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February 22, 2023

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

Re: **EM-VER-034-221017 – Cellco Partnership d/b/a Verizon Wireless – 109 Federal Road, Danbury, Connecticut**

Dear Attorney Bachman:

Pursuant to Condition No. 1 of the Siting Council's approval of the above referenced Exempt Modification, enclosed is a revised Structural Analysis referencing the recently updated Connecticut State Building Code, effective October 1, 2022. Also enclosed is the cumulative RF far-field analysis submitted pursuant to Condition No. 2 of the Council's approval of EM-VER-034-221017.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachments

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Frame & Host Building

Proposed Verizon
Antenna Upgrade

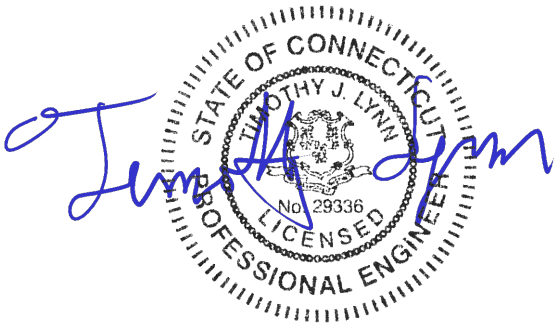
Site Ref: Danbury 10

109 Federal Road
Danbury, CT

CENTEK Project No. 20150.07

~~Date: January 19, 2021~~

Rev 3: February 15, 2023



Prepared for:

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

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Introduction

The purpose of this structural analysis report (SAR) is to summarize the results, of the impacted structural components, by the equipment upgrade proposed by Verizon Wireless on the existing host building located in Danbury, CT.

The antennas are mounted on within a proposed replacement RF transparent screen enclosure attached to the roof top of the host building.

The mounts member sizes information and roof framing information were obtained from construction documents as prepared by Centek Engineering Rev.0, dated July 10, 2015, and steel shop drawings as prepared by PND WELDING/GoodFAB LLC dated October, 6 2016. Proposed/existing antenna and appurtenance information was taken from a RF data sheet dated 11/13/2020 provided by Verizon Wireless.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel antenna frames carry the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Proposed reinforcement and support steel will be properly installed and maintained.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Alpha Sector	~~(1) HBXX-6513DS Antenna~~ ~~(1) B25-RRH-4x30~~ ~~(1) B4 RRH 2x60~~ (1) HBXX-6513DS Antenna **(1) VZS01 Antenna** **(1) Samsung B2/B66A RRH – BR049** **(1) SDX1926Q-43 diplexer** (1) RFS RRFDC-3315-PF-48	31.9-ft	FRP enclosure attached to building rooftop
Gamma Sector	~~(1) HBXX-6513DS Antenna~~ ~~(1) B25-RRH-4x30~~ ~~(1) B4 RRH 2x60~~ (1) HBXX-6513DS Antenna **(1) VZS01 Antenna** **(1) Samsung B2/B66A RRH – BR049** **(1) SDX1926Q-43 diplexer**	31.9-ft	FRP enclosure attached to building rooftop

~~Equipment~~ – Indicates equipment to be removed.
Equipment – Indicates equipment to be installed.

Analysis

The existing antenna frames were analyzed using a comprehensive computer program titled Risa3D. The program analyzes the equipment platform and antenna mounts considering the worst case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2021 International Building Code amended by the 2022 CSBC and ASCE 7-16 “Minimum Design Loads for Buildings and Other Structures”.

Wind Speed:	V_{ult} = 120 mph	*Appendix N of the 2022 CT State Building Code*
Risk Category:	II	*2021 IBC; Table 1604.05*
Exposure Category:	Surface Roughness B	*ASCE 7-16; Section 26.7.2*
Dead Load	Equipment and framing self-weight	*Identified within SAR design calculations*

Reference Standards

2015 International Building Code:

1. *ACI 318-14, Building Code Requirements for Structural Concrete.*
2. *ACI 530-13, Building Code Requirements for Masonry Structures.*
3. AISC 360-10, *Specification for Structural Steel Buildings*
4. AWS D1.1 – 00, *Structural Welding Code – Steel*.
5. AF&PA-12, Span Tables for Joists and Rafters.

Results

Structure stresses were calculated utilizing the structural analysis software RISA 3D. The stresses were determined based on the AISC standard.

- Calculated stresses for the antenna frame were found to **be within allowable** limits.

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	L5x5x3/8 FRP	96.5%	**PASS**
	Pipe 2.5 X-Strong	28.3%	**PASS**
	Pipe 3.5 X-Strong	27.2%	**PASS**
	(3) 2x8	73.4%	**PASS**

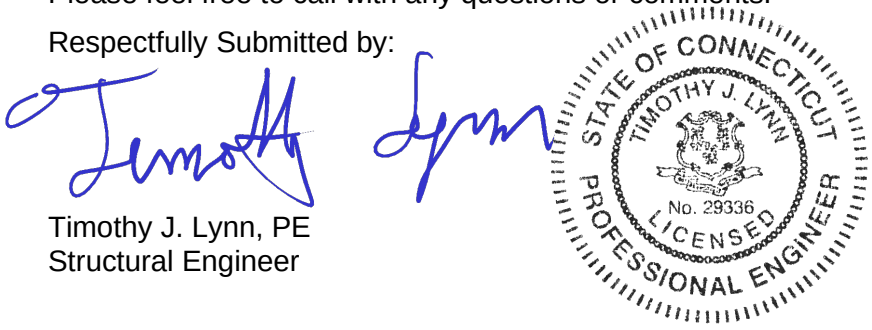
Conclusion

This analysis shows that the subject antenna frame and host building **HAVE SUFFICIENT CAPACITY** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Verizon. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

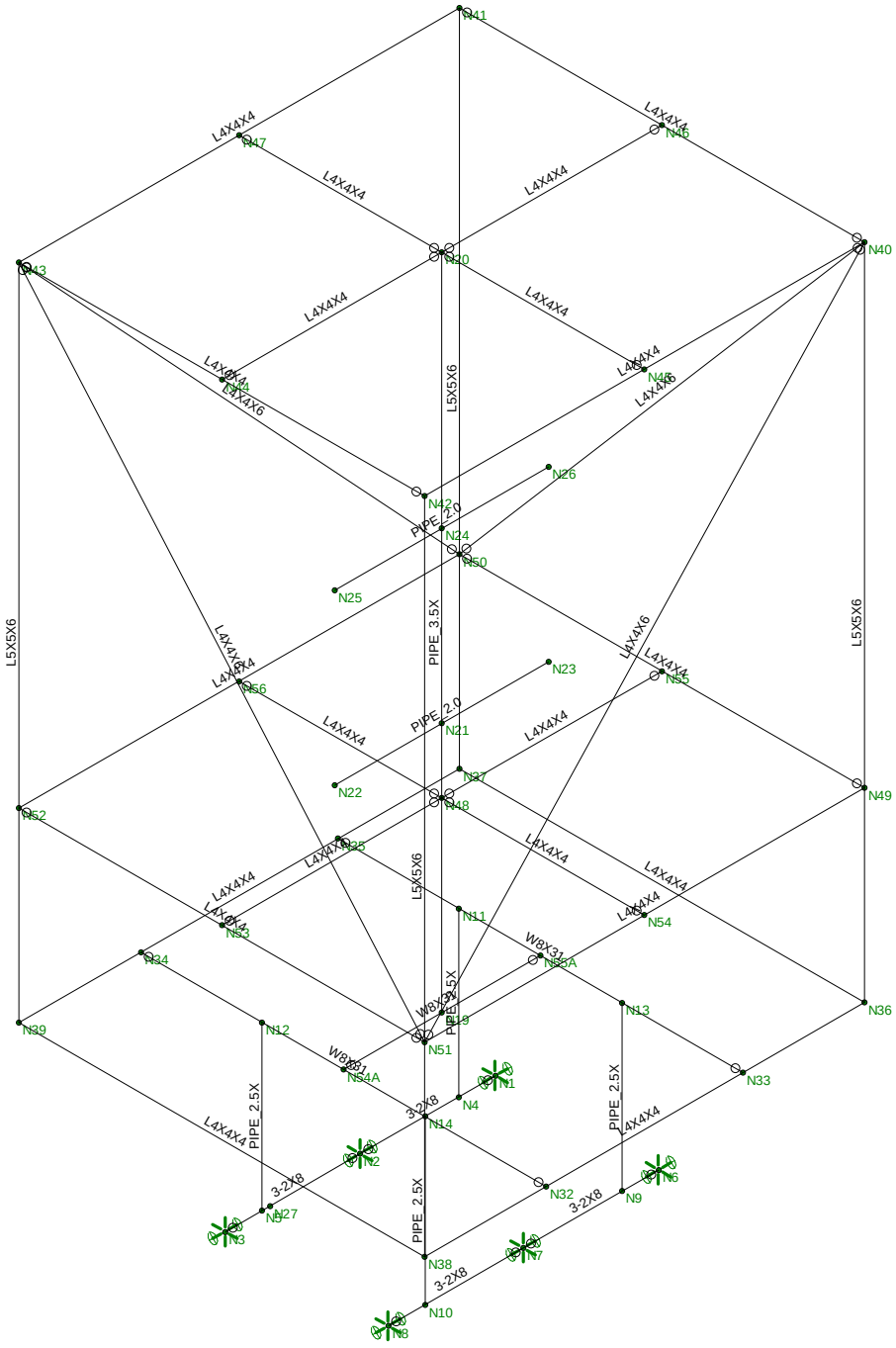


Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Envelope Only Solution

Centek Engineering		
TJL	Danbury 10 CT	Mar 5, 2021 at 7:58 AM
20150.07	Member Framing	Antenna Frame.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	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	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	FRP	2800	450	.35	.44	.12	10	1.5	58	1.2
7	A53 Grade B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Base_Pipe_2....	PIPE_2.5X	Column	Pipe	A53 Grade B	Typical	2.1	1.83	1.83	3.66
2	Pipe_3.5 XStrong	PIPE_3.5X	Column	Pipe	A53 Grade B	Typical	3.43	5.94	5.94	11.9
3	L3X3X3/8	L4X4X6	Column	Single Angle	FRP	Typical	2.86	4.32	4.32	.141
4	L5X5X3/8_V	L5X5X6	Column	Single Angle	FRP	Typical	3.65	8.76	8.76	.183
5	Pipe 2.0 STD	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
6	L4x4x1/4	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044
7	W8	W8X31	Beam	Wide Flange	A992	Typical	9.13	37.1	110	.536

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M7	Mount Base_Pipe_2...	2.417									Lateral
2	M8	Mount Base_Pipe_2...	2.417									Lateral
3	M9	Mount Base_Pipe_2...	2.417									Lateral
4	M10	Mount Base_Pipe_2...	2.417									Lateral
5	M17	Pipe_3.5 XStrong	9.75									Lateral
6	M26	L5X5X3/8_V	9.75									Lateral
7	M27	L5X5X3/8_V	9.75									Lateral
8	M28	L5X5X3/8_V	9.75									Lateral
9	M29	L5X5X3/8_V	9.75									Lateral
10	M30	L4x4x1/4	6									Lateral
11	M31	L4x4x1/4	6.517									Lateral
12	M32	L4x4x1/4	6									Lateral
13	M33	L4x4x1/4	6.517									Lateral
14	M34	L4x4x1/4	3.258									Lateral
15	M35	L4x4x1/4	2.998									Lateral
16	M36	L4x4x1/4	3.258									Lateral
17	M37	L4x4x1/4	3.002									Lateral
18	M38	Pipe 2.0 STD	3.167									Lateral
19	M39	Pipe 2.0 STD	3.167									Lateral
20	M40	L4x4x1/4	6.517			Lbyy						Lateral
21	M41	L4x4x1/4	6			Lbyy						Lateral
22	M42	L4x4x1/4	6.517			Lbyy						Lateral
23	M43	L4x4x1/4	6			Lbyy						Lateral
24	M36A	L4x4x1/4	6									Lateral
25	M37A	L4x4x1/4	6.517									Lateral
26	M38B	L4x4x1/4	6									Lateral
27	M39B	L4x4x1/4	6.517									Lateral
28	M40A	L4x4x1/4	3.258									Lateral
29	M41A	L4x4x1/4	2.998									Lateral
30	M42A	L4x4x1/4	3.258									Lateral
31	M43A	L4x4x1/4	3.002									Lateral
32	M40B	W8	6			Lbyy						Lateral
33	M41B	W8	6			Lbyy						Lateral
34	M42B	W8	2.917			Lbyy						Lateral
35	M39A	L3X3X3/8	9.22									Lateral
36	M40C	L3X3X3/8	9.22									Lateral
37	M41C	L3X3X3/8	9.564									Lateral
38	M42C	L3X3X3/8	9.564									Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M3	N3	N2			Mount Base- (3-2x8)	Beam	Rectangular	DF	Typical
2	M4	N2	N1			Mount Base- (3-2x8)	Beam	Rectangular	DF	Typical
3	M5	N8	N7			Mount Base- (3-2x8)	Beam	Rectangular	DF	Typical
4	M6	N7	N6			Mount Base- (3-2x8)	Beam	Rectangular	DF	Typical
5	M7	N5	N12			Mount Base_Pipe_2.5 XStr..	Column	Pipe	A53 Grade B	Typical
6	M8	N10	N14			Mount Base_Pipe_2.5 XStr..	Column	Pipe	A53 Grade B	Typical
7	M9	N4	N11			Mount Base_Pipe_2.5 XStr..	Column	Pipe	A53 Grade B	Typical
8	M10	N9	N13			Mount Base_Pipe_2.5 XStr..	Column	Pipe	A53 Grade B	Typical
9	M17	N19	N20			Pipe 3.5 XStrong	Column	Pipe	A53 Grade B	Typical
10	M26	N39	N43		180	L5X5X3/8 V	Column	Single Angle	FRP	Typical
11	M27	N36	N40			L5X5X3/8 V	Column	Single Angle	FRP	Typical
12	M28	N41	N37		180	L5X5X3/8 V	Column	Single Angle	FRP	Typical
13	M29	N38	N42		270	L5X5X3/8 V	Column	Single Angle	FRP	Typical
14	M30	N43	N42		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
15	M31	N42	N40		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
16	M32	N40	N41		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
17	M33	N41	N43		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
18	M34	N44	N20		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
19	M35	N20	N45		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
20	M36	N20	N46		90	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
21	M37	N20	N47		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
22	M38	N22	N23			Pipe 2.0 STD	Column	Pipe	A53 Grade B	Typical
23	M39	N25	N26			Pipe 2.0 STD	Column	Pipe	A53 Grade B	Typical
24	M40	N39	N37			L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
25	M41	N37	N36			L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
26	M42	N36	N38			L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
27	M43	N38	N39			L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
28	M36A	N52	N51		270	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
29	M37A	N51	N49		270	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
30	M38B	N49	N50		270	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
31	M39B	N50	N52		270	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
32	M40A	N53	N48		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
33	M41A	N48	N54		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
34	M42A	N48	N55		90	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
35	M43A	N48	N56		180	L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
36	M40B	N35	N33			W8	Beam	Wide Flange	A992	Typical
37	M41B	N34	N32			W8	Beam	Wide Flange	A992	Typical
38	M42B	N54A	N55A			W8	Beam	Wide Flange	A992	Typical
39	M39A	N50	N40			L3X3X3/8	Column	Single Angle	FRP	Typical
40	M40C	N51	N43			L3X3X3/8	Column	Single Angle	FRP	Typical
41	M41C	N40	N51			L3X3X3/8	Column	Single Angle	FRP	Typical
42	M42C	N43	N50			L3X3X3/8	Column	Single Angle	FRP	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	0	0	
2	N2	0	0	2	0	
3	N3	0	0	4	0	
4	N4	0	0	0.541667	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
5	N5	0	0	3.458333	0	
6	N6	2.416667	0	0	0	
7	N7	2.416667	0	2	0	
8	N8	2.416667	0	4	0	
9	N9	2.416667	0	0.541667	0	
10	N10	2.416667	0	3.458333	0	
11	N11	0	2.416667	0.541667	0	
12	N12	0	2.416667	3.458333	0	
13	N13	2.416667	2.416667	0.541667	0	
14	N14	2.416667	2.416667	3.458333	0	
15	N19	1.208333	2.416667	2	0	
16	N20	1.208333	12.166667	2	0	
17	N21	1.208333	6.125	2	0	
18	N22	1.208333	6.125	3.583333	0	
19	N23	1.208333	6.125	0.416667	0	
20	N24	1.208333	8.625	2	0	
21	N25	1.208333	8.625	3.583333	0	
22	N26	1.208333	8.625	0.416667	0	
23	N27	0	0	3.333333	0	
24	N32	4.206667	2.416667	3.458333	0	
25	N33	4.206667	2.416667	0.541667	0	
26	N34	-1.793333	2.416667	3.458333	0	
27	N35	-1.793333	2.416667	0.541667	0	
28	N36	4.206667	2.416667	-1.258333	0	
29	N37	-1.793333	2.416667	-1.258333	0	
30	N38	4.206667	2.416667	5.258333	0	
31	N39	-1.793333	2.416667	5.258333	0	
32	N40	4.206667	12.166667	-1.258333	0	
33	N41	-1.793333	12.166667	-1.258333	0	
34	N42	4.206667	12.166667	5.258333	0	
35	N43	-1.793333	12.166667	5.258333	0	
36	N44	1.206667	12.166667	5.258333	0	
37	N45	4.206667	12.166667	2	0	
38	N46	1.206667	12.166667	-1.258333	0	
39	N47	-1.793333	12.166667	2	0	
40	N48	1.208333	5.166667	2	0	
41	N49	4.206667	5.166667	-1.258333	0	
42	N50	-1.793333	5.166667	-1.258333	0	
43	N51	4.206667	5.166667	5.258333	0	
44	N52	-1.793333	5.166667	5.258333	0	
45	N53	1.206667	5.166667	5.258333	0	
46	N54	4.206667	5.166667	2	0	
47	N55	1.206667	5.166667	-1.258333	0	
48	N56	-1.793333	5.166667	2	0	
49	N54A	1.206667	2.416667	3.458333	0	
50	N55A	1.206667	2.416667	0.541667	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction			Reaction
2	N2	Reaction	Reaction	Reaction			Reaction
3	N3	Reaction	Reaction	Reaction			Reaction
4	N6	Reaction	Reaction	Reaction			Reaction
5	N7	Reaction	Reaction	Reaction			Reaction
6	N8	Reaction	Reaction	Reaction			Reaction

Member Point Loads (BLC 3 : Dead: Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M38	Y	-.041	.833
2	M39	Y	-.041	.833
3	M38	Y	-.006	1
4	M39	Y	-.006	1
5	M38	Y	-.043	2.333
6	M39	Y	-.043	2.333
7	M38	Y	-.02	2.333
8	M39	Y	-.02	2.333

Member Distributed Loads (BLC 6 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M26	Y	-.026	-.067	0	1.95
2	M26	Y	-.067	-.071	1.95	3.9
3	M26	Y	-.071	-.035	3.9	5.85
4	M26	Y	-.035	-.013	5.85	7.8
5	M26	Y	-.013	-.012	7.8	9.75
6	M29	Y	-.04	-.045	0	1.95
7	M29	Y	-.045	-.032	1.95	3.9
8	M29	Y	-.032	-.021	3.9	5.85
9	M29	Y	-.021	-.045	5.85	7.8
10	M29	Y	-.045	-.083	7.8	9.75
11	M40C	Y	-.024	-.02	0	1.844
12	M40C	Y	-.02	-.023	1.844	3.688
13	M40C	Y	-.023	-.023	3.688	5.532
14	M40C	Y	-.023	-.02	5.532	7.376
15	M40C	Y	-.02	-.024	7.376	9.22
16	M27	Y	-.026	-.067	0	1.95
17	M27	Y	-.067	-.071	1.95	3.9
18	M27	Y	-.071	-.035	3.9	5.85
19	M27	Y	-.035	-.013	5.85	7.8
20	M27	Y	-.013	-.012	7.8	9.75
21	M41C	Y	-.025	-.021	0	1.913
22	M41C	Y	-.021	-.024	1.913	3.826
23	M41C	Y	-.024	-.024	3.826	5.738
24	M41C	Y	-.024	-.021	5.738	7.651
25	M41C	Y	-.021	-.025	7.651	9.564
26	M28	Y	-.083	-.045	0	1.95
27	M28	Y	-.045	-.021	1.95	3.9
28	M28	Y	-.021	-.032	3.9	5.85
29	M28	Y	-.032	-.045	5.85	7.8

Member Distributed Loads (BLC 6 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
30	M28	Y	-.045	-.04	7.8	9.75
31	M39A	Y	-.024	-.02	0	1.844
32	M39A	Y	-.02	-.023	1.844	3.688
33	M39A	Y	-.023	-.023	3.688	5.532
34	M39A	Y	-.023	-.02	5.532	7.376
35	M39A	Y	-.02	-.024	7.376	9.22
36	M42C	Y	-.025	-.021	0	1.913
37	M42C	Y	-.021	-.024	1.913	3.826
38	M42C	Y	-.024	-.024	3.826	5.738
39	M42C	Y	-.024	-.021	5.738	7.651
40	M42C	Y	-.021	-.025	7.651	9.564

Member Distributed Loads (BLC 7 : BLC 4 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M26	X	.041	.104	0	1.95
2	M26	X	.104	.111	1.95	3.9
3	M26	X	.111	.055	3.9	5.85
4	M26	X	.055	.021	5.85	7.8
5	M26	X	.021	.018	7.8	9.75
6	M28	X	.13	.071	0	1.95
7	M28	X	.071	.033	1.95	3.9
8	M28	X	.033	.05	3.9	5.85
9	M28	X	.05	.07	5.85	7.8
10	M28	X	.07	.062	7.8	9.75
11	M42C	X	.076	.062	0	1.913
12	M42C	X	.062	.072	1.913	3.826
13	M42C	X	.072	.072	3.826	5.738
14	M42C	X	.072	.062	5.738	7.651
15	M42C	X	.062	.076	7.651	9.564
16	M27	X	.014	.035	0	1.95
17	M27	X	.035	.037	1.95	3.9
18	M27	X	.037	.018	3.9	5.85
19	M27	X	.018	.007	5.85	7.8
20	M27	X	.007	.006	7.8	9.75
21	M29	X	.021	.023	0	1.95
22	M29	X	.023	.017	1.95	3.9
23	M29	X	.017	.011	3.9	5.85
24	M29	X	.011	.024	5.85	7.8
25	M29	X	.024	.043	7.8	9.75
26	M41C	X	.025	.021	0	1.913
27	M41C	X	.021	.024	1.913	3.826
28	M41C	X	.024	.024	3.826	5.738
29	M41C	X	.024	.021	5.738	7.651
30	M41C	X	.021	.025	7.651	9.564

Member Distributed Loads (BLC 8 : BLC 5 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M27	Z	.037	.096	0	1.95
2	M27	Z	.096	.102	1.95	3.9
3	M27	Z	.102	.05	3.9	5.85
4	M27	Z	.05	.019	5.85	7.8

Member Distributed Loads (BLC 8 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
5	M27	Z	.019	.017	7.8	9.75
6	M28	Z	.119	.065	0	1.95
7	M28	Z	.065	.031	1.95	3.9
8	M28	Z	.031	.046	3.9	5.85
9	M28	Z	.046	.065	5.85	7.8
10	M28	Z	.065	.057	7.8	9.75
11	M39A	Z	.073	.059	0	1.844
12	M39A	Z	.059	.069	1.844	3.688
13	M39A	Z	.069	.069	3.688	5.532
14	M39A	Z	.069	.059	5.532	7.376
15	M39A	Z	.059	.073	7.376	9.22
16	M26	Z	.012	.032	0	1.95
17	M26	Z	.032	.034	1.95	3.9
18	M26	Z	.034	.017	3.9	5.85
19	M26	Z	.017	.006	5.85	7.8
20	M26	Z	.006	.006	7.8	9.75
21	M29	Z	.019	.022	0	1.95
22	M29	Z	.022	.015	1.95	3.9
23	M29	Z	.015	.01	3.9	5.85
24	M29	Z	.01	.022	5.85	7.8
25	M29	Z	.022	.04	7.8	9.75
26	M40C	Z	.024	.02	0	1.844
27	M40C	Z	.02	.023	1.844	3.688
28	M40C	Z	.023	.023	3.688	5.532
29	M40C	Z	.023	.02	5.532	7.376
30	M40C	Z	.02	.024	7.376	9.22

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Dead: Self	DL								
2	Dead: Enclosure	DL							4	
3	Dead: Equipment	DL					8			
4	Wind X-Dir. (29psf)	WLX							2	
5	Wind Z-Dir.(29psf)	WLZ							2	
6	BLC 2 Transient Area Loads	None						40		
7	BLC 4 Transient Area Loads	None						30		
8	BLC 5 Transient Area Loads	None						30		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																		
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1														
3	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	SLN	1														
4	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	SLN	.75										
5	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																
6	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																
7	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																
8	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																
9	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75												

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
10	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75										
11	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75										
12	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75										
13	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75						
14	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75						
15	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	SL	.75	S...	.75						
16	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	SL	.75	S...	.75						
17	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6														
18	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6														
19	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6														
20	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6														

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	N1	max	.275	19	1.802	7	.247	20	0	20	0	20	.352	5
2		min	-.301	5	-1.02	17	-.279	6	0	1	0	1	-.337	19
3	N2	max	.191	19	1.432	7	.193	8	0	20	0	20	.258	5
4		min	-.209	5	-.843	17	-.193	6	0	1	0	1	-.247	19
5	N3	max	.269	19	2.125	7	.279	8	0	20	0	20	.342	5
6		min	-.294	5	-1.356	17	-.247	18	0	1	0	1	-.329	19
7	N6	max	.3	7	1.955	8	.239	20	0	20	0	20	.338	17
8		min	-.276	17	-1.179	18	-.273	6	0	1	0	1	-.352	7
9	N7	max	.209	7	1.433	5	.188	20	0	20	0	20	.247	17
10		min	-.191	17	-.842	19	-.187	18	0	1	0	1	-.258	7
11	N8	max	.294	7	2.128	5	.273	8	0	20	0	20	.328	17
12		min	-.268	17	-1.352	19	-.239	18	0	1	0	1	-.342	7
13	Totals:	max	1.525	19	2.661	16	1.404	20						
14		min	-1.525	5	1.597	17	-1.404	6						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	0	20	0	20	0	20	0	20	0	20	0	20
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	0	20	0	20	0	20	0	20	0	20	0	20
4		min	0	1	0	1	0	1	0	1	0	1	0	1
5	N3	max	0	20	0	20	0	20	0	20	0	20	0	20
6		min	0	1	0	1	0	1	0	1	0	1	0	1
7	N4	max	0	5	.001	17	0	6	1.703e-04	7	7.542e-05	5	2.978e-04	19
8		min	0	19	-.002	7	0	20	-9.158e-05	17	-6.942e-05	19	-3.106e-04	5
9	N5	max	0	5	.002	17	0	18	1.279e-04	17	5.988e-05	19	2.901e-04	19
10		min	0	19	-.003	7	0	8	-2.058e-04	7	-6.612e-05	5	-3.02e-04	5
11	N6	max	0	20	0	20	0	20	0	20	0	20	0	20
12		min	0	1	0	1	0	1	0	1	0	1	0	1
13	N7	max	0	20	0	20	0	20	0	20	0	20	0	20
14		min	0	1	0	1	0	1	0	1	0	1	0	1
15	N8	max	0	20	0	20	0	20	0	20	0	20	0	20
16		min	0	1	0	1	0	1	0	1	0	1	0	1
17	N9	max	0	17	.001	19	0	6	1.703e-04	5	6.94e-05	17	3.104e-04	7
18		min	0	7	-.002	5	0	20	-9.158e-05	19	-7.551e-05	7	-2.981e-04	17

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
19	N10	max	0	17	.002	19	0	18	1.276e-04	19	6.603e-05	7	3.022e-04	7
20		min	0	7	-.003	5	0	8	-2.06e-04	5	-5.99e-05	17	-2.898e-04	17
21	N11	max	.029	5	.002	17	.066	6	3.133e-03	18	9.541e-05	6	3.538e-04	7
22		min	-.029	7	-.004	7	-.066	8	-3.345e-03	8	-9.209e-05	20	-2.399e-04	17
23	N12	max	.029	5	.003	17	.066	6	3.344e-03	6	9.348e-05	18	4.238e-04	7
24		min	-.029	7	-.005	7	-.066	8	-3.131e-03	20	-9.39e-05	8	-3.117e-04	17
25	N13	max	.029	5	.002	19	.064	6	3.086e-03	18	5.649e-05	17	2.395e-04	19
26		min	-.029	7	-.004	5	-.064	8	-3.3e-03	8	-6.091e-05	7	-3.53e-04	5
27	N14	max	.029	5	.003	19	.064	6	3.298e-03	6	6.651e-05	5	3.111e-04	19
28		min	-.029	7	-.005	5	-.064	8	-3.087e-03	20	-6.642e-05	7	-4.245e-04	5
29	N19	max	.029	5	0	17	.065	6	1.056e-04	6	2.354e-06	8	5.712e-03	7
30		min	-.029	7	0	7	-.065	8	-1.061e-04	8	-2.913e-06	5	-5.716e-03	5
31	N20	max	.478	5	0	17	.339	6	2.403e-03	6	2.354e-06	8	2.161e-03	7
32		min	-.477	7	0	7	-.341	8	-2.4e-03	8	-2.913e-06	5	-2.166e-03	5
33	N21	max	.27	5	0	17	.159	6	2.627e-03	6	2.354e-06	8	4.296e-03	7
34		min	-.269	7	0	7	-.16	8	-2.666e-03	8	-2.913e-06	5	-4.301e-03	5
35	N22	max	.269	5	.049	20	.159	6	2.751e-03	6	2.354e-06	8	4.296e-03	7
36		min	-.269	7	-.053	6	-.16	8	-2.574e-03	20	-2.913e-06	5	-4.301e-03	5
37	N23	max	.27	5	.048	18	.159	6	2.521e-03	18	2.354e-06	8	4.296e-03	7
38		min	-.269	7	-.054	8	-.16	8	-2.841e-03	8	-2.913e-06	5	-4.301e-03	5
39	N24	max	.376	5	0	17	.235	6	2.471e-03	6	2.354e-06	8	2.895e-03	7
40		min	-.375	7	0	7	-.237	8	-2.506e-03	8	-2.913e-06	5	-2.9e-03	5
41	N25	max	.376	5	.046	20	.235	6	2.596e-03	6	2.354e-06	8	2.895e-03	7
42		min	-.375	7	-.05	6	-.237	8	-2.416e-03	20	-2.913e-06	5	-2.9e-03	5
43	N26	max	.376	5	.045	18	.235	6	2.366e-03	18	2.354e-06	8	2.895e-03	7
44		min	-.375	7	-.051	8	-.237	8	-2.681e-03	8	-2.913e-06	5	-2.9e-03	5
45	N27	max	0	5	.002	17	0	18	7.733e-05	17	3.583e-05	19	2.652e-04	19
46		min	0	19	-.003	7	0	8	-1.25e-04	7	-3.961e-05	5	-2.761e-04	5
47	N32	max	.029	5	.01	19	.064	6	5.079e-03	5	1.873e-03	5	2.776e-03	19
48		min	-.029	7	-.017	5	-.065	8	-1.47e-03	19	-1.644e-03	19	-4.097e-03	5
49	N33	max	.029	5	.008	19	.064	6	1.087e-03	19	1.549e-03	19	2.578e-03	19
50		min	-.029	7	-.014	5	-.064	8	-4.704e-03	5	-1.778e-03	5	-3.898e-03	5
51	N34	max	.029	5	.01	17	.068	6	5.069e-03	7	1.643e-03	17	4.046e-03	7
52		min	-.029	7	-.017	7	-.069	8	-1.476e-03	17	-1.868e-03	7	-2.734e-03	17
53	N35	max	.029	5	.008	17	.069	6	1.093e-03	17	1.774e-03	7	3.853e-03	7
54		min	-.029	7	-.014	7	-.068	8	-4.703e-03	7	-1.55e-03	17	-2.542e-03	17
55	N36	max	.063	5	.028	19	.065	6	1.897e-03	18	6.861e-04	7	2.457e-03	19
56		min	-.063	19	-.139	5	-.064	8	-6.284e-03	8	-1.265e-04	17	-3.775e-03	5
57	N37	max	.063	17	.028	17	.069	6	1.292e-03	18	1.299e-04	19	3.734e-03	7
58		min	-.063	7	-.139	7	-.068	8	-5.691e-03	8	-6.912e-04	5	-2.424e-03	17
59	N38	max	.068	5	.045	19	.064	6	6.274e-03	6	3.211e-04	17	2.898e-03	19
60		min	-.067	7	-.155	5	-.065	8	-1.903e-03	20	-8.817e-04	7	-4.22e-03	5
61	N39	max	.067	5	.045	17	.068	6	5.631e-03	6	8.922e-04	5	4.165e-03	7
62		min	-.067	7	-.155	7	-.069	8	-1.271e-03	20	-3.281e-04	19	-2.852e-03	17
63	N40	max	.443	5	.031	19	.359	18	1.33e-03	18	9.58e-04	17	3.412e-04	18
64		min	-.436	7	-.149	5	-.366	8	-1.466e-03	8	-1.087e-03	7	-3.929e-04	8
65	N41	max	.444	5	.028	17	.317	6	7.169e-04	18	8.306e-04	17	2.149e-03	17
66		min	-.436	7	-.144	7	-.313	20	-7.888e-04	8	-1.e-03	7	-2.22e-03	7
67	N42	max	.499	5	.044	19	.359	18	1.686e-03	6	7.361e-04	18	4.833e-04	8
68		min	-.506	7	-.161	5	-.366	8	-1.627e-03	20	-8.966e-04	8	-4.13e-04	18
69	N43	max	.499	5	.049	17	.317	6	1.502e-03	6	5.972e-04	17	9.409e-04	5
70		min	-.506	7	-.167	7	-.312	20	-1.381e-03	20	-7.214e-04	7	-9.011e-04	19

Envelope Joint Displacements (Continued)

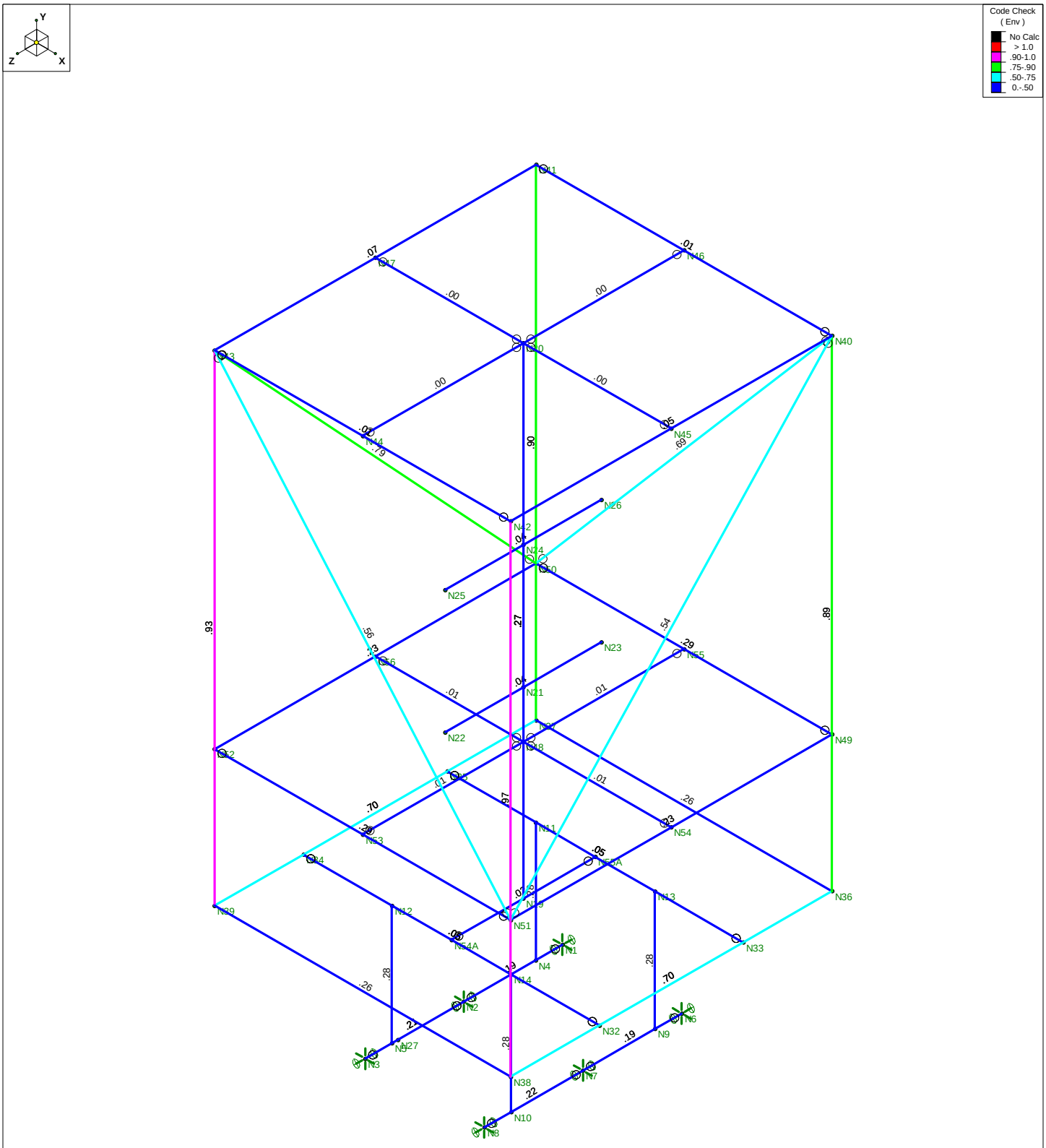
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
71	N44	max	.499	5	.017	20	.339	6	1.594e-03	6	8.122e-04	7	2.538e-03	7
72		min	-.506	7	-.133	6	-.341	8	-1.504e-03	20	-6.84e-04	17	-2.512e-03	5
73	N45	max	.478	5	.038	19	.359	18	1.865e-03	18	7.387e-04	17	4.523e-05	8
74		min	-.477	7	-.154	5	-.366	8	-1.897e-03	8	-8.929e-04	7	-3.613e-05	17
75	N46	max	.444	5	.017	18	.339	6	1.023e-03	18	8.121e-04	7	2.021e-03	7
76		min	-.436	7	-.134	8	-.341	8	-1.128e-03	8	-6.839e-04	17	-2.059e-03	5
77	N47	max	.478	5	.044	17	.317	6	1.53e-03	6	7.519e-04	17	1.539e-03	17
78		min	-.477	7	-.16	7	-.312	20	-1.515e-03	20	-9.059e-04	7	-1.553e-03	7
79	N48	max	.216	5	0	17	.128	6	2.715e-03	6	2.354e-06	8	5.026e-03	7
80		min	-.216	7	0	7	-.129	8	-2.74e-03	8	-2.913e-06	5	-5.031e-03	5
81	N49	max	.254	5	.028	19	.201	6	3.207e-03	6	1.486e-03	7	6.424e-03	7
82		min	-.254	7	-.142	5	-.202	8	-2.515e-03	20	-1.342e-03	17	-6.15e-03	17
83	N50	max	.255	5	.029	17	.188	6	2.726e-03	6	1.357e-03	19	6.746e-03	19
84		min	-.254	7	-.142	7	-.189	8	-2.025e-03	20	-1.526e-03	5	-7.069e-03	5
85	N51	max	.273	5	.046	19	.202	6	2.169e-03	18	1.822e-03	17	6.88e-03	7
86		min	-.274	7	-.159	5	-.202	8	-2.891e-03	8	-2.002e-03	7	-6.561e-03	17
87	N52	max	.273	5	.046	17	.188	6	1.806e-03	18	2.041e-03	5	7.253e-03	19
88		min	-.273	7	-.159	7	-.188	8	-2.515e-03	8	-1.891e-03	19	-7.533e-03	5
89	N53	max	.273	5	-.022	20	.129	6	1.988e-03	18	2.199e-04	7	2.457e-03	7
90		min	-.273	7	-.09	6	-.129	8	-2.703e-03	8	-2.246e-04	5	-2.466e-03	5
91	N54	max	.216	5	.016	19	.201	6	1.292e-03	6	2.442e-04	5	6.652e-03	7
92		min	-.216	7	-.142	5	-.202	8	-1.291e-03	8	-2.519e-04	7	-6.355e-03	17
93	N55	max	.254	5	-.022	18	.129	6	2.966e-03	6	2.008e-04	7	1.99e-03	7
94		min	-.254	7	-.091	8	-.129	8	-2.27e-03	20	-2.056e-04	5	-1.991e-03	5
95	N56	max	.216	5	.014	17	.188	6	9.407e-04	18	4.455e-04	6	7.e-03	19
96		min	-.216	7	-.139	7	-.189	8	-9.557e-04	8	-4.491e-04	8	-7.301e-03	5
97	N54A	max	.029	5	0	20	.065	6	3.321e-03	6	6.45e-05	5	2.971e-04	7
98		min	-.029	7	-.001	6	-.065	8	-3.109e-03	20	-6.7e-05	7	-2.975e-04	5
99	N55A	max	.029	5	0	18	.065	6	3.109e-03	18	5.771e-05	5	2.369e-04	7
100		min	-.029	7	-.001	8	-.065	8	-3.322e-03	8	-6.02e-05	7	-2.366e-04	5

Envelope AISC 15th(360-16): ASD Steel Code Checks

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	Dir	...	Pnc/...	Pnt/o...	Mny...	Mnz...	Cb	Eqn
1	M29	L5X5X6	.965	0	5	.064	1....	y	5	3.762	21.856	1.007	2.089	3.2..	H2-1
2	M26	L5X5X6	.927	0	7	.063	0	z	7	3.762	21.856	1.371	2.089	3.1..	H2-1
3	M28	L5X5X6	.896	9.75	7	.063	9....	z	7	3.762	21.856	1.371	2.089	3.0..	H2-1
4	M27	L5X5X6	.895	0	5	.064	.102	z	5	3.762	21.856	1.371	2.089	3.1..	H2-1
5	M42C	L4X4X6	.790	4....	7	.039	0	z	5	1.912	17.126	.813	.962	1.1..	H2-1
6	M42	L4X4X4	.700	4....	5	.101	4....	y	5	24.609	41.605	2.088	3.749	1.1..	H2-1
7	M40	L4X4X4	.698	1....	7	.101	0	y	7	24.609	41.605	2.088	3.748	1.1..	H2-1
8	M39A	L4X4X6	.691	4....	8	.034	0	z	8	2.058	17.126	.813	.987	1.1..	H2-1
9	M40C	L4X4X6	.557	4....	5	.013	9.22	y	5	2.058	17.126	.772	.987	1.1..	H2-1
10	M41C	L4X4X6	.541	5....	6	.016	0	y	7	1.912	17.126	.772	.962	1.1..	H2-1
11	M36A	L4X4X4	.290	3	8	.015	3	y	8	26.599	41.605	2.088	4.006	1.3..	H2-1
12	M38B	L4X4X4	.289	3	6	.016	0	y	8	26.599	41.605	2.088	4.006	1.3..	H2-1
13	M10	PIPE_2.5X	.283	0	8	.032	0		7	41.891	44.012	3.091	3.091	2.1..	H1-...
14	M8	PIPE_2.5X	.283	0	6	.035	0		7	41.891	44.012	3.091	3.091	2.1..	H1-...
15	M9	PIPE_2.5X	.283	0	8	.033	0		6	41.891	44.012	3.091	3.091	2.1..	H1-...
16	M7	PIPE_2.5X	.283	0	6	.035	0		5	41.891	44.012	3.091	3.091	2.1..	H1-...
17	M17	PIPE_3.5X	.272	0	8	.034	0		6	47.967	71.886	7.108	7.108	1.38	H1-...

Envelope AISC 15th(360-16): ASD Steel Code Checks (Continued)

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	Dir	...	Pnc/...	Pnt/o...	Mny...	Mnz...	Cb	Eqn
18	M41	L4X4X4	.258	6	5	.023	0	y	5	26.599	41.605	2.088	4.439	2.23	H2-1
19	M43	L4X4X4	.257	0	5	.027	0	y	5	26.599	41.605	2.088	4.44	2.2...	H2-1
20	M37A	L4X4X4	.234	3....	5	.012	0	y	5	24.609	41.605	2.088	3.855	1.2...	H2-1
21	M39B	L4X4X4	.228	3....	7	.012	0	y	7	24.609	41.605	2.088	3.861	1.23	H2-1
22	M33	L4X4X4	.072	0	6	.005	0	z	7	24.609	41.605	2.088	4.064	1.5...	H2-1
23	M31	L4X4X4	.051	6....	6	.004	0	y	8	24.609	41.605	2.088	4.11	1.6...	H2-1
24	M40B	W8X31	.047	4.25	8	.075	4.25	y	5	249....	273....	35.124	75.767	1.1...	H1-...
25	M41B	W8X31	.047	4.25	6	.084	4.25	y	5	249....	273....	35.124	75.767	1.1...	H1-...
26	M38	PIPE_2.0	.038	1....	16	.010	1....		...	18.956	21.377	1.245	1.245	1.9...	H1-...
27	M39	PIPE_2.0	.038	1....	16	.010	1....		...	18.956	21.377	1.245	1.245	1.9...	H1-...
28	M42B	W8X31	.016	1....	8	.086	1....	z	5	267....	273....	35.124	75.767	1.3...	H1-...
29	M40A	L4X4X4	.012	0	8	.012	0	y	7	31.579	41.605	2.088	4.295	1	H2-1
30	M42A	L4X4X4	.012	0	6	.014	0	y	5	31.579	41.605	2.088	4.295	1	H2-1
31	M32	L4X4X4	.008	3	5	.003	0	z	7	26.599	41.605	2.088	4.019	1.3...	H2-1
32	M41A	L4X4X4	.007	0	19	.007	0	y	8	31.894	41.605	2.088	4.36	1	H2-1
33	M43A	L4X4X4	.007	0	17	.009	0	y	8	31.89	41.605	2.088	4.359	1	H2-1
34	M30	L4X4X4	.006	3	8	.001	3	z	8	26.599	41.605	2.088	4.01	1.32	H2-1
35	M37	L4X4X4	.002	0	19	.004	0	y	8	31.89	41.605	2.088	4.359	1	H2-1
36	M35	L4X4X4	.001	0	17	.003	0	y	6	31.894	41.605	2.088	4.36	1	H2-1
37	M36	L4X4X4	.000	0	8	.001	0	y	8	31.579	41.605	2.088	4.295	1	H2-1
38	M34	L4X4X4	.000	0	8	.002	0	y	7	31.579	41.605	2.088	4.295	1	H2-1



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
TJL	Danbury 10 CT	Mar 5, 2021 at 7:57 AM
20150.07	Unity Check	Antenna Frame.r3d

verizon fuze | RFDS

NORTH EAST > North East > New England > New England West > DANBURY 10 CT - A

Gadasu, Shiva - shiva.gadasu@verizonwireless.com - 11/13/2020 12:1:51

Project Details

Carrier Aggregation:	false
MPT Id:	
eCIP-0:	false
Project Name:	850 ADD
FUZE Project ID:	16244659
Designed Sector Carrier 4G:	6
Designed Sector Carrier 5G:	N/A
Additional Sector Carrier 4G:	N/A
Additional Sector Carrier 5G:	N/A
SiteTraker Project Id:	
FP Solution Type & Tech Type:	MODIFICATION;4G_850,5G_L-Sub6-Prep
RFDS Project Scope:	LSub6 add, RRH swap Rev0_11.13.2020 : Initial Design
Suffix:	Rev0_11.13.2020

Location Information

Site ID:	5008680
E-NodeB ID:	065557,0659557
PSLC:	467984
Switch Name:	Wallingford 2,Wallingford 2
Tower Owner:	
Tower Type:	Rooftop
Site Type:	MACRO
Street Address:	109 Federal Road
City:	Danbury
State:	CT
Zip Code:	06811
County:	Fairfield
Latitude:	41.429758 / 41° 25' 47.1288" N
Longitude:	-73.415831 / 73° 24' 56.9916" W

Antenna Summary

Added

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
											TBD	nL-Sub6 Antenna	31.5	33.6	25(0001) 220(0002)	false	false	PHYSICAL	2

Removed

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
												ANDREW	HBXX-6513DS-VTM	32.5	25(01) 220(02)	false	false	PHYSICAL	2

Retained

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
		LTE	LTE								ANDREW	HBXX-6513DS-VTM	32.5	33.6	25(01) 220(02)	false	false	PHYSICAL	2

Added: 2 **Removed:** 2 **Retained:** 2

Equipment Summary

Added

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Diplexer	Tower			LTE	LTE								Commscope	SDX1926Q-43			PHYSICAL	2
RRU	Tower			LTE	LTE								Samsung	B2/B66A RRH-BR049 (RFV01U-D1A)			PHYSICAL	2
RRU	Tower												Samsung	VZS01			PHYSICAL	2

Removed

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
RRU	Tower			LTE									Nokia	UHFA B25 RRH 4x30			PHYSICAL	2
RRU	Tower				LTE								Nokia	UHIC B4 RRH 2x60-4R			PHYSICAL	2

Retained

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
OVP Box	Tower																PHYSICAL	1
Hybrid Cable	Tower																PHYSICAL	1

Service Info

1900 MHZ LTE

	0000		5GLS	
Sector	**D1**	**D2**	**01**	**02**
Azimuth	25	220	25	220
Cell / ENode B ID	065557	065557	065557	065557
Antenna Model	HBXX-6513DS-VTM	HBXX-6513DS-VTM	HBXX-6513DS-VTM	HBXX-6513DS-VTM
Antenna Make	ANDREW	ANDREW	ANDREW	ANDREW
Antenna Centerline(Ft)	32.5	32.5	32.5	32.5
Mechanical Down-Tilt(Deg.)	0	0	0	0
Electrical Down-Tilt	4	4	4	4
Tip Height	33.6	33.6	33.6	33.6
Regulatory Power	47.39	47.39	62.48	62.48
TMA Make				
TMA Model				
RRU Make	Nokia	Nokia	Samsung	Samsung
RRU Model	UHFA B25 RRH 4x30	UHFA B25 RRH 4x30	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	2,4	2,4	4,4	4,4
Position				
Transmitter Id	1967909	1967911	7842999	7843001
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

2100 MHZ LTE

	0000		5GLS	
Sector	**D1**	**D2**	**01**	**02**
Azimuth	25	220	25	220
Cell / ENode B ID	065557	065557	065557	065557
Antenna Model	HBXX-6513DS-VTM	HBXX-6513DS-VTM	HBXX-6513DS-VTM	HBXX-6513DS-VTM
Antenna Make	ANDREW	ANDREW	ANDREW	ANDREW
Antenna Centerline(Ft)	32.5	32.5	32.5	32.5
Mechanical Down-Tilt(Deg.)	0	0	0	0
Electrical Down-Tilt	4	4	4	4
Tip Height	33.6	33.6	33.6	33.6
Regulatory Power	101.33	101.33	66.95	66.95
TMA Make				
TMA Model				
RRU Make	Nokia	Nokia	Samsung	Samsung
RRU Model	UHIC B4 RRH 2x60-4R	UHIC B4 RRH 2x60-4R	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	2,4	2,4	2,4	2,4
Position				
Transmitter Id	1967910	1967912	7843000	7843002
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

nL-Sub6

			5GLS	
Sector			**0001**	**0002**
Azimuth			25	220
Cell / ENode B ID			0659557	0659557
Antenna Model			nL-Sub6 Antenna	nL-Sub6 Antenna
Antenna Make			TBD	TBD
Antenna Centerline(Ft)			31.5	31.5
Mechanical Down-Tilt(Deg.)			0	0
Electrical Down-Tilt			3	3
Tip Height			33.6	33.6
Regulatory Power			2711.04	2711.04
TMA Make				
TMA Model				
RRU Make			Samsung	Samsung
RRU Model			VZS01	VZS01
Number of Tx, Rx Lines			4,4	4,4
Position				
Transmitter Id			7843018	7843019
Source			ATOLL_API	ATOLL_API

Service Comments

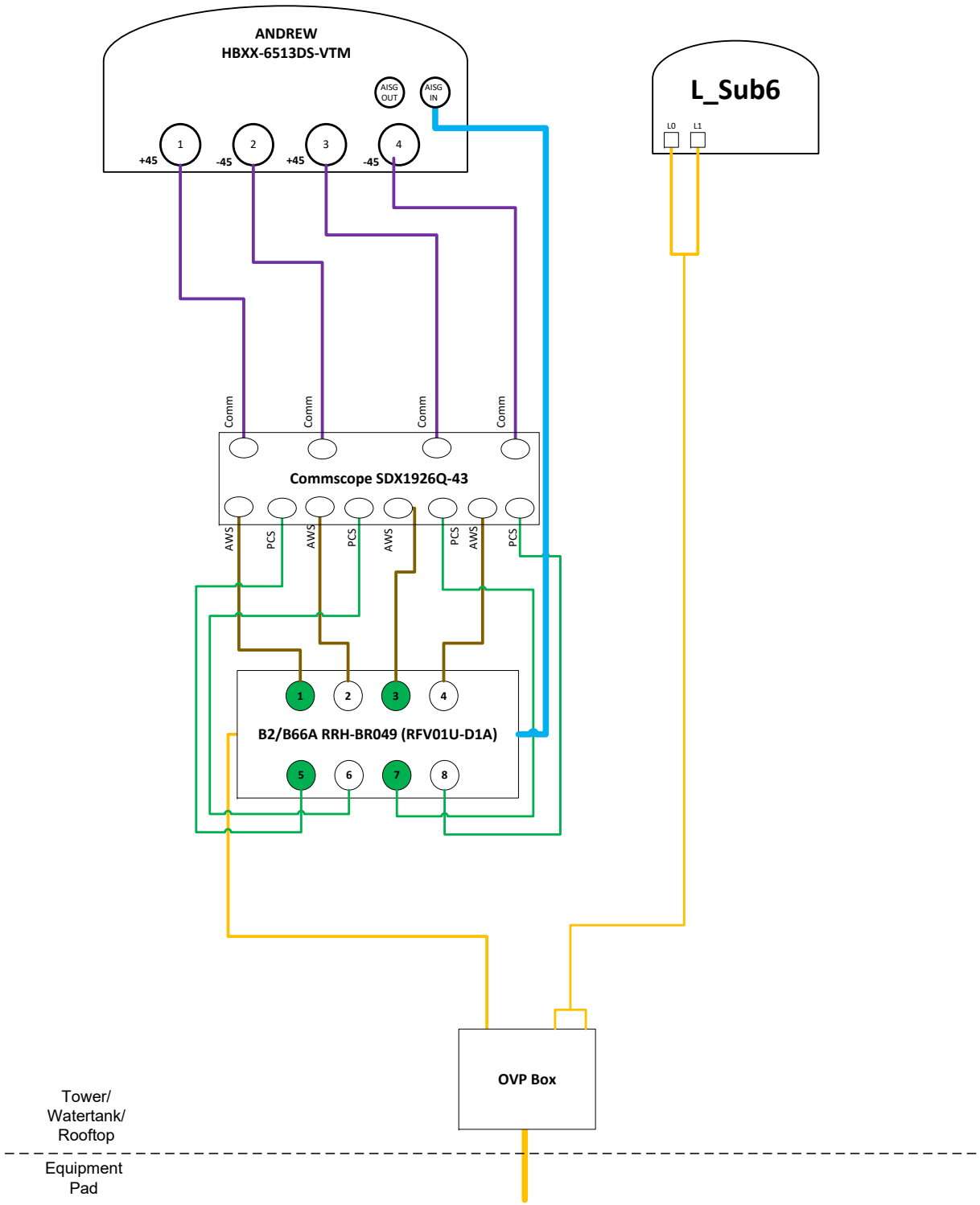
Callsigns Per Antenna

Sector	Antenna Make	Antenna Mode	Ant CL Height AGL	Tip Height	Azimuth (TN)	Electrical Tilt	Mechanical Tilt	Gain	Beamwidth	Regulatory Power	Callsigns						
											700	850	1900	2100	28 GHz	31 GHz	39 GHz
No data available.																	

Callsigns

Callsign	Market	Radio Code	Market Number	Block	State	County	Licensee Name	Wholly Owned	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq Mi	Status	Action	Approved for Insvc
KNLF644	*New York, NY*	*CW*	*BTA321*	*C*	*CT*	*Fairfield*	*AirTouch Cellular*	*Yes*	*20.000*	*1900.000-1910.000*	*1980.000-1990.000*	*.000-.000*	*.000-.000*	*62.48*	*1640*	*1467.18*	*Active*	*added*	*Yes*
WQBT539	*New York, NY*	*CW*	*BTA321*	*C*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*10.000*	*1895.000-1900.000*	*1975.000-1980.000*	*.000-.000*	*.000-.000*	*62.48*	*1640*	*1467.18*	*Active*	*added*	*Yes*
KNLH264	*New York, NY*	*CW*	*BTA321*	*F*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*10.000*	*1890.000-1895.000*	*1970.000-1975.000*	*.000-.000*	*.000-.000*	*62.48*	*1640*	*1467.18*	*Active*	*added*	*Yes*
WQGB279	*Bridgeport-Stamford-Norwalk-Danbury, CT*	*AW*	*CMA042*	*A*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*20.000*	*1710.000-1720.000*	*2110.000-2120.000*	*.000-.000*	*.000-.000*	*66.95*	*1640*	*1467.18*	*Active*	*added*	*Yes*
WQGA906	*New York-No. New Jer.-Long Island, NY-NJ-CT-PA-MA-*	*AW*	*BEA010*	*B*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*20.000*	*1720.000-1730.000*	*2120.000-2130.000*	*.000-.000*	*.000-.000*	*66.95*	*1640*	*1467.18*	*Active*	*added*	*Yes*
WQJQ689	Northeast	WU	REA001	C	CT	Fairfield	Cellco Partnership	Yes	22.000	746.000-757.000	776.000-787.000	.000-.000	.000-.000		1000	1467.18	Active		Yes
KNKA363	Bridgeport-Stamford-Norwalk-Danbury, CT	CL	CMA042	A	CT	Fairfield	Cellco Partnership	Yes	25.000	824.000-835.000	869.000-880.000	845.000-846.500	890.000-891.500		400	1467.18	Active		Yes
WPOH942	New York, NY	LD	BTA321	A	CT	Fairfield	Cellco Partnership	Yes	300.000	29100.000-29250.000	31075.000-31225.000	.000-.000	.000-.000			1467.18	Active		No
WPLM397	New York, NY	LD	BTA321	B	CT	Fairfield	Cellco Partnership	Yes	150.000	31000.000-31075.000	31225.000-31300.000	.000-.000	.000-.000			1467.18	Active		No
WRBA702	New York, NY	UU	BTA321	L1	CT	Fairfield	Cellco Partnership	Yes	325.000	27600.000-27925.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRBA703	New York, NY	UU	BTA321	L2	CT	Fairfield	Cellco Partnership	Yes	325.000	27925.000-27950.000	28050.000-28350.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD609	New York, NY	UU	PEA001	M1	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37600.000-37700.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD610	New York, NY	UU	PEA001	M10	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38500.000-38600.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD611	New York, NY	UU	PEA001	M2	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37700.000-37800.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD612	New York, NY	UU	PEA001	M3	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37800.000-37900.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD613	New York, NY	UU	PEA001	M4	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37900.000-38000.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD614	New York, NY	UU	PEA001	M5	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38000.000-38100.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes

WRHD615	New York, NY	UU	PEA001	M6	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38100.000-38200.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD616	New York, NY	UU	PEA001	M7	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38200.000-38300.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD617	New York, NY	UU	PEA001	M8	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38300.000-38400.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD618	New York, NY	UU	PEA001	M9	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38400.000-38500.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD619	New York, NY	UU	PEA001	N1	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38600.000-38700.000	.000-.000	.000-.000	.000-.000			1467.18	Active		No
WRDG500	New York, NY	UU	PEA001	S2	CT	Fairfield	Cellco Partnership	Yes	400.000	37800.000-38200.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes


ANDREW
HBXX-6513DS-VTM
AISG OUT
AISG IN
1
2
3
4
+45
-45
+45
-45
L_Sub6
L0
L1
Comm
Comm
Comm
Comm
Commscope SDX1926Q-43
AWS
PCS
AWS
PCS
AWS
PCS
AWS
PCS
1
2
3
4
B2/B66A RRH-BR049 (RFV01U-D1A)
5
6
7
8
OVP Box
Tower/
Watertank/
Rooftop
Equipment
Pad