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Technical Evaluation Report

DIVISION: 23 08 00–COMMISSIONING OF HVAC

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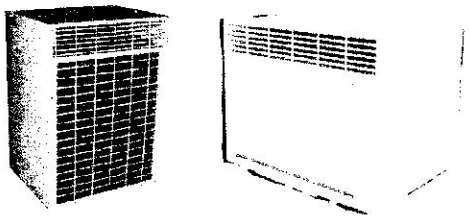
(Subject to Renew December 1, 2022 or next code cycle)

EVALUATION SUBJECT: **FIRST COMPANY WCX UNITS**

TER-21-39975

REPORT HOLDER:
FIRST COMPANY
8273 MOBERLY LANE
DALLAS, TX USA
214-388-5751 | FIRSTCO.COM

Florida Building Code Seventh Edition (2020)
International Building Code (2012, 2015 & 2018)



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.

This Product Evaluation Report is being issued in accordance with the requirements of the **Florida Building Code Seventh Edition (2020)** 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 Code (2012, 2015, & 2018).** The product noted on 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:

- Maximum allowable unit panel wind pressure connection integrity
- Maximum allowable sliding for through the wall applications

Calculation summary is included in this TER and appears below.
NOTE: No 33% increase in allowable stress has been used in the design of this product.

SCOPE:
This document certifies the condenser unit models listed in the "Options" section on this page for wind certification and host installation.

INSTALLATION:
The product(s) listed above shall be installed in strict compliance with this TER & manufacturer-provided model specifications.
The product components shall be of the material specified in the manufacturer-provided product specifications. All screws must be installed in accordance with the applicable provisions & anchor manufacturer's published installation instructions. Installation shall follow manufacturer specifications as well as the information provided herein.

LIMITATIONS & CONDITIONS OF USE:
Use of this product shall be in strict accordance with this TER as noted herein. See final page for complete limitations and conditions of use. This product is **NOT** approved for rooftop installation.

OPTIONS:
This evaluation is valid for the First Company WCX models described herein. Any structural changes outside of the design as described herein would void this certification.

UNIT CASING MATERIAL:
All unit cabinetry shall be assembled according to manufacturer specifications. All cabinetry panels shall be 20 GA min. ASTM A653 cold rolled steel and all screws shall be #8 min. SAE Gr. 5. Provide 5 pitches min. past the thread plane.

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

DESIGN NOTES:
Models referenced herein are subject to the following design limitations:

MAXIMUM ALLOWABLE DESIGN PRESSURES:
+90 psf / -180 psf (ASD)

- Required design pressures shall be determined 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 pressures shall be less than or equal to the maximum pressures listed herein.
- *MAXIMUM ALLOWABLE DESIGN PRESSURES indicates the maximum pressures that all units listed herein are approved for. Valid for at-grade applications only. See limitations herein.
- Valid for use inside and outside the High-Velocity Hurricane Zone (HVHZ).
- Site-specific wind analysis may produce alternate limitations provided maximum rated wind pressures stated herein are not exceeded.

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OR DIGITAL SEAL REQUIRED TO BE VALID PER CODE:

May 17, 2021

Frank Bennardo, P.E., SECB
ENGINEERING EXPRESS®
FL PE #0046549 FLCA #9885

☐ If Checked, Certifying Engineer and PE # Appear Above

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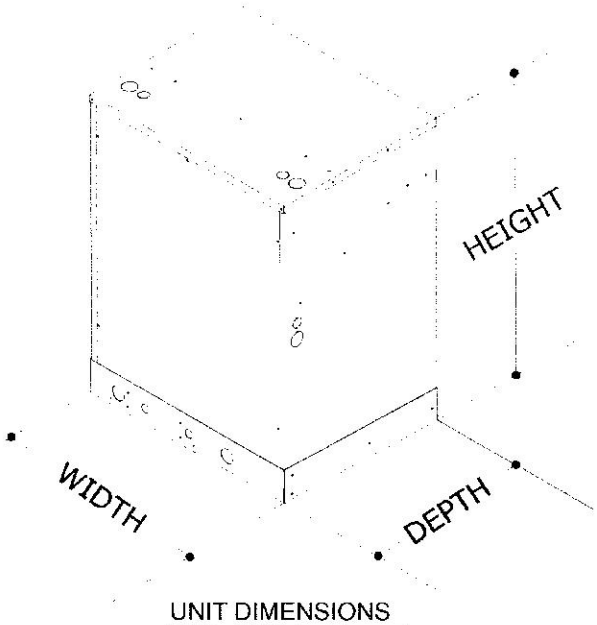
The FBC 7th Edition (2020) define APPROVED SOURCE (Section 202) as: "An independent person, firm or corporation, approved by the building official, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses." Engineering Express® professionals meet the competency requirements as defined in the FBC and can seal their work. Engineering Express® is regularly engaged in conducting and providing engineering evaluations of single-element and full-scale building systems tests.

UNIT SCHEDULE

Unit	Unit Dimensions (in)		
	Width	Depth	Height
WCX12-AB	24	19	32
WCX12-BB	26	19	32
WCX14-CB	29.5	22	23

UNIT SCHEDULE NOTES

Model information listed herein is based on information provided by the client. See Unit Dimensions diagram right for definitions of unit dimensions. Unit appearances may vary. Please contact Report Holder for further model information.



UNIT DIMENSIONS
SCALE: NTS ISOMETRIC VIEW

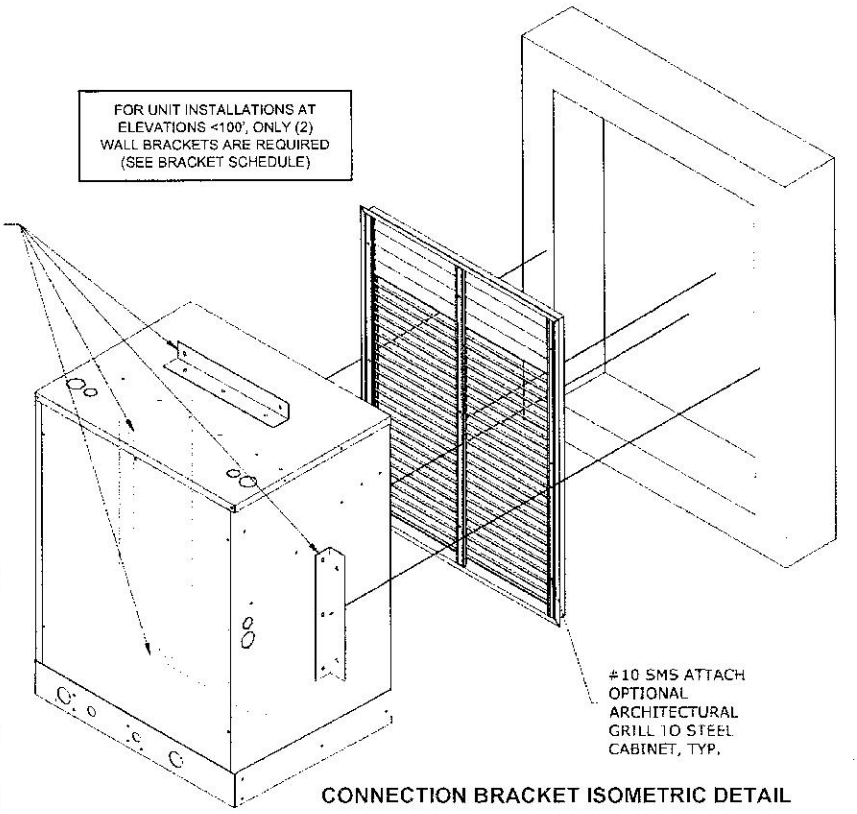
GENERAL NOTES

1. This certification is limited to the design of unit cabinetry to resist the wind pressures at the installation scenarios described herein. This document also certifies the design capacity of the attachment of the condensing unit to the various host structure substrates (by others) listed in the design schedule. Large and small missile impact are not covered in this certification and shall be approved through a separate submittal if required. This certification considers a 200lb max condensing unit.
2. No 33-1/3% increase in allowable stress has been used in the design of this system. Wind load duration factor cd=1.6 has been used for wood anchor design.
3. The system detailed herein is generic and does not provide information for a specific site. For site conditions different from the conditions detailed herein, a licensed engineer or registered architect shall prepare site specific documents for use in conjunction with this document.
4. Permit holder shall verify the adequacy of the existing structure to withstand superimposed loads. Wood bucks (by others) shall be anchored properly to transfer loads to the existing structure.
5. Unless otherwise noted herein, all screws shall be SAE Grade 5 carbon steel.
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. All existing supporting wood host structure members shall be G=0.55 min., design and integrity by others.
8. All existing supporting steel host structure members shall be 18ga (T=0.0478) ASTM A653, Fy=33ksi min, Fu=45 ksi min, design and integrity by others.
9. The contractor is responsible to insulate all members from dissimilar materials to prevent electrolysis.
10. Engineer seal affixed here to validates 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.
11. Alterations, additions or other markings to this document are not permitted and invalidate this certification.

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.

SEE FOLLOWING PAGES FOR PRODUCT INSTALLATION INFORMATION

PRODUCT INSTALLATION



CONNECTION BRACKET ISOMETRIC DETAIL

BRACKET SCHEDULE

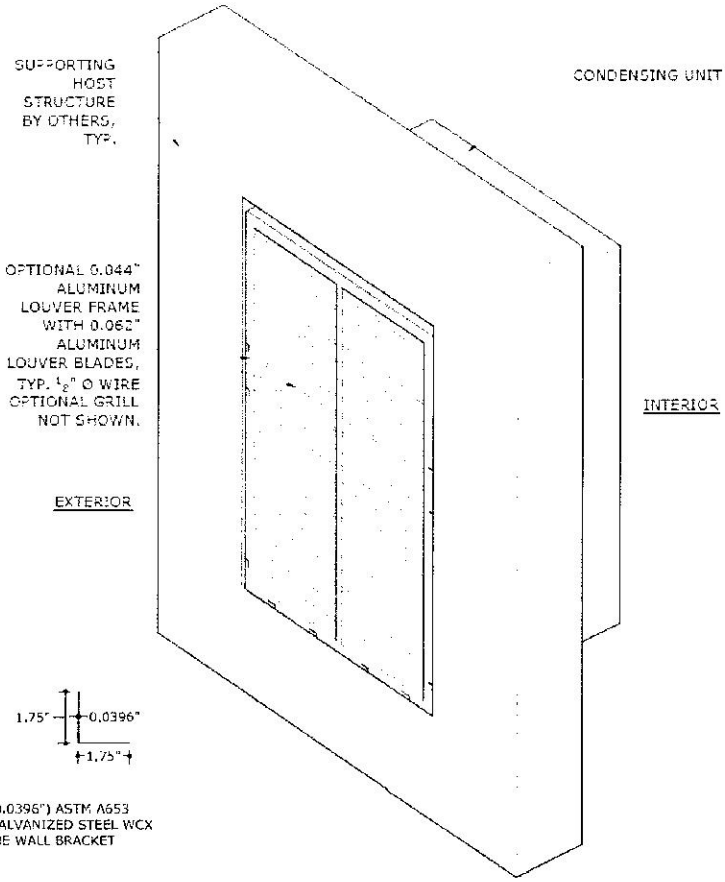
Unit Elevation	Qty. of Clips
<100'	2 (Left and Right)
>100'	4 (Left, Right, Top, and Bottom)

ANCHOR SCHEDULE

Anchor	Installation
3/8" Ø SAE Gr. 5 Sheet Metal Screw	18 GA. (t=0.0478"), UTS = 45 ksi min. steel
#14 Wood Screw	1-1/2" thread penetration to wood (G=0.55 min.), 1-3/4" min. edge distance
1/4" Ø ITW TapCon or DeWalt UltraCon	1-3/4" embed. to 3192 psi conc., 2-1/2" edge distance, 4" min. spacing from any adjacent conc. anchor.
1/4" Ø DeWalt UltraCon	2-1/4" embed. to face of ASTM C-90 grout-filled block, 2-1/2" edge distance, 4-1/2" min. spacing from any adjacent conc. anchor.

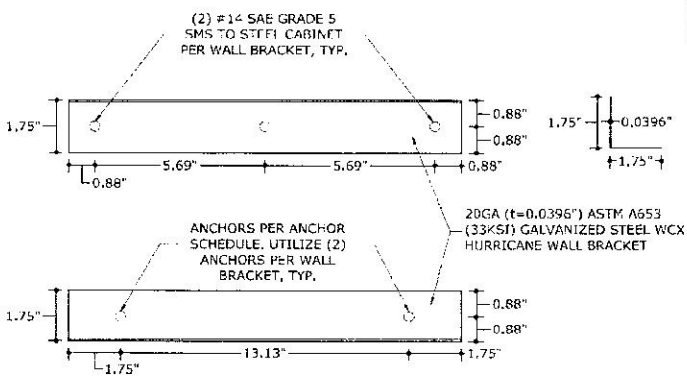
ANCHOR SCHEDULE NOTES

1. All concrete anchors shall be installed to un-cracked concrete only.
2. Install all concrete anchors according to manufacturer's recommendations.
3. Sheet metal screws shall be installed with a minimum of 5 pitches past the thread plane.

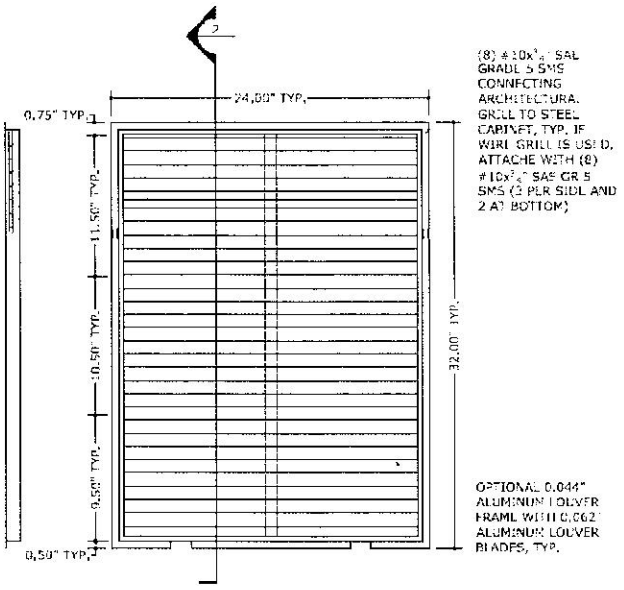


WCX CONDENSING UNIT
(INSTALLATION THROUGH WALL SHOWN)

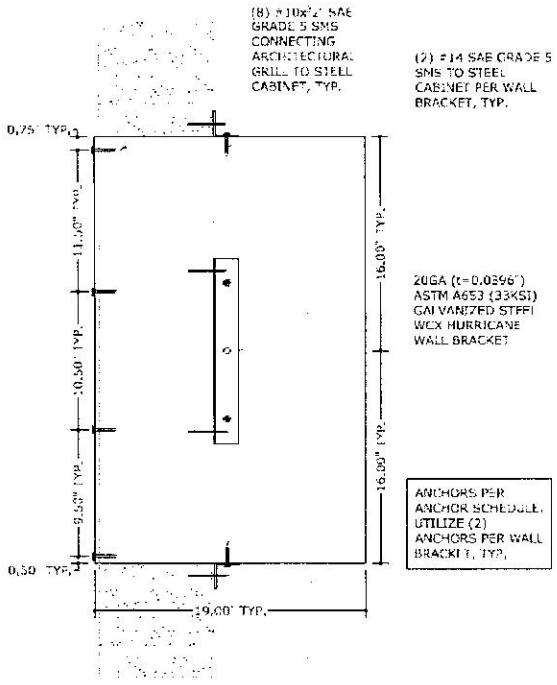
STEEL CONNECTION BRACKET



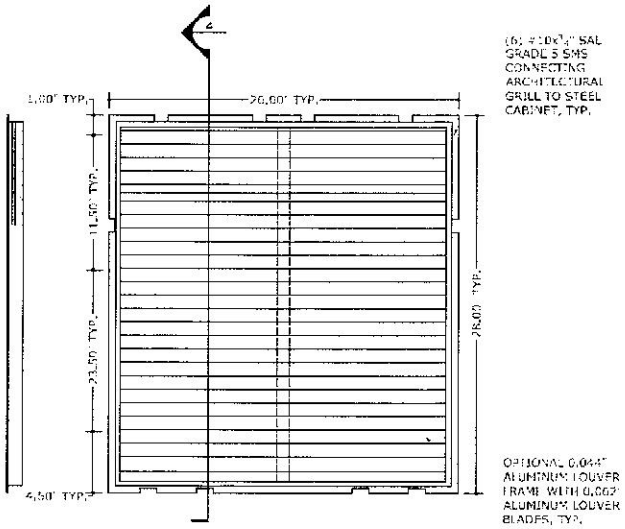
PRODUCT INSTALLATION DETAILS



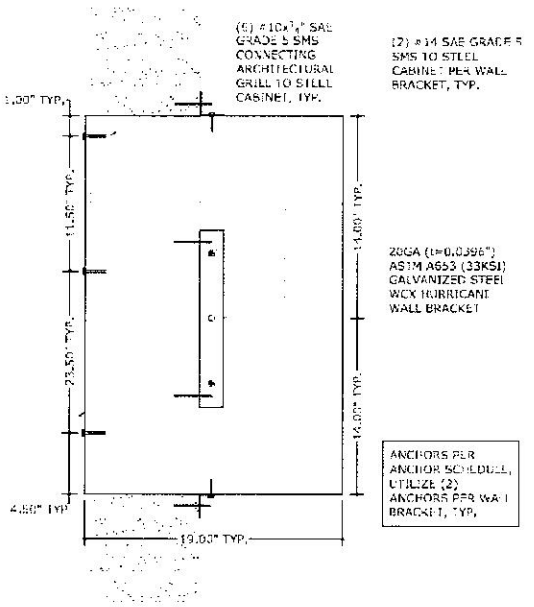
1 WCX12-AB UNIT ARCH. GRILL TYPICAL ELEVATION AND SECTION
N.T.S. ELEVATION/SECTION



2 WCX12-AB UNIT TYPICAL SECTION
N.T.S. SECTION

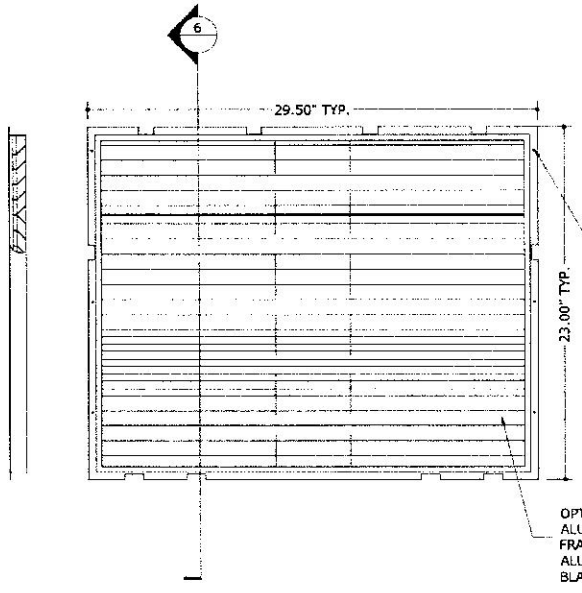


3 WCX12-BB UNIT ARCH. GRILL TYPICAL ELEVATION AND SECTION
N.T.S. ELEVATION/SECTION

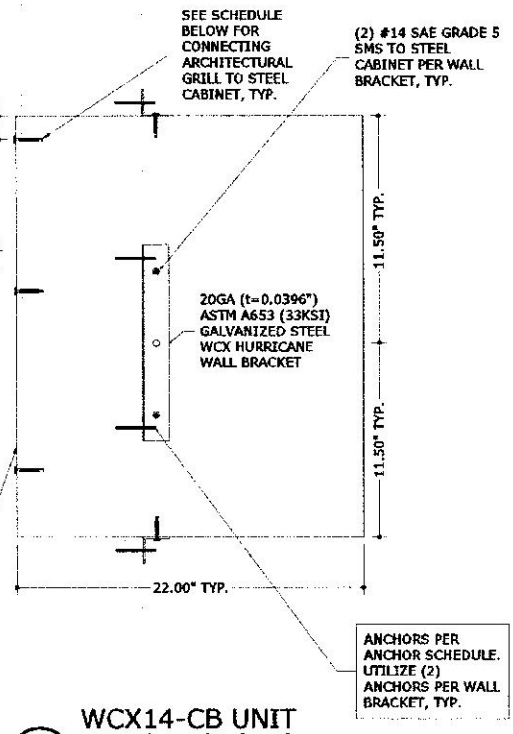


4 WCX12-BB UNIT TYPICAL SECTION
N.T.S. SECTION

PRODUCT INSTALLATION DETAILS CONTINUED



5 WCX14-CB UNIT ARCH. GRILL TYPICAL ELEVATION AND SECTION
SCALE: NOT TO SCALE ELEVATION/SECTION



6 WCX14-CB UNIT TYPICAL SECTION
SCALE: NOT TO SCALE SECTION

WCX14-CB: Architectural Grill to Steel Cabinet Connections Schedule	
Max. ASD Wind Pressures	**Screw Qty. Required**
+ 40 psf / - 80 psf	6
+ 55 psf / - 110 psf	8
+ 70 psf / - 140 psf	10
+ 90 psf / - 180 psf	12

CONNECTIONS SCHEDULE NOTES

1. Screws shall be #10 x ¾", SAE Gr. 5 or stronger SMS.
2. Install (3) screws at left side and (3) screws on right side.
   a. (If applicable) Distribute remaining screws evenly between top and bottom of grill.
3. Provide 1" min. spacing between neighboring SMS. Provide 1" min. edge distance from corners (see Detail 6).
4. If wire grill is used, attach according to the same specifications as for the architectural grill, with the exception that only (8) screws are required for max. ASD wind pressures up to + 90 psf / - 180 psf.

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 which 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 codes must be considered, where applicable. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times.

Fasteners must penetrate the supporting members such that the full length of the threaded portion is embedded within the main member. This evaluation does not offer any evaluation to meet large missile impact debris requirements which typically are not required for this type of product. Site-specific wind analysis may produce alternate limitations provided maximum rated wind pressure is not exceeded. The attachment of the units to the host structure shall be installed according to the information provided herein.

Proj. #	Remarks	By	Checked	Date	Proj. #	Remarks	By	Checked	Date
16-3183	Initial Wind Evaluation	---	---	2016	21-39975	Add WXC14-CB	EPR	RWN	5/17/21
20-27105	FBC 2020 Update	TT	RWN	8/19/20					