Blackwell

Structural Engineers

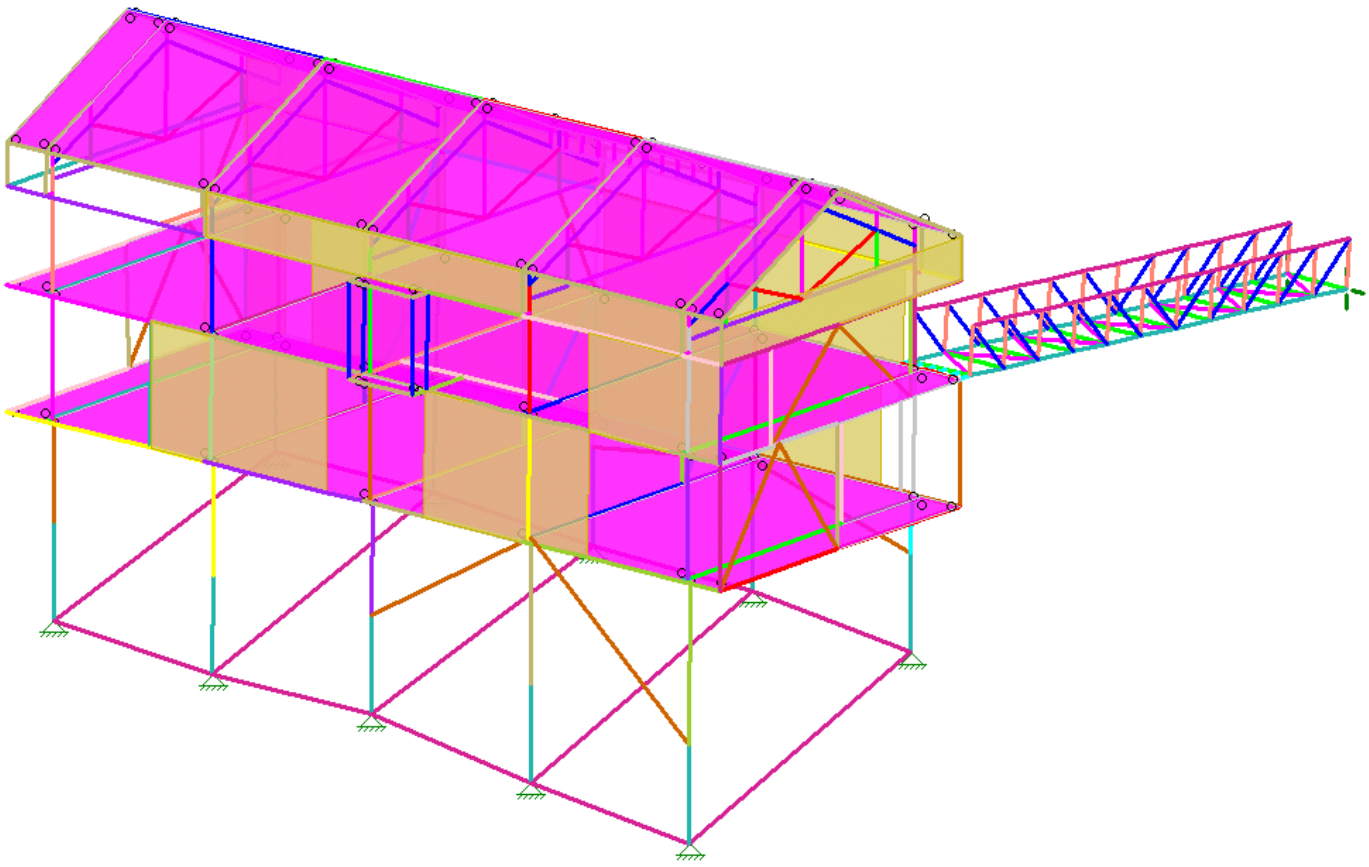
SUMMIT HORIZON NEIGHBORHOOD

2500 SF UNIT

Our Project - 160063

Foundation Design Calculation Package

Blackwell



Blackwell

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Footing Design

Blackwell	Project: Summit Horizon Neighborhood 2500SF Unit				Job Ref.: 160063	
	Section: Pad Footings				Sheet no./rev.: 1	
	Calc. by: RML	Date: 10/5/2016	Chk'd by: JDB	Date:	App'd by:	Date:

SQUARE FOOTING SIZE – INDIVIDUAL COLUMN (AXIAL LOAD ONLY)

Tedds calculation version 1.0.02

Column details

Column width, x — a_c = **24.000** in

Column width, y — b_c = **24.000** in

Loading details

Column axial dead load — P_{dl} = **25.600** kips

Column axial live load — P_{ll} = **59.300** kips

Total column load (unfactored) — $P_n = P_{dl} + P_{ll}$ = **84.900** kips

Axial load acting downward - OK

Soil details

The allowable increase in bearing pressure — q_a = **2.600** ksf

Depth of soil above top of footing — D_s = **6.000** ft

Density of soil — ρ_s = **120** lb/ft^3

Footing details

Thickness of footing — t_{ftg} = **12.000** in

Concrete density — ρ_c = **150** lb/ft^3

Increase in pressure due to weight of footing — $q_{ftg} = (\rho_c - \rho_s) \times t_{ftg}$ = **0.030** ksf

Materials

Yield strength of tension reinforcement — f_y = **60** ksi

Concrete strength — f'_c = **3.600** ksi

Footing size

Available net increase in bearing pressure — $q_s = q_a - q_{ftg}$ = **2.570** ksf

Footing size reqd — $L_x = L_y = \sqrt{(P_n / q_s)}$ = **5.748** ft

Say footing size 6.000 ft × 6.000 ft × 12.000 in

Footing area OK

SQUARE FOOTING USD DESIGN FORCES – INDIVIDUAL COLUMN (AXIAL LOAD ONLY)

Footing details

Thickness of footing — t_{ftg} = **12.000** in

Concrete cover — d_c = **3.000** in

Trial bar diameter — d_{bar} = **0.625** in

Structural depth to reinforcement

$d_b = t_{ftg} - d_c - d_{bar}/2 =$ **8.688** in

$d_{bx} = d_b$

$d_{by} = d_{bx} - d_{bar} =$ **8.063** in

Design forces

Column service loads

Column axial dead load $P_{dl} =$ **25.600** kips

Column axial live load $P_{ll} =$ **59.300** kips

Total column load (unfactored)

$P_n = P_{dl} + P_{ll} =$ **84.900** kips

Total column load (factored)

$P_u = 1.2 \times P_{dl} + 1.6 \times P_{ll} =$ **125.600** kips

Axial load acting downward - OK

Actual soil pressure under base

Ultimate net design bearing pressure

$q_u = P_u / L_x^2 + 1.2 \times q_{ftg} =$ **3.525** ksf

Assume the base is a cantilevered slab with uniform load q_u ksf

Ultimate moment at column face, x direction

ACI 15.4.2a

Column width, x $a_c =$ **24.000** in

$M_{ux} = q_u \times L_x \times (L_x/2 - a_c/2)^2/2 =$ **42.3** kip_ft

Ultimate moment at column face, y direction

Column width, y $b_c =$ **24.000** in

$M_{uy} = q_u \times L_x \times (L_x/2 - b_c/2)^2/2 =$ **42.3** kip_ft

One-way (beam) shear

$x_d = \max((L_x/2 - a_c/2 - d_b), 0 \text{ in}) =$ **15.313** in

$V_{ux} = q_u \times L_x \times x_d =$ **27.0** kips

$y_d = \max((L_x/2 - b_c/2 - d_b + d_{bar}), 0 \text{ in}) =$ **15.938** in

$V_{uy} = q_u \times L_x \times y_d =$ **28.1** kips

Two-way shear at d/2 from column face

ACI 11.12.1.2

Area within ftg - OK

Perimeter at d/2

$b_o = 2 \times (a_c + b_c + 2 \times d_b) =$ **130.750** in

$V_{up} = q_u \times (L_x^2 - (a_c + d_b) \times (b_c + d_b))$ = **100.742** kips

Note - it is assumed that edge distances permit this to be a valid failure mechanism

Footing reinforcement - along X axis

Depth to tension steel along X axis d_{bx} = **8.688** in

Ultimate moment at column face M_{ux} = **42.299** kip_ft

Area of reinforcement required

β_1 = if(f'c < 4 ksi, 0.85, max(.65, 0.85 - 0.05 × (f'c - 4 ksi) / 1 ksi)) = **0.850**

ω_t = 0.319 × β_1 = **0.271**

R_u = ω_t × (1 – 0.588 × ω_t) = **0.228**

R_{reqdx} = M_{ux} / (f'c × d_{bx}^2) / L_y = **0.025947**

Section dimensions are OK to be tension-controlled

FOOTING REQUIRING TENSION STEEL ONLY – BARS IN X DIRECTION

J_x = sqrt(max(.25 - R_{reqdx} / 0.85 / 2.,0)) + .5 = **0.9845**

Area of tension steel required

$A_{sx\_reqd} = M_{ux} / (0.90 \times f_y \times J_x \times d_{bx} \times L_y)$ = **0.18** in^2 /ft

Minimum ratio of tension reinforcement for temperature and shrinkage

ACI 7.12.2

ρ_{min} = **0.001800**

Thickness of footing

t_{ftg} = **12.000** in

Total area of concrete per foot width

$A_c = t_{ftg} \times 12$ in / 1 ft = **144.000** in^2/ft

ACI 10.5.1

$A_{s\_minx} = \rho_{min} \times A_c$ = **0.26** in^2/ft

ACI 15.4.4.2

β_{bx} = if(L_y/L_x>1, 2 / (L_y / L_x + 1) × L_y / L_x, 1) = **1.000**

A_{sx_req} = max($A_{sx\_reqd} \times \beta_{bx}$, A_{s_minx}) = **0.26** in^2 /ft

Tension steel provided

Provide Size #5 @ 10 in centers

A_{sx} = **0.37** in^2/ft

d_{bar} = **0.625** in

$a_x = A_{sx} \times f_y / (0.85 \times f'_c)$ = **0.602** in

$c_x = a_x / \beta_1$ = **0.059**

$\varepsilon_{ty} = 0.003 \times ((d_{bx} - c_x) / c_x)$ = **0.034**

Pass - Ductility OK at ultimate strength.

Area of tension steel provided sufficient

Check maximum spacing

ACI 7.6.5

Spacing of bars - OK

Check minimum area of steel

Area of steel > min - OK

Check of nominal cover and thickness of footing

Effective depth to bottom outer tension reinforcement

d_{bx} = **8.7** in

AI 15.7

Footing thickness > minimum - OK

Cover to outer tension reinforcement

$d_{cov} = t_{ftg} - d_{bx} - d_{bar} / 2$ = **3.0** in

Permissible minimum nominal cover to all reinforcement

ACI 7.7.1(a)

c_{min} = **3.000** in

Cover over outer steel - OK

Footing reinforcement - along Y axis

Depth to tension steel along Y axis d_{by} = **8.063** in

Ultimate moment at column face M_{uy} = **42.299** kip_ft

Area of reinforcement required

β_1 = if(f'c < 4 ksi, 0.85, max(.65, 0.85 - 0.05 × (f'c - 4 ksi) / 1 ksi)) = **0.850**

ω_t = 0.319 × β_1 = **0.271**

R_u = $\omega_t \times (1 - 0.588 \times \omega_t)$ = **0.228**

R_{reqdy} = $M_{uy} / (f'_c \times d_{by}^2) / L_x$ = **0.030125**

Section dimensions are OK to be tension-controlled

FOOTING REQUIRING TENSION STEEL ONLY – BARS IN Y DIRECTION

J_y = sqrt(max(.25 - R_{reqdy} / 0.85 / 2.,0)) + .5 = **0.9820**

Area of tension steel required

$A_{sy\_reqd} = M_{uy} / (0.90 \times f_y \times J_y \times d_{by} \times L_x)$ = **0.20** in^2 /ft

Minimum ratio of tension reinforcement for temperature and shrinkage

ACI 7.12.1

ρ_{min} = **0.001800**

Thickness of footing

t_{ftg} = **12.000** in

Total area of concrete per foot width

$A_c = t_{ftg} \times 12$ in / 1 ft = **144.000** in^2/ft

ACI 10.5.1

$A_{s\_miny} = \rho_{min} \times A_c$ = **0.26** in^2/ft

ACI 15.4.4.2

β_{by} = if(L_x/L_y>1, 2 / (L_x / L_y + 1) $\times$ L_x / L_y, 1) = **1.000**

$A_{sy\_req} = \max(A_{sy\_reqd} \times \beta_{by}, A_{s\_miny})$ = **0.26** in^2 /ft

Tension steel provided

Provide Size #5 @ 10 in centers

A_{sy} = **0.37** in^2/ft

d_{bar} = **0.625** in

$a_y = A_{sy} \times f_y / (0.85 \times f'_c)$ = **0.602** in

$c_y = a_y / \beta_1$ = **0.059**

$\varepsilon_{ty} = 0.003 \times ((d_{by} - c_y) / c_y)$ = **0.031**

Pass - Ductility OK at ultimate strength.
Area of tension steel provided sufficient

Check maximum spacing

ACI 7.6.5

Spacing of bars - OK

Check minimum area of steel

Area of steel > min - OK

Check of nominal cover and thickness of footing

Effective depth to bottom outer tension reinforcement

d_{by} = **8.1** in

ACI 15.7

Footing thickness > minimum - OK

Cover to outer tension reinforcement

$d_{cov} = t_{ftg} - d_{by} - d_{bar} / 2$ = **3.6** in

Permissible minimum nominal cover to all reinforcement

ACI 7.7.1(a)

c_{min} = **3.000** in

Cover over outer steel OK

ONE-WAY (BEAM) SHEAR RESISTANCE OF FOOTING - X AXIS (ACI 11.12, 15.5)

Transverse width of footing L_y = **6.000** ft

Depth to tension steel d_{bx} = **8.688** in

Design ultimate shear forces

Ultimate shear at 'd' from column face V_{ux} = **26.987** kips

Concrete strength f'_c = **3.600** ksi

Shear capacity of concrete

$V_{cx} = 2 \times \sqrt{(f'_c)} \times L_y \times d_{bx}$ = **75.060** kips

V_{sx} = 0 kips

$\phi V_{nx} = 0.75 \times (V_{cx} + V_{sx})$ = **56.295** kips

One-way shear capacity - OK

ONE-WAY (BEAM) SHEAR RESISTANCE OF FOOTING - Y AXIS (ACI 11.12, 15.5)

Longitudinal length of footing L_x = **6.000** ft

Depth to tension steel d_{by} = **8.063** in

Design ultimate shear forces

Ultimate shear at 'd' from column face V_{uy} = **28.089** kips

Concrete strength f'_c = **3.600** ksi

Shear capacity of concrete

$V_{cy} = 2 \times \sqrt{(f'_c)} \times L_x \times d_{by}$ = **69.660** kips

V_{sy} = 0 kips

$\phi V_{ny} = 0.75 \times (V_{cy} + V_{sy})$ = **52.245** kips

One-way shear capacity - OK

TWO-WAY (PUNCHING) SHEAR CHECK (ACI 11.12.2)

Tension steel resisting bending

Total length of shear perimeter at d/2 from column face

b_o = **130.750** in

Depth to tension steel d_b = **8.688** in

Max punching shear force V_{up} = **100.742** kips

Concrete strength f'_c = **3.600** ksi

Shear capacity of concrete

$\beta_c = \max(a_c/b_c, b_c/a_c)$ = **1.000**

α_s = 40

factor = $\min(4, \alpha_s \times d_b / b_o + 2, 2 + 4/\beta_c)$ = **4.000**

V_{cp} = factor $\times \sqrt{(f'_c)} \times b_o \times d_b$ = **272.614** kips

V_{sp} = 0 kips

$\phi V_{np} = 0.75 \times (V_{cp} + V_{sp})$ = **204.460** kips

Two-way shear capacity - OK

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Sliding Check

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Title: **SLIDING CHECK**

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood

Project Number: 160063

Date: 5/10/2016

Coefficient of Friction **μ =** **0.35**

LC	X (k)	Y (k)	Z (k)	Friction (k)	SLIDING?
116	0.0	397.9	0.0	139.3	NO
117	0.0	547.6	0.0	191.7	NO
118	0.0	397.9	0.0	139.3	NO
119	0.0	792.0	0.0	277.2	NO
120	0.0	805.8	0.0	282.0	NO
121	-24.9	384.8	0.0	134.7	NO
122	24.8	384.8	0.0	134.7	NO
123	-24.8	394.9	0.0	138.2	NO
124	24.9	394.8	0.0	138.2	NO
125	21.7	378.7	0.0	132.5	NO
126	0.0	390.8	-10.4	136.8	NO
127	0.0	391.1	10.3	136.9	NO
128	0.0	400.7	-10.4	140.3	NO
129	0.0	400.7	10.4	140.3	NO
130	0.0	378.7	-10.3	132.5	NO
131	0.0	504.9	-7.8	176.7	NO
132	0.0	505.2	7.8	176.8	NO
133	-18.7	500.4	0.0	175.1	NO
134	18.6	500.4	0.0	175.1	NO
135	0.0	512.4	-7.8	179.3	NO
136	0.0	512.4	7.8	179.3	NO
137	-18.6	508.0	0.0	177.8	NO
138	18.7	507.9	0.0	177.8	NO
139	0.0	495.8	-7.7	173.5	NO
140	16.3	495.8	0.0	173.5	NO
141	0.0	800.5	-7.8	280.2	NO
142	0.0	800.8	7.8	280.3	NO
143	-18.7	796.0	0.0	278.6	NO
144	18.6	796.0	0.0	278.6	NO
145	0.0	808.0	-7.8	282.8	NO
146	0.0	808.0	7.8	282.8	NO
147	-18.6	803.6	0.0	281.3	NO
148	18.7	803.5	0.0	281.2	NO
149	0.0	791.4	-7.7	277.0	NO
150	16.3	791.4	0.0	277.0	NO
151	0.0	231.6	-10.4	81.1	NO
152	0.0	232.0	10.3	81.2	NO
153	-24.9	225.7	0.0	79.0	NO
154	24.8	225.7	0.0	79.0	NO
155	0.0	241.6	-10.4	84.6	NO
156	0.0	241.6	10.4	84.6	NO

LC	X (k)	Y (k)	Z (k)	Friction (k)	SLIDING?
157	-24.8	235.8	0.0	82.5	NO
159	0.0	219.5	-10.3	76.8	NO
160	21.7	219.5	0.0	76.8	NO
161	-54.6	435.9	0.0	152.6	NO
162	-54.6	435.9	0.0	152.6	NO
163	-54.6	435.9	0.0	152.6	NO
164	0.0	435.9	-54.5	152.6	NO
165	0.0	435.9	-54.5	152.6	NO
166	0.0	435.9	-54.5	152.6	NO
167	54.6	435.9	0.0	152.6	NO
168	54.6	435.9	0.0	152.6	NO
169	54.6	435.9	0.0	152.6	NO
170	0.0	435.9	54.6	152.6	NO
171	0.0	435.9	54.6	152.6	NO
172	0.0	435.9	54.6	152.6	NO
173	-40.9	538.7	0.0	188.6	NO
174	-40.9	538.7	0.0	188.6	NO
175	-40.9	538.7	0.0	188.6	NO
176	0.0	538.7	-40.9	188.6	NO
177	0.0	538.7	-40.9	188.6	NO
178	0.0	538.7	-40.9	188.6	NO
179	40.9	538.7	0.0	188.6	NO
180	40.9	538.7	0.0	188.6	NO
181	40.9	538.7	0.0	188.6	NO
182	0.0	538.7	40.9	188.6	NO
183	0.0	538.7	40.9	188.6	NO
184	0.0	538.7	40.9	188.6	NO
185	-40.9	834.3	0.0	292.0	NO
186	-40.9	834.3	0.0	292.0	NO
187	-40.9	834.3	0.0	292.0	NO
188	0.0	834.3	-40.9	292.0	NO
189	0.0	834.3	-40.9	292.0	NO
190	0.0	834.3	-40.9	292.0	NO
191	40.9	834.3	0.0	292.0	NO
192	40.9	834.3	0.0	292.0	NO
193	40.9	834.3	0.0	292.0	NO
194	0.0	834.3	40.9	292.0	NO
195	0.0	834.3	40.9	292.0	NO
196	0.0	834.3	40.9	292.0	NO
197	-54.6	200.7	0.0	70.2	NO
198	-54.6	200.7	0.0	70.2	NO
199	-54.6	200.7	0.0	70.2	NO
200	0.0	200.7	-54.5	70.2	NO
201	0.0	200.7	-54.5	70.2	NO
202	0.0	200.7	-54.5	70.2	NO
203	54.6	200.7	0.0	70.2	NO
204	54.6	200.7	0.0	70.2	NO
205	54.6	200.7	0.0	70.2	NO
206	0.0	200.7	54.5	70.2	NO
207	0.0	200.7	54.5	70.2	NO
208	0.0	200.7	54.5	70.2	NO

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Pier Design

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Title: Pier Design Forces (LRFD)

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 5/10/2016

PIER: A1 (WORST CASE COMPRESSION)

123.561 at 7 ft **A**  **k** 3.832 at 0 ft	15.526 at 0 ft **Vy**  **k** -23.003 at 0 ft	9.705 at 0 ft **Vz**  **k** -9.853 at 0 ft
.008 at 0 ft **T** **k-ft** -.006 at 0 ft	141.259 at 7 ft **Mz**  **k-ft** -131.105 at 7 ft	77.679 at 7 ft **My**  **k-ft** -78.873 at 7 ft

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Title: **Pier Design Forces (LRFD)**

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 5/10/2016

PIER: A2 (WORST CASE BENDING)

102.115 at 7 ft **A**  **k** 13.297 at 0 ft	12.441 at 0 ft **Vy**  **k** -17.099 at 0 ft	11.25 at 0 ft **Vz**  **k** -12.34 at 0 ft
.008 at 0 ft **T** **k-ft** -.006 at 0 ft	141.157 at 7 ft **Mz**  **k-ft** -148.645 at 7 ft	90.03 at 7 ft **My**  **k-ft** -98.807 at 7 ft

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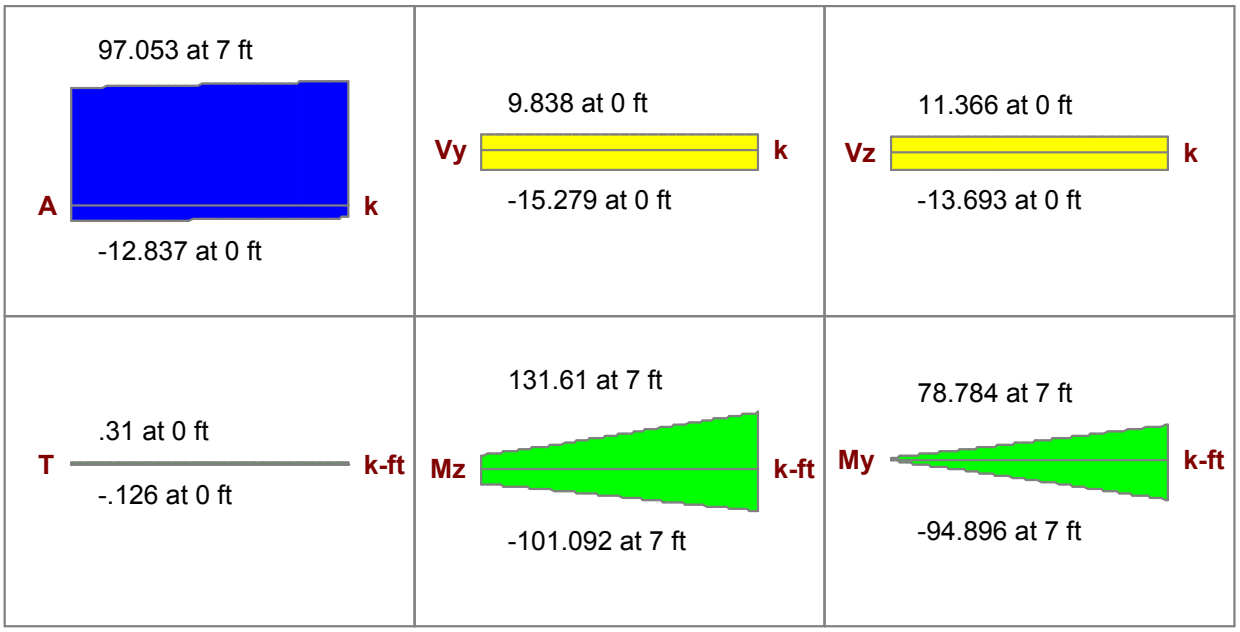
Title: Pier Design Forces (LRFD)

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 5/10/2016

PIER: A5 (WORST CASE TENSION)



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Title: # Pier Design - 2500 SF Unit

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 5/10/2016

General Information:
==========
File Name: C:\Users\rmackaylyons\Dropbox (BSE)\160063 Summit Powder Mounta...\160063 2500SF Pier.col
Project: 160063
Column: Pier Engineer: RML
Code: ACI 318-11 Units: English

Run Option: Design Slenderness: Not considered
Run Axis: X-axis Column Type: Structural

Material Properties:
==========
f'c = 3 ksi fy = 60 ksi
Ec = 3122.02 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.85

Section:
========
Rectangular: Width = 24 in Depth = 24 in

Gross section area, Ag = 576 in^2
Ix = 27648 in^4 Iy = 27648 in^4
rx = 6.9282 in ry = 6.9282 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Bar selection: Minimum number of bars
Asmin = 0.01 * Ag = 5.76 in^2, Asmax = 0.08 * Ag = 46.08 in^2

Confinement: Tied; #3 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

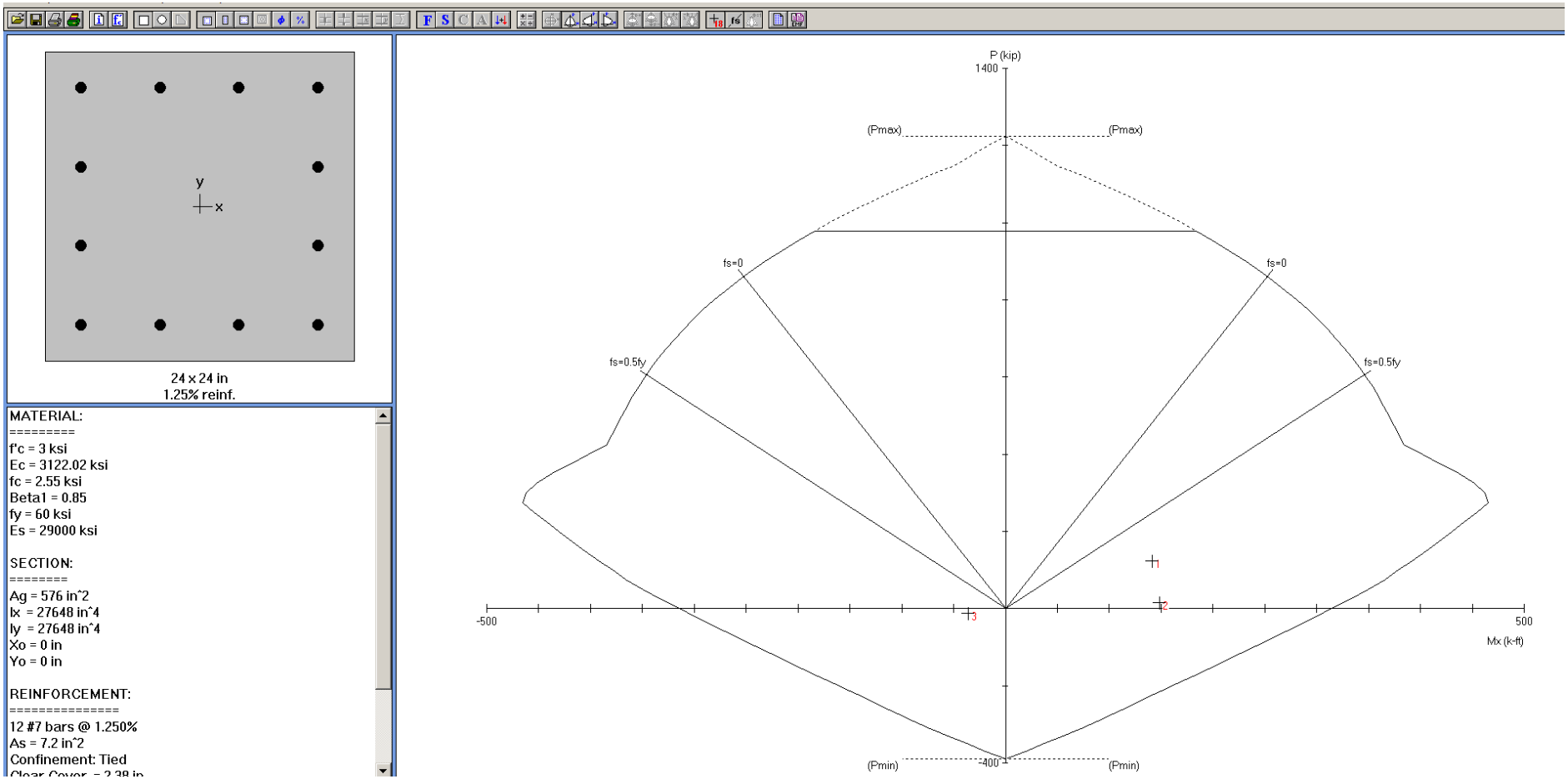
Layout: Rectangular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 7.20 in^2 at rho = 1.25%
Minimum clear spacing = 5.25 in

12 #7 Cover = 2 in

Factored Loads and Moments with Corresponding Capacities:
==========
Design/Required ratio PhiMn/Mu >= 1.00

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	123.60	141.20	391.59	2.773	5.87	21.19	0.00783	0.900
2	16.50	148.60	326.11	2.195	4.50	21.19	0.01112	0.900
3	-12.80	-35.80	-304.99	8.519	4.11	21.19	0.01246	0.900

*** End of output ***


y
x
24 x 24 in
1.25% reinf.
MATERIAL:
==========
f'c = 3 ksi
Ec = 3122.02 ksi
fc = 2.55 ksi
Beta1 = 0.85
fy = 60 ksi
Es = 29000 ksi
SECTION:
========
Ag = 576 in^2
Ix = 27648 in^4
Iy = 27648 in^4
Xo = 0 in
Yo = 0 in
REINFORCEMENT:
==========
12 #7 bars @ 1.250%
As = 7.2 in^2
Confinement: Tied
P (kip)
1400
(Pmax)
(Pmax)
fs=0
fs=0
fs=0.5fy
fs=0.5fy
-500
500
Mx (k-ft)
(Pmin)
-400
(Pmin)

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Anchor Bolt Design

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Title: Anchor Bolt Design Forces (LRFD)

Unit Type 2500SF

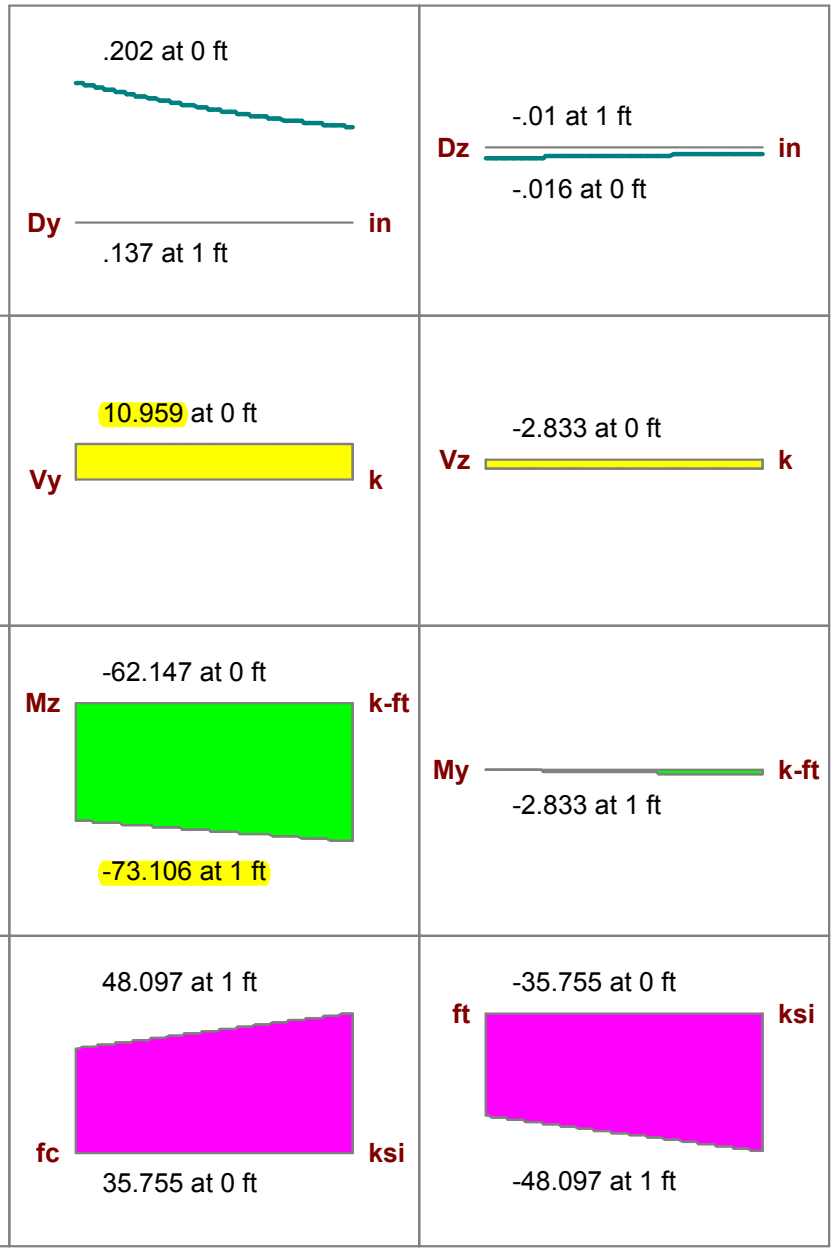
Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 6/10/2016

Column: A2

(WORST CASE FOR ANCHOR BOLT DESIGN)

LC 85: ASCE Strength 5



Blackwell	Project: Summit Horizon Neighborhood				Job Ref.: 160063	
	Section: Anchor Bolts				Sheet no./rev.: 1	
	Calc. by: RML	Date: 10/6/2016	Chk'd by: JDB	Date:	App'd by:	Date:

ANCHOR BOLT DESIGN

In accordance with ACI318-11

Tedds calculation version 2.0.16

Anchor bolt geometry

Type of anchor bolt	Cast-in hooked end bolt anchor
Diameter of anchor bolt	d_a = **1** in
Number of bolts in x direction	N_{boltx} = **2**
Number of bolts in y direction	N_{bolty} = **2**
Total number of bolts	$n_{total} = (N_{boltx} \times 2) + (N_{bolty} - 2) \times 2$ = **4**
Total number of bolts in tension	$n_{tens} = (N_{boltN} \times 2) + (N_{bolty} - 2)$ = **2**
Spacing of bolts in x direction	s_{boltx} = **15** in
Spacing of bolts in y direction	s_{bolty} = **15** in
Number of threads per inch	n_t = **8**
Effective cross-sectional area of anchor	$A_{se} = \pi / 4 \times (d_a - 0.9743 \text{ in} / n_t)^2$ = **0.606** in^2
Embedded depth of each anchor bolt	h_{ef} = **24** in L > Ld

Foundation geometry

Member thickness	h_a = **24** in
Dist center of baseplate to left edge foundation	x_{ce1} = **12** in
Dist center of baseplate to right edge foundation	x_{ce2} = **12** in
Dist center of baseplate to bot. edge foundation	y_{ce1} = **12** in
Dist center of baseplate to top edge foundation	y_{ce2} = **12** in

NOTE:
CONCRETE FAILURE MODES DO NOT GOVERN SINCE ANCHOR BOLTS ARE LAPPED WITH PIER REINFORCING STEEL.

Material details

Minimum yield strength of steel	f_{ya} = **36** ksi
Nominal tensile strength of steel	f_{uta} = **58** ksi
Compressive strength of concrete	f'_c = **3** ksi
Concrete modification factor	λ = **1.00**
Modification factor for cast-in anchor concrete failure	$\lambda_a = 1.0 \times \lambda$= **1.00**

Strength reduction factors

Tension of steel element	$\phi_{t,s}$ = **0.75**
Shear of steel element	$\phi_{v,s}$ = **0.65**
Concrete tension	$\phi_{t,c}$ = **0.75**
Concrete shear	$\phi_{v,c}$ = **0.75**
Concrete tension for pullout	$\phi_{t,cB}$ = **0.70**
Concrete shear for pryout	$\phi_{v,cB}$ = **0.70**

Seismic requirements

Seismic category	D

. Anchor strengths associated with concrete failure modes will be taken to be 0.75 times the calculated strength.

Anchor forces

Number of bolt rows in tension	N_{boltN} = **1**
Axial force in bolts for row 1	N_1 = **36.00** kips
Total axial force on bolt group	N_R = **36.00** kips

Maximum axial force to single bolt	$N_{max,s}$ = **18.00** kips
Eccentricity of axial load (from bolt group centroid)	e'_N = **0.00** in
Shear force applied to bolt group	V = **11.00** kips

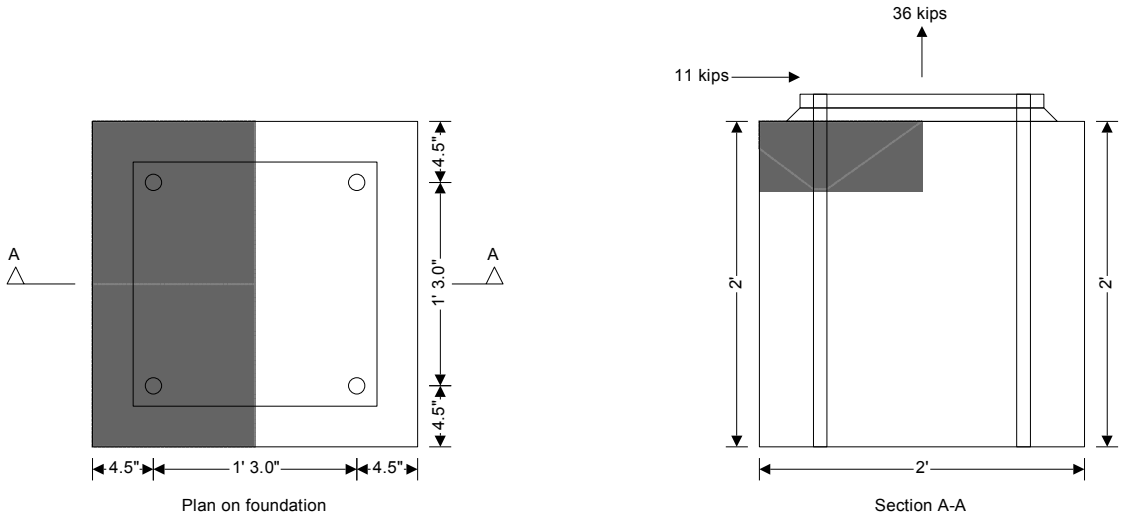
Steel strength of anchor in tension (D.5.1)

Nominal strength of anchor in tension	$N_{sa} = A_{se} \times f_{uta}$ = **35.13** kips
Steel strength of anchor in tension	$\phi N_{sa} = \phi_{t,s} \times N_{sa}$ = **26.35** kips

PASS - Steel strength of anchor exceeds max tension in single bolt

Check concrete breakout strength of anchor bolt in tension (D.5.2)

The spacing and embedded depth of the bolts/anchors are such that the projected area of all the anchors do not overlap. The concrete breakout strength of the anchors will therefore be based on a single anchor with the maximum axial force to a single anchor



Concrete breakout - tension

Single anchor

Applied axial force	$N_s = N_{max,s}$ = **18.00** kips
Eccentricity	e'_N = **0** in

The anchors are located at less than $1.5h_{ef}$ from 4 edges. Therefore the effective embedded depth has to be limited to 5.00" in accordance with D.5.2.3

Limiting embedded depth	$h_{ef,lim}$ = **5.00** in
Coeff for basic breakout strength in tension	k_c = **24**
Breakout strength for single anchor in tension	$N_b = k_c \times \lambda_a \times \sqrt{(f'_c \times 1\ psi)} \times h_{ef,lim}^{1.5} \times 1\ in^{0.5}$ = **14.70** kips
Projected area for groups of anchors	A_{Nc} = **144** in^2
Projected area of a single anchor	$A_{Nco} = 9 \times h_{ef,lim}^2$ = **225** in^2
Min dist center of anchor to edge of concrete	$c_{a,min}$ = **4.5** in
Mod factor for groups loaded eccentrically	$\psi_{ec,N} = \min(1 / (1 + ((2 \times e'_N) / (3 \times h_{ef,lim}))), 1)$ = **1.000**
Modification factor for edge effects	$\psi_{ed,N} = 0.7 + 0.3 \times (c_{a,min} / (1.5 \times h_{ef,lim}))$ = **0.880**
Modification factor for no cracking at service loads	$\psi_{c,N}$ = **1.000**
Modification factor for cracked concrete	$\psi_{cp,N}$ = **1.000**
Nominal concrete breakout strength	$N_{cb} = A_{Nc} / A_{Nco} \times \psi_{ed,N} \times \psi_{c,N} \times \psi_{cp,N} \times N_b$ = **8.28** kips
Concrete breakout strength	$\phi N_{cb} = 0.75 \times \phi_{t,c} \times N_{cb}$ = **4.66** kips

FAIL - Tension in bolts exceed breakout strength

Pullout strength (D.5.3)

Net bearing area of the head of anchor	A_{brg} = **1.5** in^2
Mod factor for no cracking at service loads	$\psi_{c,P}$ = **1.000**
Pullout strength for single anchor	$N_p = 0.9 \times f'_c \times e_h \times d_a$ = **10.80** kips
Nominal pullout strength of single anchor	$N_{pn} = \psi_{c,P} \times N_p$ = **10.80** kips
Pullout strength of single anchor	$\phi N_{pn} = 0.75 \times \phi_{t,cB} \times N_{pn}$ = **5.67** kips

FAIL - Maximum axial force in a single bolt exceeds pullout strength of single anchor

Side face blowout strength (D.5.4)

The sideface blowout will be checked in the x and y directions as the edge distances for the bolts in both directions are less than h_{ef} / 2.5

Check x direction

Axial force in group of anchors	$N_{sfb} = (N_1)$ = **36.00** kips
Edge distance	c_{a1} = **4.50** in
	c_{a2} = **4.50** in
Side face blowout strength for single anchor	$N_{sb} = (160 \times c_{a1} \times \sqrt{(A_{brg})} \times \lambda_a \times \sqrt{(f'_c \times 1psi)})$ = **48.30** kips
Distance between outer anchors along the edge	$s = (N_{bolty}-1) \times s_{bolty}$ = **15** in
Nom side face blowout strength multiple anchors	$N_{sbg} = (1 + s / (6 \times c_{a1})) \times N_{sb}$ = **75.13** kips
Side face blowout strength for multiple anchors	$\phi N_{sbg} = 0.75 \times \phi_{t,c} \times N_{sbg}$ = **42.26** kips

~~***PASS - Sideface blowout strength exceeds tension in bolts***~~

Check y direction

Axial force in single anchor	$N_{sfb} = N_1 / N_{bolty}$ = **18.00** kips
Nom side face blowout strength for single anchor	$N_{sb} = ((1 + \max(1, \min((c_{a2} / c_{a1}), 3))) / 4) \times (160 \times c_{a1} \times \sqrt{(A_{brg})} \times \lambda_a \times \sqrt{(f'_c \times 1psi)})$ = **24.15** kips
Side face blowout strength for multiple anchors	$\phi N_{sb} = 0.75 \times \phi_{t,c} \times N_{sb}$ = **13.58** kips

~~***FAIL - Tension in bolts exceeds sideface blowout strength***~~

Steel strength of anchor in shear (D.6.1)

Built-up grout pads are used so nominal strength will be multiplied by 0.8 (D.6.1.3)

Effective number of anchors in shear	N_{boltV} = **4**
Nom strength of anchor in shear	$V_{sa} = 0.8 \times N_{boltV} \times 0.6 \times A_{se} \times f_{uta}$ = **67.46** kips
Steel strength of anchor in shear	$\phi V_{sa} = \phi_{v,s} \times V_{sa}$ = **43.85** kips

PASS - Steel strength of anchor exceeds shear in bolts

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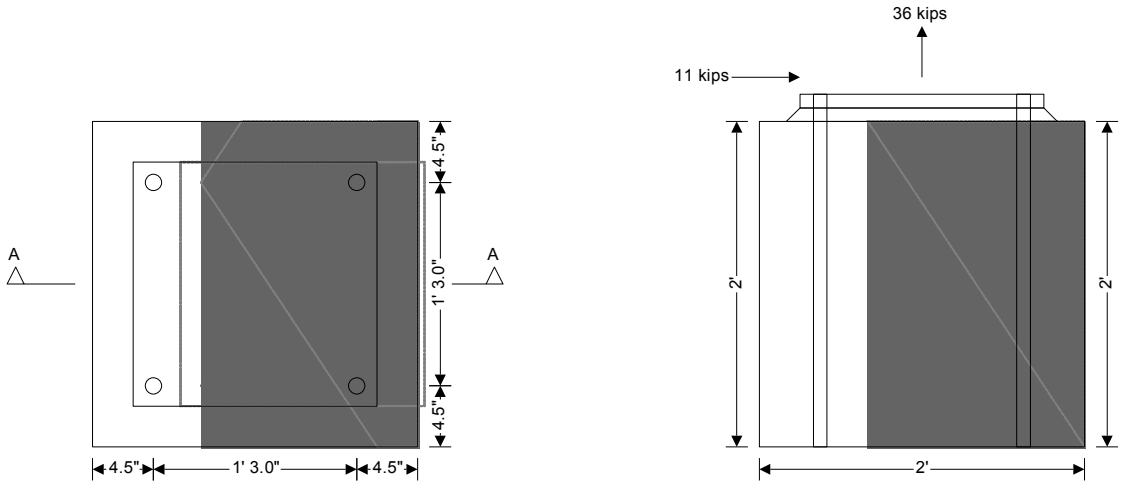
	Section: Anchor Bolts				Sheet no./rev.: 4	
	Calc. by: RML	Date: 10/6/2016	Chk'd by: JDB	Date:	App'd by:	Date:

Concrete breakout strength in shear perpendicular to edge - Case 2. All shear resisted by rear bolts (D.6.2)



Plan on foundation

Section A-A

Concrete breakout - shear

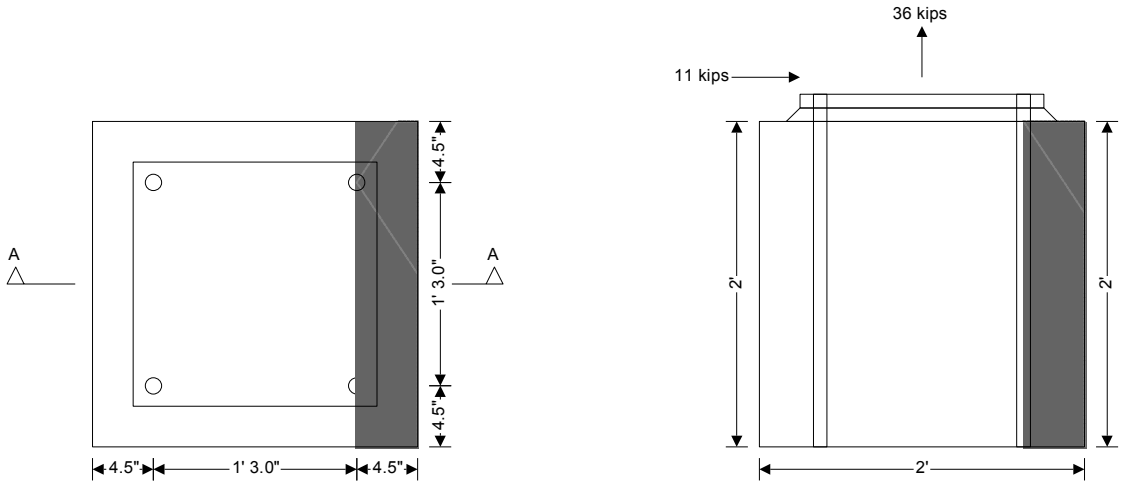
The anchors are influenced by three or more edges where any edge distance is less than $1.5c_{a1}$ so value of c_{a1} is limited to c'_{a1}

Bolt offset for limiting shear	$x_{V,r}$ = **3.50** in
Limiting edge distance	c'_{a1} = **16** in
Applied shear	$V_{app} = V$ = **11.00** kips
Edge distance x for shear near corner	c_{a1} = **19.5** in
Edge distance y for shear near corner	$c_{a2} = \min(y_{ce1}, y_{ce2}) - (((N_{bolty} - 1)/2) \times s_{bolty})$ = **4.5** in
Load bearing length of anchor	$l_e = \min(h_{ef}, 8 \times d_a)$ = **8** in
Basic concrete breakout strength	$V_{b1} = 7 \times (l_e / d_a)^{0.2} \times \sqrt{(d_a)} \times \lambda_a \times \sqrt{(f'_c \times 1psi)} \times (c'_{a1})^{1.5}$ = **37.19** kips
	$V_{b2} = 9 \times \lambda_a \times \sqrt{(f'_c \times 1psi \times 1\ in)} \times (c'_{a1})^{1.5}$ = **31.55** kips
Basic concrete breakout strength	$V_b = \text{Min}(V_{b1}, V_{b2})$ = **31.55** kips
Projected area of a single anchor	$A_{Vco} = 4.5 \times c'^2_{a1}$ = **1152** in^2
Projected area of a group of anchors	A_{Vc} = **576** in^2
Mod factor for edge effect	$\psi_{ed,V} = 0.7 + 0.3 \times c_{a2} / (1.5 \times c'_{a1})$ = **0.756**
Eccentricity of loading	e'_V = **0** in
Modification factor of eccentric loading	$\psi_{ec,V} = \min(1, 1 / (1 + ((2 \times e'_V) / (3 \times c'_{a1}))))$ = **1.000**
Modification factor for cracking	$\psi_{c,V}$ = **1.400**
Modification factor for edge distance	$\psi_{h,V}$ = 1.0 = **1.000**
Nominal concrete break out strength in shear	$V_{cbg} = A_{Vc} / A_{Vco} \times \psi_{ec,V} \times \psi_{ed,V} \times \psi_{c,V} \times \psi_{h,V} \times V_b$ = **16.70** kips
Concrete break out strength in shear	$\phi V_{cbg} = 0.75 \times \phi_{v,c} \times V_{cbg}$ = **9.39** kips

~~***FAIL - Shear in bolts exceeds shear breakout perpendicular to edge strength***~~

Blackwell	Project: Summit Horizon Neighborhood				Job Ref.: 160063	
	Section: Anchor Bolts				Sheet no./rev.: 5	
	Calc. by: RML	Date: 10/6/2016	Chk'd by: JDB	Date:	App'd by:	Date:

Concrete breakout strength in shear - Case 1. Half of shear resisted by front bolts (D.6.2)



Plan on foundation

Section A-A

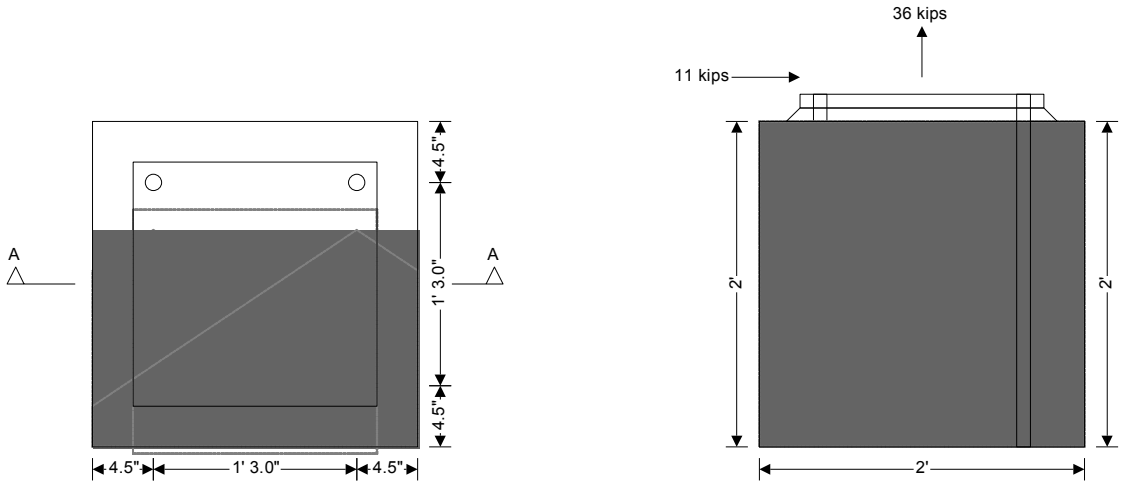
Concrete breakout - shear

Applied shear	$V_{app} = V / 2 =$ **5.50** kips
Edge distance x for shear near corner	$c_{a1} =$ **4.5** in
Edge distance y for shear near corner	$c_{a2} = \min(y_{ce1}, y_{ce2}) - (((N_{bolty} - 1)/2) \times s_{bolty}) =$ **4.5** in
Load bearing length of anchor	$l_e = \min(h_{ef}, 8 \times d_a) =$ **8** in
Basic concrete breakout strength	$V_{b1} = 7 \times (l_e / d_a)^{0.2} \times \sqrt{(d_a)} \times \lambda_a \times \sqrt{(f'_c \times 1psi)} \times (c_{a1})^{1.5} =$ **5.55** kips
	$V_{b2} = 9 \times \lambda_a \times \sqrt{(f'_c \times 1psi \times 1\ in)} \times (c_{a1})^{1.5} =$ **4.71** kips
Basic concrete breakout strength	$V_b = \text{Min}(V_{b1}, V_{b2}) =$ **4.71** kips
Projected area of a single anchor	$A_{Vco} = 4.5 \times c_{a1}^2 =$ **91.1** in^2
Projected area of a group of anchors	$A_{Vc} =$ **151.9** in^2
Mod factor for edge effect	$\psi_{ed,V} = 0.7 + 0.3 \times c_{a2} / (1.5 \times c_{a1}) =$ **0.900**
Eccentricity of loading	$e'_V =$ **0** in
Modification factor of eccentric loading	$\psi_{ec,V} = \min(1, 1 / (1 + ((2 \times e'_V) / (3 \times c_{a1})))) =$ **1.000**
Modification factor for cracking	$\psi_{c,V} =$ **1.400**
Modification factor for edge distance	$\psi_{h,V} = 1.0 =$ **1.000**
Nominal concrete break out strength in shear	$V_{cb} = A_{Vc} / A_{Vco} \times \psi_{ed,V} \times \psi_{c,V} \times \psi_{h,V} \times V_b =$ **9.88** kips
Concrete break out strength in shear	$\phi V_{cb} = 0.75 \times \phi_{v,c} \times V_{cb} =$ **5.56** kips

~~PASS - Shear breakout perpendicular to edge strength exceeds shear in bolts~~

Blackwell	Project: Summit Horizon Neighborhood				Job Ref.: 160063	
	Section: Anchor Bolts				Sheet no./rev.: 6	
	Calc. by: RML	Date: 10/6/2016	Chk'd by: JDB	Date:	App'd by:	Date:

Concrete breakout strength in shear parallel to edge - Case 2. All shear resisted by rear bolts (D.6.2)



Concrete breakout - side shear

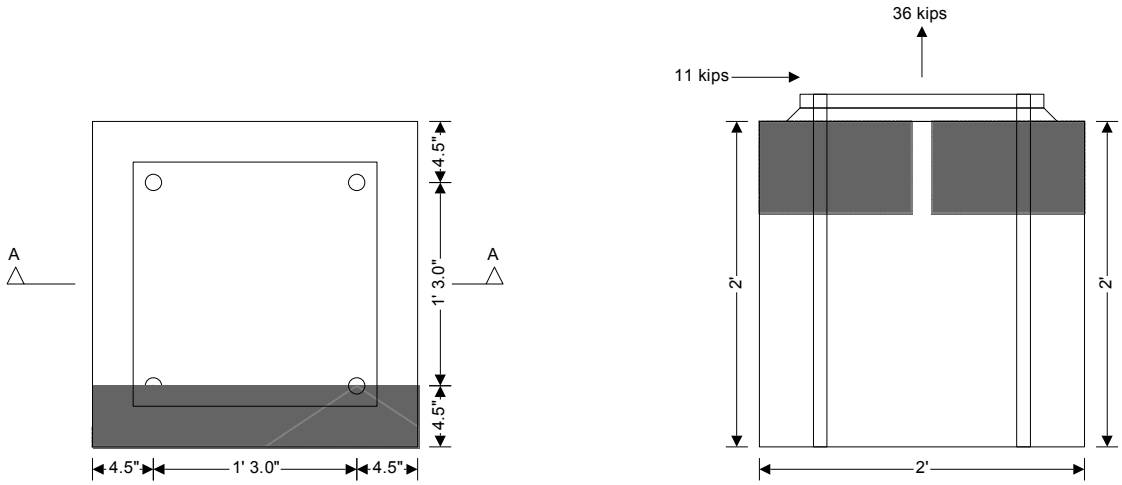
The anchors are influenced by three or more edges where any edge distance is less than $1.5c_{a1,p}$ so value of $c_{a1,p}$ is limited to $c'_{a1,p}$

Bolt offset for limiting shear	$y_{V,r,p}$ = **3.50** in
Limiting edge distance	$c'_{a1,p}$ = **16** in
Applied shear	$V_{app} = V$ = **11.00** kips
Edge distance x for shear near corner	$c_{a1,p}$ = **19.5** in
Edge distance y for shear near corner	$c_{a2,p} = \min(x_{ce1}, x_{ce2}) - (((N_{boltx} - 1)/2) \times s_{boltx})$ = **4.5** in
Load bearing length of anchor	$l_e = \min(h_{ef}, 8 \times d_a)$ = **8** in
Basic concrete breakout strength	$V_{b,p1} = 7 \times (l_e / d_a)^{0.2} \times \sqrt{(d_a)} \times \lambda_a \times \sqrt{(f'_c \times 1psi)} \times (c'_{a1,p})^{1.5}$ = **37.19** kips
	$V_{b,p2} = 9 \times \lambda_a \times \sqrt{(f'_c \times 1psi \times 1in)} \times (c'_{a1,p})^{1.5}$ = **31.55** kips
Basic concrete breakout strength	$V_{b,p} = \text{Min}(V_{b,p1}, V_{b,p2})$ = **31.55** kips
Projected area of a single anchor	$A_{Vco,p} = 4.5 \times c'^2_{a1,p}$ = **1152** in^2
Projected area of a group of anchors	$A_{Vc,p}$ = **576** in^2
Mod factor for edge effect	$\psi_{ed,V,p}$ = **1.000**
Eccentricity of loading	$e'_{V,p}$ = **0** in
Modification factor of eccentric loading	$\psi_{ec,V,p} = \min(1, 1 / (1 + ((2 \times e'_{V,p}) / (3 \times c'_{a1,p}))))$ = **1.000**
Modification factor for cracking	$\psi_{c,V}$ = **1.400**
Modification factor for edge distance	$\psi_{h,V,p}$ = 1.0 = **1.000**
Nominal concrete break out strength in shear	$V_{cbg,p} = 2 \times A_{Vc,p} / A_{Vco,p} \times \psi_{ec,V,p} \times \psi_{ed,V,p} \times \psi_{c,V} \times \psi_{h,V,p} \times V_{b,p}$ = **44.17** kips
Concrete break out strength in shear	$\phi V_{cbg,p} = 0.75 \times \phi_{v,c} \times V_{cbg,p}$ = **24.84** kips

~~***PASS - Shear breakout strength parallel to edge exceeds shear in bolts***~~

Blackwell	Project: Summit Horizon Neighborhood				Job Ref.: 160063	
	Section: Anchor Bolts				Sheet no./rev.: 7	
	Calc. by: RML	Date: 10/6/2016	Chk'd by: JDB	Date:	App'd by:	Date:

Concrete breakout strength in shear parallel to edge - Case 1. Half of shear resisted by front bolts (D.6.2)



Plan on foundation — Concrete breakout - side shear — Section A-A

Applied shear	$V_{app} = V / 2 =$ **5.50** kips
Edge distance x for shear near corner	$c_{a1,p} =$ **4.5** in
Edge distance y for shear near corner	$c_{a2,p} = \min(x_{ce1}, x_{ce2}) - (((N_{boltx} - 1)/2) \times s_{boltx}) =$ **4.5** in
Load bearing length of anchor	$l_e = \min(h_{ef}, 8 \times d_a) =$ **8** in
Basic concrete breakout strength	$V_{b,p1} = 7 \times (l_e / d_a)^{0.2} \times \sqrt{(d_a)} \times \lambda_a \times \sqrt{(f'_c \times 1psi)} \times (c_{a1,p})^{1.5} =$ **5.55** kips
	$V_{b,p2} = 9 \times \lambda_a \times \sqrt{(f'_c \times 1psi \times 1in)} \times (c_{a1,p})^{1.5} =$ **4.71** kips
Basic concrete breakout strength	$V_{b,p} = \text{Min}(V_{b,p1}, V_{b,p2}) =$ **4.71** kips
Projected area of a single anchor	$A_{Vco,p} = 4.5 \times c_{a1,p}^2 =$ **91.1** in^2
Projected area of a group of anchors	$A_{Vc,p} =$ **151.9** in^2
Mod factor for edge effect	$\psi_{ed,V,p} =$ **1.000**
Eccentricity of loading	$e'_{V,p} =$ **0** in
Modification factor of eccentric loading	$\psi_{ec,V,p} = \min(1, 1 / (1 + ((2 \times e'_{V,p}) / (3 \times c_{a1,p})))) =$ **1.000**
Modification factor for cracking	$\psi_{c,V} =$ **1.400**
Modification factor for edge distance	$\psi_{h,V,p} = 1.0 =$ **1.000**
Nominal concrete break out strength in shear	$V_{cb,p} = 2 \times A_{Vc,p} / A_{Vco,p} \times \psi_{ed,V,p} \times \psi_{c,V} \times \psi_{h,V,p} \times V_{b,p} =$ **21.96** kips
Concrete break out strength in shear	$\phi V_{cb,p} = 0.75 \times \phi_{v,c} \times V_{cb,p} =$ **12.35** kips

~~***PASS - Shear breakout strength parallel to edge exceeds shear in bolts***~~

Pryout strength of anchor in shear (D.6.3)

Coefficient of pryout strength	$k_{cp} =$ **2.0**
Nominal pryout strength of anchor in shear	$V_{cpg} = k_{cp} \times N_{cb} =$ **16.55** kips
Pryout strength of anchor in shear	$\phi V_{cpg} = 0.75 \times \phi_{v,cB} \times V_{cpg} =$ **8.69** kips

~~***FAIL - Shear in bolts exceeds Pryout strength of anchor***~~

Interaction of tensile and shear forces

Critical design strength in tension	$\phi N_n = \phi N_{cb,s} =$ ~~**4.66** kips~~ φNsa = 26.4 kips
Critical applied tensile force	$N_{ua} = N_s =$ **18.00** kips
	$N_{ua} / \phi N_n =$ ~~**3.866**~~ = 0.682
Critical design strength in shear	$\phi V_n = \phi V_{cpg} =$ **8.69** kips φVsa = 43.8 kips * 4 bolts = 175.2 kips

Blackwell	Project: Summit Horizon Neighborhood				Job Ref.: 160063	
	Section: Anchor Bolts				Sheet no./rev.: 8	
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Critical applied shear force

V_{ua} = abs(V) = **11.00** kips

$V_{ua} / \phi V_n$ = ~~**1.266**~~ = 0.063

$V_{ua} / \phi V_n$ < 0.2 and $N_{ua} / \phi N_n$ > 0.2,

Interaction check in accordance is with D.7.3 required

Interaction

$I_b = N_{ua} / \phi N_n + V_{ua} / \phi V_n$ = ~~**5.132**~~ = 0.745

~~***FAIL - interaction of forces is greater than 1.2***~~

PASS - interaction of forces is less than 1.2

Blackwell

Structural Engineers

Frost Wall Design

Blackwell

Title: **Frost Wall Design Forces (LRFD)**

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 6/10/2016

FROST WALL ON GRID 2
(WORST CASE BENDING)

NOTE:
FROST WALLS DESIGN TO ACT AS
GRADE BEAMS TO RESIST UPLIFT.

3.216 at 0 ft **A** k -3.216 at 24.587 ft	19.507 at 0 ft **Vy** k -15.577 at 24.587 ft	.01 at 0 ft **Vz** k -.008 at 0 ft
.683 at 0 ft **T** k-ft -.608 at 0 ft	139.726 at 24.587 ft **Mz** k-ft -145.351 at 24.587 ft	.152 at 24.587 ft **My** k-ft -.104 at 24.587 ft

Blackwell	Project: Summit Horizon Neighborhood Cabins				Job Ref.: 160063	
	Section: Frost Walls				Sheet no./rev.: 1	
	Calc. by: RML	Date: 10/6/2016	Chk'd by: JDB	Date:	App'd by:	Date:

RC BEAM DESIGN (ACI318-11)

TEDDS calculation version 2.2.13

Rectangular section details

Section width — b = **10** in

Section depth — h = **60** in

Concrete details

Compressive strength of concrete — f'_c = **4000** psi

Modulus of elasticity of concrete — E = **3834254** psi

Reinforcement details

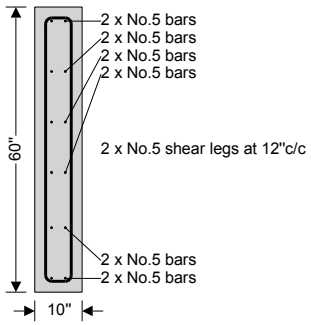
Yield strength of reinforcement — f_y = **60000** psi

Nominal cover to reinforcement

Cover to top reinforcement — c_{nom_t} = **2** in

Cover to bottom reinforcement — c_{nom_b} = **2** in

Cover to side reinforcement — c_{nom_s} = **2** in



Multiple layers of bottom reinforcement

Reinforcement provided - layer 1 — 2 × No. 5 bars

Area of reinforcement provided - layer 1 — A_{s_L1} = **0.614** in^2

Depth to layer 1 — d_{L1} = **57.063** in

Reinforcement provided - layer 2 — 2 × No. 5 bars

Area of reinforcement provided - layer 2 — A_{s_L2} = **0.614** in^2

Depth to layer 2 — d_{L2} = **46.438** in

Total area of reinforcement — $A_{s,prov} = A_{s\_L1} + A_{s\_L2}$ = **1.227** in^2

Centroid of reinforcement — $d_{bot} = (A_{s\_L1} \times d_{L1} + A_{s\_L2} \times d_{L2}) / A_{s,prov}$ = **51.75** in

Multiple layers of top reinforcement

Reinforcement provided - layer 1 — 2 × No. 5 bars

Area of reinforcement provided - layer 1 — A_{s_L1} = **0.614** in^2

Depth to layer 1 — d_{L1} = **2.938** in

Reinforcement provided - layer 2 — 2 × No. 5 bars

Area of reinforcement provided - layer 2 — A_{s_L2} = **0.614** in^2

Depth to layer 2 — d_{L2} = **13.562** in

Reinforcement provided - layer 3 — 2 × No. 5 bars

Area of reinforcement provided - layer 3 — A_{s_L3} = **0.614** in^2

Depth to layer 3 — d_{L3} = **24.187** in

Reinforcement provided - layer 4	2 × No. 5 bars
Area of reinforcement provided - layer 4	A_{s_L4} = **0.614** in^2
Depth to layer 4	d_{L4} = **34.813** in
Total area of reinforcement	$A'_{s,prov} = A_{s\_L1} + A_{s\_L2} + A_{s\_L3} + A_{s\_L4}$ = **2.454** in^2
Centroid of reinforcement	$d_{top} = (A_{s\_L1} \times d_{L1} + A_{s\_L2} \times d_{L2} + A_{s\_L3} \times d_{L3} + A_{s\_L4} \times d_{L4}) / A'_{s,prov}$ = **18.875** in

Rectangular section in flexure (Chapter 10) - Positive moment

Factored bending moment at section	M_u = **145.000** kip_ft
Depth to tension reinforcement	d = getvar("d_{bot}", h - 2 in) = **51.75** in
Tension reinforcement provided	2 × No. 5 bars + 2 × No. 5 bars
Area of tension reinforcement provided	$A_{s,prov}$ = **1.227** in^2 $A_{s,min}$ = 1.2 in^2 for wall. OK.
~~Minimum area of reinforcement (exp.10-3)~~	~~$A_{s,min} = \max(3\ psi \times \sqrt{(f'_c / 1\ psi)}, 200\ psi) \times b \times d / f_y$ = **1.725** in^2~~

~~***FAIL - Area of reinforcement provided is less than minimum area of reinforcement required***~~

Stress block depth factor (cl.10.2.7.3)	$\beta_1 = \min(\max(0.85 - 0.05 \times (f'_c - 4\ ksi) / 1\ ksi, 0.65), 0.85)$ = **0.85**
Depth of equivalent rectangular stress block	$a = A_{s,prov} \times f_y / (0.85 \times f'_c \times b)$ = **2.166** in
Depth to neutral axis	$c = a / \beta_1$ = **2.548** in
Net tensile strain in extreme tension fibers	$\varepsilon_t = 0.003 \times (d - c) / c$ = **0.05794**

Net tensile strain in tension controlled zone

Strength reduction factor (cl.9.3.2)	$\phi_f = \min(\max(0.65 + (\varepsilon_t - 0.002) \times (250 / 3), 0.65), 0.9)$ = **0.90**
Nominal moment strength	$M_n = A_{s,prov} \times f_y \times (d - a / 2)$ = **310.890** kip_ft
Required nominal moment strength	M_u / ϕ_f = **161.111** kip_ft

PASS - Nominal moment strength exceeds required nominal moment strength

Minimum allowable top bar spacing	$s_{top,min} = \max(\phi_{top,L1}, 1in)$ = **1.000** in
Actual top bar spacing	$s_{bar\_top,min} = (b - 2 \times c_{nom\_s} - 2 \times \phi_v - N_{top,L1} \times \phi_{top,L1}) / (N_{top,L1} - 1)$ = **3.500** in

PASS - Actual bar spacing exceeds minimum allowable

Center to center spacing of reinforcement	$s_{bar\_top} = (b - 2 \times c_{nom\_s} - 2 \times \phi_v - \phi_{top,L1}) / (N_{top,L1} - 1)$ = **4.125** in
Service load stress in reinforcement (cl. 10.6.4)	$f_s = 2/3 \times f_y$ = **40000** psi
Distance from surface of reinf. to tension face	$c_c = c_{nom\_t} + \phi_v$ = **2.625** in
Maximum allowable top bar spacing (exp 10-4)	$s_{max} = \min(15in \times 40000psi / f_s - 2.5 \times c_c, 12in \times 40000psi / f_s)$ = **8.438** in

PASS - Maximum allowable tension reinforcement spacing exceeds actual spacing

Rectangular section in shear (Chapter 11)

Design shear force	V_u = **15.600** kips
Concrete weight modification factor	λ = **1.00**
Nominal concrete shear strength (exp.11-3)	$V_c = \lambda \times 2\ psi \times \sqrt{(f'_c / 1\ psi)} \times b \times d$ = **65.459** kips
Nominal reinforcement shear strength (exp.11-2)	$V_s = \max(V_u / \phi_s - V_c, 0\ kips)$ = **0.000** kips
Maximum reinforcement shear strength	$V_{s,max} = 8\ psi \times \sqrt{(f'_c / 1\ psi)} \times b \times d$ = **261.837** kips
Area of shear reinforcement required (exp.11-15)	$A_{sv,req} = V_s / [\min(f_y, 60000\ psi) \times d]$ = **0.000** in^2/ft
Shear reinforcement provided	2 × No.5 legs at 12 in c/c
Area of shear reinforcement provided	$A_{sv,prov}$ = **0.614** in^2/ft
Minimum area of shear reinforcement (exp.11-13)	$A_{sv,min} = \max(50\ psi, 0.75\ psi \times \sqrt{(f'_c / 1\ psi)}) \times b / \min(f_y, 60000\ psi)$
	$A_{sv,min}$ = **0.100** in^2/ft

PASS - Area of shear reinforcement provided exceeds area of shear reinforcement required

Maximum longitudinal spacing (cl.11.4.5)	$s_{vl,max} = \min(d / 2, 24\ in)$ = **24** in

PASS - Longitudinal spacing of shear reinforcement provided is less than maximum

Blackwell

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APPENDIX A

Load Cases

Blackwell

Title: **BASIC LOAD CASES**

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 5/10/2016

BLC	DESCRIPTION	CATEGORY
1	Dead	DL
2	Snow	SL
3	Live	LL
4	Wind +Z +GCpi Max Cp	WL+Z
5	Wind -Z +GCpi Max Cp	WL-Z
6	Wind -X +GCpi Max Cp	WL-X
7	Wind +X +CGpi Max Cp	WL+X
8	Wind +Z -GCpi Max Cp	WL+Z
9	Wind -Z -GCpi Max Cp	WL-Z
10	Wind -X -GCpi Max Cp	WL-X
11	Wind +X -CGpi Max Cp	WL+X
12	Wind +Z +GCpi Min Cp	WL+Z
13	Wind +X +CGpi Min Cp	WL+X
14	Earthquake Load Z	ELZ
15	Earthquake Load X	ELX
16	Earthquake Load Z Plus X Eccentric	ELZ+X
17	Earthquake Load Z Minus X Eccentric	ELZ-X
18	Earthquake Load X Plus Z Eccentric	ELX+Z
19	Earthquake Load X Minus Z Eccentric	ELX-Z
20	Deck Snow	SL
21	Ramp Snow	SL
22	Ramp Live	LL

Blackwell

Title: **LOAD CASES**

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 5/10/2016

LC	DESCRIPTION	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR
22	ASCE Strength 1	DL	1.4								
23	ASCE Strength 1	DL	1.4								
24	ASCE Strength 1	DL	1.4								
25	ASCE Strength 1	DL	1.4								
26	ASCE Strength 2	DL	1.2	LL	1.6						
27	ASCE Strength 2	DL	1.2	LL	1.6						
28	ASCE Strength 2	DL	1.2	LL	1.6						
29	ASCE Strength 2	DL	1.2	LL	1.6						
30	ASCE Strength 2	DL	1.2	LL	1.6	SL	0.5				
31	ASCE Strength 2	DL	1.2	LL	1.6	SL	0.5				
32	ASCE Strength 2	DL	1.2	LL	1.6	SL	0.5				
33	ASCE Strength 2	DL	1.2	LL	1.6	SL	0.5				
34	ASCE Strength 3	DL	1.2	SL	1.6	LL	0.5				
35	ASCE Strength 3	DL	1.2	SL	1.6	LL	0.5				
36	ASCE Strength 3	DL	1.2	SL	1.6	LL	0.5				
37	ASCE Strength 3	DL	1.2	SL	1.6	LL	0.5				
38	ASCE Strength 3	DL	1.2	6	0.5						
39	ASCE Strength 3	DL	1.2	11	0.5						
40	ASCE Strength 3	DL	1.2	4	0.5						
41	ASCE Strength 3	DL	1.2	5	0.5						
42	ASCE Strength 3	DL	1.2	8	0.5						
43	ASCE Strength 3	DL	1.2	9	0.5						
44	ASCE Strength 3	DL	1.2	12	0.5						
45	ASCE Strength 3	DL	1.2	SL	1.6	6	0.5				
46	ASCE Strength 3	DL	1.2	SL	1.6	7	0.5				
47	ASCE Strength 3	DL	1.2	SL	1.6	10	0.5				
48	ASCE Strength 3	DL	1.2	SL	1.6	11	0.5				
49	ASCE Strength 3	DL	1.2	SL	1.6	4	0.5				
50	ASCE Strength 3	DL	1.2	SL	1.6	5	0.5				
51	ASCE Strength 3	DL	1.2	SL	1.6	8	0.5				
52	ASCE Strength 3	DL	1.2	SL	1.6	9	0.5				
53	ASCE Strength 4	DL	1.2	6	1	LL	0.5				
54	ASCE Strength 4	DL	1.2	7	1	LL	0.5				
55	ASCE Strength 4	DL	1.2	10	1	LL	0.5				
56	ASCE Strength 4	DL	1.2	11	1	LL	0.5				
57	ASCE Strength 4	DL	1.2	4	1	LL	0.5				
58	ASCE Strength 4	DL	1.2	5	1	LL	0.5				
59	ASCE Strength 4	DL	1.2	8	1	LL	0.5				
60	ASCE Strength 4	DL	1.2	9	1	LL	0.5				
61	ASCE Strength 4	DL	1.2	6	1	LL	0.5	SL	0.5		
62	ASCE Strength 4	DL	1.2	7	1	LL	0.5	SL	0.5		
63	ASCE Strength 4	DL	1.2	10	1	LL	0.5	SL	0.5		
64	ASCE Strength 4	DL	1.2	11	1	LL	0.5	SL	0.5		
65	ASCE Strength 4	DL	1.2	4	1	LL	0.5	SL	0.5		
66	ASCE Strength 4	DL	1.2	5	1	LL	0.5	SL	0.5		
67	ASCE Strength 4	DL	1.2	8	1	LL	0.5	SL	0.5		
68	ASCE Strength 4	DL	1.2	9	1	LL	0.5	SL	0.5		
69	ASCE Strength 6	DL	0.9	6	1						
70	ASCE Strength 6	DL	0.9	7	1						
71	ASCE Strength 6	DL	0.9	10	1						
72	ASCE Strength 6	DL	0.9	11	1						
73	ASCE Strength 6	DL	0.9	4	1						
74	ASCE Strength 6	DL	0.9	5	1						
75	ASCE Strength 6	DL	0.9	8	1						

LC	DESCRIPTION	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR
76	ASCE Strength 6	DL	0.9	9	1						
77	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELX	1	LL	0.5	SL	0.2
78	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELX+Z	1	LL	0.5	SL	0.2
79	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELX-Z	1	LL	0.5	SL	0.2
80	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELZ	1	LL	0.5	SL	0.2
81	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELZ+X	1	LL	0.5	SL	0.2
82	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELZ-X	1	LL	0.5	SL	0.2
83	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELX	-1	LL	0.5	SL	0.2
84	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELX+Z	-1	LL	0.5	SL	0.2
85	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELX-Z	-1	LL	0.5	SL	0.2
86	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELZ	-1	LL	0.5	SL	0.2
87	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELZ+X	-1	LL	0.5	SL	0.2
88	ASCE Strength 5	DL	1.2	Sds*DL	0.2	Rho*ELZ-X	-1	LL	0.5	SL	0.2
89	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELX	1				
90	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELX+Z	1				
91	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELX-Z	1				
92	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELZ	1				
93	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELZ+X	1				
94	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELZ-X	1				
95	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELX	-1				
96	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELX+Z	-1				
97	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELX-Z	-1				
98	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELZ	-1				
99	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELZ+X	-1				
100	ASCE Strength 7	DL	0.9	Sds*DL	-0.2	Rho*ELZ-X	-1				
116	ASCE ASD 1	DL	1								
117	ASCE ASD 2	DL	1	LL	1						
119	ASCE ASD 3	DL	1	SL	1						
120	ASCE ASD 4	DL	1	LL	0.75	SL	0.75				
121	ASCE ASD 5	DL	1	6	0.6						
122	ASCE ASD 5	DL	1	7	0.6						
123	ASCE ASD 5	DL	1	10	0.6						
124	ASCE ASD 5	DL	1	11	0.6						
125	ASCE ASD 5	DL	1	13	0.6						
126	ASCE ASD 5	DL	1	4	0.6						
127	ASCE ASD 5	DL	1	5	0.6						
128	ASCE ASD 5	DL	1	8	0.6						
129	ASCE ASD 5	DL	1	9	0.6						
130	ASCE ASD 5	DL	1	12	0.6						
131	ASCE ASD 6	DL	1	4	0.45	LL	0.75				
132	ASCE ASD 6	DL	1	5	0.45	LL	0.75				
133	ASCE ASD 6	DL	1	6	0.45	LL	0.75				
134	ASCE ASD 6	DL	1	7	0.45	LL	0.75				
135	ASCE ASD 6	DL	1	8	0.45	LL	0.75				
136	ASCE ASD 6	DL	1	9	0.45	LL	0.75				
137	ASCE ASD 6	DL	1	10	0.45	LL	0.75				
138	ASCE ASD 6	DL	1	11	0.45	LL	0.75				
139	ASCE ASD 6	DL	1	12	0.45	LL	0.75				
140	ASCE ASD 6	DL	1	13	0.45	LL	0.75				
141	ASCE ASD 6	DL	1	4	0.45	LL	0.75	SL	0.75		
142	ASCE ASD 6	DL	1	5	0.45	LL	0.75	SL	0.75		
143	ASCE ASD 6	DL	1	6	0.45	LL	0.75	SL	0.75		
144	ASCE ASD 6	DL	1	7	0.45	LL	0.75	SL	0.75		
145	ASCE ASD 6	DL	1	8	0.45	LL	0.75	SL	0.75		
146	ASCE ASD 6	DL	1	9	0.45	LL	0.75	SL	0.75		
147	ASCE ASD 6	DL	1	10	0.45	LL	0.75	SL	0.75		
148	ASCE ASD 6	DL	1	11	0.45	LL	0.75	SL	0.75		
149	ASCE ASD 6	DL	1	12	0.45	LL	0.75	SL	0.75		
150	ASCE ASD 6	DL	1	13	0.45	LL	0.75	SL	0.75		
151	ASCE ASD 7	DL	0.6	4	0.6						
152	ASCE ASD 7	DL	0.6	5	0.6						
153	ASCE ASD 7	DL	0.6	6	0.6						
154	ASCE ASD 7	DL	0.6	7	0.6						
155	ASCE ASD 7	DL	0.6	8	0.6						
156	ASCE ASD 7	DL	0.6	9	0.6						
157	ASCE ASD 7	DL	0.6	10	0.6						
158	ASCE ASD 7	DL	0.6	11	0.6						

LC	DESCRIPTION	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR	BLC	FACTOR
159	ASCE ASD 7	DL	0.6	12	0.6						
160	ASCE ASD 7	DL	0.6	13	0.6						
161	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELX	0.7				
162	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELX+Z	0.7				
163	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELX-Z	0.7				
164	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELZ	0.7				
165	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELZ+X	0.7				
166	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELZ-X	0.7				
167	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELX	-0.7				
168	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELX+Z	-0.7				
169	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELX-Z	-0.7				
170	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELZ	-0.7				
171	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELZ+X	-0.7				
172	ASCE ASD 5	DL	1	Sds*DL	0.14	Rho*ELZ-X	-0.7				
173	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX	0.525	LL	0.75		
174	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX+Z	0.525	LL	0.75		
175	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX-Z	0.525	LL	0.75		
176	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ	0.525	LL	0.75		
177	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ+X	0.525	LL	0.75		
178	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ-X	0.525	LL	0.75		
179	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX	-0.525	LL	0.75		
180	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX+Z	-0.525	LL	0.75		
181	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX-Z	-0.525	LL	0.75		
182	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ	-0.525	LL	0.75		
183	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ+X	-0.525	LL	0.75		
184	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ-X	-0.525	LL	0.75		
185	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX	0.525	LL	0.75	SL	0.75
186	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX+Z	0.525	LL	0.75	SL	0.75
187	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX-Z	0.525	LL	0.75	SL	0.75
188	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ	0.525	LL	0.75	SL	0.75
189	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ+X	0.525	LL	0.75	SL	0.75
190	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ-X	0.525	LL	0.75	SL	0.75
191	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX	-0.525	LL	0.75	SL	0.75
192	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX+Z	-0.525	LL	0.75	SL	0.75
193	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELX-Z	-0.525	LL	0.75	SL	0.75
194	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ	-0.525	LL	0.75	SL	0.75
195	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ+X	-0.525	LL	0.75	SL	0.75
196	ASCE ASD 6	DL	1	Sds*DL	0.105	Rho*ELZ-X	-0.525	LL	0.75	SL	0.75
197	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELX	0.7				
198	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELX+Z	0.7				
199	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELX-Z	0.7				
200	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELZ	0.7				
201	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELZ+X	0.7				
202	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELZ-X	0.7				
203	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELX	-0.7				
204	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELX+Z	-0.7				
205	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELX-Z	-0.7				
206	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELZ	-0.7				
207	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELZ+X	-0.7				
208	ASCE ASD 8	DL	0.6	Sds*DL	-0.14	Rho*ELZ-X	-0.7				

Blackwell

Structural Engineers

APPENDIX B

Pier Forces

Blackwell

Title: LRFD Pier Forces

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 5/10/2016

Member	Section		Axial (k)	LC	Y Shear (k)	LC	Z Shear (k)	LC	Torque (k*ft)	LC	My (k*ft)	LC	Mz (k*ft)	LC
A5	1	max	92.019	34	9.838	96	11.366	99	0.31	84	0.956	81	27.604	90
		min	-12.837	97	-15.279	78	-13.693	81	-0.126	90	-0.778	99	-35.78	84
	2	max	93.278	34	9.838	96	11.366	99	0.31	84	19.113	99	51.393	78
		min	-12.036	97	-15.279	78	-13.693	81	-0.126	90	-23.007	81	-50.03	84
	3	max	94.536	34	9.838	96	11.366	99	0.31	84	39.003	99	78.132	78
		min	-11.235	97	-15.279	78	-13.693	81	-0.126	90	-46.97	81	-66.66	96
	4	max	95.795	34	9.838	96	11.366	99	0.31	84	58.894	99	104.871	78
		min	-10.435	97	-15.279	78	-13.693	81	-0.126	90	-70.933	81	-83.876	96
	5	max	97.053	34	9.838	96	11.366	99	0.31	84	78.784	99	131.61	78
		min	-9.634	97	-15.279	78	-13.693	81	-0.126	90	-94.896	81	-101.092	96
A4	1	max	89.225	34	12.021	96	2.917	99	0.003	84	6.943	99	32.486	90
		min	6.909	97	-15.629	78	-3.076	81	-0.003	90	-7.498	81	-51.067	84
	2	max	90.483	34	12.021	96	2.917	99	0.003	84	12.048	99	57.291	90
		min	7.709	97	-15.629	78	-3.076	81	-0.003	90	-12.881	81	-69.635	84
	3	max	91.742	34	12.021	96	2.917	99	0.003	84	17.154	99	82.096	90
		min	8.51	97	-15.629	78	-3.076	81	-0.003	90	-18.264	81	-88.204	84
	4	max	93	34	12.021	96	2.917	99	0.003	84	22.259	99	107.411	78
		min	9.311	97	-15.629	78	-3.076	81	-0.003	90	-23.647	81	-106.772	84
	5	max	94.259	34	12.021	96	2.917	99	0.003	84	27.365	99	134.763	78
		min	10.111	97	-15.629	78	-3.076	81	-0.003	90	-29.03	81	-127.158	96
A3	1	max	86.008	34	9.61	96	14.014	99	0.067	90	0.162	99	30.35	90
		min	6.604	97	-14.797	78	-14.941	81	-0.163	84	-0.398	81	-55.142	84
	2	max	87.267	34	9.61	96	14.014	99	0.067	90	24.686	99	52.667	90
		min	7.404	97	-14.797	78	-14.941	81	-0.163	84	-26.544	81	-68.412	84
	3	max	88.526	34	9.61	96	14.014	99	0.067	90	49.211	99	74.984	90
		min	8.205	97	-14.797	78	-14.941	81	-0.163	84	-52.69	81	-81.682	84
	4	max	89.784	34	9.61	96	14.014	99	0.067	90	73.735	99	98.284	78
		min	9.006	97	-14.797	78	-14.941	81	-0.163	84	-78.837	81	-94.952	84
	5	max	91.043	34	9.61	96	14.014	99	0.067	90	98.259	99	124.179	78
		min	9.806	97	-14.797	78	-14.941	81	-0.163	84	-104.983	81	-111.702	96
A2	1	max	97.081	34	12.441	97	11.25	99	0.008	84	11.283	99	33.403	91
		min	13.297	96	-17.099	79	-12.34	81	-0.006	90	-12.424	81	-73.106	85
	2	max	98.339	34	12.441	97	11.25	99	0.008	84	30.97	99	60.342	91
		min	14.097	96	-17.099	79	-12.34	81	-0.006	90	-34.02	81	-91.99	85
	3	max	99.598	34	12.441	97	11.25	99	0.008	84	50.656	99	87.28	91
		min	14.898	96	-17.099	79	-12.34	81	-0.006	90	-55.615	81	-110.875	85
	4	max	100.856	34	12.441	97	11.25	99	0.008	84	70.343	99	114.219	91
		min	15.698	96	-17.099	79	-12.34	81	-0.006	90	-77.211	81	-129.76	85
	5	max	102.115	34	12.441	97	11.25	99	0.008	84	90.03	99	141.157	91
		min	16.499	96	-17.099	79	-12.34	81	-0.006	90	-98.807	81	-148.645	85
A1	1	max	118.526	34	15.526	97	9.705	99	0.008	84	9.746	99	0.23	91
		min	3.832	93	-23.003	79	-9.853	81	-0.006	90	-9.902	81	-56.131	34
	2	max	119.785	34	15.526	97	9.705	99	0.008	84	26.729	99	34.666	91
		min	4.633	93	-23.003	79	-9.853	81	-0.006	90	-27.144	81	-64.352	85
	3	max	121.043	34	15.526	97	9.705	99	0.008	84	43.712	99	69.103	91
		min	5.434	93	-23.003	79	-9.853	81	-0.006	90	-44.387	81	-86.028	85
	4	max	122.302	34	15.526	97	9.705	99	0.008	84	60.696	99	103.539	91
		min	6.234	93	-23.003	79	-9.853	81	-0.006	90	-61.63	81	-107.703	85
	5	max	123.561	34	15.526	97	9.705	99	0.008	84	77.679	99	141.259	79
		min	7.035	93	-23.003	79	-9.853	81	-0.006	90	-78.873	81	-131.105	97

Member	Section		Axial (k)	LC	Y Shear (k)	LC	Z Shear (k)	LC	Torque (k*ft)	LC	My (k*ft)	LC	Mz (k*ft)	LC
B1	1	max	82.749	34	6.843	85	0.152	100	0.001	84	1.365	88	6.652	91
		min	2.625	94	-0.745	91	-0.142	94	0	90	-1.059	94	-20.887	85
	2	max	84.007	34	6.843	85	0.152	100	0.001	84	1.611	88	7.956	91
		min	3.425	94	-0.745	91	-0.142	94	0	90	-1.307	94	-32.863	85
	3	max	85.266	34	6.843	85	0.152	100	0.001	84	1.858	88	9.259	91
		min	4.226	94	-0.745	91	-0.142	94	0	90	-1.555	94	-44.838	85
	4	max	86.524	34	6.843	85	0.152	100	0.001	84	2.104	88	10.562	91
		min	5.027	94	-0.745	91	-0.142	94	0	90	-1.803	94	-56.814	85
	5	max	87.783	34	6.843	85	0.152	100	0.001	84	2.351	88	11.865	91
		min	5.827	94	-0.745	91	-0.142	94	0	90	-2.051	94	-68.789	85
B2	1	max	79.056	34	9.371	85	0.11	100	0.001	84	1.134	88	10.599	91
		min	2.405	90	-2.79	91	-0.108	94	0	90	-0.973	94	-28.256	85
	2	max	80.314	34	9.371	85	0.11	100	0.001	84	1.294	88	15.482	91
		min	3.206	90	-2.79	91	-0.108	94	0	90	-1.162	94	-44.654	85
	3	max	81.573	34	9.371	85	0.11	100	0.001	84	1.461	100	20.364	91
		min	4.006	90	-2.79	91	-0.108	94	0	90	-1.35	94	-61.053	85
	4	max	82.831	34	9.371	85	0.11	100	0.001	84	1.654	100	25.247	91
		min	4.807	90	-2.79	91	-0.108	94	0	90	-1.539	94	-77.452	85
	5	max	84.09	34	9.371	85	0.11	100	0.001	84	1.847	100	30.129	91
		min	5.608	90	-2.79	91	-0.108	94	0	90	-1.727	94	-93.851	85
B3	1	max	92.647	34	8.63	84	20.986	88	0.446	26	0.431	94	10.805	90
		min	-3.322	90	-2.61	90	-13.964	94	-0.028	90	-0.929	88	-27.09	84
	2	max	93.906	34	8.63	84	20.986	88	0.446	26	35.797	88	15.372	90
		min	-2.522	90	-2.61	90	-13.964	94	-0.028	90	-24.005	94	-42.192	84
	3	max	95.164	34	8.63	84	20.986	88	0.446	26	72.522	88	19.939	90
		min	-1.721	90	-2.61	90	-13.964	94	-0.028	90	-48.441	94	-57.295	84
	4	max	96.423	34	8.63	84	20.986	88	0.446	26	109.248	88	24.506	90
		min	-0.92	90	-2.61	90	-13.964	94	-0.028	90	-72.877	94	-72.397	84
	5	max	97.681	34	8.63	84	20.986	88	0.446	26	145.974	88	29.073	90
		min	-0.12	90	-2.61	90	-13.964	94	-0.028	90	-97.313	94	-87.5	84
B4	1	max	80.015	34	6.448	84	0.064	100	0	84	0.829	88	10.447	90
		min	0.136	91	-2.066	90	-0.054	94	0	90	-0.708	94	-26.553	84
	2	max	81.273	34	6.448	84	0.064	100	0	84	0.905	88	14.063	90
		min	0.936	91	-2.066	90	-0.054	94	0	90	-0.802	94	-37.836	84
	3	max	82.532	34	6.448	84	0.064	100	0	84	1.014	100	17.679	90
		min	1.737	91	-2.066	90	-0.054	94	0	90	-0.896	94	-49.12	84
	4	max	83.79	34	6.448	84	0.064	100	0	84	1.127	100	21.295	90
		min	2.538	91	-2.066	90	-0.054	94	0	90	-0.991	94	-60.404	84
	5	max	85.049	34	6.448	84	0.064	100	0	84	1.239	100	24.911	90
		min	3.338	91	-2.066	90	-0.054	94	0	90	-1.085	94	-71.688	84
B5	1	max	95.735	34	3.559	84	11.794	100	-0.013	90	0.6	82	6.046	90
		min	-0.267	100	-0.545	90	-15.25	82	-0.42	26	-0.358	100	-19.112	84
	2	max	96.994	34	3.559	84	11.794	100	-0.013	90	20.282	100	7.001	90
		min	0.534	100	-0.545	90	-15.25	82	-0.42	26	-26.087	82	-25.34	84
	3	max	98.252	34	3.559	84	11.794	100	-0.013	90	40.922	100	7.955	90
		min	1.334	100	-0.545	90	-15.25	82	-0.42	26	-52.774	82	-31.567	84
	4	max	99.511	34	3.559	84	11.794	100	-0.013	90	61.562	100	8.91	90
		min	2.135	100	-0.545	90	-15.25	82	-0.42	26	-79.461	82	-37.795	84
	5	max	100.769	34	3.559	84	11.794	100	-0.013	90	82.202	100	9.864	90
		min	2.935	100	-0.545	90	-15.25	82	-0.42	26	-106.148	82	-44.022	84

Blackwell

Structural Engineers

APPENDIX C

Column Forces (For Anchor Bolt Design)

Blackwell

Title: LRFD Column Forces (GND-LOWER)

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 6/10/2016

Member	Section		Axial (k)	LC	Y Shear (k)	LC	Z Shear (k)	LC	orque (k*ft	LC	My (k*ft)	LC	Mz (k*ft)	LC
A1	1	max	118.497	34	15.537	97	9.746	99	0.008	84	0	22	-6.885	97
		min	3.814	93	-23.02	79	-9.902	81	-0.006	90	0	22	-64.867	34
	2	max	118.505	34	15.537	97	9.746	99	0.008	84	2.437	99	-9.545	99
		min	3.818	93	-23.02	79	-9.902	81	-0.006	90	-2.475	81	-62.683	34
	3	max	118.512	34	15.537	97	9.746	99	0.008	84	4.873	99	-8.66	99
		min	3.823	93	-23.02	79	-9.902	81	-0.006	90	-4.951	81	-60.499	34
	4	max	118.519	34	15.537	97	9.746	99	0.008	84	7.31	99	-4.696	91
		min	3.828	93	-23.02	79	-9.902	81	-0.006	90	-7.426	81	-58.315	34
	5	max	118.526	34	15.537	97	9.746	99	0.008	84	9.746	99	0.23	91
		min	3.832	93	-23.02	79	-9.902	81	-0.006	90	-9.902	81	-56.131	34
A2	1	max	97.052	34	12.489	97	11.283	99	0.008	84	0	22	17.965	91
		min	13.278	96	-17.181	79	-12.424	81	-0.006	90	0	22	-62.147	85
	2	max	97.059	34	12.489	97	11.283	99	0.008	84	2.821	99	21.824	91
		min	13.283	96	-17.181	79	-12.424	81	-0.006	90	-3.106	81	-64.887	85
	3	max	97.066	34	12.489	97	11.283	99	0.008	84	5.642	99	25.684	91
		min	13.287	96	-17.181	79	-12.424	81	-0.006	90	-6.212	81	-67.626	85
	4	max	97.073	34	12.489	97	11.283	99	0.008	84	8.462	99	29.543	91
		min	13.292	96	-17.181	79	-12.424	81	-0.006	90	-9.318	81	-70.366	85
	5	max	97.081	34	12.489	97	11.283	99	0.008	84	11.283	99	33.403	91
		min	13.297	96	-17.181	79	-12.424	81	-0.006	90	-12.424	81	-73.106	85
A3	1	max	85.726	34	9.632	96	0.081	99	0.004	84	0	22	6.153	91
		min	6.885	97	-14.896	78	-0.199	81	-0.003	90	0	22	-40.491	85
	2	max	85.74	34	9.632	96	0.081	99	0.004	84	0.04	99	12.022	91
		min	6.894	97	-14.896	78	-0.199	81	-0.003	90	-0.099	81	-43.81	85
	3	max	85.754	34	9.632	96	0.081	99	0.004	84	0.081	99	17.892	91
		min	6.903	97	-14.896	78	-0.199	81	-0.003	90	-0.199	81	-47.128	85
	4	max	85.769	34	9.632	96	0.081	99	0.004	84	0.121	99	23.762	91
		min	6.913	97	-14.896	78	-0.199	81	-0.003	90	-0.298	81	-50.447	85
	5	max	85.783	34	9.632	96	0.081	99	0.004	84	0.162	99	29.865	90
		min	6.922	97	-14.896	78	-0.199	81	-0.003	90	-0.398	81	-53.978	84
A4	1	max	89.156	34	12.054	96	2.942	99	0.003	84	0	22	0.037	91
		min	6.865	97	-15.746	78	-3.177	81	-0.003	90	0	22	-30.201	26
	2	max	89.174	34	12.054	96	2.942	99	0.003	84	1.736	99	7.273	90
		min	6.876	97	-15.746	78	-3.177	81	-0.003	90	-1.874	81	-31.989	84
	3	max	89.191	34	12.054	96	2.942	99	0.003	84	3.471	99	15.678	90
		min	6.887	97	-15.746	78	-3.177	81	-0.003	90	-3.749	81	-38.348	84
	4	max	89.208	34	12.054	96	2.942	99	0.003	84	5.207	99	24.082	90
		min	6.898	97	-15.746	78	-3.177	81	-0.003	90	-5.623	81	-44.708	84
	5	max	89.225	34	12.054	96	2.942	99	0.003	84	6.943	99	32.486	90
		min	6.909	97	-15.746	78	-3.177	81	-0.003	90	-7.498	81	-51.067	84

Member	Section		Axial (k)	LC	Y Shear (k)	LC	Z Shear (k)	LC	orque (k*fi	LC	My (k*ft)	LC	Mz (k*ft)	LC
A5	1	max	91.391	34	9.797	96	0.248	81	0.001	84	0	22	9.354	48
		min	-13.817	97	-15.393	78	-0.202	99	-0.001	90	0	22	-34.959	78
	2	max	91.419	34	9.797	96	0.248	81	0.001	84	0.239	81	5.495	48
		min	-13.799	97	-15.393	78	-0.202	99	-0.001	90	-0.195	99	-25.606	26
	3	max	91.447	34	9.797	96	0.248	81	0.001	84	0.478	81	4.534	47
		min	-13.782	97	-15.393	78	-0.202	99	-0.001	90	-0.389	99	-20.145	26
	4	max	91.475	34	9.797	96	0.248	81	0.001	84	0.717	81	14.054	90
		min	-13.764	97	-15.393	78	-0.202	99	-0.001	90	-0.584	99	-26.746	84
	5	max	91.503	34	9.797	96	0.248	81	0.001	84	0.956	81	27.151	90
		min	-13.746	97	-15.393	78	-0.202	99	-0.001	90	-0.778	99	-34.659	84
B1	1	max	82.536	34	6.891	85	0.185	88	0.001	84	0	22	33.984	30
		min	2.489	94	-0.762	91	-0.144	94	0	90	0	22	1.042	91
	2	max	82.589	34	6.891	85	0.185	88	0.001	84	0.341	88	22.196	30
		min	2.523	94	-0.762	91	-0.144	94	0	90	-0.265	94	2.444	91
	3	max	82.642	34	6.891	85	0.185	88	0.001	84	0.682	88	10.407	30
		min	2.557	94	-0.762	91	-0.144	94	0	90	-0.529	94	0.557	97
	4	max	82.696	34	6.891	85	0.185	88	0.001	84	1.023	88	5.25	91
		min	2.591	94	-0.762	91	-0.144	94	0	90	-0.794	94	-8.207	85
	5	max	82.749	34	6.891	85	0.185	88	0.001	84	1.365	88	6.652	91
		min	2.625	94	-0.762	91	-0.144	94	0	90	-1.059	94	-20.887	85
B2	1	max	78.814	34	9.436	85	0.136	88	0.001	84	0	22	50.63	85
		min	2.251	90	-2.793	91	-0.116	94	0	90	0	22	-12.754	91
	2	max	78.874	34	9.436	85	0.136	88	0.001	84	0.283	88	30.909	85
		min	2.29	90	-2.793	91	-0.116	94	0	90	-0.243	94	-6.916	91
	3	max	78.935	34	9.436	85	0.136	88	0.001	84	0.567	88	11.398	26
		min	2.328	90	-2.793	91	-0.116	94	0	90	-0.487	94	-1.077	91
	4	max	78.995	34	9.436	85	0.136	88	0.001	84	0.85	88	4.761	91
		min	2.367	90	-2.793	91	-0.116	94	0	90	-0.73	94	-8.534	85
	5	max	79.056	34	9.436	85	0.136	88	0.001	84	1.134	88	10.599	91
		min	2.405	90	-2.793	91	-0.116	94	0	90	-0.973	94	-28.256	85
B3	1	max	88.354	34	8.754	84	0.052	94	0.001	84	0	22	45.414	84
		min	1.101	91	-2.603	90	-0.111	88	0	90	0	22	-10.908	90
	2	max	88.415	34	8.754	84	0.052	94	0.001	84	0.108	94	27.144	85
		min	1.139	91	-2.603	90	-0.111	88	0	90	-0.232	88	-5.488	91
	3	max	88.475	34	8.754	84	0.052	94	0.001	84	0.216	94	10.379	26
		min	1.178	91	-2.603	90	-0.111	88	0	90	-0.464	88	-0.206	91
	4	max	88.536	34	8.754	84	0.052	94	0.001	84	0.323	94	5.411	90
		min	1.216	91	-2.603	90	-0.111	88	0	90	-0.697	88	-9.472	84
	5	max	88.596	34	8.754	84	0.052	94	0.001	84	0.431	94	10.851	90
		min	1.255	91	-2.603	90	-0.111	88	0	90	-0.929	88	-27.767	84
B4	1	max	79.715	34	6.561	84	0.08	88	0	84	0	22	41.457	84
		min	-0.055	91	-2.067	90	-0.068	94	0	90	0	22	-10.976	90
	2	max	79.79	34	6.561	84	0.08	88	0	84	0.207	88	24.454	84
		min	-0.007	91	-2.067	90	-0.068	94	0	90	-0.177	94	-5.62	90
	3	max	79.865	34	6.561	84	0.08	88	0	84	0.414	88	8.585	26
		min	0.04	91	-2.067	90	-0.068	94	0	90	-0.354	94	-0.264	90
	4	max	79.94	34	6.561	84	0.08	88	0	84	0.622	88	5.091	90
		min	0.088	91	-2.067	90	-0.068	94	0	90	-0.531	94	-9.55	84
	5	max	80.015	34	6.561	84	0.08	88	0	84	0.829	88	10.447	90
		min	0.136	91	-2.067	90	-0.068	94	0	90	-0.708	94	-26.553	84
B5	1	max	88.904	34	3.703	84	0.051	82	0	84	0	22	25.733	26
		min	0.751	91	-0.56	90	-0.03	100	0	90	0	22	-0.618	90
	2	max	88.99	34	3.703	84	0.051	82	0	84	0.15	82	16.055	26
		min	0.806	91	-0.56	90	-0.03	100	0	90	-0.089	100	-0.406	47
	3	max	89.076	34	3.703	84	0.051	82	0	84	0.3	82	6.378	26
		min	0.861	91	-0.56	90	-0.03	100	0	90	-0.179	100	-0.835	48
	4	max	89.161	34	3.703	84	0.051	82	0	84	0.45	82	4.369	90
		min	0.915	91	-0.56	90	-0.03	100	0	90	-0.268	100	-8.526	84
	5	max	89.247	34	3.703	84	0.051	82	0	84	0.6	82	6.031	90
		min	0.97	91	-0.56	90	-0.03	100	0	90	-0.358	100	-19.509	84

Blackwell

Structural Engineers

APPENDIX D

Frost Wall (Grade Beam) Forces

Blackwell

Title: **LRFD Frost Wall Forces**

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 6/10/2016

Member	Section		Axial (k)	LC	Y Shear (k)	LC	Z Shear (k)	LC	Torque (k*ft)	LC	My (k*ft)	LC	Mz (k*ft)	LC
M391	1	max	-0.238	91	5.046	82	0.034	99	1.699	45	0.307	81	3.266	88
		min	-0.437	22	1.914	100	-0.029	81	-1.185	97	-0.294	99	-2.985	94
	2	max	-0.119	91	2.125	82	0.034	99	1.699	45	0.204	81	-0.525	100
		min	-0.218	22	0.246	100	-0.029	81	-1.185	97	-0.174	99	-15.318	82
	3	max	0	22	-0.162	94	0.034	99	1.699	45	0.101	81	1.538	100
		min	0	22	-2.094	88	-0.029	81	-1.185	97	-0.054	99	-17.652	82
	4	max	0.218	22	-1.83	94	0.034	99	1.699	45	0.098	48	9.939	88
		min	0.119	95	-5.015	88	-0.029	81	-1.185	97	-0.027	26	-10.058	94
	5	max	0.437	22	-3.498	94	0.034	99	1.699	45	0.186	99	32.659	88
		min	0.238	95	-7.935	88	-0.029	81	-1.185	97	-0.104	81	-0.71	94
M392	1	max	0	22	12.98	88	0.015	78	0.689	91	0.164	97	35.097	88
		min	0	22	-1.24	94	-0.026	96	-0.863	85	-0.097	79	-3.022	94
	2	max	0	22	10.059	88	0.015	78	0.689	91	0.078	97	4.239	94
		min	0	22	-2.908	94	-0.026	96	-0.863	85	-0.049	79	-5.222	88
	3	max	0	22	7.139	88	0.015	78	0.689	91	0.034	87	17.338	94
		min	0	22	-4.576	94	-0.026	96	-0.863	85	-0.051	48	-35.319	88
	4	max	0	22	4.517	100	0.015	78	0.689	91	0.075	78	36.274	94
		min	0	22	-6.577	82	-0.026	96	-0.863	85	-0.123	96	-55.194	88
	5	max	0	22	2.849	100	0.015	78	0.689	91	0.129	78	61.049	94
		min	0	22	-9.497	82	-0.026	96	-0.863	85	-0.215	96	-64.848	88
M393	1	max	-0.478	92	10.325	88	0.034	84	1.48	84	-0.034	93	80.362	88
		min	-0.876	22	0.861	94	0.003	90	-0.506	90	-0.246	87	-35.982	94
	2	max	-0.239	92	7.405	88	0.034	84	1.48	84	0.014	93	49.017	88
		min	-0.438	22	-0.807	94	0.003	90	-0.506	90	-0.161	87	-36.077	94
	3	max	0	22	4.484	88	0.034	84	1.48	84	0.063	81	27.999	88
		min	0	22	-2.475	94	0.003	90	-0.506	90	-0.076	87	-30.373	82
	4	max	0.438	22	1.897	100	0.034	84	1.48	84	0.16	84	18.162	100
		min	0.239	100	-4.485	82	0.003	90	-0.506	90	-0.042	90	-19.679	82
	5	max	0.876	22	0.229	100	0.034	84	1.48	84	0.282	84	16.939	88
		min	0.478	100	-7.405	82	0.003	90	-0.506	90	-0.031	90	-1.781	34
M394	1	max	-0.357	98	12.181	88	0.027	99	1.102	48	0.088	81	18.519	88
		min	-0.655	22	-3.495	94	-0.037	81	-0.758	90	-0.068	99	-2.398	94
	2	max	-0.179	98	9.261	88	0.027	99	1.102	48	0.028	99	12.839	94
		min	-0.328	22	-5.163	94	-0.037	81	-0.758	90	-0.042	81	-19.219	88
	3	max	0	22	6.956	100	0.027	99	1.102	48	0.124	99	33.947	94
		min	0	22	-7.489	82	-0.037	81	-0.758	90	-0.172	81	-46.678	88
	4	max	0.328	22	5.288	100	0.027	99	1.102	48	0.221	99	63.788	82
		min	0.179	92	-10.409	82	-0.037	81	-0.758	90	-0.303	81	-66.2	100
	5	max	0.655	22	3.62	100	0.027	99	1.102	48	0.317	99	105.569	82
		min	0.357	92	-13.33	82	-0.037	81	-0.758	90	-0.433	81	-81.88	100
M395	1	max	3.498	22	15.387	84	0.033	82	1.29	78	0.52	88	45.007	84
		min	1.908	95	0.24	90	-0.032	100	-0.971	96	-0.402	94	-10.599	90
	2	max	1.749	22	10.493	84	0.033	82	1.29	78	0.328	88	-3.426	90
		min	0.954	95	-2.555	90	-0.032	100	-0.971	96	-0.204	94	-41.5	48
	3	max	0	22	5.599	84	0.033	82	1.29	78	0.403	84	21.068	90
		min	0	22	-5.35	90	-0.032	100	-0.971	96	-0.27	90	-85.042	84
	4	max	-0.954	89	2.637	96	0.033	82	1.29	78	0.496	84	62.885	90
		min	-1.749	22	-10.114	78	-0.032	100	-0.971	96	-0.355	90	-104.576	84
	5	max	-1.908	89	-0.158	96	0.033	82	1.29	78	0.588	84	131.422	78
		min	-3.498	22	-15.008	78	-0.032	100	-0.971	96	-0.44	90	-101.882	96
M396	1	max	0.655	22	13.248	81	0.024	100	1.246	85	0.448	51	95.03	81
		min	0.357	92	-4.517	99	-0.05	48	-1.311	47	-0.451	88	-78.674	99
	2	max	0.328	22	10.328	81	0.024	100	1.246	85	0.284	51	54.313	93
		min	0.179	92	-6.185	99	-0.05	48	-1.311	47	-0.38	88	-61.011	87
	3	max	0	22	7.41	93	0.024	100	1.246	85	0.203	90	25.293	93
		min	0	22	-7.881	87	-0.05	48	-1.311	47	-0.348	84	-38.409	87
	4	max	-0.179	99	5.742	93	0.024	100	1.246	85	0.266	90	2.145	93
		min	-0.328	22	-10.802	87	-0.05	48	-1.311	47	-0.457	84	-5.526	87
	5	max	-0.357	99	4.074	93	0.024	100	1.246	85	0.328	90	37.636	87

Member	Section		Axial (k)	LC	Y Shear (k)	LC	Z Shear (k)	LC	Torque (k*ft)	LC	My (k*ft)	LC	Mz (k*ft)	LC
		min	-0.655	22	-13.722	87	-0.05	48	-1.311	47	-0.567	84	-15.131	93
M397	1	max	0.157	22	9.421	81	0.039	48	0.866	90	0.123	100	19.576	81
		min	0.086	99	0.244	99	-0.021	91	-1.55	84	-0.288	48	4.855	99
	2	max	0.079	22	6.501	81	0.039	48	0.866	90	0.127	100	6.921	99
		min	0.043	99	-1.424	99	-0.021	91	-1.55	84	-0.161	51	-8.296	81
	3	max	0	22	3.58	81	0.039	48	0.866	90	0.146	88	14.827	99
		min	0	22	-3.092	99	-0.021	91	-1.55	84	-0.102	94	-25.943	81
	4	max	-0.043	93	1.792	93	0.039	48	0.866	90	0.24	84	28.573	99
		min	-0.079	22	-5.885	87	-0.021	91	-1.55	84	-0.142	90	-33.365	81
	5	max	-0.086	93	0.124	93	0.039	48	0.866	90	0.367	84	53.044	87
		min	-0.157	22	-8.805	87	-0.021	91	-1.55	84	-0.215	90	-35.28	93
M398	1	max	0.437	22	13.157	81	0.035	91	2.797	85	0.27	85	74.254	81
		min	0.238	93	-3.822	99	-0.057	85	-1.797	91	-0.164	91	-50.412	99
	2	max	0.218	22	10.237	81	0.035	91	2.797	85	0.128	94	33.263	93
		min	0.119	93	-5.49	99	-0.057	85	-1.797	91	-0.102	88	-34.363	87
	3	max	0	22	7.316	81	0.035	91	2.797	85	0.081	91	4.977	93
		min	0	22	-7.158	99	-0.057	85	-1.797	91	-0.132	85	-14.539	87
	4	max	-0.119	98	5.559	93	0.035	91	2.797	85	0.204	91	16.159	99
		min	-0.218	22	-10.03	87	-0.057	85	-1.797	91	-0.333	85	-18.132	81
	5	max	-0.238	98	3.891	93	0.035	91	2.797	85	0.327	91	55.852	87
		min	-0.437	22	-12.951	87	-0.057	85	-1.797	91	-0.534	85	-34.037	93
M399	1	max	0	22	16.381	81	0.018	96	1.044	90	0.116	90	69.786	81
		min	0	22	-4.946	99	-0.015	78	-1.904	84	-0.185	84	-39.331	99
	2	max	0	22	13.461	81	0.018	96	1.044	90	0.065	91	17.825	93
		min	0	22	-6.614	99	-0.015	78	-1.904	84	-0.125	85	-19.403	87
	3	max	0	22	10.54	81	0.018	96	1.044	90	0.019	91	6.968	99
		min	0	22	-8.282	99	-0.015	78	-1.904	84	-0.07	85	-24.438	81
	4	max	0	22	8.186	93	0.018	96	1.044	90	0.012	96	38.875	99
		min	0	22	-10.549	87	-0.015	78	-1.904	84	-0.053	78	-56.218	81
	5	max	0	22	6.518	93	0.018	96	1.044	90	0.075	96	76.62	99
		min	0	22	-13.469	87	-0.015	78	-1.904	84	-0.107	78	-77.776	81
M400	1	max	-1.516	95	15.16	79	0.013	81	1.033	99	0.235	99	140.466	79
		min	-2.779	22	-1.737	97	-0.011	99	-1.061	81	-0.278	81	-131.177	97
	2	max	-0.758	95	10.266	79	0.013	81	1.033	99	0.166	99	74.464	91
		min	-1.39	22	-4.532	97	-0.011	99	-1.061	81	-0.198	81	-124.521	85
	3	max	0	22	6.196	91	0.013	81	1.033	99	0.097	99	28.322	91
		min	0	22	-8.217	85	-0.011	99	-1.061	81	-0.118	81	-89.458	85
	4	max	1.39	22	3.401	91	0.013	81	1.033	99	0.057	78	4.349	30
		min	0.758	91	-13.111	85	-0.011	99	-1.061	81	-0.067	96	-24.657	85
	5	max	2.779	22	0.605	91	0.013	81	1.033	99	0.071	78	69.883	85
		min	1.516	91	-18.005	85	-0.011	99	-1.061	81	-0.07	96	-13.007	91
M401B	1	max	3.216	22	19.507	85	0.01	84	0.683	88	0.081	90	93.628	85
		min	1.754	91	-1.3	91	-0.008	90	-0.608	94	-0.095	84	-29.679	91
	2	max	1.608	22	14.613	85	0.01	84	0.683	88	0.04	94	3.958	26
		min	0.877	91	-4.095	91	-0.008	90	-0.608	94	-0.039	88	-20.621	22
	3	max	0	22	9.72	85	0.01	84	0.683	88	0.066	82	20.661	91
		min	0	22	-6.89	91	-0.008	90	-0.608	94	-0.049	100	-86.025	85
	4	max	-0.877	95	5.73	97	0.01	84	0.683	88	0.099	81	71.603	91
		min	-1.608	22	-10.683	79	-0.008	90	-0.608	94	-0.067	99	-130.729	85
	5	max	-1.754	95	2.935	97	0.01	84	0.683	88	0.152	84	139.726	91
		min	-3.216	22	-15.577	79	-0.008	90	-0.608	94	-0.104	90	-145.351	85
M402B	1	max	2.779	22	17.888	84	0.021	82	0.846	90	0.342	88	85.375	84
		min	1.516	95	-0.552	90	-0.021	100	-1.332	84	-0.262	94	-28.042	90
	2	max	1.39	22	12.995	84	0.021	82	0.846	90	0.214	88	5.004	26
		min	0.758	95	-3.347	90	-0.021	100	-1.332	84	-0.135	94	-24.894	47
	3	max	0	22	8.101	84	0.021	82	0.846	90	0.197	84	12.633	90
		min	0	22	-6.142	90	-0.021	100	-1.332	84	-0.12	90	-72.553	84
	4	max	-0.758	89	4.525	96	0.021	82	0.846	90	0.214	84	58.448	90
		min	-1.39	22	-10.32	78	-0.021	100	-1.332	84	-0.138	90	-106.91	84
	5	max	-1.516	89	1.73	96	0.021	82	0.846	90	0.269	81	125.174	78
		min	-2.779	22	-15.214	78	-0.021	100	-1.332	84	-0.194	99	-114.325	96
M403B	1	max	3.498	22	17.651	84	0.006	84	0.591	84	0.169	82	72.171	84
		min	1.908	97	-0.68	90	-0.009	90	-0.443	90	-0.094	100	-24.66	90
	2	max	1.749	22	12.757	84	0.006	84	0.591	84	0.124	51	-2.863	26
		min	0.954	97	-3.475	90	-0.009	90	-0.443	90	-0.059	100	-30.764	48
	3	max	0	22	7.863	84	0.006	84	0.591	84	0.099	51	18.408	90
		min	0	22	-6.27	90	-0.009	90	-0.443	90	-0.027	26	-85.941	84
	4	max	-0.954	95	4.441	96	0.006	84	0.591	84	0.086	48	65.925	90
		min	-1.749	22	-10.597	78	-0.009	90	-0.443	90	-0.034	91	-119.507	84
	5	max	-1.908	95	1.646	96	0.006	84	0.591	84	0.094	84	134.281	78
		min	-3.498	22	-15.491	78	-0.009	90	-0.443	90	-0.086	90	-125.013	96

Blackwell

Structural Engineers

APPENDIX E

Reaction Forces (For Footing Design)

Blackwell

Title: **REACTIONS (ASD)**

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood

Project Number: 160063

Date: 5/10/2016

LC	LOCATION	X (k)	Y (k)	Z (k)
116	A1	-2.512	35.668	-0.118
117	A1	-4.611	48.456	-0.472
118	A1	-2.512	35.668	-0.118
119	A1	-5.423	89.6	0.279
120	A1	-6.269	85.708	-0.086
121	A1	-8.326	38.936	0.583
122	A1	3.199	29.856	-0.829
123	A1	-8.266	39.92	0.586
124	A1	3.254	30.815	-0.826
125	A1	2.441	29.773	-0.735
126	A1	-1.991	32.528	-1.391
127	A1	-3.074	37.464	1.14
128	A1	-1.966	33.495	-1.386
129	A1	-3.05	38.412	1.151
130	A1	-2.029	31.372	-1.387
131	A1	-3.696	42.904	-1.338
132	A1	-4.508	46.606	0.56
133	A1	-8.447	47.71	0.142
134	A1	0.197	40.9	-0.917
135	A1	-3.677	43.629	-1.334
136	A1	-4.489	47.317	0.568
137	A1	-8.401	48.448	0.144
138	A1	0.238	41.619	-0.915
139	A1	-3.723	42.037	-1.335
140	A1	-0.371	40.837	-0.847
141	A1	-5.878	83.353	-1.04
142	A1	-6.691	87.055	0.857
143	A1	-10.629	88.159	0.44
144	A1	-1.986	81.349	-0.619
145	A1	-5.859	84.078	-1.037
146	A1	-6.672	87.766	0.866
147	A1	-10.584	88.897	0.442
148	A1	-1.944	82.068	-0.617
149	A1	-5.906	82.486	-1.037

LC	LOCATION	X (k)	Y (k)	Z (k)	
150	A1	-2.554	81.286	-0.549	
151	A1	-0.986	18.261	-1.344	
152	A1	-2.069	23.197	1.187	
153	A1	-7.321	24.669	0.63	
154	A1	4.204	15.589	-0.782	
155	A1	-0.961	19.228	-1.338	
156	A1	-2.045	24.145	1.198	
157	A1	-7.261	25.653	0.633	
158	A1	4.259	16.547	-0.779	
159	A1	-1.024	17.105	-1.339	
160	A1	3.446	15.505	-0.688	
161	A1	-14.976	51.971	1.752	
162	A1	-13.221	52.629	2.207	
163	A1	-16.731	51.313	1.297	
164	A1	-0.914	23.395	-7.03	
165	A1	-1.418	23.244	-7.164	
166	A1	-0.41	23.547	-6.897	
167	A1	9.47	26.186	-2.01	
168	A1	7.716	25.528	-2.465	
169	A1	11.225	26.844	-1.555	
170	A1	-4.591	54.762	6.772	
171	A1	-4.087	54.914	6.905	
172	A1	-5.095	54.611	6.638	
173	A1	-13.434	57.486	1.019	
174	A1	-12.118	57.98	1.36	
175	A1	-14.75	56.993	0.677	
176	A1	-2.888	36.054	-5.568	
177	A1	-3.266	35.941	-5.668	
178	A1	-2.509	36.168	-5.468	
179	A1	4.901	38.148	-1.803	
180	A1	3.585	37.654	-2.144	
181	A1	6.217	38.641	-1.462	
182	A1	-5.645	59.58	4.783	
183	A1	-5.267	59.693	4.883	
184	A1	-6.024	59.466	4.683	
185	A1	-15.617	97.935	1.316	
186	A1	-14.3	98.428	1.658	
187	A1	-16.933	97.442	0.975	
188	A1	-5.07	76.503	-5.27	
189	A1	-5.449	76.389	-5.37	
190	A1	-4.692	76.617	-5.17	
191	A1	2.718	78.596	-1.505	
192	A1	1.402	78.103	-1.847	
193	A1	4.034	79.09	-1.164	
194	A1	-7.828	100.028	5.081	
195	A1	-7.45	100.142	5.181	←WORST CASE COMPRESSION

LC	LOCATION	X (k)	Y (k)	Z (k)
196	A1	-8.206	99.915	4.981
197	A1	-13.49	30.883	1.822
198	A1	-11.735	31.541	2.277
199	A1	-15.245	30.225	1.367
200	A1	0.571	2.307	-6.96
201	A1	0.067	2.155	-7.094
202	A1	1.076	2.458	-6.827
203	A1	10.956	5.098	-1.941
204	A1	9.201	4.44	-2.396
205	A1	12.711	5.755	-1.486
206	A1	-3.106	33.674	6.841
207	A1	-2.602	33.825	6.975
208	A1	-3.61	33.522	6.708
116	A2	-1.31	44.151	-0.552
117	A2	-2.296	59.502	-0.976
118	A2	-1.31	44.151	-0.552
119	A2	-0.588	81.948	-0.057
120	A2	-1.508	84.012	-0.499
121	A2	-7.019	45.154	0.309
122	A2	4.333	40.417	-1.426
123	A2	-6.985	46.223	0.313
124	A2	4.374	41.454	-1.423
125	A2	3.708	39.866	-1.312
126	A2	-1.235	43.532	-2.115
127	A2	-1.403	43.337	0.992
128	A2	-1.224	44.55	-2.108
129	A2	-1.394	44.348	1.006
130	A2	-1.25	42.288	-2.11
131	A2	-1.994	55.2	-2.042
132	A2	-2.119	55.054	0.288
133	A2	-6.332	56.417	-0.225
134	A2	2.182	52.864	-1.526
135	A2	-1.985	55.963	-2.037
136	A2	-2.112	55.812	0.298
137	A2	-6.306	57.218	-0.221
138	A2	2.214	53.642	-1.523
139	A2	-2.005	54.267	-2.039
140	A2	1.713	52.451	-1.44
141	A2	-1.452	83.548	-1.671
142	A2	-1.578	83.402	0.659
143	A2	-5.79	84.765	0.147
144	A2	2.723	81.212	-1.154
145	A2	-1.444	84.311	-1.666
146	A2	-1.571	84.161	0.67
147	A2	-5.765	85.566	0.15
148	A2	2.755	81.99	-1.152

LC	LOCATION	X (k)	Y (k)	Z (k)
149	A2	-1.464	82.615	-1.667
150	A2	2.255	80.799	-1.069
151	A2	-0.711	25.872	-1.894
152	A2	-0.879	25.676	1.212
153	A2	-6.495	27.494	0.53
154	A2	4.857	22.757	-1.205
155	A2	-0.7	26.889	-1.887
156	A2	-0.87	26.688	1.227
157	A2	-6.461	28.562	0.534
158	A2	4.898	23.794	-1.202
159	A2	-0.726	24.627	-1.889
160	A2	4.232	22.206	-1.091
161	A2	-13.261	55.554	1.706
162	A2	-12.996	56.122	2.263
163	A2	-13.525	54.985	1.149
164	A2	-1.29	48.282	-9.074
165	A2	-1.379	48.149	-9.238
166	A2	-1.202	48.415	-8.911
167	A2	10.39	41.191	-2.916
168	A2	10.126	40.623	-3.473
169	A2	10.655	41.76	-2.359
170	A2	-1.58	48.463	7.864
171	A2	-1.492	48.596	8.028
172	A2	-1.668	48.329	7.701
173	A2	-11.013	64.216	0.823
174	A2	-10.814	64.642	1.241
175	A2	-11.211	63.79	0.406
176	A2	-2.035	58.762	-7.262
177	A2	-2.101	58.662	-7.384
178	A2	-1.969	58.862	-7.139
179	A2	6.725	53.444	-2.643
180	A2	6.527	53.018	-3.061
181	A2	6.924	53.871	-2.225
182	A2	-2.252	58.898	5.442
183	A2	-2.186	58.998	5.565
184	A2	-2.319	58.798	5.32
185	A2	-10.471	92.564	1.195
186	A2	-10.273	92.991	1.613
187	A2	-10.67	92.138	0.777
188	A2	-1.494	87.111	-6.89
189	A2	-1.56	87.011	-7.013
190	A2	-1.428	87.211	-6.768
191	A2	7.267	81.793	-2.272
192	A2	7.068	81.367	-2.69
193	A2	7.465	82.219	-1.854
194	A2	-1.711	87.246	5.814

LC	LOCATION	X (k)	Y (k)	Z (k)
195	A2	-1.645	87.346	5.936
196	A2	-1.777	87.146	5.691
197	A2	-12.486	29.45	2.033
198	A2	-12.222	30.018	2.59
199	A2	-12.751	28.882	1.475
200	A2	-0.516	22.178	-8.748
201	A2	-0.604	22.045	-8.911
202	A2	-0.428	22.312	-8.585
203	A2	11.165	15.088	-2.59
204	A2	10.9	14.519	-3.147
205	A2	11.429	15.656	-2.032
206	A2	-0.806	22.359	8.191
207	A2	-0.717	22.492	8.354
208	A2	-0.894	22.226	8.028
116	A3	-1.885	41.3	-0.474
117	A3	-3.634	56.475	-0.869
118	A3	-1.885	41.3	-0.474
119	A3	-1.751	74.239	0.306
120	A3	-3.096	77.385	-0.185
121	A3	-5.915	43.254	0.511
122	A3	2.085	36.677	-1.49
123	A3	-5.889	44.28	0.522
124	A3	2.119	37.691	-1.48
125	A3	1.649	36.446	-1.362
126	A3	-2.071	40.689	-2.255
127	A3	-1.718	40.521	1.277
128	A3	-2.059	41.673	-2.241
129	A3	-1.707	41.508	1.299
130	A3	-2.085	39.488	-2.258
131	A3	-3.336	52.223	-2.106
132	A3	-3.071	52.097	0.543
133	A3	-6.219	54.147	-0.032
134	A3	-0.219	49.214	-1.533
135	A3	-3.327	52.961	-2.096
136	A3	-3.063	52.837	0.56
137	A3	-6.2	54.916	-0.024
138	A3	-0.194	49.975	-1.525
139	A3	-3.346	51.322	-2.109
140	A3	-0.546	49.041	-1.437
141	A3	-3.235	76.927	-1.521
142	A3	-2.97	76.801	1.128
143	A3	-6.118	78.851	0.553
144	A3	-0.118	73.918	-0.947
145	A3	-3.226	77.665	-1.511
146	A3	-2.962	77.541	1.145
147	A3	-6.099	79.62	0.561

LC	LOCATION	X (k)	Y (k)	Z (k)
148	A3	-0.093	74.679	-0.94
149	A3	-3.245	76.026	-1.523
150	A3	-0.445	73.745	-0.852
151	A3	-1.317	24.169	-2.066
152	A3	-0.963	24.001	1.467
153	A3	-5.161	26.734	0.7
154	A3	2.839	20.157	-1.3
155	A3	-1.305	25.153	-2.051
156	A3	-0.953	24.988	1.489
157	A3	-5.135	27.76	0.711
158	A3	2.873	21.171	-1.29
159	A3	-1.331	22.968	-2.069
160	A3	2.404	19.926	-1.173
161	A3	-10.601	55.629	2.158
162	A3	-11.065	55.534	2.789
163	A3	-10.138	55.723	1.526
164	A3	-2.843	45.492	-10.141
165	A3	-2.715	45.51	-10.327
166	A3	-2.971	45.474	-9.956
167	A3	6.47	34.87	-3.196
168	A3	6.934	34.964	-3.828
169	A3	6.006	34.775	-2.565
170	A3	-1.288	45.006	9.103
171	A3	-1.417	44.988	9.288
172	A3	-1.16	45.024	8.917
173	A3	-9.734	63.428	1.203
174	A3	-10.082	63.357	1.677
175	A3	-9.386	63.499	0.729
176	A3	-3.915	55.825	-8.021
177	A3	-3.819	55.839	-8.16
178	A3	-4.011	55.812	-7.882
179	A3	3.07	47.859	-2.812
180	A3	3.417	47.929	-3.286
181	A3	2.722	47.788	-2.338
182	A3	-2.749	55.461	6.412
183	A3	-2.845	55.447	6.551
184	A3	-2.653	55.475	6.273
185	A3	-9.633	88.132	1.788
186	A3	-9.981	88.061	2.262
187	A3	-9.285	88.202	1.315
188	A3	-3.814	80.529	-7.436
189	A3	-3.718	80.543	-7.575
190	A3	-3.91	80.516	-7.297
191	A3	3.171	72.562	-2.227
192	A3	3.518	72.633	-2.701
193	A3	2.823	72.492	-1.753

LC	LOCATION	X (k)	Y (k)	Z (k)
194	A3	-2.648	80.165	6.997
195	A3	-2.744	80.151	7.136
196	A3	-2.552	80.179	6.858
197	A3	-9.487	31.21	2.438
198	A3	-9.95	31.116	3.07
199	A3	-9.023	31.305	1.806
200	A3	-1.728	21.074	-9.861
201	A3	-1.6	21.092	-10.046
202	A3	-1.857	21.056	-9.676
203	A3	7.585	10.451	-2.916
204	A3	8.048	10.546	-3.548
205	A3	7.121	10.357	-2.284
206	A3	-0.174	20.588	9.383
207	A3	-0.302	20.57	9.568
208	A3	-0.045	20.606	9.198
116	A4	-1.139	41.847	-0.062
117	A4	-2.414	56.787	-0.195
118	A4	-1.139	41.847	-0.062
119	A4	-1.007	76.899	0.037
120	A4	-1.996	79.34	-0.088
121	A4	-5.596	43.944	0.17
122	A4	3.248	37.049	-0.295
123	A4	-5.565	44.972	0.17
124	A4	3.286	38.073	-0.295
125	A4	2.723	36.81	-0.264
126	A4	-1.411	40.895	-0.48
127	A4	-0.889	41.32	0.353
128	A4	-1.397	41.986	-0.48
129	A4	-0.875	42.323	0.355
130	A4	-1.425	39.574	-0.478
131	A4	-2.299	52.338	-0.475
132	A4	-1.908	52.656	0.149
133	A4	-5.437	54.625	0.012
134	A4	1.195	49.453	-0.336
135	A4	-2.288	53.156	-0.475
136	A4	-1.897	53.409	0.152
137	A4	-5.415	55.395	0.013
138	A4	1.223	50.222	-0.336
139	A4	-2.31	51.347	-0.473
140	A4	0.801	49.274	-0.313
141	A4	-2.2	78.626	-0.401
142	A4	-1.809	78.945	0.224
143	A4	-5.339	80.913	0.087
144	A4	1.294	75.741	-0.262
145	A4	-2.19	79.444	-0.401
146	A4	-1.798	79.697	0.226

LC	LOCATION	X (k)	Y (k)	Z (k)
147	A4	-5.316	81.684	0.087
148	A4	1.322	76.51	-0.262
149	A4	-2.211	77.635	-0.399
150	A4	0.9	75.562	-0.239
151	A4	-0.955	24.156	-0.456
152	A4	-0.433	24.581	0.377
153	A4	-5.14	27.205	0.195
154	A4	3.704	20.31	-0.27
155	A4	-0.941	25.247	-0.455
156	A4	-0.419	25.584	0.38
157	A4	-5.11	28.233	0.195
158	A4	3.741	21.334	-0.27
159	A4	-0.969	22.835	-0.453
160	A4	3.178	20.071	-0.239
161	A4	-11.158	56.544	0.55
162	A4	-11.996	56.421	0.699
163	A4	-10.321	56.667	0.4
164	A4	-2.133	45.825	-2.341
165	A4	-1.889	45.838	-2.384
166	A4	-2.376	45.812	-2.297
167	A4	8.663	35.154	-0.686
168	A4	9.5	35.277	-0.836
169	A4	7.825	35.031	-0.536
170	A4	-0.363	45.873	2.204
171	A4	-0.607	45.86	2.248
172	A4	-0.12	45.886	2.161
173	A4	-9.61	64.075	0.297
174	A4	-10.238	63.982	0.41
175	A4	-8.981	64.167	0.185
176	A4	-2.84	56.035	-1.87
177	A4	-2.657	56.045	-1.903
178	A4	-3.023	56.026	-1.838
179	A4	5.256	48.032	-0.629
180	A4	5.884	48.124	-0.742
181	A4	4.628	47.939	-0.517
182	A4	-1.513	56.071	1.538
183	A4	-1.696	56.061	1.571
184	A4	-1.33	56.081	1.505
185	A4	-9.511	90.363	0.371
186	A4	-10.139	90.271	0.484
187	A4	-8.883	90.455	0.259
188	A4	-2.742	82.324	-1.796
189	A4	-2.559	82.333	-1.829
190	A4	-2.924	82.314	-1.763
191	A4	5.355	74.32	-0.555
192	A4	5.983	74.412	-0.668

LC	LOCATION	X (k)	Y (k)	Z (k)
193	A4	4.727	74.228	-0.443
194	A4	-1.414	82.359	1.612
195	A4	-1.597	82.35	1.645
196	A4	-1.232	82.369	1.579
197	A4	-10.485	31.802	0.586
198	A4	-11.323	31.679	0.736
199	A4	-9.647	31.925	0.437
200	A4	-1.459	21.083	-2.304
201	A4	-1.215	21.096	-2.348
202	A4	-1.703	21.07	-2.26
203	A4	9.336	10.412	-0.649
204	A4	10.174	10.535	-0.799
205	A4	8.498	10.289	-0.499
206	A4	0.31	21.131	2.241
207	A4	0.066	21.118	2.285
208	A4	0.554	21.144	2.197
116	A5	-2.617	33.831	-1.105
117	A5	-4.522	49.256	-1.659
118	A5	-2.617	33.831	-1.105
119	A5	0.354	73.513	-0.978
120	A5	-1.817	75.161	-1.426
121	A5	-6.176	39.036	-0.288
122	A5	0.836	26.207	-1.905
123	A5	-6.132	39.923	-0.295
124	A5	0.883	27.122	-1.913
125	A5	0.378	26.702	-1.791
126	A5	-2.874	35.64	-2.543
127	A5	-2.405	30.732	0.332
128	A5	-2.844	36.597	-2.548
129	A5	-2.374	31.62	0.335
130	A5	-2.907	34.468	-2.525
131	A5	-4.238	46.756	-2.599
132	A5	-3.886	43.075	-0.443
133	A5	-6.715	49.304	-0.908
134	A5	-1.455	39.682	-2.121
135	A5	-4.216	47.474	-2.603
136	A5	-3.863	43.742	-0.441
137	A5	-6.682	49.969	-0.913
138	A5	-1.421	40.368	-2.127
139	A5	-4.263	45.878	-2.586
140	A5	-1.799	40.053	-2.035
141	A5	-2.009	76.518	-2.505
142	A5	-1.657	72.837	-0.348
143	A5	-4.486	79.065	-0.813
144	A5	0.773	69.443	-2.026
145	A5	-1.987	77.236	-2.509

LC	LOCATION	X (k)	Y (k)	Z (k)
146	A5	-1.635	73.503	-0.346
147	A5	-4.453	79.73	-0.818
148	A5	0.808	70.129	-2.032
149	A5	-2.034	75.639	-2.491
150	A5	0.429	69.814	-1.941
151	A5	-1.827	22.107	-2.101
152	A5	-1.358	17.199	0.774
153	A5	-5.129	25.504	0.154
154	A5	1.883	12.674	-1.464
155	A5	-1.797	23.064	-2.107
156	A5	-1.327	18.088	0.777
157	A5	-5.085	26.391	0.147
158	A5	1.93	13.589	-1.471
159	A5	-1.86	20.936	-2.084
160	A5	1.425	13.169	-1.349
161	A5	-11.118	56.015	0.921
162	A5	-12.003	55.135	1.449
163	A5	-10.233	56.895	0.394
164	A5	-3.463	52.738	-9.064
165	A5	-3.203	52.951	-9.218
166	A5	-3.722	52.524	-8.91
167	A5	5.383	18.117	-3.342
168	A5	6.267	18.997	-3.869
169	A5	4.498	17.237	-2.815
170	A5	-2.273	21.394	6.643
171	A5	-2.532	21.181	6.798
172	A5	-2.014	21.608	6.489
173	A5	-10.421	62.038	0
174	A5	-11.085	61.378	0.394
175	A5	-9.758	62.698	-0.396
176	A5	-4.68	59.58	-7.49
177	A5	-4.485	59.74	-7.606
178	A5	-4.874	59.42	-7.374
179	A5	1.954	33.614	-3.198
180	A5	2.618	34.275	-3.594
181	A5	1.291	32.954	-2.803
182	A5	-3.787	36.072	4.291
183	A5	-3.982	35.912	4.406
184	A5	-3.593	36.233	4.175
185	A5	-8.192	91.799	0.094
186	A5	-8.856	91.139	0.489
187	A5	-7.529	92.459	-0.302
188	A5	-2.451	89.341	-7.395
189	A5	-2.256	89.501	-7.511
190	A5	-2.645	89.181	-7.279
191	A5	4.183	63.376	-3.104

LC	LOCATION	X (k)	Y (k)	Z (k)
192	A5	4.847	64.036	-3.499
193	A5	3.52	62.716	-2.708
194	A5	-1.559	65.834	4.385
195	A5	-1.753	65.674	4.501
196	A5	-1.364	65.994	4.27
197	A5	-9.571	36.013	1.575
198	A5	-10.455	35.133	2.102
199	A5	-8.686	36.893	1.047
200	A5	-1.915	32.735	-8.411
201	A5	-1.656	32.949	-8.565
202	A5	-2.174	32.522	-8.257
203	A5	6.93	-1.885	-2.689
204	A5	7.815	-1.005	-3.216
205	A5	6.046	-2.766	-2.162
206	A5	-0.725	1.392	7.297
207	A5	-0.985	1.179	7.451
208	A5	-0.466	1.606	7.142
116	B1	2.112	30.133	-0.058
117	B1	3.846	37.968	-0.055
118	B1	2.112	30.133	-0.058
119	B1	3.394	69.277	-0.076
120	B1	4.374	65.367	-0.069
121	B1	2.045	27.775	-0.065
122	B1	2.243	30.052	-0.049
123	B1	2.021	28.717	-0.066
124	B1	2.218	30.984	-0.05
125	B1	2.242	29.554	-0.05
126	B1	2.171	28.954	-0.068
127	B1	2.088	30.009	-0.047
128	B1	2.145	29.905	-0.068
129	B1	2.064	30.901	-0.048
130	B1	2.201	27.798	-0.067
131	B1	3.457	35.125	-0.063
132	B1	3.394	35.916	-0.048
133	B1	3.363	34.241	-0.062
134	B1	3.511	35.948	-0.05
135	B1	3.438	35.838	-0.064
136	B1	3.377	36.585	-0.048
137	B1	3.344	34.947	-0.062
138	B1	3.493	36.648	-0.05
139	B1	3.48	34.258	-0.063
140	B1	3.51	35.575	-0.05
141	B1	4.418	64.483	-0.077
142	B1	4.356	65.275	-0.061
143	B1	4.324	63.599	-0.075
144	B1	4.472	65.307	-0.063

← WORST CASE UPLIFT

NOTE:
WT. OF FTG. = 5.5 kip
0.6*(5.5) > 2.77 kip
O.K.

LC	LOCATION	X (k)	Y (k)	Z (k)
145	B1	4.399	65.196	-0.077
146	B1	4.338	65.944	-0.062
147	B1	4.306	64.305	-0.075
148	B1	4.454	66.006	-0.063
149	B1	4.441	63.616	-0.077
150	B1	4.471	64.933	-0.064
151	B1	1.326	16.901	-0.045
152	B1	1.243	17.956	-0.024
153	B1	1.201	15.722	-0.042
154	B1	1.398	17.999	-0.026
155	B1	1.301	17.851	-0.045
156	B1	1.219	18.848	-0.025
157	B1	1.176	16.664	-0.043
158	B1	1.374	18.931	-0.027
159	B1	1.356	15.745	-0.044
160	B1	1.397	17.501	-0.027
161	B1	2.131	29.239	-0.085
162	B1	2.181	28.768	-0.093
163	B1	2.081	29.71	-0.077
164	B1	2.557	28.693	-0.113
165	B1	2.544	28.778	-0.111
166	B1	2.571	28.607	-0.116
167	B1	2.497	36.789	-0.042
168	B1	2.447	37.261	-0.034
169	B1	2.547	36.318	-0.049
170	B1	2.07	37.336	-0.013
171	B1	2.084	37.25	-0.016
172	B1	2.057	37.421	-0.011
173	B1	3.427	35.339	-0.076
174	B1	3.464	34.985	-0.082
175	B1	3.39	35.692	-0.071
176	B1	3.747	34.929	-0.098
177	B1	3.737	34.993	-0.096
178	B1	3.757	34.865	-0.099
179	B1	3.701	41.001	-0.044
180	B1	3.664	41.355	-0.038
181	B1	3.739	40.648	-0.05
182	B1	3.382	41.411	-0.022
183	B1	3.392	41.347	-0.024
184	B1	3.371	41.475	-0.021
185	B1	4.388	64.697	-0.09
186	B1	4.425	64.343	-0.096
187	B1	4.351	65.05	-0.084
188	B1	4.708	64.287	-0.111
189	B1	4.698	64.351	-0.109
190	B1	4.718	64.223	-0.113

LC	LOCATION	X (k)	Y (k)	Z (k)
191	B1	4.663	70.36	-0.057
192	B1	4.625	70.713	-0.051
193	B1	4.7	70.006	-0.063
194	B1	4.343	70.769	-0.036
195	B1	4.353	70.705	-0.038
196	B1	4.333	70.833	-0.034
197	B1	0.882	11.423	-0.051
198	B1	0.932	10.952	-0.059
199	B1	0.832	11.895	-0.043
200	B1	1.309	10.877	-0.079
201	B1	1.295	10.963	-0.077
202	B1	1.322	10.791	-0.082
203	B1	1.248	18.974	-0.007
204	B1	1.198	19.445	0
205	B1	1.298	18.502	-0.015
206	B1	0.822	19.52	0.021
207	B1	0.835	19.434	0.019
208	B1	0.808	19.605	0.023
116	B2	2.275	41.913	0.084
117	B2	4.144	54.482	0.097
118	B2	2.275	41.913	0.084
119	B2	2.031	74.761	0.083
120	B2	3.494	75.976	0.094
121	B2	1.783	35.342	0.06
122	B2	2.817	45.819	0.106
123	B2	1.767	36.386	0.06
124	B2	2.798	46.84	0.107
125	B2	2.721	44.564	0.103
126	B2	2.339	40.026	0.064
127	B2	2.238	42.385	0.103
128	B2	2.319	41.049	0.064
129	B2	2.219	43.357	0.103
130	B2	2.362	38.789	0.064
131	B2	3.724	49.925	0.079
132	B2	3.649	51.694	0.108
133	B2	3.307	46.412	0.076
134	B2	4.083	54.27	0.111
135	B2	3.71	50.692	0.079
136	B2	3.635	52.423	0.109
137	B2	3.296	47.195	0.076
138	B2	4.069	55.035	0.111
139	B2	3.742	48.997	0.079
140	B2	4.012	53.328	0.109
141	B2	3.542	74.561	0.079
142	B2	3.466	76.33	0.108
143	B2	3.125	71.048	0.076

LC	LOCATION	X (k)	Y (k)	Z (k)
144	B2	3.9	78.906	0.111
145	B2	3.527	75.328	0.079
146	B2	3.452	77.059	0.108
147	B2	3.113	71.831	0.076
148	B2	3.886	79.671	0.111
149	B2	3.559	73.633	0.079
150	B2	3.829	77.965	0.108
151	B2	1.429	23.261	0.03
152	B2	1.328	25.62	0.069
153	B2	0.873	18.577	0.027
154	B2	1.907	29.054	0.073
155	B2	1.409	24.284	0.031
156	B2	1.309	26.592	0.07
157	B2	0.857	19.621	0.027
158	B2	1.888	30.075	0.073
159	B2	1.452	22.024	0.03
160	B2	1.812	27.799	0.07
161	B2	1.074	30.903	0.03
162	B2	1.193	30.203	0.014
163	B2	0.955	31.603	0.045
164	B2	2.779	39.288	-0.003
165	B2	2.75	39.476	0.001
166	B2	2.807	39.1	-0.007
167	B2	3.911	60.937	0.153
168	B2	3.792	61.637	0.169
169	B2	4.03	60.237	0.138
170	B2	2.206	52.553	0.186
171	B2	2.235	52.364	0.182
172	B2	2.178	52.741	0.19
173	B2	2.776	43.083	0.053
174	B2	2.865	42.558	0.042
175	B2	2.686	43.607	0.065
176	B2	4.054	49.371	0.029
177	B2	4.033	49.512	0.032
178	B2	4.076	49.23	0.026
179	B2	4.904	65.608	0.146
180	B2	4.814	66.133	0.158
181	B2	4.993	65.083	0.135
182	B2	3.625	59.32	0.171
183	B2	3.647	59.178	0.167
184	B2	3.604	59.461	0.174
185	B2	2.593	67.719	0.053
186	B2	2.682	67.194	0.042
187	B2	2.504	68.244	0.065
188	B2	3.872	74.007	0.029
189	B2	3.85	74.149	0.032

LC	LOCATION	X (k)	Y (k)	Z (k)
190	B2	3.893	73.866	0.025
191	B2	4.721	90.244	0.146
192	B2	4.632	90.769	0.157
193	B2	4.81	89.719	0.135
194	B2	3.442	83.956	0.17
195	B2	3.464	83.815	0.167
196	B2	3.421	84.097	0.174
197	B2	-0.271	6.123	-0.02
198	B2	-0.152	5.423	-0.035
199	B2	-0.39	6.823	-0.004
200	B2	1.434	14.508	-0.052
201	B2	1.405	14.696	-0.048
202	B2	1.462	14.319	-0.057
203	B2	2.566	36.157	0.104
204	B2	2.447	36.857	0.119
205	B2	2.685	35.457	0.089
206	B2	0.861	27.772	0.137
207	B2	0.89	27.584	0.132
208	B2	0.832	27.96	0.141
116	B3	2.206	43.991	3.337
117	B3	4.157	59.694	5.67
118	B3	2.206	43.991	3.337
119	B3	1.596	80.411	5.117
120	B3	3.212	83.083	6.422
121	B3	1.566	36.43	0.774
122	B3	2.907	48.589	5.667
123	B3	1.545	37.592	0.864
124	B3	2.884	49.723	5.757
125	B3	2.805	47.116	5.291
126	B3	2.215	42.22	1.012
127	B3	2.229	44.197	5.536
128	B3	2.191	43.347	1.097
129	B3	2.206	45.28	5.624
130	B3	2.244	40.857	0.929
131	B3	3.677	54.44	3.344
132	B3	3.687	55.922	6.736
133	B3	3.19	50.097	3.165
134	B3	4.195	59.216	6.835
135	B3	3.659	55.285	3.407
136	B3	3.67	56.734	6.802
137	B3	3.174	50.969	3.232
138	B3	4.178	60.067	6.902
139	B3	3.699	53.417	3.281
140	B3	4.119	58.112	6.552
141	B3	3.219	81.754	4.678
142	B3	3.23	83.237	8.071

LC	LOCATION	X (k)	Y (k)	Z (k)
143	B3	2.732	77.412	4.5
144	B3	3.738	86.531	8.169
145	B3	3.201	82.599	4.742
146	B3	3.213	84.049	8.137
147	B3	2.717	78.283	4.567
148	B3	3.721	87.382	8.237
149	B3	3.241	80.732	4.616
150	B3	3.662	85.426	7.887
151	B3	1.333	24.624	-0.322
152	B3	1.347	26.6	4.201
153	B3	0.683	18.834	-0.561
154	B3	2.025	30.992	4.332
155	B3	1.309	25.75	-0.237
156	B3	1.324	27.683	4.289
157	B3	0.663	19.996	-0.471
158	B3	2.002	32.127	4.422
159	B3	1.362	23.26	-0.406
160	B3	1.923	29.52	3.956
161	B3	0.695	30.406	-3.059
162	B3	0.71	29.689	-4.59
163	B3	0.681	31.123	-1.529
164	B3	2.396	43.784	-7.337
165	B3	2.395	43.999	-6.892
166	B3	2.398	43.569	-7.782
167	B3	4.138	65.99	10.372
168	B3	4.124	66.707	11.902
169	B3	4.153	65.273	8.841
170	B3	2.437	52.612	14.649
171	B3	2.439	52.397	14.204
172	B3	2.436	52.827	15.095
173	B3	2.537	45.579	0.29
174	B3	2.548	45.041	-0.858
175	B3	2.526	46.117	1.438
176	B3	3.812	55.612	-2.918
177	B3	3.811	55.774	-2.585
178	B3	3.813	55.451	-3.252
179	B3	5.119	72.267	10.363
180	B3	5.108	72.805	11.511
181	B3	5.13	71.729	9.215
182	B3	3.843	62.233	13.571
183	B3	3.844	62.072	13.237
184	B3	3.842	62.395	13.905
185	B3	2.08	72.893	1.625
186	B3	2.09	72.356	0.477
187	B3	2.069	73.431	2.773
188	B3	3.355	82.927	-1.584

LC	LOCATION	X (k)	Y (k)	Z (k)
189	B3	3.354	83.088	-1.25
190	B3	3.356	82.766	-1.918
191	B3	4.662	99.581	11.698
192	B3	4.651	100.119	12.846
193	B3	4.672	99.044	10.55
194	B3	3.386	89.548	14.906
195	B3	3.387	89.387	14.572
196	B3	3.385	89.709	15.24
197	B3	-0.609	4.396	-5.032
198	B3	-0.594	3.679	-6.563
199	B3	-0.623	5.114	-3.502
200	B3	1.092	17.774	-9.31
201	B3	1.091	17.99	-8.865
202	B3	1.093	17.559	-9.755
203	B3	2.834	39.98	8.399
204	B3	2.819	40.698	9.929
205	B3	2.848	39.263	6.868
206	B3	1.133	26.602	12.676
207	B3	1.134	26.387	12.231
208	B3	1.132	26.817	13.122
116	B4	1.584	39.834	-0.124
117	B4	2.99	52.356	-0.282
118	B4	1.584	39.834	-0.124
119	B4	1.019	66.233	-0.557
120	B4	2.215	69.025	-0.567
121	B4	1.34	33.908	-0.108
122	B4	1.876	43.694	-0.108
123	B4	1.323	34.718	-0.121
124	B4	1.858	44.486	-0.12
125	B4	1.835	42.56	-0.1
126	B4	1.587	38.859	-0.161
127	B4	1.607	39.731	-0.069
128	B4	1.569	39.627	-0.173
129	B4	1.589	40.484	-0.081
130	B4	1.608	37.93	-0.147
131	B4	2.64	48.495	-0.271
132	B4	2.655	49.148	-0.202
133	B4	2.455	44.781	-0.231
134	B4	2.857	52.121	-0.23
135	B4	2.627	49.07	-0.28
136	B4	2.642	49.713	-0.21
137	B4	2.442	45.388	-0.24
138	B4	2.844	52.714	-0.239
139	B4	2.656	47.797	-0.26
140	B4	2.826	51.27	-0.225
141	B4	2.217	68.294	-0.595

LC	LOCATION	X (k)	Y (k)	Z (k)
142	B4	2.232	68.948	-0.526
143	B4	2.031	64.58	-0.556
144	B4	2.434	71.92	-0.555
145	B4	2.203	68.87	-0.604
146	B4	2.218	69.512	-0.535
147	B4	2.019	65.188	-0.565
148	B4	2.42	72.514	-0.564
149	B4	2.233	67.597	-0.584
150	B4	2.403	71.07	-0.549
151	B4	0.953	22.926	-0.112
152	B4	0.973	23.798	-0.02
153	B4	0.706	17.974	-0.059
154	B4	1.243	27.761	-0.058
155	B4	0.935	23.693	-0.124
156	B4	0.955	24.55	-0.031
157	B4	0.689	18.785	-0.071
158	B4	1.224	28.552	-0.07
159	B4	0.975	21.996	-0.097
160	B4	1.201	26.627	-0.051
161	B4	1.002	29.481	-0.11
162	B4	0.982	29.013	-0.141
163	B4	1.021	29.949	-0.079
164	B4	1.692	42.318	-0.371
165	B4	1.698	42.468	-0.362
166	B4	1.686	42.167	-0.38
167	B4	2.469	57.804	-0.161
168	B4	2.489	58.272	-0.13
169	B4	2.45	57.336	-0.192
170	B4	1.779	44.968	0.1
171	B4	1.773	44.817	0.091
172	B4	1.785	45.118	0.109
173	B4	2.202	41.461	-0.232
174	B4	2.187	41.11	-0.255
175	B4	2.216	41.812	-0.209
176	B4	2.719	51.088	-0.428
177	B4	2.724	51.201	-0.421
178	B4	2.715	50.975	-0.435
179	B4	3.302	62.703	-0.27
180	B4	3.317	63.054	-0.247
181	B4	3.288	62.352	-0.293
182	B4	2.784	53.076	-0.074
183	B4	2.78	52.963	-0.081
184	B4	2.789	53.189	-0.068
185	B4	1.778	61.261	-0.557
186	B4	1.764	60.909	-0.58
187	B4	1.793	61.612	-0.534

LC	LOCATION	X (k)	Y (k)	Z (k)
188	B4	2.296	70.888	-0.753
189	B4	2.3	71.001	-0.746
190	B4	2.291	70.775	-0.759
191	B4	2.879	82.503	-0.595
192	B4	2.893	82.854	-0.572
193	B4	2.864	82.151	-0.618
194	B4	2.361	72.875	-0.399
195	B4	2.356	72.762	-0.406
196	B4	2.365	72.988	-0.393
197	B4	0.065	5.93	-0.037
198	B4	0.046	5.462	-0.068
199	B4	0.085	6.398	-0.006
200	B4	0.756	18.766	-0.298
201	B4	0.762	18.917	-0.289
202	B4	0.75	18.616	-0.307
203	B4	1.533	34.253	-0.088
204	B4	1.552	34.721	-0.057
205	B4	1.513	33.784	-0.119
206	B4	0.842	21.416	0.173
207	B4	0.836	21.265	0.165
208	B4	0.848	21.567	0.182
116	B5	1.284	40.437	-1.256
117	B5	2.333	57.224	-1.89
118	B5	1.284	40.437	-1.256
119	B5	0.371	80.149	-5.167
120	B5	1.386	82.812	-4.664
121	B5	1.403	36.278	-2.334
122	B5	1.213	41.698	0.055
123	B5	1.384	37.417	-2.426
124	B5	1.195	42.803	-0.033
125	B5	1.237	40.544	-0.045
126	B5	1.268	42.689	-2.792
127	B5	1.324	36.691	0.399
128	B5	1.251	43.753	-2.881
129	B5	1.307	37.746	0.315
130	B5	1.288	41.373	-2.671
131	B5	2.059	54.717	-2.884
132	B5	2.101	50.218	-0.49
133	B5	2.16	49.908	-2.54
134	B5	2.017	53.973	-0.748
135	B5	2.046	55.515	-2.95
136	B5	2.088	51.009	-0.553
137	B5	2.146	50.762	-2.609
138	B5	2.004	54.802	-0.814
139	B5	2.074	53.73	-2.792
140	B5	2.035	53.108	-0.823

LC	LOCATION	X (k)	Y (k)	Z (k)
141	B5	1.374	84.501	-5.816
142	B5	1.416	80.002	-3.423
143	B5	1.475	79.692	-5.473
144	B5	1.332	83.757	-3.681
145	B5	1.361	85.299	-5.883
146	B5	1.403	80.794	-3.486
147	B5	1.461	80.547	-5.542
148	B5	1.319	84.586	-3.747
149	B5	1.389	83.514	-5.725
150	B5	1.35	82.892	-3.756
151	B5	0.754	26.514	-2.29
152	B5	0.811	20.516	0.902
153	B5	0.889	20.103	-1.831
154	B5	0.699	25.523	0.557
155	B5	0.738	27.578	-2.378
156	B5	0.794	21.571	0.818
157	B5	0.871	21.242	-1.924
158	B5	0.681	26.628	0.469
159	B5	0.775	25.198	-2.168
160	B5	0.723	24.369	0.458
161	B5	1.657	34.952	-4.366
162	B5	1.659	37.18	-5.458
163	B5	1.655	32.723	-3.275
164	B5	1.214	60.88	-9.258
165	B5	1.213	60.28	-8.943
166	B5	1.215	61.479	-9.573
167	B5	1.157	53.656	1.614
168	B5	1.155	51.427	2.706
169	B5	1.159	55.884	0.522
170	B5	1.6	27.728	6.505
171	B5	1.602	28.328	6.19
172	B5	1.599	27.128	6.82
173	B5	2.351	48.914	-4.064
174	B5	2.352	50.585	-4.883
175	B5	2.349	47.242	-3.245
176	B5	2.018	68.359	-7.733
177	B5	2.017	67.91	-7.496
178	B5	2.019	68.809	-7.969
179	B5	1.975	62.941	0.421
180	B5	1.974	61.27	1.24
181	B5	1.977	64.613	-0.398
182	B5	2.308	43.496	4.089
183	B5	2.309	43.945	3.853
184	B5	2.307	43.046	4.326
185	B5	1.666	78.698	-6.997
186	B5	1.667	80.369	-7.816

LC	LOCATION	X (k)	Y (k)	Z (k)
187	B5	1.664	77.026	-6.178
188	B5	1.333	98.144	-10.666
189	B5	1.332	97.694	-10.429
190	B5	1.334	98.593	-10.902
191	B5	1.29	92.726	-2.512
192	B5	1.289	91.054	-1.693
193	B5	1.292	94.397	-3.331
194	B5	1.623	73.28	1.157
195	B5	1.624	73.73	0.92
196	B5	1.622	72.83	1.393
197	B5	0.898	11.044	-3.624
198	B5	0.9	13.272	-4.716
199	B5	0.896	8.815	-2.532
200	B5	0.454	36.971	-8.515
201	B5	0.453	36.372	-8.2
202	B5	0.456	37.571	-8.83
203	B5	0.397	29.748	2.356
204	B5	0.396	27.519	3.448
205	B5	0.399	31.976	1.264
206	B5	0.841	3.82	7.248
207	B5	0.842	4.42	6.933
208	B5	0.84	3.22	7.563
116	BRIDGE 1	0	2.38	0
117	BRIDGE 1	0	7.721	0
118	BRIDGE 1	0	2.38	0
119	BRIDGE 1	0	12.482	0
120	BRIDGE 1	0	13.962	0
121	BRIDGE 1	0	2.38	0
122	BRIDGE 1	0	2.38	0
123	BRIDGE 1	0	2.38	0
124	BRIDGE 1	0	2.38	0
125	BRIDGE 1	0	2.38	0
126	BRIDGE 1	0	2.38	0
127	BRIDGE 1	0	2.38	0
128	BRIDGE 1	0	2.38	0
129	BRIDGE 1	0	2.38	0
130	BRIDGE 1	0	2.38	0
131	BRIDGE 1	0	6.386	0
132	BRIDGE 1	0	6.386	0
133	BRIDGE 1	0	6.386	0
134	BRIDGE 1	0	6.386	0
135	BRIDGE 1	0	6.386	0
136	BRIDGE 1	0	6.386	0
137	BRIDGE 1	0	6.386	0
138	BRIDGE 1	0	6.386	0
139	BRIDGE 1	0	6.386	0

LC	LOCATION	X (k)	Y (k)	Z (k)
140	BRIDGE 1	0	6.386	0
141	BRIDGE 1	0	13.962	0
142	BRIDGE 1	0	13.962	0
143	BRIDGE 1	0	13.962	0
144	BRIDGE 1	0	13.962	0
145	BRIDGE 1	0	13.962	0
146	BRIDGE 1	0	13.962	0
147	BRIDGE 1	0	13.962	0
148	BRIDGE 1	0	13.962	0
149	BRIDGE 1	0	13.962	0
150	BRIDGE 1	0	13.962	0
151	BRIDGE 1	0	1.428	0
152	BRIDGE 1	0	1.428	0
153	BRIDGE 1	0	1.428	0
154	BRIDGE 1	0	1.428	0
155	BRIDGE 1	0	1.428	0
156	BRIDGE 1	0	1.428	0
157	BRIDGE 1	0	1.428	0
158	BRIDGE 1	0	1.428	0
159	BRIDGE 1	0	1.428	0
160	BRIDGE 1	0	1.428	0
161	BRIDGE 1	0	2.607	0
162	BRIDGE 1	0	2.608	0
163	BRIDGE 1	0	2.607	0
164	BRIDGE 1	0	2.608	0
165	BRIDGE 1	0	2.608	0
166	BRIDGE 1	0	2.608	0
167	BRIDGE 1	0	2.608	0
168	BRIDGE 1	0	2.608	0
169	BRIDGE 1	0	2.608	0
170	BRIDGE 1	0	2.608	0
171	BRIDGE 1	0	2.608	0
172	BRIDGE 1	0	2.608	0
173	BRIDGE 1	0	6.556	0
174	BRIDGE 1	0	6.556	0
175	BRIDGE 1	0	6.556	0
176	BRIDGE 1	0	6.557	0
177	BRIDGE 1	0	6.557	0
178	BRIDGE 1	0	6.557	0
179	BRIDGE 1	0	6.557	0
180	BRIDGE 1	0	6.557	0
181	BRIDGE 1	0	6.557	0
182	BRIDGE 1	0	6.557	0
183	BRIDGE 1	0	6.557	0
184	BRIDGE 1	0	6.557	0
185	BRIDGE 1	0	14.133	0

LC	LOCATION	X (k)	Y (k)	Z (k)
186	BRIDGE 1	0	14.133	0
187	BRIDGE 1	0	14.132	0
188	BRIDGE 1	0	14.133	0
189	BRIDGE 1	0	14.133	0
190	BRIDGE 1	0	14.133	0
191	BRIDGE 1	0	14.133	0
192	BRIDGE 1	0	14.133	0
193	BRIDGE 1	0	14.133	0
194	BRIDGE 1	0	14.133	0
195	BRIDGE 1	0	14.133	0
196	BRIDGE 1	0	14.133	0
197	BRIDGE 1	0	1.2	0
198	BRIDGE 1	0	1.2	0
199	BRIDGE 1	0	1.2	0
200	BRIDGE 1	0	1.201	0
201	BRIDGE 1	0	1.201	0
202	BRIDGE 1	0	1.201	0
203	BRIDGE 1	0	1.201	0
204	BRIDGE 1	0	1.201	0
205	BRIDGE 1	0	1.201	0
206	BRIDGE 1	0	1.2	0
207	BRIDGE 1	0	1.201	0
208	BRIDGE 1	0	1.2	0
116	BRIDGE 2	0	2.378	0.328
117	BRIDGE 2	0	7.72	0.632
118	BRIDGE 2	0	2.378	0.328
119	BRIDGE 2	0	12.482	1.013
120	BRIDGE 2	0	13.962	1.069
121	BRIDGE 2	0	2.378	0.389
122	BRIDGE 2	0	2.378	0.275
123	BRIDGE 2	0	2.378	0.389
124	BRIDGE 2	0	2.378	0.272
125	BRIDGE 2	0	2.378	0.266
126	BRIDGE 2	0	2.378	0.324
127	BRIDGE 2	0	2.378	0.333
128	BRIDGE 2	0	2.378	0.325
129	BRIDGE 2	0	2.378	0.331
130	BRIDGE 2	0	2.378	0.322
131	BRIDGE 2	0	6.384	0.552
132	BRIDGE 2	0	6.384	0.559
133	BRIDGE 2	0	6.384	0.601
134	BRIDGE 2	0	6.384	0.515
135	BRIDGE 2	0	6.384	0.553
136	BRIDGE 2	0	6.384	0.558
137	BRIDGE 2	0	6.384	0.601
138	BRIDGE 2	0	6.384	0.513

LC	LOCATION	X (k)	Y (k)	Z (k)
139	BRIDGE 2	0	6.384	0.551
140	BRIDGE 2	0	6.384	0.509
141	BRIDGE 2	0	13.962	1.066
142	BRIDGE 2	0	13.962	1.072
143	BRIDGE 2	0	13.962	1.115
144	BRIDGE 2	0	13.962	1.029
145	BRIDGE 2	0	13.962	1.066
146	BRIDGE 2	0	13.962	1.071
147	BRIDGE 2	0	13.962	1.114
148	BRIDGE 2	0	13.962	1.027
149	BRIDGE 2	0	13.962	1.064
150	BRIDGE 2	0	13.962	1.022
151	BRIDGE 2	0	1.427	0.192
152	BRIDGE 2	0	1.427	0.202
153	BRIDGE 2	0	1.427	0.258
154	BRIDGE 2	0	1.427	0.143
155	BRIDGE 2	0	1.427	0.193
156	BRIDGE 2	0	1.427	0.2
157	BRIDGE 2	0	1.427	0.257
158	BRIDGE 2	0	1.427	0.141
159	BRIDGE 2	0	1.427	0.191
160	BRIDGE 2	0	1.427	0.135
161	BRIDGE 2	0	2.605	0.505
162	BRIDGE 2	0	2.605	0.861
163	BRIDGE 2	0	2.606	0.149
164	BRIDGE 2	0	2.605	0.182
165	BRIDGE 2	0	2.605	0.086
166	BRIDGE 2	0	2.605	0.277
167	BRIDGE 2	0	2.605	0.215
168	BRIDGE 2	0	2.605	-0.141
169	BRIDGE 2	0	2.604	0.571
170	BRIDGE 2	0	2.605	0.538
171	BRIDGE 2	0	2.605	0.634
172	BRIDGE 2	0	2.605	0.442
173	BRIDGE 2	0	6.555	0.688
174	BRIDGE 2	0	6.555	0.955
175	BRIDGE 2	0	6.555	0.421
176	BRIDGE 2	0	6.555	0.446
177	BRIDGE 2	0	6.555	0.374
178	BRIDGE 2	0	6.555	0.517
179	BRIDGE 2	0	6.554	0.47
180	BRIDGE 2	0	6.555	0.203
181	BRIDGE 2	0	6.554	0.737
182	BRIDGE 2	0	6.555	0.713
183	BRIDGE 2	0	6.555	0.785
184	BRIDGE 2	0	6.555	0.641

LC	LOCATION	X (k)	Y (k)	Z (k)
185	BRIDGE 2	0	14.133	1.201
186	BRIDGE 2	0	14.133	1.468
187	BRIDGE 2	0	14.133	0.934
188	BRIDGE 2	0	14.133	0.959
189	BRIDGE 2	0	14.133	0.887
190	BRIDGE 2	0	14.133	1.031
191	BRIDGE 2	0	14.132	0.984
192	BRIDGE 2	0	14.133	0.717
193	BRIDGE 2	0	14.132	1.251
194	BRIDGE 2	0	14.133	1.226
195	BRIDGE 2	0	14.133	1.298
196	BRIDGE 2	0	14.133	1.154
197	BRIDGE 2	0	1.2	0.311
198	BRIDGE 2	0	1.199	0.667
199	BRIDGE 2	0	1.2	-0.045
200	BRIDGE 2	0	1.199	-0.013
201	BRIDGE 2	0	1.199	-0.108
202	BRIDGE 2	0	1.199	0.083
203	BRIDGE 2	0	1.199	0.02
204	BRIDGE 2	0	1.199	-0.336
205	BRIDGE 2	0	1.199	0.376
206	BRIDGE 2	0	1.199	0.344
207	BRIDGE 2	0	1.199	0.44
208	BRIDGE 2	0	1.199	0.248

Blackwell

Structural Engineers

APPENDIX F

Loading Report

SULLAWAY
ENGINEERING

10815 Rancho Bernardo RD., SD, CA 92127
projectmanager@sullawayeng.com
Phone: 858-312-5150 Fax: 858-777-3534

Design Loads

for
The Cabins

Summit Horizon Neighborhood
Eden, UT

Project # 10972

date;
7/11/2016

SULLAWAY ENGINEERING
10815 Rancho Bernardo RD., SD, CA 92127
projectmanager@sullawayeng.com
Phone: 858-312-5150 Fax: 858-777-3534

PROJECT: Summit Horizon
PROJ. NO.: 10972
CLIENT: Blackwell
DATE: 3/25/2016
ENGINEER: mfs

building code; IBC 2012
units; pounds, feet unless noted otherwise

Seismic Analysis- Building Structure

Design Force (ASCE 12)

Latitude 41.3007
Longitude -111.8127

S_1= 0.304 (from USGS)
S_{DS}= 0.683
S_{D1}= 0.363
Ss= 0.898
F_a= 1.14
F_v= 1.80

I= 1.0
Risk Category II
Seismic Design Cat. D

R	Ω	Cd
3.25	2	3.25

ASCE Table 12.2-1 B.3. "Steel ordinary concentrically braced frame"

$V=C_sW$

$C_s=S_{DS}/(R/I)$ C_s= 0.21

Vertical Seismic Loads

$E_v=0.2S_{DS}DL$

Live Loads

Typical Reduction

L_o= 40 psf

$L=L_o(0.25+15/\sqrt{(K_{LL}A_T)})$

K_{LL}= 1
A_T= 1000

A_T (sf)	L (psf)
1000	28.97
1500	25.49
2000	23.42
2500	22.00

Roof 20 psf

R1= 0.6
R2= 0.6
$L_r=L_oR_1R_2$= 7.20 psf

Loads for parking structure

Truck- 250 psf or 16 kip point load (one wheel load)

HS0-44 (aashto TRUCK) 40 kip truck, with;
8 kip on front axil
32 kip on back axil

Note- I put in a call to the fire marshal to get fire truck loads.

SULLAWAY ENGINEERING
10815 Rancho Bernardo RD., SD, CA 92127
projectmanager@sullawayeng.com
Phone: 858-312-5150 Fax: 858-777-3534

PROJECT: Summit Horizon
PROJ. NO.: 10972
CLIENT: Blackwell

DATE: 3/25/2016
ENGINEER: mfs

building code; IBC 2012

units; pounds, feet unless noted otherwise

Snow Load

ASCE Chap. 7

Exposure Factor:	C_e =		=	1.0	
Thermal Factor:	C_t =		=	1.0	
Importance Factor:	I =		=	1.0	
Roof Slope Factor:	C_s =		=	1.00	
Ground Snow Load:	p_g =		=	274.3	psf
Flat Roof Snow Load:	p_f =	0.7 * Ce * Ct * I * pg =		192	psf
Sloped Roof Snow Load:	p_s =	Cs * pf =		192	psf
Snow Drift:				0.0	
Roof Slope:	S=			2.0	

Drift - Courtyard

note- No snow drift on roof

l_u=	13.3	ft			
h_d=.43*(l_u)^0.33*(p_g+10)^0.25 -1.5 =	2.7	ft	leeward		
h_d=	4.6	ft	windward	w=4h_d=	18.4 ft
h_c = 15.6-h_d=	11.0	ft			
γ=0.13p_g+14 <30 =	30	pcf			
h_b=	6.4	ft			
drift load = p_d = $h_d\gamma$ =	138	psf			

p_d = 0 at a distance of 'w' from wall

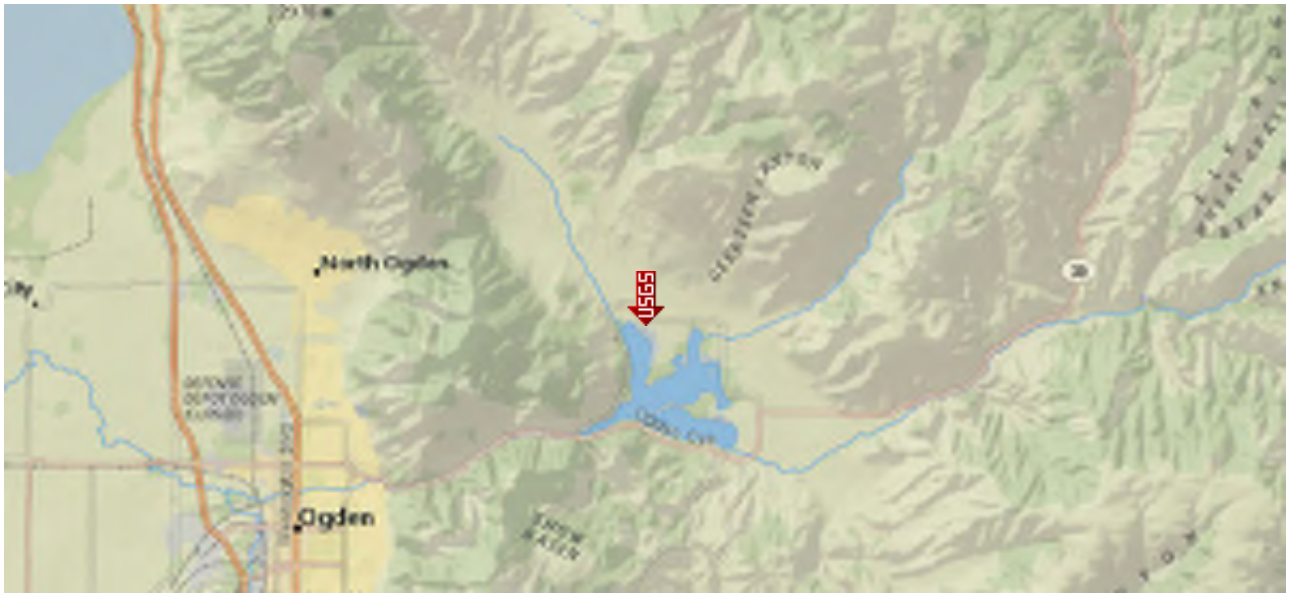
Frost Depth

40 inches

Design Maps Summary Report

User–Specified Input

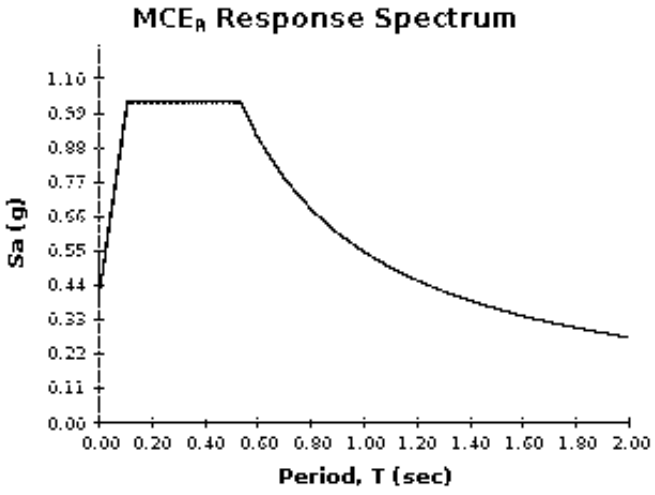
Report Title	Summit Horizon, Eden, UT Fri March 25, 2016 18:16:11 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	41.3007°N, 111.8127°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

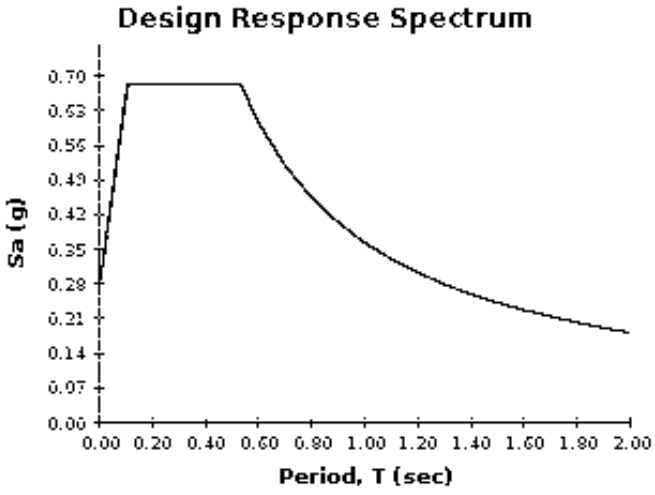


USGS–Provided Output

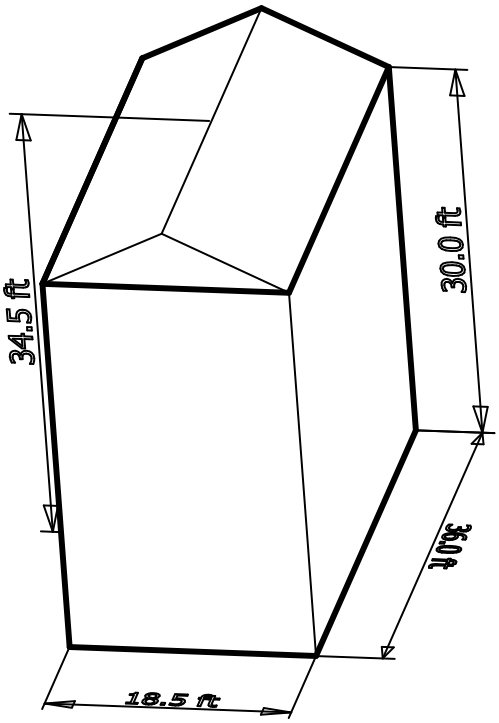
S_S =	0.898 g	S_{MS} =	1.025 g	S_{DS} =	0.683 g
S_1 =	0.304 g	S_{M1} =	0.545 g	S_{D1} =	0.363 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





1000 sqft Cabin



MecaWind Pro v2.2.6.1 per ASCE 7-10

Date	: 7/12/2016	Project No.	: JobNo
Company Name	: True	Designed By	: Engineer
Address	: Address	Description	: Description
City	: City	Customer Name	: Customer
State	: State	Proj Location	: Location

File Location: S:\Projects\10900-10999\10972\Cabins\1000 sqft\mecawind 1000sf.wnd

Input Parameters: Directional Procedure All Heights Building (Ch 27 Part 1)

Basic Wind Speed(V)	= 115.00 mph		
Structural Category	= II	Exposure Category	= C
Natural Frequency	= N/A	Flexible Structure	= No
Importance Factor	= 1.00	Kd Directional Factor	= 0.85
Alpha	= 9.50	Zg	= 900.00 ft
At	= 0.11	Bt	= 1.00
Am	= 0.15	Bm	= 0.65
Cc	= 0.20	l	= 500.00 ft
Epsilon	= 0.20	Zmin	= 15.00 ft
Slope of Roof	= 5.837838 : 12	Slope of Roof(Theta)	= 25.94 Deg
h: Mean Roof Ht	= 32.25 ft	Type of Roof	= GABLED
RHt: Ridge Ht	= 34.50 ft	Eht: Eave Height	= 30.00 ft
OH: Roof Overhang at Eave	= .00 ft	Overhead Type	= No Overhang
Bldg Length Along Ridge	= 36.00 ft	Bldg Width Across Ridge	= 18.50 ft

Gust Factor Calculations

Gust Factor Category I Rigid Structures - Simplified Method

Gust1: For Rigid Structures (Nat. Freq.>1 Hz) use 0.85 = 0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Zm:	0.6*Ht	= 19.35 ft
lzm:	Cc*(33/Zm)^0.167	= 0.22
Lzm:	l*(Zm/33)^Epsilon	= 449.37 ft
Q:	(1/(1+0.63*((B+Ht)/Lzm)^0.63))^0.5	= 0.93
Gust2:	0.925*((1+1.7*lzm*3.4*Q)/(1+1.7*3.4*lzm))	= 0.89

Gust Factor Summary

Not a Flexible Structure use the Lessor of Gust1 or Gust2 = 0.85

Table 26.11-1 Internal Pressure Coefficients for Buildings, GCpi

GCPi : Internal Pressure Coefficient = +/-0.18

Wind Pressurs Main Wind Force Resisting System (MWFRS) - Ref Figure 27.4-1

Kh: 2.01*(Ht/Zg)^(2/Alpha)	= 1.00
Kht: Topographic Factor (Figure 6-4)	= 1.00
Qh: .00256*(V)^2*I*Kh*Kht*Kd	= 28.70 psf
Cpww: Windward Wall Cp(Ref Fig 6-6)	= 0.80
Roof Area	= 740.63 ft^2
Reduction Factor based on Roof Area	= 0.83

MWFRS-Wall Pressures for Wind Normal to 36 ft Wall (Normal to Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)
Leeward Wall	-0.50	-17.36	-7.03
Side Walls	-0.70	-22.24	-11.91

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi
Windward	30.00	0.98	1.00	0.80	28.27	14.06	24.39	31.42
Windward	20.00	0.90	1.00	0.80	25.95	12.48	22.81	29.85
Windward	10.00	0.85	1.00	0.80	24.43	11.45	21.78	28.81

Roof Location	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Windward - Min Cp	-0.46	-16.39	-6.06
Windward - Max Cp	0.04	-4.19	6.14
Leeward Norm to Ridge	-0.60	-19.80	-9.47

Normal to Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.36	1080	.00	18.75	.00	281.3	.0	.0
Side Wall	-22.24	555	-12.34	.00	.00	.0	185.2	.0
Side Wall	-22.24	555	12.34	.00	.00	.0	-185.2	.0
Windward Wall	14.06	360	.00	5.06	.00	126.5	.0	.0
Windward Wall	12.48	360	.00	4.49	.00	67.4	.0	.0
Windward Wall	11.45	360	.00	4.12	.00	20.6	.0	.0
Roof Windward	-16.39	370	.00	-2.65	5.46	-60.4	.0	.0
Roof Leeward	-19.80	370	.00	3.21	6.59	73.0	.0	.0
Side Wall	-22.24	42	-0.93	.00	.00	.0	29.2	.0
Side Wall	-22.24	42	0.93	.00	.00	.0	-29.2	.0
Total	.00	4094	.00	32.98	12.05	508.4	.0	.0

Normal to Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.36	1080	.00	18.75	.00	281.3	.0	.0
Side Wall	-22.24	555	-12.34	.00	.00	.0	185.2	.0
Side Wall	-22.24	555	12.34	.00	.00	.0	-185.2	.0
Windward Wall	14.06	360	.00	5.06	.00	126.5	.0	.0
Windward Wall	12.48	360	.00	4.49	.00	67.4	.0	.0
Windward Wall	11.45	360	.00	4.12	.00	20.6	.0	.0
Side Wall	-22.24	42	-0.93	.00	.00	.0	29.2	.0
Side Wall	-22.24	42	0.93	.00	.00	.0	-29.2	.0
Total	.00	3353	.00	32.43	.00	495.8	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.03	1080	.00	7.59	.00	113.9	.0	.0
Side Wall	-11.91	555	-6.61	.00	.00	.0	99.2	.0
Side Wall	-11.91	555	6.61	.00	.00	.0	-99.2	.0
Windward Wall	24.39	360	.00	8.78	.00	219.5	.0	.0
Windward Wall	22.81	360	.00	8.21	.00	123.2	.0	.0
Windward Wall	21.78	360	.00	7.84	.00	39.2	.0	.0
Roof Windward	6.14	370	.00	0.99	-2.05	22.6	.0	.0
Roof Leeward	-9.47	370	.00	1.53	3.15	34.9	.0	.0
Side Wall	-11.91	42	-0.50	.00	.00	.0	15.6	.0
Side Wall	-11.91	42	0.50	.00	.00	.0	-15.6	.0
Total	.00	4094	.00	34.96	1.11	553.3	.0	.0

Normal to Ridge - Base Reactions - Walls Only -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.03	1080	.00	7.59	.00	113.9	.0	.0
Side Wall	-11.91	555	-6.61	.00	.00	.0	99.2	.0
Side Wall	-11.91	555	6.61	.00	.00	.0	-99.2	.0
Windward Wall	24.39	360	.00	8.78	.00	219.5	.0	.0
Windward Wall	22.81	360	.00	8.21	.00	123.2	.0	.0
Windward Wall	21.78	360	.00	7.84	.00	39.2	.0	.0
Side Wall	-11.91	42	-0.50	.00	.00	.0	15.6	.0
Side Wall	-11.91	42	0.50	.00	.00	.0	-15.6	.0
Total	.00	3353	.00	32.43	.00	495.8	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	360	.00	5.76	.00	144.0	.0	.0
Windward Wall	16.00	360	.00	5.76	.00	86.4	.0	.0
Windward Wall	16.00	360	.00	5.76	.00	28.8	.0	.0

Roof Windward	8.00	162	.00	1.30	.00	41.8	.0	.0
Roof Leeward	8.00	162	.00	1.30	.00	41.8	.0	.0
Total	.00	1404	.00	19.87	.00	342.8	.0	.0

Notes - Normal to Ridge

Note (1) Per Fig 27.4-1 Note 7, Since Theta > 10 Deg base calcs on Mean Ht
Note (2) Wall & Roof Pressures = Qh*(G*Cp - GCPi)
Note (3) +GCpi = Positive Internal Bldg Press, -GCPi = Negative Internal Bldg Press
Note (4) Total Pressure = Leeward Press + Windward Press (For + or - GCPi)
Note (5) Ref Fig 27.4-1, Normal to Ridge (Theta>=10), Theta= 25.9 Deg, h/l= 0.90
Note (6) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (7) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (8) Area* = Area of the surface projected onto a vertical plane normal to wind.

MWFRS-Wall Pressures for Wind Normal to 18.5 ft wall (Along Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)
Leeward Wall	-0.31	-12.75	-2.42
Side Walls	-0.70	-22.24	-11.91

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi
Windward	34.50	1.01	1.00	0.80	29.11	14.63	24.96	27.38
Windward	30.00	0.98	1.00	0.80	28.27	14.06	24.39	26.80
Windward	20.00	0.90	1.00	0.80	25.95	12.48	22.81	25.23
Windward	10.00	0.85	1.00	0.80	24.43	11.45	21.78	24.19

Roof - Dist from Windward Edge	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Roof: 0.0 ft to 16.1 ft	-1.05	-30.69	-20.36
Roof: 16.1 ft to 32.3 ft	-0.74	-23.26	-12.93
Roof: 32.3 ft to 36.0 ft	-0.66	-21.23	-10.89

Along Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-12.75	555	7.08	.00	.00	.0	-106.1	.0
Side Wall	-22.24	1080	.00	24.02	.00	360.3	.0	.0
Side Wall	-22.24	1080	.00	-24.02	.00	-360.3	.0	.0
Windward Wall	14.06	185	2.60	.00	.00	.0	-65.0	.0
Windward Wall	12.48	185	2.31	.00	.00	.0	-34.6	.0
Windward Wall	11.45	185	2.12	.00	.00	.0	-10.6	.0
Roof (0 to h/2)	-30.69	166	.00	-2.23	4.58	-50.7	-45.5	-22.1
Roof (0 to h/2)	-30.69	166	.00	2.23	4.58	50.7	-45.5	22.1
Roof (h/2 to h)	-23.26	166	.00	-1.69	3.47	-38.4	21.5	10.4
Roof (h/2 to h)	-23.26	166	.00	1.69	3.47	38.4	21.5	-10.4
Roof (h to 2h)	-21.23	39	.00	-0.36	0.74	-8.1	11.9	5.8
Roof (h to 2h)	-21.23	39	.00	0.36	0.74	8.1	11.9	-5.8
Leeward Wall	-12.75	42	0.53	.00	.00	.0	-16.7	.0
Windward Wall	14.63	42	0.61	.00	.00	.0	-19.2	.0
Total	.00	4094	15.24	.00	17.57	.0	-276.6	.0

Along Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-12.75	555	7.08	.00	.00	.0	-106.1	.0
Side Wall	-22.24	1080	.00	24.02	.00	360.3	.0	.0
Side Wall	-22.24	1080	.00	-24.02	.00	-360.3	.0	.0
Windward Wall	14.06	185	2.60	.00	.00	.0	-65.0	.0
Windward Wall	12.48	185	2.31	.00	.00	.0	-34.6	.0
Windward Wall	11.45	185	2.12	.00	.00	.0	-10.6	.0
Leeward Wall	-12.75	42	0.53	.00	.00	.0	-16.7	.0
Windward Wall	14.63	42	0.61	.00	.00	.0	-19.2	.0
Total	.00	3353	15.24	.00	.00	.0	-252.3	.0

Along Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-2.42	555	1.34	.00	.00	.0	-20.1	.0
Side Wall	-11.91	1080	.00	12.86	.00	193.0	.0	.0
Side Wall	-11.91	1080	.00	-12.86	.00	-193.0	.0	.0
Windward Wall	24.39	185	4.51	.00	.00	.0	-112.8	.0
Windward Wall	22.81	185	4.22	.00	.00	.0	-63.3	.0
Windward Wall	21.78	185	4.03	.00	.00	.0	-20.1	.0
Roof (0 to h/2)	-20.36	166	.00	-1.48	3.04	-33.6	-30.2	-14.7
Roof (0 to h/2)	-20.36	166	.00	1.48	3.04	33.6	-30.2	14.7
Roof (h/2 to h)	-12.93	166	.00	-0.94	1.93	-21.3	11.9	5.8
Roof (h/2 to h)	-12.93	166	.00	0.94	1.93	21.3	11.9	-5.8
Roof (h to 2h)	-10.89	39	.00	-0.18	0.38	-4.2	6.1	3.0
Roof (h to 2h)	-10.89	39	.00	0.18	0.38	4.2	6.1	-3.0
Leeward Wall	-2.42	42	0.10	.00	.00	.0	-3.2	.0
Windward Wall	24.96	42	1.04	.00	.00	.0	-32.7	.0
Total	.00	4094	15.24	.00	10.69	.0	-276.6	.0

Along Ridge - Base Reactions - Walls Only -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-2.42	555	1.34	.00	.00	.0	-20.1	.0
Side Wall	-11.91	1080	.00	12.86	.00	193.0	.0	.0
Side Wall	-11.91	1080	.00	-12.86	.00	-193.0	.0	.0
Windward Wall	24.39	185	4.51	.00	.00	.0	-112.8	.0
Windward Wall	22.81	185	4.22	.00	.00	.0	-63.3	.0
Windward Wall	21.78	185	4.03	.00	.00	.0	-20.1	.0
Leeward Wall	-2.42	42	0.10	.00	.00	.0	-3.2	.0
Windward Wall	24.96	42	1.04	.00	.00	.0	-32.7	.0
Total	.00	3353	15.24	.00	.00	.0	-252.3	.0

Along Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	185	2.96	.00	.00	.0	-74.0	.0
Windward Wall	16.00	185	2.96	.00	.00	.0	-44.4	.0
Windward Wall	16.00	185	2.96	.00	.00	.0	-14.8	.0
Windward Wall	16.00	42	0.67	.00	.00	.0	-21.0	.0
Total	.00	597	9.55	.00	.00	.0	-154.2	.0

Notes - Along Ridge

Note (1) Ref Fig 27.4-1, Parallel to Ridge (All), h/l= 0.90
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) Area* = Area of the surface projected onto a vertical plane normal to wind.

Total Base Reaction Summary

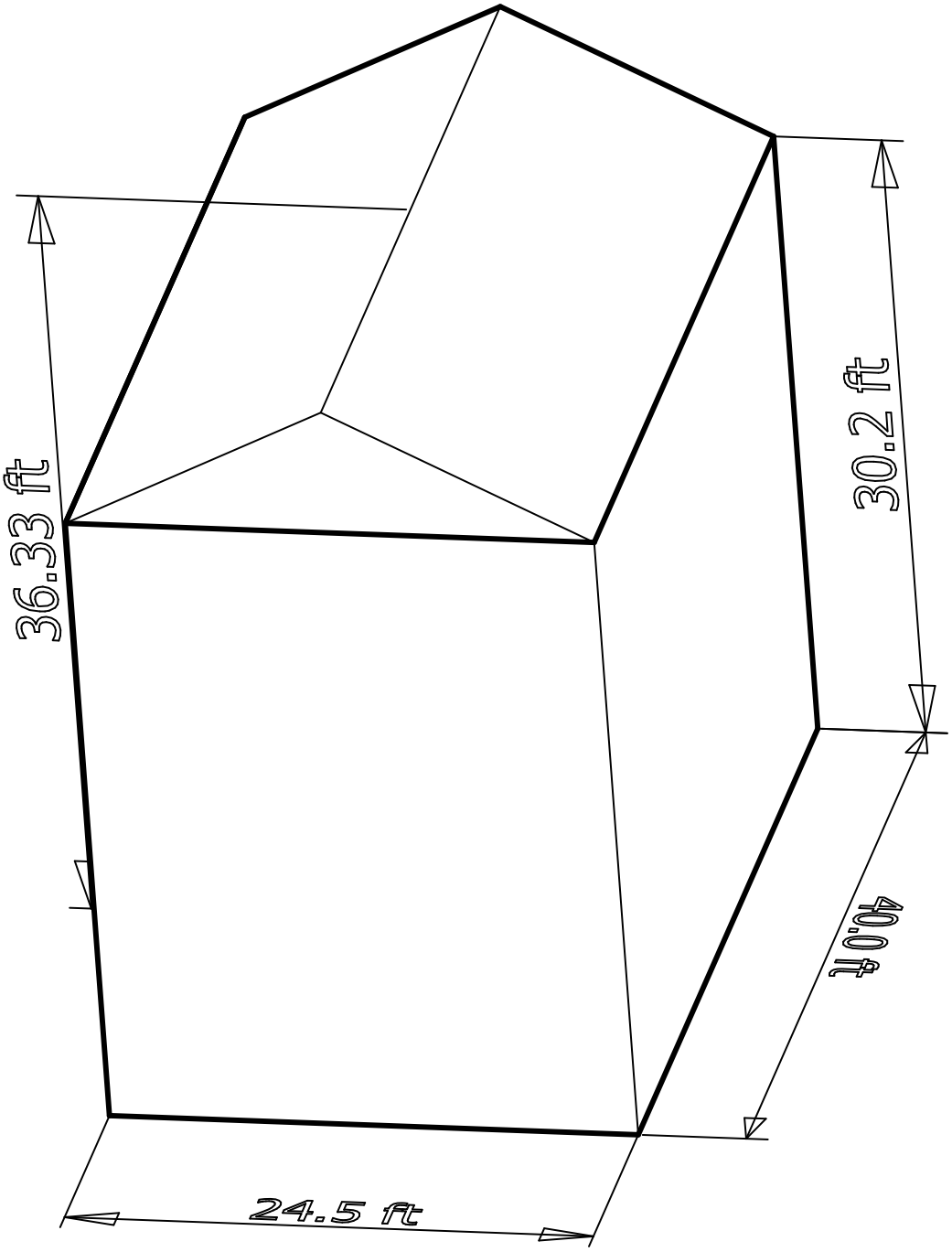
Description	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Normal to Ridge Walls+Roof +GCpi	.0	33.0	12.1	508.4	.0	.0
Normal to Ridge Walls Only +GCpi	.0	32.4	.0	495.8	.0	.0
Normal to Ridge Walls+Roof -GCpi	.0	35.0	1.1	553.3	.0	.0
Normal to Ridge Walls Only -GCpi	.0	32.4	.0	495.8	.0	.0
Normal to Ridge Walls+Roof MIN	.0	19.9	.0	342.8	.0	.0
Along Ridge Walls+Roof +GCpi	15.2	.0	17.6	.0	-276.6	.0
Along Ridge Walls Only +GCpi	15.2	.0	.0	.0	-252.3	.0
Along Ridge Walls+Roof -GCpi	15.2	.0	10.7	.0	-276.6	.0
Along Ridge Walls Only -GCpi	15.2	.0	.0	.0	-252.3	.0
Along Ridge Walls+Roof MIN	9.5	.0	.0	.0	-154.2	.0

Notes Applying to MWFRS Reactions:

Note (1) Per Fig 27.4-1, Note 9, Use greater of Shear calculated with or without roof.
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical

Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) MIN area is the area of the surface onto a vertical plane normal to wind.
Note (5) Total Roof Area (incl OH Top) = 740.63 sq. ft

1500 sqft Cabin



Gust Factor Calculations

Gust Factor Category I Rigid Structures - Simplified Method

Gust1: For Rigid Structures (Nat. Freq.>1 Hz) use 0.85 = 0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Zm:	0.6*Ht	= 19.96 ft
lzm:	Cc*(33/Zm)^0.167	= 0.22
Lzm:	l*(Zm/33)^Epsilon	= 452.16 ft
Q:	(1/(1+0.63*((B+Ht)/Lzm)^0.63))^0.5	= 0.92
Gust2:	0.925*((1+1.7*lzm*3.4*Q)/(1+1.7*3.4*lzm))	= 0.89

Gust Factor Summary

Not a Flexible Structure use the Lessor of Gust1 or Gust2 = 0.85

Table 26.11-1 Internal Pressure Coefficients for Buildings, GCpi

GCPi : Internal Pressure Coefficient = +/-0.18

Wind Pressurs Main Wind Force Resisting System (MWFRS) - Ref Figure 27.4-1

Kh: 2.01*(Ht/Zg)^(2/Alpha)	= 1.00
Kht: Topographic Factor (Figure 6-4)	= 1.00
Qh: .00256*(V)^2*I*Kh*Kht*Kd	= 28.89 psf
Cpww: Windward Wall Cp(Ref Fig 6-6)	= 0.80
Roof Area	= 1095.85 ft^2
Reduction Factor based on Roof Area	= 0.80

MWFRS-Wall Pressures for Wind Normal to 40 ft Wall (Normal to Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)
Leeward Wall	-0.50	-17.48	-7.08
Side Walls	-0.70	-22.39	-11.99

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi
Windward	30.20	0.98	1.00	0.80	28.31	14.05	24.45	31.53
Windward	20.20	0.90	1.00	0.80	26.01	12.49	22.89	29.96
Windward	10.20	0.85	1.00	0.80	24.43	11.41	21.81	28.89
Windward	0.20	0.85	1.00	0.80	24.43	11.41	21.81	28.89

Roof Location	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Windward - Min Cp	-0.44	-16.00	-5.60
Windward - Max Cp	0.06	-3.73	6.67
Leeward Norm to Ridge	-0.60	-19.93	-9.53

Normal to Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.48	1208	.00	21.11	.00	318.8	.0	.0
Side Wall	-22.39	740	-16.57	.00	.00	.0	250.1	.0
Side Wall	-22.39	740	16.57	.00	.00	.0	-250.1	.0
Windward Wall	14.05	400	.00	5.62	.00	141.6	.0	.0
Windward Wall	12.49	400	.00	4.99	.00	75.9	.0	.0
Windward Wall	11.41	400	.00	4.56	.00	23.7	.0	.0
Windward Wall	11.41	8	.00	0.09	.00	0.0	.0	.0
Roof Windward	-16.00	548	.00	-3.92	7.84	-82.5	.0	.0
Roof Leeward	-19.93	548	.00	4.89	9.77	102.8	.0	.0
Side Wall	-22.39	75	-1.68	.00	.00	.0	54.2	.0
Side Wall	-22.39	75	1.68	.00	.00	.0	-54.2	.0
Total	.00	5142	.00	37.35	17.61	580.3	.0	.0

Normal to Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.48	1208	.00	21.11	.00	318.8	.0	.0

Side Wall	-22.39	740	-16.57	.00	.00	.0	250.1	.0
Side Wall	-22.39	740	16.57	.00	.00	.0	-250.1	.0
Windward Wall	14.05	400	.00	5.62	.00	141.6	.0	.0
Windward Wall	12.49	400	.00	4.99	.00	75.9	.0	.0
Windward Wall	11.41	400	.00	4.56	.00	23.7	.0	.0
Windward Wall	11.41	8	.00	0.09	.00	0.0	.0	.0
Side Wall	-22.39	75	-1.68	.00	.00	.0	54.2	.0
Side Wall	-22.39	75	1.68	.00	.00	.0	-54.2	.0
Total	.00	4046	.00	36.38	.00	560.1	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.08	1208	.00	8.55	.00	129.1	.0	.0
Side Wall	-11.99	740	-8.87	.00	.00	.0	133.9	.0
Side Wall	-11.99	740	8.87	.00	.00	.0	-133.9	.0
Windward Wall	24.45	400	.00	9.78	.00	246.4	.0	.0
Windward Wall	22.89	400	.00	9.15	.00	139.1	.0	.0
Windward Wall	21.81	400	.00	8.72	.00	45.4	.0	.0
Windward Wall	21.81	8	.00	0.17	.00	0.0	.0	.0
Roof Windward	6.67	548	.00	1.64	-3.27	34.4	.0	.0
Roof Leeward	-9.53	548	.00	2.34	4.67	49.1	.0	.0
Side Wall	-11.99	75	-0.90	.00	.00	.0	29.0	.0
Side Wall	-11.99	75	0.90	.00	.00	.0	-29.0	.0
Total	.00	5142	.00	40.36	1.40	643.6	.0	.0

Normal to Ridge - Base Reactions - Walls Only -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.08	1208	.00	8.55	.00	129.1	.0	.0
Side Wall	-11.99	740	-8.87	.00	.00	.0	133.9	.0
Side Wall	-11.99	740	8.87	.00	.00	.0	-133.9	.0
Windward Wall	24.45	400	.00	9.78	.00	246.4	.0	.0
Windward Wall	22.89	400	.00	9.15	.00	139.1	.0	.0
Windward Wall	21.81	400	.00	8.72	.00	45.4	.0	.0
Windward Wall	21.81	8	.00	0.17	.00	0.0	.0	.0
Side Wall	-11.99	75	-0.90	.00	.00	.0	29.0	.0
Side Wall	-11.99	75	0.90	.00	.00	.0	-29.0	.0
Total	.00	4046	.00	36.38	.00	560.1	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	400	.00	6.40	.00	161.3	.0	.0
Windward Wall	16.00	400	.00	6.40	.00	97.3	.0	.0
Windward Wall	16.00	400	.00	6.40	.00	33.3	.0	.0
Windward Wall	16.00	8	.00	0.13	.00	0.0	.0	.0
Roof Windward	8.00	245	.00	1.96	.00	65.3	.0	.0
Roof Leeward	8.00	245	.00	1.96	.00	65.3	.0	.0
Total	.00	1698	.00	23.25	.00	422.4	.0	.0

Notes - Normal to Ridge

Note (1) Per Fig 27.4-1 Note 7, Since Theta > 10 Deg base calcs on Mean Ht
Note (2) Wall & Roof Pressures = Qh*(G*Cp - GCPi)
Note (3) +GCpi = Positive Internal Bldg Press, -GCPi = Negative Internal Bldg Press
Note (4) Total Pressure = Leeward Press + Windward Press (For + or - GCPi)
Note (5) Ref Fig 27.4-1, Normal to Ridge (Theta>=10), Theta= 26.6 Deg, h/l= 0.83
Note (6) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (7) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (8) Area* = Area of the surface projected onto a vertical plane normal to wind.

MWFRS-Wall Pressures for Wind Normal to 24.5 ft wall (Along Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)

Leeward Wall	-0.37	-14.37	-3.97
Side Walls	-0.70	-22.39	-11.99

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi
Windward	36.33	1.02	1.00	0.80	29.43	14.81	25.21	29.18
Windward	30.20	0.98	1.00	0.80	28.31	14.05	24.45	28.42
Windward	20.20	0.90	1.00	0.80	26.01	12.49	22.89	26.86
Windward	10.20	0.85	1.00	0.80	24.43	11.41	21.81	25.78
Windward	0.20	0.85	1.00	0.80	24.43	11.41	21.81	25.78

Roof - Dist from Windward Edge	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Roof: 0.0 ft to 16.6 ft	-0.99	-29.58	-19.18
Roof: 16.6 ft to 33.3 ft	-0.77	-24.04	-13.64
Roof: 33.3 ft to 40.0 ft	-0.63	-20.73	-10.33

Along Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-14.37	740	10.63	.00	.00	.0	-160.6	.0
Side Wall	-22.39	1208	.00	27.05	.00	408.4	.0	.0
Side Wall	-22.39	1208	.00	-27.05	.00	-408.4	.0	.0
Windward Wall	14.05	245	3.44	.00	.00	.0	-86.7	.0
Windward Wall	12.49	245	3.06	.00	.00	.0	-46.5	.0
Windward Wall	11.41	245	2.80	.00	.00	.0	-14.5	.0
Windward Wall	11.41	5	0.06	.00	.00	.0	-0.0	.0
Roof (0 to h/2)	-29.58	228	.00	-3.02	6.03	-63.4	-70.4	-35.2
Roof (0 to h/2)	-29.58	228	.00	3.02	6.03	63.4	-70.4	35.2
Roof (h/2 to h)	-24.04	228	.00	-2.45	4.90	-51.5	24.2	12.1
Roof (h/2 to h)	-24.04	228	.00	2.45	4.90	51.5	24.2	-12.1
Roof (h to 2h)	-20.73	92	.00	-0.86	1.71	-18.0	28.5	14.2
Roof (h to 2h)	-20.73	92	.00	0.86	1.71	18.0	28.5	-14.2
Leeward Wall	-14.37	75	1.08	.00	.00	.0	-34.8	.0
Windward Wall	14.81	75	1.11	.00	.00	.0	-35.9	.0
Total	.00	5142	22.18	.00	25.27	.0	-414.4	.0

Along Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-14.37	740	10.63	.00	.00	.0	-160.6	.0
Side Wall	-22.39	1208	.00	27.05	.00	408.4	.0	.0
Side Wall	-22.39	1208	.00	-27.05	.00	-408.4	.0	.0
Windward Wall	14.05	245	3.44	.00	.00	.0	-86.7	.0
Windward Wall	12.49	245	3.06	.00	.00	.0	-46.5	.0
Windward Wall	11.41	245	2.80	.00	.00	.0	-14.5	.0
Windward Wall	11.41	5	0.06	.00	.00	.0	-0.0	.0
Leeward Wall	-14.37	75	1.08	.00	.00	.0	-34.8	.0
Windward Wall	14.81	75	1.11	.00	.00	.0	-35.9	.0
Total	.00	4046	22.18	.00	.00	.0	-379.0	.0

Along Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-3.97	740	2.94	.00	.00	.0	-44.4	.0
Side Wall	-11.99	1208	.00	14.48	.00	218.7	.0	.0
Side Wall	-11.99	1208	.00	-14.48	.00	-218.7	.0	.0
Windward Wall	24.45	245	5.99	.00	.00	.0	-150.9	.0
Windward Wall	22.89	245	5.61	.00	.00	.0	-85.2	.0
Windward Wall	21.81	245	5.34	.00	.00	.0	-27.8	.0
Windward Wall	21.81	5	0.11	.00	.00	.0	-0.0	.0
Roof (0 to h/2)	-19.18	228	.00	-1.96	3.91	-41.1	-45.7	-22.8
Roof (0 to h/2)	-19.18	228	.00	1.96	3.91	41.1	-45.7	22.8
Roof (h/2 to h)	-13.64	228	.00	-1.39	2.78	-29.2	13.8	6.9
Roof (h/2 to h)	-13.64	228	.00	1.39	2.78	29.2	13.8	-6.9
Roof (h to 2h)	-10.33	92	.00	-0.43	0.85	-9.0	14.2	7.1

Roof (h to 2h)	-10.33	92	.00	0.43	0.85	9.0	14.2	-7.1
Leeward Wall	-3.97	75	0.30	.00	.00	.0	-9.6	.0
Windward Wall	25.21	75	1.89	.00	.00	.0	-61.0	.0
Total	.00	5142	22.18	.00	15.08	.0	-414.4	.0

Along Ridge - Base Reactions - Walls Only -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-3.97	740	2.94	.00	.00	.0	-44.4	.0
Side Wall	-11.99	1208	.00	14.48	.00	218.7	.0	.0
Side Wall	-11.99	1208	.00	-14.48	.00	-218.7	.0	.0
Windward Wall	24.45	245	5.99	.00	.00	.0	-150.9	.0
Windward Wall	22.89	245	5.61	.00	.00	.0	-85.2	.0
Windward Wall	21.81	245	5.34	.00	.00	.0	-27.8	.0
Windward Wall	21.81	5	0.11	.00	.00	.0	-0.0	.0
Leeward Wall	-3.97	75	0.30	.00	.00	.0	-9.6	.0
Windward Wall	25.21	75	1.89	.00	.00	.0	-61.0	.0
Total	.00	4046	22.18	.00	.00	.0	-379.0	.0

Along Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	245	3.92	.00	.00	.0	-98.8	.0
Windward Wall	16.00	245	3.92	.00	.00	.0	-59.6	.0
Windward Wall	16.00	245	3.92	.00	.00	.0	-20.4	.0
Windward Wall	16.00	5	0.08	.00	.00	.0	-0.0	.0
Windward Wall	16.00	75	1.20	.00	.00	.0	-38.7	.0
Total	.00	815	13.04	.00	.00	.0	-217.5	.0

Notes - Along Ridge

Note (1) Ref Fig 27.4-1, Parallel to Ridge (All), h/l= 0.83
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) Area* = Area of the surface projected onto a vertical plane normal to wind.

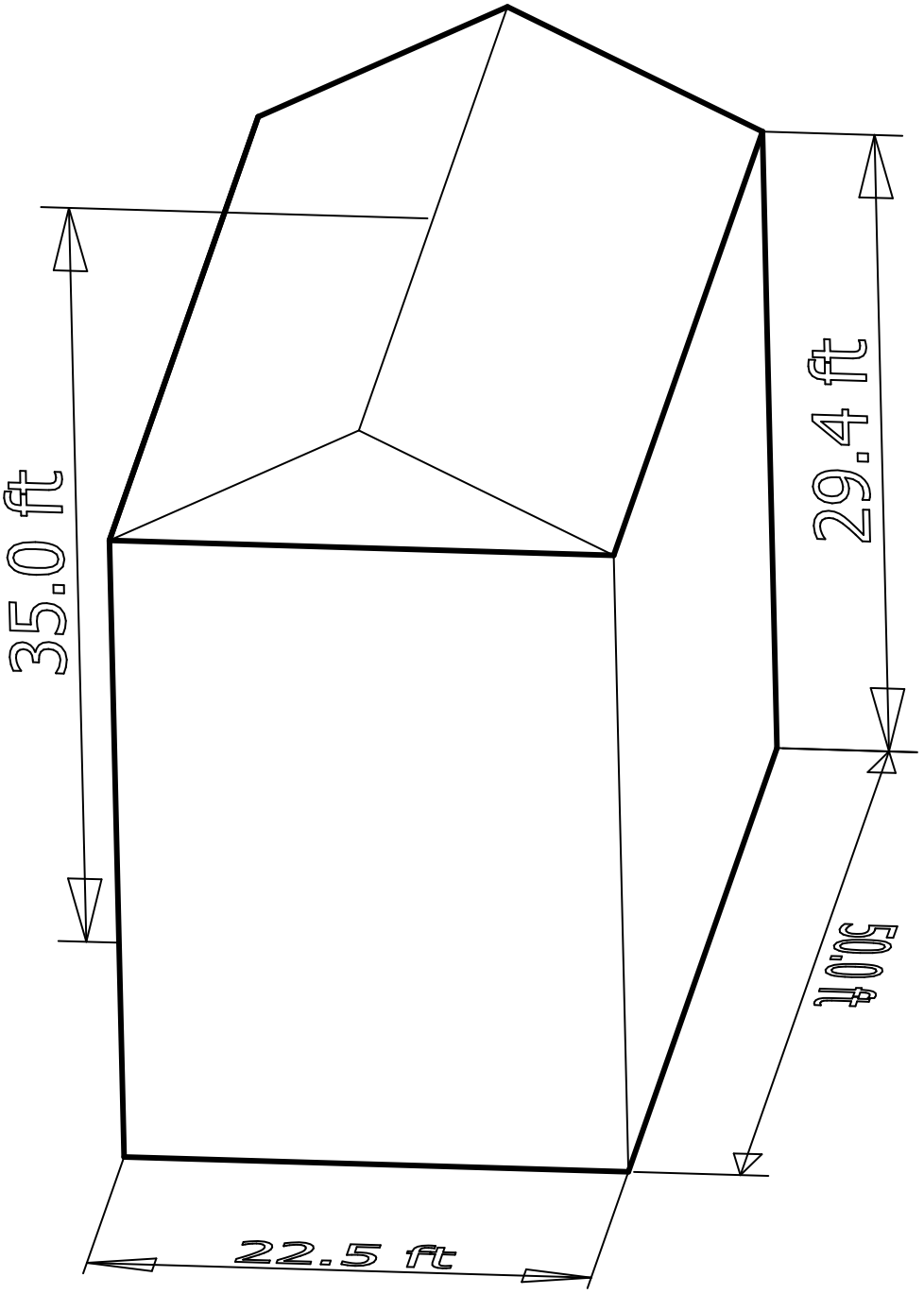
Total Base Reaction Summary

Description	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Normal to Ridge Walls+Roof +GCpi	.0	37.3	17.6	580.3	.0	.0
Normal to Ridge Walls Only +GCpi	.0	36.4	.0	560.1	.0	.0
Normal to Ridge Walls+Roof -GCpi	.0	40.4	1.4	643.6	.0	.0
Normal to Ridge Walls Only -GCpi	.0	36.4	.0	560.1	.0	.0
Normal to Ridge Walls+Roof MIN	.0	23.3	.0	422.4	.0	.0
Along Ridge Walls+Roof +GCpi	22.2	.0	25.3	.0	-414.4	.0
Along Ridge Walls Only +GCpi	22.2	.0	.0	.0	-379.0	.0
Along Ridge Walls+Roof -GCpi	22.2	.0	15.1	.0	-414.4	.0
Along Ridge Walls Only -GCpi	22.2	.0	.0	.0	-379.0	.0
Along Ridge Walls+Roof MIN	13.0	.0	.0	.0	-217.5	.0

Notes Applying to MWFRS Reactions:

Note (1) Per Fig 27.4-1, Note 9, Use greater of Shear calculated with or without roof.
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) MIN area is the area of the surface onto a vertical plane normal to wind.
Note (5) Total Roof Area (incl OH Top) = 1095.85 sq. ft

1500+ sqft Cabin



Gust Factor Calculations

Gust Factor Category I Rigid Structures - Simplified Method

Gust1: For Rigid Structures (Nat. Freq.>1 Hz) use 0.85 = 0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Zm:	0.6*Ht	= 19.32 ft
lzm:	Cc*(33/Zm)^0.167	= 0.22
Lzm:	l*(Zm/33)^Epsilon	= 449.23 ft
Q:	(1/(1+0.63*((B+Ht)/Lzm)^0.63))^0.5	= 0.93
Gust2:	0.925*((1+1.7*lzm*3.4*Q)/(1+1.7*3.4*lzm))	= 0.89

Gust Factor Summary

Not a Flexible Structure use the Lessor of Gust1 or Gust2 = 0.85

Table 26.11-1 Internal Pressure Coefficients for Buildings, GCpi

GCPi : Internal Pressure Coefficient = +/-0.18

Wind Pressurs Main Wind Force Resisting System (MWFRS) - Ref Figure 27.4-1

Kh:	2.01*(Ht/Zg)^(2/Alpha)	= 1.00
Kht:	Topographic Factor (Figure 6-4)	= 1.00
Qh:	.00256*(V)^2*I*Kh*Kht*Kd	= 28.69 psf
Cpww:	Windward Wall Cp(Ref Fig 6-6)	= 0.80
Roof Area		= 1256.67 ft^2
Reduction Factor based on Roof Area		= 0.80

MWFRS-Wall Pressures for Wind Normal to 50 ft Wall (Normal to Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)
Leeward Wall	-0.50	-17.36	-7.03
Side Walls	-0.70	-22.24	-11.91

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi
Windward	29.40	0.98	1.00	0.80	28.15	13.98	24.30	31.33
Windward	19.40	0.90	1.00	0.80	25.79	12.37	22.70	29.73
Windward	9.40	0.85	1.00	0.80	24.43	11.45	21.78	28.81

Roof Location	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Windward - Min Cp	-0.44	-15.89	-5.57
Windward - Max Cp	0.06	-3.70	6.63
Leeward Norm to Ridge	-0.60	-19.80	-9.47

Normal to Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.36	1470	.00	25.52	.00	375.1	.0	.0
Side Wall	-22.24	662	-14.71	.00	.00	.0	216.2	.0
Side Wall	-22.24	662	14.71	.00	.00	.0	-216.2	.0
Windward Wall	13.98	500	.00	6.99	.00	170.5	.0	.0
Windward Wall	12.37	500	.00	6.19	.00	89.1	.0	.0
Windward Wall	11.45	470	.00	5.38	.00	25.3	.0	.0
Roof Windward	-15.89	628	.00	-4.45	8.94	-93.0	.0	.0
Roof Leeward	-19.80	628	.00	5.54	11.14	115.9	.0	.0
Side Wall	-22.24	63	-1.40	.00	.00	.0	43.8	.0
Side Wall	-22.24	63	1.40	.00	.00	.0	-43.8	.0
Total	.00	5646	.00	45.16	20.08	682.8	.0	.0

Normal to Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.36	1470	.00	25.52	.00	375.1	.0	.0
Side Wall	-22.24	662	-14.71	.00	.00	.0	216.2	.0
Side Wall	-22.24	662	14.71	.00	.00	.0	-216.2	.0

Windward Wall	13.98	500	.00	6.99	.00	170.5	.0	.0
Windward Wall	12.37	500	.00	6.19	.00	89.1	.0	.0
Windward Wall	11.45	470	.00	5.38	.00	25.3	.0	.0
Side Wall	-22.24	63	-1.40	.00	.00	.0	43.8	.0
Side Wall	-22.24	63	1.40	.00	.00	.0	-43.8	.0
Total	.00	4389	.00	44.07	.00	660.0	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.03	1470	.00	10.33	.00	151.9	.0	.0
Side Wall	-11.91	662	-7.88	.00	.00	.0	115.8	.0
Side Wall	-11.91	662	7.88	.00	.00	.0	-115.8	.0
Windward Wall	24.30	500	.00	12.15	.00	296.5	.0	.0
Windward Wall	22.70	500	.00	11.35	.00	163.4	.0	.0
Windward Wall	21.78	470	.00	10.23	.00	48.1	.0	.0
Roof Windward	6.63	628	.00	1.86	-3.73	38.8	.0	.0
Roof Leeward	-9.47	628	.00	2.65	5.33	55.4	.0	.0
Side Wall	-11.91	63	-0.75	.00	.00	.0	23.5	.0
Side Wall	-11.91	63	0.75	.00	.00	.0	-23.5	.0
Total	.00	5646	.00	48.58	1.60	754.1	.0	.0

Normal to Ridge - Base Reactions - Walls Only -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.03	1470	.00	10.33	.00	151.9	.0	.0
Side Wall	-11.91	662	-7.88	.00	.00	.0	115.8	.0
Side Wall	-11.91	662	7.88	.00	.00	.0	-115.8	.0
Windward Wall	24.30	500	.00	12.15	.00	296.5	.0	.0
Windward Wall	22.70	500	.00	11.35	.00	163.4	.0	.0
Windward Wall	21.78	470	.00	10.23	.00	48.1	.0	.0
Side Wall	-11.91	63	-0.75	.00	.00	.0	23.5	.0
Side Wall	-11.91	63	0.75	.00	.00	.0	-23.5	.0
Total	.00	4389	.00	44.07	.00	660.0	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	500	.00	8.00	.00	195.2	.0	.0
Windward Wall	16.00	500	.00	8.00	.00	115.2	.0	.0
Windward Wall	16.00	470	.00	7.52	.00	35.3	.0	.0
Roof Windward	8.00	280	.00	2.24	.00	72.1	.0	.0
Roof Leeward	8.00	280	.00	2.24	.00	72.1	.0	.0
Total	.00	2030	.00	28.00	.00	490.0	.0	.0

Notes - Normal to Ridge

Note (1) Per Fig 27.4-1 Note 7, Since Theta > 10 Deg base calcs on Mean Ht
Note (2) Wall & Roof Pressures = Qh*(G*Cp - GCPi)
Note (3) +GCpi = Positive Internal Bldg Press, -GCPi = Negative Internal Bldg Press
Note (4) Total Pressure = Leeward Press + Windward Press (For + or - GCPi)
Note (5) Ref Fig 27.4-1, Normal to Ridge (Theta>=10), Theta= 26.5 Deg, h/l= 0.64
Note (6) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (7) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (8) Area* = Area of the surface projected onto a vertical plane normal to wind.

MWFRS-Wall Pressures for Wind Normal to 22.5 ft wall (Along Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)
Leeward Wall	-0.29	-12.21	-1.88
Side Walls	-0.70	-22.24	-11.91

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi

Windward	35.00	1.01	1.00	0.80	29.20	14.69	25.02	26.90
Windward	29.40	0.98	1.00	0.80	28.15	13.98	24.30	26.19
Windward	19.40	0.90	1.00	0.80	25.79	12.37	22.70	24.58
Windward	9.40	0.85	1.00	0.80	24.43	11.45	21.78	23.66

Roof - Dist from Windward Edge	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Roof: 0.0 ft to 16.1 ft	-0.94	-28.10	-17.77
Roof: 16.1 ft to 32.2 ft	-0.84	-25.71	-15.38
Roof: 32.2 ft to 50.0 ft	-0.56	-18.76	-8.43

Along Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-12.21	662	8.08	.00	.00	.0	-118.7	.0
Side Wall	-22.24	1470	.00	32.69	.00	480.5	.0	.0
Side Wall	-22.24	1470	.00	-32.69	.00	-480.5	.0	.0
Windward Wall	13.98	225	3.14	.00	.00	.0	-76.7	.0
Windward Wall	12.37	225	2.78	.00	.00	.0	-40.1	.0
Windward Wall	11.45	212	2.42	.00	.00	.0	-11.4	.0
Roof (0 to h/2)	-28.10	202	.00	-2.53	5.09	-52.9	-86.3	-42.9
Roof (0 to h/2)	-28.10	202	.00	2.53	5.09	52.9	-86.3	42.9
Roof (h/2 to h)	-25.71	202	.00	-2.32	4.66	-48.4	-4.0	-2.0
Roof (h/2 to h)	-25.71	202	.00	2.32	4.66	48.4	-4.0	2.0
Roof (h to 2h)	-18.76	224	.00	-1.87	3.76	-39.1	60.5	30.1
Roof (h to 2h)	-18.76	224	.00	1.87	3.76	39.1	60.5	-30.1
Leeward Wall	-12.21	63	0.77	.00	.00	.0	-24.1	.0
Windward Wall	14.69	63	0.93	.00	.00	.0	-28.9	.0
Total	.00	5646	18.12	.00	27.01	.0	-359.4	.0

Along Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-12.21	662	8.08	.00	.00	.0	-118.7	.0
Side Wall	-22.24	1470	.00	32.69	.00	480.5	.0	.0
Side Wall	-22.24	1470	.00	-32.69	.00	-480.5	.0	.0
Windward Wall	13.98	225	3.14	.00	.00	.0	-76.7	.0
Windward Wall	12.37	225	2.78	.00	.00	.0	-40.1	.0
Windward Wall	11.45	212	2.42	.00	.00	.0	-11.4	.0
Leeward Wall	-12.21	63	0.77	.00	.00	.0	-24.1	.0
Windward Wall	14.69	63	0.93	.00	.00	.0	-28.9	.0
Total	.00	4389	18.12	.00	.00	.0	-299.9	.0

Along Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-1.88	662	1.24	.00	.00	.0	-18.3	.0
Side Wall	-11.91	1470	.00	17.50	.00	257.3	.0	.0
Side Wall	-11.91	1470	.00	-17.50	.00	-257.3	.0	.0
Windward Wall	24.30	225	5.47	.00	.00	.0	-133.4	.0
Windward Wall	22.70	225	5.11	.00	.00	.0	-73.5	.0
Windward Wall	21.78	212	4.61	.00	.00	.0	-21.6	.0
Roof (0 to h/2)	-17.77	202	.00	-1.60	3.22	-33.5	-54.5	-27.2
Roof (0 to h/2)	-17.77	202	.00	1.60	3.22	33.5	-54.5	27.2
Roof (h/2 to h)	-15.38	202	.00	-1.39	2.79	-29.0	-2.4	-1.2
Roof (h/2 to h)	-15.38	202	.00	1.39	2.79	29.0	-2.4	1.2
Roof (h to 2h)	-8.43	224	.00	-0.84	1.69	-17.6	27.2	13.5
Roof (h to 2h)	-8.43	224	.00	0.84	1.69	17.6	27.2	-13.5
Leeward Wall	-1.88	63	0.12	.00	.00	.0	-3.7	.0
Windward Wall	25.02	63	1.58	.00	.00	.0	-49.3	.0
Total	.00	5646	18.12	.00	15.39	.0	-359.4	.0

Along Ridge - Base Reactions - Walls Only -GCpi

Description	Press	Area	Fx	Fy	Fz	Mx	My	Mz

	psf	ft^2	Kip	Kip	Kip	K-ft	K-ft	K-ft
Leeward Wall	-1.88	662	1.24	.00	.00	.0	-18.3	.0
Side Wall	-11.91	1470	.00	17.50	.00	257.3	.0	.0
Side Wall	-11.91	1470	.00	-17.50	.00	-257.3	.0	.0
Windward Wall	24.30	225	5.47	.00	.00	.0	-133.4	.0
Windward Wall	22.70	225	5.11	.00	.00	.0	-73.5	.0
Windward Wall	21.78	212	4.61	.00	.00	.0	-21.6	.0
Leeward Wall	-1.88	63	0.12	.00	.00	.0	-3.7	.0
Windward Wall	25.02	63	1.58	.00	.00	.0	-49.3	.0
Total	.00	4389	18.12	.00	.00	.0	-299.9	.0

Along Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	225	3.60	.00	.00	.0	-87.8	.0
Windward Wall	16.00	225	3.60	.00	.00	.0	-51.8	.0
Windward Wall	16.00	212	3.38	.00	.00	.0	-15.9	.0
Windward Wall	16.00	63	1.01	.00	.00	.0	-31.5	.0
Total	.00	725	11.59	.00	.00	.0	-187.1	.0

Notes - Along Ridge

Note (1) Ref Fig 27.4-1, Parallel to Ridge (All), h/l= 0.64
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) Area* = Area of the surface projected onto a vertical plane normal to wind.

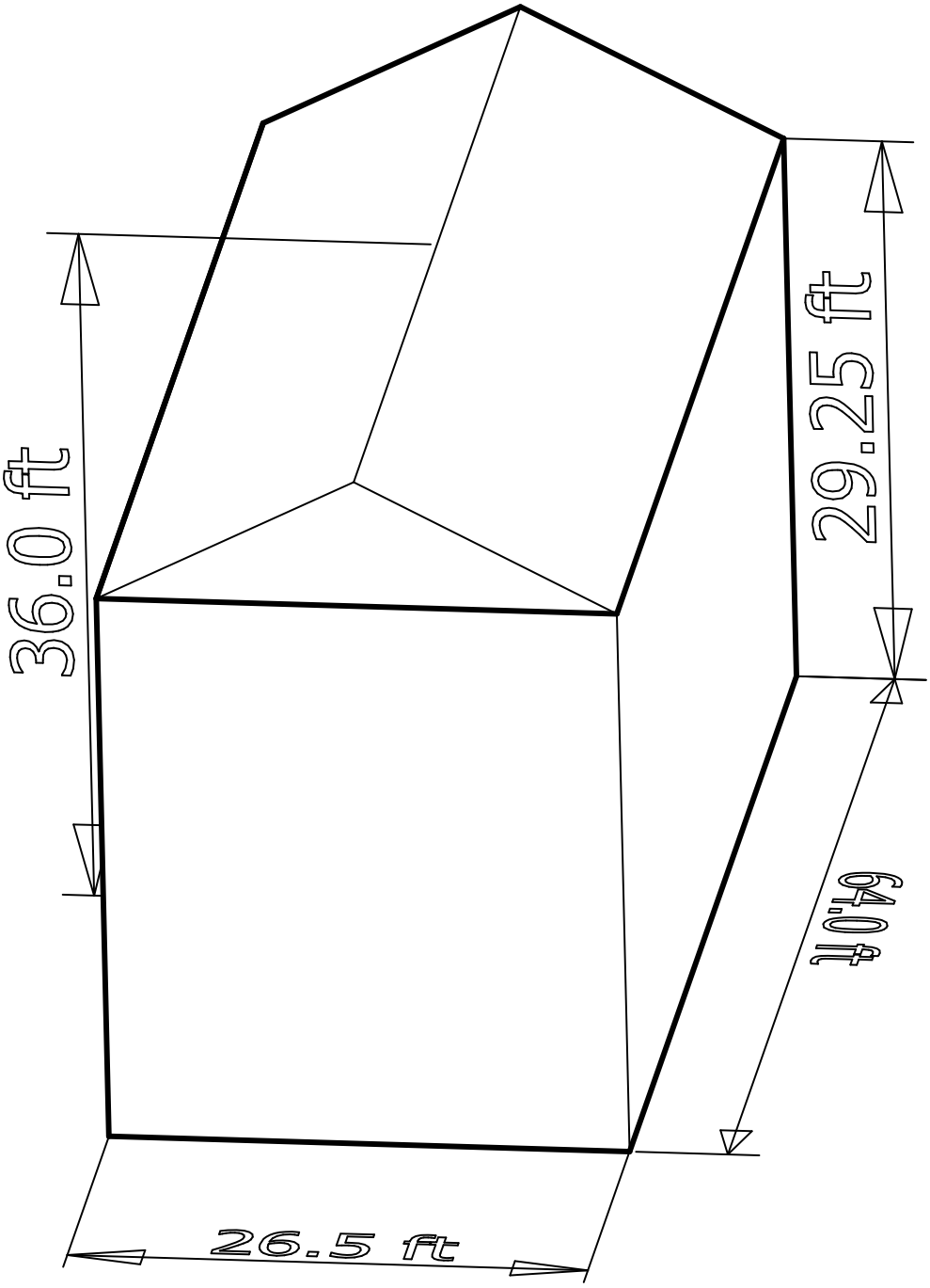
Total Base Reaction Summary

Description	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Normal to Ridge Walls+Roof +GCpi	.0	45.2	20.1	682.8	.0	.0
Normal to Ridge Walls Only +GCpi	.0	44.1	.0	660.0	.0	.0
Normal to Ridge Walls+Roof -GCpi	.0	48.6	1.6	754.1	.0	.0
Normal to Ridge Walls Only -GCpi	.0	44.1	.0	660.0	.0	.0
Normal to Ridge Walls+Roof MIN	.0	28.0	.0	490.0	.0	.0
Along Ridge Walls+Roof +GCpi	18.1	.0	27.0	.0	-359.4	.0
Along Ridge Walls Only +GCpi	18.1	.0	.0	.0	-299.9	.0
Along Ridge Walls+Roof -GCpi	18.1	.0	15.4	.0	-359.4	.0
Along Ridge Walls Only -GCpi	18.1	.0	.0	.0	-299.9	.0
Along Ridge Walls+Roof MIN	11.6	.0	.0	.0	-187.1	.0

Notes Applying to MWFRS Reactions:

Note (1) Per Fig 27.4-1, Note 9, Use greater of Shear calculated with or without roof.
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) MIN area is the area of the surface onto a vertical plane normal to wind.
Note (5) Total Roof Area (incl OH Top) = 1256.67 sq. ft

2500 sqft Cabin



Gust Factor Calculations

Gust Factor Category I Rigid Structures - Simplified Method

Gust1: For Rigid Structures (Nat. Freq.>1 Hz) use 0.85 = 0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Zm:	0.6*Ht	= 19.58 ft
lzm:	Cc*(33/Zm)^0.167	= 0.22
Lzm:	l*(Zm/33)^Epsilon	= 450.41 ft
Q:	(1/(1+0.63*((B+Ht)/Lzm)^0.63))^0.5	= 0.92
Gust2:	0.925*((1+1.7*lzm*3.4*Q)/(1+1.7*3.4*lzm))	= 0.88

Gust Factor Summary

Not a Flexible Structure use the Lessor of Gust1 or Gust2 = 0.85

Table 26.11-1 Internal Pressure Coefficients for Buildings, GCpi

GCPi : Internal Pressure Coefficient = +/-0.18

Wind Pressurs Main Wind Force Resisting System (MWFRS) - Ref Figure 27.4-1

Kh: 2.01*(Ht/Zg)^(2/Alpha)	= 1.00
Kht: Topographic Factor (Figure 6-4)	= 1.00
Qh: .00256*(V)^2*I*Kh*Kht*Kd	= 28.77 psf
Cpww: Windward Wall Cp(Ref Fig 6-6)	= 0.80
Roof Area	= 1903.40 ft^2
Reduction Factor based on Roof Area	= 0.80

MWFRS-Wall Pressures for Wind Normal to 64 ft Wall (Normal to Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)
Leeward Wall	-0.50	-17.41	-7.05
Side Walls	-0.70	-22.30	-11.94

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi
Windward	29.25	0.98	1.00	0.80	28.12	13.94	24.30	31.35
Windward	19.25	0.89	1.00	0.80	25.75	12.33	22.69	29.73
Windward	9.25	0.85	1.00	0.80	24.43	11.43	21.79	28.84

Roof Location	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Windward - Min Cp	-0.42	-15.45	-5.09
Windward - Max Cp	0.08	-3.22	7.14
Leeward Norm to Ridge	-0.60	-19.85	-9.49

Normal to Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.41	1872	.00	32.58	.00	476.5	.0	.0
Side Wall	-22.30	775	-17.28	.00	.00	.0	252.8	.0
Side Wall	-22.30	775	17.28	.00	.00	.0	-252.8	.0
Windward Wall	13.94	640	.00	8.92	.00	216.4	.0	.0
Windward Wall	12.33	640	.00	7.89	.00	112.4	.0	.0
Windward Wall	11.43	592	.00	6.77	.00	31.3	.0	.0
Roof Windward	-15.45	952	.00	-6.67	13.10	-131.0	.0	.0
Roof Leeward	-19.85	952	.00	8.58	16.83	168.3	.0	.0
Side Wall	-22.30	89	-1.99	.00	.00	.0	62.8	.0
Side Wall	-22.30	89	1.99	.00	.00	.0	-62.8	.0
Total	.00	7377	.00	58.07	29.94	874.0	.0	.0

Normal to Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-17.41	1872	.00	32.58	.00	476.5	.0	.0
Side Wall	-22.30	775	-17.28	.00	.00	.0	252.8	.0
Side Wall	-22.30	775	17.28	.00	.00	.0	-252.8	.0

Windward Wall	13.94	640	.00	8.92	.00	216.4	.0	.0
Windward Wall	12.33	640	.00	7.89	.00	112.4	.0	.0
Windward Wall	11.43	592	.00	6.77	.00	31.3	.0	.0
Side Wall	-22.30	89	-1.99	.00	.00	.0	62.8	.0
Side Wall	-22.30	89	1.99	.00	.00	.0	-62.8	.0
Total	.00	5473	.00	56.16	.00	836.6	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.05	1872	.00	13.20	.00	193.0	.0	.0
Side Wall	-11.94	775	-9.25	.00	.00	.0	135.4	.0
Side Wall	-11.94	775	9.25	.00	.00	.0	-135.4	.0
Windward Wall	24.30	640	.00	15.55	.00	377.1	.0	.0
Windward Wall	22.69	640	.00	14.52	.00	206.9	.0	.0
Windward Wall	21.79	592	.00	12.90	.00	59.7	.0	.0
Roof Windward	7.14	952	.00	3.08	-6.05	60.5	.0	.0
Roof Leeward	-9.49	952	.00	4.10	8.05	80.5	.0	.0
Side Wall	-11.94	89	-1.07	.00	.00	.0	33.6	.0
Side Wall	-11.94	89	1.07	.00	.00	.0	-33.6	.0
Total	.00	7377	.00	63.35	2.00	977.6	.0	.0

Normal to Ridge - Base Reactions - Walls Only -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-7.05	1872	.00	13.20	.00	193.0	.0	.0
Side Wall	-11.94	775	-9.25	.00	.00	.0	135.4	.0
Side Wall	-11.94	775	9.25	.00	.00	.0	-135.4	.0
Windward Wall	24.30	640	.00	15.55	.00	377.1	.0	.0
Windward Wall	22.69	640	.00	14.52	.00	206.9	.0	.0
Windward Wall	21.79	592	.00	12.90	.00	59.7	.0	.0
Side Wall	-11.94	89	-1.07	.00	.00	.0	33.6	.0
Side Wall	-11.94	89	1.07	.00	.00	.0	-33.6	.0
Total	.00	5473	.00	56.16	.00	836.6	.0	.0

Normal to Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	640	.00	10.24	.00	248.3	.0	.0
Windward Wall	16.00	640	.00	10.24	.00	145.9	.0	.0
Windward Wall	16.00	592	.00	9.47	.00	43.8	.0	.0
Roof Windward	8.00	432	.00	3.46	.00	112.8	.0	.0
Roof Leeward	8.00	432	.00	3.46	.00	112.8	.0	.0
Total	.00	2736	.00	36.86	.00	663.6	.0	.0

Notes - Normal to Ridge

Note (1) Per Fig 27.4-1 Note 7, Since Theta > 10 Deg base calcs on Mean Ht
Note (2) Wall & Roof Pressures = Qh*(G*Cp - GCPi)
Note (3) +GCpi = Positive Internal Bldg Press, -GCPi = Negative Internal Bldg Press
Note (4) Total Pressure = Leeward Press + Windward Press (For + or - GCPi)
Note (5) Ref Fig 27.4-1, Normal to Ridge (Theta>=10), Theta= 27.0 Deg, h/l= 0.51
Note (6) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (7) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (8) Area* = Area of the surface projected onto a vertical plane normal to wind.

MWFRS-Wall Pressures for Wind Normal to 26.5 ft wall (Along Ridge)

All pressures shown are based upon STRENGTH Design, with a Load Factor of 1

Wall	Cp	Pressure +GCpi (psf)	Pressure -GCpi (psf)
Leeward Wall	-0.28	-12.01	-1.65
Side Walls	-0.70	-22.30	-11.94

Wall	Elev ft	Kz	Kzt	Cp	qz psf	Press +GCpi	Press -GCpi	Total +/-GCpi

Windward	36.00	1.02	1.00	0.80	29.37	14.79	25.15	26.80
Windward	29.25	0.98	1.00	0.80	28.12	13.94	24.30	25.95
Windward	19.25	0.89	1.00	0.80	25.75	12.33	22.69	24.34
Windward	9.25	0.85	1.00	0.80	24.43	11.43	21.79	23.44

Roof - Dist from Windward Edge	Cp	Pressure +GCpi(psf)	Pressure -GCpi(psf)
Roof: 0.0 ft to 16.3 ft	-0.90	-27.25	-16.90
Roof: 16.3 ft to 32.6 ft	-0.90	-27.09	-16.74
Roof: 32.6 ft to 64.0 ft	-0.50	-17.50	-7.14

Along Ridge - Base Reactions - Walls+Roof +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-12.01	775	9.31	.00	.00	.0	-136.1	.0
Side Wall	-22.30	1872	.00	41.74	.00	610.5	.0	.0
Side Wall	-22.30	1872	.00	-41.74	.00	-610.5	.0	.0
Windward Wall	13.94	265	3.69	.00	.00	.0	-89.6	.0
Windward Wall	12.33	265	3.27	.00	.00	.0	-46.6	.0
Windward Wall	11.43	245	2.80	.00	.00	.0	-13.0	.0
Roof (0 to h/2)	-27.25	243	.00	-3.00	5.89	-58.9	-140.5	-71.6
Roof (0 to h/2)	-27.25	243	.00	3.00	5.89	58.9	-140.5	71.6
Roof (h/2 to h)	-27.09	243	.00	-2.98	5.86	-58.5	-44.1	-22.5
Roof (h/2 to h)	-27.09	243	.00	2.98	5.86	58.5	-44.1	22.5
Roof (h to 2h)	-17.50	467	.00	-3.71	7.28	-72.7	118.7	60.5
Roof (h to 2h)	-17.50	467	.00	3.71	7.28	72.7	118.7	-60.5
Leeward Wall	-12.01	89	1.07	.00	.00	.0	-33.8	.0
Windward Wall	14.79	89	1.32	.00	.00	.0	-41.7	.0
Total	.00	7377	21.47	.00	38.04	.0	-492.5	.0

Along Ridge - Base Reactions - Walls Only +GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-12.01	775	9.31	.00	.00	.0	-136.1	.0
Side Wall	-22.30	1872	.00	41.74	.00	610.5	.0	.0
Side Wall	-22.30	1872	.00	-41.74	.00	-610.5	.0	.0
Windward Wall	13.94	265	3.69	.00	.00	.0	-89.6	.0
Windward Wall	12.33	265	3.27	.00	.00	.0	-46.6	.0
Windward Wall	11.43	245	2.80	.00	.00	.0	-13.0	.0
Leeward Wall	-12.01	89	1.07	.00	.00	.0	-33.8	.0
Windward Wall	14.79	89	1.32	.00	.00	.0	-41.7	.0
Total	.00	5473	21.47	.00	.00	.0	-360.7	.0

Along Ridge - Base Reactions - Walls+Roof -GCpi

Description	Press psf	Area ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Leeward Wall	-1.65	775	1.28	.00	.00	.0	-18.7	.0
Side Wall	-11.94	1872	.00	22.35	.00	326.9	.0	.0
Side Wall	-11.94	1872	.00	-22.35	.00	-326.9	.0	.0
Windward Wall	24.30	265	6.44	.00	.00	.0	-156.1	.0
Windward Wall	22.69	265	6.01	.00	.00	.0	-85.7	.0
Windward Wall	21.79	245	5.34	.00	.00	.0	-24.7	.0
Roof (0 to h/2)	-16.90	243	.00	-1.86	3.65	-36.5	-87.1	-44.4
Roof (0 to h/2)	-16.90	243	.00	1.86	3.65	36.5	-87.1	44.4
Roof (h/2 to h)	-16.74	243	.00	-1.84	3.62	-36.2	-27.2	-13.9
Roof (h/2 to h)	-16.74	243	.00	1.84	3.62	36.2	-27.2	13.9
Roof (h to 2h)	-7.14	467	.00	-1.51	2.97	-29.7	48.4	24.7
Roof (h to 2h)	-7.14	467	.00	1.51	2.97	29.7	48.4	-24.7
Leeward Wall	-1.65	89	0.15	.00	.00	.0	-4.6	.0
Windward Wall	25.15	89	2.25	.00	.00	.0	-70.9	.0
Total	.00	7377	21.47	.00	20.48	.0	-492.5	.0

Along Ridge - Base Reactions - Walls Only -GCpi

Description	Press	Area	Fx	Fy	Fz	Mx	My	Mz

	psf	ft^2	Kip	Kip	Kip	K-ft	K-ft	K-ft
Leeward Wall	-1.65	775	1.28	.00	.00	.0	-18.7	.0
Side Wall	-11.94	1872	.00	22.35	.00	326.9	.0	.0
Side Wall	-11.94	1872	.00	-22.35	.00	-326.9	.0	.0
Windward Wall	24.30	265	6.44	.00	.00	.0	-156.1	.0
Windward Wall	22.69	265	6.01	.00	.00	.0	-85.7	.0
Windward Wall	21.79	245	5.34	.00	.00	.0	-24.7	.0
Leeward Wall	-1.65	89	0.15	.00	.00	.0	-4.6	.0
Windward Wall	25.15	89	2.25	.00	.00	.0	-70.9	.0
Total	.00	5473	21.47	.00	.00	.0	-360.7	.0

Along Ridge - Base Reactions - Walls+Roof MIN

Description	Press psf	Area* ft^2	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Windward Wall	16.00	265	4.24	.00	.00	.0	-102.8	.0
Windward Wall	16.00	265	4.24	.00	.00	.0	-60.4	.0
Windward Wall	16.00	245	3.92	.00	.00	.0	-18.1	.0
Windward Wall	16.00	89	1.43	.00	.00	.0	-45.1	.0
Total	.00	865	13.83	.00	.00	.0	-226.5	.0

Notes - Along Ridge

Note (1) Ref Fig 27.4-1, Parallel to Ridge (All), h/l= 0.51
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) Area* = Area of the surface projected onto a vertical plane normal to wind.

Total Base Reaction Summary

Description	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Normal to Ridge Walls+Roof +GCpi	.0	58.1	29.9	874.0	.0	.0
Normal to Ridge Walls Only +GCpi	.0	56.2	.0	836.6	.0	.0
Normal to Ridge Walls+Roof -GCpi	.0	63.3	2.0	977.6	.0	.0
Normal to Ridge Walls Only -GCpi	.0	56.2	.0	836.6	.0	.0
Normal to Ridge Walls+Roof MIN	.0	36.9	.0	663.6	.0	.0
Along Ridge Walls+Roof +GCpi	21.5	.0	38.0	.0	-492.5	.0
Along Ridge Walls Only +GCpi	21.5	.0	.0	.0	-360.7	.0
Along Ridge Walls+Roof -GCpi	21.5	.0	20.5	.0	-492.5	.0
Along Ridge Walls Only -GCpi	21.5	.0	.0	.0	-360.7	.0
Along Ridge Walls+Roof MIN	13.8	.0	.0	.0	-226.5	.0

Notes Applying to MWFRS Reactions:

Note (1) Per Fig 27.4-1, Note 9, Use greater of Shear calculated with or without roof.
Note (2) X= Along Building ridge, Y = Normal to Building Ridge, Z = Vertical
Note (3) MIN = Minimum pressures on Walls = 16 psf and Roof = 8 psf
Note (4) MIN area is the area of the surface onto a vertical plane normal to wind.
Note (5) Total Roof Area (incl OH Top) = 1903.40 sq. ft