COASTLINE
POWER SOLUTIONS

ENGINEERING STRUCTURAL CALCULATIONS
For
Gillette 110" Frame Gensets

March 12, 2025

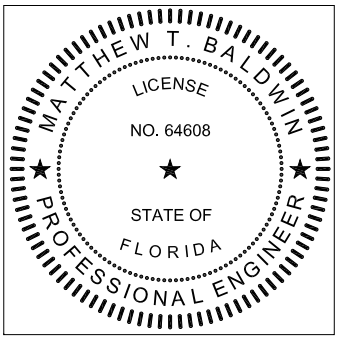
110" Frame Genset Models:

SP-1500	**SPD-1500**
SPJD-1550	**SPD-2000**
SPJD-2100	

Location: Florida

Designed in compliance with: **2023 Florida Building Code, 8th Edition**
ASCE 7 - 22 Minimum Design Loads for Buildings and Other Structures
2020 Aluminum Association Design Manual
ANSI/AISC 360-22 - Specification for Structural Steel Buildings

Anchoring: 1/2" Bolt/Anchors - Minimum (6) per side (12) total



Digitally signed by Matthew Baldwin
Date: 2025.03.12 14:26:30 -04'00'

This item has been digitally signed and sealed by Matthew T. Baldwin, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Matthew T. Baldwin, P.E.
Florida License #64608

Project Information

Project Name/Model #	- Gillette 110" Frame Gensets
Project Number	-
Project Description	- Sound Attenuated Generator Enclosure
Project Location	- Florida
Customer	-
Mounting Location	- Ground

Enclosure Materials

Roof Beam	- 14 Gage Truss - CRS
Roof Panels	- 0.080 Aluminum Panel - 5052-H34
Wall Panels	- 0.080 Aluminum Panel - 5052-H34
Base Frame/Skid	- Aluminum Formed Steel 'C' Channel

Components

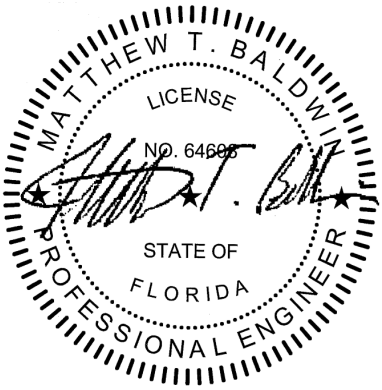
GenSet Manufacturer	- Gillette
GenSet Size and Model	- SP-1500,SPJD-1550,SPJD-2100,SPD-1500,SPD-2000 Supported by - Base
Base	- Aluminum Formed Steel 'C' Channel

Fasteners/Hardware

		Bolt Size	Washer	Nut	Grade/Finish
Roof to Walls	-	5/16" - 18 Bolts	5/16" Washer	Nut Clip	Grade 18-8/SS
Wall to Wall	-	5/16" - 18 Bolts	5/16" Washer	Nut Clip	Grade 18-8/SS
Walls to Base	-	5/16" - 18 Bolts	5/16" Washer	Nut Clip	Grade 18-8/SS
Base to Slab/Tank	-	1/2" Set Bolt Anchors	Flat Washers	Hex Nuts	Grade 5/Galv.

Specification Requirements

Wind Speed	-	200	mph
Exposure Category	-	D	
Risk Category	-	III	
Ground Snow Load (P_g Fig 7.1)	-	0	psf
Ice Thickness (t Fig 10-2 to10-6)	-	0.25	in
and Concurrent Wind Gust (V_c)	-	30	mph
Seismic Site Class		B	

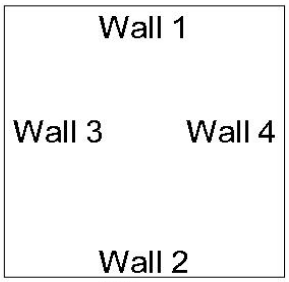


Matthew T. Baldwin, P.E.
Florida License #64608

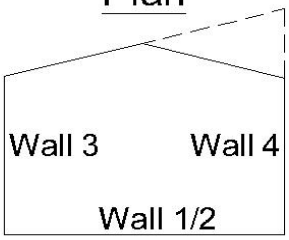
Enclosure Dimensions & Component Weights

Gillette 110" Frame Gensets

Roof Style- Flat



Plan



Elevation

Enclosure Dimensions (ft)

Wall	Length (ft)		Height (ft)
1	4.02	x	5.36
2	4.02	x	5.36
3	12.18	x	5.36
4	12.18	x	5.36

Base Dimensions

Width (Wall 1/2 Side)	=	48	in
Length (Wall 3/4 Side)	=	110	in
Height	=	7	in

Roof/Eave Information

Roof Pitch Angle - *(θ)*	=	0.0	Degrees
Eave/Roof Height - *h*	=	5.943	

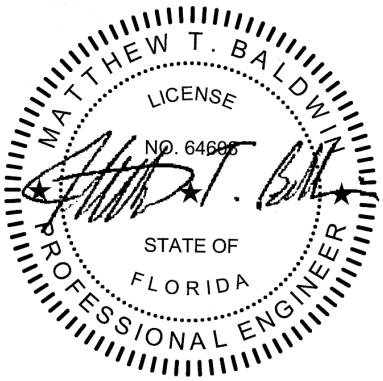
Structure Areas

Walls 1/2 Area -	*(w1)* =	23.9	ft^2 =	3,440	in^2
Walls 3/4 Area -	*(w3)* =	72.4	ft^2 =	10,424	in^2
Roof Area -	*(R)* =	49.0	ft^2 =	7,051	in^2

Base Side 1/2	*(T1)* =	336.0	in2
Base Side 3/4	*(T3)* =	770.0	in2

Component Weights (lightest setup for worst case)

Genset	=	0	lbs	(Varies, so will use zero to be conservative/most uplift to resist)
Enclosure	=	225	lbs	(Based on Aluminum to be conserative/most uplift to resist)
Base	=	175	lbs	(Based on Aluminum to be conserative/most uplift to resist)



Matthew T. Baldwin, P.E.
Florida License #64608

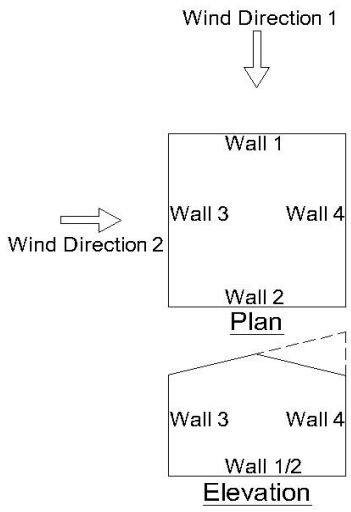
MWFRS Net Pressures

Gillette 110" Frame Gensets

Wind

Analytical Procedure method and Load Combinations from ASCE 7 are utilized in these calculations.

Enclosure Classification	-	Enclosed	
Exposure Category	-	D	
Basic Wind Speed	(V)	200	mph
Importance Factor (Wind)	(I_w)	1.15	
Wind Directionality Factors	(K_d)	0.85	
Internal Pressure Coefficients	(GC_{pi})	± 0.18	
Velocity Pressure Exposure Coefficient	(K_z)	1.03	
Roof Mean Height Above Ground Level	(z)	6.53	ft
Velocity Pressure	(q)	103.12	psf



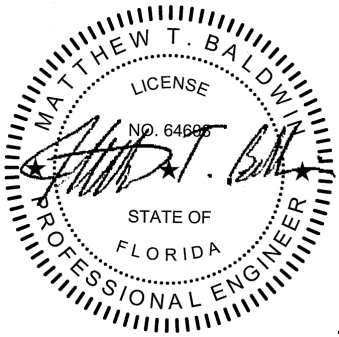
Wind Direction 1

		Enclosure							
		Wall #			Roof				
		1	2	3&4	Parallel to Ridge				
					$(C_p)1$ (Distance From Windward Edge)				$(C_p)2$
		Windward	Leeward	Side	0 to 3.0	3.0 to 5.9	5.9 to 11.9	> 11.9	
Background Response Factor	(Q)	0.97	0.97	0.96	0.97				
Gust Effect Factors	(G)	0.91	0.91	0.91	0.91				
External Pressure Coefficients	(C_p)	0.80	-0.249	-0.70	-0.90	-0.90	-0.50	-0.3	-0.18
Net Pressures with + (GC_{pi}) - psf	(Net_{p+})	56.7	-42.0	-84.1	-103.3	-103.3	-65.6	-46.8	-35.5
Net Pressures with - (GC_{pi}) - psf	(Net_{p-})	93.9	-4.8	-46.9	-66.1	-66.1	-28.5	-9.7	1.6

Wind Direction 2

		Enclosure								
		Wall #			Roof - Normal To Ridge					
		3	4	1&2						
					$(C_p)1$ (Distance From Windward Edge)				$(C_p)2$	
		Windward	Leeward	Side	0 to 3.0	> 3.0				
Background Response Factor	(Q)	0.96	0.96	0.97	0.96					
Gust Effect Factors	(G)	0.91	0.91	0.91	0.91					
External Pressure Coefficients	(C_p)	0.80	-0.5	-0.70	-1.04	-0.70			-0.18	
Net Pressures with + (GC_{pi}) - psf	(Net_{p+})	56.3	-65.3	-84.4	-115.9	-84.1			-35.4	
Net Pressures with - (GC_{pi}) - psf	(Net_{p-})	93.4	-28.2	-47.3	-78.8	-46.9			1.7	

Plus and minus signs signify pressures acting toward or away from the surfaces, respectively.



Matthew T. Baldwin, P.E.
Florida License #64608

Snow

Importance Factor (Snow)	(I_s)	1.1	
Exposure Factor	(C_e)	0.8	
Thermal Factor	(C_t)	1.2	
Slope Factor	(C_s)	1.0	
Flat Roof Snow Load	(p_s)	0	psf

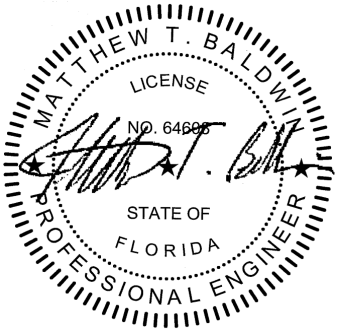
Seismic

Importance Factor (Seismic)	(I_{sm})	1.25		
Mapped Acceleration Parameter	(S_s)	0.14	Figures 22-1 Thru 22-14	
Mapped Acceleration Parameter	(S_1)	0.07	Figures 22-1 Thru 22-14	
Site Coefficient	(F_a)	1		
Site Coefficient	(F_v)	1		
MCE Spectral Resp. Accel. Short Per.	(S_{MS})	0.140		
MCE Spectral Resp. Accel. 1-s Period	(S_{M1})	0.07		
Design Spectral Accel. Short Period	(S_{DS})	0.093		
Design Spectral Accel. 1-s Period	(S_{D1})	0.04667		
Fundamental Period of Structure	(T_a)	0.070	sec	
Long Period Transistion Period	(T_L)	8	sec	Figure 22-15 Thru 22-20
Seismic Design Category	-	A		
Total Effective Seismic Weight	(W_{eff})	923	lbs	
Response Modification Coeficient	(R)	2	Table 12.2-1	
System Overstrength Factor	(Ω_o)	2.5	Table 12.2-1	
Deflection Amplification Factor	(C_d)	2	Table 12.2-1	
Seismic Response Coefficient	(C_s)	0.058		

Resultant Seismic Forces

Horizontal Seismic Load Effect	-	(E_h)	
Force at Base of Base	=	0.0	kips
Force at Top of Base	=	0.0	kips
Force at Top/Bottom of Enclosure	=	0.002	kips
Force on Silencer	=	0	kips

Vertical Seismic Load Effect (E_v) = 0 (Factor, Used With Deadweight in Load Combinations)



Matthew T. Baldwin, P.E.
Florida License #64608

Structural Calculations - Roof

Gillette 110" Frame Gensets

Critical Loads & Pressures

Wind Pressures

Downforce	1.719	psf	=	0.01 psi
Uplift	-115.9	psf	=	-0.80 psi

Snow Pressure

0 psf = 0.000 psi

Seismic Load

Horizontal	=	2 lbs
Vertical Factor	=	0

Roof Live Load

Downforce 20.0 psf = 0.1389 psi or 300 lbs Concentrated Load

Pressures & loads are the numerical maximums to be analyzed for shear, bending tension, and compression.

Section Properties

14 Gage Truss - CRS

Cross Sectional Area	(A)	= 0.48	in^2
Moment of Inertia - x	(I_x)	= 0.620	in^4
Moment of Inertia - y	(I_y)	= N/A	in^4
Section Modulus - x	(S_x)	= 0.640	in^3
Section Modulus - y	(S_y)	= N/A	in^3
Radius of Gyration - x	(r_x)	= 1.130	in
Radius of Gyration - y	(r_y)	= N/A	in

Weight	(ω)	= 0.120	lbs/in
Modulus of Elasticity	(E)	= 2.90E+04	ksi
Safety Factor	(Ω)	= 1.95	
Plastic Section Mod. - x	(Z_x)	= 0.18	
Plastic Section Mod. - y	(Z_y)	= 0.18	
Tensile Ultimate Strength	(F_{tu})	= 58	ksi
Tensile Yield Strength	(F_{ty})	= 36	ksi
Compressive Yield Strength	(F_{cy})	= 22	ksi
Shear Ultimate Strength	(F_{su})	= 36	ksi

Roof Frame Calculations

Member Designed for Forces Acting on the Strong Axis

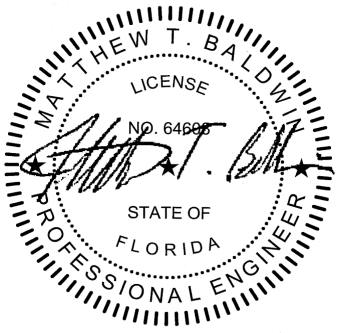
Interior Beam Critical Member Dimensions

Interior Beam Length	(L_i)	= 47.8	in
Load Spanned Width	(W_i)	= 54.9	in

Interior Beam Calculated Forces

Distributed Loads

Weight of Beam	(ω)	= 0.090	lbs/in
Wind Load Downforce	(w_d)	= 0.502	lbs/in
Wind Load Uplift Force	(w_u)	= -34.230	lbs/in



Matthew T. Baldwin, P.E.
Florida License #64608

Shear Forces (Maximum at End)

Beam Weight Shear	(V_b)	=	1.75	lbs
Wind DownForce Shear	(V_{wd})	=	9.7	lbs
Wind Uplift Shear	(V_{wu})	=	-664.3	lbs
Total Shear Downward		=	11.5	lbs
Total Shear Upward		=	662.5	lbs
Design Shear	(V_{bi})	=	662.5	lbs

Stress Forces (Bending)

Beam Weight Moment	(M_b)	=	11	lb·in
Wind Downforce Moment	(M_d)	=	47	lb·in
Wind Uplift Moment	(M_u)	=	-3,223	lb·in
Total Moments Downward		=	59	lb·in
Total Moments Upward		=	3,211	lb·in
Design Moment	(M_T)	=	3,211	lb·in
Design Stress	(σ_{bi})	=	8,921	psi

Interior Beam Design Calculations

Allowable Shear Strength

Slenderness Limit 1	(S_1)	=	-20.08	
Slenderness Limit 2	(S_2)	=	102.40	
Slenderness Ratio	(S)	=	18.0	
Allowable Shear Stress		=	9,856	psi
Allowable Shear Strength	(V_n)	=	3,548	lbs

Conclusion

(V_{bi}) 663 lbs < (V_n) 3,548 lbs **OK**

Allowable Stresses For Tension And Compression (Bending)

Tension

Allowable Tensile Stress (F_t) = 16,000 psi

Compression

Slenderness Limit 1	(S_1)	=	25.0	
Slenderness Limit 2	(S_2)	=	125.0	
Slenderness Ratio	(S)	=	41.3	

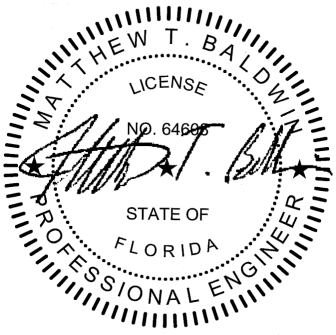
Allowable Compressive Stress (F_c) = 13,121 psi

The Allowable Compressive Stress is the controlling failure design

Therefore, (F_b) = 13,121 psi

Conclusion

(σ_{bi}) 8,921 psi < (F_b) 13,121 psi **OK**



Matthew T. Baldwin, P.E.
Florida License #64608

Entire Roof Uplift Calculations

Roof Area

Area of Roof Subjected to Uplift (R) = 7,051 in^2 (not including discharge hood area)

Roof Uplift Calculated Forces

Roof Weight	(ω_a)	=	102	lbs
Wind Load Uplift Force	(w_{ru})	=	-5,674	lbs
Total Roof Design Uplift	(W_{ru})	=	-5,572	lbs

Mounting Hardware - Roof Frame to Wall Panels

Screws Along Length - 1 Side	=	6	5/16" - 18 Bolts
Screws Along Width - 1 Side	=	3	5/16" - 18 Bolts
Total Mounting Screws	=	18	5/16" - 18 Bolts

Entire Roof Uplift Design Calculations

Grade 18-8/SS Ult. Strength	=	150,000	psi
5/16" Bolt Nominal Diameter	=	0.255	in
5/16" Bolt Effective Area	=	0.051	in^2
5/16" Bolt Threads per Inch	=	18	
Washer Nominal Diameter	=	0.875	in
Wall Panel Tensile Ult. Strength	=	34	ksi
Wall Panel Tensile Yield Strength	=	26	ksi
Safety Factor	=	3	
Wall Panel Nominal Thickness	=	0.0620	in
Maximum Tensile Strength	=	439.2	lbs
Maximum Shear/Bearing Strength	=	408.6	lbs
Max. Tensile Load per Bolt	=	408.6	lbs
Max. Total Screws Tensile Strength (P_{ts})	=	7,354	lbs

Conclusion

(W_{ru}) 5,572 lbs < (P_{ts}) 7,354 lbs **OK**

Roof Panel Uplift Calculations

Roof Panel Critical Member Dimensions

Critical Panel Length	(L_p)	=	54.90	in
Critical Panel Width	(W_p)	=	48.00	in

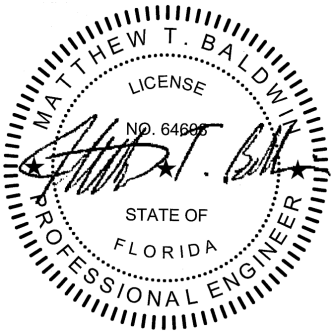
Roof Panel Uplift Calculated Forces

Distributed Loads

Wind Load Uplift Force (w_{pu}) = 2,120.6 lbs

Mounting Hardware - Roof Panel to Roof Frame

Screws Along Length - 1 Side	=	3	5/16" - 18 Bolts	- Grade 18-8/SS
Screws Along Width - 1 Side	=	3	5/16" - 18 Bolts	- Grade 18-8/SS



Matthew T. Baldwin, P.E.

Florida License #64608

Roof Panel Uplift Design Calculations

Grade 18-8/SS Ult. Strength	=	150,000	psi
5/16" Bolt Nominal Diameter	=	0.255	in
5/16" Bolt Effective Area	=	0.051	in^2
5/16" Bolt Threads per Inch	=	18	
Washer Nominal Diameter	=	0.875	in
Roof Panel Tensile Ult. Strength	=	34	ksi
Roof Panel Tensile Yield Strength	=	26	ksi
Safety Factor	=	3	
Roof Panel Nominal Thickness	=	0.0800	in

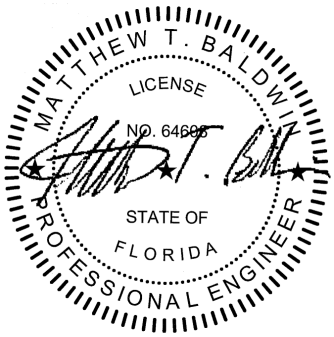
		Roof Frame
Maximum Tensile Strength	=	439.2
Maximum Shear/Bearing Strength	=	408.6
Max. Tensile Load per Screw	=	408.6

(Accounts for screw pull-over and pull-out strengths)

Max. Total Screws Tensile Strength (P_{ts}) = 4,903 lbs

Conclusion

(w_{pu}) 2,121 lbs < (P_{ts}) 4,903 lbs **OK**



Matthew T. Baldwin, P.E.
Florida License #64608

Structural Calculations - Wall Panel

Gillette 110" Frame Gensets

Critical Loads & Pressures

Walls 1 & 2

Maximum Pressures Acting:

Toward	93.9	psf	=	0.6518	psi
Away	-84.4	psf	=	-0.5864	psi

Walls 3 & 4

Maximum Pressures Acting:

Toward	93.4	psf	=	0.6488	psi
Away	-84.1	psf	=	-0.5838	psi

Roof Forces on Critical Panel (From Roof Frame Calculations)

Maximum Downforce	(W_d)	=	1,081	lbs
Wind Load Uplift Force	(w_{pu})	=	2,121	lbs

Pressures and weights are the numerical maximums to be analyzed for shear, tension, and compression.

Critical Wall Panel Dimensions

Critical/Maximum Panel Width	=	45.50	in
Critical/Maximum Panel Height	=	64.00	in

Section Properties

0.080 Aluminum Panel - 5052-H34

Cross Sectional Area	(A)	=	3.79	in^2
Moment of Inertia - x	(I_x)	=	0.052	in^4
Moment of Inertia - y	(I_y)	=	N/A	in^4
Section Modulus - x	(S_x)	=	0.802	in^3
Section Modulus - y	(S_y)	=	N/A	in^3
Radius of Gyration - x	(r_x)	=	0.112	in
Radius of Gyration - y	(r_y)	=	N/a	in
Weight	(ω)	=	0.026	lbs/in^2
Modulus of Elasticity	(E)	=	1.02E+04	ksi
Safety Factor	(Ω)	=	1.67	
Plastic Section Mod. - x	(Z_x)	=	0.13	
Plastic Section Mod. - y	(Z_y)	=	0.13	

Tensile Ultimate Strength	(F_{tu})	=	34	ksi
Tensile Yield Strength	(F_{ty})	=	26	ksi
Compressive Yield Strength	(F_{cy})	=	24	ksi
Shear Ultimate Strength	(F_{su})	=	20	ksi

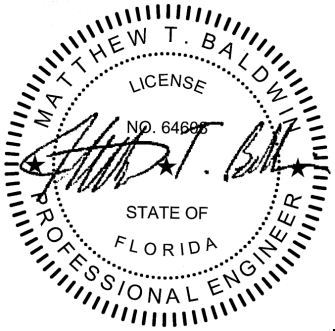
Wall Panel Calculations

Critical Wall Area

Area of Wall Panel	(W)	=	2,912.0	in^2

Mounting Hardware - Roof Frame to Wall Panels

Screws Along Height - 1 Side	=	4	5/16" - 18 Bolts
Screws Along Width - 1 Side	=	8	5/16" - 18 Bolts
Total Mounting Screws	=	24	5/16" - 18 Bolts



Matthew T. Baldwin, P.E.
Florida License #64608

Grade 5 Ultimate Strength	=	150,000	psi
5/16" Bolt Nominal Diameter	=	0.255	in
5/16" Bolt Effective Area	=	0.051	in^2
5/16" Bolt Threads per Inch	=	18	
Washer Nominal Diameter	=	0.875	in
Roof Panel Tensile Ult. Strength	=	34	ksi
Roof Panel Tensile Yield Strength	=	26	ksi
Safety Factor	=	3	
Roof Panel Nominal Thickness	=	0.0800	in

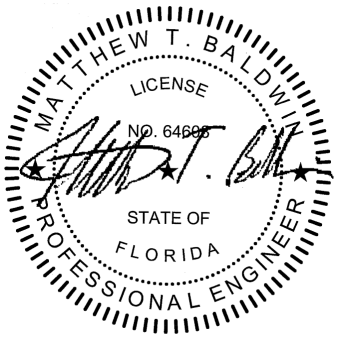
		Roof Frame
Maximum Tensile Strength	=	388.7
Maximum Shear/Bearing Strength	=	300.0
Max. Tensile Load per Bolt	=	300.0

(Accounts for screw pull-over and pull-out strengths)

Max. Total Screws Tensile Strength (P_{ts}) = 6,391 lbs

Conclusion

(w_{pu}) 1,898 lbs < (P_{ts}) 6,391 lbs **OK**



Matthew T. Baldwin, P.E.
Florida License #64608

Structural Calculations - Enclosure to Base

Gillette 110" Frame Gensets

Critical Pressures & Loads

To determine maximum moment forces, pressures are algebraically combined relative to toward or away forces (+ & -) and each wind direction.

Wind Direction 1

To be conservative, roof downforce is neglected.

Net Pressures with + Internal Pressure*(+Gcpi)*

Walls 1 & 2	-	98.7	psf =	0.6853	psi
Wall 3 or 4	-	84.1	psf =	0.5838	psi
Roof Uplift	-	103.3	psf =	0.7172	psi

Net Pressures with - Internal Pressure*(-Gcpi)*

Walls 1 & 2	-	98.7	psf =	0.6853	psi
Wall 3 or 4	-	46.9	psf =	0.3260	psi
Roof Uplift	-	66.1	psf =	0.4594	psi

Wind Direction 2

Net Pressures with + Internal Pressure*(+Gcpi)*

Walls 3 & 4	-	121.6	psf =	0.8448	psi
Wall 1 or 2	-	84.4	psf =	0.5864	psi
Roof Uplift	-	115.9	psf =	0.8047	psi

Net Pressures with - Internal Pressure*(-Gcpi)*

Walls 3 & 4	-	121.6	psf =	0.8448	psi
Wall 1 or 2	-	47.3	psf =	0.3286	psi
Roof Uplift	-	78.8	psf =	0.5469	psi

Seismic

Horizontal Seismic Force (E_h) = 2 lbs

Enclosure Critical Dimensions & Weights

Total Enclosure Weight		(W_t)	=	225	lbs	(Includes all components)
Walls 1/2 Area	-	*(w1)*	=	3440.5	in^2	
Walls 3/4 Area	-	*(w3)*	=	10424.1	in^2	
Roof Area	-	*(R)*	=	7050.8	in^2	

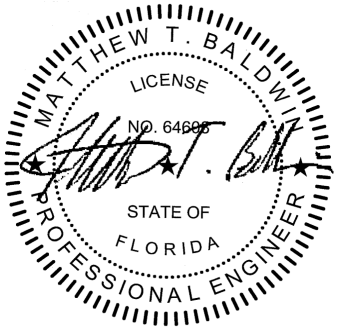
Enclosure Calculated Forces

Maximum Wind Load Forces on Walls

Wind Direction 1

Net Forces with + Internal Pressure*(+Gcpi)*

Walls 1/2	-	=	2,358	lbs
Wall 3 or 4	-	=	6,085	lbs
Roof Uplift	-	=	5,057	lbs



Matthew T. Baldwin, P.E.
Florida License #64608

Net Forces with - Internal Pressure *(-Gcpi)*

Walls 1/2	-	=	2,358	lbs
Wall 3 or 4	-	=	3,398	lbs
Roof Uplift	-	=	3,239	lbs

Wind Direction 2

Net Forces with + Internal Pressure *(+Gcpi)*

Walls 3/4	-	=	8,806	lbs
Wall 1 or 2	-	=	2,018	lbs
Roof Uplift	-	=	5,674	lbs

Net Forces with - Internal Pressure *(-Gcpi)*

Walls 3/4	-	=	8,806	lbs
Wall 1 or 2	-	=	1,131	lbs
Roof Uplift	-	=	3,856	lbs

Enclosure Overturn Forces (Includes Seismic)

(Postive forces act upward, negative forces act downward)

Wind Direction 1

Net Forces with + Internal Pressure *(+Gcpi)*

Overturn on Walls 1/2	=	2,991	lbs
Overturn on Walls 3/4	=	6,914	lbs

Net Forces with - Internal Pressure *(-Gcpi)*

Overturn on Walls 1/2	=	2,082	lbs
Overturn on Walls 3/4	=	4,019	lbs

Wind Direction 2

Net Forces with + Internal Pressure *(+Gcpi)*

Overturn on Walls 3/4	=	9,234	lbs
Overturn on Walls 1/2	=	3,217	lbs

Net Forces with - Internal Pressure *(-Gcpi)*

Overturn on Walls 3/4	=	8,325	lbs
Overturn on Walls 1/2	=	2,091	lbs

Design Overturn Force (O_E) = 9,234 lbs Acting On Wall 3/4

Mounting Hardware - Enclosure to Base/Tank or Pad

To be conservative, bolt connections along the adjacent walls are neglected.

No. of Bolt Connections Along Wall 3/4 = 7 5/16" - 18 Bolts - Grade 18-8/S

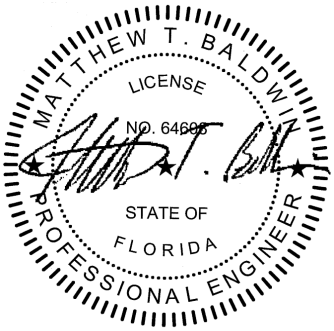
Enclosure Overturn Design Calculations

Grade 18-8 Ultimate Strength	=	150,000	psi
Grade 8.8 Nom. Tensile Stress	=	112,500	psi (Includes Reduction Factor)
5/16" Bolt Effective Area	=	0.051	in^2
Tensile Strength per Bolt	=	2,873	lbs

Total Bolts Tensile Strength = 20,109 lbs

Conclusion

(O_E) 9,234 lbs < (R_V) 20,109 lbs **OK**



Matthew T. Baldwin, P.E.
Florida License #64608

Structural Calculations - Enclosure With Base/Tank to Pad

Gillette 110" Frame Gensets

Critical Wind Load Pressures

To determine maximum moment forces, pressures are algebraically combined relative to toward or away forces (+ & -) and each wind direction.

Wind Direction 1

To be conservative, roof downforce is neglected.

Net Pressures with + Internal Pressure *(+Gcpi)*

Walls 1 & 2	-	98.7	psf =	0.6853	psi
Wall 3 or 4	-	84.1	psf =	0.5838	psi
Roof Uplift	-	103.3	psf =	0.7172	psi

Net Pressures with - Internal Pressure *(-Gcpi)*

Walls 1 & 2	-	98.7	psf =	0.6853	psi
Wall 3 or 4	-	46.9	psf =	0.3260	psi
Roof Uplift	-	66.1	psf =	0.4594	psi

Wind Direction 2

Net Pressures with + Internal Pressure *(+Gcpi)*

Walls 3 & 4	-	121.6	psf =	0.8448	psi
Wall 1 or 2	-	84.4	psf =	0.5864	psi
Roof Uplift	-	115.9	psf =	0.8047	psi

Net Pressures with - Internal Pressure *(-Gcpi)*

Walls 3 & 4	-	121.6	psf =	0.8448	psi
Wall 1 or 2	-	47.3	psf =	0.3286	psi
Roof Uplift	-	78.8	psf =	0.5469	psi

Seismic

Enclosure Horiz. Seismic Force	(EE_h)	=	2	lbs
Base/Tank Horiz. Seismic Force	(EB_h)	=	9	lbs

Enclosure With Base/Tank Critical Dimensions & Weights

Total Enclosure Weight	*(W_t)*	=	400	lbs	(Includes all components)
Walls 1/2 Area -	*(w1)*	=	3,776	in^2	(Includes Base/Tank Surface Area)
Walls 3/4 Area -	*(w3)*	=	11,194	in^2	(Includes Base/Tank Surface Area)
Roof Area -	*(R)*	=	7,051	in^2	

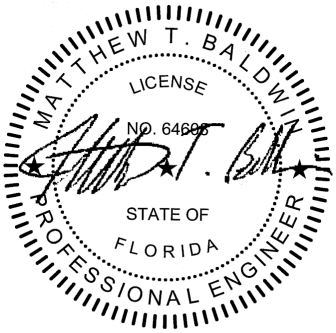
Enclosure With Base/Tank Calculated Forces

Maximum Wind Shear Forces on Walls Including Base/Tank

Wind Direction 1

Net Forces with + Internal Pressure *(+Gcpi)*

Walls 1/2	-	=	2,588	lbs
Wall 3 or 4	-	=	6,535	lbs
Roof Uplift	-	=	5,057	lbs



Matthew T. Baldwin, P.E.
Florida License #64608

Net Forces with - Internal Pressure *(-Gcpi)*

Walls 1/2	-	=	2,588	lbs
Wall 3 or 4	-	=	3,649	lbs
Roof Uplift	-	=	3,239	lbs

Wind Direction 2

Net Forces with + Internal Pressure *(+Gcpi)*

Walls 3/4	-	=	9,456	lbs
Wall 1 or 2	-	=	2,215	lbs
Roof Uplift	-	=	5,674	lbs

Net Forces with - Internal Pressure *(-Gcpi)*

Walls 3/4	-	=	9,456	lbs
Wall 1 or 2	-	=	1,241	lbs
Roof Uplift	-	=	3,856	lbs

Enclosure with Base/Tank Maximum Wind Force = 9,456 lbs Acting On Wall 3/4

Coefficient of Friction - Steel to Wet Concrete (μ_s) = 0.45
Frictional Resisting Force (Total Weight x μ_s) = 180

Enclosure with Base/Tank Design Shear (V_{EB}) = 9,276

Enclosure With Base/Tank Overturn Forces (Inlcudes Seismic)

Postive forces act upward

Wind Direction 1

Net Forces with + Internal Pressure *(+Gcpi)*

Overturn on Walls 1/2	=	3,023	lbs
Overturn on Walls 3/4	=	7,638	lbs

Net Forces with - Internal Pressure *(-Gcpi)*

Overturn on Walls 1/2	=	2,115	lbs
Overturn on Walls 3/4	=	4,387	lbs

Wind Direction 2

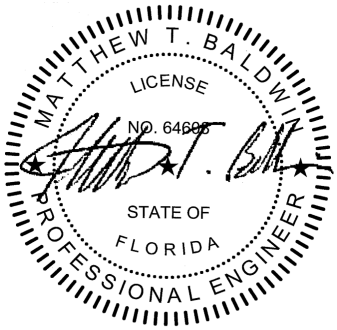
Net Forces with + Internal Pressure *(+Gcpi)*

Overturn on Walls 3/4	=	10,318	lbs
Overturn on Walls 1/2	=	3,232	lbs

Net Forces with - Internal Pressure *(-Gcpi)*

Overturn on Walls 3/4	=	9,410	lbs
Overturn on Walls 1/2	=	2,062	lbs

Design Overturn Force (O_{EB}) = 10,318 lbs Acting On Wall 3/4



Matthew T. Baldwin, P.E.
Florida License #64608

Mounting Hardware - Enclosure With Base/Tank to Pad

No. of Bolt Connections Along Wall 3/4 = 6 Bolts 1/2" Set Bolt Anchors - Grade 5/Galv.

Enclosure With Base/Tank Design Calculations

Mounting Hardware - Shear and Tension

Grade 5	Ultimate Stress	=	120,000	psi
Grade 5	Nom. Shear Stress	=	48,000	psi
Grade 5	Nom. Tensile Stress	=	90,000	psi
1/2" Bolt Nominal Area		=	0.159	in^2
Shear Strength per Bolt		=	3,816	lbs
Tensile Strength per Bolt		=	7,155	lbs
Avail. Tensile Strength per Bolt		=	1,781	lbs (Combined Tension and Shear)

Total Bolts Shear Strength	(R_{vb})	=	22,896	lbs
Total Bolts Tensile Strength	(R_{tb})	=	10,685	lbs

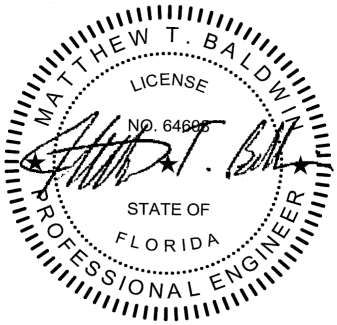
Conclusion

Shear

(V_{EB})	9,276	lbs	<	(R_{tb})	22,896	lbs **OK**

Tension

(O_{EB})	10,318	lbs	<	(R_{tb})	10,685	lbs **OK**



Matthew T. Baldwin, P.E.
Florida License #64608