August 3, 2023

Jacklyn McCoy – Project Manager
1505 Westlake Avenue North, Suite 800
Seattle, WA 98109
Crown Castle

RE: **AT&T Mobility Project – Power & Battery Cabinet Anchorage Calculations**

AT&T Mobility Site Name:	SWAN ISLAN
AT&T Mobility Site ID:	PL72
AT&T Mobility FA Number:	10093098
Crown Castle BU#:	879610
Infinigy Job Number:	4039-Z5555-B
Building Code:	2021 IBC / 2022 OSSC
Client:	Crown Castle
Carrier:	AT&T Mobility
Site Location:	5405 N. Lagoon Ave Portland, OR 97217 Multnomah County 45° 33' 42.80" N NAD83 122° 42' 45.80" W NAD83
Result:	**Pass**
Note(s):	**Anchorage connection check consist of proposed cabinets to existing steel beams.**

Infinigy has reviewed the proposed AT&T Mobility's power & battery cabinet anchorage at the above referenced site for adequacy to support the proposed loads for the referenced project. This evaluation is based on a review of the information from the Construction Drawings (dated October 19, 2022) provided by Infinigy.

This evaluation assumes that all structural members are in good condition, have not been altered from the manufacturer's original design and have been installed per the manufacturer's requirements. The contractor is responsible for the means and methods of construction and shall notify Infinigy immediately if any field conditions differ from those listed above.

Should there be any questions, please do not hesitate to contact us.

structural@infinigy.com
AM

Program Inputs

PROJECT INFORMATION	
Client:	CROWN CASTLE
Carrier:	AT&T MOBILITY
Engineer:	AM

CODE STANDARDS		
Building Code:	2021 IBC	
Design Standards:	ASCE 7-16	

PLATFORM INFORMATION		
Platform Height AGL:	1.0	ft
Roof Height AGL:	0.0	ft

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Category:	1	
Site Class:	D	
Ground Elevation:	37.96	ft *7-16 only

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Crest Height:	N/A	ft
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft

WIND, SNOW, AND ICE DATA		
Basic Wind (V_{Basic}):	98	mph
Snow Pressure:	0	psf
Ice Wind Speed (V_i):	30	mph
Ice Thickness (t_i):	2	in

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Infinigy Cabinet Calculator V1.2.1

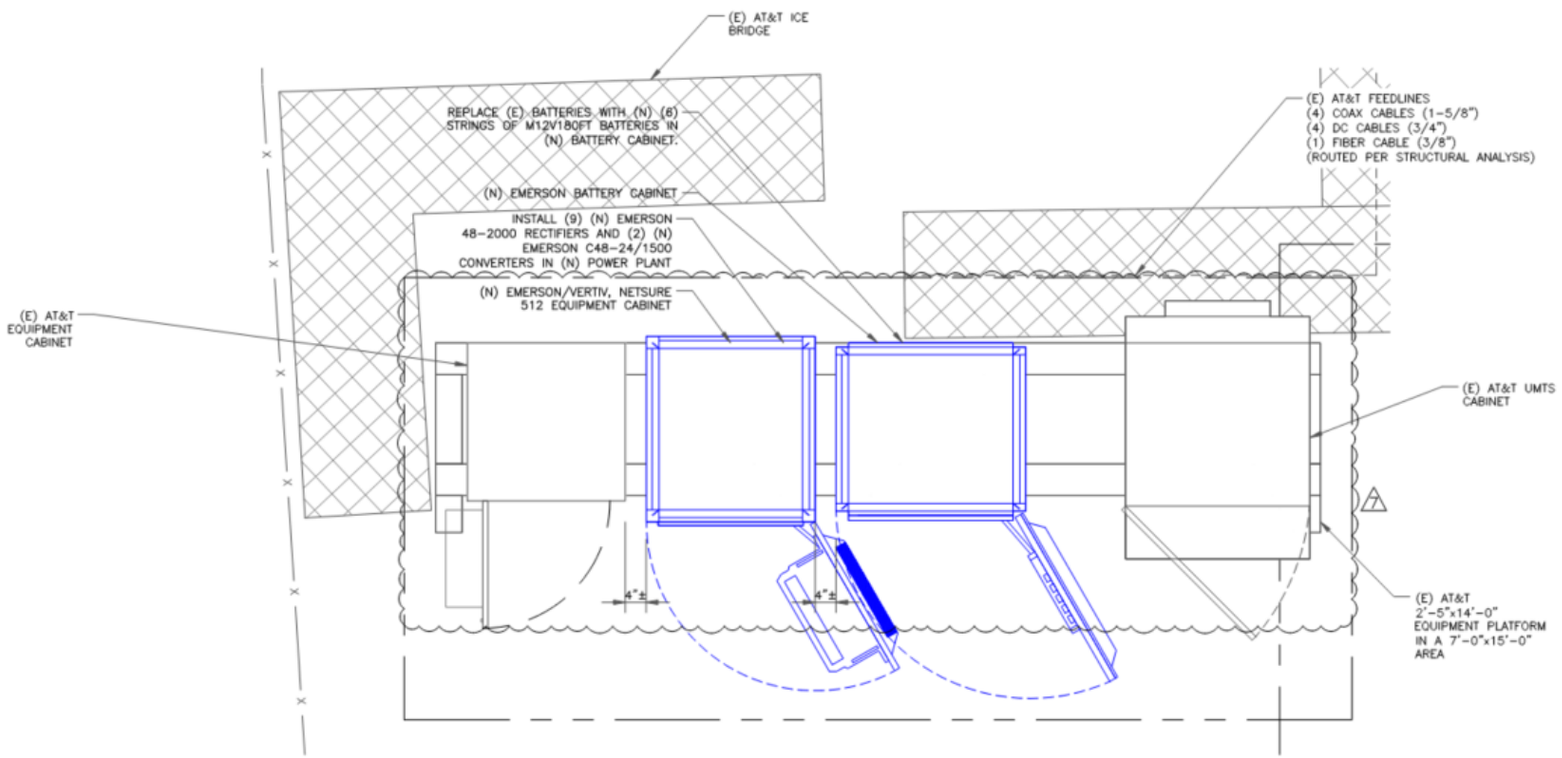
SEISMIC DATA		
Short-Period Accel. (S_s):	0.88	g
1-Second Accel. (S_1):	0.40	g
Short-Period Design (S_{DS}):	0.67	
1-Second Design (S_{D1}):	0.51	
Short-Period Coeff. (F_a):	1.15	
1-Second Coeff. (F_v):	1.90	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	2.00	

ANCHORAGE RESULTS		
Max Bolt Tension	6.3%	Pass
Max Bolt Shear	5.4%	Pass
Max Bolt Interaction	8.4%	Pass
Bolt Type	1/2"	A307

*Max bolt reactions may not all occur on the same equipment

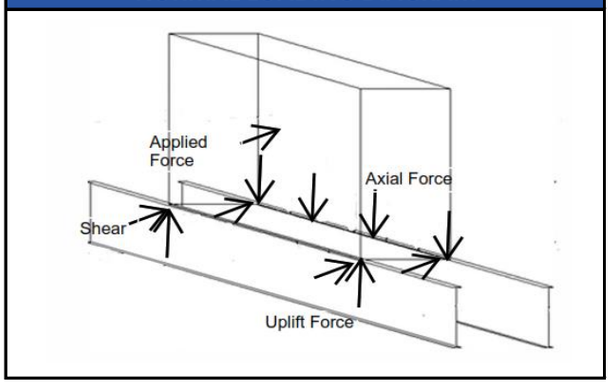
Program Inputs

PROPOSED EQUIPMENT						
Equipment Type	**Manufacturer**	**Model**	**Length (in)**	**Width (in)**	**Height (in)**	**Weight (lb)**
CABINET	EMERSON	BATTERY CABINET	36	37	72	4010
CABINET	EMERSON	POWER PLANT	32	34	72	2300
CABINET	UNKNOWN	UNKNOWN	32	32	72	1000
CABINET	UNKNOWN	UNKNOWN	28	32	78	750

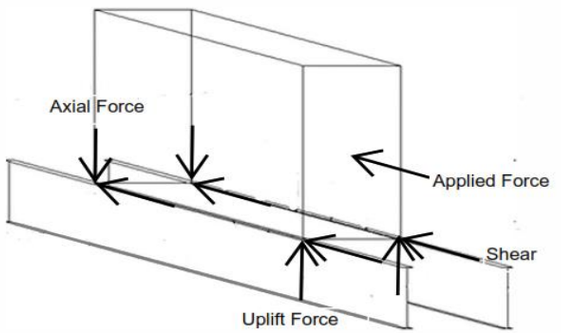


Program Inputs

NORMAL LOADING DIAGRAM



TRANSVERSE LOADING DIAGRAM



EQUIPMENT LOADING (WIND)

Equipment Type	Manufacturer	Model	Uplift/Bolt (lbs)	Axial/Bolt (lbs)	Normal Shear/Bolt (lbs)	Transverse Shear/Bolt (lbs)
CABINET	EMERSON	BATTERY CABINET	263.73	-263.73	-135.53	-139.29
CABINET	EMERSON	POWER PLANT	255.11	-255.11	-120.47	-128.00
CABINET	UNKNOWN	UNKNOWN	271.05	-271.05	-120.47	-120.47
CABINET	UNKNOWN	UNKNOWN	278.35	-278.35	-114.19	-130.51

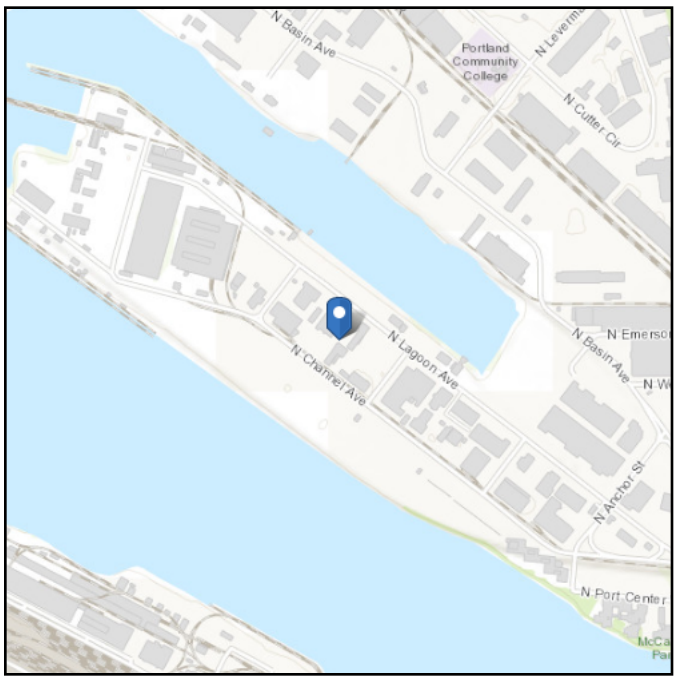
EQUIPMENT LOADING (SEISMIC)

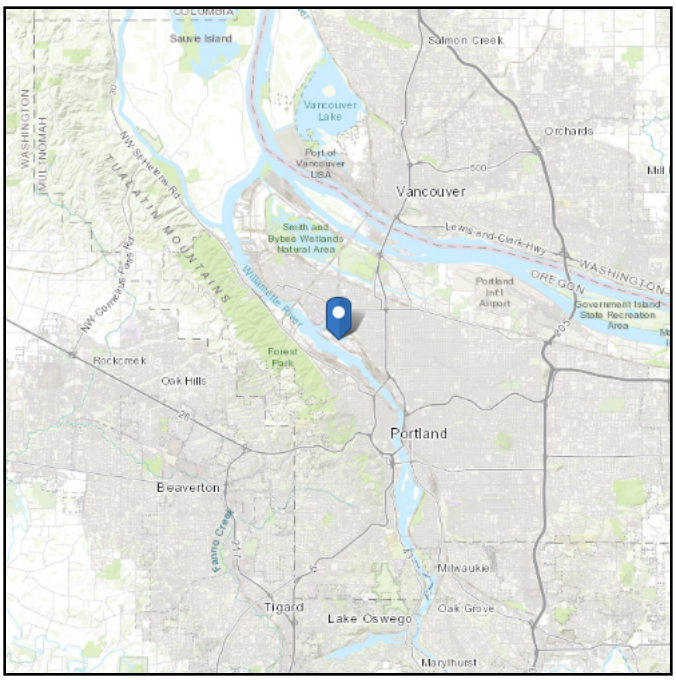
Manufacturer	Model	Vertical E5 (lbs)	Vertical E7 (lbs)	Uplift/Bolt (lbs)	Axial/Bolt (lbs)	Shear/bolt (lbs)
EMERSON	BATTERY CABINET	1338.04	767.21	420.43	-420.43	216.06
EMERSON	POWER PLANT	-3069.81	-1760.19	262.42	-262.42	123.92
UNKNOWN	UNKNOWN	-1334.70	-765.30	121.23	-121.23	53.88
UNKNOWN	UNKNOWN	-1001.02	-573.98	98.50	-98.50	40.41

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	45.561889
Risk Category:	II	**Longitude:**	-122.712722
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	37.957443616212956 ft (NAVD 88)





Wind

Results:

Wind Speed	98 Vmph per local jurisdiction
10-year MRI	67 Vmph
25-year MRI	73 Vmph
50-year MRI	77 Vmph
100-year MRI	82 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Tue Aug 01 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Seismic

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	0.882	S_{D1} :	N/A
S_1 :	0.399	T_L :	16
F_a :	1.2	PGA :	0.399
F_v :	N/A	PGA_M :	0.479
S_{MS} :	1.058	F_{PGA} :	1.201
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.705	C_v :	1.241

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Tue Aug 01 2023

Date Source: USGS Seismic Design Maps

Ice

Results:

Ice Thickness:	2.00 in.
Concurrent Temperature:	25 F
Gust Speed	30 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Aug 01 2023

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.