



ENGINEER:

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REVISION HISTORY:

REV	DATE	DESCRIPTION
-	-	-

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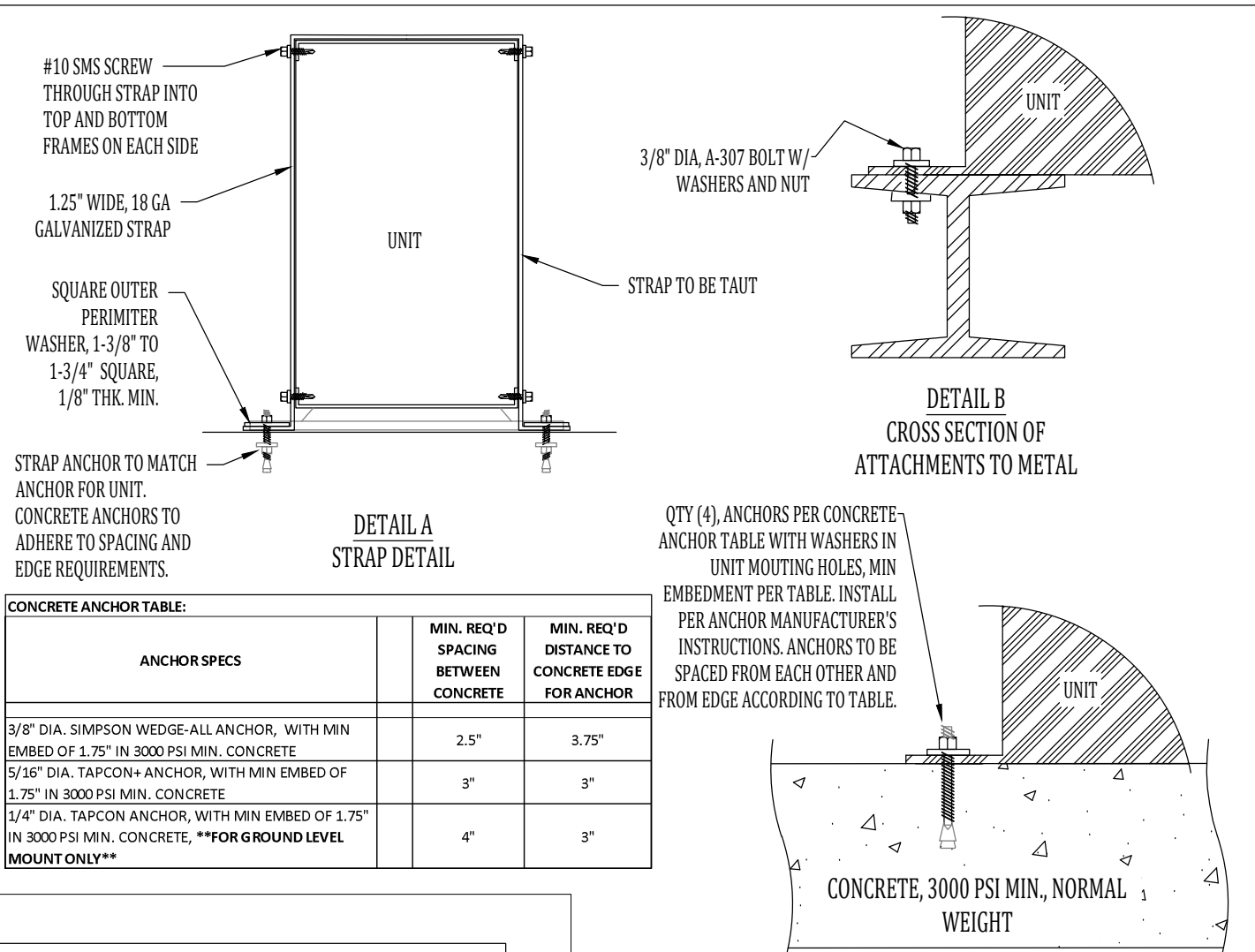
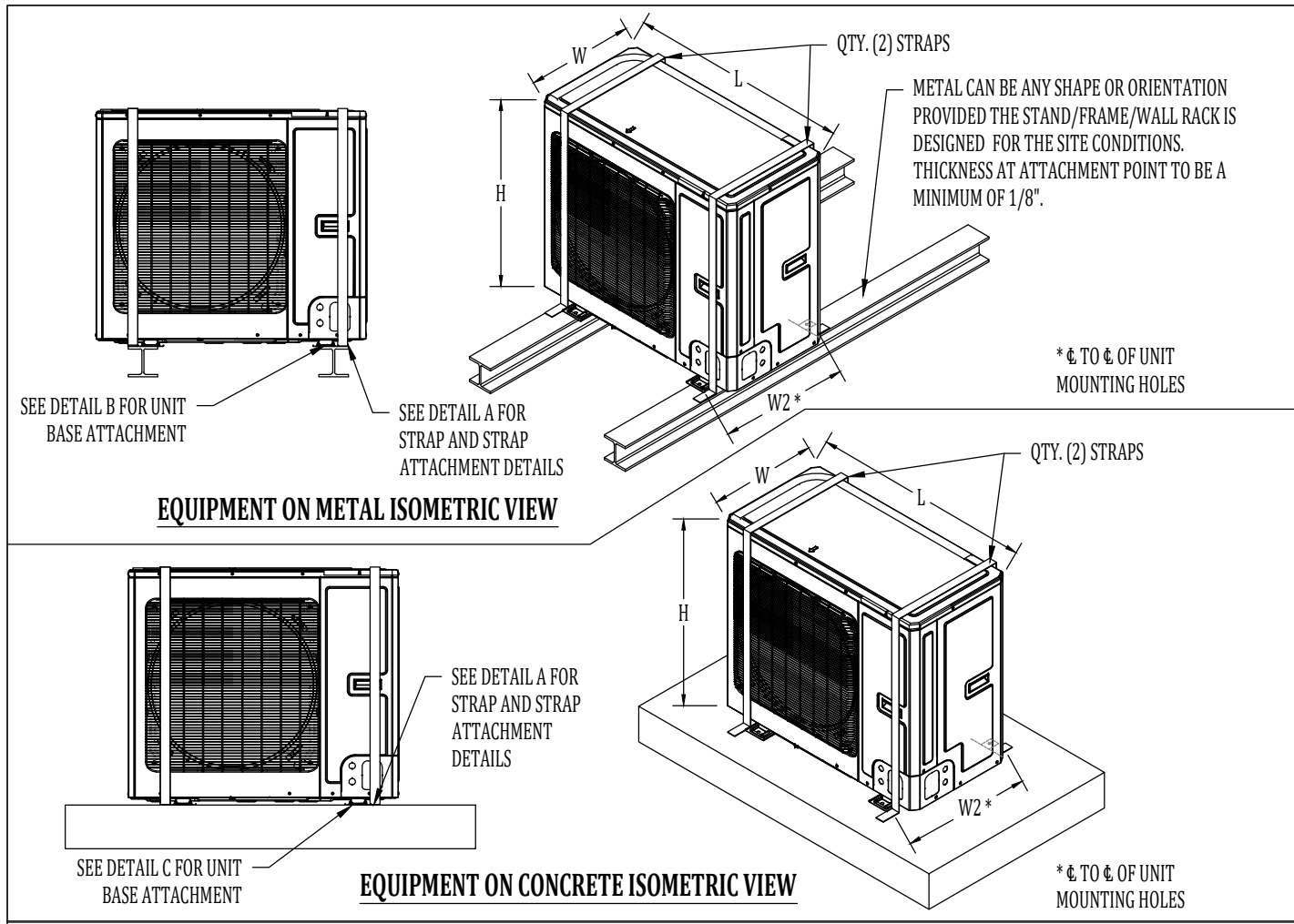
PROJECT NAME:

GREE FLEXX CONDENSING UNIT PRODUCT EVALUATIONS-FLEXX36HP/AC230V1A0

DRAWING TITLE

PRODUCT EVALUATION AND TIE-DOWN DETAILS

DATE	4/17/2023	
BY	SRM	CHK'D SRM
DRAWING SCALE	NTS	
DRAWING NUMBER	DWG SIZE	REVISION
21166-1	B	0



CONCRETE ANCHOR TABLE:

ANCHOR SPECS	MIN. REQ'D SPACING BETWEEN CONCRETE	MIN. REQ'D DISTANCE TO CONCRETE EDGE FOR ANCHOR
3/8" DIA. SIMPSON WEDGE-ALL ANCHOR, WITH MIN EMBED OF 1.75" IN 3000 PSI MIN. CONCRETE	2.5"	3.75"
5/16" DIA. TAPCON+ ANCHOR, WITH MIN EMBED OF 1.75" IN 3000 PSI MIN. CONCRETE	3"	3"
1/4" DIA. TAPCON ANCHOR, WITH MIN EMBED OF 1.75" IN 3000 PSI MIN. CONCRETE, **FOR GROUND LEVEL MOUNT ONLY**	4"	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>	GC <sub>r</sub> =	A <sub>f</sub> unit	A <sub>f</sub> hoods-accessories	A <sub>f</sub> total
H	32.3 in	1.9 Eq 29.5-2	8.3 SQ.FT	0.0 SQ.FT	8.3 SQ.FT
L	37 in				
W	18.1 in				
W <sub>2</sub>	19.1 in				
Weight	185 lbs	F <sub>h</sub> =q <sub>h</sub> *(GC <sub>r</sub> )	209.1 lb/sq ft	F <sub>min</sub> (lb/sq ft)	16 ASCE7, section 29.8
V <sub>ult</sub>	195 mph	F <sub>h</sub> =q <sub>h</sub> *(GC <sub>r</sub> )*A <sub>f</sub>	1735 lb		
V <sub>ASD</sub>	151.0 mph	F <sub>v</sub> =q <sub>v</sub> *(GC <sub>r</sub> )*A <sub>f</sub>		GC <sub>r</sub> =	1.5 Eq 29.5-3
Risk Category	IV	A <sub>f</sub> unit	4.7 SQ.FT	A <sub>f</sub> hoods-accessories	0.0 SQ.FT
Exposure	D	A <sub>f</sub>	4.7 SQ.FT	A <sub>f</sub>	4.7 SQ.FT
K <sub>z</sub>	1.33 Table 29.3-1 (65 ft elev.)	F <sub>v</sub> =q <sub>v</sub> *(GC <sub>r</sub> )	165.1 lb/sq ft	F <sub>min</sub> (lb/sq ft)	16 ASCE7, section 29.8
K <sub>d</sub>	0.85 ASCE7, table 26.6-1	F <sub>v</sub> =q <sub>v</sub> *(GC <sub>r</sub> )*A <sub>f</sub>	767.7 lb		
K <sub>zt</sub>	1				
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)					
q <sub>z</sub> =	110.0 psf				

Calculation Results

**Totals at Base - Bolt:**

# anchors on upwind side	2
# anchors per short side	0
0.6W+0.6D	527.6 LB uplift/anchor
Shear at base of equipment	
F <sub>h</sub> total (equipment)*0.6	1,041 LBS
# anchors	4
	260.3 LB shear/anchor
	3/8" rod/bolt assembly
	A307 steel
ANCHOR ALLOWABLE TENSION	2490.0
ANCHOR ALLOWABLE SHEAR	1330.0
Anchor installed horizontally (uplift loads hardware in shear)	
Anchor Combined loading value	0.17 must be less than or = to 1
Anchor is OK	
<b>Totals at Base - Concrete Anchor:</b>	
# anchors on upwind side	4
# anchors per short side	0
0.6W+0.6D	264 LB uplift/anchor
Shear at base	
# anchors	4
	260.3 LB shear/anchor
	Wedge Anchor, 3000psi normal weight concrete
	3/8" anchors, 1.75" embed
ANCHOR ALLOWABLE TENSION	555 LBS
ANCHOR ALLOWABLE SHEAR	570 LBS
Anchor installed vertically (uplift loads hardware in tension)	
Anchor Combined loading value	0.56 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: FLEXX36HP230V1A0 AND FLEXX36AC230V1A0.

- 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