

Alex Murshteyn, Site Acquisition Consultant
c/o Cellco Partnership d/b/a Verizon Wireless
Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379
Mobile: (508) 821-0159
AMurshteyn@centerlinecommunications.com

March 20, 2020

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification // Site: Brookfield CT (ATC: 283426)
37 Carmen Hill Road, Brookfield, CT 06804
N 41.57066 // W 72.0176

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless currently maintains 9 antennas at the 79-foot and 71-foot mounts on the existing 80-foot self-supporting lattice tower, located at 37 Carmen Hill Road, Brookfield, CT. The tower and property are owned by American Tower. The Council approved Verizon Wireless use of this tower in 1995. Verizon Wireless now intends to install 3 antennas and mount reinforcing modifications at the 71-foot level to update existing equipment as part of its (700/850/1900/2100/3500 MHz) PCS/AWS/LTE/CBRS upgrade. Additionally, Verizon Wireless will replace all of its remote radio head units (RRUs) with 9 new RRUs and 3 diplexers, and remove and upgrade certain cabling; altogether updating leased equipment rights, as reflected by the final configuration outlined in the structural analysis and proposed hereby.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Stephen C. Dunn, First Selectman for the Town of Brookfield, its Land Use Director Alice Dew, including for the Planning and Zoning Commissions and to American Tower Corporation for American Towers LLC, which is the tower and property owner.

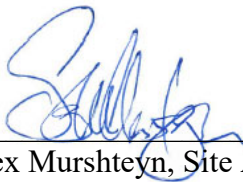
The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2). Enclosed to accommodate this filing are construction drawings by Tower Engineering Professionals dated March 13, 2020, structural analysis by A.T. Engineering Service, PLLC dated December 18, 2019 and antenna mount analysis by Infinify

dated January 29 and stamped January 30, 2020, as well as radio frequency (RF) analysis table showing worst-case RF emission calculation by Verizon Wireless RF Design Engineering.

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the new antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading, as shown in the attached structural analysis by A.T. Engineering Service, PLLC, dated and stamped December 18, 2019 and mount analysis by Infinify dated January 29 and stamped January 30, 2020.

For the foregoing reasons, Verizon Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Alex Murshteyn, Site Acquisition Consultant
c/o Cellco Partnership d/b/a Verizon Wireless
Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379
Mobile: (508) 821-0159
AMurshteyn@centerlinecommunications.com

Attachments

cc: Stephen C. Dunn, First Selectman - as elected official
Alice Dew, Land Use Director - as P&Z official
American Tower Corporation - as tower & property owner

BUILDING PERMIT
BROOKFIELD, CONNECTICUT

Nº 4306

Issued May 31, 1978 Expires in six months if construction is not then commenced
Owner Housatonic Cable Vision Co. Address New Milford, Conn.
Building T.V. Receiving Tower Size 80'
Located Carmen Hill Road

This Permit is subject to the Statutes of the State of Connecticut and the Ordinances, Rules and Regulations of the Town of Brookfield or its Board of Selectmen and is subject to cancellation by the Building Inspector if it appears that the applicant has not fairly and truthfully presented all material facts to the Building Inspector.

All sewage disposal installations are subject to the approval of the Town Health Officer and no building shall be occupied until a certificate of occupancy has been issued by the Building Inspector.

Building Inspector of the Town of Brookfield

By

Arthur J. Ziegler



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 80 ft Self Supported Tower
ATC Site Name : BROOKFIELD CT, CT
ATC Asset Number : 283426
Engineering Number : 13012776_C3_02
Proposed Carrier : VERIZON WIRELESS
Carrier Site Name : BROOKFIELD CT
Carrier Site Number : 468123
Site Location : 37 Carmen Hill Road
Brookfield, CT 06804-1004
41.492900,-73.427300
County : Fairfield
Date : December 18, 2019
Max Usage : 88%
Result : Pass

Prepared By:
Lucas Tait
Structural Engineer

Reviewed By:



COA: PEC.0001553



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 80 ft self supported tower to reflect the change in loading by VERIZON WIRELESS.

Supporting Documents

Tower Drawings	HTS Mapping Site #KGI11464, dated February 21, 2008
Foundation Drawing	ETS Mapping Job #173310, dated November 30, 2017
Geotechnical Report	FDH Project #17QQWL1600, dated November 30, 2017

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	93 mph (3-Second Gust, Vasd) / 120 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	4
Crest Height:	57 ft
Spectral Response:	$S_s = 0.21, S_1 = 0.07$
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
79.0	1	RFS DB-B1-6C-12AB-0Z	Sector Frame	(1) 1 5/8" Hybriflex	VERIZON WIRELESS
	6	Commscope JAHH-65B-R3B			
71.0	1	Amphenol Antel BXA-80063-4CF-EDIN-X	Sector Frame	(6) 1 5/8" Coax	
	2	Amphenol Antel BXA-80063-6CF-EDIN-X			

Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
79.0	3	Nokia Band 5 AHCA RRH4x40	-	-	VERIZON WIRELESS
	3	Alcatel-Lucent B25 RRH4x30			
	3	Alcatel-Lucent RRH2x60 700			
	3	Alcatel-Lucent B66A RRH4x45-4R w/o Solar Shield			
71.0	-	-	-	(6) 1 5/8" Coax	

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
79.0	3	Commscope CBC78T-DS-43-2X	Sector Frame	-	VERIZON WIRELESS
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
71.0	3	Amphenol Antel LPA-185063/8CF ___ 4°	Sector Frame		

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	75%	Pass
Diagonals	88%	Pass
Horizontals	9%	Pass
Anchor Bolts	68%	Pass
Leg Bolts	48%	Pass

Foundations

Reaction Component	Analysis Reactions
Uplift (Kips)	49.2
Axial (Kips)	56.4
Shear (Kips)	6.0

The structure foundation piers are directly embedded into shallow rock and are assumed to be designed to withstand the analysis reactions.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
79.0	Commscope CBC78T-DS-43-2X	VERIZON WIRELESS	0.106	0.002	0.144
	Samsung B5/B13 RRH-BR04C				
	Samsung B2/B66A RRH-BR049				
71.0	Amphenol Antel LPA-185063/8CF ___ 4°		0.086	0.003	0.141

*Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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Loads: 93 mph no ice
 50 mph w/ 3/4" radial ice
 Site Class: D Ss: 0.21 S1: 0.07
 60 mph Serviceability

Job Information		
Client : VERIZON WIRELESS		
Tower : 283426	Location : BROOKFIELD CT,	Base Width : 10.58 ft
Code : ANSI/TIA-222-G		Top Width : 4.50 ft
		Tower Ht : 80.00 ft
		Shape : Triangle

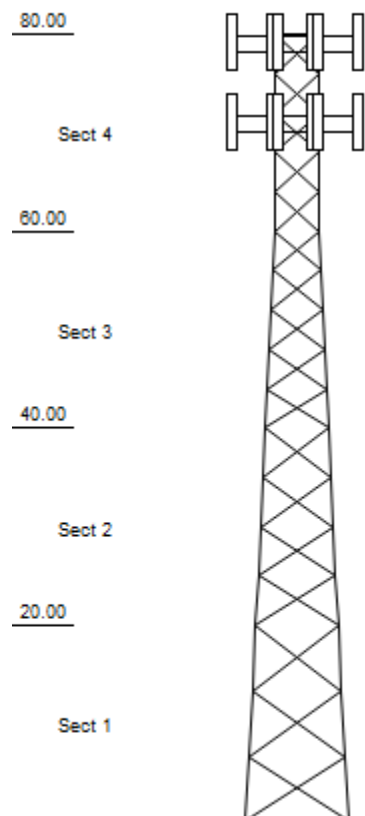
Sections Properties			
Section	Leg Members	Diagonal Members	Horizontal Members
1	PXX 50 ksi 2-1/2" DIA PIPE	SAE 36 ksi 1.75X1.75X0.125	
2	PST 50 ksi 2-1/2" DIA PIPE	SAE 36 ksi 1.5X1.5X0.1563	
3	PX 50 ksi 2" DIA PIPE	SAE 36 ksi 1.5X1.5X0.1563	
4	PSP 50 ksi 2.375" x .188"	SAE 36 ksi 1.5X1.5X0.1563	SAE 36 ksi 1.5X1.5X0.25

Discrete Appurtenance			
Elev (ft)	Type	Qty	Description
79.00	Mounting Frame	2	Round Sector Frame
79.00	Panel	6	Commscope JAHH-65B-R3B
79.00		1	RFS DB-B1-6C-12AB-0Z
79.00		3	Samsung B2/B66A RRH-BR049
79.00		3	Samsung B5/B13 RRH-BR04C
79.00		3	Commscope CBC78T-DS-43-2X
71.00	Mounting Frame	2	Round Sector Frame
71.00	Panel	2	Amphenol Antel BXA-80063-6CF-E
71.00	Panel	1	Amphenol Antel BXA-80063-4CF-E
71.00	Panel	3	Amphenol Antel LPA-185063/8CF

Linear Appurtenance			
From	To	Qty	Description
10.00	79.00	1	1 5/8" Hybriflex
0.00	79.00	1	Waveguide
10.00	71.00	6	1 5/8" Coax

Global Base Foundation Design Loads			
Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL + WL	492.44	7.90	10.09
DL + WL + IL	174.37	23.65	3.71

Individual Base Foundation Design Loads		
Vertical (kip)	Uplift (kip)	Horizontal (kip)
56.36	49.23	6.00



Site Number: 283426

Code:

ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

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Customer: VERIZON WIRELESS

Analysis Parameters

Location:	Fairfield County, CT	Height (ft):	80
Code:	ANSI/TIA-222-G	Base Elevation (ft):	0.00
Shape:	Triangle	Bottom Face Width (ft):	10.58
Tower Manufacturer:		Top Face Width (ft):	4.50
Tower Type:	Self Support	Anchor Bolt Detail Type	c
Kd:			
Ke:			

Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	93 mph
Exposure Category:	B	Design Windspeed With Ice:	50 mph
Topographic Category:	4	Operational Windspeed:	60 mph
Crest Height:	57 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	0.56		
T_L (sec):	6	p:	1.3
S_S :	0.207	S_1 :	0.066
F_a :	1.600	F_v :	2.400
S_{ds} :	0.221	S_{d1} :	0.106
		C_S :	0.063
		$C_{S, Max}$:	0.063
		$C_{S, Min}$:	0.030

Load Cases

1.2D + 1.6W Normal	93 mph Normal with No Ice
1.2D + 1.6W 60 deg	93 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	93 mph 90 degree with No Ice
0.9D + 1.6W Normal	93 mph Normal with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	93 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	93 mph 90 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 deg with 0.75 in Radial Ice
(1.2 + 0.2S _{ds}) * DL + E Normal	Seismic Normal
(1.2 + 0.2S _{ds}) * DL + E 60 deg	Seismic 60 deg
(1.2 + 0.2S _{ds}) * DL + E 90 deg	Seismic 90 deg
(0.9 - 0.2S _{ds}) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2S _{ds}) * DL + E 60 deg	Seismic (Reduced DL) 60 deg
(0.9 - 0.2S _{ds}) * DL + E 90 deg	Seismic (Reduced DL) 90 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg

Tower Loading

Discrete Appurtenance Properties 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
79.00	Commscope	3	21	0.6	0.8	6.9	6.4	0.90	0.50	0.0	0.0	20.29	21	75
79.00	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.90	0.50	0.0	0.0	20.29	70	253
79.00	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.90	0.50	0.0	0.0	20.29	70	304
79.00	RFS DB-B1-6C-12AB-	1	21	2.5	1.6	15.7	10.3	0.90	1.00	0.0	0.0	20.29	62	26
79.00	Commscope JAHH-	6	61	9.1	6.0	13.8	8.2	0.90	0.69	0.0	0.0	20.29	937	436
79.00	Round Sector Frame	2	300	14.4	0.0	0.0	0.0	0.90	0.90	0.0	0.0	20.29	644	720
71.00	Amphenol Antel LPA-	3	9	3.0	3.9	6.4	5.8	0.90	0.67	0.0	0.0	20.37	148	32
71.00	Amphenol Antel BXA-	1	10	4.7	4.0	11.2	5.2	0.90	1.00	0.0	0.0	20.37	117	12
71.00	Amphenol Antel BXA-	2	17	7.5	5.9	11.0	5.2	0.90	0.75	0.0	0.0	20.37	279	41
71.00	Round Sector Frame	2	300	14.4	0.0	0.0	0.0	0.90	0.90	0.0	0.0	20.37	646	720
Totals		26	2182	156.2									2994	2619

Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
79.00	Commscope	3	21	0.6	0.8	6.9	6.4	0.90	0.50	0.0	0.0	20.29	21	56
79.00	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.90	0.50	0.0	0.0	20.29	70	190
79.00	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.90	0.50	0.0	0.0	20.29	70	228
79.00	RFS DB-B1-6C-12AB-	1	21	2.5	1.6	15.7	10.3	0.90	1.00	0.0	0.0	20.29	62	19
79.00	Commscope JAHH-	6	61	9.1	6.0	13.8	8.2	0.90	0.69	0.0	0.0	20.29	937	327
79.00	Round Sector Frame	2	300	14.4	0.0	0.0	0.0	0.90	0.90	0.0	0.0	20.29	644	540
71.00	Amphenol Antel LPA-	3	9	3.0	3.9	6.4	5.8	0.90	0.67	0.0	0.0	20.37	148	24
71.00	Amphenol Antel BXA-	1	10	4.7	4.0	11.2	5.2	0.90	1.00	0.0	0.0	20.37	117	9
71.00	Amphenol Antel BXA-	2	17	7.5	5.9	11.0	5.2	0.90	0.75	0.0	0.0	20.37	279	31
71.00	Round Sector Frame	2	300	14.4	0.0	0.0	0.0	0.90	0.90	0.0	0.0	20.37	646	540
Totals		26	2182	156.2									2994	1964

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
79.00	Commscope	3	43	1.1	0.8	6.9	6.4	0.90	0.50	0.0	0.0	5.86	7	140
79.00	Samsung B5/B13	3	127	2.8	1.3	15.0	8.1	0.90	0.50	0.0	0.0	5.86	19	424
79.00	Samsung B2/B66A	3	148	2.8	1.3	15.0	10.0	0.90	0.50	0.0	0.0	5.86	19	494
79.00	RFS DB-B1-6C-12AB-	1	101	3.5	1.6	15.7	10.3	0.90	1.00	0.0	0.0	5.86	16	105
79.00	Commscope JAHH-	6	262	11.9	6.0	13.8	8.2	0.90	0.69	0.0	0.0	5.86	220	1642
79.00	Round Sector Frame	2	666	30.8	0.0	0.0	0.0	0.90	0.90	0.0	0.0	5.86	249	1451
71.00	Amphenol Antel LPA-	3	102	3.8	3.9	6.4	5.8	0.90	0.67	0.0	0.0	5.89	34	312
71.00	Amphenol Antel BXA-	1	111	6.5	4.0	11.2	5.2	0.90	1.00	0.0	0.0	5.89	29	113
71.00	Amphenol Antel BXA-	2	164	10.2	5.9	11.0	5.2	0.90	0.75	0.0	0.0	5.89	69	335
71.00	Round Sector Frame	2	666	30.8	0.0	0.0	0.0	0.90	0.90	0.0	0.0	5.89	250	1451
Totals		26	6031	256.2									913	6467

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
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Site Number: 283426

Code: ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

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Customer: VERIZON WIRELESS

Tower Loading

79.00	Commscope	3	21	0.6	0.8	6.9	6.4	0.90	0.50	0.0	0.0	8.44	5	62
79.00	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.90	0.50	0.0	0.0	8.44	18	211
79.00	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.90	0.50	0.0	0.0	8.44	18	253
79.00	RFS DB-B1-6C-12AB-	1	21	2.5	1.6	15.7	10.3	0.90	1.00	0.0	0.0	8.44	16	21
79.00	Commscope JAHH-	6	61	9.1	6.0	13.8	8.2	0.90	0.69	0.0	0.0	8.44	244	364
79.00	Round Sector Frame	2	300	14.4	0.0	0.0	0.0	0.90	0.90	0.0	0.0	8.44	167	600
71.00	Amphenol Antel LPA-	3	9	3.0	3.9	6.4	5.8	0.90	0.67	0.0	0.0	8.48	39	27
71.00	Amphenol Antel BXA-	1	10	4.7	4.0	11.2	5.2	0.90	1.00	0.0	0.0	8.48	31	10
71.00	Amphenol Antel BXA-	2	17	7.5	5.9	11.0	5.2	0.90	0.75	0.0	0.0	8.48	73	34
71.00	Round Sector Frame	2	300	14.4	0.0	0.0	0.0	0.90	0.90	0.0	0.0	8.48	168	600
	Totals	26	2182	156.2									779	2182

Site Number: 283426

Code: ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

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Customer: VERIZON WIRELESS

Tower Loading

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	79.00	Waveguide	1	2.00	6.00	100	1	Individual	0.00	N	1.00	1.00	0.00
10.00	79.00	1 5/8" Hybriflex	1	1.98	1.30	100	1	Individual	0.00	N	1.00	1.00	0.00
10.00	71.00	1 5/8" Coax	6	1.98	0.82	100	1	Individual	0.00	N	1.00	1.00	0.00

Site Number: 283426

Code: ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

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Customer: VERIZON WIRELESS

Equivalent Lateral Force Method

(Based on ASCE7-10 Chapters 11, 12 & 15)

Spectral Response Acceleration for Short Period (S_s):	0.21
Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.07
Long-Period Transition Period (T_L - Seconds):	6
Importance Factor (I_p):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.22
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Seismic Response Coefficient (C_s):	0.06
Upper Limit C_s :	0.06
Lower Limit C_s :	0.03
Period based on Rayleigh Method (sec):	0.56
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.03
Total Unfactored Dead Load:	6.58 k
Seismic Base Shear (E):	0.54 k

LoadCase (1.2 + 0.2Sds) * DL + E

Seismic

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
4	70.00	1,315	105,198	0.270	144	1,636
3	50.00	857	48,467	0.124	67	1,066
2	30.00	923	30,805	0.079	42	1,148
1	10.00	1,307	14,056	0.036	19	1,627
Commscope CBC78T-DS-43-2X	79.00	62	5,628	0.014	8	77
Samsung B5/B13 RRH-BR04C	79.00	211	19,114	0.049	26	262
Samsung B2/B66A RRH-BR049	79.00	253	22,947	0.059	32	315
RFS DB-B1-6C-12AB-0Z	79.00	21	1,939	0.005	3	27
Commscope JAHH-65B-R3B	79.00	364	32,953	0.085	45	452
Round Sector Frame	79.00	600	54,378	0.139	75	746
Amphenol Antel LPA-185063/8CF ___ 4°	71.00	27	2,192	0.006	3	34
Amphenol Antel BXA-80063-4CF-EDIN-X	71.00	10	804	0.002	1	12
Amphenol Antel BXA-80063-6CF-EDIN-X	71.00	34	2,760	0.007	4	42
Round Sector Frame	71.00	600	48,707	0.125	67	746
		6,584	389,948	1.000	535	8,192

LoadCase (0.9 - 0.2Sds) * DL + E

Seismic (Reduced DL)

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
4	70.00	1,315	105,198	0.270	144	1,125
3	50.00	857	48,467	0.124	67	734
2	30.00	923	30,805	0.079	42	790
1	10.00	1,307	14,056	0.036	19	1,119

Site Number: 283426

Code: ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

12/18/2019 4:35:41 PM

Customer: VERIZON WIRELESS

Equivalent Lateral Force Method

Commscope CBC78T-DS-43-2X	79.00	62	5,628	0.014	8	53
Samsung B5/B13 RRH-BR04C	79.00	211	19,114	0.049	26	180
Samsung B2/B66A RRH-BR049	79.00	253	22,947	0.059	32	217
RFS DB-B1-6C-12AB-0Z	79.00	21	1,939	0.005	3	18
Commscope JAHH-65B-R3B	79.00	364	32,953	0.085	45	311
Round Sector Frame	79.00	600	54,378	0.139	75	514
Amphenol Antel LPA-185063/8CF ___ 4°	71.00	27	2,192	0.006	3	23
Amphenol Antel BXA-80063-4CF-EDIN-X	71.00	10	804	0.002	1	8
Amphenol Antel BXA-80063-6CF-EDIN-X	71.00	34	2,760	0.007	4	29
Round Sector Frame	71.00	600	48,707	0.125	67	514
		6,584	389,948	1.000	535	5,635

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_{ps}):	0.21
Spectral Response Acceleration at 1.0 Second Period (S_{p1}):	0.07
Importance Factor (I_p):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.22
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Period Based on Rayleigh Method (sec):	0.56
Redundancy Factor (ρ):	1.30

LoadCase (1.2 + 0.2Sds) * DL + E

Seismic

Section	Height		a	b	c	S_{az}	Horizontal Force (lb)	Vertical Force (lb)
	Above Base (ft)	Weight (lb)						
4	70.00	1,315	1.447	0.379	0.482	0.286	163	1,636
3	50.00	857	0.738	-0.098	0.038	0.110	41	1,066
2	30.00	923	0.266	0.052	0.015	0.063	25	1,148
1	10.00	1,307	0.030	0.068	0.040	0.023	13	1,627
Commscope CBC78T-DS-43-2X	79.00	62	1.843	1.741	1.053	0.509	14	77
Samsung B5/B13 RRH-BR04C	79.00	211	1.843	1.741	1.053	0.509	47	262
Samsung B2/B66A RRH-BR049	79.00	253	1.843	1.741	1.053	0.509	56	315
RFS DB-B1-6C-12AB-0Z	79.00	21	1.843	1.741	1.053	0.509	5	27
Commscope JAHH-65B-R3B	79.00	364	1.843	1.741	1.053	0.509	80	452
Round Sector Frame	79.00	600	1.843	1.741	1.053	0.509	132	746
Amphenol Antel LPA-	71.00	27	1.489	0.474	0.529	0.306	4	34
Amphenol Antel BXA-80063-4CF-	71.00	10	1.489	0.474	0.529	0.306	1	12
Amphenol Antel BXA-80063-6CF-	71.00	34	1.489	0.474	0.529	0.306	5	42
Round Sector Frame	71.00	600	1.489	0.474	0.529	0.306	79	746
		6,584	19.494	12.744	9.012	4.759	664	8,192

LoadCase (0.9 - 0.2Sds) * DL + E

Seismic (Reduced DL)

Section	Height		a	b	c	S_{az}	Horizontal Force (lb)	Vertical Force (lb)
	Above Base (ft)	Weight (lb)						
4	70.00	1,315	1.447	0.379	0.482	0.286	163	1,125
3	50.00	857	0.738	-0.098	0.038	0.110	41	734
2	30.00	923	0.266	0.052	0.015	0.063	25	790
1	10.00	1,307	0.030	0.068	0.040	0.023	13	1,119
Commscope CBC78T-DS-43-2X	79.00	62	1.843	1.741	1.053	0.509	14	53
Samsung B5/B13 RRH-BR04C	79.00	211	1.843	1.741	1.053	0.509	47	180
Samsung B2/B66A RRH-BR049	79.00	253	1.843	1.741	1.053	0.509	56	217
RFS DB-B1-6C-12AB-0Z	79.00	21	1.843	1.741	1.053	0.509	5	18
Commscope JAHH-65B-R3B	79.00	364	1.843	1.741	1.053	0.509	80	311
Round Sector Frame	79.00	600	1.843	1.741	1.053	0.509	132	514
Amphenol Antel LPA-	71.00	27	1.489	0.474	0.529	0.306	4	23
Amphenol Antel BXA-80063-4CF-	71.00	10	1.489	0.474	0.529	0.306	1	8
Amphenol Antel BXA-80063-6CF-	71.00	34	1.489	0.474	0.529	0.306	5	29
Round Sector Frame	71.00	600	1.489	0.474	0.529	0.306	79	514
		6,584	19.494	12.744	9.012	4.759	664	5,635

Force/Stress Summary

Section: 1		-		Bot Elev (ft): 0.00				Height (ft): 20.000							
		Pu (kip)	Load Case	Len (ft)	Bracing %			F'y (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
Max Compression Member															
LEG	PXX - 2-1/2" DIA PIP	-54.37	1.2D + 1.6W Normal	6.68	100	100	100	94.9	50.0	93.81	0	0	0.00	0.00	57 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 1.75X1.75X0.12	-1.87	1.2D + 1.6W 90 deg	12.22	50	50	50	211.4	36.0	2.12	1	1	7.95	6.96	88 Member Z
Max Tension Member															
LEG	PXX - 2-1/2" DIA PIP	47.64	0.9D + 1.6W 60 deg	50	65	181.35	0	0	0.00	0.00	0	0	0.00	0.00	26 Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	0	0.00	0.00	0
DIAG	SAE - 1.75X1.75X0.12	1.83	0.9D + 1.6W 90 deg	36	58	11.15	1	1	7.95	4.13	1	1	3.81	48	Blk Shear
Max Splice Forces															
		Pu (kip)	Load Case		phiRnt (kip)	Use %	Num Bolts	Bolt Type							
Top Tension		38.95	0.9D + 1.6W 60 deg		0.00	0	0								
Top Compression		44.57	1.2D + 1.6W Normal		0.00	0									
Bot Tension		49.55	0.9D + 1.6W 60 deg		86.78	68	4	5/8 A325							
Bot Compression		56.48	1.2D + 1.6W Normal		0.00	0									

Section: 2		-		Bot Elev (ft): 20.00				Height (ft): 20.000							
		Pu (kip)	Load Case	Len (ft)	Bracing %			F'y (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
Max Compression Member															
LEG	PST - 2-1/2" DIA PIP	-43.07	1.2D + 1.6W Normal	5.01	100	100	100	63.5	50.0	57.12	0	0	0.00	0.00	75 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 1.5X1.5X0.1563	-1.57	1.2D + 1.6W 90 deg	9.693	50	50	50	197.1	36.0	2.56	1	1	7.95	8.70	61 Member Z
Max Tension Member															
LEG	PST - 2-1/2" DIA PIP	37.79	0.9D + 1.6W 60 deg	50	65	76.68	0	0	0.00	0.00	0	0	0.00	0.00	49 Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	0	0.00	0.00	0
DIAG	SAE - 1.5X1.5X0.1563	1.53	1.2D + 1.6W 90 deg	36	58	11.17	1	1	7.95	5.17	1	1	3.91	39	Blk Shear
Max Splice Forces															
		Pu (kip)	Load Case		phiRnt (kip)	Use %	Num Bolts	Bolt Type							
Top Tension		28.08	0.9D + 1.6W 60 deg		0.00	0	0								
Top Compression		32.27	1.2D + 1.6W Normal		0.00	0									
Bot Tension		38.95	0.9D + 1.6W 60 deg		81.36	48	4	5/8 A325							
Bot Compression		0.00			0.00	0									

Force/Stress Summary

Section: 3 - Bot Elev (ft): 40.00 Height (ft): 20.000

		Pu (kip)	Load Case	Len (ft)	Bracing %			F'y (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
Max Compression Member															
LEG	PX - 2" DIA PIPE	-31.01	1.2D + 1.6W Normal	4.01	100	100	100	62.8	50.0	49.93	0	0	0.00	0.00	62 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 1.5X1.5X0.1563	-1.29	1.2D + 1.6W 90 deg	7.485	50	50	50	152.2	36.0	4.29	1	1	7.95	8.70	29 Member Z

		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
Max Tension Member													
LEG	PX - 2" DIA PIPE	26.69	1.2D + 1.6W 60 deg	50	65	66.60	0	0	0.00	0.00			40 Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0.00		0
DIAG	SAE - 1.5X1.5X0.1563	1.26	1.2D + 1.6W 90 deg	36	58	11.17	1	1	7.95	5.17	3.91		32 Blk Shear

		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Max Splice Forces							
Top Tension		15.53	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression		18.48	1.2D + 1.6W Normal	0.00	0		
Bot Tension		28.08	0.9D + 1.6W 60 deg	81.36	35	4	5/8 A325
Bot Compression		0.00		0.00	0		

Section: 4 - Bot Elev (ft): 60.00 Height (ft): 20.000

		Pu (kip)	Load Case	Len (ft)	Bracing %			F'y (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
Max Compression Member															
LEG	PSP - 2.375" x .188"	-16.02	1.2D + 1.6W Normal	4.00	100	100	100	61.5	50.0	50.53	0	0	0.00	0.00	31 Member X
HORIZ	SAE - 1.5X1.5X0.25	-0.41	0.9D + 1.6W 60 deg	4.500	100	100	100	185.0	36.0	4.56	1	1	7.95	13.92	9 Member Z
DIAG	SAE - 1.5X1.5X0.1563	-1.93	1.2D + 1.6W 90 deg	6.021	50	50	50	122.5	36.0	6.47	1	1	7.95	8.70	29 Member Z

		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
Max Tension Member													
LEG	PSP - 2.375" x .188"	13.35	0.9D + 1.6W 60 deg	50	65	66.60	0	0	0.00	0.00			20 Member
HORIZ	SAE - 1.5X1.5X0.25	0.45	1.2D + 1.6W Normal	36	58	17.41	1	1	7.95	8.27	6.25		7 Blk Shear
DIAG	SAE - 1.5X1.5X0.1563	1.86	1.2D + 1.6W 90 deg	36	58	11.17	1	1	7.95	5.17	3.91		47 Blk Shear

		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Max Splice Forces							
Top Tension		0.00		0.00	0	0	
Top Compression		1.69	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension		15.53	0.9D + 1.6W 60 deg	81.36	19	4	5/8 A325
Bot Compression		0.00		0.00	0		

Detailed Reactions

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal	6.11	00.00	0	1	0.00	56.36	-6.00	
	6.11	00.00	120	1a	2.03	-24.23	-2.04	
	6.11	00.00	240	1b	-2.03	-24.23	-2.04	
1.2D + 1.6W 60 deg	6.11	00.00	0	1	-0.69	28.26	-2.90	
	6.11	00.00	120	1a	-2.85	28.26	0.85	
	6.11	00.00	240	1b	-4.64	-48.62	-2.68	
1.2D + 1.6W 90 deg	6.11	00.00	0	1	-0.82	2.63	-0.15	
	6.11	00.00	120	1a	-4.52	47.56	2.14	
	6.11	00.00	240	1b	-4.27	-42.29	-1.99	
0.9D + 1.6W Normal	6.11	00.00	0	1	0.00	55.66	-5.96	
	6.11	00.00	120	1a	2.06	-24.87	-2.07	
	6.11	00.00	240	1b	-2.06	-24.87	-2.07	
0.9D + 1.6W 60 deg	6.11	00.00	0	1	-0.69	27.58	-2.86	
	6.11	00.00	120	1a	-2.82	27.58	0.83	
	6.11	00.00	240	1b	-4.67	-49.23	-2.70	
0.9D + 1.6W 90 deg	6.11	00.00	0	1	-0.82	1.98	-0.11	
	6.11	00.00	120	1a	-4.49	46.86	2.12	
	6.11	00.00	240	1b	-4.31	-42.91	-2.01	
1.2D + 1.0Di + 1.0Wi Normal	6.11	00.00	0	1	0.00	26.91	-2.35	
	6.11	00.00	120	1a	0.60	-1.63	-0.68	
	6.11	00.00	240	1b	-0.60	-1.63	-0.68	
1.2D + 1.0Di + 1.0Wi 60 deg	6.11	00.00	0	1	-0.28	17.19	-1.25	
	6.11	00.00	120	1a	-1.22	17.19	0.39	
	6.11	00.00	240	1b	-1.63	-10.72	-0.94	
1.2D + 1.0Di + 1.0Wi 90 deg	6.11	00.00	0	1	-0.32	7.88	-0.21	
	6.11	00.00	120	1a	-1.84	24.14	0.88	
	6.11	00.00	240	1b	-1.48	-8.37	-0.67	
(1.2 + 0.2Sds) * DL + E Normal M1	6.11	00.00	0	1	0.00	6.22	-0.48	
	6.11	00.00	120	1a	-0.02	0.78	-0.01	
	6.11	00.00	240	1b	0.02	0.78	-0.01	
(1.2 + 0.2Sds) * DL + E Normal M2	6.11	00.00	0	1	0.00	7.45	-0.57	
	6.11	00.00	120	1a	0.02	0.17	-0.04	
	6.11	00.00	240	1b	-0.02	0.17	-0.04	
(1.2 + 0.2Sds) * DL + E 60 deg M1	6.11	00.00	0	1	-0.02	4.41	-0.32	
	6.11	00.00	120	1a	-0.29	4.41	0.14	
	6.11	00.00	240	1b	-0.13	-1.03	-0.07	
(1.2 + 0.2Sds) * DL + E 60 deg M2	6.11	00.00	0	1	-0.02	5.02	-0.37	
	6.11	00.00	120	1a	-0.33	5.02	0.16	
	6.11	00.00	240	1b	-0.21	-2.26	-0.12	
(1.2 + 0.2Sds) * DL + E 90 deg M1	6.11	00.00	0	1	-0.03	2.60	-0.17	
	6.11	00.00	120	1a	-0.39	5.73	0.21	
	6.11	00.00	240	1b	-0.10	-0.54	-0.04	
(1.2 + 0.2Sds) * DL + E 90 deg M2	6.11	00.00	0	1	-0.03	2.60	-0.17	
	6.11	00.00	120	1a	-0.45	6.80	0.25	

Site Number: 283426

Code:

ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

12/18/2019 4:35:41 PM

Customer: VERIZON WIRELESS

	6.11	00.00	240	1b	-0.17	-1.61	-0.08
(0.9 - 0.2Sds) * DL + E Normal M1	6.11	00.00	0	1	0.00	5.40	-0.43
	6.11	00.00	120	1a	0.03	-0.02	-0.04
	6.11	00.00	240	1b	-0.03	-0.02	-0.04
(0.9 - 0.2Sds) * DL + E Normal M2	6.11	00.00	0	1	0.00	6.64	-0.52
	6.11	00.00	120	1a	0.06	-0.64	-0.06
	6.11	00.00	240	1b	-0.06	-0.64	-0.06
(0.9 - 0.2Sds) * DL + E 60 deg M1	6.11	00.00	0	1	-0.02	3.59	-0.27
	6.11	00.00	120	1a	-0.25	3.59	0.12
	6.11	00.00	240	1b	-0.17	-1.83	-0.10
(0.9 - 0.2Sds) * DL + E 60 deg M2	6.11	00.00	0	1	-0.02	4.21	-0.32
	6.11	00.00	120	1a	-0.29	4.21	0.14
	6.11	00.00	240	1b	-0.25	-3.07	-0.14
(0.9 - 0.2Sds) * DL + E 90 deg M1	6.11	00.00	0	1	-0.03	1.79	-0.11
	6.11	00.00	120	1a	-0.34	4.92	0.18
	6.11	00.00	240	1b	-0.14	-1.35	-0.07
(0.9 - 0.2Sds) * DL + E 90 deg M2	6.11	00.00	0	1	-0.03	1.79	-0.11
	6.11	00.00	120	1a	-0.41	5.99	0.22
	6.11	00.00	240	1b	-0.21	-2.42	-0.11
1.0D + 1.0W Service Normal	6.11	00.00	0	1	0.00	16.07	-1.65
	6.11	00.00	120	1a	0.44	-4.74	-0.48
	6.11	00.00	240	1b	-0.44	-4.74	-0.48
1.0D + 1.0W Service 60 deg	6.11	00.00	0	1	-0.18	8.81	-0.84
	6.11	00.00	120	1a	-0.82	8.81	0.27
	6.11	00.00	240	1b	-1.12	-11.04	-0.65
1.0D + 1.0W Service 90 deg	6.11	00.00	0	1	-0.21	2.19	-0.13
	6.11	00.00	120	1a	-1.25	13.80	0.60
	6.11	00.00	240	1b	-1.02	-9.41	-0.47

Max Uplift:	49.23 (kip)	Moment Ice:	174.37 (kip-ft)	Moment:	492.44 (kip-ft)	1.2D + 1.6W Normal
Max Down:	56.36 (kip)	Total Down Ice:	23.65 (kip)	Total Down:	7.90 (kip)	
Max Shear:	6.00 (kip)	Total Shear Ice:	3.71 (kip)	Total Shear:	10.09 (kip)	

Site Number: 283426

Code: ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

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Customer: VERIZON WIRELESS

Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
93 mph Normal with No Ice	72.00	0.333	0.0112	0.5471	0.5471
93 mph Normal with No Ice	80.00	0.409	0.0106	0.5567	0.5568
93 mph 60 degree with No Ice	72.00	0.321	0.0111	0.5301	0.5302
93 mph 60 degree with No Ice	80.00	0.395	0.0104	0.5400	0.5401
93 mph 90 degree with No Ice	72.00	0.324	-0.0127	0.5346	0.5346
93 mph 90 degree with No Ice	80.00	0.399	-0.0120	0.5467	0.5468
93 mph Normal with No Ice (Reduced DL)	72.00	0.332	0.0111	0.5460	0.5460
93 mph Normal with No Ice (Reduced DL)	80.00	0.409	0.0106	0.5556	0.5557
93 mph 60 deg with No Ice (Reduced DL)	72.00	0.321	0.0110	0.5292	0.5292
93 mph 60 deg with No Ice (Reduced DL)	80.00	0.395	0.0104	0.5391	0.5392
93 mph 90 deg with No Ice (Reduced DL)	72.00	0.323	-0.0127	0.5335	0.5336
93 mph 90 deg with No Ice (Reduced DL)	80.00	0.398	-0.0120	0.5457	0.5458
50 mph Normal with 0.75 in Radial Ice	72.00	0.114	0.0035	0.1843	0.1843
50 mph Normal with 0.75 in Radial Ice	80.00	0.140	0.0032	0.1871	0.1871
50 mph 60 deg with 0.75 in Radial Ice	72.00	0.112	-0.0031	0.1807	0.1807
50 mph 60 deg with 0.75 in Radial Ice	80.00	0.137	-0.0028	0.1825	0.1825
50 mph 90 deg with 0.75 in Radial Ice	72.00	0.113	-0.0040	0.1825	0.1825
50 mph 90 deg with 0.75 in Radial Ice	80.00	0.138	-0.0037	0.1855	0.1855
Seismic Normal M1	72.00	0.025	0.0005	0.0408	0.0408
Seismic Normal M1	80.00	0.030	0.0004	0.0404	0.0404
Seismic Normal M2	72.00	0.034	0.0008	0.0576	0.0576
Seismic Normal M2	80.00	0.042	0.0007	0.0572	0.0572
Seismic 60 deg M1	72.00	0.025	-0.0005	0.0405	0.0405
Seismic 60 deg M1	80.00	0.030	-0.0004	0.0401	0.0401
Seismic 60 deg M2	72.00	0.034	-0.0008	0.0574	0.0574
Seismic 60 deg M2	80.00	0.042	-0.0007	0.0569	0.0569
Seismic 90 deg M1	72.00	0.025	-0.0006	0.0407	0.0407
Seismic 90 deg M1	80.00	0.030	-0.0005	0.0403	0.0403
Seismic 90 deg M2	72.00	0.034	-0.0010	0.0576	0.0576
Seismic 90 deg M2	80.00	0.042	-0.0008	0.0570	0.0570
Seismic (Reduced DL) Normal M1	72.00	0.025	0.0005	0.0406	0.0406
Seismic (Reduced DL) Normal M1	80.00	0.030	0.0004	0.0402	0.0402
Seismic (Reduced DL) Normal M2	72.00	0.034	0.0008	0.0574	0.0574
Seismic (Reduced DL) Normal M2	80.00	0.042	0.0007	0.0570	0.0570
Seismic (Reduced DL) 60 deg M1	72.00	0.025	-0.0005	0.0404	0.0404
Seismic (Reduced DL) 60 deg M1	80.00	0.030	-0.0004	0.0400	0.0400
Seismic (Reduced DL) 60 deg M2	72.00	0.034	-0.0008	0.0572	0.0572
Seismic (Reduced DL) 60 deg M2	80.00	0.042	-0.0007	0.0568	0.0568
Seismic (Reduced DL) 90 deg M1	72.00	0.025	-0.0006	0.0405	0.0405
Seismic (Reduced DL) 90 deg M1	80.00	0.030	-0.0005	0.0401	0.0402
Seismic (Reduced DL) 90 deg M2	72.00	0.034	-0.0009	0.0573	0.0573
Seismic (Reduced DL) 90 deg M2	80.00	0.042	-0.0008	0.0569	0.0569
Serviceability - 60 mph Wind Normal	72.00	0.086	0.0024	0.1415	0.1415
Serviceability - 60 mph Wind Normal	80.00	0.106	0.0021	0.1439	0.1439
Serviceability - 60 mph Wind 60 deg	72.00	0.083	0.0023	0.1369	0.1369
Serviceability - 60 mph Wind 60 deg	80.00	0.102	0.0020	0.1391	0.1391
Serviceability - 60 mph Wind 90 deg	72.00	0.084	-0.0027	0.1382	0.1382
Serviceability - 60 mph Wind 90 deg	80.00	0.103	-0.0024	0.1411	0.1411

Maximum Reactions Summary

Anchor Group	Vertical (kip)				Horizontal (kip)		Moment (kip-ft)	
	DL+WL	DL+WL+IL	UpLift	Shear	DL+WL	DL+WL+IL	DL+WL	DL+WL+IL
Base	7.90	23.65	56.36	6.00	10.09	3.71	492.44	174.37

Site Number: 283426

Code: ANSI/TIA-222-G

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Site Name: BROOKFIELD CT, CT

Engineering Number: 13012776_C3_02

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Customer: VERIZON WIRELESS

INFINIGY

FROM ZERO TO INFINIGY
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1033 WATERLIET SHAKER RD, ALBANY, NY 12205

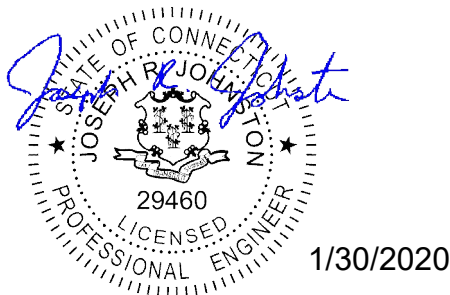
Mount Analysis Report

January 29, 2020

Verizon Site Name	Brookfield CT
Verizon Site Number	468123
ATC Site Name	Brookfield CT
ATC Site Number	283426
Infinigy Job Number	1009-Z0003-B
Client	ATC
Carrier	Verizon
Site Location	37 Carmen Hill Road Brookfield, CT 06804 Fairfield County 41.4929 N NAD83 73.4273 W NAD83
Mount Centerline EL.	79.0 ft and 71.0 ft
Mount Type	Sector Frames
Structural Usage Ratio	92.0%
Overall Result	Contingent Pass

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The mounts and connections for the proposed carrier are therefore deemed adequate to support the final loading configuration as listed in this report after the following modifications are installed.

- Install (1) 2.0" std pipe as tieback at RAD center 71.0 ft, from the inner mount pipe to the opposite tower leg, maximum 12 inches from the top horizontal, per sector. Please see proposed modifications renderings at rad height 71.0 ft for more detail.



Pradin Suinyal Magar, M.S.
Project Engineer I

AZ CA CO FL GA MD NC NH NJ NY TX WA

INFINIGY

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Calculations.....	Appended

Introduction

Infinigy Engineering has been requested to perform a mount analysis on the existing Verizon mounts. All referenced supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 17.0.4 analysis software.

Supporting Documentation

Collocation Application	Collo App ID #361257, dated December 10, 2019
RFDS	FUZE Project ID #16035979, dated November 12, 2019
Structural Report	ATC Engineering #13012776_C3_02, dated December 18, 2019
Mapping Report	Infinigy Job #1009-Z0003-H, dated January 23, 2020

Analysis Code Requirements

Wind Speed	93 mph (3-Second Gust, V_{asd}) / 120 mph (3-Second Gust, V_{ult})
Wind Speed w/ Ice	50 mph (3 Second Gust) w/ 0.75" Ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2015 IBC / 2018 Connecticut State Building Code
Structure Class	II
Exposure Category	B
Topographic Category	5
Crest Height	309.0 ft
Spectral Response	$S_s = 0.208$ g, $S_1 = 0.066$ g
Site Class	D - Stiff Soil

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The mount and connections are therefore deemed adequate to support the existing and proposed loading as listed in this report after the listed modifications are installed.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Pradin Suinyal Magar, M.S.
 Project Engineer I | **INFINIGY**
 1517 Old Apex Road, Cary, NC 27513
 (O) (518) 690-0813
 pmagar@infinigy.com | www.infinigy.com

Final Configuration Loading

Mount CL (ft)	Vert. O/S (ft)	Rad. HT (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
79.0	0.0	79.0	6.3/11.1	6	COMMSCOPE JAHH-65B-R3B	Verizon
			6.9/10.2	3	COMMSCOPE CBC78T-DS-43-2X	
			1.7	1	RFS/CELWAVE DB-B1-6C-12AB-0Z	
			3.0/4.1	3	SAMSUNG B5/B13 RRH-BR04C	
			4.1/4.1	3	SAMSUNG B2/B66A RRH-BR049	
71.0	0.0	71.0	0.3/3.5	3	AMPHENOL LPA-185063/8CF 4	
			3.5	2	AMPHENOL BXA-80063-6CF-EDIN-X	
			0.3	1	AMPHENOL BXA-80063-4CF-EDIN-X	

*Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower

Structure Usages at 79.0 ft RAD Height

Horizontals	92.0%	Pass
Mount Pipes	59.7%	Pass
Tieback	14.4%	Pass
Max Usage	92.0%	Pass

Structure Usages at 71.0 ft RAD Height

Horizontals	52.2%	Pass
Mount Pipes	55.9%	Pass
Tieback	12.1%	Pass
Max Usage	55.9%	Pass

Mount Connection Usages at 79.0 ft RAD Height

Bolt Check			
Reaction Data	Design Capacity*	Analysis Reactions	Results
Max Tension (lbs.)	6,385.4	227.4	3.6%
Max Shear (lbs.)	3,976.1	1,043.0	26.2%
Unity Check	-	-	7.0%
Slip Check			
Reaction Data	Design Capacity*	Analysis Reactions	Results
Sliding Force (lbs.)	9424.8	1583.9	16.8%
Torsion (lbs-ft)	981.8	0.0	0.0%
Interaction Check	-	-	2.8%
*(2) 0.5" A307 U-Bolts.			

Mount Connection Usages at 71.0 ft RAD Height

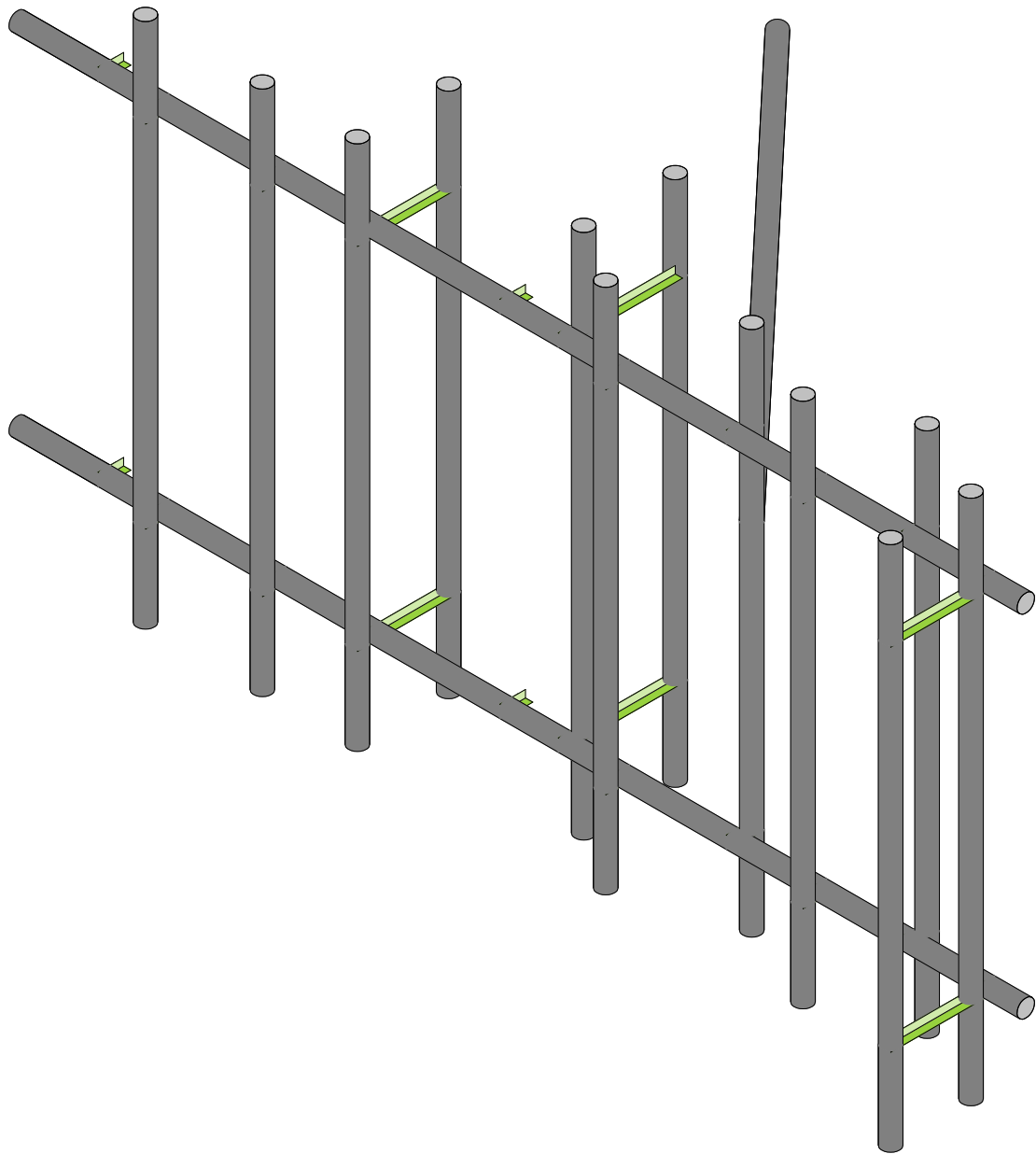
Bolt Check			
Reaction Data	Design Capacity*	Analysis Reactions	Results
Max Tension (lbs.)	6,385.4	242.8	3.8%
Max Shear (lbs.)	3,976.1	972.9	24.5%
Unity Check	-	-	6.1%
Slip Check			
Reaction Data	Design Capacity*	Analysis Reactions	Results
Sliding Force (lbs.)	9,416.5	761.4	8.1%
Torsion (lbs-ft)	980.9	0.0	0.0%
Interaction Check	-	-	0.7%
*(2) 0.5" A307 U-Bolts.			

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of “like new” and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure’s condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.



Envelope Only Solution

Infinigy Engineering PLLC	BROOKFIELD CT-RAD HT. 79.0 ft	Existing Configuration
PSM		Jan 28, 2020 at 12:36 PM
1009-Z0003-B		283426 RAD 79.0'_loaded.r3d

Program Inputs

PROJECT INFORMATION		
Client:	ATC	
Carrier:	Verizon	
Engineer:	Pradin Suyinal Magar, M.S	

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Category:	5	
Site Class:	D - Stiff Soil	
Ground Elevation:	N/A	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	79.0	ft
Tower Height AGL:	80.0	ft

TOPOGRAPHIC DATA		
Topo Feature:	Flat Topped Ridge	
Crest Height:	309.0	ft
Slope Distance:	2460.0	ft
Crest Distance:	0.0	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_e):	N/A	*Rev H Only
Rooftop Speed-Up (K_s):	N/A	*Rev H Only
Topographic Factor (K_{zt}):	1.54	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-G	
ASCE Standard:	ASCE 7-10	

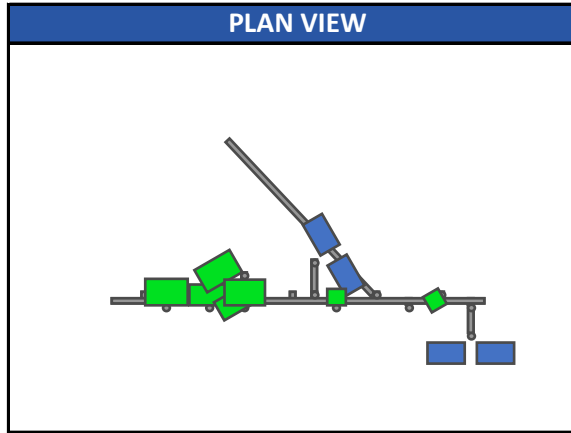
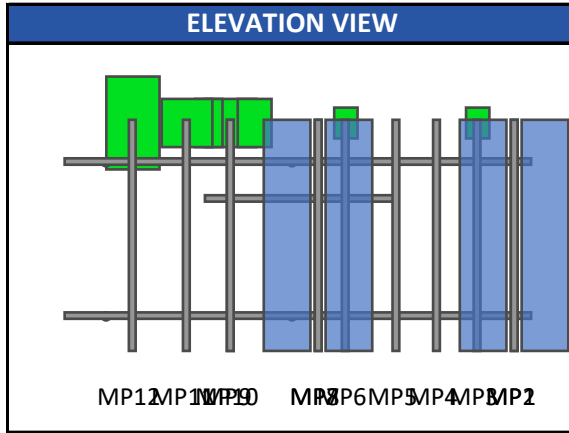
WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	120	mph
Design Wind (V):	93	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	0.75	in
Flat Pressure:	59.79	psf
Round Pressure:	35.88	psf
Ice Wind Pressure:	10.37	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.21	g
1-Second Accel. (S_1):	0.07	g
Short-Period Design (S_{DS}):	0.22	
1-Second Design (S_{D1}):	0.11	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	



Infinigy Load Calculator V2.1.3

Program Inputs



Infinigy Load Calculator V2.1.3

APPURTENANCE INFORMATION												
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft ²)	EPA_T (ft ²)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)	
COMMSCOPE JAHH-65B-R3B	79.0	1	1.00	29.90	5.50	4.38	164.55	131.08	63.30	7.02	MP2	
COMMSCOPE JAHH-65B-R3B	79.0	1	1.00	29.90	5.50	4.38	164.55	131.08	63.30	7.02	MP2	
COMMSCOPE JAHH-65B-R3B	79.0	1	1.00	29.90	5.50	4.38	139.45	156.18	63.30	7.02	MP8	
COMMSCOPE JAHH-65B-R3B	79.0	1	1.00	29.90	5.50	4.38	139.45	156.18	63.30	7.02	MP8	
COMMSCOPE JAHH-65B-R3B	79.0	1	1.00	29.90	5.50	4.38	164.55	131.08	63.30	7.02	Leg/Flush	
COMMSCOPE JAHH-65B-R3B	79.0	1	1.00	29.90	5.50	4.38	164.55	131.08	63.30	7.02	Leg/Flush	
COMMSCOPE CBC78T-DS-43-2X	79.0	1	1.00	29.90	0.55	0.51	15.61	16.20	20.70	2.30	MP3	
COMMSCOPE CBC78T-DS-43-2X	79.0	1	1.00	29.90	0.55	0.51	16.50	15.31	20.70	2.30	MP6	
COMMSCOPE CBC78T-DS-43-2X	79.0	1	1.00	29.90	0.55	0.51	16.50	15.31	20.70	2.30	Leg/Flush	
RFS/CELWAVE TME-DB-B1-6C-12AB-OZ	79.0	1	1.00	29.90	3.79	2.51	113.38	75.15	32.00	3.55	MP12	
NG TELECOMMUNICATIONS B5/B13 RR	79.0	2	1.00	29.90	1.88	1.01	56.06	30.27	70.30	7.80	MP11	
NG TELECOMMUNICATIONS B5/B13 RR	79.0	1	1.00	29.90	1.88	1.01	36.72	49.61	70.30	7.80	MP10	
G TELECOMMUNICATIONS B2/B66A RR	79.0	2	1.00	29.90	1.88	1.25	56.06	37.37	84.40	9.36	MP9	
G TELECOMMUNICATIONS B2/B66A RR	79.0	1	1.00	29.90	1.88	1.25	42.04	51.38	84.40	9.36	MP10	



Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...)	Section/Shape	Type	Design List	Material	Design Rules
1	H1	N3	N4			Horizontals	Beam	None	A53 Gr.B	Typical
2	H2	N1	N2			Horizontals	Beam	None	A53 Gr.B	Typical
3	MP1	N34	N30			Mount Pipes	Beam	None	A53 Gr.B	Typical
4	M24	N24	N47			RIGID	None	None	RIGID	Typical
5	M25	N23	N46			RIGID	None	None	RIGID	Typical
6	M6	N23	N11			RIGID	None	None	RIGID	Typical
7	M7	N24	N12			RIGID	None	None	RIGID	Typical
8	MP2	N14	N13			Mount Pipes	Beam	None	A53 Gr.B	Typical
9	MP3	N18	N17			Mount Pipes	Beam	None	A53 Gr.B	Typical
10	M10	N16	N20			RIGID	None	None	RIGID	Typical
11	M11	N15	N19			RIGID	None	None	RIGID	Typical
12	MP4	N24A	N23A			Mount Pipes	Beam	None	A53 Gr.B	Typical
13	M13	N22	N26			RIGID	None	None	RIGID	Typical
14	M14	N21	N25			RIGID	None	None	RIGID	Typical
15	MP5	N30A	N29			Mount Pipes	Beam	None	A53 Gr.B	Typical
16	M16	N28	N32			RIGID	None	None	RIGID	Typical
17	M17	N27	N31			RIGID	None	None	RIGID	Typical
18	MP6	N36	N35			Mount Pipes	Beam	None	A53 Gr.B	Typical
19	M19	N34A	N38			RIGID	None	None	RIGID	Typical
20	M20	N33	N37			RIGID	None	None	RIGID	Typical
21	MP7	N42	N41			Mount Pipes	Beam	None	A53 Gr.B	Typical
22	M22	N40	N44			RIGID	None	None	RIGID	Typical
23	M23	N39	N43			RIGID	None	None	RIGID	Typical
24	MP8	N46A	N45			Mount Pipes	Beam	None	A53 Gr.B	Typical
25	M25A	N48	N40			RIGID	None	None	RIGID	Typical
26	M26	N47A	N39			RIGID	None	None	RIGID	Typical
27	M27	N50	N52			RIGID	None	None	RIGID	Typical
28	M28	N49	N51			RIGID	None	None	RIGID	Typical
29	MP9	N56	N55			Mount Pipes	Beam	None	A53 Gr.B	Typical
30	M30	N54	N58			RIGID	None	None	RIGID	Typical
31	M31	N53	N57			RIGID	None	None	RIGID	Typical
32	MP10	N62	N61			Mount Pipes	Beam	None	A53 Gr.B	Typical
33	M33	N60	N58			RIGID	None	None	RIGID	Typical
34	M34	N59	N57			RIGID	None	None	RIGID	Typical
35	MP11	N66	N65			Mount Pipes	Beam	None	A53 Gr.B	Typical
36	M36	N64	N68			RIGID	None	None	RIGID	Typical
37	M37	N63	N67			RIGID	None	None	RIGID	Typical
38	MP12	N72	N71			Mount Pipes	Beam	None	A53 Gr.B	Typical
39	M39	N70	N74			RIGID	None	None	RIGID	Typical
40	M40	N69	N73			RIGID	None	None	RIGID	Typical
41	M41	N76	N78			RIGID	None	None	RIGID	Typical



Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...)	Section/Shape	Type	Design List	Material	Design Rules
42	M42	N75	N77			RIGID	None	None	RIGID	Typical
43	T1	N79	N80			Tiebacks	Beam	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		28	122	0
3	Total General		28	122	0
4					
5	Hot Rolled Steel				
6	A53 Gr.B	PIPE 2.0	15	1222.4	.354
7	Total HR Steel		15	1222.4	.354

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface...
1	Self Weight	DL		-1			15			
2	Wind Load AZI 0	WLZ					30			
3	Wind Load AZI 30	None					30			
4	Wind Load AZI 60	None					30			
5	Wind Load AZI 90	WLX					30			
6	Wind Load AZI 120	None					30			
7	Wind Load AZI 150	None					30			
8	Wind Load AZI 180	None					30			
9	Wind Load AZI 210	None					30			
10	Wind Load AZI 240	None					30			
11	Wind Load AZI 270	None					30			
12	Wind Load AZI 300	None					30			
13	Wind Load AZI 330	None					30			
14	Distr. Wind Load Z	WLZ						43		
15	Distr. Wind Load X	WLX						43		
16	Ice Weight	OL1					15	43		
17	Ice Wind Load AZI 0	OL2					30			
18	Ice Wind Load AZI 30	None					30			
19	Ice Wind Load AZI 60	None					30			
20	Ice Wind Load AZI 90	OL3					30			
21	Ice Wind Load AZI 120	None					30			
22	Ice Wind Load AZI 150	None					30			
23	Ice Wind Load AZI 180	None					30			
24	Ice Wind Load AZI 210	None					30			



Company : Infinigy Engineering PLLC
 Designer : PSM
 Job Number : 1009-Z0003-B
 Model Name : BROOKFIELD CT-RAD HT. 79.0 ft

Jan 28, 2020
 5:08 PM
 Checked By: _____

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...)	Surface...
25	Ice Wind Load AZI 240	None					30			
26	Ice Wind Load AZI 270	None					30			
27	Ice Wind Load AZI 300	None					30			
28	Ice Wind Load AZI 330	None					30			
29	Distr. Ice Wind Load Z	OL2						43		
30	Distr. Ice Wind Load X	OL3						43		
31	Seismic Load Z	ELZ			-0.111		15			
32	Seismic Load X	ELX	-0.111				15			
33	Service Live Loads	LL				1				

Load Combinations

	Description	S...P...S...	BLC	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
1	1.4DL	Y...Y	1	1.4												
2	1.2DL + 1.6WL AZI 0	Y...Y	1	1.2	2	1.6	14	1.6	15							
3	1.2DL + 1.6WL AZI 30	Y...Y	1	1.2	3	1.6	14	1.3...	15	.8						
4	1.2DL + 1.6WL AZI 60	Y...Y	1	1.2	4	1.6	14	.8	15	1.3...						
5	1.2DL + 1.6WL AZI 90	Y...Y	1	1.2	5	1.6	14		15	1.6						
6	1.2DL + 1.6WL AZI 120	Y...Y	1	1.2	6	1.6	14	-.8	15	1.3...						
7	1.2DL + 1.6WL AZI 150	Y...Y	1	1.2	7	1.6	14	-1...	15	.8						
8	1.2DL + 1.6WL AZI 180	Y...Y	1	1.2	8	1.6	14	-1.6	15							
9	1.2DL + 1.6WL AZI 210	Y...Y	1	1.2	9	1.6	14	-1...	15	-.8						
10	1.2DL + 1.6WL AZI 240	Y...Y	1	1.2	10	1.6	14	-.8	15	-1...						
11	1.2DL + 1.6WL AZI 270	Y...Y	1	1.2	11	1.6	14		15	-1.6						
12	1.2DL + 1.6WL AZI 300	Y...Y	1	1.2	12	1.6	14	.8	15	-1...						
13	1.2DL + 1.6WL AZI 330	Y...Y	1	1.2	13	1.6	14	1.3...	15	-.8						
14	0.9DL + 1.6WL AZI 0	Y...Y	1	.9	2	1.6	14	1.6	15							
15	0.9DL + 1.6WL AZI 30	Y...Y	1	.9	3	1.6	14	1.3...	15	.8						
16	0.9DL + 1.6WL AZI 60	Y...Y	1	.9	4	1.6	14	.8	15	1.3...						
17	0.9DL + 1.6WL AZI 90	Y...Y	1	.9	5	1.6	14		15	1.6						
18	0.9DL + 1.6WL AZI 120	Y...Y	1	.9	6	1.6	14	-.8	15	1.3...						
19	0.9DL + 1.6WL AZI 150	Y...Y	1	.9	7	1.6	14	-1...	15	.8						
20	0.9DL + 1.6WL AZI 180	Y...Y	1	.9	8	1.6	14	-1.6	15							
21	0.9DL + 1.6WL AZI 210	Y...Y	1	.9	9	1.6	14	-1...	15	-.8						
22	0.9DL + 1.6WL AZI 240	Y...Y	1	.9	10	1.6	14	-.8	15	-1...						
23	0.9DL + 1.6WL AZI 270	Y...Y	1	.9	11	1.6	14		15	-1.6						
24	0.9DL + 1.6WL AZI 300	Y...Y	1	.9	12	1.6	14	.8	15	-1...						
25	0.9DL + 1.6WL AZI 330	Y...Y	1	.9	13	1.6	14	1.3...	15	-.8						
26	1.2D + 1.0Di	Y...Y	1	1.2	16	1										
27	1.2D + 1.0Di + 1.0Wi AZI 0	Y...Y	1	1.2	16	1	17	1	29	1.6	30					
28	1.2D + 1.0Di + 1.0Wi AZI 30	Y...Y	1	1.2	16	1	18	1	29	1.3...	30	.8				
29	1.2D + 1.0Di + 1.0Wi AZI 60	Y...Y	1	1.2	16	1	19	1	29	.8	30	1.3...				



Load Combinations (Continued)

	Description	S...	P...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
30	1.2D + 1.0Di + 1.0Wi AZI 90Y...	Y			1	1.2	16	1	20	1	29	30	1.6						
31	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	21	1	29	-.8	30	1.3...					
32	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	22	1	29	-1...	30	.8					
33	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	23	1	29	-1.6	30						
34	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	24	1	29	-1...	30	-.8					
35	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	25	1	29	-.8	30	-1...					
36	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	26	1	29	30	-1.6						
37	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	27	1	29	.8	30	-1...					
38	1.2D + 1.0Di + 1.0Wi AZI ...	Y		Y	1	1.2	16	1	28	1	29	1.3...	30	-.8					
39	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	1	32										
40	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	.866	32	.5									
41	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	.5	32	.866									
42	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31		32	1									
43	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	-.5	32	.866									
44	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	-.8...	32	.5									
45	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	-1	32										
46	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	-.8...	32	-.5									
47	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	-.5	32	-.8...									
48	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31		32	-1									
49	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	.5	32	-.8...									
50	(1.2 + 0.2Sds)DL + 1.0E ...	Y		Y	1	1.2	.31	.866	32	-.5									
51	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	1	32										
52	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	.866	32	.5									
53	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	.5	32	.866									
54	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31		32	1									
55	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	-.5	32	.866									
56	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	-.8...	32	.5									
57	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	-1	32										
58	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	-.8...	32	-.5									
59	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	-.5	32	-.8...									
60	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31		32	-1									
61	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	.5	32	-.8...									
62	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y	1	.856	31	.866	32	-.5									
63	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	2	.416	14	.416	15	33	1.5						
64	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	3	.416	14	.36	15	.208	33	1.5					
65	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	4	.416	14	.208	15	.36	33	1.5					
66	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	5	.416	14		15	.416	33	1.5					
67	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	6	.416	14	-.2...	15	.36	33	1.5					
68	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	7	.416	14	-.36	15	.208	33	1.5					
69	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	8	.416	14	-.4...	15		33	1.5					
70	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	9	.416	14	-.36	15	-.2...	33	1.5					
71	1.0DL + 1.5LL + 1.0SWL ...	Y		Y	1	1	10	.416	14	-.2...	15	-.36	33	1.5					



Load Combinations (Continued)

	Description	S...	P...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
72	1.0DL + 1.5LL + 1.0SWL ...	Y...	Y		1	1	11	.416	14		15	-.4...	33	1.5					
73	1.0DL + 1.5LL + 1.0SWL ...	Y...	Y		1	1	12	.416	14	.208	15	-.36	33	1.5					
74	1.0DL + 1.5LL + 1.0SWL ...	Y...	Y		1	1	13	.416	14	.36	15	-.2...	33	1.5					

Envelope Joint Reactions

	Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N76	max 1093.767	14	343.18	28	400.981	14	61.461	25	0	74	201.836	27
2		min -1130.4...	8	-27.296	21	-409.11	8	-105.698	7	0	1	19.128	20
3	N75	max 774.831	8	865.257	69	44.41	27	15.185	14	0	74	193.829	29
4		min -753.035	14	10.9	14	-35.245	14	-185.472	69	0	1	-695.42	63
5	N49	max 1730.411	30	1581.996	37	482.548	14	33.07	19	0	74	439.06	27
6		min -682.976	23	94.855	18	-519.031	8	-237.455	27	0	1	-18.155	19
7	N50	max 2624.005	19	1583.881	31	165.225	8	-13.635	22	0	74	431.844	28
8		min -3225.0...	13	166.206	24	-127.076	14	-229.993	27	0	1	-23.884	23
9	N80	max 1786.717	14	49.861	33	1922.627	14	0	74	0	74	0	74
10		min -1782.2...	8	10.18	51	-1921.31	8	0	1	0	1	0	1
11	Totals:	max 2234.469	17	3800.376	38	2643.835	14						
12		min -2234.47	11	846.697	57	-2643.834	8						

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

Member	Shape	Code Check	Loc[in]	LC	She...	Loc[in]	Dir	LC	phi*Pn...	phi*Pn...	phi*M...	phi*Mn ...	Cb	Eqn
1	H1	PIPE_2.0	.920	99.188	2	.374	99.188		2	7437....	32130	1871....	1871.625	2.3... H3-6
2	MP5	PIPE_2.0	.597	60	2	.325	48.75		2	20866...	32130	1871....	1871.625	2.6... H1-1b
3	H2	PIPE_2.0	.576	67.563	29	.212	76.188		27	7437....	32130	1871....	1871.625	1.94 H1-1a
4	MP4	PIPE_2.0	.312	12	32	.102	60		27	20866...	32130	1871....	1871.625	1.8... H1-1b
5	MP6	PIPE_2.0	.292	60	38	.122	60		2	20866...	32130	1871....	1871.625	1.7... H1-1b
6	MP3	PIPE_2.0	.204	60	34	.075	60		38	20866...	32130	1871....	1871.625	1.8... H1-1b
7	MP7	PIPE_2.0	.180	60	38	.078	60		2	20866...	32130	1871....	1871.625	1.8... H1-1b
8	MP8	PIPE_2.0	.171	12	8	.096	60		2	20866...	32130	1871....	1871.625	1.7... H1-1b
9	MP2	PIPE_2.0	.152	12	8	.037	60		2	20866...	32130	1871....	1871.625	1.7... H1-1b
10	T1	PIPE_2.0	.144	82.415	14	.005	82.415		37	18251...	32130	1871....	1871.625	1.1... H1-1b*
11	MP1	PIPE_2.0	.127	60	34	.032	12		28	20866...	32130	1871....	1871.625	1.8... H1-1b
12	MP12	PIPE_2.0	.096	60	8	.036	60		2	20866...	32130	1871....	1871.625	1.7... H1-1b
13	MP10	PIPE_2.0	.095	60	6	.029	60		12	20866...	32130	1871....	1871.625	3.4... H1-1b
14	MP9	PIPE_2.0	.057	60	29	.019	60		13	20866...	32130	1871....	1871.625	1.8... H1-1b
15	MP11	PIPE_2.0	.051	60	2	.026	60		2	20866...	32130	1871....	1871.625	1.7... H1-1b

Bolt Calculation Tool, V1.2

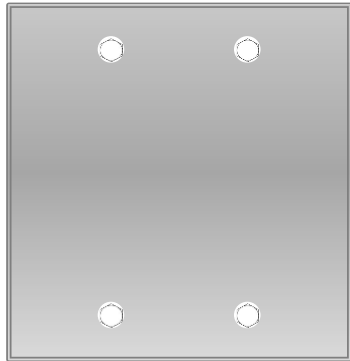
PROJECT DATA	
Site Name:	Brookfield CT
Site Number:	283426
Job Code:	1009-Z0003-B
Connection Description:	Horizontals to Tower Legs (79.0 ft)

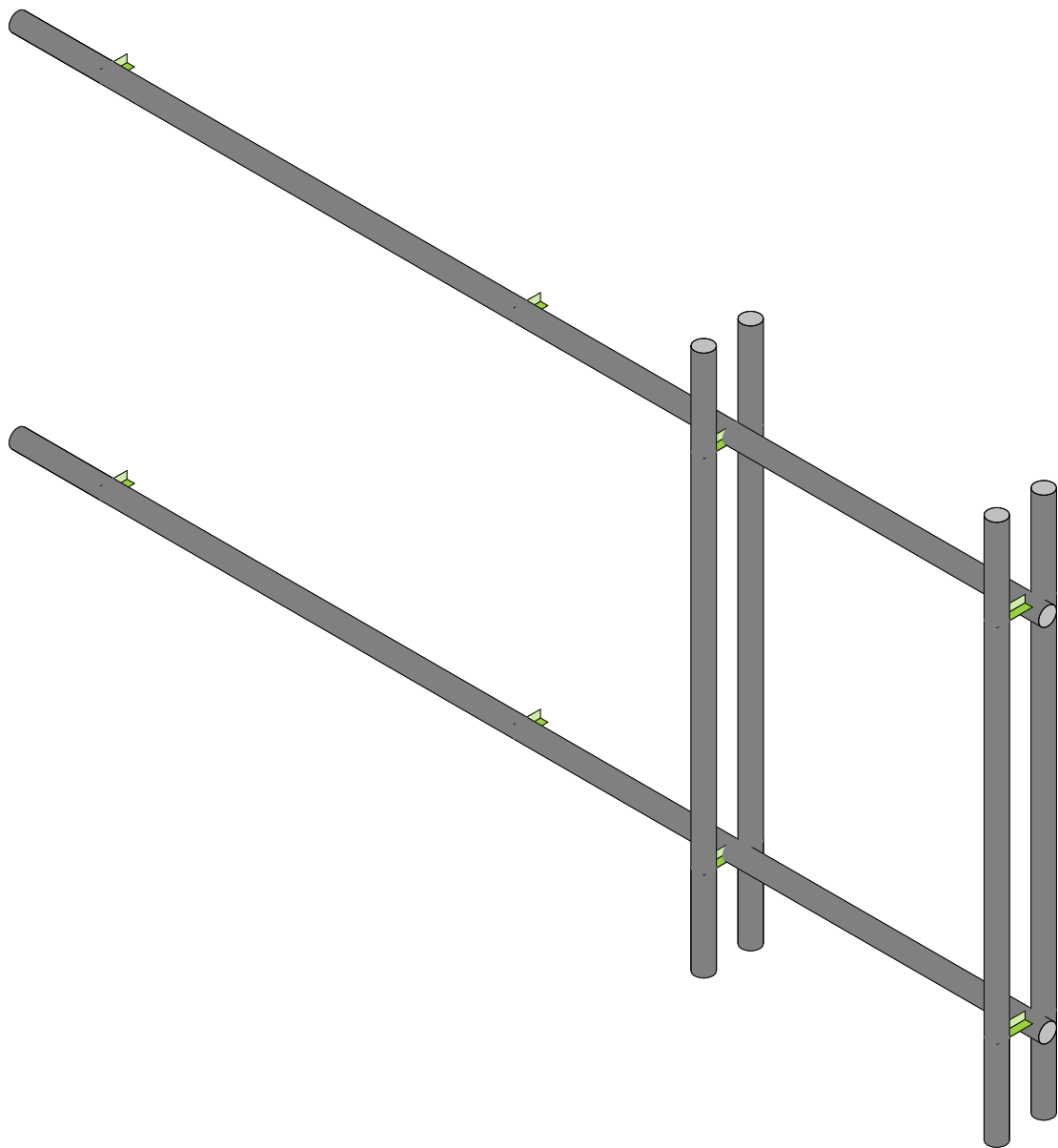
APPLIED LOADS		
Bolt Tension:	227.36	lbs
Bolt Shear:	1043.00	lbs
Sliding Force:	1583.88	lbs
Torsion About Leg:	0.00	lbs-ft

BOLT PROPERTIES		
Bolt Type:	U-Bolt	-
Bolt Diameter:	0.5	in
Bolt Grade:	A307	-
# of U-Bolts:	2	-
Leg Diameter:	2.5	in
Threads Excluded?	No	-

BOLT CHECK	
Tensile Strength	6385.43
Shear Strength	3976.08
Tensile Usage	3.6%
Shear Usage	26.2%
Interaction Check	7.0%
Result	Pass

SLIP CHECK	
Torsional Resistance	981.75
Sliding Resistance	9424.78
Torsional Usage	0.0%
Sliding Usage	16.8%
Interaction Check	2.8%
Result	Pass





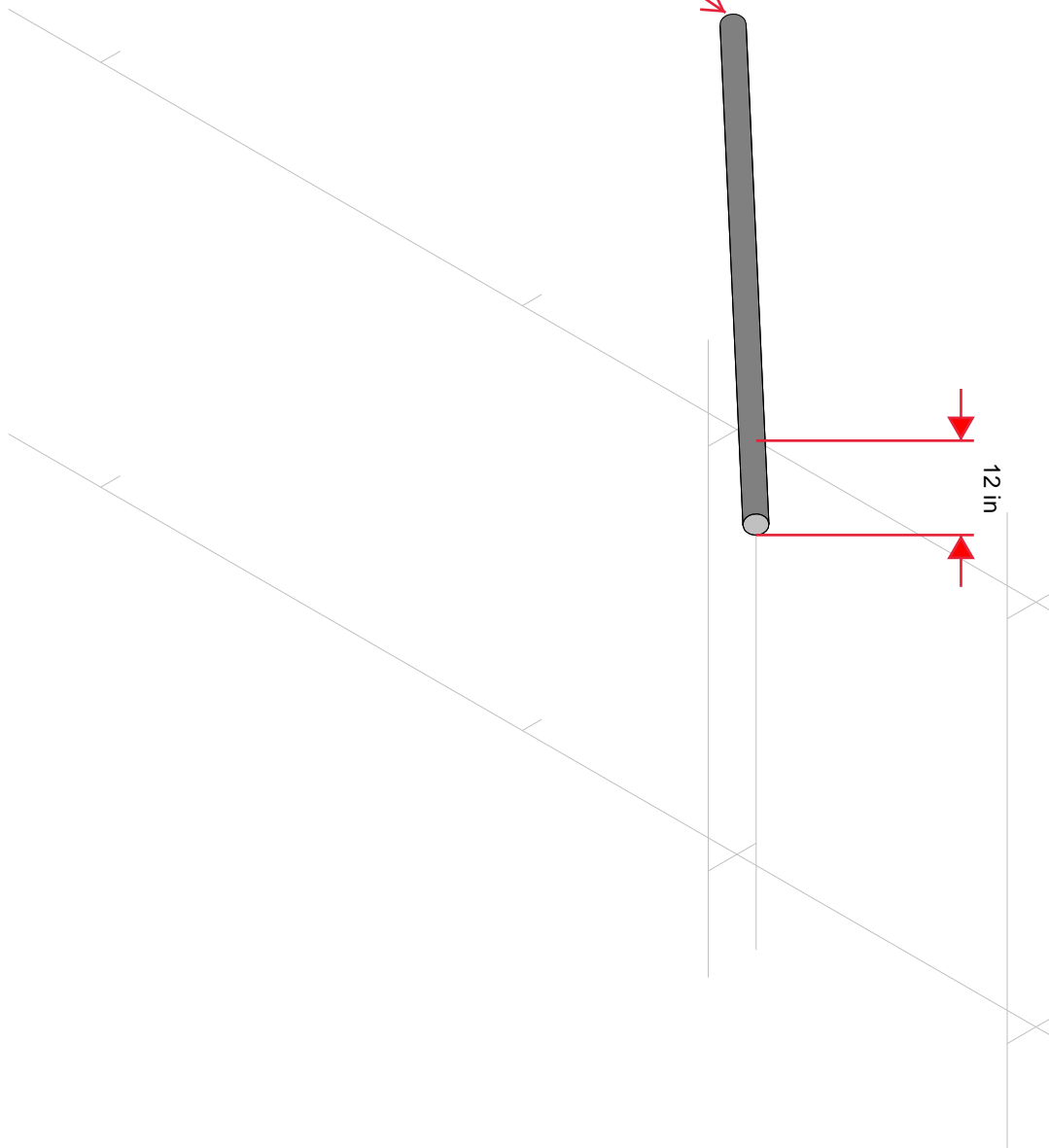
Infinigy Engineering PLLC
PSM
1009-Z0003-B

BROOKFIELD CT-RAD HT. 71.0 ft

Existing Configuration
Jan 28, 2020 at 2:14 PM
283426 RAD 71.0'.r3d

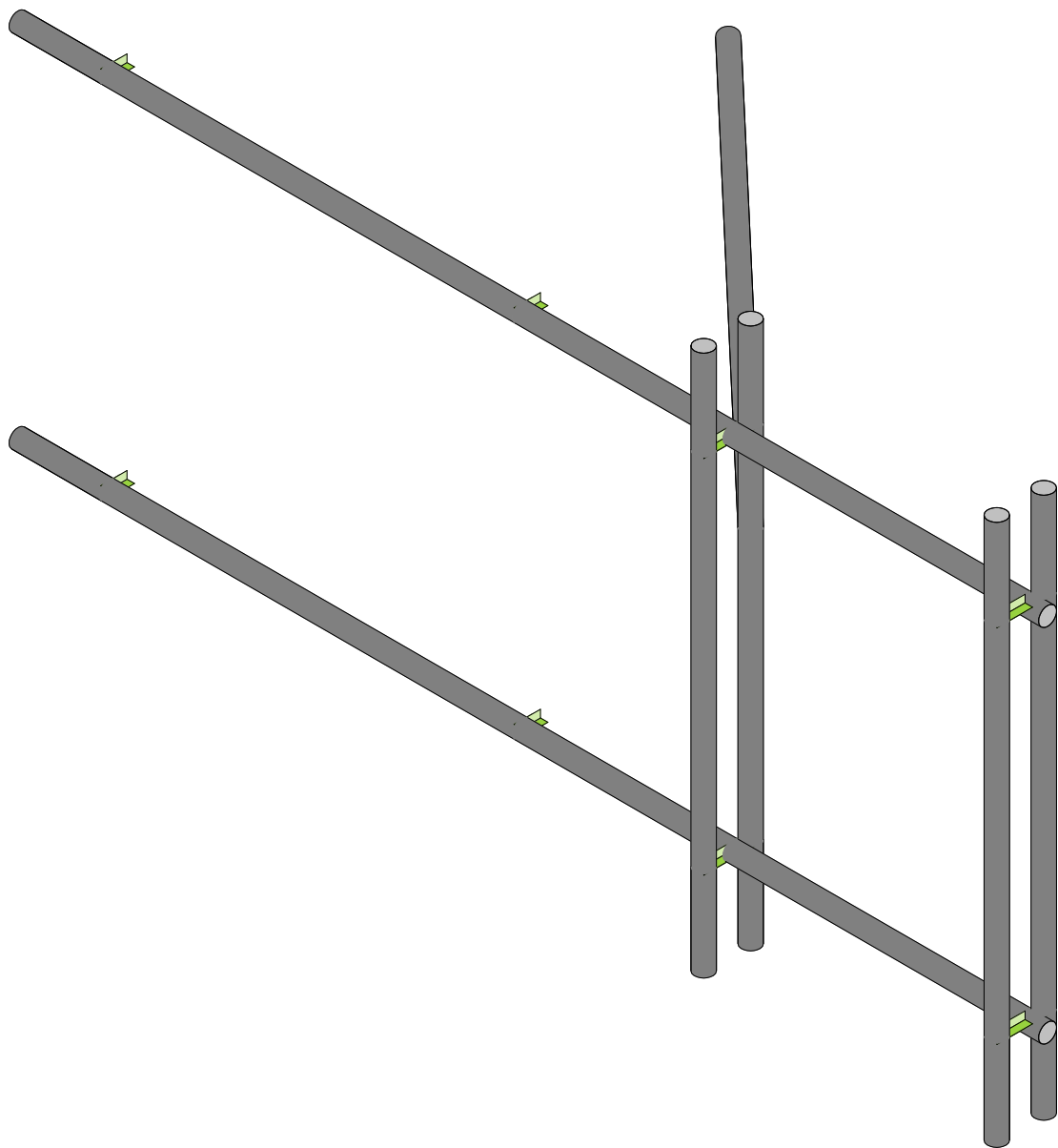


Install (1) 2.0" std pipe as tieback at RAD center 71.0 ft, from the inner mount pipe to the opposite tower leg, maximum 12 inches from the top horizontal, per sector.



Envelope Only Solution

Infinigy Engineering PLLC	BROOKFIELD CT-RAD HT. 71.0 ft	Proposed Modification
PSM		Jan 28, 2020 at 2:22 PM
1009-Z0003-B		283426 RAD 71.0'_loaded_MOD.r3d



Envelope Only Solution

Infinigy Engineering PLLC	BROOKFIELD CT-RAD HT. 71.0 ft	Final Configuration
PSM		Jan 28, 2020 at 2:23 PM
1009-Z0003-B		283426 RAD 71.0'_loaded_MOD.r3d

Program Inputs

PROJECT INFORMATION		
Client:	ATC	
Carrier:	Verizon	
Engineer:	Pradin Suyinal Magar, M.S	

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Category:	5	
Site Class:	D - Stiff Soil	
Ground Elevation:	N/A	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	71.0	ft
Tower Height AGL:	80.0	ft

TOPOGRAPHIC DATA		
Topo Feature:	Flat Topped Ridge	
Crest Height:	309.0	ft
Slope Distance:	2460.0	ft
Crest Distance:	0.0	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_e):	N/A	*Rev H Only
Rooftop Speed-Up (K_s):	N/A	*Rev H Only
Topographic Factor (K_{zt}):	1.55	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-G	
ASCE Standard:	ASCE 7-10	

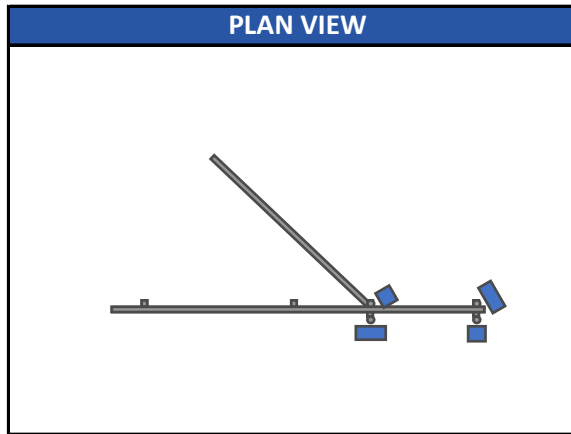
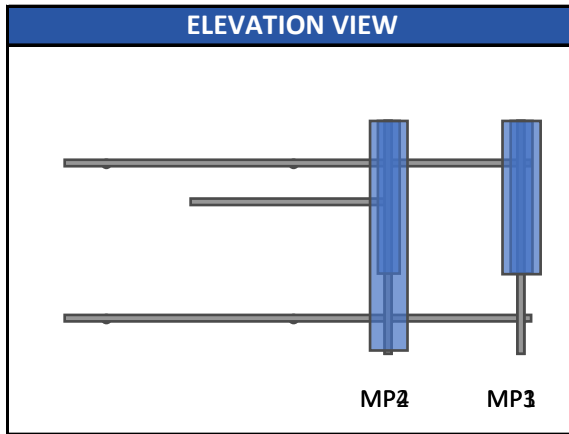
WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	120	mph
Design Wind (V):	93	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	0.75	in
Flat Pressure:	58.44	psf
Round Pressure:	35.06	psf
Ice Wind Pressure:	10.14	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.21	g
1-Second Accel. (S_1):	0.07	g
Short-Period Design (S_{DS}):	0.22	
1-Second Design (S_{D1}):	0.11	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	



Infinigy Load Calculator V2.1.3

Program Inputs



Infinigy Load Calculator V2.1.3

APPURTENANCE INFORMATION											
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft ²)	EPA_T (ft ²)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
AMPHENOL LPA-185063/8CF___4	71.0	2	1.00	29.22	2.96	2.73	86.58	79.88	9.00	1.00	MP1
AMPHENOL LPA-185063/8CF___4	71.0	1	1.00	29.22	2.96	2.73	81.55	84.91	9.00	1.00	MP4
AMPHENOL BXA-80063-6CF-EDIN-X	71.0	2	1.00	29.22	7.46	4.16	218.03	121.50	17.00	1.89	MP2
AMPHENOL BXA-80063-4CF-EDIN-X	71.0	1	1.00	29.22	4.71	2.52	89.55	121.56	9.90	1.10	MP3

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...)	Section/Shape	Type	Design List	Material	Design Rules
1	H1	N3	N4			Horizontals	Beam	None	A53 Gr.B	Typical
2	H2	N1	N2			Horizontals	Beam	None	A53 Gr.B	Typical
3	M24	N24	N47			RIGID	None	None	RIGID	Typical
4	M25	N23	N46			RIGID	None	None	RIGID	Typical
5	M27	N50	N52			RIGID	None	None	RIGID	Typical
6	M28	N49	N51			RIGID	None	None	RIGID	Typical
7	M41	N76	N78			RIGID	None	None	RIGID	Typical
8	M42	N75	N77			RIGID	None	None	RIGID	Typical
9	MP1	N34	N20			Mount Pipes	Beam	None	A53 Gr.B	Typical
10	M10	N22	N25			RIGID	None	None	RIGID	Typical
11	M11	N21	N24A			RIGID	None	None	RIGID	Typical
12	MP2	N23A	N26			Mount Pipes	Beam	None	A53 Gr.B	Typical
13	M13	N26A	N47			RIGID	None	None	RIGID	Typical
14	M14	N25A	N46			RIGID	None	None	RIGID	Typical
15	MP3	N27	N30			Mount Pipes	Beam	None	A53 Gr.B	Typical
16	M16	N30A	N25			RIGID	None	None	RIGID	Typical
17	M17	N29	N24A			RIGID	None	None	RIGID	Typical
18	MP4	N31	N34A			Mount Pipes	Beam	None	A53 Gr.B	Typical
19	M19	N33	N34B			Tiebacks	Beam	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		12	35	0
3	Total General		12	35	0
4					
5	Hot Rolled Steel				
6	A53 Gr.B	PIPE 2.0	7	641.9	.186
7	Total HR Steel		7	641.9	.186

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
1	Self Weight	DL		-1			8			
2	Wind Load AZI 0	WLZ					16			
3	Wind Load AZI 30	None					16			
4	Wind Load AZI 60	None					16			
5	Wind Load AZI 90	WLX					16			
6	Wind Load AZI 120	None					16			



Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...)	Surface...
7	Wind Load AZI 150	None					16			
8	Wind Load AZI 180	None					16			
9	Wind Load AZI 210	None					16			
10	Wind Load AZI 240	None					16			
11	Wind Load AZI 270	None					16			
12	Wind Load AZI 300	None					16			
13	Wind Load AZI 330	None					16			
14	Distr. Wind Load Z	WLZ						19		
15	Distr. Wind Load X	WLX						19		
16	Ice Weight	OL1					8	19		
17	Ice Wind Load AZI 0	OL2					16			
18	Ice Wind Load AZI 30	None					16			
19	Ice Wind Load AZI 60	None					16			
20	Ice Wind Load AZI 90	OL3					16			
21	Ice Wind Load AZI 120	None					16			
22	Ice Wind Load AZI 150	None					16			
23	Ice Wind Load AZI 180	None					16			
24	Ice Wind Load AZI 210	None					16			
25	Ice Wind Load AZI 240	None					16			
26	Ice Wind Load AZI 270	None					16			
27	Ice Wind Load AZI 300	None					16			
28	Ice Wind Load AZI 330	None					16			
29	Distr. Ice Wind Load Z	OL2						19		
30	Distr. Ice Wind Load X	OL3						19		
31	Seismic Load Z	ELZ			-0.111		8			
32	Seismic Load X	ELX	-0.111				8			
33	Service Live Loads	LL				1				

Load Combinations

	Description	S...	P...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
1	1.4DL	Y...	Y		1	1.4													
2	1.2DL + 1.6WL AZI 0	Y...	Y		1	1.2	2	1.6	14	1.6	15								
3	1.2DL + 1.6WL AZI 30	Y...	Y		1	1.2	3	1.6	14	1.3	15	.8							
4	1.2DL + 1.6WL AZI 60	Y...	Y		1	1.2	4	1.6	14	.8	15	1.3							
5	1.2DL + 1.6WL AZI 90	Y...	Y		1	1.2	5	1.6	14		15	1.6							
6	1.2DL + 1.6WL AZI 120	Y...	Y		1	1.2	6	1.6	14	-.8	15	1.3							
7	1.2DL + 1.6WL AZI 150	Y...	Y		1	1.2	7	1.6	14	-1	15	.8							
8	1.2DL + 1.6WL AZI 180	Y...	Y		1	1.2	8	1.6	14	-1.6	15								
9	1.2DL + 1.6WL AZI 210	Y...	Y		1	1.2	9	1.6	14	-1	15	-.8							
10	1.2DL + 1.6WL AZI 240	Y...	Y		1	1.2	10	1.6	14	-.8	15	-1							
11	1.2DL + 1.6WL AZI 270	Y...	Y		1	1.2	11	1.6	14		15	-1.6							



Load Combinations (Continued)

	Description	S...	P...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
12	1.2DL + 1.6WL AZI 300	Y...	Y		1	1.2	12	1.6	14	.8	15	-1...							
13	1.2DL + 1.6WL AZI 330	Y...	Y		1	1.2	13	1.6	14	1.3...	15	-.8							
14	0.9DL + 1.6WL AZI 0	Y...	Y		1	.9	2	1.6	14	1.6	15								
15	0.9DL + 1.6WL AZI 30	Y...	Y		1	.9	3	1.6	14	1.3...	15	.8							
16	0.9DL + 1.6WL AZI 60	Y...	Y		1	.9	4	1.6	14	.8	15	1.3...							
17	0.9DL + 1.6WL AZI 90	Y...	Y		1	.9	5	1.6	14		15	1.6							
18	0.9DL + 1.6WL AZI 120	Y...	Y		1	.9	6	1.6	14	-.8	15	1.3...							
19	0.9DL + 1.6WL AZI 150	Y...	Y		1	.9	7	1.6	14	-1...	15	.8							
20	0.9DL + 1.6WL AZI 180	Y...	Y		1	.9	8	1.6	14	-1.6	15								
21	0.9DL + 1.6WL AZI 210	Y...	Y		1	.9	9	1.6	14	-1...	15	-.8							
22	0.9DL + 1.6WL AZI 240	Y...	Y		1	.9	10	1.6	14	-.8	15	-1...							
23	0.9DL + 1.6WL AZI 270	Y...	Y		1	.9	11	1.6	14		15	-1.6							
24	0.9DL + 1.6WL AZI 300	Y...	Y		1	.9	12	1.6	14	.8	15	-1...							
25	0.9DL + 1.6WL AZI 330	Y...	Y		1	.9	13	1.6	14	1.3...	15	-.8							
26	1.2D + 1.0Di	Y...	Y		1	1.2	16	1											
27	1.2D + 1.0Di + 1.0Wi AZI 0	Y...	Y		1	1.2	16	1	17	1	29	1.6	30						
28	1.2D + 1.0Di + 1.0Wi AZI 30	Y...	Y		1	1.2	16	1	18	1	29	1.3...	30	.8					
29	1.2D + 1.0Di + 1.0Wi AZI 60	Y...	Y		1	1.2	16	1	19	1	29	.8	30	1.3...					
30	1.2D + 1.0Di + 1.0Wi AZI 90	Y...	Y		1	1.2	16	1	20	1	29		30	1.6					
31	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	21	1	29	-.8	30	1.3...					
32	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	22	1	29	-1...	30	.8					
33	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	23	1	29	-1.6	30						
34	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	24	1	29	-1...	30	-.8					
35	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	25	1	29	-.8	30	-1...					
36	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	26	1	29		30	-1.6					
37	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	27	1	29	.8	30	-1...					
38	1.2D + 1.0Di + 1.0Wi AZI ...	Y...	Y		1	1.2	16	1	28	1	29	1.3...	30	-.8					
39	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	1	32										
40	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	.866	32	.5									
41	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	.5	32	.866									
42	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31		32	1									
43	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	-.5	32	.866									
44	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	-.8...	32	.5									
45	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	-.1	32										
46	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	-.8...	32	-.5									
47	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	-.5	32	-.8...									
48	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31		32	-.1									
49	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	.5	32	-.8...									
50	(1.2 + 0.2Sds)DL + 1.0E ...	Y...	Y		1	1.2...	31	.866	32	-.5									
51	(0.9 - 0.2Sds)DL + 1.0E A...	Y...	Y		1	.856	31	1	32										
52	(0.9 - 0.2Sds)DL + 1.0E A...	Y...	Y		1	.856	31	.866	32	.5									
53	(0.9 - 0.2Sds)DL + 1.0E A...	Y...	Y		1	.856	31	.5	32	.866									

Load Combinations (Continued)

	Description	S...	P...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
54	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		32	1								
55	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		-5	32	.866							
56	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		-8...	32	.5							
57	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		-1	32								
58	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		-8...	32	-.5							
59	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		-.5	32	-.8...							
60	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		32	-.1								
61	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		.5	32	-.8...							
62	(0.9 - 0.2Sds)DL + 1.0E A...	Y		Y		1	.856	31		.866	32	-.5							
63	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	2	.416	14	.416	15	33	1.5					
64	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	3	.416	14	.36	15	.208	33	1.5				
65	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	4	.416	14	.208	15	.36	33	1.5				
66	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	5	.416	14		15	.416	33	1.5				
67	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	6	.416	14	-.2...	15	.36	33	1.5				
68	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	7	.416	14	-.36	15	.208	33	1.5				
69	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	8	.416	14	-.4...	15		33	1.5				
70	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	9	.416	14	-.36	15	-.2...	33	1.5				
71	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	10	.416	14	-.2...	15	-.36	33	1.5				
72	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	11	.416	14		15	-.4...	33	1.5				
73	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	12	.416	14	.208	15	-.36	33	1.5				
74	1.0DL + 1.5LL + 1.0SWL ...	Y		Y		1	1	13	.416	14	.36	15	-.2...	33	1.5				

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N76	max	158.476	17	46.985	33	29.071	15	-2.037	62	0	74	17.506	33
2		min	-208.525	35	9.775	51	-41.359	33	-9.694	27	0	1	3.714	60
3	N75	max	1056.918	8	761.425	63	75.053	8	-2.037	62	0	74	17.506	27
4		min	-957.479	14	9.775	55	-65.106	14	-158.63	63	0	1	-745.659	69
5	N49	max	691.914	3	658.878	33	180.086	14	30.695	20	0	74	817.153	33
6		min	-575.639	21	-90.442	14	-186.656	8	-149.186	27	0	1	-73.471	14
7	N50	max	1318.513	19	671.552	27	396.536	19	70.627	20	0	74	791.029	27
8		min	-1471.2...	13	-88.965	20	-393.7	2	-167.38	27	0	1	9.79	20
9	N34B	max	1650.632	2	47.754	33	1590.034	2	0	74	0	74	0	74
10		min	-1641.9...	20	9.883	51	-1586.055	20	0	1	0	1	0	1
11	Totals:	max	969.924	5	1347.058	27	1334.641	2						
12		min	-969.924	11	197.28	57	-1334.637	20						



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

Member	Shape	Code Check	Loc[in]	LC	She...	Loc[in]	Dir	LC	phi*Pn...	phi*Pn...	phi*M...	phi*Mn ...	Cb	Eqn
1	MP4	PIPE_2.0	.559	60	2	.236	48	2	20866...	32130	1871....	1871.625	2.5..	H1-1b
2	H1	PIPE_2.0	.522	94.188	19	.086	67.073	27	7546....	32130	1871....	1871.625	2.4..	H1-1b
3	H2	PIPE_2.0	.507	67.073	33	.093	67.073	33	7546....	32130	1871....	1871.625	1.7..	H1-1b
4	MP2	PIPE_2.0	.271	60	33	.069	60	8	20866...	32130	1871....	1871.625	1.7..	H1-1b
5	MP3	PIPE_2.0	.126	60	37	.029	60	25	20866...	32130	1871....	1871.625	1.84	H1-1b
6	MP1	PIPE_2.0	.125	60	36	.026	60	25	20866...	32130	1871....	1871.625	1.8..	H1-1b
7	M19	PIPE_2.0	.121	79.931	2	.005	0	38	18874...	32130	1871....	1871.625	1.1..	H1-1b*

Bolt Calculation Tool, V1.2

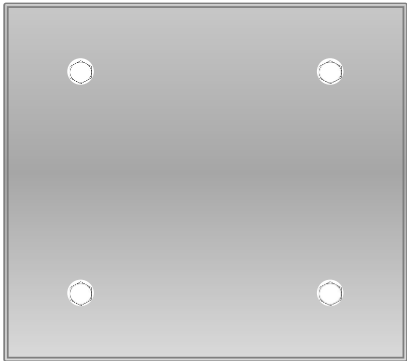
PROJECT DATA	
Site Name:	Brookfield CT
Site Number:	283426
Job Code:	1009-Z0003-B
Connection Description:	Horizontals to Tower Legs (71.0 ft)

APPLIED LOADS		
Bolt Tension:	242.75	lbs
Bolt Shear:	972.97	lbs
Sliding Force:	761.43	lbs
Torsion About Leg:	0.00	lbs-ft

BOLT PROPERTIES		
Bolt Type:	U-Bolt	-
Bolt Diameter:	0.5	in
Bolt Grade:	A307	-
# of U-Bolts:	2	-
Leg Diameter:	2.5	in
Threads Excluded?	No	-

BOLT CHECK	
Tensile Strength	6385.43
Shear Strength	3976.08
Tensile Usage	3.8%
Shear Usage	24.5%
Interaction Check	6.1%
Result	Pass

SLIP CHECK	
Torsional Resistance	980.89
Sliding Resistance	9416.53
Torsional Usage	0.0%
Sliding Usage	8.1%
Interaction Check	0.7%
Result	Pass



Site Name: **BROOKFIELD CT**
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm ²)	(mW/cm ²)	(%)
VZW PCS	1970	1	1580	1579.79	78	0.0934	1.0	9.34%
VZW Cellular CDMA	869	1	500	500	78	0.0296	0.579333333	5.10%
VZW Cellular LTE	880	1	500	500	78	0.0296	0.586666667	5.04%
VZW AWS	2145	1	1605	1605.46	78	0.0949	1.0	9.49%
VZW 700	746	1	634	633.57	78	0.0374	0.497333333	7.53%
VZW CBRS	3550	1	0	0	78	0.0000	2.366666667	0.00%

Total Percentage of Maximum Permissible Exposure

36.50%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz

mW/cm² = milliwatts per square centimeter

ERP = Effective Radiated Power

Absolute worst case maximum values used, including the following assumptions:

1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

Town of Brookfield, Connecticut - Assessment Parcel Map

Parcel: **B05010**

Address: 37 CARMEN HILL RD



Approximate Scale: 1 inch = 100 feet

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Brookfield and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced Aug 2017



Property Information

Property Location	
Owner	
Co-Owner	
Mailing Address	
Land Use	
Land Class	
Zoning Code	
Census Tract	

Neighborhood	
Acreage	
Utilities	
Lot Setting/Desc	
Town Clerk Map # 1	
Town Clerk Map # 2	

Photo



Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	



Town of Brookfield, CT

Property Listing Report

Map Block Lot

Account

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings		
Extras		
Improvements		
Outbuildings		
Land		
Total		

Outbuilding and Extra Items

Type	Description

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price

VZW LOCATION CODE: 468123
 VZW SITE NAME: BROOKFIELD CT
 PROJECT DESCRIPTION: ANTENNA RELOCATION /RECONFIGURATION
 TOWER TYPE: 80' SELF-SUPPORT
 SITE ADDRESS: 37 CARMEN HILL RD
 BROOKFIELD, CT 06804
 (FAIRFIELD COUNTY)
 JURISDICTION: CITY OF BROOKFIELD
 PRESENT OCCUPANCY TYPE: TELECOMMUNICATIONS FACILITY
 CURRENT ZONING: R-100
 MBL: B05010

PROJECT INFORMATION

*LATITUDE N 41° 29' 34.58"
 *LONGITUDE W 73° 25' 38.39"
 *GROUND ELEVATION (AMSL) = 728' ±
 *INFORMATION PROVIDED BY ATC

SITE COORDINATES



LOCATION MAP

FROM DANBURY CT START OUT GOING NORTHEAST ON FEDERAL RD TOWARD SWANSON AVE. TAKE THE 2ND RIGHT ONTO WHITE TURKEY RD. MERGE ONTO US-7 N. TAKE THE US-202 EXIT, EXIT 12, TOWARD BROOKFIELD. TURN RIGHT ONTO FEDERAL RD/US-202 E. TAKE THE 1ST LEFT ONTO LAUREL HILL RD. TAKE THE 2ND LEFT ONTO N MOUNTAIN RD. TAKE THE 1ST RIGHT ONTO CARMEN HILL RD.

DRIVING DIRECTIONS



20 ALEXANDER DR, 2ND FLOOR
 WALLINGFORD, CT 06492

VZW LOCATION CODE: 468123
 VZW SITE NAME: BROOKFIELD CT

37 CARMEN HILL RD
 BROOKFIELD, CT 06804
 (FAIRFIELD COUNTY)

LESSEE:
 NAME: VERIZON WIRELESS
 ADDRESS: 20 ALEXANDER DR, 2ND FLOOR
 CITY, STATE, ZIP: WALLINGFORD, CT 06492

TOWER MANAGER:
 NAME: AMERICAN TOWER CORPORATION
 ADDRESS: 19100 VON KARMAN AVE, STE 200
 CITY, STATE, ZIP: IRVINE, CA 92612
 CONTACT: AARON DIAL
 PHONE: (919) 466-5383
 SITE NAME: BROOKFIELD CT
 SITE NUMBER: 283426

CIVIL ENGINEER:
 NAME: TOWER ENGINEERING PROFESSIONALS
 ADDRESS: 326 TRYON ROAD
 CITY, STATE, ZIP: RALEIGH, NC 27603
 CONTACT: GRAHAM M. ANDRES, P.E.
 PHONE: (919) 661-6351

PROPERTY OWNER:
 NAME: AMERICAN TOWERS LLC
 ADDRESS: PO BOX 723597
 CITY, STATE, ZIP: ATLANTA, GA 31139

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING:

- 1. INTERNATIONAL BUILDING CODE (2015 EDITION)
- 2. CONNECTICUT CODE COUNCIL
- 3. ANSITIA-222-G-2-2009
- 4. 2017 NEC & ADDENDUM
- 5. LOCAL BUILDING CODE
- 6. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

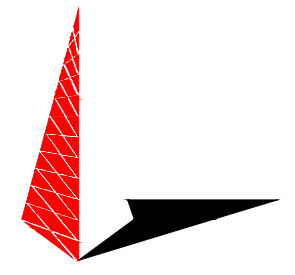
- REMOVE (12) RRHs
- INSTALL (6) RRHs
- INSTALL (3) DIPLEXERS
- INSTALL MOUNT MODIFICATIONS

SCOPE OF WORK

SHEET	DESCRIPTION	REV
T1	TITLE SHEET	0
N1	PROJECT NOTES	0
C1	COMPOUND LAYOUT	0
C2	TOWER ELEVATION	0
C3A	ANTENNA LAYOUT I	0
C3B	ANTENNA LAYOUT II	0
C4A	FINAL ANTENNA SCHEDULE I	0
C5	EQUIPMENT DETAILS	0

INDEX OF SHEETS

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
 326 TRYON ROAD
 RALEIGH, NC 27603-3530
 OFFICE: (919) 661-6351
 www.tepgroup.net

REV	DATE	ISSUED FOR:
0	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY

DRAWN BY: [Signature] CHECKED BY: DEL

SEAL:



February 19, 2020

SHEET NUMBER: T-1 REVISION: 0

TEP#: 68462.207357

PROJECT NOTES:

1. ALL REFERENCES TO THE OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED VERIZON WIRELESS OR ITS DESIGNATED REPRESENTATIVE.
2. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF CONNECTICUT.
3. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE.
4. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
5. ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
7. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.
8. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
10. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.
11. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
12. IF APPLICABLE, ALL CONCRETE WORK SHALL COMPLY TO LOCAL CODES AND THE ACI 318-11, "BUILDING REQUIREMENTS FOR STRUCTURAL CONCRETE".
13. ALL TOWER DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.
14. ALL TOWER MODIFICATION WORK SHALL BE IN ACCORDANCE WITH TIA-1019-A STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

PLANS PREPARED FOR:

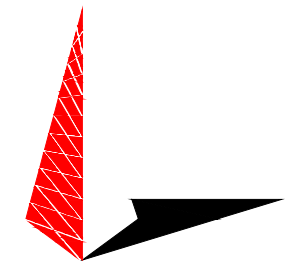


20 ALEXANDER DR, 2ND FLOOR
WALLINGFORD, CT 06492

PROJECT INFORMATION:

**VZW LOCATION
CODE: 468123
VZW SITE NAME:
BROOKFIELD CT**
37 CARMEN HILL RD
BROOKFIELD, CT 06804
(FAIRFIELD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tegroup.net

SEAL:



February 19, 2020

O	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY
REV	DATE	ISSUED FOR:

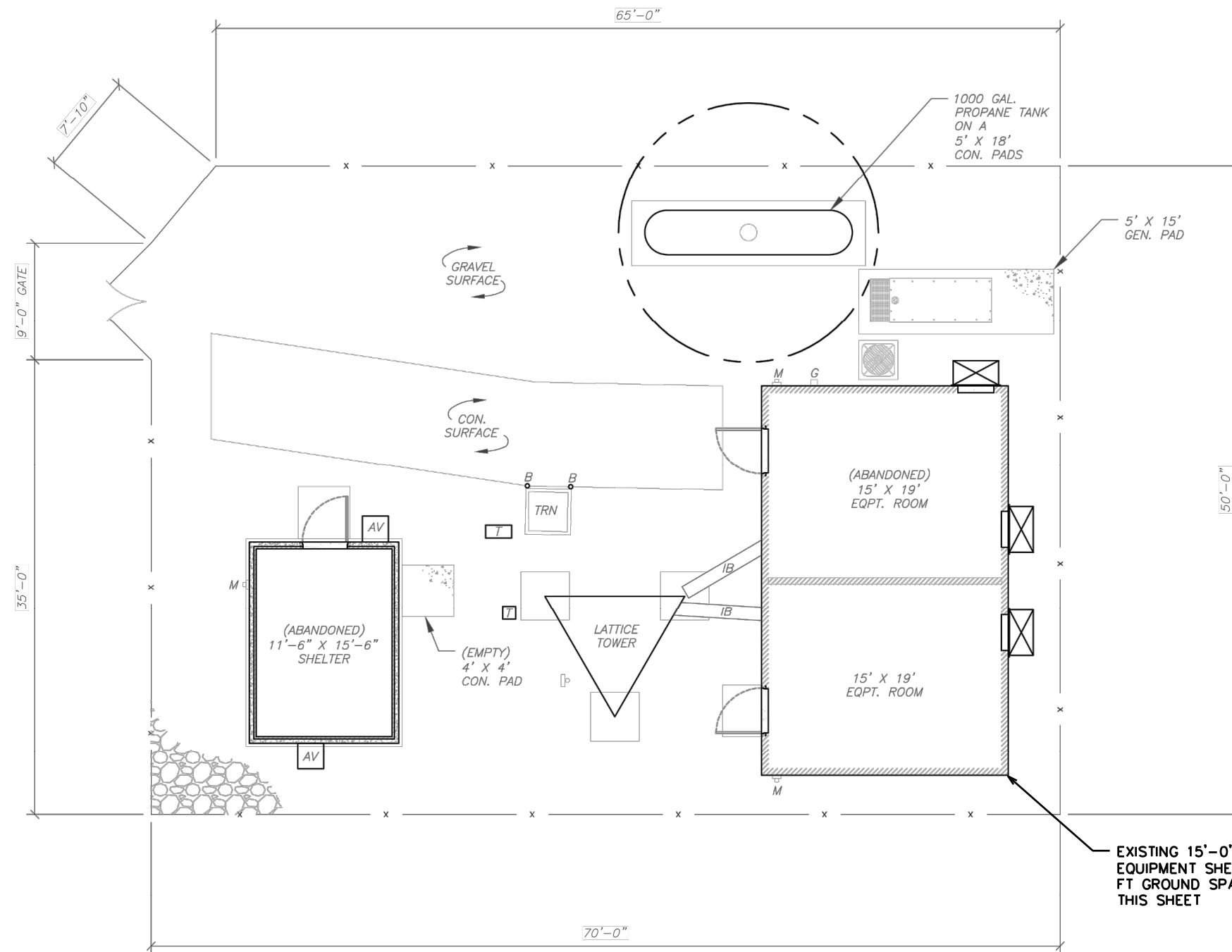
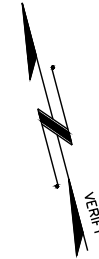
DRAWN BY: CJ CHECKED BY: DEL

SHEET TITLE:
PROJECT NOTES

SHEET NUMBER: **N-1** REVISION: **0**
TEP#: 68462.207357

NOTES:

1. COMPOUND DETAIL SHOWN BELOW TAKEN FROM INFORMATION PROVIDED BY ATC. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION IS AS INDICATED ON SITE PLAN. CONTRACTOR IS TO ESTABLISH THE EXISTENCE AND LOCATION OF ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES. IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES.
2. ALL GROUNDWORK TO BE PERFORMED WITHIN EXISTING VERIZON GROUND SPACE. NO PROPOSED ADDITIONS TO EXISTING SITE FOOTPRINT.



EXISTING 15'-0"x19'-0" VERIZON EQUIPMENT SHELTER IN 285 SQ FT GROUND SPACE. SEE NOTE 2, THIS SHEET

PLANS PREPARED FOR:
verizon
 20 ALEXANDER DR, 2ND FLOOR
 WALLINGFORD, CT 06492

PROJECT INFORMATION:
**VZW LOCATION
 CODE: 468123
 VZW SITE NAME:
 BROOKFIELD CT**
 37 CARMEN HILL RD
 BROOKFIELD, CT 06804
 (FAIRFIELD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
 326 TRYON ROAD
 RALEIGH, NC 27603-3530
 OFFICE: 919-661-6351
 www.tepgroup.net

SEAL:

 February 19, 2020

REV	DATE	ISSUED FOR:
0	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY

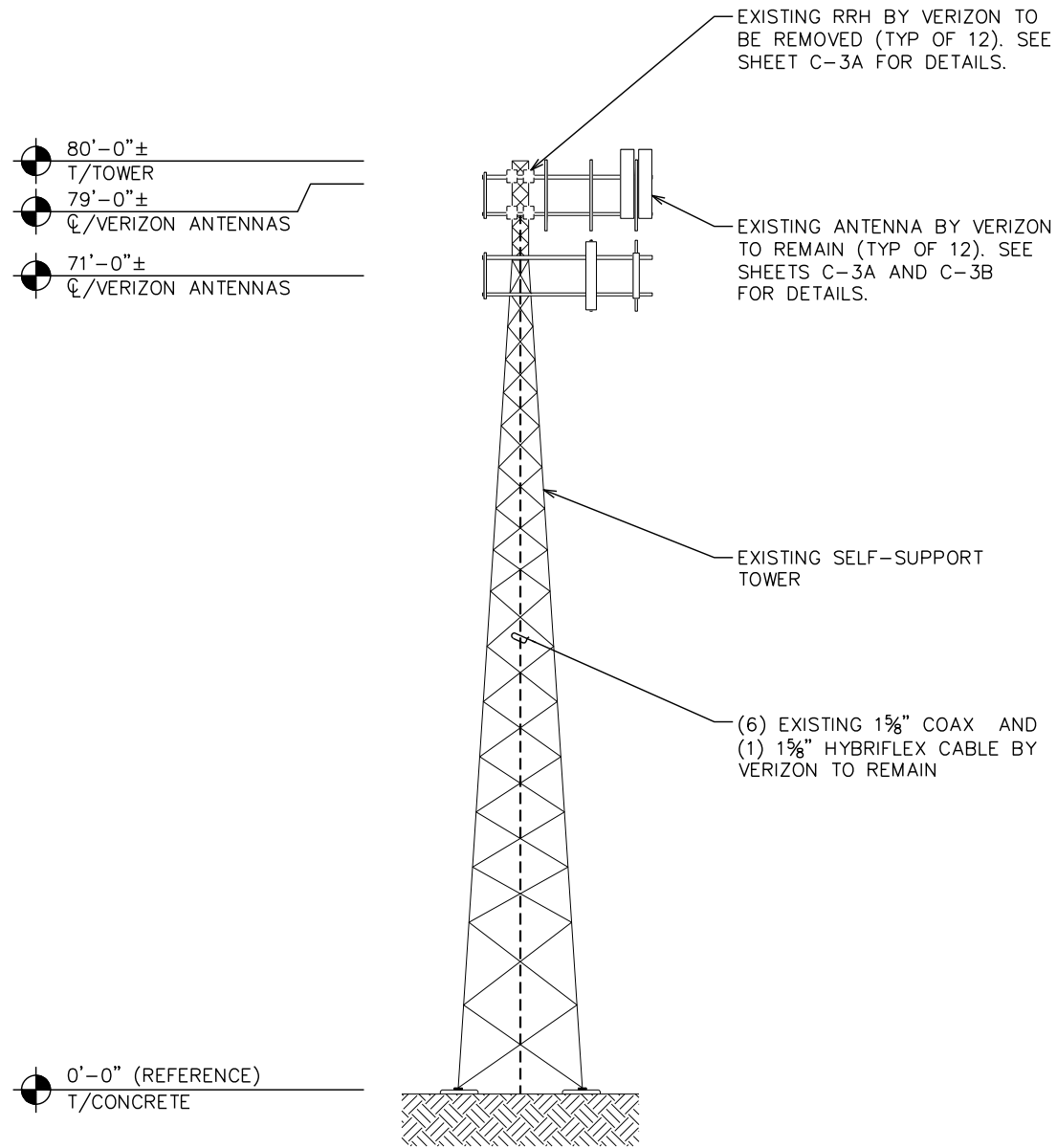
DRAWN BY: CJ CHECKED BY: DEL

SHEET TITLE:
**COMPOUND
 DETAIL**

SHEET NUMBER: **C-1** REVISION: **0**
 TEP#: 68462.207357

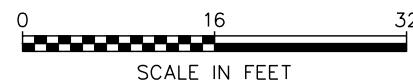
NOTE:

TOWER ELEVATION IS FOR SCHEMATIC PURPOSES ONLY. TEP DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS, AND MOUNT CONFIGURATIONS.



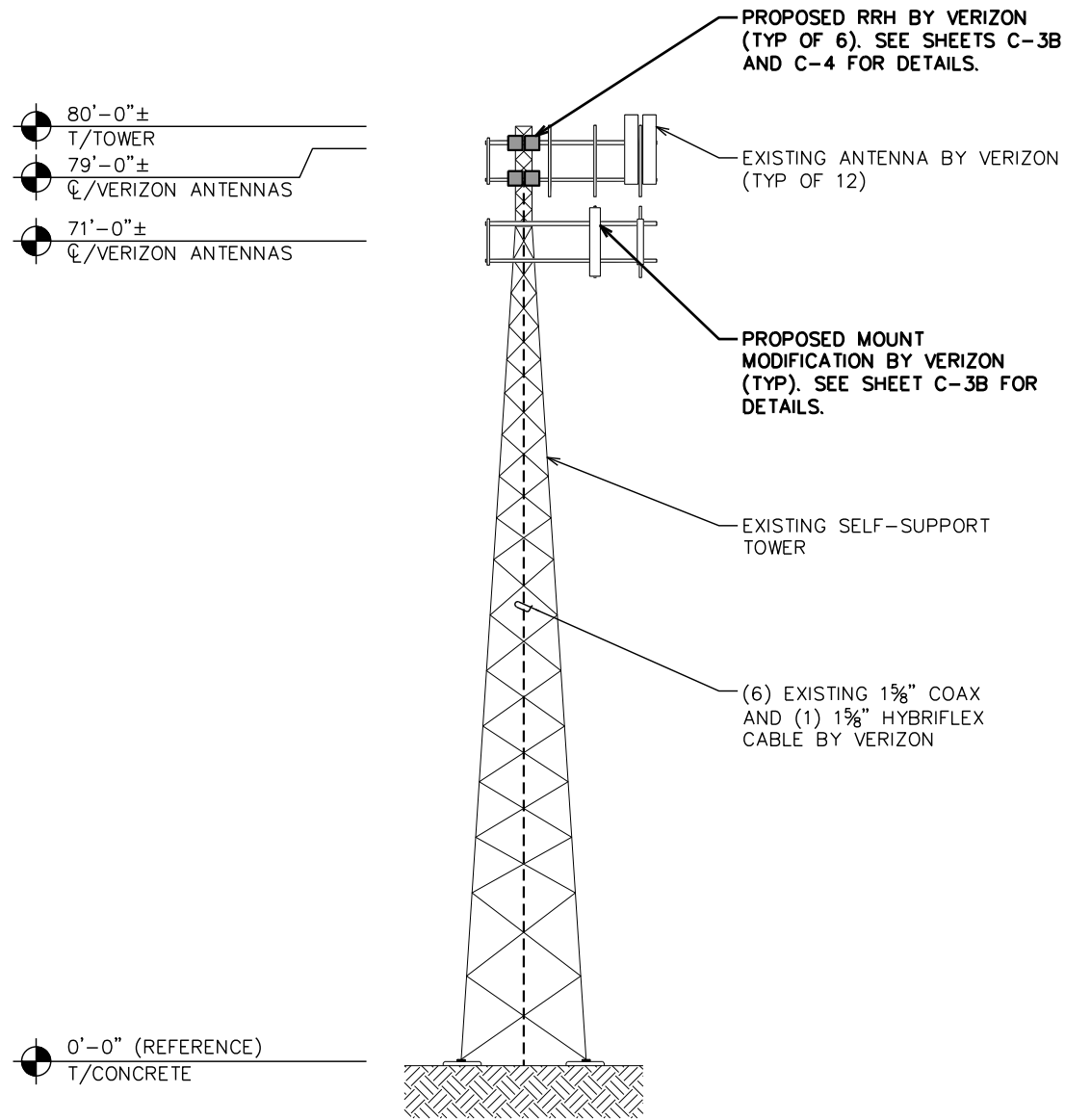
EXISTING TOWER ELEVATION

SCALE: 1/16" = 1'-0"



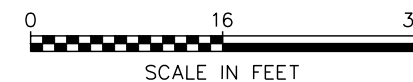
NOTE:

TOWER ELEVATION IS FOR SCHEMATIC PURPOSES ONLY. TEP DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS, AND MOUNT CONFIGURATIONS.



PROPOSED TOWER ELEVATION

SCALE: 1/16" = 1'-0"



PLANS PREPARED FOR:



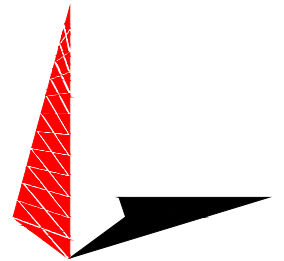
20 ALEXANDER DR, 2ND FLOOR
WALLINGFORD, CT 06492

PROJECT INFORMATION:

**VZW LOCATION
CODE: 468123
VZW SITE NAME:
BROOKFIELD CT**

37 CARMEN HILL RD
BROOKFIELD, CT 06804
(FAIRFIELD COUNTY)

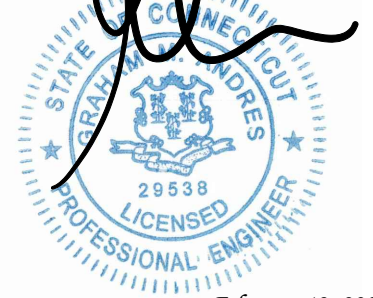
PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS

326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 861-6351
www.tepgroup.net

SEAL:



February 19, 2020

REV	DATE	ISSUED FOR:
0	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY

DRAWN BY: CJ CHECKED BY: DEL

SHEET TITLE:

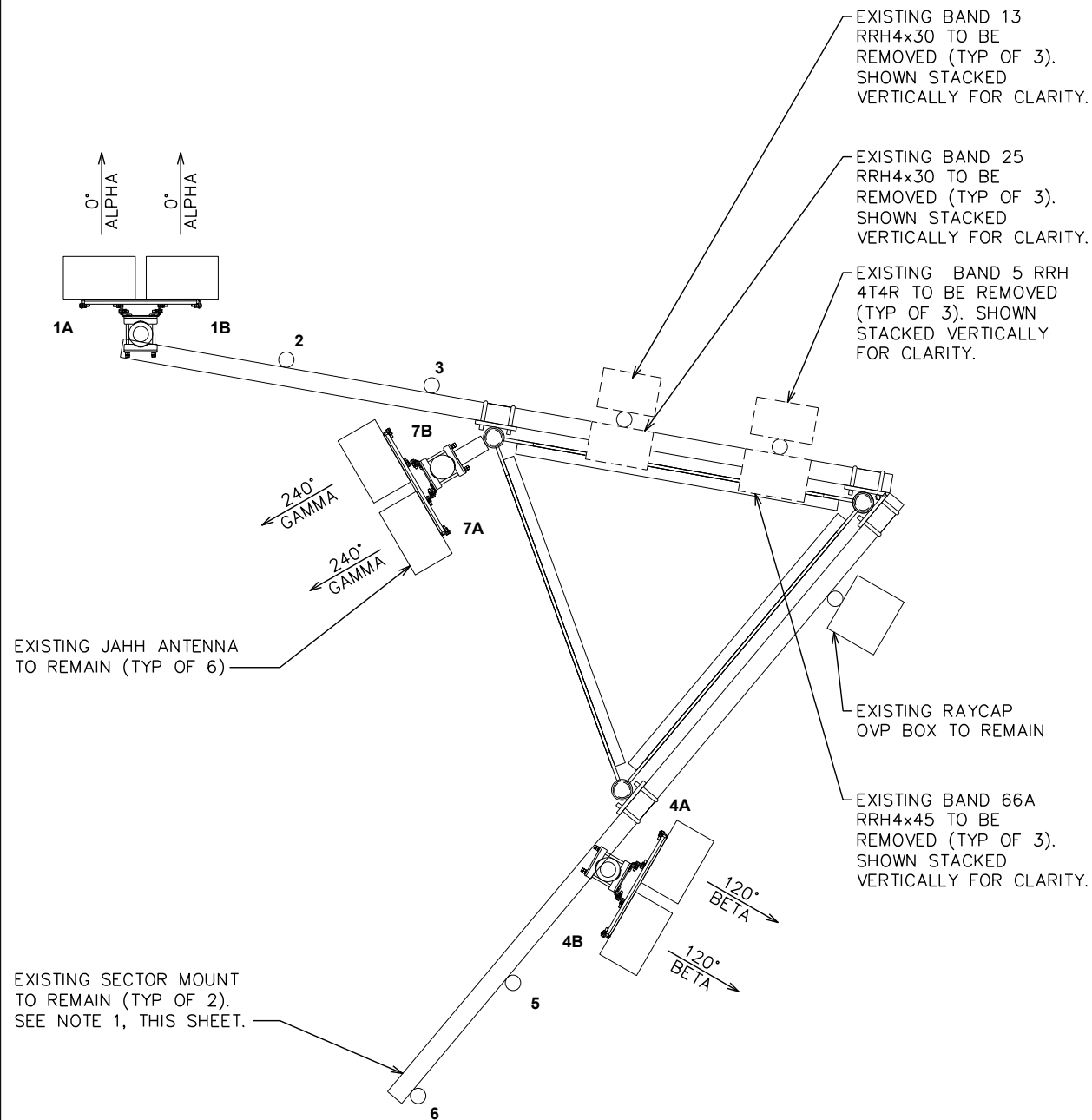
**TOWER
ELEVATION**

SHEET NUMBER: C-2 REVISION: 0

TEP#: 68462.207357

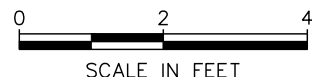
NOTES:

- TEP HAS NOT VERIFIED ANY EXISTING ANTENNA CONFIGURATION OR MOUNT CONFIGURATION. CONTRACTOR TO VERIFY MOUNT CONFIGURATION HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (I.E. CLEARANCES, MOUNT PIPE OR SUFFICIENT LENGTH, ETC.). TEP DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.



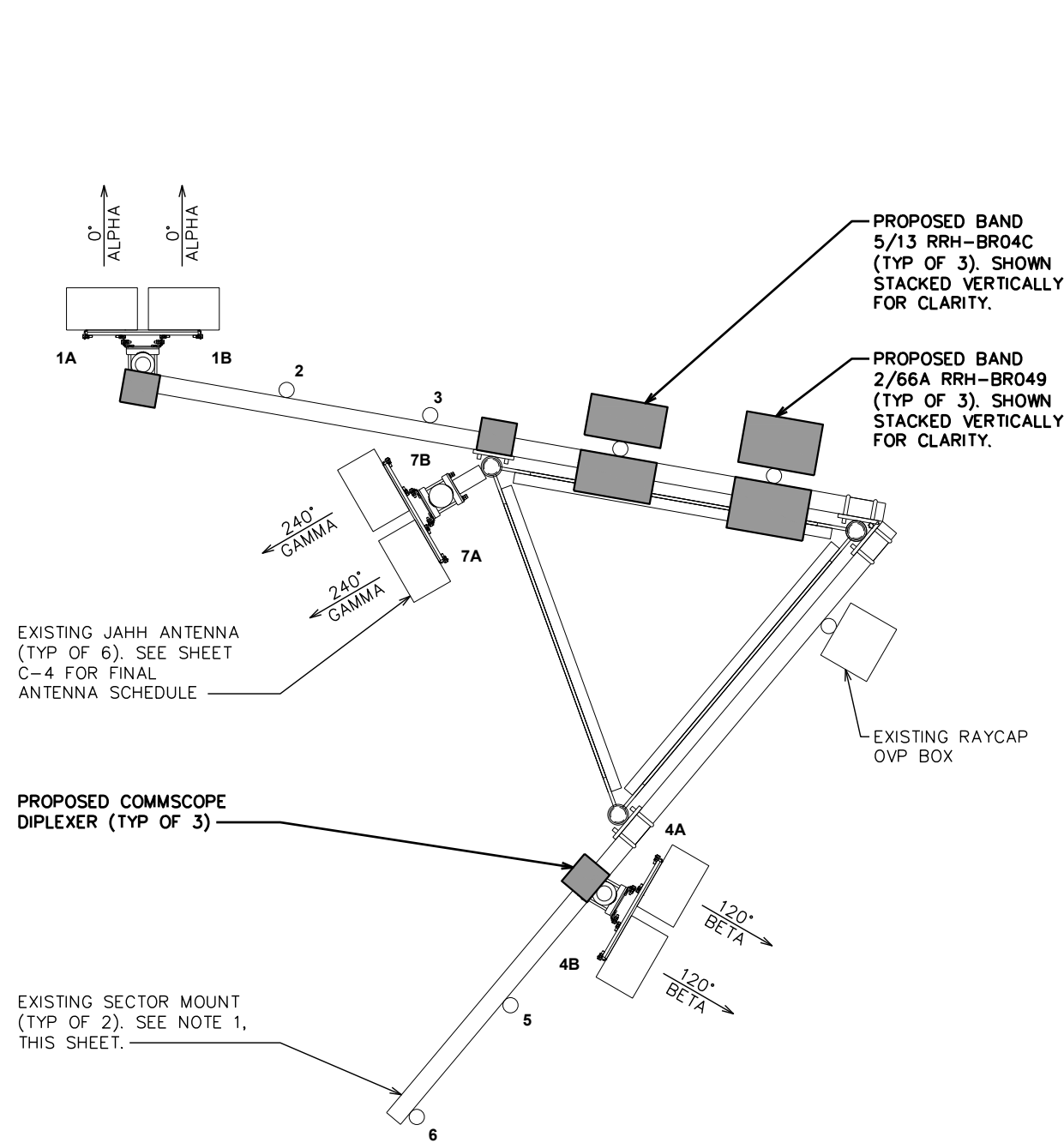
EXISTING ANTENNA PLAN @ 79'-0"±

SCALE: 3/8" = 1'-0"



NOTES:

- TEP HAS NOT VERIFIED ANY EXISTING ANTENNA CONFIGURATION OR MOUNT CONFIGURATION. CONTRACTOR TO VERIFY MOUNT CONFIGURATION HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (I.E. CLEARANCES, MOUNT PIPE OR SUFFICIENT LENGTH, ETC.). TEP DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
- CONTRACTOR TO VERIFY PROPOSED LOADING WITH TOWER STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION.



PROPOSED ANTENNA PLAN @ 79'-0"±

SCALE: 3/8" = 1'-0"



PLANS PREPARED FOR:

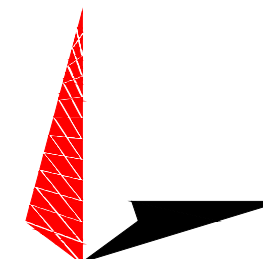


20 ALEXANDER DR, 2ND FLOOR
WALLINGFORD, CT 06492

PROJECT INFORMATION:

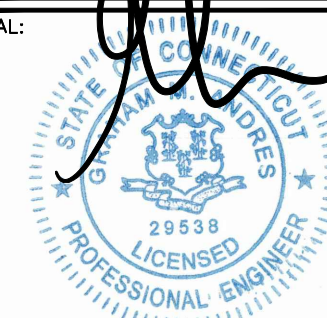
**VZW LOCATION
CODE: 468123
VZW SITE NAME:
BROOKFIELD CT**
37 CARMEN HILL RD
BROOKFIELD, CT 06804
(FAIRFIELD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



February 19, 2020

O	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY
REV	DATE	ISSUED FOR:

DRAWN BY: CJ | CHECKED BY: DEL

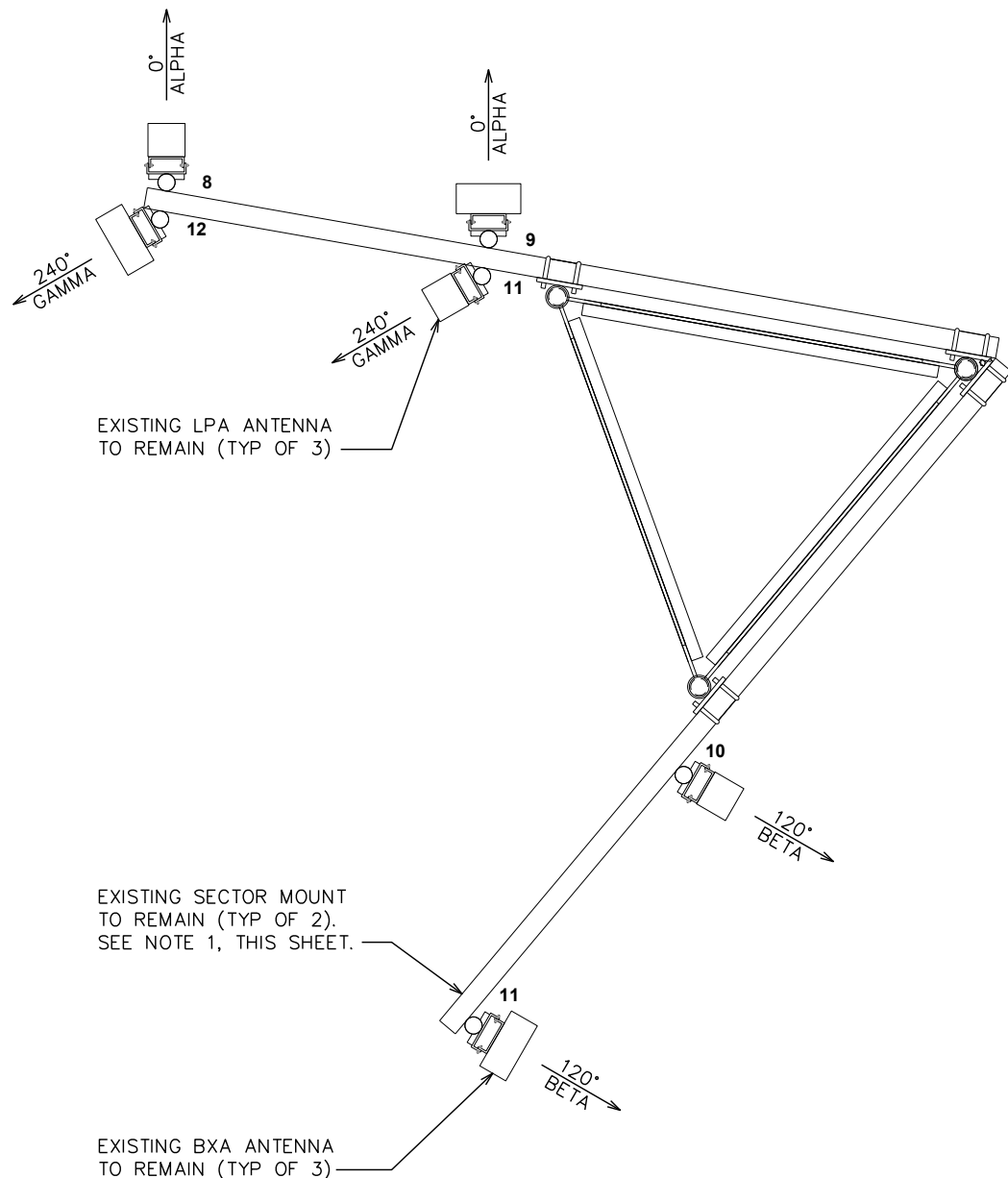
SHEET TITLE:

ANTENNA LAYOUT I

SHEET NUMBER: C-3A	REVISION: 0
TEP#: 68462.207357	

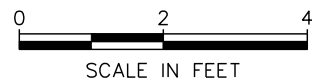
NOTES:

1. TEP HAS NOT VERIFIED ANY EXISTING ANTENNA CONFIGURATION OR MOUNT CONFIGURATION. CONTRACTOR TO VERIFY MOUNT CONFIGURATION HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (I.E. CLEARANCES, MOUNT PIPE OR SUFFICIENT LENGTH, ETC.). TEP DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
2. EXISTING MOUNT DOES NOT HAVE SUFFICIENT STRUCTURAL CAPACITY AND MUST BE MODIFIED. SEE CONTINGENTLY PASSING MOUNT ANALYSIS REPORT COMPLETED BY INFINIGY DATED JANUARY 30, 2020 FOR DETAILS.



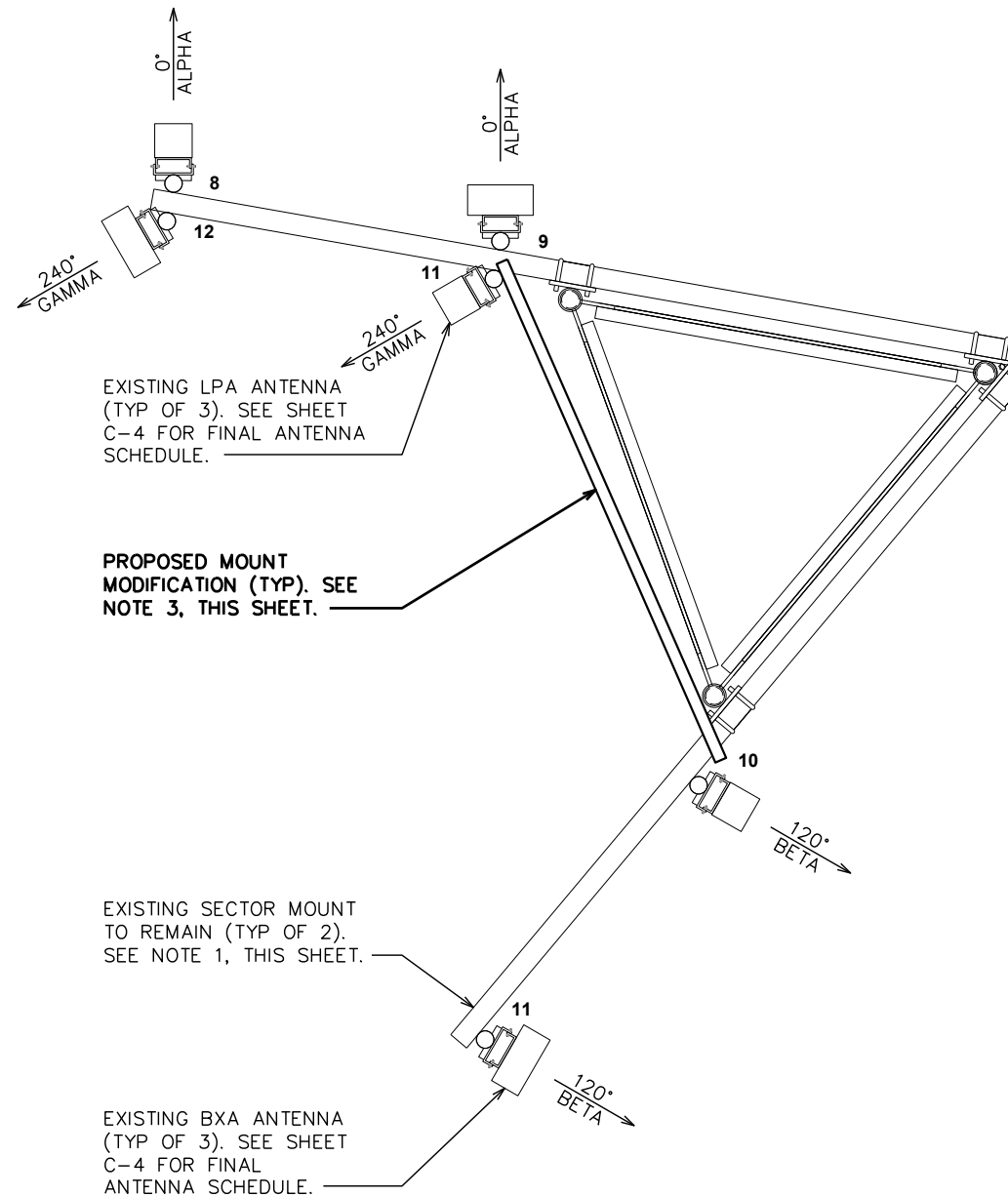
EXISTING ANTENNA PLAN @ 71'-0"±

SCALE: 3/8" = 1'-0"



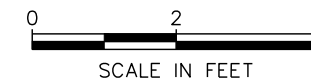
NOTES:

1. TEP HAS NOT VERIFIED ANY EXISTING ANTENNA CONFIGURATION OR MOUNT CONFIGURATION. CONTRACTOR TO VERIFY MOUNT CONFIGURATION HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (I.E. CLEARANCES, MOUNT PIPE OR SUFFICIENT LENGTH, ETC.). TEP DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
2. CONTRACTOR TO VERIFY PROPOSED LOADING WITH TOWER STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION.
3. EXISTING MOUNT DOES NOT HAVE SUFFICIENT STRUCTURAL CAPACITY AND MUST BE MODIFIED. SEE CONTINGENTLY PASSING MOUNT ANALYSIS REPORT COMPLETED BY INFINIGY DATED JANUARY 30, 2020 FOR DETAILS.



PROPOSED ANTENNA PLAN @ 71'-0"±

SCALE: 3/8" = 1'-0"



PLANS PREPARED FOR:

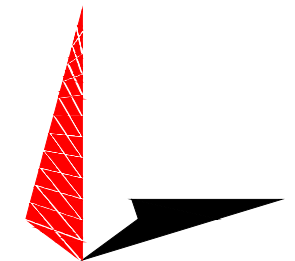


20 ALEXANDER DR, 2ND FLOOR
WALLINGFORD, CT 06492

PROJECT INFORMATION:

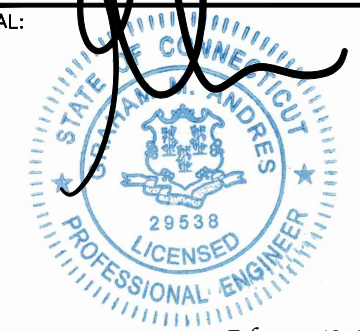
**VZW LOCATION
CODE: 468123
VZW SITE NAME:
BROOKFIELD CT**
37 CARMEN HILL RD
BROOKFIELD, CT 06804
(FAIRFIELD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tegroup.net

SEAL:



February 19, 2020

REV	DATE	ISSUED FOR:
O	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY

DRAWN BY: CJ CHECKED BY: DEL

SHEET TITLE:

ANTENNA LAYOUT II

SHEET NUMBER: REVISION:

C-3B

0

TEP#: 68462.207357

NOTES:

1. CONTRACTOR TO REFERENCE VERIZON ISSUED RFDS AND GIVE PRECEDENCE TO INFORMATION PROVIDED IN RFDS OVER INFORMATION PROVIDED IN THIS TABLE.
2. VERIFY LOADING WITH STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION.
3. IF STRUCTURAL ANALYSIS AND RFDS DO NOT MATCH CONTRACTOR IS TO CONTACT AMERICAN TOWER CORPORATION IMMEDIATELY.

PLANS PREPARED FOR:

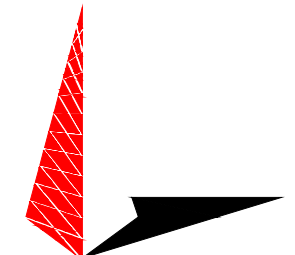


20 ALEXANDER DR, 2ND FLOOR
WALLINGFORD, CT 06492

PROJECT INFORMATION:

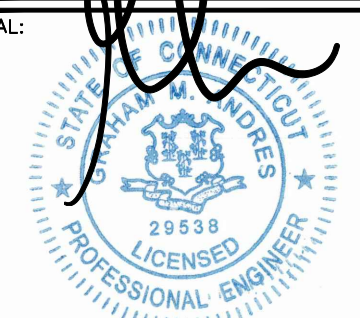
**VZW LOCATION
CODE: 468123
VZW SITE NAME:
BROOKFIELD CT**
37 CARMEN HILL RD
BROOKFIELD, CT 06804
(FAIRFIELD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



February 19, 2020

PROPOSED EQUIPMENT IN BOLD>

FINAL ANTENNA/FEEDLINE SCHEDULE							
SECTOR	POS.	MANUFACTURER MODEL #	MOUNTING HEIGHT	CABLE SIZE	AZIMUTH (TN)	*CABLE LENGTH	OVP/RRH/TMA/DIPLEXER [MODEL #]
ALPHA	1A	ANDREW JAHH-65B-R3B	☉ @ 79'-0"±	(1) 1 5/8" HYBRIFLEX	0°	135'±	(1) SAMSUNG RRH [B5/13 RRH-BR04C] (1) SAMSUNG RRH [B2/66A RRH-BR049] (1) COMMSCOPE DIPLEXER [CBC78T-DS-43-2X]
ALPHA	1B	ANDREW JAHH-65B-R3B	☉ @ 79'-0"±		0°		
ALPHA	2	-	-		-		
ALPHA	3	-	-		-		
BETA	4A	ANDREW JAHH-65B-R3B	☉ @ 79'-0"±		120°		(1) RFS OVP [DB-B1-6C-12AB-OZ] (1) SAMSUNG RRH [B5/13 RRH-BR04C] (1) SAMSUNG RRH [B2/66A RRH-BR049] (1) COMMSCOPE DIPLEXER [CBC78T-DS-43-2X]
BETA	4B	ANDREW JAHH-65B-R3B	☉ @ 79'-0"±		120°		
BETA	5	-	-		-		
BETA	6	-	-		-		
GAMMA	7A	ANDREW JAHH-65B-R3B	☉ @ 79'-0"±	240°	(1) SAMSUNG RRH [B5/13 RRH-BR04C] (1) SAMSUNG RRH [B2/66A RRH-BR049] (1) COMMSCOPE DIPLEXER [CBC78T-DS-43-2X]		
GAMMA	7B	ANDREW JAHH-65B-R3B	☉ @ 79'-0"±	240°			
ALPHA	8	ANTEL LPA-185063/8CF_4*	☉ @ 71'-0"±	(6) 1 1/8" COAX	0°	125'±	-
ALPHA	9	ANTEL BXA-80063-6CF-EDIN-X	☉ @ 71'-0"±		0°		
BETA	10	ANTEL LPA-185063/8CF_4*	☉ @ 71'-0"±		120°		
BETA	11	ANTEL BXA-80063-6CF-EDIN-X	☉ @ 71'-0"±		120°		
GAMMA	12	ANTEL LPA-185063/8CF_4*	☉ @ 71'-0"±		240°		
GAMMA	13	ANTEL BXA-80063-4CF-EDIN-X	☉ @ 71'-0"±		240°		

*CONTRACTOR TO VERIFY CABLE LENGTH PRIOR TO CONSTRUCTION.
**ANTENNA DESIGN BASED ON INFORMATION PROVIDED BY AMERICAN TOWER CORPORATION IN THE FORM OF AN APPLICATION (ID: 13012776).

FINAL ANTENNA SCHEDULE

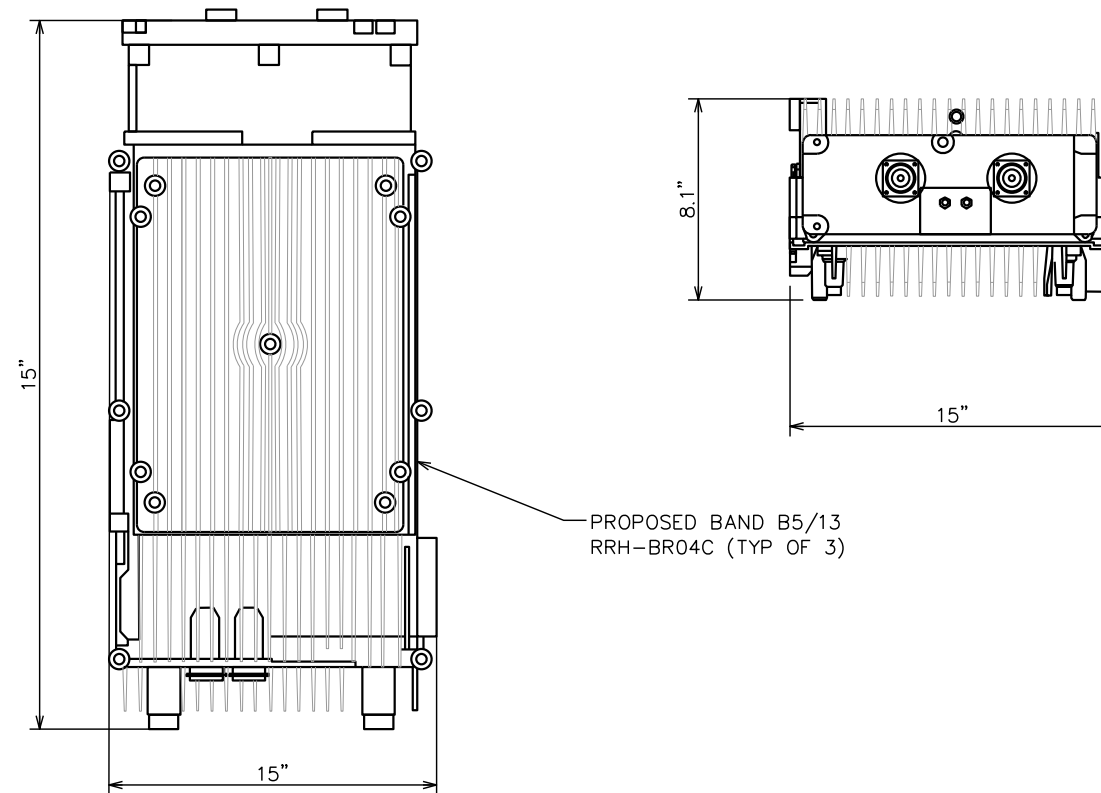
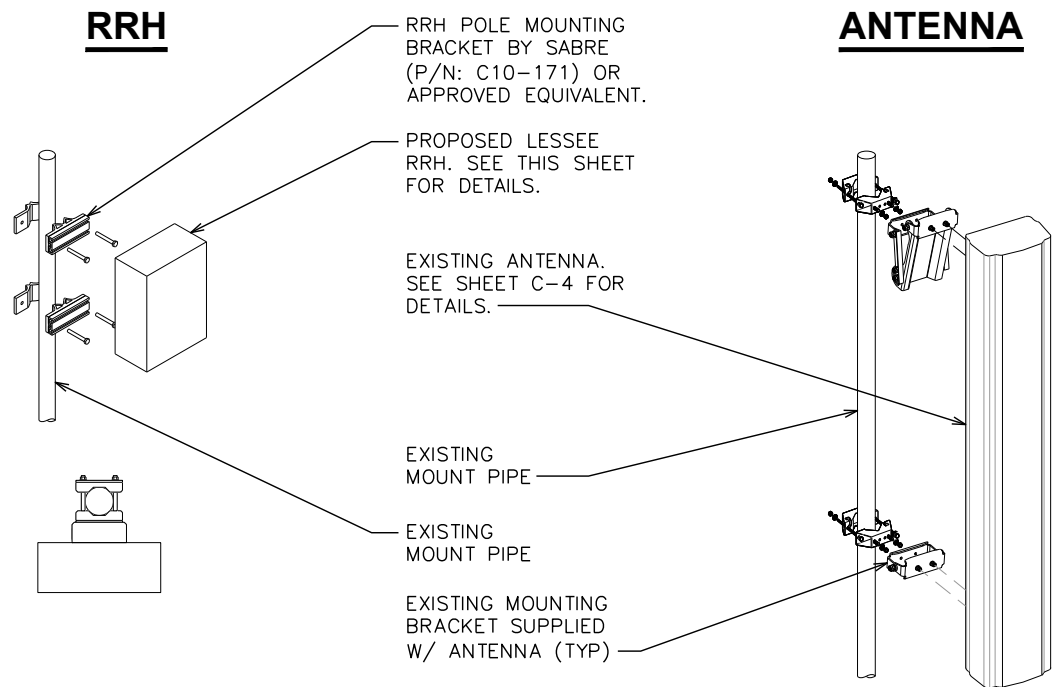
SCALE: N.T.S.

REV	DATE	ISSUED FOR:
0	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY

DRAWN BY: CJ CHECKED BY: DEL

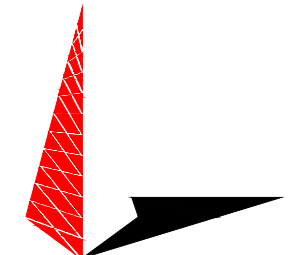
SHEET TITLE:
**FINAL ANTENNA
SCHEDULE**

SHEET NUMBER: **C-4** REVISION: **0**
TEP#: 68462.207357



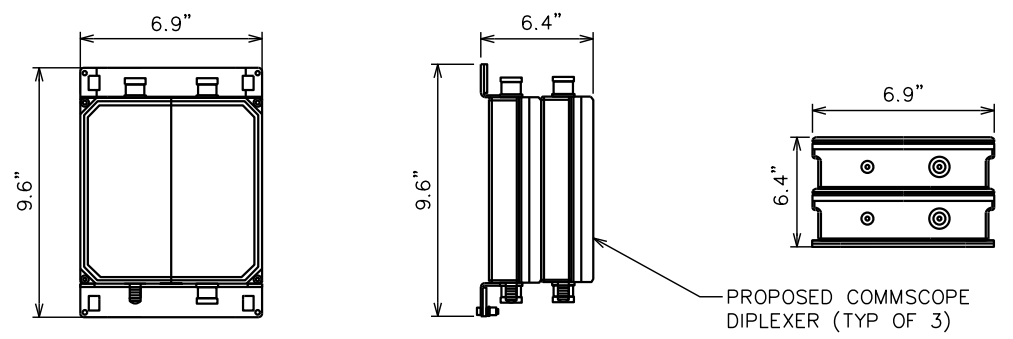
PLANS PREPARED FOR:
verizon
 20 ALEXANDER DR, 2ND FLOOR
 WALLINGFORD, CT 06492

PROJECT INFORMATION:
VZW LOCATION CODE: 468123
VZW SITE NAME: BROOKFIELD CT
 37 CARMEN HILL RD
 BROOKFIELD, CT 06804
 (FAIRFIELD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
 326 TRYON ROAD
 RALEIGH, NC 27603-3530
 OFFICE: (919) 661-6351
 www.tepgroup.net

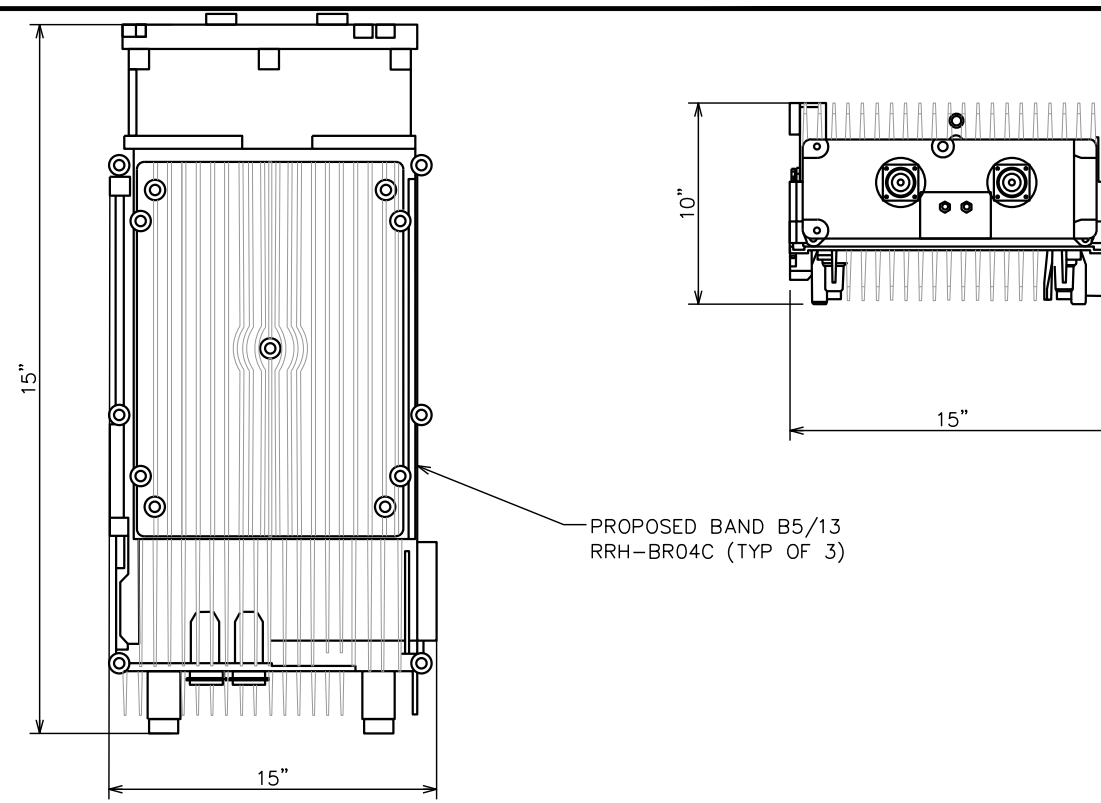
EQUIPMENT MOUNTING DETAIL

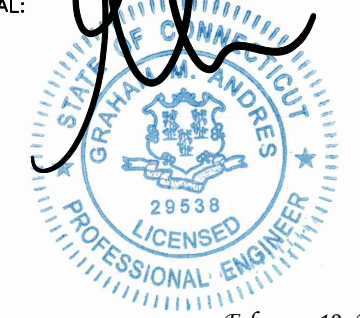
SCALE: N.T.S.



PROPOSED B5/13 RRH-BR04C DETAIL

SCALE: N.T.S.



SEAL:

 February 19, 2020

REV	DATE	ISSUED FOR:
0	02-19-20	100% CONSTRUCTION
A	12-18-19	PRELIMINARY

DRAWN BY: CJ CHECKED BY: DEL

SHEET TITLE:
EQUIPMENT DETAILS

PROPOSED COMMSCOPE DIPLEXER DETAIL

SCALE: N.T.S.

PROPOSED B2/66 RRH-BR049 DETAIL

SCALE: N.T.S.

SHEET NUMBER: **C-5** REVISION: **0**
 TEP#: 68462.207357

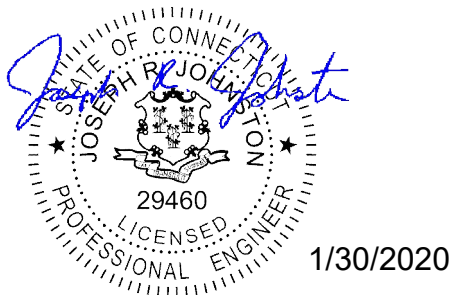
Mount Analysis Report

January 29, 2020

Verizon Site Name	Brookfield CT
Verizon Site Number	468123
ATC Site Name	Brookfield CT
ATC Site Number	283426
Infinigy Job Number	1009-Z0003-B
Client	ATC
Carrier	Verizon
Site Location	37 Carmen Hill Road Brookfield, CT 06804 Fairfield County 41.4929 N NAD83 73.4273 W NAD83
Mount Centerline EL.	79.0 ft and 71.0 ft
Mount Type	Sector Frames
Structural Usage Ratio	92.0%
Overall Result	Contingent Pass

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The mounts and connections for the proposed carrier are therefore deemed adequate to support the final loading configuration as listed in this report after the following modifications are installed.

- Install (1) 2.0" std pipe as tieback at RAD center 71.0 ft, from the inner mount pipe to the opposite tower leg, maximum 12 inches from the top horizontal, per sector. Please see proposed modifications renderings at rad height 71.0 ft for more detail.



Pradin Suinyal Magar, M.S.
Project Engineer I

Introduction

Infinigy Engineering has been requested to perform a mount analysis on the existing Verizon mounts. All referenced supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 17.0.4 analysis software.

Supporting Documentation

Collocation Application	Collo App ID #361257, dated December 10, 2019
RFDS	FUZE Project ID #16035979, dated November 12, 2019
Structural Report	ATC Engineering #13012776_C3_02, dated December 18, 2019
Mapping Report	Infinigy Job #1009-Z0003-H, dated January 23, 2020

Analysis Code Requirements

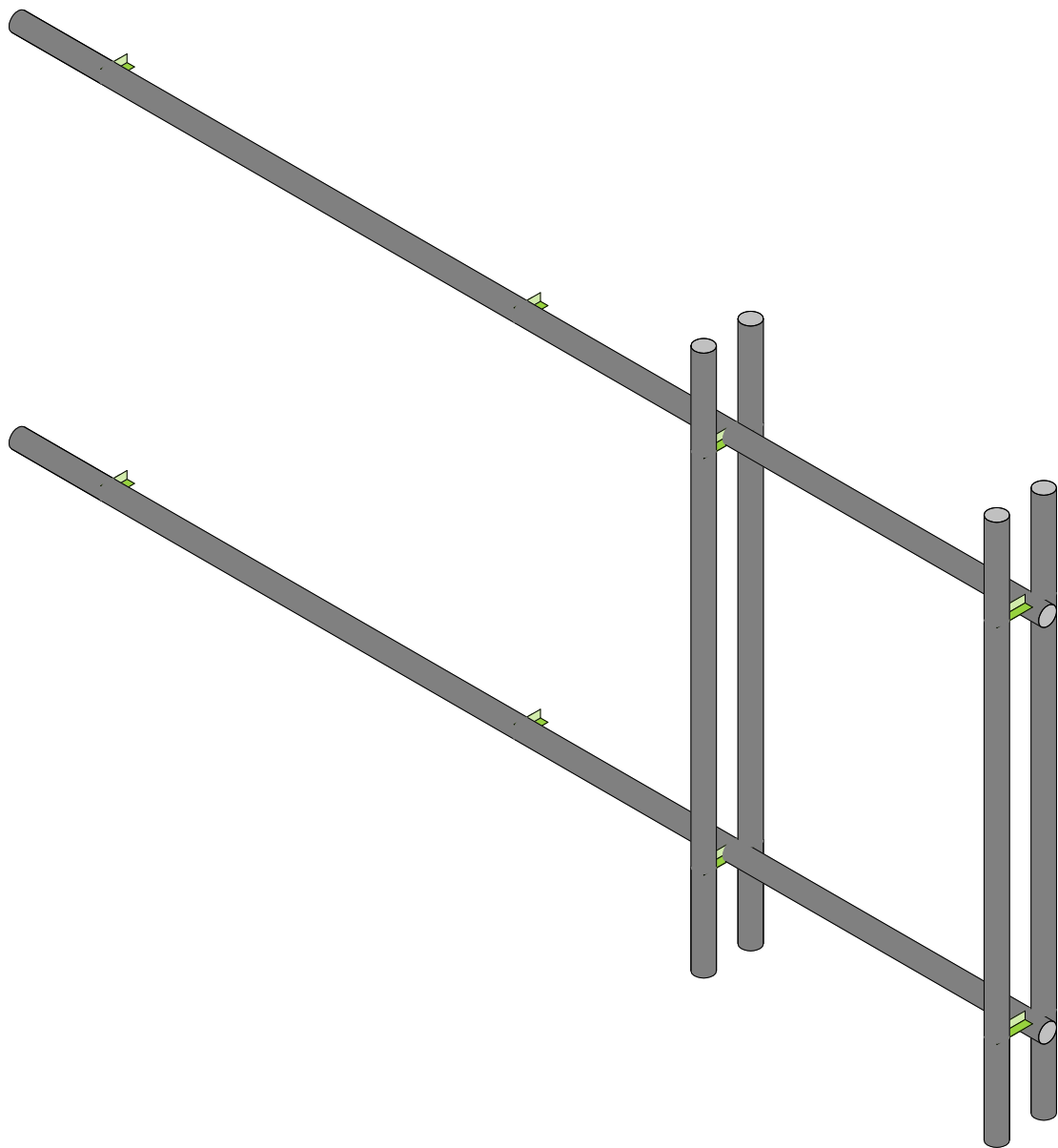
Wind Speed	93 mph (3-Second Gust, V_{asd}) / 120 mph (3-Second Gust, V_{ult})
Wind Speed w/ Ice	50 mph (3 Second Gust) w/ 0.75" Ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2015 IBC / 2018 Connecticut State Building Code
Structure Class	II
Exposure Category	B
Topographic Category	5
Crest Height	309.0 ft
Spectral Response	$S_s = 0.208$ g, $S_1 = 0.066$ g
Site Class	D - Stiff Soil

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The mount and connections are therefore deemed adequate to support the existing and proposed loading as listed in this report after the listed modifications are installed.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Pradin Suinyal Magar, M.S.
 Project Engineer I | **INFINIGY**
 1517 Old Apex Road, Cary, NC 27513
 (O) (518) 690-0813
 pmagar@infinigy.com | www.infinigy.com



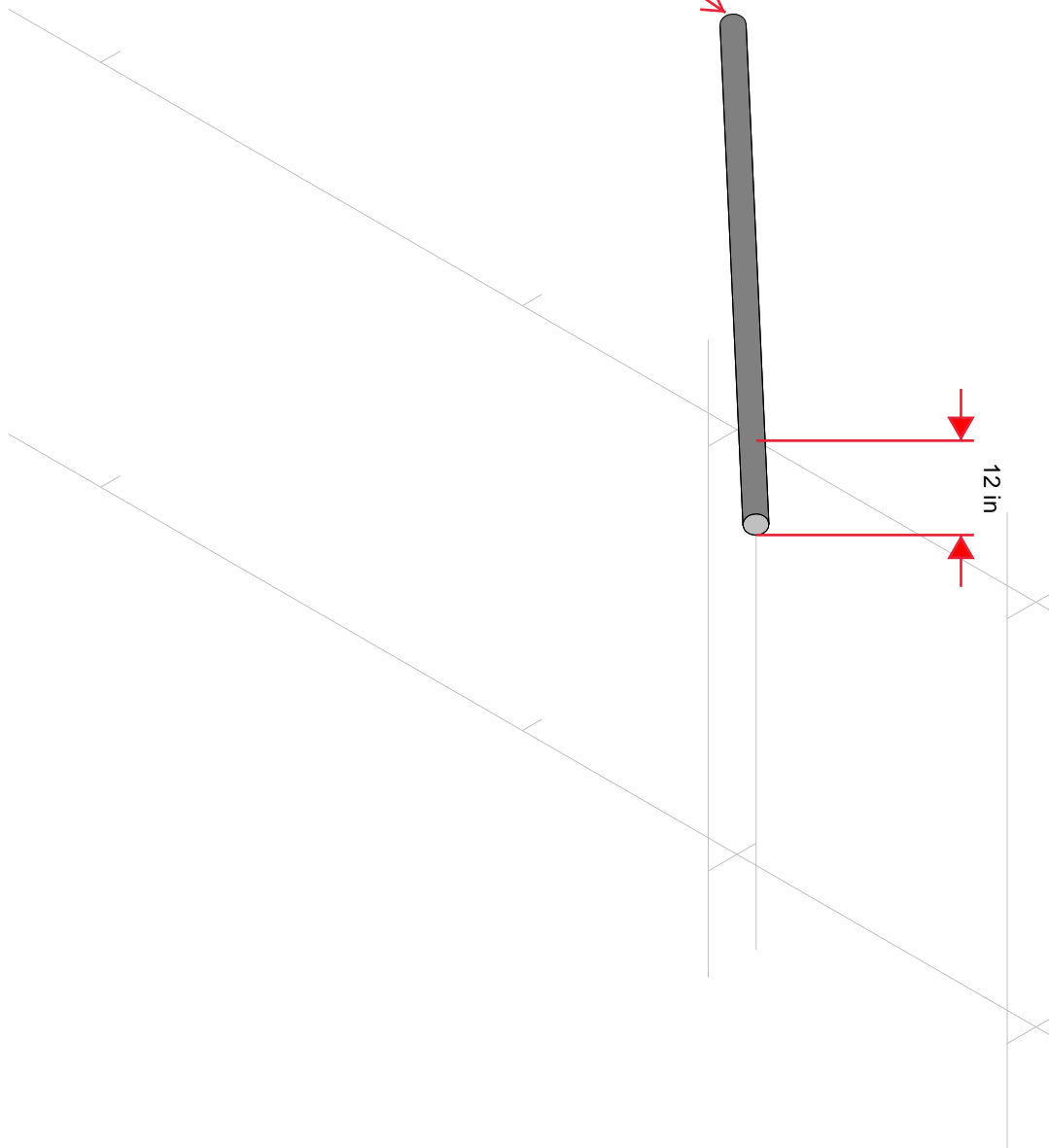
Infinigy Engineering PLLC
PSM
1009-Z0003-B

BROOKFIELD CT-RAD HT. 71.0 ft

Existing Configuration
Jan 28, 2020 at 2:14 PM
283426 RAD 71.0'.r3d

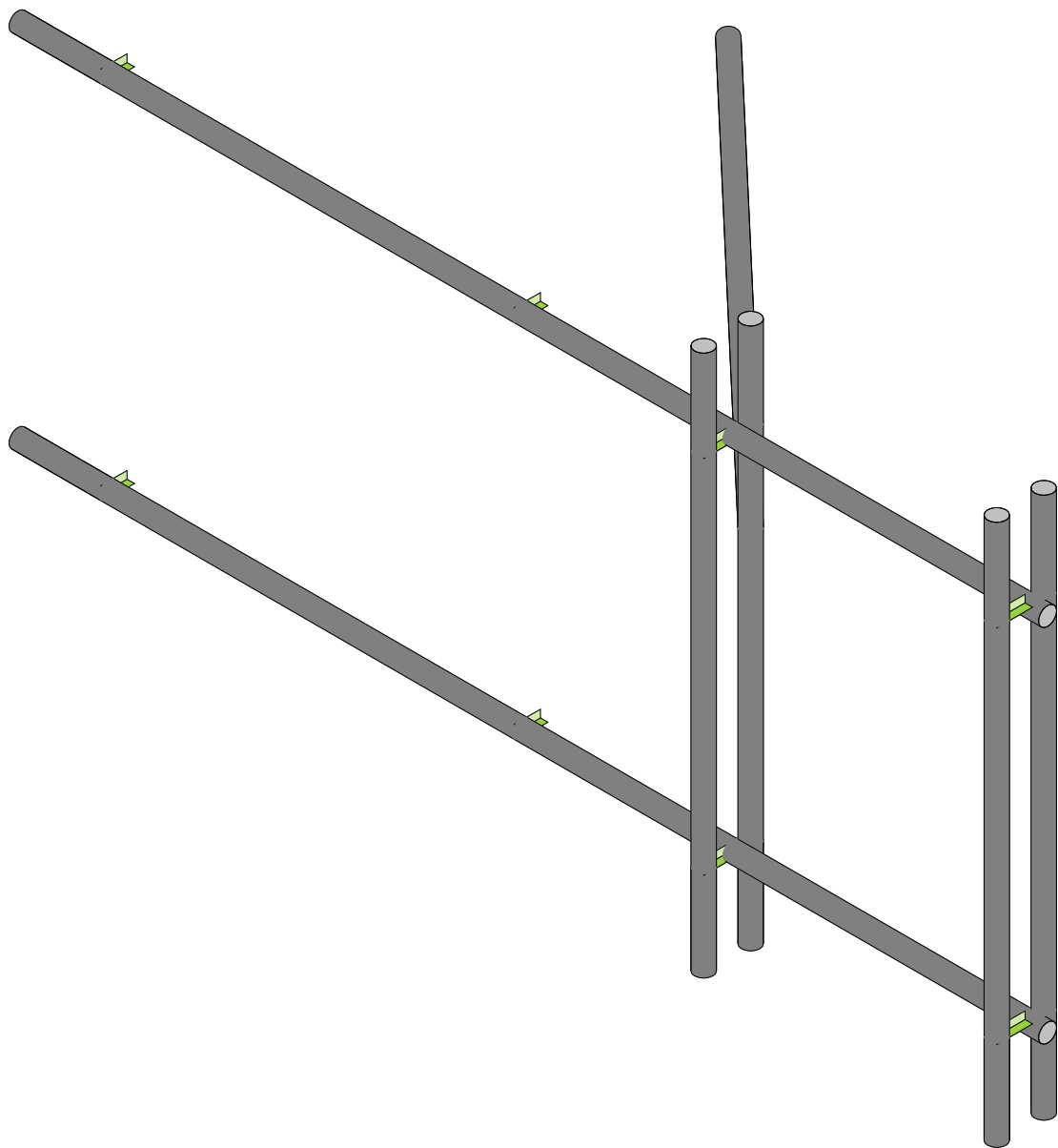


Install (1) 2.0" std pipe as tieback at RAD center 71.0 ft, from the inner mount pipe to the opposite tower leg, maximum 12 inches from the top horizontal, per sector.



Envelope Only Solution

Infinigy Engineering PLLC	BROOKFIELD CT-RAD HT. 71.0 ft	Proposed Modification
PSM		Jan 28, 2020 at 2:22 PM
1009-Z0003-B		283426 RAD 71.0'_loaded_MOD.r3d



Envelope Only Solution

Infinigy Engineering PLLC	BROOKFIELD CT-RAD HT. 71.0 ft	Final Configuration
PSM		Jan 28, 2020 at 2:23 PM
1009-Z0003-B		283426 RAD 71.0'_loaded_MOD.r3d