STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

January 13, 2020

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

RE: **EM-VER-017-191219** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 225 North Main Street, Bristol, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) is in receipt of your correspondence of January 7, 2020 submitted in response to the Council's January 3, 2020 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Dandeneau, Kathleen <KDANDENEAU@RC.com>
Sent: Tuesday, January 7, 2020 2:27 PM
To: Bachman, Melanie; CSC-DL Siting Council
Cc: Baldwin, Kenneth; Mayo, Rachel
Subject: EM-VER-017-191219 - 225 North Main Street, Bristol, CT - Structural Report
Attachments: Bristol_001.pdf

The original has been mailed to the Siting Council.

Kathleen M. Dandeneau
Legal Administrative Assistant

Robinson & Cole LLP
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Hartford, CT 06103
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Also admitted in Massachusetts

January 7, 2020

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-017-191219 – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 225 North Main Street, Bristol, Connecticut**

Dear Ms. Bachman:

In response to your January 3, 2020 letter regarding the above-referenced pending exempt modification request, attached is a Stamped and Signed Structural Report, prepared by Tectonic Engineering & Surveying Consultants.

If you have any questions or need any additional information please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Enclosures

BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011

STRUCTURAL DESIGN CALCULATIONS

FOR

VERIZON WIRELESS
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

MARCH 14, 2019

PREPARED BY

TECTONIC
ENGINEERING & SURVEYING CONSULTANTS P.C.
1279 ROUTE 300
NEWBURGH, NY 12550

W.O. 8814.27

W.O. 8814.27
BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011
STRUCTURAL DESIGN CALCULATIONS
LEAD SHEET

PURPOSE

Analyze the existing building structure and rooftop platform for the proposed Verizon Wireless CRAN installation.

REFERENCES

1. 2018 Connecticut State Building Code Supplement.
2. Minimum Design Loads for Buildings and Other Structures ASCE 7-10.
3. Tower Structural Analysis report by Centek Engineering dated 6/7/12.

PROCEDURE

1. Determine the design loads.
2. Estimate existing building loads.
3. Check existing rooftop platform members.
4. Perform reaction comparison.
5. Design steel to support batteries.
6. Check floor slab bending and shear.
7. Check floor slab punching shear.

ASSUMPTIONS

1. As noted.

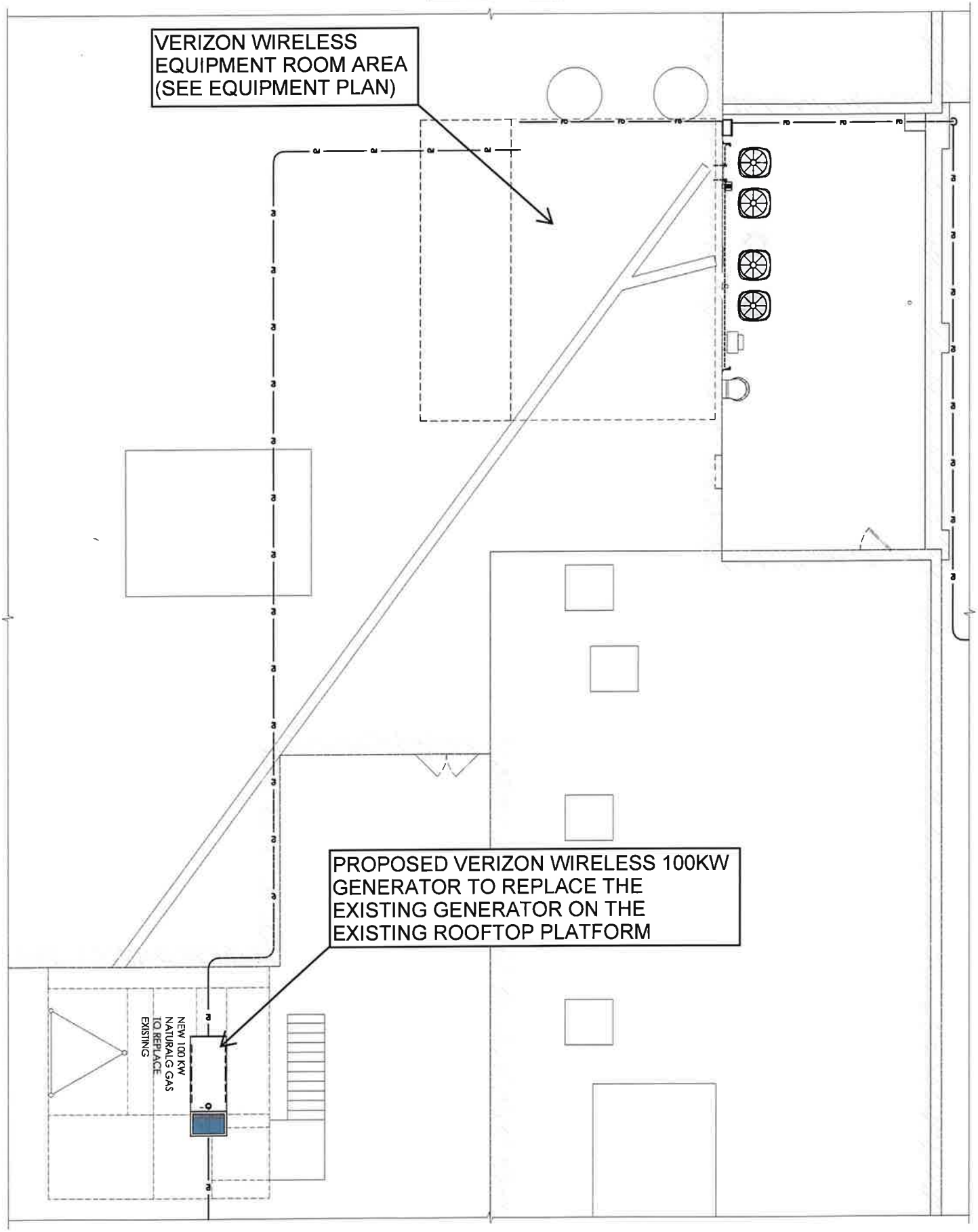
RESULTS / CONCLUSIONS

The existing building structure and rooftop platform are adequate to support the proposed Verizon Wireless CRAN installation.

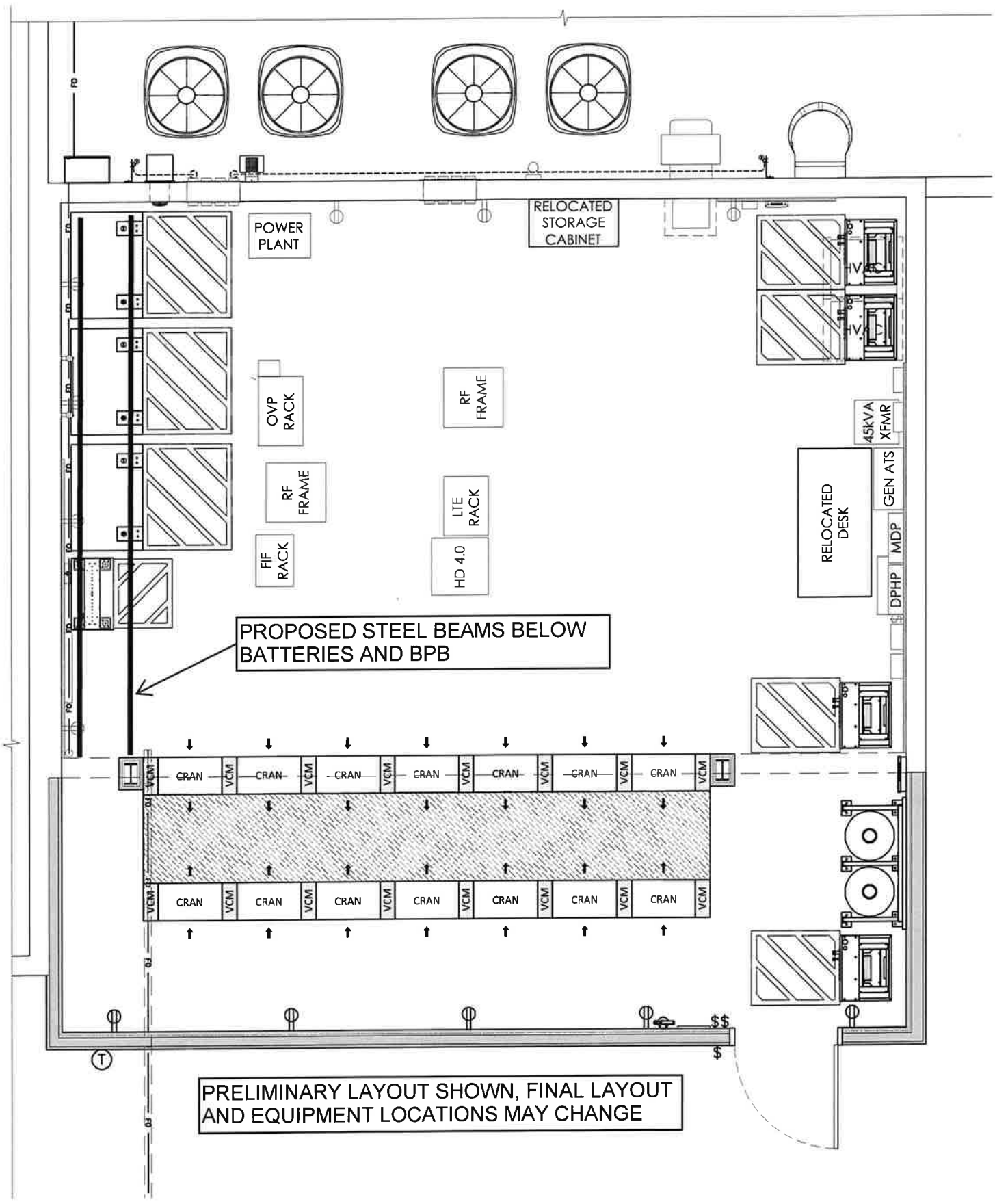
Prepared By: Craig Buechele Date: 03/14/19
Craig Buechele
Senior Engineer

Checked By: Edward Iamiceli Date: 03/14/19
Edward N. Iamiceli, P.E.
Senior Project Manager

ROOF PLAN


VERIZON WIRELESS
EQUIPMENT ROOM AREA
(SEE EQUIPMENT PLAN)
PROPOSED VERIZON WIRELESS 100KW
GENERATOR TO REPLACE THE
EXISTING GENERATOR ON THE
EXISTING ROOFTOP PLATFORM
NEW 100 KW
NATURALG GAS
TO REPLACE
EXISTING

EQUIPMENT PLAN



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date : 3/15/2019

Indoor Slab Loading

Slab Thickness =	8	in
Density of Concrete =	150	pcf
Slab Weight =	100	psf
Floor Finish =	5	psf (VCT Tile)
Hung Load =	10	psf
Room Width =	28.58	ft
Room Length =	28	ft

Proposed Verizon Wireless Equipment Load

Equipment	Length (ft)	Width (ft)	Weight (lbs)	Quantity
CRAN Racks	2.17	1.25	1500	14
AHU	1.75	2.20	200	4
Power Plant	2.08	1.50	2000	1
FIF Rack	1.75	1.25	1000	1
OVP Rack	2.33	1.50	1000	1
RF Frame	2.00	2.00	1000	2
HD 4.0	1.92	1.92	1000	1
LTE Rack	2.00	1.50	1000	1
FM 200 Tank	2.08	2.04	300	2
BPB	2.38	1.25	2000	1

The proposed Batteries have been excluded, they are being supported by steel beams spanning column to column

Total Equipment Load =	40	psf
Equipment Room Live Load =	75	psf
Floor Span =	20	ft
Total Floor Load =	230	psf
Maximum Moment on Floor =	**9.219**	**k-ft**
Maximum Shear on Floor =	**2.766**	**kips**

Check Existing Slab for Bending

$\Phi Mn=\Phi*As*fy*(d-a/2)$

Where:

Φ =	0.9	
fy =	60000	psi
f'c =	3000	psi
Width =	12	in
ρmin =	0.0018	(Consider Minimum Steel Area based on temperature and shrinkage)
d =	7.00	in
a =	0.61	in
ΦMn =	**9.34**	**k-ft > Max Moment therefore OK**

Check Deflection

I =	1003	in^4 (Per 12" width)
$E_{concrete}$ =	4500	ksi
E_{steel} =	29000	ksi
Deflection =	**1.17**	**in Therefore the slab deflection is acceptable**
Allowable Delfection L/180 =	**1.33**	**in**

Check Existing Slab for Shear

$\Phi V_c=\Phi*2*\lambda*\sqrt{f'_c}*b_w*d$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
b_w =	12	in
d =	7.00	in
ΦV_c =	**6.901**	**kips > Max Shear therefore OK**

Therefore, the existing floor slab is adequate to support the proposed Verizon Wireless installation.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date: 3/15/2019

Outdoor Slab Loading

Slab Thickness =	8	in
Density of Concrete =	150	pcf
Slab Weight =	100	psf
Roofing/Insulation =	10	psf
Hung Load =	10	psf

Proposed Verizon Wireless Equipment Load

Equipment	Length (ft)	Width (ft)	Weight (lbs)	Quantity
HVAC Condensor	3.10	2.85	270	4

Per the Connecticut 2018 supplement and ASCE 7-10

$P_f=0.7C_eC_lIP_g$

P_f= 29.4 psf

But not less than (30 psf)

P_f= 30 psf **GOVERNS**

C_e = 1.0 [Table 7-2]
C_l = 1.2 [Table 7-3]
I = 1.0 [Table 7-4]
P_g = 35 psf [CBC 2018 Supplement] Appendix N

Snow Drift Load (Around Bulkhead)

$\gamma = 0.13xp_g + 14$ =	18.55	pcf	
Height of Bulkhead =	20	ft (Approximately)	
h_b =	1.62	ft	
h_c =	18.38	ft Does not Govern	
	Windward		Length of Roof
$(3/4)h_d$ =	0.94	ft Figure 7-9	l_u = 25 ft (Use Min)
$W = 4h_d$=	4	ft	
$p_d = \gamma h_d$ =	17	psf	
	Leeward		Length of Bulkhead
h_d =	3.48	ft Figure 7-9	l_u = 90 ft
$W = 4h_d$=	**14**	**ft**	**GOVERNS**
$p_d = \gamma h_c$ =	**65**	**psf**	

Roof Span =	20	ft
Total Roof Load =	215	psf
Maximum Moment on Roof =	**8.887**	**k-ft**
Maximum Shear on Roof =	**2.845**	**kips**

Check Existing Slab for Bending

$\Phi Mn=\Phi*As*fy*(d-a/2)$

Where:

Φ =	0.9	
fy =	60000	psi
f'c =	3000	psi
Width =	12	in
ρmin =	0.0018	(Consider Minimum Steel Area based on temperature and shrinkage)
As =	0.31	in^2
d =	7.00	in
a =	0.61	in
ΦMn =	**9.34**	**k-ft > Max Moment therefore OK**

Check Deflection

I =	1003	in^4 (Per 12" width)
$E_{concrete}$ =	4500	ksi
E_{steel} =	29000	ksi
Deflection =	**1.09**	**in Therefore the slab deflection is acceptable**
Allowable Delfection L/180 =	**1.33**	**in**

Check Existing Slab for Shear

$\Phi V_c=\Phi*2*\lambda*\sqrt{f'_c}*b_w*d$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
b_w =	12	in
d =	7.00	in
ΦV_c =	**6.901**	**kips > Max Shear therefore OK**

Therefore, the existing roof slab is adequate to support the proposed Verizon Wireless installation.

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PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27

Calculated By CB Date : 03/11/19

Proposed Battery Design Loads

Dead Load

	Height (ft)	Width (ft)	Depth (ft)	Weight (lbs)
BPB CABINET	7.94	3.325	2.39	8616

Vertical Force per Connection = **2154** **lbs (4 Points of Connection)**
Beam Spacing = **2** **ft**

Wind Load (Interior)

Per ASCE 7-10

q_z= 16 PSF - Section 29.8 (Minimum Wind Load)

Lateral Force per Connection = **106** **lbs (4 Points of Connection)**
Overturning Force = **351** **lbs (4 Points of Connection)**
Lateral Force (Other Direction) = **152** **lbs (4 Points of Connection)**

Seismic Load

ASCE 13.3-1

ap	1.00	Table 3.6-1	
SDS	0.197	Per USGS	
Wp	8616	lbs	
Rp	2.5	Table 3.6-1	
Ip	1.5	Risk Cat IV	
z/h	1	(z/h need not exceed 1.0)	

[(.4*ap*SDS*Wp)*(1+2(z/h)] / (Rp/Ip)]	Fp	1222	lbs	Equation 13.3-1	Apply to center of gravity
.3*SDS*Ip*Wp	Fp Min	764	lbs		
1.6*SDS*Ip*Wp	Fp Max	4074	lbs		
	Fp (Lateral)	1222	lbs/Unit		
.2*SDS*Wp	Fp (Vertical)	339	lbs/Unit		

Lateral Force per Connection = **306** **lbs (4 Points of Connection)**
Overturning Force = **1213** **lbs (4 Points of Connection)**
Vertical Seismic Force = **85** **lbs (4 Points of Connection)**

By inspection seismic loads govern over wind

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27

Calculated By CB Date : 03/13/19

Proposed Battery Design Loads

Dead Load

Deka Unigy II AVR125-33 (Typ of 4)	Height (ft)	Width (ft)	Depth (ft)	Weight (lbs)
	8	2.380	1.25	2000

Vertical Force per Connection = 500 **lbs (4 Points of Connection)**
Beam Spacing = 2 **ft**

Wind Load (Interior)

Per ASCE 7-10

q_z= 16 PSF - Section 29.8 (Minimum Wind Load)

Lateral Force per Connection = 76 **lbs (4 Points of Connection)**
Overturning Force = 487 **lbs (4 Points of Connection)**
Lateral Force (Other Direction) = 80 **lbs (4 Points of Connection)**

Seismic Load

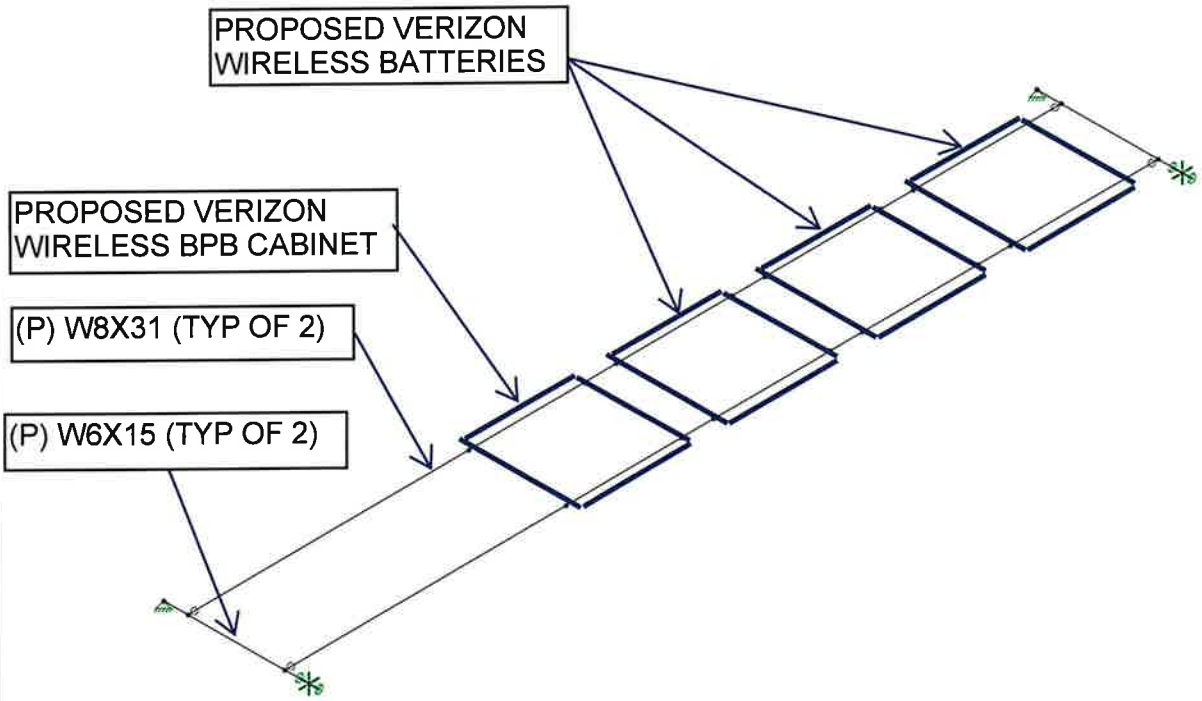
ASCE 13.3-1

ap	1.00	Table 3.6-1 (Batteries)
SDS	0.197	Per USGS
Wp	2000	lbs
Rp	2.5	Table 3.6-1 (Batteries)
Ip	1.5	Risk Cat IV
z/h	1	(z/h need not exceed 1.0)

[(.4*ap*SDS*Wp)*(1+2(z/h)] / (Rp/Ip)]	Fp	284	lbs	Equation 13.3-1	Apply to center of gravity
.3*SDS*Ip*Wp	Fp Min	177	lbs		
1.6*SDS*Ip*Wp	Fp Max	946	lbs		
	Fp (Lateral)	284	lbs/Unit		
.2*SDS*Wp	Fp (Vertical)	79	lbs/Unit		

Lateral Force per Connection = 71 **lbs (4 Points of Connection)**
Overturning Force = 284 **lbs (4 Points of Connection)**
Vertical Seismic Force = 20 **lbs (4 Points of Connection)**

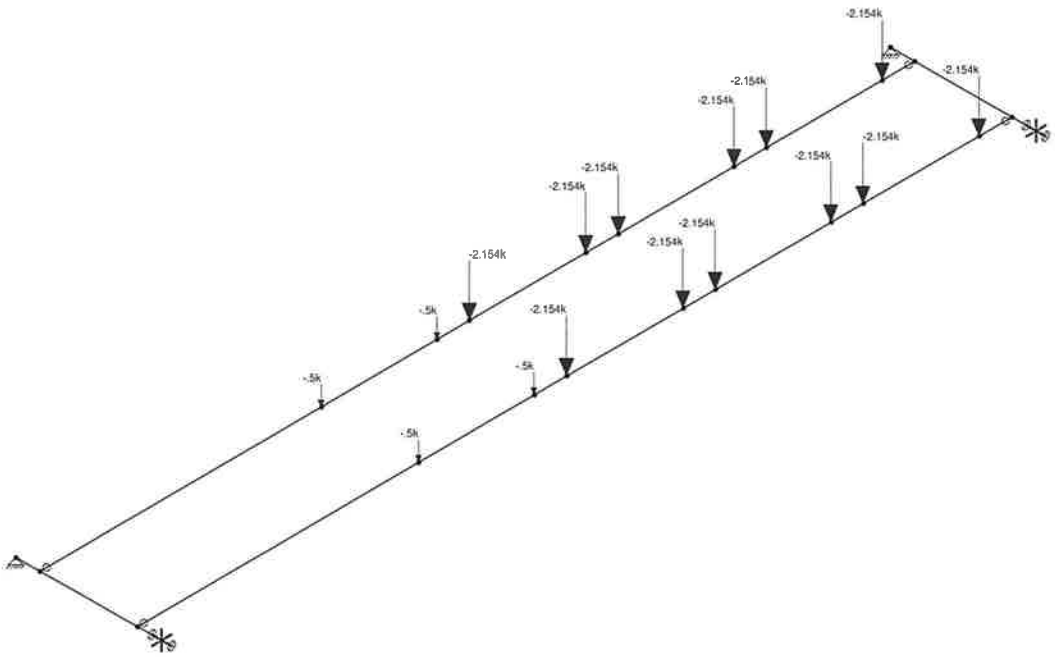
By inspection seismic loads govern over wind



NOTE: THE PROPOSED VERIZON WIRELESS BPB CABINET SHALL BE SUPPORTED WITH L4X4X3/8 ANGLES SPANNING BETWEEN THE PROPOSED W8 BEAMS

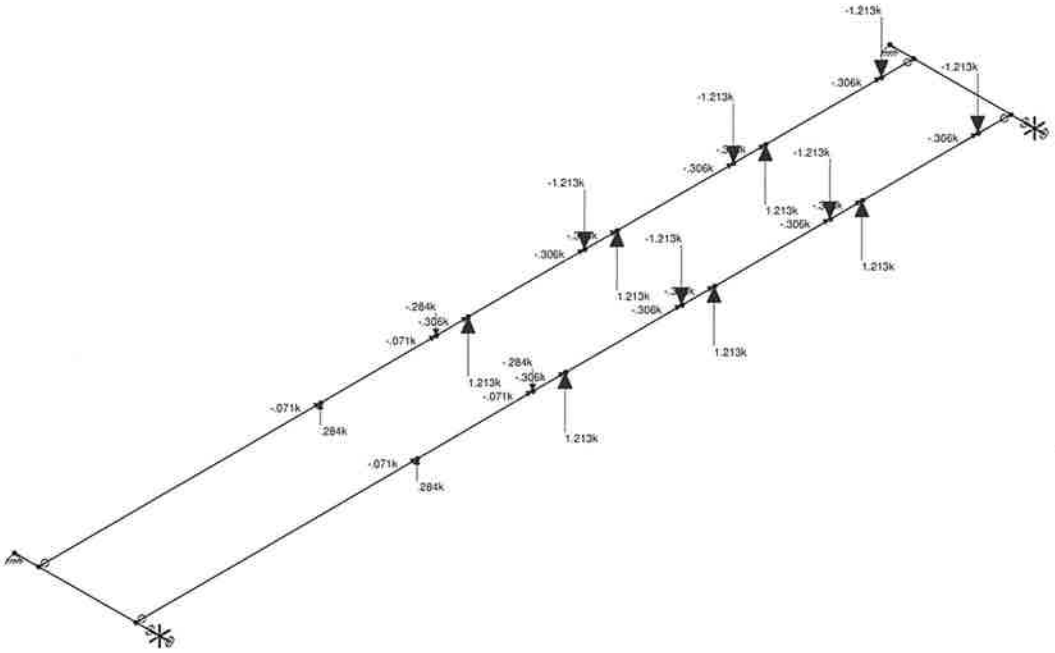
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB		
8814.27 Bristol		8814.27 - Battery Support Steel.r3d



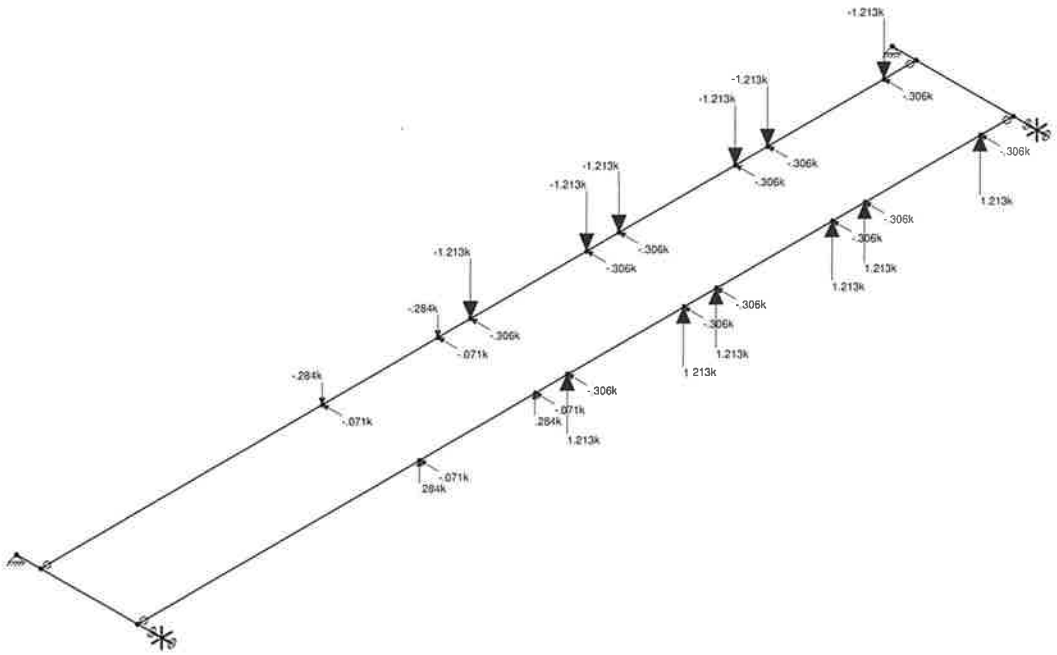
Loads: BLC 1, DL
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB		
8814.27 Bristol	DEAD LOAD	8814.27 - Battery Support Steel.r3d



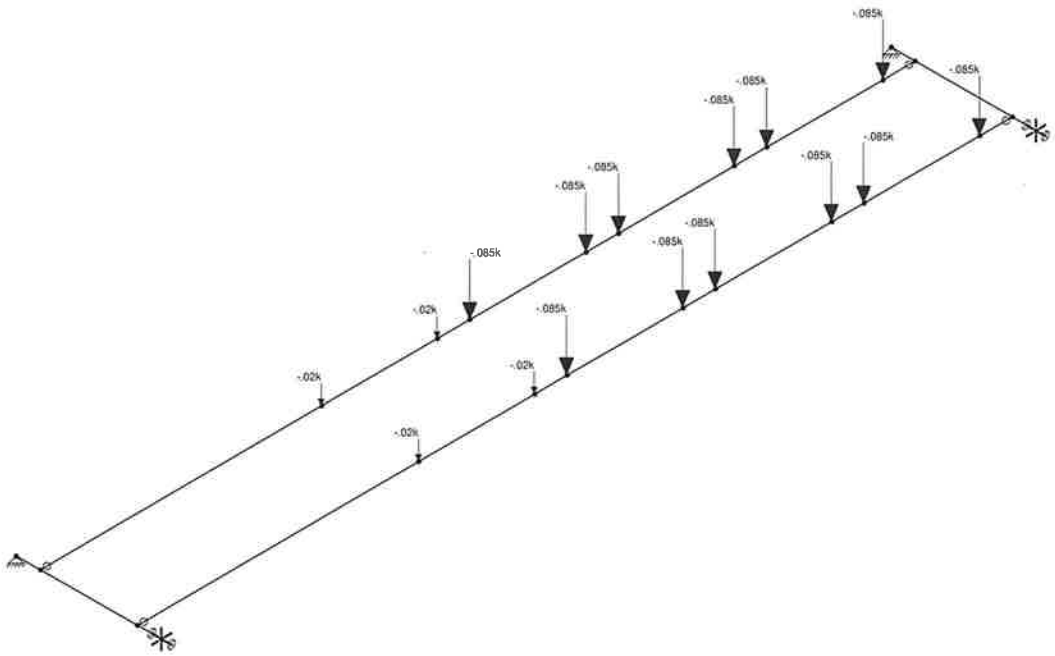
Loads: BLC 3, ELZ
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB		
8814.27 Bristol	SEISMIC LOAD IN Z DIRECTION	8814.27 - Battery Support Steel.r3d



Loads: BLC 2, ELX
Envelope Only Solution

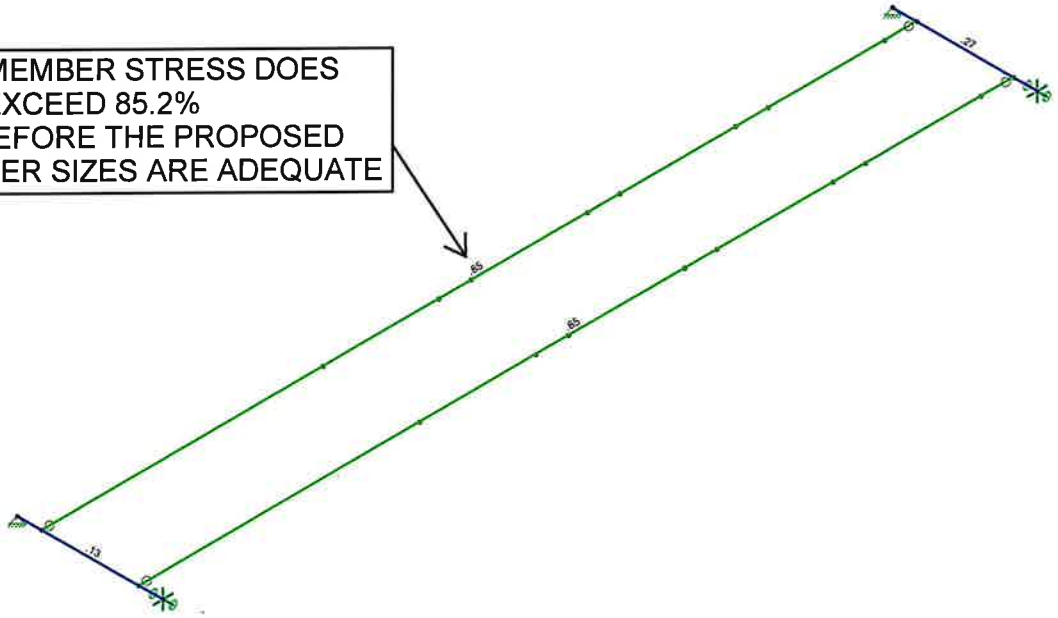
Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB		
8814.27 Bristol	SEISMIC LOAD IN X DIRECTION	8814.27 - Battery Support Steel.r3d



Loads: BLC 4, ELY
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB	VERTICAL SEISMIC LOAD	
8814.27 Bristol		8814.27 - Battery Support Steel.r3d

MAX MEMBER STRESS DOES NOT EXCEED 85.2% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB		
8814.27 Bristol	BENDING STRESS	8814.27 - Battery Support Steel.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W8x24	W8x31	Beam	Wide Flange	A992	Typical	9.13	37.1	110	.536
2	W6x15	W6x15	Beam	Wide Flange	A992	Typical	4.43	9.32	29.1	.101

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	DL	DL		-1.05		16				
2	ELX	ELX	-.142			32				
3	ELZ	ELZ			-.142	32				
4	ELY	ELY		-.039		16				

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL	Yes	Y		1	1	2		3																	
2	DL + 0.7ELX	Yes	Y		1	1	2	.7	3																	
3	DL + 0.7ELZ	Yes	Y		1	1	2		3	.7																
4	DL + 0.7ELY	Yes	Y		1	1	2				4	.7														
5	DL + 0.5(ELX + ELZ+ELY)	Yes	Y		1	1	2	.5	3	.5	4	.5														
6	DL + 0.7EL-X	Yes	Y		1	1	2	-.7	3																	
7	DL + 0.7EL-Z	Yes	Y		1	1	2		3	-.7																
8	DL + 0.7EL-Y	Yes	Y		1	1	2				4	-.7														
9	DL + 0.5(EL-X + EL-Z)	Yes	Y		1	1	2	-.5	3	-.5	4	-.5														

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	21A	max	1.003	2	12.671	6	.77	3	0	1	0	1	0	1
2		min	-1.003	6	7.529	2	-.77	7	0	1	0	1	0	1
3	22A	max	.442	2	5.548	6	.675	3	0	1	0	1	0	1
4		min	-.442	6	3.369	2	-.675	7	0	1	0	1	0	1
5	N23A	max	.442	2	5.548	2	.675	3	0	1	0	1	0	1
6		min	-.442	6	3.369	6	-.675	7	0	1	0	1	0	1
7	N24A	max	1.003	2	12.671	2	.77	3	0	1	0	1	0	1
8		min	-1.003	6	7.529	6	-.77	7	0	1	0	1	0	1
9	Totals:	max	2.889	2	29.92	4	2.889	3						
10		min	-2.889	6	28.314	8	-2.889	7						

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Loc...	L...	Shea...	Loc...	...	L...	Pnc/o...	Pnt/om...	Mnyy/o...	Mnzz/...	...	Eqn
1	M3	W8x31	.852	11.25	2	.306	18	y	2	118.068	273.353	35.124	71.152	1...	H1-1b
2	M4	W8x31	.852	11.25	6	.306	18	y	6	118.068	273.353	35.124	71.152	1...	H1-1b
3	M5	W6x15	.130	2.5	9	.201	3	y	6	126.793	132.635	10.834	25.364	1...	H1-1b
4	4	W6x15	.272	.5	5	.460	3	y	6	126.793	132.635	10.834	25.364	1...	H1-1b

MAX MEMBER STRESS DOES NOT EXCEED 85.2% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27
Sheet No. of
Calculated By CB Date : 3/13/2019

Check Existing Slab for Shear

Normal Shear

Max Reaction (From RISA) = 19.440 kips LC 2 & Max Positive Shear

$\Phi V_c = \Phi * 2 * \lambda * \sqrt{f'_c} * b_w * d$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
Slab Thickness =	8	in
b_w =	48	in (Consider 48 inch width for analysis based on RISA mesh size)
d =	7.00	in
ΦV_c =	**27.605**	**kips > Max Shear therefore OK**

Punching Shear

Max Reaction (From RISA) = 19.440 kips LC 2 & 6, Nodes 21A and N24A Govern

$$\Phi Vc = \text{Min} \left\{ \begin{array}{l} \Phi * (2+4/\beta) * \lambda * \sqrt{f'_c} * b_o * d \\ \Phi * (\alpha_s d/b_o + 2) * \lambda * \sqrt{f'_c} * b_o * d \\ \Phi * 4 * \lambda * \sqrt{f'_c} * b_o * d \end{array} \right\}$$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
α_s =	40.0	(interior)
β =	2.0	
Slab Thickness =	8	in
b_o =	84	in (Consider Perimeter of Steel Support)
d =	7.00	in
ΦV_c =	**96.618**	**kips > Max Shear therefore OK**

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date : 03/11/19
Checked By Date :

Design Loads for Generator Platform

1 - Dead Load

Number of Units	Cabinet Type	Length (in.)	Width (in.)	Height (in.)	Weight (lbs)	Total Weight	
1	SG100 Generator	111.8	40.5	68.6	3022	3022	lbs
						3022	lbs

Length on Loading Strip = 7.33 ft
Support Beam Spacing = 2.83 ft
Uniform Distributed Load = **207** **lbs/ft**

For Grating, use **10 psf**

2 - Live Load

Per the Connecticut 2018 supplement, the live load for elevated platforms is **60 psf.**

3- Snow Load

Per the Connecticut 2018 supplement and ASCE 7-10

$P_f=0.7C_eC_tIP_g$

P_f= 29.4 psf

But not less than (30 psf)

P_f= 30 psf **GOVERNS**

C_e = 1.0 [Table 7-2]
C_t = 1.2 [Table 7-3]
I = 1.0 [Table 7-4]
P_g = 35 psf [CBC 2018 Supplement] Appendix N

4- Wind Load

Per ASCE 7-10 Chapters 26 & 29

z= 80 FT (Approx. T/Generator)
V= 97 mph 3 Second Gust (Risk Category IV) [CBC 2018 Supplement Appendix N]
Exposure: C
α= 9.5 Table 26.91
Z_g= 900 ft Table 26.91
K_z= 1.208 Table 29.3-1
K_{zt}= 1.00 Section 26.8.2
K_d= 0.90 Section 26.6
q_z= 26.19 psf Section 29.3.2

Per on ASCE7-10 Section 29.5 (Other Structures)

G= 0.85 Section 26.9
C_f= 2.0 Figure 29.5-1 through 29.5-3
F= 45 psf

Wind Pressure= **45** psf

Uplift Force Per Support Beam= 520 lbs/ft
Wind Force Per Support Beam= 129 lbs/ft

Lateral force in other direction= 435 lbs

Wind Load on Members		
W6	23	lbs/ft
W8	30	lbs/ft
W12	45	lbs/ft

CONVERT TOWER WIND PRESSURE FROM REV F (FASTEST MILE) TO REV G (3 SECOND GUST)

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date : 03/14/19
Checked By Date :

CALCULATION OF WIND LOAD ON ANTENNA - REV-F

Antenna Information:

Model No. =	REV F CONVERSION	
Height =	12.0	in
Width =	12.0	in
Depth =	12.0	in
Area, Aa =	1.00	ft2
Weight =	0.0	lbs
Antenna Centerline =	112.5	ft +/-

Geographic Information:

County: Hartford County, CT

Wind Speed =	80	mph	(Per Rev F)

Supporting Pipe Information:

Pipe Length =	0	ft
Pipe Size =	1/2 PIPE	in
Width =	0.84	in
Area =	0.25	in
Weight =	0.85	lb/ft

Design Parameters:

Per, TIA/EIA-222-F-1996:

Design Wind Load, $F = q_z G_H (C_A A_A)$

q_z =	23.26	psf
K_z =	1.42	ft
G_H =	1.15	*** Existing Mount**
Antenna C_A =	1.40	
Pipe C_A =	0.8	

Normal Force on Antenna, F_N =	**37**	**lbs**
Transverse Force on Antenna, F_T =	**37**	**lbs**
Force on Pipe F_A =	**1**	**lbs/ft**

CONVERT TOWER WIND PRESSURE FROM REV F (FASTEST MILE) TO REV G (3 SECOND GUST)

DESIGN OF ANTENNA MOUNT

(PER ANSI/TIA-222-G-2005) Rev 1 6/12/2006

Job number 6814.27 Bristol Calculated by: CB Date: 3/14/2019
Sheet 1 Of 1 Checked by: Date:

(TYPICAL FOR ALL SECTORS)

Basic Wind (3 Second Gust) Hartford County, CT

Without Ice	V	97	MPH	
With Ice	VI	50	MPH	
Design Ice Thickness	ti	0.75	Inches	
Height above ground level at base of the structure	z	112.50	Feet	Per CD's Conservative

Antenna Information — **REV F Conversion**

Weight	Wt	0	LBS	Type	Flat						
Height	h	12	Inches	No Ice			With Ice				
Width	w	12	Inches	Aa (Normal)	1.00	FT²	Aa (Normal)	1.83	FT²	A_{ANR} (Normal)	0.83 FT²
Depth	d	12	Inches	Aa (Trans)	1.00	FT²	Aa (Trans)	1.83	FT²	A_{ANR} (Trans)	0.83 FT²
Wind Area Normal Per Manuf.			FT²	Ca (Normal)	1.20		Canf (Normal)	1.20		Canr (Normal)	0.7
Wind Area Trans			FT²	Ca (Trans)	1.20		Canf (Trans)	1.20		Canr (Trans)	0.7

Mount Information

Pipe Dia	D	NONE	Inches	Ap	0.00	Ap	0.12
Pole Width		0.00	Inches	Cf	1.20	Cf	1.20
Length	L	0	Feet				
Pole Wt	W	0	LBS/FT				

Structure Class	3	High hazard or Essential facility
Exposure Category	C	Open terrain

Minimum value of Kz	Kzmin	0.85	
Power law exponent	α	9.5	
Nominal height of atmospheric boundary layer	Zg	900	Feet
	Ke	1	
	Gh	1	
	Kzt	1	For antennas on a Building
	Kd	0.95	Constant for antennas on roof

Importance Factor — Wind only		1.15
Wind with ice		1
Ice thickness		1.25
Kz Calculated		1.30
Use for Design		1.30
Kzi Calculated		1.13
Use for Design		1.13
Design Ice Thickness	t_z	2.12 Inch

Eff. Projected Area of the Antenna	$(EPA)_N$	1.20	FT²	$(EPA)_T$	1.20 FT²
Eff. Projected Area of the Antenna (with ice)		1.78	FT²		1.78 FT²
Eff. Projected Area of the Mounting Pipe	$(EPA)_{FN}$	0.00	FT²	$(EPA)_{FT}$	0.00 FT²
Eff. Projected Area of the Mounting Pipe (with ice)		0.15	FT²		0.15 FT²
Weight of ice around the Antenna	W_N	12.38	LBS		
Weight of ice around the pipe	W_{FN}	1.94	LBS		

Wind Pressure $q_z = 0.00256 Kz Kzt Kd V^2$

No Ice	34.14	PSF
With Ice	6.87	PSF

Design Wind Force on Appurtenances

Wind Normal to the Antenna

On Antenna	$F_A = q_z G_h (EPA)_N$	F_A	41	LBS
On Mounting pipe	$F_A = q_z G_h (EPA)_{FN}$	F_A	0	LBS
On Antenna (with Ice)		F_{Ai}	12	LBS
On Mounting pipe (with Ice)		F_{Ai}	1	LBS

Wind Transverse to the Antenna

On Antenna	$F_A = q_z G_h (EPA)_T$	F_A	41	LBS
On Mounting pipe	$F_A = q_z G_h (EPA)_{FT}$	F_A	0	LBS
On Antenna (with Ice)		F_{Ai}	12	LBS
On Mounting pipe (with Ice)		F_{Ai}	1	LBS

USED FOR DESIGN:

	Wind (Lateral) LBS	Weight LBS	
On Antenna	41	0	
On Mounting Pipe	0	0	lb/ft
On Antenna (with ice)	12	40	
On Mounting pipe (with ice)	1	0	lb/ft

CONVERSION FACTOR:
41PSF/37PSF = 1.108

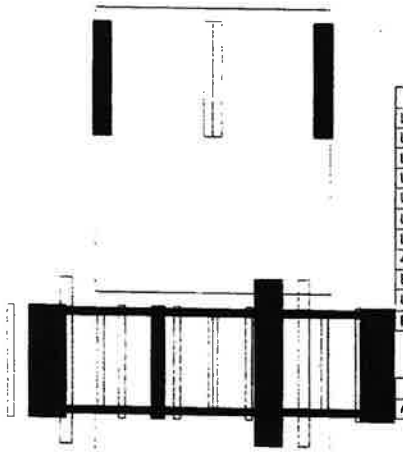
Section	T1	T2	T3	
Legs	P2.5x.203			
Leg Grade	A572-50			
Diagonals	L1 1/2x1 1/2x1/8		L2x2x3/16	
Diagonal Grade	A36			
Top Girts	L1 1/2x1 1/2x1/8			
Face Width (ft)	8.5625			
# Panels @ (ft)	8 @ 5			1 @ 2.5
Weight (K)	0.4	0.4	1.0	1.7

112.5 ft

102.5 ft

92.5 ft

72.5 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80080-4CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80063/4CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	48"x6"x8" Panel (Verizon - Existing)	100
LPA-171063-8CF (Verizon - Proposed)	110	BXA-70063/6CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80063-4CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80080/4CF (Verizon - Proposed)	100
LPA-80080/4CF (Verizon - Proposed)	100	48"x6"x8" Panel (Verizon - Existing)	100
48"x6"x8" Panel (Verizon - Existing)	100	13-ft Wireless Frame (Verizon - Proposed)	100
BXA-70063/6CF (Verizon - Proposed)	100	13-ft Wireless Frame (Verizon - Proposed)	100
LPA-80080-4CF (Verizon - Proposed)	100	13-ft Wireless Frame (Verizon - Proposed)	100
BXA-70063/6CF (Verizon - Proposed)	100		

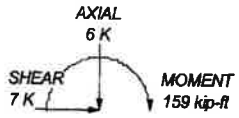
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

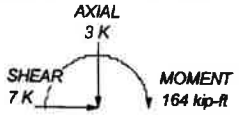
TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. Weld together tower sections have flange connections.
5. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
6. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
7. Welds are fabricated with ER-70S-6 electrodes.
8. TOWER RATING: 95.3%

MAX. CORNER REACTIONS AT BASE:
DOWN: 23 K
UPLIFT: -20 K
SHEAR: 4 K



TORQUE 2 kip-ft
69 mph WIND - 0.5000 in ICE



TORQUE 2 kip-ft
REACTIONS - 80 mph WIND

TOWER REACTIONS TAKEN FROM STRUCTURAL ANALYSIS BY CENTEK ENGINEERING DATED 6/7/12

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: 12001.CO41 - Bristol		
Project: 40' Lattice Tower - 32 Valley St. Bristol, CT		
Client: Verizon Wireless	Drawn by: TJL	App'd:
Code: TIA/EIA-222-F	Date: 06/07/12	Scale: NTS
Path: J:\Jobs\12000\WSCO41 - Bristol\Celco\CAD Files\407 Lattice Tower Bristol, CT.eri		Dwg No. E-1

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	18	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	13	22.23	2.93	-1.82
	Max. H_x	13	22.23	2.93	-1.82
	Max. H_z	20	-15.35	-2.93	2.25
	Min. Vert	5	-19.45	-2.73	1.70
	Min. H_x	22	-17.48	-3.42	2.08
	Min. H_z	11	18.99	2.26	-1.89
Leg B	Max. Vert	7	22.32	-2.91	-1.85
	Max. H_x	32	-17.23	3.40	2.10
	Max. H_z	34	-15.10	2.90	2.30
	Min. Vert	15	-19.37	2.72	1.73
	Min. H_x	7	22.32	-2.91	-1.85
	Min. H_z	9	19.08	-2.23	-1.95
Leg A	Max. Vert	19	23.38	0.04	2.60
	Max. H_x	14	1.21	1.03	0.03
	Max. H_z	2	23.17	0.04	3.54
	Min. Vert	10	-19.87	-0.04	-3.31
	Min. H_x	6	1.21	-1.03	0.03
	Min. H_z	27	-17.18	-0.03	-4.07

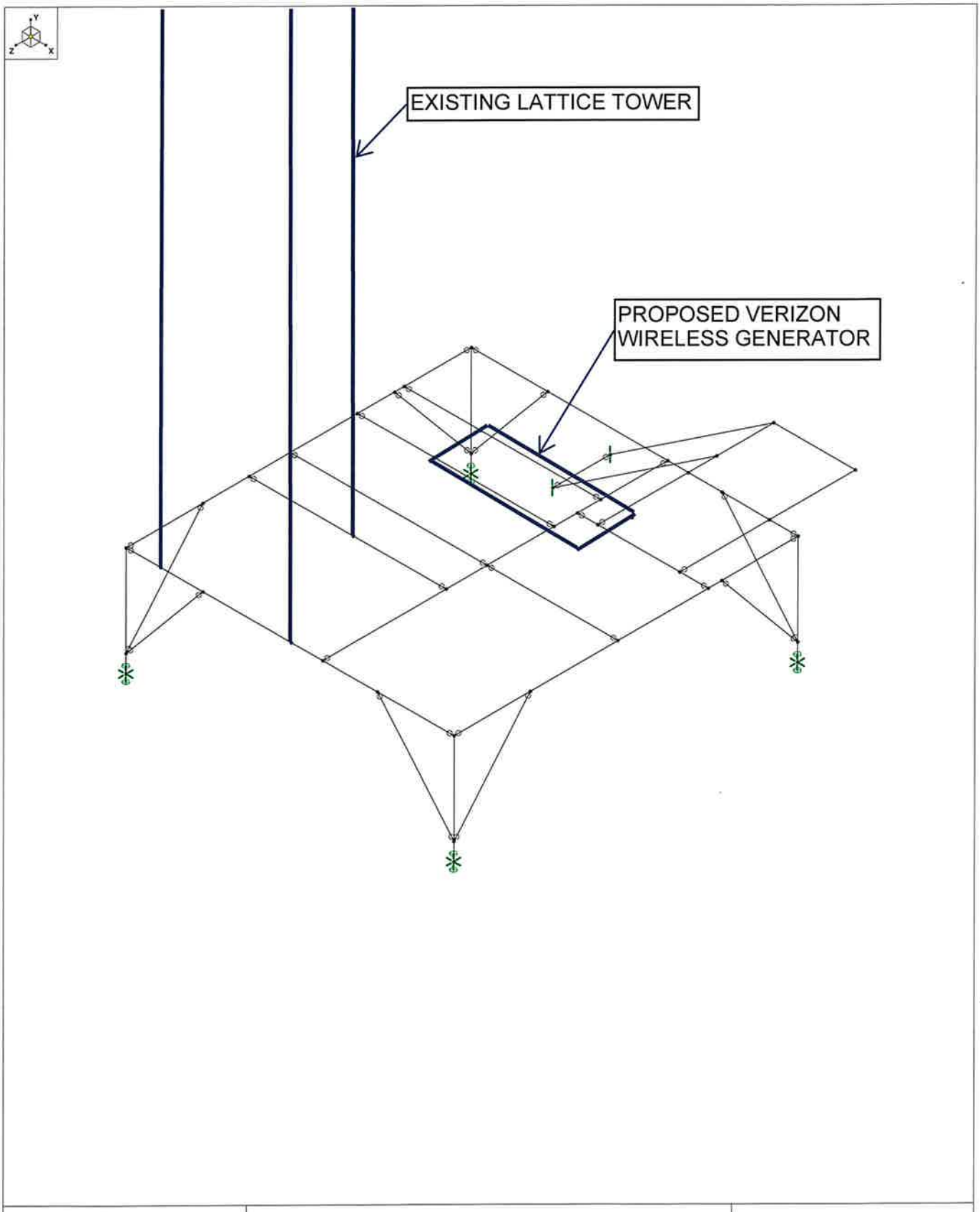
Tower Mast Reaction Summary

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	3.17	0.00	0.00	-1.10	-0.35	0.00
Dead+Wind 0 deg - No Ice	3.17	0.00	-6.74	-164.01	-0.35	0.57
Dead+Wind 30 deg - No Ice	3.17	3.12	-5.62	-137.87	-75.96	-0.46
Dead+Wind 45 deg - No Ice	3.17	4.39	-4.56	-112.18	-106.70	-0.91
Dead+Wind 60 deg - No Ice	3.17	5.34	-3.20	-79.23	-129.88	-1.30
Dead+Wind 90 deg - No Ice	3.17	6.25	-0.00	-1.10	-151.58	-1.84
Dead+Wind 120 deg - No Ice	3.17	5.63	3.37	80.35	-135.64	-1.98
Dead+Wind 135 deg - No Ice	3.17	4.39	4.56	109.98	-106.70	-1.66
Dead+Wind 150 deg - No Ice	3.17	3.12	5.62	135.66	-75.96	-1.38
Dead+Wind 180 deg - No Ice	3.17	0.00	6.41	155.16	-0.35	-0.52
Dead+Wind 210 deg - No Ice	3.17	-3.12	5.62	135.66	75.27	0.46
Dead+Wind 225 deg - No Ice	3.17	-4.39	4.56	109.98	106.00	0.91
Dead+Wind 240 deg - No Ice	3.17	-5.63	3.37	80.35	134.94	1.41
Dead+Wind 270 deg - No Ice	3.17	-6.25	-0.00	-1.10	150.88	1.84
Dead+Wind 300 deg - No Ice	3.17	-5.34	-3.20	-79.23	129.18	1.82
Dead+Wind 315 deg - No Ice	3.17	-4.39	-4.56	-112.18	106.00	1.66
Dead+Wind 330 deg - No Ice	3.17	-3.12	-5.62	-137.87	75.27	1.38
Dead+Ice+Temp	5.97	-0.00	0.00	-3.44	-1.08	0.00
Dead+Wind 0 deg+Ice+Temp	5.97	0.00	-6.66	-158.64	-1.08	0.56
Dead+Wind 30 deg+Ice+Temp	5.97	3.04	-5.43	-131.60	-72.50	-0.43
Dead+Wind 45 deg+Ice+Temp	5.97	4.25	-4.38	-107.24	-101.24	-0.85
Dead+Wind 60 deg+Ice+Temp	5.97	5.15	-3.07	-76.23	-122.71	-1.20

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 90 deg+Ice+Temp	5.97	6.08	0.00	-3.44	-143.93	-1.73
Dead+Wind 120 deg+Ice+Temp	5.97	5.61	3.33	74.16	-131.04	-1.96
Dead+Wind 135 deg+Ice+Temp	5.97	4.25	4.38	100.36	-101.24	-1.55
Dead+Wind 150 deg+Ice+Temp	5.97	3.04	5.43	124.73	-72.50	-1.30
Dead+Wind 180 deg+Ice+Temp	5.97	0.00	6.13	142.15	-1.08	-0.48
Dead+Wind 210 deg+Ice+Temp	5.97	-3.04	5.43	124.73	70.35	0.43
Dead+Wind 225 deg+Ice+Temp	5.97	-4.25	4.38	100.36	99.08	0.85
Dead+Wind 240 deg+Ice+Temp	5.97	-5.61	3.33	74.16	128.89	1.40
Dead+Wind 270 deg+Ice+Temp	5.97	-6.08	0.00	-3.44	141.77	1.73
Dead+Wind 300 deg+Ice+Temp	5.97	-5.15	-3.07	-76.23	120.55	1.68
Dead+Wind 315 deg+Ice+Temp	5.97	-4.25	-4.38	-107.24	99.08	1.55
Dead+Wind 330 deg+Ice+Temp	5.97	-3.04	-5.43	-131.60	70.35	1.30
Dead+Wind 0 deg - Service	3.17	0.00	-2.63	-64.74	-0.35	0.22
Dead+Wind 30 deg - Service	3.17	1.22	-2.20	-54.53	-29.89	-0.18
Dead+Wind 45 deg - Service	3.17	1.71	-1.78	-44.49	-41.89	-0.36
Dead+Wind 60 deg - Service	3.17	2.09	-1.25	-31.62	-50.95	-0.51
Dead+Wind 90 deg - Service	3.17	2.44	0.00	-1.10	-59.42	-0.72
Dead+Wind 120 deg - Service	3.17	2.20	1.32	30.72	-53.19	-0.77
Dead+Wind 135 deg - Service	3.17	1.71	1.78	42.29	-41.89	-0.65
Dead+Wind 150 deg - Service	3.17	1.22	2.20	52.32	-29.89	-0.54
Dead+Wind 180 deg - Service	3.17	0.00	2.50	59.94	-0.35	-0.20
Dead+Wind 210 deg - Service	3.17	-1.22	2.20	52.32	29.19	0.18
Dead+Wind 225 deg - Service	3.17	-1.71	1.78	42.29	41.19	0.36
Dead+Wind 240 deg - Service	3.17	-2.20	1.32	30.72	52.50	0.55
Dead+Wind 270 deg - Service	3.17	-2.44	0.00	-1.10	58.73	0.72
Dead+Wind 300 deg - Service	3.17	-2.09	-1.25	-31.62	50.25	0.71
Dead+Wind 315 deg - Service	3.17	-1.71	-1.78	-44.49	41.19	0.65
Dead+Wind 330 deg - Service	3.17	-1.22	-2.20	-54.53	29.19	0.54

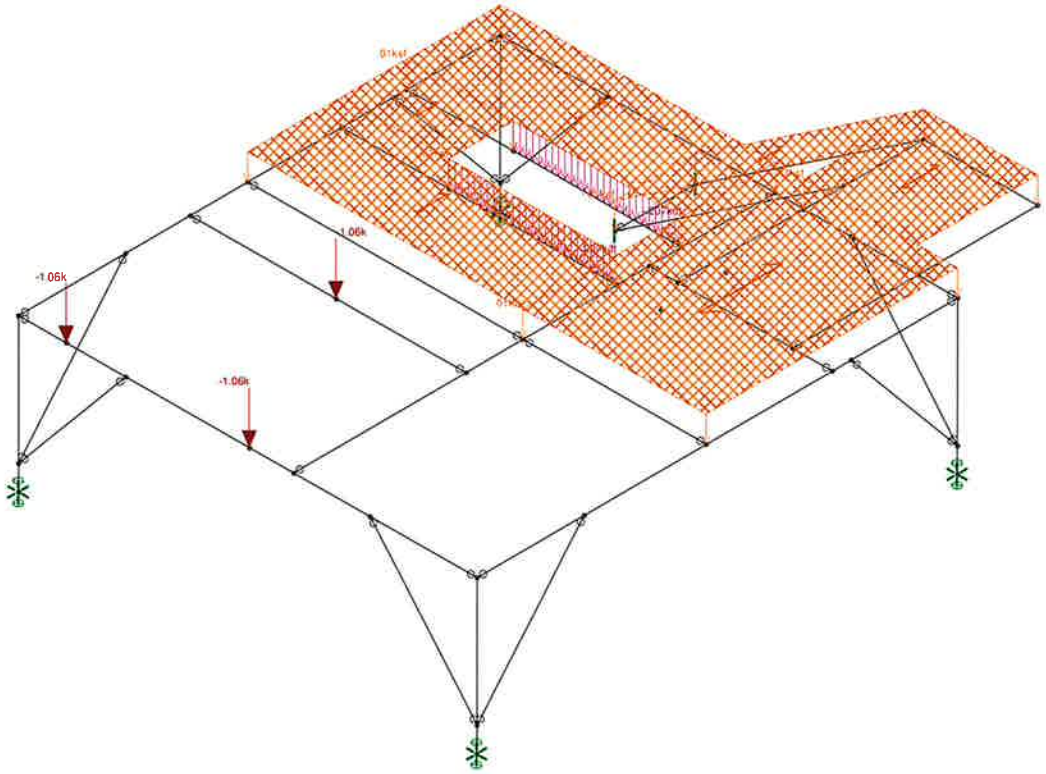
Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-3.17	0.00	0.00	3.17	0.00	0.000%
2	0.00	-3.17	-6.74	-0.00	3.17	6.74	0.000%
3	3.12	-3.17	-5.62	-3.12	3.17	5.62	0.000%
4	4.39	-3.17	-4.56	-4.39	3.17	4.56	0.000%
5	5.34	-3.17	-3.20	-5.34	3.17	3.20	0.000%
6	6.25	-3.17	0.00	-6.25	3.17	0.00	0.000%
7	5.63	-3.17	3.37	-5.63	3.17	-3.37	0.000%
8	4.39	-3.17	4.56	-4.39	3.17	-4.56	0.000%
9	3.12	-3.17	5.62	-3.12	3.17	-5.62	0.000%
10	0.00	-3.17	6.41	-0.00	3.17	-6.41	0.000%
11	-3.12	-3.17	5.62	3.12	3.17	-5.62	0.000%
12	-4.39	-3.17	4.56	4.39	3.17	-4.56	0.000%
13	-5.63	-3.17	3.37	5.63	3.17	-3.37	0.000%
14	-6.25	-3.17	0.00	6.25	3.17	0.00	0.000%
15	-5.34	-3.17	-3.20	5.34	3.17	3.20	0.000%
16	-4.39	-3.17	-4.56	4.39	3.17	4.56	0.000%
17	-3.12	-3.17	-5.62	3.12	3.17	5.62	0.000%
18	0.00	-5.97	0.00	0.00	5.97	-0.00	0.000%
19	0.00	-5.97	-6.66	-0.00	5.97	6.66	0.000%
20	3.04	-5.97	-5.43	-3.04	5.97	5.43	0.000%
21	4.25	-5.97	-4.38	-4.25	5.97	4.38	0.000%
22	5.15	-5.97	-3.07	-5.15	5.97	3.07	0.000%
23	6.08	-5.97	0.00	-6.08	5.97	-0.00	0.000%
24	5.61	-5.97	3.33	-5.61	5.97	-3.33	0.000%



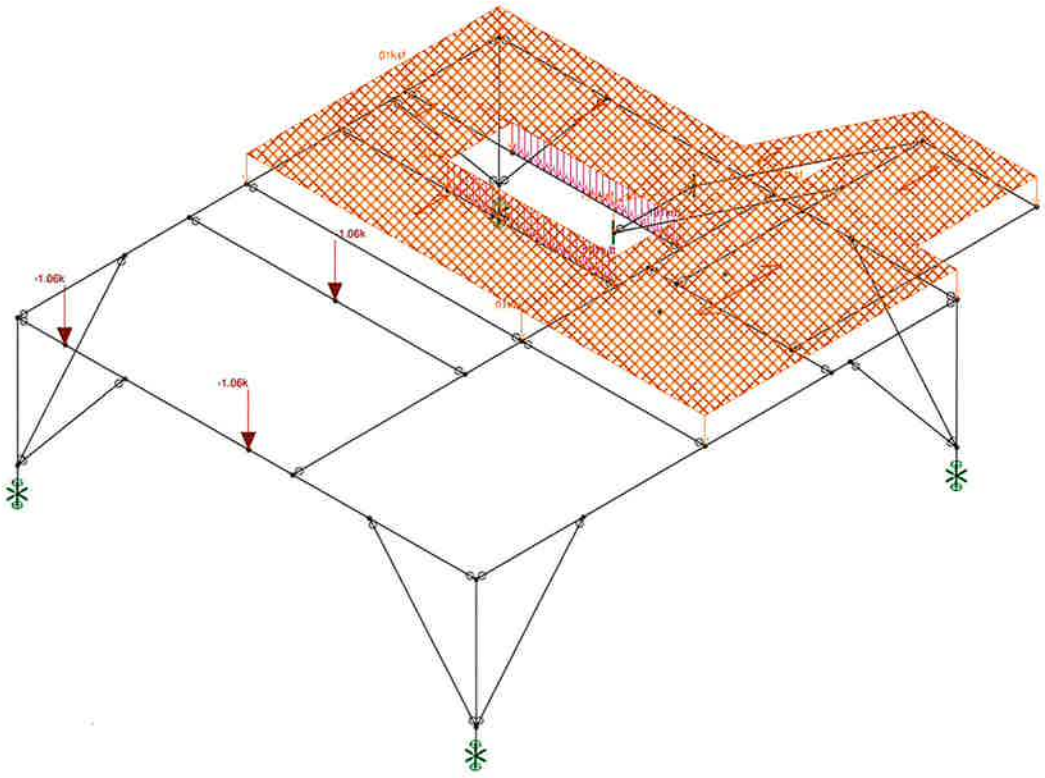
TECTONIC	GENERATOR PLATFORM	
CB		
8814.27		8814.27 - Generator Platform.r3d

TOWER REACTIONS TAKEN FROM STRUCTURAL ANALYSIS BY CENTEK ENGINEERING DATED 6/7/12 AND HAVE BEEN CONVERTED FROM REV F (FASTEST MILE) TO REV G (3 SECOND GUST)



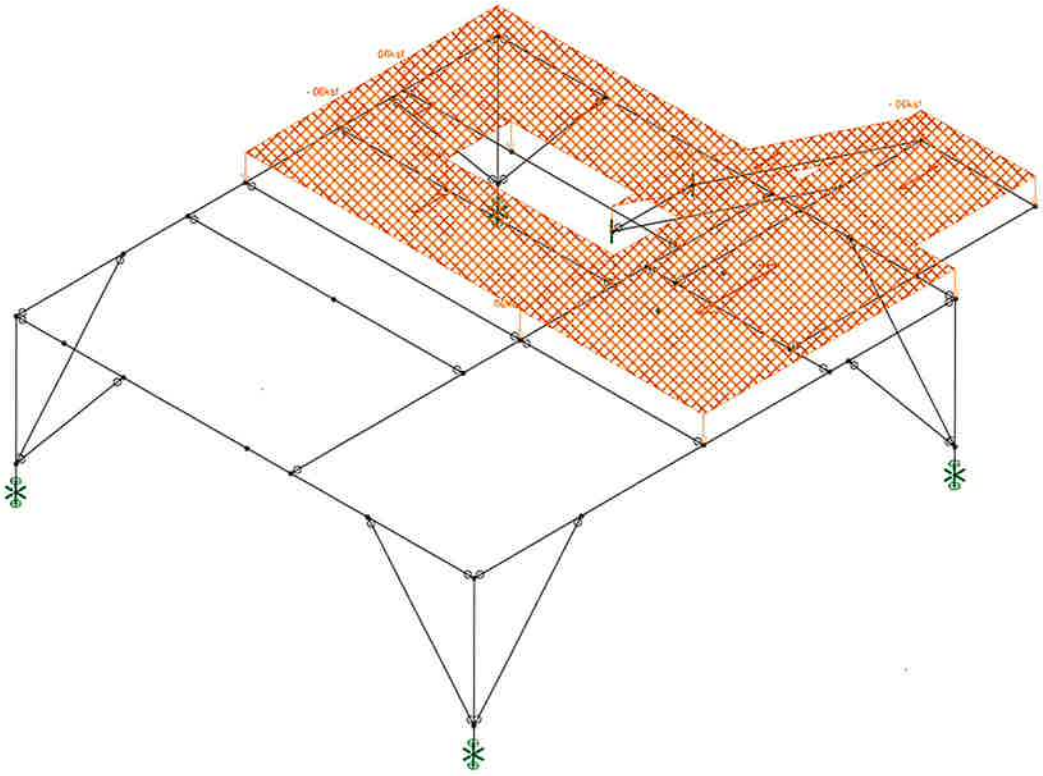
Loads: BLC 1, DL

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	DEAD LOAD	8814.27 - Generator Platform.r3d



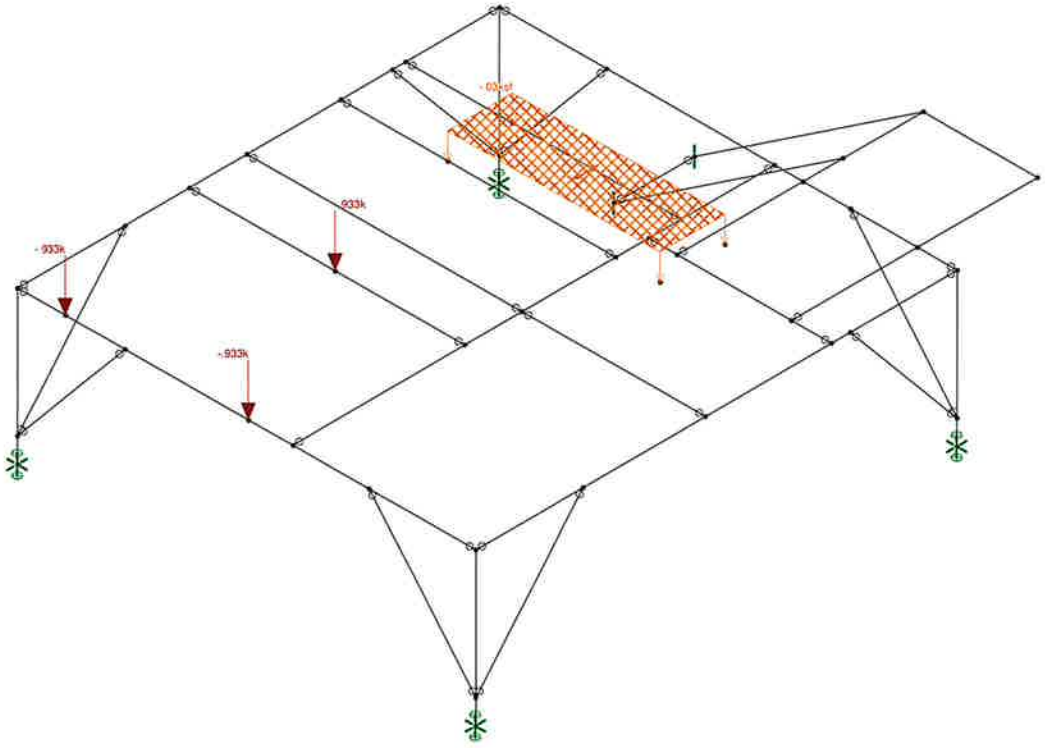
Loads: BLC 1, DL

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	EXISTING GENERATOR LOAD	8814.27 - Generator Platform EXIS...



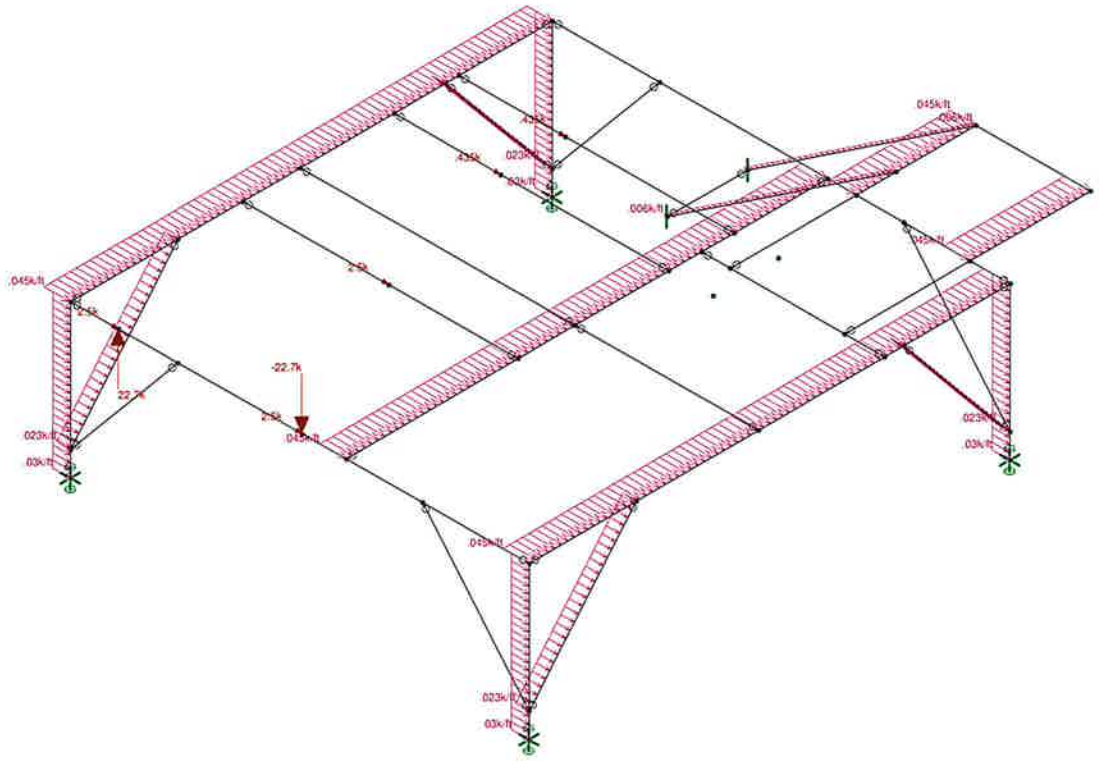
Loads: BLC 2, LL

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	LIVE LOAD	8814.27 - Generator Platform.r3d



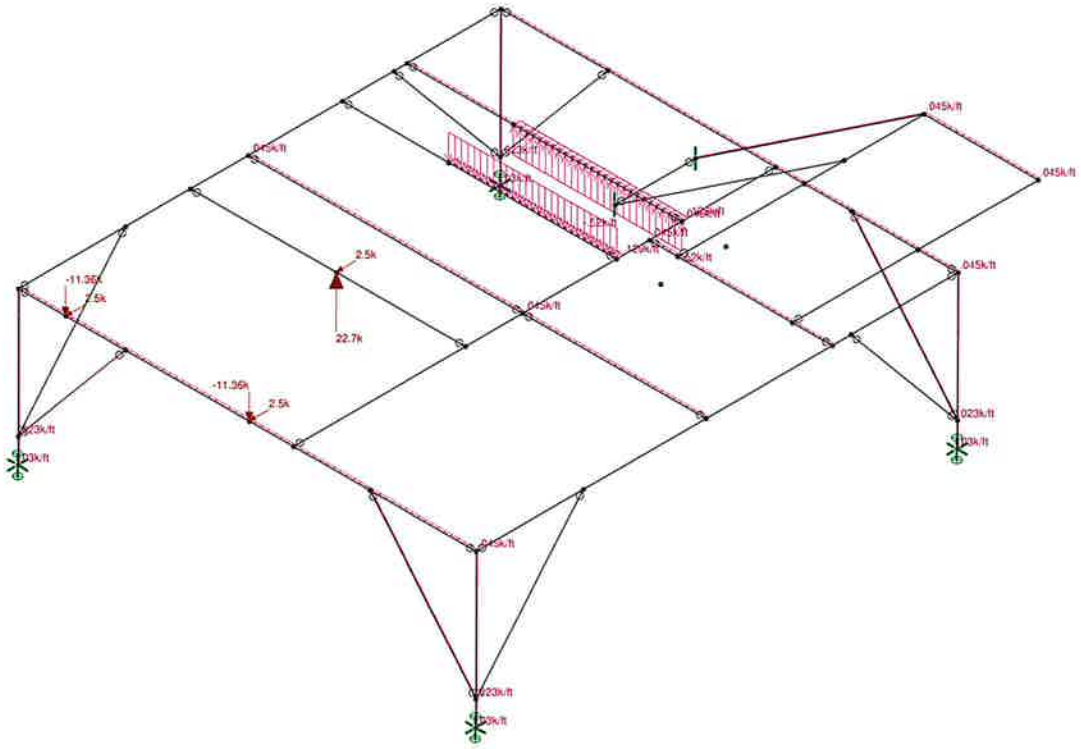
Loads: BLC 3, SL

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	SNOW LOAD	8814.27 - Generator Platform.r3d



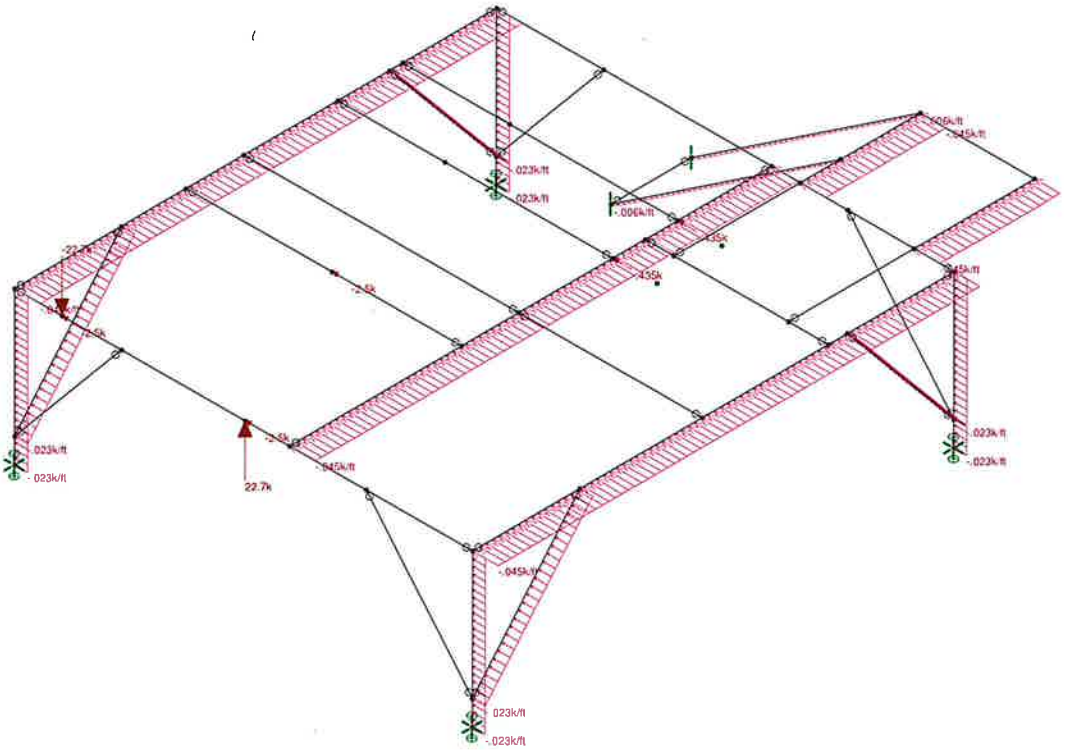
Loads: BLC 4, WLX

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	WIND LOAD IN X DIRECTION	8814.27 - Generator Platform.r3d



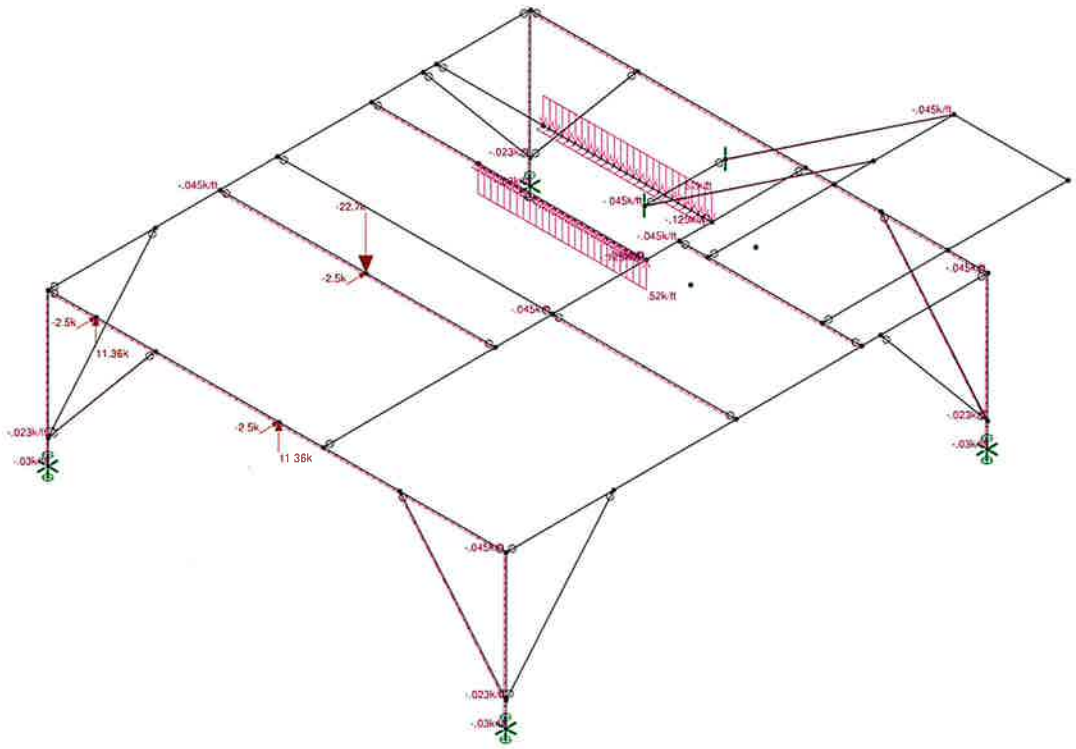
Loads: BLC 5, WLZ

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	WIND LOAD IN Z DIRECTION	8814.27 - Generator Platform.r3d



Loads: BLC 6, WL-X

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	WIND LOAD IN -X DIRECTION	8814.27 - Generator Platform.r3d

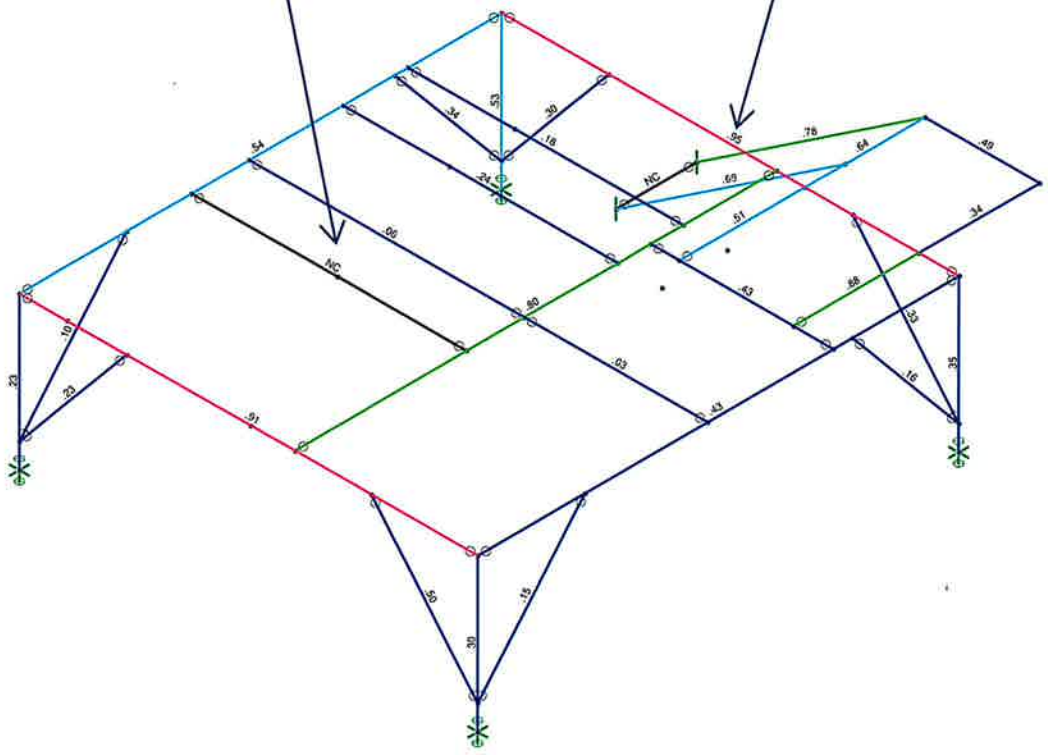


Loads: BLC 7, WL-Z

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	WIND LOAD IN -Z DIRECTION	8814.27 - Generator Platform.r3d

MEMBER NOT AFFECTED BY THE PROPOSED SCOPE OF WORK AND THEREFORE HAS NOT BE INCLUDED IN THE ANALYSIS

MAX MEMBER STRESS DOES NOT EXCEED 95.4% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	BENDING STRESS	8814.27 - Generator Platform.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572Grade50	29000	11154	.3	.65	.49	50	1.5	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.5	58	1.2
4	A500_42	29000	11154	.3	.65	.49	42	1.5	58	1.2
5	A500_46	29000	11154	.3	.65	.49	46	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W12x35	W12x35	Beam	Wide Flange	A36	Typical	10.3	24.5	285	.741
2	W8x31	W8x31	Beam	Wide Flange	A36	Typical	9.13	37.1	110	.536
3	W6x12	W6x12	Beam	Wide Flange	A36	Typical	3.55	2.99	22.1	.09
4	C12x20.7	C12x20.7	Beam	Channel	A36	Typical	6.08	3.86	129	.369

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	DL	DL		-1.05		3		2	6	
2	LL	LL							6	
3	SL	SL				3			1	
4	WLX	WLX				7		15		
5	WLZ	WLZ				6		20		
6	WL-X	WL-X				7		15		
7	WL-Z	WL-Z				6		20		
8	BLC 1 Transient Area Loads	None						25		
9	BLC 2 Transient Area Loads	None						25		
10	BLC 3 Transient Area Loads	None						15		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL + LL	Yes	Y		DL	1	LL	1	SL		W...		W...											
2	DL + SL	Yes	Y		DL	1	LL		SL	1	W...		W...											
3	DL + WLX	Yes	Y		DL	1	LL		SL		W...	1	W...											
4	DL + WLZ	Yes	Y		DL	1	LL		SL		W...		W...	1										
5	DL + WL-X	Yes	Y		DL	1	LL		SL		W...	-1												
6	DL + WL-Z	Yes	Y		DL	1	LL		SL				W...	-1										
7	DL + 0.75(LL + SL + WLX)	Yes	Y		DL	1	LL	.75	SL	.75	W...	.75	W...											
8	DL + 0.75(LL + SL + WLZ)	Yes	Y		DL	1	LL	.75	SL	.75	W...		W...	.75										
9	DL + 0.75(LL + SL + WL-X)	Yes	Y		DL	1	LL	.75	SL	.75	W...	.75												
10	DL + 0.75(LL + SL + WL-Z)	Yes	Y		DL	1	LL	.75	SL	.75			W...	.75										
11	DL		Y		DL	1	LL		SL		W...		W...											
12	SL		Y		DL		LL		SL	1	W...		W...											
13	LL		Y		DL		LL	1	SL		W...		W...											
14	WLX		Y		DL		LL		SL		W...	1	W...											
15	WLZ		Y		DL		LL		SL		W...		W...	1										
16	WL-X		Y		DL		LL		SL		W...	1												
17	WL-Z		Y		DL		LL		SL				W...	1										

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N6	max	5.24	8	15.604	9	-.854	4	0	1	.011	6	0	1
2		min	.235	10	-7.15	3	-2.502	7	0	1	-.008	10	0	1
3	N5	max	6.919	9	15.824	10	8.618	10	0	1	.007	6	0	1
4		min	.247	3	-3.658	6	-7.262	6	0	1	-.006	10	0	1
5	N8	max	5.55	9	14.794	3	1.598	10	0	1	.004	10	0	1
6		min	-12.824	3	-3.904	9	-3.809	6	0	1	-.006	6	0	1
7	N7	max	.844	6	14.416	10	3.903	10	0	1	.012	10	0	1
8		min	-7.746	10	-.559	6	-3.529	6	0	1	-.014	6	0	1
9	N43	max	0	1	1.074	10	0	1	0	1	0	1	0	1
10		min	0	1	-.027	6	0	1	0	1	0	1	0	1
11	N42	max	0	1	1.011	6	0	1	0	1	0	1	0	1
12		min	0	1	-.527	10	0	1	0	1	0	1	0	1
13	Totals:	max	9.83	9	33.537	1	11.657	10						
14		min	-13.294	3	17.909	5	-15.543	6						

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Loc...	L...	Shea...	Loc.....	L...	Pnc/o...	Pnt/om...	Mnyy/o...	Mnzz/...	...	Eqn
1	M1	W12x35	.912	10	6	.293	17.... y	5	181.067	222.036	20.659	88.273	1	H1-1b
2	M2	W12x35	.954	8.125	10	.222	4.792 y	10	140.317	222.036	20.659	78.896	1	H1-1b
3	M3	W12x35	.541	16....	6	.132	7.656 y	6	185.595	222.036	20.659	89.445	1	H1-1b
4	M4	W12x35	.431	15....	6	.066	16.... y	10	161.44	222.036	20.659	83.584	1	H1-1b
5	M5	W8x31	.232	1.111	7	.161	1.042 y	8	181.154	196.814	25.329	54.611	1...	H1-1b
6	M6	W8x31	.302	1.111	6	.392	0 y	3	181.154	196.814	25.329	54.611	1...	H1-1b
7	M7	W8x31	.352	1.042	10	.238	1.042 y	10	181.154	196.814	25.329	54.611	1...	H1-1b
8	M8	W8x31	.535	1.042	10	.212	0 y	9	181.154	196.814	25.329	54.611	1...	H1-1b
9	M9	W12x35	.796	7.656	10	.157	0 y	10	196.766	222.036	20.659	91.976	1...	H1-1b
10	M10	W12x35	.432	1.25	6	.088	0 z	6	181.067	222.036	20.659	91.976	1...	H1-1b
11	M11	W12x35	.029	4	8	.020	8 y	1	181.067	222.036	20.659	91.976	1...	H1-1b
12	M13	W12x35	.060	6	8	.021	12 y	1	140.317	222.036	20.659	89.654	1...	H1-1b
13	M14	W12x35	.235	5.25	6	.078	0 y	8	140.317	222.036	20.659	91.976	1...	H1-1b
14	M15	W12x35	.184	5.25	10	.093	0 y	10	140.317	222.036	20.659	91.976	1...	H1-1b
15	M16	W6x12	.232	3.563	8	.035	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
16	M17	W6x12	.102	0	10	.015	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1b*
17	M18	W6x12	.499	3.184	3	.038	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
18	M19	W6x12	.151	0	6	.019	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1b*
19	M20	W6x12	.155	0	10	.017	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1b*
20	M21	W6x12	.329	3.563	10	.044	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
21	M22	W6x12	.343	3.184	10	.015	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1a
22	M23	W6x12	.300	3.563	10	.042	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
23	M24	C12x20.7	.693	12....	6	.020	0 y	10	27.894	131.066	4.949	36.303	1...	H1-1b
24	M25	C12x20.7	.775	0	6	.034	0 y	10	27.894	131.066	4.949	45.988	2...	H1-1b
25	M26	C12x20.7	.338	0	6	.033	5.25 y	10	94.31	131.066	4.949	45.988	1...	H1-1b
26	M27	C12x20.7	.494	5	6	.043	4.375 y	10	97.24	131.066	4.949	45.988	1...	H1-1b
27	M28	C12x20.7	.641	5.25	10	.106	5.25 y	10	94.31	131.066	4.949	45.988	1...	H1-1b
28	M30	W12x35	.508	5.5	10	.091	5.5 y	10	201.629	222.036	20.659	91.976	1...	H1-1b
29	M31	W12x35	.876	5.5	6	.058	0 z	10	201.629	222.036	20.659	91.976	1...	H1-1b

MAX MEMBER STRESS DOES NOT EXCEED 95.4% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27

Calculated By CB Date : 03/14/19

Generator Platform Reaction Comparison

Existing Reactions

Node (Label)	X (kips)	Y (kips)	Z (kips)
N6	5.223	8.000	15.570
N6	0.217	10.000	-7.184
N5	6.857	9.000	15.715
N5	0.185	3.000	-3.765
N8	5.567	9.000	14.769
N8	-12.807	3.000	-3.928
N7	0.906	6.000	14.341
N7	-7.684	10.000	-0.632
N43	0.000	1.000	1.070
N43	0.000	1.000	-0.031
N42	0.000	1.000	1.023
N42	0.000	1.000	-0.516

Proposed Reactions

Node (Label)	X (kips)	Y (kips)	Z (kips)
N6	5.240	8.000	15.604
N6	0.235	10.000	-7.150
N5	6.919	9.000	15.824
N5	0.247	3.000	-3.658
N8	5.550	9.000	14.794
N8	-12.824	3.000	-3.904
N7	0.844	6.000	14.416
N7	-7.746	10.000	-0.559
N43	0.000	1.000	1.074
N43	0.000	1.000	-0.027
N42	0.000	1.000	1.011
N42	0.000	1.000	-0.527

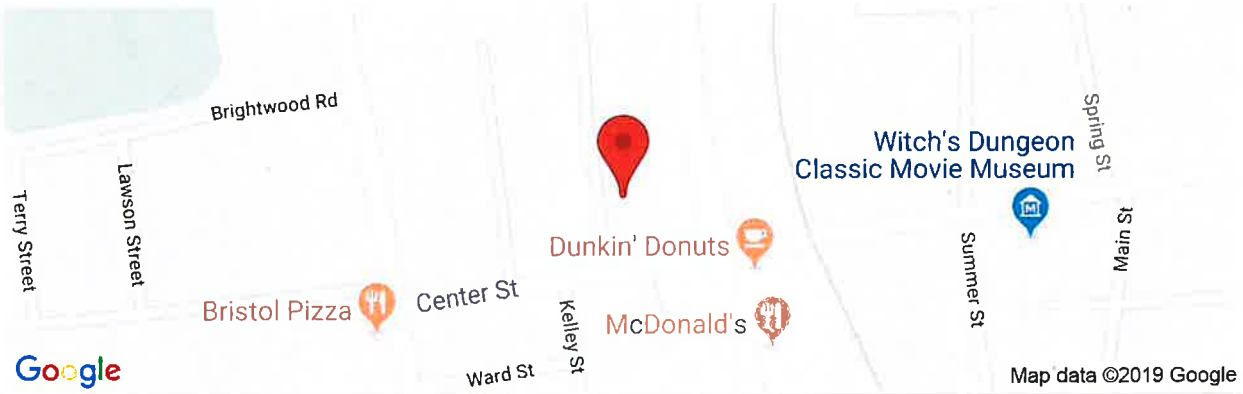
Increase in Load

Node (Label)	X (kips)	Y (kips)	Z (kips)
N6	0.017	0.000	0.034
N6	0.018	0.000	0.034
N5	0.062	0.000	**0.109**
N5	0.062	0.000	0.107
N8	0.017	0.000	0.025
N8	0.017	0.000	0.024
N7	0.062	0.000	0.075
N7	0.062	0.000	0.073
N43	0.000	0.000	0.004
N43	0.000	0.000	0.004
N42	0.000	0.000	0.012
N42	0.000	0.000	0.011

The maximum increase in load does not exceed 109 lbs which is relatively small in comparison to the existing reactions (15,824 lbs, which is less than a 1% increase in load). Therefore, we believe the existing platform connections and building supporting elements are adequate to support the proposed Verizon Wireless installation.

225 N Main St, Bristol, CT 06010, USA

Latitude, Longitude: 41.6763822, -72.94782609999998



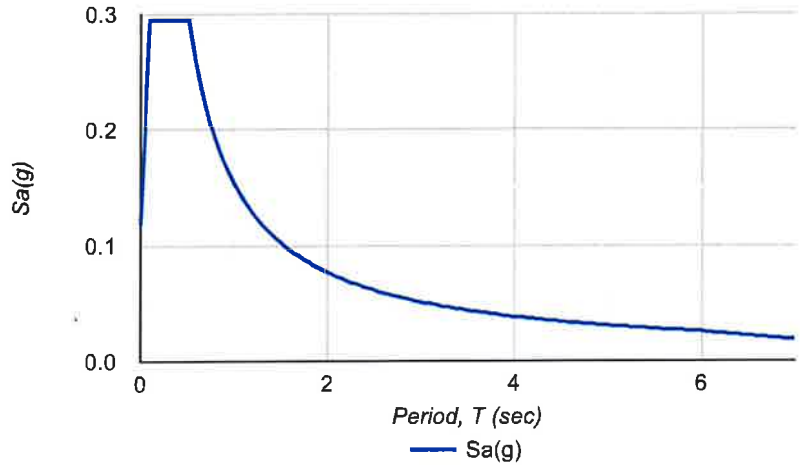
Date	3/8/2019, 10:27:48 AM
Design Code Reference Document	ASCE7-10
Risk Category	IV
Site Class	D - Stiff Soil

Type	Value	Description
S_S	0.185	MCE_R ground motion. (for 0.2 second period)
S_1	0.064	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.295	Site-modified spectral acceleration value
S_{M1}	0.154	Site-modified spectral acceleration value
S_{DS}	0.197	Numeric seismic design value at 0.2 second SA
S_{D1}	0.103	Numeric seismic design value at 1.0 second SA

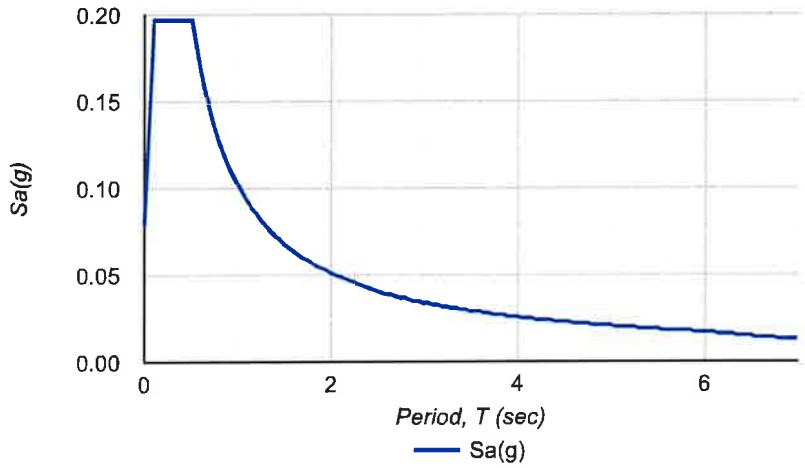
Type	Value	Description
SDC	C	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.094	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.15	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	0.185	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.206	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.064	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.071	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.897	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.898	Mapped value of the risk coefficient at a period of 1 s

MCER Response Spectrum



Design Response Spectrum



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