



ENGINEER:

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REVISION HISTORY:

| REV | DATE | DESCRIPTION |
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PROJECT NAME:  
**GREE FLEXX CONDENSING UNIT PRODUCT EVALUATIONS-FLEXX60HP/AC230V1A0**

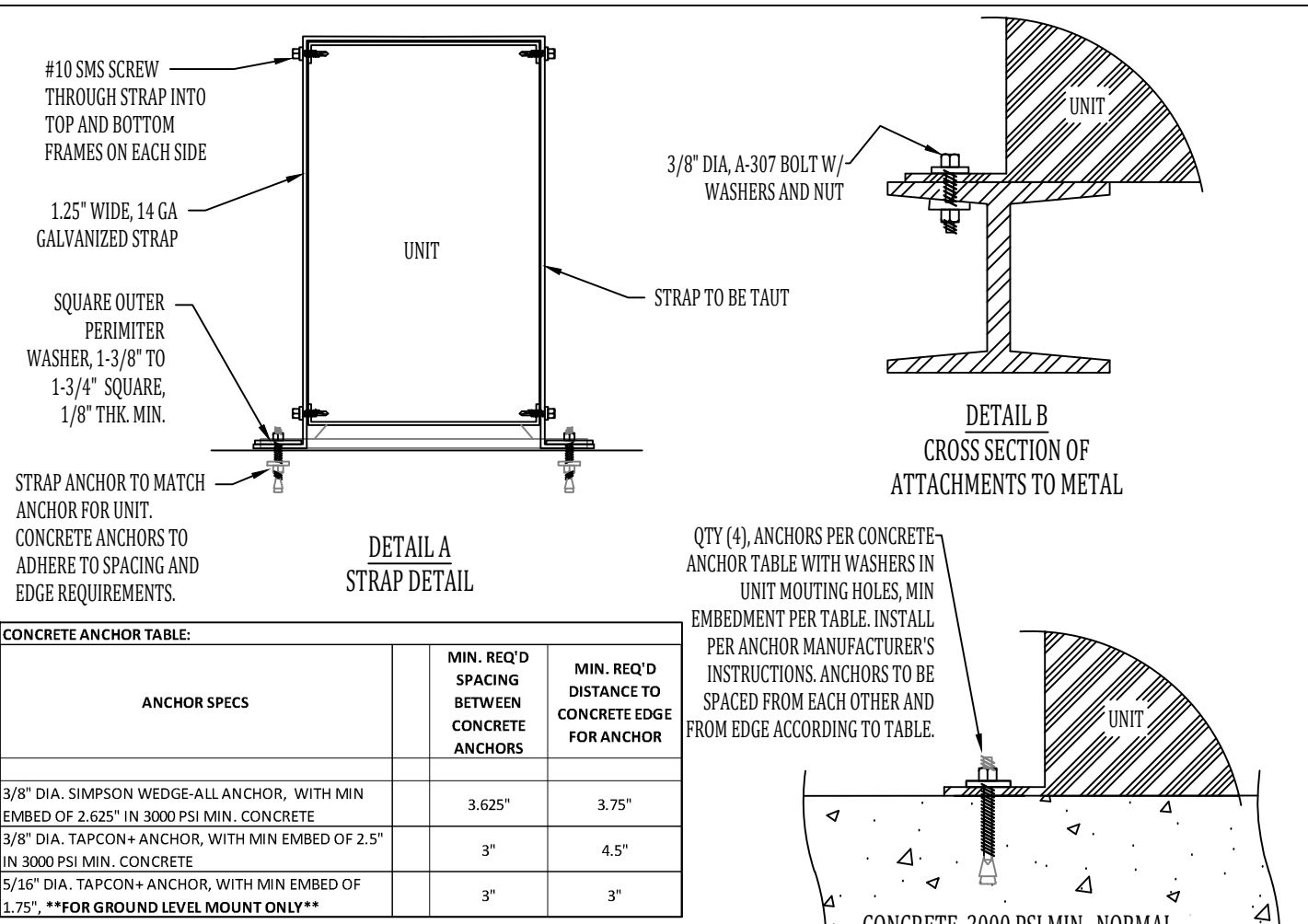
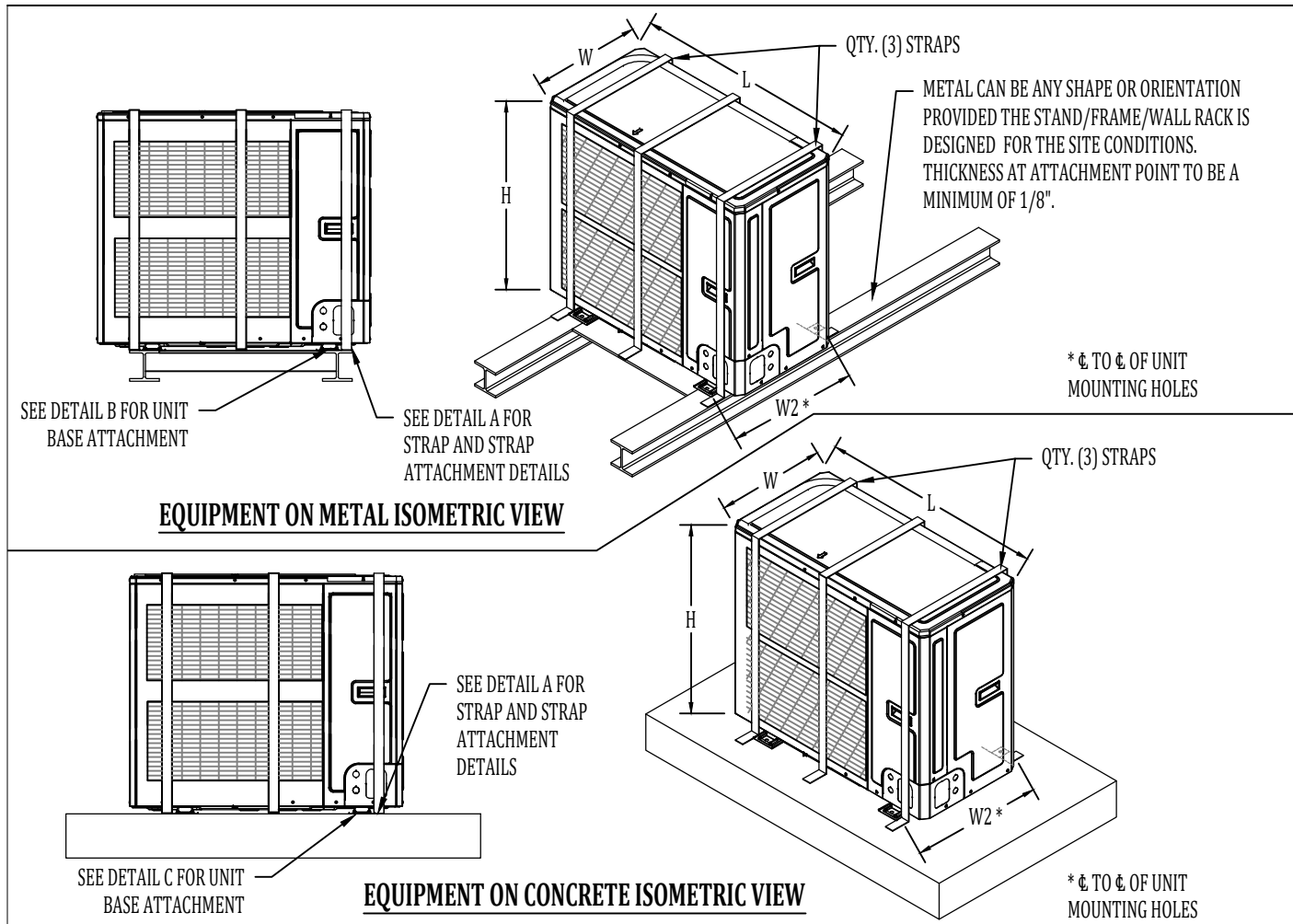
DRAWING TITLE:  
**PRODUCT EVALUATION AND TIE-DOWN DETAILS**

DATE: 11/28/2021

BY: SRM CWD SRM

DRAWING SCALE: NTS

DRAWING NUMBER: 21166-2 DWG SIZE: B REVISION: 0



**CONCRETE ANCHOR TABLE:**

| ANCHOR SPECS   | MIN. REQ'D SPACING BETWEEN CONCRETE ANCHORS | MIN. REQ'D DISTANCE TO CONCRETE EDGE FOR ANCHOR |
|--|---|---|
| 3/8" DIA. SIMPSON WEDGE-ALL ANCHOR, WITH MIN EMBED OF 2.625" IN 3000 PSI MIN. CONCRETE | 3.625"                                      | 3.75"   |
| 3/8" DIA. TAPCON+ ANCHOR, WITH MIN EMBED OF 2.5" IN 3000 PSI MIN. CONCRETE             | 3"  | 4.5"  |
| 5/16" DIA. TAPCON+ ANCHOR, WITH MIN EMBED OF 1.75", **FOR GROUND LEVEL MOUNT ONLY**    | 3"  | 3"  |

WIND LOAD CALCULATIONS PER APPLICABLE SECTIONS OF: FBC CHAPTERS 15&16, 2020, 7TH ED. ASCE7 CHAPTERS 26&29, 2016

- DESIGN CONDITIONS:
- EQUIPMENT DEAD LOAD: SEE CALCULATION
  - LOCATION: ROOF, 60' MAXIMUM ABOVE GRADE
  - WIND DESIGN CRITERIA:
    - Vult: 195 mph
    - Vasd: 151 mph
    - RISK CAT: IV
    - WIND EXPOSURE: D, HVHZ
  - USE ASD LOAD COMBINATIONS FOR WIND, FBC SECTION 1605.3:
    - 0.6D+(0.6W), EQ. 16-15, FOR UPLIFT (F<sub>h</sub> AND F<sub>v</sub>)
    - D+(0.6W), EQ. 16-12, FOR DOWNWARD FORCES

| Wind Direction A, Normal to Long Side of Unit  |                                 | F <sub>h</sub> =q <sub>h</sub> *(GC <sub>r</sub> )*A <sub>f</sub> |                        |
|--|---------------------------------|---|------------------------|
| H  | 56.3 in                         | GC <sub>r</sub> =   | 1.9 Eq 29.5-2          |
| L  | 37.2 in                         | A <sub>f unit</sub>   | 14.5 SQ FT             |
| W  | 12.625 in                       | A <sub>f hoods-accessories</sub>                                  | 0.0 SQ FT              |
| W <sub>2</sub>   | 13.9 in                         | A <sub>f total</sub>  | 14.5 SQ FT             |
| Weight   | 262 lbs                         | F <sub>h</sub> =q <sub>h</sub> *(GC <sub>r</sub> )                | 209.1 lb/sq ft         |
| V <sub>ult</sub>   | 195 mph                         | F min (lb/sq ft)  | 16 ASCE7, section 29.8 |
| V <sub>ASD</sub>   | 151.0 mph                       | F <sub>h</sub> =q <sub>h</sub> *(GC <sub>r</sub> )*A <sub>f</sub> | 3041 lb                |
| Risk Category  | IV                              | F <sub>v</sub> =q <sub>v</sub> *(GC <sub>r</sub> )*A <sub>f</sub> |                        |
| Exposure   | D                               | GC <sub>r</sub> =   | 1.5 Eq 29.5-3          |
|  |                                 | A <sub>f unit</sub>   | 3.3 SQ FT              |
| K <sub>z</sub>   | 1.33 Table 29.3-1 (65 ft elev.) | A <sub>f hoods-accessories</sub>                                  | 0.0 SQ FT              |
| K <sub>d</sub>   | 0.85 ASCE7, table 26.6-1        | A <sub>f</sub>  | 3.3 SQ FT              |
| K <sub>zt</sub>  | 1                               | F <sub>v</sub> =q <sub>v</sub> *(GC <sub>r</sub> )                | 165.1 lb/sq ft         |
| q <sub>z</sub> =0.00256*K <sub>z</sub> *K <sub>zt</sub> *K <sub>d</sub> *V <sup>2</sup> (lb/sq ft) |                                 | F min (lb/sq ft)  | 16 ASCE7, section 29.8 |
| q <sub>z</sub> =   | 110.0 psf                       | F <sub>v</sub> =q <sub>v</sub> *(GC <sub>r</sub> )*A <sub>f</sub> | 538.4 lb               |

| Calculation Results  |  |
|--|--|
| Totals at Base - Bolt:   |  |
| # anchors on upwind side                                       | 5  |
| # anchors per short side                                       | 0  |
| 0.6W+0.6D  | 755.6 LB uplift/anchor   |
| Shear at base of equipment                                     |  |
| F <sub>h total</sub> (equipment)*0.6                           | 1,825 LBS  |
| # anchors  | 10   |
|  | 182.5 LB shear/anchor  |
|  | 3/8" rod/bolt assembly<br>A307 steel                                       |
| ANCHOR ALLOWABLE TENSION                                       | 2490.0   |
| ANCHOR ALLOWABLE SHEAR   | 1330.0   |
| Anchor installed horizontally (uplift loads hardware in shear) |  |
| Anchor Combined loading value                                  | 0.33 must be less than or = to 1   |
| Anchor is OK   |  |
| Totals at Base - Concrete Anchor:                              |  |
| # anchors on upwind side                                       | 5  |
| # anchors per short side                                       | 0  |
| 0.6W+0.6D  | 755 LB uplift/anchor   |
| Shear at base  |  |
| # anchors  | 4  |
|  | 456.2 LB shear/anchor  |
|  | Wedge Anchor, 3000psi normal weight concrete<br>3/8" anchors, 2.625" embed |
| ANCHOR ALLOWABLE TENSION                                       | 1100 LBS   |
| ANCHOR ALLOWABLE SHEAR   | 1055 LBS   |
| Anchor installed vertically (uplift loads hardware in tension) |  |
| Anchor Combined loading value                                  | 0.78 must be less than or = to 1   |
| Anchor is OK   |  |

SCOPE:  
PRODUCT EVALUATION AND TIE-DOWN DETAIL FOR CONDENSING UNITS TO METAL (ALUMINUM OR STEEL) AND CONCRETE SURFACES. EVALUATION AND TIE-DOWNS INVESTIGATE WIND SHEAR AND OVERTURNING MOMENT. UNIT INTEGRITY IS ADDRESSED WITH THE STRAPS AND PREVENTS PANEL SEPARATION. CUs ARE MADE BY GREE, MODEL NUMBERS: FLEXX60HP230V1A0 AND FLEXX60AC230V1A0 (...60AC... IS GOVERNING).

- GENERAL NOTES:
- INTEGRITY OF METAL (STEEL OR ALUMINUM) OR CONCRETE STRUCTURE SHALL BE RATED FOR THE LOADS OF THE UNITS. THIS CAN BE ACHIEVED WITH STAND/FRAME/WALL RACK/PAD ETC. WITH NOA, FLORIDA PRODUCT APPROVAL, EOR SPECIFICATION, OR OTHER AHJ APPROVED METHOD.
  - ANCHORS, BOLTS, SCREWS, AND RODS TO HAVE CORROSION RESISTANT COATING SUITABLE FOR THE ENVIRONMENT. COASTAL INSTALLATIONS REQUIRE HOT DIP GALVANIZED OR STAINLESS STEEL.
  - IT IS OWNER'S RESPONSIBILITY TO ENSURE THAT ALL MANUFACTURER'S SCREWS, PANEL SCREWS, STRAP SCREWS, AND ANCHORS ARE IN PLACE AS PART OF THEIR PERIODIC MAINTENANCE AND HURRICANE PREPARATION PLANS.
  - IT IS OWNER'S RESPONSIBILITY TO ENSURE THAT ALL ATTACHMENT LOCATIONS AND FASTENERS ARE MAINTAINED AND DO NOT CORRODE OVER TIME