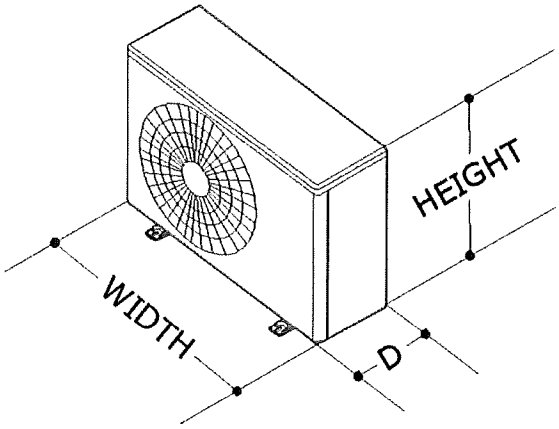
MODEL INFORMATION NOTES

Unit dimensions listed above are unit net dimensions (as opposed to packing/shipping dimensions).

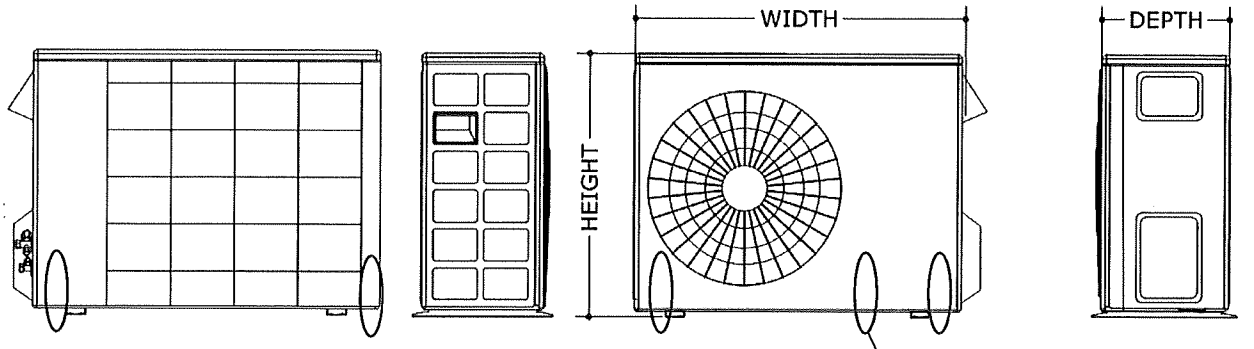
Unit net weights shall be between 50 lb and 150 lb, typ. Model information listed herein is based on information provided by the client.

All unit dimensions and weights shall conform to the limitations stated herein. Units shall comply with all specifications stated herein. Unit dimensions are rounded up to the nearest/next-highest [tenth of an inch, inch, etc.].

See Detail 2 below for definitions of unit dimensions. See Details 3-6 on the following page for unit integrated feet information. Unit appearance may vary. Please contact Report Holder for more information.



1 SAMPLE UNIT DIMENSIONS, TYP.
SCALE: NTS ISOMETRIC VIEW

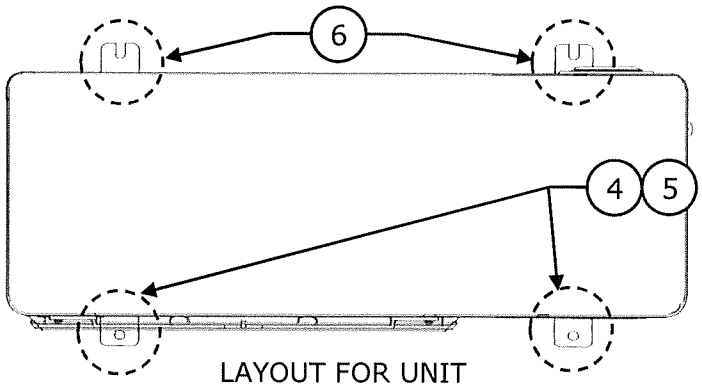


2 UNIT DIMENSIONS
SCALE: NTS MULTIPLE VIEWS

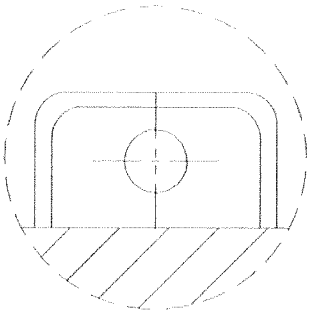
Detail 2 Notes: Suggested tie-down clip locations relate to the Tie-Down Directives herein. See Report Holder for further unit construction information.

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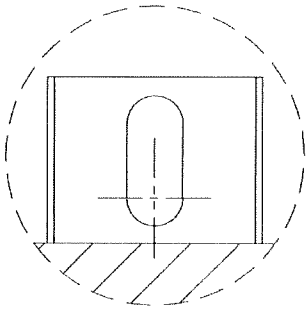
MODEL INFORMATION: UNIT INTEGRATED FEET (Page 2 of 2):



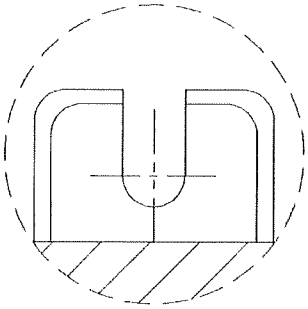
3 LAYOUT FOR UNIT INTEGRATED FEET
SCALE: NTS TOP VIEW



4 UNIT INTEGRATED FOOT, NO SLOT
SCALE: NTS TOP VIEW



5 UNIT INTEGRATED FOOT, CLOSED SLOT
SCALE: NTS TOP VIEW



6 UNIT INTEGRATED FOOT, OPEN SLOT
SCALE: NTS TOP VIEW

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 the details (as applicable). Unit Integrated Feet details 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 6, and (2) fully enclosed feet, as shown in Details 4 & 5. A reverse configuration to that shown in Detail 5 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 4 & 5.

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DESIGN & GENERAL NOTES: (Page 1 of 2):

The following notes are applicable for at-grade (ground) and rooftop installations U.N.O.:

1. "Host Concrete" where used herein: host concrete shall have f'c = 3,000 psi min. compressive strength and shall be regular-weight, uncracked concrete. Host concrete shall be by others.
2. All existing supporting aluminum host structure members (i.e. roof stand rails or wall brackets) shall be 0.090" min. thick, 6061-T6 or stronger aluminum, design and integrity by others.
3. All existing supporting steel host structure members (i.e. roof stand rails or wall brackets) shall be 12 GA (.098") min. thick, ASTM A653 Gr. 33 min. (Fy=33ksi min, Fu=45 ksi min), design and integrity by others.
4. Permit holder shall verify the adequacy of the existing structure to withstand superimposed loads.
5. "Mechanical Unit" or "Unit" where used herein refers to either of the listed Cabinet Sizes specified herein. See the "Model Information" section prior for required specifications and approved unit sizes.
6. "Tie-Down Clip" or "Clip" where used herein: Each clip shall be 1" min. wide x 0.068" min. thick, UTS = 45 ksi min. (equivalent to ASTM A653 Gr. 33 or stronger) galv. steel, typ. Ensure clip sits flush on host structure and flush against the unit. Clip-to-unit screws shall be positioned as (1) screw per clip slot, typ. Care must be taken to avoid screw contact with internal piping and components; exercise caution with screw installation. Ensure all screws fully engage with the unit. Clip-to-host anchor shall be placed at the center of the tie-down clip leg, such that 1/2" min. edge distance is provided in all directions, typ. See herein for clip-to-unit screw and clip-to-host anchor quantities and specifications.
7. "Tie-Down Strap" or "Strap" where used herein: Each strap shall be 2" min. wide x 22 GA min. thick, UTS = 45 ksi min. (equivalent to ASTM A653 Gr. 33 or stronger) galv. steel, typ. Tie-down strap lengths shall be determined by the installing contractor. Ensure strap lengths are such that the strap is neither excessively taut nor excessively slack once installed. A secure fit should be achieved. Straps shall be positioned at 6" minimum from the unit short side edges. Stagger strap screws as needed to achieve the required minimum spacing and edge distances. Neoprene pads may be placed between the unit and strap to protect the unit from damage/distortion. Straps may be removed for maintenance purposes, but shall be replaced per the strap specifications herein following maintenance. **Tie-down straps shall be in place during any named storm or high-wind event (Vult > 75 mph sustained).**

   Note: if desired, (2) 1" wide straps may be used in place of (1) 2" min. wide strap. The (2) 1" wide straps shall be 22 GA min. thick, UTS = 45 ksi min. (equivalent to ASTM A653 Gr. 33 or stronger) galv. steel, typ. The 1" wide strap ends shall be secured with half as many screws as the 2" wide strap end attachments (i.e. (2) #10 SMS per 1" wide strap end if the 2" wide strap ends are secured with (4) #10 SMS). All other strap specifications noted herein shall apply.

   (This note is intended to provide installing contractors with the option to use 1" wide straps in case the 1" wide straps are easier to source. This alternate tie-down method is intended to be equivalent to the 2" wide strap method. Contact Engineering Express if additional clarity is needed).
8. "Support Angle" where used herein: each angle shall be an L-angle with the following specifications: 3" min. wide legs x 1/8" min. thick, 6061-T6 aluminum. Support angle length may vary so long as the support angle attachment conditions are achieved; see limitations herein.
9. "Sheet Metal Screws" or "SMS" where used herein: screws shall be SAE Gr. 2 min. or SS self-drilling screws with standard-sized washers, typ.
10. "Thru-Bolt" where used herein: bolt shall be SAE Gr. 5 min. with washers top and bottom and SAE Gr. 5 min. locking nut at the underside of the connection, typ. See the thru-bolt diagram on the second-to-last page of this report. Tie-down clips shall employ standard-sizes SAE washers sized for the bolt diameter; all other thru-bolt connections shall employ 1" OD fender washers with ID sized for the bolt diameter, typ.
11. For all fasteners specified herein: provide 3x diameter minimum spacing and 1.5x diameter minimum edge distance for all steel-to-steel and steel-to-aluminum connections, typ. Provide 2.5x diameter minimum spacing and 1.5x diameter minimum edge distance for all aluminum-to-aluminum connections.
12. Refer to fastener manufacturer's published data sheets and recommendations for fastener installation instructions. Fasteners shall be cadmium-plated or otherwise corrosion-resistant material and shall comply with "Specifications for Aluminum Structures" Section J.3.7.2 by the Aluminum Association Inc., and any applicable federal, state, and/or local codes.
13. Alternate/equivalent anchors may be used in place of the listed anchors herein so long as all of the below conditions are satisfied and are subject to the approval of the Authority Having Jurisdiction:
    i. The equivalent anchor is demonstrated to have allowable (ASD) tension and shear capacities equal to or greater than the listed anchor's allowable tension and shear capacities as verified by a Design Professional.
    ii. All necessary reductions in capacity for edge distance, spacing, and other requirements as noted by the anchor manufacturer are considered in determining the equivalent anchor's tension and shear capacities.
    iii. The alternate anchor is of equal or greater diameter than the listed anchor and is provided with the same minimum edge distance, spacing, and any other specifications as are required for the listed anchor; AND
    iv. Anchor equivalents shall follow all requirements specified in this report in addition to the governing code(s) and allowable stress design (ASD) methodology.

    Contact Engineering Express to add additional anchoring options to this report, or to certify an anchor option for special site-specific conditions needed for a particular site installation.
14. Water-tightness of the existing host substrate/structure shall be the full responsibility of the installing contractor. The contractor shall ensure that any removed or altered waterproofing membrane is restored after fabrication and installation of the structure evaluated herein. This engineer shall not be responsible for any waterproofing or leakage issues that may occur as water-tightness shall be the full responsibility of the installing contractor.

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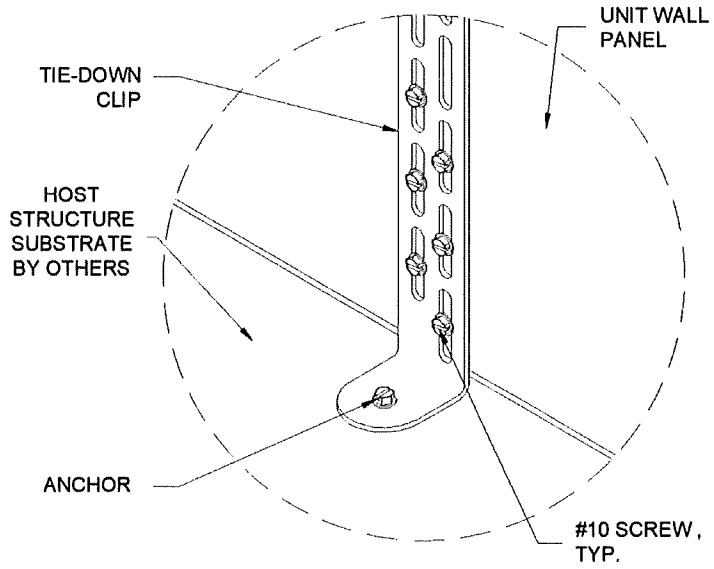
DESIGN & GENERAL NOTES: (Page 2 of 2):

15. The contractor is responsible for insulating all members from dissimilar materials to prevent electrolysis.
16. Large and small missile impact are not covered in this certification and shall be approved through a separate submittal if required.
17. Interior mechanisms and/or electrical circuitry are outside the scope of this performance evaluation. 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.
18. The products and/or systems detailed herein are generic and do not provide information for a specific site. For site conditions different from the conditions listed herein, a licensed engineer or registered architect shall provide site-specific documents for use in conjunction with this evaluation report. Contact Engineering Express for site scenarios outside the bounds of this evaluation.
19. Engineering Express shall be notified and given an opportunity to reevaluate our work upon discovery of any inaccurate information prior to modification of existing field conditions and fabrication and installation of materials.
20. Alterations, additions, or other markings to this document are not permitted and invalidate this certification. Dimensions are shown to illustrate design forces and other design criteria. They may vary slightly but must remain within the limitations specified herein. Work shall be field-verified by others.
21. Engineer seal affixed hereto validates the structural design as shown only. Use of this specification by contractor, et. al. indemnifies and saves harmless this engineer for all costs and damages including legal fees and appellate fees resulting from material fabrication, system erection, and construction practices beyond that which is called for by local, state, and federal codes and from deviations of this plan.

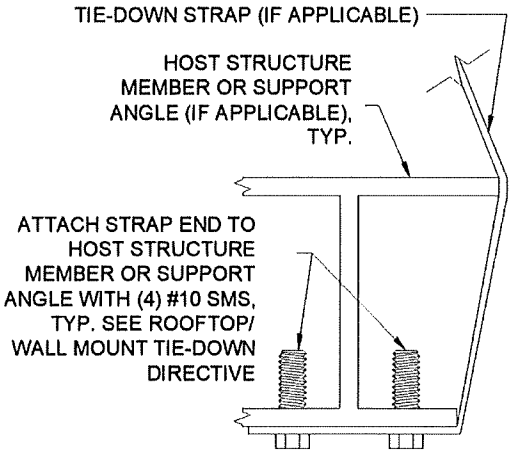
PANEL INTEGRITY SUMMARY

No additional screws are required for unit installations up to ± 140 psf Lateral & 111 psf Uplift ASD wind pressures. Panel integrity calculations were based on information provided by the client and manufacturer-listed specifications. Calculations are valid for all unit models listed herein, and specifications herein apply to all unit models listed herein (see "Model Information" section). All exterior panels were considered in the calculations and are covered by this certification. 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 based on client-provided information and additional conservative assumptions. Screw quantities were checked to reinforce unit panels as needed.

TIE-DOWN COMPONENT DETAILS (Related to Tie-Down Directives on the Following Pages)



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



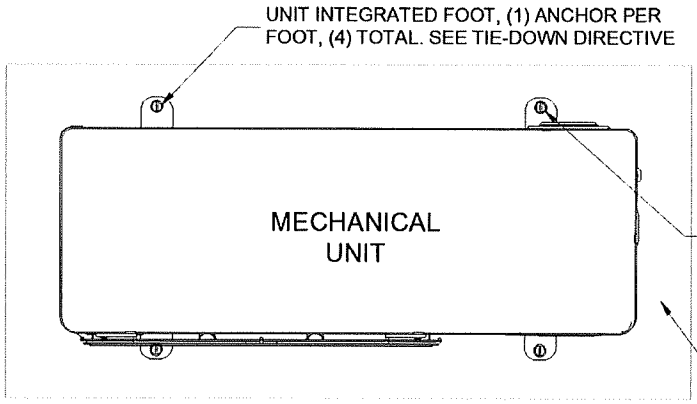
TIE-DOWN STRAP ATTACHMENT, TYP.
8 SCALE: NTS ISOMETRIC VIEW

TIE-DOWN DETAILS, 7 – 8 NOTES

For each Detail, consult the Tie-Down Directives and Notes herein for all tie-down components & specifications required. The units depicted are for illustrative purposes only. Units may vary in appearance. Tie-down system may not be depicted in full. Tie-down locations may vary per the specifications of the Tie-Down Directives and Notes herein. Host structure shape may vary.
Note: Detail 7 applies for all mounting options (ground, wall mount, and rooftop mounts). Detail 8 applies to wall mount and rooftop mounts only. See wall mount and rooftop tie-down directive on the following pages.

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GROUND MOUNT TO CONCRETE
Valid for ASD Wind Pressures up to ± 54 psf Lateral & 0 psf Uplift. Concrete Host by Others



GROUND MOUNT TIE-DOWN DIRECTIVE:

UNIT FEET ATTACHMENT:
ATTACH UNIT TO CONCRETE HOST BY OTHERS WITH (4) 3/8" Ø HILTI KWIK HUS-EZ SS316 SCREW ANCHORS OR EQUIVALENT WITH 2-1/2" MIN. NOMINAL EMBED., 3" MIN. EDGE DISTANCE TO ANY EDGE OF CONCRETE, AND 3" MIN. SPACING BETWEEN NEIGHBORING CONCRETE ANCHORS, TYP. (1) ANCHOR PER UNIT FOOT, TYP. PROVIDE (1) 1" OD FENDER WASHER SIZED TO FIT ANCHOR ID. SEE UNIT FEET DETAILS HEREIN REGARDING ANCHOR PLACEMENT AT EACH UNIT FOOT.

9 GROUND MOUNT TIE-DOWN DIRECTIVE, TYP.
SCALE: NTS PLAN VIEW

TIE-DOWN DETAILS, 9 NOTES

For each Detail in this section, consult the Tie-Down Directive and Design Notes herein for all tie-down components & specifications required.

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. The sample tie-down layouts shown herein are for illustrative purposes only. Tie-down locations may vary per the specifications of the Tie-Down Directive and Design Notes herein. Host structure shape may vary.

Note: Long side clips may be placed at the unit short side corner instead of the unit long side if preferred or as needed to satisfy the requirements herein. Ensure all specifications are met.

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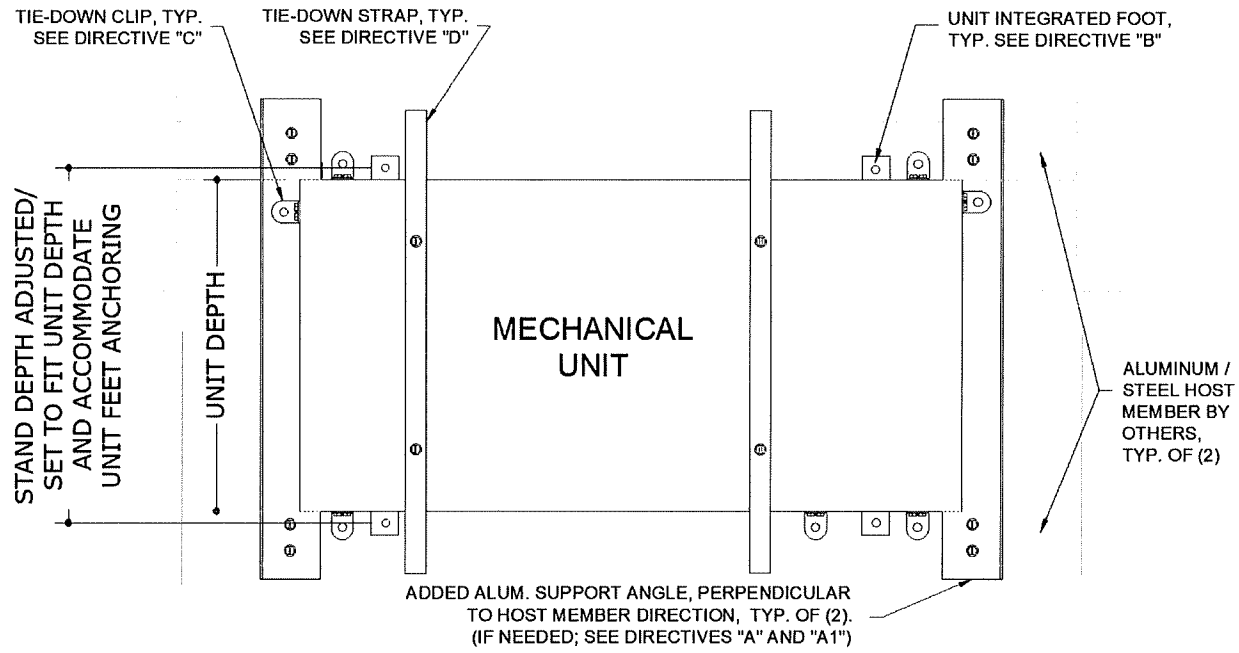
WALL OR ROOFTOP MOUNT (Page 1 of 3)

TIE-DOWN DIRECTIVE: HOST CONFIG. 1: UNIT ORIENTED PARALLEL TO HOST MEMBER DIRECTION, STAND DEPTH ≈ UNIT DEPTH. PLAN VIEW, NOT TO SCALE

Tie-Down Schedule		
Max. ASD Wind Pressures Lateral (Uplift)	**# of Tie-Down Clips & Clip Location on Unit (i.e. Side of Unit)**	**# of Tie-Down Straps**
± 65 psf (52 psf)	(2) Total: (1) at Front, (1) at Back	(0)
± 90 psf (72 psf)	(4) Total: (2) at Front, (2) at Back	(0)
± 140 psf (111 psf)	(6) Total: (3) at Front, (3) at Back	(2)

Note: Directive detail shown is for illustrative purposes. Units may vary in appearance. Tie-down location may vary per the specifications herein.

Note: Tie-Down Clip may be placed at the unit short side corner instead of the unit long side corner, but requires support angles be used to accommodate tie-down clip placement. See Detail & Directives A/A1.



A: To facilitate tie-down clip placement on the unit short sides (if applicable – only needed for tie-down clip placement at the short side corners), support angles shall be added as depicted in the detail above. Provide (2) support angles with 3" min. wide legs x 1/8" min. thick, 6061-T6 aluminum angles as shown.

Miami-Tech "CAB" aluminum support angles may also be used and attached per details 1A & 1B of the current edition of Miami-Dade NOA # 23-0713.26 (see Miami-Dade website for the latest edition of the NOA file).

A1: The (2) support angles perpendicular to the host member direction shall attach to the host members with (2) 1/4" Ø thru-bolts per crossing, (4) total per perpendicular support angle, typ. Position angles to allow for clip positioning on the unit short sides.

B: Attach unit feet to host member with (1) 3/8" Ø thru-bolt per unit foot, (4) total.

C: Provide the required quantity of tie-down clips per the schedule table. Attach tie-down clips to unit with (6) #10 SMS per clip, typ. Attach tie-down clips to support angles with (1) 1/4" Ø thru-bolt.

D: Provide the required quantity of tie-down straps per the schedule table. Wrap straps over the unit and attach to the host members with (4) #10 SMS per strap end, (8) total per strap, typ. To prevent straps from slipping, also attach each strap to the roof of the unit with (2) #10 SMS with 3" min. end distance from ends of roof and positioned O.C. of strap, (1) each side as depicted, typ.

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WALL OR ROOFTOP MOUNT (Page 2 of 3)

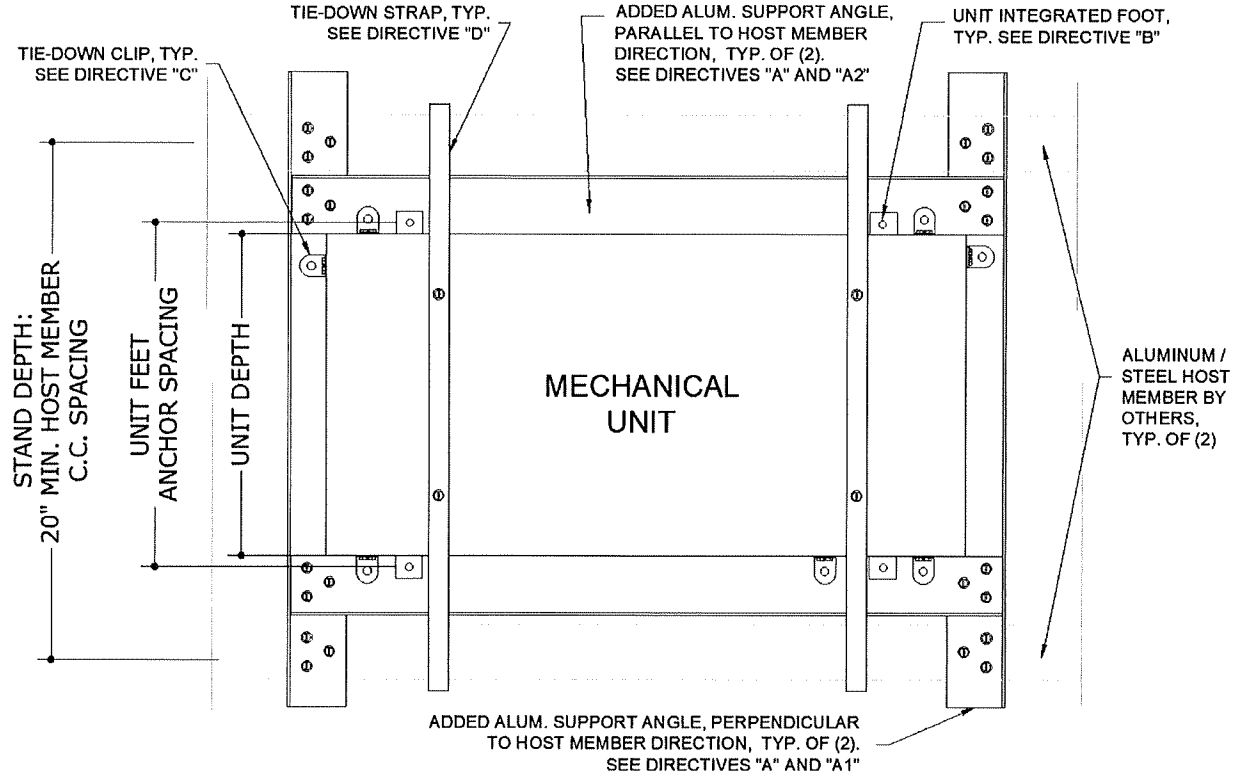
TIE-DOWN DIRECTIVE: HOST CONFIG. 2: UNIT ORIENTED PARALLEL TO HOST MEMBER DIRECTION, STAND DEPTH > UNIT DEPTH. PLAN VIEW, NOT TO SCALE

Tie-Down Schedule		
Max. ASD Wind Pressures Lateral (Uplift)	**# of Tie-Down Clips & Clip Location on Unit (i.e. Side of Unit)**	**# of Tie-Down Straps**
± 65 psf (52 psf)	(2) Total: (1) at Front, (1) at Back	(0)
± 90 psf (72 psf)	(4) Total: (2) at Front, (2) at Back	(0)
± 140 psf (111 psf)	(6) Total: (3) at Front, (3) at Back	(2)

Note: Directive detail shown is for illustrative purposes. Units may vary in appearance. Tie-down location may vary per the specifications herein.

Note: Support angles are always required in this tie-down option.

Note: Tie-Down Clip may be placed at the unit short side corner instead of the unit long side corner if preferred.



A: To facilitate unit placement, support angles shall be added as depicted in the detail above. When host member spacing (i.e. wall bracket or roof stand rails) exceeds the unit feet anchor spacing as shown, provide (4) support angles with 3" min. wide legs x 1/8" min. thick, 6061-T6 aluminum angles as shown.

Miami-Tech "CAB" aluminum support angles may also be used and attached per details 1A & 1B of the current edition of Miami-Dade NOA # 23-0713.26 (see Miami-Dade website for latest edition of the NOA file).

A1: The (2) support angles perpendicular to the host member direction shall attach to the host members with (3) 1/4" Ø thru-bolts per crossing, (6) total per perpendicular support angle, typ. Position angles to allow for clip positioning on the unit short sides (if applicable) and for attachment of the other support angles.

A2: The (2) support angles parallel to the host member direction shall be positioned underneath the unit feet and with clearance for tie-down clip positioning against the unit. Attach support angles to the perpendicular support angles with (3) 1/4" ø thru-bolts per crossing, (6) total per parallel support angle, typ.

B: Attach unit feet to support angles with (1) 3/8" Ø thru-bolt per unit foot, (4) total.

C: Provide the required quantity of tie-down clips per the schedule table. Attach tie-down clips to unit with (6) #10 SMS per clip, typ. Attach tie-down clips to support angles with (1) 1/4" Ø thru-bolt.

D: Provide the required quantity of tie-down straps per the schedule table. Wrap straps over the unit and attach to the host members with (4) #10 SMS per strap end, (8) total per strap, typ. To prevent straps from slipping, also attach each strap to the roof of the unit with (2) #10 SMS with 3" min. end distance from ends of roof and positioned O.C. of strap, (1) each side as depicted, typ.

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WALL OR ROOFTOP MOUNT (Page 3 of 3)

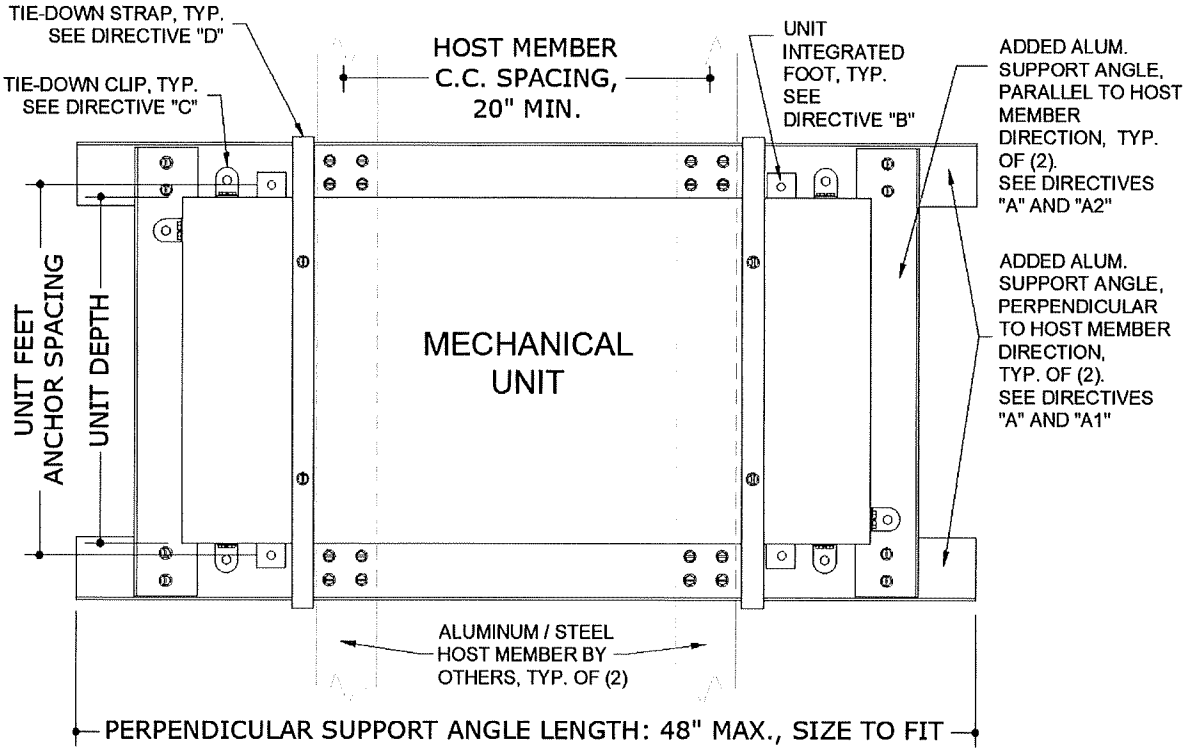
TIE-DOWN DIRECTIVE: HOST CONFIG. 3: UNIT ORIENTED PERP. TO HOST MEMBER DIRECTION PLAN VIEW, NOT TO SCALE.

Tie-Down Schedule		
Max. ASD Wind Pressures Lateral (Uplift)	**# of Tie-Down Clips & Clip Location on Unit (i.e. Side of Unit)**	**# of Tie-Down Straps**
± 65 psf (52 psf)	(2) Total: (1) at Front, (1) at Back	(0)
± 90 psf (72 psf)	(4) Total: (2) at Front, (2) at Back	(0)
± 140 psf (111 psf)	(6) Total: (3) at Front, (3) at Back	(2)

Note: Directive detail shown is for illustrative purposes. Units may vary in appearance. Tie-down location may vary per the specifications herein.

Note: See Directive "A" for Support Angle required quantities.

Note: Tie-Down Clip may be placed at the unit short side corner instead of the unit long side corner if preferred.



A: To facilitate tie-down component placement, support angles shall be added as needed per the detail and Schedule above. Longer support angles perpendicular to the host member direction are to accommodate tie-down straps, unit feet, and tie-down clips as needed. Shorter support angles parallel to host member direction are to accommodate tie-down clips on the unit short sides (as applicable; see note above). Support angles shall be L-angles with 3" min. wide legs x 1/8" min. thick, 6061-T6 aluminum as shown.

Miami-Tech "CAB" aluminum support angles may also be used and attached per details 1A & 1B of the current edition of Miami-Dade NOA # 21-1013.03 (see Miami-Dade website for latest edition of the NOA file).

A1: The (2) longer support angles perpendicular to the host member direction shall attach to the host members with (4) 1/4" Ø thru-bolts per crossing, (8) total per longer support angle, typ. Position angles to allow for clip positioning on the unit long sides (if applicable) and for attachment of the other support angles.

A2: The (2) shorter support angles parallel to the host member direction shall be provided as needed to accommodate tie-down clip placement against the unit short sides (if applicable) and shall attach to the longer support angles with (2) 1/4" Ø thru-bolts per crossing, (4) total per shorter support angle, typ.

B: Attach unit feet to support angles with (1) 3/8" Ø thru-bolt per unit foot, (4) total.

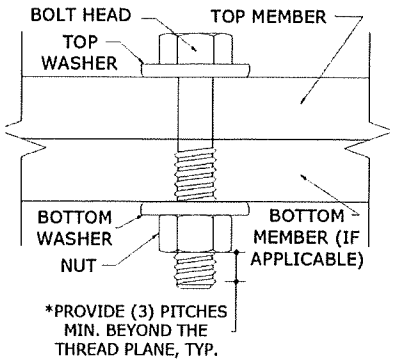
C: Provide the required quantity of tie-down clips per the schedule table. Attach tie-down clips to unit with (6) #10 SMS per clip, typ. Attach tie-down clips to support angles with (1) 1/4" Ø thru-bolt.

D: Provide the required quantity of tie-down straps per the schedule table. Wrap straps over the unit and attach to the host members with (4) #10 SMS per strap end, (8) total per strap, typ. To prevent straps from slipping, also attach each strap to the roof of the unit with (2) #10 SMS with 3" min. end distance from ends of roof and positioned O.C. of strap, (1) each side as depicted, typ.

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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 ecalc.io/glossary for additional abbreviation clarifications.



SAMPLE THRU-BOLT
SCALE: NTS SECTION VIEW

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. 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. 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. **For permanent outdoor installations, all exposed anchors, fasteners, connectors, and metal plates shall be corrosion resistant. Corrosion resistance may be provided by inherent material composition or, where permitted by code, by an approved protective coating or galvanization. Where applicable near a saltwater coastline, such components shall comply with FBC Section 1711, including applicable requirements for exposed, protected, or enclosed conditions. Materials, coatings, and finishes shall be compatible with connected materials, and protective coatings shall be continuous over exposed surfaces. Fasteners used with aluminum members shall also comply with Section J.3.7.2 of the Aluminum Design Manual, "Specification for Aluminum Structures." Substitution of components from alternate manufacturers, or with different materials, coatings, or finishes, shall not be assumed equivalent and may require additional engineering review or site-specific analysis.** 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 (3) pitches minimum beyond the thread plane of the connecting members in contact. For thru-bolt connections, provide (3) pitches minimum beyond end of nut. For screw connections, provide (3) pitches minimum beyond the bottom member. See Sample Thru-Bolt Detail herein.

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
26-103841	Initial Issue	MARH	EPR	08/24/26					

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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

~~300 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:

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

Rooftop (>15 ft MRH) Required Design Pressures:

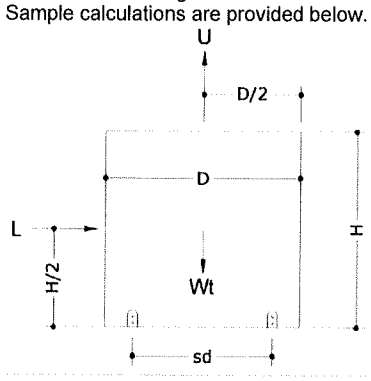
- ASCE 7 "Design Wind Loads: Other Structures: Rooftop Structures and Equipment for Buildings"
- Structure Shape = Square, flat terrain
- z = up to 7 ft, where z = height of curb/stand/slab/pad + ½ unit height
- Lateral GC_f = 1.90; Uplift GC_f = 1.50

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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 in^2 / 144 ft^2) = **1680 lb**
2. Uplift Force, U = P_up x W x D
   = (95 psf) x (48 in) x (36 in) x (1 in^2 / 144 ft^2) = **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 in^2 / 144 ft^2) = **1260 lb**
2. Uplift Force, U = P_up x W x D
   = (95 psf) x (48 in) x (36 in) x (1 in^2 / 144 ft^2) = **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.

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