June 22, 2023

Mr. Thomas Campbell
State of Florida
Dept. of Business and Professional Regulations
1940 North Monroe Street, Suite 90A
Tallahassee, FL 32399-0772

RE: Cellxion, LLC
Bossier City, LA
Model: STWS02 12'7" x 34'3" Concrete Equipment Shelter

Dear Mr. Campbell:

Enclosed please find one set of documents for the above-noted model.

PFS Corporation hereby certifies that it has examined the building plans and other documents submitted by the manufacturer for certification and found them to be in compliance with the following codes and standards:

7th Edition (2020) Florida Building Code Building w/2022 Supplement
7th Edition (2020) Florida Building Code Residential w/2022 Supplement
7th Edition (2020) Florida Building Code Mechanical
7th Edition (2020) Florida Building Code Plumbing
7th Edition (2020) Florida Building Code Fuel Gas
7th Edition (2020) Florida Building Code Energy Conservation w/2022 Supplement
7th Edition (2020) Florida Building Code Accessibility
2017 National Electrical Code
61G20-3 FAC for Product Approval

If you have any questions concerning this submission, please feel free to contact this office at any time.

Approved By:

Mark Severson
Plan Reviewer – SMP0000020
Enclosures: As Stated

cc: Theresa Reagan
File

Date Received at PFS:_____
IBC Transmittal No. (by PFS):_____
Project No. (by PFS):_____

ADDITIONAL OR MODIFIED ACCEPTANCE (MODULARS/PANELIZED)

This form is to be used only when the manufacturer is seeking acceptance of an additional model, modified model or model name change which uses a previously accepted building system.

Current PFS Building System Acceptance #:_____
Model Name/ No. STWS02 12'7" x 34'3" Concrete Equipment Shelter
Manufacturer's Name: CellXion, LLC (A Division of Sabre Industries)
Plant(s) at which model will be produced Bossier City, Louisiana
Check One: X NEW MODEL _____ Revised Model*

TECHNICAL DATA

	Conforms		
Floor Plan Showing:	Yes	No	N/A
Braced Wall Method or Shearwalls	X		
Building Size (LxW Dimensions)	X		
Room Sizes, Light & Ventilation Schedule	X		
Exit Requirements	X		
Electrical Outlet Spacing & Smoke Detector	X		
Location of Labels & Data Plates	X		
Use Group, Type Const., Total Sq.Ft. Area	X		
Plumbing System Design or Reference No. (_____)			X
Heat Loss Calculations or Reference No. (_____)			X
HVAC/Furnace Size/Model No. (Wall 3T 5KW M 2STG)	X		
Thermal Performance Calculations or Reference No. (_____)			X
Electrical Load Calculations or Reference No. (_____)	X		
Service Size and Location (_____)	X		
Applicable Building Codes 2020 FBC	X		

Submit model to the followingstates: Florida

*Description of Modification:_____

Requested by: Theresa Reagan Date: 4/26/2023
(designer)

For PFS Use

Staff Plan Reviewer Mark Swenson IBC Certification #:_____ Date: 6/22/2023

Structural Calculation(s) Reviewed By:_____ P.E. #:_____ Date:_____
Remarks:_____

***(1) copy sent to IBC within 15 days of approval.*

VERBAL APPROVAL GIVEN ☐ By Whom:_____ To Whom_____ Date:_____
MODEL WAS DEVIATED ☐ Revision Number:_____

THIS FORM SHALL BE FILLED OUT COMPLETELY WITH EACH MODEL ACCEPTANCE OR MODIFICATION PRIOR TO SUBMITTAL TO PFS.

cc:_____
\forms\form-m
Rev 05/26/16 ds

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: *Mark Severson*
Title: Staff Plan Reviewer
Date: **6/22/23**

FLORIDA COMMERCIAL PLANS REVIEW CHECKLIST

Manufacturer: Cellxion, LLC Model Name/Number: STWS02 PFS Reference/Project #

Reviewer: Mark Severson Date Reviewed: 4/26/2023 Approval Date: 6/22/2023

			Conforms (by PFS)		
REF.	**PFS REQUIREMENTS**	**PLAN SHEET PAGE # AND NOTES**	**YES**	**NO**	**N/A**
(B)	**BUILDING:**				
B-1.	Occupancy classification	0-0	☒	☐	☐
B-2.	Special occupancy requirements	N/A	☐	☐	☒
B-3.	Minimum type of construction	0-0	☒	☐	☐
(FRC)	**FIRE RESISTANT CONSTRUCTION:**				
FRC-1.	Fire resistant separations	Calcs Sec 1	☒	☐	☐
FRC-2.	Fire resistant protection for type of construction	Calcs Sec 1.3.2	☒	☐	☐
FRC-3.	Protection of openings and penetrations of rated walls	0-0	☒	☐	☐
FRC-4.	Fire blocking	N/A	☐	☐	☒
FRC-5.	Draftstopping	N/A	☐	☐	☒
FRC-6.	Calculated fire resistance	N/A	☐	☐	☒
(FSS)	**FIRE SUPPRESSION SYSTEMS:**				
FSS-1.	Early warning	4-0	☒	☐	☐
FSS-2.	Smoke evacuation systems schematic	N/A	☐	☐	☒
FSS-3.	Fire sprinklers	N/A	☐	☐	☒
FSS-4.	Standpipes	N/A	☐	☐	☒
FSS-5.	Pre-engineered systems	N/A	☐	☐	☒
FSS-6.	Riser diagram	N/A	☐	☐	☒
(LS)	**LIFE SAFETY:**				
LS-1.	Occupant load capacities	N/A	☐	☐	☒
LS-2.	Egress capacities	N/A	☐	☐	☒
LS-3.	Early warning systems	N/A	☐	☐	☒
LS-4.	Smoke control	N/A	☐	☐	☒
LS-5.	Stair pressurization	N/A	☐	☐	☒
LS-6.	Systems schematic	N/A	☐	☐	☒
(OLER)	**OCCUPANCY LOAD/EGRESS REQUIREMENTS:**				
OLER-1.	Gross occupancy load	0-0	☒	☐	☐
OLER-2.	Net occupancy load	0-0	☒	☐	☐
OLER-3.	Means of egress	2-0	☒	☐	☐
OLER-4.	Exit access	2-0	☒	☐	☐
OLER-5.	Exit and exit discharge	4-0	☒	☐	☐
OLER-6.	Stairs construction/geometry and protection	N/A	☐	☐	☒
OLER-7.	Doors	1-0	☒	☐	☐

			Conforms (by PFS)		
REF.	**PFS REQUIREMENTS**	**PLAN SHEET PAGE # AND NOTES**	**YES**	**NO**	**N/A**
OLER-8.	Emergency lighting	4-0	☒	☐	☐
OLER-9.	Exit signs	4-0	☒	☐	☐
OLER-10	Specific occupancy requirements	0-0	☒	☐	☐
OLER-11	Construction requirements	108-016	☒	☐	☐
OLER-12	Horizontal exits/exit passageways	N/A	☐	☐	☒
(SR)	**STRUCTURAL REQUIREMENTS:**				
SR-1.	Termite protection	N/A	☐	☐	☒
SR-2.	Design loads	0-0	☒	☐	☐
SR-3.	Wind requirements	0-0	☒	☐	☐
SR-4.	Building envelope	S1	☒	☐	☐
SR-5.	Structural calculations (if required)	Calcs	☒	☐	☐
SR-6.	Wall systems	S1, S2	☒	☐	☐
SR-7.	Floor systems	108-035	☒	☐	☐
SR-8.	Roof systems	S1 , S10	☒	☐	☐
SR-9.	Threshold inspection plan	N/A	☐	☐	☒
SR-10.	Stair systems	N/A	☐	☐	☒
(M)	**MATERIALS:**				
M-1.	Wood	N/A	☐	☐	☒
M-2.	Steel	0-0, 108-016	☒	☐	☐
M-3.	Aluminum	N/A	☐	☐	☒
M-4.	Concrete	0-0, 108-016	☒	☐	☐
M-5.	Plastic	N/A	☐	☐	☒
M-6.	Glass	N/A	☐	☐	☒
M-7.	Masonry	N/A	☐	☐	☒
M-8.	Gypsum board and plaster	108-035	☒	☐	☐
M-9.	Insulating (mechanical)	N/A	☐	☐	☒
M-10.	Roofing	S1, S9	☒	☐	☐
M-11.	Insulation	108-035	☒	☐	☐
(AR)	**ACCESSIBILITY REQUIREMENTS:**				
AR-1.	Accessible route	N/A	☐	☐	☒
AR-2.	Vertical accessibility	N/A	☐	☐	☒
AR-3.	Toilet and bathing facilities	N/A	☐	☐	☒
AR-4.	Drinking fountains	N/A	☐	☐	☒
AR-5.	Equipment	4-0	☒	☐	☐
AR-6.	Special occupancy requirements	N/A	☐	☐	☒
AR-7.	Fair Housing requirements	N/A	☐	☐	☒
(IR)	**INTERIOR REQUIREMENTS:**				
IR-1.	Interior finishes (flame spread/smoke develop)	108-035	☒	☐	☐
IR-2.	Light	3-0	☒	☐	☐
IR-3.	Ventilation	4-0	☒	☐	☐
IR-4.	Sanitation	N/A	☐	☐	☒

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State: **Florida**

Signature: Mark Severson

Title: Staff Plan Reviewer

Date: **6/22/23**

			Conforms (by PFS)		
REF.	**PFS REQUIREMENTS**	**PLAN SHEET PAGE # AND NOTES**	**YES**	**NO**	**N/A**
(SS)	**SPECIAL SYSTEMS:**				
SS-1.	Elevators	N/A	☐	☐	☒
SS-2.	Escalators	N/A	☐	☐	☒
SS-3.	Lifts	N/A	☐	☐	☒
(E)	**ELECTRICAL:**				
E-1.	Wiring services	6-0, 6-1	☒	☐	☐
E-2.	Feeders and branch circuits	6-0	☒	☐	☐
E-3.	Overcurrent protection	6-0	☒	☐	☐
E-4.	Grounding	5-4, 6-0, 6-1	☒	☐	☐
E-5.	Wiring methods and materials	0-1, 0-2	☒	☐	☐
E-6.	GFCI's	3-0	☒	☐	☐
E-7.	Equipment	3-0	☒	☐	☐
E-8.	Special occupancies	N/A	☐	☐	☒
E-9.	Emergency systems	N/A	☐	☐	☒
E-10.	Communication systems	N/A	☐	☐	☒
E-11.	Low-voltage	3-0	☒	☐	☐
E-12.	Load calculations	PB Calcs, 0-0	☒	☐	☐
(P)	**PLUMBING:**				
P-1.	Minimum plumbing facilities	N/A	☐	☐	☒
P-2.	Fixture requirements	N/A	☐	☐	☒
P-3.	Water supply piping	N/A	☐	☐	☒
P-4.	Sanitary drainage	N/A	☐	☐	☒
P-5.	Water heaters	N/A	☐	☐	☒
P-6.	Vents	N/A	☐	☐	☒
P-7.	Roof drainage	N/A	☐	☐	☒
P-8.	Back flow prevention	N/A	☐	☐	☒
P-9.	Irrigation	N/A	☐	☐	☒
P-10.	Location water supply line	N/A	☐	☐	☒
P-11.	Grease traps	N/A	☐	☐	☒
P-12.	Environmental requirements	N/A	☐	☐	☒
P-13.	Plumbing riser	N/A	☐	☐	☒
(M)	**MECHANICAL:**				
M-1.	Energy calculations	N/A	☐	☐	☒
M-2.	Exhaust systems including clothes dryer exhaust	N/A	☐	☐	☒
M-3.	Kitchen equipment exhaust	N/A	☐	☐	☒
M-4.	Specialty exhaust systems	N/A	☐	☐	☒
M-5.	Equipment	0-3	☒	☐	☐
M-6.	Equipment location	3-2, 5-0	☒	☐	☐
M-7.	Make-up air	N/A	☐	☐	☒
M-8.	Roof mounted equipment	N/A	☐	☐	☒
M-9.	Duct systems	N/A	☐	☐	☒
M-10.	Ventilation	5-2	☒	☐	☐
M-11.	Combustion air	N/A	☐	☐	☒
M-12.	Chimneys	N/A	☐	☐	☒
M-13.	Fireplaces and vents	N/A	☐	☐	☒

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Title: Staff Plan Reviewer
Date: 6/22/23

			Conforms (by PFS)		
REF.	**PFS REQUIREMENTS**	**PLAN SHEET PAGE # AND NOTES**	**YES**	**NO**	**N/A**
M-14.	Appliances	N/A	☐	☐	☒
M-15.	Boilers	N/A	☐	☐	☒
M-16.	Refrigeration	N/A	☐	☐	☒
M-17.	Bathroom ventilation	N/A	☐	☐	☒
M-18.	Laboratory	N/A	☐	☐	☒
(G)	**GAS:**				
G-1.	Gas piping	N/A	☐	☐	☒
G-2.	Venting	N/A	☐	☐	☒
G-3.	Combustion air	N/A	☐	☐	☒
G-4.	Chimneys and vents	N/A	☐	☐	☒
G-5.	Appliances	N/A	☐	☐	☒
G-6.	Type of gas	N/A	☐	☐	☒
G-7.	Fire places	N/A	☐	☐	☒
G-8.	LP tank location	N/A	☐	☐	☒
G-9.	Riser diagram/shut-offs	N/A	☐	☐	☒
(9B)	**RULE 9B-72: STATE PRODUCT APPROVAL**				
9B-72.005	Scope	OM manual	☒	☐	☐
9B-72.010	Definitions	submit as needed	☒	☐	☐
9B-72.030	Exceptions	submit as needed	☒	☐	☐
9B-72.040	Product Evaluation & Quality Assurance for Local Approval	FL Product Approval Schedule	☒	☐	☐
9B-72.060	Optional Statewide Approval Generally	submit as needed	☒	☐	☐
9B-72.070	Product Evaluation & Quality Assurance for State Approval	FL Product Approval Schedule	☒	☐	☐
9B-72.080	Product Validation by Approved Validation Entity for State Approval	submit as needed	☒	☐	☐
9B-72.090	Product Approval by the Commission	submit as needed	☒	☐	☐
9B-72.100	Approval of Product Evaluation Entities, Product Validation Entities, Testing Laboratories, Certification Agencies, Quality Assurance Agencies and Accreditation Bodies	submit as needed	☒	☐	☐
9B-72.110	Criteria for Certification of Independence	submit as needed	☒	☐	☐
9B-72.120	List of Approved Product Evaluation Entities, Validation Entities, Testing Laboratories, Certification Agencies, Quality Assurance Agencies and Accreditation Bodies	submit as needed	☒	☐	☐
9B-72.130	Forms	submit as needed	☒	☐	☐
9B-72.135	Revisions to Product Approvals or Entity Approvals	submit as needed	☒	☐	☐
9B-72.160	Revocation or Modification of Product Approvals and Entity Certifications	submit as needed	☒	☐	☐
9B-72.170	Investigations	submit as needed	☒	☐	☐
9B-72.180	Equivalence of Standards	submit as needed	☒	☐	☐
9B-72.190	Reference Standards	submit as needed	☒	☐	☐

PFS CORPORATION

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State: **Florida**

Signature: PFS *Mark Severson*

Title: Staff Plan Reviewer

Date: **6/22/23**

Sabre Industries™

INNOVATION DELIVERED

CELLXION LLC

Model: STWS02

12’-7” x 34-3”

Concrete Equipment Shelter

State of Florida

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF FLORIDA
PROFESSIONAL ENGINEER

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 6/22/23

CELLXION, LLC
SABRE INDUSTRIES
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, Louisiana 71111
(318) 213-2900
Fax: (318) 213-2864

TABLE OF CONTENTS

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V.	DRAWINGS (SEE SHEET 0-0 FOR INDEX)	

PFS CORPORATION
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State: **Florida**
Signature: Mark Severson
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Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF FLORIDA
PROFESSIONAL ENGINEER

SABRE INDUSTRIES
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, Louisiana 71111
(318) 213-2900
Fax: (318) 213-2864

1.1 REFERENCE MATERIAL FOR DESIGN CALCULATIONS

- □ 2018 International Building Code
- □ American Concrete Institute (ACI) 318-14
- □ Embedment Properties for Headed Studs, TRW Nelson, Design Data Catalog
- □ Steel Construction Manual, AISC 360-16
- □ ASCE 7-16 LRFD

1.2 DESIGN CRITERIA USED IN CALCULATIONS

- □ Reinforcing Steel Yield Strength = fy = 60 ksi
- □ Structural Steel is A 572/572M
- □ LRFD Weld Capacity = 1.392 kips/in/1/16 in
- □ Unconfined Compressive Strength of Concrete = f'c = 5000 psi
- □ Weight of Concrete = 115 pcf
- □ Stud Yield Strength = 50 ksi

1.3 INTERNATIONAL BUILDING CODE REQUIREMENTS

The following is a summary of the Code requirements applicable to CellXion precast concrete equipment shelters.

1.3.1 Occupancy Classification

Occupancy to be Group U per sec 312.1.

1.3.2 Construction Type

Type V-B per section 602.5 and Table 601.

1.3.3 Building Limitations

Occupancy U

Relative to the location of the nearest structure or property line:
Walls must be rated one hour if less than 10 feet. (Table 602)
Maximum size of U building (Table 503) is 5,500 SF, 1 story. (Table 503)

NOTE: STANDARD SHELTERS MAY BE RATED UP TO 2-HOURS.

REF: Table 721.1(2), Item number 4-1.1, Sand-lightweight concrete 4 inches thick.

IF PROTECTED OPENINGS ARE REQUIRED:
3/4 HOUR RATED OPENINGS ARE REQUIRED IN ONE HOUR ASSEMBLIES.
1.5 HOUR RATED OPENINGS ARE REQUIRED IN TWO HOUR ASSEMBLIES.

Unprotected Openings Allowed	Protected Openings Allowed Table 705.8
Not permitted up to 5 feet.	Not permitted up to 3 feet.
10% permitted > 5 feet to 10 feet.	15% permitted > 3 feet to 5 feet.
15% permitted > 10 feet to 15 feet.	25% permitted > 5 feet to 10 feet.
25% permitted > 15 feet to 20 feet.	45% permitted > 10 feet to 15 feet.
45% permitted > 20 feet to 25 feet.	75% permitted > 15 feet to 20 feet.
70% permitted > 25 feet to 30 feet.	No restriction > 20 feet.
No restriction > 30 feet.	

1.4 FLOOR LOADS Floor live load required (Table 1607.1) for light storage is; 125 psf

The summary loading chart in Section 2.0.1 indicates allowable loads of:
426 psf 12.583 ft wide **OK**

For some equipment, such as batteries, a concentrated load is realized (2.5 SF in size).
Section 2.3.6 shows that concentrated loads of 1779 lbs can be placed anywhere.
If the concentrated load is next to the wall, 6136 lbs can be used.

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1.5 ROOF LOADS Minimum roof live load required (2018 IBC 1607.13.2.1) is:

$L_r = L_o R_1 R_2$ [sec 1607.13.2.1, Eq 16-26]

L_o = 20 [sec 1607.13.2.1]

R_1 = 1.0 (worst case for smaller shelters) [sec 1607.13.2.1, Eq 16-27]

F = .167 in per ft slope R_2 = 1.0 (for F< 4) [sec 1607.13.2.1, Eq 16-30]

L_r = 20 psf

The summary loading chart in Section 2.0.1 indicates allowable loads of:

118 psf 12.583 ft wide **OK**

Snow Loads Section 1608.2 requires use of section 7 of ASCE 7-16

$p_f = 0.7\ C_e\ C_t\ I_s\ p_g$ [ASCE 7-16, Sec 7.3, Equation 7.3-1]

p_f = (Min. design load for roofs from section 2 of these calcs)

= 118 psf 12.58 ft wide

C_e = 0.9 (worst case-ASCE 7-16,Table 7.1-1, lesser factors may be used as appropriate)

C_t = 1.0 (From ASCE 7-16, Table 7.3-2, heated structure)

I_s = 1.2 (Category IV, ASCE 7-16 Sec 1.5.1, Table 1.5-2)

Using the design load from section 2 for p_f and solving for p_g:

$p_g = p_f / (0.7\ C_e\ C_t\ I_s)$

= **(Allowable ground snow load)**

= 156 psf 12.58 ft wide

1.6 WIND LOADS

Sect. 1609.1.1 requires ASCE 7-16, Chapter 28; Part 2; simple diaphragm low-rise buildings:

Risk Category: IV [ASCE 7-16, Section 1 and Table 1.5-1]

V = 180 mph [ASCE 7-16, Section 26.5.1 and Figure 26.5-1D]

Surface Roughness Category: C [ASCE 7-16, section 26.7.2]

Exposure category: C [ASCE 7-16, section 26.7.3]

Exposure C Adjustment Factor: λ = 1.21 [ASCE 7-16, section 28.5.3 & Fig 28.5-1]

Enclosure Classification: enclosed [ASCE 7-16, section 26.2]

Topographic Factor: K_{zt} = 1.0 [ASCE 7-16, sec 26.8.2]

MWFRS Design Wind Pressures: [from ASCE 7-16, sec 28.5.3 & Figure 28.5-1]

$p_s = \lambda K_{zt} p_{s30}$ [ASCE 7-16, sec 28.5.3, Eq 28.5-1]

WALLS: **62.2 psf** **[zone A]**

-32.3 psf [zone B, negligible--> only 1 inch tall]

46.6 psf [zone C]

-19.1 psf [zone D, negligible--> only 1 inch tall]

Zone A controls, use it for analysis

Allowable load on walls: l on walls: 152.5 psf(Calcs sec 2.0.1) 9.250 ft tall **OK**

ROOF: **-74.7 psf** **[zone E]**

-42.5 psf [zone F]

-52.0 psf [zone G]

-32.9 psf [zone H]

Zone E controls, use it for analysis

Allowable negative load on roof: -41.0 psf (Calcs, sec 2) 12.583 ft wide

Plus .9x DL (48.3 psf = 43.4 psf + Allow Neg Ld = -84.4 psf **OK**

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State: **Florida**

Signature: PFS *Mark Feverson*

Title: Staff Plan Reviewer

Date: **6/22/23**

1.6.1 Check structural connections for carrying wind loads to the foundation.

The worst case for the windward forces are when they are projected onto the long walls. Half of the load is carried to the floor connections and half is carried to the roof connections.
The walls are 9.250 ft tall.
The connections which connect the long walls to the end walls are neglected for the purposes of this particular analysis. Analysis with Calculations from section 3

1.6.1.1 Check connections for transfer of windward loads from wall to the floor and roof.

The connections along the top and bottom of the walls are at a standard spacing of 56 inches. This will be the tributary width of wind load for each connection at the floor and roof. The load for this tributary area on the windward wall is then:

P'(w)= P(windward wall) x tributary area (for 9.250 ft tall wall)
Where tributary area = (9.250 ft / 2) x 4 ft 8 in = 21.58 sq. ft.
= 62.2 psf x 21.58 sq. ft.
P'(w)= 1,342 lbs

This load is resisted by three main components of the connection at the floor:
5.95 kips Capacity of P/N 223100 in tension per Clacs Section 3.3.1
22.87 kips Capacity of the Floor Lifting Insert in shear per Clacs Section 3.7
12.53 kips Capacity of the weld which connects the plates per Clacs Section 3.8
The capacity of all 3 components exceed the wind load OK

This load is resisted by three main components of the connection at the roof:
3.52 kips Capacity of P/N 223000 in Y-shear per Clacs Section 3.4.3
5.95 kips Capacity of P/N 222000 in tension per Clacs Section 3.5.1
12.53 kips Capacity of the weld which connects the plates per Clacs Section 3.8
The capacity of all 3 components exceed the wind load OK

1.6.1.2 Check connections for transfer of leeward loads from wall to the floor and roof.

The leeward wall has similar construction, but the loads are less and are outward.

P'(l)= P(leeward wall) x tributary area
Where tributary area = (9.250 ft / 2) x 4 ft 8 in = 21.58 sq. ft.
= 62.2 psf x 21.58 sq. ft.
P'(l)= 1,342 lbs (negative indicating an outward direction)

This load is resisted by three main components of the connection at the floor:
5.95 kips Capacity of P/N 223100 in tension per Section 3.3.1
22.87 kips Capacity of Floor Lifting Insert in shear per Section 3.7
12.53 kips Capacity of the weld which connects the plates per Section 3.8
The capacity of all 3 components exceed the wind load OK

This load is resisted by three main components of the connection at the roof:
3.52 kips Capacity of P/N 223000 in Y-shear per Section 3.4.3
5.95 kips Capacity of P/N 222000 in tension per Section 3.5.1
12.53 kips Capacity of the weld which connects the plates per Section 3.8
The capacity of all 3 components exceed the wind load OK

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1.6.1.3 Windward and leeward loading transfer to endwalls:

The loads on the top half of the shelter must be transferred to the ground through the connections on the endwalls. There are three connections from the roof to the endwall and three connections from the endwall to the floor. The load on the projected area of the top half of the long side of the shelter is resisted by these connections and is assumed to distribute half of the load to each endwall.

A shelter which is 34.250 feet long has a tributary area of:

Area = (9.667 feet / 2) x (34.250 feet / 2) = 82.77 sq. ft.

P(proj.)= 82.77 sq ft x 62.2 psf = 5,148 lbs.

The roof connection consist of the same three components as were indicated in the sidewalls, except that they are loaded in a different direction. Their capacities are shown below.

7.04 kips Capacity of P/N 223000 in X-shear per Section 3.4.2
22.87 kips Capacity of the Wall Corner Insert per Section 3.6.1
12.53 kips Capacity of the weld which connects the plates per Section 3.8

Since there are three of these connections, the total capacity is: 21.12 kips **OK**

1.6.1.4 Windward and Leeward loading transfer to floor:

The same loads that are transferred to the endwalls from the roof need to be transferred to the floor panel. This is accomplished through the three connections at the base of the endwall.

The floor connections consist of the same three components as were indicated in the sidewalls, except that they are loaded in a different direction. Their capacities are shown below.

14.54 kips Capacity of P/N 223100 in X-shear per Section 3.3.2
22.87 kips Capacity of Floor Lifting Insert in shear per Section 3.7
12.53 kips Capacity of the weld which connects the plates per Section 3.8

Since there are three of these connections, the total capacity is: 37.58 kips **OK**

1.6.1.5 Find horizontal forces and overturning moments.

This is used in the tie-down anchor analysis in 1.8 below.

Shelter Dims (feet)			Shelter Weight	Hor.Wind (PxA-hor)	Vert. Wind (PxA-vert.)	Overturn Moment
Width	Length	Height	lbs	lbs	lbs	ft-lbs
12.58	34.25	10.125	81,744	21,568	32,175	311,614

1.6.1.6 Components and Cladding:

$p_{net} = \lambda K_{zt} p_{net30}$ [ASCE 7-16, sec 30.4.2, Eq 30.4-1]

	POS	NEG	
			[from ASCE 7-16, Figure 30.4-1]
ROOF ZONE 1:	22.7 psf	-64.5 psf	(100 sf effective wind area) use for analysis
ROOF ZONE 2:	26.9 psf	-105.8 psf	(20 sf effective wind area)
ROOF ZONE 3:	28.7 psf	-178.1 psf	(10 sf effective wind area)

Allowable positive load on roof: (From section 2)
118 psf 12.583 ft wide shelter

Allowable negative load on roof: (From section 2, neglecting DL)
-41.0 psf 12.583 ft wide shelter

Allowable negative load on roof: (From section 2, including .6 x DL)
Roof Dead Load: 48.3 psf X .9 = 43.4 psf
-84.4 psf 12.583 ft wide shelter **OK**

	POS	NEG	
			[from ASCE 7-16, Figure 30.4-1]
WALL ZONE 4:	60.0 psf	-65.9 psf	(100 sf effective wind area) use for analysis
WALL ZONE 5:	67.4 psf	-88.1 psf	(20 sf effective wind area)

Allowable load on walls: (From section 2)
152.5 psf 9.250 ft tall wall **OK**

The larger load at the corners does not produce a significant bending stress, and the shear strength of the roof panel will be more than adequate to resist this uplift load. In addition, extra connections between the roof and endwalls anchor the roof at these end zones.

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1.7 SEISMIC LOADS Section 1613.1, requires ASCE 7-16 for analysis.

Site Class is D [ASCE 7-16, Sec 11.4.3, assumed due to unknown soil properties]

Risk Category: IV [ASCE 7-16, sec 11.5.1, Table 1.5-1]

Seismic Design Category: **C** [ASCE 7-16, sec 11.6]

Seismic Importance Factor, I is: 1.50 [ASCE 7-16, sec 11.5.1, Table 1.5-2]

$V = C_s W$ [ASCE 7-16, sec 12.8.1, Eq. 12.8-1]

$W = D$ [ASCE 7-16, sec 12.7.2]

$C_s = S_{DS} / (R / I)$ [ASCE 7-16, sec 12.8.1.1, Eq. 12.8-2]

$V = (S_{DS} / (R / I)) D$

$R =$ 4 [ASCE 7-16, Table 12.2-1, A.5]

$S_{DS} = 2/3\ S_{MS}$ [ASCE 7-16, sec 11.4.5, Eq. 11.4-3]

$S_{MS} = F_a S_S$ [ASCE 7-16, sec 11.4.4, Eq. 11.4-1]

$F_a =$ 1.600 [ASCE 7-16, Sec 11.4.4, Table 11.4-1]

$S_S =$ 0.086 [ASCE 7-16 per seismicmaps.org]

$S_{MS} =$ 0.138

$S_{DS} =$ 0.092 Design Category = A

$S_{D1} = 2/3\ S_{M1}$ [ASCE 7-16, sec 11.4.5, Eq. 11.4-4]

$S_{M1} = F_v S_1$ [ASCE 7-16, sec 11.4.4, Eq. 11.4-2]

$Fv =$ 2.400 [ASCE 7-16, Sec 11.4.4, Table 11.4-2]

$S_1 =$ 0.051 [ASCE 7-16 per seismicmaps.org]

$S_{M1} =$ 0.12

$S_{D1} =$ 0.082 Design Category = C

$T = 0.02\ h^{0.75} =$ 0.114 s

$T_s = S_{D1} / S_{DS} =$ 0.890 s

$C_s =$ 0.034 USE

$C_{s\_max} = S_{D1} / ((R / I) \times T) =$ 0.270

$C_{s\_min} = \max(0.044 S_{DS} I, 0.01) =$ 0.006

Seismic Coefficient = $\rho\ C_S =$ **0.034**

$V =$ **0.034 D** [Use for base shear]

Determine E for use in load combinations on individual panel design.

$E = E_h + E_v$ [ASCE 7-16, sec 12.4.2, Eq. 12.4-1]

$E_h = \rho\ Q_E$ [ASCE 7-16, sec 12.4.2.1, Eq. 12.4-3]

$E_v = 0.2\ S_{DS} D$ [ASCE 7-16, sec 12.4.2.2, Eq. 12.4-4a]

$E = \rho\ Q_E + 0.2\ S_{DS} D$ [ASCE 7-16, sec 12.4.2.1, Eq. 12.4-3 plus sec 12.4.2.2, Eq. 12.4-4]

$Q_E = V$ [ASCE 7-16, sec 12.4.2.1] $\rho =$ 1.0 [ASCE 7-16, sec 12.3.4]

$E = \rho\ V + 0.2\ S_{DS} D$

$E_m = E_{mh} - E_v$ [ASCE 7-16, sec 12.4.3, Eq. 12.4-6]

$E_{mh} = \Omega_0\ Q_E$ [ASCE 7-16, sec 12.4.3.1 Eq. 12.4-7]

$E_m = \Omega_0\ Q_E - 0.2\ S_{DS} D$ $\Omega_0 =$ 2.5 [ASCE 7-16, Table 12.2-1, A.5]

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Load combinations: per ASCE 7-16 2.3.1 & 2.3.6

Comb 1	1.4D	[Notes 1, 2, 3]	
Comb 2	1.2D + 1.6L + 0.5(Lr or S or R)	[Notes 1, 2, 3]	← Controls Floor
Comb 3	1.2D + 1.6(Lr or S or R) + (L or 0.5W)	[Notes 1, 2, 3]	
Comb 4	1.2D + 1.0W + L + 0.5(Lr or S or R)	[Notes 1, 2, 3]	← Controls Walls (H)
Comb 5	0.9D + 1.0W	[Notes 1, 2, 3]	← Controls Roof
Comb 6	$(1.2+0.2Sds)D + \Omega_0 Q_E + L + 0.2S$	[Notes 1, 2, 3]	← Controls Walls (V)
Comb 7	$(0.9-0.2Sds)D + \Omega_o Q_E$		

Note 1: Roof and floor panels are designed using 1.2D and 1.6L, exceeds req'd factors.
Note 2: Wall panels are designed using 1.2D and 1W, exceeds req'd factors.
Note 3: S, R, and Lr are used as L in panel calculations, see section 2 of these calcs.

Load Comb check

									Min. Design Loads		
Walls (V):	$(1.2+.2S_{DS})D +$		Ω_{O^*}	Q_E =	1.218	X	577.22	703.25	5770	plf	**OK**
Walls (H):	0.9 x	0	+ 1.0 x	62.194	=			62.19	244	psf	**OK**
Roof:	0.9 x	48.258	+ 1.0 x	-74.657	=			-31.22	243	psf	**OK**
Floor:	1.2 x	43.685	+ 1.6 x	125.000	=			252.42	426	psf	**OK**

1.7.1 Seismic loads from top half of the wall panel are transferred to the roof.

Equipment permanently installed in the building is estimated at 8,563 pounds. For a 34.25 ft long shelter, this is an average of 250 pounds per linear foot. If this equipment is mounted to the floor and braced at the top, then half the seismic load from the equipment should be added to the top of the walls. Analysis uses sec 3 of these calculations.

The weight of a wall section transferred to the connections at 56" on center is:

W(wall)= (56/12 ft width) x(9.250 ft high) x (4 /12 ft thick) x (115 pcf)
= 827 lbs

W(equipment) = (56/12 ft width) x(125 plf) = 583 lbs

W(top of wall) = W(wall) + W(equipment) = 1,411 lbs

For the wall panel, the seismic shear is:

V = 49 lbs Seismic shear per connection plate at top of walls

This load is resisted by three main components of the connection at the floor:

5.95 kips Capacity of P/N 223100 in tension per Section 3.3.1
22.87 kips Capacity of Floor Lifting Insert in shear per Section 3.7
12.53 kips Capacity of the weld which connects the plates per Section 3.8

The capacity of all 3 components exceed the seismic load **OK**

This load is resisted by three main components of the connection at the roof:

3.52 kips Capacity of P/N 223000 in Y-shear per Section 3.4.3
5.95 kips Capacity of P/N 222000 in tension per Section 3.5.1
12.53 kips Capacity of the weld which connects the plates per Section 3.8

The capacity of all 3 components exceed the seismic load **OK**

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1.7.2 Seismic loads from roof are transferred to the top of the endwall.

The seismic load at the top connection plates of the endwalls includes the seismic loads from the top quarter of two sidewalls, one half of the roof, and one half of the total equipment.

Use a 9.250 ft tall x 33.583 ft long wall & use a 12.916 ft wide x 34.583 ft long roof.

W(quarter wall)= 9.250 ft / 2 x 33.6 ft / 2 x
4.00 /12 ft x 115 pcf = 2,977 lbs. x 2 = 5,954 lbs.

W(half roof)= 12.916 ft x 34.583 ft / 2 x
4.75 /12 ft x 115 pcf = 10,166 lbs.

W(equipment) = 17.125 ft x 125 plf = 2,141 lbs

TOTAL: W(top of endwall) = 18,261 lbs.

The seismic load is then: V(top of endwall) = 628 lbs.

The roof connection consist of the same three components as were indicated in the sidewalls, except that they are loaded in a different direction. Their capacities are shown below.

7.04 kips Capacity of P/N 223000 in X-shear per Section 3.4.2
22.87 kips Capacity of the Wall Corner Insert per Section 3.6.1
12.53 kips Capacity of the weld which connects the plates per Section 3.8

Since there are three of these connections, the total capacity is:

21.12 kips **This capacity exceeds the seismic load** **OK**

1.7.3 Seismic loads from endwall are transferred to the floor.

The connections at the bottom of the endwalls have the same seismic load as the connections at the top, except that the seismic load from the endwall itself is added.

The weight of the endwall is:

W(endwall)= 12.583 ft x 9.250 ft x
4.00 /12 ft x 115 pcf = 4,462 lbs

V(endwall)= 153 lbs

V(bottom)= V(top of endwall) + V(endwall) = 782 lbs

The same loads that are transferred to the endwalls from the roof need to be transferred to the floor panel. This is accomplished through the three connections at the base of the endwall.

The floor connections consist of the same three components as were indicated in the sidewalls, except that they are loaded in a different direction. Their capacities are shown below.

14.54 kips Capacity of P/N 223100 in X-shear per Section 3.3.2
22.87 kips Capacity of Floor Lifting Insert in shear per Section 3.7
12.53 kips Capacity of the weld which connects the plates per Section 3.8

Since there are three of these connections, the total capacity is:

37.58 kips **This capacity exceeds the seismic load** **OK**

1.8 Check shelter tie-downs to foundation

For tie-down anchor capacity see Section 3.9 of these calcs:

Tension Pullout:	1817 lbs	Per connection
Horizontal Shear:	3914 lbs	Per connection
Vertical Shear:	3914 lbs	Per connection

Horizontal forces due to seismic/wind loads:

Shelter Dims (feet)			Shelter	Seis.Load	Wind load	Control'g	Sliding	Tie-down	Force on	CHECK
Width	Length	Height	Weight	(W x Cs)	1.6.1.5	Load	Resist.	Capacity	Anchors	
12.58	34.25	10.125	81,744	2,812	21,568	WIND	28,828	31,314	0	N/A

Sliding resistance uses (0.9-0.2S_{DS}) x μ x DL of shelter (where μ = 0.4)

This shelter to have a total of 8 tie-down connections

N/A indicates that no-tie down requirement is necessary for sliding.

Overturning forces due to seismic/wind loads:

Shelter Dims (feet)			Seis.load (W x Cs)	Seismic Overturn	Wind Over 1.6.1.5	Control'g Load	Overturn Resist.	Tie-down Capacity	Force on Anchors	CHECK
Width	Length	Height	lbs.	ft-lbs.	ft-lbs.		ft-lbs.	lbs	lbs	
12.58	34.25	10.125	2,812	45,025	311,614	WIND	453427	15,657	0	N/A

Overturning resistance uses (0.9-0.2S_{DS}) x DL of shelter

Weight of shelter and contents are the same as in the horizontal force chart above.

N/A indicates that no-tie down requirement is necessary for overturning.

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2.0 DESIGN CRITERIA

NOTE: These calculations represent the panels of a
12.583 ft wide x 34.250 ft long x 9.250 ft tall shelter.

STRUCTURAL PROPERTY		UNITS	LABEL
Concrete Compressive Strength	5000	psi	f'_c (sand-lightweight)
Reinforcing bar Yield Stress	60000	psi	fy[REBAR]
Concrete Density	115	pcf	DENSITY
Maximum Building Width	12.583	feet	BLDGW
Maximum Building Length	34.25	feet	BLDGL
Maximum Wall Panel Height	9.25	feet	WALLH
Max. Est. weight of Shelter	73,181	LBS.	BLDGWT
Concrete volume req'd.	22.07	YDS.	CONCYDS
Roof thickness at peak	5.5	inches	H[ROOF]
Roof thickness at edge	4	inches	
Rebar size used in roof #	4	Rebar	REBARROOF
Lateral rebar spacing: roof	10	inches	ROOFSPACING12
Longitudinal rebar spacing-roof:	14	inches	
Steel mesh used in wall:	W4	Wire	REBARWALL
Add vert steel used in wall #	4	Rebar	REBARWALL2
Steel spacing in wall (12"max.)	4	inches	WALLSPACING
Vertical Rebar spacing in wall	12	inches	WALLSPACING2
Horizontal rebar spacing in wall	12	inches	
Wall panel thickness	4	inches	WALLTHICKNESS
Rebar size used in floor #	6	Rebar	REBARFLR
Number of rebar per floor rib	2	each	REBARFLRQTY
Spacing of ribs in floor	22	inches	FLOORSPACING
Floor thickness	5.75	inches	H[FLOOR]
Floor deck thickness	2.75	inches	H[DECK]
Floor rib width	6	inches	B[RIB]
Floor deck steel size	W4	Wire	
Floor deck steel spacing	4	inches	
Area per roof rebar	**0.200**	sq. in.	A[REBARROOF]
Diameter of roof rebar	**0.500**	inches	DIA[REBARROOF]
Area per wall wire	**0.040**	sq. in.	A[REBARWALL]
Area per extra vert wall rebar	**0.200**	sq. in.	A[REBARWALL2]
Diameter of wall wire	**0.356**	inches	DIA[REBARWALL]
Diameter of wall rebar	**0.500**	inches	
Area of floor rib rebar	**0.880**	sq. in.	A[REBARFLR]
Diameter of floor rebar	**0.750**	inches	DIA[REBARFLR]
Area of deck rebar/wire	**0.040**	sq. in.	A[REBARDECK]
Diameter of deck rebar/wire	**0.356**	inches	DIA[REBARDECK]

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Area of deck steel per foot **0.120** sq.in./ft. A[DECKSTEEL]
Minimum req'd deck steel/foot **0.059** sq.in./ft. A[DECKSTEEL-MIN]

2.0.1 STRUCTURAL LOADING SUMMARY FOR PANELS, AS DESIGNED.

PANEL	ALLOWABLE LOAD	TYPE
	12.583 ft wide	
roof	**118** psf	LIVE
floor	**265** psf	LIVE
	9.250 ft tall	
wall	**152.5** psf	WIND

2.0.2 CHECK STEEL RATIOS (ACI 318-14, sec. 18.10.2.3)

B_1 = 0.80

	ρ_t	ρ_v	
ROOF:	0.0048	0.0035	**OK**
FLOOR:	0.0086		**OK**
WALL:	0.0099	0.0099	**OK**

ρ_b	ρ_{max}	ρ_{min}
0.0335	0.0252	0.0033

Min reqd. per ACI 318-14, sec 18.10.2.1 0.0025

2.0.3 CHECK DEVELOPMENT LENGTH (ACI 318-14, sec. 18.8.5.1)

		Wall	Roof	Floor
Largest of:	10 d_b =	3.6 in	5.0 in	7.5 in
		7.5 in	7.5 in	7.5 in
Use Eq. Below for l_d =		9.7 in	13.6 in	25.5 in

ld = (3/40)*(fy/(λ*SQRT(f'c))*(ψt*ψe*ψs/((cb + Ktr)/db))*db ψt = 1.0; ψe =1.0; ψs = 0.8 λ = 0.75

K_{tr} = 0.0 (cb + Ktr)/db <= 2.5

development length for #4 rebar = 18 in. **OK**

developmnet length for #6 rebar = 30 in **OK**

2.1 ROOF PANEL CALCULATIONS

Temperature steel required: Ats
Panels are 4 in thick, minimum.
Maximum thickness of roof panel is 5.5 inches at center peak.
Ats = Aconc x 0.0018
= 5.5 in. x 12 in. x 0.0018
= 0.1188 sq. in. per foot of width of roof panel.
Use #4 rebar at 14 inches, longitudinal: Ats(actual) = 0.1714 sq. in. **OK**

2.1.1 Determine shear strength: Vu[ROOF]

b[ROOF] = **12.0** inches
d[ROOFSHEAR]= 3 in. - DIA[REBARROOF] / 2
2.75 inches
Vu[ROOF]= .85 x .85 x 2 x (fc)^.5 x b[ROOF] x d[ROOFSHEAR]
= **3372** lbs.

2.1.2 Determine allowable live load due to shear: w[ROOFSHEARLL]

ROOFSPANSHEAR= bldgw - ((d[ROOFSHEAR] + 4) x 2 / 12)
= **11.458** feet 12.58 ft wide shelter
w[ROOFDL]= density x thickness (4.75 in avg) = **45.5** psf (concrete only)
Vu[ROOF] / ROOFSPANSHEAR = 294 psf
w[ROOFSHEARLL]= (Vu[ROOF] / ROOFSPANSHEAR - 1.2 x w[ROOFDL]) / 1.6
= **150** psf allowable roof live load due to shear strength 12.583 ft wide

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2.1.3 Determine allowable live load due to moment: w[ROOFMOMENTLL]

A[ROOFSTEEL12]= A[REBARROOF] x 10 inches / ROOFSPACING)
= **0.24** sq. inches per foot of roof panel 12.583 ft wide shelter

d[ROOFMOMENT]= (H[ROOF]) - (1 +DIA[REBARROOF] / 2)
= **4.25** inches

a[ROOF12]= (A[ROOFSTEEL12] x fy[REBAR]) / (.85 x fc x b[ROOF])
= **0.282** inches

Mu[ROOF12]= (.9/12) x A[ROOFSTEEL12] x fy[REBAR] x (d[ROOFMOMENT] - a[ROOF12] / 2)
= **4438** ft-lbs

l[ROOFSPAN]= BLDGW - .5 = **12.08** feet 12.583 ft wide shelter
8 x Mu[ROOF] / l[ROOFSPAN]^2 = 243 psf

w[ROOFMOMENTLL]= [(8 x Mu[ROOF] / l[ROOFSPAN]^2) - (1.2 x w[ROOFDL])] / 1.6
= **118** psf allowable roof live load due to bending strength. 12.583 ft wide

2.1.4 Determine allowable negative live load due to moment: w[ROOFNEGMOMENTLL]

d[RFNEGMOMENT]= 1 +DIA[REBARROOF] / 2)
= **1.25** inches

a[RFNEG12]= (A[ROOFSTEEL12] x fy[REBAR]) / (.85 x fc x b[ROOF])
0.282 inches

Mu[RFNEG12]= (.9/12) x A[ROOFSTEEL12] x fy[REBAR] x (d[RFNEGMOMENT] - a[RFNEG12] / 2)
1198 ft-lbs

l[ROOFSPAN]= BLDGW - .5 = **12.08** feet 12.583 ft wide shelter

w[ROOFNEGMOMLL]= [(8 x Mu[ROOF]) / (l[ROOFSPAN]^2)] / 1.6
= Allowable negative roof live load due to bending strength (neglecting dead load)
= **-41.0** psf 12.583 ft wide shelter

2.1.5 CHECK SHEAR ALLOWED PARALLEL TO PLANE OF ROOF

2.1.5.1 CHECK SHEAR ALLOWED FOR ONE CURTAIN OF REINFORCEMENT

Use a 4 inch panel, 4 foot length, for minimum A_{CV}. (ACI 318-14, 18.10.2.2)

$2 A_{CV} \times \lambda \times f'_c{}^{1/2}$ = 23080 lbs [CONTROLS]

2.1.5.2 NOMINAL SHEAR FOR ROOF SECTION (per ACI 318-14, sec. 18.10.4.1, eq. 18.10.4.1)

Use a 4 inch panel, 4 foot length, for minimum A_{CV}.

$V_n = A_{CV} (\alpha_c \times \lambda \times f'_c{}^{1/2} + \rho_t \times f_y)$ α_c = 2.0 (for $h_w / l_w > 2$)

A_{CV} = 192 in^2 λ = 0.85 (per ACI 318-14, Table 19.2.4.2)

$\rho_t = A_s / A_{CV}$ = 0.0048

= 78935 lbs [DOES NOT CONTROL]

2.1.5.3 NOMINAL SHEAR FOR ROOF DIAPHRAGM (per ACI 318-14, sec 18312.9.1, eq. 18.12.9.1)

Use a 4 inch panel, 4 foot length, for minimum A_{CV}.

$V_n = A_{CV} (2 \times \lambda \times f'_c{}^{1/2} + \rho_t \times f_y)$

= 78935 lbs [DOES NOT CONTROL]

2.2 WALL PANEL CALCULATIONS

Temperature steel required: Ats
Panel thickness is: 4 inches
Ats= Aconc x 0.0018

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= 4 in. x 12 in. x 0.0018
= 0.0864 sq. in. per foot of width of wall panel.
(ACI 318-14, sec. 11.7.2.2 & 11.7.3.2; 18" MAX) use 4x4-W4xW4 mesh:
Use #4 rebar at 12 inches, longitudinal: Ats(actual)= 0.3200 sq. in. per foot **OK**

2.2.1 Determine allowable loads perpendicular to plane of wall

2.2.1.1 Determine shear strength perpendicular to plane of wall: (Vu)

b[WALL] = 12 inches
d[WALL] = 2 inches (Distance from outside face of panel to center of rebar)
Vu[WALL]= .85 x .85 x 2 x (fc)^.5 x b[WALL] x d[WALL]
= **2452** lbs.

2.2.1.2 Determine allowable live load due to shear: w[WALLSHEARLL]

WALLSPANSHEAR= WALLH - (d[WALL] x 2 / 12)
= **8.92** feet 9.250 ft tall wall
w[WALLDL]= **38.33** psf (does not add to horizontal force)
NOTE: WALL DEAD LOAD DOES NOT ACT PERPENDICULAR TO PLANE OF PANEL.
Vu[WALL] / (WALLSPANSHEAR) = 275 psf
w[WALLSHEARLL]= Vu[WALL] / (WALLSPANSHEAR] x 1.6)
= Allowable wall load due to shear strength
= **172** psf 9.250 ft tall wall

2.2.1.3 Determine allowable live load due to WINDWARD moment: w(WALLMOMENTLL)

A[WALLSTEEL]= A[REBARWALL]x(12"/WALLSPACING)+A[REBARWALL2]x12"/WALLSPACING2
= **0.32** sq. inches per foot of wall panel
a[WALL]= (A[WALLSTEEL] x fy[REBAR]) / (.85 x fc x b[WALL])
= **0.376** inches
Mu[WALL]= (.9/12) x A[WALLSTEEL] x fy[REBAR] x (d[WALL] - a[WALL] / 2)
= **2609** ft-lbs
8 x Mu[WALL] / l[WALLH]^2 = 244 psf
w[WALLMOMENTLL]= [(8 x Mu[WALL] / l[WALLH]^2) - (1.2 x w[WALLDL])] / 1.6
= Allowable wall live load due to bending strength.
= **152.5** psf 9.250 ft tall wall

2.2.1.4 Determine allowable live load due to LEEWARD moment: w(WALLMOMENTLL)

d[LEEWALL] = 2 inches (Distance from inside face of panel to center of rebar)
a[LEEWALL]= (A[WALLSTEEL] x fy[REBAR]) / (.85 x fc x b[WALL])
= **0.376** inches
Mu[LEEWALL]= (.9/12) x A[WALLSTEEL] x fy[REBAR] x (d[WALL] - a[WALL] / 2)
= **2609** ft-lbs
w[LEEWALLMOMENTLL]= [(8 x Mu[WALL] / l[WALLH]^2) - (1.2 x w[WALLDL])] / 1.6
= Allowable wall live load due to bending strength.
= **152.5** psf 9.250 ft tall wall

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2.2.2 CHECK SHEAR ALLOWED PARALLEL TO PLANE OF WALL

2.2.2.1 CHECK SHEAR ALLOWED FOR ONE CURTAIN OF REINFORCEMENT

Use a 4 inch panel, 4 foot length, for minimum A_{CV}. (ACI 318-14, 18.10.2.2)

$2 A_{CV} \times \lambda \times f'_c{}^{1/2}$ = 23080 lbs [CONTROLS]

2.2.2.2 NOMINAL SHEAR FOR WALL SECTION (per ACI 318-14, sec. 18.10.4.1, eq. 18.10.4.1)

Use a 4 inch panel, 4 foot length, for minimum A_{CV}.

$V_n = A_{CV} (\alpha_c \times \lambda \times f'_c{}^{1/2} + \rho_t \times f_y)$ A_{CV} = 192 in^2

α_c = 2.0 (for $h_w / l_w > 2$) λ = 0.85 (per ACI 318-14, Table 19.2.4.2)

$\rho_t = A_s / A_{CV}$ = 0.0099

= 136968 lbs [DOES NOT CONTROL]

2.2.2.3 NOMINAL SHEAR FOR WALL DIAPHRAGM (per ACI 318-14, sec 18312.9.1, eq. 18.12.9.1)

Use a 4 inch panel, 4 foot length, for minimum A_{CV}.

$V_n = A_{CV} (2 \times \lambda \times f'_c{}^{1/2} + \rho_t \times f_y)$

= 136968 lbs [DOES NOT CONTROL]

2.3 FLOOR PANEL CALCULATIONS

2.3.1 Determine temperature steel required for the deck:

Deck temperature steel required is:

ATS[DECK]= H[DECK] X 12 in. X .0018

= 2.75 in. x 12 in. x 0.0018

= 0.0594 sq. in. per foot of width of floor panel.

A[DECKSTEEL]= **0.1200** sq. in per foot of panel. **OK**

2.3.2 Determine floor deck strength:

DECKSPAN= FLOORSPACING - B[RIB]

= **16.0** inches

d[DECK]= H[DECK] -1 (Assumes mesh is 1" clear from bottom of deck)

= **1.75** inches

a[DECK]= (A[DECKSTEEL] x FY[REBAR]) / (.85 x fc x 12 in.)

= **0.1412** inches

Mu[DECK]= 0.9/12 x A[DECKSTEEL] x fy[REBAR] x (d[DECK] - (a[DECK] / 2))

= **907** ft-lbs

w[DECKTOTALMOM]= (Mu[DECK] x 8) / (DECKSPAN x 12 in. per ft.)^2

= **4.1E+03** psf

w[DECKDL]= (H[DECK] / 12 in. per ft. x 1 ft.^2 x DENSITY)

= **26.4** psf

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w[DECKLLMOM]= (w[DECKTOTAL - 1.2 x w[DECKDL]) / 1.6
= **2.5E+03** psf
Vu[DECK]= .85 x .85 x 2 x (fc^.5) x d[DECK] x 12 in.
= **2146** lbs.
w[DECKTOTSHEAR]= 2 x (Vu[DECK] / L
= **3.2E+03** psf
w[DECKLLSHEAR]= (w[DECKTOTSHEAR] - 1.2 x w[DECKDL]) / 1.6
= **1992** psf
Allowable live load for the floor deck is: **1992** psf (FLOOR DECK SHEAR CONTROLS)

2.3.3 Determine floor rib strength:

Effective width of flange: ACI 318-14, sec. 6.3.2.1 flange width
1/4 span: = **36.2** inches
Effective width of overhang: ACI 318-14, Table 6.3.2.1
(a) 8 times H[DECK] = **22** inches **50.0** inches
OR (b) 1/2 clear dist. = **8.0** inches **22.0** inches <controls>
bf= **22.0** inches
d[FLOOR]= H[FLOOR] - (.75" + DIA[REBARFLR] / 2)
4.625 inches
a[FLOOR]= (A[REBARFLR] x fy[REBAR]) / (.85 x fc x bf)
= **0.565** inches
Mu[FLOOR]= (.9/12) x A[REBARFLR] x fy[REBAR] x (d[FLOOR] - a[FLOOR] / 2)
= **17197** ft-lbs
FLOORSPANMOM= BLDGW - 1.333 ft. = **11.25** feet 12.583 ft wide shelter
w[FLOORMOMTOT]= 8 x Mu[FLOOR] / (FLOORSPANMOM)^2
= **1087** plf 12.583 ft wide shelter
w[FLOORDL]= ((H[DECK] x bf / 144) + b[RIB] x (H[FLOOR] - H[DECK]) / 144) x 1 ft.x DENSITY
= **62.7** plf (PER RIB) = 34.2 psf
w[FLOORMOMLL]= [W[FLOORMOMTOT] - (1.2 x w[FLOORDL])] / (1.6 x trib)
= **345** psf 12.583 ft wide shelter

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2.3.4 Determine rib shear strength: Vu[FLOOR]

b[RIB] = **6.00** inches

A[RIBSHEAR]= (H[FLOOR] - (.75" + DIA[REBARFLR]/2)) x B[RIB]

27.75 sq. in.

ACI 318-14, Table 22.5.5.1 λ = 0.85

Vc[FLOOR]= (1.9 x λ x (fc)^.5 + (2500 x ρ_w)) x b[RIB] x d[FLOOR]

= **5369** lbs.

But not greater than: 3.5 x λ x f'c^.5 x b[RIB] x d[FLOOR] = **5838** lbs.

USE Vc[FLOOR]= **5369** lbs. ϕ = 0.75

ϕVc[FLOOR]= 4027 lbs

ACI 318-14, 9.8.1.5 Vc[FLOORALLOW]= 1.1 x ϕVc[FLOOR] = **4429** lbs.

2.3.5 Determine allowable live load due to shear: w[FLOORSHEARLL]

FLOORSPANSHEAR= bldgw - ((d[FLOOR + 8.5) x 2 / 12)

= **10.40** feet 12.583 ft wide shelter

Vc[FLOORALLOW] / (FLOORSPANSHEAR) = 426 psf

w[FLOORSHEARLL]= (Vc[FLOORALLOW] / (.5xFLOORSPANSHEAR)-1.2 x w[FLOORDL]) / (1.6xFLOORSPACING/12)

= Allowable floor live load due to shear strength

= **265** psf 12.583 ft wide shelter

Allowable LL for the 12.583 ft wide floor rib is: **265** psf (FLOOR RIB SHEAR CONTROLS)

Gross allowable floor load; LL + 44 psf DL= 309 psf 12.583 ft wide

2.3.6 Determine allowable concentrated load over 2.5 sf.

2.5 square foot area is equivalent to approximately 19 inch x 19 inch, or 1.58 feet x 1.58 feet.

Assume one rib takes the entire concentrated load.

Allowable load based on shear is: 265 psf

For a 12.583 foot wide shelter with a 11.583 ft span, the equivalent concentrated load is:

P[shear) = 11.583 ft x 265 lbs. x 2

= **6136 lbs** **Maximum concentrated load (shear).**

Maximum live load for bending on one rib is:

w[FLOORRIBLL]= w[FLOORMOMLL] x BF / 12 = 632 plf

Make uniform load moment equal to concentrated load moment and solve for P.

w[FLOORRIBLL]x (FLOORSPANMOM^2) /8 = P x FLOORSPANMOM / 2

P(moment) = w[FLOORRIBLL] x (FLOORSPANMOM) / 4

= **1779 LBS** **Maximum load in center of floor (bending).**

If the load is next to the wall (as is usually the case with batteries) :

w[FLOORRIBLL]x (FLOORSPANMOM^2) / 8 = P x 1.5

P(moment) = w[FLOORRIBLL] x (FLOORSPANMOM^2) * (2 x 8)

= **6669 LBS** **Maximum load next to wall (bending).**

Shear controls

Shear controls when load is next to wall.

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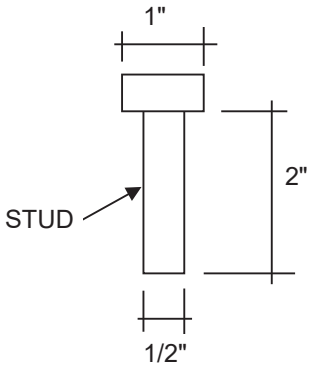
3.0 INSERT PLATE ANALYSIS

(Analysis per ACI 318-14, Ch. 17)



3.1 Material Properties

f'_c = 5000 psi (sand-lightweight)
f_{uta} = 61 ksi
A_{se} = 0.196 in^2
A_{brg} = 0.589 in^2
h_{ef} = 2 in
d_a = 0.5 in

3.2 Stud Analysis

3.2.1 Per Eq 17.4.3.4, Pullout strength in tension shall not exceed:

$N_p = 8\ A_{brg}\ f'_c$ = 23,562 lbs/stud

(due to crushing strength of concrete at the head of the stud.

3.2.2 Basic tension breakout strength of stud shall not exceed:

$N_b = k_c \lambda (f'_c)^{1/2} h_{ef}^{1.5}$ [Eq 17.4.2.2a]

λ = 0.85 [T19.2.4.2] (sand-lightweight k_c = 24 (for cast-in anchors)

N_b = 4080 lbs/stud

3.2.3 Check ductile strength of stud.

$N_{sa} = A_{se} f_{uta}$ = 11.98 kips/stud
ϕ = 0.75 [See 17.3.3 a) i)]
ϕN_{sa} = 8.98 kips/stud

3.2.3 Check shear strength of stud.

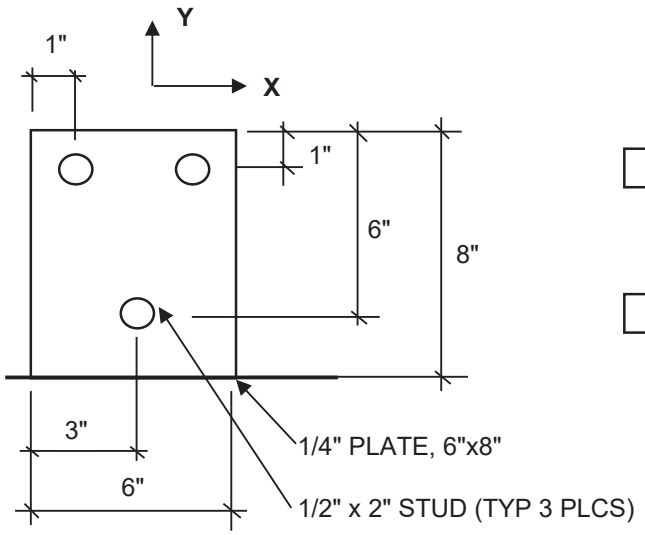
$V_{sa} = A_{se} f_{uta}$ = 11.98 kips/stud
ϕ = 0.65 [See 17.3.3 a) ii)]
ϕN_{sa} = 7.79 kips/stud

3.2.4 Check weld strength of stud to plate.

Welds to be made with GMAW, E7XT-XX electrodes and are good for 1392 lbs per inch per sixteenth inch of weld. The weld is 1/4" all around the stud. The weld capacity is then:

Pw = (1392 lbs/inch/sixteenth) x (1.573 inches) x (4 sixteenths)
Pw = 8758 lbs/stud

3.3 INSERT PLATE "P/N 223100" ANALYSIS



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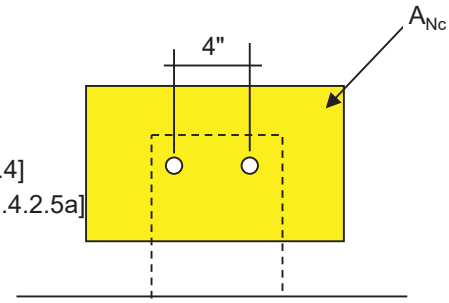
3.3.1 Tension Capacity of "P/N 223100" plate:

$N_{cbg} = (A_{nc}/A_{nco})\psi_{ec,N}\ \psi_{ed,N}\ \psi_{c,N}\ \psi_{cp,N}\ N_b$ [Eq 17.4.2.1b]

$A_{Nco} = 9h_{ef}^2$ = 36 in^2

Find A_{Nc} for just the two upper studs.

$A_{Nc} = A_{Nco} + 4(3)(h_{ef})$ = 60 in^2



$\psi_{ec,N}$ = 1.0 assume no eccentricity [Eq 17.4.2.4]

$\psi_{ed,N}$ = 1.0 (c_a min > 1.5 h_{ef} for 2 studs)[Eq 17.4.2.5a]

$\psi_{c,N}$ = 1.25 (for cast-in anchors) [17.4.2.6]

$\psi_{cp,N}$ = 1.0 (for cast-in anchors) [17.4.2.7]

N_{cbg} = 8500 lbs ϕ = 0.70 [Sec 17.3.3 (c) condition B]

ϕN_{cbg} = 5950 lbs

TENSION CAPACITY OF "P/N 223100" PLATE

3.3.2 Shear Capacity of "P/N 223100" plate in the X-direction:

This shear force is parallel to the edge of the panel. (equals two times perpendicular)

$V_{cbg} = 2(A_{vc}/A_{vco})\psi_{ec,V}\ \psi_{ed,V}\ \psi_{c,V}\ \psi_{h,V}\ V_b$ [Eq 17.5.2.1b x 2] Sec 17.5.2.1 (c)

$V_b = 7(l_e/d_a)^{0.2}\ (d_a)^{1/2}\ \lambda(f'_c)^{1/2}\ (c_{a1})^{1.5}$ [Eq 17.5.2.2a]

$l_e = h_{ef}$ = 2 inches λ = 0.85 Table 19.2.4.2

d_a = 0.5 inches c_{a1} = 7 inches

V_b = 7270 lbs/stud $\psi_{h,V}$ = 1.0 [17.5.2.8]

$\psi_{ec,V}$ = 1.0 assume no eccentricity $\psi_{ed,V}$ = 1.0

$\psi_{c,V}$ = 1.2 (for #4 bar between anchor and edge)

h_a = 4 inches s_1 = 4 inches

$A_{vco} = 2(1.5\ c_{a1})\ h_a$ = 84 in^2

$A_{vc} = (\ 2\ (1.5\ c_{a1}) + s_1)\ h_a$ = 100 in^2

V_{cbg} = 20772 lbs ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕV_{cbg} = 14540 lbs

SHEAR CAPACITY OF "P/N 223100" PLATE IN X-DIRECTION

3.3.3 Shear Capacity of "P/N 223100" plate in the (negative) Y-direction:

This shear force is perpendicular to the edge of the panel.

NOTE: The lower stud is ignored since it is close to the free edge.

$V_{cbg} = (A_{vc}/A_{vco})\psi_{ec,V}\ \psi_{ed,V}\ \psi_{c,V}\ \psi_{h,V}V_b$ [Eq 17.5.2.1b]

V_b = 7270 lbs/stud from 3.3.2 above

$\psi_{ec,V}$ = 1.0 assume no eccentricity

$\psi_{ed,V}$ = 1.0 c_{a2}>1.5c_{a1} $\psi_{h,V}$ = 1.0 [17.5.2.8]

$\psi_{c,V}$ = 1.2 (for #4 bar between anchor and edge)

h_a = 4 inches s_1 = 4 inches

A_{vco} = 84 in^2 A_{vc} = 100 in^2 from 3.3.2 above

V_{cbg} = 10386 lbs ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕV_{cbg} = 7270 lbs

SHEAR CAPACITY OF "P/N 223100" PLATE IN Y-DIRECTION

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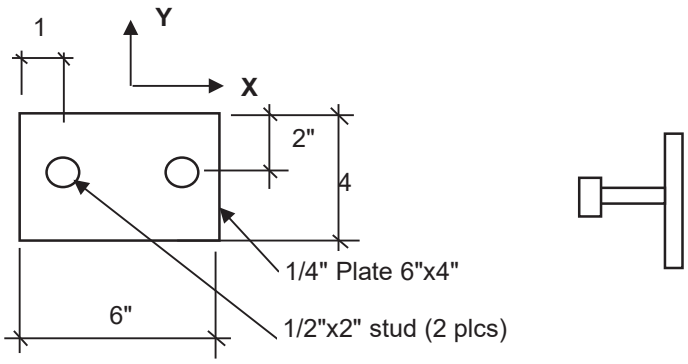
3.4 INSERT PLATE "P/N 223000" ANALYSIS



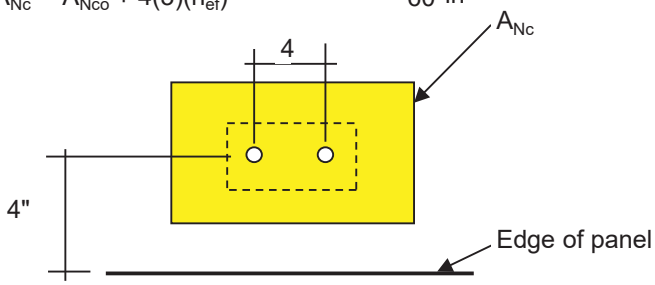
3.4.1 Tension Capacity of "P/N 223000" plate:

$N_{cbg} = (A_{nc}/A_{nco})\psi_{ec,N}\,\psi_{ed,N}\,\psi_{c,N}\,\psi_{cp,N}\,N_b$ [Eq 17.4.2.1b]

$A_{Nco} = 9h_{ef}^2$ = 36 in^2

Find A_{Nc} for just the two upper studs.

$A_{Nc} = A_{Nco} + 4(3)(h_{ef})$ = 60 in^2



$\psi_{ec,N}$ = 1.0 assume no eccentricity

$\psi_{ed,N}$ = 1.0 (c_a min > 1.5 h_{ef} for 2 studs considered)

$\psi_{c,N}$ = 1.25 (for cast-in anchors)

$\psi_{cp,N}$ = 1.0 (for cast-in anchors)

N_{cbg} = 8500 lbs

ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕN_{cbg} = 5950 lbs

TENSION CAPACITY OF "P/N 223000" PLATE

3.4.2 Shear Capacity of "P/N 223000" plate in the X-direction:

This shear force is parallel to the edge of the panel. (equals two times perpendicular)

$V_{cbg} = 2(A_{vc}/A_{vco})\psi_{ec,V}\,\psi_{ed,V}\,\psi_{c,V}\,\psi_{h,V}\,V_b$ [Eq 17.5.2.1b x 2] Sec 17.5.2.1 (c)

where: $V_b = 7(l_e/d_a)^{0.2}\,(d_a)^{1/2}\,\lambda(f'_c)^{1/2}\,(c_{a1})^{1.5}$ [Eq 17.5.2.2a]

l_e= hef = 2 inches λ = 0.85 Table 19.2.4.2

d_a = 0.5 inches c_{a1} = 4 inches

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V_b = 3140 lbs/stud $\Psi_{h,V}$ = 1.0 [17.5.2.8]

$\Psi_{ec,V}$ = 1.0 assume no eccentricity $\Psi_{ed,V}$ = 1.0

$\Psi_{c,V}$ = 1.2 (for #4 bar between anchor and edge)

h_a = 3.5 inches [at step-joint] s_1 = 4 inches

$A_{vco} = 2(1.5\ c_{a1})\ h_a$ = 42 in^2

$A_{vc} = (\ 2\ (1.5\ c_{a1}) + s_1)\ h_a$ = 56 in^2

V_{cbg} = 10049 lbs

ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕV_{cbg} = 7035 lbs

SHEAR CAPACITY OF "P/N 223000" PLATE IN X-DIRECTION

3.4.3 Shear Capacity "P/N 223000" in the neg Y-direction (toward free edge):

This shear force is perpendicular to the edge of the panel.

$V_{cbg} = (A_{vc}/A_{vco})\Psi_{ec,V}\ \Psi_{ed,V}\ \Psi_{c,V}\ \Psi_{h,V} V_b$ [Eq 17.5.2.2b]

V_b = 3140 lbs/stud from 3.4.2 above

$\Psi_{ec,V}$ = 1.0 assume no eccentricity

$\Psi_{ed,V}$ = 1.0 $c_{a2}>1.5c_{a1}$ $\Psi_{h,V}$ = 1.0 [17.5.2.8]

$\Psi_{c,V}$ = 1.2 (for #4 bar between anchor and edge)

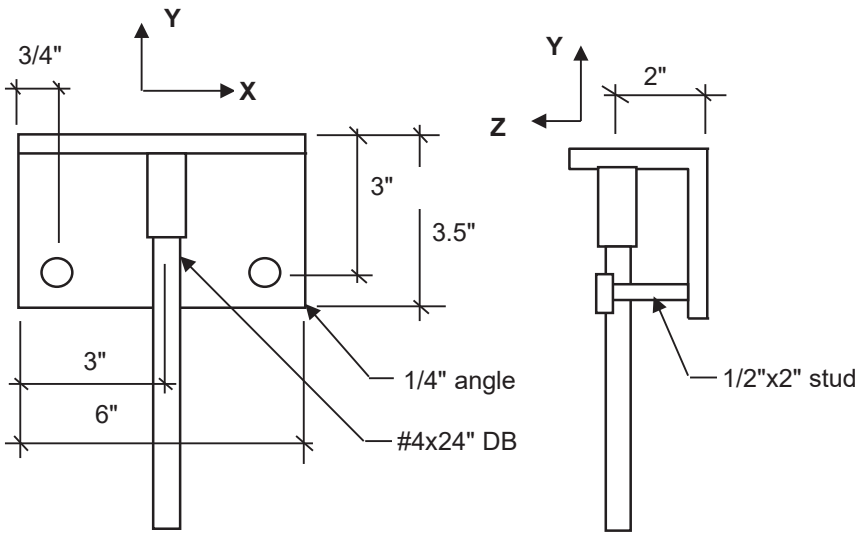
A_{vco} = 42 in^2 A_{vc} = 56 in^2 from 3.4.2 above

V_{cbg} = 5025 lbs ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕV_{cbg} = 3517 lbs

SHEAR CAPACITY OF "P/N 223000" PLATE IN Y-DIRECTION

3.5 INSERT ANGLE "P/N 222000" ANALYSIS



3.5.1 Tension Capacity of "P/N 222000" Insert Angle: (negative Z)

$N_{cbg} = (A_{nc}/A_{nco})\Psi_{ec,N}\ \Psi_{ed,N}\ \Psi_{c,N}\ \Psi_{cp,N}\ N_b$ [Eq 17.4.2.1b]

$A_{Nco} = 9h_{ef}^2$ = 36 in^2

Find A_{Nc} for just the two studs.

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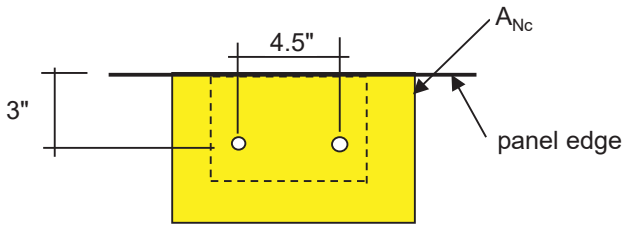
$A_{Nc} = A_{Nco} + (4.5)(3)(h_{ef}) =$ 60 in^2



$\psi_{ec,N} =$ 1.0 assume no eccentricity

$\psi_{ed,N} =$ 1.0 (c_a min > 1.5 h_{ef} for 2 studs considered)

$\psi_{c,N} =$ 1.25 (for cast-in anchors)

$\psi_{cp,N} =$ 1.0 (for cast-in anchors)

$N_{cbg} =$ 8500 lbs $\phi =$ 0.70 [17.3.3 (c)(i) condition B]

$\phi N_{cbg} =$ 5950 lbs

TENSION CAPACITY OF "P/N 222000" INSERT

3.5.2 Shear Capacity of "P/N 222000" Insert Angle in X direction:

This shear force is parallel to the edge of the panel. (equals two times perpendicular)

$V_{cbg} = 2(A_{vc}/A_{vco})\psi_{ec,V}\psi_{ed,V}\psi_{c,V}\psi_{h,V}V_b$ [Eq 17.5.2.1b x 2] Sec 17.5.2.1 (c)

where:

$V_b = 7(l_e/d_a)^{0.2}(d_a)^{1/2}\lambda(f'_c)^{1/2}(c_{a1})^{1.5}$ [Eq 17.5.2.2a]

$l_e = h_{ef} =$ 2 inches $\lambda =$ 0.85 Table 19.2.4.2

$d_a =$ 0.5 inches $c_{a1} =$ 3 inches

$V_b =$ 2040 lbs/stud $\psi_{h,V} =$ 1.0 [17.5.2.8]

$\psi_{ec,V} =$ 1.0 assume no eccentricity $\psi_{ed,V} =$ 1.0

$\psi_{c,V} =$ 1.2 (for #4 bar between anchor and edge)

$h_a =$ 4 inches [at step-joint]

$s_1 =$ 4.5 inches

$A_{vco} = 2(1.5\,c_{a1})\,h_a =$ 36 in^2

$A_{vc} = (2(1.5\,c_{a1}) + s_1)\,h_a =$ 54 in^2

$V_{cbg} =$ 7343 lbs $\phi =$ 0.70 [17.3.3 (c)(i) condition B]

$\phi V_{cbg} =$ 5140 lbs

SHEAR CAPACITY OF "P/N 222000" INSERT, X-DIRECTION

3.5.3 Shear Capacity of "P/N 222000" Insert Angle in Y direction:

This is for uplift forces from the roof panel.

$V_{cbg} = (A_{vc}/A_{vco})\psi_{ec,V}\psi_{ed,V}\psi_{c,V}\psi_{h,V}V_b$ [Eq 17.5.2.1b]

$V_b =$ 2040 lbs/stud from 3.5.2 above

$\psi_{ec,V} =$ 1.0 assume no eccentricity

$\psi_{ed,V} =$ 1.0 $c_{a2} > 1.5c_{a1}$ $\psi_{h,V} =$ 1.0 [17.5.2.8]

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$\psi_{c,V}$ = 1.2 (for #4 bar between anchor and edge)

A_{vco} = 36 in^2 from 3.5.2 above

A_{vc} = 54 in^2 from 3.5.2 above

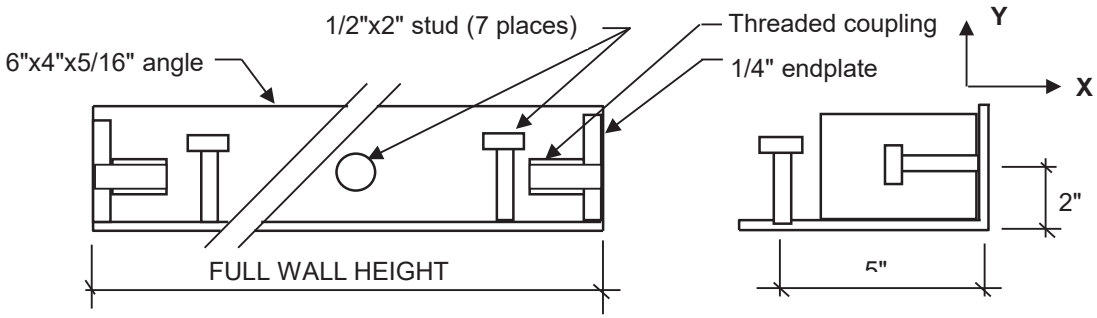
V_{cbg} = 3672 lbs

ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕV_{cbg} = 2570 lbs

SHEAR CAPACITY OF "P/N 222000" INSERT, Y-DIRECTION

3.6 WALL CORNER INSERT ANALYSIS



This insert is used on the vertical sides of the endwalls. The 4" leg forms the outside edge of the endwalls, and the 6" leg is abutted to the side walls and is used for the welded connection to the side wall, the roof, and the floor.
The primary loads on this insert are those from wind and seismic forces as they are transferred to/from the floor/roof panel by using the endwall as a shearwall against the forces as they are applied to the side walls.
The shearwall forces are applied in the X-direction as applied to the end view on the right side of the picture above. Of the 7 studs (minimum) that are on the insert, three of them would be analyzed for tension and the other four would be in shear. Depending on the direction of shear, (+X or -X direction), the free edge will come into play. This analysis will only consider the free edge allowable loads with the assumption that the insert will exceed that capacity when loaded in the opposite direction.

3.6.1 Capacity of Wall Corner Inserts in X-direction

Check capacity of individual studs on the 6" leg of the angle.
These studs would be in shear toward the free edge.

$V_{cb} = (A_{vc}/A_{vco})\ \psi_{ed,V}\ \psi_{c,V}\ \psi_{h,V}\ V_b$ [Eq 17.5.2.1a]

where:

$V_b = 7(l_e/d_a)^{0.2}\ (d_a)^{1/2}\ \lambda(f'_c)^{1/2}\ (c_{a1})^{1.5}$ [Eq 17.5.2.2a]

$l_e = h_{ef}$ = 2 inches λ = 0.85 Table 19.2.4.2

d_a = 0.5 inches c_{a1} = 5 inches

V_b = 4389 lbs/stud

$\psi_{ed,V}$ = 1.0 $\psi_{h,V}$ = 1.0 [17.5.2.8]

$\psi_{c,V}$ = 1.2 (for #4 bar between anchor and edge)

h_a = 4 inches [at step-joint] s_1 = 24 inches

$A_{vco} = 4.5\ c_{a1}^2$ = 112.5 in^2

$A_{vc} = 2(1.5\ c_{a1})\ h_a$ = 60 in^2

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V_{cb} = 5618 lbs ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕV_{cb} = 3932 lbs

Shear capacity of studs on 6" leg, X direction.

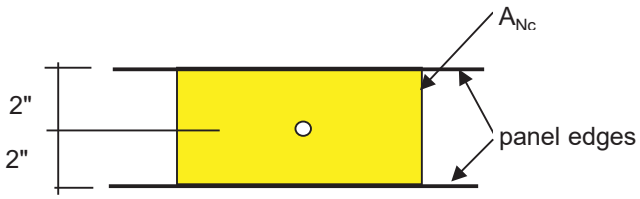
To this, add the tension load from the studs on the 4" leg.

$N_{cb} = (A_{nc}/A_{nco})\ \psi_{ed,N}\ \psi_{c,N}\ \psi_{cp,N}\ N_b$ [Eq 17.4.2.1a]

$A_{Nco} = 9h_{ef}^2$ = 36 in^2

Find A_{Nc} c_{a1} = 2 inches h_{ef} = 2 inches

$A_{Nc} = 2(c_{a1}) \times 2(1.5\ h_{ef})$ = 24 in^2



$\psi_{ed,N}$ = 1.0 (c_a min > 1.5 h_{ef} for 2 studs considered)

$\psi_{c,N}$ = 1.25 (for cast-in anchors)

$\psi_{cp,N}$ = 1.0 (for cast-in anchors)

N_{cb} = 3400 lbs ϕ = 0.70 [17.3.3 (c)(i) condition B]

ϕN_{cb} = 2380 lbs

Shear capacity of studs on 6" leg, X direction.

These two were analyzed as individual studs since they are spaced 12 inches apart, far enough to act alone, not as a group.
In this direction, there would be a minimum of 4 studs in shear, and three studs in tension. The total allowable load is:

$P_x = 4(\phi V_{cb}) + 3(\phi N_{cb})$ = 22870 lbs

SHEAR CAPACITY OF WALL INSERT, +/- X-direction

3.7 FLOOR LIFTING INSERT ANALYSIS

The floor lifting inserts are made from 5"x5"x5/16" angle with a 5"x5/16" plate welded on the open top, to form a channel, and extend across the entire width of the floor panel at each end of the shelter. The inserts are similar to the wall corner inserts in design as they have no less than 6 studs, 1/2"x4" long, on 12" centers and two studs, 1/2"x2" long. These inserts provide three connection points for the endwall, and the two outer connections also double as side wall connections. The floor panel side inserts are made from a 5"x5"x5/16" angle with one side up and one side out, and extend the entire length of the shelter. They are also similar to the wall corner inserts in design by having a minimum of 6 studs, 1/2"x4" long, on 12" centers and four # 6 x 30" rebar splices. These inserts provide three or more connection points for the sidewall. By inspection these inserts are highly integrated into the floor structure. A failure would require much more than the shear cone failures as provided by the stud design manual. Therefore, the connections will be considered as equivalent to the analysis of the wall corner insert (sec 3.6.1).

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3.8 CAPACITY OF WELDS AT CONNECTION PLATES

Welds to be made with FCAW, E7XT-XX electrodes.
All standard connection plates will have a 3/16" weld, 3 inches long.
E7XT-XX welds are good for 1.392 kips per inch per sixteenth inch of weld.
Weld capacity is then:

Pw = (1.392k/inch/sixteenth) x (3 inches) x (3 sixteenths)

Pw = 12.528 kips
CAPACITY OF ALL STANDARD CONNECTION PLATE WELDS

3.9 CAPACITY OF TIE-DOWN CONNECTION PLATES

Three failure modes are noted:

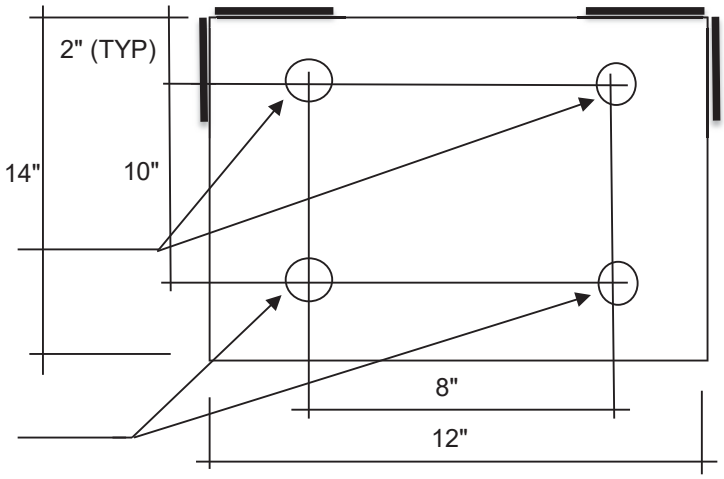
A: Failure of the connection plate.
B1: Failure of the bolts connecting the plate to the shelter.
B2: Failure of welded connection between plate and shelter.
C: Failure of the expansion anchor connecting the plate to the foundation.

t = 0.25 " (plate thickness)

Fy = 36 ksi
Fu = 58 ksi

Bolt DIA = 1.00 "
1.25 "

anchor DIA = 0.75 "
0.875 "



A: Shear through edge of plate at one hole is:

HoleArea(bolt)= D(top) x t = 0.3125 in²
HoleArea(anchor)= D(bot) x t = 0.21875 in²
PL-Area = t x (2" - (.5 x 1.25")) = 0.34375 in²
cannot exceed t x 4t = 0.25 in² CONTROLS
OK [exceeds 2/3 hole area, AISC, LRFD, (1999), D3.2]

Bearing on hole area:
Apl(bolt)= 0.25 in²
Apl(anchor)= 0.1875 in²
Fp(hole) = 1.0 Fu = 58 ksi
PL-bearing = 14.50 kips/ bolt hole
PL-bearing = 10.88 kips/ anchor hole

Transient load factor: 0.750
Capacity of connection plate is: 16.31 kips (using 2 bolt and 2 anchors)
16313 lbs per connection

B1: 1" bolt capacity: Use A325 bolts or better

Fys = 90.0 ksi
A(bolt) = 0.785 in²
Transient load factor: 0.750
Shear load Factor = 0.600
V(bolt) Single Shear= 31.81 kips / bolt

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P(bolt) = 53.01 kips / bolt = 106029 lbs per connection

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B2: Weld capacity: Use 3/16" weld 3" horizontally & vertically from top corners.
E7XT-XX welds are good for 1.392 kips per inch per sixteenth inch of weld.

Lw 12.000 in
Pw = (1.392 k/inch/sixteenth) x Lw (in) x (3 sixteenths)
Pw = 50112 lbs per connection

C: Expansion anchor capacity from Simpson charts:
Reference ICC report #ESR-3037, Tables 1B, 2B, & 3B
Simpson Strong-Bolt 2 Stainless Steel Concrete Anchor

d_a:	0.75	in	
Length:	7.000	in	
h_{ef}:	5.000	in	
$A_{se,N}$:	0.270	in^2	
f_{uta}:	95	ksi	
$c_{a,c}$:	8	in	
N:	8	ea	(Number of tie-down connections)
SRF:	0.75	17.2.3.4.4	

Steel strength of anchor in tension (17.4.1):

Φ:	0.75		
N_{sa}:	25.650	kips	(Per tie-down plate)
ΦN_{sa}:	19.238	kips	
N_{ua}:	0.00	kips	

Steel strength of anchor in shear (17.5.1):

Φ:	0.65		
V_{sa}:	13.620	kips	
ΦV_{sa}:	8.853	kips	
V_{ua}:	0.00	kips	(Max. shear from uplift)
V_{ua}:	0.00	kips	(Max. shear from sliding)

Concrete breakout strength of anchor group in tension (17.4.2):

k_c:	17		
Φ:	0.65		
N_b:	10.41	kips	
c_{a1}:	8.00	in	
s_1:	8.00	in	
e'_N:	10	in	
A_{Nc}:	352.50	in^2	
A_{Nco}:	225.00	in^2	
$\Psi_{ec,N}$:	0.4	(eq. 17.4.2.4)	
$\Psi_{ed,N}$:	1.0	(eq. 17.4.2.5a)	
$\Psi_{c,N}$:	1.0	17.4.2.6	
$\Psi_{cp,N}$:	0.4	(eq. 17.4.2.7b)	
N_{cbg}:	2.80	kips	
ΦN_{cbg}:	1.82	kips	
N_{ua}:	0.00	kips	

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Concrete breakout strength of anchor group in shear (17.5.2):

	h_a:	12	in
	Φ:	0.7	
	l_e:	5.00	in
Uplift	c_{a1}:	8.00	in
	e'_V:	0.00	in
	V_b:	10.98	kips
	A_{vc}:	384.00	in^2
	A_{vco}:	288.00	in^2
	$\Psi_{ec,V}$:	1.0	(eq. 17.5.2.5)
	$\Psi_{ed,V}$:	1.0	(eq. 17.5.2.6a)
	$\Psi_{c,V}$:	1.0	17.5.2.7
	$\Psi_{h,V}$:	1.0	(eq. 17.5.2.8)
	V_{cbg}:	14.64	kips
	ΦV_{cb}:	10.25	kips
	V_{ua}:	0.00	kips
Sliding	$c_{a1,1}$:	14.00	in
	$c_{a1,2}$:	22.00	in
	e'_V:	10.00	in
	V_b:	25.42	kips
	A_{vc}:	504.00	in^2
	A_{vco}:	882.00	in^2
	$\Psi_{ec,V}$:	0.7	(eq. 17.5.2.5)
	$\Psi_{ed,V}$:	1.0	(eq. 17.5.2.6a)
	$\Psi_{c,V}$:	1.0	17.5.2.7
	$\Psi_{h,V}$:	1.3	(eq. 17.5.2.8)
	V_{cbg}:	13.02	kips
	ΦV_{cb}:	9.11	kips
	V_{ua}:	0.00	kips

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Pullout strength of anchor in tension (17.4.3):

Φ:	0.65	
N_p:	8.23	kips
$\Psi_{c,P}$:	1	
N_{pn}:	8.23	kips
ΦN_{pn}:	5.35	kips
N_{ua}:	0.00	kips

Concrete pryout strength of anchor in shear (17.5.3):

k_{cp}:	2	
Φ:	0.7	
N_{cbg}:	2.80	kips
V_{cpg}:	5.59	kips
ΦV_{cpg}:	3.914	kips
V_{ua}:	0.00	kips

Controlling loads for tie-down connections:

Tension Pullout:	1817	lbs
Horizontal Shear:	3914	lbs
Vertical Shear:	3914	lbs

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4 CONCRETE BUILDING WEIGHT CALCULATOR

Concrete Density = 115 pcf
Concrete Required = 22.1 yards

4.1 Shelter Dimensions:

	shelter dimensions	
Width:	12.583	ft
Length:	34.250	ft
Height:	9.250	ft,(wall height)

Material	Weight, lbs	
4.2 ROOF CONCRETE	20695	
2.25" INSULATION	156	
7/16" OSB PANELING	588	
3/8" OSB W/FINISH	500	
ESTIMATED EQUIPMENT		856
Total Roof Wt.	**21940**	
Avg. Dead Load, psf	48.3	
4.3 WALLS CONCRETE	30687	
1.75" INSULATION	240	
7/16" OSB PANELING	800	
3/8" OSB W/FINISH	688	
ESTIMATED EQUIPMENT		2569
Total Wall Wt.	**32415**	
Avg. Dead Load, psf	38.0	
4.4 FLOOR CONCRETE	17155	
L5x5x5/16 PERIMETER BEAM	965	
STYROFOAM (2 PCF DENSITY)	175	
TILE, 1/8"	532	
ESTIMATED EQUIPMENT		5138
Total Floor Wt.	**18827**	
Avg. Dead Load, psf	43.7	

4.5 WEIGHT SUMMARY:

		Building Width x	Length x	Height
Total Shelter Weight Only: lbs	**73181**	**12.583**	**34.250**	**9.250**
Total Weight w/Estimated Equipment: lbs	**81744**			

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COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2020 Florida Building Code, Energy Conservation
Project Title: CONCRETE SHELTER STWS02-FL
Project Type: New Construction

Construction Site:
5031 Hazel Jones Rd.
Bossier, Louisiana 71111

Owner/Agent:
TOWER SYSTEMS FDOT
LAKE CITY, Florida

Designer/Contractor:
KATRINA ADKINS
5031 Hazel Jones Rd.
Bossier, Louisiana 71111
3182132822
kadkins@sabreindustries.com

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
Reduced Lighting Power, 1.0 credit

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Common Space Types:Workshop	431	1.03	444
		Total Allowed Watts =	444

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
1-Common Space Types:Workshop				
LED: LED Other Fixture Unit 36W:	2	5	36	180
			Total Proposed Watts =	180

Interior Lighting PASSES: Design 59% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2020 Florida Building Code, Energy Conservation requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Katrina Adkins, Code Compliance Admin
Name - Title

Katrina Adkins
Signature

05/03/2023
Date

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Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 6/22/23

COM*check* Software Version COMcheckWeb

Exterior Lighting Compliance Certificate

Project Information

Energy Code:	2020 Florida Building Code, Energy Conservation
Project Title:	CONCRETE SHELTER STWS02-FL
Project Type:	New Construction
Exterior Lighting Zone	2 (Light industrial area with limited nighttime use (LZ2))

Construction Site:
5031 Hazel Jones Rd.
Bossier, Louisiana 71111

Owner/Agent:
TOWER SYSTEMS FDOT
LAKE CITY, Florida

Designer/Contractor:
KATRINA ADKINS
5031 Hazel Jones Rd.
Bossier, Louisiana 71111
3182132822
kadkins@sabreindustries.com

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Illuminated area of facade wall or surface	324 ft2	0.07	No	24
			Total Tradable Watts (a) =	0
			Total Allowed Watts =	24
			Total Allowed Supplemental Watts (b) =	400

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 400 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Illuminated area of facade wall or surface (324 ft2): Non-tradable Wattage				
LED: LED Panel 70W:	2	2	70	140
			Total Tradable Proposed Watts =	0

Exterior Lighting PASSES: Design 0.0% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2020 Florida Building Code, Energy Conservation requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Katrina Adkins, Code Compliance Admin — Name - Title
Katrina Adkins — Signature
05/03/2023 — Date

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Date: **6/22/23**

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2020 Florida Building Code, Energy Conservation

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C103.2 [PR8][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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Date: **6/22/23**

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.2 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.2, C405.2.2.1, C405.2.2.2 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

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1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3, C405.2.3.1, C405.2.3.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.4 [EL26][1]	Separate lighting control devices for specific uses installed per approved lighting plans. 1. Display and accent lighting, lighting in display cases, supplemental task lighting and lighting equipment for sale shall have occupancy sensor control. 2) Sleeping units shall have auto off controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.5 [EL28][3]	Manual lighting controls are in a location with ready access and where controlled lights are visible.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.6 [EL30][3]	Exterior lighting systems provided with controls complying with C405.2.6.1 through C405.2.6.4 for daylight shutoff and decorative lighting shutoff.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.5.3 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.3.2 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
C405.4.2 [FI19][1]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, recommendations, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated. Regular maintenance actions shall be clearly stated on accessible label.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

PANEL NAME:				**PANEL A**									**DATE:**	**4/27/2023**		
Project: STWS02			VOLTAGE:	120	/	240		MAIN BREAKER:	Y							
			PHASE:	1				LUGS ONLY:								
LOADING			WIRE:	3				SURFACE:	Y							
NORMAL OPERATION			BUS AMPS:	200		200	:MAIN CB AMPS	FLUSH:								
			SUPPLY AMPS:	200				GROUND BUS:	Y							
			MIN. SHORT CIRCUIT RATING:	10K				ISOLATED GROUND BUS:								
INCLUDE SPARE CAP. - Y / N:	N							NEUTRAL BUS:	Y							

NOTES:	SERVES	LTG	RCPT	PWR	HVAC/HEAT VENT/EXIST PANEL	CB *	CKT	PH	CKT	CB *	LTG	RCPT	PWR	HVAC/HEAT VENT/EXIST PANEL	SERVES	NOTES:
	SURGE ARRESTOR			60		60	1	A	2	40				2796	HVAC #1	
	"			60		|	3	B	4	|			2796	"	
	EQUIP. ROOM LIGHTS	188				20	5	A	6	40				2796	HVAC #2	
	GENERATOR ROOM LIGHTS	152				20	7	B	8	|				2796	"	
	TWIST-LOCK			1200		20	9	A	10	15			0		POWER FAIL ALARM	
	TWIST-LOCK			1200		20	11	B	12	|			0		"	
	TWIST-LOCK			1200		20	13	A	14	15			10		SMOKE DETECTOR	
	TWIST-LOCK			1200		20	15	B	16	15			10		HEAT DETECTOR	
	TWIST-LOCK			1200		20	17	A	18	15				177	EXHAUST FAN	
	TWIST-LOCK			1200		20	19	B	20							
	TWIST-LOCK			1200		20	21	A	22							
	TWIST-LOCK			1200		20	23	B	24							
	TWIST-LOCK			1200		20	25	A	26							
	TWIST-LOCK			1200		20	27	B	28							
	TWIST-LOCK			1200		20	29	A	30							
	QUAD RECEPTACLES		1080			20	31	B	32							
	QUAD RECEPTACLES		1440			20	33	A	34							
	QUAD RECEPTACLES		1440			20	35	B	36							
	QUAD RECEPTACLES		1440			20	37	A	38	20			400		BATT. CHARGER / BLOCK HEATER	
	QUAD RECEPTACLES		1440			20	39	B	40	|			700		"	
	QUAD RECEPTACLES		1440			20	41	A	42	20		180			GFCI RECEPTACLE	
	CONNECTED VA			A:	17,727		B:	14,734								

	CONNECTED KVA:	D.F.	DEMAND KVA:
LIGHTING LOAD:	0.3	1.25	0.4
RECEPT. LOAD - FIRST 10 KVA:	7.0	1.25	8.8
RECEPT. LOAD - REMAINDER:	0.0	1.00	0.0
POWER LOAD:	14.4	1.25	18.1
HVAC/HEAT/VENT/EXIST PANEL	11.4	1.00	11.4
		1.25	0.0
20% SPARE CAPACITY:	0.0	1.00	0.0
TOTAL CONNECTED LOAD:	33.2	TOTAL DEMAND LOAD:	38.6

	AMPS	KVA	
	200.0	48.0	DESIGN (BASED ON SUPPLY)
	138.2	33.2	CONNECTED
	160.9	38.6	**DEMAND**
	39.1	9.4	**SPARE**

AVG KVA	AMPS	KVA	CONNECTED
16.2	148	17.7	PHASE A
	123	14.7	PHASE B

INSTRUCTIONS:

* - ALL BRANCH CIRCUIT BREAKERS ARE 1P20 UNLESS OTHERWISE SHOWN

| - DENOTES ADDITIONAL POLES OF MULTI-POLE CIRCUIT BREAKERS

PHASE LOAD	**PHASE BALANCE**
74%	55% PHASE A
61%	45% PHASE B

NOTES:

PFS CORPORATION

Approval Limited to Factory Built Portion Only

State: **Florida**

Signature: Mark Feverson

Title: Staff Plan Reviewer

Date: **6/22/23**

120V Single Phase

Contractor Name: _____ Address of Project: _____

Parcel Number: _____ Subdivision Name/Lot/Block _____

PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

FLORIDA BUILDING CODE
PRODUCT APPROVAL SCHEDULE

Manufacturer	Model #	Category	Subcategory	App#	Validation Entity
Curries	Varies	Exterior Doors	Swinging (Metal)	FL11537.1, FL11537.2	Underwriters Laboratories Inc.
Ceco Door Prod	Varies	Exterior Doors	Swinging (Metal)	FL10723-R8	Intertek Testing Services NA Inc.
Marvair (Div. of Airxcell	DAC 2000	Exterior Doors	DAC Fan on Single Outswing Door	NOA 21-0615-16	Miami Date Ex 1/30/25
UniFlex Ind.	41-300	Roofing	Liquid Applied Roof Systems	NOA 21-0218.03	Miami Dade BCCO Expires 10/6/26
Sargent	11 Line Series	Exterior doors	Components	FL2998-R15	UL LLC
GenFlex Roofing Systems	EPDM 07530	Roofing	EPDM Rubber	FL1064.R10	ASTM, Miami-Dade BCCO
Ruskin	EME520MD	Vents	Wall Louvers	FL 21829.5 NOA 20-1015.04	Miami Dade BCCO Expires 2/23/26
James Hardie Building Products	Varies	Panel Walls	Siding	NOA 22-0315.07 FL13192.2 R6/	Miami Dade BCCO Expires 5/1/27 Expires 12/31/23
Corbin Russwin	ML2000 Series	Exterior doors	Components	FL13223.2 R7 FL3067-R12	UL LLC
McElroy Metals	Medallion Lock	Roofing	Metal	FL1832-R15	UL LLC
McElroy Metals	Maxima	roofing	Metal	FL1832-R15	UL LLC
Marvair (Div. of Airxcel)	DAC 2000	Exterior Doors	DAC Fan mounted on door	NOA 19-0219.13	Miami Dade BCCO Expires 1/30/25
National Custom Hollow	UL752	Exterior Doors	Swinging Exterior	FL17823-R2	Intertek Testing Serv.
Greenheck Fan	EVH-660D	Vents	Louvers	NOA 17-0807.20	Expires 10/4/22 Miami Dade BCCO
Schlage Lock Co.	Varies	Exterior door	Lockset	FL 14482.1 -R10	Locke Bowden PE
Marvair (Div. of Airxcell)	WAC Door Vent	Exterior Door	WAC Door Vent unit Mounted Single door-Component	NOA 21-0615.17	Miami Dade expires 10/29/25

CODE SUMMARY

2006-2021	INTERNATIONAL BUILDING CODE
2006-2021	INTERNATIONAL MECHANICAL CODE
2019	CHICAGO BUILDING CODE
2013	KENTUCKY BUILDING CODE
2015	MINNESOTA STATE BUILDING CODE
2015	MINNESOTA STATE MECHANICAL CODE
(CH.	1346-2012 IMC & 2012 IFGC W/AMEND)
2015	MINNESOTA STATE ENERGY CODE (CH. 1323)
2015	NEW MEXICO COMMERCIAL BUILDING CODE
2017	NEW MEXICO ELECTRICAL CODE
2015	NEW MEXICO MECHANICAL CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN MECHANICAL CODE
2014	MICHIGAN ELECTRICAL CODE
2022	CALIFORNIA BUILDING CODE
2022	CALIFORNIA GREEN BUILDING STANDARDS
2022	CALIFORNIA ENERGY CODE TITLE 24
2020	CALIFORNIA ELECTRICAL CODE
2022	CALIFORNIA FIRE CODE
	CALIFORNIA TITLE 25
2010	NEW YORK CITY BUILDING CODE
	NORTH DAKOTA ELECTRICAL WIRING STANDARDS
2020	FLORIDA BUILDING CODE 7TH EDITION
2020	FLORIDA BUILDING CODE MECHANICAL
2020	FLORIDA BUILDING CODE FUEL GAS
2020	FLORIDA ENERGY CODE (EXCEPT THERMAL PERFORMANCE)
9TH	MASSACHUSETTS STATE BUILDING CODE
2017	OHIO BUILDING CODE
2017	OHIO MECHANICAL CODE
2017	OHIO FIRE CODE
2019	OREGON STRUCTURAL SPECIALITY CODE
2019	OREGON MECHANICAL SPECIALITY CODE
2019	OREGON ENERGY EFFICIENCY SPECIALITY CODE
2018	NORTH CAROLINA BUILDING CODE
2017	NORTH CAROLINA ELECTRICAL CODE
2018	NORTH CAROLINA MECHANICAL CODE WITH AMENDMENTS
2018	NORTH CAROLINA ENERGY CONSERVATION CODE
2012	TEXAS ACCESSIBILITY STANDARDS
1996 - 2020	NATIONAL ELECTRIC CODE
2007 - 2019	ASHRAE 90.1
2009 - 2021	INTERNATIONAL ENERGY CONSERVATION CODE
2006 - 2021	NFPA 101 LIFE SAFETY CODE
2009 - 2021	INTERNATIONAL FIRE CODE
2009 - 2021	INTERNATIONAL FUEL GAS CODE
2021	NFPA 1 UNIFORM FIRE PREVENTION CODE
2002	ARKANSAS FIRE PREVENTION CODE
2018	NORTH CAROLINA FIRE CODE
	RHODE ISLAND FIRE SAFETY CODE

NOTES

1. LISTED CODES INCLUDE LATEST STATE ADOPTED AMENDMENTS.
2. THIS SHELTER IS AN "ENCLOSED STRUCTURE" NOT INTENDED FOR HUMAN HABITATION.
3. APPROVED MODEL MAY BE MIRROR IMAGE.
4. OCCUPANT LOAD = 0, OHIO = 2. THIS BUILDING SHALL BE OCCUPIED FOR SERVICING EQUIPMENT AND MAINTENANCE ONLY.
5. SPECIAL CONDITIONS AND PERMISSIBLE TYPES OF GASSES: N/A
6. SHELTER HAS NO COUNTY PLACEMENT RESTRICTION IN THE STATE OF MARYLAND.
7. STATE INSIGNIA LABEL/DECAL IS LOCATED NEAR MAIN ELECTRICAL SERVICE PANEL.
8. DOOR MUST BE MINIMUM 90 MINUTE FIRE RATED IF USED IN 2 HOUR FIRE RATED SHELTER AND MINIMUM 45 MINUTE FIRE RATED IF USED IN 1 HOUR FIRE RATED SHELTER.
9. ACCESS TO SHELTER SHALL COMPLY WITH MARYLAND ACCESSIBILITY CODE COMAR.05.02.02.07 / ADAAG SECTION 4.1.2.
10. APPLICABLE INTERNAL PRESSURE COEFFICIENT (N/A) - THESE SHELTERS CONFORM TO THE REQUIREMENTS OF (2000,03,06,09 IBC), ASCE 7-05, METHOD 1 SIMPLIFIED PROCEDURE; (2012,15 IBC) ASCE 7-10 SIMPLIFIED DIAPHRAGM LOW-RISE BUILDINGS; (2018,21 IBC, 2020 FBC) ASCE 7-16 PART 2: LOW-RISE BUILDINGS (SIMPLIFIED).
11. WIND IMPORTANCE FACTOR - IW = 1.000
12. THESE PLANS ARE DESIGNED TO BE USED FOR THE CONSTRUCTION OF COMMERCIAL MODULAR UNITS, IN ACCORDANCE WITH CA HEALTH AND SAFETY CODE SECTION 18028.
13. HVAC UNITS ARE SIZED TO ALLOW FOR MAX FUTURE EQUIPMENT CAPACITY AND HEAT LOAD WITHIN SHELTER WITH REDUNDANCY IN MIND. THEY ARE TO BE CONTROLLED TO STAGE UNITS BASED ON CURRENT LOAD.
14. EXTERNAL GROUNDING BY OTHERS.
15. SHELTER CONSTRUCTED IN ACCORDANCE WITH 61G20-3.006.
16. THIS BUILDING DOES NOT CONTAIN PLUMBING FACILITIES. PLUMBING FACILITIES SHALL BE PROVIDED ON SITE SUBJECT TO THE LOCAL AUTHORITY HAVING JURISDICTION.
20. SPECIAL INSPECTION SHALL BE CONDUCTED BY AHJ OR THIRD PARTY INSPECTOR APPROVED BY AHJ ON-SITE PER IBC 1704.1, 1704, 1707 ON SEISMIC/WIND PROVISION FOR THE FASTENING/SECURING OF THE ELECTRICAL EQUIPMENT AND THE STRUCTURAL STEEL FASTENING/WELDING.
21. THIRD PARTY PLANT INSPECTIONS DO NOT INCLUDE UTILITY SERVICE CONNECTIONS, TIE-DOWN CONNECTIONS, OR MULTI-PIECE BUILDING SPLIT JOINT CONNECTIONS WHERE APPLICABLE. THESE ARE TO BE INSPECTED ON SITE.
22. CONNECTIONS TO PUBLIC UTILITIES TO BE PERFORMED ON SITE BY OTHERS.

EXTERIOR COMPONENTS AND CLADDING POSITIVE AND NEGATIVE PRESSURES IN TERMS OF PSF				
ZONE	2003 IBC, 2006 IBC, 120 MPH WIND SPEED	06, 09, 12, 15 IBC 150 MPH WIND SPEED	18, 21 IBC / 2020 FBC 150 MPH WIND SPEED	2020 FBC 180 MPH WIND SPEED
ROOF ZONE 1 (100 SF EFFECTIVE WIND AREA)	+10.0/-28.7	+15.7/-44.8	+15.7/-44.8	+22.7/-64.5
ROOF ZONE 2 (20 SF EFFECTIVE WIND AREA)	+12.0/-46.9	+18.6/-73.4	+18.6/-73.4	+26.9/-105.8
ROOF ZONE 3 (10 SF EFFECTIVE WIND AREA)	+12.7/-79.1	+20.0/-123.7	+20.0/-123.7	+28.7/-178.1
WALL ZONE 4 (100 SF EFFECTIVE WIND AREA)	+25.8/-28.4	+39.6/-43.4	+41.6/-39.9	+60.0/-65.9
WALL ZONE 5 (20 SF EFFECTIVE WIND AREA)	+29.3/-38.0	+45.9/-59.2	+46.8/-53.2	+67.4/-88.1

INDEX OF SHEETS

* = DENOTES SHEETS WHICH MAY CONTAIN FIELD WORK

LAYOUT DRAWINGS

	0-0	COVER SHEET
	0-1	PARTS LIST
	0-2	PARTS LIST (CONTINUED)
	0-3	PARTS LIST (CONTINUED)
	0-4	PARTS LIST (CONTINUED)
	0-5	SHOP DETAILS / CUT LIST
*	1-0	EXTERIOR WALL ELEVATION "A"
*	1-1	EXTERIOR WALL ELEVATION "C"
*	1-2	EXTERIOR WALL ELEVATIONS "B" & "D"
	2-0	FLOOR PLAN
	2-1	EQUIPMENT LAYOUT PLAN
	2-2	ROOM OVERLAY PLAN
	3-0	REFLECTED CEILING PLAN (ELECTRICAL)
	3-1	WIREWAY LAYOUT
	3-2	CABLE TRAY LAYOUT
	4-0	INTERIOR ELEVATION WALL "A" (ELECTRICAL)
	4-1	INTERIOR ELEVATION WALL "C" (ELECTRICAL)
	4-2	INTERIOR ELEVATION WALLS "B" & "D" (ELECTRICAL)
	4-3	INTERIOR ELEVATION WALLS 'E' & 'F' (ELECTRICAL)
	5-0	INTERIOR ELEVATION WALL "A" (MECHANICAL)
	5-1	INTERIOR ELEVATION WALL "C" (MECHANICAL)
	5-2	INTERIOR ELEVATION WALLS "B" & "D" (MECHANICAL)
	5-3	INTERIOR ELEVATION WALLS 'E' & 'F' (MECHANICAL)
*	5-4	MECHANICAL GROUND BAR INSTALLATION DETAILS
*	6-0	ELECTRICAL ONE-LINE WIRING DIAGRAM
*	6-1	ELECTRICAL DISTRIBUTION WIRING SCHEMATIC
	6-2	ELECTRICAL PANEL "A" WIRING SCHEMATIC
	6-3	HVAC & SMOKE DETECTOR WIRING SCHEMATICS
	6-4	ALARM CONTACT DESCRIPTIONS
	6-5	ALARM CONTACT DESCRIPTIONS (CONTINUED)
	6-6	FOUNDATION PLAN INSTALLATION DETAILS

REFERENCE DRAWINGS

	108-007	ABBREVIATIONS & SYMBOLS
	108-008	CONCRETE SHELTER PANEL CONNECTION DETAILS
	108-015	GENERAL ELECTRICAL NOTES & LEGEND
	108-016	GENERAL CASTING SPECIFICATIONS
	108-035	CONCRETE SHELTER INTERIOR INSULATION/PANEL INSTALLATION DETAILS
	108-039	ANGLED & FLAT TIE DOWN DETAILS
	108-087	CANOPY FIELD INSTALLATION DETAIL
	108-088	SHELTER LIFTING DETAILS
	108-089	SHELTER LOADING DETAILS

Manufacturer: Cellxion, LLC
Model: STWS02

PFS

APPROVED
PFS CORPORATION
Cottage Grove, WI

A Florida DBPR approved inspection and plan review examiner agency

Construction Type	V-B
Occupancy	U
Allowable Number of Floors	1
Wind Velocity @ V3S	180
Fire Rating / Ext. Walls	2
Floor Load	125

Approval Date: 6/22/2023

This document meets or exceeds the requirements of the State of Florida Manufactured Building Rules & Regulations

SMP0000020

Signature & License Number

DESIGN PARAMETERS

USE GROUP: U

CONSTRUCTION TYPE: V-B

RISK CATEGORY: IV

ROOF LIVE LOAD: 20 PSF
ALLOWABLE ROOF LOAD: 118 PSF

FLOOR LIVE LOAD: 125 PSF
ALLOWABLE FLOOR LOAD: 426 PSF

WIND SPEED: 180 MPH/EXPOSURE C/RISK CATEGORY IV

SEISMIC DESIGN CATEGORY: C
8 LIFTING POINTS

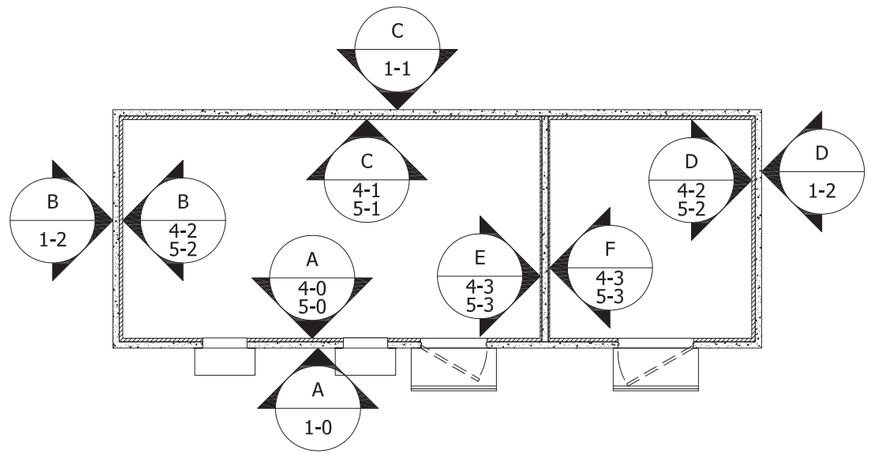
MEETS BULLET RESISTANCE UL 752 LEVELS 1, 2, 3, & 6 FOR 4" CONCRETE
CONCRETE f'c: 5000 PSI AT 28 DAYS
CONCRETE UNIT WEIGHT: 115 PCF
FIRE RATING: 2 HOUR WALL PER IBC/FBC TABLE 721.1 (2) ITEM NUMBER 4-1.1,
2 HOUR ROOF PER IBC/FBC TABLE 721.1 (3) ITEM NUMBER 3-1.1,
SOLID LIGHTWEIGHT CONCRETE
(LIMITATIONS MAY APPLY DUE TO OPENINGS AND PROXIMITY ON SITE)
MINIMUM FIRE SEPARATION DISTANCE: 10FT

PHYSICAL PROPERTIES

SHELTER DIMENSIONS: 12'-7"W X 34'-3"L
SHIPPING DIMENSIONS: 12'-11"W X 34'-7"L X 10'-4"H
SHELTER WEIGHT: 110,000 # (SHELTER ONLY)
EXCLUDES BATTERIES AND RADIO EQUIPMENT

STRUCTURAL DRAWINGS (MANUFACTURER ONLY)

1 OF 10		STRUCTURAL SPECIFICATIONS
2 OF 10		STRUCTURAL LAYOUT SIDE WALL "A"
3 OF 10		MESH LAYOUT SIDE WALL "A"
4 OF 10		STRUCTURAL LAYOUT END WALL "B"
5 OF 10		STRUCTURAL LAYOUT SIDE WALL "C"
6 OF 10		MESH LAYOUT SIDE WALL "C"
7 OF 10		STRUCTURAL LAYOUT END WALL "D"
8 OF 10		STRUCTURAL LAYOUT PARTITION WALL 'E'
9 OF 10		STRUCTURAL LAYOUT ROOF
10 OF 10		SHELTER ASSEMBLY
221-1207X3403		CONCRETE FLOOR ASSEMBLY



ELEVATION KEY

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Sabre Industries
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, LA 71111
Voice: (318) 213-2900
Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
COVER SHEET

FILENAME: *STWS02*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *0-0*	
DRAWING NO.: *STWS02*	REV.: *A*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

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M.FOUQUETTE

PARTS LIST

ITEM	QTY	U/M	P/N	DEPT	DESCRIPTION	MFG	MFG P/N
1	1.000	EA.	350061	20	TELCO BOARD,4'X4',POLY.030,W/5/8"OB	CELLXION	350061
2	4.000	EA.	168283	30	BUSHING,PLASTIC,1/2",SNAP-IN,HEYCO	HEYCO	SB875-11
3	1.000	EA.	170111	30	PIPE CAP,PLASTIC,NPT,NIAGARA #204 (OR EQUAL)	NIAGARA	204
4	1.000	EA.	170112	30	PIPE CAP,PLASTIC,NPT,NIAGARA #249 (OR EQUAL)	NIAGARA	249
5	4.000	EA.	170122	30	PIPE CAP,PLASTIC,NPT,NIAGARA T-6X (OR EQUAL)	NIAGARA	T-6X
6	3.000	EA.	170125	30	PIPE CAP,PLASTIC,NPT,NIAGARA #257 (OR EQUAL)	NIAGARA	#257
7	2.000	EA.	390607	30	CABINET,EXTINGUISHER,CUSTOM,SS	ACTIVAR	
8	1.000	EA.	410009	30	CONDULET,BODY AL LB,2",LB200D (OR EQUAL)	BRIDGEPORT	LB-46
9	3.000	EA.	410014	30	CONDULET,BODY AL LB,3/4",LB75D (OR EQUAL)	BRIDGEPORT	LB-42
10	3.000	EA.	410063	30	NIPPLE,EMT,1/2",CHASE		
11	4.000	EA.	410075	30	BUSHING,1/2",PLASTIC (OR EQUAL)	T&B	BU501
12	1.000	EA.	410076	30	BUSHING,EMT,3/4",PLASTIC (OR EQUAL)	T&B	BU502
13	1.000	EA.	410077	30	BUSHING,1",PLASTIC (OR EQUAL)	RACO	1404
14	3.000	EA.	410080	30	BUSHING,EMT,2",PLASTIC (OR EQUAL)	T&B	BU506
15	1.000	EA.	410113	30	NIPPLE,EMT,1/2",OFFSET	STEEL CITY	HO221
16	1.000	EA.	410140	30	NIPPLE,RIGID,2",CLOSE		
17	4.000	EA.	410183	30	NIPPLE,RIGID,3/4"X7 1/2"		
18	5.000	EA.	410205	30	NIPPLE,RIGID,2"X8"		
19	7.000	EA.	410206	30	NIPPLE,RIGID,3/4"X8"		
20	4.000	EA.	410207	30	NIPPLE,RIGID,1/2"X8"	GRAINGER	
21	1.000	EA.	410217	30	NIPPLE,RIGID,1"X8"	GRAINGER	
	65.000	EA.	430005	30	BOX,JUNCT,4"X4",2-1/8D,1/2"-3/4KO (OR EQUAL)	THOMAS & BETTS	521711234E
24	4.000	EA.	430008	30	BOX,6X6X4,SCREW COVER,NEMA 1,0-KO (OR EQUAL)	HOFFMAN	ASE6X6X4NK
25	1.000	EA.	430017	30	BOX,GEN RECPT BACK,200A,APT,AJA620	APPLETON	AJA620
26	1.000	EA.	430030	30	BOX,JUNCT,2X4,WP,(3) 1/2"HOLES (OR EQUAL)	LEGRAND	WPB23
27	1.000	EA.	430047	30	LOADCENTER,SQD,BOX,MH50	SQUARE D	MH50
28	2.000	EA.	430049	30	WIREWAY,GALV,4"X4",CLOSURE PLATE,NO (OR EQUAL)	HOFFMAN	F-44GCPNKGV
29	3.000	EA.	430050	30	WIREWAY,GALV,4"X4",U-CONNECTOR (OR EQUAL)	HOFFMAN	F-44GUCGV
30	1.000	EA.	430053	30	PLUG,2",BLK PLASTIC (OR EQUAL)	APPLETON	PLG200
31	1.000	EA.	430056	30	BOX,JUNCT,OCT,4"RND,2-1/8"DEEP (OR EQUAL)	STEEL CITY	54171
32	1.000	EA.	430058	30	SWITCH,MTS,2P200A,SQD,DTU224NRB,N3	SQUARE D	DTU224NRB
33	1.000	EA.	430061	30	WIREWAY,GALV,4X4,90D ELBOW (OR EQUAL)	HOFFMAN	F-4490EGV
34	2.000	EA.	430075	30	ALARM BLOCK,SIEMON,S66M1-50	SIEMON	S66M1-50
35	2.000	EA.	430089	30	ALARM BLOCK,MOUNTING BRACKET,S89D	SIEMON	S89D
36	1.000	EA.	430269	30	WIREWAY,GALV,4"X4"X120",W/O KO'S (OR EQUAL)	HOFFMAN	F-44T1120GV
37	1.000	EA.	430282	30	DISCONNECT,SQD,200A,FUSED,D224NRB	SQUARE D	D224NRB
38	1.000	EA.	430319	30	WIREWAY,GALV,4"X4"X36",W/O KO'S (OR EQUAL)	HOFFMAN	F-44136GV
39	1.000	EA.	430998	30	SWITCH,PUSH BUTTON,E-STOP,ST120PB	PILLA ELECTRICAL PRODUCTS	ST120PB
40	1.000	EA.	431172	30	SWITCH,ATS,3P 225A,CUMMINS,OTEC	CUMMINS	OTEC225
41	4.000	EA.	431419	30	BOX,JUNCT,4-11/16"W/3/4" & 1" K/O'S (OR EQUAL)	STEEL CITY	721711
42	1.000	EA.	431468	30	BOX,JUNCT,OCT,4"X2 1/8"D, W/3/4"KO (OR EQUAL)	STEEL CITY	541511234
43	3.000	EA.	460101	30	THERMOSTAT,HI/LOW TEMP,1UHH2 (OR EQUAL)	DAYTON	1UHH2
44	1.000	EA.	460138	30	CONTROLLER,LEAD LAG,COMSTAT 4,MARVA	MARVAIR	COMMSTAT4
45	2.000	EA.	470005	30	LIGHT FIXTURE,70W,EXTERIOR,W/PHOTO (OR EQUAL)	LUMAPRO	5MM59
46	1.000	EA.	470034	30	FAN,12",EXHAUST,DAYTON,1HLA2	DAYTON	1HLA2
47	1.000	EA.	470473	30	LOUVER,36",EXTENSION,16GA SS		
48	2.000	EA.	470931	30	FIXTURE,36W,4FT,LED,201-X1 SERIES	SAYLITE	201A232X1LN18W40
49	6.000	EA.	510115	30	UNISTRUT,1 5/8"CHANNEL,GOLDGALV,6" (OR EQUAL)	THOMASE & BETTS	A1200HS10
50	1.000	FT.	390224	40	DETECTOR,HEAT,FIKE 60-1029		
51	1.000	EA.	400285	40	BREAKER,SQD,2P 15A,BOLT ON,QOB215	SQD	QOB215
52	2.000	EA.	400420	40	T-TAP,250-1/0MAIN,1/0-14,GP-250-0WC	NSI	GP-250-0WC
53	3.000	EA.	400462	40	BREAKER,SQD,1P 15A,BOLT ON,QOB115VH	SQD	QOB115VH
54	2.000	EA.	400482	40	BREAKER,SQD,2P 40A,BOLT ON,QOB240VH	SQD	QOB240VH
55	1.000	EA.	400484	40	BREAKER,SQD,2P 20A,BOLT ON,QOB220VH	SQD	QOB220VH
56	4.000	EA.	400530	40	FUSE,HOLDER,IN-LINE,HLR2 (OR EQUAL)	BUSSMANN	HLR-2A
57	3.000	EA.	400533	40	FUSE,1 AMP,SMALL DIN BUSS,GLR1	BUSSMANN	GLR-1
58	1.000	EA.	400536	40	RELAY,COIL,8-PIN,240VAC,DPDT,10 AMP (OR EQUAL)	OMRON	MK2PSAC240

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FILENAME: *STWS02*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *0-1*	
DRAWING NO.: *STWS02*	REV.: *A*

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M.FOUQUETTE

PARTS LIST (CONTINUED)

ITEM	QTY	U/M	P/N	DEPT	DESCRIPTION	MFG	MFG P/N
59	2.000	EA.	400537	40	RELAY,BASE,8-PIN OCT,10A,SNGLE TIER (OR EQUAL)	DAYTON	5X852
60	1.000	EA.	400595	40	FUSE,10 AMP,SMALL DIN BUSS,GLR10	BUSSMANN	GLR-10
61	1.000	EA.	400736	40	RELAY,COIL,8-PIN,48VDC,DPDT,10 AMP (OR EQUAL)		KPD12P14V56
62	1.000	EA.	410002	40	CONDULET,BODY COVER,2" ALUM (OR EQUAL)	BRIDGEPORT	SC-46
63	3.000	EA.	410005	40	CONDULET,BODY COVER,3/4" AL,CC75 (OR EQUAL)	BRIDGEPORT	SC-42
64	3.000	EA.	410040	40	CONDULET,GASKET 3/4",GASK025N (OR EQUAL)	BRIDGEPORT	SGN-62
65	1.000	EA.	410043	40	CONDULET,GASKET 2",GASK065N (OR EQUAL)	BRIDGEPORT	SGN-66
	36.000	FT.	410111	40	CONDUIT,LFMC,3/4",SEALTITE (OR EQUAL)	ANAMET ELECTRICAL, INC	EF34
	4.250	FT.	410112	40	CONDUIT,LFMC,1/2",SEALTITE (OR EQUAL)		
70	2.000	EA.	410117	40	CONNECTOR,LFMC,1/2",STRAIGHT,ST (OR EQUAL)	T&B	5232
71	6.000	EA.	410128	40	CONNECTOR,LFMC,3/4",45D,SEALTITE (OR EQUAL)	T&B	5243
72	6.000	EA.	410129	40	CONNECTOR,LFMC,3/4",STRAIGHT,ST (OR EQUAL)	T&B	5233
73	1.000	EA.	410146	40	CONNECTOR,LFMC,1/2",45D,SEALTITE (OR EQUAL)	T&B	5242
74	7.500	FT.	410232	40	CONDUIT,LFMC,2",SEALTITE		
75	1.000	EA.	410252	40	CONNECTOR,LFMC,2",45 DEGREE (OR EQUAL)	T&B	5247
76	1.000	EA.	410258	40	CONNECTOR,LFMC,2",STRAIGHT (OR EQUAL)	T&B	5237
77	1.000	EA.	420006	40	LABEL,BLK,ELECT,"GFCI"	CELLXION	420006
78	1.000	EA.	420008	40	LABEL,BLK,ELECT,"SERVICE DISCONNECT	CELLXION	420008
79	1.000	EA.	420009	40	LABEL,BLK,ELECT,"INTERIOR LIGHT"	CELLXION	420009
80	1.000	EA.	420011	40	LABEL,BLK,ELECT,"LOW TEMP"	CELLXION	420011
81	1.000	EA.	420015	40	LABEL,BLK,ELECT,"HIGH TEMP"	CELLXION	420015
82	1.000	EA.	420016	40	LABEL,BLK,ELECT,"LEAD-LAG CONTROL"	CELLXION	420016
83	1.000	EA.	420017	40	LABEL,BLK,ELECT,"HVAC #2"	CELLXION	420017
84	1.000	EA.	420018	40	LABEL,BLK,ELECT,"HVAC #1"	CELLXIONG	420018
85	2.000	EA.	420024	40	LABEL,BLK,ELECT,"EXTERIOR LIGHT"	CELLXION	420024
86	16.000	EA.	420033	40	LABEL,SELF TRANSFER,PANDUIT TTSL2 (OR EQUAL)	PANDUIT	S100X150VATY
87	1.000	EA.	420041	40	LABEL,"ARC FLASH AND SHOCK WARNING		
88	1.000	EA.	420143	40	LABEL,RED, ELECT,BONDING TAG	CELLXION	420143
89	3.000	EA.	430006	40	COVER,SWITCH PLATE,4X4,1 SWITCH (OR EQUAL)	STEEL CITY	460-BW
90	18.000	EA.	430010	40	COVER,RECPT PLATE,4X4,4 RECPT (OR EQUAL)	APPLETON	8371N
91	29.000	EA.	430012	40	COVER,BLANK PLATE,4X4 (OR EQUAL)	APPLETON	8465
92	4.000	EA.	430014	40	COVER,BLANK PLATE,4 11/16 (OR EQUAL)	APPLETON	8487
93	1.000	EA.	430021	40	RECEPTACLE,GEN,200A,4W4P,AR20044RS	APPLETON	AR20044RS
94	36.000	EA.	430034	40	RECEPTACLE,DUPLEX,125V,20A,IVORY (OR EQUAL)	COOPER	CR20V
95	1.000	EA.	430072	40	COVER,SWITCH PLATE,4X4,2 SWITCH (OR EQUAL)	STEEL CITY	456
96	5.000	EA.	430084	40	SWITCH,SPST,20A,120V,IVORY (OR EQUAL)	HUBBELL	CS1221I
97	12.000	EA.	430169	40	COVER,RECPT PLATE,4X4,1R,250V,20A (OR EQUAL)	T&B	RS4
98	1.000	EA.	430207	40	BREAKER,SQD,2P 200A,MB,QBL22200	SQD	QBL22200
99	1.000	EA.	430312	40	BREAKER,SQD,2P,60A,BOLT ON,QOB260VH	sqd	QOB260VH
100	20.000	EA.	430339	40	BREAKER,SQD,1P 20A,BOLT ON,QOB120VH	SQD	QOB120VH
101	1.000	EA.	430356	40	LOADCENTER,SQD,COVER,NC50S	SQD	NC50S
102	0.958	FT.	430521	40	RAIL,DIN,35MM X 6'		
103	2.000	EA.	430580	40	FUSE,150 AMP,FLNR150	LITTLEFUSE	FLNR150
104	1.000	EA.	430765	40	PANELBOARD,SQD,225A,42P,NQ42L2C	SQD	NQ42L2C
105	1.000	EA.	430799	40	MAIN BREAKER KIT,SQD,225A,NQMB2Q	SQD	NQMB2Q
106	1.000	EA.	430967	40	COVER,E-STOP,PILCLHCOV1	Pilla Electrical	PILCLHCOV1
107	1.000	EA.	430999	40	CONTACT,E-STOP,PILNCCB	Pilla Electrical	PILNCCB
108	21.000	EA.	431647	40	TERMINAL BLOCK,60A,9080GR6	SCHNEIDER	9080GR6
109	1.000	EA.	431648	40	TERMINAL BLOCK,END BARRIER,GM6B		
110	12.000	EA.	431710	40	RECEPTACLE,TWIST,20A,125V,LEV,2310 (OR EQUAL)	Leviton	L5-20R
111	1.000	EA.	431727	40	COVER,GFCI,IN USE,EXTRA DTY,MM420C (OR EQUAL)	TAYMAC	MM420C
112	1.000	EA.	431773	40	RECEPTACLE,GFCI,120V,20A,GFWRST20I (OR EQUAL)	HUBBELL	GFWRST20I
113	3.000	EA.	432656	40	BOX,ENCLOSURE,36"X36"X12",HOFFMAN	Hoffman	A36R3612HCR
114	1.000	EA.	440211	40	SURGE ARRESTOR,APT,TE01XAS30E1XD-W2	Advanced Protection	TE01XAS30E1XD-W2
115	1.000	EA.	440212	40	SURGE ARRESTOR,APT,TE01XDS204XA-W2	Advanced Protection	TE01XDS204XA-W2
116	1.000	EA.	460155	40	COMSTAT 4 MODBUS INTERFACE ADAPTER	MARVAIR	

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CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
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SHEET NO. *0-2*	
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M.FOUQUETTE

PARTS LIST (CONTINUED)

ITEM	QTY	U/M	P/N	DEPT	DESCRIPTION	MFG	MFG P/N
117	2.000	EA.	470056	40	LIGHT FIXTURE,COMBO EXIT/EMERGENCY (OR EQUAL)	COMPASS	CCR
118	2.000	EA.	490000	40	ALARM,MAGNETIC DOOR CONTACT (OR EQUAL)	HONEYWELL	7939WG-2GY
119	1.000	EA.	490067	40	DETECTOR,SMOKE,48V,SENTROL,KIT (OR EQUAL)	SENTROL	449CSRT
120	1.000	EA.	540104	40	G-BAR KIT,SQUARE D,PTOGTA-6	SQUARE D	PTOGTA-6
121	1.000	EA.	540211	40	G-BAR KIT,SQUARE D,PK23GTAL	SQD	PK23GTAL
122	1.000	EA.	540339	40	G-BAR,CU,SQUARE D,PK27GTACU	SQD	PK27GTACU
123	1.000	EA.	540340	40	NEUTRAL KIT,SQUARE D,NQN2CU	SQD	NQN2CU
124	1.000	EA.	540386	40	GRD BAR KIT,SQ-D ,DT100SG	SQUARE D	DT100SG
	24.125	EA.	146506-12000	50	SHEET METAL,18GA,4'WX10'L,GALV		
128	25.000	EA.	400001	50	LUG,2H,#6,BLU,3/8"BOLT,1"C/C,LBFW (OR EQUAL)	PANDUIT	LCCXF6-38D-L
129	4.000	EA.	400021	50	C-TAP,BROWN,54720 (OR EQUAL)	PANDUIT	CTAPF4-12TP-C
	122.500	FT.	400030	50	WIRE,#6 THHN,STRAND,GRN		
	208.500	FT.	400050	50	WIRE,#2 THHN,STRAND,GRN		
137	4.000	EA.	400051	50	C-TAP,ORANGE,54740 (OR EQUAL)	PANDUIT	CTAPF1/0-12TP-L
138	2.000	EA.	400108-01	50	LUG,2H,#4,GRY,1/4"LB,KIT W/10FT DROP	CELLXION	400377-01
139	39.000	EA.	400174	50	C-TAP,PINK,54730 (OR EQUAL)	PANDUIT	CTAPF2-12TP-C
140	2.000	EA.	400259	50	LUG,2H,#2,BRN,3/8"BOLT,1"C/C,LBFW (OR EQUAL)	PANDUIT	LCCXF2-38D-L
141	4.000	EA.	400371	50	LUG,2H,#6,BLU,1/4"BOLT,3/4"C/C,LBFW (OR EQUAL)	PANDUIT	LCCXF6-14B-L
142	6.000	EA.	400500	50	CLAMP,GROUND 1/2"-1",GC-1Z,WEAVER (OR EQUAL)	NEER	GC-1Z
143	9.000	EA.	400622	50	CLAMP,GROUND,1/2-1",RB12A,PARALLEL (OR EQUAL)	HARGER	RB12A
144	2.000	EA.	400623	50	CLAMP,GROUND 1 1/2",RB12B,PERPENDIC (OR EQUAL)	HARGER	RB12B
145	45.000	EA.	410343	50	WIRE STANDOFF,1 3/4" (OR EQUAL)	T&B	TC376
146	77.000	EA.	410396	50	BUSHING,INSULATING,CEILING BRACKET (OR EQUAL)	NYLON & ALLOYS, LTD	12SWS3104
147	14.000	EA.	410397	50	BUSHING,INSULATING,WALL MOUNT BRACK (OR EQUAL)	NYLON & ALLOYS, LTD	12SWS3165
148	1.000	EA.	471126	50	LOUVER,12X12,RUSKIN,FIXD,EME420MD		
149	1.000	EA.	480005	50	SABRE GRAY/BLUE SERIAL NO. PLATE	CELLXION	480005
	14.333	EA.	510000	50	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	CENTRAL STEEL FABRICATORS	10012ZY
	2.000	EA.	510001	50	CABLE LADDER,6"X9'8 1/2",Y/Z (OR EQUAL)	CENTRAL STEEL FABRICATORS, INC.	10006ZY
159	1.000	EA.	510006	50	CABLE LADDER,12",CLOSING BAR,Y/Z	CENTRAL STEEL FABRICATORS	ET112YZ
160	18.000	EA.	510010	50	CABLE LADDER,STRAIGHT CLAMP,SC12CN (OR EQUAL)	CENTRAL STEEL FABRICATORS	SC12N
161	8.000	PAIR	510014	50	CABLE LADDER,WALL CLIP,WC12,PAIR (OR EQUAL)	CENTRAL STEEL FABRICATORS	WC12
162	17.000	EA.	510027	50	CABLE LADDER,AUX CABLE BRK,ACB2SZY (OR EQUAL)	CENTRAL STEEL FABRICATORS	ACB2SYZ
163	2.000	EA.	510052	50	CABLE LADDER,24"X9'8 1/2",YELLOW ZI (OR EQUAL)	CENTRAL STEEL FABRICATORS	10024
164	2.000	EA.	510053	50	CABLE LADDER,24",CLOSING BRACKET,YZ (OR EQUAL)	CENTRAL STEEL FABRICATORS	ET124YZ
165	14.000	EA.	510074	50	CABLE LADDER,FLOOR BRKT,3.5"X1.5" (OR EQUAL)	CENTRAL STEEL FABRICATORS	WM11YZ
166	2.000	EA.	510116	50	UNISTRUT,1 5/8"CHANNEL,GOLDGALV,10" (OR EQUAL)	THOMAS & BETTS	A1200HS10
167	9.000	EA.	510142	50	UNISTRUT,1 5/8"CHANNEL,GOLDGALV,9" (OR EQUAL)	THOMAS & BETTS	A1200HS10
168	61.000	EA.	510151	50	CABLE LADDER,TRAY HANGER,11"		
169	3.000	EA.	510201	50	CAP,WIRE,5/16",BLACK,RUBBER		
170	2.000	EA.	521002	50	HVAC,GRILL,SUPPLY,10"X30"		
171	2.000	EA.	521102	50	HVAC,GRILL,RETURN,16"X30"		
172	2.000	EA.	530000	50	WAVEGUIDE ENTRY,12 PORT,4",3X4	VALMONT	B1118
173	2.000	EA.	530004	50	WAVEGUIDE ENTRY,4PORT,4",1X4,B575	VALMONT	B575
174	4.000	EA.	540133	50	POLYPHASER,GROUND STRAP,9700-0007		
175	2.000	EA.	540214	50	GROUND STRAP ASSY,#6 WELD,6" LONG	CELLXION	540214
176	2.000	EA.	540225	50	GROUND STRAP ASSY,#6 THHN,6" LONG	CELLXION	540225
177	16.000	EA.	540234	50	GROUND STRAP ASSY,#6 WELD,12"	CELLXION	540234
178	1.000	EA.	P540227-05	50	G-BAR ASSY,540227-05 KIT & HARDWARE	CELLXION	P540227-05
179	1.000	EA.	470257	51	LOUVER,42.5"42.5",RUSKIN,EME4625	RUSKIN	EME520MD
180	1.000	EA.	470619	51	LOUVER,36X36,RUSKIN,FIXED,EME520MD	RUSKIN	EME520MD
181	1.000	EA.	500083	51	DOOR,3670,RH,CURRIES,16GA,REINFO	CURRIES	707 SERIES
182	1.000	EA.	500281	51	DOOR,4070,LH,CURRIES,18G,MORT,FLA	CURRIES	707 SERIES
183	1.000	EA.	501000	51	DOOR FRM,3670,RH,CURRIES,16G,GALV		
184	1.000	EA.	501005	51	DOOR FRM,4070,LH,CURRIES,16G,GALV		
185	2.000	EA.	504011	51	DOOR,HINGE,CONTINUOUS,BR,304SS (OR EQUAL)	NATIONAL BULLET PROOF, INC	SS-OS-H-CS-XX
186	1.000	EA.	504102	51	DOOR,BUMPER,SS RUBBER STOP,BLACK		
187	1.000	EA.	504113	51	DOOR,HOLD OPEN,T-LATCH,6" (OR EQUAL)	A.L.HANSEN MFG.	ALH29-6

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PARTS LIST (CONTINUED)

ITEM	QTY	U/M	P/N	DEPT	DESCRIPTION	MFG	MFG P/N
189	2.000	EA.	504143	51	DOOR,CLOSER,W/90 DEGREE HOLD OPEN (OR EQUAL)		
	7.500	FT.	504216	51	DOOR,WEATHERSTRIP,SPONGE NEOPRENE (OR EQUAL)	PEMKO	P491
192	2.000	EA.	504300	51	DOOR,LOCKGUARD,10" 32D (OR EQUAL)		
193	1.000	EA.	504400	51	DOOR,DRIP CAP,NGF16A-48" (OR EQUAL)	PEMKO	346C
194	1.000	EA.	504401	51	DOOR,THRESHOLD 48"X4.75",.090 ALUM	CELLXION	504401
195	1.000	EA.	504405	51	DOOR,DRIP CAP,NGF16A-54" (OR EQUAL)	PEMKO	346C
196	1.000	EA.	504406	51	DOOR,THRESHOLD 54"X4.75",.090 ALUM	CELLXION	504406
197	1.000	EA.	504435	51	DOOR,THRESHOLD 48"X6.25",.090 ALUM	CELLXION	504435
198	1.000	EA.	504436	51	DOOR,THRESHOLD 54"X6.25",.090 ALUM	CELLXION	504436
199	4.000	EA.	504504	51	DOOR,PULL HANDLE KASON,CAST,382 (OR EQUAL)	McMASTER-CARR	1646A34
200	2.000	EA.	504555	51	DOOR,STRIKER PLATE,STANDARD		
201	1.000	EA.	504625	51	LOCKSET,DB,MRT,RUSSWIN,RH,ML2065		
202	1.000	EA.	504626	51	LOCKSET,DB,MRT,RUSSWIN,LH,ML2065		
203	2.000	EA.	504670	51	LOCKSET,ENT,CYD,MEDECO,KEYED,LEV		
204	2.000	EA.	540248	51	GROUND STRAP ASSY,#2 THHN,12"LONG	SABRE	540248
205	2.000	EA.	570005	51	DOOR,CANOPY,48",MOUNTING BRACKET	CELLXION	570005
206	2.000	EA.	146514-005	55	DRIP CAP,48"X3",HVAC	CELLXION	146514-005
207	2.000	EA.	520528	55	HVAC,WALL,3T,5KW,MARVAIR,2STG	MARVAIR	MAA2036AA050N++1+1EA+C21++++++
208	2.000	EA.	522001-00006	55	HVAC,SLEEVE,10"X30"X5 1/2"	CELLXION	522001-00006
209	2.000	EA.	522001-00012	55	HVAC,SLEEVE,16"X30"X5 1/2"	CELLXION	522001-00012
210	430.000	EA.	320021	70	TILE VINYL,1/8",VINYLASA,VL556	VINYLASA	VL-556
211	1.000	EA.	146514-002	75	THIMBLE COVER PLATE,.063X16"X16"	CELLXION	146514-002
212	1.000	EA.	170123	75	PIPE CAP,PLASTIC,NPT,NIAGARA #2046 (OR EQUAL)	NIAGARA	2046
213	1.000	EA.	400420	75	T-TAP,250-1/0MAIN,1/0-14,GP-250-0WC	NSI	GP-250-0WC
214	1.000	EA.	410117	75	CONNECTOR,LFMC,1/2",STRAIGHT,ST (OR EQUAL)	T&B	5232
215	1.000	EA.	410160	75	BUSHING,EMT,3",PLASTIC (OR EQUAL)	T&B	BU508
216	1.000	EA.	470090	75	LOUVER,12",EXTENSION	CELLXION	470090
217	1.000	EA.	470102	75	SHUTTER,MOTOR,2C832	DAYTON	2C832
218	1.000	EA.	470203	75	LOUVER,42",EXTENSION	CELLXION	470203
219	1.000	EA.	550042-003	75	GENERATOR,EXHAUST TL PIPE GALV,BOM	CELLXION	550042-003
220	1.000	EA.	550195	75	GENERATOR,40KW,NG/LP,CUMMINS,C40N6		
221	1.000	EA.	550340	75	EXHAUST THIMBLE,8"OD,ASSEMBLY,RND	CELLXION	550108
222	1.000	EA.	550434	75	PAN,CONTAINMENT,18GA,37"X69"X3"		
223	1.000	EA.	420048	90	LABEL,DATA,STANDARD SHELTER	CELLXION	420048
224	1.000	EA.	480001	90	PLATE,DATA,ALUM,8"X12",GRAY	CELLXION	480001
225	1.000	EA.	504222	95	DOOR,WEATHERSTRIPPING,303-TF-3670 (OR EQUAL)	PEMKO	303-TF-3670
226	1.000	EA.	504223	95	DOOR,WEATHERSTRIPPING,303-TF-4070 (OR EQUAL)	PEMKO	303-TF-4068
227	3.000	EA.	390001	99	EXTINGUISHER,10# CO2 FIRE,BADGER (OR EQUAL)	BADGER	B10V
228	1.000	EA.	480000	99	TRAY,WALL FILE PLASTIC,LR-SMOKE (OR EQUAL)	UNIVERSAL	UNIV08122
229	1.000	EA.	480087-02	99	PACKING KIT,W/8 FLAT TIE DOWN PLATE	CELLXION	480087-02
230	2.000	EA.	570018	99	DOOR,CANOPY,54",METAL (PACKING LIST ITEM)	CELLXION	570018

DEPT CODES:
- 20 - CARPENTRY
- 30 - CONDUIT
- 40 - ELECTRICAL
- 50 - MECHANICAL
- 51 - DOORS
- 55 - HVAC
- 70 - TILE/FLOORING
- 75 - GENERATOR
- 90 - SHIPPING
- 95 - MULTI-TASK
- 99 - PACKING LIST
- 150 - INSTALLATION DEPT

NOTES:
1. ITEMS LISTED THAT DO NOT SHOW AN ITEM NUMBER HAVE TWO OR MORE LIKE MATERIALS CUT TO DIFFERENT LENGTHS AND ARE MERGED TO PROVIDE A TOTAL QUANTITY REQUIRED. THESE MERGED ITEMS ARE DETAILED IN THE CUT LIST TABLE SHOWN AFTER THE PARTS LIST.

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State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF
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PROFESSIONAL ENGINEER

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Voice: (318) 213-2900
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CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
OPTIONS LIST

FILENAME: STWS02	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K.MORRISSEY	DATE: 6/21/23
CHK. BY: M.FOUQUETTE	DATE: 6/21/23
APP. BY: S.WALKER	DATE: 6/21/23
SHEET NO. 0-4	
DRAWING NO.: STWS02	REV.: A

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M.FOUQUETTE

NOTE:
CUT LIST ITEM LENGTHS ARE ESTIMATED, CONFIRM
LENGTHS REQUIRED PRIOR TO ACTUALLY CUTTING PARTS.

CUT LIST

ITEM	P/N	DESCRIPTION	CUT	PCS
1	350061	TELCO BOARD,4'X4',POLY.030,W/5/8"OB	48" X 48"	1
36	430269	WIREWAY,GALV,4"X4"X120",W/O KO'S (OR EQUAL)	120"	1
38	430319	WIREWAY,GALV,4"X4"X36",W/O KO'S (OR EQUAL)	27 1/8"	1
66	410111	CONDUIT,LFMC,3/4",SEALTITE (OR EQUAL)	120"	2
67	410111	CONDUIT,LFMC,3/4",SEALTITE (OR EQUAL)	48"	4
68	410112	CONDUIT,LFMC,1/2",SEALTITE (OR EQUAL)	36"	1
69	410112	CONDUIT,LFMC,1/2",SEALTITE (OR EQUAL)	15"	1
74	410232	CONDUIT,LFMC,2",SEALTITE	90"	1
102	430521	RAIL,DIN,35MM X 6'	11 1/2"	1
125	146506-12000	SHEET METAL,18GA,4'WX10'L,GALV	13" X 13"	1
126	146506-12000	SHEET METAL,18GA,4'WX10'L,GALV	44" X 44"	1
127	146506-12000	SHEET METAL,18GA,4'WX10'L,GALV	37" X 37"	1
130	400030	WIRE,#6 THHN,STRAND,GRN	468"	1
131	400030	WIRE,#6 THHN,STRAND,GRN	900"	1
132	400030	WIRE,#6 THHN,STRAND,GRN	66"	1
133	400030	WIRE,#6 THHN,STRAND,GRN	18"	2
134	400050	WIRE,#2 THHN,STRAND,GRN	402"	1
135	400050	WIRE,#2 THHN,STRAND,GRN	900"	1
136	400050	WIRE,#2 THHN,STRAND,GRN	300"	4
150	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	27 1/2"	1
151	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	116 1/2"	1
152	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	50"	1
153	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	32"	2
154	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	86 1/2"	3
155	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	41 3/4"	1
156	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	69"	2
157	510001	CABLE LADDER,6"X9'8 1/2",Y/Z (OR EQUAL)	32"	1
158	510001	CABLE LADDER,6"X9'8 1/2",Y/Z (OR EQUAL)	46"	1
163	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI (OR EQUAL)	84 1/2"	2
190	504216	DOOR,WEATHERSTRIP,SPONGE NEOPRENE (OR EQUAL)	42"	1
191	504216	DOOR,WEATHERSTRIP,SPONGE NEOPRENE (OR EQUAL)	48"	1
193	504400	DOOR,DRIP CAP,NGF16A-48" (OR EQUAL)	46"	1
195	504405	DOOR,DRIP CAP,NGF16A-54" (OR EQUAL)	52"	1

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Date: **6/22/23**

SHOP DRAWINGS (MECHANICAL)

DWG #	DESCRIPTION
50-001	GROUND BAR MOUNTING INSTALLATION
50-005	CABLE LADDER GROUNDING DETAILS (T-JUNCTION INSIDE/OUTSIDE)
50-006	CABLE LADDER GROUNDING DETAILS (T-JUNCTION TWO SIDES)
50-008	CABLE LADDER SPLICE JUNCTION GROUNDING DETAILS
50-012	GROUND TO DISTRIBUTION PANEL & BOXES OVER 6"x6"
50-013	GROUND TO DOOR FRAME
50-014	GROUND TO HVAC GRILLE
50-015	GROUND TO LEAD/LAG CONTROLLER
50-016	GROUND TO EXHAUST FAN
50-017	GROUND TO INTAKE LOUVER
50-019	GROUND TO PERPENDICULAR CONDUIT
50-035	THRU WALL PENETRATION PVC PIPE @ 45°
50-038	GROUND TO WIREWAY
50-042	WIRE STANDOFF INSTALLATION
50-050	SINGLE CONNECTOR AT GROUND BAR
50-051	SINGLE CONNECTOR AT STEEL OBJECT
50-062	HALO GROUND SINGLE DROP #2 TO #2
50-070	LUG CRIMPING DETAIL
50-071	GROUND BAR HAT BRACKET INSTALLATION
50-083	GROUND CLAMP USAGE DETAIL
51-003	2 PIECE THRESHOLD INSTALLATION
51-006	DRIP CAP INSTALLATION
51-007	DOOR LOCKGUARD INSTALLATION
51-008	DOOR PULL HANDLE INSTALLATION
51-009	DOOR HOLD OPEN INSTALLATION
51-010	DOOR CLOSER INSTALLATION
51-012	DOOR CANOPY INSTALLATION
51-013	ID SIGN LOCATION
51-014	DOOR HARDWARE INSTALLATION
51-017	GROUND STRAP TO DOOR FRAME
51-021	PANELIZED SHELTER DOOR HARDWARE INSTALLATION
51-029	MAGNETIC DOOR CONTACT INSTALLATION
51-034	DOOR WEATHER STRIP INSTALLATION
51-040	DOOR FRAME IDENTIFICATION MATRIX
52-003	STRAIGHT CLAMP INSTALLATION
52-004	CORNER CLAMP INSTALLATION
52-016	CABLE LADDER WALL BRACKET INSTALLATION
52-017	CABLE LADDER DOG LEG INSTALLATION
52-018	CABLE LADDER TO HANGER BRACKET INSTALLATION DETAIL
52-019	CABLE LADDER INSTALLATION DETAIL (HANGER BRACKET)
52-021	CABLE LADDER HANGER BRACKET ONE LAYER INSTALLATION
53-001	WAVEGUIDE ENTRY INSTALLATION
55-002	HVAC FINISH SLEEVE INSTALLATION
55-003	HVAC MOUNTING ANGLE INSTALLATION DETAIL
70-001	TILE INSTALLATION DETAIL
70-002	BASE MOLD INSTALLATION DETAIL
70-003	VINYL TILE INSTALLATION PROCEDURE
80-001	1/2" PVC PIPE STANDOFF

SHOP DRAWINGS (ELECTRICAL)

DWG #	DESCRIPTION
30-002	BOX TO BOX PENETRATION DETAIL
30-004	BOX TO GFCI PENETRATION DETAIL
30-007	THRU WALL PEENTRATION RIGID NIPPLE DETAIL
30-008	BOX TO W/P BOX PENETRATION DETAIL
30-009	CONDUIT TO WIREWAY CONNECTION
30-011	PLASTIC CAP INSTALLATION DETAIL
30-012	RIGID, CLOSE & CHASE NIPPLE APPLICATION
30-013	WIREWAY TO AC PANEL CONNECTION
30-015	ONE LAYER UNISTRUT INSTALLATION
30-016	WIREWAY MOUNTING INSTALLATION DETAIL
30-017	CONDUIT STRAP-BACK INSTALLATION DETAIL
30-019	CONDUIT STANDARD INTERIOR LIGHT FIXTURE DETAIL
30-020	JUNCTION BOX MOUNTING DETAIL
30-022	HVAC THRU WALL PENETRATION DETAIL
40-008	ELECTRICAL GROUND BONDING DETAIL
40-010	TYPICAL WIRE SECURING AT LOADCENTER
40-011	HVAC THRU WALL CONDUIT PENETRATION
40-012	WARNING LABEL PLACEMENT DETAILS
40-013	FIRE PROTECTION CIRCUIT BREAKER INSTALLATION STANDARDS
55-001	HVAC BLOCKOUT SLEEVE INSTALLATION
55-004	HVAC INSTALLATION DETAIL
55-006	HVAC INSTALLATION AND CONNECTIONS
55-010	HVAC DRIP CAP INSTALLATION

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www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
SHOP DRAWINGS &
CUT LIST

FILENAME: *STWS02*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *0-5*	
DRAWING NO.: *STWS02*	REV.: *A*

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SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
206	146514-005	DRIP CAP,48"X3",HVAC	
232	570018	DOOR,CANOPY,54",METAL (PACKING LIST ITEM)	

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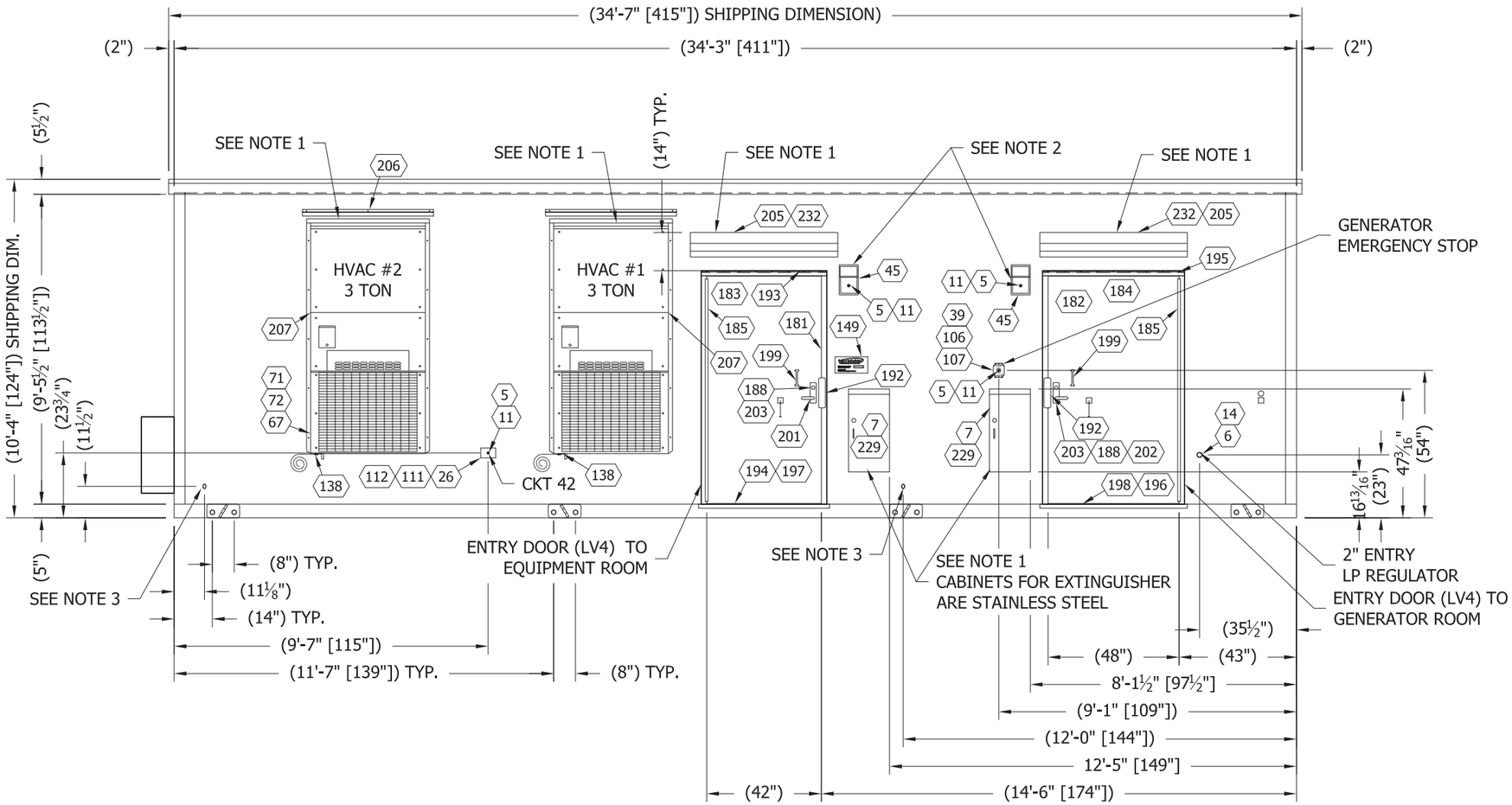
State: **Florida**
Signature: *Mark Feverson*
Title: Staff Plan Reviewer
Date: **6/22/23**



EXTERIOR ELEVATION "A"

STRUCTURAL PANEL HEIGHT: 9'-6"

NOTES:
1. REMOVE FOR SHIPPING
2. EXTERIOR LIGHT INSTALLED AT MANUFACTURER, TESTED FOR FUNCTION, THEN REMOVED AND PLACED INSIDE SHELTER FOR SHIPPING.
3. GROUNDING PENETRATIONS 1" PVC CAST @ 45°

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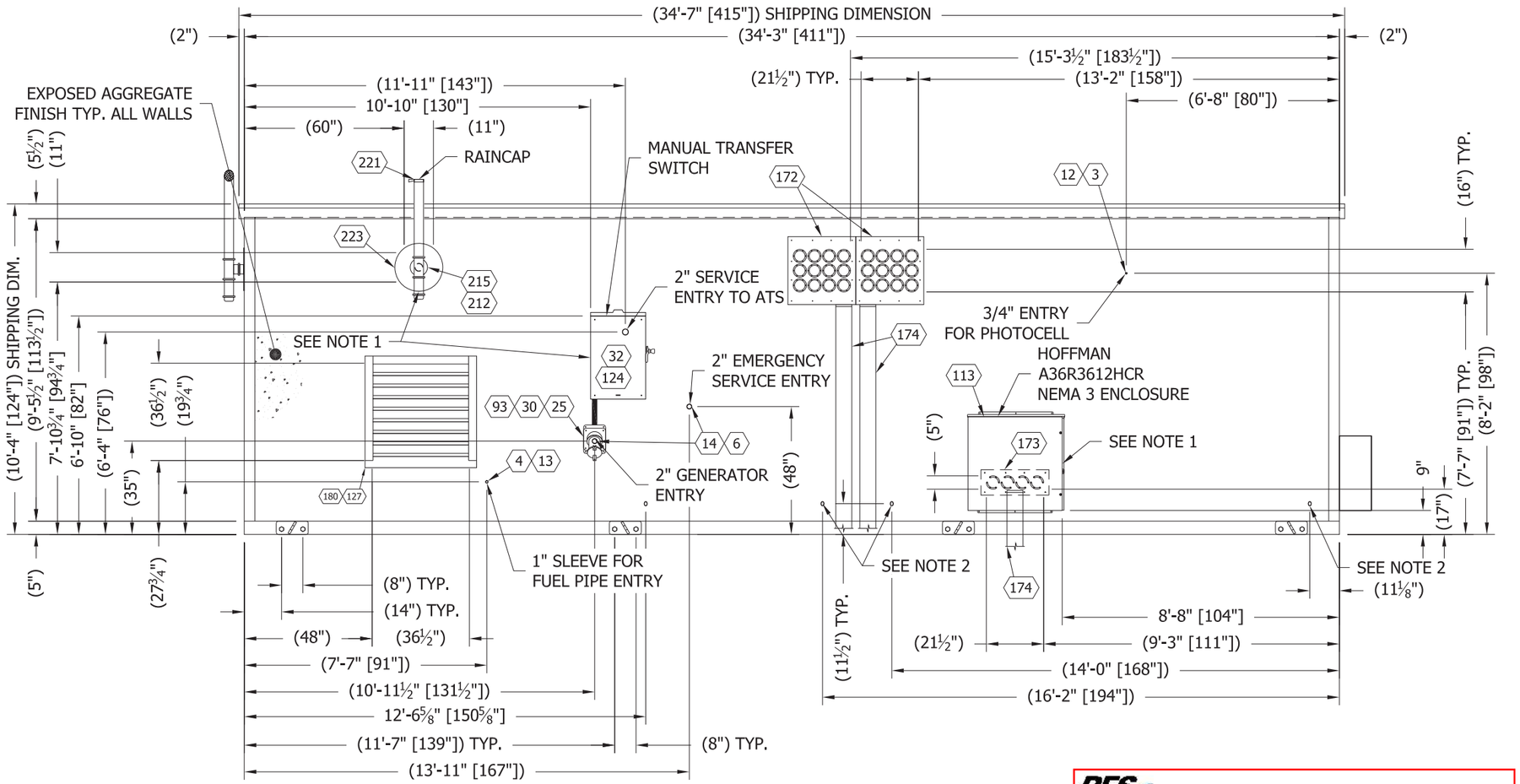
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
EXTERIOR ELEVATION
WALL "A"

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *1-0*	
DRAWING NO.: *STWS02*	REV.: *A*



EXTERIOR ELEVATION "C"

STRUCTURAL PANEL HEIGHT: 9'-6"

NOTES:
1. REMOVE FOR SHIPPING
2. GROUNDING PENETRATIONS 1" PVC CAST @ 45°

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LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
EXTERIOR ELEVATION
WALL "C"

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *1-1*	
DRAWING NO.: *STWS02*	REV.: *A*

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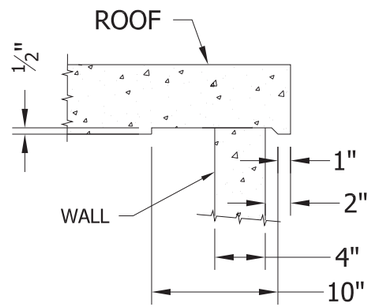
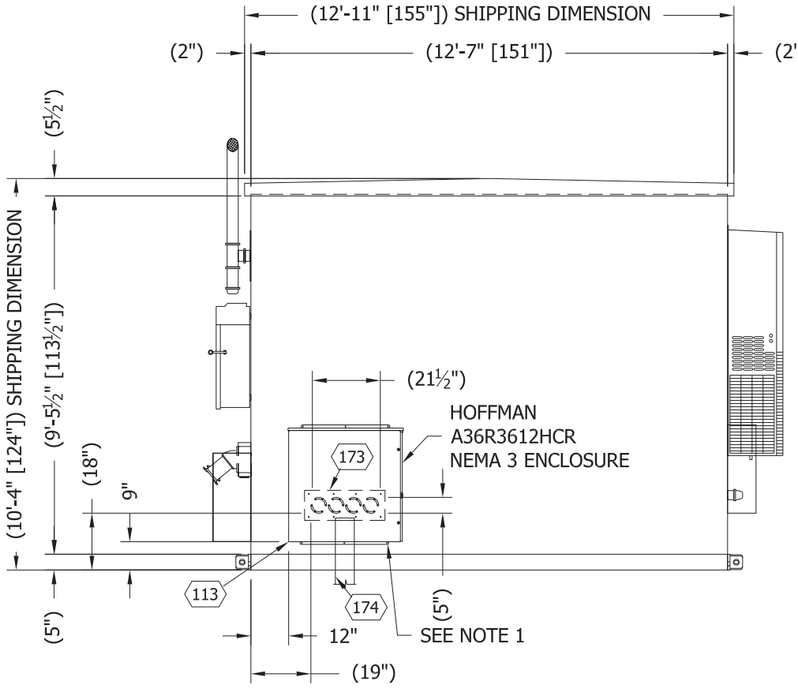
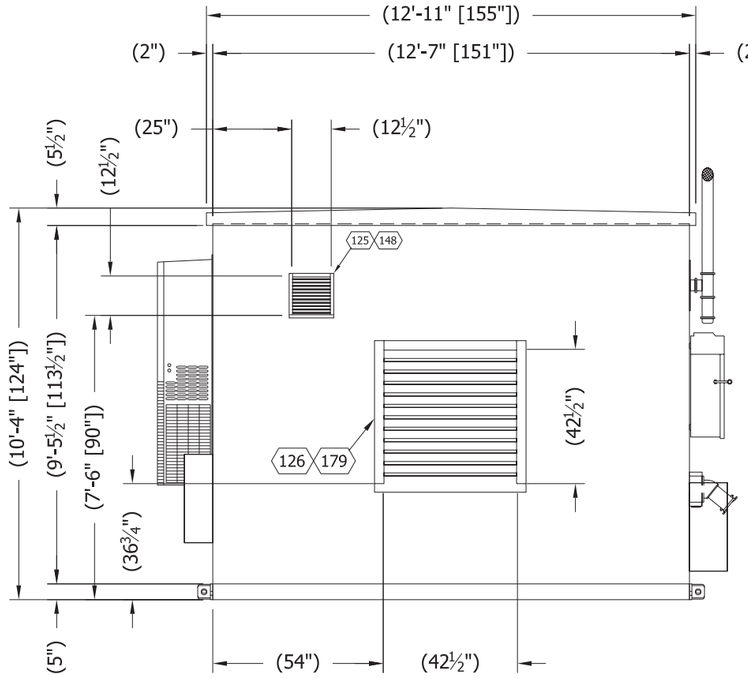


ROOF REVEAL DETAIL



EXTERIOR ELEVATION "B"



EXTERIOR ELEVATION "D"

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State: **Florida**
Signature: *Mark Severson*
Title: Staff Plan Reviewer
Date: **6/22/23**

NOTES:
1. REMOVE FOR SHIPPING

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LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
EXTERIOR ELEVATION
WALLS "B" & "D"

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
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CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *1-2*	
DRAWING NO.: *STWS02*	REV.: *A*

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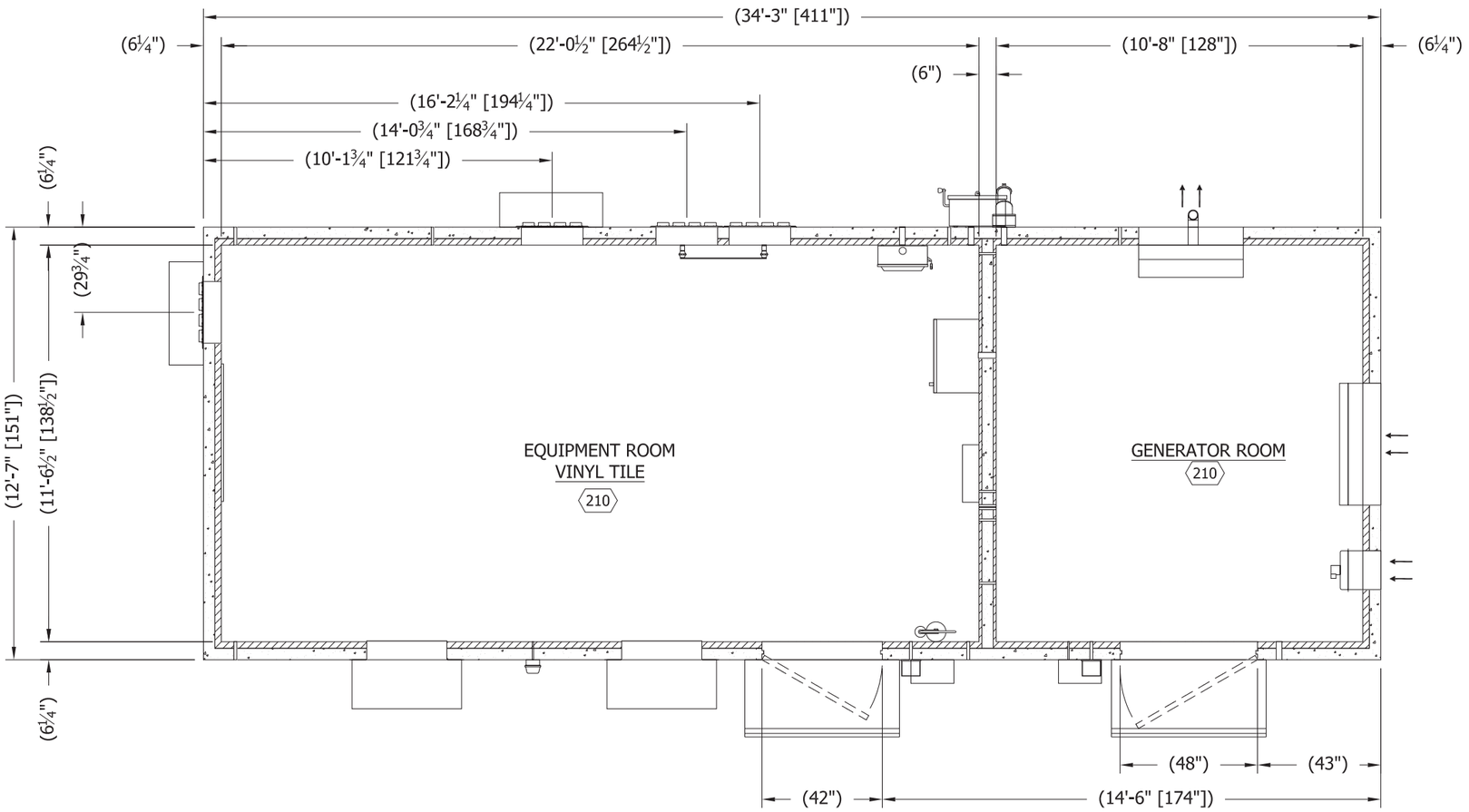
SUB PARTS LIST			
ITEM	P/N	DESCRIPTION	PCS
210	320021	TILE VINYL,1/8",VINYLASA,VL556	430



FLOOR PLAN
430.979 SQ. FT. EXTERIOR AREA
254.398 SQ. FT. EQUIPMENT ROOM
123.111 SQ. FT. GENERATOR ROOM

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12'-7"X34'-3"
CONCRETE SHELTER
FLOOR PLAN

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *2-0*	
DRAWING NO.: *STWS02*	REV.: *A*

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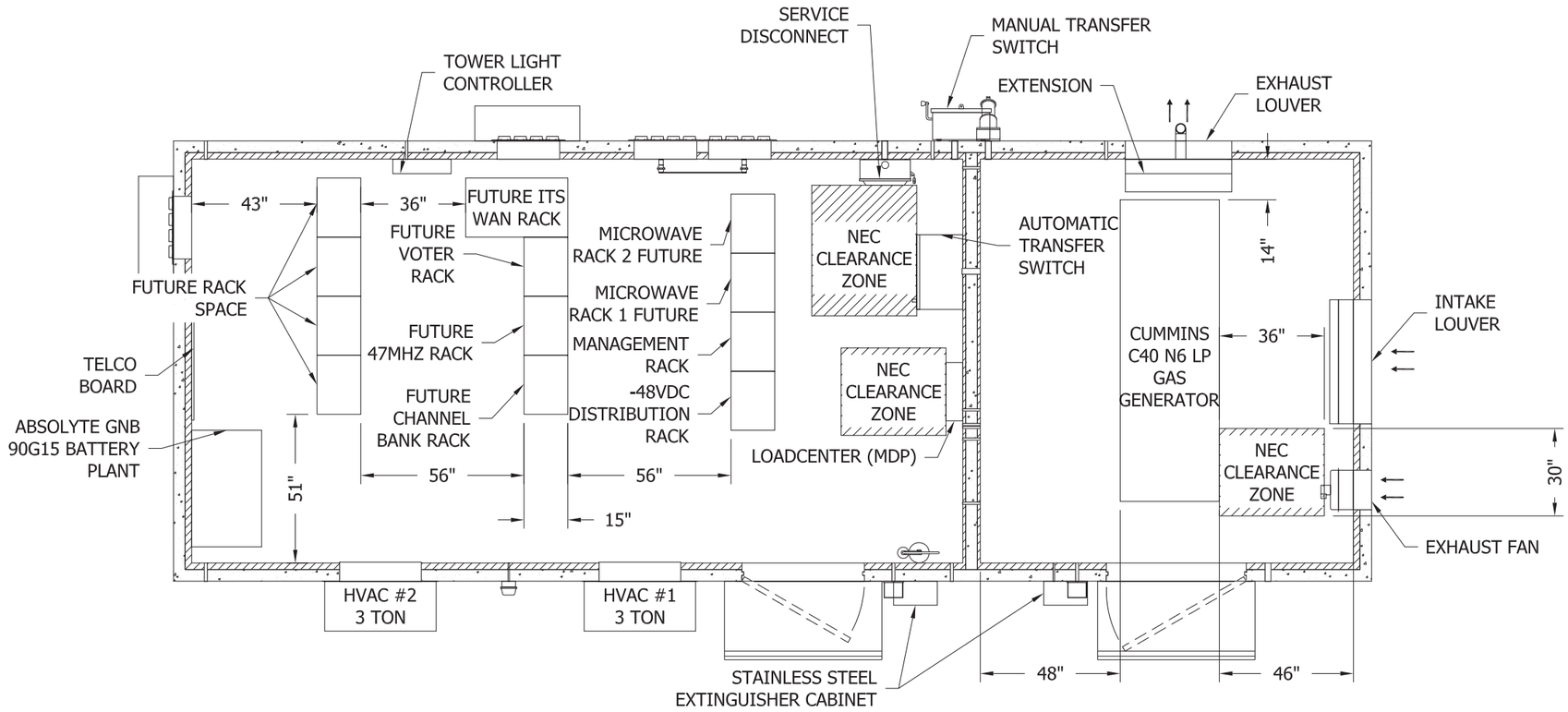

EQUIPMENT LAYOUT PLAN

NOTES:
1. ONLY THE MANAGEMENT RACK AND -48VDC DISTRIBUTION RACK WILL BE SUPPLIED AND FURNISHED FOR THIS PROJECT.

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12'-7"X34'-3"
CONCRETE SHELTER
EQUIPMENT LAYOUT
PLAN

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *2-1*	
DRAWING NO.: *STWS02*	REV.: *A*

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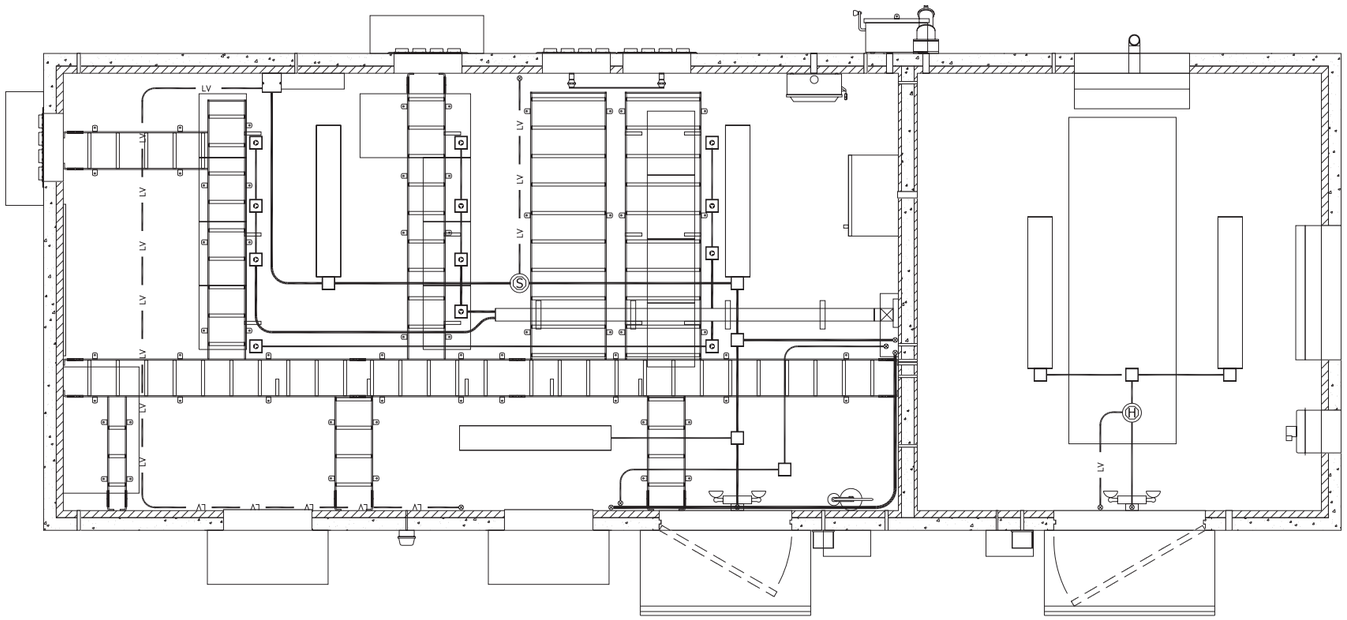

ROOM OVERLAY PLAN

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
Corey Nicholas Mitchel
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Sabre Industries
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, LA 71111
Voice: (318) 213-2900
Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
ROOM OVERLAY PLAN

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *2-2*	
DRAWING NO.: *STWS02*	REV.: *A*

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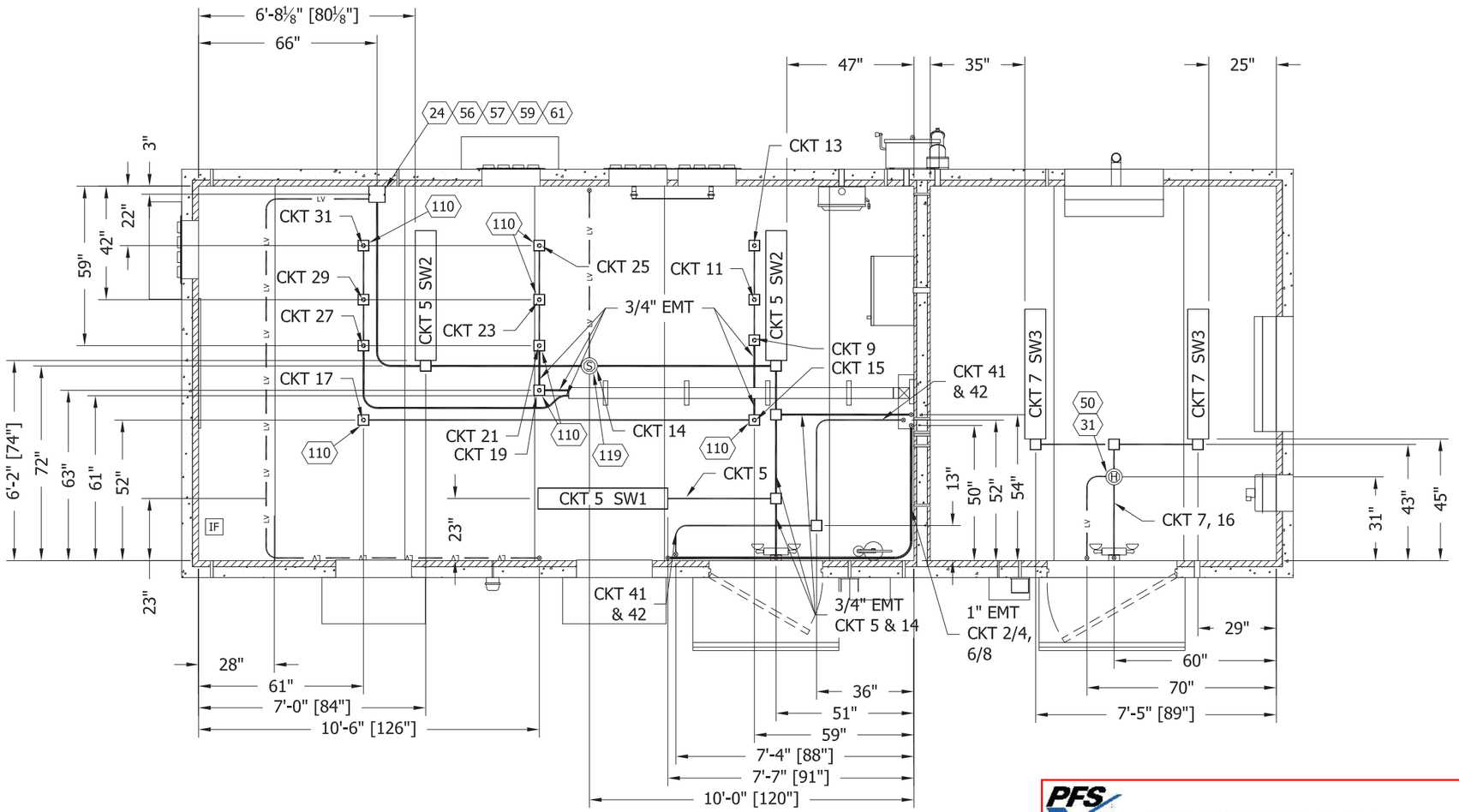
LEGEND:

IF = INTERIOR FINISH STARTING PANEL



REFLECTED CEILING PLAN
(ELECTRICAL)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

NOTES:
1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES

COREY NICHOLAS MITCHEL
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6/21/2023
No. 79623
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CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

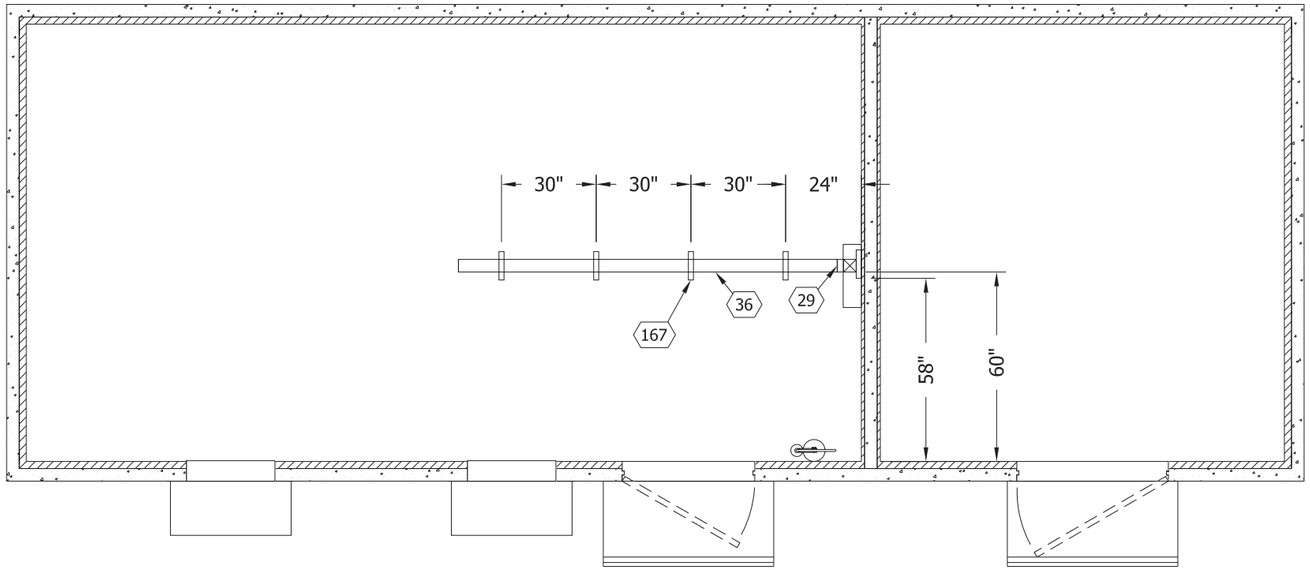
PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
REFLECTED CEILING
PLAN (ELECTRICAL)

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *3-0*	
DRAWING NO.: *STWS02*	REV.: *A*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
36	430269	WIREWAY,GALV,4"X4"X120",W/O KO'S (OR EQUAL)	120"



WIREWAY LAYOUT
(MECHANICAL)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

NOTES:
1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES

COREY NICHOLAS MITCHEL
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CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
WIREWAY LAYOUT
(MECHANICAL)

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *3-1*	
DRAWING NO.: *STWS02*	REV.: *A*

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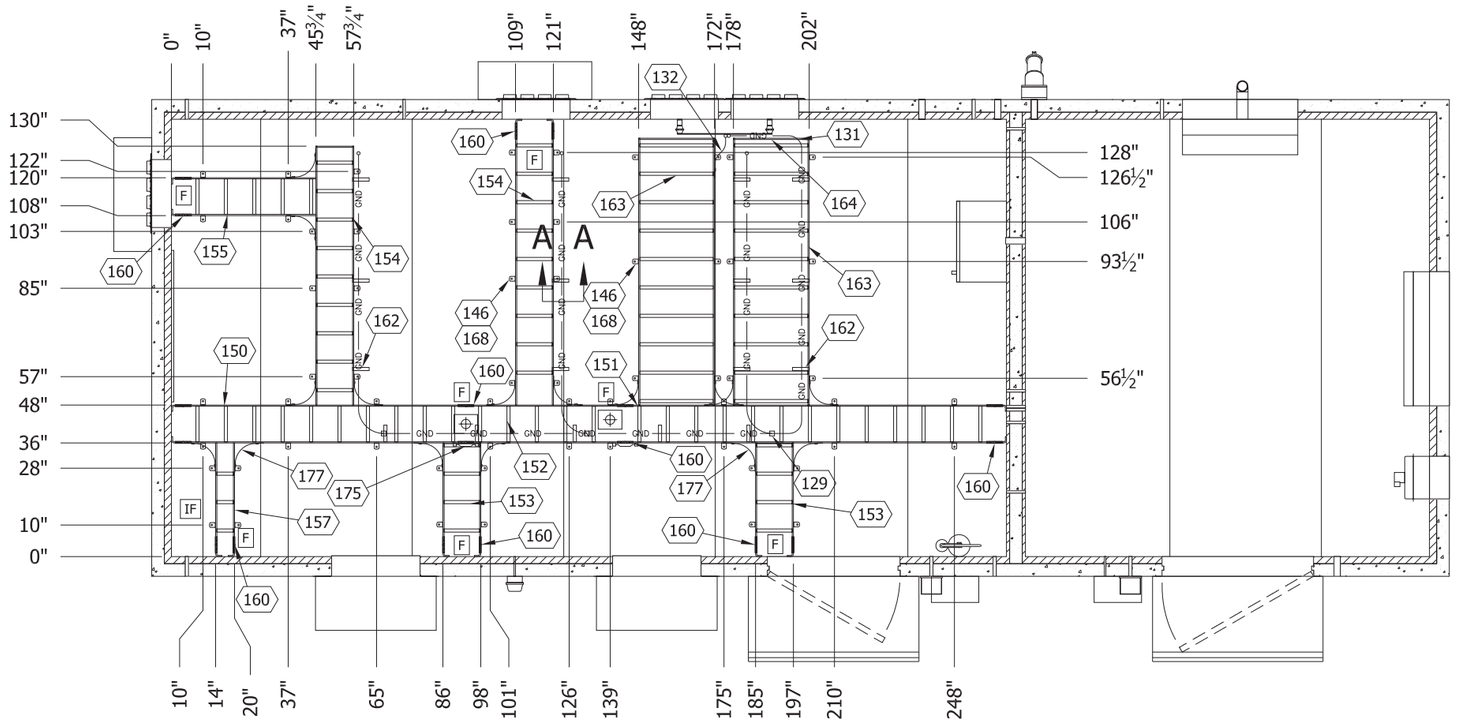
SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
131	400030	WIRE,#6 THHN,STRAND,GRN	900"
132	400030	WIRE,#6 THHN,STRAND,GRN	66"
155	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	41 3/4"

LEGEND:

⊕ = CABLE LADDER SPLICE LOCATION

F = CABLE LADDER FACTORY CUT END

IF = INTERIOR FINISH STARTING PANEL



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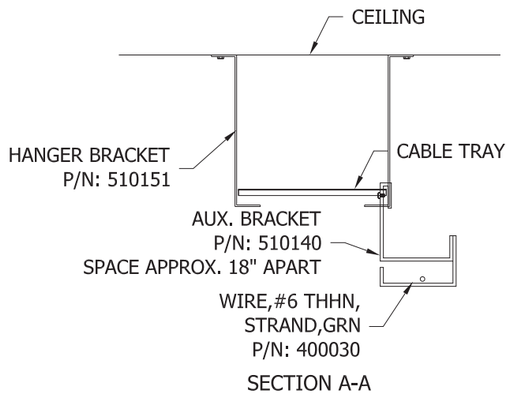
State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

REFLECTED CEILING PLAN
(MECHANICAL)



SECTION A-A

NOTES:
1. CABLE LADDER TO BE INSTALLED 8'-3" [99"] AFF

COREY NICHOLAS MITCHEL
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FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
REFLECTED CEILING
PLAN (MECHANICAL)

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *3-2*	
DRAWING NO.: *STWS02*	REV.: *A*

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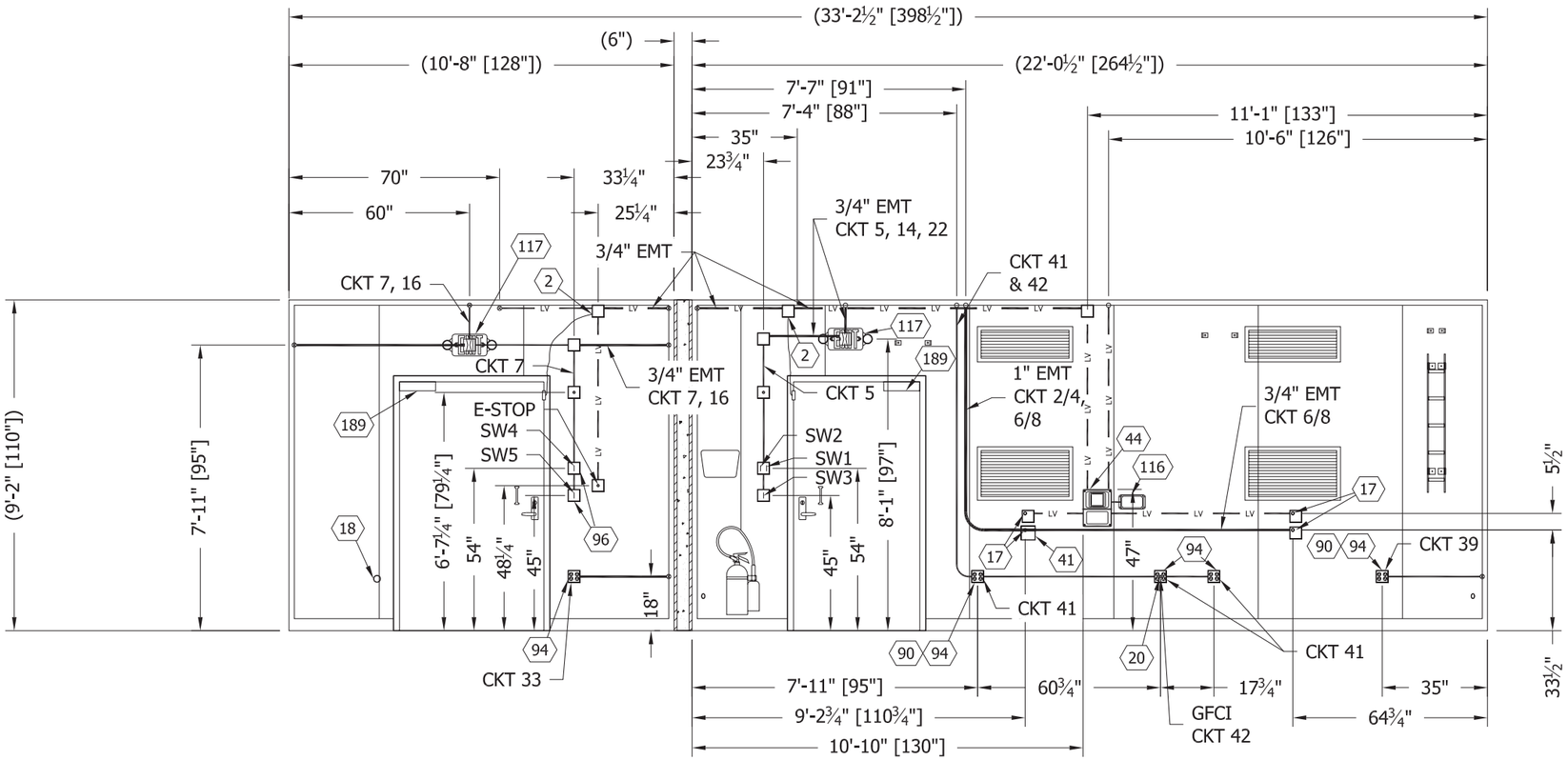

PFS CORPORATION
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State: **Florida**
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Title: Staff Plan Reviewer
Date: **6/22/23**

INTERIOR ELEVATION "A"
(ELECTRICAL)

NOTES:
1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES

COREY NICHOLAS MITCHEL
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6/21/2023
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CUSTOMER:
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FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
INTERIOR ELEVATION
WALL "A" (ELECTRICAL)

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *4-0*	
DRAWING NO.: *STWS02*	REV.: *A*

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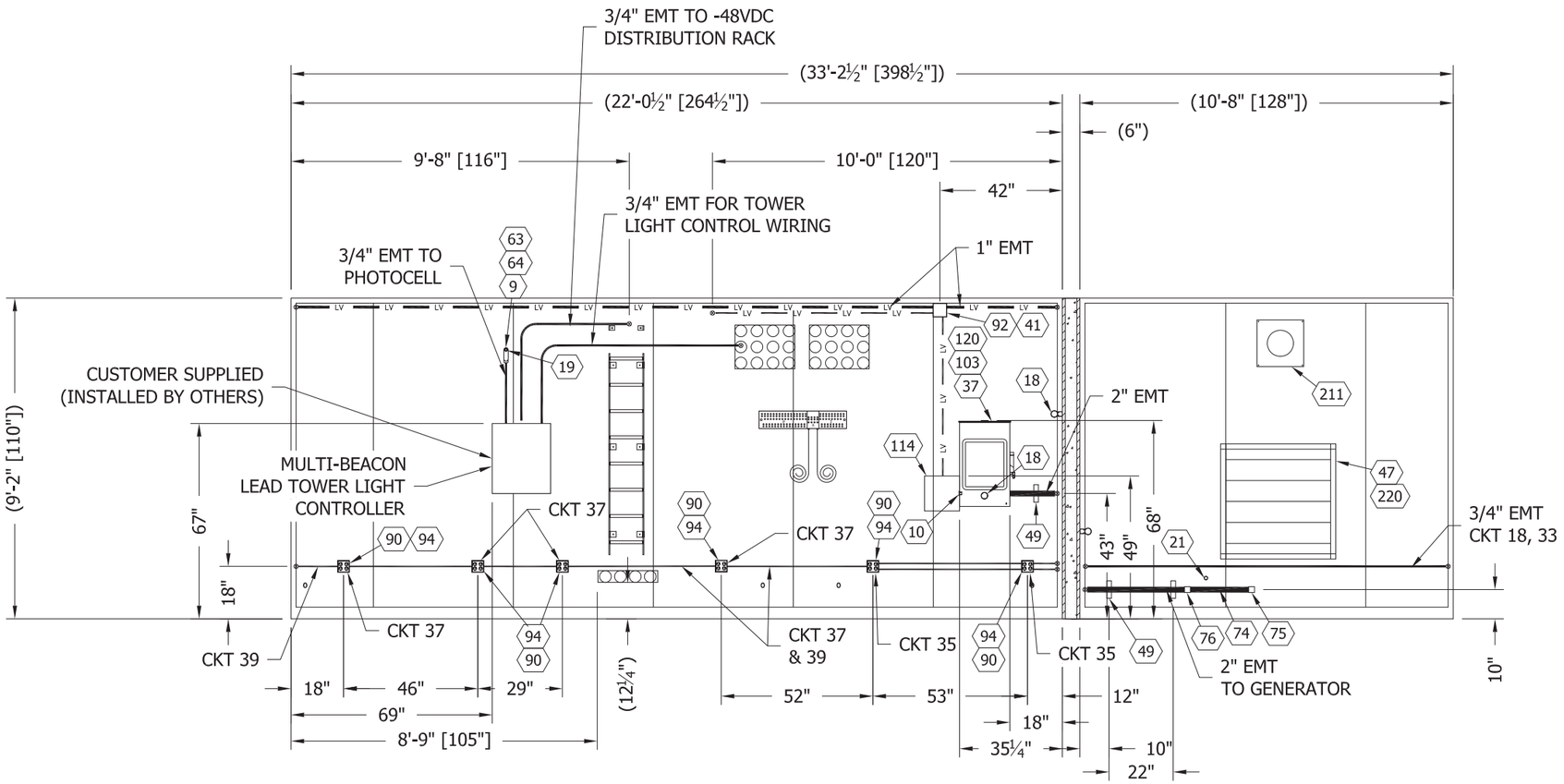

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State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

INTERIOR ELEVATION "C"
(ELECTRICAL)

NOTES:
1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES

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6/21/2023
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Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
INTERIOR ELEVATION
WALL "C" (ELECTRICAL)

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *4-1*	
DRAWING NO.: *STWS02*	REV.: *A*

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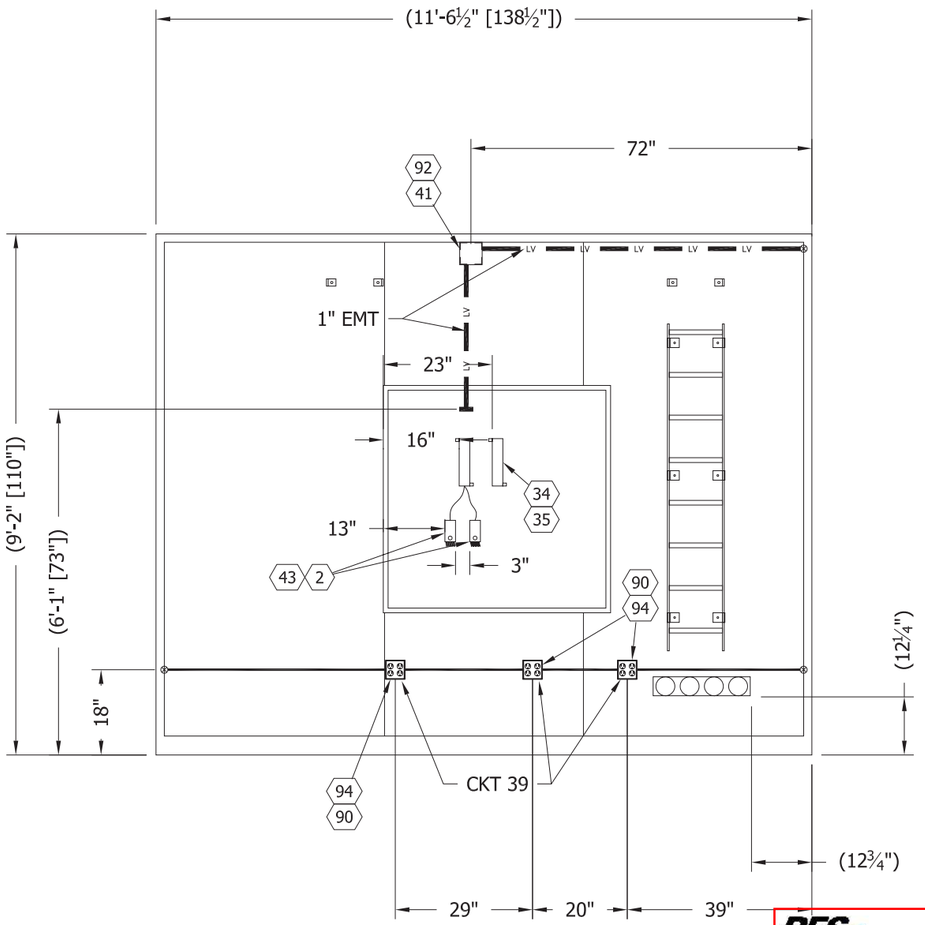
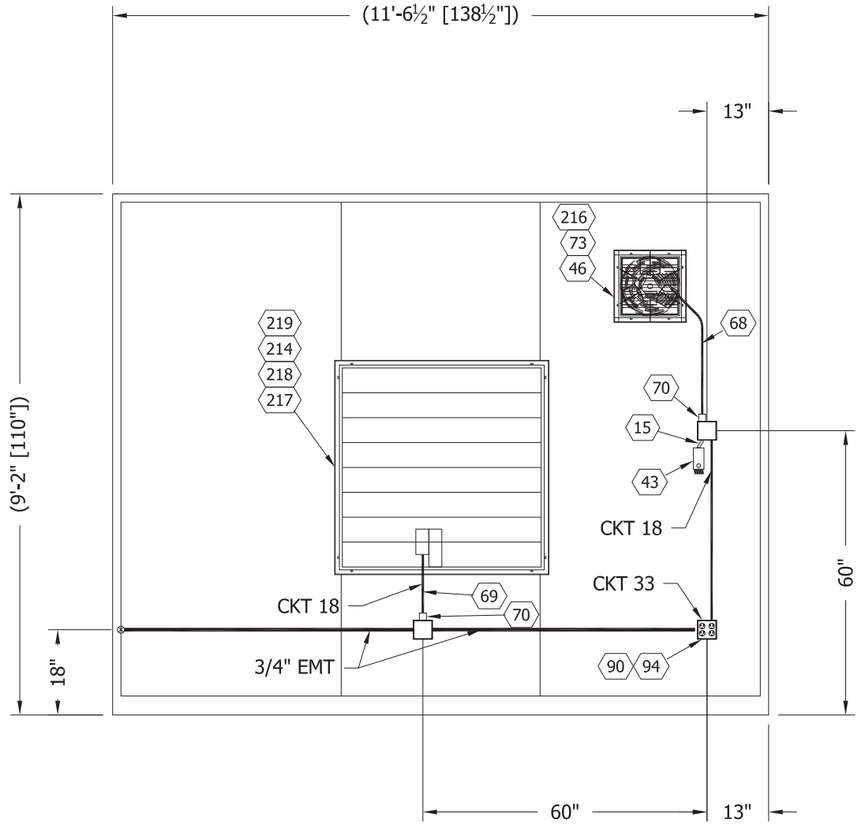
M.FOUQUETTE

SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
69	410112	CONDUIT,LFMC,1/2",SEALTITE (OR EQUAL)	15"



INTERIOR ELEVATION "B"
(ELECTRICAL)



INTERIOR ELEVATION "D"
(ELECTRICAL)

PFS CORPORATION
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State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

NOTES:
1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES

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www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
INTERIOR ELEVATION WALLS
"B" & "D" (ELECTRICAL)

FILENAME: *STWS02*	
SCALE: *3/8" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *4-2*	
DRAWING NO.: *STWS02*	REV.: *A*

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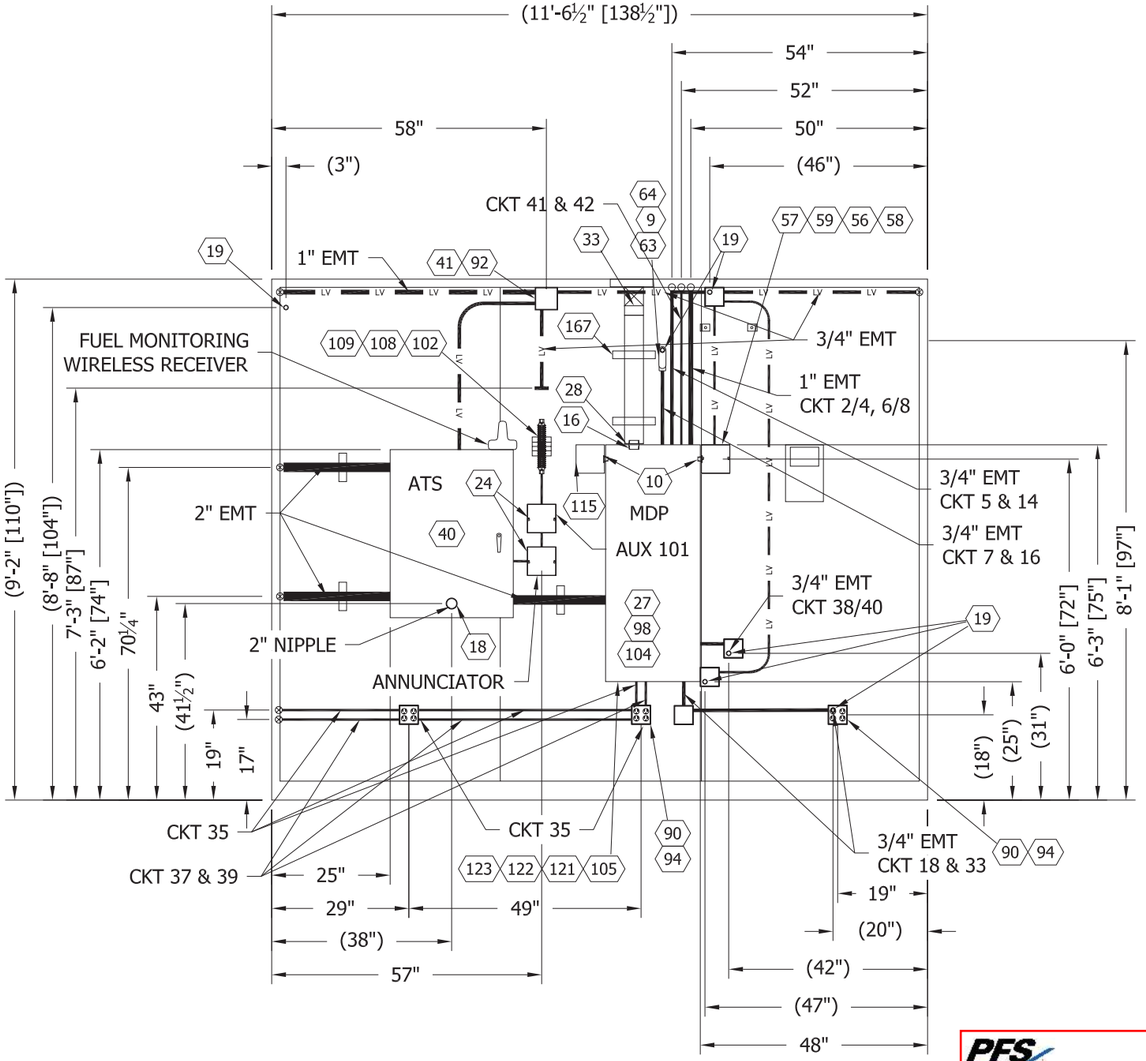
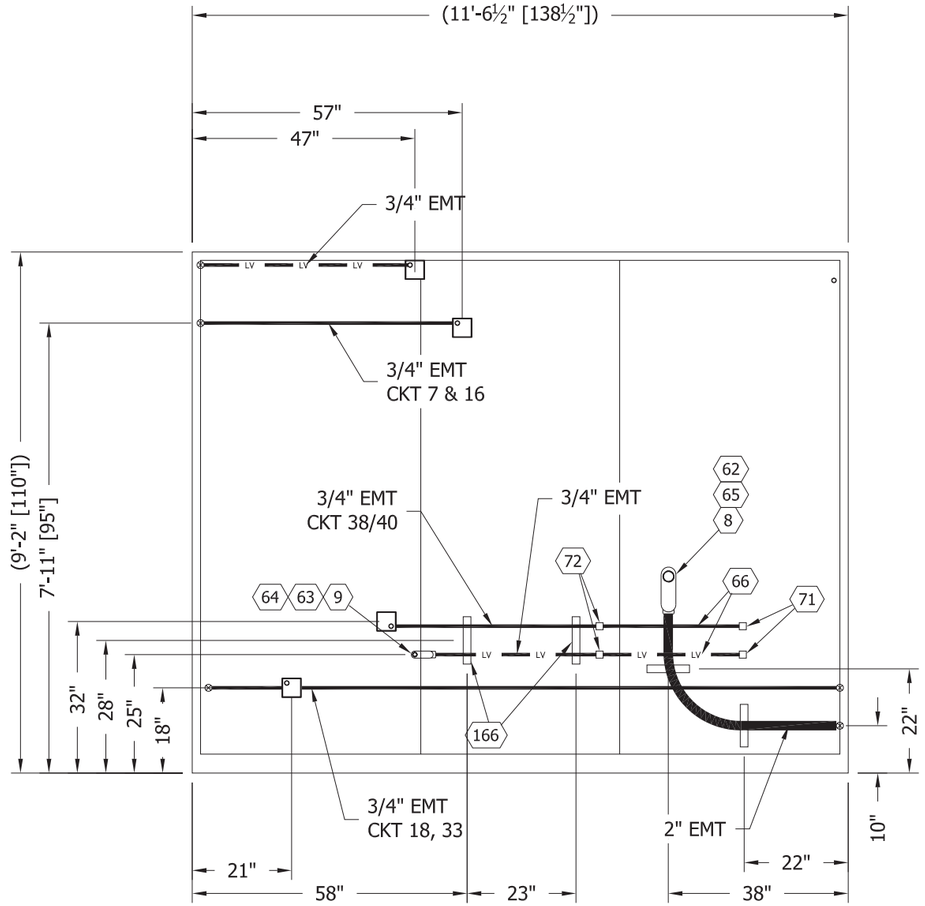


INTERIOR ELEVATION "E"
(ELECTRICAL)



INTERIOR ELEVATION "F"
(ELECTRICAL)

NOTES:
1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Feverson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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Fax: (318) 213-2919
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CUSTOMER:
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FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
INTERIOR ELEVATION WALLS
"E" & "F" (ELECTRICAL)

FILENAME: *STWS02*	
SCALE: *3/8" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *4-3*	
DRAWING NO.: *STWS02*	REV.: *A*

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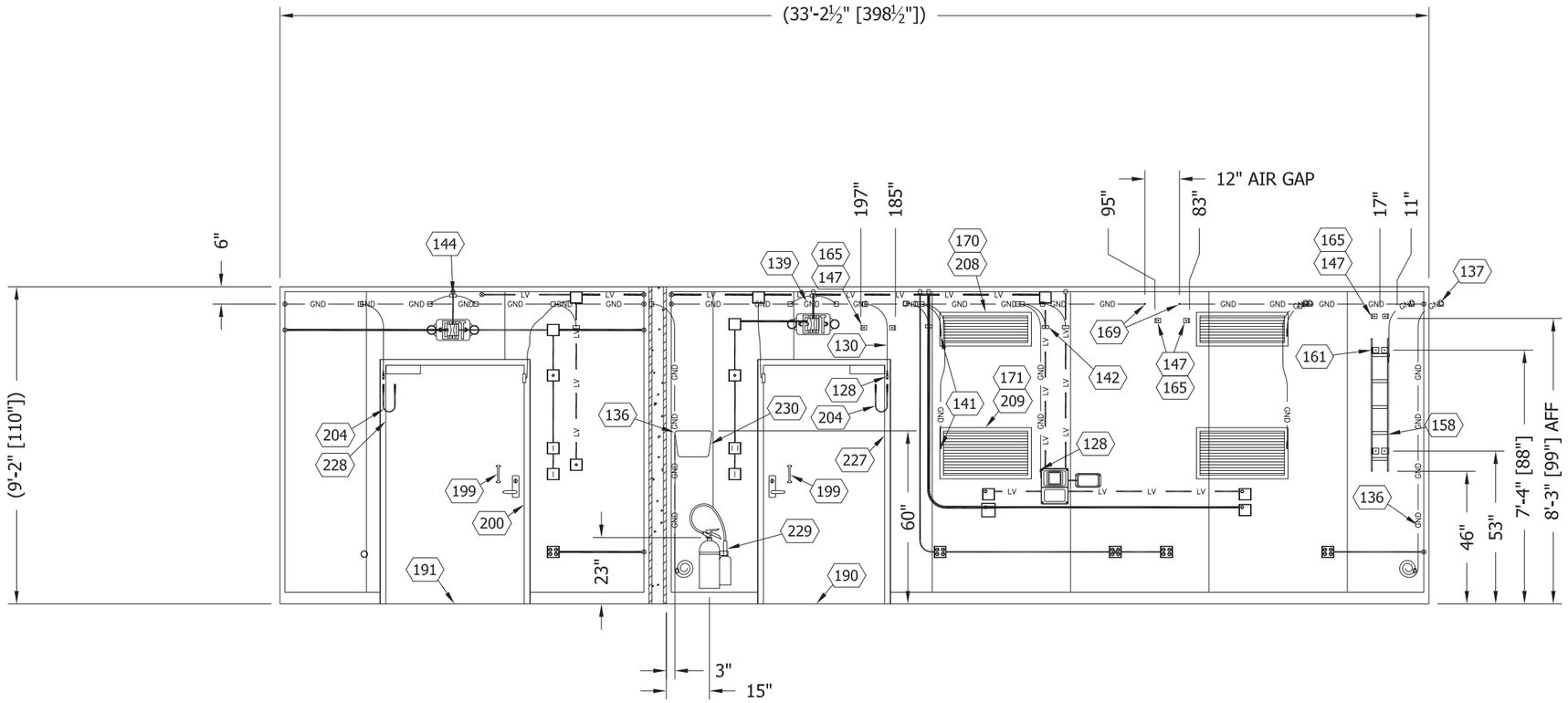
SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
130	400030	WIRE,#6 THHN,STRAND,GRN	468"
136	400050	WIRE,#2 THHN,STRAND,GRN	300"
158	510001	CABLE LADDER,6"X9'8 1/2",Y/Z (OR EQUAL)	46"



INTERIOR ELEVATION "A"
(MECHANICAL)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
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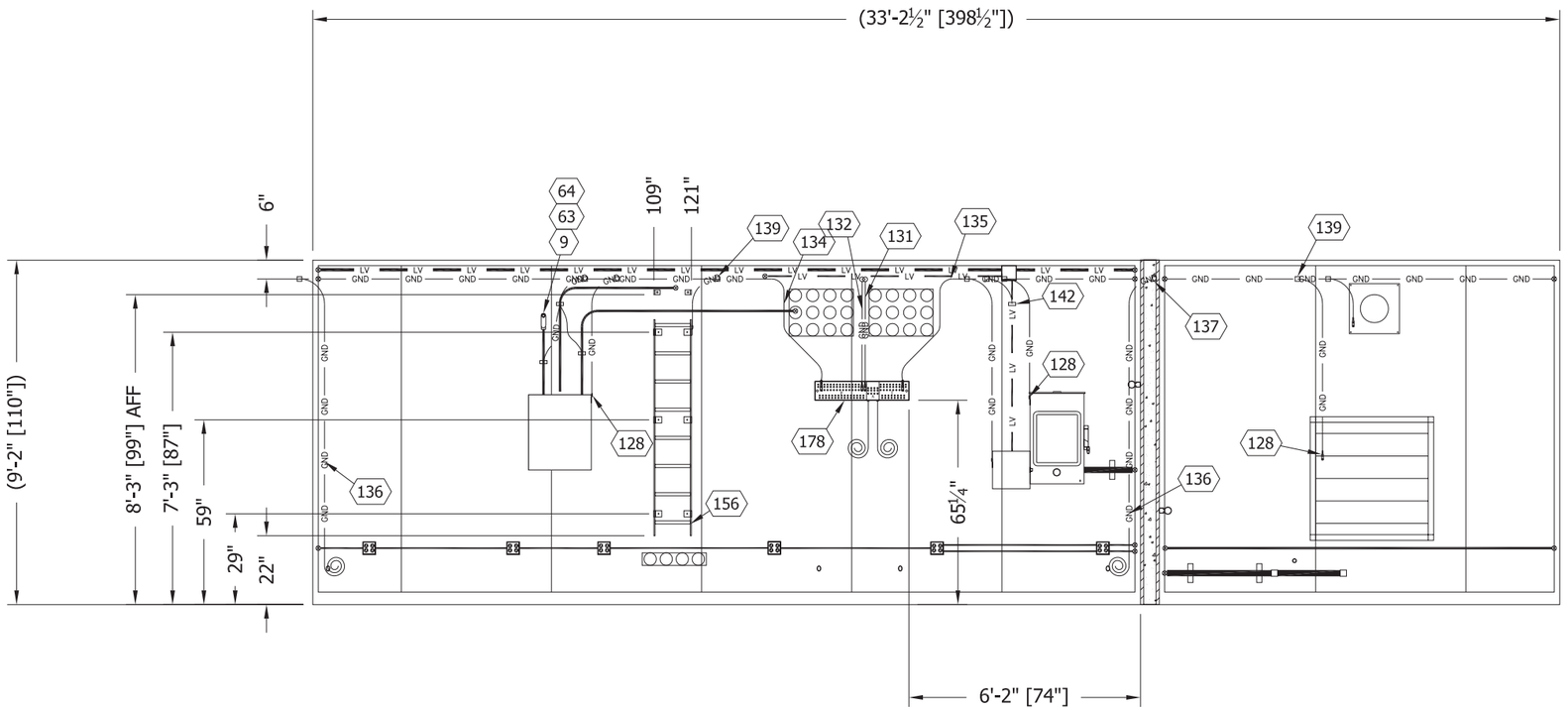
CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
INTERIOR ELEVATION
WALL "A" (MECHANICAL)

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *5-0*	
DRAWING NO.: *STWS02*	REV.: *A*

SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
74	410232	CONDUIT,LFMC,2",SEALTITE	90"
130	400030	WIRE,#6 THHN,STRAND,GRN	468"
134	400050	WIRE,#2 THHN,STRAND,GRN	402"
135	400050	WIRE,#2 THHN,STRAND,GRN	900"
136	400050	WIRE,#2 THHN,STRAND,GRN	300"
156	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	69"



INTERIOR ELEVATION "C"
(MECHANICAL)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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CUSTOMER:
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LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
INTERIOR ELEVATION
WALL "C" (MECHANICAL)

FILENAME: *STWS02*	
SCALE: *1/4" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *5-1*	
DRAWING NO.: *STWS02*	REV.: *A*

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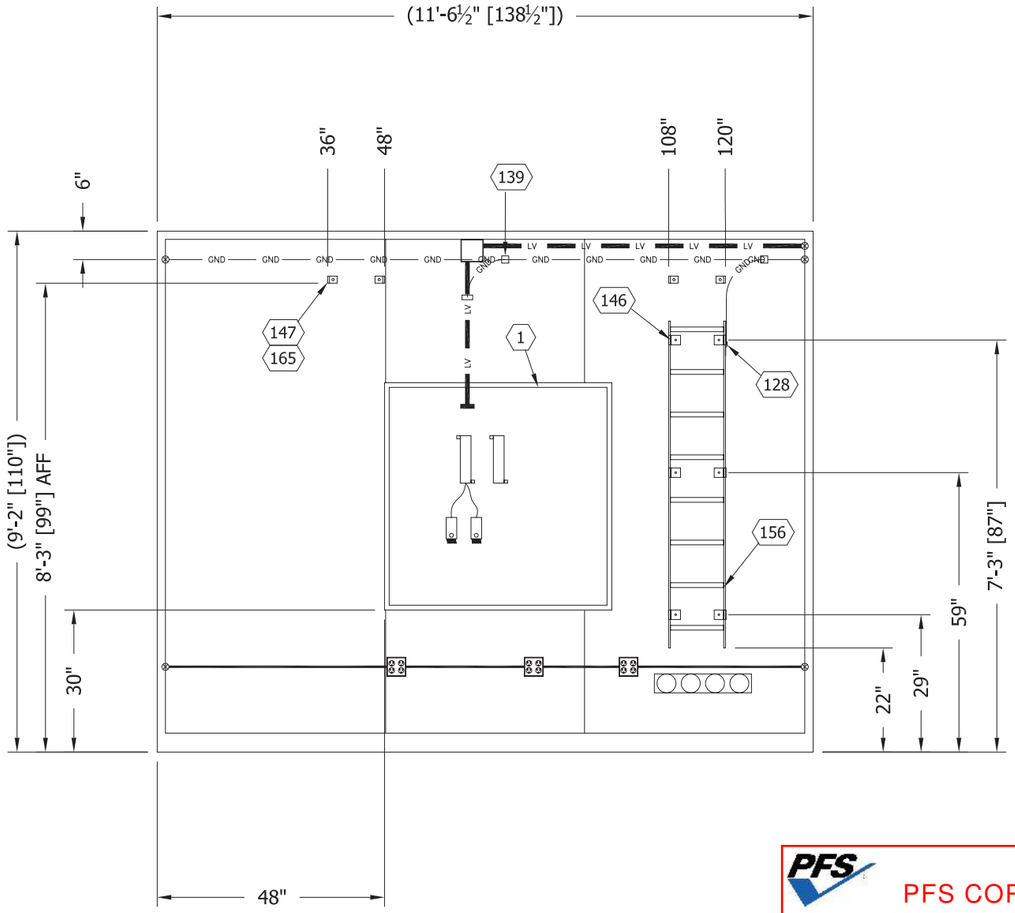
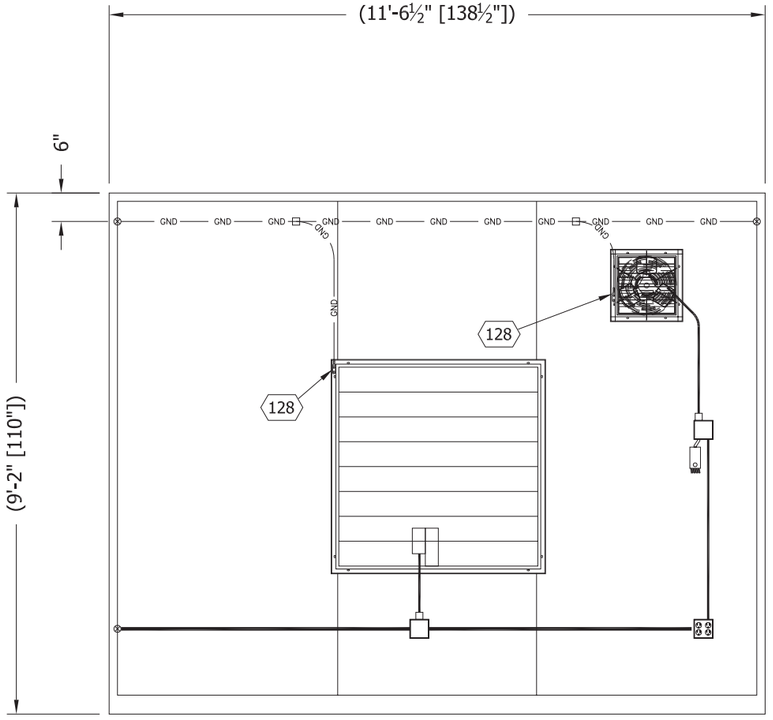
SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
68	410112	CONDUIT,LFMC,1/2",SEALTITE (OR EQUAL)	36"
130	400030	WIRE,#6 THHN,STRAND,GRN	468"
156	510000	CABLE LADDER,12"X9'8 1/2",YELLOW ZI (OR EQUAL)	69"



INTERIOR ELEVATION "B"
(MECHANICAL)



INTERIOR ELEVATION "D"
(MECHANICAL)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: *Mark Severson*
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
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6/21/2023
No. 79623
Corey Nicholas Mitchel
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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CONCRETE SHELTER
INTERIOR ELEVATION WALLS
"B" & "D" (MECHANICAL)

FILENAME: *STWS02*	
SCALE: *3/8" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *5-2*	
DRAWING NO.: *STWS02*	REV.: *A*

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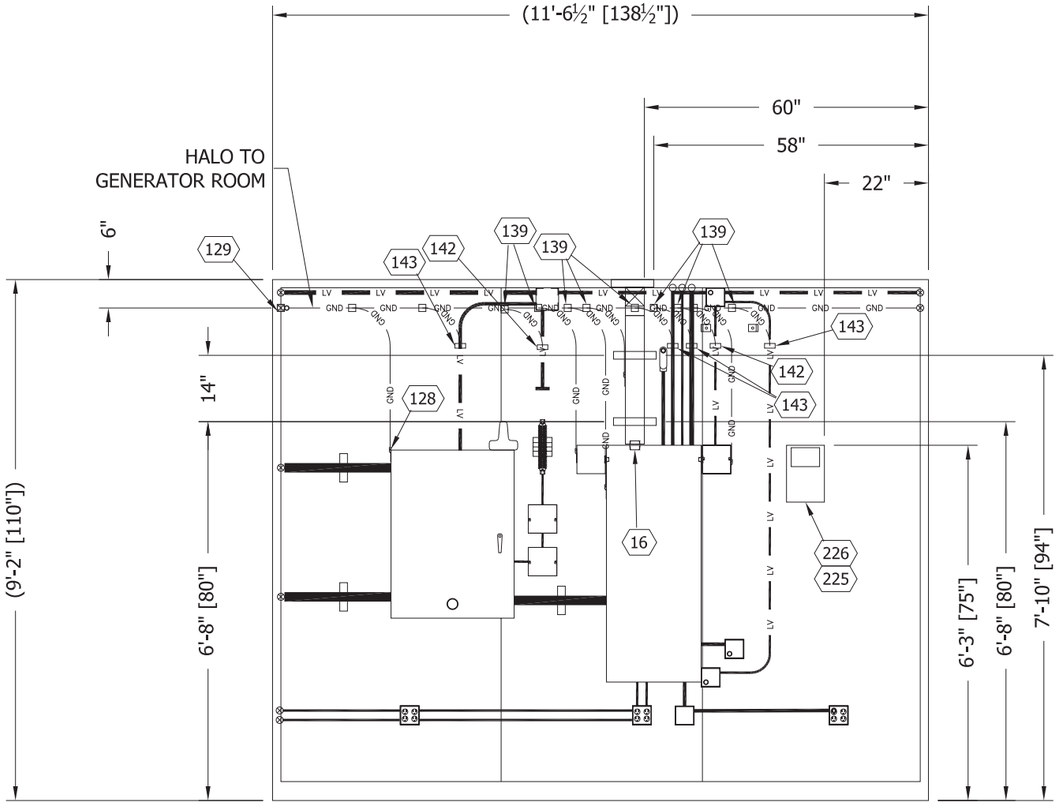
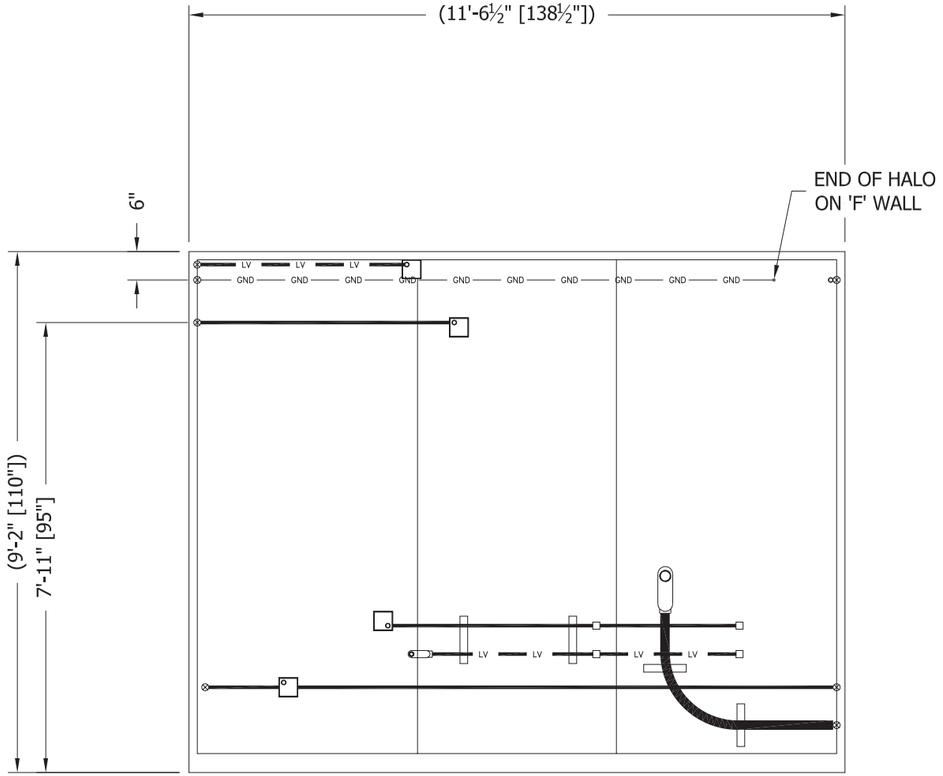
SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
66	410111	CONDUIT,LFMC,3/4",SEALTITE (OR EQUAL)	120"
130	400030	WIRE,#6 THHN,STRAND,GRN	468"



INTERIOR ELEVATION "E"
(MECHANICAL)



INTERIOR ELEVATION "F"
(MECHANICAL)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Sabre Industries™
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, LA 71111
Voice: (318) 213-2900
Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

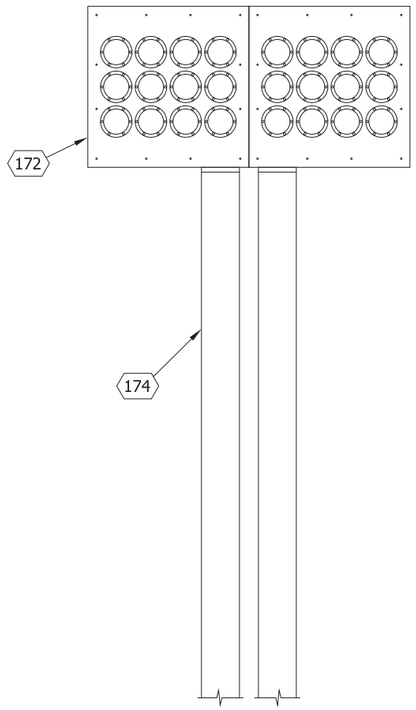
PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
INTERIOR ELEVATION WALLS
"E" & "F" (MECHANICAL)

FILENAME: *STWS02*	
SCALE: *3/8" = 1'-0"*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *5-3*	
DRAWING NO.: *STWS02*	REV.: *A*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

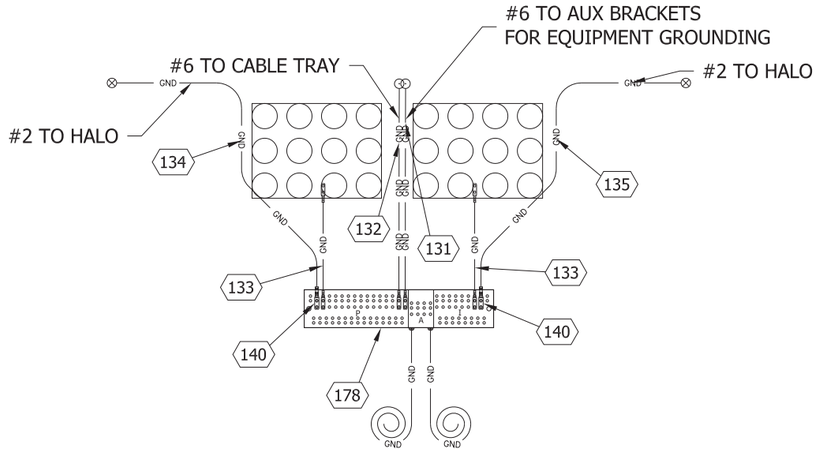
SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
131	400030	WIRE,#6 THHN,STRAND,GRN	900"
132	400030	WIRE,#6 THHN,STRAND,GRN	66"
133	400030	WIRE,#6 THHN,STRAND,GRN	18"
134	400050	WIRE,#2 THHN,STRAND,GRN	402"
135	400050	WIRE,#2 THHN,STRAND,GRN	900"



EXTERIOR GROUND BAR DETAIL

SCALE: N.T.S.



INTERIOR GROUND BAR DETAIL

SCALE: N.T.S.

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State: **Florida**
Signature: *Mark Severson*
Title: Staff Plan Reviewer
Date: **6/22/23**

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CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
MECHANICAL GROUND BAR
INSTALLATION DETAILS

FILENAME: *STWS02*	
SCALE: *AS NOTED*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *5-4*	
DRAWING NO.: *STWS02*	REV.: *A*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

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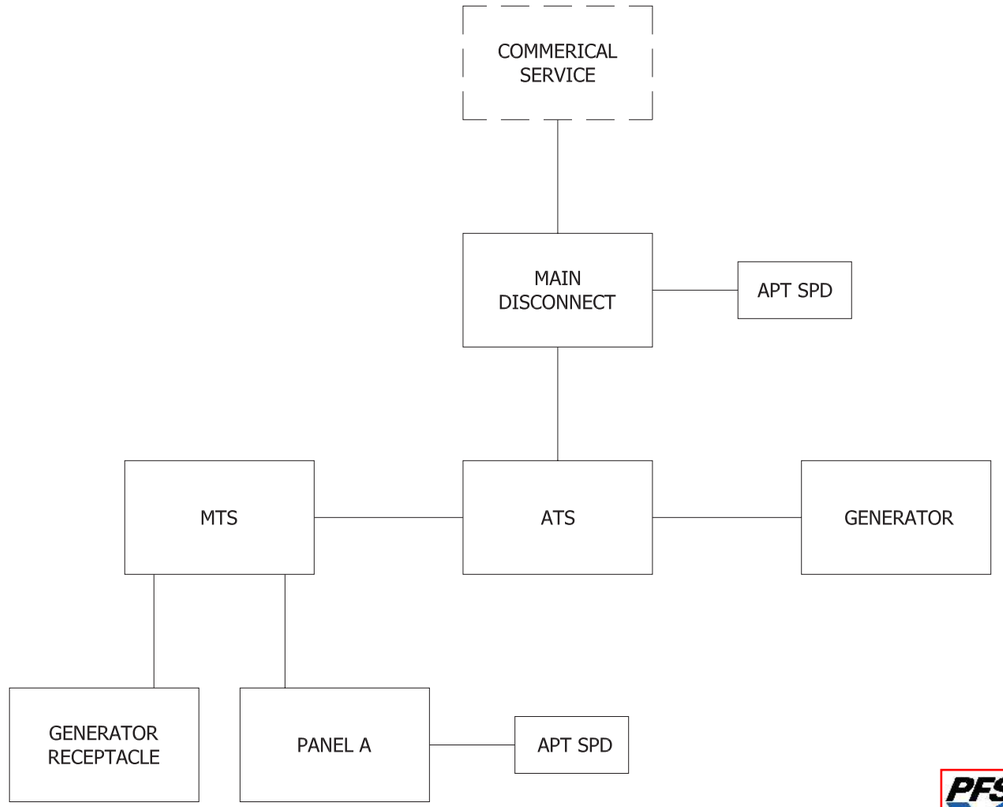

ELECTRICAL ONE-LINE WIRING DIAGRAM

SCALE: N.T.S.

PFS CORPORATION
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State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

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CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
ELECTRICAL ONE-LINE
WIRING DIAGRAM

FILENAME: *STWS02*	
SCALE: *AS NOTED*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *6-0*	
DRAWING NO.: *STWS02*	REV.: *A*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

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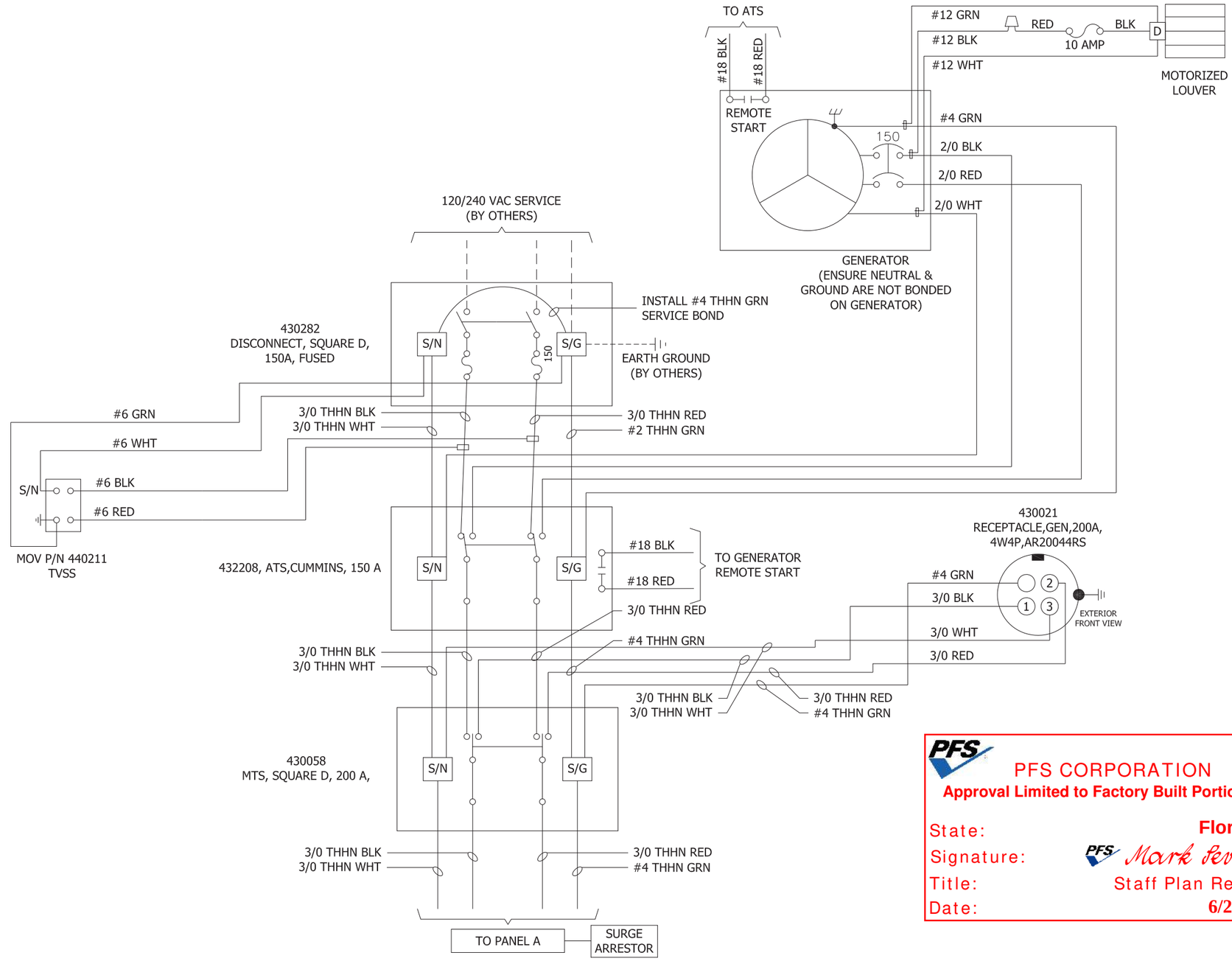

NOTES:

1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES
2. REF GENERATOR & ATS INSTALLATION MANUALS SUPPLIED WITH EQUIPMENT FOR REMOTE START TERMINATION LOCATIONS.

ELECTRICAL DISTRIBUTION WIRING SCHEMATIC

SCALE: N.T.S.

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

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6/21/2023
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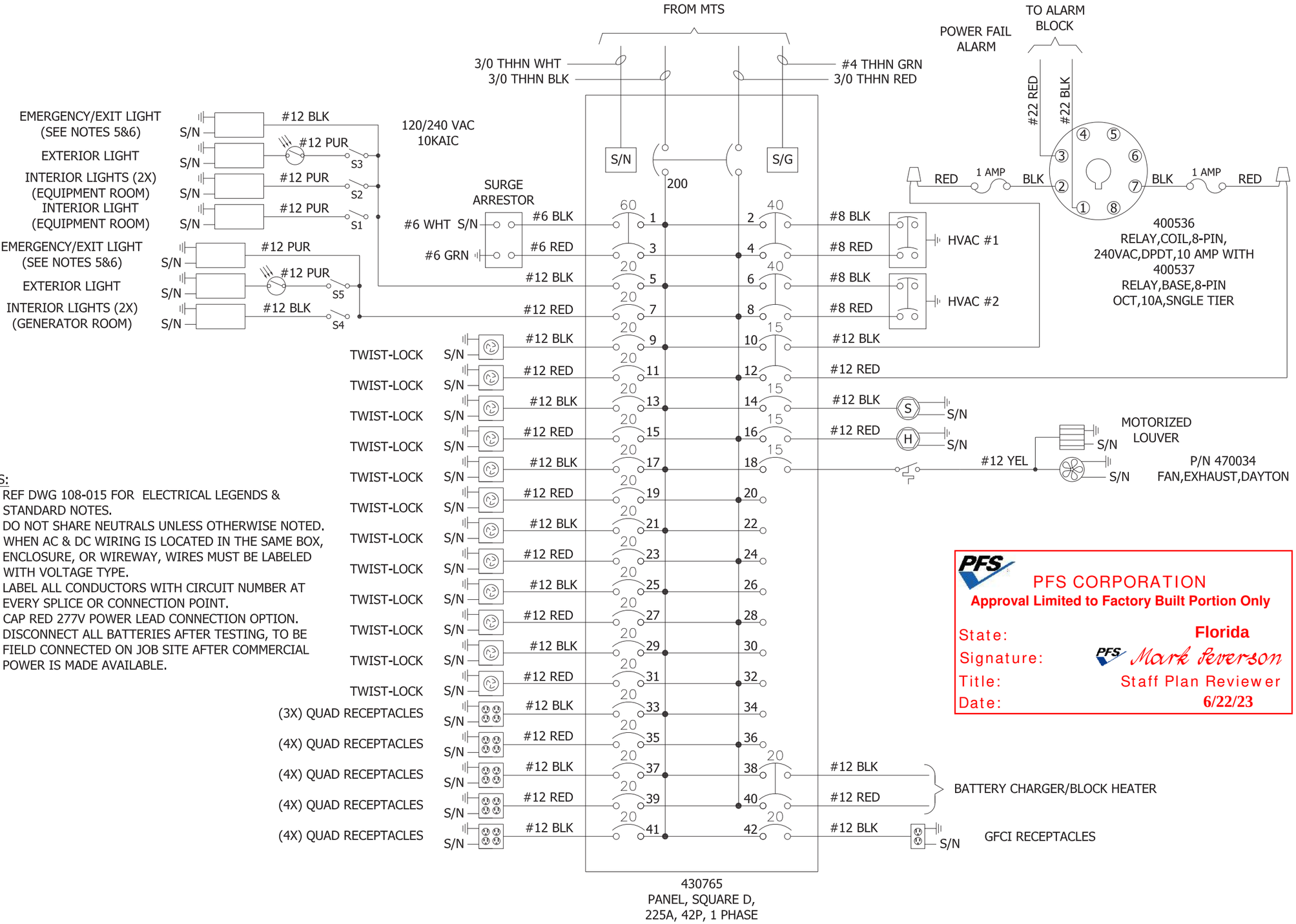
CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
ELECTRICAL DISTRIBUTION
WIRING SCHEMATIC

FILENAME: *STWS02*	
SCALE: *AS NOTED*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *6-1*	
DRAWING NO.: *STWS02*	REV.: *A*



NOTES:

1. REF DWG 108-015 FOR ELECTRICAL LEGENDS & STANDARD NOTES.
2. DO NOT SHARE NEUTRALS UNLESS OTHERWISE NOTED.
3. WHEN AC & DC WIRING IS LOCATED IN THE SAME BOX, ENCLOSURE, OR WIREWAY, WIRES MUST BE LABELED WITH VOLTAGE TYPE.
4. LABEL ALL CONDUCTORS WITH CIRCUIT NUMBER AT EVERY SPLICE OR CONNECTION POINT.
5. CAP RED 277V POWER LEAD CONNECTION OPTION.
6. DISCONNECT ALL BATTERIES AFTER TESTING, TO BE FIELD CONNECTED ON JOB SITE AFTER COMMERCIAL POWER IS MADE AVAILABLE.

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Peverson
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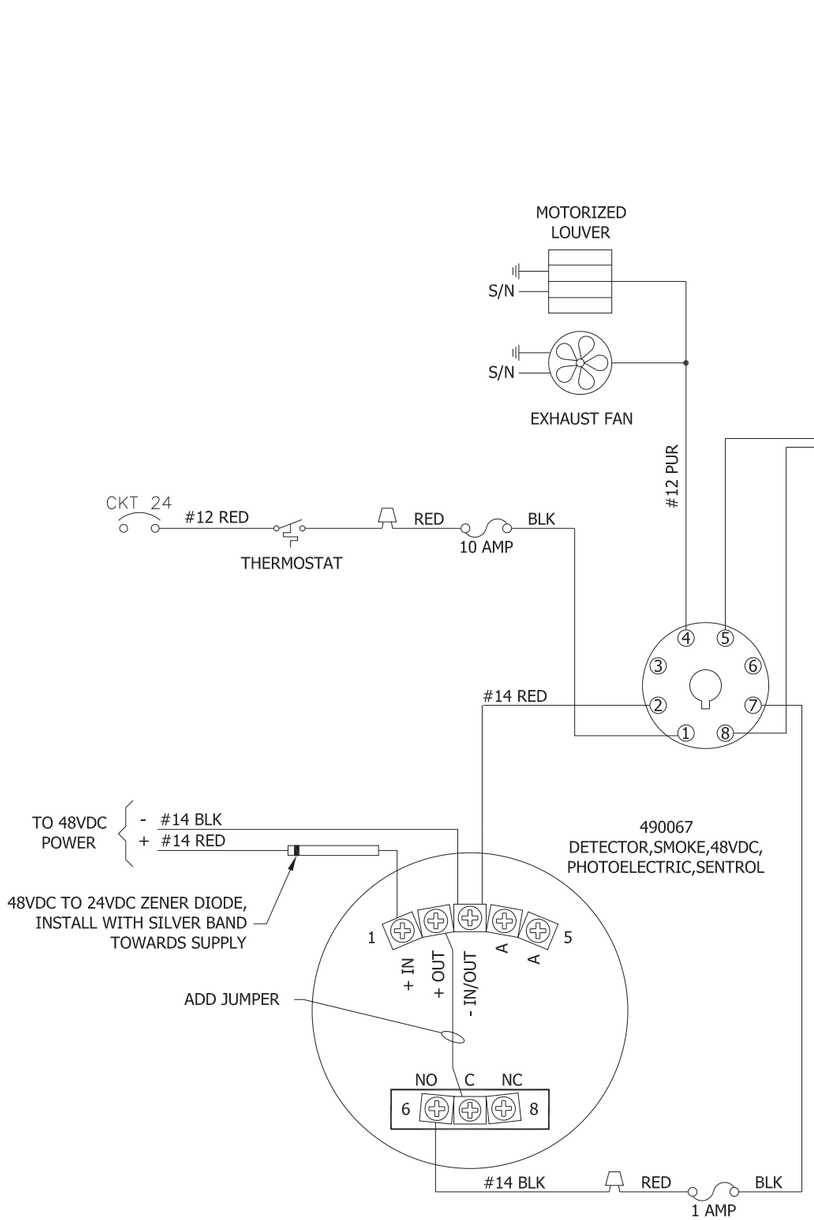
CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
ELECTRICAL PANEL "A"
WIRING SCHEMATIC

FILENAME: *STWS02*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *6-2*	
DRAWING NO.: *STWS02*	REV.: *A*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

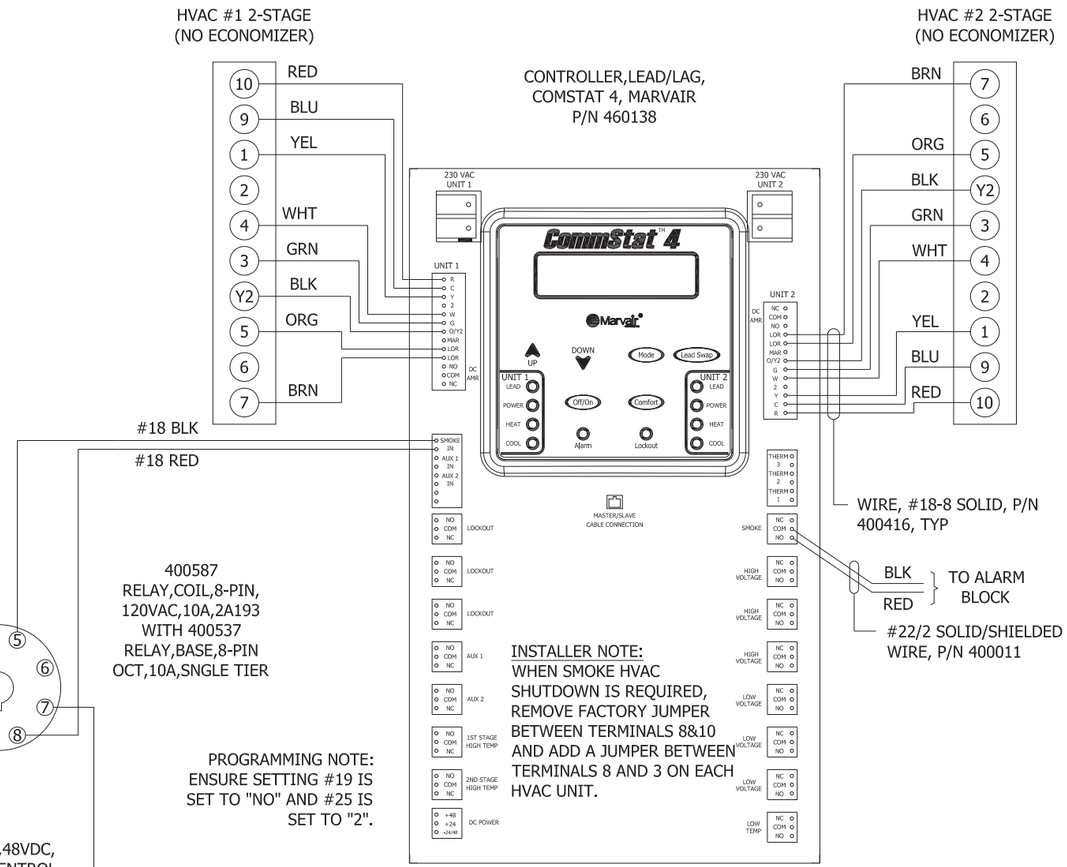
SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT



490067
DETECTOR,SMOKE,48VDC,
PHOTOELECTRIC,SENTROL

400587
RELAY,COIL,8-PIN,
120VAC,10A,2A193
WITH 400537
RELAY,BASE,8-PIN
OCT,10A,SNGLE TIER

PROGRAMMING NOTE:
ENSURE SETTING #19 IS
SET TO "NO" AND #25 IS
SET TO "2".



PFS CORPORATION
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State: **Florida**
Signature: Mark Feverson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
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6/21/2023
No. 79623
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Bossier City, LA 71111
Voice: (318) 213-2900
Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
HVAC & SMOKE DETECTOR
WIRING SCHEMATICS

FILENAME: *STWS02*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *6-3*	
DRAWING NO.: *STWS02*	REV.: *A*

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M.FOUQUETTE

LAKE CITY DOT
HOUSEKEEPING

PAIR	POINT	ALARM	COLOR	CONNECTION	BLOCK	PAIR	NO/NC
1	1	DOOR	RED	T	1	1	NC
	2		GREEN	R			
2	3	HIGH TEMP	RED	T	1	2	NC
	4		GREEN	1			
3	5	LOW TEMP	RED	1			NC
	6		GREEN	R			
4	7	SMOKE DETECTOR	RED	T	1	3	NC
	8		GREEN	R			
5	9	AC TVSS	RED	T	1	7	NC
	10		GREEN	R			
6	11	AC POWER FAIL	RED	T	1	5	NC
	12		GREEN	R			
7	13						
	14						
8	15						
	16						
9	17	-48VDC ANALOG	W-BLU	T	2	A1	
	18		BLU-W	R			
10	19	BATT DISCONNECT	W-O	T	1	19	NC
	20		O-W	R			
11	21	RECT MIN	W-GRE	T	1	21	NC
	22		GRE-W	R			
12	23	RECT MAJ	W-BRO	T	1	20	NC
	24		BRO-W	R			
13	25	DIST TRIP	W-SL	T	1	22	NC
	26		SL-W	R			
14	27	DC SUMMED	R-BLU	T	1	18	NC
	28		BLU-R	R			
15	29	-24VDC ANALOG	O-R	T	2	A4	
	30		R-O	R			
16	31						
	32						
17	33						
	34						
18	35						NC
	36						
19	37						NC
	38						
20	39						NC
	40						
21	41						NC
	42						
22	43						NC
	44						
23	45						NO
	46						
24	47						
	48						
25	49						
	50						

NOTES:
1. ALL ALARM CABLES SHALL BE #22/2 SOLID, SHIELDED CABLE (P/N 400011) UNLESS NOTED OTHERWISE.
2. TERMINATE ALARM WIRES TO ALARM BLOCK ON LEFT SIDE AT PINS INDICATED.
3. REFER TO GENERATOR INSTALLATION MANUAL PROVIDED WITH GENSET FOR ALARM TERMINATION LOCATIONS.

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

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LICENSE
6/21/2023
No. 79623
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Sabre Industries™
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, LA 71111
Voice: (318) 213-2900
Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
ALARM CONTACT
DESCRIPTIONS

FILENAME: *STWS02*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *6-4*	
DRAWING NO.: *STWS02*	REV.: *A*

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M.FOUQUETTE

LAKE CITY DOT
DPS RTU BLOCK 1

PAIR	POINT	ALARM	CONTACT	BLOCK	PAIR	NO/NC
1	1	DOOR INTRUSION	1	HOUSEK.	1	NC
	2					
2	3	HIGH/LOW BUILDING TEMP	2	HOUSEK.	2/3	NC
	4					
3	5	SMOKE DETECTOR	3	HOUSEK.	4	NC
	6					
4	7	AIR CONDITIONER FAILURE	4			
	8					
5	9	POWER FAILURE	5	HOUSEK.	6	NC
	10					
6	11	MAIN AC BREAKER LOAD TRIP ALARM	6			
	12					
7	13	MAIN AC POWER TVSS ALARM	7	HOUSEK.	5	NC
	14					
8	15					
	16					
9	17					
	18					
10	19					
	20					
11	21					
	22					
12	23					
	24					
13	25					
	26					
14	27					
	28					
15	29					
	30					
16	31	EMERGENCY POWER	16			
	32					
17	33					
	34					
18	35	DC POWER PLANT ALARM (SUMMED)	18	HOUSEK.	14	NC
	36					
19	37	BATTERY DISCONNECT BREAKER TRIP ALARM	19	HOUSEK.	10	NC
	38					
20	39	DC RECTIFIER FAIL MAJOR ALARM	20	HOUSEK.	12	NC
	40					
21	41	DC RECTIFIER FAIL MAJOR ALARM	21	HOUSEK.	11	NC
	42					
22	43	DC POWER BREAKER TRIP ALARM	22	HOUSEK.	13	NC
	44					
23	45	GENERATOR 'NOT IN AUTO' POSITION	23			
	46					
24	47	GENERATOR RUNNING CONFIRMATION	24			
	48					
25	49					
	50					

LAKE CITY DOT
DPS RTU BLOCK 2

PAIR	POINT	ALARM	CONTACT	BLOCK	PAIR	NO/NC
1	1	GENERATOR LOW OIL PRESSURE	25			
	2					
2	3	GENERATOR HIGH/LOW TEMPERATURE (SUMMED)	26			
	4					
3	5	GENERATOR OVERCRANK/OVERSPEED (SUMMED)	27			
	6					
4	7	GENERATOR LOW COOLANT LEVEL	28			
	8					
5	9					
	10					
6	11					
	12					
7	13					
	14					
8	15	GENERATOR FUEL TANK	A3			
	16					
9	17	GENERATOR START/STOP	C1			
	18					
10	19					
	20					
11	21					
	22					
12	23					
	24					
13	25					
	26					
14	27					
	28					
15	29					
	30					
16	31					
	32					
17	33	-48VDC ANALOG	A1	HOUSEK.	9	
	34					
18	35	GENERATOR BATTERY	A2			
	36					
19	37					
	38					
20	39	-24VDC ANALOG	A4	HOUSEK.	15	
	40					
21	41					
	42					
22	43					
	44					
23	45					
	46					
24	47					
	48					
25	49					
	50					

NOTES:
1. ALL ALARM CABLES SHALL BE #22/2 SOLID, SHIELDED CABLE (P/N 400011) UNLESS NOTED OTHERWISE.
2. TERMINATE ALARM WIRES TO ALARM BLOCK ON LEFT SIDE AT PINS INDICATED.
3. REFER TO GENERATOR INSTALLATION MANUAL PROVIDED WITH GENSET FOR ALARM TERMINATION LOCATIONS.

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Feverson
Title: Staff Plan Reviewer
Date: **6/22/23**

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CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
ALARM CONTACT
DESCRIPTIONS (CONTINUED)

FILENAME: *STWS02*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *6-5*	
DRAWING NO.: *STWS02*	REV.: *A*

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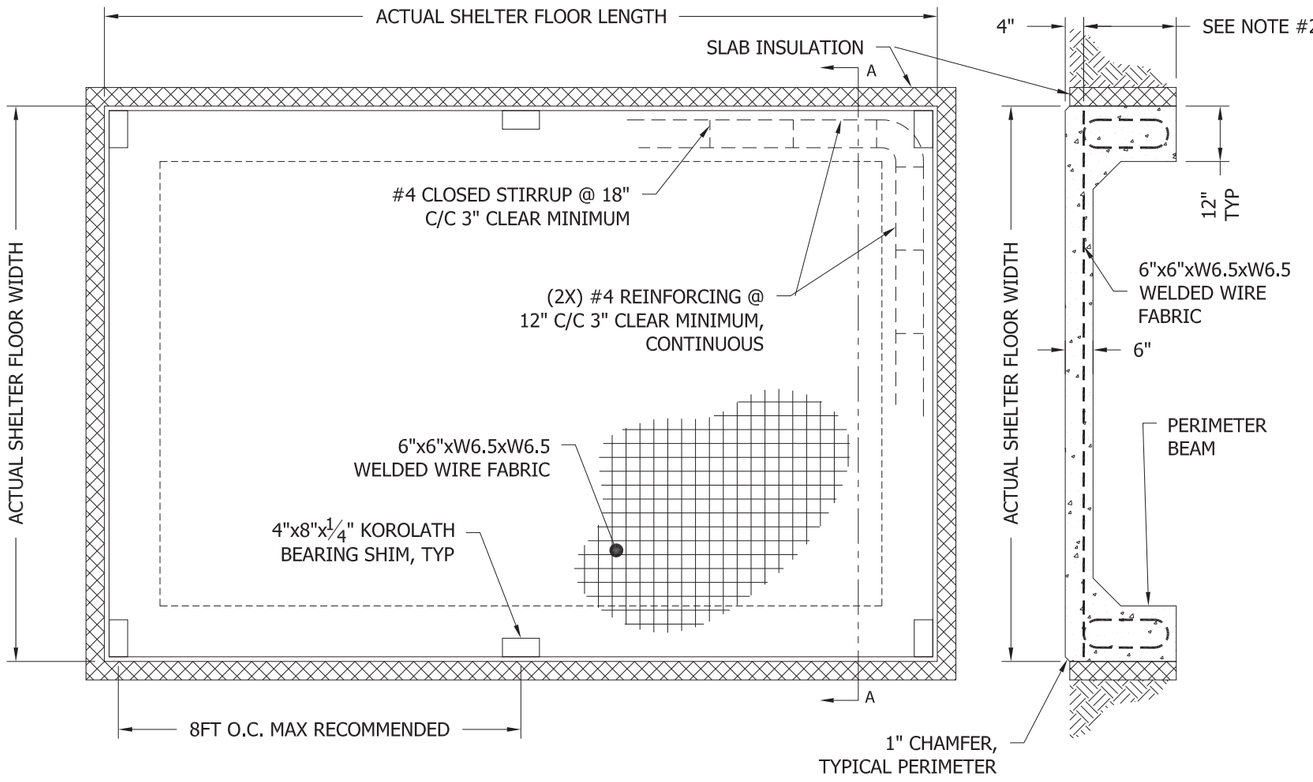
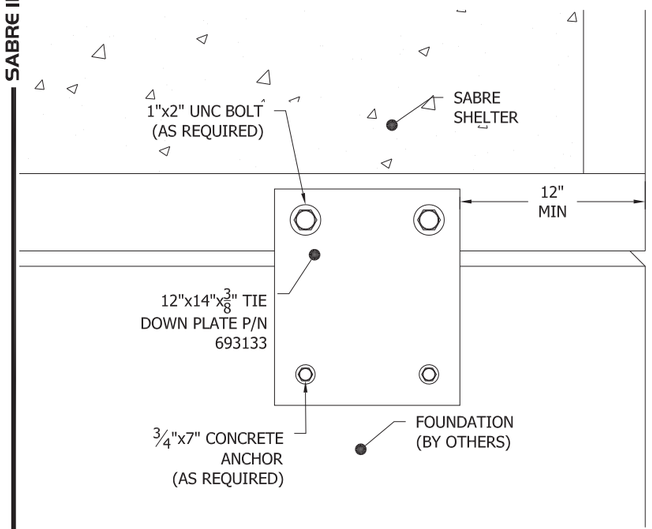
M.FOUQUETTE

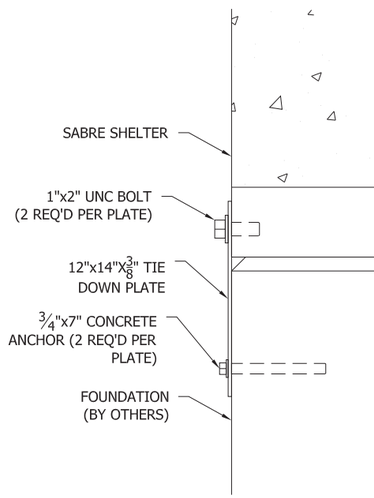


SLAB FOUNDATION

SECTION A-A



CONNECTION DETAIL - FRONT



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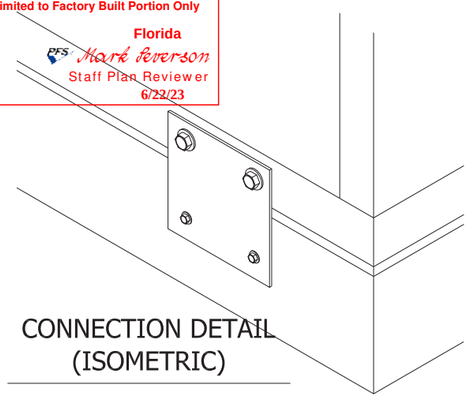
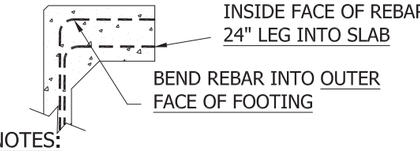
State: Florida
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: 6/22/23

CONNECTION DETAIL - SIDE



CONNECTION DETAIL
(ISOMETRIC)



NO STIRRUP
OPTION
SCALE: N.T.S.

NOTES:

1. SLAB FOUNDATION AND ASSOCIATED SECTIONAL VIEWS, TABLE, AND FOLLOWING NOTES ARE FOR ILLUSTRATION OF A TYPICAL SLAB ONLY. THEY ARE NOT DESIGNED BY A PE, AND THE PE STAMP ON THIS DRAWING DOES NOT APPLY TO THESE VIEWS. COMPETENT AND PROPERLY LICENSED CIVIL, GEOTECHNICAL AND/OR STRUCTURAL ENGINEERING PROFESSIONALS SHOULD BE ENGAGED FOR SPECIFIC SITE DESIGN OF ANY FOUNDATION.
2. WELDED WIRE FABRIC OR OPTIONAL REINFORCING BAR MAY BE USED AS AVAILABLE. SEE CHART FOR SIZE, GRADE, AND SPACING OF REBAR.
3. BOTTOM OF FOOTING TO BE 24" MIN OR 6" BELOW LOCAL FROST LINE, OR TO 2000 PSF SOIL BEARING CAPACITY, WHICHEVER IS GREATER.
4. USE OF THIS DESIGN REQUIRES VERIFICATION OF SOIL BEARING CAPACITY.
5. SLAB TOLERANCE IS ±1/4".
6. SLOPE GRADE AWAY FROM FOUNDATION
7. W6.5 AS SPECIFIED FOR THE WWF HAS A Ø0.288"
8. WWF IS 60 KSI MINIMUM.
9. OVERLAP SPLICES ARE ALLOWED FOR REINFORCING BAR, USE 18" MINIMUM LAP.
10. ALL REQUIRED TIE DOWN PLATES, SHIMS, BOLTS AND ANCHORS SHALL BE PLACED INSIDE SHELTER PRIOR TO SHIPMENT FROM MANUFACTURER.
11. CONCRETE STRNEGTH: Fc' = 3000 PSI @ 28 DAYS.
12. USE SHIMS AS REQUIRED TO ASSURE SHELTER IS BEARING AT PERIMETER. SEAL PERIMETER W/CAULK OR GROUT AS DESIRED.
13. REBAR TO BE GROUNDED W/SOLID COPPER WIRE, #4 MIN. ONE LOCATION MIN, DEFAULT TO BE AT ELECTRICAL SERVICE ENTRY LOCATION. QTY, SIZE & LOCATION(S) MAY VARY AS SPECIFIED BY CUSTOMER. PIGTAIL(S) TO BE MADE ACCESSIBLE FOR BONDING TO SERVICE GROUND.
14. SLAB INSULATION ONLY TO BE INSTALLED BY SITE CONTRACTOR AS REQUIRED, EXTENDING FROM TOP OF SLAB TO BOTTOM OF FOOTING. INSULATING VALUE, ATTACHMENT METHOD, AND COVERING OBTAINED FROM LOCALITY'S ENERGY CODE.

OPTIONAL REINFORCING BAR		
SIZE	GRADE	LAT/LONG SPACING
#3	40	9" C/C
#4	40	16" C/C
#5	40	18" C/C
#3	60	10" C/C
#4	60	18" C/C
#5	60	18" C/C

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Sabre Industries
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5031 Hazel Jones Road
Bossier City, LA 71111
Voice: (318) 213-2900
Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS
FDOT
LAKE CITY, FL

PROJECT:
12'-7"X34'-3"
CONCRETE SHELTER
FOUNDATION PLAN
INSTALLATION DETAILS

FILENAME: *STWS02*	
SCALE: *AS NOTED*	TOLERANCE:
DRWN. BY: *K.MORRISSEY*	DATE: *6/21/23*
CHK. BY: *M.FOUQUETTE*	DATE: *6/21/23*
APP. BY: *S.WALKER*	DATE: *6/21/23*
SHEET NO. *6-6*	
DRAWING NO.: *STWS02*	REV.: *A*

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M.FOUQUETTE

ABBREVIATIONS

@	AT
⌀	DIAMETER / PHASE
A	AMP(S)
AFF	ABOVE FINISH FLOOR
BCW	BARE COPPER WIRE
BCU	BATTERY CONTROL UNIT
BMS	BATTERY MANAGEMENT SYSTEM
BPU	BATTERY PROTECTION UNIT
BLDG	BUILDING
BLK	BLACK
BLU	BLUE
BRN	BROWN
BOCA	BUILDING OFFICIALS & CODE ADMINISTRATORS
℄	CENTERLINE
C/C	CENTER TO CENTER
CKT	CIRCUIT
CONC	CONCRETE
CU YD	CUBIC YARD
DIA	DIAMETER
DIM	DIMENSION
DP	DOUBLE POLE
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DT	DOUBLE THROW
DWG	DRAWING
EA	EACH
EGR	EQUIPMENT GROUNDING RING
EPO	EMERGENCY POWER OFF
E-STOP	EMERGENCY STOP
EMS	ENERGY MANAGEMENT SYSTEM
ELEC	ELECTRIC / ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NON-METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
EXT	EXTERIOR
FACP	FIRE ALARM CONTROL PANEL
FND	FOUNDATION
FRP	FIBERGLASS REINFORCED POLYESTER
GALV	GALVANIZED
GB	GROUND BAR
GEN	GENERATOR
GENSET	GENERATOR SET
GP	GROUND PAD
GRN	GREEN
GND	GROUND
GFCI	GROUND FAULT CURRENT INTERRUPTER
HVAC	HEATING, VENTING & AIR CONDITIONING UNIT
HVDC	HIGH VOLTAGE DC
HOR	HORIZONTAL
IAW	IN ACCORDANCE WITH
IN	INCH / INCHES
IPC	INTEGRATED POWER CENTER
ID	INSIDE DIMENSION/DIAMETER
INSUL	INSULATION
INT	INTERIOR
IMC	INTERMEDIATE METAL CONDUIT
IG or ISO GND	ISOLATED GROUND
JB or J-BOX	JUNCTION BOX
KW	KILOWATT
KO	KNOCKOUT
L	LEFT
LBS	POUNDS
LFMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NON-METALLIC CONDUIT
LH	LEFT HAND
L/N	LOAD NEUTRAL
LTG	LIGHT / LIGHTING
LL	LIVE LOAD
LV	LOW VOLTAGE
LVDC	LOW VOLTAGE DC
MFG	MANUFACTURER
MISC	MISCELLANEOUS
NEC	NATIONAL ELECTRIC CODE
NEG	NEGATIVE
NEMA	NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION
NOM	NOMINAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
O/C	ON CENTER
OD	OUTSIDE DIMENSION/DIAMETER
ORG	ORANGE
OSB	ORIENTED STRAND BOARD
P	POLE(S)
P/N	PART NUMBER
PCS	POWER CONVERSION STATION
PDC	POWER DISTRIBUTION CABINET
PSU	POWER SUPPLY UNIT
PLC	PROGRAMMABLE LOGIC CONTROLLER
POS	POSITIVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PUR	PURPLE
QTY	QUANTITY
R	RIGHT
REBAR	REINFORCING BAR
RECPT	RECEPTACLE
RECT	RECTIFIER
REF	REFERENCE
REQ'D	REQUIRED
REV	REVISION
RH	RIGHT HAND
S/G	SERVICE GROUND
S/N	SERVICE NEUTRAL
SHT	SHEET
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SW	SWITCH
SCADA	SYSTEM CONTROL & DATA ACQUISITION
TH	TEMPERATURE/HUMIDITY SENSOR
TEMP	TEMPERATURE
TP	TEMPERATURE PROBE (PLC)
TSTAT	THERMOSTAT
TS	TEMPERATURE SENSOR (HVAC)
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
V	VOLTAGE / VOLTS
VENT	VENTILATION
W	WATT(S)
WHT	WHITE
WLD	WELD / WELDED
WP	WEATHERPROOF
WWF	WELDED WIRE FABRIC
W/	WITH
W/O	WITHOUT
YEL	YELLOW
1⌀	SINGLE PHASE
3⌀	THREE PHASE
1P	ONE POLE
2P	TWO POLE
3P	THREE POLE
3W	THREE WIRE

PFS CORPORATION

Approval Limited to Factory Built Portion Only

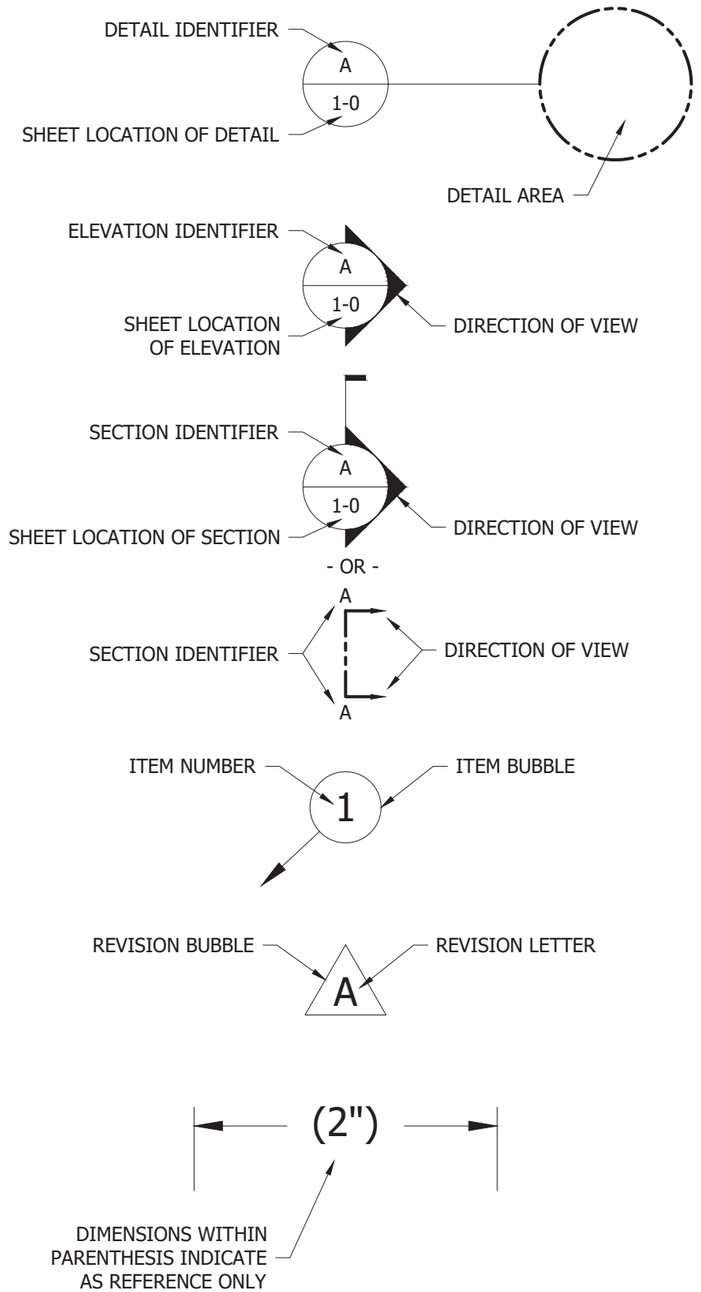
State: **Florida**

Signature: PFS *Mark Peverson*

Title: Staff Plan Reviewer

Date: **6/22/23**

SYMBOLS



REV	BY	DATE	DESCRIPTION	APP.BY	DATE
F	KMM	3/5/21	UPDATED FOR STANDARDS		
E	LJL	5/25/16	UPDATED FOR STANDARDS	LJL	5/25/16

COREY NICHOLAS MITCHEL
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6/21/2023
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Voice: (318) 213-2900
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www.sabreindustries.com

CUSTOMER:
ENGINEERING STANDARD

PROJECT:
ABBREVIATIONS & SYMBOLS

FILENAME: *108-007*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *C. CASINGER*	DATE: *12/4/03*
CHK. BY: *K. BARNETT*	DATE: *12/4/03*
APP. BY:	DATE:
SHEET NO. *1 OF 1*	
DRAWING NO.: *108-007*	REV.: *F*

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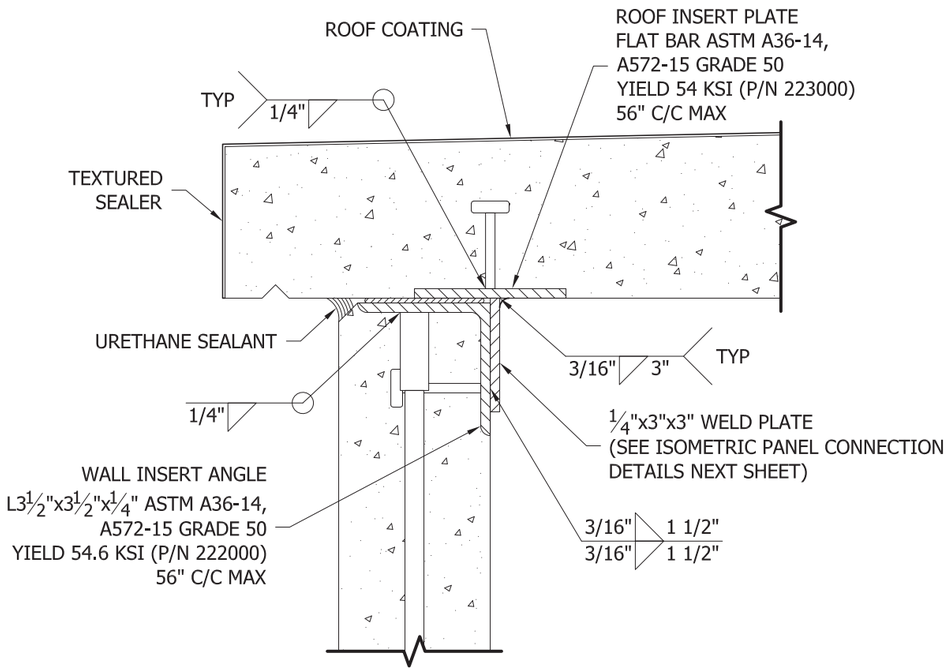
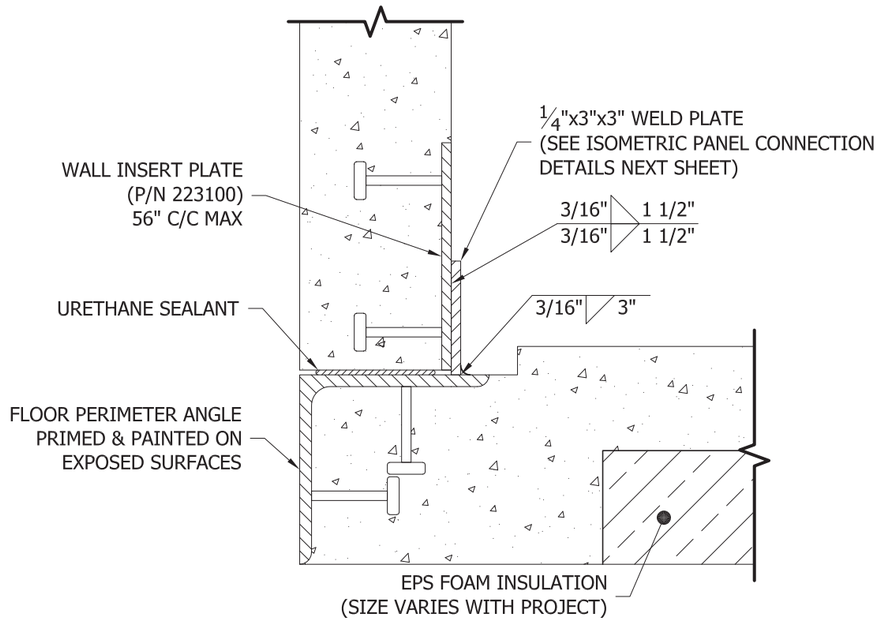


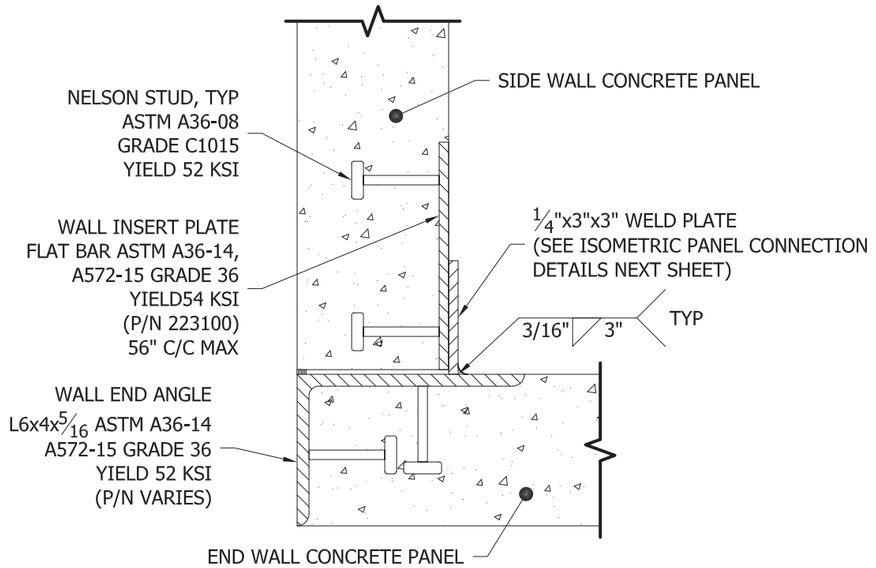
WALL TO ROOF CONNECTION DETAILS

(REF SHOP DETAIL 10-002)



WALL TO FLOOR CONNECTION DETAILS

(REF SHOP DETAIL 10-004)



WALL TO WALL CONNECTION DETAILS

(REF SHOP DETAIL 10-003)

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Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
E	LJL	9/1/16	UPDATED FOR STANDARDS	LJL	9/1/16

COREY NICHOLAS MITCHEL
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6/21/2023
No. 79623
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CUSTOMER:
ENGINEERING STANDARD

PROJECT:
CONCRETE SHELTER PANEL CONNECTION DETAILS

FILENAME: *108-008*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *C. CASINGER*	DATE: *4/5/04*
CHK. BY: *V. HASSELL*	DATE: *4/5/04*
APP. BY: *J. HOOD*	DATE: *4/5/04*
SHEET NO. *1 OF 2*	
DRAWING NO.: *108-008*	REV.: *E*

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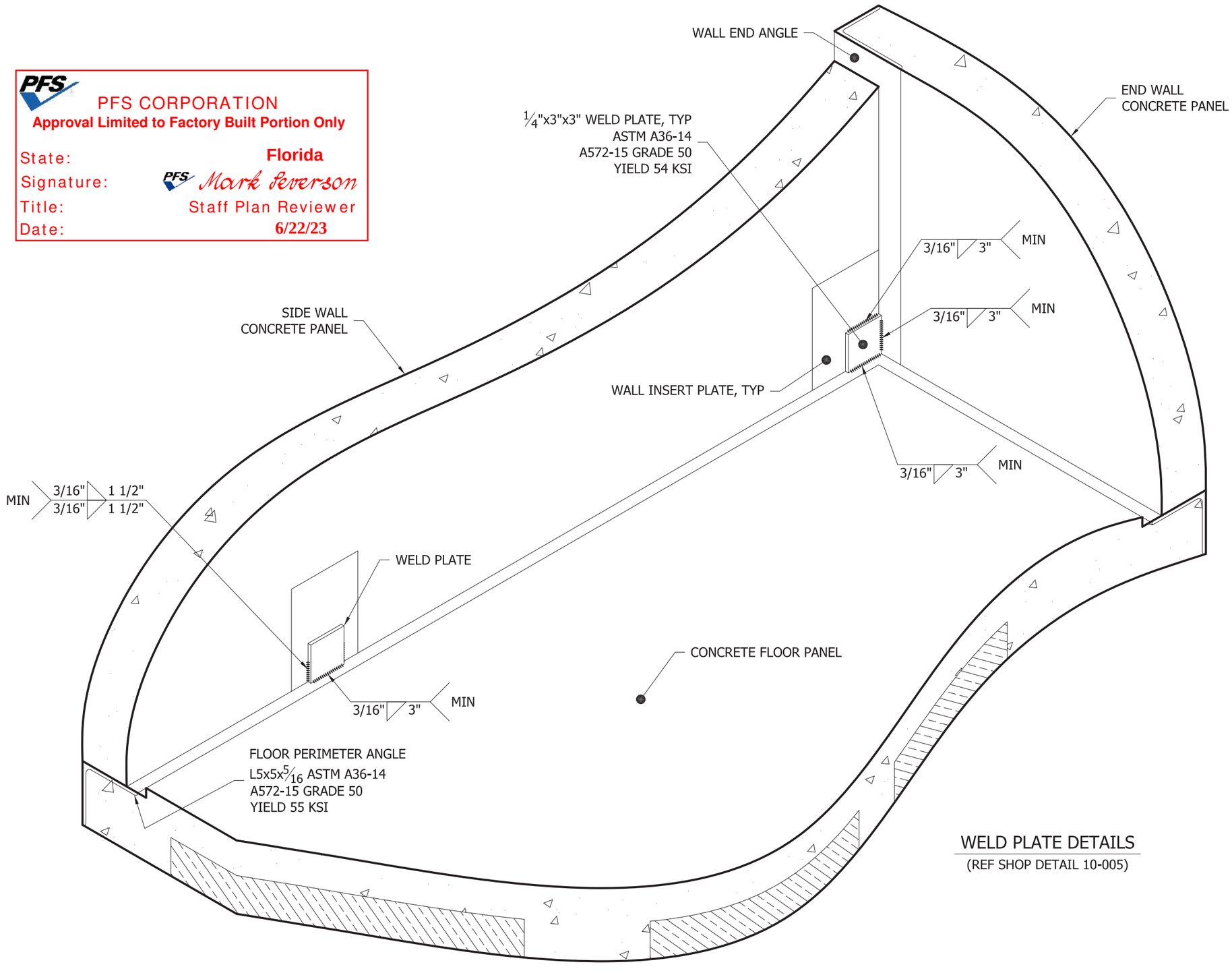
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**



WELD PLATE DETAILS
(REF SHOP DETAIL 10-005)

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CUSTOMER:
ENGINEERING STANDARD

PROJECT:
CONCRETE SHELTER PANEL CONNECTION ISOMETRIC PANEL CONNECTION DETAILS

FILENAME: *108-008*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *C. CASINGER*	DATE: *4/5/04*
CHK. BY: *V. HASSELL*	DATE: *4/5/04*
APP. BY: *J. HOOD*	DATE: *4/5/04*
SHEET NO. *2 OF 2*	
DRAWING NO.: *108-008*	REV.: *E*

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NOTES:

1. CONDUCTOR COLORS ARE AS FOLLOWING:

120/240 SINGLE PHASE		120/208 THREE PHASE		277/480 THREE PHASE	
PHASE "A"	= BLACK	PHASE "A"	= BLACK	PHASE "A"	= BROWN
PHASE "B"	= RED	PHASE "B"	= RED	PHASE "B"	= ORANGE
NEUTRAL	= WHITE	PHASE "C"	= BLUE	PHASE "C"	= YELLOW
		NEUTRAL	= WHITE	NEUTRAL	= GRAY

ALL ELECTRICAL GROUND = GREEN
ALL ISOLATED GROUND = GREEN/YELLOW STRIPE
ALL SWITCHED = PURPLE (UNO)

2. ALL CONDUCTORS (UNO) TO BE STRANDED THHN OR THWN INSULATED COPPER WIRE.
3. ALL CONDUIT TO BE 1/2" EMT (UNO).
4. ALL LOW VOLTAGE CONDUIT TO BE 1/2" EMT (UNO).
5. ALL CONDUCTOR AMPACITIES ARE BASED ON TABLE 310.15(B)(16) OF NEC.
6. CONDUIT FILL BASED ON CHAPTER 9 OF NEC.
7. PLACEMENT OF ELECTRICAL AND CONDUIT COMPONENTS OR BOXES MAY VARY TO ALIGN WITH COMPONENTS MANUFACTURE'S PRE-MADE BOX KNOCKOUTS. THIS MAY INCLUDE ALIGNMENT WITH SHELTER PENETRATIONS AND/OR INTERFERENCE WITH OTHER COMPONENTS.
8. CONDUIT, ELECTRICAL AND MECHANICAL DIMENSION TOLERANCE SHALL BE ±1/8".
9. ALL CIRCUITS ON 25 AMP THROUGH 60 AMP BREAKER SHALL USE #10 GROUND CONDUCTOR (UNO).
10. CONDUCTORS SMALLER THAN 4 AWG MUST HAVE CORRECT COLOR INSULATION. CONDUCTORS 4 AWG AND LARGER MAY BE RE-IDENTIFIED BY COLORED TAPE. BLACK INSULATED CONDUCTOR SHALL BE THE ONLY COLOR TO BE RE-IDENTIFIED. IF CONDUCTORS ARE RE-IDENTIFIED, IDENTIFICATION MUST BE APPLIED IN THREE INCH (3") WRAPS, MINIMUM EVERY THREE FEET (3'-0"). RE-IDENTIFICATION SHALL BE VISIBLE BY OPENING ANY ENCLOSURE. WHITE, GRAY AND GREEN CONDUCTORS SHALL NOT BE RE-IDENTIFIED.
11. ALL METALLIC ELECTRICAL BOXES (SWITCH BOXES, DUPLEX BOXES, LIGHTS, JUNCTION BOXES, ETC) SHALL BE CONNECTED TO THE PROTECTED GROUND OF THE AC DISTRIBUTION PANEL WITH A MINIMUM #12 GREEN INSULATED STRANDED CONDUCTOR WHICH SHALL BE RUN INTERNAL TO THE CONDUIT.
12. THE AVAILABLE FAULT CURRENT CALCULATIONS AND MARKING IS THE RESPONSIBILITY OF THE SITE CONTRACTOR. MARKING SHOULD BE OF SUCH: MAXIMUM AVAILABLE FAULT CURRENT_____AMPERES, DATE___-___-___.
13. NO SHARED NEUTRALS BETWEEN CIRCUITS (UNO). IF A NEUTRAL IS SHARED THE CIRCUITS MUST BE ON A SHARED TRIP BREAKER.

ELECTRICAL LINETYPE LEGEND

- = CONDUIT (THICKNESS VARIES WITH SIZE OF CONDUIT)
- = LOW VOLTAGE CONDUIT (THICKNESS VARIES WITH SIZE OF CONDUIT)
- = FIRE SYSTEM CONDUIT (THICKNESS VARIES WITH SIZE OF CONDUIT)
- = GROUND WIRE
- = OPTIONAL EQUIPMENT (SEE OPTIONS LIST)
- = FIELD WORK (BY FIELD CREWS OR OTHERS)

ELECTRICAL OBJECT SYMBOLS

- = 2 X 4 J-BOX W/BLANK COVER
- = 2 X 4 J-BOX W/PENETRATION
- = 2 X 4 J-BOX W/SWITCH
- = 2 X 4 J-BOX W/DUPLEX RECEPTACLE
- = 2 X 4 J-BOX W/TIMER SWITCH
- = 4 X 4 J-BOX W/BLANK COVER
- = 4 X 4 J-BOX W/PENETRATION
- = 4 X 4 J-BOX W/SINGLE SWITCH
- = 4 X 4 J-BOX W/TWO SWITCHES
- = 4 X 4 J-BOX W/TIMER SWITCH
- = 4 X 4 J-BOX W/TWO TIMER SWITCHES
- = 4 X 4 J-BOX W/SINGLE RECEPTACLE
- = 4 X 4 J-BOX W/DUPLEX RECEPTACLE
- = 4 X 4 J-BOX W/QUAD RECEPTACLE
- = 4 X 4 J-BOX WITH TWIST-LOCK RECEPTACLE
- = 4" OCTOGON BOX WITH SMOKE DETECTOR
- = 4" OCTOGON BOX WITH HEAT DETECTOR
- = 4" OCTOGON BOX WITH CARBON MONOXIDE DETECTOR
- = 4" OCTOGON BOX WITH COMBO HEAT & SMOKE DETECTOR
- = 4" OCTOGON BOX WITH COMBO CARBON MONOXIDE & SMOKE DETECTOR
- = VENT/EXHAUST FAN
- = AIR DAMPER / LOUVER / SHUTTER

ELECTRICAL SCHEMATIC SYMBOLS

- = SPST SWITCH
- = DPST SWITCH / NON-FUSED DISCONNECT
- = 3-WAY SWITCH / TRANSFER SWITCH
- = 4-WAY SWITCH
- = THERMOSTAT SWITCH
- = TIMER SWITCH
- = MOTION SENSOR SWITCH
- = PHOTOELECTRIC SWITCH / PHOTOCELL
- = CIRCUIT BREAKER
- = FUSE
- = SYSTEM GROUND FOR AC CIRCUITS
- = ISOLATED GROUND FOR AC CIRCUITS
- = CHASSIS GROUND FOR METALLIC ITEMS
- = HYDROGEN DETECTOR
- = CONTACTOR COIL
- = MOTOR
- = OPTICAL FIBER CABLE

PFS CORPORATION
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State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
M	CM	10/13/21	ADDED FIBER SYMBOL	JP	10/13/21
L	LJL	8/29/16	UPDATED FOR STANDARDS	LJL	8/29/16

COREY NICHOLAS MITCHEL
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6/21/2023
No. 79623
Corey Nicholas Mitchel
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PROFESSIONAL ENGINEER

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Bossier City, LA 71111
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Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
ENGINEERING STANDARD

PROJECT:
GENERAL ELECTRICAL NOTES & LEGEND

FILENAME: *108-015-01*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *C. MITCHEL*	DATE: *10/13/2021*
CHK. BY:	DATE:
APP. BY:	DATE:
SHEET NO. *1 OF 1*	
DRAWING NO.: *108-015-01*	REV.: *M*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT
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GENERAL NOTES

1. ALL STEEL FABRICATION AND INSTALLATION SHALL BE DONE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL AISC 341-16 PARTS I AND II, 360-16 AND AWS D1.1-15 SPECIFICATIONS.
2. ALL WELDING SHALL BE FCAW WITH PROPER AWS WPS'S OR PRE-QUALIFIED WPS'S IN ACCORDANCE WITH AWS D1.1 STRUCTURAL STEEL WELDING CODE 2015.
3. STRUCTURAL STEEL SPECIFICATIONS:
   ANGLE, FLAT PLATE, & BARS: ASTM A36, A572 GRADE 50
   W-BEAM & CHANNEL: ASTM A992, A572 GRADE 50
   TUBE: ASTM A500 GRADE B & C
   REBAR & REBAR SPLICES: ASTM A615 GRADE 60
   WIRE MESH: ASTM A1064 GRADE 65
   HIGH STRENGTH BOLTS: ASTM F3125 GRADE A325, ASTM A354, A449, & F593
   HIGH STRENGTH NUTS: ASTM A563C, A193 GRADE 2H, & F594
   HIGH STRENGTH FLAT WASHERS: ASTM F436

   OTHER BOLTS & THREADED ROD: ASTM A307 GRADE A
   OTHER NUTS: ASTM A563A
   FLAT WASHERS: ASTM F844
   HEADED STUDS: ASTM A29
4. ALL CONCRETE WORK SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE A.C.I. 318-14 CH. 21, ASTM STANDARDS C-172-14, C-31/C31M-15, AND PROVISIONS OF C-94/C94M-15a.
5. ALL PRECAST STRUCTURAL SAND-LIGHTWEIGHT CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS..
6. CONCRETE COVERAGE OVER ALL REINFORCING STEEL SHALL BE A MINIMUM OF 3/4" AND MEET ACI 318 COVERAGE REQUIREMENTS.
7. ALL REBAR SHALL BE TIED 100% AT THE PERIMETER, AND 50% ELSEWHERE.
8. ALL REBAR WIRE TIES TO BE 16 GAUGE.
9. LIGHTWEIGHT CONCRETE MAY BE USED IN THE ROOF AND FLOOR AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.
10. MAXIMUM JOINT SPACE BETWEEN PANELS SHALL BE 3/8" MEASURED BY REFUSAL OF ABILITY TO PASS A 3/8" ROD ALL THE WAY THROUGH THE JOINT AT ANY POINT ALONG THE JOINT.
11. WELD PLATE CONNECTIONS SHALL BE SPACED AT 4'-8" MAXIMUM ON THE FLOOR AND ROOF PANELS. THIS DIMENSION SHALL BE MAINTAINED EXCEPT IN CASES WHERE OPENINGS PROHIBIT.
12. TOLERANCES SHALL BE AS FOLLOWS:
    PANEL THICKNESS: ±1/8"
    PANEL SIZE: ±1/16"
    PANEL SQUARENESS: ±1/8" AGREEMENT ON DIAGONALS
    LOCATION OF BLOCKOUTS & PVC'S: ±1/4"
    BLOCKOUT DIMENSIONS: +1/4", -0"
    PVC SIZE: USE TRADE SIZE AS LISTED ON PROJECT DRAWINGS
13. REBAR SPLICING IS ALLOWED WHERE SPACE PERMITS. MINIMUM LAP IS 18" FOR #4 REBAR AND 30" FOR #6 REBAR.
14. CONCRETE SHALL HAVE AIR ENTRAINMENT OF 6%, MODERATE EXPOSURE AND A MAXIMUM AGGREGATE SIZE OF 3/8 INCH.
15. CONCRETE SHALL HAVE A WATER-CEMENTITIOUS MATERIAL RATIO NO GREATER THAN 0.45.

GENERAL: THESE REBAR SIZES AND SPACING REPRESENT THE MINIMUM AMOUNT FOR ALL CASTING PLANS. PROJECT DRAWINGS MAY REQUIRE REINFORCEMENT IN ADDITION TO CELLXION STANDARDS.

ROOF PANEL: #4 (SHORT AXIS) 12" O.C. ON SHELTER WIDTH OF 11'-6" AND LESS, 10" O.C. ON SHELTER WIDTH GREATER THAN 11'-6" TO 12', AND #4 (LONG AXIS) AT 18" O.C.

WALL PANEL: #4 AT PERIMETER AND 36" O.C. BOTH DIRECTIONS IN FIELD, 4 X 4 X W4 X W4 MESH THROUGHOUT.

FLOOR: (2)-#6 (SHORT AXIS) EACH RIB, #6 (LONG AXIS) EACH INTERIOR RIB. DECK: 4 X 4 X W4 X W4 MESH.

SEALANT APPLICATION

STEP 1. AT MATING SURFACES BETWEEN PANELS, APPLY URETHANE SEALANT ($\frac{1}{2}$" BEAD) DURING ASSEMBLY.

STEP 2. URETHANE SEALANT REQUIRED ON ALL JOINTS. APPLY TO EXTERIOR AFTER PANEL ASSEMBLY.

STEP 3. ROOF COATING:
APPLY SHELTER ROOF COATING PER MANUFACTURER INSTRUCTION. ROOF COATING TO CONFORM TO, ASTM D6083-05e01, OBC 1507.15.2 & 2015 IBC 1507.15.2.

STEP 4. APPLY AGGREGATE SEALER TO EXTERIOR WALLS. USE 1 GALLON PER 200 SQ. FEET.

STEP 5. USE TEXTURED SEALER ON ALL SMOOTH UNTREATED EXPOSED SURFACES.

PFS CORPORATION
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State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
R	CM	5/7/20	CODE UPDATE	JP	5/7/20

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CUSTOMER:
ENGINEERING STANDARD

PROJECT:
GENERAL CASTING SPECIFICATIONS 2018 IBC

FILENAME: *108-016*

SCALE:	TOLERANCE:
1"=1"	
DRWN. BY: *C. MITCHEL*	DATE: *5/7/2020*
CHK. BY:	DATE:
APP. BY:	DATE:

SHEET NO. *1 OF 1*

DRAWING NO.:	REV.:
108-016	*R*

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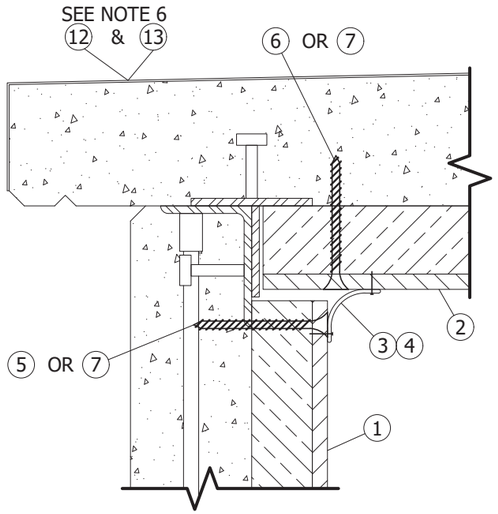
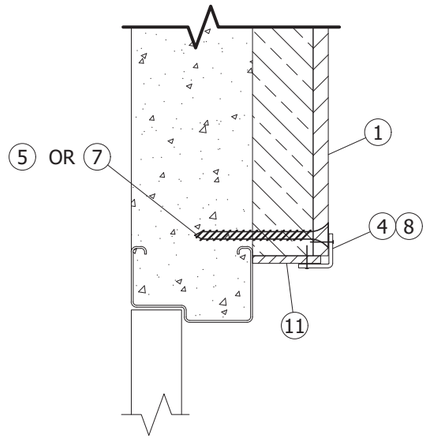


TYPICAL WALL TO ROOF SECTION



TYPICAL DOOR TRIM SECTION

PFS CORPORATION
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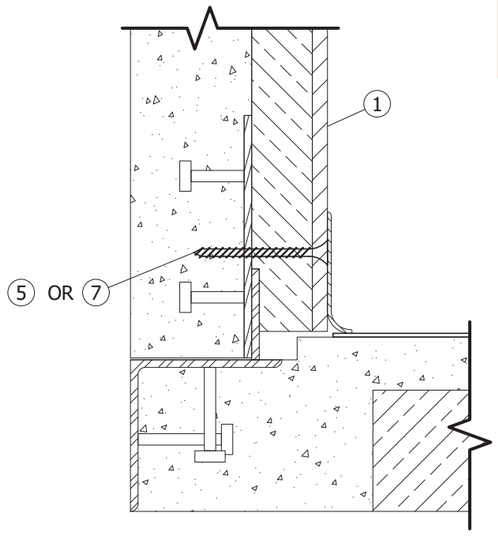
State: **Florida**
Signature: *Mark Severson*
Title: Staff Plan Reviewer
Date: **6/22/23**

NOTES:

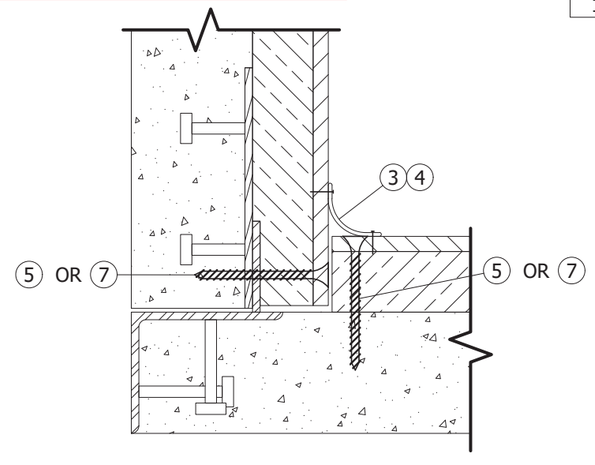
1. INSTALL INTERIOR PANELS WITH CONCRETE SCREWS (LENGTH MAY VARY) 4" O.C. MAX ALONG LENGTH OF PANELS. NO FASTENERS REQUIRED LONG SHORT SIDE OF PANELS IF PANEL EDGE IS AT A CORNER.
2. MAX GAP BETWEEN PANELS TO BE $\frac{1}{4}$".
3. USE COVE TRIM IN ALL CORNERS AND AROUND TOP PERIMETER. INSTALL USING $\frac{3}{4}$" BRAD NAILS.
4. TRIM ALL EXPOSED OPENINGS W/ OUTSIDE CORNER TRIM.
5. USE TRIM P/N 320035 FOR JOINT LENGTHS 9FT AND UNDER, USE TRIM P/N 320036 FOR JOINT LENGTHS OVER 9FT.
6. ROOF FINISH TO BE UNIFLEX 41-300 ELASTOMERIC ROOF COATING WITH 41-320 BASE COAT, 20-385 FABRIC, AND 36-500 CONCRETE PRIMER FOR A TOTAL OF 41 MIL DRY FILM THICKNESS. SOLAR REFLECTANCE: 0.57, THERMAL EMITTANCE: 0.91, SRI: 68.

CARPENTRY PARTS LIST

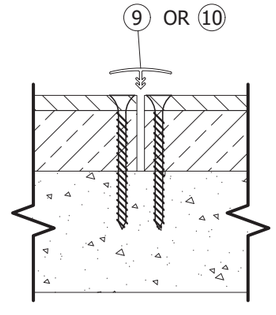
ITEM	U/M	P/N	DESCRIPTION
1	EA.	300058	INSULATION,1.7",7/16"OSB/NRP48"X110
2	EA.	300059	INSULATION,2.3",7/16"OSB/NRP 48X132
3	EA.	320002	TRIM,COVE,VINYL,10'0",WHITE 1 3/4"
4	EA.	168009	BRAD,WHITE 3/4",44241
5	EA.	168293	SCREW,CONCRETE,3/16"X3 1/4",PH,GREE
6	EA.	168294	SCREW,CONCRETE,3/16"X3 3/4",PH,BLUE
7	EA.	168581	NAIL,CONCRETE,4",PDP-400
8	EA.	320020	TRIM,CORNER,WOOD,1-3/8"X1-3/8"OUTSI
9	EA.	320035	TRIM,FRP,VINYL,9'0",WHITE 2" FACE 5
10	EA.	320036	TRIM,FRP,VINYL,11'0",WHITE 2" FACE
11	EA.	300037	PANELING,1/4" LUAN 4'X8'
12	EA.	330011	ROOFING,ROOF COATING,WHITE,ELAST
13	EA.	330015	ROOFING,FABRIC,COMPOSITE



TYPICAL WALL TO FLOOR SECTION



TYPICAL WALL TO WALL SECTION



TYPICAL PANEL JOINT TRIM SECTION

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
N	CNM	4/14/22	UPDATED INSULATION VALUE CALCULATIONS	JP	4/14/22
M	CNM	9/11/19	ADDED NOTE 6	JP	9/11/19
L	LJL	4/1/16	UPDATED INSULATION THICKNESS	CM	4/1/16

COREY NICHOLAS MITCHEL
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6/21/2023
No. 79623
Corey Nicholas Mitchel
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www.sabreindustries.com

CUSTOMER:
ENGINEERING STANDARD

PROJECT:
CONCRETE SHELTER
INTERIOR PANEL INSTALL
(1) LAYER
WALLS <= 9'-6"

FILENAME: *108-035-01*

SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *C. CASINGER*	DATE: *10/6/05*
CHK. BY: *V. HASSELL*	DATE: *10/6/05*
APP. BY:	DATE:

SHEET NO. *1 OF 2*

DRAWING NO.: *108-035-01* REV.: *N*

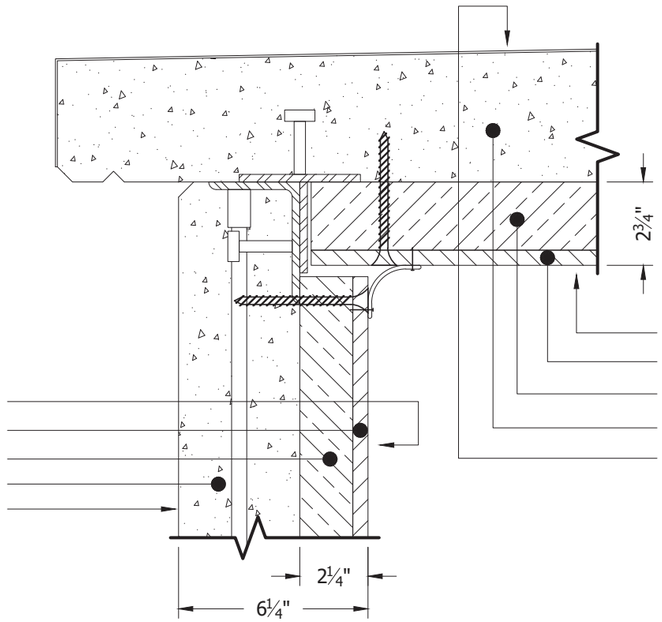
NOTES:

CALCULATIONS ARE IN ACCORDANCE WITH ASHRAE 90.1 APPENDIX A AND ASHRAE FUNDAMENTALS HANDBOOK.

WALL

(HEAT CAPACITY = 8 BTU/°F)

0.680	INSIDE AIR FILM
0.696	7/16" PANELING
11.000	1.7" DOW THERMAX
0.640	4" L.W. CONCRETE
0.170	OUTSIDE AIR FILM
13.186	OVERALL R-VALUE
0.076	OVERALL U-FACTOR

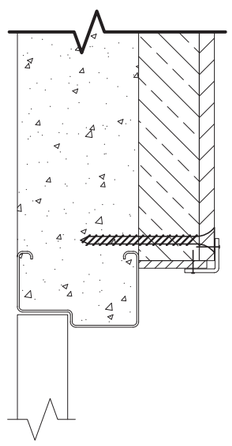


CEILING

INSIDE AIR FILM	0.610
7/16" PANELING	0.696
2¼" DOW THERMAX	14.625
4½" (AVG) L.W. CONCRETE	0.720
OUTSIDE AIR FILM	0.170
OVERALL R-VALUE	16.821
OVERALL U-FACTOR	0.059

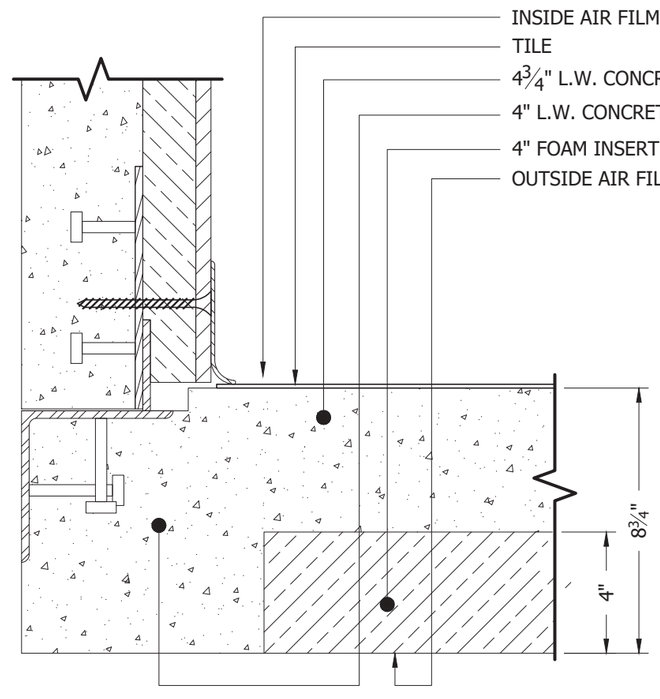
METAL DOOR

6.250	OVERALL R-VALUE
0.160	OVERALL U-FACTOR



FLOOR

RIB	DECK	
0.920	0.920	INSIDE AIR FILM
0.050	0.050	TILE
0.440	0.440	4¾" L.W. CONCRETE (DECK)
0.480	-	4" L.W. CONCRETE (RIB)
-	10.800	4" FOAM INSERT
0.170	0.170	OUTSIDE AIR FILM
2.060	12.380	TOTAL 'R'
0.485	0.081	TOTAL 'U'
0.286	0.714	SURFACE AREA RATIO
0.139	0.058	U-FACTOR PER SURFACE AREA
5.089		OVERALL R-FACTOR
0.197		OVERALL U-FACTOR



PFS CORPORATION
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State: **Florida**
Signature: *Mark Severson*
Title: Staff Plan Reviewer
Date: **6/22/23**

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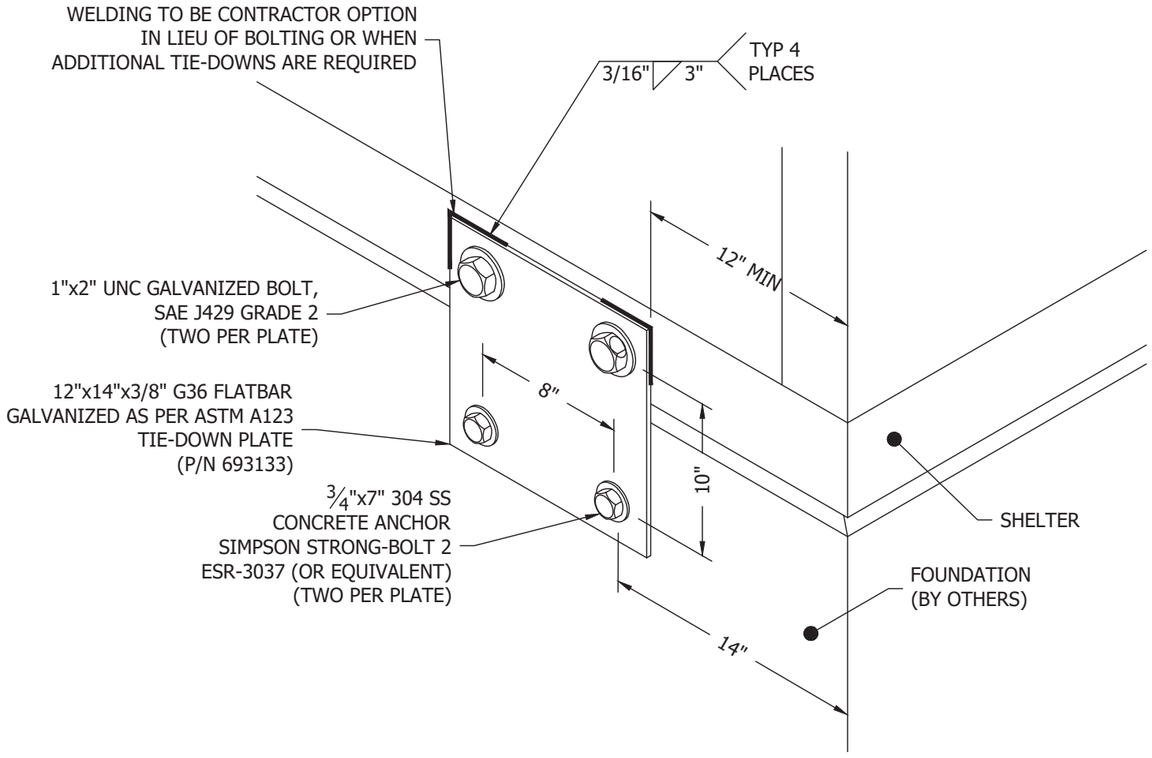
INTERIOR PANEL INSTALL
(1) LAYER
WALLS <= 9'-6"

FILENAME: *108-035-01*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *C. CASINGER*	DATE: *10/6/05*
CHK. BY: *V. HASSELL*	DATE: *10/6/05*
APP. BY:	DATE:
SHEET NO. *2 OF 2*	
DRAWING NO.: *108-035-01*	REV.: *N*

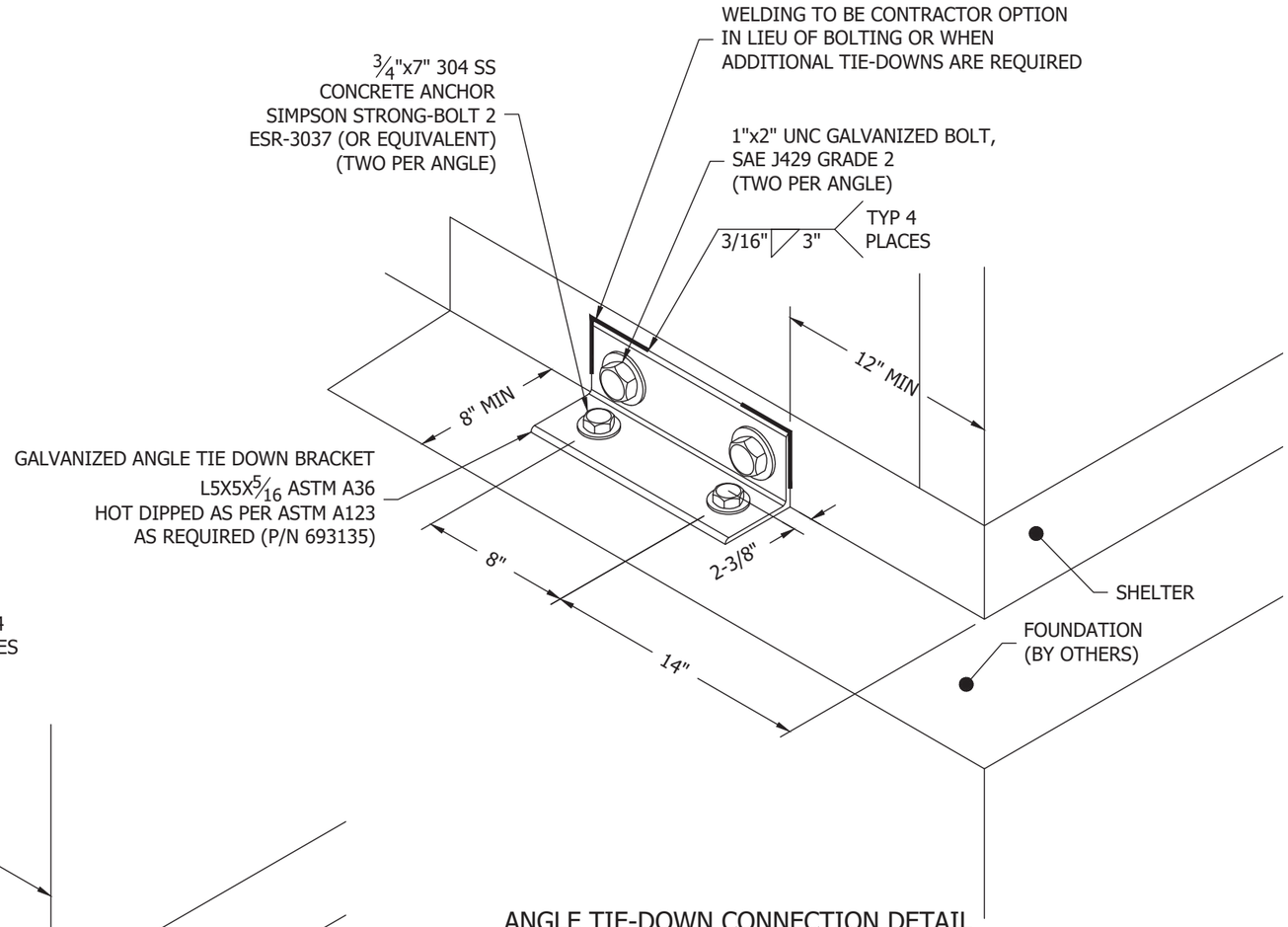
NOTES:

1. SEE STRUCTURAL CALCULATIONS SECTION 1.8 FOR REQUIRED QUANTITY OF TIE DOWN CONNECTIONS FOR CONCRETE SHELTERS.
2. USE 4"x2"x$\frac{1}{4}$" KOROLATH BEARING SHIMS ALONG PERIMETER AT CORNERS AND ON 8FT CENTERS ALONG PERIMETER AS REQUIRED. SEAL PERIMETER WITH CAULK OR GROUT AS DESIRED.
3. SLAB-ON-GRADE FOUNDATIONS SHOWN TO TERMINATE ABOVE FINISHED GRADE. FOUNDATIONS OTHER THAN SOLID SLABS TO TERMINATE SUCH AS TO KEEP SHELTER FLOOR FROM BEING IN DIRECT CONTACT WITH GROUND.



FLAT TIE-DOWN CONNECTION DETAIL

N.T.S.



ANGLE TIE-DOWN CONNECTION DETAIL

N.T.S.

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State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
H	CSK	8/22/18	ADDED CONTRACTOR OPTION FOR WELDED TIE-DOWN	CNM	8/22/18
G	CNM	8/22/18	UPDATED DIMENSIONS ON ANGLE TIE-DOWN	CNM	8/22/18
F	MDF	7/3/18	MADE TIE DOWN PLATES 4 HOLE	MDF	7/3/18
E	LJL	9/2/16	ADDED ASTM RATINGS TO ANGLE	LJL	9/2/16
D	LJL	1/11/16	STREAMLINED VIEWS, ADDED MIN LEDGE DISTANCE	CNM	1/11/16
C	CNM	6/26/14	ADDED MATERIAL PROPERTIES TO COMPONENTS	JTI	6/26/14
B	GAB	7/31/13	CORRECTED DIM ON TIE DOWN PLATE	JTI	7/31/13
A	DJC	8/20/09	ADD LOCK WASHER TO CON DETAILS, ADD P/N TO PLATE	GAB	8/20/09

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CUSTOMER:
SABRE INDUSTRIES ENGINEERING STANDARD

PROJECT:
ANGLE/FLAT TIEDOWN DETAILS

FILENAME: *108-039.DWG*	
SCALE: *AS NOTED*	TOLERANCE:
DRWN. BY: *A. McWHINEY*	DATE: *2/17/06*
CHK. BY: *V. HASSELL*	DATE: *2/17/06*
APP. BY: *J. HOOD*	DATE: *2/17/06*
SHEET NO. *1 OF 1*	
DRAWING NO.: *108-039*	REV.: *H*

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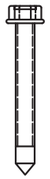
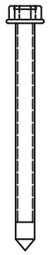
PARTS LIST		
ITEM	P/N	DESCRIPTION
1	VARIES	DOOR CANOPY (SIZE MAY VARY)
2	120017	BACKER ROD, 1/2" CERA-1250LF

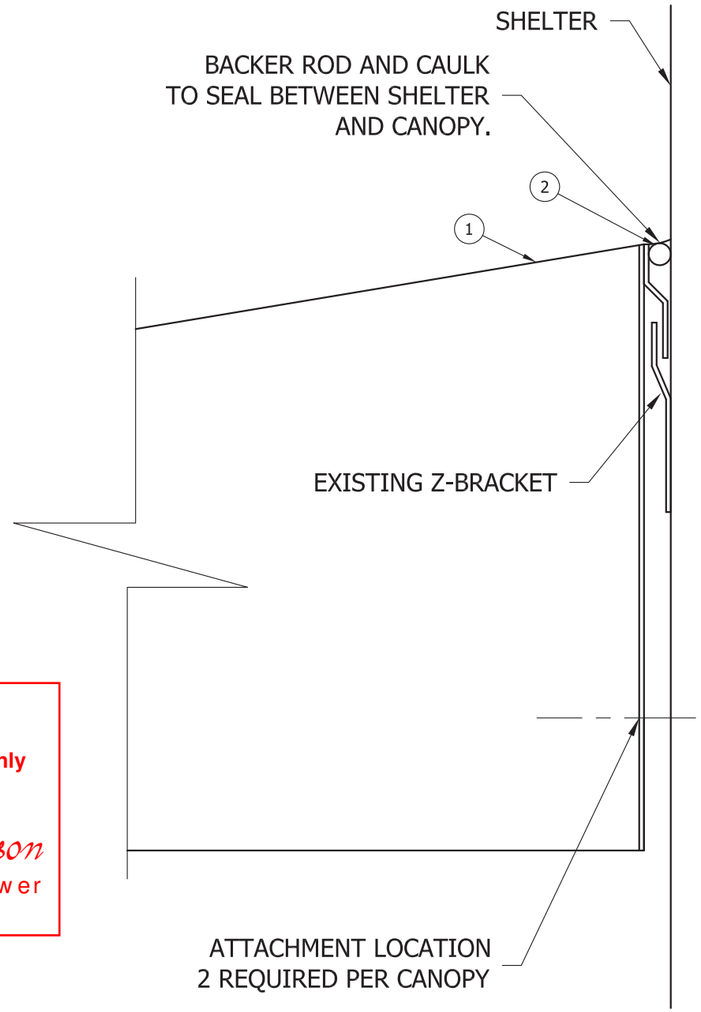
P/N 168208 ANCHOR,
TAP-IN, 1/4" X 1"
METAL W/SS PIN
USED ON CONCRETE
SHELTER APPLICATIONS

P/N 168278 SCREW,
#14 X 2", SS,
HEX W/SEAL
USED ON ALUMINUM,
NC/NR STEEL
SHELTER APPLICATIONS



P/N 168323 SCREW,
#14 X 3", SS,
HEX W/SEAL
USED ON LIGHTWEIGHT
STEEL 1 & 2 HOUR
SHELTER APPLICATIONS





INSTALLATION NOTES:

1. SLIDE DOOR CANOPY INTO PLACE OVER EXISTING Z-BRACKET.

PFS CORPORATION
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Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:

PROJECT:
MECHANICAL STANDARD DOOR CANOPY INSTALLATION

FILENAME: *108-087*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *J. ASHLEY*	DATE: *5/12/08*
CHK. BY: *V. HASSELL*	DATE: *5/12/08*
APP. BY:	DATE:
SHEET NO. *1 OF 1*	
DRAWING NO.: *108-087*	REV.: *B*

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
B	JZ	8/23/16	UPDATE TEXT	CM	8/23/16
A	JFA	6/4/08	REVISED SCREWS AND NOTES	VGH	6/3/08

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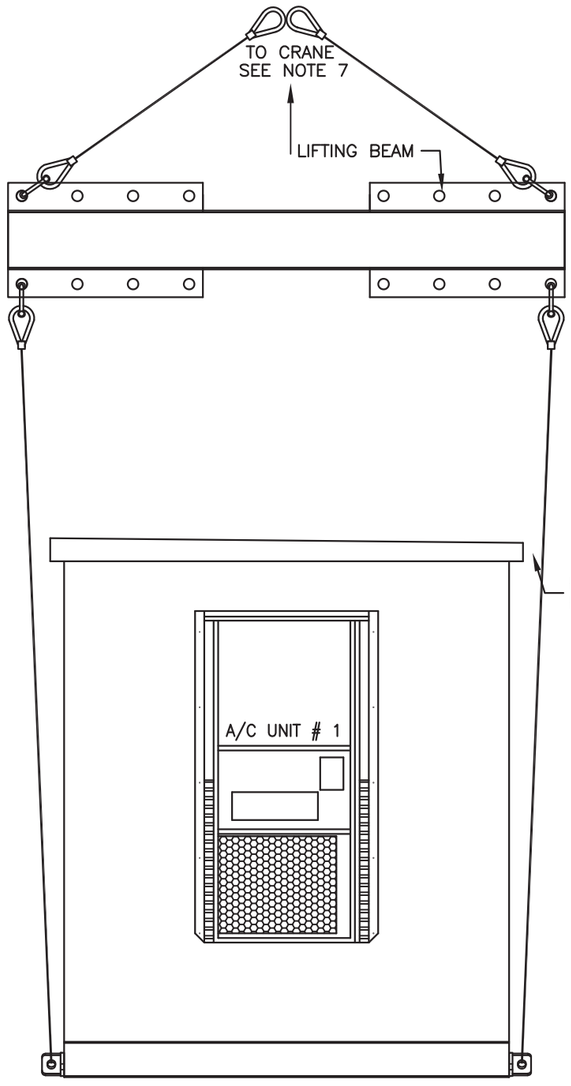

END VIEW
NTS

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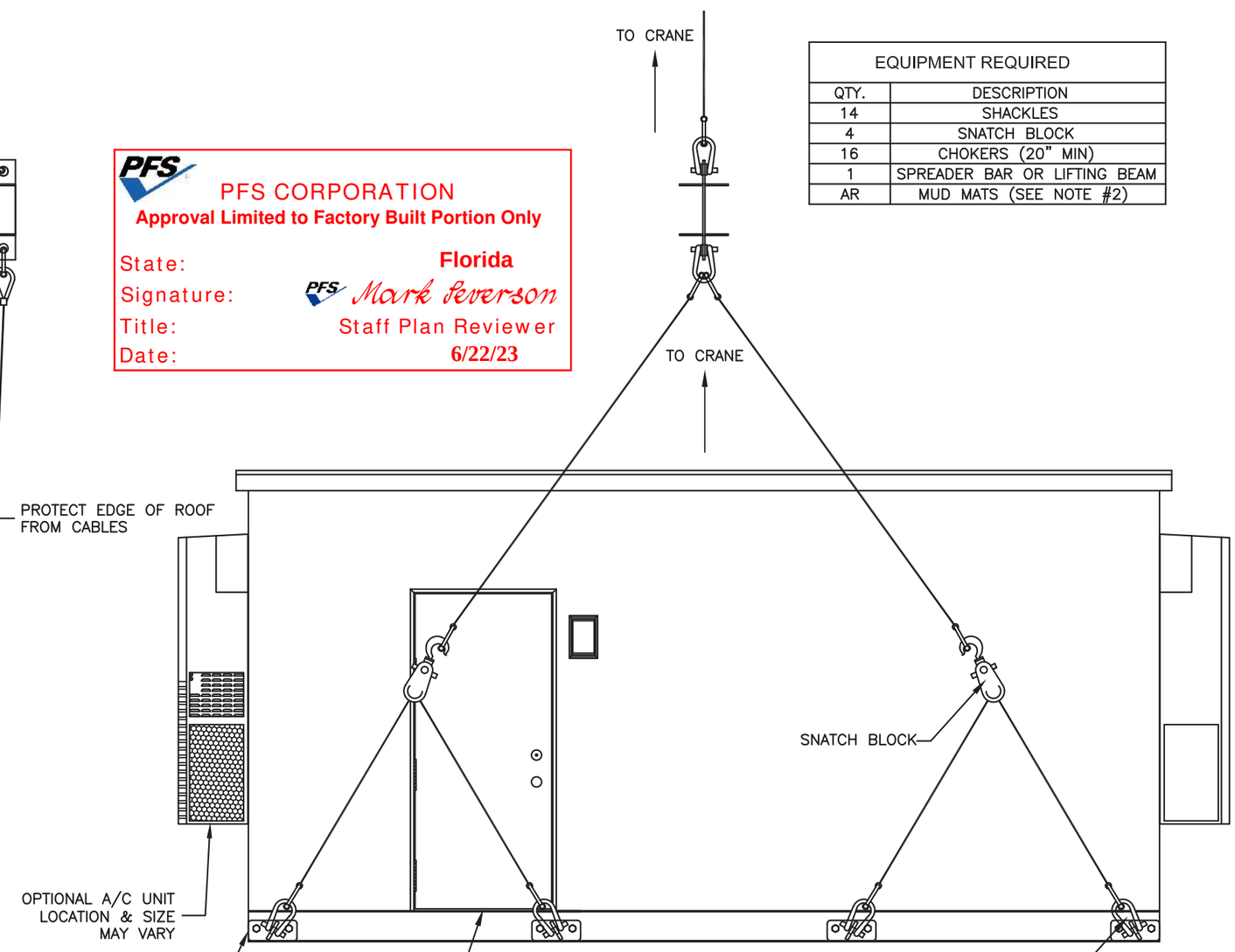
State: **Florida**
Signature: Mark Feverson
Title: Staff Plan Reviewer
Date: **6/22/23**



SIDE VIEW
NTS

EQUIPMENT REQUIRED	
QTY.	DESCRIPTION
14	SHACKLES
4	SNATCH BLOCK
16	CHOKERS (20" MIN)
1	SPREADER BAR OR LIFTING BEAM
AR	MUD MATS (SEE NOTE #2)

NOTES:

1. EIGHT (8) LIFTING POINTS REQUIRED ONLY FOR SHELTER 24' AND LONGER.
2. SHELTER SIZE & CONFIG. MAY VARY.
3. COMPENSATE WEIGHT DIFFERENCE WITH ADDITIONAL SHACKLES IF REQ'D.
4. MUD MATS ARE TO BE USED IF SITE CONDITIONS WARRANT.
5. REVIEW WEIGHT TICKETS AND SITE CONDITIONS TO DETERMINE PROPER SIZING OF EQUIPMENT AND RIGGING.
6. SPREADER LENGTH TO BE WIDER THAN SHELTER TO KEEP CABLES FROM RUBBING AT ROOF.
7. LOCATE TERMINATION AT CRANE HOOK OR NEARLY ABOVE CG OF SHELTER OF SHELTER LOADED FOR LIFT

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
C	GAB	11/04/14	ADDED NOTE 7 AND CLARIFIED NTS	GAB	01/19/11
B	GAB	01/19/11	ADDED THE WORD OPTIONAL TO THE A/C	GAB	01/19/11
A	AMM	9/15/09	ADDED 8 LIFTING POINTS OPTION	LD	9/15/09

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Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:
PREP TO MOVE STANDARD

PROJECT:
SHELTER LIFTING DETAILS 8 LIFTING POINTS OPTION-1

FILENAME: 108-088	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: J. ASHLEY	DATE: 5/13/08
CHK. BY: G. BRINKMAN	DATE: 5/13/08
APP. BY: AE DUMAS	DATE: 11/04/14
SHEET NO. 1 OF 3	
DRAWING NO.: 108-088	REV.: E

NOTES:

1. EIGHT (8) LIFTING POINTS REQUIRED ONLY FOR SHELTER 24' AND LONGER.
2. SHELTER SIZE & CONFIG. MAY VARY.
3. COMPENSATE WEIGHT DIFFERENCE WITH ADDITIONAL SHACKLES IF REQ'D.
4. MUD MATS ARE TO BE USED IF SITE CONDITIONS WARRANT.
5. REVIEW WEIGHT TICKETS AND SITE CONDITIONS TO DETERMINE PROPER SIZING OF EQUIPMENT AND RIGGING.
6. SPREADER LENGTH TO BE WIDER THAN SHELTER TO KEEP CABLES FROM RUBBING AT ROOF.
7. LOCATE OVER OR NEARLY OVER CG OF SHELTER AS LOADED FOR LIFT.

EQUIPMENT REQUIRED	
QTY.	DESCRIPTION
24	SHACKLES
28	CHOKERS (20" MIN)
3	SPREADER BAR OR LIFTING BEAM
AR	MUD MATS (SEE NOTE #2)

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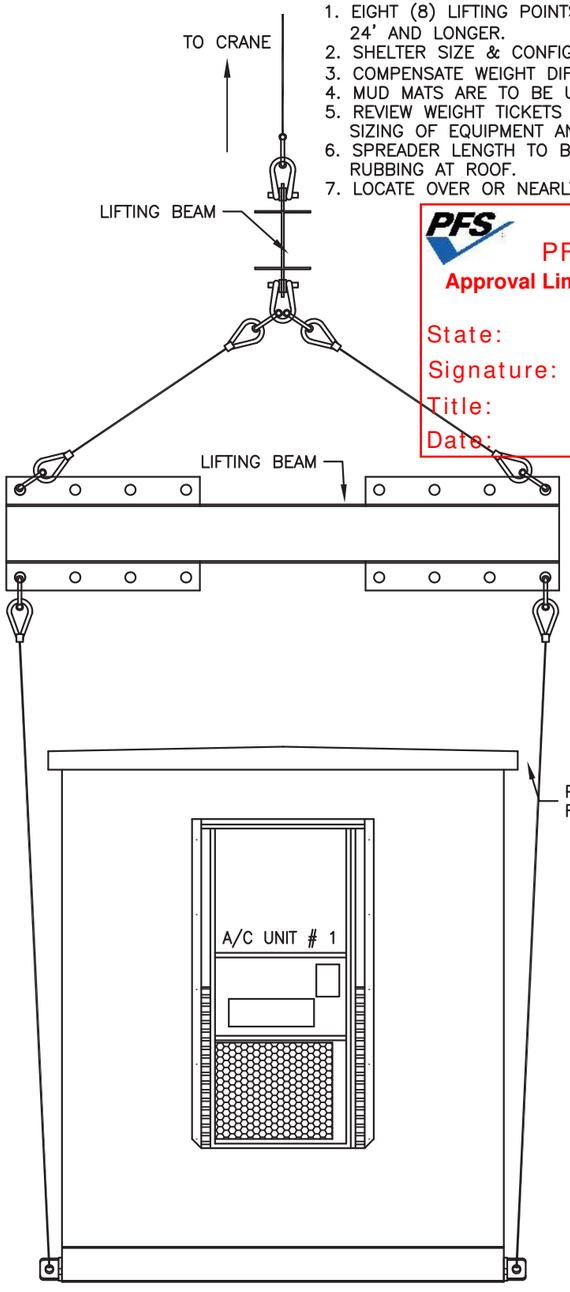
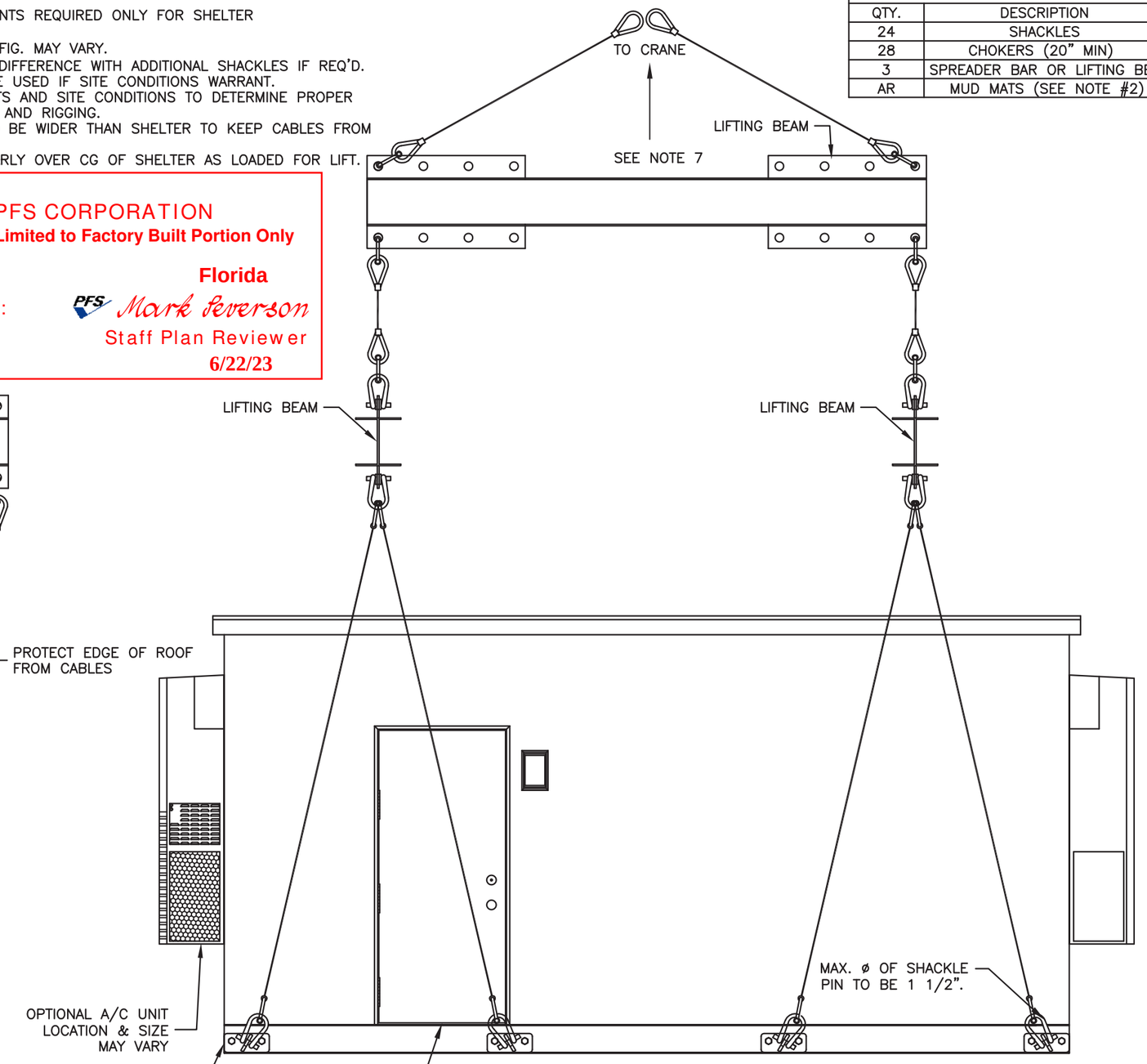
State: **Florida**
Signature: *Mark Feverson*
Title: Staff Plan Reviewer
Date: **6/22/23**



END VIEW
NTS



SIDE VIEW
NTS

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
C	GAB	11/04/14	ADDED NOTE 7 AND CLARIFIED NTS	AED	11/04/14
B	GAB	01/19/11	ADDED THE WORD OPTIONAL TO THE A/C	GAB	01/19/11
A	AMM	9/15/09	ADDED 8 LIFTING POINTS OPTION	LD	9/15/09

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CUSTOMER:
PREP TO MOVE STANDARD

PROJECT:
SHELTER LIFTING DETAILS 8 LIFTING POINTS OPTION-2

FILENAME: *108-088*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *J. ASHLEY*	DATE: *5/13/08*
CHK. BY: *G. BRINKMAN*	DATE: *11/04/14*
APP. BY: *AE DUMAS*	DATE: *11/04/14*
SHEET NO. *2 OF 3*	
DRAWING NO.: *108-088*	REV.: *E*

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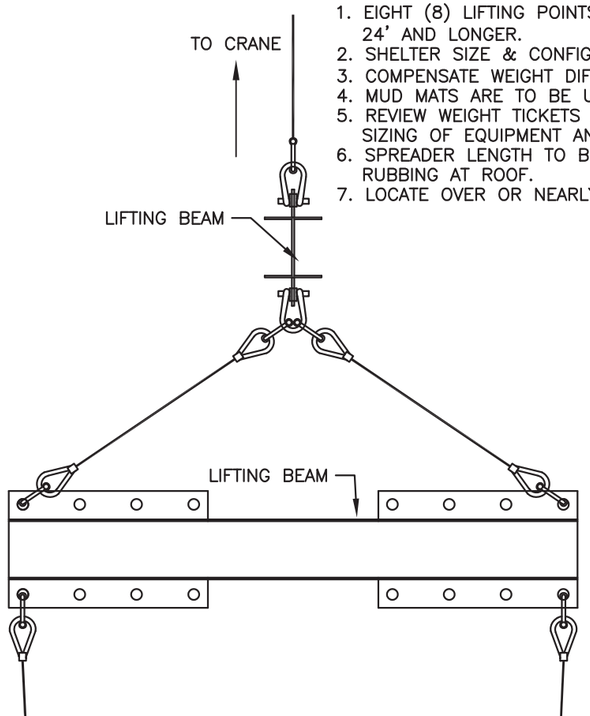
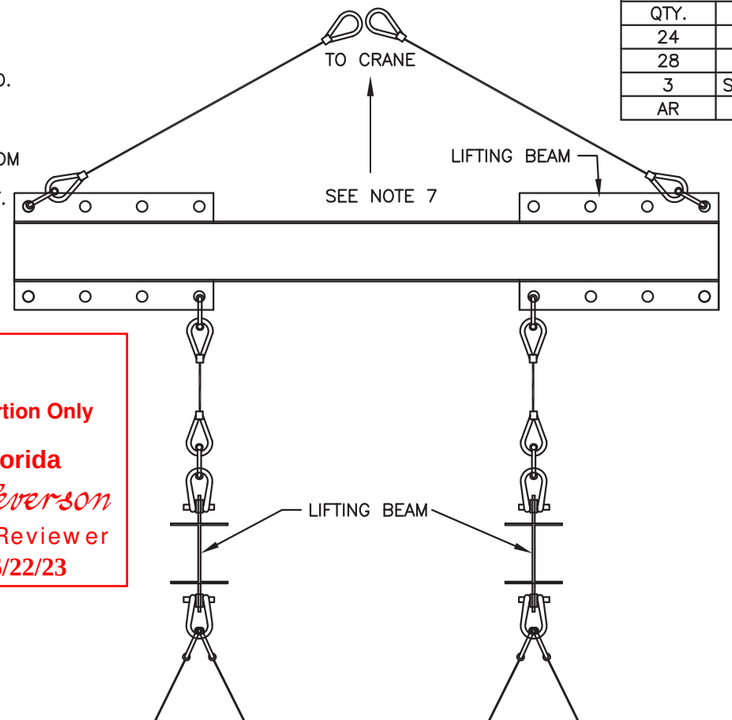
NOTES:

1. EIGHT (8) LIFTING POINTS REQUIRED ONLY FOR SHELTER 24' AND LONGER.
2. SHELTER SIZE & CONFIG. MAY VARY.
3. COMPENSATE WEIGHT DIFFERENCE WITH ADDITIONAL SHACKLES IF REQ'D.
4. MUD MATS ARE TO BE USED IF SITE CONDITIONS WARRANT.
5. REVIEW WEIGHT TICKETS AND SITE CONDITIONS TO DETERMINE PROPER SIZING OF EQUIPMENT AND RIGGING.
6. SPREADER LENGTH TO BE WIDER THAN SHELTER TO KEEP CABLES FROM RUBBING AT ROOF.
7. LOCATE OVER OR NEARLY OVER CG OF SHELTER AS LOADED FOR LIFT.

EQUIPMENT REQUIRED	
QTY.	DESCRIPTION
24	SHACKLES
28	CHOKERS (20" MIN)
3	SPREADER BAR OR LIFTING BEAM
AR	MUD MATS (SEE NOTE #2)





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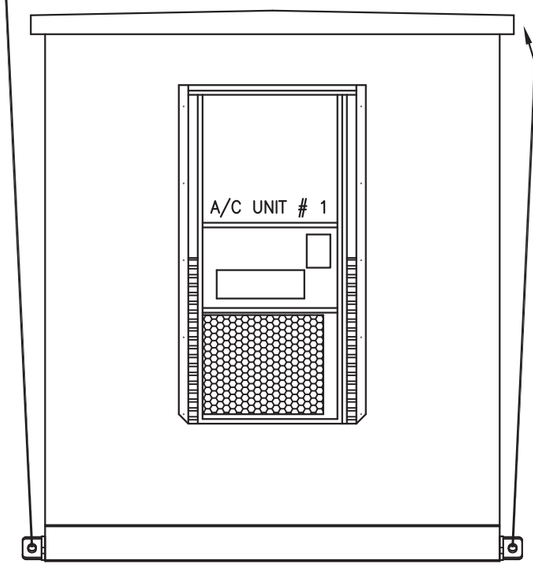
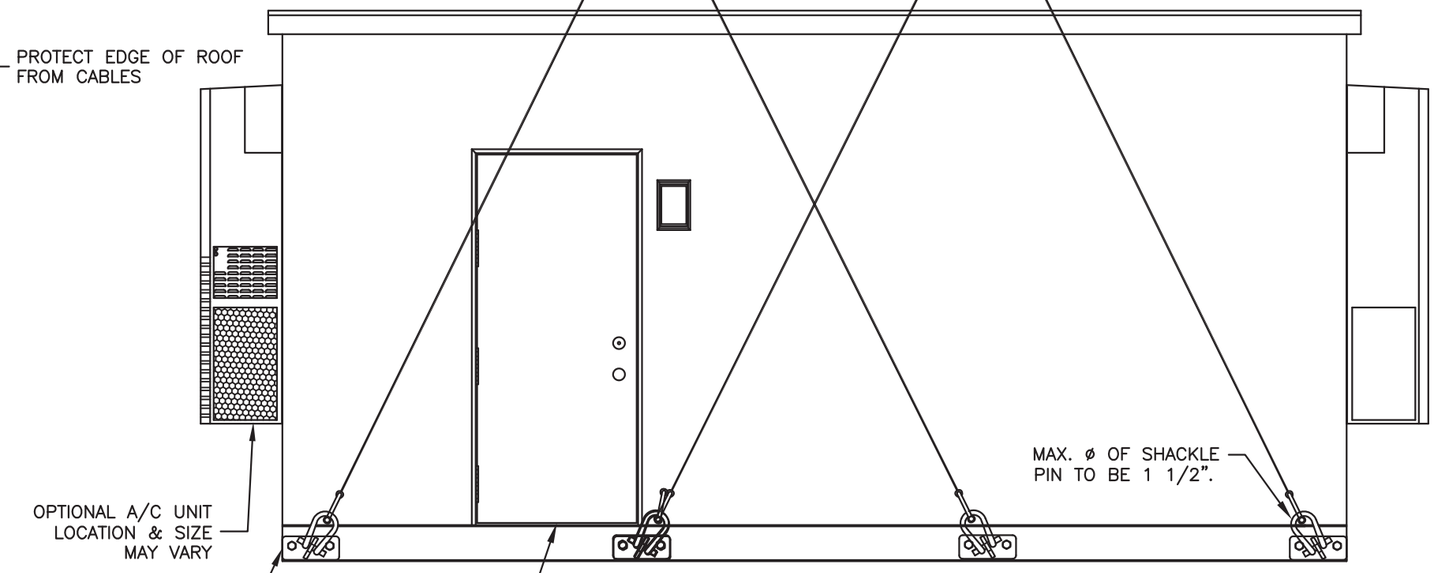


END VIEW
NTS



SIDE VIEW
NTS

REV	BY	DATE	DESCRIPTION	APP.BY	DATE
D	CNM	12/27/16	ADDED SHEET 4	LAN	12/27/16
C	GAB	11/04/14	ADDED NOTE 7 AND CLARIFIED NTS	AED	11/04/14
B	GAB	01/19/11	ADDED THE WORD OPTIONAL TO THE A/C	GAB	01/19/11
A	AMM	9/15/09	ADDED 8 LIFTING POINTS OPTION	LD	9/15/09

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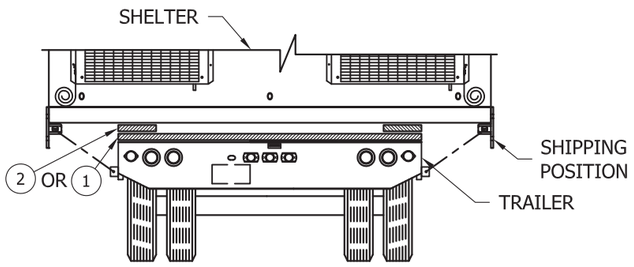
CUSTOMER:
PREP TO MOVE STANDARD

PROJECT:
SHELTER LIFTING DETAILS 8 LIFTING POINTS OPTION-3

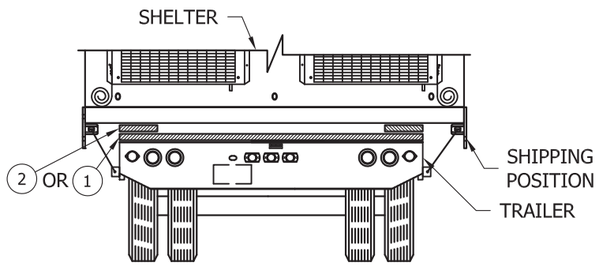
FILENAME: *108-088*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *J. ASHLEY*	DATE: *5/13/08*
CHK. BY: *G. BRINKMAN*	DATE: *11/04/14*
APP. BY: *AE DUMAS*	DATE: *11/04/14*
SHEET NO. 3 OF 3	
DRAWING NO.: *108-088*	REV.: *E*

SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT



REAR VIEW OF TRAILER

(SEE NOTE 5)



REAR VIEW OF TRAILER

PARTS LIST	
ITEM	DESCRIPTION
1	INSUL. RMAX, OR BEAD BOARD, 1-1/2" MIN. THICKNESS
2	RUBBER PAD, 60 DUR. 3/4" MIN THICKNESS

NOTES:

1. DO NOT PLACE RUBBER PADS UNDER DOORWAYS.
2. RUBBER PAD TO BE 6" X 12" MIN.
3. INSULATION TO BE 6" WIDE, LENGTH AS REQ'D.
4. LOCATION OF RUBBER PAD SHOULD BE AT OUTERMOST POINTS ON TRAILER WHICH CAN PROVIDE ADEQUATE SUPPORT.
5. FOR LARGE BUILDINGS THAT ARE HEAVILY LOADED ABOUT THE PERIPHERY ON THE INSIDE, SEE SPECIAL LOADING INSTRUCTIONS.

PFS CORPORATION

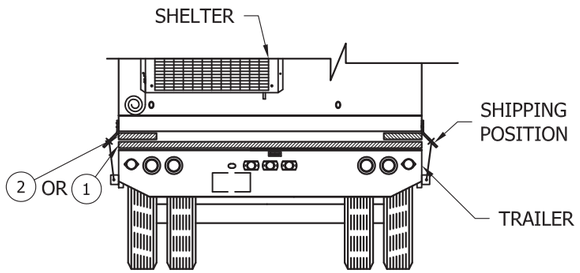
Approval Limited to Factory Built Portion Only

State: **Florida**

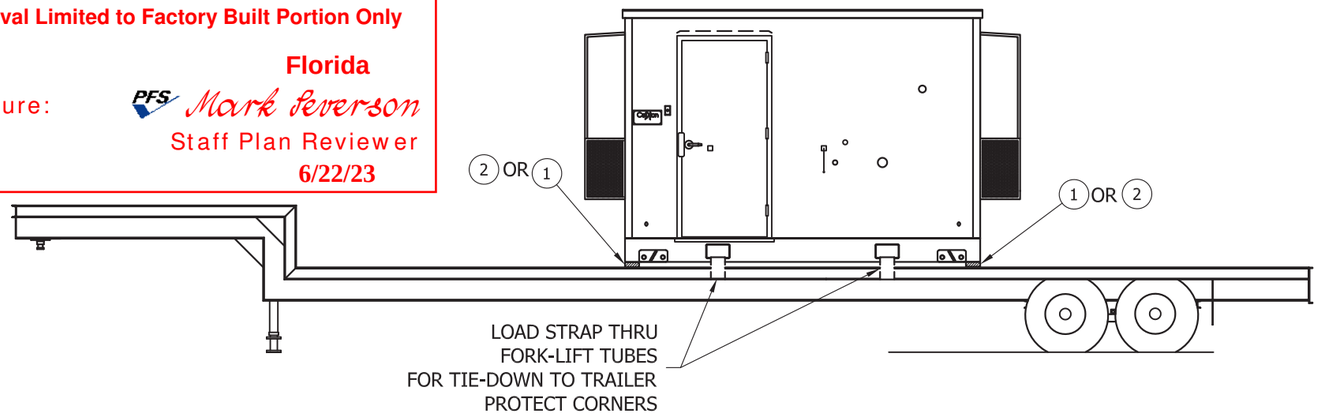
Signature: PFS *Mark Severson*

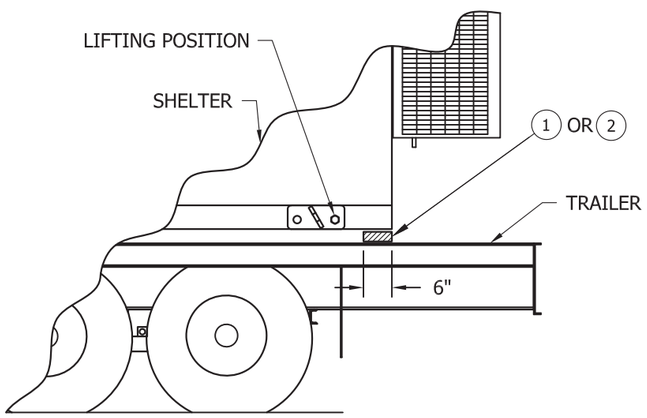
Title: Staff Plan Reviewer

Date: **6/22/23**

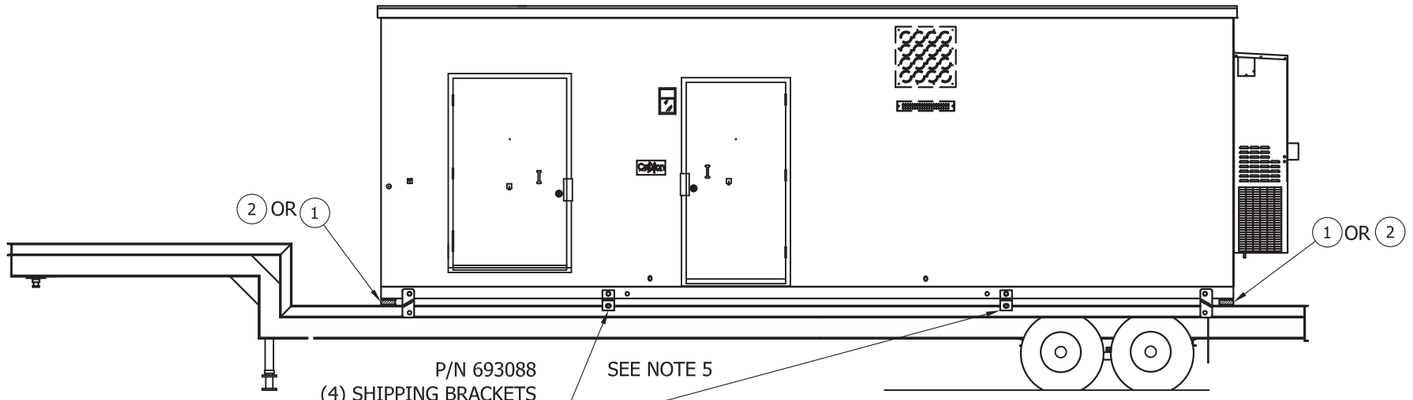


REAR VIEW OF TRAILER





SIDE VIEW OF TRAILER



REV	BY	DATE	DESCRIPTION	APP.BY	DATE
C	JZ	8/23/16	UPDATE TEXT	JZ	8/23/16
B	GAB	11/05/14	ADDED NOTE 5 AND REFERENCES	AED	11/05/14
A	JFA	6/4/08	ADDED TRAILER LOADING DETAIL	VGH	6/4/08

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
Corey Nicholas Mitchel
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Sabre Industries
Building Systems by CellXion
5031 Hazel Jones Road
Bossier City, LA 71111
Voice: (318) 213-2900
Fax: (318) 213-2919
www.sabreindustries.com

CUSTOMER:

PREP TO MOVE STANDARD

PROJECT:

SHELTER LOADING DETAILS > 12' WIDE

FILENAME: *108-089*	
SCALE: *N.T.S.*	TOLERANCE:
DRWN. BY: *J. ASHLEY*	DATE: *5/13/08*
CHK. BY: *V. HASSELL*	DATE: *5/13/08*
APP. BY:	DATE:
SHEET NO. *1 OF 1*	
DRAWING NO.: *108-089*	REV.: *C*

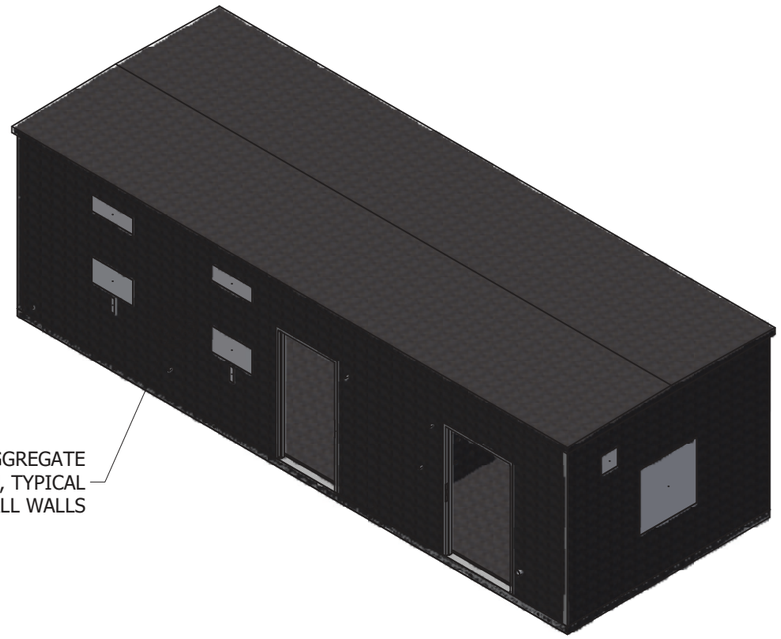
SABRE INDUSTRIES(TM) PROPRIETARY DOCUMENT

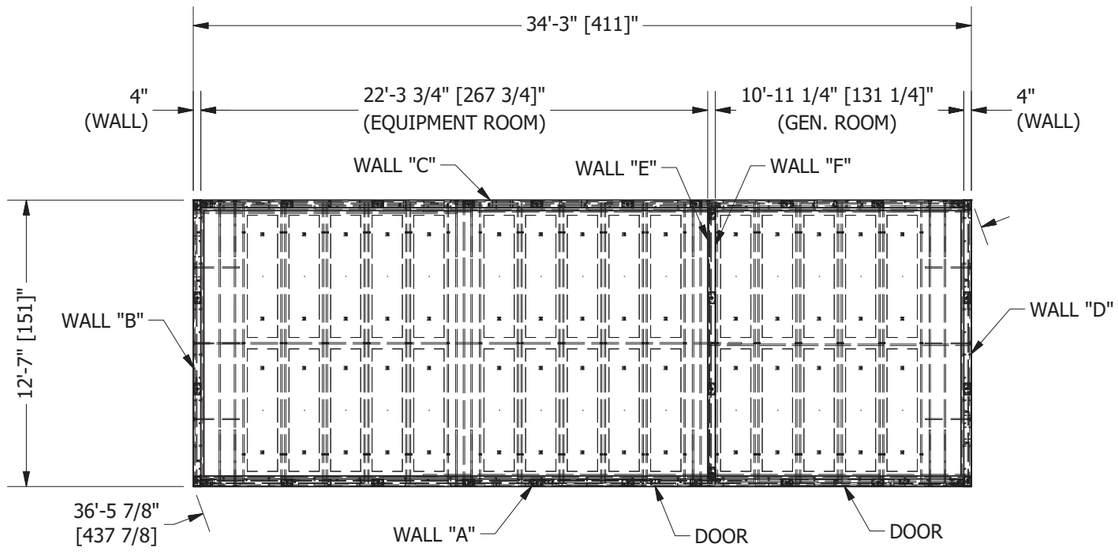
NOTES:
1.FOR DESIGN PARAMETERS SEE SHEET 0-0 OF INTERIOR SHELTER DRAWINGS

WEIGHT - 80095.163 lbmass

USE 115 PCF SAND LIGHT-WEIGHT MIX.

SHOP DETAILS		SHOP DETAILS	
DWG NO.	*DESCRIPTION*	*DWG NO.*	*DESCRIPTION*
10-002	*WALL/ROOF CONNECTION*	*14-005*	*WALL DETAIL (PENETRATION)*
10-003	*WALL/FLOOR CONNECTION*	*20-005*	*WALL/ROOF COVE INSTALLATION*
10-004	*WALL/WALL CONNECTION*	*20-006*	*CORNER COVE INSTALLATION*
10-005	*WELD PLATE DETAILS*	*20-008*	*DOOR TRIM INSTALLATION*
13-001	*ROOF DETAIL (RIDGE)*	*20-020*	*CARPENTRY STANDARD-1 LAYER CEILING*
14-001	*WALL DETAIL (BOTTOM/EDGE)*	*20-022*	*CARPENTRY STANDARD-1 LAYER WALLS*
14-002	*WALL DETAIL (TOP OF PANNEL)*	*20-023*	*CARPENTRY STANDARD-1 LAYER TRIM*
14-003	*WALL DETAIL (END PANEL EDGE)*	*20-039*	*CONCRETE SHELTER ONE PIECE TRIM*
14-004	*WALL DETAIL (BLOCKOUT)*		





STRUCTURAL LAYOUT - WALLS
SCALE 1:80

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: PFS *Mark Severson*
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
Corey Nicholas Mitchel
STATE OF FLORIDA
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CUSTOMER:
TOWER SYSTEMS SOUTH
FDOT
LAKE CITY, FL

PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
COVER SHEET

FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *1 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

PARTS LIST

ITEM	QTY	U/M	P/N	DEPT	DESCRIPTION
500, 501, 502, 503, 504	10.999	CU. YD.	100052-001	10	CONCRETE,CYD,WALLS
505	6.434	CU. YD.	100052-003	10	CONCRETE,1 CUBIC YARD BATCH,ROOF
506	1	EA.	10RH1111-00	10	PARTITION WALL TOP RAIL ANGLE, 11'-11" (PRODUCTION TOOL)
507	2	EA.	10RH1207-00	10	END WALL HORIZONTAL ANGLE 12'-7" (PRODUCTION TOOL)
508	2	EA.	10RH3403-01	10	SIDE WALL HORIZONTAL RAIL ANGLE (PRODUCTION TOOL)
509	2	EA.	10RP1211-00	10	ROOF RAIL END PLATE , 12'-11",4/5.5 (PRODUCTION TOOL)
510	2	EA.	10RR1211-00	10	END WALL ANGLE ROOF RAIL,12'11" (PRODUCTION TOOL)
511	2	EA.	10RR3407-01	10	CASTING BED ROOF RAIL SIDE ANGLE 34'-7" (PRODUCTION TOOL)
512	2	EA.	10RV0904.5-00	10	CASTING BED VERT. RAIL ANGLE PH9'4" (PRODUCTION TOOL)
513	8	EA.	10RV0906-00	10	CASTING BED VERT. RAIL ANGLE PH9'6" (PRODUCTION TOOL)
514, 515, 516, 517, 518	6.154	EA.	110001	10	MESH,WIRE,4X4,D4XD4,8'X20'
519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565	3290.728	FT.	112502	10	REBAR,#4 (1/2") #13 METRIC,GRADE 60
566, 567	355	EA.	119010	10	REBAR CHAIR,PLASTIC,#4,1",W/BASE
568	2.000	FT	170000	10	PIPE,PVC,SCH 40,1"
569	0.500	FT	170003	10	PIPE,PVC,SCH 40,1 1/2"
570, 571	3.5	FT	170004	10	PIPE,PVC,SCH 40,1 1/4"
572, 573	2.5	FT	170005	10	PIPE,PVC,SCH 40,3"
574, 575	3	EA.	170400	10	PIPE,PVC,1",CAST-IN PLATE,45 DEG
576	8	EA.	220219-01	10	ROOF ANCHOR,LIFTING INSERT
577	1	EA.	221-1207X3403-00	10	CONCRETE FLOOR ASSY KIT,12'-7"X34'-3"
578	4	EA.	221011	10	WALL EMBED ANGLE ASSY,6"X4" X 9'3"
579, 580, 581, 582, 583	28	EA.	222000	10	INSERT ANGLE,WALL TO ROOF,1/4"
584	24	EA.	223000	10	INSERT PLATE,ROOF TO 4" WALL,2 STUD
585	38	EA.	223100	10	EMBED PLATE,WALL,1/4"X6"X8"
586	61	EA.	223102	10	INSERT,WELD PLATE 1/4"X3"X4",F/B
587, 588, 589, 590, 591, 592, 593, 594, 595	157.443	FBM	360151	10	INSULATION,EPS,FOAM,RAW MATL B-FOOT
596	1	EA.	501086	10	DOOR FRM,3670,LHRB,REP,BR,L4
597	1	EA.	501243	10	DOOR FRM,4070,RHRB,REP,BR,L4
598	7	EA.	300006	20	OSB,7/16"X4'X8'
599	22	EA.	300058	20	INSULATION,1.7",7/16"OSB/NRP48"X110
600	9	EA.	300059	20	INSULATION,2.3",7/16"OSB/NRP 48X132
601	6	EA.	300084	20	OSB,7/16",W/POLY.030,48"X110"

CUT LIST

ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH	PCS
514	110001	MESH,WIRE,4X4,D4XD4,8'X20'	109.500 in	96.000 in		1
515	110001	MESH,WIRE,4X4,D4XD4,8'X20'	109.500 in	47.750 in		1
516	110001	MESH,WIRE,4X4,D4XD4,8'X20'	111.000 in	96.000 in		10
517	110001	MESH,WIRE,4X4,D4XD4,8'X20'	111.000 in	56.000 in		2
518	110001	MESH,WIRE,4X4,D4XD4,8'X20'	111.000 in	31.750 in		2
519	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	109.500 in			13
520	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	139.750 in			10
521	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in			22
522	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	152.000 in			43
523	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	288.000 in			26
524	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	142.000 in			12
525	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	111.000 in			83
526	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	148.000 in			19
527	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	129.750 in			11
528	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	185.875 in			9
529	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	32.500 in			8
530	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	74.000 in			8
531	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	78.000 in			2
532	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	84.000 in			2
533	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	68.676 in			1
534	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in			8
535	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	9.750 in			2
536	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	92.750 in			2
537	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	43.500 in			3
538	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	52.125 in			3
539	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	150.625 in			1
540	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	52.625 in			1
541	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	131.500 in			1
542	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	59.500 in			2
543	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	198.625 in			1
544	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	21.750 in			1
545	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	110.250 in			1
546	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	81.750 in			1
547	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	13.250 in			1
548	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	28.500 in			3
549	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	50.500 in			6
550	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.500 in			3
551	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	24.500 in			8
552	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	42.125 in			4
553	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	48.250 in			2
554	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	55.000 in			2
555	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	25.750 in			4
556	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	228.000 in			1
557	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	14.250 in			1
558	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	8.875 in			4
559	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	82.625 in			4
560	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	8.750 in			4
561	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	94.000 in			2
562	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	9.000 in			2
563	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	9.750 in			1
564	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	35.000 in			1
565	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	17.500 in			3
568	170000	PIPE,PVC,SCH 40,1"	6.000 in			4
569	170003	PIPE,PVC,SCH 40,1 1/2"	6.000 in			1
570	170004	PIPE,PVC,SCH 40,1 1/4"	6.000 in			1
571	170004	PIPE,PVC,SCH 40,1 1/4"	6.000 in			6
572	170005	PIPE,PVC,SCH 40,3"	6.000 in			4
573	170005	PIPE,PVC,SCH 40,3"	6.000 in			1
587	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	12.500 in	12.500 in	4.000 in	1
588	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	21.500 in	5.000 in	4.000 in	2
589	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	30.750 in	10.750 in	4.000 in	2
590	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	30.750 in	16.750 in	4.000 in	2
591	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	3.000 in	10.000 in	4.000 in	2
592	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	42.500 in	42.500 in	4.000 in	1
593	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	30.500 in	30.500 in	4.000 in	1
594	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	21.500 in	16.000 in	4.000 in	2
595	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	11.000 in	11.000 in	4.000 in	1

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Feverson
Title: Staff Plan Reviewer
Date: **6/22/23**

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CUSTOMER:
TOWER SYSTEMS SOUTH
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PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
PARTS LIST/CUT LIST

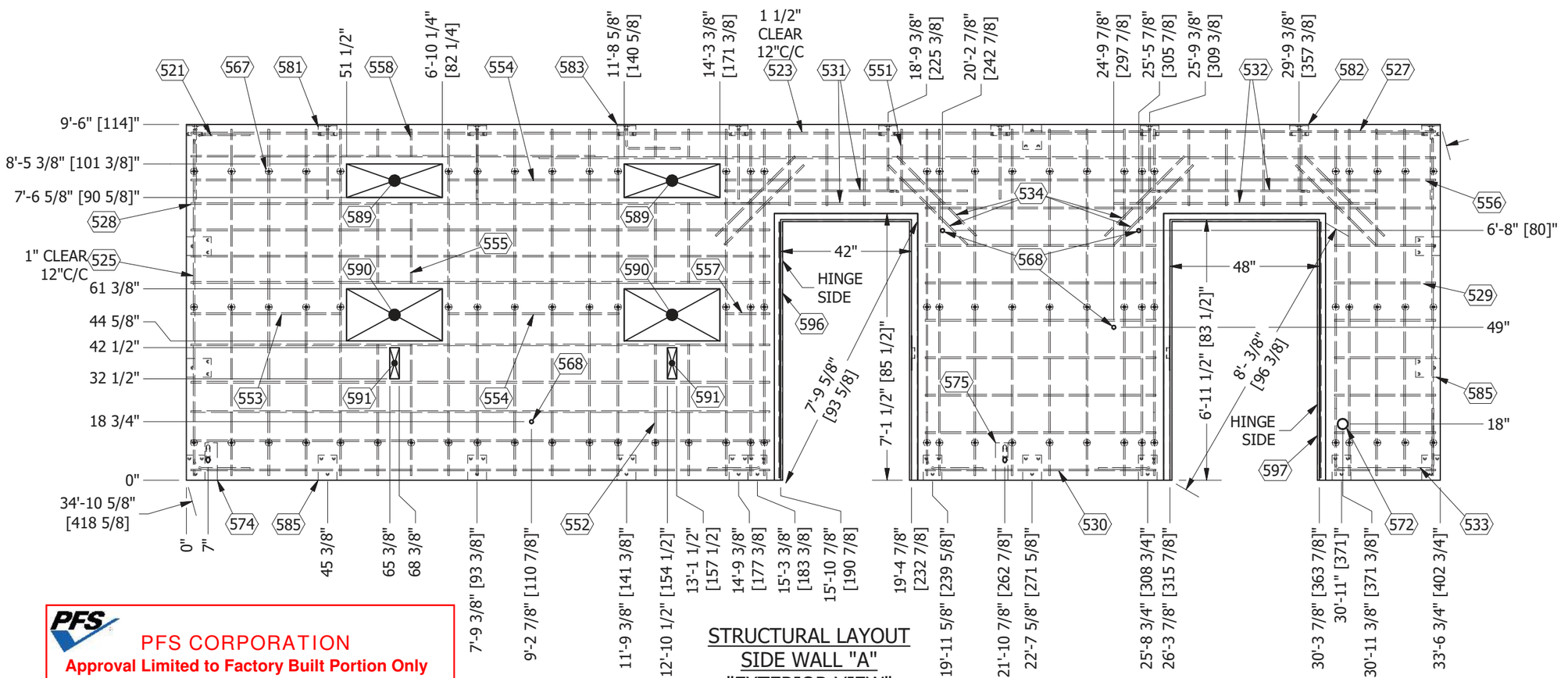
FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *2 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
508	10RH3403-01	SIDE WALL HORIZONTAL RAIL ANGLE (PRODUCTION TOOL)			
513	10RV0906-00	CASTING BED VERT. RAIL ANGLE PH9'6" (PRODUCTION TOOL)			
521	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in		
523	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	288.000 in		
525	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	111.000 in		
527	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	129.750 in		
528	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	185.875 in		
529	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	32.500 in		
530	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	74.000 in		
531	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	78.000 in		
532	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	84.000 in		
533	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	68.676 in		
534	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in		
551	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	24.500 in		
552	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	42.125 in		
553	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	48.250 in		
554	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	55.000 in		
555	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	25.750 in		

SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
556	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	228.000 in		
557	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	14.250 in		
558	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	8.875 in		
567	119010	REBAR CHAIR,PLASTIC,#4,1",W/BASE			
568	170000	PIPE,PVC,SCH 40,1"	6.000 in		
572	170005	PIPE,PVC,SCH 40,3"	6.000 in		
574	170400	PIPE,PVC,1",CAST-IN PLATE,45 DEG			
575	170400	PIPE,PVC,1",CAST-IN PLATE,45 DEG			
581	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
582	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
583	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
585	223100	EMBED PLATE,WALL,1/4"X6"X8"			
589	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	30.750 in	10.750 in	4.000 in
590	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	30.750 in	16.750 in	4.000 in
591	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	3.000 in	10.000 in	4.000 in
596	501086	DOOR FRM,3670,LHRB,REP,BR,L4			
597	501243	DOOR FRM,4070,RHRB,REP,BR,L4			

WEIGHT - 9533.872 lbmass

USE 115 PCF SAND LIGHT-WEIGHT MIX.



STRUCTURAL LAYOUT
SIDE WALL "A"
"EXTERIOR VIEW"
SCALE 1:38
(3.068 CU.YD. CONCRETE)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

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TOWER SYSTEMS SOUTH
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PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
SIDE WALL "A"
STRUCTURAL LAYOUT

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SCALE: *AS NOTED*	TOLERANCE:
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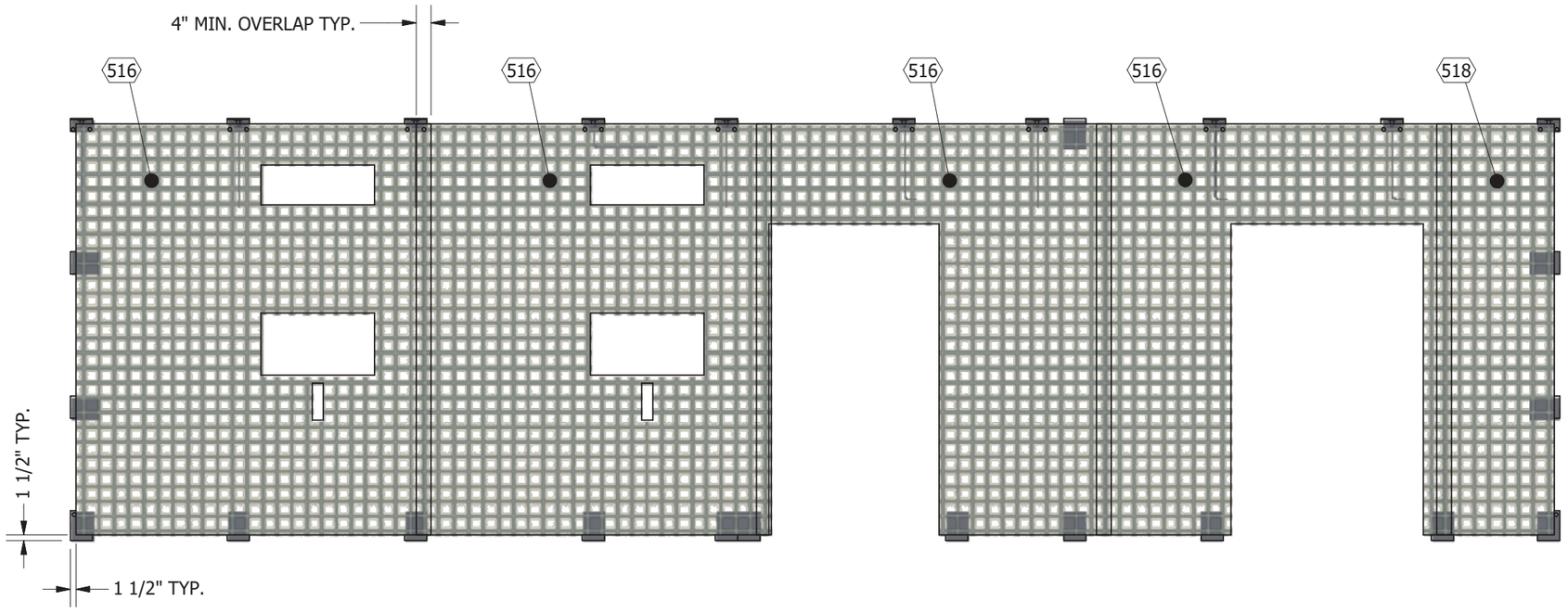
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *3 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
516	*110001*	*MESH,WIRE,4X4,D4XD4,8'X20'*	*111.000 in*	*96.000 in*	
518	*110001*	*MESH,WIRE,4X4,D4XD4,8'X20'*	*111.000 in*	*31.750 in*	

NOTES:
1. CUT WIRE MESH BACK 1 1/2" AROUND ALL BLOCKOUTS.



MESH LAYOUT
SIDE WALL "A"
SCALE 1:38

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Feverson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
Corey Nicholas Mitchel
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Sabre Industries™
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, LA 71111
voice: 318-213-2900
fax: 318-213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS SOUTH
FDOT
LAKE CITY, FL

PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
SIDE WALL "A"
MESH LAYOUT

FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *4 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

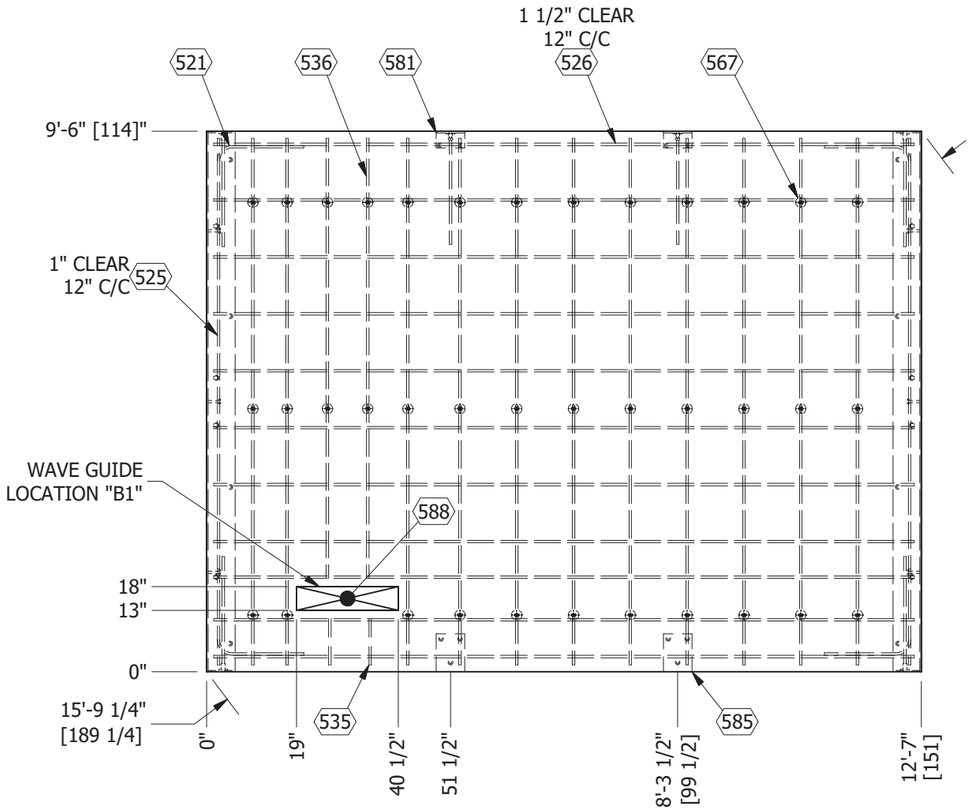
SUB-PART LIST						SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH	ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
507	10RH1207-00	END WALL HORIZONTAL ANGLE 12'-7" (PRODUCTION TOOL)				535	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	9.750 in		
513	10RV0906-00	CASTING BED VERT. RAIL ANGLE PH9'6" (PRODUCTION TOOL)				536	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	92.750 in		
516	110001	MESH,WIRE,4X4,D4XD4,8'X20'	111.000 in	96.000 in		567	119010	REBAR CHAIR,PLASTIC,#4,1",W/BASE			
517	110001	MESH,WIRE,4X4,D4XD4,8'X20'	111.000 in	56.000 in		578	221011	WALL EMBED ANGLE ASSY,6"X4" X 9'3"			
521	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in			581	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
525	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	111.000 in			585	223100	EMBED PLATE,WALL,1/4"X6"X8"			
526	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	148.000 in			588	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	21.500 in	5.000 in	4.000 in

NOTES:

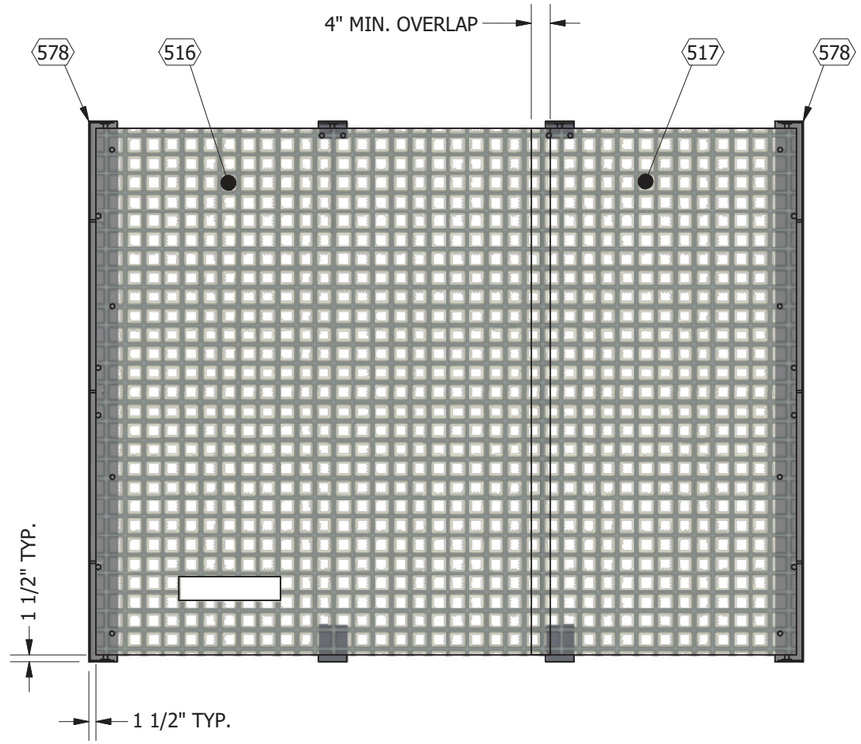
1. CUT WIRE MESH BACK 1 1/2" AROUND ALL BLOCKOUTS.

WEIGHT - 5095.381 lbmass

USE 115 PCF SAND LIGHT-WEIGHT MIX.



STRUCTURAL LAYOUT
END WALL "B"
"EXTERIOR VIEW"
SCALE 1:32
(1.466 CU.YD. CONCRETE)



MESH LAYOUT
END WALL "B"
SCALE 1:32

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State: **Florida**
Signature: *Mark Peverson*
Title: Staff Plan Reviewer
Date: **6/22/23**

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CUSTOMER:
TOWER SYSTEMS SOUTH
FDOT
LAKE CITY, FL

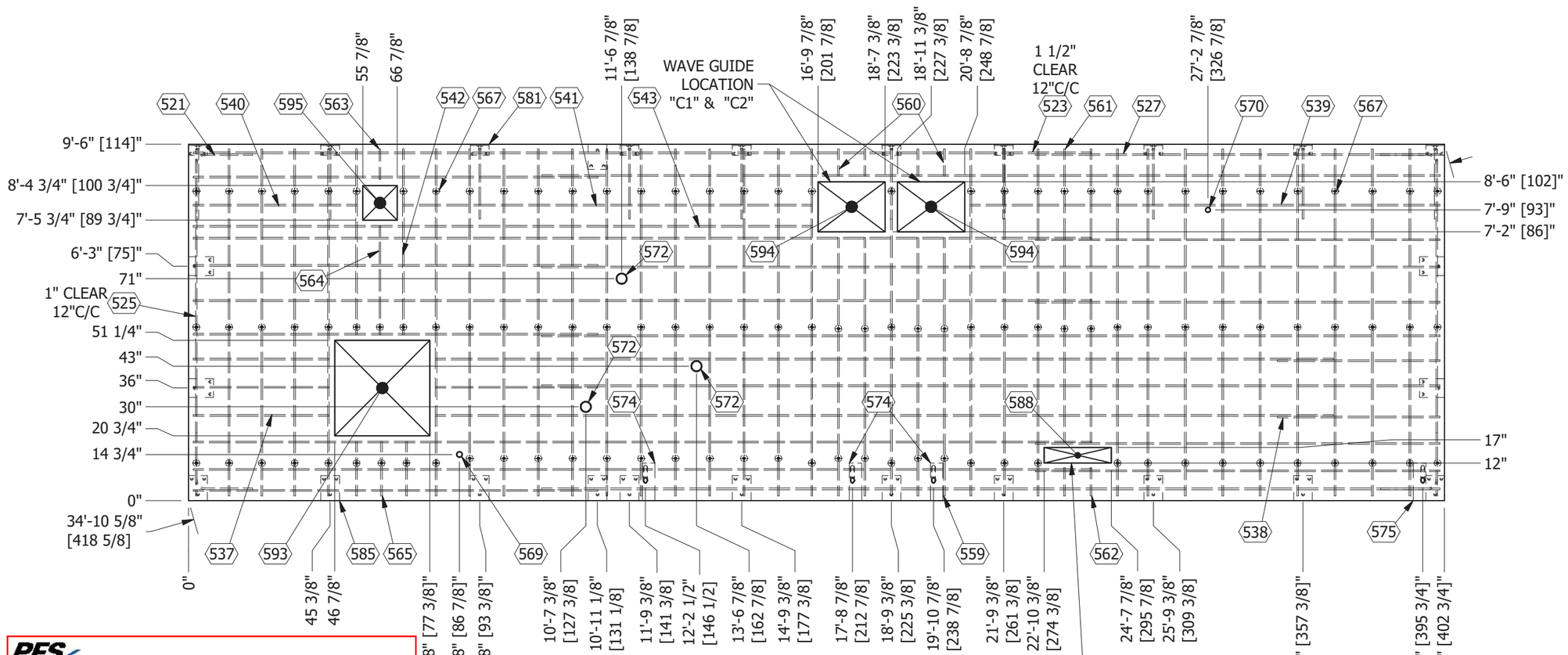
PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
END WALL "B"
STRUCTURAL & MESH LAYOUT

FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *5 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

SUB-PART LIST						SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH	ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
508	10RH3403-01	SIDE WALL HORIZONTAL RAIL ANGLE (PRODUCTION TOOL)				562	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	9.000 in		
513	10RV0906-00	CASTING BED VERT. RAIL ANGLE PH9'6" (PRODUCTION TOOL)				563	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	9.750 in		
521	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in			564	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	35.000 in		
523	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	288.000 in			565	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	17.500 in		
525	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	111.000 in			567	119010	REBAR CHAIR,PLASTIC,#4,1",W/BASE			
527	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	129.750 in			569	170003	PIPE,PVC,SCH 40,1 1/2"	6.000 in		
537	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	43.500 in			570	170004	PIPE,PVC,SCH 40,1 1/4"	6.000 in		
538	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	52.125 in			572	170005	PIPE,PVC,SCH 40,3"	6.000 in		
539	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	150.625 in			574	170400	PIPE,PVC,1",CAST-IN PLATE,45 DEG			
540	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	52.625 in			575	170400	PIPE,PVC,1",CAST-IN PLATE,45 DEG			
541	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	131.500 in			581	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
542	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	59.500 in			585	223100	EMBED PLATE,WALL,1/4"X6"X8"			
543	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	198.625 in			588	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	21.500 in	5.000 in	4.000 in
559	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	82.625 in			593	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	30.500 in	30.500 in	4.000 in
560	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	8.750 in			594	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	21.500 in	16.000 in	4.000 in
561	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	94.000 in			595	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	11.000 in	11.000 in	4.000 in

WEIGHT - 13136.519 lbmass

USE 115 PCF SAND LIGHT-WEIGHT MIX.



STRUCTURAL LAYOUT
SIDE WALL "C"
"EXTERIOR VIEW"
SCALE 1:38
(3.778 CU.YD. CONCRETE)

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

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6/21/2023
No. 79623
Corey Nicholas Mitchel
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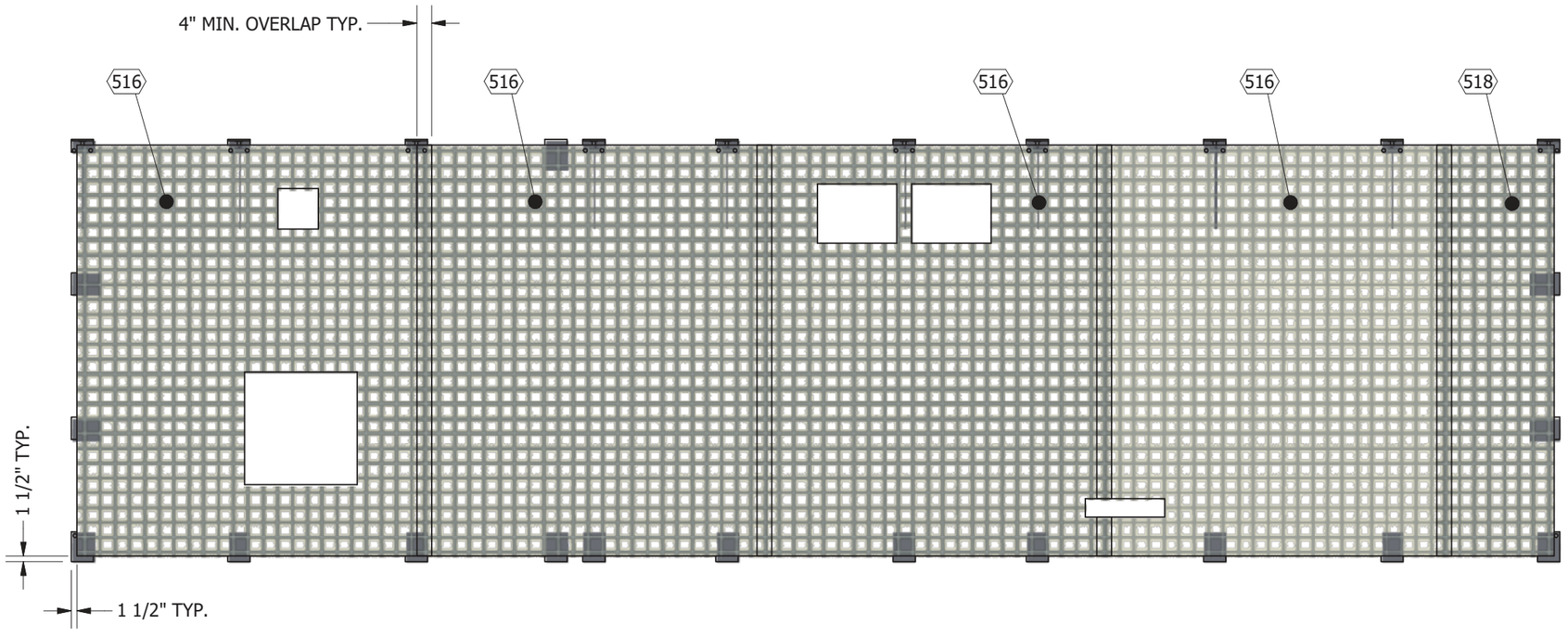
CUSTOMER:
TOWER SYSTEMS SOUTH
FDOT
LAKE CITY, FL

PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
SIDE WALL "C"
STRUCTURAL LAYOUT

FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *6 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
516	*110001*	*MESH,WIRE,4X4,D4XD4,8'X20'*	*111.000 in*	*96.000 in*	
518	*110001*	*MESH,WIRE,4X4,D4XD4,8'X20'*	*111.000 in*	*31.750 in*	

NOTES:
1. CUT WIRE MESH BACK 1 1/2" AROUND ALL BLOCKOUTS.



MESH LAYOUT
SIDE WALL "C"
SCALE 1:38

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: PFS *Mark Peverson*
Title: Staff Plan Reviewer
Date: **6/22/23**

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TOWER SYSTEMS SOUTH
FDOT
LAKE CITY, FL

PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
SIDE WALL "C"
MESH LAYOUT

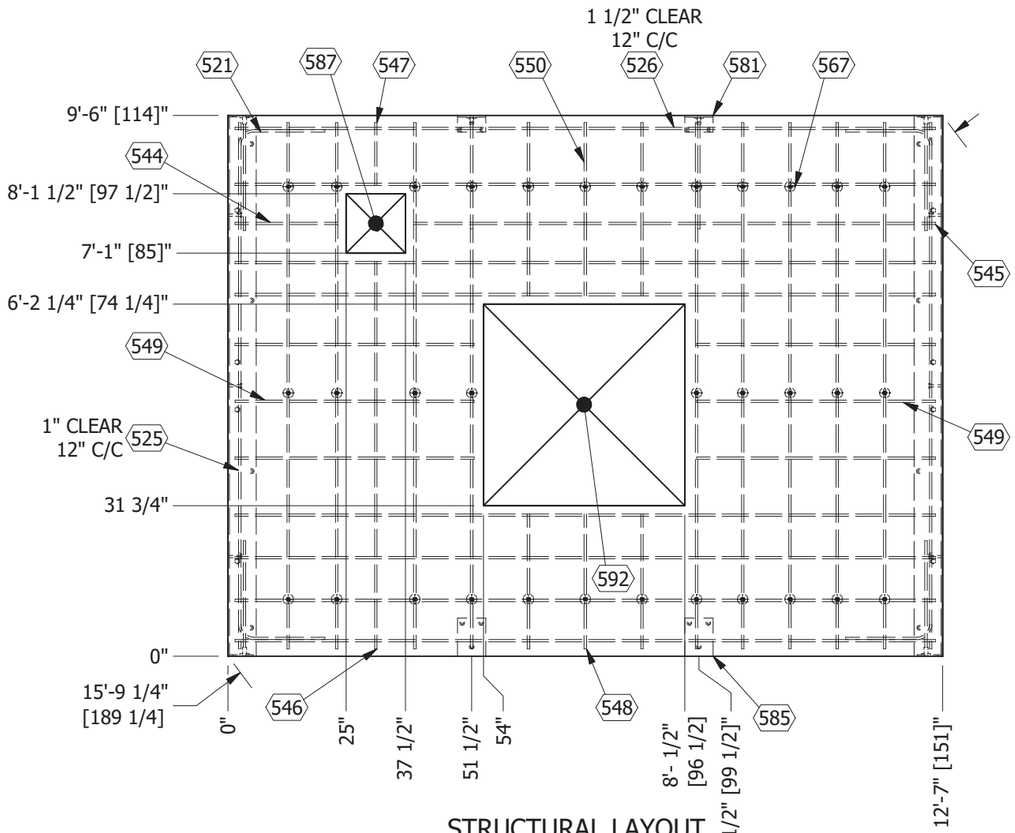
FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *7 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

SUB-PART LIST						SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH	ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
507	10RH1207-00	END WALL HORIZONTAL ANGLE 12'-7" (PRODUCTION TOOL)				547	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	13.250 in		
513	10RV0906-00	CASTING BED VERT. RAIL ANGLE PH9'6" (PRODUCTION TOOL)				548	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	28.500 in		
516	110001	MESH,WIRE,4X4,D4XD4,8'X20'	111.000 in	96.000 in		549	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	50.500 in		
517	110001	MESH,WIRE,4X4,D4XD4,8'X20'	111.000 in	56.000 in		550	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.500 in		
521	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in			567	119010	REBAR CHAIR,PLASTIC,#4,1",W/BASE			
525	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	111.000 in			578	221011	WALL EMBED ANGLE ASSY,6"X4" X 9'3"			
526	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	148.000 in			581	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
544	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	21.750 in			585	223100	EMBED PLATE,WALL,1/4"X6"X8"			
545	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	110.250 in			587	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	12.500 in	12.500 in	4.000 in
546	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	81.750 in			592	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	42.500 in	42.500 in	4.000 in

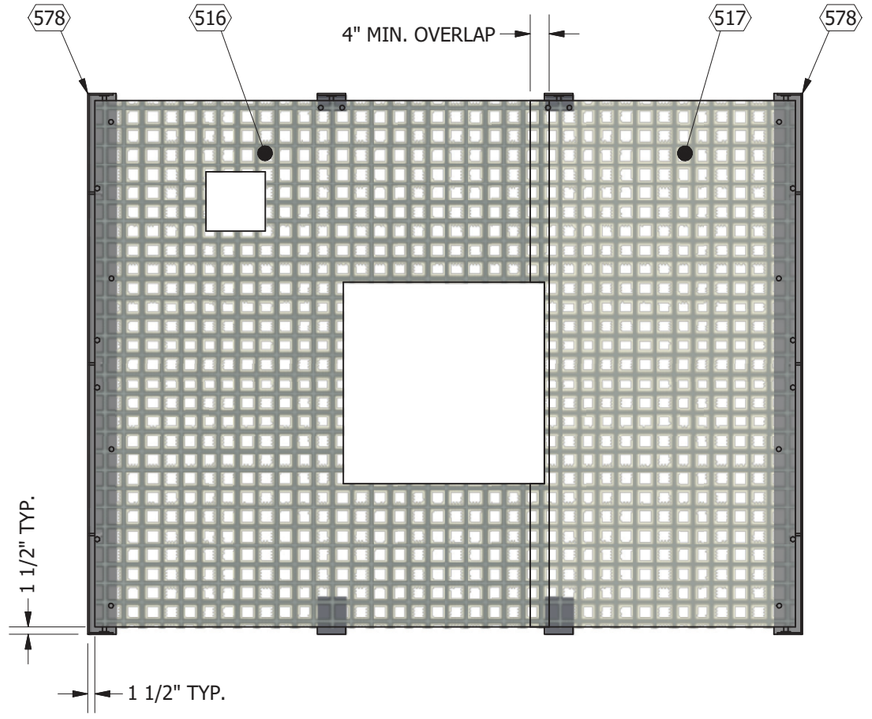
NOTES:
1. CUT WIRE MESH BACK 1 1/2" AROUND ALL BLOCKOUTS.

WEIGHT - 4857.868 lbmass

USE 115 PCF SAND LIGHT-WEIGHT MIX.



STRUCTURAL LAYOUT
END WALL "D"
"EXTERIOR VIEW"
SCALE 1:32
(1.310 CU.YD. CONCRETE)



MESH LAYOUT
END WALL "D"
SCALE 1:32

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

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6/21/2023
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CUSTOMER:
TOWER SYSTEMS SOUTH
FDOT
LAKE CITY, FL

PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
END WALL "D"
STRUCTURAL & MESH LAYOUT

FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *8 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

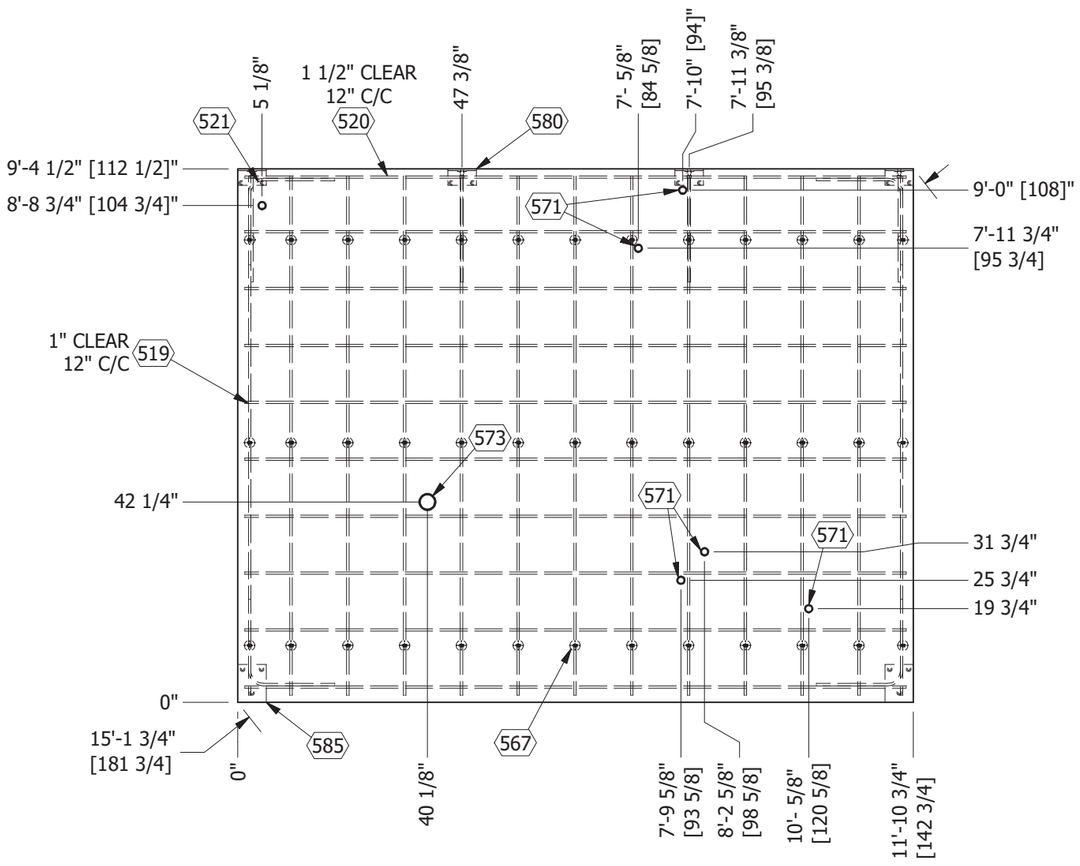
SUB-PART LIST						SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH	ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
506	10RH1111-00	PARTITION WALL TOP RAIL ANGLE, 11'-11" (PRODUCTION TOOL)				567	119010	REBAR CHAIR,PLASTIC,#4,1",W/BASE			
512	10RV0904.5-00	CASTING BED VERT. RAIL ANGLE PH9'4" (PRODUCTION TOOL)				571	170004	PIPE,PVC,SCH 40,1 1/4"	6.000 in		
514	110001	MESH,WIRE,4X4,D4XD4,8'X20'	109.500 in	96.000 in		573	170005	PIPE,PVC,SCH 40,3"	6.000 in		
515	110001	MESH,WIRE,4X4,D4XD4,8'X20'	109.500 in	47.750 in		579	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
519	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	109.500 in			580	222000	INSERT ANGLE,WALL TO ROOF,1/4"			
520	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	139.750 in			585	223100	EMBED PLATE,WALL,1/4"X6"X8"			
521	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	36.000 in								

NOTES:

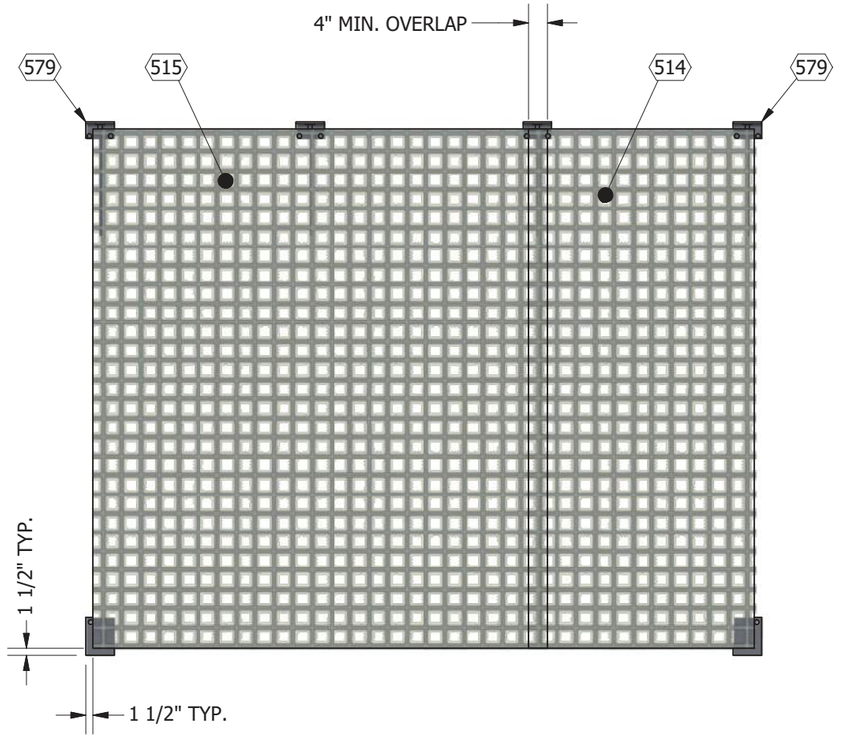
1. CUT WIRE MESH BACK 1 1/2" AROUND ALL BLOCKOUTS.

WEIGHT - 4837.675 lbmass

USE 115 PCF SAND LIGHT-WEIGHT MIX.



STRUCTURAL LAYOUT
PARTITION WALL "E"
SCALE 1:32
(1.377 CU.YD. CONCRETE)



MESH LAYOUT
PARTITION WALL "E"
SCALE 1:32

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Feverson
Title: Staff Plan Reviewer
Date: **6/22/23**

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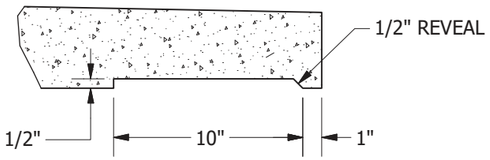
PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
PARTITION WALL "E"
STRUCTURAL & MESH LAYOUT

FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *9 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

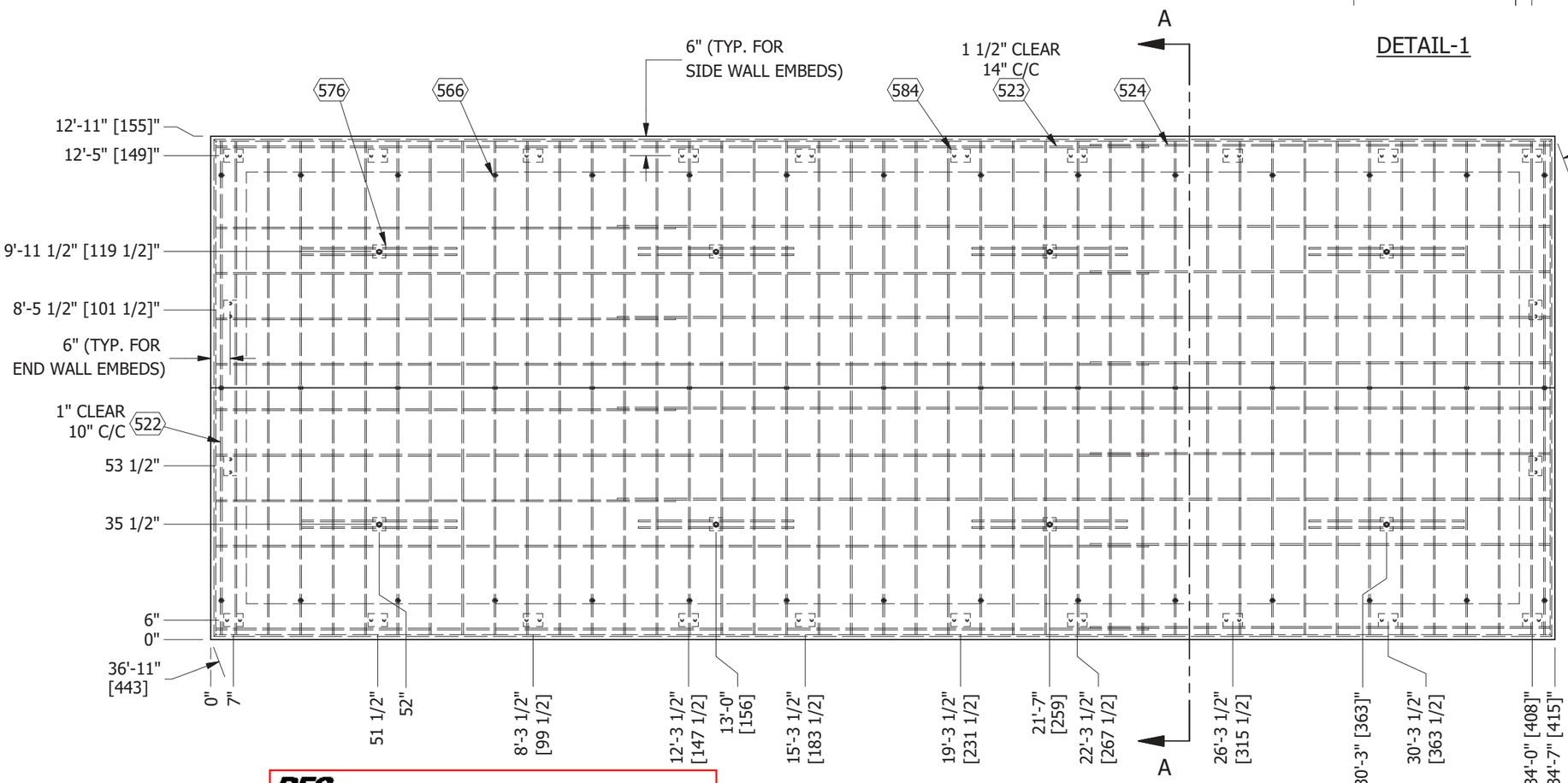
SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
509	10RP1211-00	ROOF RAIL END PLATE , 12'-11",4/5.5 (PRODUCTION TOOL)			
510	10RR1211-00	END WALL ANGLE ROOF RAIL,12'11" (PRODUCTION TOOL)			
511	10RR3407-01	CASTING BED ROOF RAIL SIDE ANGLE 34'-7" (PRODUCTION TOOL)			
522	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	152.000 in		
523	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	288.000 in		

SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH
524	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	142.000 in		
566	119010	REBAR CHAIR,PLASTIC,#4,1",W/BASE			
576	220219-01	ROOF ANCHOR,LIFTING INSERT			
584	223000	INSERT PLATE,ROOF TO 4" WALL,2 STUD			

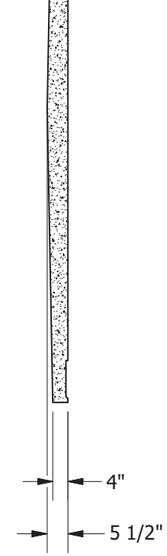
WEIGHT - 22042.504 lbmass
USE 115 PCF SAND LIGHT-WEIGHT MIX.



DETAIL-1



STRUCTURAL LAYOUT
ROOF
SCALE 1:40
(6.434 CU.YD. CONCRETE)



SECTION A-A

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

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PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
CONCRETE ROOF
STRUCTURAL LAYOUT

FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *10 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

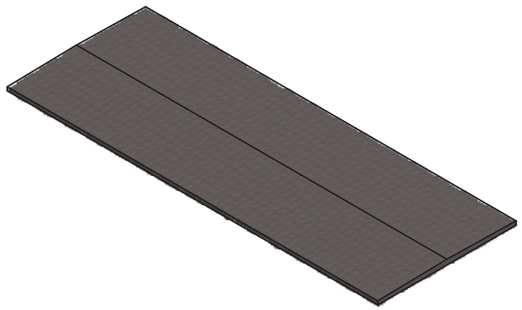
ASSEMBLY ORDER:

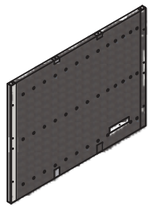
- STEP 1: SET FLOOR IN PLACE AND NOTE 'A' WALL ORIENTATION.
- STEP 2: GRAB END WALL FOR SIDE FURTHEST AWAY FROM CASTING AREA AND SET INTO PLACE ON FLOOR, BRACING WALL AND WELDING DOWN BEFORE UNHOOKING CRANE.
- STEP 3: GRAB SIDE WALL FOR SIDE FURTHEST AWAY FROM CENTER OF WORKING AISLE, SET INTO PLACE, WELD AND UNHOOK CRANE.
- STEP 4: GRAB PARTITION END WALL, SET INTO PLACE, WELD AND UNHOOK CRANE AND REMOVE END WALL BRACES.
- STEP 5: GRAB SECOND SIDE WALL, SET INTO PLACE, WELD AND UNHOOK CRANE AND REMOVE END WALL BRACES.
- STEP 6: GRAB SECOND END WALL, SET INTO PLACE, USE BRACING AND/OR CLAMPS TO CLOSE GAPS, WELD AND UNHOOK CRANE.
- STEP 7: GRAB ROOF, SET INTO PLACE, WELD DOWN AND UNHOOK CRANE.

PFS CORPORATION
Approval Limited to Factory Built Portion Only

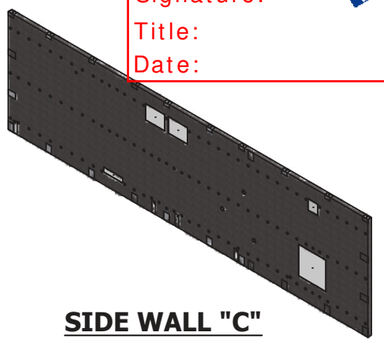
State: **Florida**
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: **6/22/23**

CONCRETE ROOF



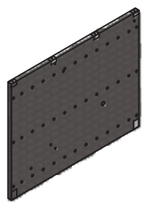


END WALL "B"

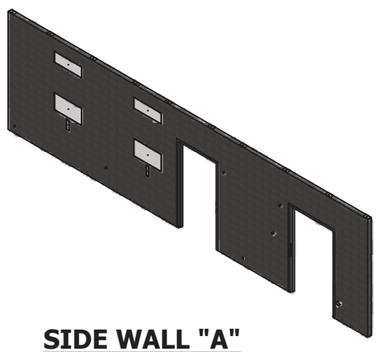


SIDE WALL "C"

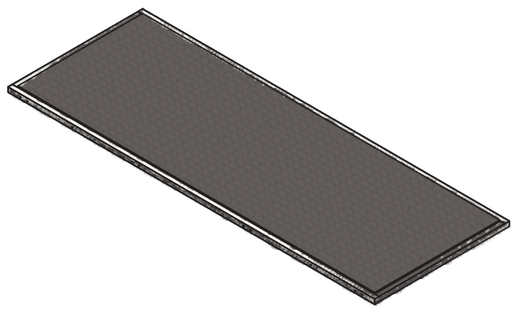
PARTITION WALL "E" VIEW



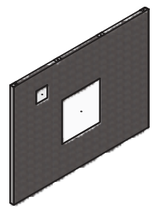
PARTITION WALL "F" VIEW



SIDE WALL "A"



CONCRETE FLOOR



END WALL "D"

Sabre Industries™
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, LA 71111
voice: 318-213-2900
fax: 318-213-2919
www.sabreindustries.com

CUSTOMER:
TOWER SYSTEMS SOUTH
FDOT
LAKE CITY, FL

PROJECT:
12'-7" X 34'-3"
CONCRETE SHELTER
SHELTER ASSEMBLY
EXPLODED LAYOUT

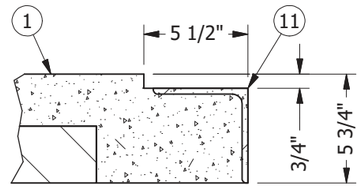
FILENAME: *STWS02S.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *K.ARUNKUMAR*	DATE: *3/7/2023*
CHECKED BY: *S.GULINO*	DATE: *3/7/2023*
APPROVED BY: *M.FOUQUETTE*	DATE: *3/7/2023*
SHEET NO.: *11 OF 11*	
DRAWING NO.: ***STWS02S***	REV: ***IR***

PARTS LIST					
ITEM	QTY	U/M	P/N	DEPT	DESCRIPTION
1	5.560	CU.YD.	100052-002	10	CONCRETE, 1 CUBIC YARD BATCH, FLOOR
2, 3	2.724	EA.	110001	10	MESH,WIRE,4X4,D4XD4,8'X20'
4	48	FT.	112502	10	REBAR,#4 (1/2") #13 METRIC,GRADE 60
5, 6, 7, 8	598.167	FT.	112503	10	REBAR #6 (3/4") #19 METRIC,GRADE 60
9	60	EA.	119013	10	REBAR CHAIR, PLASTIC, MESH WITH BASE 1"
10	90	EA.	119016	10	REBAR CHAIR, PLASTIC, #6, 3/4"
11	1	EA.	22-1207X3403-00	10	PMTR ANGLE FRAME ASSY H.S. 12'-7" X 34'-3"
12	645	FBM	360151	10	INSULATION,EPS,FOAM,RAW MATL B-FOOT

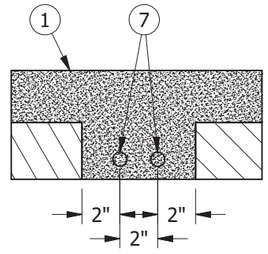
CUT LIST						
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	DEPTH	PCS
2	110001	MESH,WIRE,4X4,D4XD4,8'X20'	148.000 in	96.000 in		4
3	110001	MESH,WIRE,4X4,D4XD4,8'X20'	148.000 in	40.000 in		1
4	112502	REBAR,#4 (1/2") #13 METRIC,GRADE 60	288.000 in			2
5	112503	REBAR #6 (3/4") #19 METRIC,GRADE 60	138.000 in			2
6	112503	REBAR #6 (3/4") #19 METRIC,GRADE 60	288.000 in			3
7	112503	REBAR #6 (3/4") #19 METRIC,GRADE 60	148.000 in			38
8	112503	REBAR #6 (3/4") #19 METRIC,GRADE 60	138.000 in			3
12	360151	INSULATION,EPS,FOAM,RAW MATL B-FOOT	16.000 in	64.500 in	3.000 in	30

WEIGHT - 19654.113 lbmass

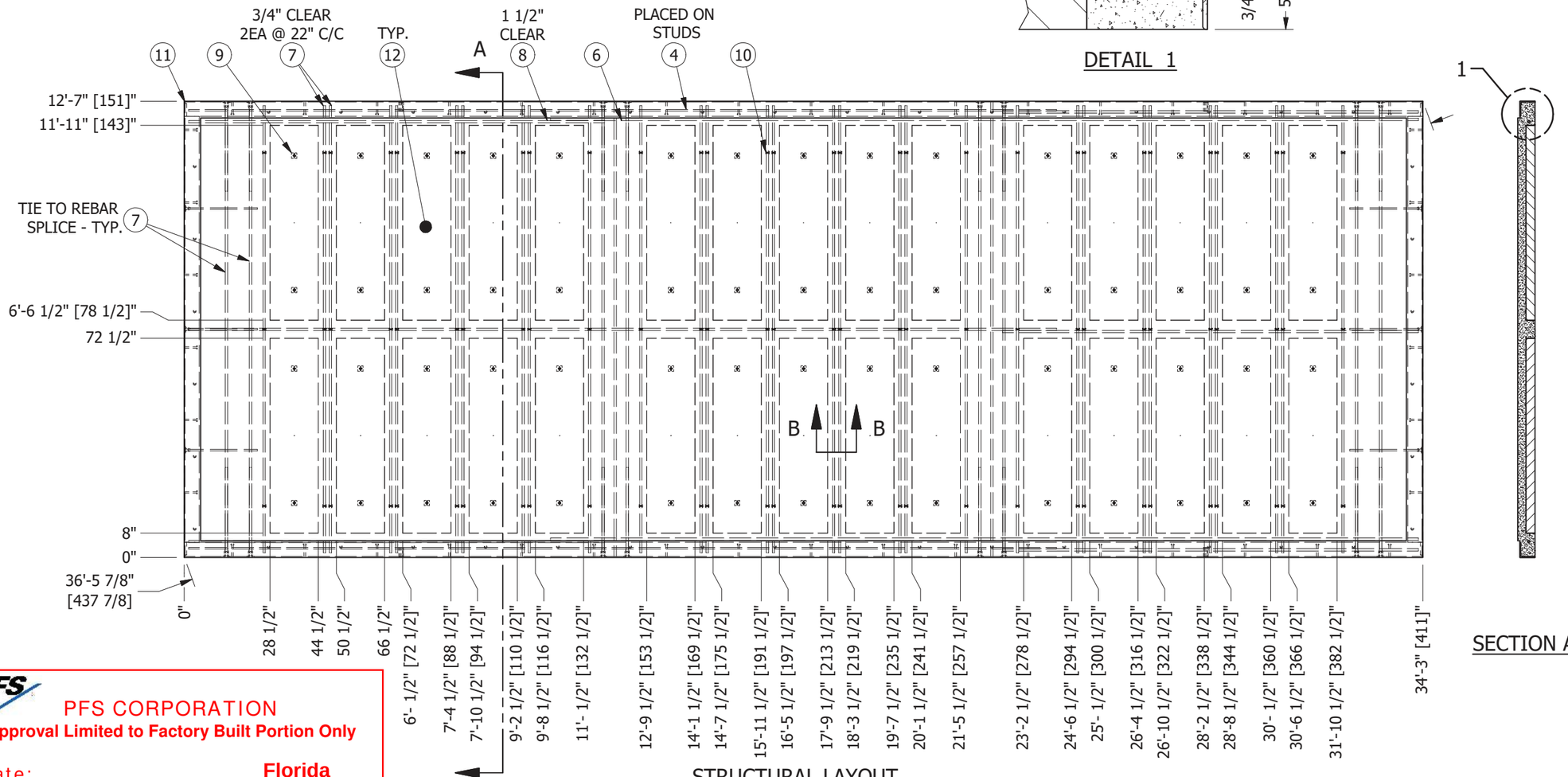
USE 115 PCF SAND LIGHT-WEIGHT MIX.



DETAIL 1



SECTION B-B



STRUCTURAL LAYOUT
CONCRETE FLOOR
SCALE 1:40
(5.560 CU. YD. CONCRETE)

SECTION A-A

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

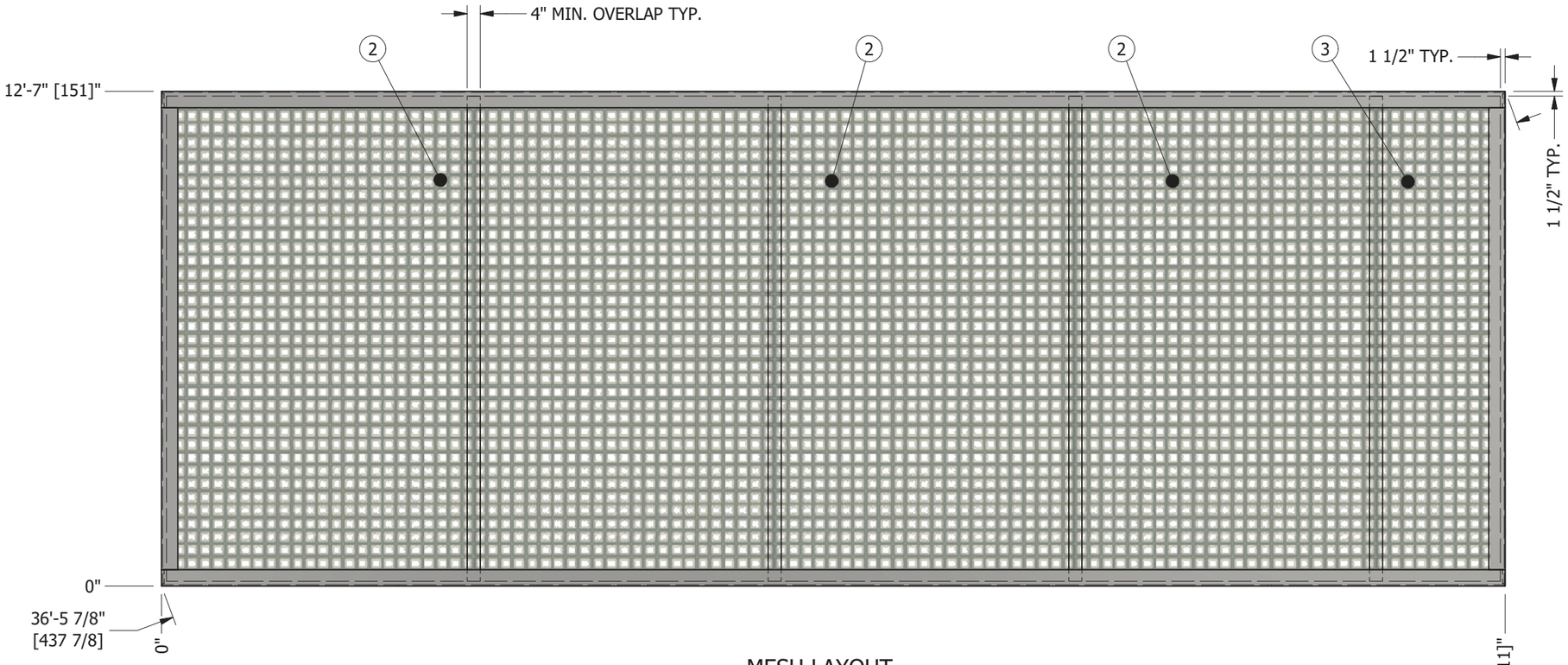
Sabre Industries™
INNOVATION DELIVERED
5031 Hazel Jones Road
Bossier City, LA 71111
voice: 318-213-2900
fax: 318-213-2919
www.sabreindustries.com

CUSTOMER:

PROJECT:
CONCRETE FLOOR
12'-7" X 34'-3"
ASSEMBLY KIT
STRUCTURAL LAYOUT

FILENAME: *221-1207X3403-00.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *MD.ARFAZ*	DATE: *8/29/2022*
CHECKED BY: *S.GULINO*	DATE: *8/29/2022*
APPROVED BY: *C.MITCHEL*	DATE: *8/29/2022*
SHEET NO.: *1 OF 2*	
DRAWING NO.: ***221-1207X3403-00***	REV: ***IR***

SUB-PART LIST					
ITEM	P/N	DESCRIPTION	LENGTH	WIDTH	PCS
2	*110001*	*MESH,WIRE,4X4,D4XD4,8'X20'*	*148.000 in*	*96.000 in*	*4*
3	*110001*	*MESH,WIRE,4X4,D4XD4,8'X20'*	*148.000 in*	*40.000 in*	*1*



MESH LAYOUT
CONCRETE FLOOR
SCALE 1:40

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: **Florida**
Signature: *Mark Feverson*
Title: Staff Plan Reviewer
Date: **6/22/23**

COREY NICHOLAS MITCHEL
LICENSE
6/21/2023
No. 79623
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

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5031 Hazel Jones Road
Bossier City, LA 71111
voice: 318-213-2900
fax: 318-213-2919
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CUSTOMER:

PROJECT:
CONCRETE FLOOR
12'-7" X 34'-3"
ASSEMBLY KIT
MESH LAYOUT

FILENAME: *221-1207X3403-00.dwg*	
SCALE: *AS NOTED*	TOLERANCE:
DRAWN BY: *MD.ARFAZ*	DATE: *8/29/2022*
CHECKED BY: *S.GULINO*	DATE: *8/29/2022*
APPROVED BY: *C.MITCHEL*	DATE: *8/29/2022*
SHEET NO.: *2 OF 2*	
DRAWING NO.: ***221-1207X3403-00***	REV: ***IR***