Blackwell

Structural Engineers

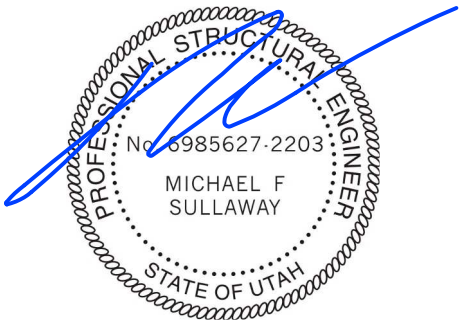
SUMMIT HORIZON NEIGHBORHOOD

2500 SF UNIT

Our Project - 160063

Foundation Design Calculation Package

REVISION 1



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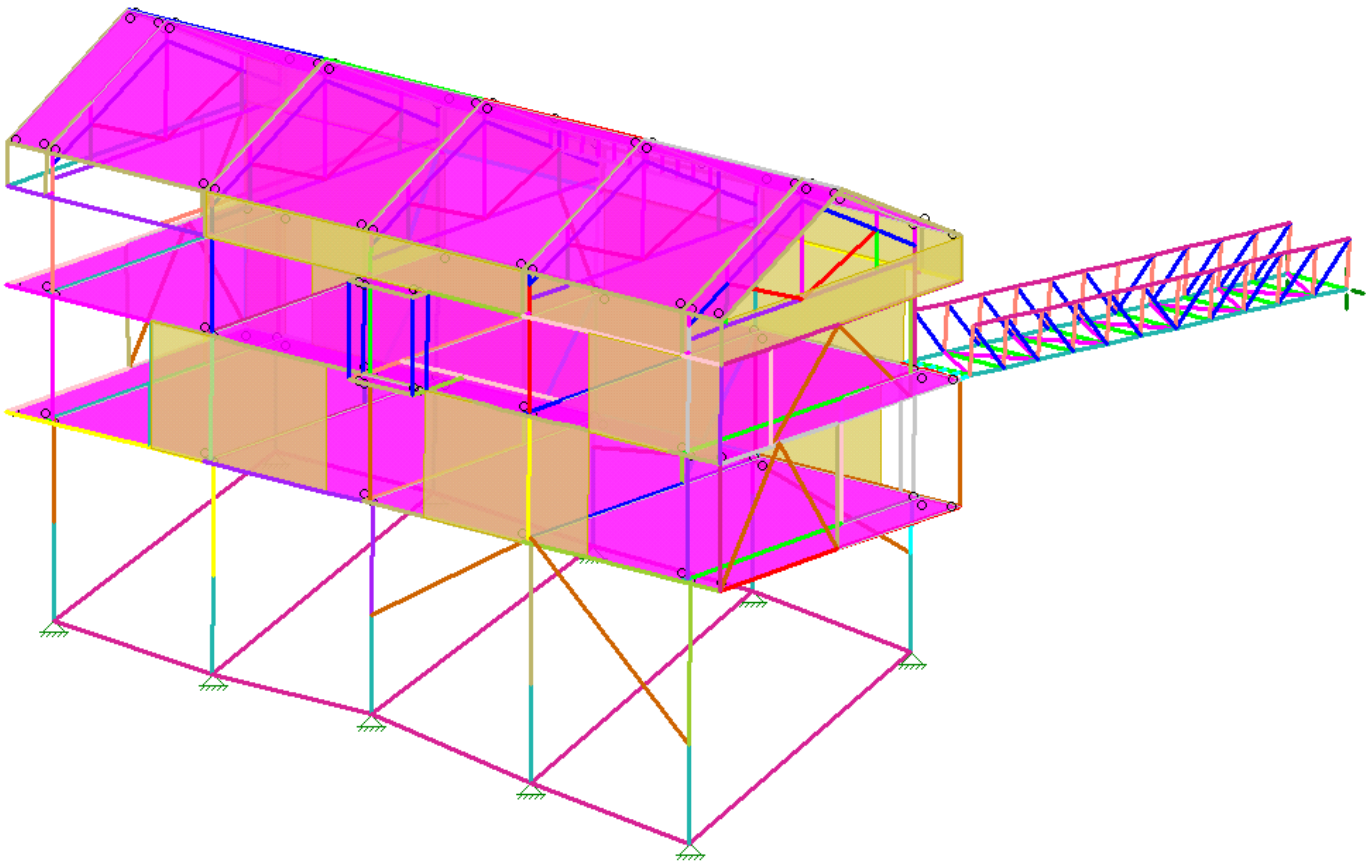

REVISION 1
COLUMNS HAVE BEEN RELEASED FOR BENDING IN BOTH DIRECTIONS @ TOP OF PIERS, RESULTING IN MORE ECONOMICAL ANCHORAGE.
WEIGHT OF FOOTINGS AND SOIL HAVE BEEN ADDED TO THE ANALYSIS MODEL (AS POINT LOADS AT SUPPORTS) TO RESIST OVERTURNING.

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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: 11/8/2016	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} = **41.900** kips

Column axial live load — P_{ll} = **56.100** kips

Total column load (unfactored) — $P_n = P_{dl} + P_{ll}$ = **98.000** kips

Axial load acting downward - OK

Soil details

The allowable increase in bearing pressure — q_a = **2.720** ksf

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

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

ALLOWABLE BEARING = 3.46 ksf
FOR SEISMIC AND WIND.

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 — $q_s = q_a - q_{ftg}$ = **2.690** ksf

Footing size reqd — $L_x = L_y = \sqrt{(P_n / q_s)}$ = **6.036** ft

REVISION 1
6'x6' FTG. O.K.
OVERSTRESS = 1%

Say footing size 6.036 ft × 6.036 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 $P_{dl} =$ **41.900** kips

Column axial live load $P_{ll} =$ **56.100** kips

Total column load (unfactored)

$P_n = P_{dl} + P_{ll} =$ **98.000** kips

Total column load (factored)

$P_u = 1.2 \times P_{dl} + 1.6 \times P_{ll} =$ **140.040** kips

Axial load acting downward - OK

Actual soil pressure under base

Ultimate net design bearing pressure

$q_u = P_u / L_x^2 + 1.2 \times q_{ftg} =$ **3.880** 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

$M_{ux} = q_u \times L_x \times (L_x/2 - a_c/2)^2/2 =$ **47.7** kip_ft

Ultimate moment at column face, y direction

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

$M_{uy} = q_u \times L_x \times (L_x/2 - b_c/2)^2/2 =$ **47.7** kip_ft

One-way (beam) shear

$x_d = \max((L_x/2 - a_c/2 - d_b), 0 \text{ in}) =$ **15.529** in

$V_{ux} = q_u \times L_x \times x_d =$ **30.3** kips

$y_d = \max((L_x/2 - b_c/2 - d_b + d_{bar}), 0 \text{ in}) =$ **16.154** in

$V_{uy} = q_u \times L_x \times y_d =$ **31.5** 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

$V_{up} = q_u \times (L_x^2 - (a_c + d_b) \times (b_c + d_b))$ = **112.564** 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} = **47.683** 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 = **0.029075**

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 = **0.9826**

Area of tension steel required

$A_{sx\_reqd} = M_{ux} / (0.90 \times f_y \times J_x \times d_{bx} \times L_y)$ = **0.21** 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} = **47.683** 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} = $M_{uy} / (f'_c \times d_{by}^2) / L_x$ = **0.033758**

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 = **0.9797**

Area of tension steel required

$A_{sy\_reqd} = M_{uy} / (0.90 \times f_y \times J_y \times d_{by} \times L_x)$ = **0.22** 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 = **6.036** ft

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

Design ultimate shear forces

Ultimate shear at 'd' from column face V_{ux} = **30.304** kips

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

Shear capacity of concrete

$V_{cx} = 2 \times \sqrt{(f'_c)} \times L_y \times d_{bx}$ = **75.510** kips

V_{sx} = 0 kips

$\phi V_{nx} = 0.75 \times (V_{cx} + V_{sx})$ = **56.633** 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 = **6.036** ft

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

Design ultimate shear forces

Ultimate shear at 'd' from column face V_{uy} = **31.524** kips

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

Shear capacity of concrete

$V_{cy} = 2 \times \sqrt{(f'_c)} \times L_x \times d_{by}$ = **70.078** kips

V_{sy} = 0 kips

$\phi V_{ny} = 0.75 \times (V_{cy} + V_{sy})$ = **52.558** 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} = **112.564** 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**

$V_{cp} = \text{factor} \times \sqrt{(f'_c)} \times b_o \times d_b$ = **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: 9/11/2016

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

LC	X (k)	Y (k)	Z (k)	Friction (k)	SLIDING?
116	-0.002	654.965	0	229.2	NO
117	-0.003	804.742	0.001	281.7	NO
118	-0.002	654.965	0	229.2	NO
119	-0.002	1049.095	0	367.2	NO
120	-0.003	1062.895	0	372.0	NO
121	-24.895	641.918	0	224.7	NO
122	24.758	641.918	0	224.7	NO
123	-24.795	652.007	-0.003	228.2	NO
124	24.871	651.851	-0.004	228.1	NO
125	21.74	635.795	0	222.5	NO
126	-0.002	647.892	-10.404	226.8	NO
127	-0.002	648.247	10.346	226.9	NO
128	-0.013	657.84	-10.397	230.2	NO
129	-0.013	657.84	10.391	230.2	NO
130	0.01	635.795	-10.326	222.5	NO
131	-0.003	761.993	-7.802	266.7	NO
132	-0.003	762.259	7.76	266.8	NO
133	-18.673	757.512	0.001	265.1	NO
134	18.567	757.512	0.001	265.1	NO
135	-0.011	769.454	-7.797	269.3	NO
136	-0.011	769.454	7.794	269.3	NO
137	-18.598	765.079	-0.002	267.8	NO
138	18.652	764.962	-0.002	267.7	NO
139	0.006	752.921	-7.744	263.5	NO
140	16.304	752.921	0.001	263.5	NO
141	-0.003	1057.591	-7.803	370.2	NO
142	-0.003	1057.857	7.759	370.2	NO
143	-18.672	1053.11	0	368.6	NO
144	18.567	1053.11	0	368.6	NO
145	-0.011	1065.051	-7.798	372.8	NO
146	-0.011	1065.051	7.793	372.8	NO
147	-18.598	1060.677	-0.002	371.2	NO
148	18.652	1060.56	-0.003	371.2	NO
149	0.006	1048.518	-7.745	367.0	NO
150	16.304	1048.518	0	367.0	NO
151	-0.001	385.906	-10.405	135.1	NO
152	-0.001	386.261	10.346	135.2	NO
153	-24.894	379.932	0	133.0	NO
154	24.758	379.932	0	133.0	NO
155	-0.013	395.854	-10.397	138.5	NO
156	-0.013	395.854	10.391	138.5	NO
157	-24.794	390.021	-0.003	136.5	NO
158	24.872	389.865	-0.004	136.5	NO
159	0.011	373.81	-10.327	130.8	NO

REVISISON 1
WEIGHT OF FOOTINGS AND SOIL ADDED TO ANALYSIS MODEL. NO SLIDING OBSERVED.

LC	X (k)	Y (k)	Z (k)	Friction (k)	SLIDING?
160	21.741	373.81	0	130.8	NO
161	-61.5	717.592	0.001	251.2	NO
162	-61.5	717.592	0.002	251.2	NO
163	-61.5	717.592	0	251.2	NO
164	-0.002	717.592	-61.487	251.2	NO
165	-0.002	717.592	-61.487	251.2	NO
166	-0.002	717.592	-61.487	251.2	NO
167	61.496	717.592	0	251.2	NO
168	61.496	717.592	0	251.2	NO
169	61.496	717.592	0	251.2	NO
170	-0.002	717.592	61.488	251.2	NO
171	-0.002	717.592	61.488	251.2	NO
172	-0.002	717.592	61.488	251.2	NO
173	-46.126	814.268	0.002	285.0	NO
174	-46.126	814.268	0.002	285.0	NO
175	-46.126	814.268	0.001	285.0	NO
176	-0.003	814.268	-46.115	285.0	NO
177	-0.003	814.268	-46.115	285.0	NO
178	-0.003	814.268	-46.114	285.0	NO
179	46.12	814.268	0	285.0	NO
180	46.12	814.268	0	285.0	NO
181	46.12	814.268	0.001	285.0	NO
182	-0.003	814.268	46.117	285.0	NO
183	-0.003	814.268	46.117	285.0	NO
184	-0.003	814.268	46.117	285.0	NO
185	-46.126	1109.866	0	388.5	NO
186	-46.126	1109.866	0.001	388.5	NO
187	-46.126	1109.866	0	388.5	NO
188	-0.003	1109.866	-46.115	388.5	NO
189	-0.003	1109.866	-46.115	388.5	NO
190	-0.003	1109.866	-46.115	388.5	NO
191	46.121	1109.866	0	388.5	NO
192	46.121	1109.866	0	388.5	NO
193	46.121	1109.866	0	388.5	NO
194	-0.003	1109.866	46.116	388.5	NO
195	-0.003	1109.866	46.116	388.5	NO
196	-0.003	1109.866	46.116	388.5	NO
197	-61.499	330.351	0	115.6	NO
198	-61.499	330.351	0.001	115.6	NO
199	-61.499	330.351	0	115.6	NO
200	0	330.351	-61.487	115.6	NO
201	0	330.351	-61.488	115.6	NO
202	0	330.351	-61.487	115.6	NO
203	61.497	330.351	0	115.6	NO
204	61.497	330.351	0	115.6	NO
205	61.497	330.351	0	115.6	NO
206	0	330.351	61.488	115.6	NO
207	0	330.351	61.488	115.6	NO
208	0	330.351	61.488	115.6	NO

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Pier Design

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Title: Pier Design

Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 9/11/2016

General Information:
==========
File Name: C:\Dropbox (BSE)\160063 Summit Powder Mountain\Design\Cottag...\160063 2500SF Pier R1.col
Project: 160063
Column: Pier Engineer: RML
Code: ACI 318-11 Units: English

Run Option: Design Slenderness: Not considered
Run Axis: Biaxial 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

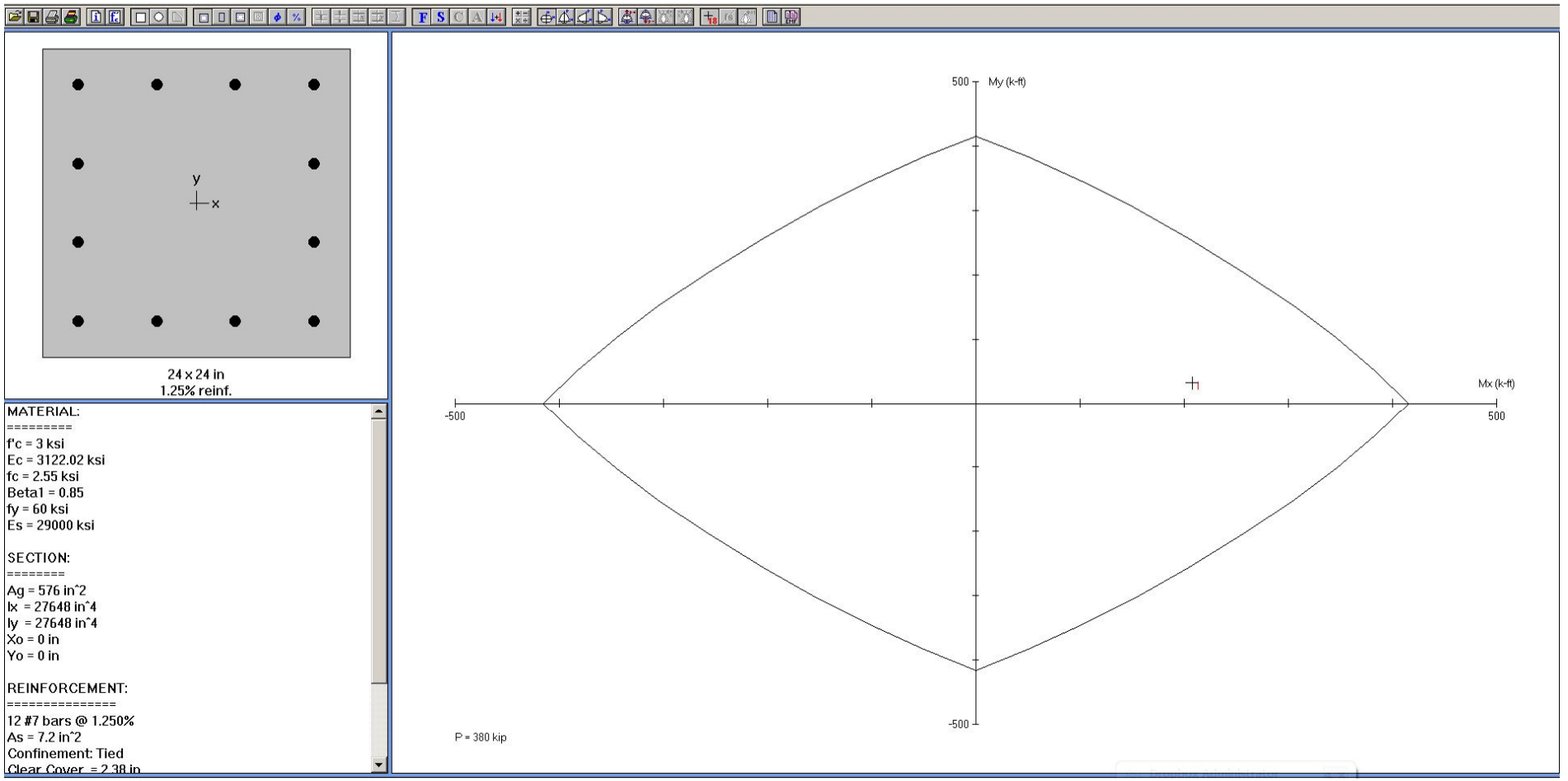
Layout: Rectangular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 7.20 in^2 at rho = 1.25%
Minimum clear spacing = 5.25 in

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	Muy k-ft	PhiMnx k-ft	PhiMny k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	380.00	208.00	32.30	377.43	58.61	1.815	13.69	24.98	0.00247	0.685
2	544.90	61.30	9.60	343.17	53.74	5.598	16.99	25.01	0.00142	0.650
3	-57.80	22.80	74.70	79.46	260.33	3.485	6.44	25.28	0.00889	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
Clear Cover = 2.38 in
500
My (k-ft)
-500
500
Mx (k-ft)
-500
P = 380 kip

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Anchor Bolt Design

Blackwell	Project: Summit Horizon Neighborhood				Job Ref.: 160063	
	Section: Anchor Bolts				Sheet no./rev.: 1	
	Calc. by: RML	Date: 11/9/2016	Chk'd by: JDB	Date:	App'd by:	Date:

ANCHOR BOLT DESIGN

In accordance with ACI318-11

Tedds calculation version 2.0.17

Anchor bolt geometry

Type of anchor bolt	Cast-in hooked end bolt anchor
Diameter of anchor bolt	d_a = **1.25** 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	$n_{tens} = (N_{boltN} \times 2) + (N_{bolty} - 2) \times 2$ = **4**
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 = **7**
Effective cross-sectional area of anchor	$A_{se} = \pi / 4 \times (d_a - 0.9743 \text{ in} / n_t)^2$ = **0.969** in^2
Embedded depth of each anchor bolt	h_{ef} = **24** in

REVISION 1 - 2016.11.07
IN ACCORDANCE WITH ACI 318-14 Cl. 17.2.3.4.3 d, SEISMIC LOADS HAVE BEEN MULIPLIED BY Ω_0 = 2.0.

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

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**

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

REFER TO ACI 318-14 Cl. 17.4.2.9

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} = **2**
Axial force in bolts for row 1	N_1 = **18.80** kips
Axial force in bolts for row 2	N_2 = **18.80** kips

Total axial force on bolt group	N_R = **37.60** kips
Maximum axial force to single bolt	$N_{max,s}$ = **9.40** kips
Eccentricity of axial load (from bolt group centroid)	e'_N = **0.00** in
Shear force applied to bolt group	V = **54.90** kips

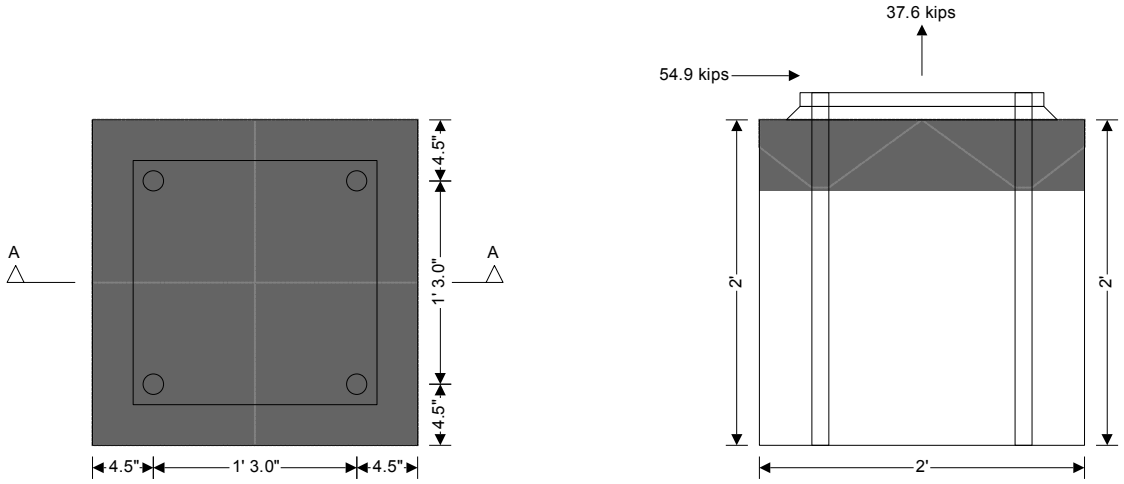
Steel strength of anchor in tension (D.5.1)

Nominal strength of anchor in tension	$N_{sa} = A_{se} \times f_{uta}$ = **56.21** kips
Steel strength of anchor in tension	$\phi N_{sa} = \phi_{t,s} \times N_{sa}$ = **42.16** 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	$N_s = N_{max,s}$ = **9.40** 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

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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 — $N_p = 0.9 \times f'_c \times e_h \times d_a$ = **13.50** kips

Nominal pullout strength of single anchor — $N_{pn} = \psi_{c,P} \times N_p$ = **13.50** kips

Pullout strength of single anchor — $\phi N_{pn} = 0.75 \times \phi_{t,cB} \times N_{pn}$ = **7.09** 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 — $N_{sfb} = (N_1)$ = **18.80** 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 — $s = (N_{bolty}\text{-}1) \times s_{bolty}$ = **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 group of anchors — $N_{sfb} = N_1 / N_{bolty} + N_2 / N_{bolty}$ = **18.80** 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 — $s = (N_{boltN}\text{-}1) \times s_{boltx}$ = **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***~~

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 — $V_{sa} = 0.8 \times N_{boltV} \times 0.6 \times A_{se} \times f_{uta}$ = **107.92** kips

Steel strength of anchor in shear — $\phi V_{sa} = \phi_{v,s} \times V_{sa}$ = **70.15** kips

PASS - Steel strength of anchor exceeds shear in bolts

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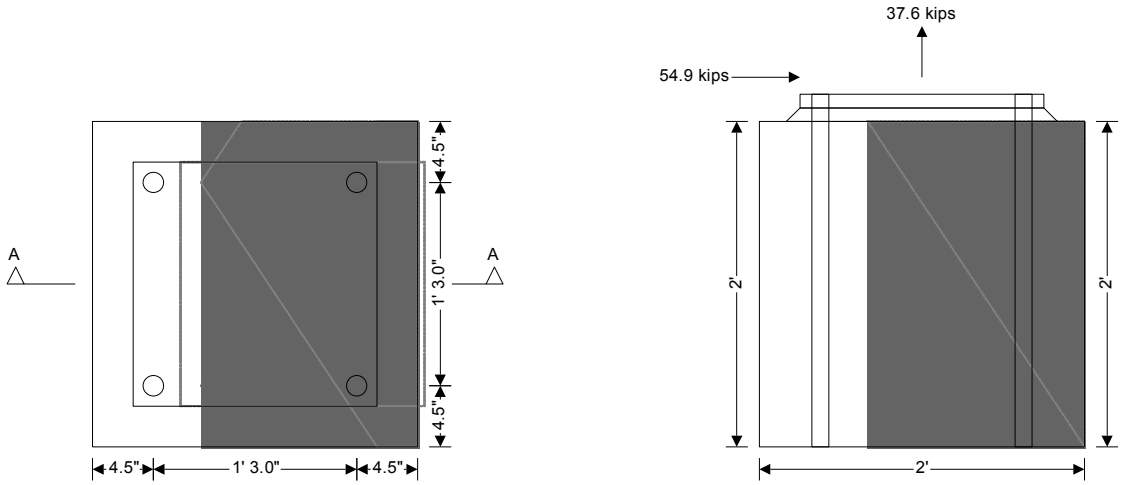
Concrete breakout strength in shear perpendicular to edge - Case 2. All shear resisted by rear bolts (D.6.2)



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	$V_{app} = V$ = **54.90** 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	$l_e = \min(h_{ef}, 8 \times d_a)$ = **10** in
Basic concrete breakout strength	$V_{b1} = 7 \times (l_e / d_a)^{0.2} \times \sqrt{(d_a)} \times \lambda_a \times \sqrt{(f'_c \times 1psi)} \times (c'_{a1})^{1.5}$ = **41.58** 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***~~

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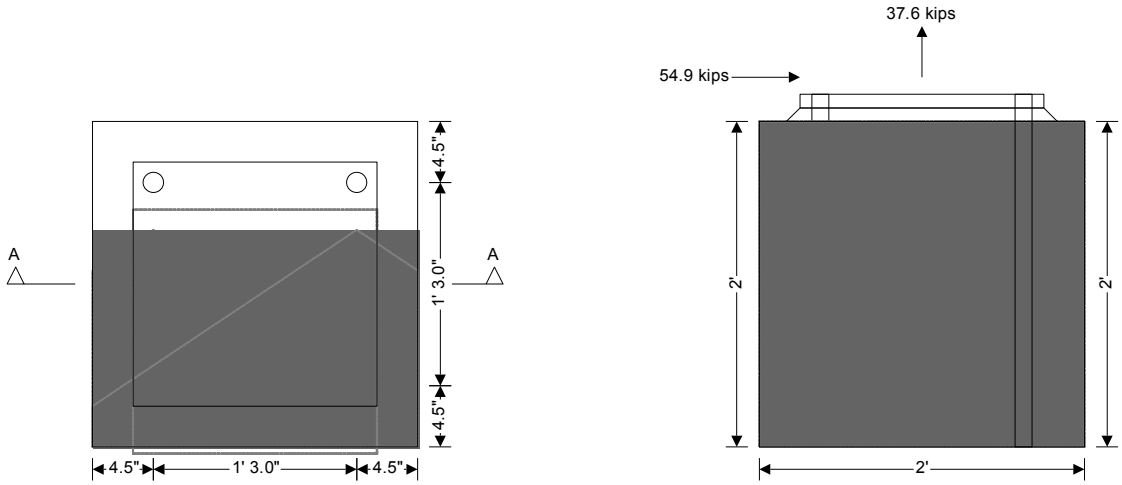
Concrete breakout strength in shear parallel to edge - Case 2. All shear resisted by rear bolts (D.6.2)



Plan on foundation

Section A-A

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	$V_{app} = V$ = **54.90** 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	$l_e = \min(h_{ef}, 8 \times d_a)$ = **10** in
Basic concrete breakout strength	$V_{b,p1} = 7 \times (l_e / d_a)^{0.2} \times \sqrt{(d_a)} \times \lambda_a \times \sqrt{(f'_c \times 1psi)} \times (c'_{a1,p})^{1.5}$ = **41.58** 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
	~~***FAIL - Shear in bolts exceeds shear breakout parallel to edge strength***~~

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***~~

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	Section: Anchor Bolts				Sheet no./rev.: 6	
	Calc. by: RML	Date: 11/9/2016	Chk'd by: JDB	Date:	App'd by:	Date:

Interaction of tensile and shear forces

Critical design strength in tension	$\phi N_n = \phi N_{cb,s}$ = **4.66** kips
Critical applied tensile force	$N_{ua} = N_s$ = **9.40** kips
	$N_{ua} / \phi N_n$ = **2.019**
Critical design strength in shear	$\phi V_n = \phi V_{cpg}$ = **8.69** kips
Critical applied shear force	V_{ua} = abs(V) = **54.90** kips
	$V_{ua} / \phi V_n$ = **6.317**

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

Interaction check in accordance is with D.7.3 required

Interaction $I_b = N_{ua} / \phi N_n + V_{ua} / \phi V_n$ = **8.336**

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

ΦN_a = 42.2 kips
N_{ua} = 9.4 kips
ΦV_a = 70.2 kips
V_{ua} = 54.9 kips
$V_{ua}/\Phi V_n$ = 0.78
$N_{ua}/\Phi N_n$ = 0.22
$V_{ua}/\Phi V_n + N_{ua}/\Phi N_n$ = 1.00 < 1.2
O.K.

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Frost Wall Design

Blackwell	Project: Summit Horizon Neighborhood Cabins				Job Ref.: 160063	
	Section: Frost Walls				Sheet no./rev.: 1	
	Calc. by: RML	Date: 11/9/2016	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

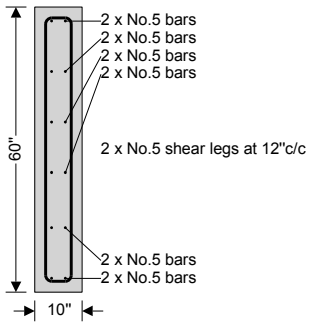
Yield strength of reinforcement — f_y = **60000** psi

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

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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 = **258.500** 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)	$A_{s,min} = \max(3\text{ psi} \times \sqrt{(f'_c / 1\text{ psi})}, 200\text{ psi}) \times b \times d / f_y$ = **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)	$\beta_1 = \min(\max(0.85 - 0.05 \times (f'_c - 4\text{ ksi}) / 1\text{ ksi}, 0.65), 0.85)$ = **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 = **287.222** kip_ft

PASS - Nominal moment strength exceeds required nominal moment strength

Minimum allowable top bar spacing	$s_{top,min} = \max(\phi_{top,L1}, 1\text{in})$ = **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	$s_{bar\_bot} = (b - 2 \times c_{nom\_s} - 2 \times \phi_v - \phi_{bot,L1}) / (N_{bot,L1} - 1)$ = **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	$c_c = c_{nom\_b} + \phi_v$ = **2.625** in
Maximum allowable bot bar spacing (exp 10-4)	$s_{max} = \min(15\text{in} \times 40000\text{psi} / f_s - 2.5 \times c_c, 12\text{in} \times 40000\text{psi} / f_s)$ = **8.438** in

PASS - Maximum allowable tension reinforcement spacing exceeds actual spacing

Rectangular section in shear (Chapter 11)

Design shear force	V_u = **19.300** kips
Concrete weight modification factor	λ = **1.00**
Nominal concrete shear strength (exp.11-3)	$V_c = \lambda \times 2\text{ psi} \times \sqrt{(f'_c / 1\text{ psi})} \times b \times d$ = **65.459** kips
Nominal reinforcement shear strength (exp.11-2)	$V_s = \max(V_u / \phi_s - V_c, 0\text{ kips})$ = **0.000** kips
Maximum reinforcement shear strength	$V_{s,max} = 8\text{ psi} \times \sqrt{(f'_c / 1\text{ psi})} \times b \times d$ = **261.837** kips
Area of shear reinforcement required (exp.11-15)	$A_{sv,req} = V_s / [\min(f_y, 60000\text{ psi}) \times d]$ = **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)	$A_{sv,min} = \max(50\text{ psi}, 0.75\text{ psi} \times \sqrt{(f'_c / 1\text{ psi})}) \times b / \min(f_y, 60000\text{ psi})$
	$A_{sv,min}$ = **0.100** in^2/ft

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

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

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

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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						

REVISION 1 - 2016/11/07
IN ACCORDANCE WITH IBC 2015 UTAH AMENDED CODE, f_2 = 0.295. LOADS AND LOAD COMBINATIONS HAVE BEEN REVISED IN ANALYSIS MODEL.

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: 9/11/2016

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
B5	1	max	96.904	34	6.882	96	23.921	99	0.514	84	0	22	1.05	90
		min	-12.963	97	-13.677	78	-32.418	81	-0.297	90	0	22	-1.83	84
	2	max	97.443	34	6.882	96	23.921	99	0.514	84	17.941	99	11.033	78
		min	-12.62	97	-13.677	78	-32.418	81	-0.297	90	-24.313	81	-6.663	96
	3	max	97.983	34	6.882	96	23.921	99	0.514	84	35.882	99	21.291	78
		min	-12.277	97	-13.677	78	-32.418	81	-0.297	90	-48.626	81	-11.824	96
	4	max	98.522	34	6.882	96	23.921	99	0.514	84	53.823	99	31.549	78
		min	-11.934	97	-13.677	78	-32.418	81	-0.297	90	-72.939	81	-16.985	96
	5	max	99.062	34	6.882	96	23.921	99	0.514	84	71.764	99	41.807	78
		min	-11.591	97	-13.677	78	-32.418	81	-0.297	90	-97.253	81	-22.147	96
A4	1	max	90.843	34	7.427	96	0.108	81	0.021	84	0	22	0	22
		min	-1.888	97	-14.519	78	-0.068	78	-0.016	90	0	22	0	22
	2	max	91.383	34	7.427	96	0.108	81	0.021	84	0.081	81	10.889	78
		min	-1.545	97	-14.519	78	-0.068	78	-0.016	90	-0.051	78	-5.57	96
	3	max	91.922	34	7.427	96	0.108	81	0.021	84	0.162	81	21.778	78
		min	-1.202	97	-14.519	78	-0.068	78	-0.016	90	-0.102	78	-11.14	96
	4	max	92.461	34	7.427	96	0.108	81	0.021	84	0.243	81	32.667	78
		min	-0.859	97	-14.519	78	-0.068	78	-0.016	90	-0.152	78	-16.71	96
	5	max	93.001	34	7.427	96	0.108	81	0.021	84	0.323	81	43.556	78
		min	-0.516	97	-14.519	78	-0.068	78	-0.016	90	-0.203	78	-22.28	96
A3	1	max	89.778	34	1.269	96	29.746	99	0.14	90	0	22	1.136	90
		min	-7.975	97	-13.828	26	-36.384	81	-0.257	84	0	22	-2.006	84
	2	max	90.318	34	1.269	96	29.746	99	0.14	90	22.309	99	11.098	78
		min	-7.632	97	-13.828	26	-36.384	81	-0.257	84	-27.288	81	-2.589	96
	3	max	90.857	34	1.269	96	29.746	99	0.14	90	44.619	99	21.369	78
		min	-7.288	97	-13.828	26	-36.384	81	-0.257	84	-54.576	81	-3.541	96
	4	max	91.397	34	1.269	96	29.746	99	0.14	90	66.928	99	31.639	78
		min	-6.945	97	-13.828	26	-36.384	81	-0.257	84	-81.864	81	-4.492	96
	5	max	91.936	34	1.269	96	29.746	99	0.14	90	89.238	99	41.91	78
		min	-6.602	97	-13.828	26	-36.384	81	-0.257	84	-109.152	81	-5.444	96
A2	1	max	96.221	34	26.646	84	0.236	81	0.066	84	0	22	0	22
		min	10.052	93	-23.517	90	-0.225	87	-0.052	90	0	22	0	22
	2	max	96.76	34	26.646	84	0.236	81	0.066	84	0.177	81	17.638	90
		min	10.395	93	-23.517	90	-0.225	87	-0.052	90	-0.169	87	-19.985	84
	3	max	97.3	34	26.646	84	0.236	81	0.066	84	0.354	81	35.276	90
		min	10.738	93	-23.517	90	-0.225	87	-0.052	90	-0.338	87	-39.969	84
	4	max	97.839	34	26.646	84	0.236	81	0.066	84	0.531	81	52.913	90
		min	11.081	93	-23.517	90	-0.225	87	-0.052	90	-0.507	87	-59.954	84
	5	max	98.378	34	26.646	84	0.236	81	0.066	84	0.708	81	70.551	90
		min	11.424	93	-23.517	90	-0.225	87	-0.052	90	-0.675	87	-79.938	84
A1	1	max	102.604	34	29.968	97	0.211	81	0.056	84	0	22	0	22
		min	8.021	93	-37.889	79	-0.245	87	-0.048	78	0	22	0	22
	2	max	103.143	34	29.968	97	0.211	81	0.056	84	0.159	81	28.416	79
		min	8.364	93	-37.889	79	-0.245	87	-0.048	78	-0.183	87	-22.476	97
	3	max	103.683	34	29.968	97	0.211	81	0.056	84	0.317	81	56.833	79
		min	8.707	93	-37.889	79	-0.245	87	-0.048	78	-0.367	87	-44.952	97
	4	max	104.222	34	29.968	97	0.211	81	0.056	84	0.476	81	85.249	79
		min	9.05	93	-37.889	79	-0.245	87	-0.048	78	-0.55	87	-67.427	97
	5	max	104.762	34	29.968	97	0.211	81	0.056	84	0.634	81	113.666	79
		min	9.393	93	-37.889	79	-0.245	87	-0.048	78	-0.734	87	-89.903	97
B1	1	max	96.907	34	8.349	30	0.018	78	0.009	84	0	22	0	22
		min	1.718	94	0.448	91	-0.056	84	-0.007	90	0	22	0	22
	2	max	97.447	34	8.349	30	0.018	78	0.009	84	0.013	78	-0.336	91
		min	2.061	94	0.448	91	-0.056	84	-0.007	90	-0.042	84	-6.262	30
	3	max	97.986	34	8.349	30	0.018	78	0.009	84	0.027	78	-0.672	91
		min	2.404	94	0.448	91	-0.056	84	-0.007	90	-0.084	84	-12.524	30
	4	max	98.526	34	8.349	30	0.018	78	0.009	84	0.04	78	-1.008	91
		min	2.747	94	0.448	91	-0.056	84	-0.007	90	-0.126	84	-18.786	30
	5	max	99.065	34	8.349	30	0.018	78	0.009	84	0.053	78	-1.344	91
		min	3.09	94	0.448	91	-0.056	84	-0.007	90	-0.168	84	-25.047	30

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
B2	1	max	81.695	34	11.52	85	0.015	47	0.008	84	0	22	0	22
		min	4.155	90	-3.313	91	-0.044	84	-0.006	90	0	22	0	22
	2	max	82.235	34	11.52	85	0.015	47	0.008	84	0.011	47	2.485	91
		min	4.498	90	-3.313	91	-0.044	84	-0.006	90	-0.033	84	-8.64	85
	3	max	82.774	34	11.52	85	0.015	47	0.008	84	0.023	47	4.97	91
		min	4.841	90	-3.313	91	-0.044	84	-0.006	90	-0.066	84	-17.281	85
	4	max	83.313	34	11.52	85	0.015	47	0.008	84	0.034	47	7.455	91
		min	5.185	90	-3.313	91	-0.044	84	-0.006	90	-0.098	84	-25.921	85
	5	max	83.853	34	11.52	85	0.015	47	0.008	84	0.046	47	9.94	91
		min	5.528	90	-3.313	91	-0.044	84	-0.006	90	-0.131	84	-34.561	85
B3	1	max	90.256	34	10.062	84	35.202	84	0.177	26	0	22	0.292	26
		min	-7.535	90	-3.019	90	-21.671	90	0.02	97	0	22	0.022	97
	2	max	90.795	34	10.062	84	35.202	84	0.177	26	26.402	84	2.375	90
		min	-7.192	90	-3.019	90	-21.671	90	0.02	97	-16.253	90	-7.421	84
	3	max	91.335	34	10.062	84	35.202	84	0.177	26	52.803	84	4.639	90
		min	-6.849	90	-3.019	90	-21.671	90	0.02	97	-32.506	90	-14.967	84
	4	max	91.874	34	10.062	84	35.202	84	0.177	26	79.205	84	6.904	90
		min	-6.506	90	-3.019	90	-21.671	90	0.02	97	-48.759	90	-22.514	84
	5	max	92.414	34	10.062	84	35.202	84	0.177	26	105.606	84	9.168	90
		min	-6.163	90	-3.019	90	-21.671	90	0.02	97	-65.012	90	-30.061	84
B4	1	max	81.772	34	7.774	84	0.012	82	0.006	84	0	22	0	22
		min	-4.024	91	-2.446	90	-0.037	84	-0.005	90	0	22	0	22
	2	max	82.312	34	7.774	84	0.012	82	0.006	84	0.009	82	1.835	90
		min	-3.681	91	-2.446	90	-0.037	84	-0.005	90	-0.028	84	-5.831	84
	3	max	82.851	34	7.774	84	0.012	82	0.006	84	0.018	82	3.67	90
		min	-3.338	91	-2.446	90	-0.037	84	-0.005	90	-0.056	84	-11.662	84
	4	max	83.391	34	7.774	84	0.012	82	0.006	84	0.027	82	5.504	90
		min	-2.994	91	-2.446	90	-0.037	84	-0.005	90	-0.083	84	-17.492	84
	5	max	83.93	34	7.774	84	0.012	82	0.006	84	0.036	82	7.339	90
		min	-2.651	91	-2.446	90	-0.037	84	-0.005	90	-0.111	84	-23.323	84
B5	1	max	88.601	34	3.622	26	15.794	96	0.053	96	0	22	0.206	78
		min	-2.029	100	-0.15	90	-15.411	78	-0.179	78	0	22	-0.057	96
	2	max	89.14	34	3.622	26	15.794	96	0.053	96	11.846	96	0.253	90
		min	-1.686	100	-0.15	90	-15.411	78	-0.179	78	-11.558	78	-2.533	26
	3	max	89.68	34	3.622	26	15.794	96	0.053	96	23.692	96	0.366	90
		min	-1.343	100	-0.15	90	-15.411	78	-0.179	78	-23.117	78	-5.249	26
	4	max	90.219	34	3.622	26	15.794	96	0.053	96	35.537	96	0.479	90
		min	-1	100	-0.15	90	-15.411	78	-0.179	78	-34.675	78	-7.966	26
	5	max	90.758	34	3.622	26	15.794	96	0.053	96	47.383	96	0.591	90
		min	-0.656	100	-0.15	90	-15.411	78	-0.179	78	-46.233	78	-10.683	26
B5	1	max	107.599	34	24.673	79	13.677	82	0	22	53.271	100	98.69	79
		min	12.29	100	-19.25	97	-13.318	100	0	22	-54.709	82	-77.001	97
	2	max	108.318	34	24.673	79	13.677	82	0	22	39.953	100	74.018	79
		min	12.747	100	-19.25	97	-13.318	100	0	22	-41.032	82	-57.75	97
	3	max	109.037	34	24.673	79	13.677	82	0	22	26.635	100	49.345	79
		min	13.205	100	-19.25	97	-13.318	100	0	22	-27.354	82	-38.5	97
	4	max	109.756	34	24.673	79	13.677	82	0	22	13.318	100	24.673	79
		min	13.662	100	-19.25	97	-13.318	100	0	22	-13.677	82	-19.25	97
	5	max	110.475	34	24.673	79	13.677	82	0	22	0	22	0	22
		min	14.12	100	-19.25	97	-13.318	100	0	22	0	22	0	22
A5	1	max	109.462	34	26.086	97	4.825	90	0	22	38.415	84	104.342	97
		min	10.554	96	-35.301	79	-9.604	84	0	22	-19.301	90	-141.203	79
	2	max	110.181	34	26.086	97	4.825	90	0	22	28.811	84	78.257	97
		min	11.012	96	-35.301	79	-9.604	84	0	22	-14.476	90	-105.902	79
	3	max	110.901	34	26.086	97	4.825	90	0	22	19.207	84	52.171	97
		min	11.469	96	-35.301	79	-9.604	84	0	22	-9.65	90	-70.601	79
	4	max	111.62	34	26.086	97	4.825	90	0	22	9.604	84	26.086	97
		min	11.927	96	-35.301	79	-9.604	84	0	22	-4.825	90	-35.301	79
	5	max	112.339	34	26.086	97	4.825	90	0	22	0	22	0	22
		min	12.384	96	-35.301	79	-9.604	84	0	22	0	22	0	22
B4	1	max	107.712	34	24.757	79	11.05	84	0	22	32.403	90	99.03	79
		min	14.445	91	-18.033	97	-8.101	90	0	22	-44.201	84	-72.132	97
	2	max	108.431	34	24.757	79	11.05	84	0	22	24.302	90	74.272	79
		min	14.903	91	-18.033	97	-8.101	90	0	22	-33.151	84	-54.099	97
	3	max	109.15	34	24.757	79	11.05	84	0	22	16.201	90	49.515	79
		min	15.36	91	-18.033	97	-8.101	90	0	22	-22.101	84	-36.066	97
	4	max	109.87	34	24.757	79	11.05	84	0	22	8.101	90	24.757	79
		min	15.818	91	-18.033	97	-8.101	90	0	22	-11.05	84	-18.033	97
	5	max	110.589	34	24.757	79	11.05	84	0	22	0	22	0	22
		min	16.275	91	-18.033	97	-8.101	90	0	22	0	22	0	22
B3	1	max	109.128	34	19.68	79	11.011	100	0	22	49.594	82	78.721	79
		min	12.503	90	-16.041	97	-12.398	82	0	22	-44.045	100	-64.163	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
	2	max	109.847	34	19.68	79	11.011	100	0	22	37.195	82	59.041	79
		min	12.961	90	-16.041	97	-12.398	82	0	22	-33.034	100	-48.123	97
	3	max	110.566	34	19.68	79	11.011	100	0	22	24.797	82	39.36	79
		min	13.418	90	-16.041	97	-12.398	82	0	22	-22.022	100	-32.082	97
	4	max	111.286	34	19.68	79	11.011	100	0	22	12.398	82	19.68	79
		min	13.876	90	-16.041	97	-12.398	82	0	22	-11.011	100	-16.041	97
	5	max	112.005	34	19.68	79	11.011	100	0	22	0	22	0	22
		min	14.333	90	-16.041	97	-12.398	82	0	22	0	22	0	22
A1	1	max	119.617	34	27.332	97	14.103	99	0	22	52.98	81	109.33	97
		min	10.127	94	-36.965	79	-13.245	81	0	22	-56.413	99	-147.858	79
	2	max	120.336	34	27.332	97	14.103	99	0	22	39.735	81	81.997	97
		min	10.584	94	-36.965	79	-13.245	81	0	22	-42.31	99	-110.894	79
	3	max	121.055	34	27.332	97	14.103	99	0	22	26.49	81	54.665	97
		min	11.042	94	-36.965	79	-13.245	81	0	22	-28.207	99	-73.929	79
	4	max	121.774	34	27.332	97	14.103	99	0	22	13.245	81	27.332	97
		min	11.499	94	-36.965	79	-13.245	81	0	22	-14.103	99	-36.965	79
	5	max	122.493	34	27.332	97	14.103	99	0	22	0	22	0	22
		min	11.957	94	-36.965	79	-13.245	81	0	22	0	22	0	22
A2	1	max	115.511	34	33.245	96	22.998	99	0	22	108.472	81	132.979	96
		min	13.508	96	-38.35	78	-27.118	81	0	22	-91.994	99	-153.399	78
	2	max	116.23	34	33.245	96	22.998	99	0	22	81.354	81	99.734	96
		min	13.965	96	-38.35	78	-27.118	81	0	22	-68.995	99	-115.049	78
	3	max	116.949	34	33.245	96	22.998	99	0	22	54.236	81	66.49	96
		min	14.423	96	-38.35	78	-27.118	81	0	22	-45.997	99	-76.699	78
	4	max	117.668	34	33.245	96	22.998	99	0	22	27.118	81	33.245	96
		min	14.881	96	-38.35	78	-27.118	81	0	22	-22.998	99	-38.35	78
	5	max	118.387	34	33.245	96	22.998	99	0	22	0	22	0	22
		min	15.338	96	-38.35	78	-27.118	81	0	22	0	22	0	22
A3	1	max	112.798	34	23.228	96	10.904	99	0	22	51.86	81	92.913	96
		min	12.72	96	-31.994	78	-12.965	81	0	22	-43.618	99	-127.977	78
	2	max	113.518	34	23.228	96	10.904	99	0	22	38.895	81	69.685	96
		min	13.178	96	-31.994	78	-12.965	81	0	22	-32.713	99	-95.983	78
	3	max	114.237	34	23.228	96	10.904	99	0	22	25.93	81	46.456	96
		min	13.635	96	-31.994	78	-12.965	81	0	22	-21.809	99	-63.988	78
	4	max	114.956	34	23.228	96	10.904	99	0	22	12.965	81	23.228	96
		min	14.093	96	-31.994	78	-12.965	81	0	22	-10.904	99	-31.994	78
	5	max	115.675	34	23.228	96	10.904	99	0	22	0	22	0	22
		min	14.55	96	-31.994	78	-12.965	81	0	22	0	22	0	22
B2	1	max	110.07	34	16.825	78	20.332	88	0	22	57.953	94	67.298	78
		min	11.352	90	-1.531	96	-14.488	94	0	22	-81.329	88	-6.125	96
	2	max	110.789	34	16.825	78	20.332	88	0	22	43.465	94	50.474	78
		min	11.81	90	-1.531	96	-14.488	94	0	22	-60.997	88	-4.593	96
	3	max	111.508	34	16.825	78	20.332	88	0	22	28.976	94	33.649	78
		min	12.267	90	-1.531	96	-14.488	94	0	22	-40.665	88	-3.062	96
	4	max	112.227	34	16.825	78	20.332	88	0	22	14.488	94	16.825	78
		min	12.725	90	-1.531	96	-14.488	94	0	22	-20.332	88	-1.531	96
	5	max	112.946	34	16.825	78	20.332	88	0	22	0	22	0	22
		min	13.182	90	-1.531	96	-14.488	94	0	22	0	22	0	22
B1	1	max	110.342	34	10.045	82	19.369	88	0	22	51.887	94	40.179	82
		min	10.048	90	-0.811	100	-12.972	94	0	22	-77.477	88	-3.242	100
	2	max	111.061	34	10.045	82	19.369	88	0	22	38.915	94	30.135	82
		min	10.506	90	-0.811	100	-12.972	94	0	22	-58.107	88	-2.432	100
	3	max	111.78	34	10.045	82	19.369	88	0	22	25.944	94	20.09	82
		min	10.963	90	-0.811	100	-12.972	94	0	22	-38.738	88	-1.621	100
	4	max	112.499	34	10.045	82	19.369	88	0	22	12.972	94	10.045	82
		min	11.421	90	-0.811	100	-12.972	94	0	22	-19.369	88	-0.811	100
	5	max	113.219	34	10.045	82	19.369	88	0	22	0	22	0	22
		min	11.879	90	-0.811	100	-12.972	94	0	22	0	22	0	22
A4	1	max	111.085	34	29.379	96	14.245	99	0	22	77.325	81	117.517	96
		min	12.073	96	-37.97	78	-19.331	81	0	22	-56.979	99	-151.878	78
	2	max	111.804	34	29.379	96	14.245	99	0	22	57.994	81	88.138	96
		min	12.531	96	-37.97	78	-19.331	81	0	22	-42.734	99	-113.909	78
	3	max	112.523	34	29.379	96	14.245	99	0	22	38.663	81	58.758	96
		min	12.988	96	-37.97	78	-19.331	81	0	22	-28.489	99	-75.939	78
	4	max	113.243	34	29.379	96	14.245	99	0	22	19.331	81	29.379	96
		min	13.446	96	-37.97	78	-19.331	81	0	22	-14.245	99	-37.97	78
	5	max	113.962	34	29.379	96	14.245	99	0	22	0	22	0	22
		min	13.903	96	-37.97	78	-19.331	81	0	22	0	22	0	22

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: 9/11/2016

REVISION 1
IN ACCORDANCE WITH ACI 318-14 Cl. 17.2.3.4.3 d), MULTIPLY SEISMIC LOADS BY BY Ω0 = 2.0.
WORST CASE TENSION
N_u = 37.5 kips
V_u = 54.9 kips

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	102.544	34	30.05	97	0	22	0.056	84	0	22	30.05	97
		min	7.983	93	-37.8	79	0	22	-0.048	78	0	22	-37.8	79
	2	max	102.559	34	30.05	97	0	22	0.056	84	0	22	22.537	97
		min	7.992	93	-37.8	79	0	22	-0.048	78	0	22	-28.35	79
	3	max	102.574	34	30.05	97	0	22	0.056	84	0	22	15.025	97
		min	8.002	93	-37.8	79	0	22	-0.048	78	0	22	-18.9	79
	4	max	102.589	34	30.05	97	0	22	0.056	84	0	22	7.512	97
		min	8.011	93	-37.8	79	0	22	-0.048	78	0	22	-9.45	79
	5	max	102.604	34	30.05	97	0	22	0.056	84	0	22	0	22
		min	8.021	93	-37.8	79	0	22	-0.048	78	0	22	0	22
A2	1	max	96.161	34	27.246	84	0	22	0.066	84	0	22	27.246	84
		min	10.014	93	-23.649	90	0	22	-0.052	90	0	22	-23.649	90
	2	max	96.176	34	27.246	84	0	22	0.066	84	0	22	20.435	84
		min	10.023	93	-23.649	90	0	22	-0.052	90	0	22	-17.737	90
	3	max	96.191	34	27.246	84	0	22	0.066	84	0	22	13.623	84
		min	10.033	93	-23.649	90	0	22	-0.052	90	0	22	-11.825	90
	4	max	96.206	34	27.246	84	0	22	0.066	84	0	22	6.812	84
		min	10.042	93	-23.649	90	0	22	-0.052	90	0	22	-5.912	90
	5	max	96.221	34	27.246	84	0	22	0.066	84	0	22	0	22
		min	10.052	93	-23.649	90	0	22	-0.052	90	0	22	0	22
A3	1	max	89.429	34	1.191	96	0	22	0.03	84	0	22	2.381	96
		min	-5.348	97	-13.994	78	0	22	-0.022	90	0	22	-27.988	78
	2	max	89.459	34	1.191	96	0	22	0.03	84	0	22	1.786	96
		min	-5.329	97	-13.994	78	0	22	-0.022	90	0	22	-20.991	78
	3	max	89.489	34	1.191	96	0	22	0.03	84	0	22	1.191	96
		min	-5.31	97	-13.994	78	0	22	-0.022	90	0	22	-13.994	78
	4	max	89.519	34	1.191	96	0	22	0.03	84	0	22	0.595	96
		min	-5.291	97	-13.994	78	0	22	-0.022	90	0	22	-6.997	78
	5	max	89.549	34	1.191	96	0	22	0.03	84	0	22	0	22
		min	-5.272	97	-13.994	78	0	22	-0.022	90	0	22	0	22
A4	1	max	90.703	34	7.419	96	0	22	0.021	84	0	22	17.508	96
		min	-1.978	97	-14.86	78	0	22	-0.016	90	0	22	-35.07	78
	2	max	90.738	34	7.419	96	0	22	0.021	84	0	22	13.131	96
		min	-1.955	97	-14.86	78	0	22	-0.016	90	0	22	-26.303	78
	3	max	90.773	34	7.419	96	0	22	0.021	84	0	22	8.754	96
		min	-1.933	97	-14.86	78	0	22	-0.016	90	0	22	-17.535	78
	4	max	90.808	34	7.419	96	0	22	0.021	84	0	22	4.377	96
		min	-1.911	97	-14.86	78	0	22	-0.016	90	0	22	-8.768	78
	5	max	90.843	34	7.419	96	0	22	0.021	84	0	22	0	22
		min	-1.888	97	-14.86	78	0	22	-0.016	90	0	22	0	22
A5	1	max	96.342	34	6.777	96	0	22	0.01	84	0	22	26.158	96
		min	-18.979	96	-14.018	78	0	22	-0.007	90	0	22	-54.109	78
	2	max	96.4	34	6.777	96	0	22	0.01	84	0	22	19.618	96
		min	-18.943	96	-14.018	78	0	22	-0.007	90	0	22	-40.582	78
	3	max	96.457	34	6.777	96	0	22	0.01	84	0	22	13.079	96
		min	-18.906	96	-14.018	78	0	22	-0.007	90	0	22	-27.054	78
	4	max	96.515	34	6.777	96	0	22	0.01	84	0	22	6.539	96
		min	-18.869	96	-14.018	78	0	22	-0.007	90	0	22	-13.527	78
	5	max	96.572	34	6.777	96	0	22	0.01	84	0	22	0	22
		min	-18.833	96	-14.018	78	0	22	-0.007	90	0	22	0	22
B1	1	max	96.469	34	8.407	30	0	22	0.009	84	0	22	61.877	30
		min	1.439	94	0.43	91	0	22	-0.007	90	0	22	3.163	91
	2	max	96.578	34	8.407	30	0	22	0.009	84	0	22	46.408	30
		min	1.509	94	0.43	91	0	22	-0.007	90	0	22	2.372	91
	3	max	96.688	34	8.407	30	0	22	0.009	84	0	22	30.938	30
		min	1.578	94	0.43	91	0	22	-0.007	90	0	22	1.582	91
	4	max	96.798	34	8.407	30	0	22	0.009	84	0	22	15.469	30
		min	1.648	94	0.43	91	0	22	-0.007	90	0	22	0.791	91

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
	5	max	96.907	34	8.407	30	0	22	0.009	84	0	22	0	22
		min	1.718	94	0.43	91	0	22	-0.007	90	0	22	0	22
B2	1	max	81.197	34	11.656	85	0	22	0.008	84	0	22	97.448	85
		min	3.838	90	-3.321	91	0	22	-0.006	90	0	22	-27.761	91
	2	max	81.322	34	11.656	85	0	22	0.008	84	0	22	73.086	85
		min	3.917	90	-3.321	91	0	22	-0.006	90	0	22	-20.821	91
	3	max	81.446	34	11.656	85	0	22	0.008	84	0	22	48.724	85
		min	3.997	90	-3.321	91	0	22	-0.006	90	0	22	-13.881	91
	4	max	81.571	34	11.656	85	0	22	0.008	84	0	22	24.362	85
		min	4.076	90	-3.321	91	0	22	-0.006	90	0	22	-6.94	91
	5	max	81.695	34	11.656	85	0	22	0.008	84	0	22	0	22
		min	4.155	90	-3.321	91	0	22	-0.006	90	0	22	0	22
B3	1	max	87.21	34	10.361	84	0	22	0.009	84	0	22	86.614	84
		min	2.122	91	-2.988	90	0	22	-0.007	90	0	22	-24.983	90
	2	max	87.335	34	10.361	84	0	22	0.009	84	0	22	64.96	84
		min	2.201	91	-2.988	90	0	22	-0.007	90	0	22	-18.737	90
	3	max	87.459	34	10.361	84	0	22	0.009	84	0	22	43.307	84
		min	2.281	91	-2.988	90	0	22	-0.007	90	0	22	-12.492	90
	4	max	87.584	34	10.361	84	0	22	0.009	84	0	22	21.653	84
		min	2.36	91	-2.988	90	0	22	-0.007	90	0	22	-6.246	90
	5	max	87.709	34	10.361	84	0	22	0.009	84	0	22	0	22
		min	2.439	91	-2.988	90	0	22	-0.007	90	0	22	0	22
B4	1	max	81.155	34	8.023	84	0	22	0.006	84	0	22	83.158	84
		min	-4.417	91	-2.436	90	0	22	-0.005	90	0	22	-25.253	90
	2	max	81.309	34	8.023	84	0	22	0.006	84	0	22	62.369	84
		min	-4.319	91	-2.436	90	0	22	-0.005	90	0	22	-18.94	90
	3	max	81.464	34	8.023	84	0	22	0.006	84	0	22	41.579	84
		min	-4.22	91	-2.436	90	0	22	-0.005	90	0	22	-12.627	90
	4	max	81.618	34	8.023	84	0	22	0.006	84	0	22	20.79	84
		min	-4.122	91	-2.436	90	0	22	-0.005	90	0	22	-6.313	90
	5	max	81.772	34	8.023	84	0	22	0.006	84	0	22	0	22
		min	-4.024	91	-2.436	90	0	22	-0.005	90	0	22	0	22
B5	1	max	84.444	84	3.69	26	0	22	0.006	84	0	22	43.781	26
		min	-12.374	90	-0.145	90	0	22	-0.005	90	0	22	-1.717	90
	2	max	84.641	84	3.69	26	0	22	0.006	84	0	22	32.836	26
		min	-12.262	90	-0.145	90	0	22	-0.005	90	0	22	-1.288	90
	3	max	84.838	84	3.69	26	0	22	0.006	84	0	22	21.891	26
		min	-12.149	90	-0.145	90	0	22	-0.005	90	0	22	-0.859	90
	4	max	85.035	84	3.69	26	0	22	0.006	84	0	22	10.945	26
		min	-12.037	90	-0.145	90	0	22	-0.005	90	0	22	-0.429	90
	5	max	85.232	84	3.69	26	0	22	0.006	84	0	22	0	22
		min	-11.924	90	-0.145	90	0	22	-0.005	90	0	22	0	22

Blackwell

Structural Engineers

APPENDIX D

Frost Wall (Grade Beam) Forces

Blackwell

Title: Grade beam forces (LFRD)
Unit Type 2500SF

Project Name: Summit Horizon Neighborhood
Project Number: 160063

Date: 9/11/2016

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	18.469	88	13.738	88	0.089	99	1.011	97	1.385	81	78.126	88
		min	-12.889	94	-2.783	94	-0.188	81	-2.234	79	-0.826	99	-51.666	94
	2	max	18.678	88	10.817	88	0.089	99	1.011	97	0.724	81	35.799	100
		min	-12.77	94	-4.451	94	-0.188	81	-2.234	79	-0.513	99	-40.097	82
	3	max	18.886	88	7.897	88	0.089	99	1.011	97	0.159	94	7.291	100
		min	-12.651	94	-6.119	94	-0.188	81	-2.234	79	-0.299	88	-25.631	82
	4	max	19.095	88	5.622	100	0.089	99	1.011	97	0.112	99	4.83	90
		min	-12.532	94	-8.503	82	-0.188	81	-2.234	79	-0.64	30	-21.209	84
	5	max	19.303	88	3.954	100	0.089	99	1.011	97	0.424	99	34.215	94
		min	-12.413	94	-11.424	82	-0.188	81	-2.234	79	-1.259	81	-32.71	88
M392	1	max	39.816	88	14.968	84	0.16	88	1.18	30	0.457	90	51.931	84
		min	-27.632	94	-3.367	90	-0.062	94	-0.046	100	-1.195	84	-25.847	90
	2	max	39.816	88	12.048	84	0.16	88	1.18	30	0.269	90	7.626	100
		min	-27.632	94	-5.035	90	-0.062	94	-0.046	100	-0.665	84	-14.328	82
	3	max	39.816	88	9.127	84	0.16	88	1.18	30	0.08	90	9.401	90
		min	-27.632	94	-6.703	90	-0.062	94	-0.046	100	-0.136	84	-32.402	84
	4	max	39.816	88	6.572	96	0.16	88	1.18	30	0.549	87	35.783	90
		min	-27.632	94	-8.98	78	-0.062	94	-0.046	100	-0.262	93	-59.236	84
	5	max	39.816	88	4.904	96	0.16	88	1.18	30	1.103	87	68.002	90
		min	-27.632	94	-11.901	78	-0.062	94	-0.046	100	-0.474	93	-75.849	84
M393	1	max	24.353	100	9.766	88	0.083	100	2.213	96	0.997	82	56.205	88
		min	-28.257	82	-0.215	94	-0.121	82	-2.255	78	-0.647	100	-28.984	94
	2	max	24.592	100	6.846	88	0.083	100	2.213	96	0.568	82	26.838	88
		min	-27.839	82	-1.883	94	-0.121	82	-2.255	78	-0.353	100	-25.276	94
	3	max	24.831	100	4.062	100	0.083	100	2.213	96	0.36	84	9.019	100
		min	-27.42	82	-3.728	82	-0.121	82	-2.255	78	-0.274	90	-17.046	82
	4	max	25.07	100	2.394	100	0.083	100	2.213	96	0.242	96	12.265	47
		min	-27.002	82	-6.649	82	-0.121	82	-2.255	78	-0.294	78	-4.794	96
	5	max	25.309	100	0.726	100	0.083	100	2.213	96	0.529	100	36.341	47
		min	-26.584	82	-9.569	82	-0.121	82	-2.255	78	-0.719	82	-9.065	96
M394	1	max	26.916	100	12.219	84	0.15	88	0.861	84	0.754	94	43.596	84
		min	-27.937	82	-0.346	90	-0.137	94	-0.603	90	-0.911	88	-9.623	90
	2	max	27.095	100	9.299	84	0.15	88	0.861	84	0.273	94	6.799	85
		min	-27.624	82	-2.014	90	-0.137	94	-0.603	90	-0.381	88	-6.637	100
	3	max	27.274	100	6.378	84	0.15	88	0.861	84	0.179	99	4.554	90
		min	-27.311	82	-3.682	90	-0.137	94	-0.603	90	-0.242	81	-21.867	84
	4	max	27.452	100	3.632	96	0.15	88	0.861	84	0.696	100	20.45	90
		min	-26.998	82	-5.68	78	-0.137	94	-0.603	90	-0.716	82	-39.178	84
	5	max	27.631	100	1.964	96	0.15	88	0.861	84	1.218	100	42.217	90
		min	-26.685	82	-8.601	78	-0.137	94	-0.603	90	-1.194	82	-46.209	84
M395	1	max	26.922	79	12.132	84	0.083	82	1.706	78	0.99	88	102.101	79
		min	-19.574	97	2.167	90	-0.084	100	-1.714	96	-0.835	94	-71.121	97
	2	max	25.252	79	7.238	84	0.083	82	1.706	78	0.469	88	79.653	91
		min	-20.528	97	-0.628	90	-0.084	100	-1.714	96	-0.327	94	-116.507	85
	3	max	23.583	79	2.603	96	0.083	82	1.706	78	0.654	84	88.502	91
		min	-21.482	97	-3.657	78	-0.084	100	-1.714	96	-0.515	90	-142.447	85
	4	max	21.913	79	-0.192	96	0.083	82	1.706	78	0.852	85	116.791	90
		min	-22.435	97	-8.55	78	-0.084	100	-1.714	96	-0.715	91	-140.176	84
	5	max	20.325	91	-2.987	96	0.083	82	1.706	78	1.236	82	183.781	78
		min	-23.947	85	-13.444	78	-0.084	100	-1.714	96	-1.122	100	-126.491	96
M396	1	max	32.382	99	16.963	84	0.1	100	0.284	91	0.793	82	110.705	84
		min	-35.053	81	-4.646	90	-0.098	82	-2.142	34	-0.829	100	-65.624	90
	2	max	32.204	99	14.043	84	0.1	100	0.284	91	0.448	82	56.133	84
		min	-35.366	81	-6.314	90	-0.098	82	-2.142	34	-0.477	100	-46.334	90
	3	max	32.025	99	11.123	84	0.1	100	0.284	91	0.301	78	13.816	96
		min	-35.679	81	-7.982	90	-0.098	82	-2.142	34	-0.314	96	-23.907	78
	4	max	31.846	99	8.546	96	0.1	100	0.284	91	0.501	79	9.86	90
		min	-35.991	81	-10.342	78	-0.098	82	-2.142	34	-0.516	97	-22.17	84
	5	max	31.667	99	6.878	96	0.1	100	0.284	91	0.786	79	48.902	78
		min	-36.304	81	-13.263	78	-0.098	82	-2.142	34	-0.811	85	-46.351	96

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
M397	1	max	18.113	99	12.799	81	0.08	100	2.208	91	0.778	82	50.648	81
		min	-16.662	81	-2.79	99	-0.13	82	-3.33	85	-0.542	100	-28.275	99
	2	max	18.07	99	9.878	81	0.08	100	2.208	91	0.323	82	12.098	93
		min	-16.737	81	-4.458	99	-0.13	82	-3.33	85	-0.261	100	-16.694	87
	3	max	18.027	99	6.958	81	0.08	100	2.208	91	0.168	91	5.842	90
		min	-16.812	81	-6.126	99	-0.13	82	-3.33	85	-0.288	85	-21.598	84
	4	max	17.984	99	5.128	93	0.08	100	2.208	91	0.301	100	27.306	99
		min	-16.887	81	-8.918	87	-0.13	82	-3.33	85	-0.588	82	-37.77	81
	5	max	17.941	99	3.46	93	0.08	100	2.208	91	0.582	100	61.641	87
		min	-16.963	81	-11.839	87	-0.13	82	-3.33	85	-1.044	82	-50.518	93
M398	1	max	36.733	99	18.332	81	0.167	88	5.347	85	0.636	90	113.598	81
		min	-39.323	81	-7.026	99	-0.069	94	-3.692	91	-1.278	84	-74.895	99
	2	max	36.614	99	15.412	81	0.167	88	5.347	85	0.455	91	54.396	81
		min	-39.532	81	-8.694	99	-0.069	94	-3.692	91	-0.758	85	-47.315	99
	3	max	36.495	99	12.491	81	0.167	88	5.347	85	0.387	79	6.041	93
		min	-39.74	81	-10.362	99	-0.069	94	-3.692	91	-0.343	97	-14.768	87
	4	max	36.375	99	10.175	93	0.167	88	5.347	85	0.663	34	25.488	100
		min	-39.949	81	-12.709	87	-0.069	94	-3.692	91	-0.265	94	-33.352	82
	5	max	36.256	99	8.507	93	0.167	88	5.347	85	1.23	88	74.422	87
		min	-40.158	81	-15.63	87	-0.069	94	-3.692	91	-0.508	94	-65.363	93
M399	1	max	14.15	99	12.854	81	0.047	99	1.028	94	1.702	34	45.887	81
		min	-13.313	81	-2.077	99	-0.216	34	-6.577	34	-0.116	99	-20.337	99
	2	max	14.15	99	9.933	81	0.047	99	1.028	94	0.946	34	10.365	45
		min	-13.313	81	-3.745	99	-0.216	34	-6.577	34	0.044	90	-11.257	97
	3	max	14.15	99	7.013	81	0.047	99	1.028	94	0.293	88	5.877	99
		min	-13.313	81	-5.413	99	-0.216	34	-6.577	34	-0.177	94	-23.646	81
	4	max	14.15	99	4.414	93	0.047	99	1.028	94	0.373	99	27.741	99
		min	-13.313	81	-7.334	87	-0.216	34	-6.577	34	-0.84	81	-43.08	81
	5	max	14.15	99	2.746	93	0.047	99	1.028	94	0.536	99	55.443	99
		min	-13.313	81	-10.255	87	-0.216	34	-6.577	34	-1.582	81	-52.292	81
M400	1	max	3.83	97	19.344	79	0.128	81	1.841	47	0.674	99	258.54	79
		min	-8.411	45	-4.028	97	-0.056	99	-0.753	96	-1.545	81	-199.684	97
	2	max	4.588	97	14.45	79	0.128	81	1.841	47	0.335	99	155.859	79
		min	-7.22	45	-6.823	97	-0.056	99	-0.753	96	-0.766	81	-166.714	97
	3	max	5.346	97	9.557	79	0.128	81	1.841	47	0.173	78	83.511	91
		min	-6.029	45	-9.618	97	-0.056	99	-0.753	96	-0.161	96	-120.007	85
	4	max	6.103	97	6.419	91	0.128	81	1.841	47	0.792	81	51.128	78
		min	-4.838	45	-14.389	85	-0.056	99	-0.753	96	-0.342	99	-61.197	96
	5	max	7.019	85	3.623	91	0.128	81	1.841	47	1.571	81	59.165	82
		min	-3.647	45	-19.283	85	-0.056	99	-0.753	96	-0.68	99	0.996	100
M401B	1	max	18.974	79	19.996	84	0.109	81	1.496	34	1.076	99	81.712	30
		min	-5.573	97	-1.761	90	-0.089	99	-0.156	93	-1.336	81	16.924	96
	2	max	17.438	79	15.102	84	0.109	81	1.496	34	0.53	99	58.935	78
		min	-6.45	97	-4.556	90	-0.089	99	-0.156	93	-0.665	81	-62.962	96
	3	max	15.903	79	10.208	84	0.109	81	1.496	34	0.043	96	87.886	90
		min	-7.326	97	-7.351	90	-0.089	99	-0.156	93	-0.054	78	-134.704	84
	4	max	14.368	79	6.009	96	0.109	81	1.496	34	0.677	81	141.662	90
		min	-8.203	97	-11.019	78	-0.089	99	-0.156	93	-0.564	99	-182.41	84
	5	max	12.833	79	3.213	96	0.109	81	1.496	34	1.348	81	217.001	78
		min	-9.08	97	-15.912	78	-0.089	99	-0.156	93	-1.11	99	-200.033	84
M402B	1	max	23.13	91	11.955	84	0.114	94	1.46	90	1.552	88	80.741	79
		min	-23.742	85	2.034	90	-0.127	88	-1.681	84	-1.344	94	-44.396	97
	2	max	22.372	91	7.061	84	0.114	94	1.46	90	0.781	88	59.037	91
		min	-25.069	85	-0.761	90	-0.127	88	-1.681	84	-0.652	94	-87.166	85
	3	max	21.614	91	2.765	96	0.114	94	1.46	90	0.343	84	70.482	90
		min	-26.396	85	-4.111	78	-0.127	88	-1.681	84	-0.289	78	-113.515	84
	4	max	20.856	91	-0.03	96	0.114	94	1.46	90	0.732	94	104.744	78
		min	-27.722	85	-9.004	78	-0.127	88	-1.681	84	-0.761	88	-114.078	96
	5	max	20.099	91	-2.825	96	0.114	94	1.46	90	1.424	94	174.33	78
		min	-29.049	85	-13.898	78	-0.127	88	-1.681	84	-1.532	88	-105.403	96
M403B	1	max	28.347	79	13.186	84	0.118	82	0.669	87	1.298	100	97.261	79
		min	-21.798	97	1.641	90	-0.105	100	-0.318	93	-1.429	82	-54.574	97
	2	max	26.677	79	8.292	84	0.118	82	0.669	87	0.647	100	74.73	91
		min	-22.752	97	-1.154	90	-0.105	100	-0.318	93	-0.695	82	-103.066	85
	3	max	25.007	79	3.663	96	0.118	82	0.669	87	0.211	85	86.971	90
		min	-24.044	85	-4.195	78	-0.105	100	-0.318	93	-0.176	79	-135.7	84
	4	max	23.674	91	0.868	96	0.118	82	0.669	87	0.772	82	121.521	78
		min	-25.714	85	-9.089	78	-0.105	100	-0.318	93	-0.657	100	-141.596	84
	5	max	22.72	91	-1.927	96	0.118	82	0.669	87	1.505	82	193.007	78
		min	-27.384	85	-13.982	78	-0.105	100	-0.318	93	-1.308	100	-137.197	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: 8/11/2016

LC	LOCATION	X (k)	Y (k)	Z (k)
116	B2	6.007	64.907	2.978
117	B2	10.138	76.831	4.611
118	B2	6.007	64.907	2.978
119	B2	11.884	102.254	0.721
120	B2	13.514	101.861	2.51
121	B2	6.996	60.37	-0.511
122	B2	5.094	66.814	6.416
123	B2	6.958	61.399	-0.484
124	B2	5.07	67.82	6.439
125	B2	5.273	65.816	5.94
126	B2	6.018	63.38	0.941
127	B2	6.042	65.047	4.985
128	B2	5.984	64.378	0.958
129	B2	6.013	66.009	5.003
130	B2	6.06	62.171	0.935
131	B2	9.114	72.705	2.675
132	B2	9.132	73.955	5.708
133	B2	9.847	70.448	1.586
134	B2	8.421	75.281	6.781
135	B2	9.088	73.453	2.688
136	B2	9.11	74.677	5.722
137	B2	9.819	71.219	1.606
138	B2	8.403	76.035	6.798
139	B2	9.145	71.798	2.671
140	B2	8.555	74.532	6.424
141	B2	13.522	100.716	0.982
142	B2	13.54	101.966	4.015
143	B2	14.256	98.458	-0.107
144	B2	12.829	103.291	5.088
145	B2	13.497	101.464	0.995
146	B2	13.518	102.687	4.029
147	B2	14.227	99.229	-0.087
148	B2	12.811	104.045	5.106
149	B2	13.553	99.808	0.978
150	B2	12.964	102.543	4.732
151	B2	3.615	37.417	-0.25
152	B2	3.639	39.084	3.794
153	B2	4.593	34.407	-1.702
154	B2	2.691	40.851	5.224
155	B2	3.581	38.415	-0.233
156	B2	3.61	40.047	3.812
157	B2	4.556	35.436	-1.676
158	B2	2.667	41.857	5.248
159	B2	3.657	36.208	-0.256
160	B2	2.871	39.853	4.749
161	B2	14.41	60.722	-7.107
162	B2	14.394	60.505	-8.446
163	B2	14.426	60.938	-5.768
164	B2	6.428	65.198	-8.353
165	B2	6.422	65.254	-7.981
166	B2	6.433	65.142	-8.726
167	B2	-1.248	81.505	13.632
168	B2	-1.232	81.721	14.971
169	B2	-1.263	81.289	12.293

REVISION 1
THE WEIGHT OF THE FOOTINGS AND SOIL HAS BEEN ADDED TO THE ANALYSIS MODEL TO RESIST OVERTURNING. NO UPLIFT WAS OBSERVED.

LC	LOCATION	X (k)	Y (k)	Z (k)
170	B2	6.734	77.028	14.878
171	B2	6.74	76.972	14.506
172	B2	6.729	77.084	15.251
173	B2	15.408	70.711	-3.361
174	B2	15.396	70.549	-4.365
175	B2	15.42	70.873	-2.357
176	B2	9.421	74.069	-4.296
177	B2	9.417	74.111	-4.016
178	B2	9.425	74.027	-4.575
179	B2	3.665	86.299	12.193
180	B2	3.677	86.461	13.197
181	B2	3.653	86.137	11.189
182	B2	9.651	82.941	13.128
183	B2	9.655	82.899	12.849
184	B2	9.647	82.983	13.408
185	B2	19.816	98.722	-5.053
186	B2	19.804	98.559	-6.058
187	B2	19.828	98.884	-4.049
188	B2	13.829	102.079	-5.988
189	B2	13.825	102.121	-5.709
190	B2	13.834	102.037	-6.268
191	B2	8.073	114.309	10.501
192	B2	8.085	114.471	11.505
193	B2	8.061	114.147	9.497
194	B2	14.059	110.952	11.436
195	B2	14.064	110.91	11.156
196	B2	14.055	110.994	11.715
197	B2	10.858	22.346	-8.868
198	B2	10.843	22.13	-10.206
199	B2	10.874	22.562	-7.529
200	B2	2.876	26.823	-10.114
201	B2	2.871	26.879	-9.741
202	B2	2.882	26.767	-10.487
203	B2	-4.799	43.129	11.871
204	B2	-4.783	43.346	13.21
205	B2	-4.815	42.913	10.532
206	B2	3.183	38.653	13.118
207	B2	3.188	38.597	12.745
208	B2	3.178	38.709	13.491
116	A2	-1.909	64.417	-1.444
117	A2	-1.667	78.51	-3.854
118	A2	-1.909	64.417	-1.444
119	A2	-4.268	104.78	-0.603
120	A2	-3.497	105.259	-2.62
121	A2	-11.255	65.786	0.273
122	A2	7.469	60.45	-3.215
123	A2	-11.246	66.789	0.297
124	A2	7.474	61.435	-3.197
125	A2	6.379	60.135	-3.006
126	A2	-1.945	62.951	-4.146
127	A2	-1.84	64.504	1.216
128	A2	-1.97	63.944	-4.13
129	A2	-1.871	65.466	1.25
130	A2	-1.914	61.748	-4.149
131	A2	-1.754	73.887	-5.278
132	A2	-1.675	75.052	-1.257
133	A2	-8.737	76.013	-1.963
134	A2	5.306	72.012	-4.579
135	A2	-1.773	74.632	-5.266
136	A2	-1.699	75.774	-1.231
137	A2	-8.73	76.766	-1.945
138	A2	5.309	72.75	-4.566
139	A2	-1.731	72.985	-5.28
140	A2	4.488	71.775	-4.422
141	A2	-3.524	104.16	-4.647
142	A2	-3.445	105.325	-0.625
143	A2	-10.506	106.286	-1.332

LC	LOCATION	X (k)	Y (k)	Z (k)
144	A2	3.536	102.284	-3.948
145	A2	-3.543	104.905	-4.634
146	A2	-3.468	106.046	-0.599
147	A2	-10.5	107.038	-1.314
148	A2	3.54	103.023	-3.935
149	A2	-3.501	103.258	-4.649
150	A2	2.719	102.048	-3.791
151	A2	-1.181	37.185	-3.569
152	A2	-1.076	38.737	1.793
153	A2	-10.491	40.019	0.851
154	A2	8.232	34.684	-2.637
155	A2	-1.207	38.177	-3.552
156	A2	-1.107	39.7	1.828
157	A2	-10.483	41.022	0.875
158	A2	8.237	35.668	-2.619
159	A2	-1.151	35.982	-3.571
160	A2	7.142	34.368	-2.428
161	A2	-30.457	79.301	3.607
162	A2	-30.765	79.353	4.304
163	A2	-30.148	79.248	2.91
164	A2	-2.279	64.92	-19.453
165	A2	-2.205	64.91	-19.65
166	A2	-2.353	64.93	-19.255
167	A2	26.275	61.852	-6.772
168	A2	26.583	61.8	-7.469
169	A2	25.966	61.905	-6.075
170	A2	-1.903	76.233	16.288
171	A2	-1.977	76.243	16.485
172	A2	-1.829	76.223	16.09
173	A2	-23.138	86.149	0.537
174	A2	-23.37	86.189	1.06
175	A2	-22.907	86.11	0.014
176	A2	-2.005	75.364	-16.758
177	A2	-1.949	75.357	-16.906
178	A2	-2.061	75.372	-16.61
179	A2	19.41	73.063	-7.247
180	A2	19.642	73.024	-7.77
181	A2	19.179	73.102	-6.724
182	A2	-1.723	83.848	10.048
183	A2	-1.779	83.856	10.196
184	A2	-1.667	83.841	9.9
185	A2	-24.908	116.422	1.168
186	A2	-25.139	116.461	1.691
187	A2	-24.676	116.383	0.645
188	A2	-3.774	105.637	-16.127
189	A2	-3.719	105.629	-16.275
190	A2	-3.83	105.644	-15.979
191	A2	17.641	103.336	-6.616
192	A2	17.872	103.296	-7.139
193	A2	17.409	103.375	-6.093
194	A2	-3.492	114.121	10.679
195	A2	-3.548	114.129	10.827
196	A2	-3.437	114.113	10.531
197	A2	-29.328	41.215	4.461
198	A2	-29.637	41.267	5.158
199	A2	-29.02	41.162	3.764
200	A2	-1.151	26.834	-18.599
201	A2	-1.076	26.824	-18.796
202	A2	-1.225	26.844	-18.401
203	A2	27.403	23.766	-5.918
204	A2	27.712	23.714	-6.615
205	A2	27.094	23.819	-5.221
206	A2	-0.775	38.147	17.142
207	A2	-0.849	38.157	17.339
208	A2	-0.7	38.137	16.944
116	B3	1.419	65.745	-0.418
117	B3	0.331	78.818	-1.122

LC	LOCATION	X (k)	Y (k)	Z (k)
118	B3	1.419	65.745	-0.418
119	B3	4.027	101.477	-2.158
120	B3	2.559	102.349	-2.251
121	B3	5.521	61.35	-1.908
122	B3	-2.682	67.503	1.17
123	B3	5.502	62.377	-1.94
124	B3	-2.684	68.512	1.135
125	B3	-2.084	66.518	0.974
126	B3	1.209	64.978	-1.824
127	B3	1.627	65.124	1.038
128	B3	1.213	65.978	-1.863
129	B3	1.632	66.088	1.003
130	B3	1.206	63.761	-1.767
131	B3	0.445	74.974	-2
132	B3	0.759	75.084	0.146
133	B3	3.679	72.253	-2.063
134	B3	-2.473	76.868	0.245
135	B3	0.448	75.724	-2.029
136	B3	0.763	75.807	0.12
137	B3	3.665	73.024	-2.087
138	B3	-2.474	77.625	0.219
139	B3	0.443	74.062	-1.958
140	B3	-2.024	76.129	0.098
141	B3	2.401	101.773	-3.306
142	B3	2.715	101.883	-1.16
143	B3	5.635	99.052	-3.369
144	B3	-0.517	103.667	-1.06
145	B3	2.404	102.523	-3.335
146	B3	2.719	102.606	-1.185
147	B3	5.621	99.823	-3.393
148	B3	-0.518	104.424	-1.087
149	B3	2.399	100.861	-3.263
150	B3	-0.068	102.928	-1.208
151	B3	0.641	38.68	-1.657
152	B3	1.06	38.826	1.205
153	B3	4.953	35.051	-1.741
154	B3	-3.25	41.205	1.337
155	B3	0.645	39.68	-1.696
156	B3	1.064	39.79	1.17
157	B3	4.934	36.079	-1.773
158	B3	-3.251	42.214	1.302
159	B3	0.638	37.463	-1.6
160	B3	-2.651	40.22	1.141
161	B3	17.104	61.961	-5.076
162	B3	16.569	61.841	-5.709
163	B3	17.639	62.082	-4.443
164	B3	0.117	71.84	-9.392
165	B3	0.251	71.873	-9.214
166	B3	-0.018	71.807	-9.571
167	B3	-13.995	82.102	4.161
168	B3	-13.46	82.223	4.794
169	B3	-14.53	81.982	3.528
170	B3	2.992	72.224	8.477
171	B3	2.858	72.191	8.299
172	B3	3.127	72.256	8.656
173	B3	12.367	72.712	-4.439
174	B3	11.966	72.621	-4.914
175	B3	12.768	72.802	-3.965
176	B3	-0.374	80.121	-7.677
177	B3	-0.273	80.145	-7.543
178	B3	-0.474	80.096	-7.811
179	B3	-10.957	87.818	2.488
180	B3	-10.556	87.908	2.963
181	B3	-11.359	87.727	2.013
182	B3	1.783	80.408	5.725
183	B3	1.682	80.384	5.591
184	B3	1.884	80.433	5.859

LC	LOCATION	X (k)	Y (k)	Z (k)
185	B3	14.323	99.511	-5.745
186	B3	13.922	99.42	-6.22
187	B3	14.724	99.601	-5.27
188	B3	1.582	106.92	-8.982
189	B3	1.683	106.945	-8.848
190	B3	1.482	106.895	-9.116
191	B3	-9.001	114.617	1.183
192	B3	-8.6	114.707	1.658
193	B3	-9.403	114.526	0.708
194	B3	3.739	107.207	4.42
195	B3	3.638	107.183	4.286
196	B3	3.84	107.232	4.554
197	B3	16.265	23.09	-4.829
198	B3	15.73	22.969	-5.462
199	B3	16.8	23.211	-4.196
200	B3	-0.722	32.969	-9.145
201	B3	-0.588	33.002	-8.967
202	B3	-0.856	32.936	-9.324
203	B3	-14.834	43.231	4.408
204	B3	-14.299	43.352	5.041
205	B3	-15.369	43.111	3.775
206	B3	2.153	33.352	8.724
207	B3	2.019	33.32	8.545
208	B3	2.288	33.385	8.903
116	A3	-3.467	64.845	-1.061
117	A3	-4.557	79.78	-2.051
118	A3	-3.467	64.845	-1.061
119	A3	-6.032	102.949	1.26
120	A3	-6.209	104.624	-0.062
121	A3	-10.196	66.414	0.457
122	A3	3.261	60.679	-2.581
123	A3	-10.181	67.411	0.451
124	A3	3.273	61.663	-2.583
125	A3	2.477	60.406	-2.331
126	A3	-3.595	64.111	-2.433
127	A3	-3.326	64.201	0.292
128	A3	-3.606	65.105	-2.419
129	A3	-3.34	65.162	0.301
130	A3	-3.583	62.903	-2.439
131	A3	-4.381	75.496	-2.832
132	A3	-4.179	75.564	-0.788
133	A3	-9.331	77.223	-0.665
134	A3	0.761	72.922	-2.943
135	A3	-4.389	76.242	-2.822
136	A3	-4.189	76.285	-0.782
137	A3	-9.32	77.971	-0.669
138	A3	0.77	73.66	-2.944
139	A3	-4.371	74.59	-2.836
140	A3	0.173	72.717	-2.755
141	A3	-6.305	104.074	-1.091
142	A3	-6.103	104.142	0.953
143	A3	-11.255	105.801	1.076
144	A3	-1.163	101.5	-1.202
145	A3	-6.313	104.819	-1.081
146	A3	-6.113	104.862	0.959
147	A3	-11.244	106.549	1.072
148	A3	-1.154	102.238	-1.203
149	A3	-6.296	103.168	-1.095
150	A3	-1.751	101.295	-1.014
151	A3	-2.209	38.173	-2.008
152	A3	-1.939	38.263	0.717
153	A3	-8.809	40.476	0.882
154	A3	4.648	34.741	-2.157
155	A3	-2.219	39.167	-1.994
156	A3	-1.953	39.224	0.725
157	A3	-8.794	41.473	0.876
158	A3	4.66	35.725	-2.158

LC	LOCATION	X (k)	Y (k)	Z (k)
159	A3	-2.196	36.965	-2.014
160	A3	3.864	34.468	-1.906
161	A3	-24.869	80.489	3.639
162	A3	-25.324	80.549	3.854
163	A3	-24.415	80.429	3.425
164	A3	-4.408	70.85	-9.89
165	A3	-4.286	70.834	-9.961
166	A3	-4.53	70.866	-9.818
167	A3	17.273	61.602	-5.965
168	A3	17.727	61.542	-6.18
169	A3	16.819	61.662	-5.751
170	A3	-3.188	71.241	7.564
171	A3	-3.31	71.257	7.636
172	A3	-3.067	71.225	7.492
173	A3	-20.337	87.78	1.722
174	A3	-20.677	87.824	1.883
175	A3	-19.996	87.735	1.561
176	A3	-4.99	80.55	-8.425
177	A3	-4.899	80.538	-8.478
178	A3	-5.082	80.562	-8.371
179	A3	11.27	73.614	-5.481
180	A3	11.611	73.569	-5.642
181	A3	10.93	73.659	-5.32
182	A3	-4.076	80.844	4.665
183	A3	-4.167	80.856	4.719
184	A3	-3.984	80.832	4.611
185	A3	-22.261	116.357	3.463
186	A3	-22.601	116.402	3.624
187	A3	-21.92	116.313	3.302
188	A3	-6.915	109.128	-6.684
189	A3	-6.823	109.116	-6.737
190	A3	-7.006	109.14	-6.63
191	A3	9.346	102.192	-3.74
192	A3	9.687	102.147	-3.901
193	A3	9.006	102.237	-3.579
194	A3	-6	109.422	6.406
195	A3	-6.091	109.434	6.46
196	A3	-5.909	109.409	6.352
197	A3	-22.82	42.15	4.267
198	A3	-23.274	42.21	4.482
199	A3	-22.366	42.09	4.052
200	A3	-2.358	32.511	-9.262
201	A3	-2.237	32.495	-9.334
202	A3	-2.48	32.527	-9.19
203	A3	19.323	23.263	-5.338
204	A3	19.777	23.203	-5.552
205	A3	18.869	23.323	-5.123
206	A3	-1.139	32.902	8.191
207	A3	-1.26	32.918	8.263
208	A3	-1.017	32.886	8.119
116	B4	2.49	66.176	1.216
117	B4	2.82	80.152	3.318
118	B4	2.49	66.176	1.216
119	B4	5.434	100.458	-2.68
120	B4	4.946	102.369	-0.13
121	B4	7.211	62.165	-0.616
122	B4	-2.27	67.571	3.166
123	B4	7.207	63.18	-0.661
124	B4	-2.259	68.571	3.123
125	B4	-1.666	66.633	2.89
126	B4	2.317	66.25	1.161
127	B4	2.633	64.728	1.34
128	B4	2.345	67.241	1.108
129	B4	2.654	65.683	1.295
130	B4	2.288	65.04	1.229
131	B4	2.608	76.713	2.751
132	B4	2.845	75.571	2.885

LC	LOCATION	X (k)	Y (k)	Z (k)
133	B4	6.279	73.649	1.418
134	B4	-0.833	77.703	4.255
135	B4	2.629	77.456	2.711
136	B4	2.861	76.288	2.851
137	B4	6.275	74.411	1.384
138	B4	-0.824	78.454	4.222
139	B4	2.586	75.805	2.802
140	B4	-0.379	77.001	4.048
141	B4	4.817	102.424	-0.172
142	B4	5.053	101.282	-0.038
143	B4	8.487	99.36	-1.504
144	B4	1.376	103.415	1.332
145	B4	4.837	103.168	-0.211
146	B4	5.069	101.999	-0.071
147	B4	8.484	100.122	-1.538
148	B4	1.384	104.165	1.3
149	B4	4.794	101.516	-0.12
150	B4	1.829	102.712	1.125
151	B4	1.321	39.779	0.674
152	B4	1.637	38.257	0.853
153	B4	6.215	35.694	-1.102
154	B4	-3.266	41.1	2.679
155	B4	1.349	40.771	0.622
156	B4	1.658	39.212	0.808
157	B4	6.211	36.71	-1.147
158	B4	-3.255	42.101	2.636
159	B4	1.292	38.569	0.743
160	B4	-2.662	40.163	2.404
161	B4	20.45	63.508	-4.302
162	B4	19.832	63.579	-4.68
163	B4	21.069	63.436	-3.924
164	B4	1.939	78.304	2.523
165	B4	2.105	78.286	2.638
166	B4	1.774	78.321	2.409
167	B4	-14.994	81.5	6.967
168	B4	-14.376	81.429	7.345
169	B4	-15.613	81.572	6.59
170	B4	3.517	66.705	0.142
171	B4	3.351	66.722	0.028
172	B4	3.682	66.687	0.257
173	B4	16.208	74.656	-1.346
174	B4	15.744	74.71	-1.63
175	B4	16.672	74.603	-1.063
176	B4	2.325	85.753	3.772
177	B4	2.449	85.74	3.858
178	B4	2.201	85.767	3.687
179	B4	-10.375	88.151	7.106
180	B4	-9.912	88.097	7.389
181	B4	-10.839	88.205	6.822
182	B4	3.508	77.054	1.987
183	B4	3.384	77.067	1.901
184	B4	3.632	77.041	2.073
185	B4	18.416	100.368	-4.269
186	B4	17.952	100.421	-4.552
187	B4	18.88	100.314	-3.985
188	B4	4.533	111.464	0.85
189	B4	4.657	111.451	0.936
190	B4	4.409	111.478	0.764
191	B4	-8.167	113.862	4.183
192	B4	-7.704	113.808	4.467
193	B4	-8.631	113.916	3.9
194	B4	5.716	102.765	-0.936
195	B4	5.592	102.779	-1.022
196	B4	5.84	102.752	-0.85
197	B4	18.978	24.382	-5.021
198	B4	18.36	24.453	-5.399
199	B4	19.597	24.31	-4.643

LC	LOCATION	X (k)	Y (k)	Z (k)
200	B4	0.467	39.178	1.804
201	B4	0.633	39.16	1.919
202	B4	0.302	39.195	1.69
203	B4	-16.466	42.374	6.248
204	B4	-15.848	42.303	6.626
205	B4	-17.085	42.446	5.87
206	B4	2.045	27.578	-0.577
207	B4	1.879	27.596	-0.691
208	B4	2.21	27.561	-0.463
116	A4	-3.086	65.168	-2.777
117	A4	-4.6	80.975	-4.538
118	A4	-3.086	65.168	-2.777
119	A4	-6.197	101.687	2.16
120	A4	-6.555	104.412	-0.395
121	A4	-11.279	66.933	0.66
122	A4	5.095	60.813	-6.202
123	A4	-11.253	67.922	0.642
124	A4	5.113	61.795	-6.211
125	A4	4.092	60.581	-5.673
126	A4	-3.178	65.248	-4.573
127	A4	-2.98	63.713	-0.999
128	A4	-3.195	66.245	-4.56
129	A4	-2.992	64.67	-0.989
130	A4	-3.157	64.032	-4.571
131	A4	-4.29	77.083	-5.444
132	A4	-4.142	75.932	-2.764
133	A4	-10.367	78.347	-1.52
134	A4	1.914	73.757	-6.667
135	A4	-4.303	77.831	-5.435
136	A4	-4.151	76.65	-2.756
137	A4	-10.347	79.089	-1.533
138	A4	1.927	74.493	-6.673
139	A4	-4.275	76.171	-5.443
140	A4	1.162	73.583	-6.27
141	A4	-6.624	104.472	-1.742
142	A4	-6.476	103.321	0.938
143	A4	-12.7	105.736	2.182
144	A4	-0.419	101.145	-2.964
145	A4	-6.637	105.22	-1.733
146	A4	-6.485	104.038	0.946
147	A4	-12.681	106.478	2.169
148	A4	-0.406	101.882	-2.971
149	A4	-6.609	103.56	-1.741
150	A4	-1.171	100.972	-2.568
151	A4	-1.943	39.18	-3.462
152	A4	-1.745	37.646	0.111
153	A4	-10.045	40.866	1.77
154	A4	6.33	34.745	-5.091
155	A4	-1.96	40.177	-3.449
156	A4	-1.758	38.603	0.122
157	A4	-10.019	41.855	1.753
158	A4	6.347	35.727	-5.1
159	A4	-1.923	37.964	-3.461
160	A4	5.327	34.514	-4.562
161	A4	-29.462	81.471	7.257
162	A4	-29.75	81.53	7.99
163	A4	-29.174	81.412	6.523
164	A4	-3.859	77.229	-13.97
165	A4	-3.774	77.21	-14.184
166	A4	-3.945	77.248	-13.756
167	A4	22.7	61.329	-13.341
168	A4	22.987	61.27	-14.074
169	A4	22.412	61.388	-12.607
170	A4	-2.903	65.571	7.886
171	A4	-2.989	65.589	8.1
172	A4	-2.817	65.552	7.672
173	A4	-24.004	89.25	3.427

LC	LOCATION	X (k)	Y (k)	Z (k)
174	A4	-24.22	89.295	3.977
175	A4	-23.788	89.206	2.877
176	A4	-4.802	86.069	-12.492
177	A4	-4.737	86.055	-12.653
178	A4	-4.866	86.083	-12.332
179	A4	15.117	74.144	-12.02
180	A4	15.333	74.1	-12.57
181	A4	14.901	74.188	-11.47
182	A4	-4.084	77.325	3.899
183	A4	-4.149	77.339	4.06
184	A4	-4.02	77.311	3.739
185	A4	-26.337	116.639	7.129
186	A4	-26.553	116.683	7.68
187	A4	-26.121	116.595	6.579
188	A4	-7.135	113.458	-8.79
189	A4	-7.071	113.444	-8.951
190	A4	-7.2	113.472	-8.63
191	A4	12.784	101.533	-8.318
192	A4	13	101.488	-8.868
193	A4	12.568	101.577	-7.768
194	A4	-6.418	104.714	7.601
195	A4	-6.482	104.728	7.762
196	A4	-6.353	104.7	7.441
197	A4	-27.637	42.941	8.898
198	A4	-27.925	43	9.631
199	A4	-27.349	42.882	8.165
200	A4	-2.035	38.699	-12.328
201	A4	-1.949	38.68	-12.542
202	A4	-2.121	38.718	-12.114
203	A4	24.524	22.799	-11.699
204	A4	24.812	22.74	-12.432
205	A4	24.236	22.857	-10.966
206	A4	-1.078	27.04	9.527
207	A4	-1.164	27.059	9.742
208	A4	-0.992	27.022	9.313
116	B5	1.418	66.536	-0.305
117	B5	1.834	81.461	2.129
118	B5	1.418	66.536	-0.305
119	B5	6.172	100.152	-0.638
120	B5	5.296	102.942	1.271
121	B5	6.392	62.884	-0.189
122	B5	-3.572	67.553	-0.512
123	B5	6.378	63.902	-0.158
124	B5	-3.573	68.56	-0.479
125	B5	-2.95	66.652	-0.55
126	B5	1.32	67.447	1.227
127	B5	1.496	64.243	-1.878
128	B5	1.341	68.444	1.257
129	B5	1.51	65.203	-1.848
130	B5	1.297	66.225	1.183
131	B5	1.657	78.413	2.669
132	B5	1.789	76.009	0.34
133	B5	5.461	74.99	1.608
134	B5	-2.012	78.492	1.365
135	B5	1.673	79.161	2.692
136	B5	1.799	76.73	0.363
137	B5	5.451	75.754	1.63
138	B5	-2.013	79.247	1.39
139	B5	1.64	77.496	2.636
140	B5	-1.545	77.817	1.336
141	B5	5.223	103.625	2.42
142	B5	5.355	101.222	0.091
143	B5	9.027	100.202	1.358
144	B5	1.554	103.705	1.115
145	B5	5.239	104.373	2.442
146	B5	5.365	101.942	0.114
147	B5	9.016	100.966	1.381

LC	LOCATION	X (k)	Y (k)	Z (k)
148	B5	1.553	104.46	1.141
149	B5	5.206	102.709	2.387
150	B5	2.02	103.029	1.087
151	B5	0.753	40.833	1.349
152	B5	0.929	37.628	-1.756
153	B5	5.825	36.269	-0.066
154	B5	-4.139	40.939	-0.39
155	B5	0.774	41.83	1.379
156	B5	0.943	38.589	-1.726
157	B5	5.811	37.288	-0.036
158	B5	-4.14	41.946	-0.357
159	B5	0.73	39.611	1.305
160	B5	-3.517	40.038	-0.428
161	B5	19.429	64.916	-0.121
162	B5	18.664	65.232	0.374
163	B5	20.194	64.599	-0.616
164	B5	1.638	84.638	10.859
165	B5	1.841	84.555	10.73
166	B5	1.435	84.722	10.988
167	B5	-16.323	80.88	-0.548
168	B5	-15.558	80.564	-1.043
169	B5	-17.088	81.197	-0.052
170	B5	1.469	61.158	-11.528
171	B5	1.265	61.241	-11.399
172	B5	1.672	61.075	-11.657
173	B5	15.239	76.514	1.658
174	B5	14.665	76.752	2.03
175	B5	15.813	76.277	1.287
176	B5	1.895	91.306	9.894
177	B5	2.048	91.244	9.797
178	B5	1.743	91.369	9.99
179	B5	-11.575	88.488	1.338
180	B5	-11.001	88.25	0.967
181	B5	-12.149	88.725	1.71
182	B5	1.768	73.696	-6.897
183	B5	1.616	73.758	-6.8
184	B5	1.921	73.634	-6.994
185	B5	18.805	101.726	1.409
186	B5	18.231	101.964	1.78
187	B5	19.379	101.489	1.037
188	B5	5.461	116.518	9.644
189	B5	5.613	116.456	9.547
190	B5	5.309	116.581	9.741
191	B5	-8.009	113.7	1.089
192	B5	-7.435	113.463	0.718
193	B5	-8.583	113.937	1.46
194	B5	5.334	98.908	-7.146
195	B5	5.182	98.97	-7.05
196	B5	5.487	98.846	-7.243
197	B5	18.591	25.577	0.059
198	B5	17.826	25.894	0.554
199	B5	19.356	25.261	-0.436
200	B5	0.8	45.3	11.04
201	B5	1.003	45.217	10.911
202	B5	0.596	45.383	11.169
203	B5	-17.161	41.542	-0.367
204	B5	-16.396	41.225	-0.862
205	B5	-17.926	41.858	0.128
206	B5	0.63	21.819	-11.348
207	B5	0.427	21.902	-11.219
208	B5	0.834	21.736	-11.477
116	A5	-3.522	65.195	-2.66
117	A5	-5.299	81.816	-2.155
118	A5	-3.522	65.195	-2.66
119	A5	-4.815	100.459	-1.262
120	A5	-5.825	104.109	-1.233
121	A5	-10.988	67.262	-0.93

LC	LOCATION	X (k)	Y (k)	Z (k)
122	A5	3.883	60.547	-4.359
123	A5	-10.941	68.241	-0.956
124	A5	3.917	61.525	-4.373
125	A5	2.926	60.378	-4.053
126	A5	-3.641	66.134	-1.881
127	A5	-3.415	62.888	-3.419
128	A5	-3.641	67.128	-1.895
129	A5	-3.407	63.838	-3.43
130	A5	-3.644	64.918	-1.865
131	A5	-4.944	78.365	-1.697
132	A5	-4.775	75.93	-2.851
133	A5	-10.454	79.211	-0.984
134	A5	0.699	74.175	-3.556
135	A5	-4.944	79.111	-1.707
136	A5	-4.768	76.643	-2.859
137	A5	-10.419	79.945	-1.003
138	A5	0.724	74.909	-3.566
139	A5	-4.946	77.453	-1.685
140	A5	-0.019	74.048	-3.326
141	A5	-5.914	104.814	-0.648
142	A5	-5.745	102.379	-1.802
143	A5	-11.424	105.66	0.065
144	A5	-0.271	100.623	-2.507
145	A5	-5.914	105.559	-0.659
146	A5	-5.738	103.092	-1.81
147	A5	-11.389	106.394	0.045
148	A5	-0.246	101.357	-2.517
149	A5	-5.916	103.901	-0.636
150	A5	-0.989	100.496	-2.278
151	A5	-2.233	40.056	-0.816
152	A5	-2.007	36.81	-2.355
153	A5	-9.579	41.184	0.134
154	A5	5.292	34.469	-3.295
155	A5	-2.232	41.05	-0.831
156	A5	-1.998	37.76	-2.366
157	A5	-9.532	42.163	0.108
158	A5	5.326	35.447	-3.309
159	A5	-2.235	38.84	-0.801
160	A5	4.334	34.3	-2.989
161	A5	-28.117	82.456	2.395
162	A5	-28.035	82.519	2.572
163	A5	-28.198	82.393	2.218
164	A5	-4.689	83.506	3.038
165	A5	-4.7	83.484	2.984
166	A5	-4.678	83.528	3.092
167	A5	20.399	60.402	-8.224
168	A5	20.318	60.339	-8.401
169	A5	20.481	60.465	-8.047
170	A5	-3.029	59.352	-8.867
171	A5	-3.018	59.374	-8.813
172	A5	-3.039	59.33	-8.921
173	A5	-23.301	90.607	1.51
174	A5	-23.24	90.654	1.642
175	A5	-23.362	90.559	1.377
176	A5	-5.73	91.394	1.992
177	A5	-5.738	91.378	1.951
178	A5	-5.722	91.411	2.032
179	A5	13.086	74.066	-6.454
180	A5	13.025	74.019	-6.587
181	A5	13.147	74.113	-6.322
182	A5	-4.485	73.278	-6.936
183	A5	-4.477	73.295	-6.896
184	A5	-4.493	73.262	-6.977
185	A5	-24.271	117.055	2.559
186	A5	-24.21	117.102	2.691
187	A5	-24.332	117.008	2.426
188	A5	-6.7	117.843	3.041

LC	LOCATION	X (k)	Y (k)	Z (k)
189	A5	-6.708	117.826	3
190	A5	-6.692	117.859	3.081
191	A5	12.116	100.514	-5.406
192	A5	12.055	100.467	-5.538
193	A5	12.177	100.562	-5.273
194	A5	-5.455	99.727	-5.888
195	A5	-5.447	99.743	-5.847
196	A5	-5.463	99.71	-5.928
197	A5	-26.034	43.91	3.968
198	A5	-25.953	43.973	4.145
199	A5	-26.116	43.847	3.791
200	A5	-2.607	44.96	4.611
201	A5	-2.617	44.938	4.556
202	A5	-2.596	44.982	4.665
203	A5	22.482	21.856	-6.651
204	A5	22.4	21.793	-6.828
205	A5	22.563	21.919	-6.475
206	A5	-0.946	20.806	-7.294
207	A5	-0.936	20.828	-7.24
208	A5	-0.957	20.784	-7.348
116	B1	4.439	63.534	3.114
117	B1	5.996	74.07	3.466
118	B1	4.439	63.534	3.114
119	B1	3.166	102.522	2.879
120	B1	4.652	100.677	3.202
121	B1	4.42	58.943	0.777
122	B1	4.36	65.507	5.436
123	B1	4.469	59.971	0.79
124	B1	4.401	66.509	5.445
125	B1	4.172	64.502	5.139
126	B1	4.972	61.249	1.255
127	B1	3.858	64.436	4.962
128	B1	5.002	62.243	1.26
129	B1	3.895	65.396	4.968
130	B1	4.932	60.049	1.261
131	B1	6.007	69.723	1.984
132	B1	5.171	72.112	4.764
133	B1	5.592	67.992	1.625
134	B1	5.548	72.916	5.12
135	B1	6.029	70.468	1.988
136	B1	5.199	72.832	4.768
137	B1	5.629	68.764	1.635
138	B1	5.578	73.667	5.126
139	B1	5.977	68.822	1.988
140	B1	5.407	72.162	4.896
141	B1	5.053	98.963	1.808
142	B1	4.217	101.353	4.588
143	B1	4.638	97.233	1.449
144	B1	4.593	102.156	4.944
145	B1	5.075	99.708	1.812
146	B1	4.244	102.073	4.592
147	B1	4.675	98.004	1.459
148	B1	4.624	102.908	4.95
149	B1	5.023	98.063	1.812
150	B1	4.452	101.402	4.72
151	B1	3.197	35.836	0.009
152	B1	2.082	39.022	3.717
153	B1	2.644	33.529	-0.469
154	B1	2.585	40.093	4.191
155	B1	3.226	36.83	0.015
156	B1	2.119	39.982	3.722
157	B1	2.693	34.558	-0.456
158	B1	2.625	41.095	4.199
159	B1	3.157	34.635	0.016
160	B1	2.396	39.088	3.893
161	B1	8.412	59.054	-3.273
162	B1	10.631	58.804	-4.268

LC	LOCATION	X (k)	Y (k)	Z (k)
163	B1	6.193	59.304	-2.278
164	B1	7.517	57.963	-8.383
165	B1	6.936	58.028	-8.113
166	B1	8.097	57.899	-8.654
167	B1	1.315	80.164	10.097
168	B1	-0.904	80.415	11.092
169	B1	3.534	79.914	9.101
170	B1	2.21	81.255	15.207
171	B1	2.791	81.19	14.936
172	B1	1.63	81.319	15.478
173	B1	8.587	68.076	-1.412
174	B1	10.251	67.888	-2.158
175	B1	6.923	68.263	-0.666
176	B1	7.915	67.258	-5.245
177	B1	7.48	67.306	-5.042
178	B1	8.351	67.21	-5.448
179	B1	3.264	83.909	8.615
180	B1	1.6	84.096	9.361
181	B1	4.928	83.721	7.869
182	B1	3.935	84.726	12.448
183	B1	4.371	84.678	12.245
184	B1	3.5	84.775	12.651
185	B1	7.632	97.316	-1.588
186	B1	9.296	97.129	-2.334
187	B1	5.968	97.504	-0.842
188	B1	6.961	96.499	-5.421
189	B1	6.525	96.547	-5.218
190	B1	7.396	96.451	-5.624
191	B1	2.309	113.149	8.439
192	B1	0.645	113.337	9.185
193	B1	3.973	112.962	7.693
194	B1	2.981	113.967	12.272
195	B1	3.416	113.919	12.069
196	B1	2.545	114.015	12.475
197	B1	5.788	21.49	-5.114
198	B1	8.006	21.24	-6.109
199	B1	3.569	21.74	-4.119
200	B1	4.892	20.4	-10.224
201	B1	4.312	20.464	-9.954
202	B1	5.473	20.335	-10.495
203	B1	-1.31	42.601	8.255
204	B1	-3.529	42.851	9.25
205	B1	0.909	42.351	7.26
206	B1	-0.414	43.691	13.366
207	B1	0.166	43.627	13.095
208	B1	-0.995	43.755	13.636
116	A1	-3.791	63.683	1.048
117	A1	-5	76.888	-0.392
118	A1	-3.791	63.683	1.048
119	A1	-9.373	107.393	-0.854
120	A1	-8.885	106.369	-1.458
121	A1	-11.716	65.054	1.52
122	A1	4.121	59.723	0.521
123	A1	-11.688	66.057	1.549
124	A1	4.14	60.704	0.54
125	A1	3.121	59.416	0.506
126	A1	-3.479	61.385	-0.41
127	A1	-4.097	64.605	2.468
128	A1	-3.487	62.375	-0.394
129	A1	-4.108	65.566	2.498
130	A1	-3.474	60.191	-0.421
131	A1	-4.464	71.863	-1.125
132	A1	-4.928	74.278	1.033
133	A1	-10.642	74.615	0.322
134	A1	1.236	70.617	-0.427
135	A1	-4.47	72.605	-1.113
136	A1	-4.935	74.999	1.055

LC	LOCATION	X (k)	Y (k)	Z (k)
137	A1	-10.62	75.367	0.344
138	A1	1.25	71.352	-0.413
139	A1	-4.461	70.968	-1.134
140	A1	0.486	70.386	-0.438
141	A1	-8.651	104.646	-2.551
142	A1	-9.114	107.061	-0.392
143	A1	-14.829	107.398	-1.104
144	A1	-2.951	103.399	-1.853
145	A1	-8.656	105.388	-2.539
146	A1	-9.122	107.782	-0.37
147	A1	-14.807	108.15	-1.082
148	A1	-2.936	104.135	-1.838
149	A1	-8.647	103.751	-2.559
150	A1	-3.701	103.169	-1.864
151	A1	-1.963	35.912	-0.829
152	A1	-2.581	39.132	2.049
153	A1	-10.2	39.581	1.101
154	A1	5.637	34.25	0.102
155	A1	-1.97	36.902	-0.813
156	A1	-2.591	40.093	2.079
157	A1	-10.171	40.584	1.13
158	A1	5.656	35.231	0.121
159	A1	-1.958	34.718	-0.84
160	A1	4.637	33.943	0.087
161	A1	-28.401	78.503	2.24
162	A1	-27.716	78.468	2.869
163	A1	-29.085	78.538	1.61
164	A1	-2.405	57.93	-8.414
165	A1	-2.593	57.946	-8.582
166	A1	-2.217	57.915	-8.246
167	A1	20.094	61.042	0.056
168	A1	19.409	61.077	-0.574
169	A1	20.779	61.007	0.685
170	A1	-5.901	81.614	10.709
171	A1	-5.713	81.599	10.877
172	A1	-6.09	81.629	10.541
173	A1	-23.155	84.701	0.862
174	A1	-22.642	84.675	1.334
175	A1	-23.669	84.728	0.39
176	A1	-3.659	69.272	-7.128
177	A1	-3.8	69.283	-7.254
178	A1	-3.517	69.261	-7.002
179	A1	13.216	71.606	-0.776
180	A1	12.702	71.632	-1.248
181	A1	13.729	71.579	-0.304
182	A1	-6.281	87.035	7.214
183	A1	-6.14	87.024	7.34
184	A1	-6.422	87.046	7.088
185	A1	-27.342	117.484	-0.564
186	A1	-26.828	117.458	-0.092
187	A1	-27.856	117.511	-1.036
188	A1	-7.845	102.055	-8.554
189	A1	-7.987	102.066	-8.68
190	A1	-7.704	102.044	-8.428
191	A1	9.029	104.389	-2.202
192	A1	8.515	104.415	-2.674
193	A1	9.543	104.362	-1.73
194	A1	-10.468	119.818	5.788
195	A1	-10.326	119.806	5.914
196	A1	-10.609	119.829	5.662
197	A1	-26.159	40.851	1.62
198	A1	-25.474	40.816	2.25
199	A1	-26.844	40.886	0.991
200	A1	-0.164	20.279	-9.033
201	A1	-0.352	20.294	-9.201
202	A1	0.025	20.263	-8.865
203	A1	22.335	23.39	-0.564

WORST CASE COMPRESSION

LC	LOCATION	X (k)	Y (k)	Z (k)
204	A1	21.65	23.425	-1.193
205	A1	23.02	23.355	0.066
206	A1	-3.66	43.962	10.09
207	A1	-3.472	43.947	10.258
208	A1	-3.849	43.977	9.922
116	BRIDGE 1	0	2.378	0.31
117	BRIDGE 1	0	7.72	0.59
118	BRIDGE 1	0	2.378	0.31
119	BRIDGE 1	0	12.482	1.174
120	BRIDGE 1	0	13.962	1.168
121	BRIDGE 1	0	2.378	0.468
122	BRIDGE 1	0	2.378	0.16
123	BRIDGE 1	0	2.378	0.467
124	BRIDGE 1	0	2.378	0.157
125	BRIDGE 1	0	2.378	0.165
126	BRIDGE 1	0	2.378	0.278
127	BRIDGE 1	0	2.378	0.342
128	BRIDGE 1	0	2.378	0.279
129	BRIDGE 1	0	2.378	0.34
130	BRIDGE 1	0	2.378	0.277
131	BRIDGE 1	0	6.384	0.496
132	BRIDGE 1	0	6.384	0.544
133	BRIDGE 1	0	6.384	0.638
134	BRIDGE 1	0	6.384	0.407
135	BRIDGE 1	0	6.384	0.497
136	BRIDGE 1	0	6.384	0.543
137	BRIDGE 1	0	6.384	0.637
138	BRIDGE 1	0	6.384	0.405
139	BRIDGE 1	0	6.384	0.495
140	BRIDGE 1	0	6.384	0.411
141	BRIDGE 1	0	13.962	1.144
142	BRIDGE 1	0	13.962	1.192
143	BRIDGE 1	0	13.962	1.286
144	BRIDGE 1	0	13.962	1.055
145	BRIDGE 1	0	13.962	1.144
146	BRIDGE 1	0	13.962	1.19
147	BRIDGE 1	0	13.962	1.285
148	BRIDGE 1	0	13.962	1.053
149	BRIDGE 1	0	13.962	1.143
150	BRIDGE 1	0	13.962	1.059
151	BRIDGE 1	0	1.427	0.154
152	BRIDGE 1	0	1.427	0.218
153	BRIDGE 1	0	1.427	0.343
154	BRIDGE 1	0	1.427	0.036
155	BRIDGE 1	0	1.427	0.155
156	BRIDGE 1	0	1.427	0.216
157	BRIDGE 1	0	1.427	0.343
158	BRIDGE 1	0	1.427	0.033
159	BRIDGE 1	0	1.427	0.153
160	BRIDGE 1	0	1.427	0.041
161	BRIDGE 1	0	2.605	0.742
162	BRIDGE 1	0	2.605	1.141
163	BRIDGE 1	0	2.606	0.343
164	BRIDGE 1	0	2.605	-0.052
165	BRIDGE 1	0	2.606	-0.154
166	BRIDGE 1	0	2.605	0.05
167	BRIDGE 1	0	2.605	-0.063
168	BRIDGE 1	0	2.605	-0.462
169	BRIDGE 1	0	2.605	0.336
170	BRIDGE 1	0	2.605	0.732
171	BRIDGE 1	0	2.605	0.834
172	BRIDGE 1	0	2.605	0.63
173	BRIDGE 1	0	6.555	0.844
174	BRIDGE 1	0	6.555	1.143
175	BRIDGE 1	0	6.555	0.545
176	BRIDGE 1	0	6.555	0.248
177	BRIDGE 1	0	6.555	0.171

LC	LOCATION	X (k)	Y (k)	Z (k)
178	BRIDGE 1	0	6.555	0.325
179	BRIDGE 1	0	6.555	0.24
180	BRIDGE 1	0	6.555	-0.059
181	BRIDGE 1	0	6.554	0.54
182	BRIDGE 1	0	6.555	0.836
183	BRIDGE 1	0	6.554	0.913
184	BRIDGE 1	0	6.555	0.76
185	BRIDGE 1	0	14.133	1.492
186	BRIDGE 1	0	14.133	1.791
187	BRIDGE 1	0	14.133	1.192
188	BRIDGE 1	0	14.133	0.896
189	BRIDGE 1	0	14.133	0.819
190	BRIDGE 1	0	14.133	0.972
191	BRIDGE 1	0	14.132	0.888
192	BRIDGE 1	0	14.133	0.589
193	BRIDGE 1	0	14.132	1.187
194	BRIDGE 1	0	14.132	1.484
195	BRIDGE 1	0	14.132	1.561
196	BRIDGE 1	0	14.132	1.407
197	BRIDGE 1	0	1.2	0.559
198	BRIDGE 1	0	1.199	0.958
199	BRIDGE 1	0	1.2	0.16
200	BRIDGE 1	0	1.2	-0.236
201	BRIDGE 1	0	1.2	-0.338
202	BRIDGE 1	0	1.2	-0.134
203	BRIDGE 1	0	1.199	-0.246
204	BRIDGE 1	0	1.199	-0.645
205	BRIDGE 1	0	1.199	0.153
206	BRIDGE 1	0	1.199	0.549
207	BRIDGE 1	0	1.199	0.651
208	BRIDGE 1	0	1.199	0.446
116	BRIDGE 2	0	2.38	0
117	BRIDGE 2	0	7.721	0
118	BRIDGE 2	0	2.38	0
119	BRIDGE 2	0	12.482	0
120	BRIDGE 2	0	13.962	0
121	BRIDGE 2	0	2.38	0
122	BRIDGE 2	0	2.38	0
123	BRIDGE 2	0	2.38	0
124	BRIDGE 2	0	2.38	0
125	BRIDGE 2	0	2.38	0
126	BRIDGE 2	0	2.38	0
127	BRIDGE 2	0	2.38	0
128	BRIDGE 2	0	2.38	0
129	BRIDGE 2	0	2.38	0
130	BRIDGE 2	0	2.38	0
131	BRIDGE 2	0	6.386	0
132	BRIDGE 2	0	6.386	0
133	BRIDGE 2	0	6.386	0
134	BRIDGE 2	0	6.386	0
135	BRIDGE 2	0	6.386	0
136	BRIDGE 2	0	6.386	0
137	BRIDGE 2	0	6.386	0
138	BRIDGE 2	0	6.386	0
139	BRIDGE 2	0	6.386	0
140	BRIDGE 2	0	6.386	0
141	BRIDGE 2	0	13.962	0
142	BRIDGE 2	0	13.962	0
143	BRIDGE 2	0	13.962	0
144	BRIDGE 2	0	13.962	0
145	BRIDGE 2	0	13.962	0
146	BRIDGE 2	0	13.962	0
147	BRIDGE 2	0	13.962	0
148	BRIDGE 2	0	13.962	0
149	BRIDGE 2	0	13.962	0
150	BRIDGE 2	0	13.962	0
151	BRIDGE 2	0	1.428	0

LC	LOCATION	X (k)	Y (k)	Z (k)
152	BRIDGE 2	0	1.428	0
153	BRIDGE 2	0	1.428	0
154	BRIDGE 2	0	1.428	0
155	BRIDGE 2	0	1.428	0
156	BRIDGE 2	0	1.428	0
157	BRIDGE 2	0	1.428	0
158	BRIDGE 2	0	1.428	0
159	BRIDGE 2	0	1.428	0
160	BRIDGE 2	0	1.428	0
161	BRIDGE 2	0	2.607	0
162	BRIDGE 2	0	2.608	0
163	BRIDGE 2	0	2.607	0
164	BRIDGE 2	0	2.607	0
165	BRIDGE 2	0	2.607	0
166	BRIDGE 2	0	2.607	0
167	BRIDGE 2	0	2.608	0
168	BRIDGE 2	0	2.608	0
169	BRIDGE 2	0	2.608	0
170	BRIDGE 2	0	2.608	0
171	BRIDGE 2	0	2.608	0
172	BRIDGE 2	0	2.608	0
173	BRIDGE 2	0	6.556	0
174	BRIDGE 2	0	6.556	0
175	BRIDGE 2	0	6.556	0
176	BRIDGE 2	0	6.556	0
177	BRIDGE 2	0	6.556	0
178	BRIDGE 2	0	6.556	0
179	BRIDGE 2	0	6.557	0
180	BRIDGE 2	0	6.557	0
181	BRIDGE 2	0	6.557	0
182	BRIDGE 2	0	6.557	0
183	BRIDGE 2	0	6.557	0
184	BRIDGE 2	0	6.557	0
185	BRIDGE 2	0	14.133	0
186	BRIDGE 2	0	14.133	0
187	BRIDGE 2	0	14.132	0
188	BRIDGE 2	0	14.133	0
189	BRIDGE 2	0	14.133	0
190	BRIDGE 2	0	14.133	0
191	BRIDGE 2	0	14.133	0
192	BRIDGE 2	0	14.133	0
193	BRIDGE 2	0	14.133	0
194	BRIDGE 2	0	14.133	0
195	BRIDGE 2	0	14.133	0
196	BRIDGE 2	0	14.133	0
197	BRIDGE 2	0	1.2	0
198	BRIDGE 2	0	1.2	0
199	BRIDGE 2	0	1.2	0
200	BRIDGE 2	0	1.2	0
201	BRIDGE 2	0	1.2	0
202	BRIDGE 2	0	1.2	0
203	BRIDGE 2	0	1.201	0
204	BRIDGE 2	0	1.201	0
205	BRIDGE 2	0	1.201	0
206	BRIDGE 2	0	1.201	0
207	BRIDGE 2	0	1.201	0
208	BRIDGE 2	0	1.201	0

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

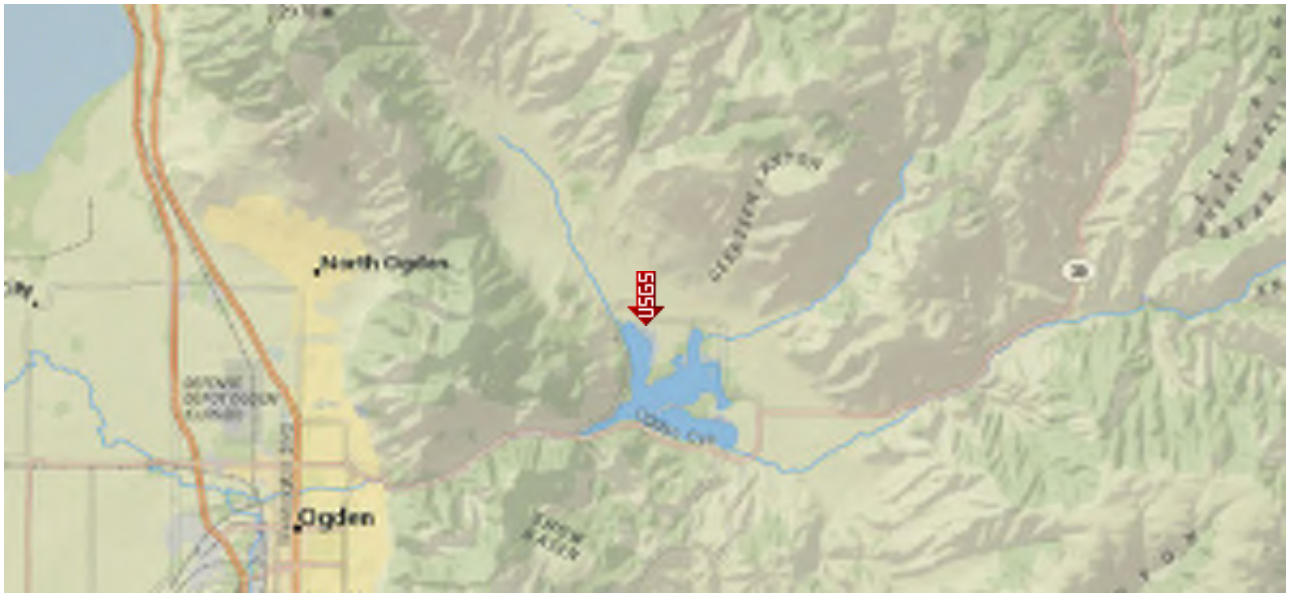
Frost Depth

40 inches

Design Maps Summary Report

User–Specified Input

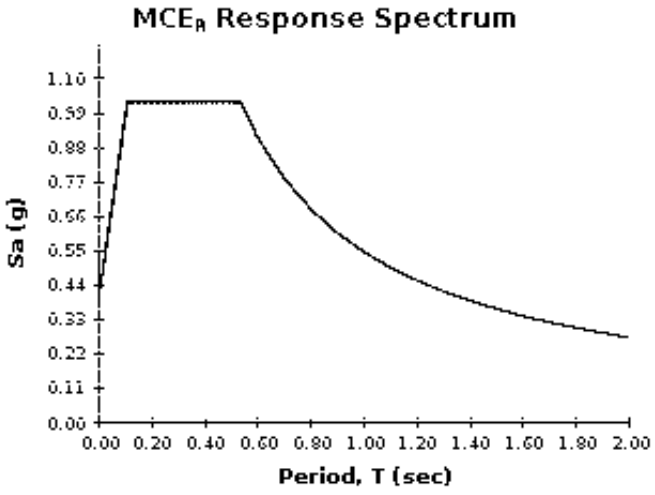
Report Title	Summit Horizon, Eden, UT Fri March 25, 2016 18:16:11 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	41.3007°N, 111.8127°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

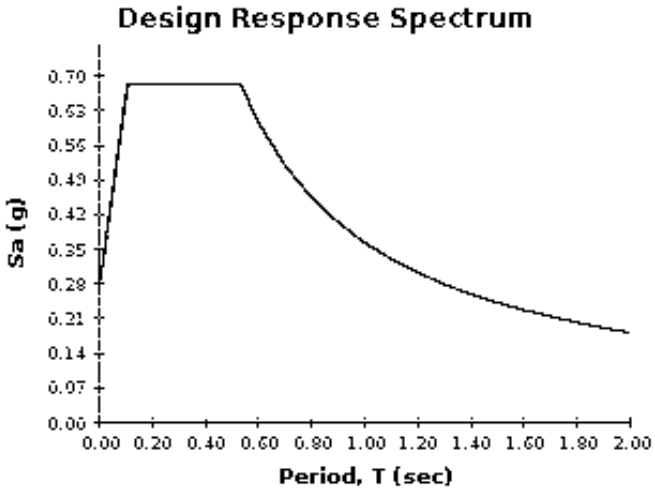


USGS–Provided Output

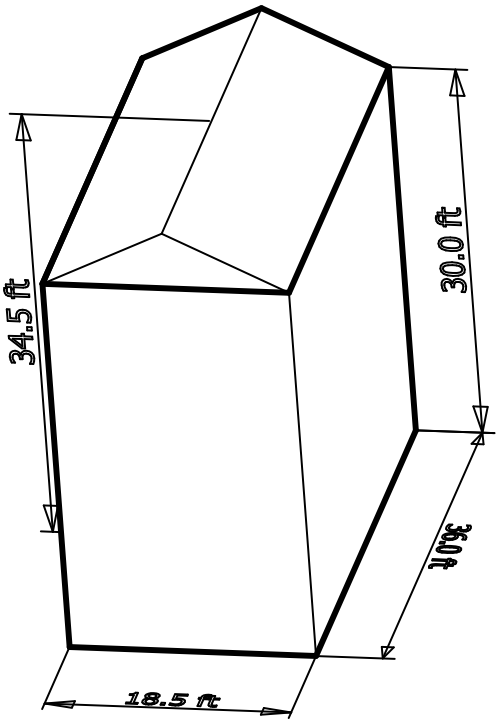
S_S =	0.898 g	S_{MS} =	1.025 g	S_{DS} =	0.683 g
S_1 =	0.304 g	S_{M1} =	0.545 g	S_{D1} =	0.363 g

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

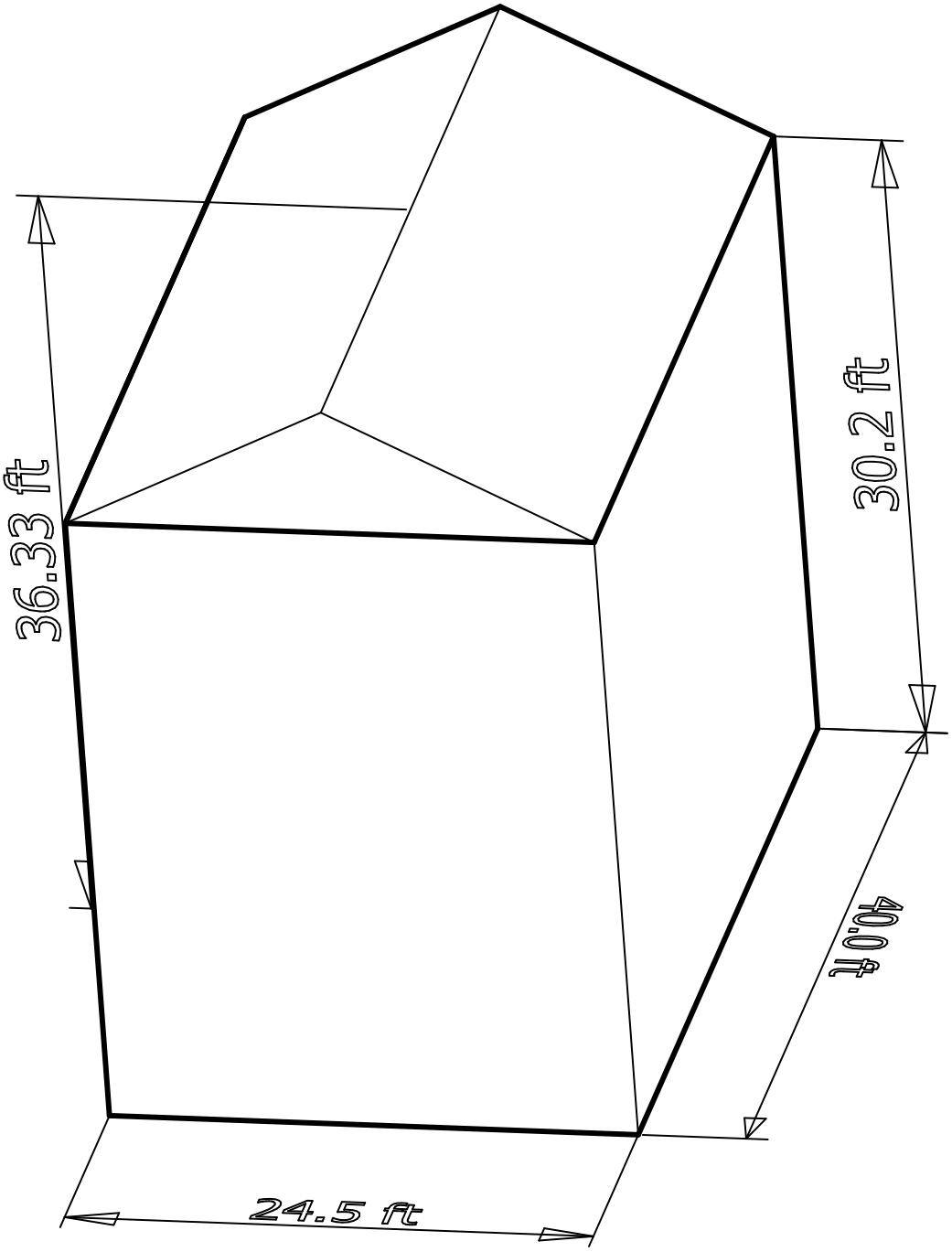
Description	Fx Kip	Fy Kip	Fz Kip	Mx K-ft	My K-ft	Mz K-ft
Normal to Ridge Walls+Roof +GCpi	.0	33.0	12.1	508.4	.0	.0
Normal to Ridge Walls Only +GCpi	.0	32.4	.0	495.8	.0	.0
Normal to Ridge Walls+Roof -GCpi	.0	35.0	1.1	553.3	.0	.0
Normal to Ridge Walls Only -GCpi	.0	32.4	.0	495.8	.0	.0
Normal to Ridge Walls+Roof 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.

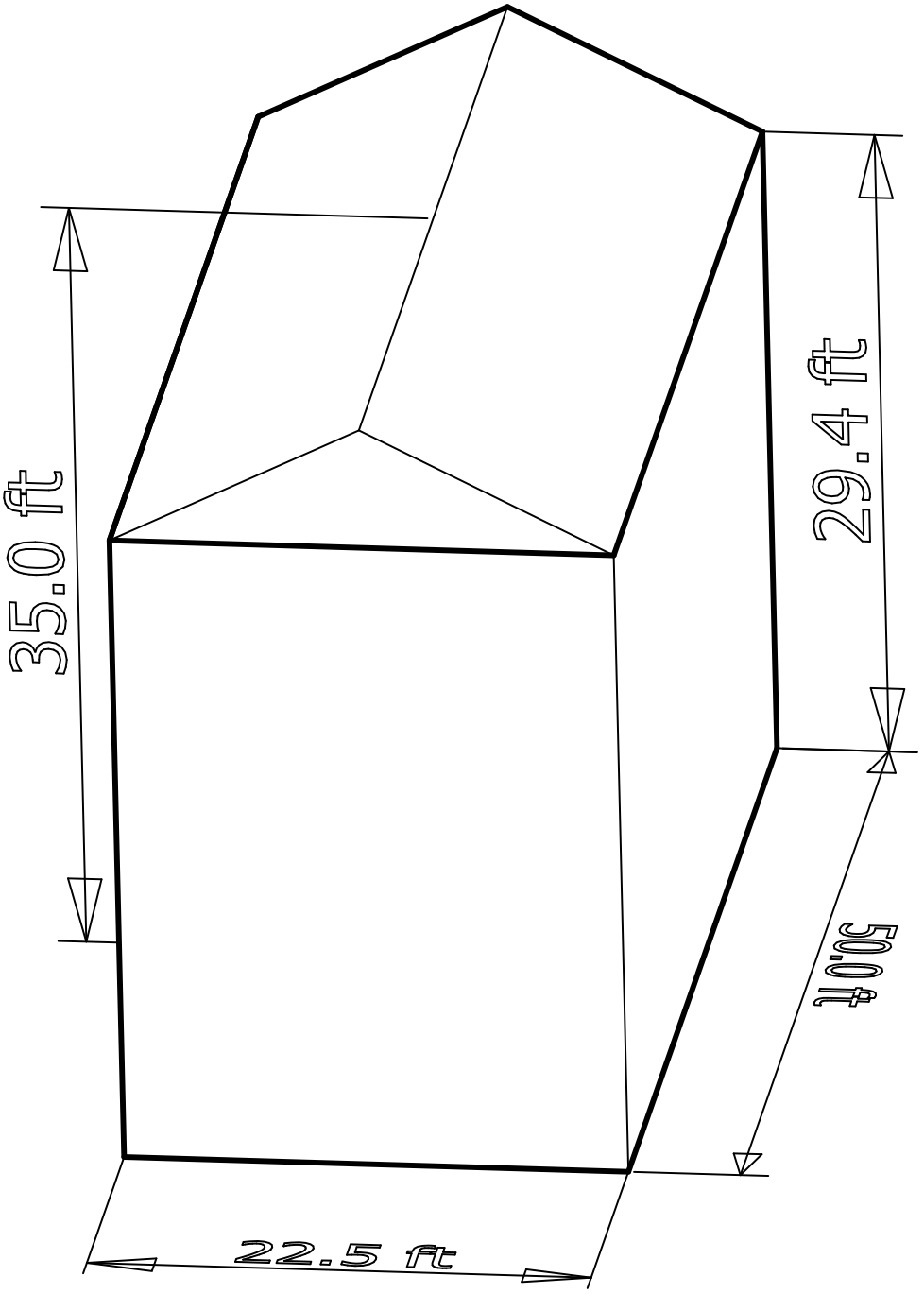
Total Base Reaction Summary

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.

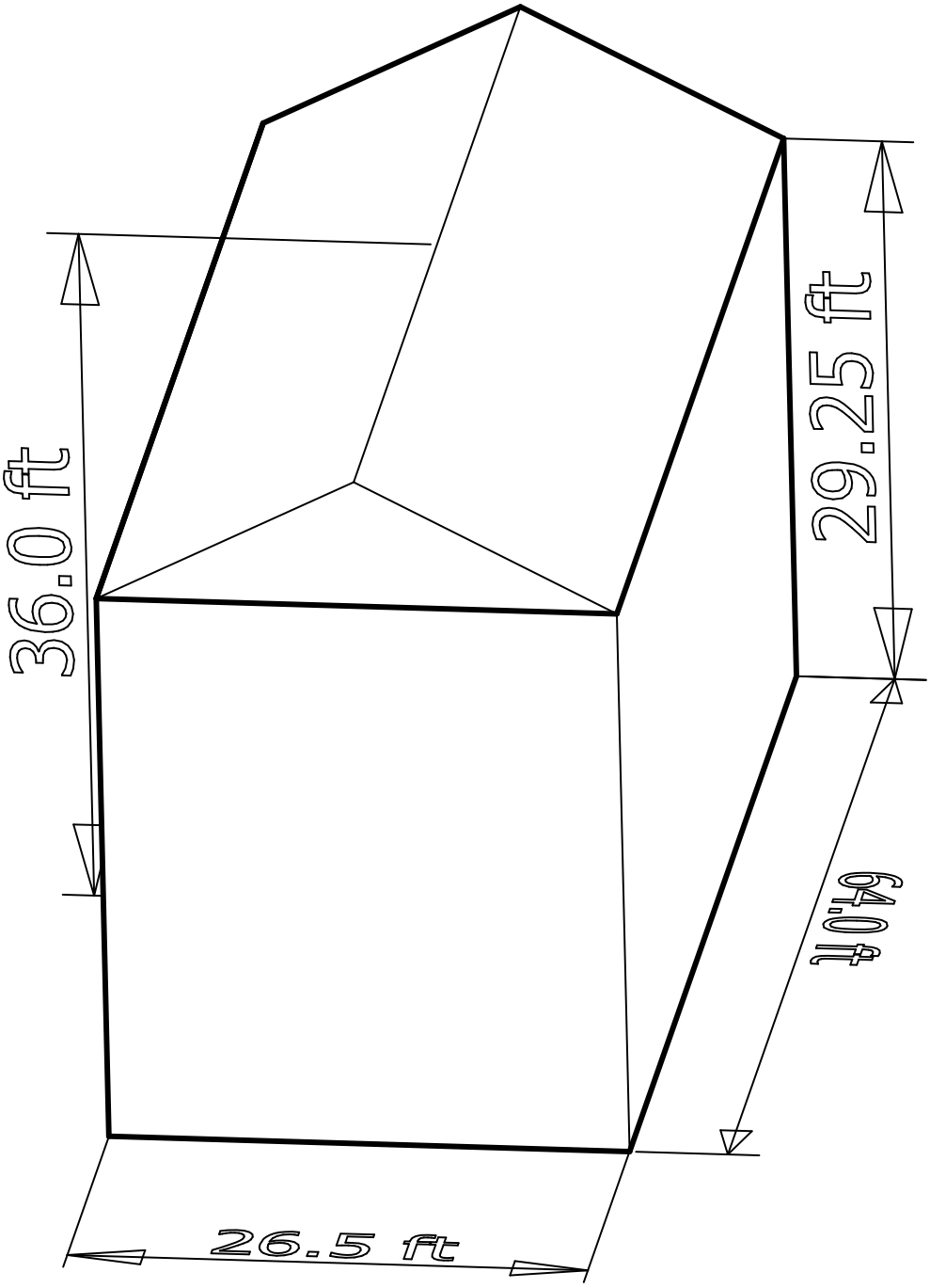
Total Base Reaction Summary

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