10 [redacted] DUSTRIAL AVE,
Su[redacted] 3
M[redacted]WAH NJ 07430

P[redacted]E: 201.684.0055
F[redacted] 201.684.0066

Transcend Wireless

September 8th, 2022

Members of the Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
50 Rust Road (AKA 31 New Hartford Road), Barkhamsted, CT 06063
Latitude: 41.893808
Longitude: -72.996472
T-Mobile Site#: CTNH417A - Anchor / Sprint Consolidation

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 108-foot level of the existing 150-foot monopole tower at 50 Rust Road, Barkhamsted, CT. Sprint currently maintains nine (9) antennas at the 146-foot level of the tower. The 150-foot monopole tower is owned and operated by American Tower. The property is owned by Regional Refuse Disposal Distribution. T-Mobile now intends to remove all existing Sprint equipment from the 146-foot level and all existing T-Mobile equipment at the 108-foot level. T-Mobile will then install nine (9) antennas at the 146-foot level. These antennas will support 5G services.

Planned Modifications:
Tower:
Install New:
(3) Ericsson AIR 6419 B41 Antennas
(3) Commscope VV-65A-R1 Antennas
(3) RFS APXVAALL24 Antennas
(3) Radio 4460 B25 B66
(3) Radio 4480 B71 B85
(3) 1.99” Hybrid Cables

To Be Removed:
(9) Sprint Antennas
(3) Sprint RRUs
Other associated Sprint equipment

(6) T-Mobile antennas
(3) T-Mobile RRUs
Other associated T-Mobile equipment
Ground:
Install (1) 6160 Power Enclosure, and (1) B160 Battery Rack, (2) RP 6651, (1) PSU 4813, and (1) CSR IXRE.
Remove (2) generic cabinets, (1) RBS 3106 Cabinet, (1) BB 5216 and (6) RUS02 B2.

This facility was originally approved by the Connecticut Siting Council in Docket No. 182A on May 7, 2002. This modification will not break any of the conditions set forth in this approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman Donald Stein, Elected Official, and Debra Brydon, Inland/Wetland Officer, as well as 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).

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 replacement 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.

For the foregoing reasons, T-Mobile 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,

Eric Breun
Transcend Wireless
Cell: 201-658-7728
Email: ebreun@transcendwireless.com

Attachments
cc: Donald Stein - First Selectman of Barkhamsted
Debra Brydon - Inlands/Wetlands Officer
American Tower - Tower Owner
Regional Refuse Disposal Distr. - Property Owner

ERIC BREUN
2016587728
1 INTERNATIONAL BLVD.
MAHWAH NJ 07495

1 LBS

1 OF 1

DWT: 18,12,1

SHIP TO:
DEBRA BRYDON
67 RIPLEY HILL ROAD
BARKHAMSTED CT 06063

CT 067 9-02

UPS GROUND
TRACKING #: 1Z V25 742 03 9766 9304

BILLING: P/P

Reference #1: CTNH417A

XOL 22.08.10 NV45 35.0A 08/2022*

ERIC BREUN
2016587728
1 INTERNATIONAL BLVD.
MAHWAH NJ 07495

1 LBS

1 OF 1

DWT: 18,12,1

SHIP TO:
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN MA 01801

MA 018 9-04

UPS GROUND
TRACKING #: 1Z V25 742 03 9546 9284

BILLING: P/P

Reference #1: CTNH417A

XOL 22.08.10 NV45 35.0A 08/2022*

Tracking Number
1ZV257420399059291

Ship From
TRANSCEND WIRELESS
TRANSCEND WIRELESS
1 INTERNATIONAL BLVD
MAHWAH, NJ, 074950025, US

Service
UPS Ground

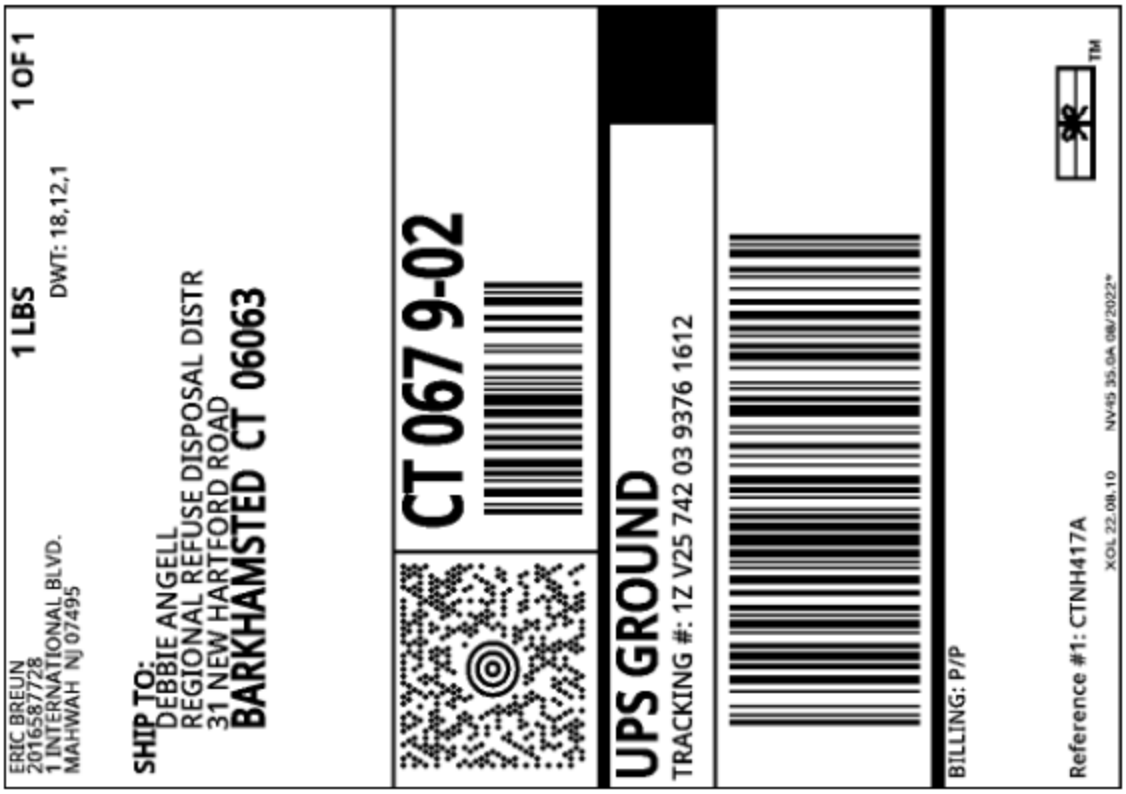
Weight
1.00 LBS

Shipment Category
Package

Reference Number(s)
CTNH417A

Shipped / Billed On
08/24/2022

Ship To
DONALD STEIN
FIRST SELECTMAN
67 RIPLEY HILL ROAD
BARKHAMSTED, CT 06063 US



Hello, your package has been delivered.

Delivery Date: Thursday, 08/25/2022

Delivery Time: 11:34 AM

Signed by: ANCRI

TRANSCEND WIRELESS

Tracking Number:	1ZV257420395469284
Ship To:	AMERICAN TOWER CORPORATION 10 PRESIDENTIAL WAY WOBURN, MA 01801 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH417A

Hello, your package has been delivered.

Delivery Date: Thursday, 08/25/2022

Delivery Time: 12:33 PM

Signed by: KRAUSE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420397669304
Ship To:	DEBRA BRYDON 67 RIPLEY HILL ROAD BARKHAMSTED, CT 06063 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH417A

Hello, your package has been delivered.

Delivery Date: Thursday, 08/25/2022

Delivery Time: 12:33 PM

Signed by: KRAUSE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420399059291
Ship To:	DONALD STEIN 67 RIPLEY HILL ROAD BARKHAMSTED, CT 06063 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH417A

Your shipment
1ZV257420399059291

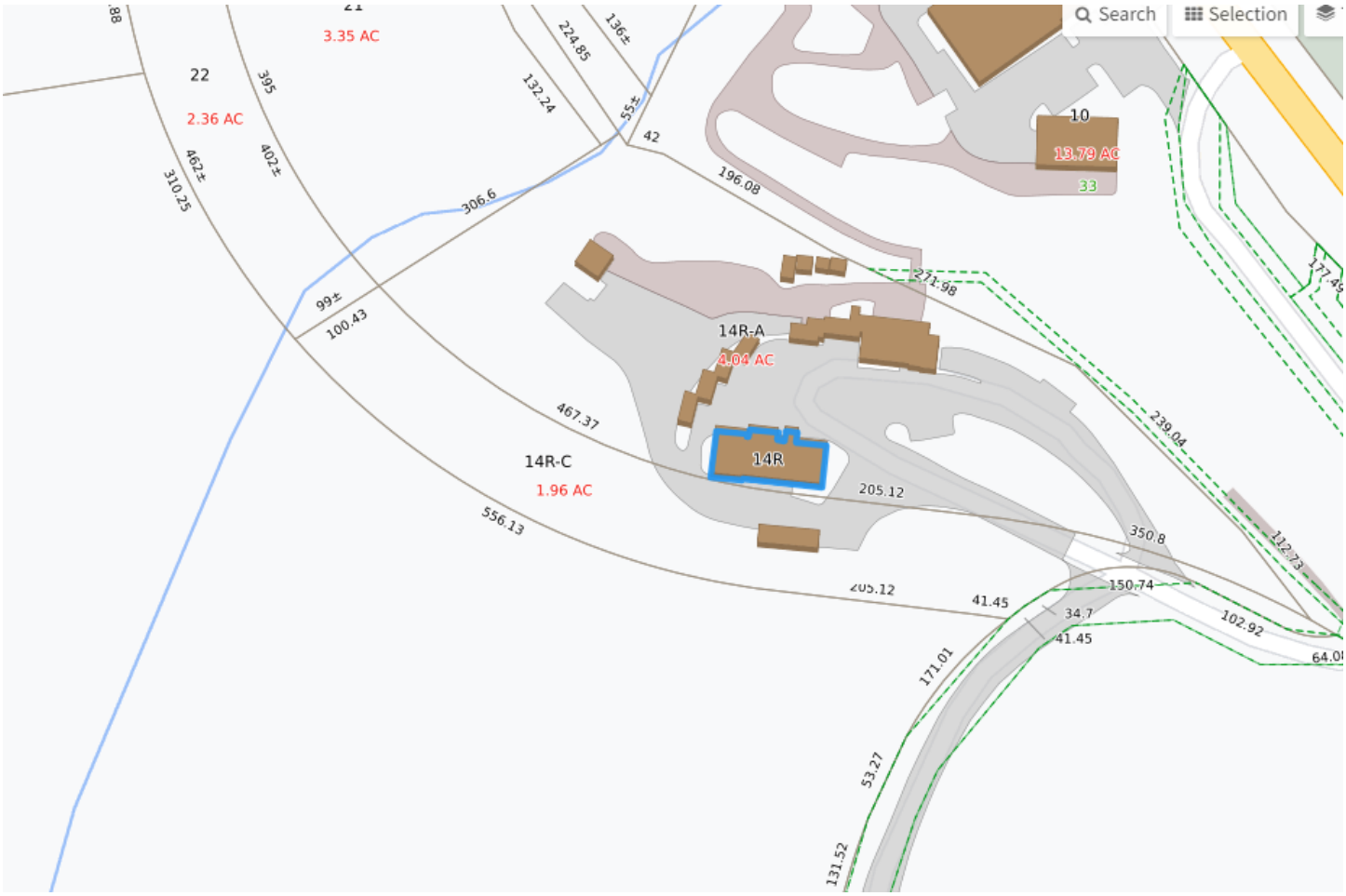
Delivered On
Thursday, August 25 at 12:33 P.M.

Delivered To
BARKHAMSTED, CT US

Received By:
KRAUSE
Proof of Delivery

Get Updates >

View Details


Search
Selection
21
3.35 AC
22
2.36 AC
395
462±
402±
310.25
132.24
224.85
136±
55±
42
306.6
196.08
10
13.79 AC
33
99±
100.43
14R-A
4.04 AC
211.98
239.04
467.37
14R-C
1.96 AC
14R
205.12
556.13
350.8
205.12
41.45
150.74
34.7
41.45
102.92
171.01
53.27
131.52

Property Location 31 NEW HARTFORD RD | Map ID 49/ 18/ 14/R / | Bldg Name | State Use 922
Vision ID 1780 | Account # 00178400 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 3 | Print Date 2/25/2022 12:57:36 P

CURRENT OWNER

REGIONAL REFUSE DISPOSAL DISTR 1

C/O DEBBIE ANGELL
31 NEW HARTFORD RD
BARKHAMSTED CT 06063

TOPO	UTILITIES	STRT / ROAD	LOCATION

SUPPLEMENTAL DATA

Alt Prcl ID 49-18-14R	DV Lot #
B.P. Status	Solar Ener
Census Tr.	BAA
Interior	Callback
100 Yr Flo	PA490 Dat
DV Map # 988, 942	
GIS ID	Assoc Pid#

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
EX COM BL	22	207,920	145,540
EX CM OTB	25	103,840	72,680
	Total	311,760	218,220

6005

BARKHAMSTED, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
REGIONAL REFUSE DISPOSAL DISTR 1	0056	0050	04-02-1974		V	0	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed	Year	Code	Assessed
2021	22	145,540	2020	22	145,540	2019	22	166,340
	25	72,680		25	72,680		25	72,680
	Total	218,220		Total	218,220		Total	239,020

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Nbhd Name	Street Index Name	Tracing	Batch
0001				

NOTES

RRDD1 BARK. LAND ASSESSED ON FOLLOWING:

49-18-14R-A, ACCT 00178510

49-18-14R-B, ACCT 00178500

49-18-14R-C, ACCT 00178520

49-18-13, ACCT 00158400

2020: Per Maps 988 & 942, Rem 4th Bldg:

Upper Sect C&D with Shed/Wkshop in NH

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	203,300
Appraised Xf (B) Value (Bldg)	4,620
Appraised Ob (B) Value (Bldg)	103,840
Appraised Land Value (Card)	0
Total Appraised Parcel Value	311,760
Valuation Method	C
Total Appraised Parcel Value	311,760

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments
17-112-E	06-15-2017	EL	Electric	7,281		100		LOW VOLTAGE SURVEILLAN
2546	10-01-2014	EL	Electric	800		100		add 2 gfci quad boxes & 1 fluo
14-08-45	08-25-2014	OT	Other	1,000		100		no exterior chng to bldg
2523	08-13-2014	EL	Electric	500		100		MISC
2387	04-15-2013	EL	Electric	1,500		100	10-01-2013	INSTALL 8KW GENERATOR
353	04-10-2013	OT	LP Gas	1,740		100		connect LP to generator
935	01-11-2012	PL	Plumbing	500		100		repair copper water lines in ma

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result
07-27-2018	MVS			07	Info at door
04-08-2008	JQ			00	Meas. and List
04-07-2008	JQ			00	Meas. and List

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	Land Type	Land Units		Unit Price	Size Adj	Site Index	Cond.	Nbhd.	Nbhd. Adj.	Notes	Special Use		Location Adjustment	Adj Unit Pri	Land Value
1	922	Mun Bldg Com			0.000	AC	4,000.00	1.00000	5	1.00		1.000			0	0.00		0
		Total Card Land Units			0.000	AC	Parcel Total Land Area			0.000		AC				Total Land Value		0

Property Location	31 NEW HARTFORD RD		Map ID	49/ 18/ 14/R /		Bldg Name	State Use 922
Vision ID 1780		Account # 00178400		Bldg # 1	Sec # 1 of 1	Card # 1 of 3	Print Date 2/25/2022 12:57:38 P

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	95	Garage/Office
Model	94	Commercial
Grade	08	C
Stories:	1	
Occupancy	1.00	
Exterior Wall 1	27	Pre-finsh Metl
Exterior Wall 2		
Roof Structure	03	Gable
Roof Cover	01	Metal/Tin
Interior Wall 1	01	Minimum
Interior Wall 2		
Interior Floor 1	03	Concrete
Interior Floor 2		
Heating Fuel	02	Oil
Heating Type	04	Forced Air
AC Type	03	Central
Bldg Use	922	Mun Bldg Com
Sprinkler Type		
Sprinkler %		
Mezzanine Fin.		
Mezanine Unf.		
Heat/AC	00	None
Frame Type	05	Steel
Baths/Plumbing	02	Average
Ceiling/Walls	00	None
Rooms/Prtns	02	Average
Wall Height	16.00	
% Comn Wall		
1st Floor Use:		

CONSTRUCTION DETAIL (CONTINUED)

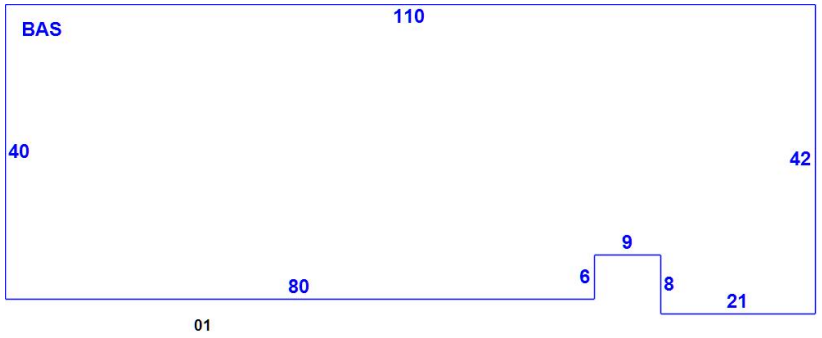
Element	Cd	Description

MIXED USE

Code	Description	Percentage
922	Mun Bldg Com	100
		0
		0

COST / MARKET VALUATION

RCN	253,319
Year Built	1974
Depreciation Code	A
Remodel Rating	
Year Remodeled	
Depreciation %	32
Functional Obsol	
External Obsol	
Cost Trend Factor	1
Condition	
Condition %	
Percent Good	68
RCNLD	172,260
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	



OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Cod	Description	Sub	Sub Desc	L/B	Units	Unit Price	Yr Blt	Cond.	% Gd	Grade	Grd A	Appr. Valu
PAV	Paving Asph.			L	20,000	1.65	1974		50		0.00	16,500
SHD	Shed	FR	Frame	L	204	21.00	1974		30		0.00	1,290
CNP	Canopy			L	2,500	26.00	1974		50		0.00	32,500
SHD	Shed LQ	MT	Metal	L	2,800	10.50	1974		50		0.00	14,700
SHD	Shed LQ	MT	Metal	L	2,400	10.50	1974		50		0.00	12,600
SHD	Shed LQ	MT	Metal	L	2,500	10.50	1974		50		0.00	13,130
SHD	Shed LQ	MT	Metal	L	2,400	10.50	1974		50		0.00	12,600
OHD	Overhead Do			B	4	1700.00	1986		68		0.00	4,620
GEN	Generator St			L	1	520.00	2013		100		0.00	520

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area
BAS	First Floor	4,388	4,388
	Ttl Gross Liv / Lease Area	4,388	4,388

Property Location 31 NEW HARTFORD RD | Map ID 49/ 18/ 14/R / | Bldg Name | State Use 922
Vision ID 1780 | Account # 00178400 | Bldg # 2 | Sec # 1 of 1 | Card # 2 of 3 | Print Date 2/25/2022 12:57:38 P

CURRENT OWNER

REGIONAL REFUSE DISPOSAL DISTR 1

C/O DEBBIE ANGELL
31 NEW HARTFORD RD
BARKHAMSTED CT 06063

TOPO	UTILITIES	STRT / ROAD	LOCATION

SUPPLEMENTAL DATA

Alt Prcl ID 49-18-14R	DV Lot #
B.P. Status	Solar Ener
Census Tr.	BAA
Interior	Callback
100 Yr Flo	PA490 Dat
DV Map # 988, 942	
GIS ID	Assoc Pid#

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
EX COM BL	22	207,920	145,540
EX CM OTB	25	103,840	72,680
	Total	311,760	218,220

6005

BARKHAMSTED, CT

VISION

RECORD OF OWNERSHIP

BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
REGIONAL REFUSE DISPOSAL DISTR 1	0056	0050	04-02-1974		V	0	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed	Year	Code	Assessed
2021	22	145,540	2020	22	145,540	2019	22	166,340
	25	72,680		25	72,680		25	72,680
	Total	218,220		Total	218,220		Total	239,020

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Nbhd Name	Street Index Name	Tracing	Batch
0001				

NOTES

STORAGE SHED

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	203,300
Appraised Xf (B) Value (Bldg)	4,620
Appraised Ob (B) Value (Bldg)	103,840
Appraised Land Value (Card)	0
Total Appraised Parcel Value	311,760
Valuation Method	C
Total Appraised Parcel Value	311,760

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	Land Type	Land Units		Unit Price	Size Adj	Site Index	Cond.	Nbhd.	Nbhd. Adj.	Notes	Special Use		Location Adjustment		Adj Unit Pri	Land Value
2	922	Mun Bldg Com			0	SF	0.00	1.00000	0	1.00		1.000			0		0.00		0
		Total Card Land Units			0.000	AC	Parcel Total Land Area			0.000		SF					Total Land Value		0

Property Location	31 NEW HARTFORD RD		Map ID	49/ 18/ 14/R /	Bldg Name		State Use 922
Vision ID 1780		Account # 00178400		Bldg # 2	Sec # 1 of 1	Card # 2 of 3	Print Date 2/25/2022 12:57:40 P

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	82	Equip Garage
Model	94	Commercial
Grade	02	E
Stories:	1	
Occupancy	1.00	
Exterior Wall 1	27	Pre-finsh Metl
Exterior Wall 2		
Roof Structure	03	Gable
Roof Cover	01	Metal/Tin
Interior Wall 1	01	Minimum
Interior Wall 2		
Interior Floor 1	02	Minimum/Plywd
Interior Floor 2		
Heating Fuel	01	Coal or Wood
Heating Type	01	None
AC Type	01	None
Bldg Use	922	Mun Bldg Com
Sprinkler Type		
Sprinkler %		
Mezzanine Fin.		
Mezanine Unf.		
Heat/AC	00	None
Frame Type	02	Wood Frame
Baths/Plumbing	00	None
Ceiling/Walls	00	None
Rooms/Prtns	02	Average
Wall Height	8.00	
% Comn Wall		
1st Floor Use:		

CONSTRUCTION DETAIL (CONTINUED)

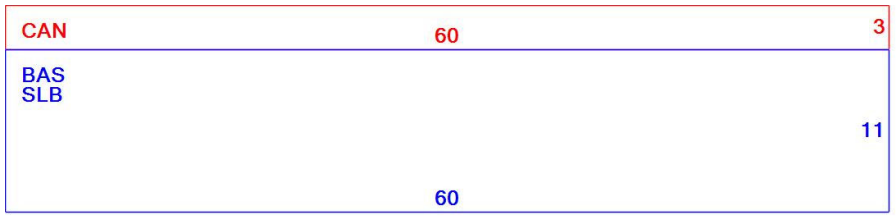
Element	Cd	Description

MIXED USE

Code	Description	Percentage
922	Mun Bldg Com	100
		0
		0

COST / MARKET VALUATION

RCN	12,819
Year Built	2006
Depreciation Code	A
Remodel Rating	
Year Remodeled	
Depreciation %	10
Functional Obsol	
External Obsol	
Cost Trend Factor	1
Condition	
Condition %	
Percent Good	90
RCNLD	11,540
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	



OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Cod	Description	Sub	Sub Desc	L/B	Units	Unit Price	Yr Blt	Cond.	% Gd	Grade	Grd A	Appr. Valu

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area
BAS	First Floor	660	660
CAN	Canopy	0	180
SLB	Slab	0	660
	Ttl Gross Liv / Lease Area	660	1,500

Property Location 31 NEW HARTFORD RD | Map ID 49/ 18/ 14/R / | Bldg Name | State Use 922
Vision ID 1780 | Account # 00178400 | Bldg # 3 | Sec # 1 of 1 | Card # 3 of 3 | Print Date 2/25/2022 12:57:40 P

CURRENT OWNER

REGIONAL REFUSE DISPOSAL DISTR 1

C/O DEBBIE ANGELL
31 NEW HARTFORD RD
BARKHAMSTED CT 06063

TOPO	UTILITIES	STRT / ROAD	LOCATION

SUPPLEMENTAL DATA

Alt Prcl ID 49-18-14R	DV Lot #
B.P. Status	Solar Ener
Census Tr.	BAA
Interior	Callback
100 Yr Flo	PA490 Dat
DV Map # 988, 942	
GIS ID	Assoc Pid#

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
EX COM BL	22	207,920	145,540
EX CM OTB	25	103,840	72,680
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6005

BARKHAMSTED, CT

VISION

RECORD OF OWNERSHIP

BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
REGIONAL REFUSE DISPOSAL DISTR 1	0056	0050	04-02-1974		V	0	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed	Year	Code	Assessed
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	25	72,680		25	72,680		25	72,680
	Total	218,220		Total	218,220		Total	239,020

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

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ASSESSING NEIGHBORHOOD

Nbhd	Nbhd Name	Street Index Name	Tracing	Batch
0001				

NOTES

RE-USE SHED

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	203,300
Appraised Xf (B) Value (Bldg)	4,620
Appraised Ob (B) Value (Bldg)	103,840
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Total Appraised Parcel Value	311,760
Valuation Method	C
Total Appraised Parcel Value	311,760

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	Land Type	Land Units		Unit Price	Size Adj	Site Index	Cond.	Nbhd.	Nbhd. Adj.	Notes	Special Use		Location Adjustment		Adj Unit Pri	Land Value
3	922	Mun Bldg Com			0	SF	0.00	1.00000	0	1.00		1.000			0		0.00		0
		Total Card Land Units			0.000	AC	Parcel Total Land Area			0.000		SF					Total Land Value		0

Property Location	31 NEW HARTFORD RD		Map ID	49/ 18/ 14/R /		Bldg Name	State Use 922
Vision ID 1780		Account # 00178400		Bldg # 3	Sec # 1 of 1	Card # 3 of 3	Print Date 2/25/2022 12:57:41 P

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	24	Comm Garage
Model	94	Commercial
Grade	06	D+
Stories:	1	
Occupancy	1.00	
Exterior Wall 1	01	Minimum
Exterior Wall 2		
Roof Structure	03	Gable
Roof Cover	01	Metal/Tin
Interior Wall 1	01	Minimum
Interior Wall 2		
Interior Floor 1	03	Concrete
Interior Floor 2		
Heating Fuel	01	Coal or Wood
Heating Type	01	None
AC Type	01	None
Bldg Use	922	Mun Bldg Com
Sprinkler Type		
Sprinkler %		
Mezzanine Fin.		
Mezanine Unf.		
Heat/AC	00	None
Frame Type	02	Wood Frame
Baths/Plumbing	00	None
Ceiling/Walls	00	None
Rooms/Prtns	01	Light
Wall Height	8.00	
% Comn Wall		
1st Floor Use:		

CONSTRUCTION DETAIL (CONTINUED)

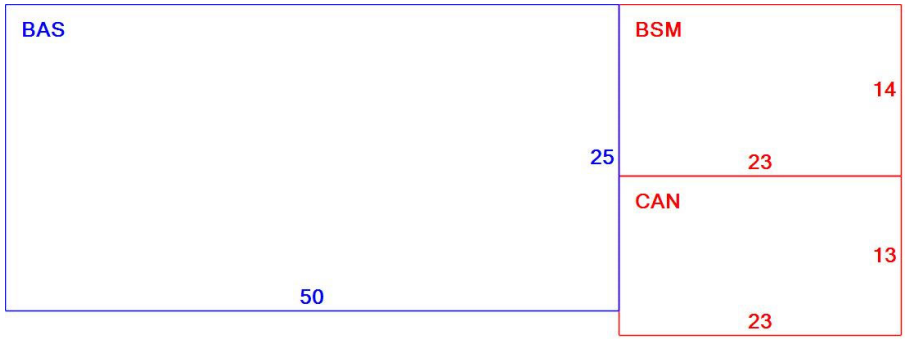
Element	Cd	Description

MIXED USE

Code	Description	Percentage
922	Mun Bldg Com	100
		0
		0

COST / MARKET VALUATION

RCN	28,673
Year Built	1974
Depreciation Code	A
Remodel Rating	
Year Remodeled	
Depreciation %	32
Functional Obsol	
External Obsol	
Cost Trend Factor	1
Condition	
Condition %	
Percent Good	68
RCNLD	19,500
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	



OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Cod	Description	Sub	Sub Desc	L/B	Units	Unit Price	Yr Blt	Cond.	% Gd	Grade	Grd A	Appr. Valu

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area
BAS	First Floor	1,250	1,250
BSM	Basement	0	322
CAN	Canopy	0	299
	Ttl Gross Liv / Lease Area	1,250	1,871

DOCKET NO. 182A - Sprint Spectrum, L.P. d/b/a Sprint PCS and Litchfield Acquisition Corporation d/b/a AT&T Wireless Services amendment to the Certificate of Environmental Compatibility and Public Need for the existing telecommunications facility located 31 New Hartford Road (access via Rust Road), Barkhamsted, Connecticut.	}	Connecticut Siting Council May 7, 2002

Findings of Fact

Introduction

1. Sprint Spectrum L. P. d/b/a Sprint PCS (Sprint) and Litchfield Acquisition Corporation d/b/a AT&T Wireless Services (AT&T) in accordance with provisions of General Statutes §§ 16-50g through 16-50aa applied to the Connecticut Siting Council (Council) on November 8, 2001, for an amendment to the Certificate of Environmental Compatibility and Public Need (Certificate) to an existing telecommunications facility on 31 New Hartford Road (access via Rust Road), Barkhamsted, Connecticut. On June 25, 1998, the Council issued a Certificate for construction of a 120-foot tower, that was extended to 124 feet above ground level (agl) for attachment of branching to be camouflaged as a tree and equipment compound that accommodates AT&T, Nextel, and SNET. Sprint proposes to increase the height of this existing monopole tower camouflaged as a tree to a tota1 height of 148 feet above ground level. The purpose of the proposed facility is to provide personal communications service (PCS) to sections of U.S. Route 44 and State Routes 181, 219, and 318 in the Town of Barkhamsted, Litchfield County, Connecticut. (Sprint 1, pp. 1,2 and 5, and Revision December 14, 2001; Transcript (Tr.) dated January 24, 2001, 7:00 p.m., pp. 7, 12, 13, 15)

2. The party in this proceeding is the applicant. The Federal Communications Commission (FCC) licenses Sprint as the "B block" "Wideband PCS" license holder for the two-gigahertz PCS frequencies for the greater New York City area, which includes the entire state of Connecticut. (Sprint 1, p. 1; Tr. pp. 5, 44, and 45)

3. Public notice of the application, as required by General Statutes § 16-50l (b), was published in The Hartford Courant and in the Register Citizen. (Sprint 1, p. 3)

4. As required by General Statute § 16-50l (e), Sprint provided the Town of Barkhamsted technical material on August 21, 2001 for the proposed increase in height of an existing tower to locate Sprint's antennas, and relocate existing antennas of AT&T, SNET and Nextel to accommodate future collocation. Since the existing site is within 2,500 feet of an adjoining municipality, Sprint provided the Town of New Hartford technical material on September 5, 2001. (Sprint 1, p. 21 and Exhibits Q and S)

5. Pursuant to General Statutes § 16-50m, the Council, after giving due notice thereof, held a public hearing on January 24, 2002, beginning at 7:00 p.m. in the cafeteria of the Barkhamsted Elementary School, 63 Ripley Hill Road, Barkhamsted, Connecticut. (Tr., p. 3)

6. The Council and its staff made inspections of the existing tower site on January 24, 2002. During this field inspection, the applicant flew a balloon at the site to simulate the height of the proposed extension. (Sprint 1 p. 19; Council Pre-hearing Conference Notice dated December 20, 2001)

PCS Service Design

7. Personal communications service (PCS) consists of low power transmitter/receiver stations known as cell sites. The system design allows for a configuration of cell sites so that the same frequencies can be used at the same time in different cells (frequency reuse) and to provide uninterrupted service throughout a service area (hand-off). (Docket No. 182, Finding of Fact No. 11)

8. The location of cell sites is based upon key factors such as traffic demand, topography, site height, site availability, building density, and foliage. (Sprint 1, p. 8, Tab H; Docket No. 182 Finding of Fact No. 18)

9. Sprint requires a minimum acceptable signal strength threshold of -94 decibels (dbm) to provide coverage in the Barkhamsted area. Signal strength thresholds lower than -94 dbm may create coverage gaps within a cell's coverage area that may prevent the establishment of a call or cause a call to be disconnected. Presently, a gap in coverage exists along Route 44 in Barkhamsted and surrounding areas. (Sprint 1, p. 7, Exhibits E and H)

10. Adjacent Sprint facilities that would hand off traffic with the proposed facility are as follows:

Location	**Distance and Direction from proposed facility**	**Status**
Greenwood Industrial Park, New Hartford	1.70 mi./east southeast	Operating
Old North Road, Barkhamsted	2.30 mi./northwest	Proposed
Oakdale Avenue, Winchester	3.42 mi./northwest	Operating
20 Antolini Road, New Hartford	4.63 mi./south	Proposed facility in Council Docket No. 184A
96 Powder Mill Road, Canton	5.22 mi./southeast	Operating
1925-1930 East Main Street, Torrington	6.40 mi./west	Operating
South of Route 202, New Hartford	4.0 mi./south southeast	Proposed
Torrington	9.0 mi./west	Proposed

(Sprint 1, Exhibit N and Revised Exhibits F and H; Sprint 3, Qs. 6 and 14, Tr. pp. 19-20)

Site Search

11. In its search for a cell site in the Barkhamsted area, Sprint identified and investigated 4 potential sites, including the proposed site in the application. The remaining sites were rejected because a property owner was not interested in leasing property, another site did not provide adequate coverage, and a raw land site was not pursued due to the existing facility's availability. The other alternative would be construction of a new tower. (Sprint 1, p. 16; Sprint 4, Timothy Keator Testimony)

Need and Coverage

12. In 1996, the United States Congress recognized a nationwide need for high quality wireless telecommunications services, including cellular telephone service. The Federal Telecommunications Act of 1996 seeks to promote competition, encourage technical innovations, and foster lower prices for telecommunications services. Furthermore, the Federal government has preempted the determination of public need for wireless service by the states, and has established design standards to ensure technical integrity and nationwide compatibility among all systems. (Sprint 1, pp. 6-7; Telecommunications Act of 1996, Definition of Act, Sections 256, and 704)

13. Coverage from existing and proposed facilities (see Finding of Fact # 8) within a two-mile radius of the Route 181 and Route 44 intersection indicates the following coverage gaps. Gaps are defined as areas

receiving less than -94 dbm coverage. The primary purpose of this application is to provide service to these gaps in coverage and provide hand-off capability to adjacent sites.

Existing Coverage
(See Appendix A)

Route	Gaps (miles) < -94 dbm	Total Road Miles
44	1.75	4.50
181	2.25	2.25
219	0.0	3.75
318	1.50	2.75

(Sprint 1, Revised Exhibit E coverage model)

14. Existing and proposed coverage combined with Sprint antennas on the proposed tower at a centerline height of 144 feet AGL within a two-mile radius of the Route 181 and Route 44 intersection as follows:

Proposed Tower at a centerline height of 144 feet AGL
(See Appendix B)

Route	Gaps (miles) < -94 dbm	Total Road Miles
44	0.13	4.50
181	0.0	2.50
219	0.0	3.75
318	0.13	2.75

(Sprint 1, Revised Exhibit F coverage model)

15. Existing and proposed coverage combined with Sprint antennas on the proposed tower at a centerline height of 130 feet AGL within a two-mile radius of the Route 181 and Route 44 intersection as follows:

Proposed Tower at a centerline height of 130 feet AGL
(See Appendix C)

Route	Gaps (miles) < -94 dbm	Total Road Miles
44	0.13	4.50
181	0.0	2.50
219	0.0	3.75
318	0.13	2.75

As capacity increases in the Route 44 area of Barkhamsted and New Hartford, the issue in providing coverage begins to change with increased use. While a 130-foot and 140-foot tower provides similar coverage, future demand may cause coverage from a 130-foot tower to be inadequate.
(Sprint 3, Q. 2 coverage model; Tr. 1, pp. 26-29)

16. Alternatives to monopole technology include microcell and repeater sites. A microcell is a small version of a cell site. A repeater is a low power system that borrows a channel from a nearby cell site and rebroadcasts it to a target area. These alternatives fulfill small coverage gaps or provide service to a building but would not be applicable in the Barkhamsted area due to the large coverage gaps and the necessary height to place antennas would not alleviate the need for a tower. (Sprint 1 pp. 15 and 16; Sprint 4, Anthony Wells Testimony)

Proposed site

17. The proposed site is an existing telecommunications facility owned and operated by AT&T Wireless Services and consists of a 120-foot monopole tower camouflaged as a pine tree and three equipment buildings at the base of the tower within a 50-foot by 50-foot fenced compound. An additional four-foot extension on this tower supports artificial tree branching for a total height of 124 feet. (Sprint 1, p. 5; Sprint 3, Q. 7; Sprint 4, Alitz Abadjian Testimony; Tr. p.13)

18. AT&T has a lease for a 75-foot by 75-foot area within an approximately 98-acre parcel of land owned by the Regional Refuse Disposal District (RRDD) No. 1. This site is located approximately 180 feet east from the end of Rust Road with an elevation of 780 feet above mean sea level. The RRDD property is zoned Restricted Industrial (I-1). The Barkhamsted Zoning Regulations, by special permit, allows use of communications towers in I-1 and I-2 zones. (Sprint 1, pp. 4, 5 and 13, Exhibit D; Sprint 1a Barkhamsted Zoning Regulations)

19. Land north and west of the RRDD property is zoned residential (RA-1). Land to the north contains residences. Land west and south is wooded, and contains no homes. The RRDD transfer station and buildings are located to the east. U.S. Route 44 borders the RRDD east property boundary. The RRDD western property boundary fronts an unimproved road (Rust Road) for approximately 1300 feet to the Barkhamsted and New Hartford town boundary. (Sprint 1, pp. 4, 5 and 13, Docket No 182 Finding of Fact No. 28)

20. Sprint would use an existing 12-foot wide by 170-foot long gravel covered access road. (Sprint 1, p. 8 and Revised Exhibit D; Sprint 4, Alitz Abadjian Testimony)

21. Electric and telephone utilities exist at the facility and are underground. No permanent backup electrical system is proposed; however, Sprint relies on batteries for backup power and for outages lasting longer than 4 hours Sprint may use a portable electric generator. Each carrier may have a generator for its own use. (Sprint 1, p. 8 and Revised Exhibit D; Tr. pp. 29-30)

22. No trees would be removed for the proposed extension of the tower or for the proposed placement of Sprint's equipment within the existing fenced compound. (Tr. p. 18)

23. There are no wetland areas within the existing leased parcel. (Sprint p. 9)

24. There are seven homes on Rust Road of which four would be within a 1000-foot radius of the existing tower. The nearest residential structure would be approximately 600 feet north of the existing tower. (Sprint 1, pp. 11 and 13 and Exhibit I)

25. The 148-foot tower radius would remain within the lessor's property. The facility site equipment buildings would be the only structures within the tower radius. (Sprint 1, Exhibit D)

26. The estimated cost of construction for the proposed modifications to the facility would be:

Monopine extension with branches	$55,630
New platforms for all carriers	$18,000
Installation of platforms, antennas, and branching	$44,000

Ground site work		$21,000
PCS radio equipment		$126,000
	Total	$264,630

(Sprint 1, p. 19; Tr. P. 52)

Facility Specifications

27. Sprint proposes to extend the existing 124-foot monopole to a total height of 148 feet above ground level (agl) and would maintain the tower as a camouflaged tree. Sprint proposes to install 12 panel type directional antennas, four per sector, at a centerline height of 144 feet agl. An additional four-foot extension for artificial tree branching would be installed above the antennas. A global positioning system antenna would be mounted at the 50-foot level of the tower. (Sprint 1, Revised Exhibit D; Sprint 5; Tr. p. 13-18)

28. Sprint would install an 8.5-foot by 20-foot concrete foundation within the fenced compound for equipment, a main power cabinet, secondary power cabinet, battery backup cabinet, and primary radio cabinet. The foundation would accommodate three additional cabinets in the future. (Sprint 1, pp. 5 and 6; Sprint 4, Alitz Abadjian Testimony)

29. AT&T proposes to relocate its 12 panel antennas on a 12-foot wide platform from its centerline height of 120 feet agl to an antenna centerline height of 134 feet agl. AT&T holds a PCS license for Litchfield County, Connecticut and proposes to provide data services. AT&T would operate six antennas at the 1900 MHz frequency and six antennas at the 850 MHz frequency. No modification to its equipment building is proposed. (Sprint 1, p. 6 and Revised Exhibit D; EM-AT&T-005-018-031-055-068-092-111-125-153-162-168-011121, Edwards and Kelsey d/b/o AT&T Wireless Services)

30. Nextel currently has three omni directional whip antennas (14 feet long by 3 inches in diameter) at the top of the proposed tower with a centerline of radiation of 127 feet agl. Nextel proposes to remove these whip antennas and replace them with panel antennas on a platform at a centerline of radiation 124 feet. No modification to its equipment building is proposed. (Sprint 1, p. 6 and Revised Exhibit D)

31. SNET proposes to relocate its 12 panel antennas on a 12-foot wide platform from its centerline height of 110 feet agl to an antenna centerline height of 114 feet agl. No modification to its equipment building is proposed. (Sprint 5; Tr. p.12)

32. The existing 124-foot tower and its foundation is capable of being extended to a total height of 158 feet, camouflaged as a tree, and accommodate up to six carriers. This 158-foot tower would be designed to withstand pressures equivalent to a 69-mph wind with one-half inch solid ice accumulation. Elevations for future carriers would be available at the 104-foot and 94-foot levels of the proposed 144-foot tower. (Sprint 1, p. 5 and Revised Exhibit D; Sprint 3, Q. 7; Sprint 4, Alitz Abadjian Testimony)

33. The existing tower did not have any air navigation marking and or lighting nor does Sprint propose any air navigation marking and or lighting consistent with Federal Aviation Administration (FAA) criteria. (Sprint 1, Exhibit K; Docket No. 182, Finding of Fact No. 43)

Environmental Considerations

34. There are no known or existing populations of federal or State endangered, threatened or special concern species occurring at the proposed site. (Sprint 1, p. 12 and Exhibit K; Docket No. 182 Findings of Fact No. 49)

35. The State Historic Preservation Officer determined that the proposed extension of the existing tower would have no effect with respect to historic, architectural, or archeological resources listed on or eligible for the national or State register of historic places. (Sprint 1, pp. 12-13 and Exhibit M)

36. Noise associated with construction would be temporary. After construction, noise would be from a portable emergency generator used during extended power outages. (Sprint 1, p. 11; Tr. 30-33)

37. A small amount of traffic would occur during construction. After construction, Sprint would make monthly visits for inspection and maintenance. (Sprint 1, p. 11)

38. State Route 181 is designated a State scenic road from the intersection with Route 44 to the intersection of Route 318 including portions of Route 318 across Saville Dam and Route 219 bordering the east shore of Lake McDonough in the Town of Barkhamsted. (Docket No. 182 Finding of Fact No. 55)

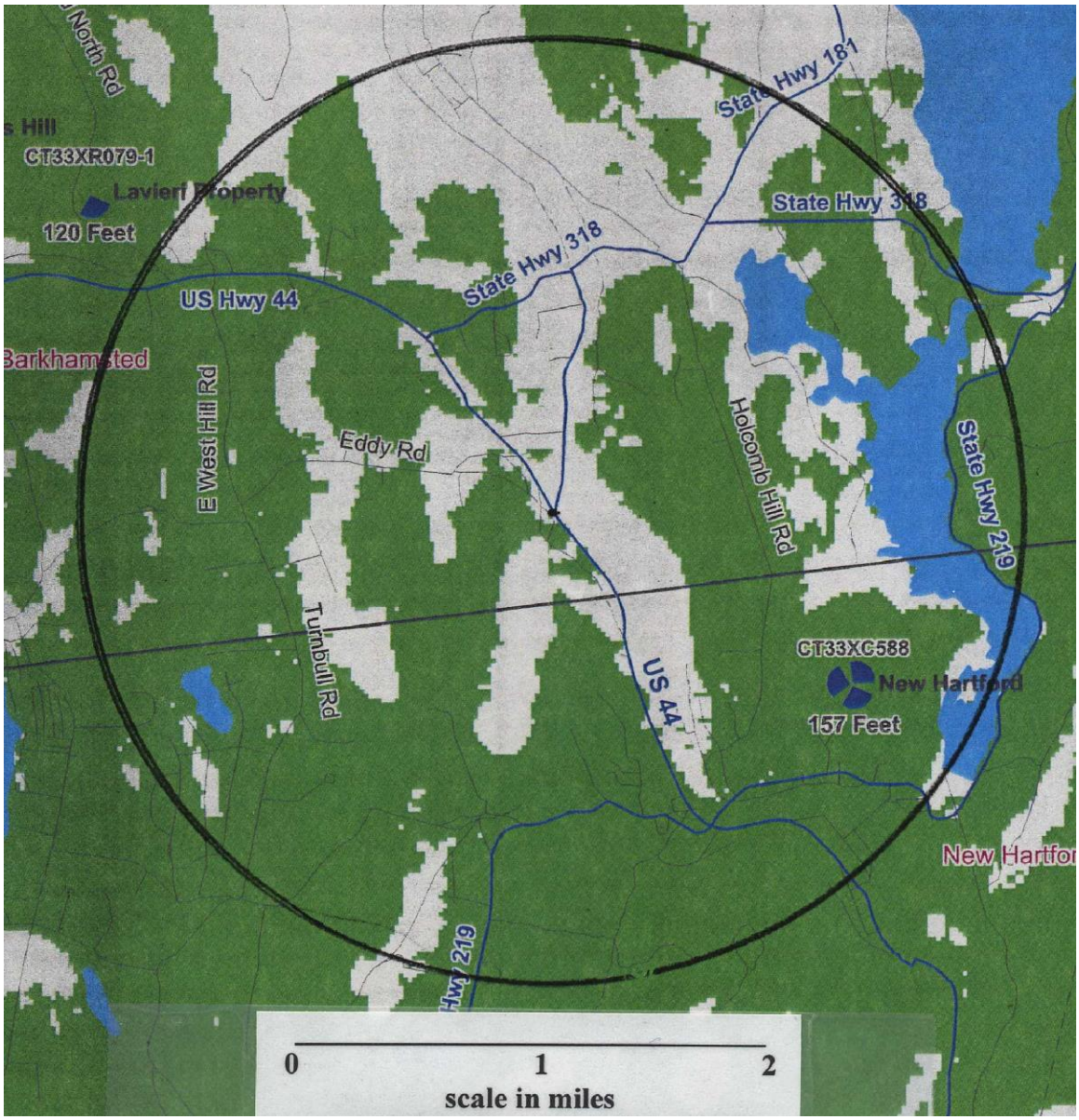
39. Visibility of proposed 148-foot tower camouflaged as a pine tree.

Location	Distance / Direction	Existing 124-foot Tower Visible?	Proposed tower with extension Visible?
Entrance to RRDD property off Route 44	0.58 mi./west	yes	yes
Hearthstone Drive	0.73 mi./southeast	yes	yes
Miner Lane and Holcomb Hill Road intersection	1.21 mi./west	yes	yes
Farmington River access off Route 318	1.26 mi./southwest	yes	yes
Barkhamsted Town Hall parking lot	1.32mi./southwest	yes	yes
State Route 181/318 intersection	1.38 mi./southwest	yes	yes
Vista from Tunis Trail on Ratlum Mountain	2.34 mi./west	no	no
Saville Dam on Route 318	2.50 mi./southwest	no	no

(Sprint 1, p. 11 and Exhibit L; Sprint 3, Qs. 10, 11, and 12; Docket No. 182 Finding of Fact 57 and 59)

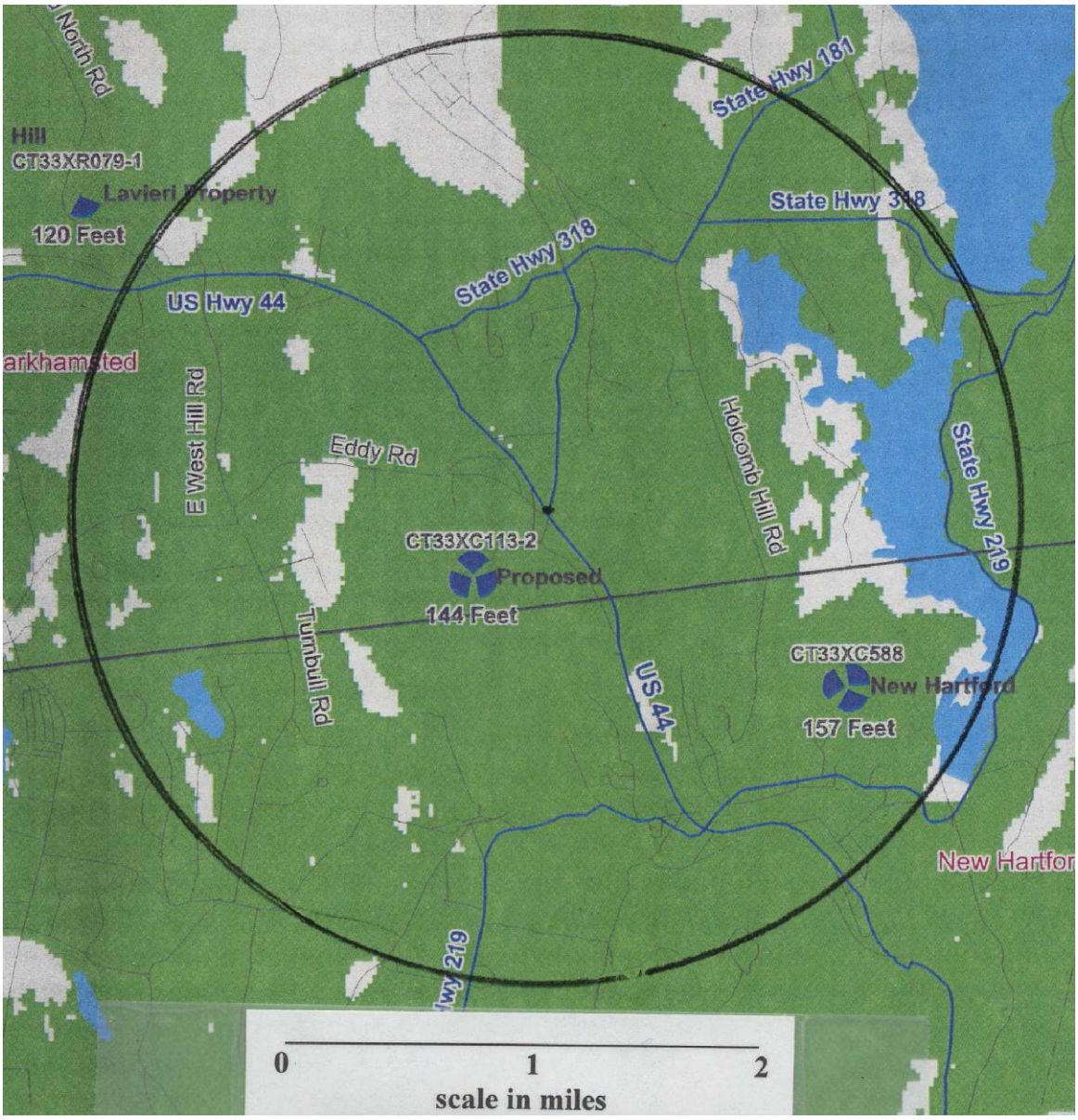
40. The cumulative worst-case electromagnetic radio frequency power densities for all carriers at the base of the proposed tower would be 22.45 percent of the 1992 American National Standards Institute (ANSI) standard as adopted by the FCC and the Connecticut Department of Environmental Protection General Statutes § 22a-162. (Sprint 1, Revised Exhibit P; OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, FCC, Office of Engineering and Technology, August 1997; IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 Ghz, approved by the American National Standards Institute, November 18, 1992; Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Federal Communications Commission's Report and Order, adopted August 1, 1996)

Appendix A
Existing Coverage



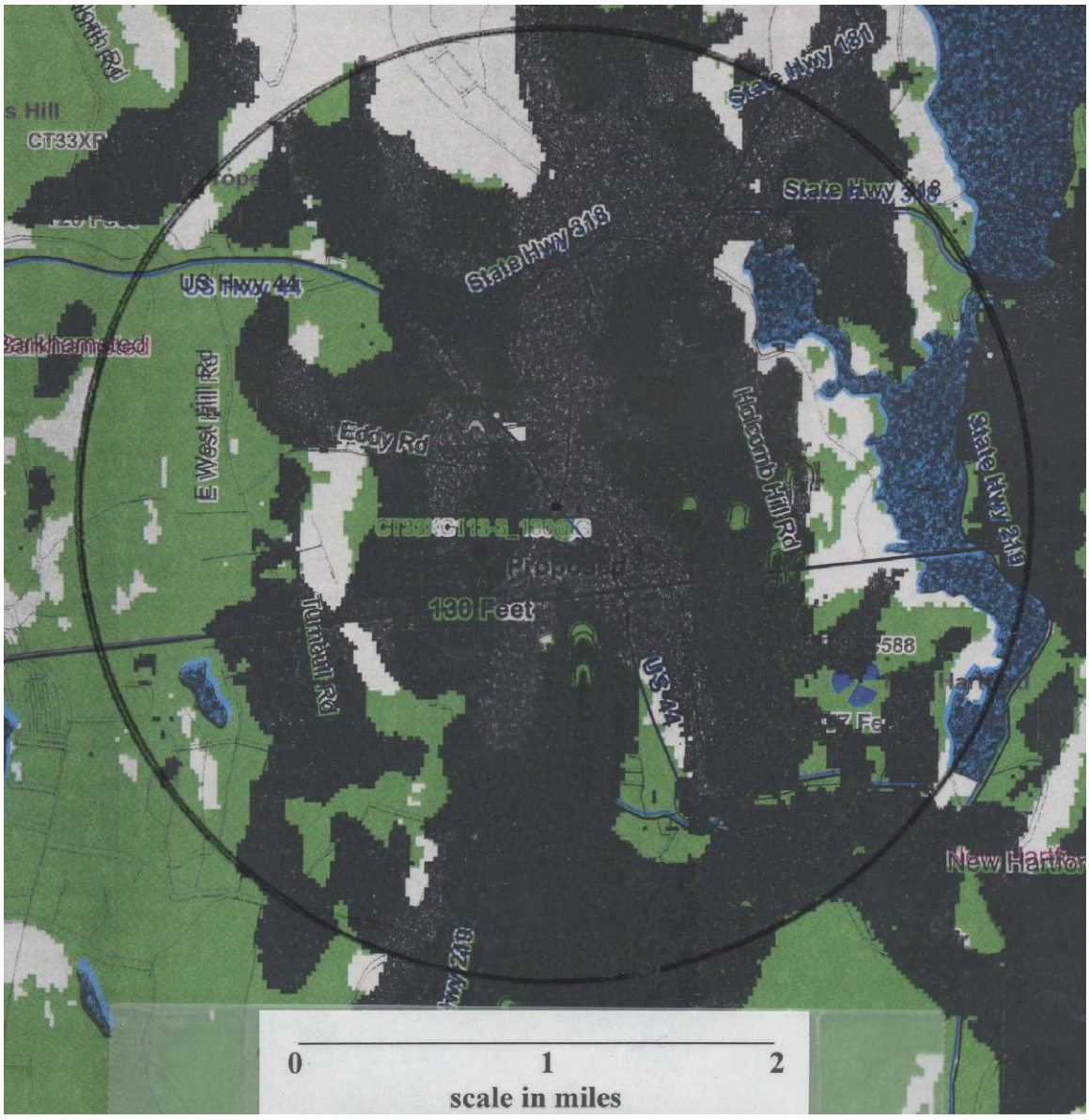
Green equates to coverage at -94 dbm or greater and white areas equate to no coverage.
(Sprint 1, Revised Exhibit E)

Appendix B
Proposed Tower at a centerline height of 144 feet AGL

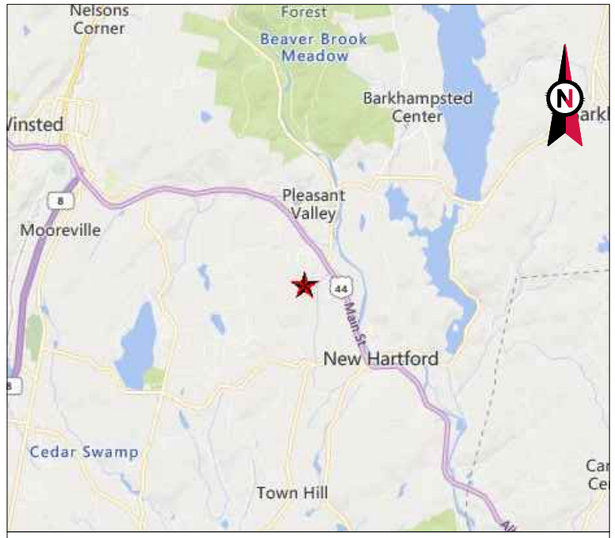


Green equates to coverage at -94 dbm or greater and white areas equate to no coverage.
(Sprint 1, Revised Exhibit F)

Appendix C
Proposed Tower at a centerline height of 130 feet AGL



Green and black equates to coverage at -94 dbm or greater and white areas equate to no coverage. (Sprint 3, Q. 2)



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: BARKHAMSTEAD CT
ATC SITE NUMBER: 411181
T-MOBILE SITE NAME: NEW HARTFORD-VERIZON COLO
T-MOBILE SITE NUMBER: CTNH417A
SITE ADDRESS: 50 RUST ROAD
BARKHAMSTED, CT 06063

LOCATION MAP

T-MOBILE ANCHOR AMENDMENT PLAN
67E5D998E ODE+6160 CONFIGURATION

COMPLIANCE CODE

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

1. INTERNATIONAL BUILDING CODE (IBC)
2. NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: NORTHEAST UTILITY SERVICE
PHONE: (800) 286-2000

TELEPHONE COMPANY: SNET
PHONE: (866) 404-7638

811 Know what's below. Call before you dig.

PROJECT SUMMARY

SITE ADDRESS:

50 RUST ROAD
BARKHAMSTED, CT 06063
COUNTY: LITCHFIELD

GEOGRAPHIC COORDINATES:

LATITUDE: 41.893808
LONGITUDE: -72.996472
GROUND ELEVATION: 793' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

T-MOBILE

ENGINEER:

ATC TOWER SERVICES, LLC
3500 REGENCY PKWY STE 100
CARY, NC 27518

PROPERTY OWNER:

REGIONAL REFUSE DISPOSAL
DIST OFFICE
50 RUST ROAD
BARKHAMSTED, CT 06063

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:

REMOVE ALL SPRINT EQUIPMENT(s) @ 146' RAD AND (3) T-ARM(s), (6) ANTENNA(s), (3) RRU(s), (6) TMA(s), AND (18) 1-5/8" COAX CABLES CABLE(s) @ 108' RAD

INSTALL MOUNT MOD, (9) ANTENNA(s), (6) RRU(s), AND (3) 1.99" HYBRID TRUNK 6/24 4AWG CABLE(s) @ 146' RAD

EXISTING (3) T-ARM(s) TO REMAIN @ 146' RAD

GROUND WORK:

REMOVE (2) GENERIC CABINET(s), (1) RBS 3106 CABINET, (1) BB 5216, AND (6) RUS02 B2

INSTALL (1) 6160 CABINET, (1) B160 CABINET, (2) RP 6651, (1) PSU 4813 VR4A, AND (1) CSR IXRE V2

EXISTING (1) RBS 2101 CABINET TO REMAIN

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

PROJECT LOCATION DIRECTIONS

I-84 TO I-91 NORTH TO US-44 WEST....US 44 US 44-W BECOMES US-44/ MORGAN ST....TURN SLIGHT RIGHT ONTO US-44/MAIN ST...CONTINUE TO FOLLOW US-44W...US-44W BECOMES NEW HARTFORD RD...PROCEED ON NEW HARTFORD RD PAST THE TRANSFER STATION TO A LEFT ON THE NEXT DIRT RD (OLD COUNTRY RD).....FOLLOW OLD COUNTRY RD UPHILL TO A LEFT ON RUST RD & PROCEED TO SITE

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	08/05/22	MC
G-002	GENERAL NOTES	0	08/05/22	MC
C-101	DETAILED SITE PLAN	0	08/05/22	MC
C-102	DETAILED EQUIPMENT PLAN	0	08/05/22	MC
C-201	TOWER ELEVATION	0	08/05/22	MC
C-401	ANTENNA INFORMATION & SCHEDULE	0	08/05/22	MC
C-501	CONSTRUCTION DETAILS	0	08/05/22	MC
E-501	GROUNDING DETAILS	0	08/05/22	MC
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
R-605	SUPPLEMENTAL			
R-606	SUPPLEMENTAL			
R-607	SUPPLEMENTAL			
R-608	SUPPLEMENTAL			
R-609	SUPPLEMENTAL			

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	MC	08/05/22

ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

T-MOBILE SITE NAME:
NEW HARTFORD-VERIZON COLO

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

SEAL:

STATE OF CONNECTICUT · SCOTT A. WIRGAU · 30575 · LICENSED PROFESSIONAL ENGINEER

Authorized by "EOR"
05 Aug 2022 03:05:30
cosign

T-Mobile

ATC JOB NO:	14099447_G3
CUSTOMER ID:	NEW HARTFORD-VERIZON COLO
CUSTOMER #:	CTNH417A

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
   - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   - B. AC/TELCO INTERFACE BOX (PPC)
   - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   - D. TOWERS, MONOPOLES
   - E. TOWER LIGHTING
   - F. GENERATORS & LIQUID PROPANE TANK
   - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   - H. ANTENNAS (INSTALLED BY OTHERS)
   - I. TRANSMISSION LINE
   - J. TRANSMISSION LINE JUMPERS
   - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   - L. TRANSMISSION LINE GROUND KITS
   - M. HANGERS
   - N. HOISTING GRIPS
   - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
   - A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.
   - B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
   - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
   - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.
   - E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
   - F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
   - G. ANTENNA AND COAXIAL CABLE GROUNDING:
2. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
3. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS)

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	MC	08/05/22

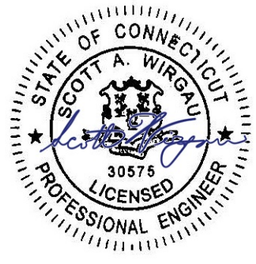
ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

T-MOBILE SITE NAME:
NEW HARTFORD-VERIZON COLO

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

SEAL:



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T-Mobile

ATC JOB NO:	14099447_G3
CUSTOMER ID:	NEW HARTFORD-VERIZON COLO
CUSTOMER #:	CTNH417A

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

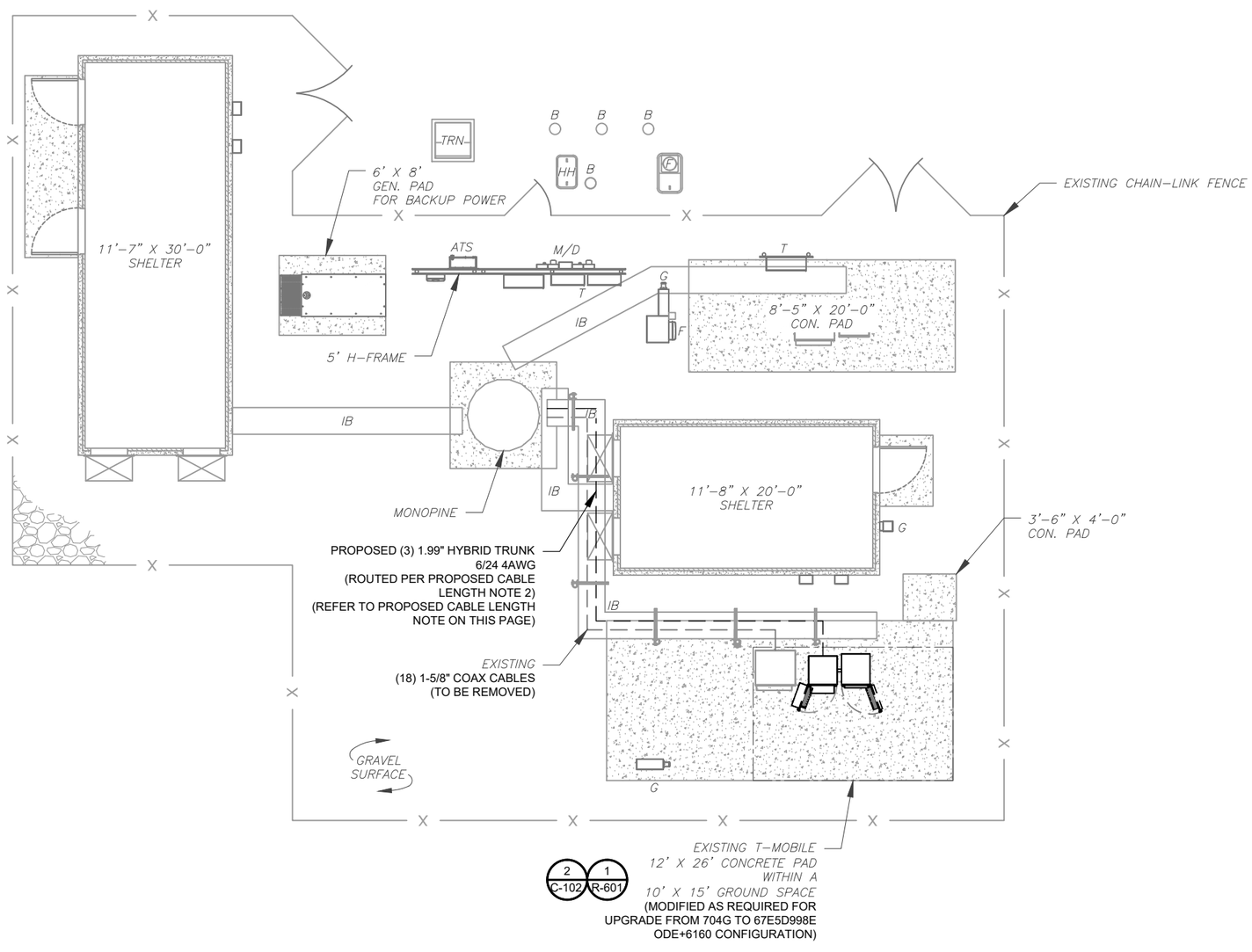
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.

3. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

LEGEND

⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
———	CHAINLINK FENCE



PROPOSED CABLE LENGTH:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **215'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.

1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

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411181

ATC SITE NAME:
BARKHAMSTEAD CT

T-MOBILE SITE NAME:
NEW HARTFORD-VERIZON COLO

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

SEAL:

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

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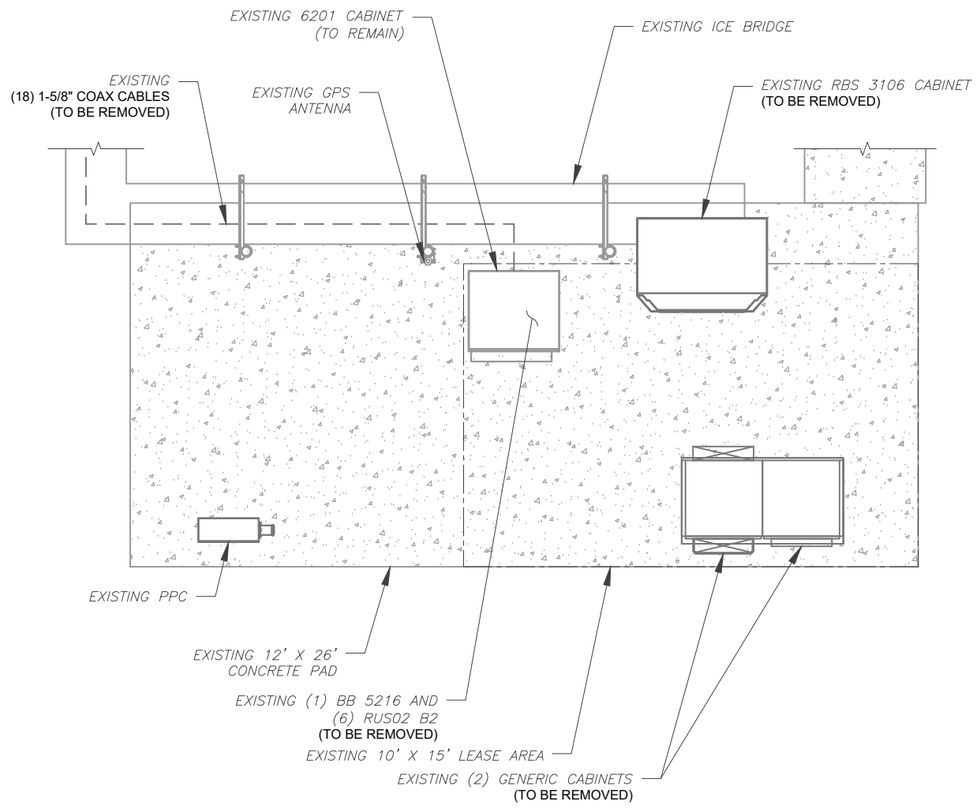
ATC JOB NO:	14099447_G3
CUSTOMER ID:	NEW HARTFORD-VERIZON COLO
CUSTOMER #:	CTNH417A

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

SITE PLAN NOTES:

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
3. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.



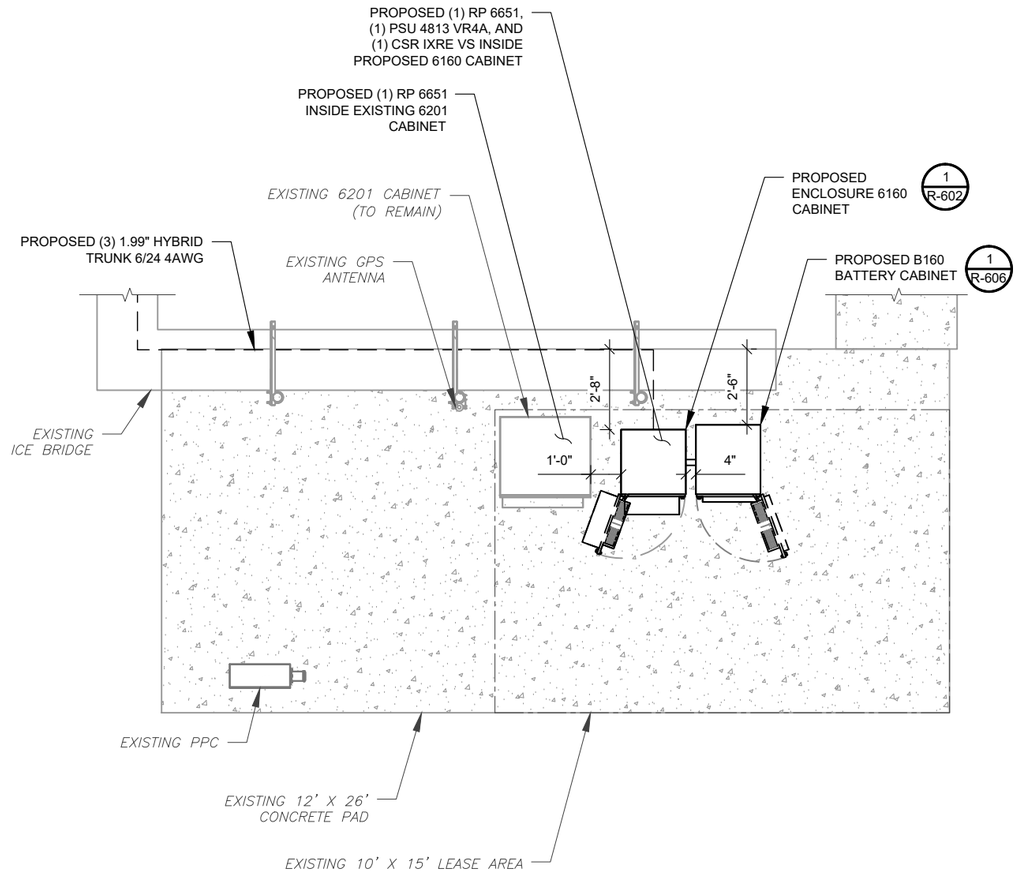
1 EXISTING GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 UNIT = 5 FEET

T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS.



2 PROPOSED GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 UNIT = 5 FEET

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T-MOBILE SITE NAME:
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SITE ADDRESS:
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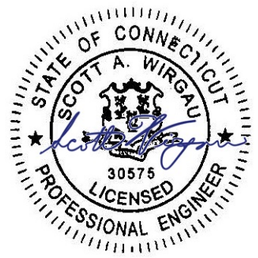
BARKHAMSTED, CT 06063

SEAL:



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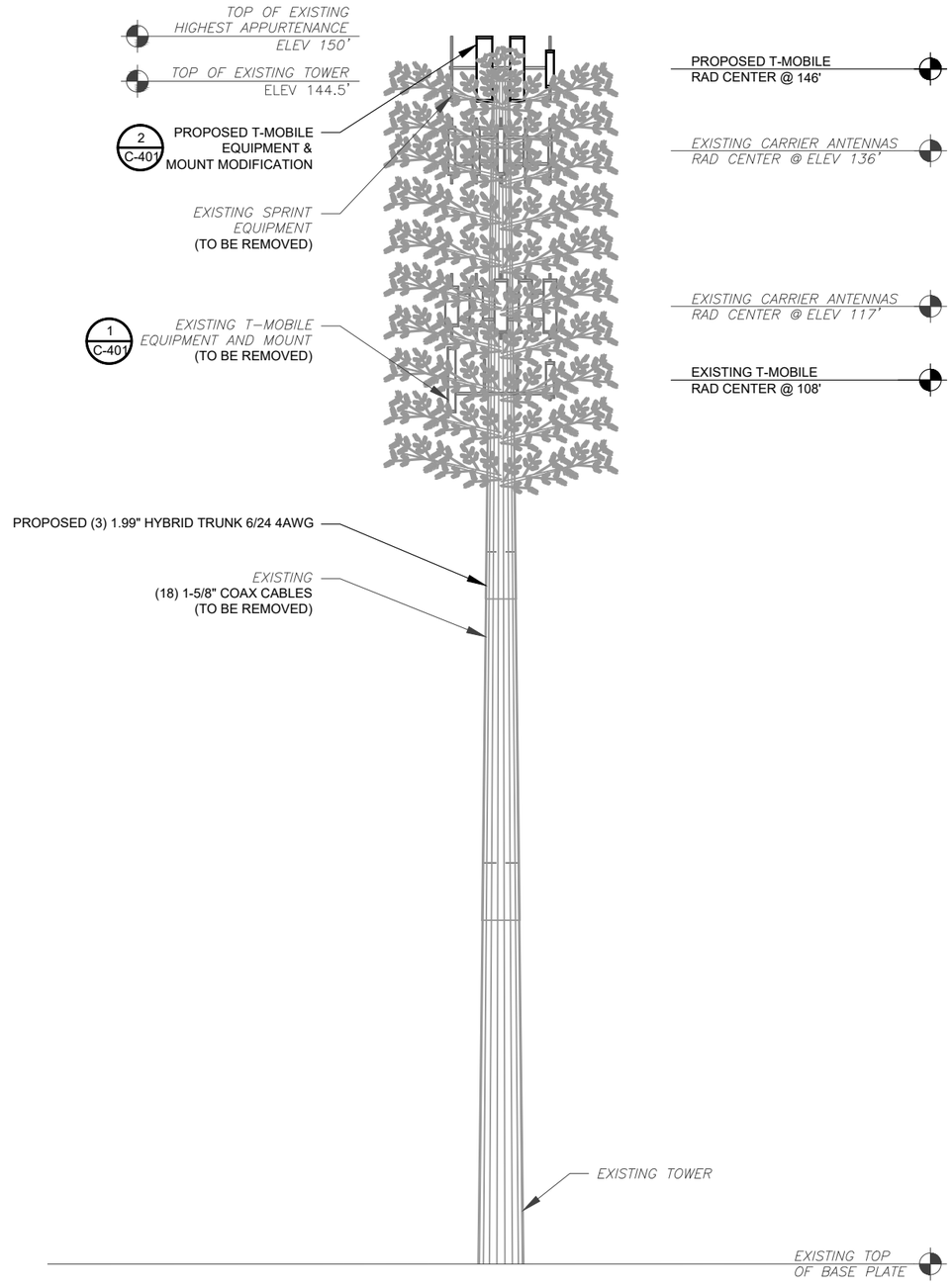
ATC JOB NO:	14099447_G3
CUSTOMER ID:	NEW HARTFORD-VERIZON COLO
CUSTOMER #:	CTNH417A

DETAILED EQUIPMENT PLAN

SHEET NUMBER:	REVISION:
C-102	0



1 TOWER ELEVATION
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 07/08/22, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.

SPECIAL WORK NOTE:
PAINT-TO-MATCH ALL PROPOSED ANTENNA RADOMES, MOUNTS & ANCILLARY EQUIPMENT

TOWER NOTE:
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
4. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)
5. TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.

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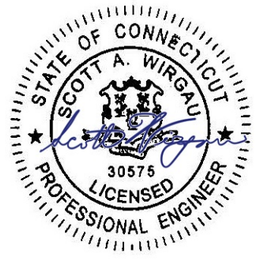

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ATC JOB NO:	14099447_G3
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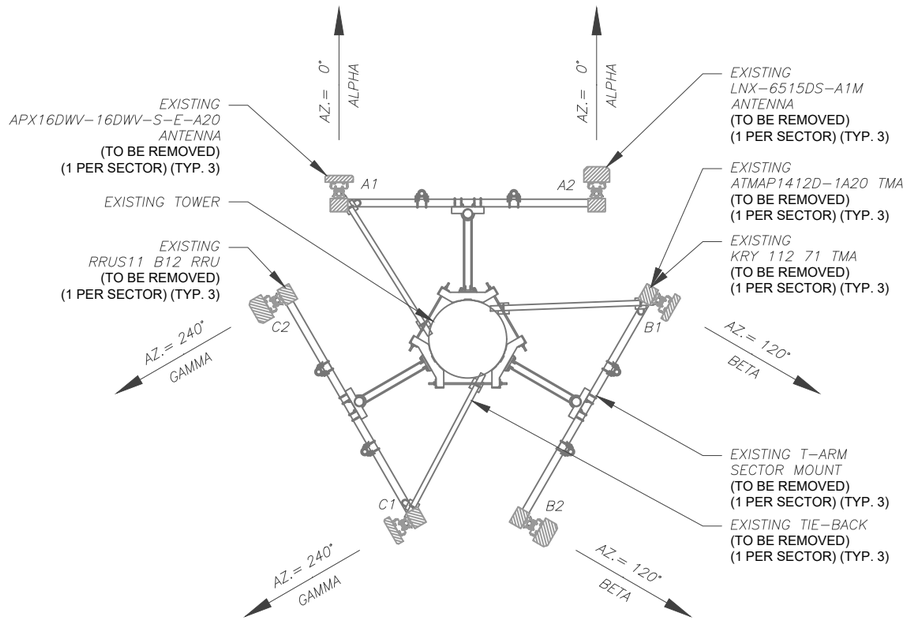
CUSTOMER #:	CTNH417A

TOWER ELEVATION

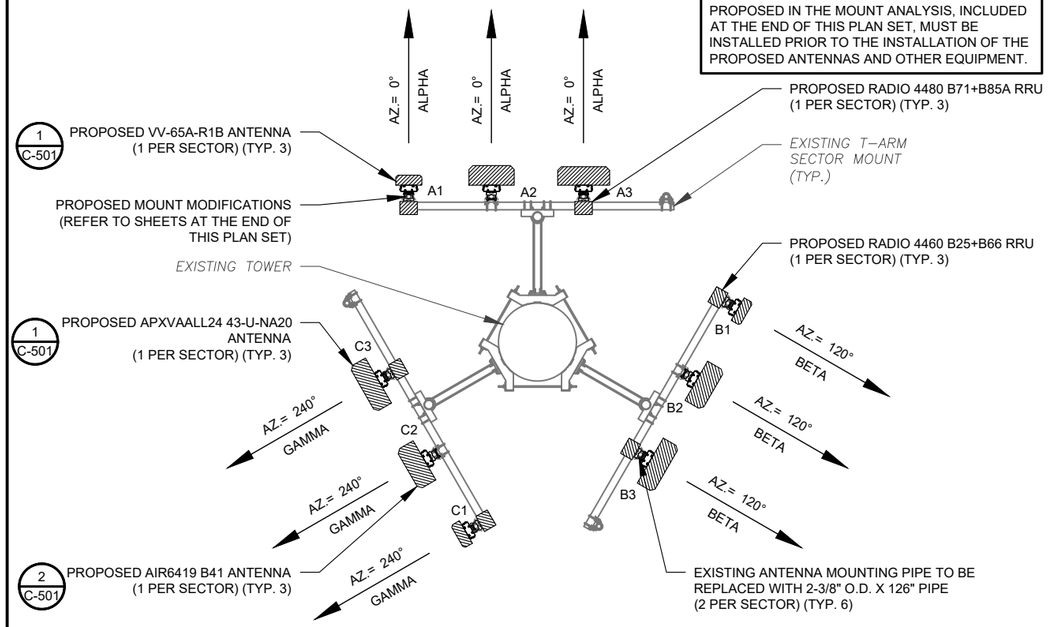
SHEET NUMBER:	REVISION:
C-201	0



1 EXISTING ANTENNA PLAN @ 108' RAD

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 07/08/22, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



2 FINAL ANTENNA PLAN @ 146' RAD

SCALE: N.T.S.

3 EQUIPMENT SCHEDULES

EXISTING ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY					NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	108'	0°	A1	APX16DWV-16DWV-S-E-A20	L1900,G1900,U2100	0°/2°	RMV	ATMAP1412D-1A20 KRY 112 71	RMV RMV
			A2	–	–	–	–	–	–
			A3	–	–	–	–	–	–
			A4	LNX-6515DS-A1M	L700	0°/2°	RMV	RRUS11 B12	RMV
BETA	108'	120°	B1	APX16DWV-16DWV-S-E-A20	L1900,G1900,U2100	0°/2°	RMV	ATMAP1412D-1A20 KRY 112 71	RMV RMV
			B2	–	–	–	–	–	–
			B3	–	–	–	–	–	–
			B4	LNX-6515DS-A1M	L700	0°/2°	RMV	RRUS11 B12	RMV
GAMMA	108'	240°	C1	APX16DWV-16DWV-S-E-A20	L1900,G1900,U2100	0°/2°	RMV	ATMAP1412D-1A20 KRY 112 71	RMV RMV
			C2	–	–	–	–	–	–
			C3	–	–	–	–	–	–
			C4	LNX-6515DS-A1M	L700	0°/2°	RMV	RRUS11 B12	RMV

NOTES

1. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
ADD: TO BE ADDED

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
RRU TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY					NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	146'	0°	A1	VV-65A-R1	L2100,L1900,G1900	0°/2°	ADD	RADIO 4460 B25+B66	ADD
			A2	AIR 6419 B41	L2500,N2500	0°/2°	ADD	-	-
			A3	APXVAALL24_43-UNA20	L700,L600,N600	0°/2°	ADD	RADIO 4480 B71+B85	ADD
			A4	-	-	-	-	-	-
BETA	146'	120°	B1	VV-65A-R1	L2100,L1900,G1900	0°/2°	ADD	RADIO 4460 B25+B66	ADD
			B2	AIR 6419 B41	L2500,N2500	0°/2°	ADD	-	-
			B3	APXVAALL24_43-UNA20	L700,L600,N600	0°/2°	ADD	RADIO 4480 B71+B85	ADD
			B4	-	-	-	-	-	-
GAMMA	146'	240°	C1	VV-65A-R1	L2100,L1900,G1900	0°/2°	ADD	RADIO 4460 B25+B66	ADD
			C2	AIR 6419 B41	L2500,N2500	0°/2°	ADD	-	-
			C3	APXVAALL24_43-UNA20	L700,L600,N600	0°/2°	ADD	RADIO 4480 B71+B85	ADD
			C4	-	-	-	-	-	-

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
–	–	(18) 1-5/8" COAX CABLES	RMV

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
-	-	(3) 1.99" HYBRID TRUNK 6/24 4AWG	ADD

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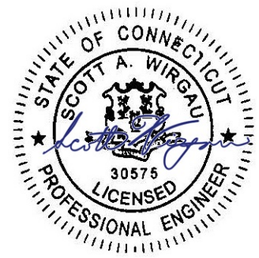
BARKHAMSTED, CT 06063

SEAL:



Authorized by "EOR"
05 Aug 2022 03:05:31

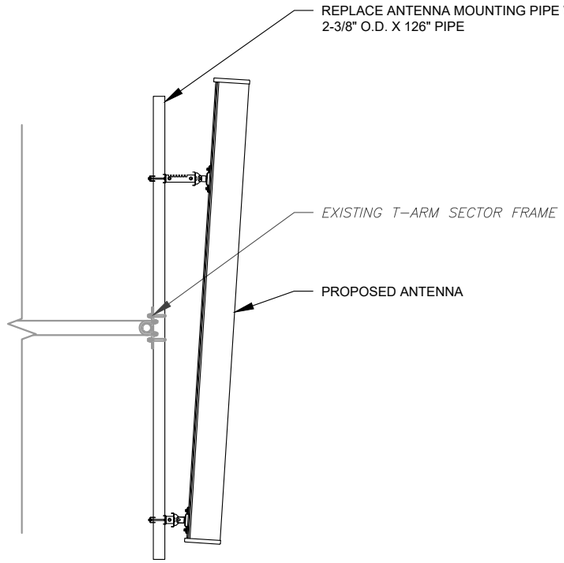
cosign

T-Mobile

ATC JOB NO:	14099447_G3
CUSTOMER ID:	NEW HARTFORD-VERIZON COLO
CUSTOMER #:	CTNH417A

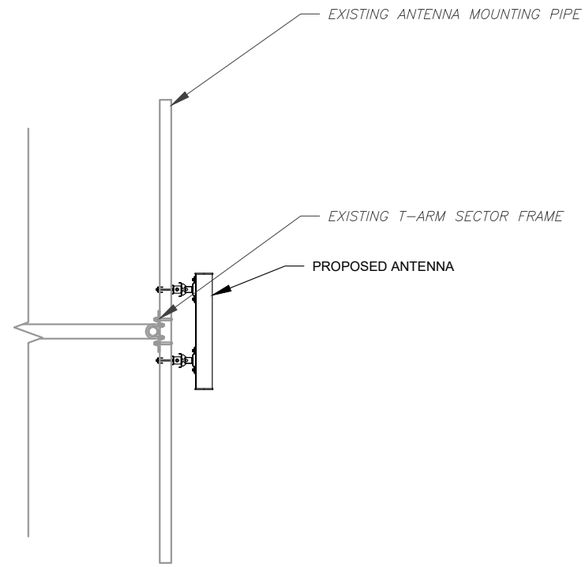
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



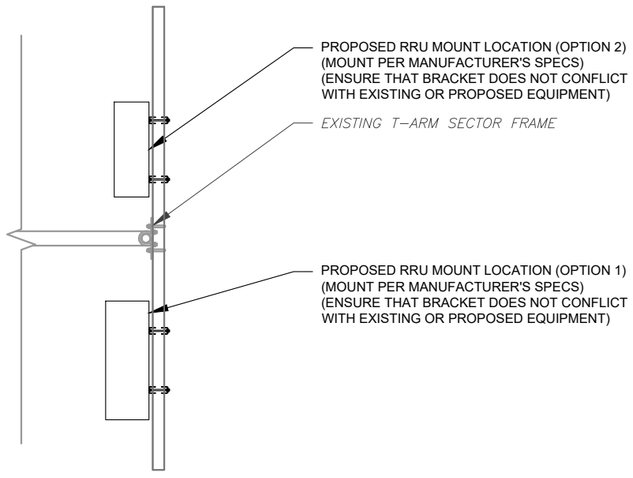
1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



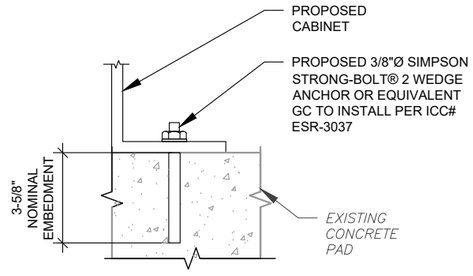
2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



3 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



NOTE:

INSTALL SIMPSON STRONG-TIE® STRONG-BOLT® 2 WEDGE ANCHOR(S) STRICTLY PER INSTALLATION INSTRUCTIONS INCLUDED WITH PRODUCT OR FOUND ONLINE AT WWW.STRONGTIE.COM. PROPER INSTALLATION IS CRITICAL FOR FULL PERFORMANCE.

4 CABINET ATTACHMENT DETAIL

SCALE: N.T.S.

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	MC	08/05/22

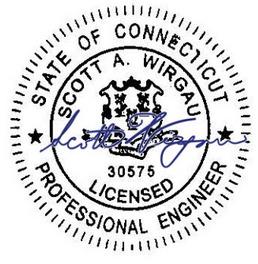
ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

T-MOBILE SITE NAME:
NEW HARTFORD-VERIZON COLO

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

SEAL:



Authorized by "EOR"
05 Aug 2022 03:05:31

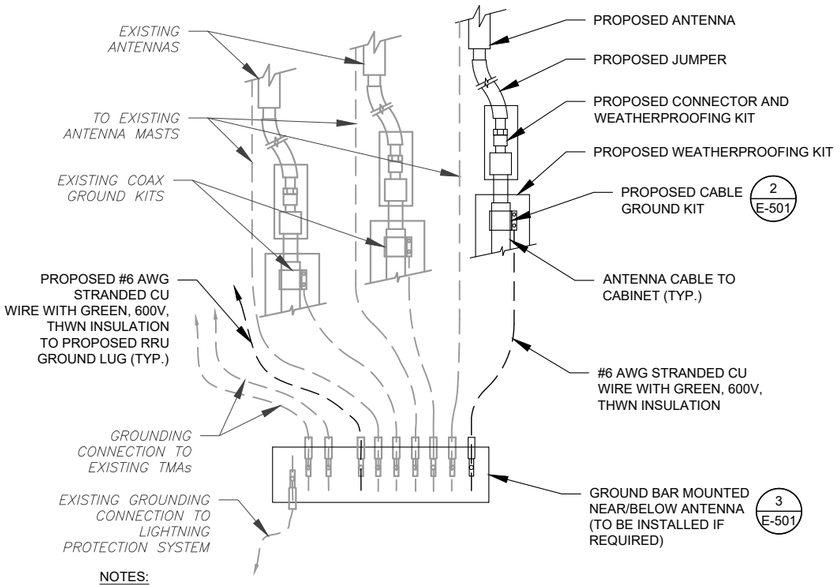
cosign

T-Mobile

ATC JOB NO:	14099447_G3
CUSTOMER ID:	NEW HARTFORD-VERIZON COLO
CUSTOMER #:	CTNH417A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

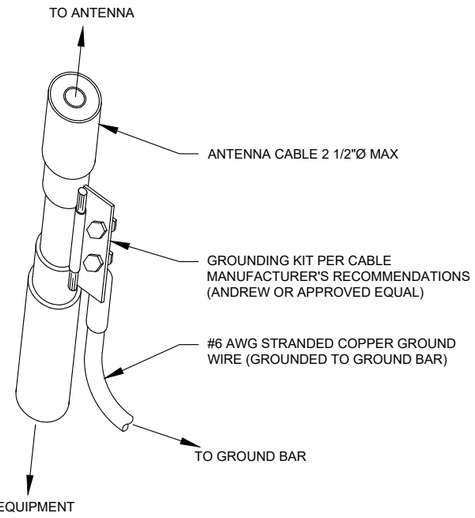


NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: N.T.S.

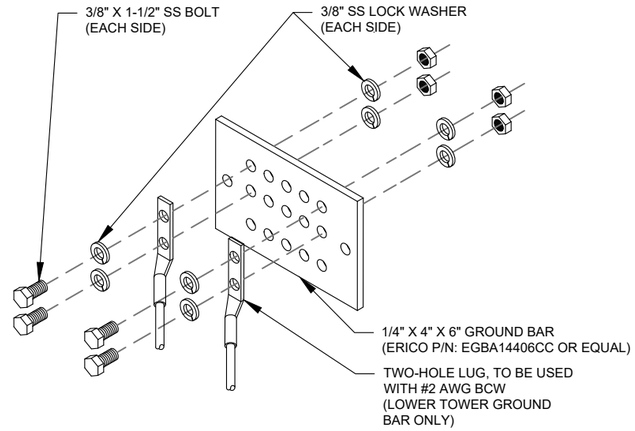


GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: N.T.S.



GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

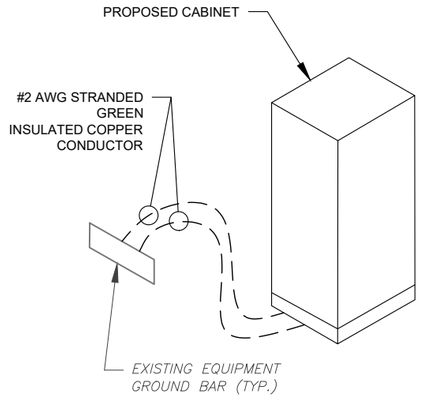
3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

STANDARD CONDUIT USE TABLE			
CONDUIT TYPE	USE CASE	LOCATION	USE CASE EXAMPLE
RMC (METALLIC)	AC, DC COMM	ABOVE GROUND	ABOVE GROUND PPC TO SSC
PVC	AC POWER	UNDERGROUND	UNDERGROUND PPC TO SSC OR BACKHAUL TRANSPORT HUB TO SSC
LFMC	AC, DC, COMM	MAX 6' PER CONDUIT RUN, ABOVE GROUND ONLY	TIGHT LOCATIONS BETWEEN HUB AND CONDUIT BUT NOT TO BE USED WHERE IT CAN BE STEPPED ON
EMT	INDOOR AC, DC COMM	INDOOR NOT EXPOSED TO THE OUTDOOR ENVIRONMENT (MUST BE DRY)	CIRCUIT PANEL TO JUNCTION BOX
LFNC	GROUND WIRE	CONCEALING AND PROTECTING BTCW RISERS ONLY	GROUND RING TO MGB OR SSC

EXCEPTION CONDUIT USE TABLE			
CONDUIT TYPE	USE CASE	LOCATION	USE CASE EXAMPLE
EMT (NOT PREFERRED)	OUTDOOR DC, COMM	OUTDOOR WHEN USED WITH WATERTIGHT HUBS ONLY	BETWEEN EQUIPMENT AND BATTERY CABINET OR EQUIPMENT TO EQUIPMENT CABINETS FOR INTER CABINET CONNECTION
RMC NONMETALLIC (ALUMINUM)	OUTDOOR/INDOOR PER NEC GUIDLINES	ABOVE GROUND	MAT BE USED AS A LOWER COST ALTERNATIVE TO METALLIC RMC, MUST MEET OR EXCEED FEDERAL SPEC: WW-C-540C, UL-6A, ANSI C80.5, NEC 344.10 (A) ALLOWS THE USE OF EITHER ALUMINUM OR GALVANIZED FITTINGS

4 CONDUIT USE TABLES



5 CABINET GROUNDING DETAIL

SCALE: N.T.S.

ELECTRICAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
2. ATC HAS NOT VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER. PROPOSED CABLE AND CONDUIT SHALL BE MINIMUM SIZE PER BELOW IN CHART.
3. FOR SPECIFIC CABINET / ANCILLARY EQUIPMENT WIRING REQUIREMENTS, THE T-MOBILE CONTRACTOR SHOULD REFERENCE DESIGN DOCUMENTS PROVIDED BY T-MOBILE FOR THIS CURRENT PROJECT CONFIGURATION, IN ACCORDANCE WITH LOCAL JURISDICTION REQUIREMENTS & NEC STANDARDS & PRACTICES.

VOLTS	OCPD SIZE	WIRE SIZE	GROUND	CONDUIT
120/240V OR 120/208V	80A/2P	3-#3 AWG	#8 AWG	1-1/4"
	100/2P	3-#2 AWG	#8 AWG	1-1/4"
	125A/2P	3-#3/0 AWG	#6 AWG	2"
	150A/2P	3-#3/0 AWG	#6 AWG	2"
	200A/2P	3-#3/0 AWG	#6 AWG	2"
240V OR 208V	80A/2P	2-#3 AWG	#8 AWG	1-1/4"
	100/2P	2-#2 AWG	#8 AWG	1-1/4"
	125A/2P	2-#3/0 AWG	#6 AWG	2"
	150A/2P	2-#3/0 AWG	#6 AWG	2"
	200A/2P	2-#3/0 AWG	#6 AWG	2"

6 ELECTRICAL NOTES

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	MC	08/05/22

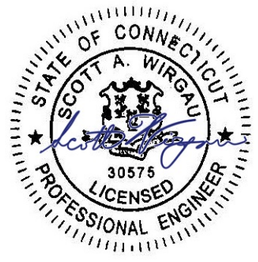
ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

T-MOBILE SITE NAME:
NEW HARTFORD-VERIZON COLO

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

SEAL:



Authorized by "EOR"
05 Aug 2022 03:05:32 cosign

T-Mobile

ATC JOB NO:	14099447_G3
CUSTOMER ID:	NEW HARTFORD-VERIZON COLO
CUSTOMER #:	CTNH417A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

Proposed RAN Equipment			
Template: 67E5D998E ODE+6160			
Enclosure	**1**	**2**	**3**
Enclosure Type	RBS 6201	Enclosure 6160 AC V1	B160
Baseband	DUG20 G1900 RP 6651 L700 L600 N600 L2100 L1900	RP 6651 L2500 N2500	
Hybrid Cable System	Hybrid Trunk 6/24 4AWG 60m (x 2)	Hybrid Trunk 6/24 4AWG 60m PSU 4813 vR4A (Kit) (x 2)	
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Remove and return all cabinet radios.

Keep existing cabinet 6201.

U2100 will be decom, remove Cabinet 3106.

Breaker upgrade for 6160 at 125A.

Add 6160 and B160,

Add (1) RP 6651 for L2500/N2500 to 6160.

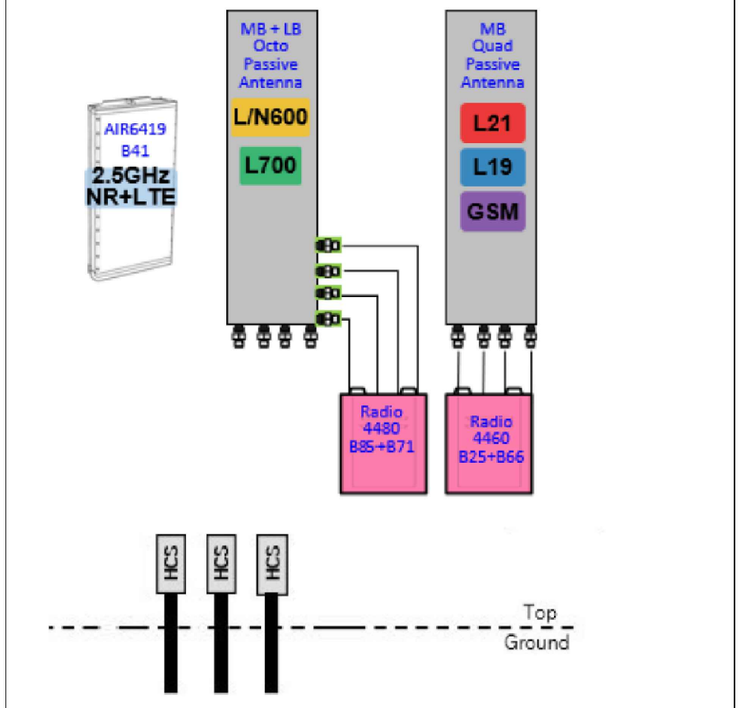
Replace BB 5216 with (1) RP 6651 for L600/L700/N600/L1900/L2100 in 6201.

Add (1) IXRe router, and Add (2) PSU 4813 vR4A to 6160.

Add (3) 6x24 at 60m.

1 CABINET CONFIGURATION

67E5D998E_1xAIR+1OP+1QP.png



Notes:

2 ANTENNA CONFIGURATION

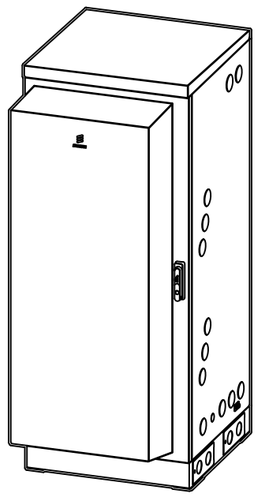
NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

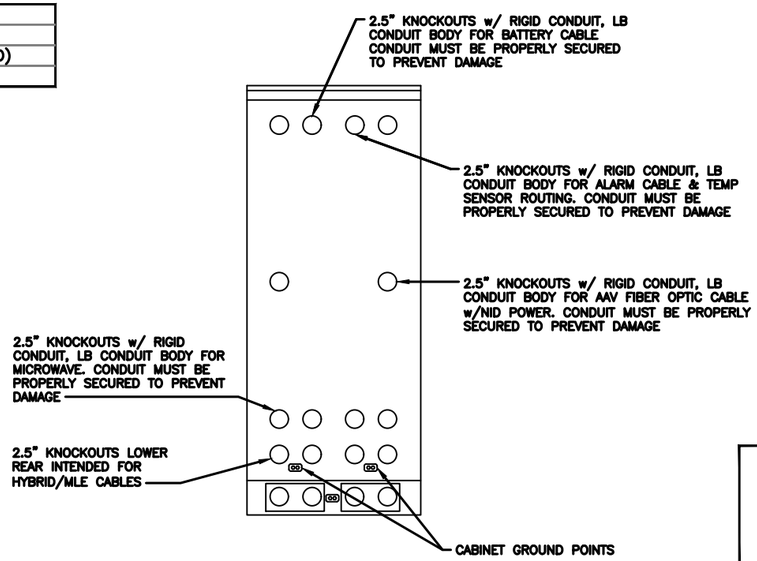
SUPPLEMENTAL

SHEET NUMBER: R-601

REVISION: 0

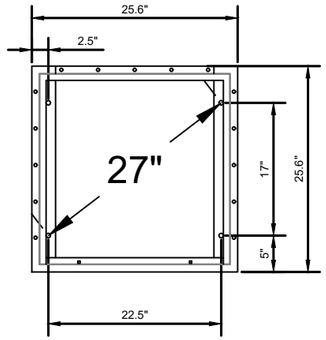
MANUFACTURER:	ERICSSON
MODEL:	6160 SITE SUPPORT CABINET
DIMENSIONS:	63" x 25.6" x 33.6" (H x W x D)
WEIGHT:	373 LBS





REAR VIEW

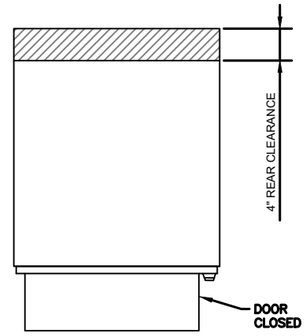
NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

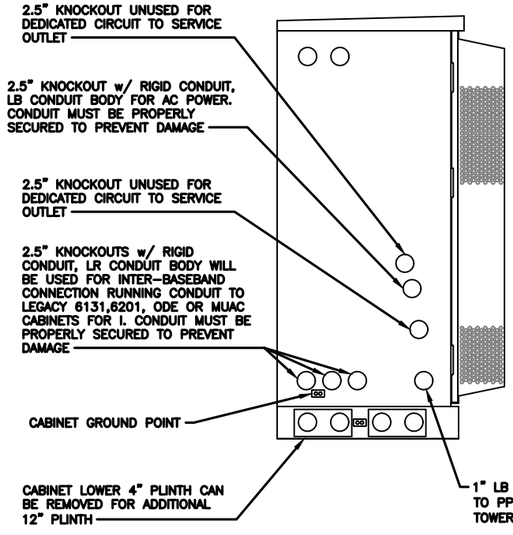


BOLT DOWN PATTERN

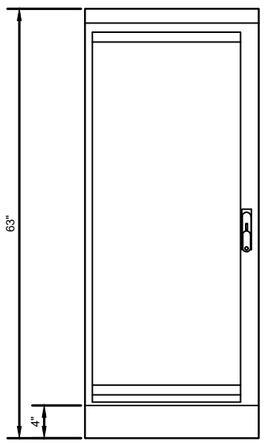
GROUNDING NOTE:

"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."

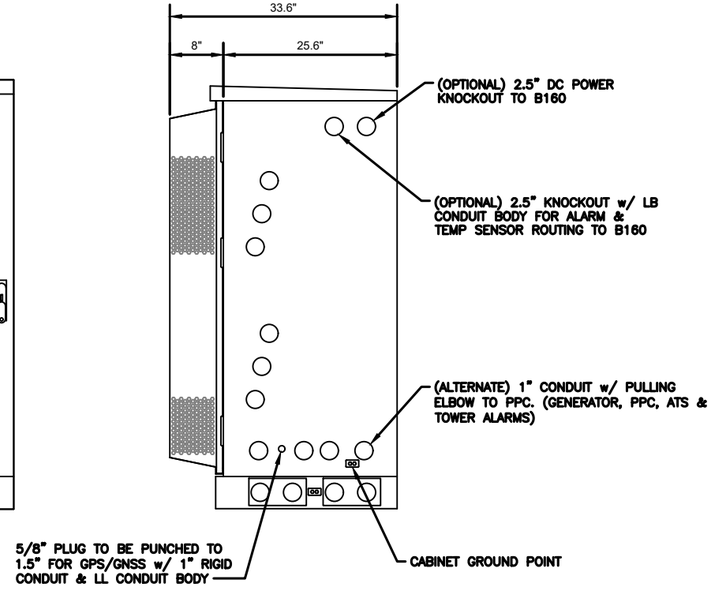




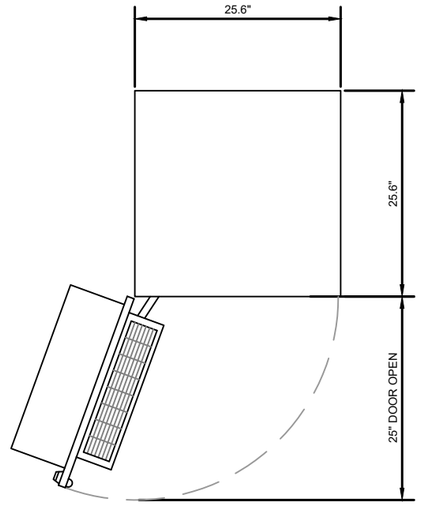
LEFT VIEW



FRONT VIEW



RIGHT VIEW



PLAN VIEW

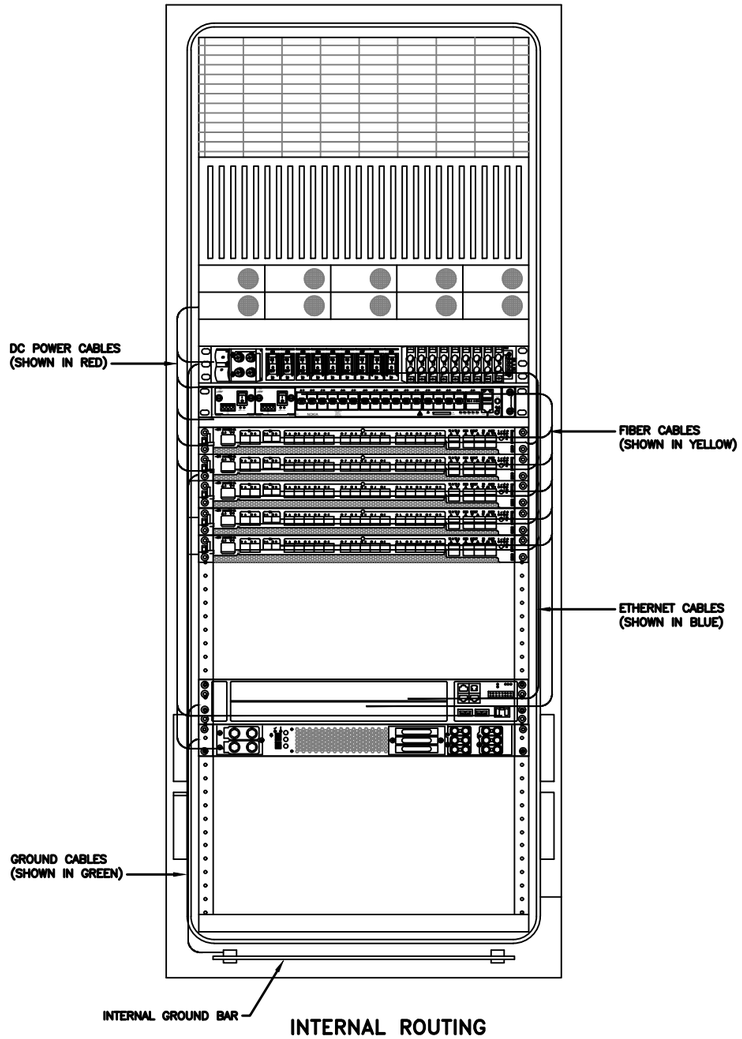
1 ERICSSON 6160 SITE SUPPORT CABINET SPECIFICATIONS

SCALE: N.T.S.

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

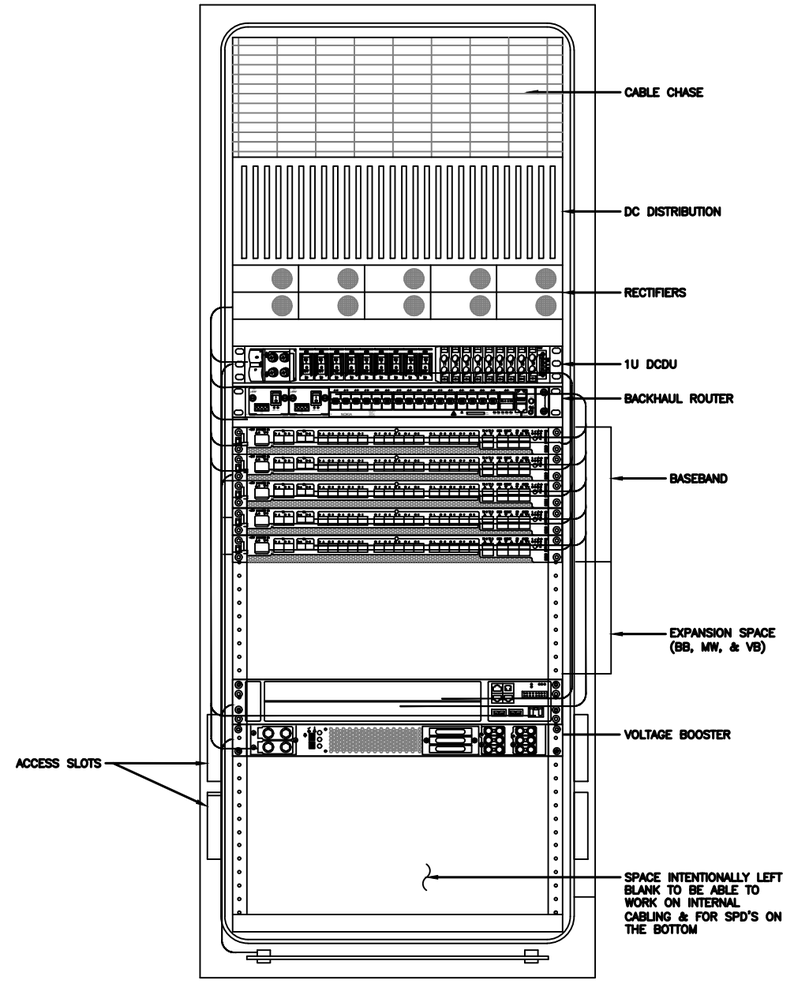
SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0



INTERNAL ROUTING
(DOOR OPEN)

RACK ASSIGNMENTS	
RU SLOTS	DESCRIPTION
1	DC DISTRIBUTION
2	
3	
4	
5	RECTIFIER SHELF
6	
7	FIBER BOX
8	DCDU
9	BACKHAUL ROUTER
10	
11	1ST BASEBAND
12	2ND BASEBAND
13	3RD BASEBAND
14	4TH BASEBAND
15	5TH BASEBAND
16	EXPANSION
17	
18	
19	
20	EXPANSION / LEGACY BASEBAND / VOLTAGE BOOSTER
21	
22	VOLTAGE BOOSTER
23	OPEN SPACE FOR SPD ACCESS
24	
25	



FRONT VIEW
(DOOR OPEN)

1 ERICSSON 6160 CABINET DETAILS

SCALE: N.T.S.

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

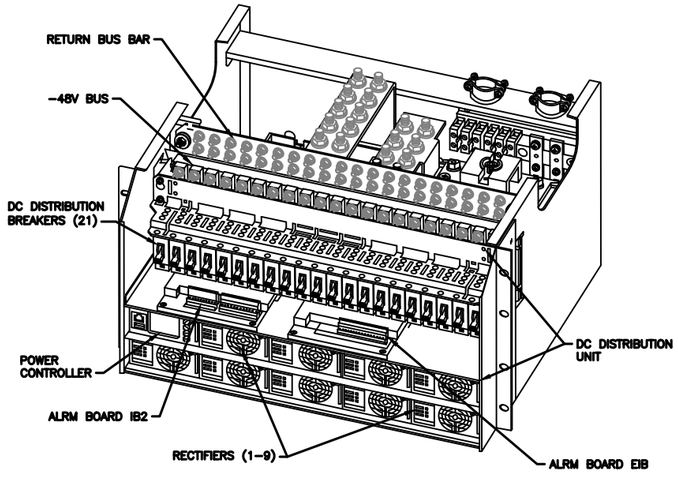
SUPPLEMENTAL

SHEET NUMBER: R-603

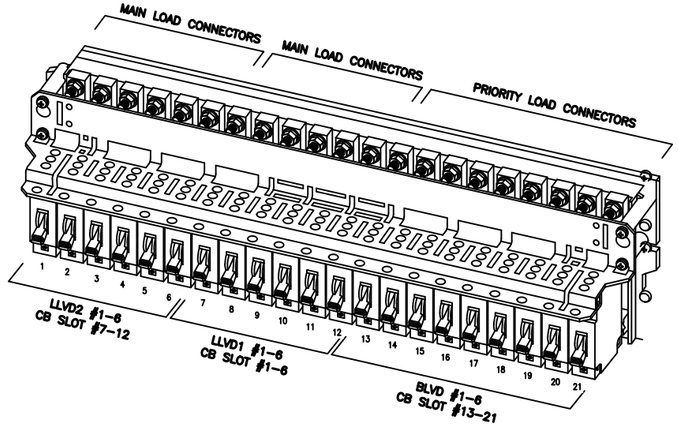
REVISION: 0

NOTE:
THIS IS FOR REFERENCE ONLY, CHECK FOR SPECIFIC DETAIL IN T–MOBILE CABINET SPECIFIC INSTALLATION GUIDES

Breaker Allocation for E6160					
CB SLOT	Ckt #		w/ DCDU Prior to availability of the 4460 and 4480	w/ DCDU Later Design Post-4460 and Post-4480	w/ DCDU 4 and 6 Sector designs
1	LVD1 47.0V	1	Router PS-2*/Future		Radio 4460 B25/66 ζ-1
2		2	Future		Radio 4460 B25/66 ζ-2
3		3	PSU 4813 feeding B25/66 α, β and γ (AIR 1641s)		PSU 4813 feeding B41-δ & B71/12-δ (Air 6449s and Radio 4480s)
4		4			
5		5	PSU 4813 feeding B41 α, β and γ (Air 6449s)		
6		6			
7	LVD2 45.1V	1	PSU 4813 feeding B71/12 α, β and γ (Radio 4449s)	PSU 4813 feeding B71/12 α, β and γ (Radio 4480s)	
8		2			
9		3	Future		Radio 4460 B25/66 δ-1
10		4	Future		Radio 4460 B25/66 δ-2
11		5	Future		Radio 4460 B25/66 ε-1
12		6	Future		Radio 4460 B25/66 ε-2
13	BLVD 43.2V	1	Router PS-1		
14		2	Radio 4415 B25/66 α	Radio 4460 B25/66 α-1	
15		3	Radio 4415 B25/66 β	Radio 4460 B25/66 α-2	
16		4	Radio 4415 B25/66 γ	Radio 4460 B25/66 β-1	
17		5	PSU 4813 feeding B2/25 α, β and γ (Radio 4424s)	Radio 4460 B25/66 β-2	
18		6		Radio 4460 B25/66 γ-1	
19		7	Future	Radio 4460 B25/66 γ-2	
20		8	DCDU		
21		9	AAV		
Sector Identification α = Alpha, β = Beta, γ = Gamma, δ = Delta, ε = Epsilon, ζ = Zeta					



POWER SUBRACK



DC DISTRIBUTION

1 ERICSSON 6160 ELECTRICAL DETAILS

SCALE: N.T.S.

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

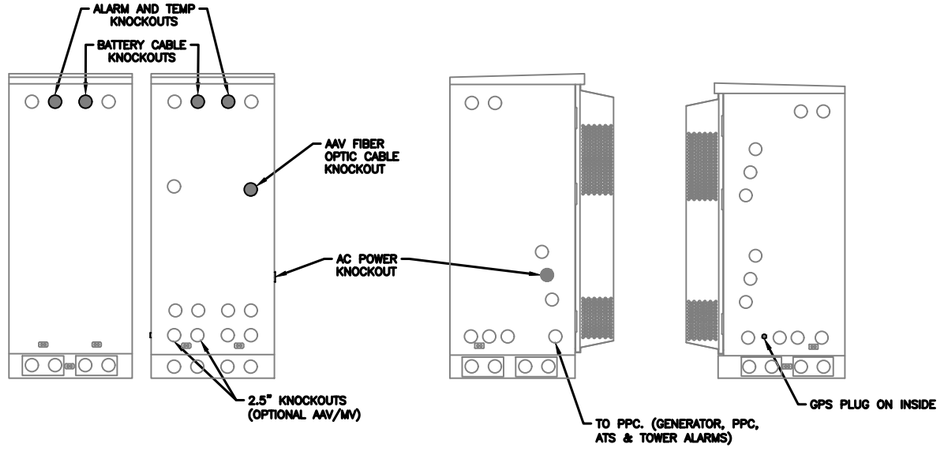
SUPPLEMENTAL

SHEET NUMBER: R-604

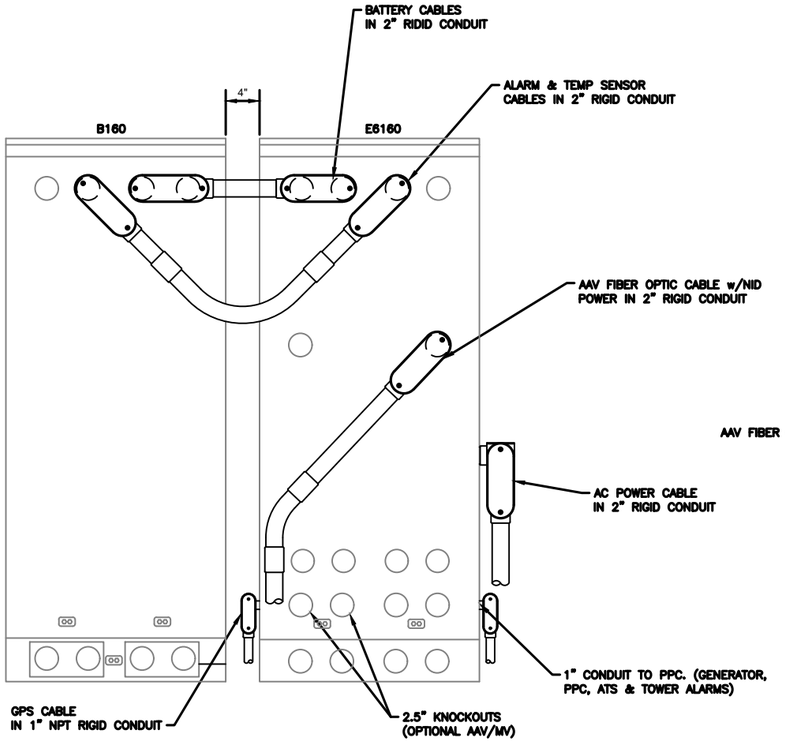
REVISION: 0

NOTE:

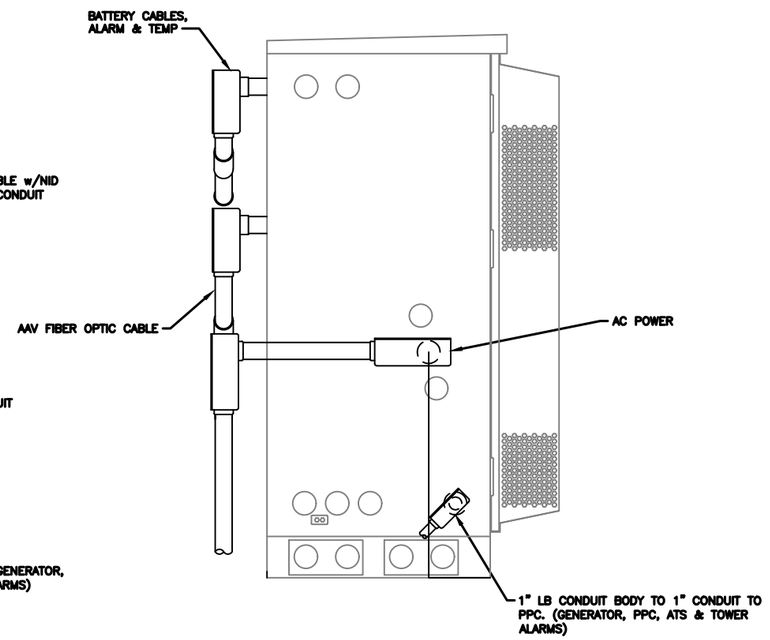
1. ALL CONDUIT AND FITTING ENTRANCES INTO CABINETS AND ENCLOSURES MUST UTILIZE MYERS OR EQUIVALENT HUBS OR SEALING WASHERS TO PREVENT WATER ENTRY/SEEPAGE INTO CABINETS AND ENCLOSURES.
2. (LIQUIDFLEX) FLEXIBLE METALLIC CONDUIT (LFMC) & ASSOCIATED FITTINGS CAN BE USED AS NEEDED BUT ONLY FOR TIGHT CONDUIT BENDS AND RUNS SUBJECT TO UL AND NEC LIMITATIONS. 6' MAX PER CONDUIT RUN.
3. POWER CONDUIT BODY ATTACHED WITH SHORT NIPPLE AND SEALING WASHER INSIDE & OUT. (FOR DOOR HOOD CLEARANCE)
4. PULLING ELBOWS MAY BE USED IN LIEU OF A CONDUIT BODIES WHEN CLEARANCE IS LIMITED.
5. ALL EXTERNAL ALARM CONDUITS ARE TOO TERMINATE AT THE PPC WITH A SINGLE 1" ALARM CONDUIT TO THE 6160.
6. (DO NOT USE CHASE NIPPLES) CONDUIT SHOULD HAVE SEALING WASHERS INSIDE AND OUT w/ LOCK NUT AND CAP.



CONDUIT LOCATIONS



REAR VIEW



SIDE VIEW

1 ERICSSON 6160/B160 CONDUIT ROUTING DETAILS

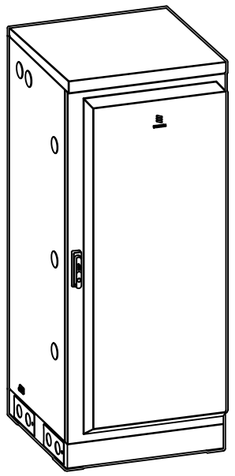
SCALE: N.T.S.

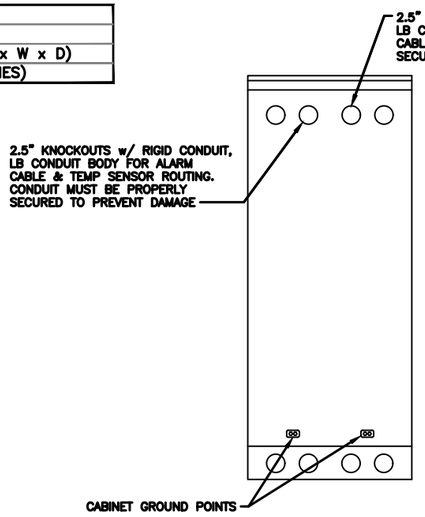
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

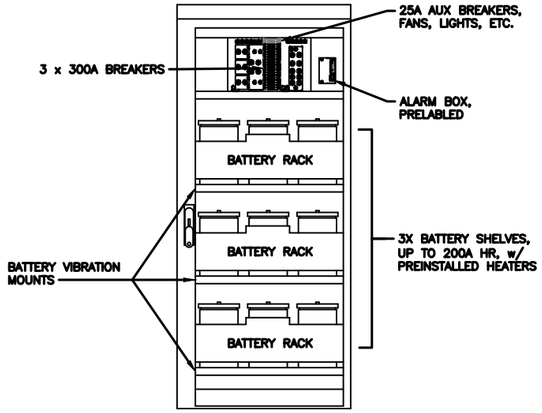
SHEET NUMBER:	REVISION:
R-605	0

MANUFACTURER:	ERICSSON
MODEL:	B160 BATTERY CABINET
DIMENSIONS:	63" x 25.6" x 29.5" (H x W x D)
WEIGHT:	295 LBS (WITHOUT BATTERIES)



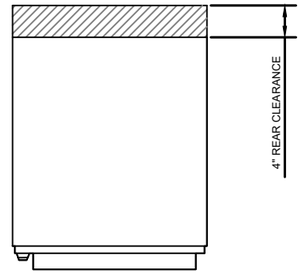


REAR VIEW



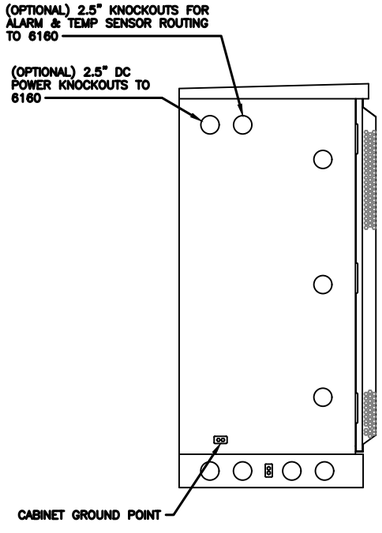
FRONT VIEW
(DOOR OPEN)

NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

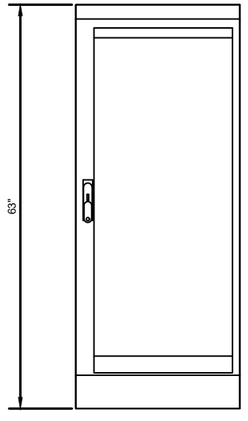


GROUNDING NOTE:

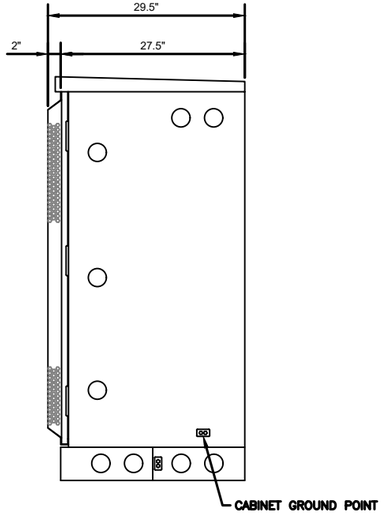
"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."



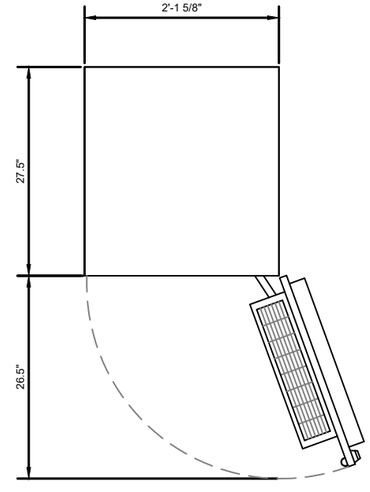
LEFT VIEW



FRONT VIEW



RIGHT VIEW



PLAN VIEW

B160 ERICSSON SITE SUPPORT BATTERY CABINET

1 ERICSSON B160 BATTERY CABINET SPECIFICATIONS

SCALE: N.T.S.

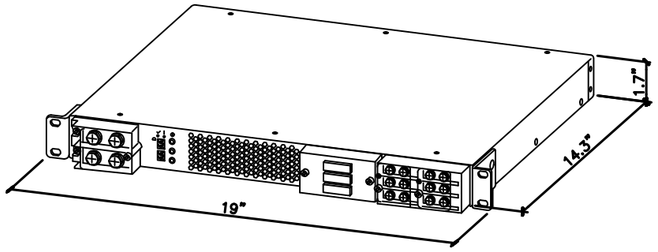
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

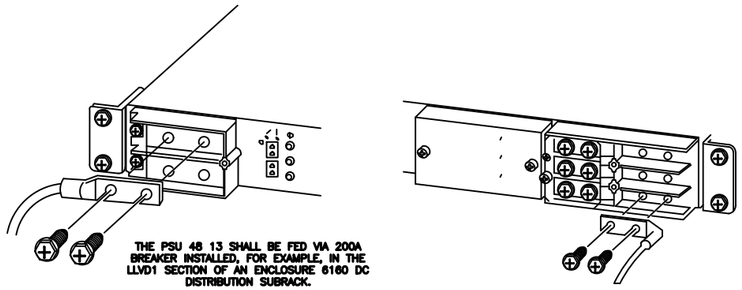
SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-606	0

MANUFACTURER:	ERICSSON
MODEL:	PSU 48 13
WEIGHT:	17.1 LBS
DIMENSIONS:	19"x 1.7"x 14.3"

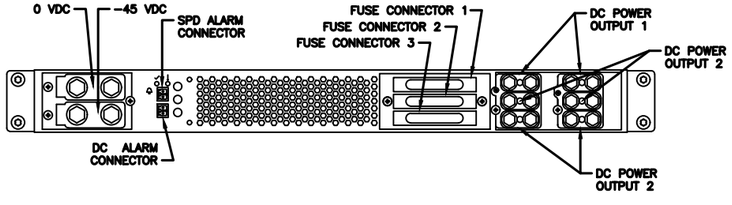
NEEDED INSTALL KIT (PICK 1)
34133 PSU4813 INSTALL KIT FOR RBS61XX
34134 PSU4813 INSTALL KIT FOR PBC6200
34135 PSU4813 INSTALL KIT FOR 6X60/RBS6230





THE PSU 48 13 SHALL BE FED VIA 200A BREAKER INSTALLED, FOR EXAMPLE, IN THE LLVD1 SECTION OF AN ENCLOSURE 6160 DC DISTRIBUTION SUBRACK.

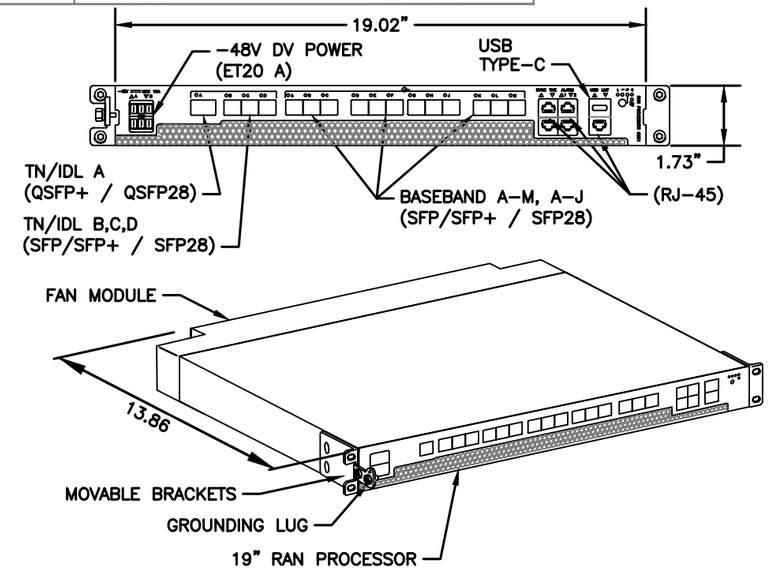
CONNECT –58 VDC DISTRIBUTION CABLE TO TERMINAL AT THE RIGHT, WHICH WILL BE FED TO RRU/AIR AT THE OTHER END.



1 SKU# 34132 - PSU 48 13

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	6651 RAN PROCESSOR (KDU1370093/11)
DIMENSIONS:	1.73" X 19.02" X 13.86" (H" X W" X D")
WEIGHT:	16.98 LBS



2 34553 - ERICSSON 6651 RAN PROCESSOR

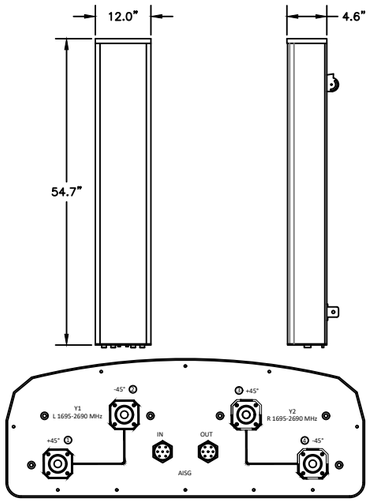
SCALE: N.T.S.

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-607	0

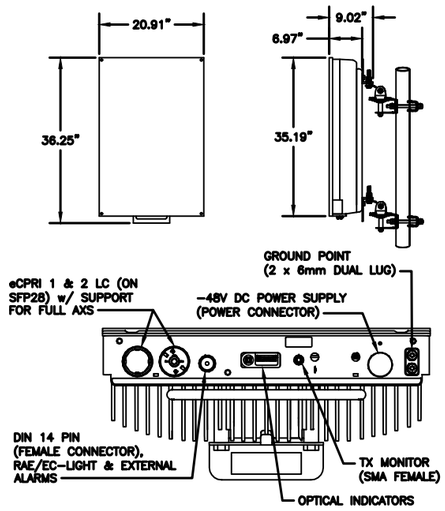
MANUFACTURER:	COMMSCOPE
MODEL:	VV-65A-R1
DIMENSIONS:	54.7" x 12.1" x 4.6" (H x W x D)
WEIGHT:	24.7 LB
INTERFACE:	4-PORT 4.3-10 FEMALE
MOUNTING KIT:	600899A-2 (INCLUDED) WEIGHT: 8.6 LB



1 34401 - COMMSCOPE VV-65A-R1

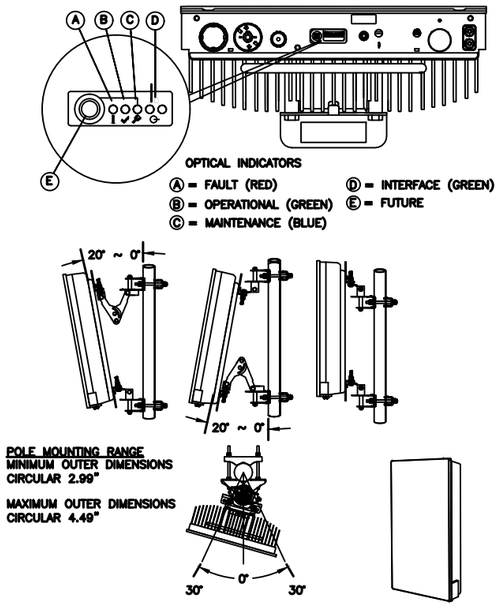
SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	AIR 6419 B41 (2.5GHz M-MIMO)
DIMENSIONS:	36.25" x 20.91" x 9.02" NOT TO EXCEED (H x W x D)
WEIGHT:	83 LBS (EXCLUDING MOUNTING KIT)
MOUNT WEIGHT:	13.5 LBS (SXK109 2016/1)

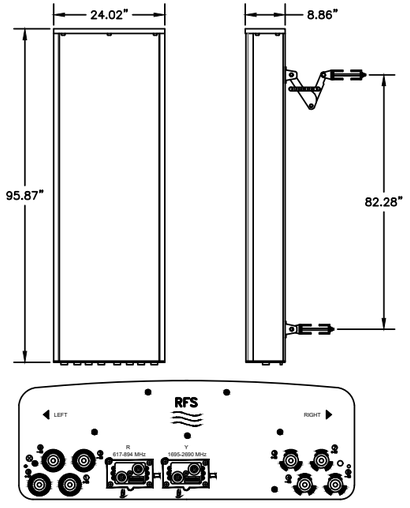


2 34552 - ERICSSON AIR 6419 BAND 41

SCALE: N.T.S.



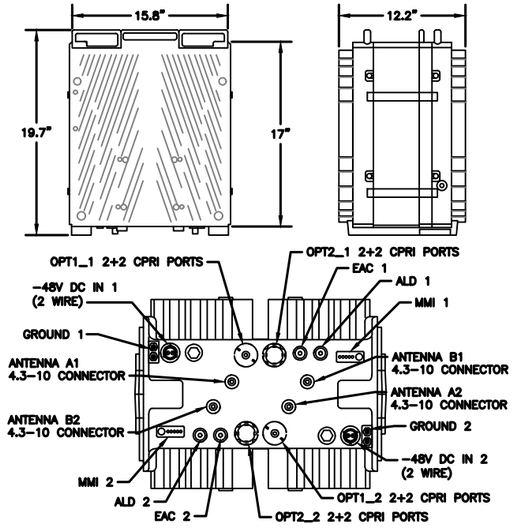
MANUFACTURER:	RFS
MODEL:	APXVAALL24_43-U-NA20
DIMENSIONS:	95.87" x 24.02" x 8.86"
WEIGHT:	119 LB
BAND:	QUAD BAND (8 PORT)
MOUNTING KIT & WEIGHT:	APM40-10E BEAM TILT KIT (INCLUDED) (16.53 LBS)



3 34087 - RFS APXVAALL24_43-U-NA20

SCALE: N.T.S.

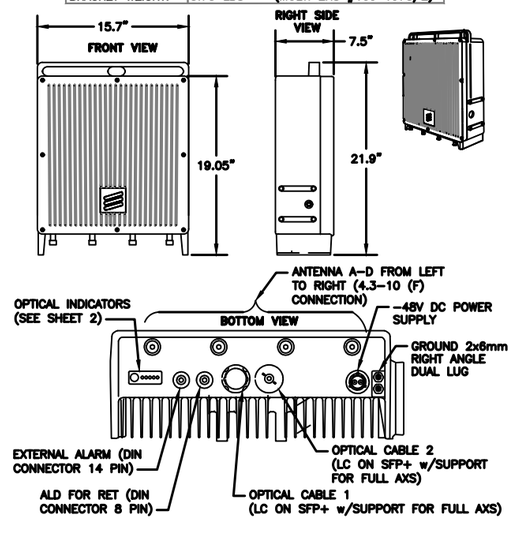
MANUFACTURER:	ERICSSON
MODEL:	4460 RADIO B2/25 B66 (KRC 161 912/3)
DIMENSIONS:	19.7" x 15.8" x 12.2" (H" x W" x D")
WEIGHT:	109 LBS
BRACKET WEIGHT:	4.8 LBS (ERS HEAVY #SXK1255993/1)



4 34373 - ERICSSON 4460 RADIO B2/25 B66

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	4480 RADIO (KRC 161 922/1)
DIMENSIONS:	21.9" x 15.7" x 7.5" (H x W x D)
MODEL BAND:	B71, B85 FOR NR AND LTE
WEIGHT:	81 LBS
BRACKET WEIGHT:	3.75 LBS (MULTI ERS #109 1973/2)



5 34372 - ERICSSON 4480 RADIO

SCALE: N.T.S.

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-608	0

Mount Analysis Report

ATC Site Name	:	**Barkhamstead CT, CT**
ATC Site Number	:	**411181**
Engineering Number	:	**14099447_C8_01**
Mount Elevation	:	**146 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**New Hartford-Verizon colo**
Carrier Site Number	:	**CTNH417A**
Site Location	:	**50 Rust Road** **BARKHAMSTED, CT 06063-3314** **41.893808 , -72.996472**
County	:	**Litchfield**
Date	:	**July 8, 2022**
Max Usage	:	**99%**
Result	:	**Contingent Pass**

Prepared By:
Joseph Swier
Structural Engineer

Joseph Swier

Reviewed By:

STATE OF CONNECTICUT · EDNA KAUSHAL MODI · 32503 · LICENSED PROFESSIONAL ENGINEER

Authorized by "EOR"
08 Jul 2022 09:55:54 cosign

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 146 ft.

Supporting Documents

Specifications Sheet	PiRod Inc. T-arm Pipe Assembly, dated April 7, 2003
Radio Frequency Data Sheet	RFDS ID #CTNH417A, dated April 20, 2022
Reference Photos	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	115 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00" radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.171, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

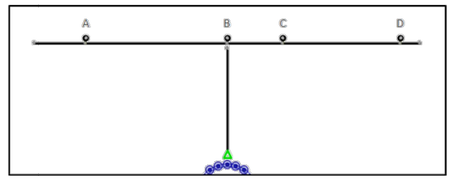
Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Replace Mount Pipe(s) A & C with P2 (2.375" x 126") antenna mounting pipe with Site Pro 1 SCX7-U (or approved equivalent) crossover plate kits.
- Move existing Mount Pipe A 12" to the left (viewed from monopole looking towards the mount).
- Move existing Mount Pipe C 24" to the left (viewed from monopole looking towards the mount).
- A structural failure was addressed with the noted contingencies. The controlling member was a Horizontal with a usage of 110%.

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.

A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 100 - Cary, NC 27518 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com

Mount Layout



A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 100 - Cary, NC 27518 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com

1 MOUNT ANALYSIS

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERYIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONTRUCTION.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-609	0

AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Site Name	:	**Barkhamstead CT, CT**
ATC Site Number	:	**411181**
Engineering Number	:	**14099447_C8_01**
Mount Elevation	:	**146 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**New Hartford-Verizon colo**
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Site Location	:	**50 Rust Road** **BARKHAMSTED, CT 06063-3314** **41.893808 , -72.996472**
County	:	**Litchfield**
Date	:	**July 8, 2022**
Max Usage	:	**99%**
Result	:	**Contingent Pass**

Prepared By:
Joseph Swier
Structural Engineer

Joseph Swier

Reviewed By:

Authorized by "EOR"
08 Jul 2022 09:55:54 cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

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Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.171, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

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- A structural failure was addressed with the noted contingencies. The controlling member was a Horizontal with a usage of 110%.

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.

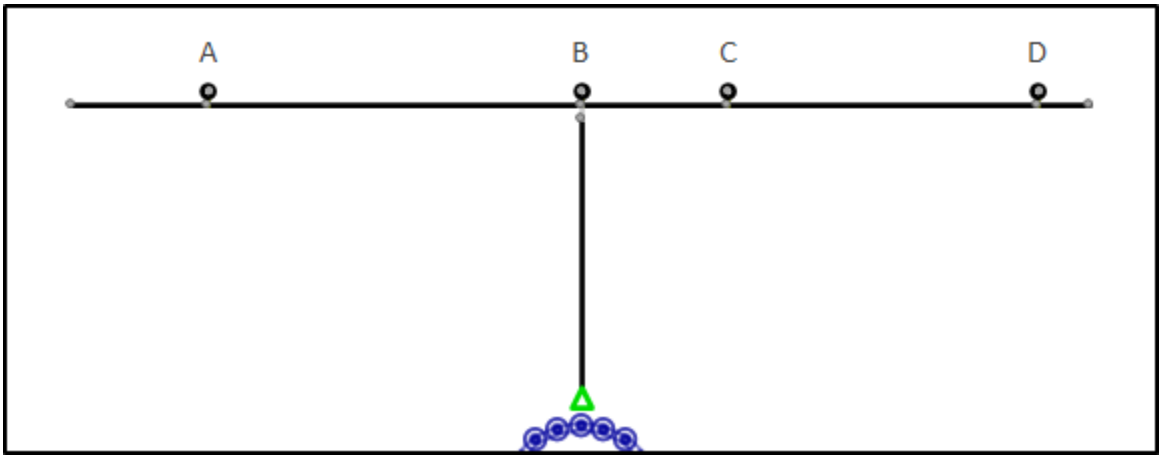
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
146.0	146.0	3	RFS APXVAALL24 43-U-NA20
		3	Ericsson AIR 6419 B41
		3	Commscope VV-65A-R1B
		3	Ericsson 4480 BAND 71
		3	Ericsson 4460 BAND 2/25

Structure Usages

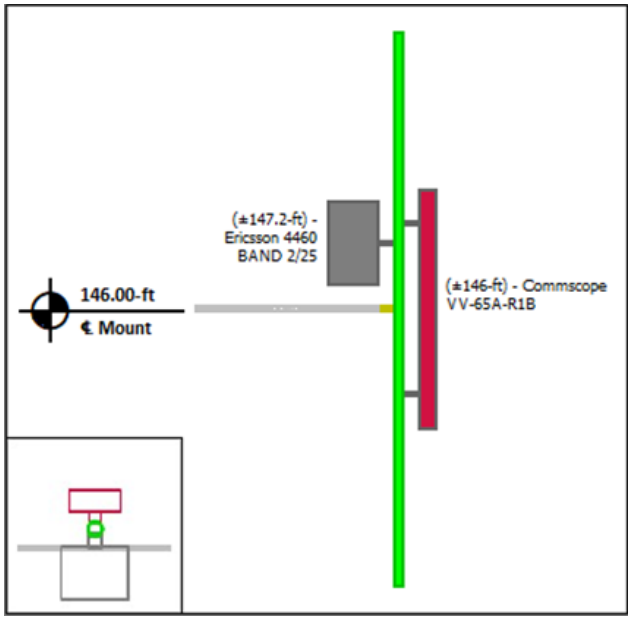
Structural Component	Controlling Usage	Pass/Fail
Horizontals	99%	Pass
Verticals	45%	Pass
Mount Pipes	64%	Pass
Connection Check	64%	Pass
Serviceability	N/A	Pass

Mount Layout

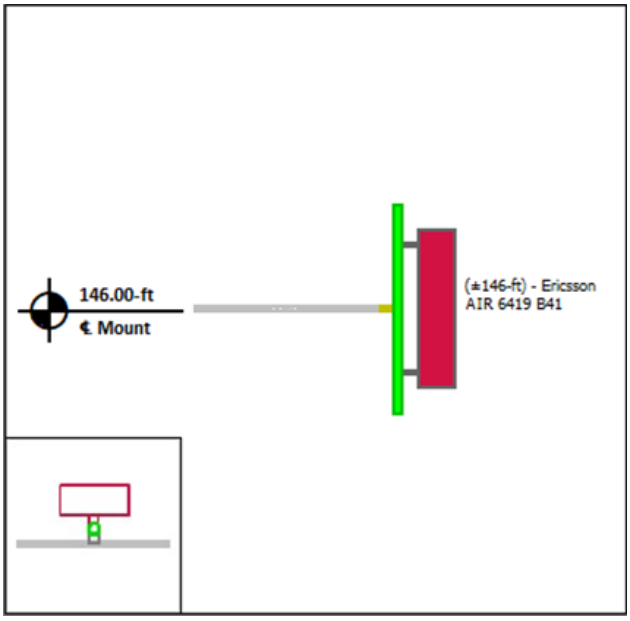


Equipment Layout

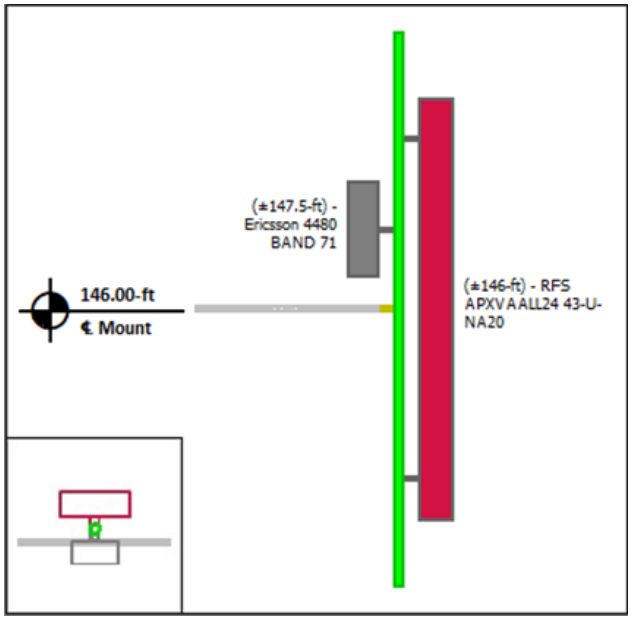
Mount Pipe A



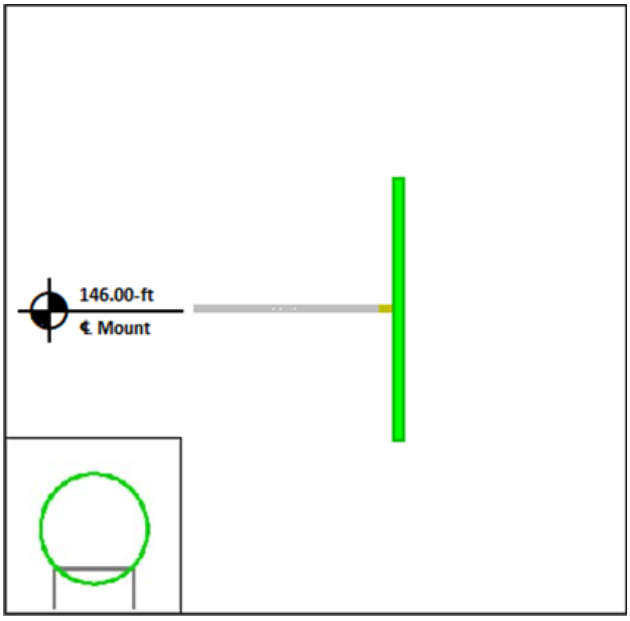
Mount Pipe B



Mount Pipe C



Mount Pipe D



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 equipment, 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.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

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.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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.

AMERICAN TOWER®
CORPORATION

Site Number:	*411181*
Project Number:	*14099447_C8_01*
Carrier:	*T-Mobile*
Mount Elevation:	*146 ft*
Date:	7/8/2022

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.10	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.97	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	115	mph
Velocity Pressure	q_z	34.4	psf
Height Escalation Factor	K_{iz}	1.16	
Thickness of Radial Glaze Ice	T_{iz}	1.16	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.182	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.091	
Amplification Factor	A	1.0	
Total Weight	W	804.6	lbs
Total Shear Force	V_S	73.4	lbs
Horizontal Seismic Load	Eh	73.4	lbs
Vertical Seismic Load	Ev	29.4	lbs

Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
RFS APXVAALL24 43-U-NA20	95.9	24.0	8.5	122.8	20.24	3.40	22.74	4.43
Ericsson AIR 6419 B41	36.3	20.9	9.0	83.3	6.32	1.82	7.47	2.44
Commscope VV-65A-R1B	54.7	12.0	4.6	24.7	5.89	1.44	7.32	2.26
Ericsson 4480 BAND 71	22.0	15.7	7.5	81.0	2.88	1.40	3.65	2.02
Ericsson 4460 BAND 2/25	19.6	15.7	12.1	109.0	2.56	1.98	3.29	2.63

**** Equipment with EPA values N/A were not considered in the mount analysis***

AMERICAN TOWER®
CORPORATION

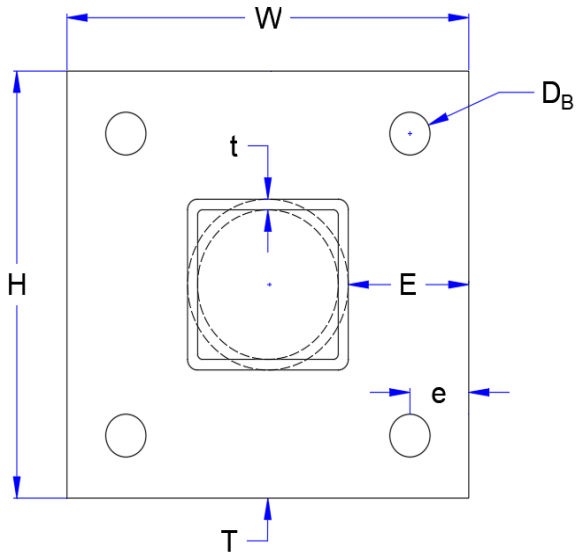
Site Number:	*411181*
Project Number:	*14099447_C8_01*
Carrier:	*T-Mobile*
Mount Elevation:	*146 ft*
Date:	7/8/2022

Mount-to-Tower Connection Analysis

Applied Loads from RISA 3D			
Controlling Load Combination		36	
Node Label		N001	
Force in X	Fx	-270.7	lbs
Force in Y	Fy	1736.6	lbs
Force in Z	Fz	134.9	lbs
Moment about X	Mx	-9188.4	lb-ft
Moment about Y	My	-1457.0	lb-ft
Moment about Z	Mz	409.5	lb-ft

Bolt Shear and Tensile Capacity			
Bolt Quantity	n	4	
Bolt Diameter	D_B	5/8	in
Bolt Edge Distance	e	0.875	in
Bolt Grade		A325	
Bolt Fy	Fy_B	92	ksi
Bolt Fu	Fu_B	120	ksi
Applied Shear	Vu	0.51	k
Applied Tension	Tu	10.68	k
Tensile Strength	ϕTn	20.3	k
Interaction Capacity	(Tu+Vu)/ϕTn	55%	Pass

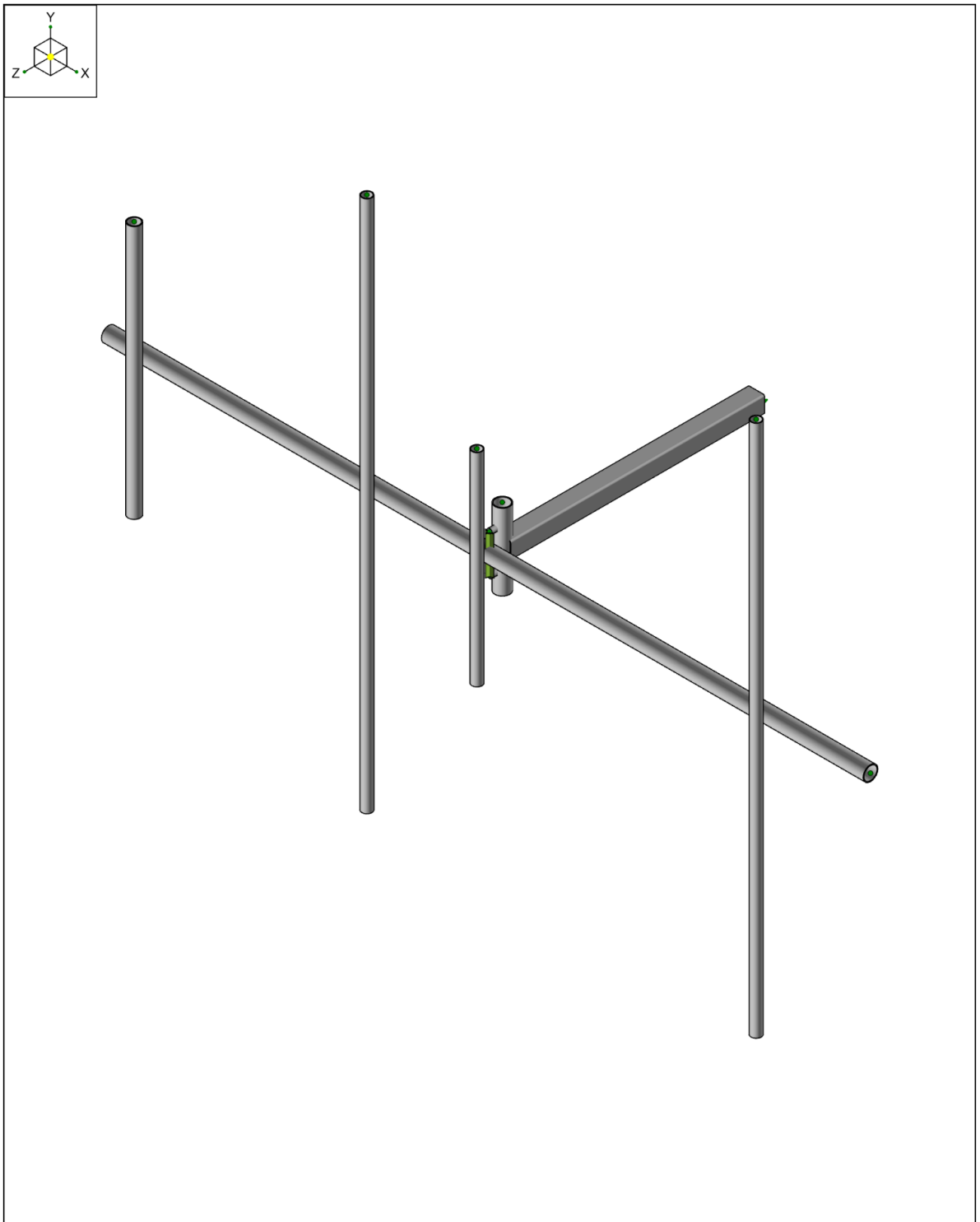
Plate Flexural Capacity			
Plate Height	H	7.75	in
Plate Width	W	7.75	in
Plate Thickness	T	5/8	in
Plate Grade		A36	
Plate Fy	Fy_P	36	ksi
Plate Fu	Fu_P	58	ksi
Shear Capacity	ϕVn	31.6	k
Applied Moment	Mu	21.4	k-in
Flexural Strength	ϕMn	39.5	k-in
Flexural Capacity	Mu/ϕMn	54%	Pass



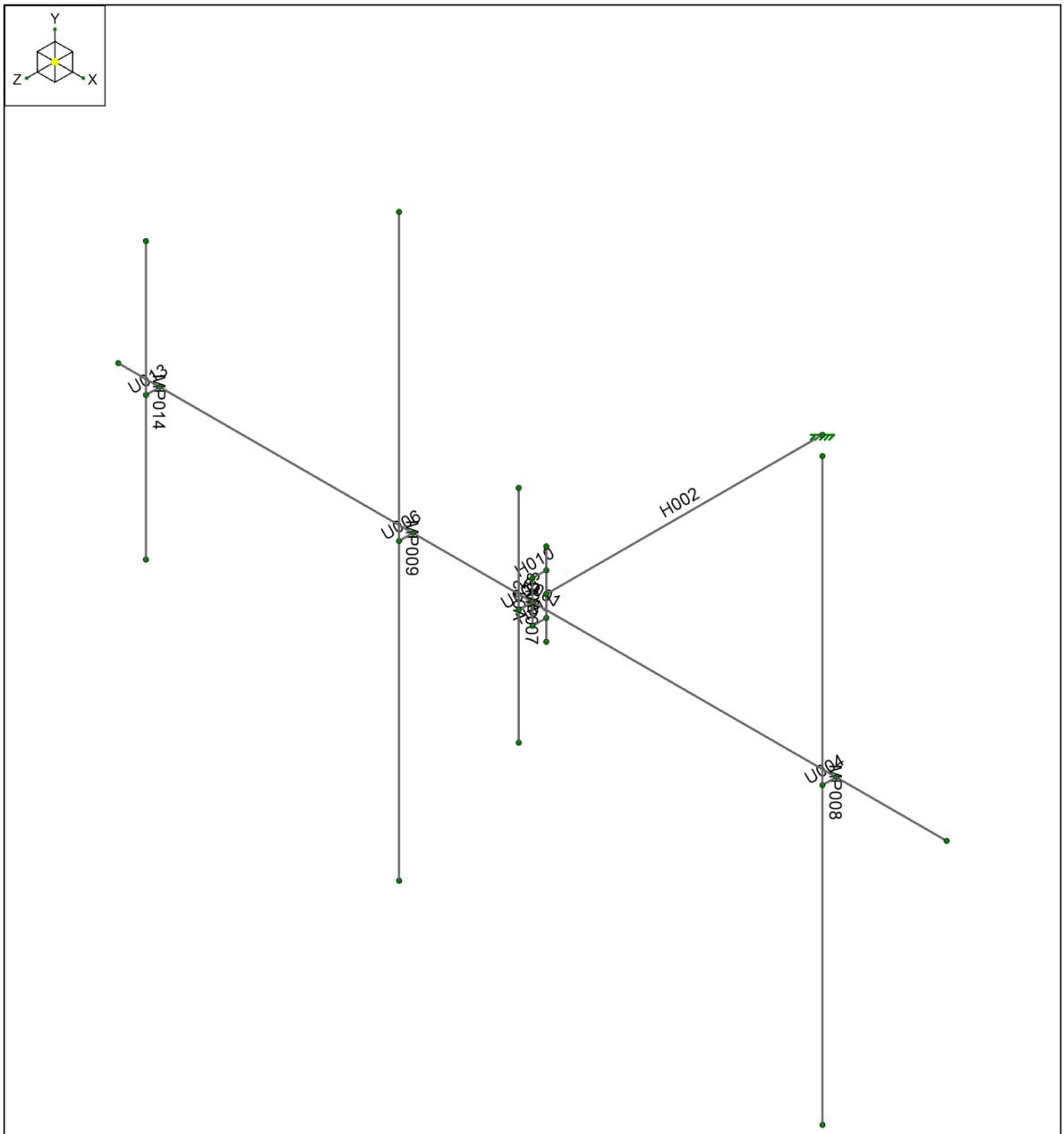
Weld and Base Metal Capacity			
Standoff Type		Tube	
Standoff Member		HSS4x4x3	
Member Edge Distance	E	1.875	in
Member Width	w	4	in
Member Thickness	t	0.188	in
Member Grade		A500 Gr. B	
Member Fy	Fy_M	42	ksi
Member Fu	Fu_M	58	ksi
Weld Size	a	3/16	in
Weld Length	l	16.0	in
Applied Load	Pu	21.4	k
Weld Strength	ϕRn	33.4	k
Weld Capacity	Pu/ϕRn	64%	Pass

Minimum Base Metal Thickness	0.160	in
Controlling Base Metal Thickness	0.188	in
Base Metal Result	Acceptable	

Prying Action Considerations							
Moment Arm	b	1.00	in	Minimum Thickness	t_{min}	0.35	in
Effective Moment Arm	b'	0.69	in	No Prying Thickness	t_{np}	0.46	in
Tributary Length	p	2.63	in	Min Bolt Strength Thickness	t_c	0.64	k-in
Effective Edge Distance	a'	1.19	in	Prying Action Bolt Tension	T_{up}	0.00	k



American Tower Corp.	411181, Barkhamstead CT	SK-1
Joseph.Swier		Jul 08, 2022
14099447_C8_01		R3D. T-MOBILE @ 411181, Barkh…



American Tower Corp.	411181, Barkhamstead CT	SK-2
Joseph.Swier		Jul 08, 2022
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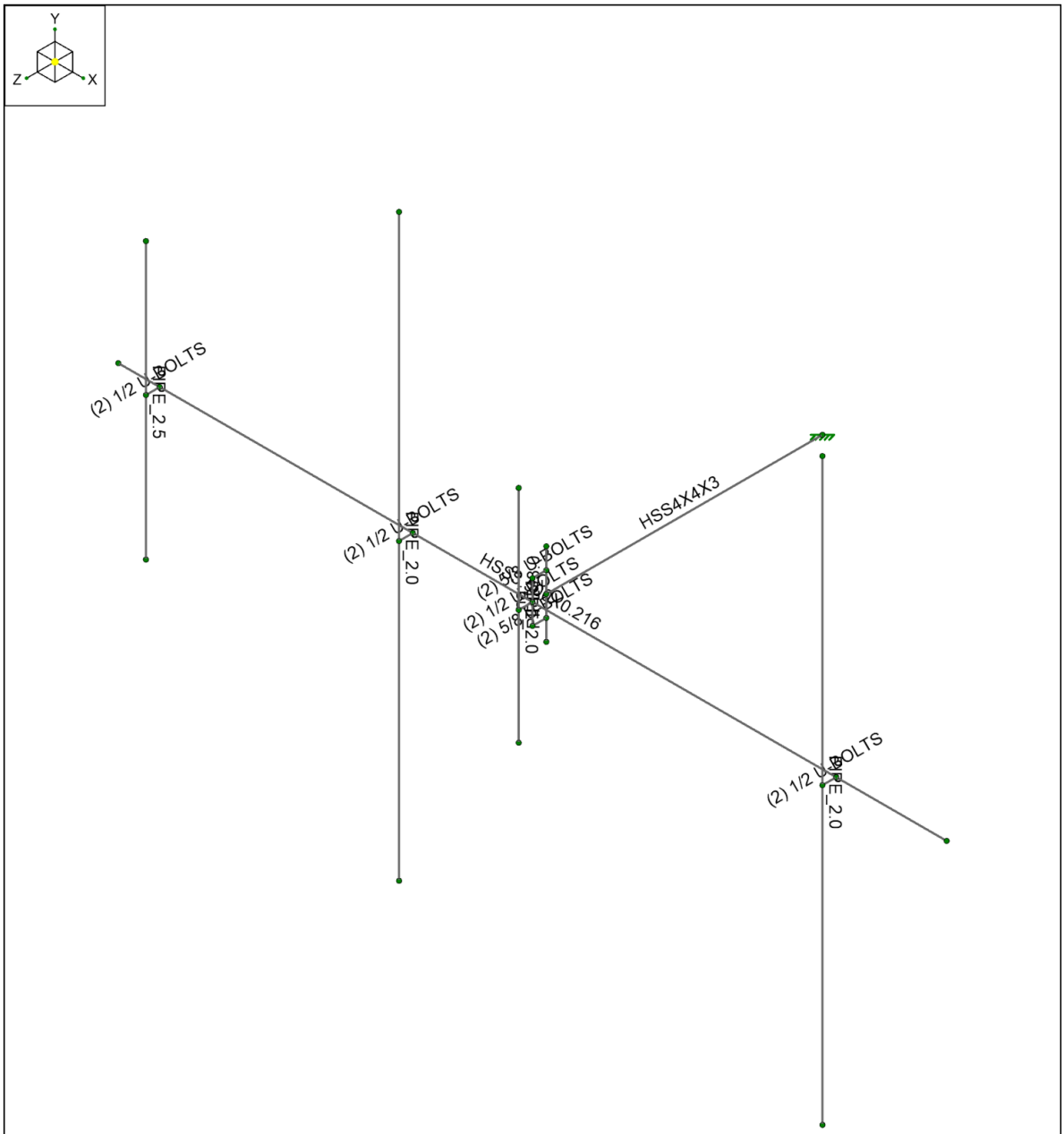

American Tower Corp.	411181, Barkhamstead CT	SK-3
Joseph.Swier		Jul 08, 2022
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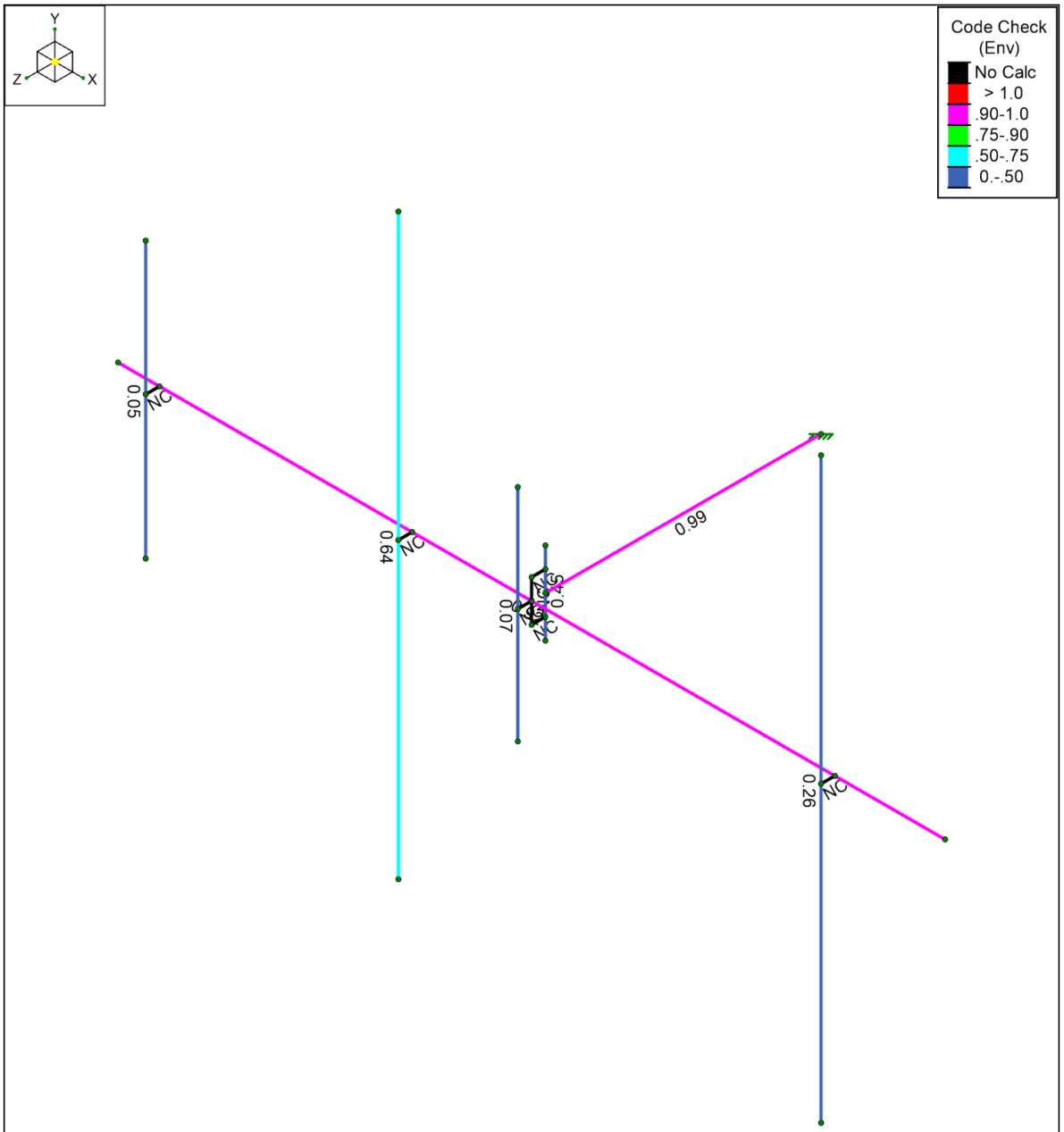
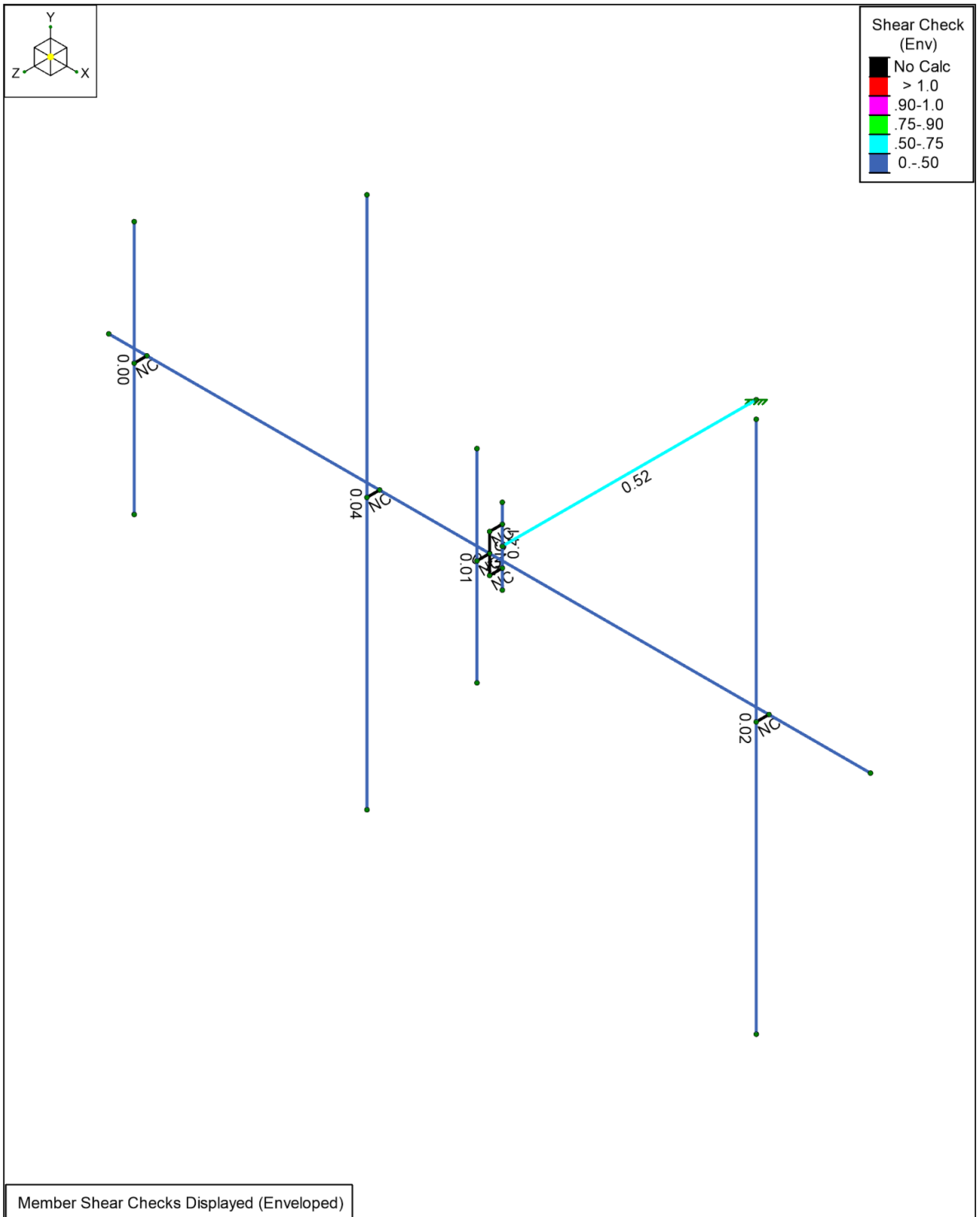


American Tower Corp.	411181, Barkhamstead CT	SK-4
Joseph.Swier		Jul 08, 2022
14099447_C8_01		R3D. T-MOBILE @ 411181, Barkh…



American Tower Corp.	411181, Barkhamstead CT	SK-5
Joseph.Swier		Jul 08, 2022
14099447_C8_01		R3D. T-MOBILE @ 411181, Barkh…

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	D	DL	-1		8	
2	Di	IL			8	7
3	W 0	WL			8	16
4	W 30	WL			16	29
5	W 60	WL			16	29
6	W 90	WL			8	14
7	W 120	WL			16	29
8	W 150	WL			16	29
9	W 180	WL			8	16
10	W 210	WL			16	29
11	W 240	WL			16	29
12	W 270	WL			8	14
13	W 300	WL			16	29
14	W 330	WL			16	29
15	Wi 0	WL			8	16
16	Wi 30	WL			16	29
17	Wi 60	WL			16	29
18	Wi 90	WL			8	14
19	Wi 120	WL			16	29
20	Wi 150	WL			16	29
21	Wi 180	WL			8	16
22	Wi 210	WL			16	29
23	Wi 240	WL			16	29
24	Wi 270	WL			8	14
25	Wi 300	WL			16	29
26	Wi 330	WL			16	29
27	Ws 0	WL			8	16
28	Ws 30	WL			16	29
29	Ws 60	WL			16	29
30	Ws 90	WL			8	14
31	Ws 120	WL			16	29
32	Ws 150	WL			16	29
33	Ws 180	WL			8	16
34	Ws 210	WL			16	29
35	Ws 240	WL			16	29
36	Ws 270	WL			8	14
37	Ws 300	WL			16	29
38	Ws 330	WL			16	29
39	Ev -Y	ELY				7
40	Eh -Z	ELZ				7
41	Eh -X	ELX				7
42	Lv (1)	LL			1	
43	Lv (2)	LL			1	
44	Lv (3)	LL		1		
45	Lm (1)	LL		1		
46	Lm (2)	LL		1		
47	Lm (3)	LL		1		
48	Lm (4)	LL		1		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lv(1)	Yes	Y	DL	1.2	42	1.5				
63	1.2D + 1.5Lv(2)	Yes	Y	DL	1.2	43	1.5				
64	1.2D + 1.5Lv(3)	Yes	Y	DL	1.2	44	1.5				
65	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	45	1.5	27	1		
66	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	45	1.5	28	1		
67	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	45	1.5	29	1		
68	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	45	1.5	30	1		
69	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	45	1.5	31	1		
70	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	45	1.5	32	1		
71	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	45	1.5	33	1		
72	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	45	1.5	34	1		
73	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	45	1.5	35	1		
74	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	45	1.5	36	1		
75	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	45	1.5	37	1		
76	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	45	1.5	38	1		
77	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	46	1.5	27	1		
78	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	46	1.5	28	1		
79	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	46	1.5	29	1		
80	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	46	1.5	30	1		
81	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	46	1.5	31	1		
82	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	46	1.5	32	1		
83	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	46	1.5	33	1		
84	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	46	1.5	34	1		
85	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	46	1.5	35	1		
86	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	46	1.5	36	1		
87	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	46	1.5	37	1		
88	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	46	1.5	38	1		
89	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	47	1.5	27	1		
90	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	47	1.5	28	1		
91	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	47	1.5	29	1		
92	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	47	1.5	30	1		
93	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	47	1.5	31	1		
94	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	47	1.5	32	1		
95	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	47	1.5	33	1		
96	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	47	1.5	34	1		
97	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	47	1.5	35	1		
98	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	47	1.5	36	1		
99	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	47	1.5	37	1		
100	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	47	1.5	38	1		
101	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	48	1.5	27	1		
102	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	48	1.5	28	1		
103	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	48	1.5	29	1		
104	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	48	1.5	30	1		
105	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	48	1.5	31	1		
106	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	48	1.5	32	1		
107	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	48	1.5	33	1		
108	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	48	1.5	34	1		
109	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	48	1.5	35	1		
110	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	48	1.5	36	1		
111	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	48	1.5	37	1		
112	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	48	1.5	38	1		

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N003	N004	HSS3.500X0.216	Beam	None	A500 Gr. B [RND]	Typical
2	H002	N001	N002	HSS4X4X3	Beam	None	A500 Gr. B [SQR]	Typical
3	V003	N006	N005	PIPE_3.0	Column	None	A53 Gr. B	Typical
4	U004	N008	N010	(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
5	U005	N007	N011	(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
6	U006	N009	N012	(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
7	MP007	N013	N014	PIPE_2.0	Column	None	A53 Gr. B	Typical
8	MP008	N015	N016	PIPE_2.0	Column	None	A53 Gr. B	Typical
9	MP009	N017	N018	PIPE_2.0	Column	None	A53 Gr. B	Typical
10	H010	N019	N020	(2) 5/8 U-BOLTS	Beam	None	A36	Typical
11	H011	N021	N022	(2) 5/8 U-BOLTS	Beam	None	A36	Typical
12	V012	N022	N020	RIGID	None	None	RIGID	Typical
13	U013	N024	N025	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
14	MP014	N026	N027	PIPE_2.5	Column	None	A53 Gr. B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H001	HSS3.500X0.216	180			Lbyy		2.1	2.1	Lateral
2	H002	HSS4X4X3	60			Lbyy		2.1	2.1	Lateral
3	V003	PIPE_3.0	18			Lbyy		2.1	2.1	Lateral
4	U004	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
5	U005	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
6	U006	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
7	MP007	PIPE_2.0	48	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
8	MP008	PIPE_2.0	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
9	MP009	PIPE_2.0	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
10	H010	(2) 5/8 U-BOLTS	3			Lbyy		2.1	2.1	Lateral
11	H011	(2) 5/8 U-BOLTS	3			Lbyy		2.1	2.1	Lateral
12	U013	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
13	MP014	PIPE_2.5	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Advanced Data

	Label	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001	Yes	N/A		None
2	H002	Yes	N/A		None
3	V003	Yes	** NA **		None
4	U004	Yes	N/A	Exclude	None
5	U005	Yes	N/A	Exclude	None
6	U006	Yes	N/A	Exclude	None
7	MP007	Yes	** NA **		None
8	MP008	Yes	** NA **		None
9	MP009	Yes	** NA **		None
10	H010	Yes	N/A	Exclude	None
11	H011	Yes	N/A	Exclude	None
12	V012	Yes	** NA **		None
13	U013	Yes	N/A	Exclude	None
14	MP014	Yes	** NA **		None

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A500 Gr. B [RND]	2.9e+07	1.115e+07	0.3	0.65	490	42000	1.4	58000	1.3
2	A500 Gr. B [SQR]	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	58000	1.3
3	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2
4	SAE J429 Gr. 2	2.9e+07	1.115e+07	0.3	0.65	490	57000	1.1	74000	1.1
5	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N001	max	1102.771	16	1736.607	27	1466.327	14	-3145.382	15	5819.116	6	4750.021	85
2		min	-1102.772	10	630.261	21	-1466.327	8	-9226.034	33	-5865.756	24	-4966.128	105
3	Totals:	max	1102.771	16	1736.607	27	1466.327	14						
4		min	-1102.772	10	630.261	21	-1466.327	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H001	HSS3.500X0.216	0.919	90	109	0.113	90		95	4490.292	78624	6898.5	6898.5	1.58	H1-1b
2	H002	HSS4X4X3	0.989	0	105	0.524	0	y	103	68537.633	106812	12661.5	12661.5	1.576	H3-6
3	V003	PIPE_3.0	0.448	9	105	0.406	9		105	61831.933	65205	5748.75	5748.75	1.841	H1-1b
4	MP007	PIPE_2.0	0.071	23	9	0.011	23		9	26457.704	32130	1871.625	1871.625	1.715	H1-1b
5	MP008	PIPE_2.0	0.261	61.688	85	0.023	61.688		9	8355.75	32130	1871.625	1871.625	2.962	H1-1b
6	MP009	PIPE_2.0	0.638	61.688	8	0.043	61.688		7	8355.75	32130	1871.625	1871.625	1.691	H1-1b
7	MP014	PIPE_2.5	0.053	28.75	105	0.004	28.75		105	41077.105	50715	3596.25	3596.25	1.686	H1-1b

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

telamon
Tower Engineering PLLC

Structural Analysis Report

Structure	:	**145 ft Monopine**
ATC Site Name	:	**Barkhamstead CT, CT**
ATC Site Number	:	**411181**
Engineering Number	:	**14099447_C3_03**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**New Hartford-Verizon colo**
Carrier Site Number	:	**CTNH417A**
Site Location	:	**50 Rust Road** **BARKHAMSTED, CT 06063-3314** **41.8938, -72.9965**
County	:	**Litchfield**
Date	:	**August 24, 2022**
Max Usage	:	**54%**
Result	:	**Pass**

Prepared By:

Anna Stiles, E.I.
CLS

Reviewed By:

Digitally signed by David W Chickering
Date: 2022.08.24 17:22:14 -04'00'

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED PROFESSIONAL ENGINEER

David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 145 ft Monopine to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	Summit, PJF Job #29200-1316, dated September 5, 2000 Mapping by Geostructural Site #411181, dated February 22, 2016
Foundation Drawing	Summit, PJF Job #29200-1316, dated September 5, 2000
Geotechnical Report	Clarence Welti Project: AT&T Tower Site, dated March 27, 2000
Mount Analysis	ATC Engineering Job #14099447_C8_01, dated July 8, 2022

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:	115 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Spectral Response:	Ss = 0.17, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

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	Equipment	Mount Type	Lines	Carrier
146.0	-	-	T-Arm	-	T-MOBILE
136.0	3	Amphenol Antel BXA-70063-6CF-EDIN-X	T-Arm	(2) 1 1/4" Hybriflex Cable (12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
134.0	3	Samsung B2/B66A RRH-BR049			
	3	Samsung B5/B13 RRH-BR04C			
	4	Antel LPA-80063/4CF			
	3	Samsung MT6407-77A			
	6	Commscope SBNHH-1D65B (72.9")			
	1	RFS DB-C1-12C-24AB-0Z			
	2	Antel LPA-80080/4CF ___			
131.0	1	VZW Unused Reserve (14749.26 sqin)			
117.0	1	Andrew ABT-DMDF-ADBH	T-Arm	(2) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (12) 1 1/4" Coax (2) 2" conduit (3) 3" conduit	AT&T MOBILITY
	6	Powerwave Allgon LGP21901			
	6	Powerwave Allgon TT19-08BP111-001			
	3	Ericsson RRUS 4478 B14			
	1	Raycap DC6-48-60-18-8F(32.8 lbs)			
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4449 B5, B12			
	1	Raycap DC6-48-60-18-8C			
	1	Raycap DC6-48-60-18-8C-EV			
	3	Powerwave Allgon 7770.00			
	2	Kathrein Scala 80010964			
	4	Kathrein Scala 80010965			
50.0	1	PCTEL GPS-TMG-HR-26N	Flush	(1) 1/2" Coax	SPRINT NEXTEL

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
104.0	1	Generic E-911 GPS	T-Arm	(18) 1 5/8" Coax (1) 1/2" Coax	T-MOBILE
	3	Ericsson KRY 112 71			
	3	Commscope LNX-6515DS-A1M (50.3 lb)			
	6	RFS APX16DWV-16DWV-S-E-ACU			
	3	RFS ATMAP1412D-1A20			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
146.0	3	Ericsson 4460 BAND 2/25	T-Arm	(3) 1.99" (50.7mm) Hybrid	T-MOBILE
	3	Ericsson 4480 BAND 71			
	3	Commscope VV-65A-R1B			
	3	Ericsson AIR 6419 B41			
	3	RFS APXVAALL24 43-U-NA20			

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

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	54%	Pass
Shaft	54%	Pass
Base Plate	24%	Pass
Flange	25%	Pass

Foundation

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	5073.4	35%
Shear (Kips)	47.4	22%
Axial (Kips)	66.5	8%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
146.0	Ericsson 4460 BAND 2/25	T-MOBILE	0.201	0.140
	Ericsson 4480 BAND 71			
	RFS APXVAALL24 43-U-NA20			
	Ericsson AIR 6419 B41			
	Commscope VV-65A-R1B			

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

Standard Conditions

All engineering services performed by A.T. Engineering Services LLC 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 Services LLC

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

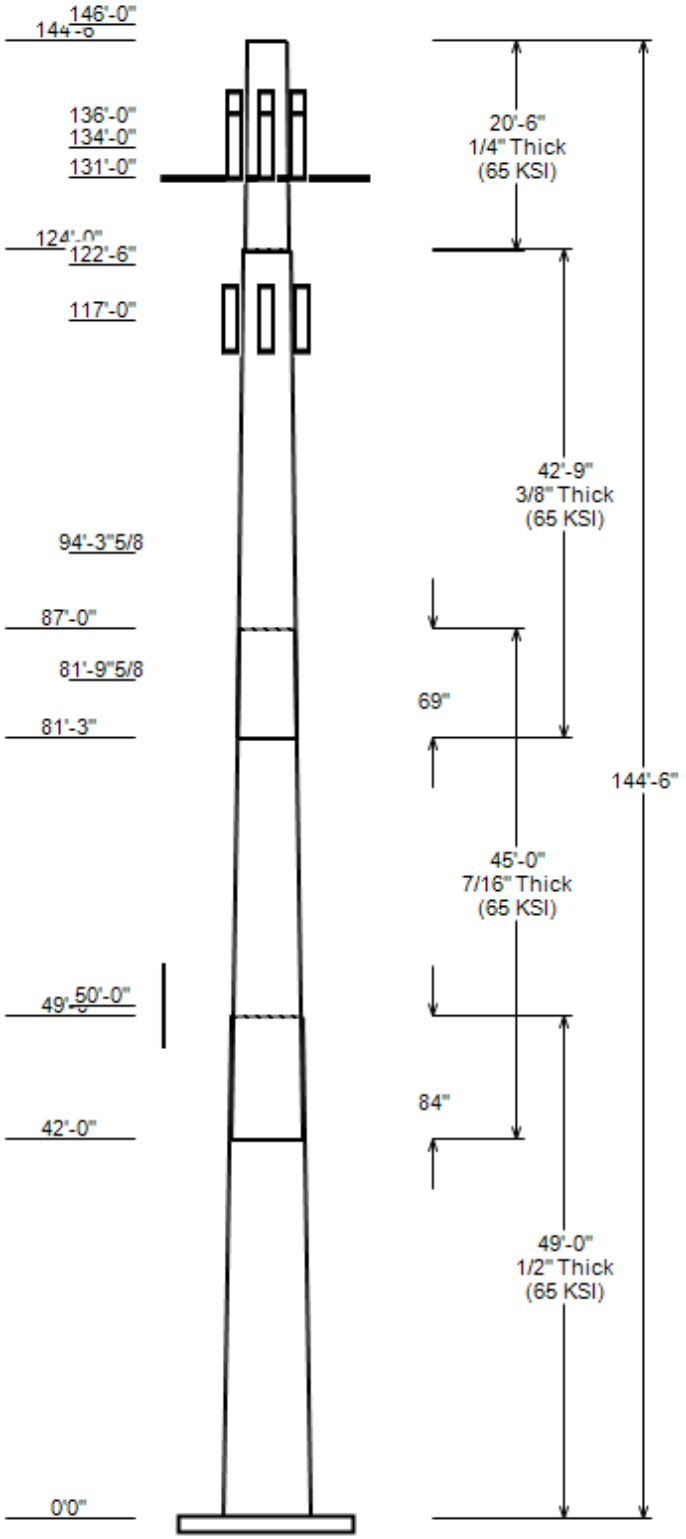
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

Unless explicitly agreed by both the client and A.T. Engineering Services LLC, 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 Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

JOB INFORMATION

Asset :	411181, Barkhamstead CT	Height :	144.5 ft
Client :	T-MOBILE	Base Width :	66.05
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Nominal Wind: 115 mph wind with no ice **Topo Category:** 1

Ice Wind: 50 mph wind with 1" radial **Topo Method:** Method 1

Base Elev (ft): 0.00 **Taper :** 0.28400(In/ft) **Topo Feature:**

Structure Class: II **Exposure :** B **S_s :** 0.171 **S_1** : 0.054

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	49.000	52.15	66.05	0.500		0.000	18 Sides	65
2	45.000	42.25	55.01	0.438	Slip Joint	84.000	18 Sides	65
3	42.750	32.50	44.63	0.375	Slip Joint	69.000	18 Sides	65
4	20.500	24.00	32.50	0.250	Butt Joint	0.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
146.0	146.0	3	Ericsson 4460 BAND 2/25
146.0	146.0	3	Ericsson 4480 BAND 71
146.0	146.0	3	Commscope VV-65A-R1B
146.0	146.0	3	Ericsson AIR 6419 B41
146.0	146.0	3	Generic Flat T-Arm
146.0	146.0	3	RFS APXVAALL24 43-U-NA20
144.5	144.5	1	Pine Tree Branches
136.0	136.0	3	Amphenol Antel BXA-70063-6CF-E
134.0	134.0	3	Samsung B2/B66A RRH-BR049
134.0	134.0	3	Samsung B5/B13 RRH-BR04C
134.0	134.0	1	RFS DB-C1-12C-24AB-0Z
134.0	134.0	3	Samsung MT6407-77A
134.0	134.0	2	Antel LPA-80080/4CF ___
134.0	134.0	4	Antel LPA-80063/4CF
134.0	134.0	6	Commscope SBNHH-1D65B (72.9")
131.0	131.0	3	Generic Round T-Arm
131.0	131.0	1	VZW Unused Reserve (14749.26 s
122.5	122.5	1	Pine Tree Branches
117.0	117.0	1	Andrew ABT-DMDF-ADBH
117.0	117.0	6	Powerwave Allgon LGP21901
117.0	117.0	6	Powerwave Allgon TT19-08BP111-
117.0	117.0	1	Raycap DC6-48-60-18-8F(32.8 lb
117.0	117.0	3	Ericsson RRUS 8843 B2, B66A
117.0	117.0	3	Ericsson RRUS 4449 B5, B12
117.0	117.0	3	Ericsson RRUS 4478 B14
117.0	117.0	1	Raycap DC6-48-60-18-8C
117.0	117.0	1	Raycap DC6-48-60-18-8C-EV
117.0	117.0	3	Powerwave Allgon 7770.00
117.0	117.0	2	Kathrein Scala 80010964
117.0	117.0	4	Kathrein Scala 80010965
117.0	117.0	3	T-Arm with Site Pro 1 PRK-1245
94.3	94.3	1	Pine Tree Branches
81.8	81.8	1	Pine Tree Branches
50.0	50.0	1	PCTEL GPS-TMG-HR-26N

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	146.0	1.99" (50.7mm) Hybrid	No
0.0	136.0	1 1/4" Hybriflex Cable	No
0.0	134.0	1 5/8" Hybriflex	No
0.0	134.0	1 5/8" Coax	No

JOB INFORMATION

Asset :	411181, Barkhamstead CT	Height :	144.5 ft
Client :	T-MOBILE	Base Width :	66.05
Code :	ANSI/TIA-222-H	Shape :	18 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	117.0	3" conduit	No
0.0	117.0	3" conduit	No
0.0	117.0	2" conduit	No
0.0	117.0	1 1/4" Coax	No
0.0	117.0	0.78" (19.7mm) 8 AWG 6	No
0.0	117.0	0.39" (10mm) Fiber Trunk	No
0.0	50.0	1/2" Coax	No

LOAD CASES

1.2D + 1.0W	115 mph wind with no ice
0.9D + 1.0W	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W	5073.37	47.35	66.52
0.9D + 1.0W	5043.47	47.34	49.88
1.2D + 1.0Di + 1.0Wi	1402.52	13.25	83.60
1.2D + 1.0Ev + 1.0Eh	212.94	1.96	66.05
0.9D - 1.0Ev + 1.0Eh	211.45	1.96	46.13
1.0D + 1.0W	1231.28	11.53	55.47

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)

ANALYSIS PARAMETERS

Location:	Litchfield County,CT	**Height:**	144.5 ft
Type and Shape:	Custom, 18 Sides	**Base Diameter:**	66.05 in
Manufacturer:	Undetermined	**Top Diameter:**	24.00 in
K_d (non-service):	0.95	**Taper:**	0.2840 in/ft
K_e:	0.97	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed w/o Ice:**	115 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	50 mph
Topo Factor Procedure:	Method 1	**Operational Wind Speed:**	60 mph
Topographic Category:	1	**Design Ice Thickness:**	1.00 in
Crest Height:	0 ft	**HMSL:**	793.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	1.63
T_L (sec):	6	**P:**	1	**C_s:**	0.035
S_s:	0.171	**S_1:**	0.054	**C_s Max:**	0.035
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.182	**S_{d1}:**	0.086		

LOAD CASES

1.2D + 1.0W	115 mph wind with no ice
0.9D + 1.0W	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
									104.0							27,624.4			
1-18	49.00	0.5000	65		0.00	15,506	66.05	0.000	2	56,471.9	21.53	132.10	52.15	49.00	81.96		16.63	104.30	0.2837
2-18	45.00	0.4375	65	Slip	84.00	10,247	55.01	42.000	75.78	28,512.4	20.41	125.74	42.25	87.00	58.05	12,818.2	15.26	96.56	0.2837
3-18	42.75	0.3750	65	Slip	69.00	6,612	44.63	81.250	52.67	13,028.6	19.22	119.01	32.50	124.00	38.23	4,983.7	13.52	86.67	0.2837
								124.00								1,343.1			
4-18	20.50	0.2500	65	Butt	0.00	1,550	32.50	0	25.59	3,362.6	21.16	130.00	24.00	144.50	18.85		15.16	96.00	0.4146
				Shaft Weight		33,915													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
146.00	RFS APXVAALL24 43-U-NA20	3	0.80	0.000	122.80	20.243	0.63	381.63	22.708	0.63
146.00	Ericsson 4460 BAND 2/25	3	0.80	0.000	109.00	2.564	0.50	167.73	3.264	0.50
146.00	Ericsson 4480 BAND 71	3	0.80	0.000	81.00	2.878	0.50	131.58	3.624	0.50
146.00	Commscope VV-65A-R1B	3	0.80	0.000	24.70	5.887	0.63	102.37	7.293	0.63
146.00	Ericsson AIR 6419 B41	3	0.80	0.000	83.30	6.322	0.63	183.87	7.446	0.63
146.00	Generic Flat T-Arm	3	0.75	0.000	312.50	12.900	0.67	486.10	18.334	0.67
144.50	Pine Tree Branches	1	1.00	0.000	337.50	11.700	1.00	493.74	17.116	1.00
136.00	Amphenol Antel BXA-70063-6CF-E	3	0.80	0.000	17.00	7.569	0.67	114.86	9.393	0.67
134.00	RFS DB-C1-12C-24AB-0Z	1	0.80	0.000	32.00	4.056	0.50	115.86	4.956	0.50
134.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.67	148.85	5.711	0.67
134.00	Antel LPA-80080/4CF ___	2	0.80	0.000	12.00	5.399	0.67	94.82	3.161	0.67
134.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	108.04	2.471	0.50
134.00	Commscope SBNHH-1D65B (72.9")	6	0.80	0.000	40.60	8.200	0.67	156.98	10.066	0.67
134.00	Antel LPA-80063/4CF	4	0.80	0.000	20.00	6.142	0.67	148.58	6.813	0.67
134.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	126.49	2.471	0.50
131.00	VZW Unused Reserve (14749.26 s	1	0.80	0.000	1360.50	102.430	0.90	1984.91	149.441	0.90
131.00	Generic Round T-Arm	3	0.75	0.000	312.50	9.700	0.67	484.61	15.131	0.67
122.50	Pine Tree Branches	1	1.00	0.000	3300.00	383.240	1.00	4803.46	557.841	1.00
117.00	T-Arm with Site Pro 1 PRK-1245	3	0.75	0.000	450.00	17.900	0.67	654.11	26.019	0.67
117.00	Kathrein Scala 80010965	4	0.80	0.000	97.60	13.814	0.67	271.18	15.800	0.67
117.00	Kathrein Scala 80010964	2	0.80	0.000	83.80	9.997	0.67	216.99	11.534	0.67
117.00	Powerwave Allgon 7770.00	3	0.80	0.000	35.00	5.508	0.67	109.01	6.892	0.67
117.00	Raycap DC6-48-60-18-8C-EV	1	0.80	0.000	16.00	4.788	0.50	100.08	5.746	0.50
117.00	Raycap DC6-48-60-18-8C	1	0.80	0.000	16.00	2.030	0.50	53.90	2.524	0.50
117.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.021	0.50	99.36	2.635	0.50
117.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.969	0.50	112.96	2.576	0.50
117.00	Ericsson RRUS 8843 B2, B66A	3	0.80	0.000	72.00	1.639	0.50	111.91	2.189	0.50
117.00	Raycap DC6-48-60-18-8F(32.8 lb	1	0.80	0.000	32.80	1.470	0.50	72.97	1.925	0.50
117.00	Powerwave Allgon TT19-08BP111-	6	0.80	0.000	16.00	0.553	0.50	29.15	0.886	0.50
117.00	Andrew ABT-DMDF-ADBH	1	0.80	0.000	1.10	0.045	0.50	2.55	0.158	0.50
117.00	Powerwave Allgon LGP21901	6	0.80	0.000	5.50	0.200	0.50	10.50	0.408	0.50
94.30	Pine Tree Branches	1	1.00	0.000	937.50	138.580	1.00	1353.06	200.007	1.00
81.80	Pine Tree Branches	1	1.00	0.000	937.50	146.250	1.00	1348.00	210.287	1.00
50.00	PCTEL GPS-TMG-HR-26N	1	1.00	0.000	0.60	0.090	1.00	3.50	0.198	1.00
Totals	Num Loadings: 34	89			13,965.60			24,384.91		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	146.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE
0.00	136.00	2	1 1/4" Hybriflex Cabl	1.54	1	N	0	0	0	0	0	N	VERIZON WIREL
0.00	134.00	12	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	134.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	117.00	12	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	AT&T MOBILITY

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	117.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	2	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	2	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	1	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	50.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	SPRINT NEXTEL

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5000	66.050	104.024	56,471.90	21.53	132.10	76.1	1684.0	0.0	0.0
5.00		0.5000	64.632	101.773	52,884.50	21.03	129.26	76.7	1611.6	0.0	1,750.7
10.00		0.5000	63.213	99.522	49,452.40	20.53	126.43	77.3	1540.9	0.0	1,712.4
15.00		0.5000	61.795	97.271	46,172.00	20.03	123.59	77.8	1471.7	0.0	1,674.1
20.00		0.5000	60.376	95.020	43,040.00	19.53	120.75	78.4	1404.1	0.0	1,635.8
25.00		0.5000	58.958	92.769	40,053.00	19.03	117.92	79	1338.1	0.0	1,597.5
30.00		0.5000	57.539	90.518	37,207.50	18.53	115.08	79.6	1273.6	0.0	1,559.2
35.00		0.5000	56.121	88.267	34,500.00	18.03	112.24	80.2	1210.8	0.0	1,520.9
40.00		0.5000	54.702	86.015	31,927.20	17.53	109.40	80.8	1149.6	0.0	1,482.6
42.00	Bot - Section 2	0.5000	54.135	85.115	30,935.00	17.33	108.27	81	1125.5	0.0	582.3
45.00		0.5000	53.284	83.764	29,485.50	17.03	106.57	81.4	1089.9	0.0	1,629.5
49.00	Top - Section 1	0.4375	53.024	73.020	25,511.60	19.61	121.20	78.3	947.7	0.0	2,132.5
50.00		0.4375	52.740	72.626	25,100.90	19.49	120.55	78.5	937.4	0.0	247.8
55.00		0.4375	51.322	70.656	23,113.50	18.92	117.31	79.1	887.1	0.0	1,218.9
60.00		0.4375	49.903	68.687	21,233.90	18.35	114.06	79.8	838.1	0.0	1,185.4
65.00		0.4375	48.485	66.717	19,459.00	17.78	110.82	80.5	790.5	0.0	1,151.9
70.00		0.4375	47.066	64.747	17,785.90	17.21	107.58	81.2	744.3	0.0	1,118.4
75.00		0.4375	45.648	62.777	16,211.60	16.63	104.34	81.8	699.5	0.0	1,084.8
80.00		0.4375	44.229	60.808	14,733.00	16.06	101.09	82.5	656.1	0.0	1,051.3
81.25	Bot - Section 3	0.4375	43.874	60.315	14,378.00	15.92	100.28	82.6	645.5	0.0	257.6
81.80		0.4375	43.718	60.099	14,223.60	15.86	99.93	82.6	640.8	0.0	211.1
85.00		0.4375	42.811	58.838	13,347.20	15.49	97.85	82.6	614.1	0.0	1,213.1
87.00	Top - Section 2	0.3750	42.993	50.724	11,640.10	18.45	114.65	79.7	533.3	0.0	745.3
90.00		0.3750	42.142	49.711	10,956.60	18.05	112.38	80.2	512.1	0.0	512.6
94.30		0.3750	40.922	48.259	10,024.30	17.48	109.13	80.8	482.5	0.0	716.8
95.00		0.3750	40.724	48.023	9,877.70	17.39	108.60	81	477.7	0.0	114.7
100.00		0.3750	39.305	46.335	8,872.10	16.72	104.81	81.7	444.6	0.0	802.7
105.00		0.3750	37.887	44.646	7,937.20	16.05	101.03	82.5	412.6	0.0	774.0
110.00		0.3750	36.468	42.958	7,070.40	15.38	97.25	82.6	381.9	0.0	745.2
115.00		0.3750	35.050	41.270	6,269.10	14.72	93.47	82.6	352.3	0.0	716.5
117.00		0.3750	34.482	40.595	5,966.40	14.45	91.95	82.6	340.8	0.0	278.6
120.00		0.3750	33.631	39.582	5,530.80	14.05	89.68	82.6	323.9	0.0	409.2
122.50		0.3750	32.922	38.737	5,184.40	13.72	87.79	82.6	310.2	0.0	333.1
124.00	Top - Section 3	0.3750	32.496	38.231	4,983.70	13.52	86.66	82.6	302.1	0.0	196.4
124.00	Bot - Section 4	0.2500	32.500	25.589	3,362.60	21.16	130.00	76.5	203.8	0.0	
125.00		0.2500	32.085	25.260	3,234.60	20.87	128.34	76.9	198.6	0.0	86.5
130.00		0.2500	30.012	23.616	2,642.90	19.40	120.05	78.6	173.4	0.0	415.8
131.00		0.2500	29.598	23.287	2,534.00	19.11	118.39	78.9	168.6	0.0	79.8
134.00		0.2500	28.354	22.300	2,225.30	18.24	113.42	80	154.6	0.0	232.7
135.00		0.2500	27.939	21.971	2,128.30	17.94	111.76	80.3	150.0	0.0	75.3
136.00		0.2500	27.525	21.642	2,034.10	17.65	110.10	80.6	145.6	0.0	74.2
140.00		0.2500	25.866	20.326	1,685.20	16.48	103.47	82	128.3	0.0	285.6
144.50		0.2500	24.001	18.846	1,343.10	15.16	96.00	82.6	110.2	0.0	299.9
									Totals:		33,912.7

Load Case: 1.2D + 1.0W 115 mph wind with no ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-66.52	-47.35	0.00	-5,073.4	0.00	5,073.37	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.538
5.00	-63.94	-47.01	0.00	-4,836.6	0.00	4,836.61	7,022.32	1,786.12	10,346.10	9,266.86	0.07	-0.12	0.532
10.00	-61.42	-46.67	0.00	-4,601.6	0.00	4,601.55	6,919.69	1,746.61	9,893.54	8,927.89	0.27	-0.25	0.525
15.00	-58.94	-46.33	0.00	-4,368.2	0.00	4,368.19	6,814.69	1,707.10	9,451.09	8,591.96	0.6	-0.38	0.518
20.00	-56.50	-46.00	0.00	-4,136.5	0.00	4,136.53	6,707.29	1,667.60	9,018.76	8,259.27	1.07	-0.51	0.510
25.00	-54.11	-45.66	0.00	-3,906.6	0.00	3,906.55	6,597.52	1,628.09	8,596.56	7,930.04	1.68	-0.64	0.502
30.00	-51.77	-45.32	0.00	-3,678.2	0.00	3,678.25	6,485.35	1,588.58	8,184.47	7,604.46	2.43	-0.78	0.492
35.00	-49.48	-44.97	0.00	-3,451.6	0.00	3,451.64	6,370.81	1,549.08	7,782.51	7,282.76	3.32	-0.92	0.483
40.00	-47.26	-44.71	0.00	-3,226.8	0.00	3,226.77	6,253.88	1,509.57	7,390.66	6,965.15	4.35	-1.05	0.472
42.00	-46.36	-44.53	0.00	-3,137.4	0.00	3,137.35	6,206.44	1,493.77	7,236.76	6,839.29	4.81	-1.11	0.467
45.00	-44.12	-44.24	0.00	-3,003.8	0.00	3,003.78	6,134.57	1,470.07	7,008.94	6,651.83	5.53	-1.19	0.460
49.00	-41.21	-44.00	0.00	-2,826.8	0.00	2,826.82	5,148.29	1,281.50	6,086.85	5,567.88	6.58	-1.31	0.517
50.00	-40.78	-43.78	0.00	-2,782.8	0.00	2,782.81	5,129.30	1,274.59	6,021.36	5,517.17	6.86	-1.34	0.514
55.00	-38.84	-43.39	0.00	-2,563.9	0.00	2,563.90	5,032.95	1,240.02	5,699.22	5,265.49	8.34	-1.49	0.496
60.00	-36.95	-42.98	0.00	-2,347.0	0.00	2,346.96	4,934.21	1,205.45	5,385.93	5,017.06	9.98	-1.64	0.477
65.00	-35.11	-42.57	0.00	-2,132.0	0.00	2,132.04	4,833.09	1,170.88	5,081.50	4,772.08	11.78	-1.79	0.455
70.00	-33.30	-42.16	0.00	-1,919.2	0.00	1,919.17	4,729.59	1,136.31	4,785.93	4,530.77	13.73	-1.94	0.432
75.00	-31.55	-41.74	0.00	-1,708.4	0.00	1,708.38	4,623.70	1,101.74	4,499.21	4,293.33	15.84	-2.08	0.406
80.00	-29.86	-41.45	0.00	-1,499.7	0.00	1,499.69	4,515.42	1,067.18	4,221.34	4,059.98	18.1	-2.22	0.378
81.25	-29.45	-41.37	0.00	-1,447.9	0.00	1,447.88	4,481.13	1,058.53	4,153.26	3,996.20	18.69	-2.26	0.370
81.80	-28.19	-36.48	0.00	-1,425.1	0.00	1,425.13	4,465.03	1,054.73	4,123.48	3,967.40	18.95	-2.27	0.367
85.00	-26.46	-36.22	0.00	-1,308.4	0.00	1,308.38	4,371.38	1,032.61	3,952.34	3,801.89	20.5	-2.36	0.351
87.00	-25.39	-35.99	0.00	-1,235.9	0.00	1,235.94	3,638.34	890.21	3,426.86	3,187.47	21.5	-2.42	0.396
90.00	-24.51	-35.69	0.00	-1,128.0	0.00	1,127.97	3,586.74	872.43	3,291.38	3,078.96	23.05	-2.49	0.375
94.30	-22.39	-30.77	0.00	-974.5	0.00	974.52	3,511.28	846.95	3,101.94	2,925.37	25.35	-2.61	0.341
95.00	-22.17	-30.55	0.00	-953.0	0.00	952.98	3,498.83	842.80	3,071.64	2,900.59	25.73	-2.63	0.336
100.00	-20.79	-30.12	0.00	-800.2	0.00	800.21	3,408.54	813.18	2,859.49	2,725.48	28.56	-2.76	0.301
105.00	-19.46	-29.70	0.00	-649.6	0.00	649.59	3,315.86	783.55	2,654.93	2,553.84	31.51	-2.87	0.262
110.00	-18.17	-29.27	0.00	-501.1	0.00	501.12	3,191.58	753.92	2,457.96	2,364.24	34.58	-2.98	0.219
115.00	-16.93	-28.95	0.00	-354.8	0.00	354.78	3,066.14	724.29	2,268.59	2,181.14	37.74	-3.06	0.170
117.00	-13.24	-25.44	0.00	-296.9	0.00	296.88	3,015.97	712.43	2,194.96	2,109.97	39.03	-3.09	0.146
120.00	-12.68	-25.21	0.00	-220.6	0.00	220.57	2,940.71	694.66	2,086.80	2,005.42	40.99	-3.13	0.116
122.50	-9.02	-11.05	0.00	-157.6	0.00	157.55	2,877.99	679.84	1,998.76	1,920.33	42.63	-3.15	0.085
124.00	-8.76	-10.94	0.00	-141.0	0.00	140.98	2,840.36	670.95	1,946.84	1,870.16	43.63	-3.17	0.079
124.00	-8.76	-10.94	0.00	-141.0	0.00	140.98	1,762.15	449.09	1,308.17	1,169.42	43.63	-3.17	0.126
125.00	-8.63	-10.73	0.00	-130.0	0.00	130.04	1,747.31	443.32	1,274.75	1,144.56	44.29	-3.17	0.119
130.00	-8.02	-10.49	0.00	-76.4	0.00	76.39	1,670.08	414.45	1,114.16	1,022.18	47.64	-3.22	0.080
131.00	-5.34	-6.96	0.00	-65.9	0.00	65.90	1,654.03	408.68	1,083.34	998.13	48.32	-3.23	0.070
134.00	-3.81	-4.56	0.00	-45.0	0.00	45.03	1,604.63	391.36	993.47	926.94	50.35	-3.25	0.051
135.00	-3.72	-4.49	0.00	-40.5	0.00	40.47	1,587.76	385.59	964.38	903.54	51.03	-3.25	0.047
136.00	-3.59	-3.88	0.00	-36.0	0.00	35.98	1,570.69	379.81	935.72	880.32	51.71	-3.26	0.043
140.00	-3.23	-3.60	0.00	-20.5	0.00	20.48	1,500.35	356.72	825.40	789.31	54.44	-3.27	0.028
144.50	0.00	-3.41	0.00	-4.3	0.00	4.26	1,400.13	330.74	709.57	682.42	57.53	-3.28	0.006

Load Case: 0.9D + 1.0W 115 mph wind with no ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.88	-47.34	0.00	-5,043.5	0.00	5,043.47	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.533
5.00	-47.92	-46.96	0.00	-4,806.8	0.00	4,806.80	7,022.32	1,786.12	10,346.10	9,266.86	0.07	-0.12	0.526
10.00	-46.00	-46.58	0.00	-4,572.0	0.00	4,572.01	6,919.69	1,746.61	9,893.54	8,927.89	0.27	-0.25	0.519
15.00	-44.12	-46.22	0.00	-4,339.1	0.00	4,339.09	6,814.69	1,707.10	9,451.09	8,591.96	0.6	-0.38	0.512
20.00	-42.27	-45.85	0.00	-4,108.0	0.00	4,108.02	6,707.29	1,667.60	9,018.76	8,259.27	1.06	-0.51	0.504
25.00	-40.45	-45.49	0.00	-3,878.8	0.00	3,878.77	6,597.52	1,628.09	8,596.56	7,930.04	1.67	-0.64	0.496
30.00	-38.67	-45.13	0.00	-3,651.3	0.00	3,651.34	6,485.35	1,588.58	8,184.47	7,604.46	2.41	-0.77	0.487
35.00	-36.92	-44.75	0.00	-3,425.7	0.00	3,425.71	6,370.81	1,549.08	7,782.51	7,282.76	3.3	-0.91	0.477
40.00	-35.24	-44.48	0.00	-3,202.0	0.00	3,201.95	6,253.88	1,509.57	7,390.66	6,965.15	4.32	-1.05	0.466
42.00	-34.56	-44.28	0.00	-3,113.0	0.00	3,113.00	6,206.44	1,493.77	7,236.76	6,839.29	4.77	-1.1	0.462
45.00	-32.86	-43.99	0.00	-2,980.2	0.00	2,980.15	6,134.57	1,470.07	7,008.94	6,651.83	5.49	-1.19	0.454
49.00	-30.67	-43.75	0.00	-2,804.2	0.00	2,804.19	5,148.29	1,281.50	6,086.85	5,567.88	6.54	-1.3	0.511
50.00	-30.33	-43.52	0.00	-2,760.4	0.00	2,760.44	5,129.30	1,274.59	6,021.36	5,517.17	6.81	-1.33	0.507
55.00	-28.85	-43.11	0.00	-2,542.8	0.00	2,542.84	5,032.95	1,240.02	5,699.22	5,265.49	8.28	-1.48	0.490
60.00	-27.41	-42.69	0.00	-2,327.3	0.00	2,327.29	4,934.21	1,205.45	5,385.93	5,017.06	9.91	-1.63	0.471
65.00	-26.00	-42.27	0.00	-2,113.8	0.00	2,113.83	4,833.09	1,170.88	5,081.50	4,772.08	11.7	-1.78	0.450
70.00	-24.63	-41.85	0.00	-1,902.5	0.00	1,902.48	4,729.59	1,136.31	4,785.93	4,530.77	13.64	-1.92	0.426
75.00	-23.29	-41.42	0.00	-1,693.2	0.00	1,693.25	4,623.70	1,101.74	4,499.21	4,293.33	15.73	-2.07	0.401
80.00	-22.02	-41.13	0.00	-1,486.2	0.00	1,486.15	4,515.42	1,067.18	4,221.34	4,059.98	17.97	-2.21	0.372
81.25	-21.70	-41.05	0.00	-1,434.7	0.00	1,434.74	4,481.13	1,058.53	4,153.26	3,996.20	18.55	-2.24	0.365
81.80	-20.80	-36.18	0.00	-1,412.2	0.00	1,412.16	4,465.03	1,054.73	4,123.48	3,967.40	18.81	-2.26	0.362
85.00	-19.49	-35.92	0.00	-1,296.4	0.00	1,296.39	4,371.38	1,032.61	3,952.34	3,801.89	20.36	-2.34	0.347
87.00	-18.68	-35.70	0.00	-1,224.5	0.00	1,224.54	3,638.34	890.21	3,426.86	3,187.47	21.35	-2.4	0.391
90.00	-18.01	-35.39	0.00	-1,117.4	0.00	1,117.45	3,586.74	872.43	3,291.38	3,078.96	22.88	-2.47	0.370
94.30	-16.46	-30.49	0.00	-965.3	0.00	965.28	3,511.28	846.95	3,101.94	2,925.37	25.16	-2.59	0.336
95.00	-16.29	-30.27	0.00	-943.9	0.00	943.94	3,498.83	842.80	3,071.64	2,900.59	25.55	-2.61	0.331
100.00	-15.25	-29.84	0.00	-792.6	0.00	792.58	3,408.54	813.18	2,859.49	2,725.48	28.35	-2.74	0.297
105.00	-14.24	-29.42	0.00	-643.4	0.00	643.36	3,315.86	783.55	2,654.93	2,553.84	31.28	-2.85	0.258
110.00	-13.27	-29.00	0.00	-496.3	0.00	496.26	3,191.58	753.92	2,457.96	2,364.24	34.32	-2.95	0.216
115.00	-12.34	-28.70	0.00	-351.2	0.00	351.25	3,066.14	724.29	2,268.59	2,181.14	37.46	-3.04	0.167
117.00	-9.61	-25.23	0.00	-293.8	0.00	293.85	3,015.97	712.43	2,194.96	2,109.97	38.74	-3.07	0.144
120.00	-9.18	-25.01	0.00	-218.2	0.00	218.15	2,940.71	694.66	2,086.80	2,005.42	40.68	-3.1	0.113
122.50	-6.63	-10.91	0.00	-155.6	0.00	155.62	2,877.99	679.84	1,998.76	1,920.33	42.31	-3.13	0.084
124.00	-6.43	-10.81	0.00	-139.2	0.00	139.25	2,840.36	670.95	1,946.84	1,870.16	43.29	-3.14	0.077
124.00	-6.43	-10.81	0.00	-139.2	0.00	139.25	1,762.15	449.09	1,308.17	1,169.42	43.29	-3.14	0.123
125.00	-6.34	-10.60	0.00	-128.4	0.00	128.44	1,747.31	443.32	1,274.75	1,144.56	43.95	-3.15	0.116
130.00	-5.88	-10.37	0.00	-75.5	0.00	75.46	1,670.08	414.45	1,114.16	1,022.18	47.27	-3.19	0.078
131.00	-3.91	-6.88	0.00	-65.1	0.00	65.09	1,654.03	408.68	1,083.34	998.13	47.94	-3.2	0.068
134.00	-2.80	-4.50	0.00	-44.5	0.00	44.46	1,604.63	391.36	993.47	926.94	49.96	-3.22	0.050
135.00	-2.73	-4.43	0.00	-40.0	0.00	39.96	1,587.76	385.59	964.38	903.54	50.63	-3.22	0.046
136.00	-2.64	-3.82	0.00	-35.5	0.00	35.53	1,570.69	379.81	935.72	880.32	51.31	-3.23	0.042
140.00	-2.38	-3.55	0.00	-20.2	0.00	20.25	1,500.35	356.72	825.40	789.31	54.02	-3.24	0.027
144.50	0.00	-3.41	0.00	-4.3	0.00	4.26	1,400.13	330.74	709.57	682.42	57.08	-3.25	0.006

Load Case: 1.2D + 1.0Di + 1.0Wi		50 mph wind with 1" radial ice			19 Iterations
Gust Response Factor:	1.10	Ice Dead Load Factor	1.00		
Dead load Factor:	1.20			Ice Importance Factor	1.00
Wind Load Factor:	1.00				

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-83.60	-13.25	0.00	-1,402.5	0.00	1,402.52	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.158
5.00	-80.80	-13.14	0.00	-1,336.3	0.00	1,336.28	7,022.32	1,786.12	10,346.10	9,266.86	0.02	-0.03	0.156
10.00	-78.03	-13.04	0.00	-1,270.6	0.00	1,270.56	6,919.69	1,746.61	9,893.54	8,927.89	0.07	-0.07	0.154
15.00	-75.28	-12.94	0.00	-1,205.4	0.00	1,205.37	6,814.69	1,707.10	9,451.09	8,591.96	0.17	-0.11	0.151
20.00	-72.58	-12.83	0.00	-1,140.7	0.00	1,140.69	6,707.29	1,667.60	9,018.76	8,259.27	0.3	-0.14	0.149
25.00	-69.93	-12.73	0.00	-1,076.5	0.00	1,076.54	6,597.52	1,628.09	8,596.56	7,930.04	0.46	-0.18	0.146
30.00	-67.32	-12.62	0.00	-1,012.9	0.00	1,012.89	6,485.35	1,588.58	8,184.47	7,604.46	0.67	-0.22	0.144
35.00	-64.76	-12.52	0.00	-949.8	0.00	949.77	6,370.81	1,549.08	7,782.51	7,282.76	0.92	-0.25	0.141
40.00	-62.25	-12.43	0.00	-887.2	0.00	887.19	6,253.88	1,509.57	7,390.66	6,965.15	1.2	-0.29	0.137
42.00	-61.26	-12.38	0.00	-862.3	0.00	862.32	6,206.44	1,493.77	7,236.76	6,839.29	1.33	-0.31	0.136
45.00	-58.87	-12.29	0.00	-825.2	0.00	825.19	6,134.57	1,470.07	7,008.94	6,651.83	1.53	-0.33	0.134
49.00	-55.73	-12.22	0.00	-776.0	0.00	776.02	5,148.29	1,281.50	6,086.85	5,567.88	1.82	-0.36	0.150
50.00	-55.28	-12.15	0.00	-763.8	0.00	763.81	5,129.30	1,274.59	6,021.36	5,517.17	1.89	-0.37	0.149
55.00	-53.10	-12.03	0.00	-703.1	0.00	703.06	5,032.95	1,240.02	5,699.22	5,265.49	2.3	-0.41	0.144
60.00	-50.96	-11.90	0.00	-642.9	0.00	642.93	4,934.21	1,205.45	5,385.93	5,017.06	2.75	-0.45	0.139
65.00	-48.87	-11.77	0.00	-583.4	0.00	583.43	4,833.09	1,170.88	5,081.50	4,772.08	3.25	-0.49	0.132
70.00	-46.83	-11.64	0.00	-524.6	0.00	524.56	4,729.59	1,136.31	4,785.93	4,530.77	3.78	-0.53	0.126
75.00	-44.84	-11.51	0.00	-466.4	0.00	466.35	4,623.70	1,101.74	4,499.21	4,293.33	4.36	-0.57	0.118
80.00	-42.89	-11.42	0.00	-408.8	0.00	408.80	4,515.42	1,067.18	4,221.34	4,059.98	4.99	-0.61	0.110
81.25	-42.41	-11.39	0.00	-394.5	0.00	394.53	4,481.13	1,058.53	4,153.26	3,996.20	5.15	-0.62	0.108
81.80	-40.66	-10.06	0.00	-388.3	0.00	388.26	4,465.03	1,054.73	4,123.48	3,967.40	5.22	-0.62	0.107
85.00	-38.77	-9.97	0.00	-356.1	0.00	356.09	4,371.38	1,032.61	3,952.34	3,801.89	5.65	-0.65	0.103
87.00	-37.60	-9.90	0.00	-336.1	0.00	336.14	3,638.34	890.21	3,426.86	3,187.47	5.92	-0.66	0.116
90.00	-36.58	-9.80	0.00	-306.4	0.00	306.44	3,586.74	872.43	3,291.38	3,078.96	6.34	-0.68	0.110
94.30	-33.72	-8.45	0.00	-264.3	0.00	264.28	3,511.28	846.95	3,101.94	2,925.37	6.98	-0.72	0.100
95.00	-33.49	-8.38	0.00	-258.4	0.00	258.37	3,498.83	842.80	3,071.64	2,900.59	7.08	-0.72	0.099
100.00	-31.87	-8.24	0.00	-216.5	0.00	216.47	3,408.54	813.18	2,859.49	2,725.48	7.86	-0.76	0.089
105.00	-30.30	-8.10	0.00	-175.3	0.00	175.27	3,315.86	783.55	2,654.93	2,553.84	8.67	-0.79	0.078
110.00	-28.77	-7.96	0.00	-134.8	0.00	134.76	3,191.58	753.92	2,457.96	2,364.24	9.51	-0.82	0.066
115.00	-27.29	-7.86	0.00	-94.9	0.00	94.94	3,066.14	724.29	2,268.59	2,181.14	10.37	-0.84	0.053
117.00	-21.44	-6.96	0.00	-79.2	0.00	79.22	3,015.97	712.43	2,194.96	2,109.97	10.73	-0.85	0.045
120.00	-20.73	-6.88	0.00	-58.3	0.00	58.34	2,940.71	694.66	2,086.80	2,005.42	11.26	-0.86	0.036
122.50	-15.07	-2.95	0.00	-41.1	0.00	41.13	2,877.99	679.84	1,998.76	1,920.33	11.71	-0.86	0.027
124.00	-14.73	-2.92	0.00	-36.7	0.00	36.70	2,840.36	670.95	1,946.84	1,870.16	11.98	-0.87	0.025
124.00	-14.73	-2.92	0.00	-36.7	0.00	36.70	1,762.15	449.09	1,308.17	1,169.42	11.98	-0.87	0.040
125.00	-14.55	-2.85	0.00	-33.8	0.00	33.78	1,747.31	443.32	1,274.75	1,144.56	12.17	-0.87	0.038
130.00	-13.71	-2.77	0.00	-19.5	0.00	19.54	1,670.08	414.45	1,114.16	1,022.18	13.08	-0.88	0.027
131.00	-9.91	-1.76	0.00	-16.8	0.00	16.77	1,654.03	408.68	1,083.34	998.13	13.27	-0.88	0.023
134.00	-6.50	-1.19	0.00	-11.5	0.00	11.49	1,604.63	391.36	993.47	926.94	13.82	-0.89	0.016
135.00	-6.36	-1.17	0.00	-10.3	0.00	10.29	1,587.76	385.59	964.38	903.54	14.01	-0.89	0.015
136.00	-5.93	-1.01	0.00	-9.1	0.00	9.12	1,570.69	379.81	935.72	880.32	14.19	-0.89	0.014
140.00	-5.40	-0.91	0.00	-5.1	0.00	5.10	1,500.35	356.72	825.40	789.31	14.94	-0.89	0.010
144.50	0.00	-0.83	0.00	-1.0	0.00	0.99	1,400.13	330.74	709.57	682.42	15.78	-0.89	0.001

Load Case: 1.0D + 1.0W 60 mph Wind with No Ice 19 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-55.47	-11.53	0.00	-1,231.3	0.00	1,231.28	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.136
5.00	-53.41	-11.44	0.00	-1,173.6	0.00	1,173.63	7,022.32	1,786.12	10,346.10	9,266.86	0.02	-0.03	0.134
10.00	-51.38	-11.35	0.00	-1,116.4	0.00	1,116.43	6,919.69	1,746.61	9,893.54	8,927.89	0.06	-0.06	0.133
15.00	-49.39	-11.27	0.00	-1,059.7	0.00	1,059.67	6,814.69	1,707.10	9,451.09	8,591.96	0.15	-0.09	0.131
20.00	-47.44	-11.18	0.00	-1,003.4	0.00	1,003.35	6,707.29	1,667.60	9,018.76	8,259.27	0.26	-0.12	0.129
25.00	-45.53	-11.09	0.00	-947.4	0.00	947.45	6,597.52	1,628.09	8,596.56	7,930.04	0.41	-0.16	0.126
30.00	-43.66	-11.01	0.00	-892.0	0.00	891.99	6,485.35	1,588.58	8,184.47	7,604.46	0.59	-0.19	0.124
35.00	-41.83	-10.92	0.00	-837.0	0.00	836.96	6,370.81	1,549.08	7,782.51	7,282.76	0.8	-0.22	0.122
40.00	-40.03	-10.85	0.00	-782.4	0.00	782.37	6,253.88	1,509.57	7,390.66	6,965.15	1.06	-0.26	0.119
42.00	-39.32	-10.81	0.00	-760.7	0.00	760.66	6,206.44	1,493.77	7,236.76	6,839.29	1.17	-0.27	0.118
45.00	-37.50	-10.74	0.00	-728.2	0.00	728.24	6,134.57	1,470.07	7,008.94	6,651.83	1.34	-0.29	0.116
49.00	-35.12	-10.68	0.00	-685.3	0.00	685.30	5,148.29	1,281.50	6,086.85	5,567.88	1.6	-0.32	0.130
50.00	-34.81	-10.62	0.00	-674.6	0.00	674.62	5,129.30	1,274.59	6,021.36	5,517.17	1.66	-0.32	0.129
55.00	-33.28	-10.53	0.00	-621.5	0.00	621.50	5,032.95	1,240.02	5,699.22	5,265.49	2.02	-0.36	0.125
60.00	-31.78	-10.43	0.00	-568.9	0.00	568.88	4,934.21	1,205.45	5,385.93	5,017.06	2.42	-0.4	0.120
65.00	-30.31	-10.32	0.00	-516.8	0.00	516.75	4,833.09	1,170.88	5,081.50	4,772.08	2.86	-0.43	0.115
70.00	-28.88	-10.22	0.00	-465.1	0.00	465.13	4,729.59	1,136.31	4,785.93	4,530.77	3.33	-0.47	0.109
75.00	-27.49	-10.12	0.00	-414.0	0.00	414.02	4,623.70	1,101.74	4,499.21	4,293.33	3.84	-0.5	0.102
80.00	-26.13	-10.05	0.00	-363.4	0.00	363.43	4,515.42	1,067.18	4,221.34	4,059.98	4.39	-0.54	0.095
81.25	-25.79	-10.03	0.00	-350.9	0.00	350.86	4,481.13	1,058.53	4,153.26	3,996.20	4.53	-0.55	0.094
81.80	-24.62	-8.84	0.00	-345.4	0.00	345.35	4,465.03	1,054.73	4,123.48	3,967.40	4.6	-0.55	0.093
85.00	-23.21	-8.78	0.00	-317.0	0.00	317.05	4,371.38	1,032.61	3,952.34	3,801.89	4.97	-0.57	0.089
87.00	-22.34	-8.72	0.00	-299.5	0.00	299.49	3,638.34	890.21	3,426.86	3,187.47	5.22	-0.59	0.100
90.00	-21.64	-8.65	0.00	-273.3	0.00	273.32	3,586.74	872.43	3,291.38	3,078.96	5.59	-0.6	0.095
94.30	-19.73	-7.46	0.00	-236.1	0.00	236.12	3,511.28	846.95	3,101.94	2,925.37	6.15	-0.63	0.086
95.00	-19.57	-7.40	0.00	-230.9	0.00	230.90	3,498.83	842.80	3,071.64	2,900.59	6.24	-0.64	0.085
100.00	-18.46	-7.30	0.00	-193.9	0.00	193.89	3,408.54	813.18	2,859.49	2,725.48	6.93	-0.67	0.077
105.00	-17.37	-7.20	0.00	-157.4	0.00	157.39	3,315.86	783.55	2,654.93	2,553.84	7.64	-0.7	0.067
110.00	-16.32	-7.09	0.00	-121.4	0.00	121.41	3,191.58	753.92	2,457.96	2,364.24	8.39	-0.72	0.057
115.00	-15.30	-7.02	0.00	-86.0	0.00	85.95	3,066.14	724.29	2,268.59	2,181.14	9.15	-0.74	0.044
117.00	-12.09	-6.17	0.00	-71.9	0.00	71.91	3,015.97	712.43	2,194.96	2,109.97	9.47	-0.75	0.038
120.00	-11.62	-6.12	0.00	-53.4	0.00	53.40	2,940.71	694.66	2,086.80	2,005.42	9.94	-0.76	0.031
122.50	-7.98	-2.67	0.00	-38.1	0.00	38.11	2,877.99	679.84	1,998.76	1,920.33	10.34	-0.76	0.023
124.00	-7.76	-2.65	0.00	-34.1	0.00	34.10	2,840.36	670.95	1,946.84	1,870.16	10.58	-0.77	0.021
124.00	-7.76	-2.65	0.00	-34.1	0.00	34.10	1,762.15	449.09	1,308.17	1,169.42	10.58	-0.77	0.034
125.00	-7.65	-2.60	0.00	-31.4	0.00	31.45	1,747.31	443.32	1,274.75	1,144.56	10.74	-0.77	0.032
130.00	-7.13	-2.54	0.00	-18.5	0.00	18.48	1,670.08	414.45	1,114.16	1,022.18	11.55	-0.78	0.022
131.00	-4.75	-1.68	0.00	-15.9	0.00	15.94	1,654.03	408.68	1,083.34	998.13	11.72	-0.78	0.019
134.00	-3.37	-1.10	0.00	-10.9	0.00	10.89	1,604.63	391.36	993.47	926.94	12.21	-0.79	0.014
135.00	-3.29	-1.09	0.00	-9.8	0.00	9.79	1,587.76	385.59	964.38	903.54	12.38	-0.79	0.013
136.00	-3.16	-0.94	0.00	-8.7	0.00	8.70	1,570.69	379.81	935.72	880.32	12.54	-0.79	0.012
140.00	-2.85	-0.87	0.00	-5.0	0.00	4.96	1,500.35	356.72	825.40	789.31	13.2	-0.79	0.008
144.50	0.00	-0.83	0.00	-1.0	0.00	1.04	1,400.13	330.74	709.57	682.42	13.95	-0.8	0.002

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.171
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient $F_{a:}$	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.182
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.035
Upper Limit C_S:	0.035
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.630
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.570
Total Unfactored Dead Load:	55.480 k
Seismic Base Shear (E):	1.960 k

1.2D + 1.0Ev + 1.0Eh **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
41	142.25	326	769	0.014	28	403
40	138	308	695	0.013	25	381
39	135.5	82	179	0.003	6	101
38	134.5	83	180	0.003	6	103
37	132.5	293	620	0.011	22	362
36	130.5	100	206	0.004	7	124
35	127.5	516	1,028	0.019	37	639
34	124.5	107	205	0.004	7	132
33	123.25	227	428	0.008	15	280
32	121.25	383	705	0.013	25	474
31	118.5	470	833	0.015	30	581
30	116	401	689	0.013	25	496
29	112.5	1,024	1,674	0.031	60	1,266
28	107.5	1,052	1,603	0.030	58	1,301
27	102.5	1,081	1,528	0.028	55	1,337
26	97.5	1,110	1,451	0.027	52	1,372
25	94.65	158	197	0.004	7	195
24	92.15	981	1,174	0.022	42	1,213
23	88.5	697	783	0.014	28	862
22	86	868	932	0.017	34	1,073
21	83.4	1,410	1,443	0.027	52	1,743
20	81.525	245	242	0.004	9	303
19	80.625	334	325	0.006	12	413
18	77.5	1,358	1,239	0.023	45	1,680
17	72.5	1,392	1,144	0.021	41	1,721
16	67.5	1,425	1,047	0.019	38	1,762
15	62.5	1,459	950	0.018	34	1,804
14	57.5	1,492	853	0.016	31	1,845
13	52.5	1,526	756	0.014	27	1,887
12	49.5	309	140	0.003	5	383
11	47	2,379	991	0.018	36	2,941
10	43.5	1,814	670	0.012	24	2,243
9	41	705	237	0.004	9	872
8	37.5	1,790	524	0.010	19	2,214

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
7	32.5	1,829	428	0.008	15	2,261
6	27.5	1,867	336	0.006	12	2,308
5	22.5	1,905	250	0.005	9	2,356
4	17.5	1,944	172	0.003	6	2,403
3	12.5	1,982	104	0.002	4	2,451
2	7.5	2,020	47	0.001	2	2,498
1	2.5	2,058	9	0.000	0	2,545
Ericsson 4460 BAND 2/25	144.5	327	792	0.015	29	404
Ericsson 4480 BAND 71	144.5	243	588	0.011	21	300
Commscope VV-65A-R1B	144.5	74	179	0.003	6	92
Ericsson AIR 6419 B41	144.5	250	605	0.011	22	309
Generic Flat T-Arm	144.5	938	2,270	0.042	82	1,159
RFS APXVAALL24 43-U-NA20	144.5	368	892	0.016	32	456
Pine Tree Branches	144.5	338	817	0.015	29	417
Pine Tree Branches	122.5	3,300	6,169	0.114	222	4,080
Pine Tree Branches	94.3	938	1,163	0.021	42	1,159
Pine Tree Branches	81.8	938	931	0.017	34	1,159
Amphenol Antel BXA-70063-6CF-EDIN-X	136	51	112	0.002	4	63
Samsung B2/B66A RRH-BR049	134	253	545	0.010	20	313
Samsung B5/B13 RRH-BR04C	134	211	454	0.008	16	261
RFS DB-C1-12C-24AB-0Z	134	32	69	0.001	2	40
Samsung MT6407-77A	134	245	527	0.010	19	303
Antel LPA-80080/4CF ___	134	24	52	0.001	2	30
Antel LPA-80063/4CF	134	80	172	0.003	6	99
Commscope SBNHH-1D65B (72.9")	134	244	524	0.010	19	301
Generic Round T-Arm	131	938	1,947	0.036	70	1,159
VZW Unused Reserve (14749.26 sqin)	131	1,360	2,825	0.052	102	1,682
Andrew ABT-DMDF-ADBH	117	1	2	0.000	0	1
Powerwave Allgon LGP21901	117	33	57	0.001	2	41
Powerwave Allgon TT19-08BP111-001	117	96	167	0.003	6	119
Raycap DC6-48-60-18-8F(32.8 lbs)	117	33	57	0.001	2	41
Ericsson RRUS 8843 B2, B66A	117	216	376	0.007	14	267
Ericsson RRUS 4449 B5, B12	117	213	371	0.007	13	263
Ericsson RRUS 4478 B14	117	178	310	0.006	11	220
Raycap DC6-48-60-18-8C	117	16	28	0.000	1	20
Raycap DC6-48-60-18-8C-EV	117	16	28	0.000	1	20
Powerwave Allgon 7770.00	117	105	183	0.003	7	130
Kathrein Scala 80010964	117	168	292	0.005	10	207
Kathrein Scala 80010965	117	390	679	0.012	24	483
T-Arm with Site Pro 1 PRK-1245	117	1,350	2,348	0.043	85	1,669
PCTEL GPS-TMG-HR-26N	50	1	0	0.000	0	1
		55,476	54,317	1.000	1,956	68,595

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
41	142.25	326	769	0.014	28	281
40	138	308	695	0.013	25	266
39	135.5	82	179	0.003	6	71
38	134.5	83	180	0.003	6	72
37	132.5	293	620	0.011	22	253
36	130.5	100	206	0.004	7	86
35	127.5	516	1,028	0.019	37	446
34	124.5	107	205	0.004	7	92
33	123.25	227	428	0.008	15	196
32	121.25	383	705	0.013	25	331
31	118.5	470	833	0.015	30	406
30	116	401	689	0.013	25	347
29	112.5	1,024	1,674	0.031	60	884
28	107.5	1,052	1,603	0.030	58	909
27	102.5	1,081	1,528	0.028	55	933
26	97.5	1,110	1,451	0.027	52	958

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
25	94.65	158	197	0.004	7	136
24	92.15	981	1,174	0.022	42	847
23	88.5	697	783	0.014	28	602
22	86	868	932	0.017	34	750
21	83.4	1,410	1,443	0.027	52	1,217
20	81.525	245	242	0.004	9	211
19	80.625	334	325	0.006	12	289
18	77.5	1,358	1,239	0.023	45	1,173
17	72.5	1,392	1,144	0.021	41	1,202
16	67.5	1,425	1,047	0.019	38	1,231
15	62.5	1,459	950	0.018	34	1,260
14	57.5	1,492	853	0.016	31	1,289
13	52.5	1,526	756	0.014	27	1,318
12	49.5	309	140	0.003	5	267
11	47	2,379	991	0.018	36	2,054
10	43.5	1,814	670	0.012	24	1,567
9	41	705	237	0.004	9	609
8	37.5	1,790	524	0.010	19	1,546
7	32.5	1,829	428	0.008	15	1,579
6	27.5	1,867	336	0.006	12	1,612
5	22.5	1,905	250	0.005	9	1,645
4	17.5	1,944	172	0.003	6	1,678
3	12.5	1,982	104	0.002	4	1,711
2	7.5	2,020	47	0.001	2	1,744
1	2.5	2,058	9	0.000	0	1,778
Ericsson 4460 BAND 2/25	144.5	327	792	0.015	29	282
Ericsson 4480 BAND 71	144.5	243	588	0.011	21	210
Commscope VV-65A-R1B	144.5	74	179	0.003	6	64
Ericsson AIR 6419 B41	144.5	250	605	0.011	22	216
Generic Flat T-Arm	144.5	938	2,270	0.042	82	810
RFS APXVAALL24 43-U-NA20	144.5	368	892	0.016	32	318
Pine Tree Branches	144.5	338	817	0.015	29	291
Pine Tree Branches	122.5	3,300	6,169	0.114	222	2,850
Pine Tree Branches	94.3	938	1,163	0.021	42	810
Pine Tree Branches	81.8	938	931	0.017	34	810
Amphenol Antel BXA-70063-6CF-EDIN-X	136	51	112	0.002	4	44
Samsung B2/B66A RRH-BR049	134	253	545	0.010	20	219
Samsung B5/B13 RRH-BR04C	134	211	454	0.008	16	182
RFS DB-C1-12C-24AB-0Z	134	32	69	0.001	2	28
Samsung MT6407-77A	134	245	527	0.010	19	211
Antel LPA-80080/4CF ___	134	24	52	0.001	2	21
Antel LPA-80063/4CF	134	80	172	0.003	6	69
Commscope SBNHH-1D65B (72.9")	134	244	524	0.010	19	210
Generic Round T-Arm	131	938	1,947	0.036	70	810
VZW Unused Reserve (14749.26 sqin)	131	1,360	2,825	0.052	102	1,175
Andrew ABT-DMDF-ADBH	117	1	2	0.000	0	1
Powerwave Allgon LGP21901	117	33	57	0.001	2	28
Powerwave Allgon TT19-08BP111-001	117	96	167	0.003	6	83
Raycap DC6-48-60-18-8F(32.8 lbs)	117	33	57	0.001	2	28
Ericsson RRUS 8843 B2, B66A	117	216	376	0.007	14	187
Ericsson RRUS 4449 B5, B12	117	213	371	0.007	13	184
Ericsson RRUS 4478 B14	117	178	310	0.006	11	154
Raycap DC6-48-60-18-8C	117	16	28	0.000	1	14
Raycap DC6-48-60-18-8C-EV	117	16	28	0.000	1	14
Powerwave Allgon 7770.00	117	105	183	0.003	7	91
Kathrein Scala 80010964	117	168	292	0.005	10	145
Kathrein Scala 80010965	117	390	679	0.012	24	337
T-Arm with Site Pro 1 PRK-1245	117	1,350	2,348	0.043	85	1,166
PCTEL GPS-TMG-HR-26N	50	1	0	0.000	0	1
		55,476	54,317	1.000	1,956	47,905

1.2D + 1.0Ev + 1.0Eh **Seismic**

CALCULATED FORCES

Seg Elev	Pu FY (-)	Vu FX (-)	Tu MY	Mu MZ	Mu Mx	Resultant Moment	Phi Pn	Phi Vn	Phi Tn	Phi Mn	Total Deflect	Rotation (deg)	Ratio

(ft)	(kips)	(kips)	(ft-kips)	(fr-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(kips)	(kips)	(in)		
0.00	-66.05	-1.96	0.00	-212.94	0.00	212.94	7,122.56	1,825.62	10,809	9,608.64	0.00	0.00	0.03
5.00	-63.55	-1.96	0.00	-203.15	0.00	203.15	7,022.32	1,786.12	10,346	9,266.86	0.00	-0.01	0.03
10.00	-61.10	-1.96	0.00	-193.34	0.00	193.34	6,919.69	1,746.61	9,894	8,927.89	0.01	-0.01	0.03
15.00	-58.70	-1.96	0.00	-183.52	0.00	183.52	6,814.69	1,707.10	9,451	8,591.96	0.03	-0.02	0.03
20.00	-56.34	-1.96	0.00	-173.71	0.00	173.71	6,707.29	1,667.60	9,019	8,259.27	0.04	-0.02	0.03
25.00	-54.03	-1.95	0.00	-163.92	0.00	163.92	6,597.52	1,628.09	8,597	7,930.04	0.07	-0.03	0.03
30.00	-51.77	-1.94	0.00	-154.17	0.00	154.17	6,485.35	1,588.58	8,184	7,604.46	0.10	-0.03	0.03
35.00	-49.56	-1.92	0.00	-144.47	0.00	144.47	6,370.81	1,549.08	7,783	7,282.76	0.14	-0.04	0.03
40.00	-48.69	-1.92	0.00	-134.85	0.00	134.85	6,253.88	1,509.57	7,391	6,965.15	0.18	-0.04	0.03
42.00	-46.44	-1.89	0.00	-131.02	0.00	131.02	6,206.44	1,493.77	7,237	6,839.29	0.20	-0.05	0.03
45.00	-43.50	-1.86	0.00	-125.33	0.00	125.33	6,134.57	1,470.07	7,009	6,651.83	0.23	-0.05	0.03
49.00	-43.12	-1.86	0.00	-117.90	0.00	117.90	5,148.29	1,281.50	6,087	5,567.88	0.28	-0.05	0.03
50.00	-41.23	-1.83	0.00	-116.04	0.00	116.04	5,129.30	1,274.59	6,021	5,517.17	0.29	-0.06	0.03
55.00	-39.38	-1.80	0.00	-106.89	0.00	106.89	5,032.95	1,240.02	5,699	5,265.49	0.35	-0.06	0.03
60.00	-37.58	-1.77	0.00	-97.88	0.00	97.88	4,934.21	1,205.45	5,386	5,017.06	0.42	-0.07	0.03
65.00	-35.82	-1.73	0.00	-89.03	0.00	89.03	4,833.09	1,170.88	5,082	4,772.08	0.49	-0.07	0.03
70.00	-34.10	-1.69	0.00	-80.37	0.00	80.37	4,729.59	1,136.31	4,786	4,530.77	0.58	-0.08	0.03
75.00	-32.42	-1.65	0.00	-71.90	0.00	71.90	4,623.70	1,101.74	4,499	4,293.33	0.66	-0.09	0.02
80.00	-32.00	-1.64	0.00	-63.65	0.00	63.65	4,515.42	1,067.18	4,221	4,059.98	0.76	-0.09	0.02
81.25	-31.70	-1.63	0.00	-61.60	0.00	61.60	4,481.13	1,058.53	4,153	3,996.20	0.78	-0.09	0.02
81.80	-28.80	-1.54	0.00	-60.70	0.00	60.70	4,465.03	1,054.73	4,123	3,967.40	0.79	-0.10	0.02
85.00	-27.73	-1.51	0.00	-55.77	0.00	55.77	4,371.38	1,032.61	3,952	3,801.89	0.86	-0.10	0.02
87.00	-26.86	-1.48	0.00	-52.75	0.00	52.75	3,638.34	890.21	3,427	3,187.47	0.90	-0.10	0.02
90.00	-25.65	-1.44	0.00	-48.31	0.00	48.31	3,586.74	872.43	3,291	3,078.96	0.97	-0.10	0.02
94.30	-24.30	-1.39	0.00	-42.14	0.00	42.14	3,511.28	846.95	3,102	2,925.37	1.06	-0.11	0.02
95.00	-22.93	-1.33	0.00	-41.16	0.00	41.16	3,498.83	842.80	3,072	2,900.59	1.08	-0.11	0.02
100.00	-21.59	-1.28	0.00	-34.50	0.00	34.50	3,408.54	813.18	2,859	2,725.48	1.20	-0.12	0.02
105.00	-20.29	-1.22	0.00	-28.11	0.00	28.11	3,315.86	783.55	2,655	2,553.84	1.32	-0.12	0.02
110.00	-19.02	-1.16	0.00	-22.02	0.00	22.02	3,191.58	753.92	2,458	2,364.24	1.45	-0.13	0.02
115.00	-18.53	-1.13	0.00	-16.23	0.00	16.23	3,066.14	724.29	2,269	2,181.14	1.59	-0.13	0.01
117.00	-14.46	-0.92	0.00	-13.97	0.00	13.97	3,015.97	712.43	2,195	2,109.97	1.64	-0.13	0.01
120.00	-13.99	-0.89	0.00	-11.21	0.00	11.21	2,940.71	694.66	2,087	2,005.42	1.72	-0.13	0.01
122.50	-9.63	-0.64	0.00	-8.99	0.00	8.99	2,877.99	679.84	1,999	1,920.33	1.79	-0.13	0.01
124.00	-9.50	-0.64	0.00	-8.02	0.00	8.02	2,840.36	670.95	1,947	1,870.16	1.83	-0.13	0.01
124.00	-9.50	-0.64	0.00	-8.02	0.00	8.02	1,762.15	449.09	1,308	1,169.42	1.83	-0.13	0.01
125.00	-8.86	-0.60	0.00	-7.39	0.00	7.39	1,747.31	443.32	1,275	1,144.56	1.86	-0.13	0.01
130.00	-8.74	-0.59	0.00	-4.40	0.00	4.40	1,670.08	414.45	1,114	1,022.18	2.01	-0.14	0.01
131.00	-5.53	-0.39	0.00	-3.81	0.00	3.81	1,654.03	408.68	1,083	998.13	2.03	-0.14	0.01
134.00	-4.08	-0.29	0.00	-2.64	0.00	2.64	1,604.63	391.36	993	926.94	2.12	-0.14	0.01
135.00	-3.98	-0.29	0.00	-2.35	0.00	2.35	1,587.76	385.59	964	903.54	2.15	-0.14	0.01
136.00	-3.54	-0.26	0.00	-2.06	0.00	2.06	1,570.69	379.81	936	880.32	2.18	-0.14	0.01
140.00	-3.14	-0.23	0.00	-1.03	0.00	1.03	1,500.35	356.72	825	789.31	2.30	-0.14	0.00
144.50	0.00	-0.22	0.00	0.00	0.00	0.00	1,400.13	330.74	710	682.42	2.43	-0.14	0.00

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-46.13	-1.96	0.00	-211.45	0.00	211.45	7,122.56	1,825.62	10,809	9,608.64	0.00	0.00	0.03
5.00	-44.38	-1.96	0.00	-201.67	0.00	201.67	7,022.32	1,786.12	10,346	9,266.86	0.00	-0.01	0.03
10.00	-42.67	-1.96	0.00	-191.87	0.00	191.87	6,919.69	1,746.61	9,894	8,927.89	0.01	-0.01	0.03
15.00	-40.99	-1.96	0.00	-182.08	0.00	182.08	6,814.69	1,707.10	9,451	8,591.96	0.03	-0.02	0.03
20.00	-39.35	-1.95	0.00	-172.29	0.00	172.29	6,707.29	1,667.60	9,019	8,259.27	0.04	-0.02	0.03
25.00	-37.73	-1.94	0.00	-162.54	0.00	162.54	6,597.52	1,628.09	8,597	7,930.04	0.07	-0.03	0.03
30.00	-36.16	-1.93	0.00	-152.83	0.00	152.83	6,485.35	1,588.58	8,184	7,604.46	0.10	-0.03	0.03
35.00	-34.61	-1.91	0.00	-143.18	0.00	143.18	6,370.81	1,549.08	7,783	7,282.76	0.14	-0.04	0.03
40.00	-34.00	-1.91	0.00	-133.62	0.00	133.62	6,253.88	1,509.57	7,391	6,965.15	0.18	-0.04	0.03
42.00	-32.43	-1.88	0.00	-129.81	0.00	129.81	6,206.44	1,493.77	7,237	6,839.29	0.20	-0.05	0.02
45.00	-30.38	-1.85	0.00	-124.16	0.00	124.16	6,134.57	1,470.07	7,009	6,651.83	0.23	-0.05	0.02
49.00	-30.11	-1.84	0.00	-116.77	0.00	116.77	5,148.29	1,281.50	6,087	5,567.88	0.27	-0.05	0.03
50.00	-28.79	-1.82	0.00	-114.93	0.00	114.93	5,129.30	1,274.59	6,021	5,517.17	0.29	-0.06	0.03
55.00	-27.50	-1.79	0.00	-105.84	0.00	105.84	5,032.95	1,240.02	5,699	5,265.49	0.35	-0.06	0.03
60.00	-26.24	-1.76	0.00	-96.91	0.00	96.91	4,934.21	1,205.45	5,386	5,017.06	0.42	-0.07	0.03
65.00	-25.01	-1.72	0.00	-88.13	0.00	88.13	4,833.09	1,170.88	5,082	4,772.08	0.49	-0.07	0.02
70.00	-23.81	-1.68	0.00	-79.54	0.00	79.54	4,729.59	1,136.31	4,786	4,530.77	0.57	-0.08	0.02
75.00	-22.64	-1.63	0.00	-71.15	0.00	71.15	4,623.70	1,101.74	4,499	4,293.33	0.66	-0.09	0.02
80.00	-22.35	-1.62	0.00	-62.98	0.00	62.98	4,515.42	1,067.18	4,221	4,059.98	0.75	-0.09	0.02
81.25	-22.14	-1.61	0.00	-60.95	0.00	60.95	4,481.13	1,058.53	4,153	3,996.20	0.78	-0.09	0.02

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
81.80	-20.11	-1.53	0.00	-60.06	0.00	60.06	4,465.03	1,054.73	4,123	3,967.40	0.79	-0.09	0.02
85.00	-19.36	-1.49	0.00	-55.17	0.00	55.17	4,371.38	1,032.61	3,952	3,801.89	0.85	-0.10	0.02
87.00	-18.76	-1.46	0.00	-52.19	0.00	52.19	3,638.34	890.21	3,427	3,187.47	0.89	-0.10	0.02
90.00	-17.91	-1.42	0.00	-47.79	0.00	47.79	3,586.74	872.43	3,291	3,078.96	0.96	-0.10	0.02
94.30	-16.97	-1.37	0.00	-41.68	0.00	41.68	3,511.28	846.95	3,102	2,925.37	1.05	-0.11	0.02
95.00	-16.01	-1.32	0.00	-40.72	0.00	40.72	3,498.83	842.80	3,072	2,900.59	1.07	-0.11	0.02
100.00	-15.08	-1.26	0.00	-34.12	0.00	34.12	3,408.54	813.18	2,859	2,725.48	1.19	-0.11	0.02
105.00	-14.17	-1.21	0.00	-27.80	0.00	27.80	3,315.86	783.55	2,655	2,553.84	1.31	-0.12	0.02
110.00	-13.28	-1.14	0.00	-21.77	0.00	21.77	3,191.58	753.92	2,458	2,364.24	1.44	-0.12	0.01
115.00	-12.94	-1.12	0.00	-16.05	0.00	16.05	3,066.14	724.29	2,269	2,181.14	1.57	-0.13	0.01
117.00	-10.10	-0.91	0.00	-13.81	0.00	13.81	3,015.97	712.43	2,195	2,109.97	1.62	-0.13	0.01
120.00	-9.77	-0.88	0.00	-11.09	0.00	11.09	2,940.71	694.66	2,087	2,005.42	1.71	-0.13	0.01
122.50	-6.73	-0.64	0.00	-8.89	0.00	8.89	2,877.99	679.84	1,999	1,920.33	1.78	-0.13	0.01
124.00	-6.63	-0.63	0.00	-7.94	0.00	7.94	2,840.36	670.95	1,947	1,870.16	1.82	-0.13	0.01
124.00	-6.63	-0.63	0.00	-7.94	0.00	7.94	1,762.15	449.09	1,308	1,169.42	1.82	-0.13	0.01
125.00	-6.19	-0.59	0.00	-7.31	0.00	7.31	1,747.31	443.32	1,275	1,144.56	1.85	-0.13	0.01
130.00	-6.10	-0.58	0.00	-4.35	0.00	4.35	1,670.08	414.45	1,114	1,022.18	1.99	-0.14	0.01
131.00	-3.86	-0.38	0.00	-3.77	0.00	3.77	1,654.03	408.68	1,083	998.13	2.02	-0.14	0.01
134.00	-2.85	-0.29	0.00	-2.61	0.00	2.61	1,604.63	391.36	993	926.94	2.10	-0.14	0.01
135.00	-2.78	-0.28	0.00	-2.32	0.00	2.32	1,587.76	385.59	964	903.54	2.13	-0.14	0.00
136.00	-2.47	-0.25	0.00	-2.04	0.00	2.04	1,570.69	379.81	936	880.32	2.16	-0.14	0.00
140.00	-2.19	-0.23	0.00	-1.02	0.00	1.02	1,500.35	356.72	825	789.31	2.28	-0.14	0.00
144.50	0.00	-0.22	0.00	0.00	0.00	0.00	1,400.13	330.74	710	682.42	2.41	-0.14	0.00

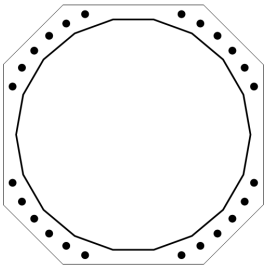
ANALYSIS SUMMARY

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	47.35	0.00	66.52	0.00	0.00	5073.37	0.00	0.54
0.9D + 1.0W	47.34	0.00	49.88	0.00	0.00	5043.47	0.00	0.53
1.2D + 1.0Di + 1.0Wi	13.25	0.00	83.60	0.00	0.00	1402.52	0.00	0.16
1.2D + 1.0Ev + 1.0Eh	1.96	0.00	66.05	0.00	0.00	212.94	0.00	0.03
0.9D - 1.0Ev + 1.0Eh	1.96	0.00	46.13	0.00	0.00	211.45	0.00	0.03
1.0D + 1.0W	11.53	0.00	55.47	0.00	0.00	1231.28	0.00	0.14

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 1818)

Width:	74	in
Shape:	Square	
Thickness:	3.25	in
Grade:	A572-55	
Yield Strength:	55	ksi
Tensile Strength:	70	ksi
Clip Length:	17	in
Rod Detail Type:	d	
Clear Distance	2.75	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	220	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 7997]	Cluster	24	2.25	74	A615-75	75	100	6	-

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (24) 2.25"ø [ID 7997]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.380	34.36	13.72	11.163	405.544	124.18	3.13
2	0.542	31.69	19.09	5.544	100.656	124.18	3.25
3	0.704	28.20	23.96	-0.221	0.998	-113.09	3.29
4	0.866	23.96	28.20	-5.980	116.961	-113.09	3.25
5	1.029	19.09	31.69	-11.581	436.454	-113.09	3.12
6	1.191	13.72	34.36	-16.880	926.168	-113.09	2.90
7	1.951	-13.72	34.36	-33.897	3732.384	-113.09	1.03
8	2.113	-19.09	31.69	-35.254	4037.272	-113.09	0.51
9	2.275	-23.96	28.20	-35.687	4136.931	-113.09	0.02
10	2.437	-28.20	23.96	-35.183	4020.967	-113.09	0.55
11	2.599	-31.69	19.09	-33.756	3701.473	-113.09	1.07
12	2.762	-34.36	13.72	-31.443	3211.761	-113.09	1.56
13	3.522	-34.36	-13.72	-11.163	405.545	-113.09	3.13
14	3.684	-31.69	-19.09	-5.544	100.655	-113.09	3.25
15	3.846	-28.20	-23.96	0.221	0.998	124.18	3.29
16	4.008	-23.96	-28.20	5.980	116.961	124.18	3.25
17	4.170	-19.09	-31.69	11.581	436.455	124.18	3.12
18	4.332	-13.72	-34.36	16.880	926.166	124.18	2.90
19	5.092	13.72	-34.36	33.897	3732.385	124.18	1.03
20	5.255	19.09	-31.69	35.254	4037.273	124.18	0.51
21	5.417	23.96	-28.20	35.687	4136.931	124.18	0.02
22	5.579	28.20	-23.96	35.183	4020.968	124.18	0.55
23	5.741	31.69	-19.09	33.756	3701.474	124.18	1.07
24	5.903	34.36	-13.72	31.443	3211.760	124.18	1.56

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	66.05"ø x 0.5" (18 Sides)	5073.4	66.52	47.35	1.000
Bolt Group	Original (24) 2.25"ø	5073.4	-	47.35	1.000
	TOTALS	**5073.37**	**66.52**	**47.35**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	66.05"ø x 0.5" (18 Sides)	102.4437	-	-	55031.14	-
Bolt Group	Original (24) 2.25"ø	3.9761	3.2477	0.8393	49655.14	4.5

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	66.18	in
Point-to-Point Diameter:	67.20	in
Flat Width:	11.668	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	220	°
Bend Line Lower Limit:		rad
Bend Line Upper Limit:	-0.121	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	38.477	0.00	101.603	1189.3	5029.3	0.236
Corner	37.456	0.00	98.907	829.0	4895.9	0.169

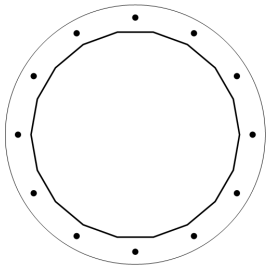
PLASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio
Original	24	2.25	124.2	3.3	243.6	0.537

UPPER FLANGE PLATE ANALYSIS @ 124 FT

PLATE PARAMETERS (ID# 12783)

Diameter:	41	in
Shape:	Round	
Thickness:	1.25	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Pole Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	346	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 7998]	Radial	12	1	37	A325	92	120	-	-

FLANGE BOLT GEOMETRY AND APPLIED LOADS --- ORIGINAL (12) 1"ø [ID 7998]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.524	16.02	9.25	12.417	93.424	13.71	1.02
2	1.047	9.25	16.02	17.183	178.870	13.71	0.39
3	1.571	0.00	18.50	17.344	182.247	13.71	0.34
4	2.094	-9.25	16.02	12.858	100.179	13.71	0.98
5	2.618	-16.02	9.25	4.927	14.734	13.71	1.36
6	3.142	-18.50	0.00	-4.324	11.357	-10.79	1.37
7	3.665	-16.02	-9.25	-12.417	93.424	-10.79	1.02
8	4.189	-9.25	-16.02	-17.183	178.870	-10.79	0.39
9	4.712	0.00	-18.50	-17.344	182.247	-10.79	0.34
10	5.236	9.25	-16.02	-12.858	100.179	-10.79	0.98
11	5.760	16.02	-9.25	-4.927	14.734	-10.79	1.36
12	6.283	18.50	0.00	4.324	11.357	13.71	1.37

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	32.5"ø x 0.25" (18 Sides)	141.0	8.76	10.94	1.000
Bolt Group	Original (12) 1"ø	141.0	-	10.94	1.000
	TOTALS	**140.98**	**8.76**	**10.94**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	32.5"ø x 0.25" (18 Sides)	25.2007	-	-	3276.81	-
Bolt Group	Original (12) 1"ø	0.7854	0.6057	0.0292	1161.62	8.0

EXTERNAL UPPER FLANGE PLATE BEND LINE ANALYSIS @ 124 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	32.62	in
Point-to-Point Diameter:	33.13	in
Flat Width:	5.753	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	346	°
Bend Line Lower Limit:	0.663	rad
Bend Line Upper Limit:	1.955	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	20.583	0.00	8.040	30.4	361.8	0.084
Corner	19.762	0.00	7.720	22.3	347.4	0.064
Circumferential	29.885	0.00	11.674	41.8	525.3	0.080

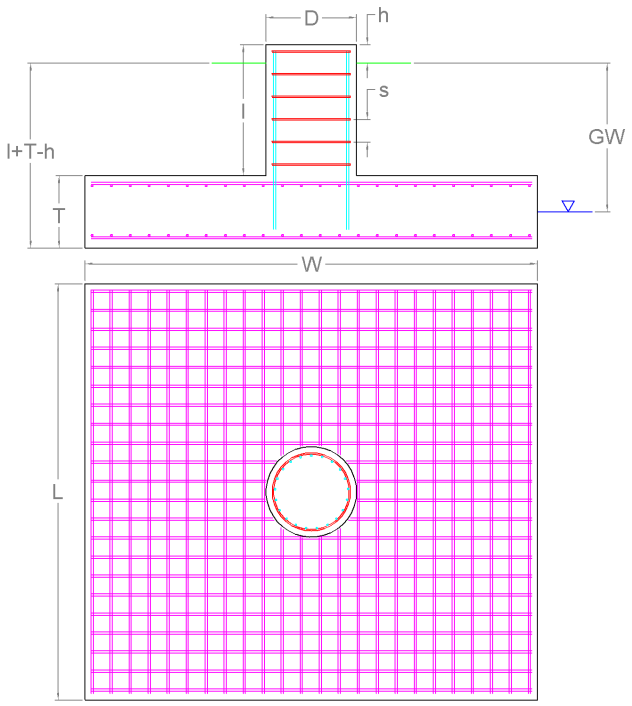
PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio
Original	12	1	13.7	1.4	54.5	0.251

Monolithic Mat Foundation Analysis (ANSI/TIA-222-H)

Foundation & Tower Parameters			
Ignore Mat Rebar?		N	
Ignore Pier Rebar?		N	
Foundation has Pier(s)?		Y	
Pier Shape		Round	
Pier Diameter	*D*	8	ft
Pier Height Above Ground	*h*	0.5	ft
Pier Length	*l*	5.5	ft
Mat Base Depth	*l+T-h*	9	ft
Mat Length	*L*	31.5	ft
Mat Width	*W*	31.5	ft
Mat Thickness	*T*	4	ft
Unit Weight of Concrete		150	pcf
Tower Eccentricity	ecc	0	ft
Tower Face Width	FW	5.5	ft
Tower Leg Count		1	

Reactions		
Moment, M_u	5,073.37	k-ft
Shear, V_u	47.35	k
Axial, P_u	66.52	k
Uplift, T_u	0	k
Tower Weight	66.52	k
Tower Dead Load Factor	0.9	



Soil Parameters			
Water Table Depth [BGL]	*GW*	3	ft
Unit Weight of Soil		125	pcf
Unit Weight of Soil [Submerged]		62.6	pcf
Shear Friction Coefficient		0.2	
Ultimate Bearing Pressure		24,000	psf
Bearing Pressure Type		Gross	
Conical Failure Angle		15	°
Capacity Increase (Transient Loads)		1.00	
Soil Strength Reduction Factor, ϕ_s		0.75	
Dead Load Factor		1.2	

Soil Capacities		
Design Moment, M_u	5,523.2	k-ft
Nominal Moment Capacity, $\phi_m M_n$	15,928.6	k-ft
$M_u / \phi_s M_n$	34.7%	
Net Bearing Pressure	1,474	k
Nominal Bearing Capacity, $\phi_b P_n$	18,000	k
Bearing Pressure Controlling Load Direction	Diagonal to Pad Edge	
$P_u / \phi_s P_n$	8.2%	
Ultimate Friction Resistance	208.48	k
Ultimate Passive Pressure Resistance	78.8	k
Nominal Shear Capacity, $\phi_s V_n$	215.46	k
$V_u / \phi_s V_n$	22.0%	

Mat Reinforcement Parameters		
Concrete Compressive Strength, f'_c	3,000	psi
Mat Rebar Quantity [Lower]	47	
Mat Rebar Size # [Lower]	11	
Mat Single Rebar Area [Lower]	1.56	in^2
Mat Rebar Quantity [Upper]	47	
Mat Rebar Size # [Upper]	11	
Mat Single Rebar Area [Upper]	1.56	in^2
Mat Rebar Yield Strength, F_y	60	ksi
Mat Clear Cover	3	in
Bending Reduction Factor, ϕ_B	0.9	
Shear Reduction Factor, ϕ_V	0.75	
Compression Reduction Factor, ϕ_C	0.65	
Steel Elastic Modulus	29,000	ksi

Mat Reinforcement Capacities		
Compression Zone Factor, β_1	0.85	
Lower Reinforcement Spacing	8.07	in
Upper Reinforcement Spacing	8.07	in
One Way Design Shear, V_u	155.1	k
One Way Shear Capacity, ϕV_c	1,259.2	k
One Way Shear Controlling Load Direction	Diagonal to Pad Edge	
$V_u / \phi V_c$	**12.3%**	
Punching Design Shear Stress, v_u	30.87	psi
Punching Shear Capacity, $\phi_c V_n$	164.32	psi
$v_u / \phi_c V_n$	**18.8%**	
Moment Transfer Effective Flexural Width, $_f$	20	in
Neutral Axis Depth	4.7	In
Moment Transfer Flexural Capacity, $\phi M_{sc,f}$	107,768.95	k-in
$\gamma_f M_{sc} / \phi M_{sc,f}$	**0.0%**	
Flexure Due to Soil Pressure, M_u	3,117.1	k-ft
Lower Steel Mat Moment Capacity, ϕM_n	13,753.65	k-ft
Flexural Steel Controlling Load Direction	Parallel to Pad Edge	
$M_u / \phi M_n$	**22.7%**	
Flexure Due to Uplift, M_u	1,763.23	k-ft
Upper Steel Mat Moment Capacity, ϕM_n	13,753.65	k-ft
$M_u / \phi M_n$	**12.8%**	

Pier Reinforcement Parameters			
Concrete Compressive Strength (f'_c)		3,000	psi
Pier Rebar Quantity		60	
Pier Rebar Size #		11	
Pier Single Rebar Area		1.56	in^2
Pier Rebar Yield Strength (F_y)		60	ksi
Tie Rebar Size #		4	
Tie Rebar Area (Single)		0.2	in^2
Tie Rebar Spacing	*s*	6.5	in
Tie Rebar Yield Strength (F_y)		40	ksi
Rebar Cage Diameter		87.62	in

Pier Reinforcement Capacities		
Design Moment (M_u)	5,333.8	k-ft
Nominal Moment Capacity ($\phi_B M_n$)	18,045.56	k-ft
$M_u / \phi_B M_n$	**29.6%**	
Design Shear (V_u)	47.35	k
Nominal Shear Capacity ($\phi_V V_n$)	751.01	k
$V_u / \phi_V V_n$	**6.3%**	
Design Compression (P_u)	66.52	k
Nominal Compression Capacity ($\phi_P P_n$)	9,522.45	k
$P_u / \phi_P P_n$	**0.7%**	
Pier Reinforcement Ratio	0	-
$M_u / \phi_B M_n + T_u / \phi_T T_n$	**29.6%**	

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Section 1 - Site Information

Site ID: CTNH417A
Status: Final
Version: 3
Project Type: Anchor
Approved: 4/20/2022 3:7:36 PM
Approved By: Pratik.Patil30@T-Mobile.com
Last Modified: 4/20/2022 3:7:36 PM
Last Modified By: Pratik.Patil30@T-Mobile.com

Site Name: New Hartford-Verizon colo
Site Class: Monopole
Site Type: Structure Non Building
Plan Year: 2022
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Verizon Wireless

Latitude: 41.89361111
Longitude: -72.99666670
Address: 31 New Hartford Road
City, State: Barkhamsted, CT
Region: NORTHEAST

RAN Template: 67E5D998E ODE+6160			**AL Template:** 67E5998E_1xAIR+1OP+1QP	
Sector Count: 3	**Antenna Count:** 9	**Coax Line Count:** 0	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

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Section 3 - Proposed Template Images

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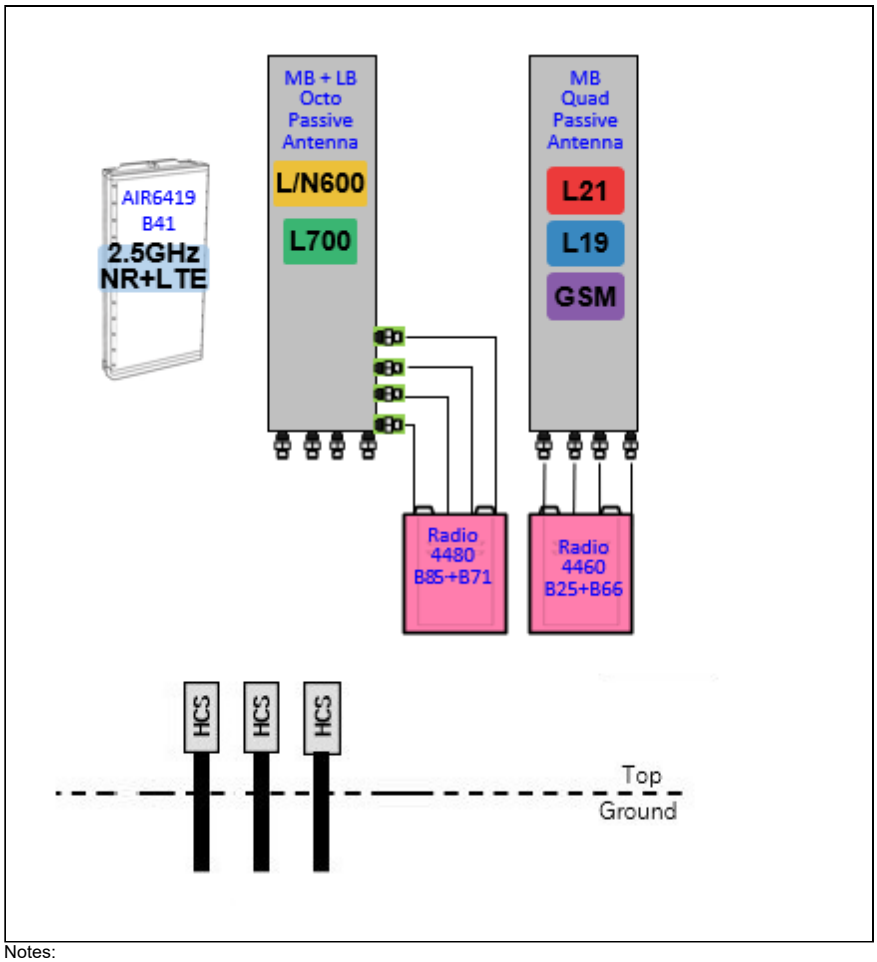

Notes:

Section 4 - Siteplan Images

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RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 704G

Enclosure	1	2
Enclosure Type	RBS 6201	RBS 3106
Baseband	DUG20 (G1900); BB 5216 (L1900, L700)	DUW30 (U2100)
Radio	RUS02 B2 **(x 6)** (L1900, G1900)	RU22 **(x 3)** (U2100); RU22 **(x 3)**

Proposed RAN Equipment

Template: 67E5D998E ODE+6160

Enclosure	1	2	3
Enclosure Type	RBS 6201	Enclosure 6160 AC V1	B160
Baseband	DUG20 (G1900); RP 6651 (L700, L600, N600, L2100, L1900)	RP 6651 (L2500, N2500)	
Hybrid Cable System	Hybrid Trunk 6/24 4AWG 60m **(x 2)**	Hybrid Trunk 6/24 4AWG 60m; PSU 4813 vR4A (Kit) **(x 2)**	
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Remove and return all cabinet radios.

Keep existing cabinet 6201.

U2100 will be decom, remove Cabinet 3106.

Breaker upgrade for 6160 at 125A.

Add 6160 and B160,

Add (1) RP 6651 for L2500/N2500 to 6160.

Replace BB 5216 with (1) RP 6651 for L600/L700/N600/L1900/L2100 in 6201.

Add (1) IXRe router, and Add (2) PSU 4813 vR4A to 6160.

Add (3) 6x24 at 60m.

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Section 6 - A&L Equipment

Existing Template: 704G
Proposed Template: 67E5998E_1xAIR+1OP+1QP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro				
Antenna	**1**		**2**	**3**	**4**
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	0				0
M. Tilt	0				0
Height	102				102
Ports	**P1**	**P2**			**P3**
Active Tech.	L1900 G1900	U2100			L700
Dark Tech.					
Restricted Tech.					
Decomm. Tech.					
E. Tilt	2	2			2
Cables	1-5/8" LMU Coax - 150 ft.	1-5/8" Coax - 150 ft.			1-5/8" Coax
TMAs	Generic Twin Style 1A - PCS (AtAntenna)	Generic Twin Style 1B - AWS (AtAntenna)			
Diplexers / Combiners					
Radio					RRUS11 B12 (At Antenna)
Sector Equipment					

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1		2		3			4	
Antenna Model	Commscope_VV-65A-R1 (Quad)		AIR 6419 B41 (Active Antenna - Massive MIMO)		RFS - APXVAALL24_43-U-NA20 (Octo)			Empty Antenna Mount (Empty mount)	
Azimuth	0		0		0				
M. Tilt	0		0		0				
Height	146		146		146				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	
Active Tech.	L2100, L1900, G1900	L2100, L1900, G1900	L2500, N2500	L2500, N2500	L700, L600, N600	L700, L600, N600			
Dark Tech.									
Restricted Tech.									
Decomm. Tech.									
E. Tilt	2	2	2	2	2	2			
Cables	Coax Jumper **(x2)**, Fiber Jumper **(x2)**	Coax Jumper **(x2)**, Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Coax Jumper **(x2)**, Fiber Jumper	Coax Jumper **(x2)**, Fiber Jumper			
TMAs									
Diplexers / Combiners									
Radio	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)			Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)			
Sector Equipment									

Unconnected Equipment:

Scope of Work:

There will be three antennae per sector.

Replace AIR21 B2P/B4A with (1) Comm-scope VV-65A-R1 in Position 1.

Add (1) Radio 4460 B25+B66 for L2100, L1900 (Both Carriers) and U2100 at Position 1.

Install (1) AIR6419 B41 for L2500 and N2500 in Position 2.

Install (1) Low-Band/Mid-Band Octo in Position 3.

Add (1) Radio 4480 B71+B85 for L600, L700, and N600 in Position 3 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Sector 2 (Existing) view from behind					
Coverage Type	A - Outdoor Macro				
Antenna	**1**		**2**	**3**	**4**
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	120				120
M. Tilt	0				0
Height	102				102
Ports	**P1**	**P2**			**P3**
Active Tech.	L1900 G1900	U2100			L700
Dark Tech.					
Restricted Tech.					
Decomm. Tech.					
E. Tilt	2	2			2
Cables	1-5/8" LMU Coax - 150 ft.	1-5/8" Coax - 150 ft.			1-5/8" Coax
TMAs	Generic Twin Style 1A - PCS (AtAntenna)	Generic Twin Style 1B - AWS (AtAntenna)			
Diplexers / Combiners					
Radio					RRUS11 B12 (At Antenna)
Sector Equipment					

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2		3			4
Antenna Model	Commscope_VV-65A-R1 (Quad)		AIR 6419 B41 (Active Antenna - Massive MIMO)		RFS - APXVAALL24_43-U-NA20 (Octo)			Empty Antenna Mount (Empty mount)
Azimuth	120		120		120			
M. Tilt	0		0		0			
Height	146		146		146			
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2100, L1900, G1900	L2100, L1900, G1900	L2500, N2500	L2500, N2500	L700, L600, N600	L700, L600, N600		
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2	2	2		
Cables	Coax Jumper **(x2)**, Fiber Jumper **(x2)**	Coax Jumper **(x2)**, Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Coax Jumper **(x2)**, Fiber Jumper	Coax Jumper **(x2)**, Fiber Jumper		
TMAs								
Diplexers / Combiners								
Radio	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)			Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

There will be three antennae per sector.

Replace AIR21 B2P/B4A with (1) Comm-scope VV-65A-R1 in Position 1.

Add (1) Radio 4460 B25+B66 for L2100, L1900 (Both Carriers) and U2100 at Position 1.

Install (1) AIR6419 B41 for L2500 and N2500 in Position 2.

Install (1) Low-Band/Mid-Band Octo in Position 3.

Add (1) Radio 4480 B71+B85 for L600, L700, and N600 in Position 3 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Sector 3 (Existing) view from behind

Coverage Type	A - Outdoor Macro				
Antenna	**1**		**2**	**3**	**4**
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	240				240
M. Tilt	0				0
Height	102				102
Ports	**P1**	**P2**			**P3**
Active Tech.	L1900 G1900	U2100			L700
Dark Tech.					
Restricted Tech.					
Decomm. Tech.					
E. Tilt	2	2			2
Cables	1-5/8" LMU Coax - 150 ft.	1-5/8" Coax - 150 ft.			1-5/8" Coax
TMAs	Generic Twin Style 1A - PCS (AtAntenna)	Generic Twin Style 1B - AWS (AtAntenna)			
Diplexers / Combiners					
Radio					RRUS11 B12 (At Antenna)
Sector Equipment					

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1		2		3			4	
Antenna Model	Commscope_VV-65A-R1 (Quad)		AIR 6419 B41 (Active Antenna - Massive MIMO)		RFS - APXVAALL24_43-U-NA20 (Octo)			Empty Antenna Mount (Empty mount)	
Azimuth	240		240		240				
M. Tilt	0		0		0				
Height	146		146		146				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	
Active Tech.	L2100 L1900 G1900	L2100 L1900 G1900	L2500 N2500	L2500 N2500	L700 L600 N600	L700 L600 N600			
Dark Tech.									
Restricted Tech.									
Decomm. Tech.									
E. Tilt	2	2	2	2	2	2			
Cables	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper			
TMAs									
Diplexers / Combiners									
Radio	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)			Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)			
Sector Equipment									

Unconnected Equipment:

Scope of Work:

There will be three antennae per sector.

Replace AIR21 B2P/B4A with (1) Comm-scope VV-65A-R1 in Position 1.

Add (1) Radio 4460 B25+B66 for L2100, L1900 (Both Carriers) and U2100 at Position 1.

Install (1) AIR6419 B41 for L2500 and N2500 in Position 2.

Install (1) Low-Band/Mid-Band Octo in Position 3.

Add (1) Radio 4480 B71+B85 for L600, L700, and N600 in Position 3 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E5D998E ODE+6160	67E5998E_1xAIR+1OP+1QP

CTNH417A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage
Replacement_Colo Consolidation

Section 7 - Power Systems Equipment

Existing Power Systems Equipment
----- This section is intentionally blank. -----

	Proposed Power Systems Equipment
Enclosure	**1**
Enclosure Type	Enclosure 6160 AC V1

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTNH417A

New Hartford-Verizon colo
50 Rust Road
Barkhamsted, Connecticut 06063

July 27, 2022

EBI Project Number: 6222004701

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**31.65%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

July 27, 2022

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTNH417A - New Hartford-Verizon colo

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **50 Rust Road** in **Barkhamsted, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 50 Rust Road in Barkhamsted, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 1 LTE channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts per Channel.

4) 1 GSM channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 10 Watts per Channel.

5) 1 LTE channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 160 Watts per Channel.

6) 1 LTE channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 160 Watts per Channel.

7) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 45 Watts.

8) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 15 Watts.

9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 90 Watts.

10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 30 Watts.

11) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

12) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antennas used in this modeling are the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector A, the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector B, the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all

calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 146 feet above ground level (AGL).

15) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

16) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd	Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd	Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd
Height (AGL):	146 feet	Height (AGL):	146 feet	Height (AGL):	146 feet
Channel Count:	3	Channel Count:	3	Channel Count:	3
Total TX Power (W):	330.00 Watts	Total TX Power (W):	330.00 Watts	Total TX Power (W):	330.00 Watts
ERP (W):	12,545.15	ERP (W):	12,545.15	ERP (W):	12,545.15
Antenna A1 MPE %:	**2.30%**	Antenna B1 MPE %:	**2.30%**	Antenna C1 MPE %:	**2.30%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd
Height (AGL):	146 feet	Height (AGL):	146 feet	Height (AGL):	146 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts
ERP (W):	31,011.95	ERP (W):	31,011.95	ERP (W):	31,011.95
Antenna A2 MPE %:	**5.69%**	Antenna B2 MPE %:	**5.69%**	Antenna C2 MPE %:	**5.69%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd
Height (AGL):	146 feet	Height (AGL):	146 feet	Height (AGL):	146 feet
Channel Count:	3	Channel Count:	3	Channel Count:	3
Total TX Power (W):	160.00 Watts	Total TX Power (W):	160.00 Watts	Total TX Power (W):	160.00 Watts
ERP (W):	3,293.87	ERP (W):	3,293.87	ERP (W):	3,293.87
Antenna A3 MPE %:	**1.45%**	Antenna B3 MPE %:	**1.45%**	Antenna C3 MPE %:	**1.45%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	9.44%
AT&T	9.04%
Metro PCS	0.9%
Nextel	0.39%
Verizon	11.88%
Site Total MPE % :	31.65%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	9.44%
T-Mobile Sector B Total:	9.44%
T-Mobile Sector C Total:	9.44%
Site Total MPE % :	31.65%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	1	358.92	146.0	0.66	1900 MHz GSM	1000	0.07%
T-Mobile 1900 MHz LTE	1	5742.75	146.0	10.53	1900 MHz LTE	1000	1.05%
T-Mobile 2100 MHz LTE	1	6443.47	146.0	11.82	2100 MHz LTE	1000	1.18%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	9619.47	146.0	17.64	2500 MHz LTE 1C & 2C Traffic	1000	1.76%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	717.84	146.0	1.32	2500 MHz LTE 1C & 2C Broadcast	1000	0.13%
T-Mobile 2500 MHz NR Traffic	1	19238.94	146.0	35.29	2500 MHz NR Traffic	1000	3.53%
T-Mobile 2500 MHz NR Broadcast	1	1435.69	146.0	2.63	2500 MHz NR Broadcast	1000	0.26%
T-Mobile 600 MHz LTE	1	788.97	146.0	1.45	600 MHz LTE	400	0.36%
T-Mobile 600 MHz NR	1	1577.94	146.0	2.89	600 MHz NR	400	0.72%
T-Mobile 700 MHz LTE	1	926.96	146.0	1.70	700 MHz LTE	467	0.36%
						Total:	**9.44%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	9.44%
Sector B:	9.44%
Sector C:	9.44%
T-Mobile Maximum MPE % (Sector A):	9.44%
Site Total:	31.65%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **31.65%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.