1 NDUSTRIAL AVE,
S TE 3
M HWAH NJ 07430

P NE: 201.684.0055
F : 201.684.0066

Transcend Wireless

December 10, 2021

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

RE: Notice of Exempt Modification
125/127 Washington Ave, North Haven, CT 06473
Latitude: 41.397847222
Longitude: -72.8566916667
T-Mobile Site#: CTNH735A - Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 109' level of the 125' monopole located at 125/127 Washington Ave in North Haven, CT. The monopole is owned by American Tower and the property is owned by Candid Group LLC. T-Mobile now intends to replace six (6) of its existing antennas with three (3) L2500/N2500 antennas. The new antennas would be installed at the same 109' level of the tower. The new antennas support 5G services.

Planned Modifications:
Tower:
Install New:
(3) Ericsson AIR6449 B41 Antennas
(3) Radio 4449 B71 B85
(3) Radio 4460 B2 B25
(1) 1.99" Hybrid Cables

To Be Removed:
(6) Ericsson AIR21 Antennas
(3) Radio 4449 B12 B71
(3) KRY112 144 TMAs
(4) 1 1/4" Hybrid Cable
(9) 1 5/8" Coax Cables

To Remain:
(3) RFS APXVAARR24 Antennas
(3) 1 ⅝" Hybrid Cables

Ground Work:
Install (1) 6160 Equipment Cabinet and (1) Battery Cabinet B160
Remove (1) Nortel Cabinet

This facility was approved by the Town of North Haven on August 12, 1998, with no record of conditions that would restrict exempt modifications. Therefore, this modification complies with the aforementioned approval. A copy of the approval is attached.

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 Michael Freda, Elected Official, and Laura Magarci, Zoning Enforcement Office, as well as the property and tower 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: Michael Freda - First Selectman of North Haven
Laura Magarci - Zoning Enforcement Office

Candid Group LLC - Property Owner
American Towers - Tower Owner

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

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

MA 018 9-04

UPS GROUND

TRACKING #: 1Z V25 742 03 9371 3601

BILLING: P/P

Reference #1: CTNH735A

XOL 21.11.24 NV45 50.0A 12/2021*

TM

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
CANDID GROUP LLC
110 WASHINGTON AVENUE
NORTH HAVEN CT 06473

CT 065 2-03

UPS GROUND

TRACKING #: 1Z V25 742 03 9007 1597

BILLING: P/P

Reference #1: CTNH735A

XOL 21.11.24 NV45 50.0A 12/2021*

TM

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
LAURA MAGARCI
18 CHURCH STREET
NORTH HAVEN CT 06473

CT 065 2-03

UPS GROUND
TRACKING #: 1Z V25 742 03 9629 6816

BILLING: P/P

Reference #1: CTNH735A

XOL 21.11.24 NV45 50.0A 12/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
FIRST SELECTMAN
MICHAEL FREDA
18 CHURCH STREET
NORTH HAVEN CT 06473

CT 065 2-03

UPS GROUND
TRACKING #: 1Z V25 742 03 9415 9610

BILLING: P/P

Reference #1: CTNH735A

XOL 21.11.24 NV45 50.0A 12/2021*

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

Delivery Time: 11:00 AM

Left At: INSIDE DELIV

Signed by: DESK

TRANSCEND WIRELESS

Tracking Number:	1ZV257420390071597
Ship To:	CANDID GROUP LLC 110 WASHINGTON AVENUE NORTH HAVEN, CT 06473 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH735A

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

Delivery Time: 11:58 AM

Left At: OFFICE

Signed by: OFFICE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420394159610
Ship To:	MICHAEL FREDA 18 CHURCH STREET NORTH HAVEN, CT 06473 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH735A

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

Delivery Time: 11:49 AM

Left At: FRONT DESK

Signed by: ANCRI

TRANSCEND WIRELESS

Tracking Number:	1ZV257420393713601
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:	CTNH735A

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

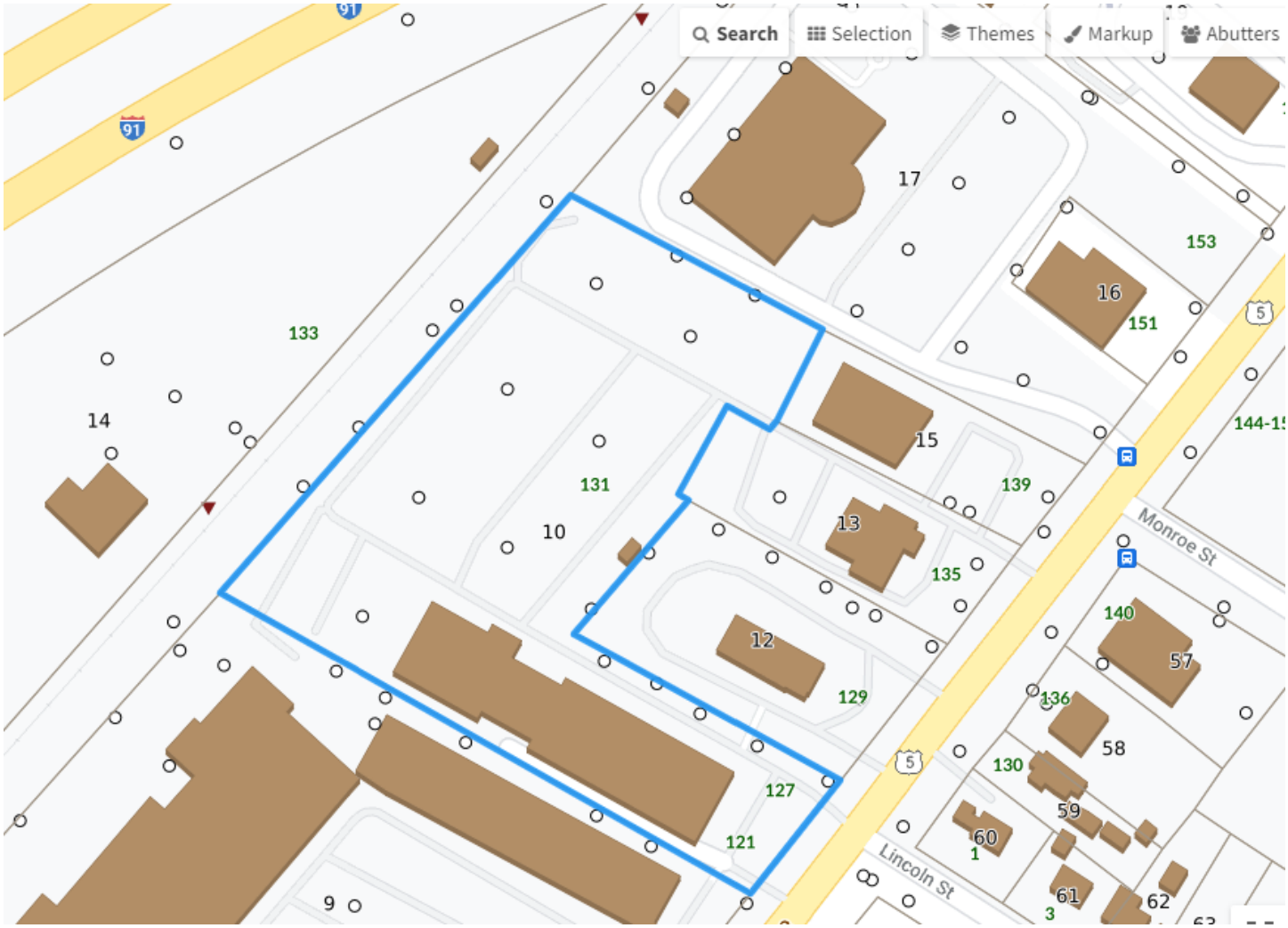
Delivery Time: 11:58 AM

Left At: OFFICE

Signed by: OFFICE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420396296816
Ship To:	LAURA MAGARCI 18 CHURCH STREET NORTH HAVEN, CT 06473 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH735A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Lincoln St
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3
9

Parcel Information

Location:	127 WASHINGTON AVE	Property Use:	Office	Primary Use:	Office Building
Unique ID:	199995	Map Block Lot:	073 010	Acres:	4.53
490 Acres:	0.00	Zone:	IL30	Volume / Page:	0500/0398
Developers Map / Lot:		Census:	0		
Location:	127 WASHINGTON AVE	Property Use:	Office	Primary Use:	Office Building
Unique ID:	199995	Map Block Lot:	073 010	Acres:	4.53
490 Acres:	0.00	Zone:	IL30	Volume / Page:	0500/0398
Developers Map / Lot:		Census:	0		

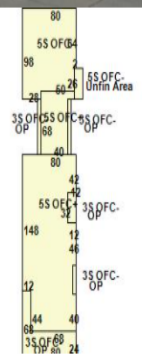
Value Information

	Appraised Value	Assessed Value
Land	939,788	657,850
Buildings	9,875,143	6,912,600
Detached Outbuildings	60,000	42,000
Total	10,874,931	7,612,450

Owner's Information

Owner's Data
CANDID GROUP LLC 110 WASHINGTON AVE NORTH HAVEN, CT 06473

Building 1



Category:	Office	Use:	Office Building	GLA:	135,052
Stories:	5.00	Construction:	Masonry	Year Built:	1987
Heating:	Forced Hot Air	Fuel:	Natural Gas	Cooling Percent:	100
Siding:	Pre-Cast Concrete	Roof Material:	Tar and Gravel	Beds/Units:	0

Special Features

Comm Frgt Elev	1
Comm Pass Elev	1
Wet Sprinklers	150000

Attached Components

Type:	Year Built:	Area:
Open Porch	1987	2,448
Open Porch	1987	300
Open Porch	1987	384
Open Porch	1987	192
Open Porch	1987	300
Unfinished Area	1987	408

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Paving	1987	0.00	0.00	60,000

Owner History - Sales

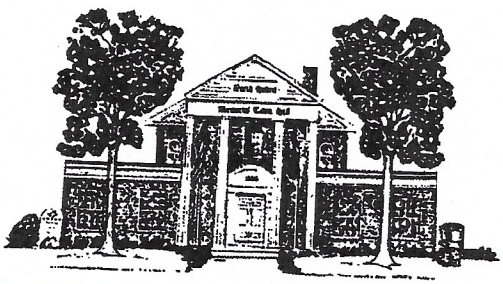
Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
CANDID GROUP LLC	0500	0398	11/27/1996		$0
LONGOBARDI VINCENT	0361	0982	12/16/1986		$0
LONGOBARDI VINCENT	0284	1060	07/02/1975		$0

Building Permits

Permit Number	Permit Type	Date Opened	Reason
B-20-2	Int Renovation	01/24/2020	ADDING (3) MEETING ROOMS AND RECEPTION WALL TO EXISTING SPACE
B-19-577	Solar	07/15/2019	SOLAR 256.65 KW SYSTEM
B-19-343	Int Renovation	05/08/2019	V-BRICK - REMOVE WALLS AND ADD INTERIOR TENANT FIT UP, WALLS AND CEILING
B-18-649	Roof	08/16/2018	REMOVE & REPLACE THE EXISTING ROOFING
B-17-541	Remodel	09/29/2017	B H CARE - CHANGE INTERIOR WALLS. BUILD CONFERENCE ROOM TO EXPAND EXISTING INTERIOR OFFICE
B-16-977	Commercial	12/23/2016	INTERIOR TENANT FIT-OUT - 4 OFFICES AND CONFERENCE ROOMS
B-16-384	Remodel	05/17/2016	RENOVATE EXISTING TENANT SPACE, ADD WALLS TO CREATE OFFICES - ELECTRICAL: $500 - PLUMBING: $1,000
B-15-831	Remodel	12/30/2015	DENTIST PHASE I 2ND FLOOR WEST
B-15-722	Remodel	10/29/2015	RENOVATE EXISTING BATHROOMS ON FIRST FLOOR. ELECTRICAL: $2,000, PLUMBING: $5,000
B-15-102	Commercial	04/01/2015	FIRST INVESTORS 2ND FLOOR EXISTING TENNANT RENOVATION
B-14-555	Commercial	10/31/2014	INSTALL PAD AND SMOKING HUT 10 X 15
B-14-463	Demolition	09/29/2014	EAST - INTERIOR DEMO OF WALLS
B-13-635	Commercial	10/17/2013	3RD FL E OFFICE SPACE - RENOV NEW OFFICE AREA
E-13-246	Commercial	08/20/2013	TENANT FIT OUT FOR 3RD FL WEST BH CARE
B-13-414	Residential	07/17/2013	BH CARE 3RD FL WEST TENANT FIT
B-13-241	Commercial	05/15/2013	MDA NEW TENANT 3RD FL WEST
B-12-486	Residential	08/22/2012	ADDING 3 LTE ANTENNAS TO EXISTING ARRAY
P-12-44	Plumbing	03/07/2012	
P-12-42	Plumbing	03/06/2012	
B-12-71	Commercial	02/15/2012	LOGISTICATE 4TH 5TH FL INTERIOR RENOVATION
B-12-48	Commercial	02/02/2012	4th Floor Renovation
P-11-769	Plumbing	07/20/2011	
P-11-768	Plumbing	07/19/2011	
B-11-0757	Commercial	06/30/2011	
E-11-0752	Electrical	06/30/2011	
E-11-0753	Electrical	06/30/2011	
0613	Commercial	06/10/2011	
E-11-0568	Electrical	05/31/2011	WIRING, REVAMP LIGHTING, LOW VOLTAGE
B-11-0530	Commercial	05/20/2011	EXPAND 3 OFFICES
B-10-0610	Commercial	07/09/2010	FIRE SIGN OFF 6/22/10
E-10-0611	Electrical	07/09/2010	WIRE NEW OFF SET UP
PL-10-0557	Plumbing	06/25/2010	RELOCATE SPRINKLER HEADS
PL-10-0503	Plumbing	06/18/2010	RELOC LUNCH RM SINK
E-10-0398	Electrical	05/20/2010	LOW VOLT NEW TENANT

B-10-0354	Commercial	05/12/2010	TENANT FIT
E-10-0355	Electrical	05/12/2010	NEW TENANT
E-08-1193	Electrical	11/13/2008	163366 MAIN SWITCH / INTERIOR
08-0173	Miscellaneous	03/10/2008	2ND FL DIVIDE
08-0153	Miscellaneous	02/28/2008	ELECTRICAL
08-0097	Miscellaneous	02/08/2008	TELE COMM EQUIP
06-1482	Miscellaneous	12/12/2006	HVAC INST 3000
04-0201	Miscellaneous	03/08/2004	PLUMB CITIZENS
04-0137	Miscellaneous	02/09/2004	ELECTRICAL
04-0041	Miscellaneous	01/13/2004	CONST 2 OFFICES
03-0934	Miscellaneous	09/17/2003	ADD ANTENNA-3 P
7478	Miscellaneous	07/05/2000	INTERIOR OFFICE

CT-5040
ZA



TOWN OF NORTH HAVEN

MEMORIAL TOWN HALL / 18 CHURCH STREET
NORTH HAVEN, CONNECTICUT 06473

REPLY TO: PLANNING & ZONING COMMISSION

Tel. (203) 239-5321
Fax (203) 234-2130

August 12, 1998

Mr. Vincent A. Longobardi
110 Washington Avenue
North Haven, CT 06473

Re: #P98-46 Special Permit application of Vincent A. Longobardi, relative to 125T Washington Avenue (Rear), Ferro Lane. Plan Entitled: Proposed Monopole Tower With Service Building, North Haven, Connecticut, Prepared By Vincent C. Amore, Registered Architect, Dated June 10, 1996, Revised June 30, 1998. Scale 1" = 30'. IL-20/IL-30 Zoning Districts.

Dear Mr. Longobardi:

Please be advised that during the deliberation session of the Planning & Zoning Commission meeting held on Monday, August 3, 1998, the Commission unanimously voted to approve the above referenced application subject to the following conditions:

1. Submit three (3) revised plans which include:
   a.) The title block must reference the nature of the application, i.e., "#P98-46, Special Permit, Section 3.3 - Required Lot Frontage".
   b.) Address/include all conditions of the related site plan approval #P98-47.

In accordance with the Connecticut State Statutes, Section 8-3d, the Special Permit is not effective until a certified copy of the Commission's decision has been recorded on the Land Records, at the owner's expense. Accordingly, you must record this certified decision letter at the Town Clerk's Office, 18 Church Street, North Haven, CT. Immediately after filing with the Town Clerk, please submit a copy of the decision letter, stamped as recorded, to the Land Use Office, for our permanent record.

Please note that one (1) set of revised drawings should be submitted for review after all outstanding issues (conditions of approval as set forth above), are adequately addressed. If there are any questions relative to the conditions of approval, please call the Town prior to submitting the revised plans. This will avoid costly and time consuming revisions and reviews, therefore expediting the process for you as the applicant.

This approval is subject to compliance with any and all Zoning Regulations of the Town of North Haven.

You may not proceed with this approval until you have received a signed plan from the Land Use Office.

Very truly yours,

Jeanne Pulleyn

Jeanne Pulleyn, Secretary
Planning & Zoning Commission

JP/ts
cc: First Selectman
Engineering Dept.
Building Dept.
CERTIFIED MAIL R/R

Approved

BUILDING PERMIT

No 06792

USE PENCIL OR BALLPOINT PEN. PRESS HARD TO GO THROUGH THE 3 COPIES.

The undersigned hereby applies for permission to construct the same to be in all respects in accordance with the laws and Building Regulations of the State of Connecticut, and the Town of North Haven, and as set forth in the accompanying drawings and specification in so far as the same shall be found not to conflict with the aforesaid State and Town Laws and Building Regulations.

Date Sept. 8, 1998

Location 125 Washington Ave Zone 11-20 11-80

Interior Lot X Corner Lot Lot Area Frontage 35

Front yard set back 75 Right side yard Left side yard Rear

Dimensions of main building — Front — Side —

Dimensions of attached garage — Detached — Basememt —

Materials of Footing Concrete Width 24" Depth 6' Ft. below grade 5'

Type of building: Single fam. - Office Factory - Gas Station - Com. Garage

Const. Type: Frame - Brick - Conc. Block - Veneer - Steel as per plan

Exterior: Clpd. - Wd. Shingle - Brick Com. - Alum. Siding Mono Pole + Tower Foundation only

Roofing material: Asph. Sh. - Wood Shingle - Built up - Comp.

Roof Type Hip - Gambrel - Flat - Shed - Roof pitch

Floor Const: Wood Joist - Concrete - Steel / Flooring: Hardwood - Carpet

Floor Joist: 1st floor span Size /2nd floor span Size

Ceiling Joist span Size Roof rafter span Size Girder

Plate Studs Column Size Post Sill

Fireplaces Flue Size Damper Size Chimneys Flue Size

Cellar: Full - part - none - Floor: Concrete - Dirt

Interior: Plas. - Gyp. Bd. - Wood - Ins. Bd. - Lay out - Cond.

No. Bedrooms Bath rooms Toilet rooms Total rooms

Total sq. ft. of building Est. Cost $ 99,000 Fee $ 594.00

Attic Insulation size Side wall Insulation size

Applicant's Name (Please Print) Vincent Longobardi

Address 110 Washington Ave North Haven CT 06473

Phone (203) 239-5991

Owner's Name (Please Print) Same

Address

Phone

Building Official John R. Wall

The owner of this building or the authorized agent agree to conform to all applicable laws of this jurisdiction.

Signature of owner Vincent A. Longobardi Authorized agent

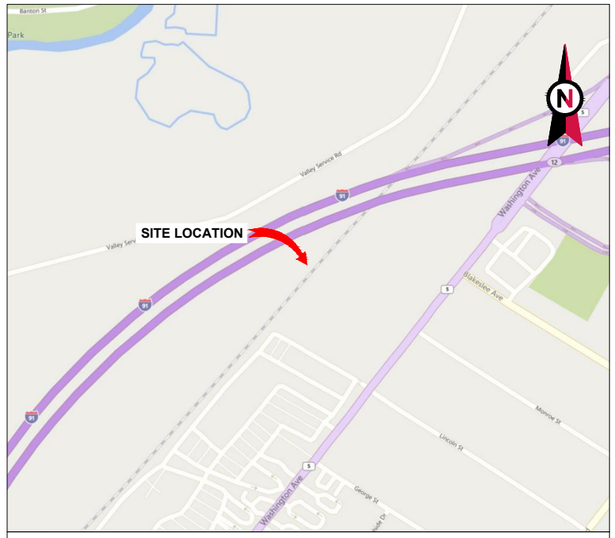
Made oath that the statements herein are true and correct and in the event that the final cost shall exceed that stated herein a further fee based on the revised estimate will be paid.

on this 8th day of September 1998

Notary Public

My Commission Expires March 31, 19

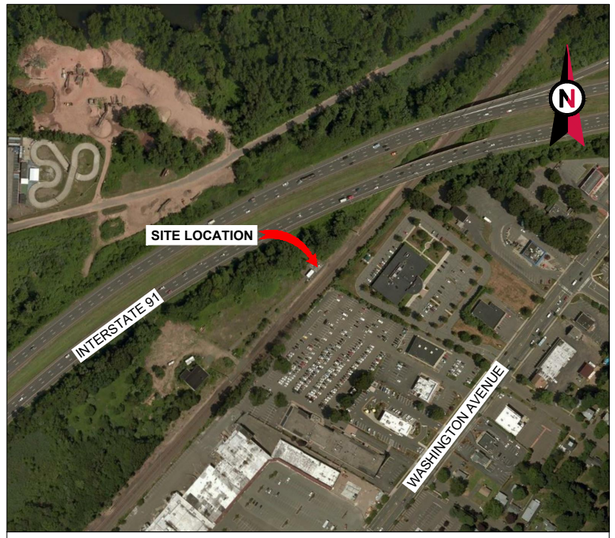
GLORIA GIANO
NOTARY PUBLIC
MY COMMISSION EXPIRES JUNE 30, 2003



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: NORTHHAVEN I
ATC SITE NUMBER: 370629
T-MOBILE SITE NAME: CT11051 REPLACEMENT
T-MOBILE SITE NUMBER: CTNH735A
SITE ADDRESS: 125 WASHINGTON AVE
NORTH HAVEN, CT 06473



LOCATION MAP

T-MOBILE ANCHOR ANTENNA AMENDMENT PLAN
67D5A998E OUTDOOR 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. CT STATE BUILDING CODE, INCORPORATING THE 2018 INTERNATIONAL BUILDING CODE
2. 2017 NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: UNITED ILLUMINATED
PHONE: (877) 251-9959

TELEPHONE COMPANY: FRONTIER COMMUNICATIONS
PHONE: (800) 376-6843

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

PROJECT SUMMARY

SITE ADDRESS:

125 WASHINGTON AVE

NORTH HAVEN, CT 06473

COUNTY: NEW HAVEN

GEOGRAPHIC COORDINATES:

LATITUDE: 41.39783333

LONGITUDE: -72.85666667

GROUND ELEVATION: 36' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

ENGINEER:

COLLIERS ENGINEERING & DESIGN CT, P.C.
135 NEW ROAD
MADISON, CT 06443

PROJECT#:
21904527A

PROPERTY OWNER:

CANDID ASSOCIATES LLC
125 WASHINGTON AVE
NORTH HAVEN, CT 06473

APPLICANT:

T-MOBILE

PROJECT DESCRIPTION

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

TOWER WORK:

REMOVE (6) ANTENNA(s), (3) RRH(s), (3) TTA(s), (4) HYBRID CABLE(s) AND (9) COAX CABLE(s)

INSTALL (3) ANTENNA(s), (6) RRH(s) AND (1) HYBRID TRUNK CABLE(s)

EXISTING (3) ANTENNA(s) AND (3) HYBRID CABLE(s) TO REMAIN

GROUND WORK:

REMOVE (1) NORTEL CABINET

INSTALL (1) ENCLOSURE 6160 AND (1) B160 BATTERY CABINET

EXISTING (1) RBS 6131 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

FROM DOWNTOWN NEW HAVEN CT START OUT GOING NORTHEAST ON CHURCH ST TOWARD WALL ST. TURN LEFT ONTO GROVE ST. TAKE THE 2ND LEFT ONTO COLLEGE ST. TURN SLIGHT RIGHT ONTO CONGRESS AVE. TURN LEFT ONTO CEDAR ST. TAKE THE 1ST LEFT ONTO WASHINGTON AVE. 127 WASHINGTON AVE, NEW HAVEN, CT 06519-1616, 127 WASHINGTON AVE IS ON THE LEFT.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	1	12/01/21	JLK
G-002	GENERAL NOTES	1	12/01/21	JLK
C-101	DETAILED SITE PLAN	1	12/01/21	JLK
C-102	DETAILED GROUND PLAN	1	12/01/21	JLK
C-201	TOWER ELEVATION	1	12/01/21	JLK
C-401	ANTENNA INFORMATION & SCHEDULE	1	12/01/21	JLK
C-501	CONSTRUCTION DETAILS	1	12/01/21	JLK
E-501	GROUNDING DETAILS	1	12/01/21	JLK
E-502	ELECTRICAL DETAILS	1	12/01/21	JLK
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
R-605	SUPPLEMENTAL			

AMERICAN TOWER®

Colliers Engineering & Design
www.colliersengineering.com
Doing Business as MASER CONSULTING
MADISON
135 New Road
Madison, CT 06443
Phone: 860.395.0055
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/29/21
0	FOR CONSTRUCTION	RMD	10/08/21
1	FOR CONSTRUCTION	RMD	12/01/21

ATC SITE NUMBER:
370629

ATC SITE NAME:
NORTHHAVEN I

T-MOBILE SITE NAME:
CT11051 REPLACEMENT

SITE ADDRESS:
125 WASHINGTON AVE
NORTH HAVEN, CT 06473

SEAL:

Digitally signed by Eric Anderson
Date: 2021.12.01 19:20:38-05'00'

COA: JPC.0000131

T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	1

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 OD COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND
   - B. INSTALL ANTENNA AS INDICATE ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
   - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS
   - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT TEST.
   - 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 GREED 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)

ELECTRICAL NOTES:

1. ELECTRICAL DESIGN SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. STRUCTURAL DESIGN SHALL BE PERFORMED BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL WORK COMPLIES WITH ALL APPLICABLE LOCAL AND STATE CODES AND NATIONAL ELECTRICAL CODE.
2. ALL SUGGESTED ELECTRICAL ELEMENTS (SUCH AS BREAKER SIZES, WIRE SIZES, CONDUITS SIZES ARE FOR ZONING PURPOSES ONLY. IT IS THE RESPONSIBILITY TO OF THE ELECTRICAL CONTRACTOR TO CONFIRM COMPLIANCE WITH LOCAL ELECTRICAL CODES AND PASS ALL APPLICABLE AND NECESSARY INSPECTIONS. IN SOME EVENTS, IT MAY BE NECESSARY TO PERFORM AN ELECTRICAL LOAD STUDY TO VERIFY THE CAPACITY OF THE EXISTING SERVICE. THIS IS NOT THE RESPONSIBILITY OF CONCORDIA. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
3. CONTRACTOR SHALL FIELD LOCATE ALL BELOW GRADE GROUND LINES AND UTILITY LINES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR RELOCATION OF ALL UTILITIES AND GROUND LINES THAT MAY BECOME DISTURBED OR CONFLICTING IN THE COURSE OF CONSTRUCTION.

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.

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REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/29/21
0	FOR CONSTRUCTION	RMD	10/08/21
1	FOR CONSTRUCTION	RMD	12/01/21

ATC SITE NUMBER:
370629

ATC SITE NAME:
NORTHHAVEN I

T-MOBILE SITE NAME:
CT11051 REPLACEMENT

SITE ADDRESS:
125 WASHINGTON AVE
NORTH HAVEN, CT 06473

SEAL:

STATE OF CONNECTICUT · ERIC A. ANDERSON · 32224 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by Eric Anderson
Date: 2021.12.01 19:20:40-05'00'

COA: JPC.0000131

T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	1

SITE PLAN NOTES:

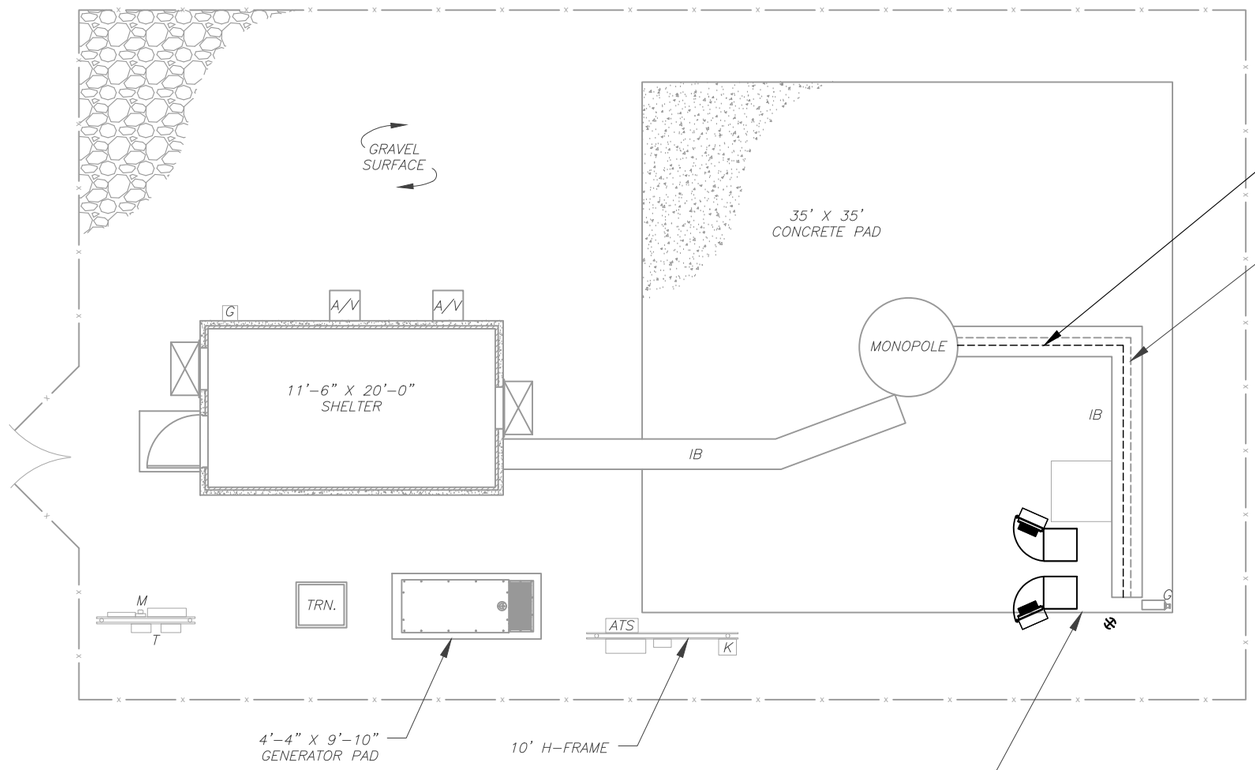
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

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. 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.

LEGEND

⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACLE
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
——x——	CHAINLINK FENCE



PROPOSED CABLE LENGTH:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **160'**. 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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A	PRELIM	JLK	09/29/21
0	FOR CONSTRUCTION	RMD	10/08/21
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ATC SITE NUMBER:
370629

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T-MOBILE SITE NAME:
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SITE ADDRESS:
125 WASHINGTON AVE
NORTH HAVEN, CT 06473

SEAL:

STATE OF CONNECTICUT · ERIC J. ANDERSON · 32224 · LICENSED PROFESSIONAL ENGINEER

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Date: 2021.12.01 19:20:42-05'00'

COA: JPC.0000131

T-Mobile

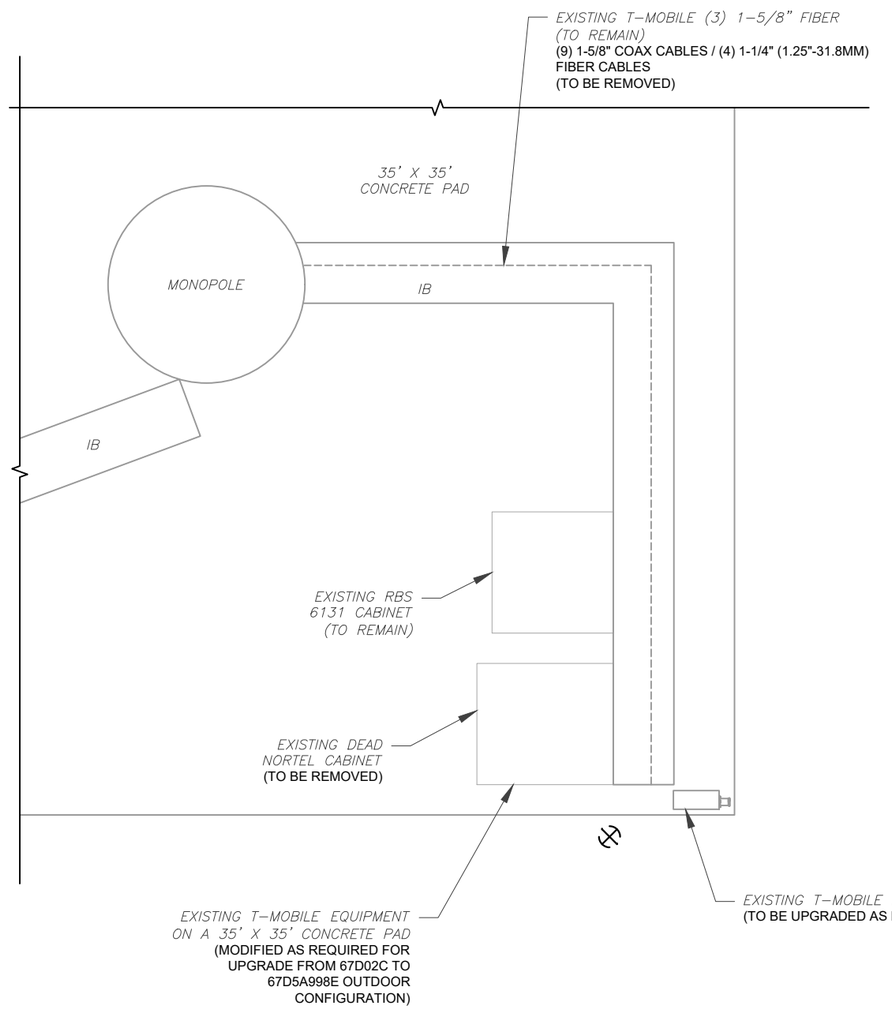
DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	1

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. REMOVE EXISTING 2G CABINETS, AND POWER / TELCO WHIPS ASSOCIATED WITH THE DEAD EQUIPMENT IF APPLICABLE.
3. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
4. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.

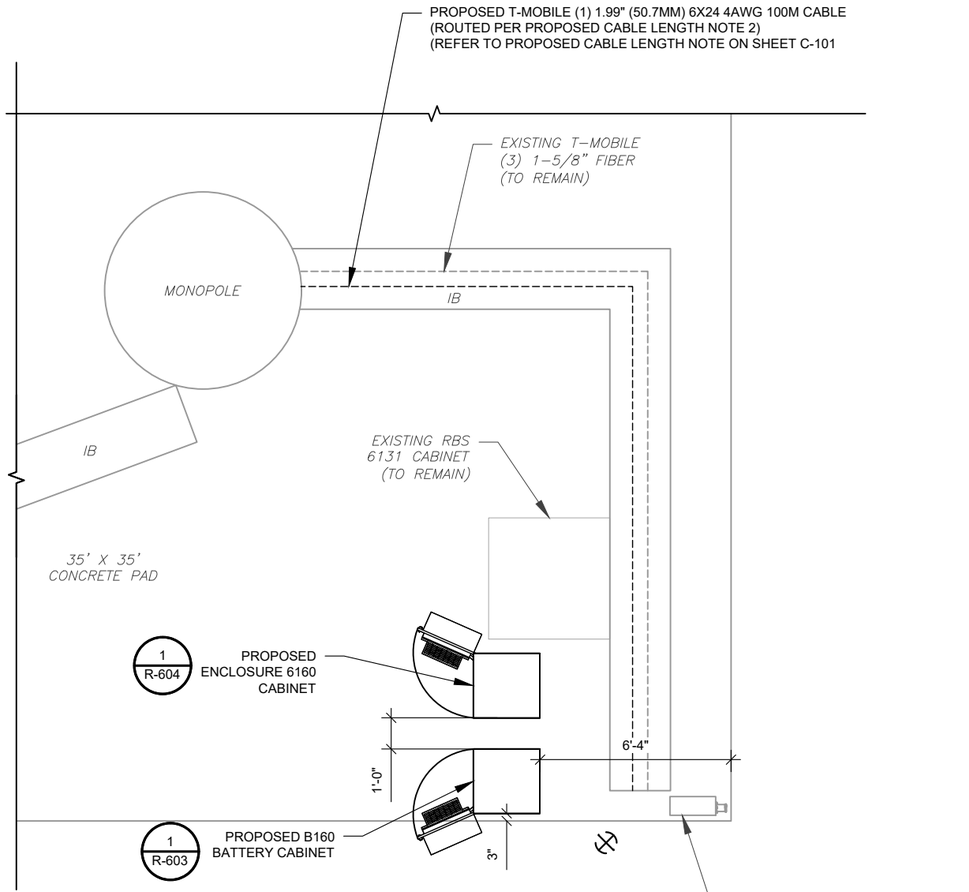


1 EXISTING GROUND EQUIPMENT LAYOUT

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)

T-MOBILE CM APPROVAL REQUIRED
BEFORE INSTALLING CABINETS



2 PROPOSED GROUND EQUIPMENT LAYOUT

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)

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1	FOR CONSTRUCTION	RMD	12/01/21

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SEAL:

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Date: 2021.12.01 19:20:45-05'00'

COA: JPC.0000131

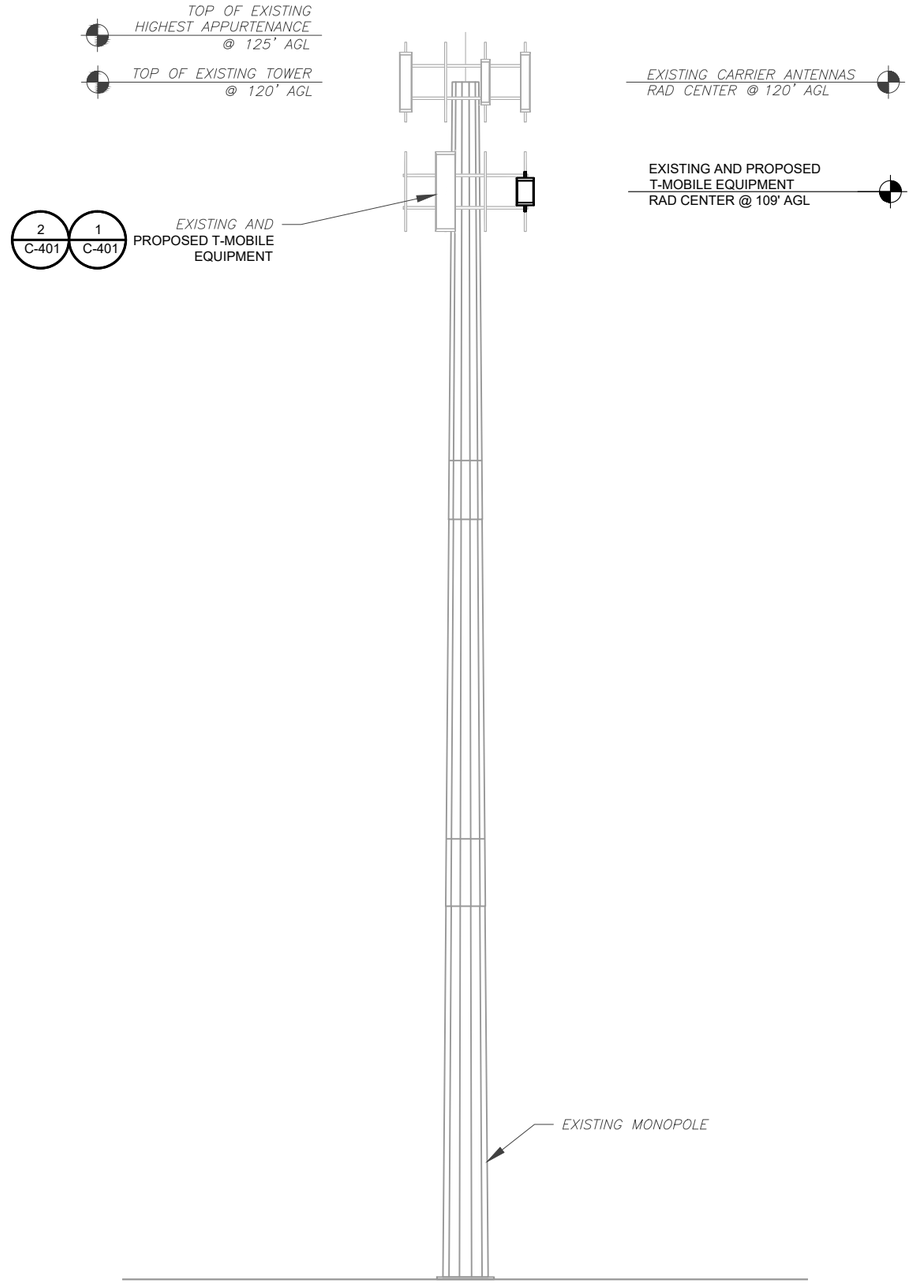
T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

DETAILED GROUND PLAN

SHEET NUMBER:	REVISION:
C-102	1

PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION, DATED 10/04/21, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.



1 TOWER ELEVATION
SCALE: N.T.S.

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.)

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SEAL:

STATE OF CONNECTICUT · ERIC J. ANDERSON · 32224 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by Eric Anderson
Date: 2021.12.01 19:20:47-05'00'

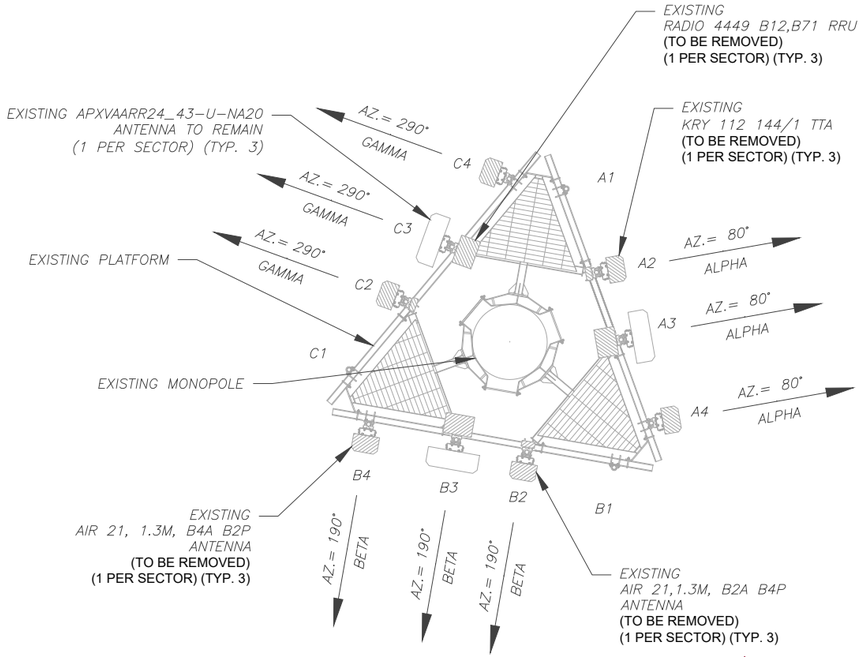
COA: JPC.0000131

T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

TOWER ELEVATION

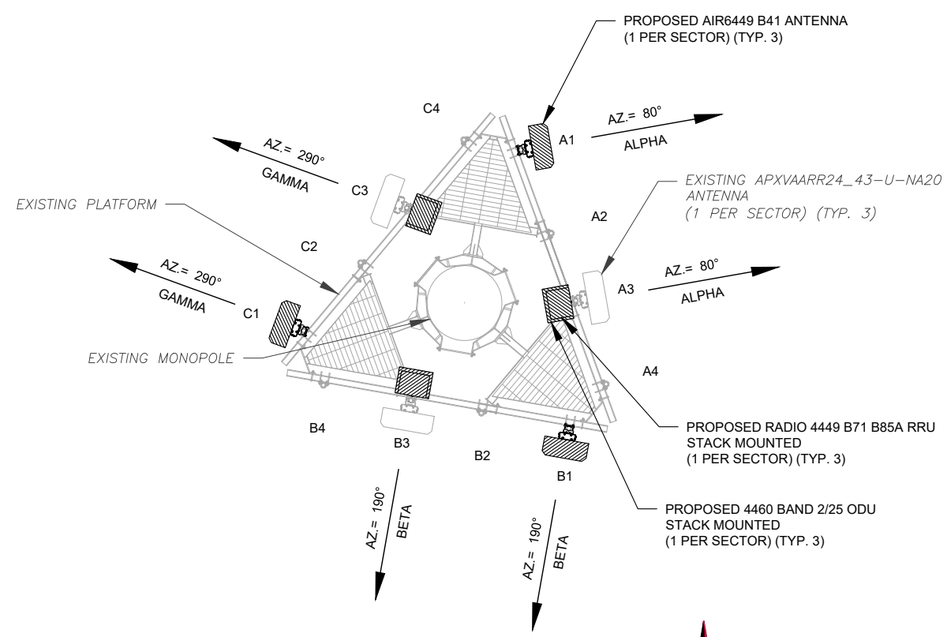
SHEET NUMBER:	REVISION:
C-201	1



1 EXISTING ANTENNA PLAN

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION, DATED 10/04/21, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.



2 FINAL ANTENNA PLAN

SCALE: N.T.S.

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	109'	80°	A1	–	–	–	–	–	–
			A2	AIR 21, 1.3M, B2A B4P	L1900/G1900 U2100	2/0/3	RMV	KRY 112 144/1	RMV
			A3	APXVAARR24_43-U-NA 20	L700/L600/N600	0/2/2	RMN	RADIO 4449 B12,B71	RMV
			A4	AIR 21, 1.3M, B4A B2P	L2100	2/3	RMV	–	–
BETA	109'	190°	B1	–	–	–	–	–	–
			B2	AIR 21, 1.3M, B2A B4P	L1900/G1900 U2100	2/0/3	RMV	KRY 112 144/1	RMV
			B3	APXVAARR24_43-U-NA 20	L700/L600/N600	0/2/2	RMN	RADIO 4449 B12,B71	RMV
			B4	AIR 21, 1.3M, B4A B2P	L2100	2/3	RMV	–	–
GAMMA	109'	290°	C1	–	–	–	–	–	–
			C2	AIR 21, 1.3M, B2A B4P	L1900/G1900 U2100	2/0/3	RMV	KRY 112 144/1	RMV
			C3	APXVAARR24_43-U-NA 20	L700/L600/N600	0/2/2	RMN	RADIO 4449 B12,B71	RMV
			C4	AIR 21, 1.3M, B4A B2P	L2100	2/3	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	109'	80°	A1	AIR6449 B41	L2500/N2500	0/2/2	ADD	-	-
			A2	-	-	-	-	-	-
			A3	APXVAARR24_43-U-NA 20	L700/L600/N600 U2100/L2100/L1900 G1900	0/2/2/2	RMN	4460 BAND 2/25 RADIO 4449 B71 B85A	ADD ADD
			A4	-	-	-	-	-	-
BETA	109'	190°	B1	AIR6449 B41	L2500/N2500	0/2/2	ADD	-	-
			B2	-	-	-	-	-	-
			B3	APXVAARR24_43-U-NA 20	L700/L600/N600 U2100/L2100/L1900 G1900	0/2/2/2	RMN	4460 BAND 2/25 RADIO 4449 B71 B85A	ADD ADD
			B4	-	-	-	-	-	-
GAMMA	109'	290°	C1	AIR6449 B41	L2500/N2500	0/2/2	ADD	-	-
			C2	-	-	-	-	-	-
			C3	APXVAARR24_43-U-NA 20	L700/L600/N600 U2100/L2100/L1900 G1900	0/2/2/2	RMN	4460 BAND 2/25 RADIO 4449 B71 B85A	ADD ADD
			C4	-	-	-	-	-	-

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	–	(3) 1-5/8" FIBER	RMN
–	–	(9) 1-5/8"	(4) 1-1/4" FIBER	RMV

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(3) 1-5/8" FIBER	RMN
-	-	-	(1) 1.99" (50.7MM) 6/24 4AWG 100M	ADD

3 EQUIPMENT SCHEDULES

AMERICAN TOWER®

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Madison, CT 06443
Phone: 860.395.0055
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/29/21
0	FOR CONSTRUCTION	RMD	10/08/21
1	FOR CONSTRUCTION	RMD	12/01/21

ATC SITE NUMBER:
370629

ATC SITE NAME:
NORTHHAVEN I

T-MOBILE SITE NAME:
CT11051 REPLACEMENT

SITE ADDRESS:
125 WASHINGTON AVE
NORTH HAVEN, CT 06473

SEAL:

Digitally signed by Eric Anderson
Date: 2021.12.01 19:20:50-05'00'

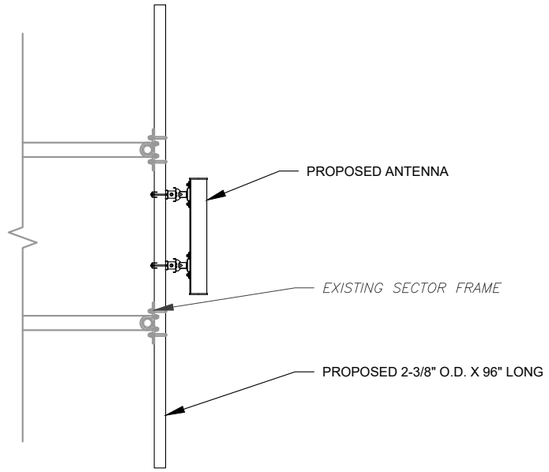
COA: JPC.0000131

T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

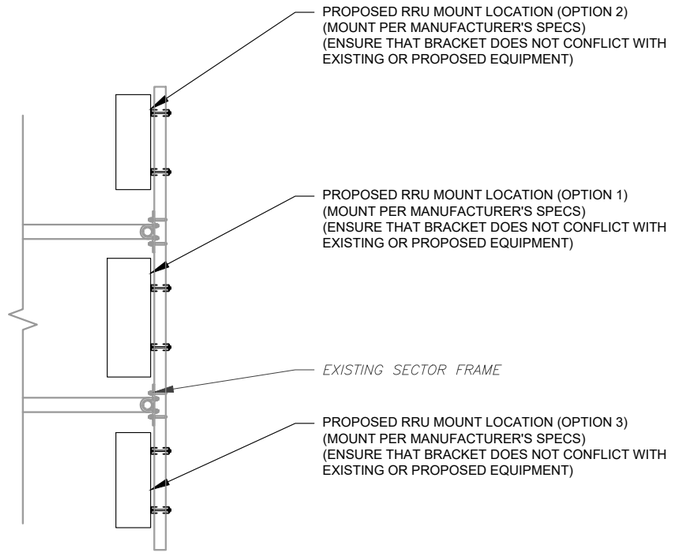
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	1



1 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



2 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.

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A	PRELIM	JLK	09/29/21
0	FOR CONSTRUCTION	RMD	10/08/21
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ATC SITE NUMBER:
370629

ATC SITE NAME:
NORTHHAVEN I

T-MOBILE SITE NAME:
CT11051 REPLACEMENT

SITE ADDRESS:
125 WASHINGTON AVE
NORTH HAVEN, CT 06473

SEAL:

STATE OF CONNECTICUT · ERIC J. ANDERSON · 32224 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by Eric Anderson
Date: 2021.12.01 19:20:52-05'00'

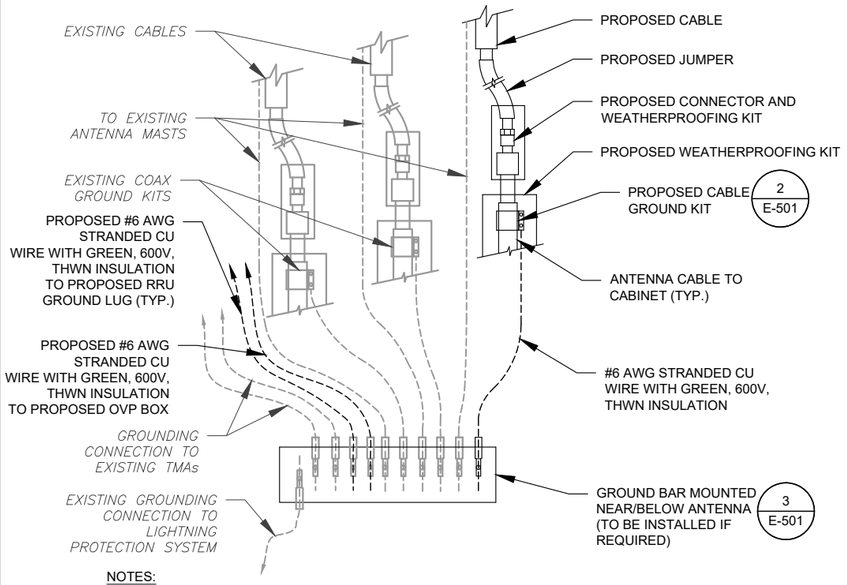
COA: JPC.0000131

T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	1

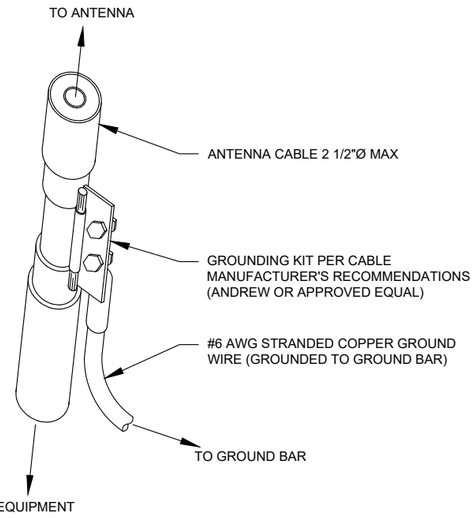


NOTES:

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.

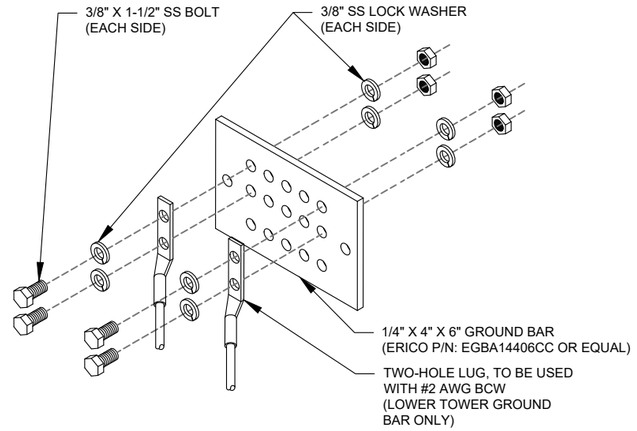


GROUND KIT NOTES:

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.

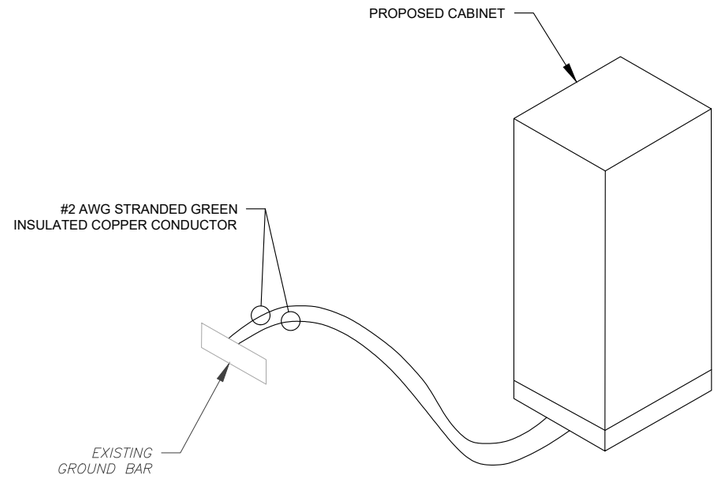
3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

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.

OCPD SIZE	WIRE SIZE	GROUND SIZE	CONDUIT SIZE
80A/2P	2#3 AWG	#8 AWG	1-1/4"
100/2P	2#2 AWG	#8 AWG	1-1/4"
125A/2P	2#1 AWG	#6 AWG	1-1/2"
150A/2P	2#1/0 AWG	#6 AWG	1-1/2"



4 CABINET GROUNDING DETAIL

SCALE: N.T.S.

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SEAL:

STATE OF CONNECTICUT · ERIC L. ANDERSON · 32224 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by Eric Anderson
Date: 2021.12.01 19:20:54-05'00'

COA: JPC.0000131

T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

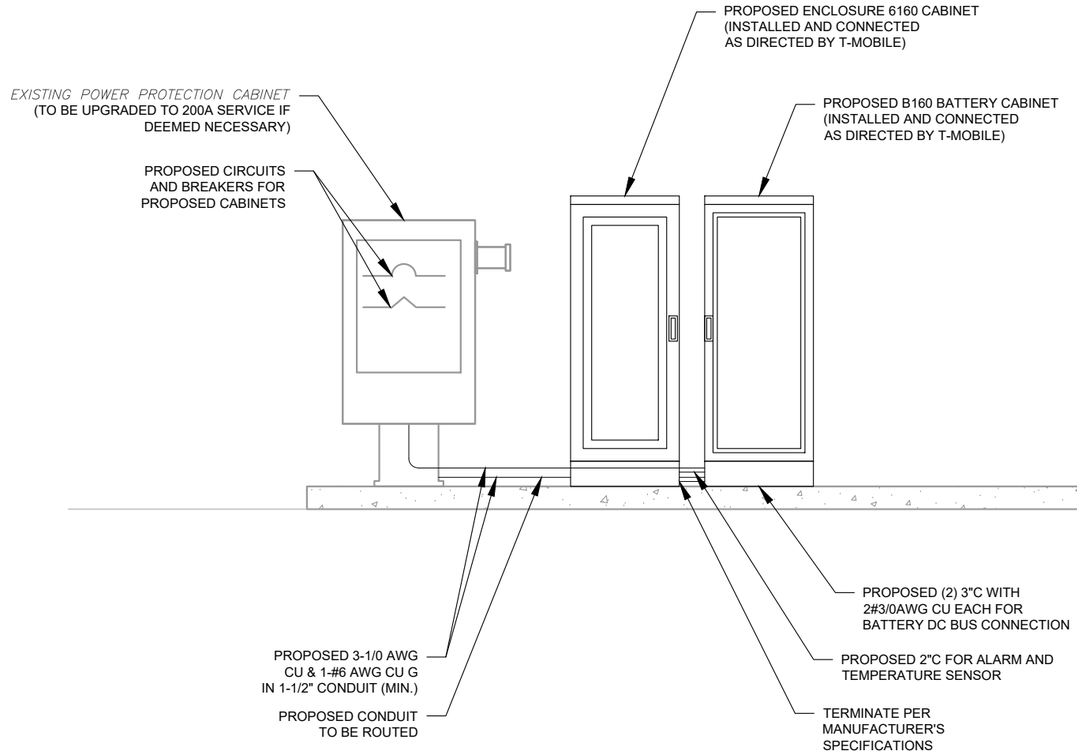
GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	1

NOTES:
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTSOF THE 2017 EDITION OF NATIONAL ELECTRICAL CODE (NEC), NATIONAL ELECTRICAL SAFETY CODE, NAPA, NETA, OSHA, AND ALL OTHER EXISTING CODES AND REGULATIONS OF AUTHORITIES WHICH WOULD HAVE JURISDICTION.

2. ALL NEW WIRING SHALL BE WITH THWN-2 OR XHHW-2 INSULATION AND RATED FOR 75 DEG CELSIUS.

3. ALL UNDERGROUND CONDUIT SHALL BE PVC SCH40. ALL ABOVE GROUND CONDUIT SHALL BE PVC SCH80 OR RMC.



1 ELECTRICAL UPGRADE DIAGRAM
SCALE: NOT TO SCALE

ELECTRICAL NOTES:

1. THIS DIAGRAM 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. 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.
3. ATC HAS NOT YET 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.

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SEAL:

STATE OF CONNECTICUT · ERIC T. ANDERSON · 32224 · LICENSED PROFESSIONAL ENGINEER

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Date: 2021.12.01 19:20:57-05'00'

COA: JPC.0000131

T-Mobile

DATE DRAWN:	09/29/21
ATC JOB NO:	13732379_G3
CUSTOMER ID:	CT11051 REPLACEMENT
CUSTOMER #:	CTNH735A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-502	1

Proposed RAN Equipment			
Template: 67D5A998E Outdoor			
Enclosure	**1**	**2**	**3**
Enclosure Type	RBS 6131	Enclosure 6160	B160
Baseband	DUW30 U2100; DUG20 G1900; BB 6630 L700 L600 N600; BB 6630 L2100 L1900	BB 6648 L2500 N2500	
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* **(x 3)**	PSU 4813 Ericsson Hybrid Trunk 6/24 4AWG 100m	
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Remove Nortel Cabinet.

Remove and return all cabinet radios from existing base station cabinet.

Add (1) Enclosure 6160.

Add (1) iXRe Router to new Enclosure 6160.

Add (1) BB6648 for L2500 and N2500 (MMBB - Mixed Mode Baseband) to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to new Enclosure 6160.

Add (1) Battery Cabinet B160.

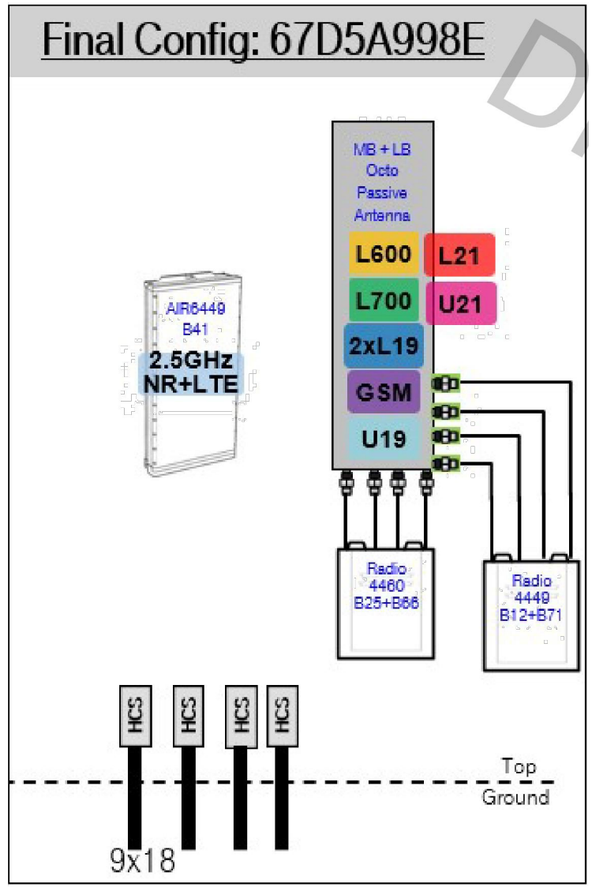
Existing : (3) 6X12 (1) 9x18 (Remove 1 - 9x18)

Add (1) 6X24 HCS terminating at the Enclosure 6160. Connect DC for the AIR6449 B41 to the PSU4813 Voltage Booster.

*** Install full platform with handrail kit. ***

1 CABINET CONFIGURATION

SCALE: NOT TO SCALE



2 ANTENNA CONFIGURATION

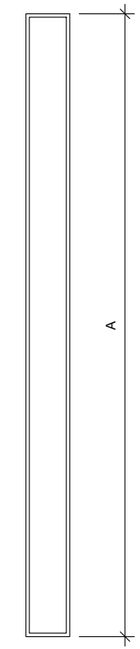
SCALE: NOT TO SCALE

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

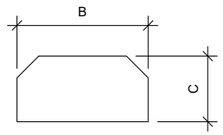
SUPPLEMENTAL

SHEET NUMBER: R-601

REVISION: -



FRONT VIEW

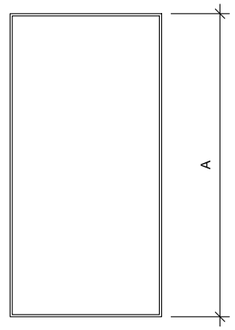


TOP VIEW

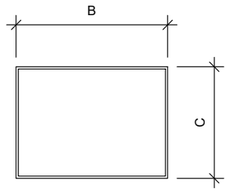
1 ANTENNA SPECIFICATIONS

FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
AIR6449 B41	33.1"	20.6"	8.6"	104.0



FRONT VIEW



TOP VIEW

2 RRU SPECIFICATIONS

FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

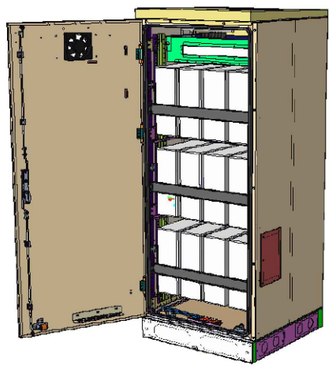
RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
RADIO 4449 B71 B85A	15.0"	13.2"	10.5"	75.0
RADIO 4460 B25/B66	19.6"	15.7"	12.1"	109.0

SUPPLEMENTAL

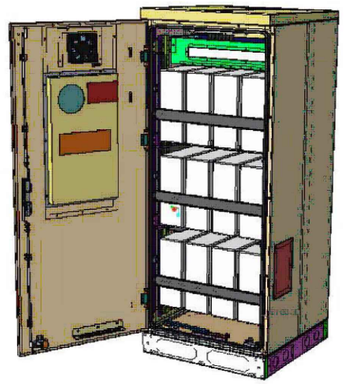
SHEET NUMBER: R-602

REVISION: -

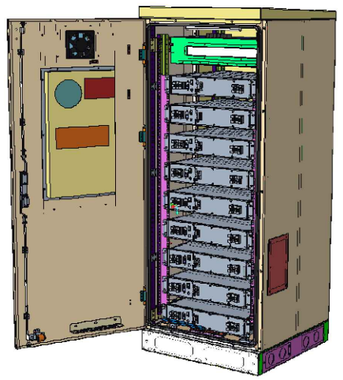
Enclosure B160



Enclosure B160
AirCon + VRLA



Enclosure B160
AirCon + Li-Ion



Enclosure B160
Convection Cooling
+ VRLA

Enclosure B160

Capacity
- VRLA 12V: 100Ah / 150Ah / 170Ah / 190Ah / 210Ah
- Li-Ion: 24U 19" / 23"
- Sodium-Nickel: 3x FIAMM

Electrical specification
- DC Output: -48VDC/200A
- Battery breakers: 2x 125/2p
- Alarms: Door open, Climate failure, MCB Connection

Mechanical specification
- Weight: 134kg
- Dimensions: 63 x 26 x 26 in. (incl. Base frame)
- Base frame height: 6 in.
- Material: Galvanized steel (180g/m^2)
- Color: Powder paint NCS 2002-B
- Door: Front access
- Locking type: Pad lock / cylinder

Environmental specification
- Ingress protection: VRLA/Sodium IP44
Li-Ion IP55
- Relative humidity: 15-100%

Climate system
- Air Conditioner
  - Fan type: DC
  - Cooling capacity: 500W @L35/L35
- Convection cooling
  - Emergency fan

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SUPPLEMENTAL

SHEET NUMBER: R-603

REVISION: -

Enclosure 6160 AC

The Enclosure 6160 is a multi-purpose site cabinet designed to support a multitude of equipment such as ERS Baseband, Transport, Li-Ion battery and 3PP vendor equipment. It also provides a highly capable power system and battery back-up - all in a streamlined design and minimized footprint to support cost efficient expansion of mobile broadband.

Being an all-in-one enclosure, the Enclosure 6160 is a very fitting choice for all types of sites where the capacity need is large or room for future expansion is needed. It is ideally used for modernizing existing sites or in greenfield scenarios to match both current and future needs.

With a robust design, IP65 compliance and a sealed Heat Exchanger (HEX) climate system the Enclosure 6160 ensures optimal environmental protection of the active equipment - enabling them for a long-lasting service. The complete system is also integrated and verified for the entire Ericsson Radio System and ensures best-in-class service.

The power system offers 31,5kW of power in total and provides 24kW of -48V DC power for both internal and external consumers.

The equipment space allows 19U of rack space ensuring well enough capacity for existing need and future expansion.

One of the main advantages of the Enclosure 6160 is its default integration with ENM - allowing for advanced remote monitoring and control such a fault management (alarms), inventory management and performance measurements. The cabinet also provides an open O&M interface for integration to 3PP O&M systems.

Preliminary technical specification for Enclosure 6160 AC

CAPACITY	
Rack space user equipment	19U (19" rack)
Hardware capabilities	Power and CPRI support for multi-standard remote radios (RRU or AIR) ERS Baseband and Transport units Li-Ion batteries 3PP equipment Additional power feed available as option
MECHANICAL SPECIFICATION	
Weight	145 kg (excluding active equipment) 320 lbs (excluding active equipment)
Dimension (H x W x D)	1600 x 650 x 650 mm (incl. Base frame) 63 x 26 x 26 in. (incl. Base frame)
Base frame height	150 mm 6 in.
Mounting position	Ground
Enclosure material	Aluminum
Color	Power paint NCS 2002-B
Door	Front access
Rack type	19" (IEC 60297-3-100)
Locking type	Pad lock or Cylinder
POWER SYSTEM	
Input voltage	3P+N+PE: 346/200-415/240 VAC 2P+N+PE: 208/120-220/127 VAC 1P+N+PE: 200-250 VAC
Input power	<33kW
Output load (-48VDC)	24kW
Total capacity (-48VDC)	31.5kW
AC SPD	Class 2/Type 2
DC SPD	Class 2/Type 2
PSU Slots	9x
Service outlet	Optional
Priority load	8x Circuit Breaker
LLVD 1	6x Circuit Breaker
LLVD 2	6x Circuit Breaker
CB ratings	3A / 5A / 10A / 15A / 20A / 25A / 30A / 40A / 50A / 60A / 80A / 100A
Battery Interface	2x Circuit Breaker
Battery Circuit Breaker rating	125A 2pol (200A)
PSU capacity	3500W

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

SUPPLEMENTAL

SHEET NUMBER: R-604

REVISION: -

AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Site Name	:	**Northhaven I, CT**
ATC Site Number	:	**370629**
Engineering Number	:	**13732379_C8_01**
Mount Elevation	:	**108.5 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**CT11051 Replacement**
Carrier Site Number	:	**CTNH735A**
Site Location	:	**125 Washington Ave** **North Haven, CT 06473-0000** **41.39783333 , -72.85666667**
County	:	**New Haven**
Date	:	**October 4, 2021**
Max Usage	:	**43%**
Result	:	**Pass**

Prepared By:
Garrett Williams
Structural Engineer

Garrett Williams

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
06 Oct 2021 07:15:47 cosign

COA: PEC.0001553

Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
108.5	109.0	3	Ericsson Air6449 B41
		3	RFS APXVAARR24_43-U-NA20
		3	Ericsson Radio 4449 B71 B85A
		3	Ericsson 4460 BAND 2/25

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Horizontals	36%	Pass
Verticals	25%	Pass
Diagonals	16%	Pass
Mount Pipes	43%	Pass

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 VERIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONSTRUCTION.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-605	-

AMERICAN TOWER®
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Mount Analysis Report

ATC Site Name	:	**Northhaven I, CT**
ATC Site Number	:	**370629**
Engineering Number	:	**13732379_C8_01**
Mount Elevation	:	**108.5 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**CT11051 Replacement**
Carrier Site Number	:	**CTNH735A**
Site Location	:	**125 Washington Ave** **North Haven, CT 06473-0000** **41.39783333 , -72.85666667**
County	:	**New Haven**
Date	:	**October 4, 2021**
Max Usage	:	**43%**
Result	:	**Pass**

Prepared By:
Garrett Williams
Structural Engineer

Garrett Williams

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
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PROFESSIONAL ENGINEER

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COA: PEC.0001553

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Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 108.5 ft.

Supporting Documents

Specifications Sheet	Perfect Vision PV-SFA-B, dated January 19, 2017
Previous Analysis	CLS Engineering Project #41124-12927192-01-MR, dated April 12, 2019
Radio Frequency Data Sheet	RFDS ID #CTNH735A, dated August 16, 2021
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:	120 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1'' 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 = 0.204, 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. The mount 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.

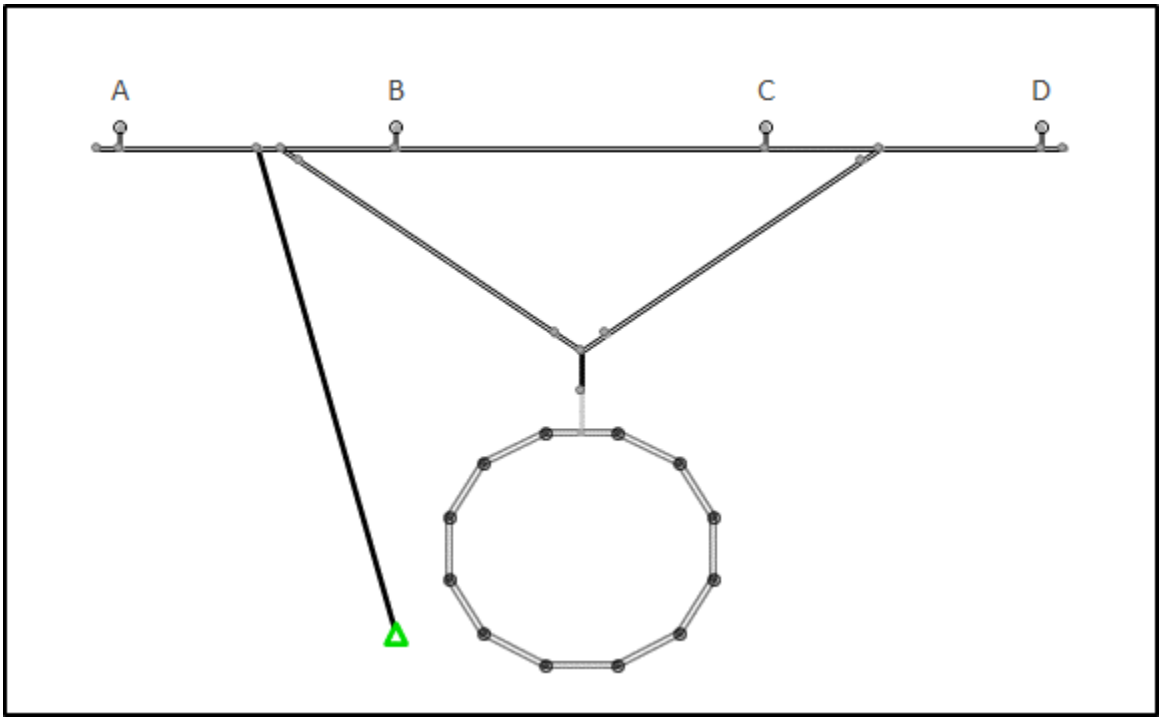
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
108.5	109.0	3	Ericsson Air6449 B41
		3	RFS APXVAARR24_43-U-NA20
		3	Ericsson Radio 4449 B71 B85A
		3	Ericsson 4460 BAND 2/25

Structure Usages

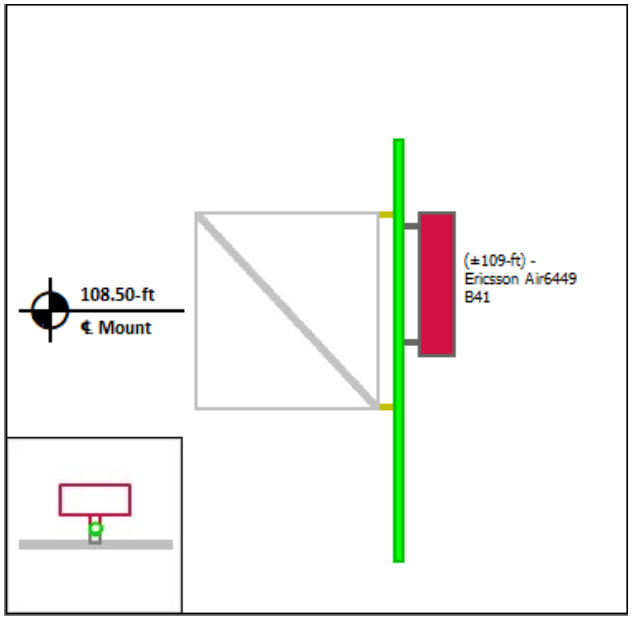
Structural Component	Controlling Usage	Pass/Fail
Horizontals	36%	Pass
Verticals	25%	Pass
Diagonals	16%	Pass
Mount Pipes	43%	Pass

Mount Layout

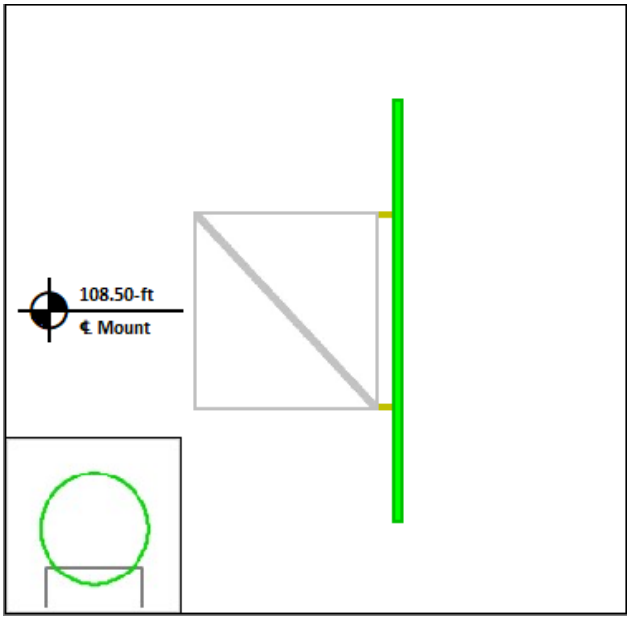


Equipment Layout

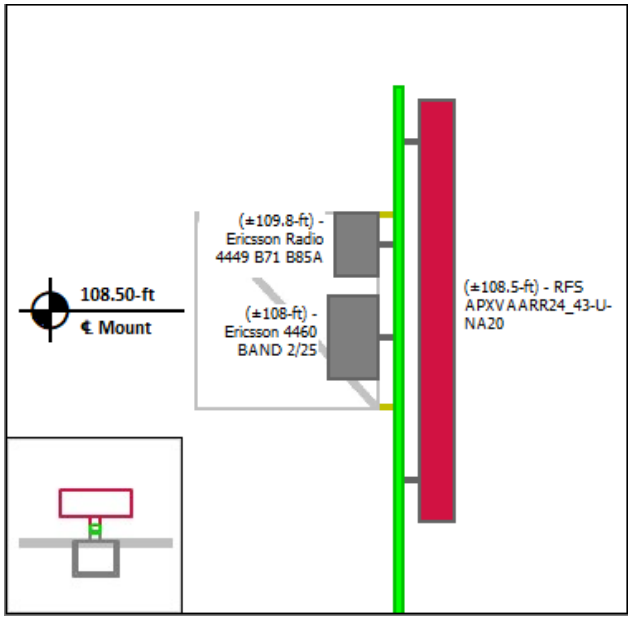
Mount Pipe A



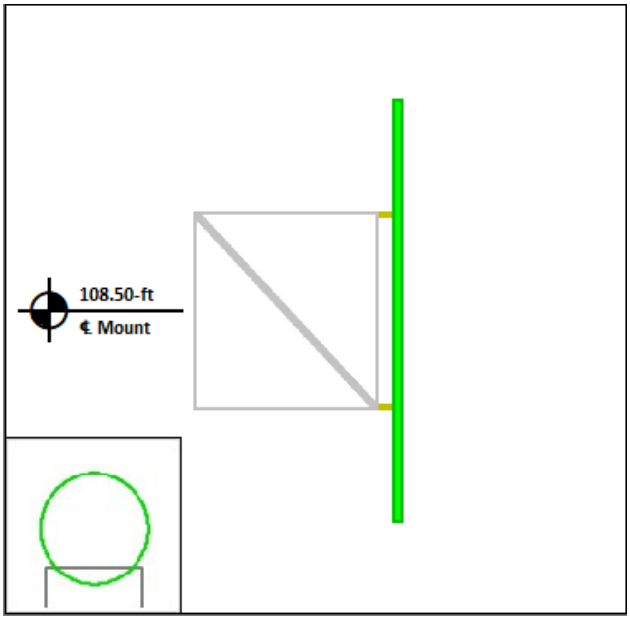
Mount Pipe B



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.

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Site Number:	*370629*
Project Number:	*13732379_C8_01*
Carrier:	*T-Mobile*
Mount Elevation:	*108.5 ft*
Date:	10/4/2021

Mount Analysis Force Calculations

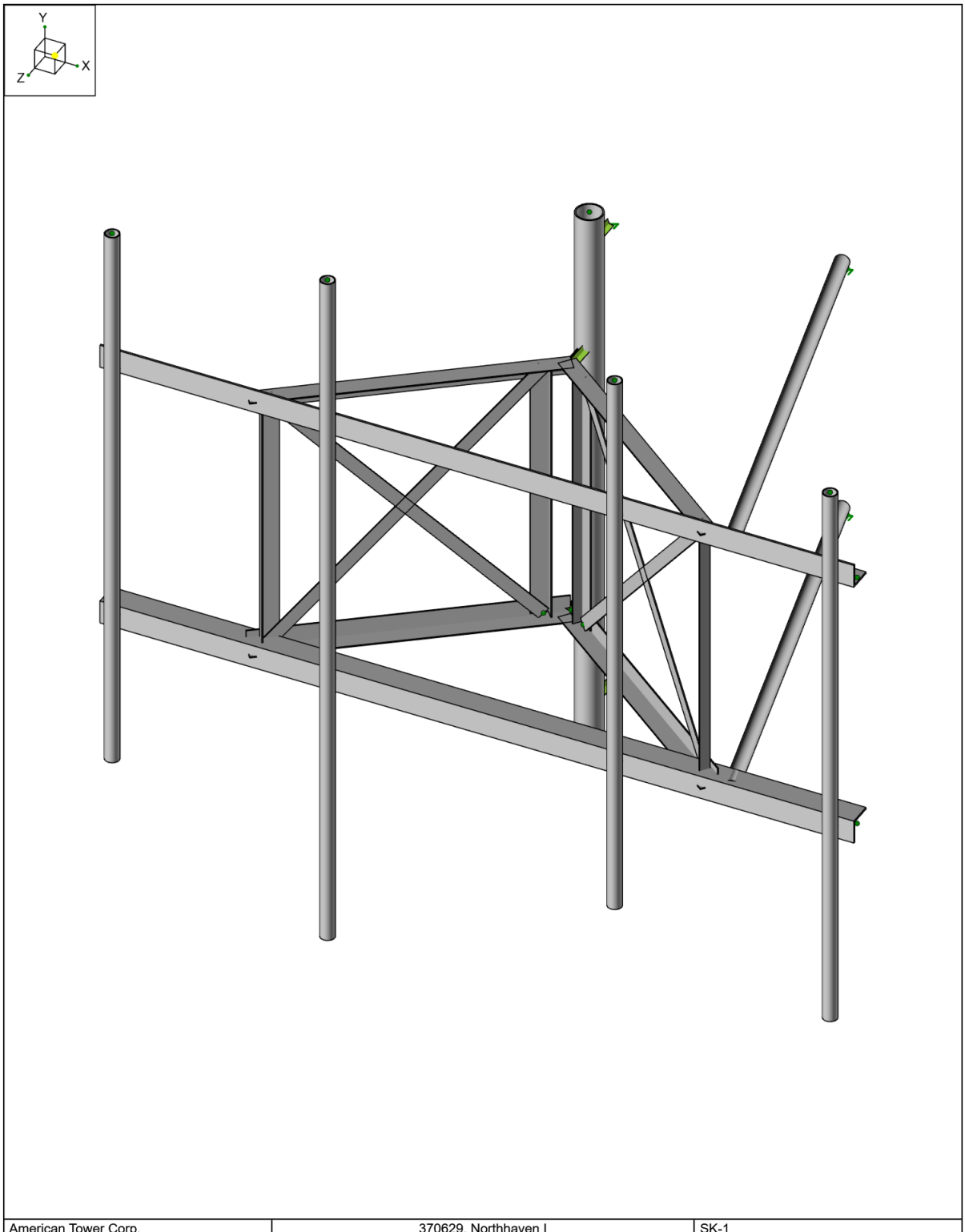
Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.01	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	1.00	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	120	mph
Velocity Pressure	q_z	35.4	psf
Height Escalation Factor	K_{iz}	1.13	
Thickness of Radial Glaze Ice	T_{iz}	1.13	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.218	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.109	
Amplification Factor	A	1.0	
Total Weight	W	1090.1	lbs
Total Shear Force	V_S	118.6	lbs
Horizontal Seismic Load	Eh	118.6	lbs
Vertical Seismic Load	Ev	47.4	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
Ericsson Air6449 B41	33.1	20.6	8.6	104.0	5.68	1.56	6.73	2.10
RFS APXVAARR24_43-U-NA20	95.9	24.0	8.7	127.9	20.24	3.48	22.66	4.48
Ericsson Radio 4449 B71 B85A	15.0	13.2	10.5	75.0	1.65	1.31	2.22	1.83
Ericsson 4460 BAND 2/25	19.6	15.7	12.1	109.0	2.56	1.98	3.27	2.61

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



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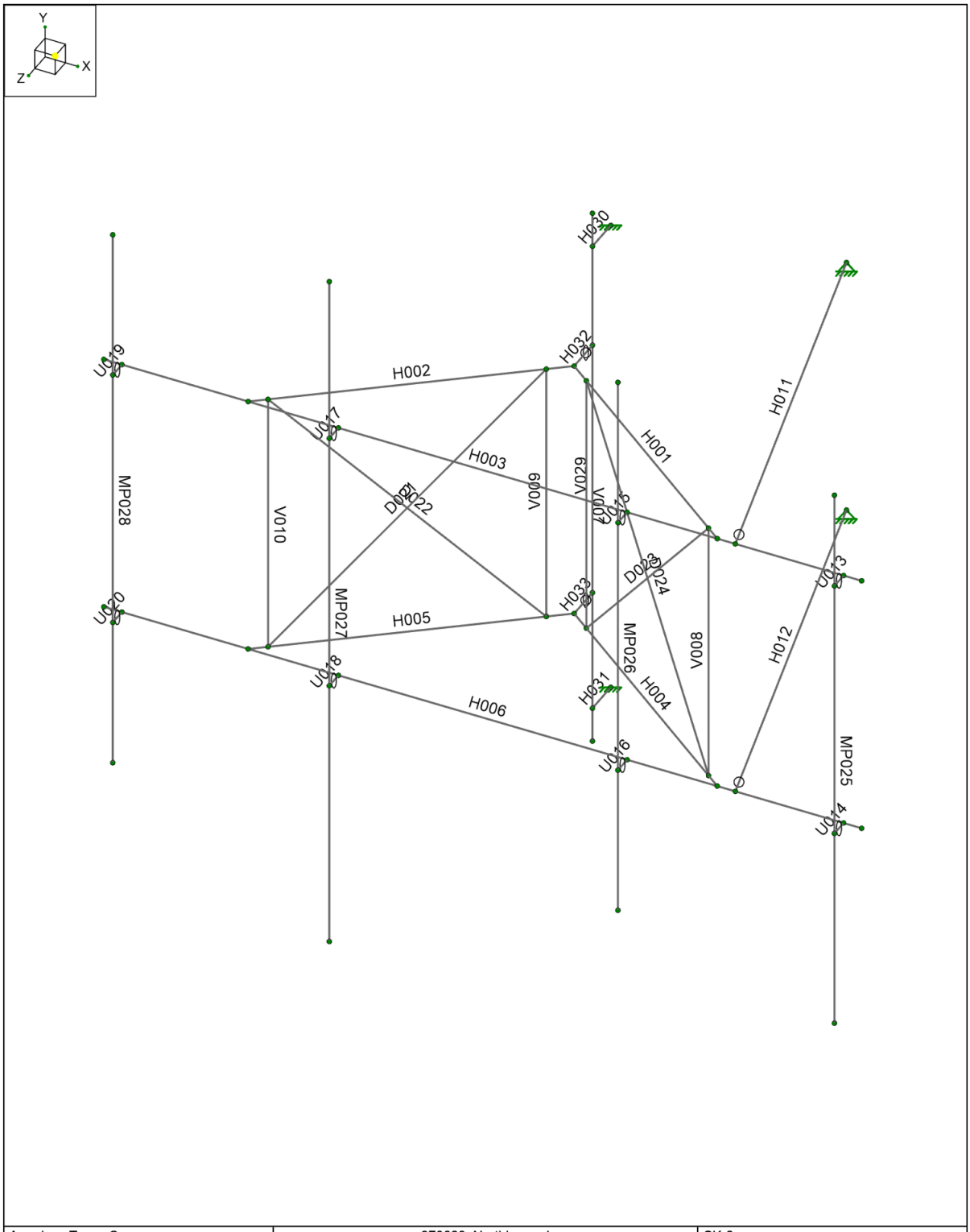
Garrett.Williams		Oct 04, 2021
13732379_C8_01		R3D. T-MOBILE @ 370629, Northhaven I…



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Garrett.Williams		Oct 04, 2021
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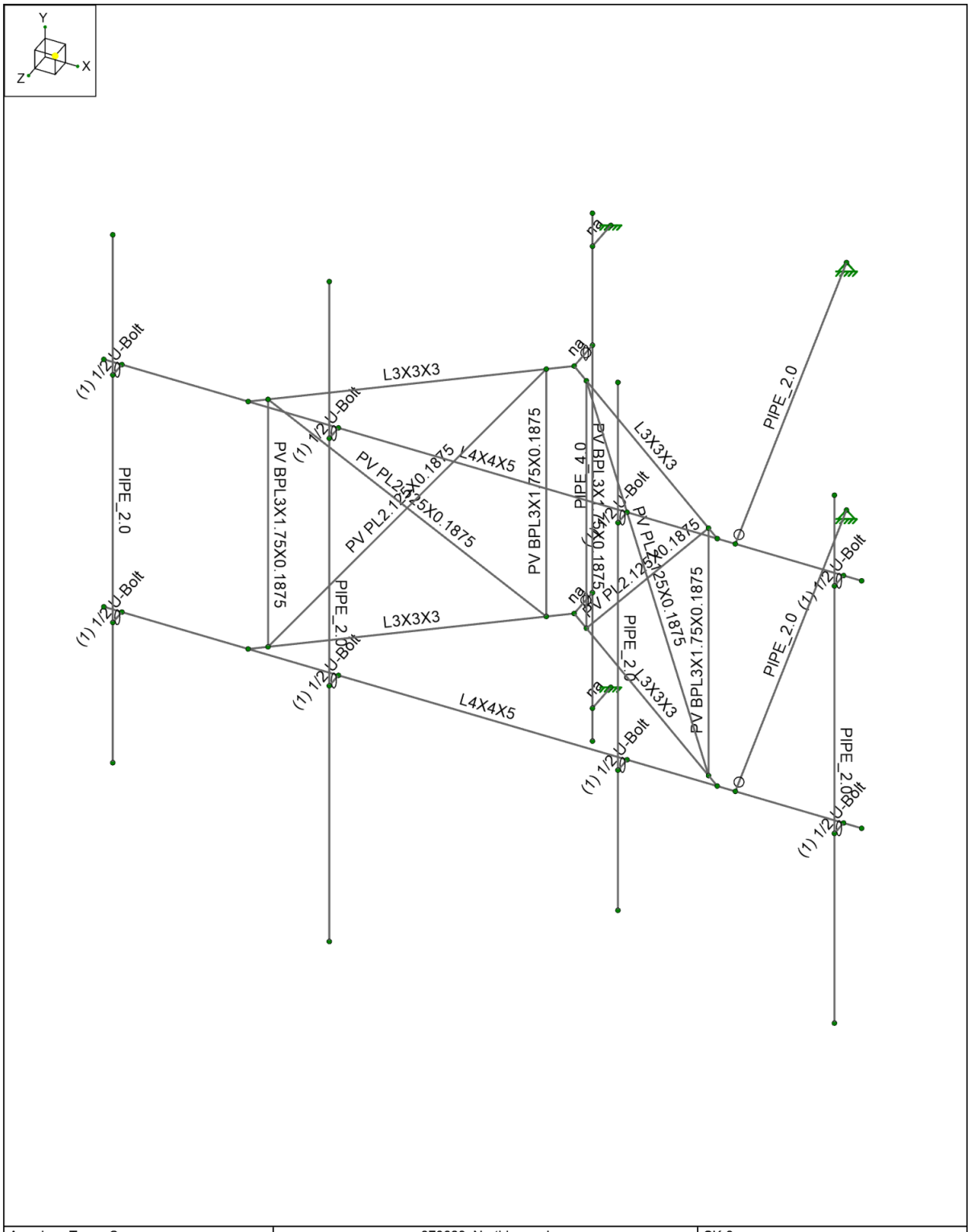

American Tower Corp.	370629, Northhaven I	SK-3
Garrett.Williams		Oct 04, 2021
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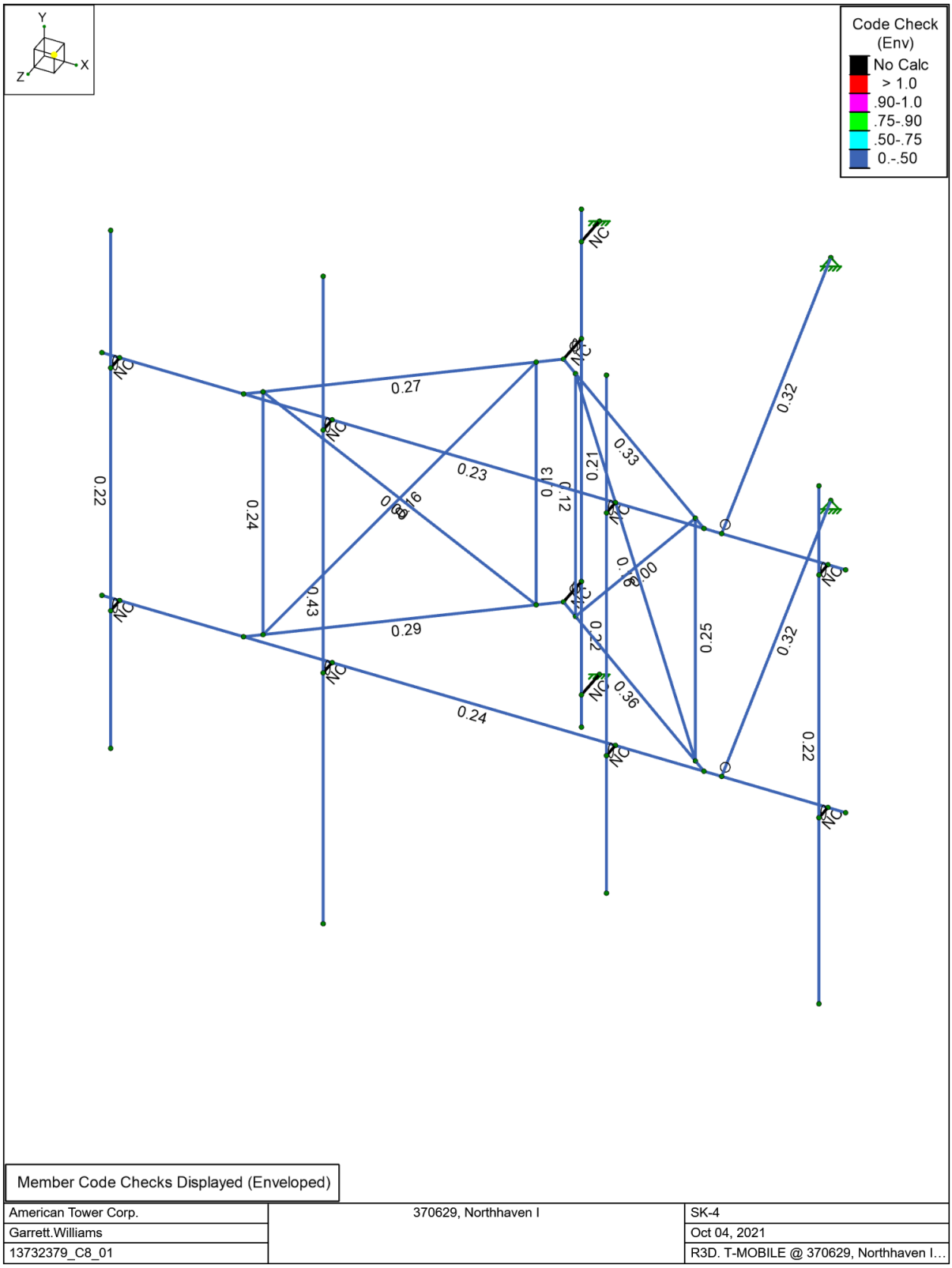
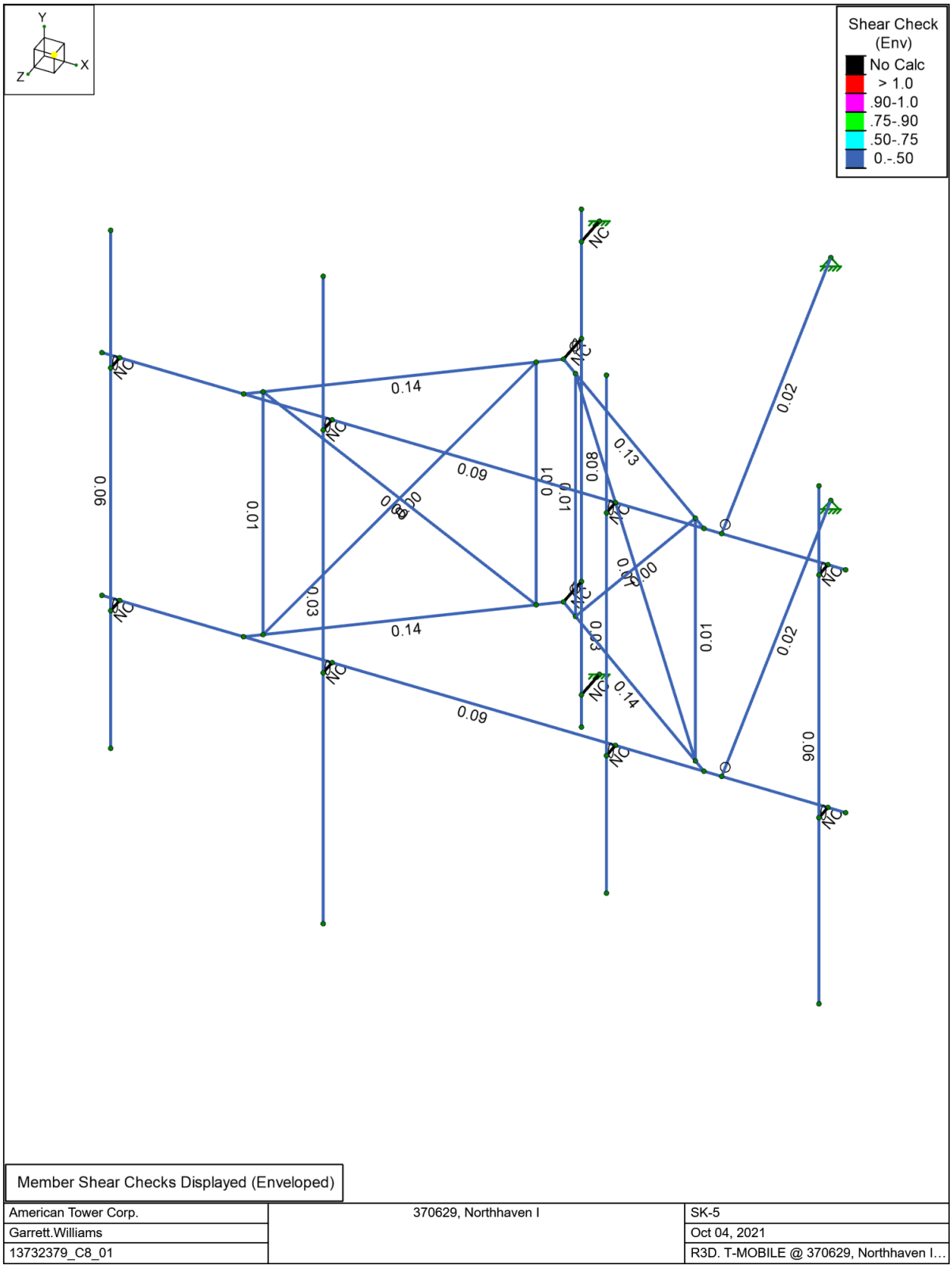

Y
X
Z
Code Check
(Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50
0.27
0.23
0.22
0.24
0.43
0.29
0.24
0.32
0.33
0.21
0.13
0.12
0.25
0.32
0.36
0.22
Member Code Checks Displayed (Enveloped)
American Tower Corp.
Garrett.Williams
13732379_C8_01
370629, Northhaven I
SK-4
Oct 04, 2021
R3D. T-MOBILE @ 370629, Northhaven I…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X
Z
Shear Check
(Env)
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0.-.50
NC
0.14
0.09
0.06
0.01
0.03
0.02
0.13
0.08
0.00
Member Shear Checks Displayed (Enveloped)
American Tower Corp.
Garrett.Williams
13732379_C8_01
370629, Northhaven I
SK-5
Oct 04, 2021
R3D. T-MOBILE @ 370629, Northhaven I…

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	N019	Reaction	Reaction	Reaction			
2	N022	Reaction	Reaction	Reaction			
3	N051	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N053	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N001	180	L3X3X3	Beam	None	A36	Typical
2	H002	N003	N001	90	L3X3X3	Beam	None	A36	Typical
3	H003	N004	N005		L4X4X5	Beam	None	A36	Typical
4	H004	N007	N006	270	L3X3X3	Beam	None	A36	Typical
5	H005	N008	N006		L3X3X3	Beam	None	A36	Typical
6	H006	N009	N010	90	L4X4X5	Beam	None	A36	Typical
7	V007	N014	N013	218	PV BPL3X1.75X0.1875	Column	None	A36	Typical
8	V008	N012	N011	322	PV BPL3X1.75X0.1875	Column	None	A36	Typical
9	V009	N018	N017	38	PV BPL3X1.75X0.1875	Column	None	A36	Typical
10	V010	N015	N016	142	PV BPL3X1.75X0.1875	Column	None	A36	Typical
11	H011	N020	N019		PIPE_2.0	Beam	None	A53 Gr. B	Typical
12	H012	N021	N022		PIPE_2.0	Beam	None	A53 Gr. B	Typical
13	U013	N023	N027		(1) 1/2 U-Bolt	Beam	None	A36	Typical
14	U014	N028	N029		(1) 1/2 U-Bolt	Beam	None	A36	Typical
15	U015	N024	N030		(1) 1/2 U-Bolt	Beam	None	A36	Typical
16	U016	N031	N032		(1) 1/2 U-Bolt	Beam	None	A36	Typical
17	U017	N025	N033		(1) 1/2 U-Bolt	Beam	None	A36	Typical
18	U018	N034	N035		(1) 1/2 U-Bolt	Beam	None	A36	Typical
19	U019	N026	N036		(1) 1/2 U-Bolt	Beam	None	A36	Typical
20	U020	N037	N038		(1) 1/2 U-Bolt	Beam	None	A36	Typical
21	D021	N017	N016		PV PL2.125X0.1875	Column	None	A36	Typical
22	D022	N018	N015		PV PL2.125X0.1875	Column	None	A36	Typical
23	D023	N011	N013		PV PL2.125X0.1875	Column	None	A36	Typical
24	D024	N012	N014		PV PL2.125X0.1875	Column	None	A36	Typical
25	MP025	N039	N040		PIPE_2.0	Column	None	A53 Gr. B	Typical
26	MP026	N041	N042		PIPE_2.0	Column	None	A53 Gr. B	Typical
27	MP027	N043	N044		PIPE_2.0	Column	None	A53 Gr. B	Typical
28	MP028	N045	N046		PIPE_2.0	Column	None	A53 Gr. B	Typical
29	V029	N049	N048		PIPE_4.0	Column	None	A53 Gr. B	Typical
30	H030	N051	N050		RIGID	None	None	RIGID	Typical
31	H031	N053	N052		RIGID	None	None	RIGID	Typical
32	H032	N047	N001		RIGID	None	None	RIGID	Typical
33	H033	N054	N006		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	N/A		None
2	H002			Yes	N/A		None
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	N/A		None
6	H006			Yes	N/A		None
7	V007			Yes	** NA **		None
8	V008			Yes	** NA **		None
9	V009			Yes	** NA **		None
10	V010			Yes	** NA **		None
11	H011	BenPIN		Yes	N/A		None
12	H012	BenPIN		Yes	N/A		None
13	U013	OOOXOO		Yes	Default	Exclude	None
14	U014	OOOXOO		Yes	Default	Exclude	None
15	U015	OOOXOO		Yes	Default	Exclude	None
16	U016	OOOXOO		Yes	Default	Exclude	None
17	U017	OOOXOO		Yes	Default	Exclude	None
18	U018	OOOXOO		Yes	Default	Exclude	None
19	U019	OOOXOO		Yes	Default	Exclude	None
20	U020	OOOXOO		Yes	Default	Exclude	None
21	D021		Tension Only	Yes	** NA **		None
22	D022		Tension Only	Yes	** NA **		None

Member Advanced Data (Continued)

	Label	I Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
23	D023		Tension Only	Yes	** NA **		None
24	D024		Tension Only	Yes	** NA **		None
25	MP025			Yes	** NA **		None
26	MP026			Yes	** NA **		None
27	MP027			Yes	** NA **		None
28	MP028			Yes	** NA **		None
29	V029			Yes	** NA **		None
30	H030			Yes	** NA **		None
31	H031			Yes	** NA **		None
32	H032	OOOXXO		Yes	** NA **		None
33	H033	OOOXXO		Yes	** NA **		None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	K y-y	K z-z	Function
1	H001	L3X3X3	49.204	Lbyy	0.65	0.65	Lateral
2	H002	L3X3X3	49.204	Lbyy	1	1	Lateral
3	H003	L4X4X5	126	Lbyy	1	1	Lateral
4	H004	L3X3X3	49.204	Lbyy	0.65	0.65	Lateral
5	H005	L3X3X3	49.204	Lbyy	0.65	0.65	Lateral
6	H006	L4X4X5	126	Lbyy	1	1	Lateral
7	V007	PV BPL3X1.75X0.1875	45	Lbyy	0.65	0.65	Lateral
8	V008	PV BPL3X1.75X0.1875	45	Lbyy	0.65	0.65	Lateral
9	V009	PV BPL3X1.75X0.1875	45	Lbyy	0.65	0.65	Lateral
10	V010	PV BPL3X1.75X0.1875	45	Lbyy	0.65	0.65	Lateral
11	H011	PIPE_2.0	74.216	Lbyy	1	1	Lateral
12	H012	PIPE_2.0	74.216	Lbyy	1	1	Lateral
13	U013	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
14	U014	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
15	U015	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
16	U016	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
17	U017	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
18	U018	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
19	U019	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
20	U020	(1) 1/2 U-Bolt	3	Lbyy	0.5	0.5	Lateral
21	D021	PV PL2.125X0.1875	61.555	Lbyy	0.65	0.65	Lateral
22	D022	PV PL2.125X0.1875	61.555	Lbyy	0.65	0.65	Lateral
23	D023	PV PL2.125X0.1875	61.555	Lbyy	0.65	0.65	Lateral
24	D024	PV PL2.125X0.1875	61.555	Lbyy	0.65	0.65	Lateral
25	MP025	PIPE_2.0	96	Lbyy	2.1	2.1	Lateral
26	MP026	PIPE_2.0	96	Lbyy	2.1	2.1	Lateral
27	MP027	PIPE_2.0	120	Lbyy	2.1	2.1	Lateral
28	MP028	PIPE_2.0	96	Lbyy	2.1	2.1	Lateral
29	V029	PIPE_4.0	96	Lbyy	0.65	0.65	Lateral

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [lb/ft^{3}]	Yield [psi]	Ry	Fu [psi]	Rt
1	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
2	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	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	N019	max	190.41	10	200.367	68	808.957	10	0	121	0	121	0	121
2		min	-187.959	16	9.579	25	-803.993	16	0	1	0	1	0	1
3	N022	max	184.702	22	200.392	69	786.336	22	0	121	0	121	0	121
4		min	-185.396	4	9.595	25	-794.318	4	0	1	0	1	0	1
5	N051	max	1045.568	4	1368.826	33	1148.199	15	1116.752	9	522.784	4	1246.761	4
6		min	-1030.321	22	-245.973	15	-2130.3	9	-990.644	15	-515.161	22	-1234.029	22
7	N053	max	940.321	16	1259.316	27	2030.818	3	1315.669	3	470.161	16	1217.927	10
8		min	-957.15	10	-285.878	21	-1044.52	21	-932.081	21	-478.575	10	-1201.621	16
9	Totals:	max	1629.97	6	2410.913	33	2314.633	14						
10		min	-1629.97	24	867.493	15	-2314.633	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	L3X3X3	0.33	49.204	9	0.133	2.563	y	90	26540.29	35316	1320.097	2664.955	1.5	H2-1
2	H002	L3X3X3	0.272	49.204	114	0.144	2.563	z	13	23632.878	35316	1320.097	2664.955	1.5	H2-1
3	H003	L4X4X5	0.23	23.625	74	0.088	101.062	y	2	20831.093	77760	3776.855	7009.912	1.5	H2-1
4	H004	L3X3X3	0.364	49.204	3	0.138	2.563	z	96	26540.29	35316	1320.097	2664.955	1.5	H2-1
5	H005	L3X3X3	0.288	49.204	120	0.145	2.563	y	7	26540.29	35316	1320.097	2664.955	1.5	H2-1
6	H006	L4X4X5	0.24	23.625	78	0.087	101.062	z	8	20831.093	77760	3776.855	7009.912	1.5	H2-1
7	V007	PV BPL3X1.75X0.1875	0.125	0	62	0.009	0	z	78	19894.332	27717.188	493.139	1478.77	1.5	H2-1
8	V008	PV BPL3X1.75X0.1875	0.252	0	77	0.011	0	y	76	19894.332	27717.188	493.139	1478.77	1.5	H2-1
9	V009	PV BPL3X1.75X0.1875	0.131	45	63	0.011	45	y	77	19894.332	27717.188	493.139	1478.77	1.5	H2-1
10	V010	PV BPL3X1.75X0.1875	0.238	45	119	0.012	45	y	120	19894.332	27717.188	493.139	1478.77	1.5	H2-1
11	H011	PIPE_2.0	0.321	37.108	68	0.021	74.216		68	20311.334	32130	1871.625	1871.625	1.309	H1-1b
12	H012	PIPE_2.0	0.321	37.108	69	0.021	74.216		69	20311.334	32130	1871.625	1871.625	1.309	H1-1b
13	D021	PV PL2.125X0.1875	0.161	0	116	0.005	0	y	2	164.729	12909.375	50.427	371.684	2.371	H1-1b*
14	D022	PV PL2.125X0.1875	0	61.555	121	0	61.555	y	121	164.729	12909.375	50.427	156.734	1	H1-1a
15	D023	PV PL2.125X0.1875	0.005	61.555	21	0.005	61.555	y	21	164.729	12909.375	50.427	426.226	2.719	H1-1b*
16	D024	PV PL2.125X0.1875	0.158	61.555	81	0.006	61.555	y	2	164.729	12909.375	50.427	371.972	2.373	H1-1b*
17	MP025	PIPE_2.0	0.218	16	82	0.063	18		80	3485.189	32130	1871.625	1871.625	1.771	H1-1a
18	MP026	PIPE_2.0	0.219	25	93	0.028	70		87	3485.189	32130	1871.625	1871.625	1.595	H1-1a
19	MP027	PIPE_2.0	0.432	72.5	8	0.035	87.5		20	2230.521	32130	1871.625	1871.625	1.284	H1-1a
20	MP028	PIPE_2.0	0.22	25	115	0.059	70		110	3485.189	32130	1871.625	1871.625	1.584	H1-1a
21	V029	PIPE_4.0	0.206	6	3	0.08	90		9	85514.086	93240	10631.25	10631.25	2.557	H1-1b

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

TOWER ENGINEERING PROFESSIONALS

Structural Analysis Report

Structure	:	**120 ft Monopole**
ATC Site Name	:	**Northhaven I,CT**
ATC Site Number	:	**370629**
Engineering Number	:	**13732379_C3_03**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**CT11051 Replacement**
Carrier Site Number	:	**CTNH735A**
Site Location	:	**125 Washington Ave** **North Haven, CT 06473-0000** **41.3978, -72.8567**
County	:	**New Haven**
Date	:	**October 13, 2021**
Max Usage	:	**41%**
Result	:	**Pass**

Prepared By:

Siddharth Yadav
TEP

Reviewed By:

STATE OF CONNECTICUT
AARON THOMAS RUCKER
32608
LICENSED PROFESSIONAL ENGINEER

10/18/2021

COA : PEC.0001553

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 120 ft Monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	Valmont Project #F177, dated September 30, 1998
Foundation Drawing	Valmont Drawing #2652-F, dated October 9, 1998
Geotechnical Report	CTB Project #98143, dated September 30, 1998
Mount Analysis	ATC Project #13732379_C8_01, dated October 4, 2021

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:	120 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 = 0.20, 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
123.0	2	Raycap DC6-48-60-18-8F ("Squid")	Platform with Handrails	(6) 0.78" (19.7mm) 8 AWG 6 (3) 3" conduit (2) 3/8" (0.38"-9.5mm) RET Control Cable (12) 1 5/8" Coax (2) 0.39" (10mm) Fiber Trunk	AT&T MOBILITY
	3	Ericsson RRUS 11 (Band 12)			
122.0	3	Ericsson RRUS 32 B66			
	6	Powerwave Allgon LGP21401			
	6	Powerwave Allgon 7020.00 Dual Band RET			
	3	Ericsson RRUS 32 B2			
	3	CCI HPA-65R-BUU-H6			
	3	Ericsson RRUS-32 (77 lbs)			
	3	Powerwave Allgon 7770.00			
	3	Quintel QS66512-2			
109.0	3	RFS APXVAARR24_43-U-NA20	Perfect Vision PV-MPM-SFA10-12-278X96 Sector Frames w/ Work Platform	(3) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
109.0	3	Ericsson KRY 112 144/1	-	(1) 1 1/4" (1.25"-31.8mm) Fiber (9) 1 5/8" Coax	T-MOBILE
	3	Ericsson AIR 21, 1.3M, B4A B2P			
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			
	3	Ericsson Radio 4449 B12,B71			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
109.0	3	Ericsson Radio 4449 B71 B85A	Perfect Vision PV-MPM-SFA10-12-278X96 Sector Frames w/ Work Platform	(1) 1.99" (50.7mm) Hybrid	T-MOBILE
	3	Ericsson 4460 BAND 2/25			
	3	Ericsson Air6449 B41			

[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	28%	Pass
Shaft	32%	Pass
Base Plate	12%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	4149.0	5601.2	1653.7	30%
Shear (Kips)	37.1	50.1	20.3	41%
* The design reactions are factored by 1.35 per ANSI/TIA-222-H, Sec. 15.6.2				

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
109.0	Ericsson Radio 4449 B71 B85A	T-MOBILE	0.334	0.310
	Ericsson Air6449 B41			
	Ericsson 4460 BAND 2/25			

***Deflection, Twist 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 Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

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

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

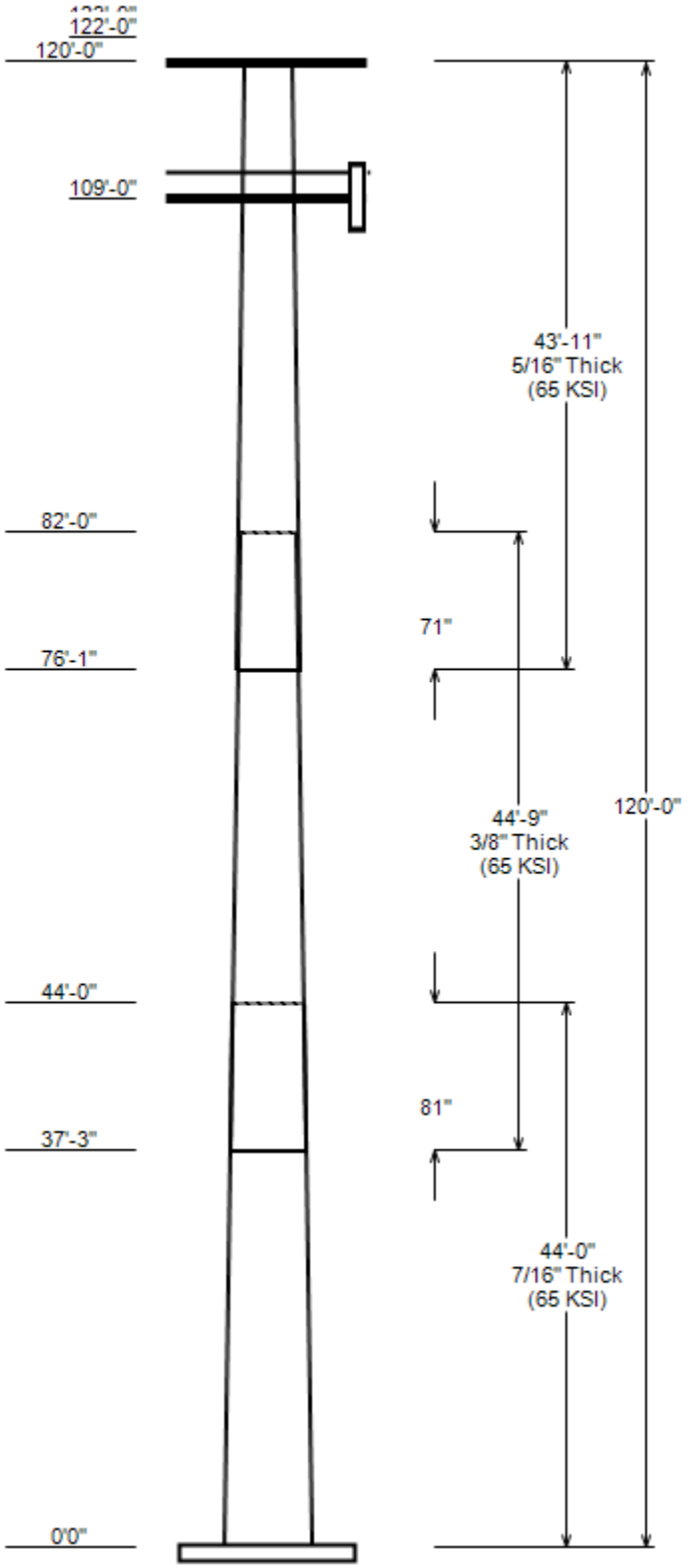
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

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

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

JOB INFORMATION

Asset :	370629, Northhaven I	Height :	120 ft
Client :	T-MOBILE	Base Width :	54.5
Code :	ANSI/TIA-222-H	Shape :	12 Sides



SITE PARAMETERS

Base Elev (ft):	0.00	Structure Class:	II
Taper :	0.20000 (In/ft)	Exposure :	B
Topographic Category :	1	Topographic Feature:	
Topo Method :	Method 1		

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	44.000	45.70	54.50	0.438		0.000	12 Sides	65
2	44.750	38.85	47.80	0.375	Slip Joint	81.000	12 Sides	65
3	43.917	31.87	40.66	0.312	Slip Joint	71.000	12 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
123.0	123.0	2	Raycap DC6-48-60-18-8F ("Squid
123.0	123.0	3	Ericsson RRUS 11 (Band 12)
122.0	123.0	6	Powerwave Allgon 7020.00 Dual
122.0	123.0	6	Powerwave Allgon LGP21401
122.0	123.0	3	Ericsson RRUS 32 B66
122.0	123.0	3	Ericsson RRUS 32 B2
122.0	123.0	3	Ericsson RRUS-32 (77 lbs)
122.0	123.0	3	Powerwave Allgon 7770.00
122.0	123.0	3	Quintel QS66512-2
122.0	123.0	3	CCI HPA-65R-BUU-H6
120.0	120.0	1	Flat Platform w/ Handrails
109.0	109.0	3	Ericsson Radio 4449 B71 B85A
109.0	109.0	3	Ericsson 4460 BAND 2/25
109.0	109.0	3	Ericsson Air6449 B41
109.0	109.0	3	Sector Frame (Perfect Vision P
109.0	109.0	3	RFS APXVAARR24_43-U-NA20

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
5.0	123.0	3/8" (0.38"- 9.5mm) RET Control Cable	No
5.0	123.0	3" conduit	No
5.0	123.0	0.78" (19.7mm) 8 AWG 6	No
5.0	123.0	0.78" (19.7mm) 8 AWG 6	No
5.0	122.0	1 5/8" Coax	No
5.0	118.0	0.39" (10mm) Fiber Trunk	No
0.0	109.0	1.99" (50.7mm) Hybrid	No
0.0	109.0	1 5/8" (1.63"-41.3mm) Fiber	No

LOAD CASES

1.2D + 1.0W	120 mph wind with no ice
0.9D + 1.0W	120 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	1653.69	20.27	45.01
0.9D + 1.0W	1644.65	20.26	33.75
1.2D + 1.0Di + 1.0Wi	378.99	4.62	56.74
1.2D + 1.0Ev + 1.0Eh	137.67	1.44	45.02
0.9D - 1.0Ev + 1.0Eh	136.72	1.43	31.00

JOB INFORMATION			
Asset :	370629, Northhaven I	Height :	120 ft
Client :	T-MOBILE	Base Width :	54.5
Code :	ANSI/TIA-222-H	Shape :	12 Sides

REACTIONS			
Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.0D + 1.0W	368.56	4.53	37.52

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

ANALYSIS PARAMETERS

Location:	New Haven County,CT	Height:	120 ft
Type and Shape:	Taper, 12 Sides	Base Diameter:	54.50 in
Manufacturer:	Valmont	Top Diameter:	31.87 in
K_d (non-service):	0.95	Taper:	0.2000 in/ft
K_e:	1.00	Rotation:	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	Design Wind Speed w/o Ice:	120 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:	36.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			Period Based on Rayleigh Method (sec):	1.51
T_L (sec):	6	P:	1	$C_{s:}$	0.038
$S_{s:}$	0.204	$S_{1:}$	0.054	C_s Max:	0.038
$F_{a:}$	1.600	$F_{v:}$	2.400	C_s Min:	0.030
$S_{ds:}$	0.218	$S_{d1:}$	0.086		

LOAD CASES

1.2D + 1.0W	120 mph wind with no ice
0.9D + 1.0W	120 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 (in^2)	Bottom Ix (in^4)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in^2)	Top Ix (in^4)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-12	44.00	0.4375	65		0.00	10,475	54.50	0.000	76.16	28,412.4	30.70	124.57	45.70	44.00	63.76	16,673.4	25.31	104.46	0.2000
2-12	44.75	0.3750	65	Slip	81.00	7,897	47.80	37.250	57.27	16,439.4	31.47	127.47	38.85	82.00	46.46	8,777.8	25.08	103.60	0.2000
3-12	43.92	0.3125	65	Slip	71.00	5,406	40.66	76.083	40.60	8,434.7	32.18	130.11	31.87	120.00	31.76	4,038.0	24.65	102.00	0.2000
				Shaft Weight		23,778													

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
123.00	Raycap DC6-48-60-18-8F ("Squid	2	0.75	0.000	31.80	1.470	0.50	72.02	1.925	0.50
123.00	Ericsson RRUS 11 (Band 12)	3	0.75	0.000	50.00	2.566	0.67	94.44	3.249	0.67
122.00	Powerwave Allgon LGP21401	6	0.75	1.000	14.10	1.104	0.50	30.37	1.569	0.50
122.00	CCI HPA-65R-BUU-H6	3	0.75	1.000	51.00	9.658	0.69	194.03	11.465	0.69
122.00	Quintel QS66512-2	3	0.75	1.000	111.00	8.133	0.74	240.91	9.950	0.74
122.00	Powerwave Allgon 7770.00	3	0.75	1.000	35.00	5.508	0.65	109.11	6.894	0.65
122.00	Ericsson RRUS-32 (77 lbs)	3	0.75	1.000	77.00	3.314	0.71	140.40	4.151	0.71
122.00	Ericsson RRUS 32 B2	3	0.75	1.000	53.00	2.743	0.67	100.95	3.505	0.67
122.00	Powerwave Allgon 7020.00 Dual	6	0.75	1.000	2.20	0.339	0.50	8.86	0.606	0.50
122.00	Ericsson RRUS 32 B66	3	0.75	1.000	53.00	2.743	0.67	100.95	3.505	0.67
120.00	Flat Platform w/ Handrails	1	1.00	0.000	2000.00	42.400	1.00	2926.49	56.072	1.00
109.00	Ericsson 4460 BAND 2/25	3	0.80	0.000	109.00	2.564	0.67	166.09	3.245	0.67
109.00	Ericsson Radio 4449 B71 B85A	3	0.80	0.000	75.00	1.650	0.50	113.84	2.199	0.50
109.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.243	0.63	381.45	22.638	0.63
109.00	Sector Frame (Perfect Vision P	3	0.75	0.000	1362.00	18.980	0.67	2023.83	29.313	0.67
109.00	Ericsson Air6449 B41	3	0.80	0.000	104.00	5.682	0.63	192.02	6.707	0.63
Totals	Num Loadings: 16	51			8,785.10			14,879.97		

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
5.00	123.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	123.00	3	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	123.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	123.00	2	3/8" (0.38"- 9.5mm) R	0.38	0.23	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	122.00	12	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	118.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	109.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	T-MOBILE
0.00	109.00	1	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE

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		0.4375	54.500	76.161	28,412.40	30.70	124.57	71.2	1007.1	0.0	0.0
5.00		0.4375	53.500	74.752	26,864.70	30.09	122.29	71.9	970.1	0.0	1,283.8
10.00		0.4375	52.500	73.343	25,374.20	29.47	120.00	72.6	933.7	0.0	1,259.8
15.00		0.4375	51.500	71.934	23,939.90	28.86	117.71	73.2	898.0	0.0	1,235.9
20.00		0.4375	50.500	70.525	22,560.70	28.25	115.43	73.9	863.1	0.0	1,211.9
25.00		0.4375	49.500	69.117	21,235.50	27.64	113.14	74.6	828.8	0.0	1,187.9
30.00		0.4375	48.500	67.708	19,963.30	27.02	110.86	75.2	795.2	0.0	1,164.0
35.00		0.4375	47.500	66.299	18,742.90	26.41	108.57	75.9	762.3	0.0	1,140.0
37.25	Bot - Section 2	0.4375	47.050	65.665	18,210.40	26.14	107.54	76.2	747.7	0.0	505.2
40.00		0.4375	46.500	64.890	17,573.30	25.80	106.28	76.6	730.1	0.0	1,143.6
44.00	Top - Section 1	0.3750	46.450	55.635	15,075.10	30.51	123.87	71.4	627.0	0.0	1,639.4
45.00		0.3750	46.250	55.394	14,879.60	30.37	123.33	71.6	621.5	0.0	188.9
50.00		0.3750	45.250	54.186	13,927.50	29.65	120.67	72.4	594.6	0.0	932.2
55.00		0.3750	44.250	52.979	13,017.00	28.94	118.00	73.2	568.3	0.0	911.6
60.00		0.3750	43.250	51.771	12,147.00	28.22	115.33	73.9	542.6	0.0	891.1
65.00		0.3750	42.249	50.563	11,316.70	27.51	112.67	74.7	517.5	0.0	870.6
70.00		0.3750	41.249	49.356	10,525.10	26.79	110.00	75.5	492.9	0.0	850.0
75.00		0.3750	40.249	48.148	9,771.40	26.08	107.33	76.3	469.0	0.0	829.5
76.08	Bot - Section 3	0.3750	40.033	47.887	9,612.90	25.93	106.75	76.4	463.9	0.0	177.0
80.00		0.3750	39.249	46.941	9,054.50	25.37	104.66	77	445.7	0.0	1,167.7
82.00	Top - Section 2	0.3125	39.474	39.407	7,714.00	31.17	126.32	70.7	377.5	0.0	587.4
85.00		0.3125	38.874	38.803	7,364.80	30.65	124.40	71.3	366.0	0.0	399.2
90.00		0.3125	37.874	37.797	6,806.60	29.80	121.20	72.2	347.2	0.0	651.6
95.00		0.3125	36.874	36.790	6,277.30	28.94	118.00	73.2	328.9	0.0	634.5
100.00		0.3125	35.874	35.784	5,776.10	28.08	114.80	74.1	311.1	0.0	617.4
105.00		0.3125	34.874	34.778	5,302.40	27.22	111.60	75	293.7	0.0	600.3
109.00		0.3125	34.074	33.973	4,942.70	26.54	109.04	75.8	280.2	0.0	467.9
110.00		0.3125	33.874	33.771	4,855.30	26.37	108.40	76	276.9	0.0	115.3
115.00		0.3125	32.874	32.765	4,434.10	25.51	105.20	76.9	260.6	0.0	566.0
120.00		0.3125	31.874	31.759	4,038.00	24.65	102.00	77.8	244.7	0.0	548.9
								Totals:			23,778.6

Load Case: 1.2D + 1.0W 120 mph wind with no ice 18 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	-45.01	-20.27	0.00	-1,653.7	0.00	1,653.69	4,882.59	1,336.62	6,816.40	5,380.53	0	0	0.317
5.00	-43.40	-19.74	0.00	-1,552.4	0.00	1,552.35	4,837.22	1,311.89	6,566.62	5,231.13	0.04	-0.08	0.306
10.00	-41.60	-19.21	0.00	-1,453.7	0.00	1,453.66	4,790.15	1,287.17	6,321.51	5,081.80	0.17	-0.16	0.295
15.00	-39.83	-18.69	0.00	-1,357.6	0.00	1,357.61	4,741.38	1,262.44	6,081.05	4,932.64	0.38	-0.24	0.284
20.00	-38.10	-18.18	0.00	-1,264.2	0.00	1,264.15	4,690.93	1,237.72	5,845.26	4,783.76	0.67	-0.32	0.273
25.00	-36.39	-17.67	0.00	-1,173.3	0.00	1,173.26	4,638.77	1,212.99	5,614.14	4,635.26	1.05	-0.39	0.261
30.00	-34.71	-17.16	0.00	-1,084.9	0.00	1,084.92	4,584.93	1,188.27	5,387.67	4,487.24	1.5	-0.47	0.250
35.00	-33.07	-16.78	0.00	-999.1	0.00	999.12	4,529.39	1,163.55	5,165.87	4,339.82	2.03	-0.54	0.238
37.25	-32.34	-16.52	0.00	-961.4	0.00	961.36	4,503.84	1,152.42	5,067.57	4,273.70	2.3	-0.58	0.232
40.00	-30.82	-16.14	0.00	-915.9	0.00	915.94	4,472.15	1,138.82	4,948.72	4,193.09	2.64	-0.62	0.226
44.00	-28.64	-15.85	0.00	-851.4	0.00	851.36	3,577.05	976.40	4,243.67	3,359.27	3.18	-0.67	0.262
45.00	-28.35	-15.53	0.00	-835.5	0.00	835.51	3,569.30	972.16	4,206.91	3,337.32	3.33	-0.69	0.259
50.00	-26.96	-14.97	0.00	-757.9	0.00	757.88	3,529.49	950.97	4,025.55	3,227.58	4.09	-0.76	0.243
55.00	-25.59	-14.40	0.00	-683.0	0.00	683.05	3,488.00	929.77	3,848.17	3,117.96	4.93	-0.84	0.227
60.00	-24.26	-13.83	0.00	-611.1	0.00	611.06	3,444.81	908.58	3,674.80	3,008.57	5.85	-0.91	0.210
65.00	-22.94	-13.25	0.00	-541.9	0.00	541.94	3,399.92	887.39	3,505.42	2,899.51	6.84	-0.98	0.194
70.00	-21.66	-12.67	0.00	-475.7	0.00	475.70	3,353.35	866.20	3,340.04	2,790.89	7.89	-1.04	0.177
75.00	-20.40	-12.31	0.00	-412.4	0.00	412.35	3,305.07	845.00	3,178.65	2,682.80	9.02	-1.1	0.160
76.08	-20.13	-12.02	0.00	-399.0	0.00	399.02	3,294.39	840.41	3,144.21	2,659.46	9.27	-1.11	0.156
80.00	-18.53	-11.65	0.00	-352.0	0.00	351.95	3,255.11	823.81	3,021.26	2,575.36	10.2	-1.16	0.143
82.00	-17.72	-11.35	0.00	-328.6	0.00	328.64	2,508.23	691.59	2,554.80	2,002.42	10.69	-1.18	0.171
85.00	-17.09	-10.89	0.00	-294.6	0.00	294.58	2,489.39	680.99	2,477.13	1,956.70	11.44	-1.21	0.158
90.00	-16.05	-10.31	0.00	-240.1	0.00	240.12	2,456.65	663.33	2,350.35	1,880.48	12.73	-1.26	0.134
95.00	-15.03	-9.73	0.00	-188.6	0.00	188.57	2,422.21	645.67	2,226.90	1,804.35	14.08	-1.31	0.111
100.00	-14.04	-9.16	0.00	-139.9	0.00	139.91	2,386.07	628.01	2,106.78	1,728.40	15.47	-1.34	0.087
105.00	-13.07	-8.64	0.00	-94.1	0.00	94.12	2,348.24	610.35	1,989.99	1,652.75	16.89	-1.37	0.063
109.00	-5.97	-5.32	0.00	-59.5	0.00	59.54	2,316.76	596.22	1,898.96	1,592.51	18.05	-1.39	0.040
110.00	-5.80	-4.99	0.00	-54.2	0.00	54.22	2,308.72	592.69	1,876.53	1,577.49	18.34	-1.39	0.037
115.00	-4.91	-4.44	0.00	-29.3	0.00	29.26	2,267.51	575.03	1,766.40	1,502.74	19.8	-1.4	0.022
120.00	0.00	-4.32	0.00	-7.1	0.00	7.06	2,224.60	557.37	1,659.60	1,428.59	21.28	-1.41	0.005

Load Case: 0.9D + 1.0W 120 mph wind with no ice 18 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	-33.75	-20.26	0.00	-1,644.6	0.00	1,644.65	4,882.59	1,336.62	6,816.40	5,380.53	0	0	0.313
5.00	-32.54	-19.71	0.00	-1,543.4	0.00	1,543.35	4,837.22	1,311.89	6,566.62	5,231.13	0.04	-0.08	0.302
10.00	-31.18	-19.17	0.00	-1,444.8	0.00	1,444.78	4,790.15	1,287.17	6,321.51	5,081.80	0.17	-0.16	0.291
15.00	-29.85	-18.64	0.00	-1,348.9	0.00	1,348.91	4,741.38	1,262.44	6,081.05	4,932.64	0.38	-0.24	0.280
20.00	-28.55	-18.12	0.00	-1,255.7	0.00	1,255.70	4,690.93	1,237.72	5,845.26	4,783.76	0.67	-0.31	0.269
25.00	-27.26	-17.60	0.00	-1,165.1	0.00	1,165.11	4,638.77	1,212.99	5,614.14	4,635.26	1.04	-0.39	0.257
30.00	-26.00	-17.08	0.00	-1,077.1	0.00	1,077.12	4,584.93	1,188.27	5,387.67	4,487.24	1.49	-0.47	0.246
35.00	-24.77	-16.70	0.00	-991.7	0.00	991.71	4,529.39	1,163.55	5,165.87	4,339.82	2.02	-0.54	0.234
37.25	-24.22	-16.43	0.00	-954.1	0.00	954.14	4,503.84	1,152.42	5,067.57	4,273.70	2.28	-0.57	0.229
40.00	-23.07	-16.05	0.00	-909.0	0.00	908.96	4,472.15	1,138.82	4,948.72	4,193.09	2.62	-0.61	0.222
44.00	-21.43	-15.76	0.00	-844.7	0.00	844.74	3,577.05	976.40	4,243.67	3,359.27	3.16	-0.67	0.258
45.00	-21.21	-15.43	0.00	-829.0	0.00	828.97	3,569.30	972.16	4,206.91	3,337.32	3.3	-0.68	0.255
50.00	-20.17	-14.87	0.00	-751.8	0.00	751.80	3,529.49	950.97	4,025.55	3,227.58	4.06	-0.76	0.239
55.00	-19.14	-14.30	0.00	-677.5	0.00	677.46	3,488.00	929.77	3,848.17	3,117.96	4.9	-0.83	0.223
60.00	-18.14	-13.72	0.00	-606.0	0.00	605.97	3,444.81	908.58	3,674.80	3,008.57	5.81	-0.9	0.207
65.00	-17.15	-13.14	0.00	-537.4	0.00	537.36	3,399.92	887.39	3,505.42	2,899.51	6.79	-0.97	0.191
70.00	-16.19	-12.56	0.00	-471.6	0.00	471.65	3,353.35	866.20	3,340.04	2,790.89	7.84	-1.03	0.174
75.00	-15.25	-12.20	0.00	-408.8	0.00	408.83	3,305.07	845.00	3,178.65	2,682.80	8.95	-1.09	0.157
76.08	-15.05	-11.92	0.00	-395.6	0.00	395.60	3,294.39	840.41	3,144.21	2,659.46	9.2	-1.11	0.154
80.00	-13.84	-11.56	0.00	-348.9	0.00	348.93	3,255.11	823.81	3,021.26	2,575.36	10.13	-1.15	0.140
82.00	-13.24	-11.26	0.00	-325.8	0.00	325.82	2,508.23	691.59	2,554.80	2,002.42	10.62	-1.17	0.168
85.00	-12.76	-10.80	0.00	-292.0	0.00	292.05	2,489.39	680.99	2,477.13	1,956.70	11.36	-1.2	0.155
90.00	-11.98	-10.22	0.00	-238.1	0.00	238.07	2,456.65	663.33	2,350.35	1,880.48	12.65	-1.25	0.132
95.00	-11.22	-9.64	0.00	-187.0	0.00	186.98	2,422.21	645.67	2,226.90	1,804.35	13.98	-1.3	0.108
100.00	-10.48	-9.07	0.00	-138.8	0.00	138.77	2,386.07	628.01	2,106.78	1,728.40	15.36	-1.33	0.085
105.00	-9.75	-8.56	0.00	-93.4	0.00	93.41	2,348.24	610.35	1,989.99	1,652.75	16.77	-1.36	0.061
109.00	-4.45	-5.28	0.00	-59.2	0.00	59.16	2,316.76	596.22	1,898.96	1,592.51	17.92	-1.38	0.039
110.00	-4.32	-4.96	0.00	-53.9	0.00	53.88	2,308.72	592.69	1,876.53	1,577.49	18.21	-1.38	0.036
115.00	-3.66	-4.41	0.00	-29.1	0.00	29.10	2,267.51	575.03	1,766.40	1,502.74	19.66	-1.39	0.021
120.00	0.00	-4.32	0.00	-7.1	0.00	7.06	2,224.60	557.37	1,659.60	1,428.59	21.12	-1.4	0.005

Load Case: 1.2D + 1.0Di + 1.0Wi		50 mph wind with 1" radial ice			17 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	-56.74	-4.62	0.00	-379.0	0.00	378.99	4,882.59	1,336.62	6,816.40	5,380.53	0	0	0.082
5.00	-54.88	-4.50	0.00	-355.9	0.00	355.89	4,837.22	1,311.89	6,566.62	5,231.13	0.01	-0.02	0.079
10.00	-52.81	-4.39	0.00	-333.4	0.00	333.38	4,790.15	1,287.17	6,321.51	5,081.80	0.04	-0.04	0.077
15.00	-50.76	-4.27	0.00	-311.4	0.00	311.44	4,741.38	1,262.44	6,081.05	4,932.64	0.09	-0.05	0.074
20.00	-48.73	-4.16	0.00	-290.1	0.00	290.07	4,690.93	1,237.72	5,845.26	4,783.76	0.15	-0.07	0.071
25.00	-46.73	-4.05	0.00	-269.3	0.00	269.28	4,638.77	1,212.99	5,614.14	4,635.26	0.24	-0.09	0.068
30.00	-44.75	-3.93	0.00	-249.0	0.00	249.04	4,584.93	1,188.27	5,387.67	4,487.24	0.34	-0.11	0.065
35.00	-42.81	-3.85	0.00	-229.4	0.00	229.38	4,529.39	1,163.55	5,165.87	4,339.82	0.47	-0.12	0.062
37.25	-41.95	-3.79	0.00	-220.7	0.00	220.72	4,503.84	1,152.42	5,067.57	4,273.70	0.53	-0.13	0.061
40.00	-40.26	-3.71	0.00	-210.3	0.00	210.30	4,472.15	1,138.82	4,948.72	4,193.09	0.61	-0.14	0.059
44.00	-37.83	-3.64	0.00	-195.5	0.00	195.48	3,577.05	976.40	4,243.67	3,359.27	0.73	-0.15	0.069
45.00	-37.48	-3.57	0.00	-191.8	0.00	191.84	3,569.30	972.16	4,206.91	3,337.32	0.76	-0.16	0.068
50.00	-35.79	-3.44	0.00	-174.0	0.00	174.01	3,529.49	950.97	4,025.55	3,227.58	0.94	-0.18	0.064
55.00	-34.13	-3.31	0.00	-156.8	0.00	156.82	3,488.00	929.77	3,848.17	3,117.96	1.13	-0.19	0.060
60.00	-32.50	-3.18	0.00	-140.3	0.00	140.26	3,444.81	908.58	3,674.80	3,008.57	1.34	-0.21	0.056
65.00	-30.89	-3.05	0.00	-124.4	0.00	124.36	3,399.92	887.39	3,505.42	2,899.51	1.57	-0.22	0.052
70.00	-29.32	-2.92	0.00	-109.1	0.00	109.12	3,353.35	866.20	3,340.04	2,790.89	1.81	-0.24	0.048
75.00	-27.77	-2.83	0.00	-94.6	0.00	94.55	3,305.07	845.00	3,178.65	2,682.80	2.07	-0.25	0.044
76.08	-27.44	-2.77	0.00	-91.5	0.00	91.48	3,294.39	840.41	3,144.21	2,659.46	2.13	-0.26	0.043
80.00	-25.61	-2.68	0.00	-80.6	0.00	80.64	3,255.11	823.81	3,021.26	2,575.36	2.34	-0.27	0.039
82.00	-24.69	-2.61	0.00	-75.3	0.00	75.28	2,508.23	691.59	2,554.80	2,002.42	2.45	-0.27	0.047
85.00	-23.88	-2.51	0.00	-67.4	0.00	67.44	2,489.39	680.99	2,477.13	1,956.70	2.62	-0.28	0.044
90.00	-22.56	-2.37	0.00	-54.9	0.00	54.91	2,456.65	663.33	2,350.35	1,880.48	2.92	-0.29	0.038
95.00	-21.26	-2.24	0.00	-43.1	0.00	43.06	2,422.21	645.67	2,226.90	1,804.35	3.23	-0.3	0.033
100.00	-20.00	-2.10	0.00	-31.9	0.00	31.88	2,386.07	628.01	2,106.78	1,728.40	3.55	-0.31	0.027
105.00	-18.76	-1.98	0.00	-21.4	0.00	21.36	2,348.24	610.35	1,989.99	1,652.75	3.88	-0.31	0.021
109.00	-8.82	-1.21	0.00	-13.4	0.00	13.44	2,316.76	596.22	1,898.96	1,592.51	4.14	-0.32	0.012
110.00	-8.59	-1.13	0.00	-12.2	0.00	12.23	2,308.72	592.69	1,876.53	1,577.49	4.21	-0.32	0.011
115.00	-7.44	-1.00	0.00	-6.6	0.00	6.55	2,267.51	575.03	1,766.40	1,502.74	4.54	-0.32	0.008
120.00	0.00	-0.96	0.00	-1.5	0.00	1.53	2,224.60	557.37	1,659.60	1,428.59	4.88	-0.32	0.001

Load Case: 1.0D + 1.0W		60 mph Wind with No Ice	17 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	-37.52	-4.53	0.00	-368.6	0.00	368.56	4,882.59	1,336.62	6,816.40	5,380.53	0	0	0.076
5.00	-36.20	-4.41	0.00	-345.9	0.00	345.90	4,837.22	1,311.89	6,566.62	5,231.13	0.01	-0.02	0.074
10.00	-34.72	-4.29	0.00	-323.8	0.00	323.84	4,790.15	1,287.17	6,321.51	5,081.80	0.04	-0.04	0.071
15.00	-33.27	-4.17	0.00	-302.4	0.00	302.39	4,741.38	1,262.44	6,081.05	4,932.64	0.08	-0.05	0.068
20.00	-31.84	-4.06	0.00	-281.5	0.00	281.52	4,690.93	1,237.72	5,845.26	4,783.76	0.15	-0.07	0.066
25.00	-30.43	-3.94	0.00	-261.2	0.00	261.24	4,638.77	1,212.99	5,614.14	4,635.26	0.23	-0.09	0.063
30.00	-29.05	-3.83	0.00	-241.5	0.00	241.53	4,584.93	1,188.27	5,387.67	4,487.24	0.33	-0.1	0.060
35.00	-27.69	-3.74	0.00	-222.4	0.00	222.40	4,529.39	1,163.55	5,165.87	4,339.82	0.45	-0.12	0.057
37.25	-27.09	-3.68	0.00	-214.0	0.00	213.98	4,503.84	1,152.42	5,067.57	4,273.70	0.51	-0.13	0.056
40.00	-25.82	-3.60	0.00	-203.8	0.00	203.85	4,472.15	1,138.82	4,948.72	4,193.09	0.59	-0.14	0.054
44.00	-24.01	-3.53	0.00	-189.5	0.00	189.46	3,577.05	976.40	4,243.67	3,359.27	0.71	-0.15	0.063
45.00	-23.78	-3.46	0.00	-185.9	0.00	185.93	3,569.30	972.16	4,206.91	3,337.32	0.74	-0.15	0.062
50.00	-22.63	-3.33	0.00	-168.6	0.00	168.64	3,529.49	950.97	4,025.55	3,227.58	0.91	-0.17	0.059
55.00	-21.50	-3.21	0.00	-152.0	0.00	151.97	3,488.00	929.77	3,848.17	3,117.96	1.1	-0.19	0.055
60.00	-20.39	-3.08	0.00	-135.9	0.00	135.94	3,444.81	908.58	3,674.80	3,008.57	1.3	-0.2	0.051
65.00	-19.30	-2.95	0.00	-120.6	0.00	120.56	3,399.92	887.39	3,505.42	2,899.51	1.52	-0.22	0.047
70.00	-18.23	-2.82	0.00	-105.8	0.00	105.82	3,353.35	866.20	3,340.04	2,790.89	1.76	-0.23	0.043
75.00	-17.19	-2.74	0.00	-91.7	0.00	91.72	3,305.07	845.00	3,178.65	2,682.80	2.01	-0.25	0.039
76.08	-16.96	-2.67	0.00	-88.8	0.00	88.76	3,294.39	840.41	3,144.21	2,659.46	2.06	-0.25	0.039
80.00	-15.62	-2.59	0.00	-78.3	0.00	78.29	3,255.11	823.81	3,021.26	2,575.36	2.27	-0.26	0.035
82.00	-14.95	-2.53	0.00	-73.1	0.00	73.10	2,508.23	691.59	2,554.80	2,002.42	2.38	-0.26	0.042
85.00	-14.42	-2.42	0.00	-65.5	0.00	65.53	2,489.39	680.99	2,477.13	1,956.70	2.55	-0.27	0.039
90.00	-13.55	-2.29	0.00	-53.4	0.00	53.41	2,456.65	663.33	2,350.35	1,880.48	2.84	-0.28	0.034
95.00	-12.70	-2.16	0.00	-42.0	0.00	41.95	2,422.21	645.67	2,226.90	1,804.35	3.13	-0.29	0.029
100.00	-11.87	-2.04	0.00	-31.1	0.00	31.13	2,386.07	628.01	2,106.78	1,728.40	3.44	-0.3	0.023
105.00	-11.05	-1.92	0.00	-21.0	0.00	20.95	2,348.24	610.35	1,989.99	1,652.75	3.76	-0.31	0.017
109.00	-5.08	-1.18	0.00	-13.3	0.00	13.26	2,316.76	596.22	1,898.96	1,592.51	4.02	-0.31	0.011
110.00	-4.93	-1.11	0.00	-12.1	0.00	12.08	2,308.72	592.69	1,876.53	1,577.49	4.08	-0.31	0.010
115.00	-4.18	-0.99	0.00	-6.5	0.00	6.52	2,267.51	575.03	1,766.40	1,502.74	4.41	-0.31	0.006
120.00	0.00	-0.97	0.00	-1.6	0.00	1.58	2,224.60	557.37	1,659.60	1,428.59	4.74	-0.31	0.001

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.204
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}):	0.218
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.038
Upper Limit C_S:	0.038
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.510
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.500
Total Unfactored Dead Load:	37.520 k
Seismic Base Shear (E):	1.430 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)
29	117.5	732	949	0.040	58	910
28	112.5	750	910	0.038	55	932
27	109.5	152	177	0.008	11	189
26	107	642	722	0.030	44	798
25	102.5	817	863	0.036	52	1,016
24	97.5	835	817	0.034	50	1,038
23	92.5	852	770	0.033	47	1,059
22	87.5	869	723	0.031	44	1,080
21	83.5	529	411	0.017	25	658
20	81	674	500	0.021	30	838
19	78.0417	1,338	937	0.040	57	1,664
18	75.5417	224	149	0.006	9	279
17	72.5	1,047	656	0.028	40	1,301
16	67.5	1,067	601	0.025	36	1,327
15	62.5	1,088	546	0.023	33	1,353
14	57.5	1,108	490	0.021	30	1,378
13	52.5	1,129	436	0.018	26	1,404
12	47.5	1,149	382	0.016	23	1,429
11	44.5	232	70	0.003	4	289
10	42	1,813	500	0.021	30	2,255
9	38.625	1,263	307	0.013	19	1,571
8	36.125	603	133	0.006	8	750
7	32.5	1,357	255	0.011	15	1,688
6	27.5	1,381	202	0.008	12	1,717
5	22.5	1,405	152	0.006	9	1,747
4	17.5	1,429	106	0.004	6	1,777
3	12.5	1,453	65	0.003	4	1,807
2	7.5	1,477	31	0.001	2	1,837
1	2.5	1,317	5	0.000	0	1,638
Raycap DC6-48-60-18-8F ("Squid")	120	64	85	0.004	5	79
Ericsson RRUS 11 (Band 12)	120	150	201	0.008	12	187
Powerwave Allgon 7020.00 Dual Band RET	120	13	18	0.001	1	16
Powerwave Allgon LGP21401	120	85	113	0.005	7	105
Ericsson RRUS 32 B66	120	159	213	0.009	13	198

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Ericsson RRUS 32 B2	120	159	213	0.009	13	198
Ericsson RRUS-32 (77 lbs)	120	231	309	0.013	19	287
Powerwave Allgon 7770.00	120	105	140	0.006	9	131
Quintel QS66512-2	120	333	446	0.019	27	414
CCI HPA-65R-BUU-H6	120	153	205	0.009	12	190
Flat Platform w/ Handrails	120	2,000	2,676	0.113	162	2,487
Ericsson Radio 4449 B71 B85A	109	225	261	0.011	16	280
Ericsson 4460 BAND 2/25	109	327	379	0.016	23	407
Ericsson Air6449 B41	109	312	361	0.015	22	388
Sector Frame (Perfect Vision PV-MPM-SFA10-12-278X96) w/work platform	109	4,086	4,731	0.200	287	5,081
RFS APXVAARR24_43-U-NA20	109	384	444	0.019	27	477
		37,517	23,658	1.000	1,434	46,654

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)
29	117.5	732	949	0.040	58	627
28	112.5	750	910	0.038	55	642
27	109.5	152	177	0.008	11	130
26	107	642	722	0.030	44	550
25	102.5	817	863	0.036	52	700
24	97.5	835	817	0.034	50	715
23	92.5	852	770	0.033	47	729
22	87.5	869	723	0.031	44	744
21	83.5	529	411	0.017	25	453
20	81	674	500	0.021	30	577
19	78.0417	1,338	937	0.040	57	1,146
18	75.5417	224	149	0.006	9	192
17	72.5	1,047	656	0.028	40	896
16	67.5	1,067	601	0.025	36	914
15	62.5	1,088	546	0.023	33	932
14	57.5	1,108	490	0.021	30	949
13	52.5	1,129	436	0.018	26	967
12	47.5	1,149	382	0.016	23	984
11	44.5	232	70	0.003	4	199
10	42	1,813	500	0.021	30	1,553
9	38.625	1,263	307	0.013	19	1,082
8	36.125	603	133	0.006	8	516
7	32.5	1,357	255	0.011	15	1,162
6	27.5	1,381	202	0.008	12	1,183
5	22.5	1,405	152	0.006	9	1,203
4	17.5	1,429	106	0.004	6	1,224
3	12.5	1,453	65	0.003	4	1,244
2	7.5	1,477	31	0.001	2	1,265
1	2.5	1,317	5	0.000	0	1,128
Raycap DC6-48-60-18-8F ("Squid")	120	64	85	0.004	5	54
Ericsson RRUS 11 (Band 12)	120	150	201	0.008	12	128
Powerwave Allgon 7020.00 Dual Band RET	120	13	18	0.001	1	11
Powerwave Allgon LGP21401	120	85	113	0.005	7	72
Ericsson RRUS 32 B66	120	159	213	0.009	13	136
Ericsson RRUS 32 B2	120	159	213	0.009	13	136
Ericsson RRUS-32 (77 lbs)	120	231	309	0.013	19	198
Powerwave Allgon 7770.00	120	105	140	0.006	9	90
Quintel QS66512-2	120	333	446	0.019	27	285
CCI HPA-65R-BUU-H6	120	153	205	0.009	12	131
Flat Platform w/ Handrails	120	2,000	2,676	0.113	162	1,713
Ericsson Radio 4449 B71 B85A	109	225	261	0.011	16	193
Ericsson 4460 BAND 2/25	109	327	379	0.016	23	280
Ericsson Air6449 B41	109	312	361	0.015	22	267
Sector Frame (Perfect Vision PV-MPM-SFA10-12-278X96) w/work platform	109	4,086	4,731	0.200	287	3,500

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
RFS APXVAARR24_43-U-NA20	109	384	444	0.019	27	329
		37,517	23,658	1.000	1,434	32,133

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

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	-45.02	-1.44	0.00	-137.67	0.00	137.67	4,882.59	1,336.62	6,816	5,380.53	0.00	0.00	0.04
5.00	-43.18	-1.44	0.00	-130.49	0.00	130.49	4,837.22	1,311.89	6,567	5,231.13	0.00	-0.01	0.03
10.00	-41.37	-1.44	0.00	-123.30	0.00	123.30	4,790.15	1,287.17	6,322	5,081.80	0.01	-0.01	0.03
15.00	-39.59	-1.44	0.00	-116.10	0.00	116.10	4,741.38	1,262.44	6,081	4,932.64	0.03	-0.02	0.03
20.00	-37.85	-1.43	0.00	-108.92	0.00	108.92	4,690.93	1,237.72	5,845	4,783.76	0.06	-0.03	0.03
25.00	-36.13	-1.42	0.00	-101.77	0.00	101.77	4,638.77	1,212.99	5,614	4,635.26	0.09	-0.03	0.03
30.00	-34.44	-1.41	0.00	-94.65	0.00	94.65	4,584.93	1,188.27	5,388	4,487.24	0.13	-0.04	0.03
35.00	-33.69	-1.40	0.00	-87.61	0.00	87.61	4,529.39	1,163.55	5,166	4,339.82	0.17	-0.05	0.03
37.25	-32.12	-1.39	0.00	-84.45	0.00	84.45	4,503.84	1,152.42	5,068	4,273.70	0.20	-0.05	0.03
40.00	-29.87	-1.36	0.00	-80.64	0.00	80.64	4,472.15	1,138.82	4,949	4,193.09	0.22	-0.05	0.03
44.00	-29.58	-1.35	0.00	-75.21	0.00	75.21	3,577.05	976.40	4,244	3,359.27	0.27	-0.06	0.03
45.00	-28.15	-1.33	0.00	-73.86	0.00	73.86	3,569.30	972.16	4,207	3,337.32	0.28	-0.06	0.03
50.00	-26.74	-1.31	0.00	-67.21	0.00	67.21	3,529.49	950.97	4,026	3,227.58	0.35	-0.07	0.03
55.00	-25.37	-1.28	0.00	-60.68	0.00	60.68	3,488.00	929.77	3,848	3,117.96	0.42	-0.07	0.03
60.00	-24.01	-1.24	0.00	-54.30	0.00	54.30	3,444.81	908.58	3,675	3,008.57	0.50	-0.08	0.03
65.00	-22.69	-1.21	0.00	-48.08	0.00	48.08	3,399.92	887.39	3,505	2,899.51	0.59	-0.08	0.02
70.00	-21.38	-1.17	0.00	-42.03	0.00	42.03	3,353.35	866.20	3,340	2,790.89	0.68	-0.09	0.02
75.00	-21.11	-1.16	0.00	-36.19	0.00	36.19	3,305.07	845.00	3,179	2,682.80	0.78	-0.10	0.02
76.08	-19.44	-1.10	0.00	-34.93	0.00	34.93	3,294.39	840.41	3,144	2,659.46	0.80	-0.10	0.02
80.00	-18.60	-1.07	0.00	-30.62	0.00	30.62	3,255.11	823.81	3,021	2,575.36	0.88	-0.10	0.02
82.00	-17.95	-1.05	0.00	-28.48	0.00	28.48	2,508.23	691.59	2,555	2,002.42	0.92	-0.10	0.02
85.00	-16.87	-1.00	0.00	-25.34	0.00	25.34	2,489.39	680.99	2,477	1,956.70	0.99	-0.11	0.02
90.00	-15.81	-0.95	0.00	-20.33	0.00	20.33	2,456.65	663.33	2,350	1,880.48	1.10	-0.11	0.02
95.00	-14.77	-0.90	0.00	-15.57	0.00	15.57	2,422.21	645.67	2,227	1,804.35	1.22	-0.11	0.02
100.00	-13.75	-0.85	0.00	-11.05	0.00	11.05	2,386.07	628.01	2,107	1,728.40	1.34	-0.12	0.01
105.00	-12.95	-0.80	0.00	-6.81	0.00	6.81	2,348.24	610.35	1,990	1,652.75	1.46	-0.12	0.01
109.00	-6.13	-0.41	0.00	-3.59	0.00	3.59	2,316.76	596.22	1,899	1,592.51	1.56	-0.12	0.01
110.00	-5.20	-0.35	0.00	-3.18	0.00	3.18	2,308.72	592.69	1,877	1,577.49	1.59	-0.12	0.00
115.00	-4.29	-0.29	0.00	-1.44	0.00	1.44	2,267.51	575.03	1,766	1,502.74	1.71	-0.12	0.00
120.00	0.00	-0.28	0.00	0.00	0.00	0.00	2,224.60	557.37	1,660	1,428.59	1.84	-0.12	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	-31.00	-1.43	0.00	-136.72	0.00	136.72	4,882.59	1,336.62	6,816	5,380.53	0.00	0.00	0.03
5.00	-29.74	-1.44	0.00	-129.55	0.00	129.55	4,837.22	1,311.89	6,567	5,231.13	0.00	-0.01	0.03
10.00	-28.49	-1.44	0.00	-122.37	0.00	122.37	4,790.15	1,287.17	6,322	5,081.80	0.01	-0.01	0.03
15.00	-27.27	-1.43	0.00	-115.19	0.00	115.19	4,741.38	1,262.44	6,081	4,932.64	0.03	-0.02	0.03
20.00	-26.07	-1.42	0.00	-108.04	0.00	108.04	4,690.93	1,237.72	5,845	4,783.76	0.06	-0.03	0.03
25.00	-24.88	-1.41	0.00	-100.91	0.00	100.91	4,638.77	1,212.99	5,614	4,635.26	0.09	-0.03	0.03
30.00	-23.72	-1.40	0.00	-93.84	0.00	93.84	4,584.93	1,188.27	5,388	4,487.24	0.13	-0.04	0.03
35.00	-23.20	-1.39	0.00	-86.83	0.00	86.83	4,529.39	1,163.55	5,166	4,339.82	0.17	-0.05	0.03
37.25	-22.12	-1.38	0.00	-83.69	0.00	83.69	4,503.84	1,152.42	5,068	4,273.70	0.19	-0.05	0.02
40.00	-20.57	-1.35	0.00	-79.91	0.00	79.91	4,472.15	1,138.82	4,949	4,193.09	0.22	-0.05	0.02
44.00	-20.37	-1.34	0.00	-74.52	0.00	74.52	3,577.05	976.40	4,244	3,359.27	0.27	-0.06	0.03
45.00	-19.39	-1.32	0.00	-73.18	0.00	73.18	3,569.30	972.16	4,207	3,337.32	0.28	-0.06	0.03
50.00	-18.42	-1.30	0.00	-66.58	0.00	66.58	3,529.49	950.97	4,026	3,227.58	0.35	-0.07	0.03
55.00	-17.47	-1.27	0.00	-60.10	0.00	60.10	3,488.00	929.77	3,848	3,117.96	0.42	-0.07	0.02
60.00	-16.54	-1.23	0.00	-53.77	0.00	53.77	3,444.81	908.58	3,675	3,008.57	0.50	-0.08	0.02
65.00	-15.62	-1.20	0.00	-47.60	0.00	47.60	3,399.92	887.39	3,505	2,899.51	0.58	-0.08	0.02
70.00	-14.73	-1.16	0.00	-41.61	0.00	41.61	3,353.35	866.20	3,340	2,790.89	0.67	-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
75.00	-14.54	-1.15	0.00	-35.82	0.00	35.82	3,305.07	845.00	3,179	2,682.80	0.77	-0.10	0.02
76.08	-13.39	-1.09	0.00	-34.58	0.00	34.58	3,294.39	840.41	3,144	2,659.46	0.79	-0.10	0.02
80.00	-12.81	-1.06	0.00	-30.31	0.00	30.31	3,255.11	823.81	3,021	2,575.36	0.87	-0.10	0.02
82.00	-12.36	-1.04	0.00	-28.18	0.00	28.18	2,508.23	691.59	2,555	2,002.42	0.92	-0.10	0.02
85.00	-11.62	-0.99	0.00	-25.08	0.00	25.08	2,489.39	680.99	2,477	1,956.70	0.98	-0.10	0.02
90.00	-10.89	-0.94	0.00	-20.12	0.00	20.12	2,456.65	663.33	2,350	1,880.48	1.09	-0.11	0.02
95.00	-10.17	-0.89	0.00	-15.41	0.00	15.41	2,422.21	645.67	2,227	1,804.35	1.21	-0.11	0.01
100.00	-9.47	-0.84	0.00	-10.94	0.00	10.94	2,386.07	628.01	2,107	1,728.40	1.33	-0.12	0.01
105.00	-8.92	-0.80	0.00	-6.74	0.00	6.74	2,348.24	610.35	1,990	1,652.75	1.45	-0.12	0.01
109.00	-4.22	-0.40	0.00	-3.55	0.00	3.55	2,316.76	596.22	1,899	1,592.51	1.55	-0.12	0.00
110.00	-3.58	-0.34	0.00	-3.15	0.00	3.15	2,308.72	592.69	1,877	1,577.49	1.57	-0.12	0.00
115.00	-2.96	-0.29	0.00	-1.43	0.00	1.43	2,267.51	575.03	1,766	1,502.74	1.70	-0.12	0.00
120.00	0.00	-0.28	0.00	0.00	0.00	0.00	2,224.60	557.37	1,660	1,428.59	1.82	-0.12	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	20.27	0.00	45.01	0.00	0.00	1653.69	0.00	0.32
0.9D + 1.0W	20.26	0.00	33.75	0.00	0.00	1644.65	0.00	0.31
1.2D + 1.0Di + 1.0Wi	4.62	0.00	56.74	0.00	0.00	378.99	0.00	0.08
1.2D + 1.0Ev + 1.0Eh	1.44	0.00	45.02	0.00	0.00	137.67	0.00	0.03
0.9D - 1.0Ev + 1.0Eh	1.44	0.00	31.00	0.00	0.00	136.72	0.00	0.03
1.0D + 1.0W	4.53	0.00	37.52	0.00	0.00	368.56	0.00	0.08

Base Plate & Anchor Rod Analysis

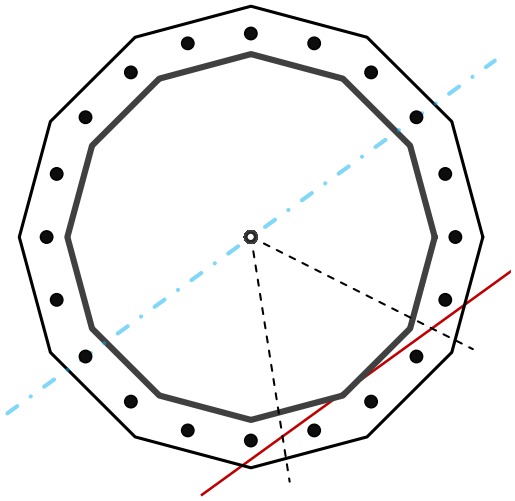
Pole Dimensions		
Number of Sides	12	-
Diameter	54.5	in
Thickness	7/16	in
Orientation Offset		°

Base Reactions		
Moment, Mu	1,653.7	k-ft
Axial, Pu	45.0	k
Shear, Vu	20.3	k
Neutral Axis	216	°

Report Capacities		
Component	Capacity	Result
Base Plate	12%	Pass
Anchor Rods	28%	Pass
Dwyidag	-	-

Base Plate		
Number of Sides	12	-
Diameter, ø	68.92	in
Thickness	2 3/4	in
Grade	A871-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	c	η=0.55
Clear Distance	N/A	in
Applied Moment, Mu	391.5	k
Bending Stress, ϕMn	3305.4	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, ø	2 1/4	in
Bolt Circle	62.92	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	9.9	in
Orientation Offset	0	°
Applied Force, Pu	67.8	k
Anchor Rods, ϕPn	243.6	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	20.3	1653.7	1.00
Anchor Rod Forces	20.3	1653.7	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	73.4601	6.1217	0.3922		26842.94
Bolt	3.9761	3.2477	0.8393	4.5	29779.40
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	12	-
Width, W	68.92	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	42.187	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

Anchor Rods		
Anchor Rod Quantity, N	20	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	62.92	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	67.8	k
Applied Shear, Vu	0.5	k
Compressive Capacity, ϕPn	243.6	k
Tensile Capacity, ϕRnt	0.278	OK
Interaction Capacity	0.282	OK

External Base Plate		
Chord Length AA	42.843	in
Additional AA	5.500	in
Section Modulus, Z	91.398	in^3
Applied Moment, Mu	391.5	k-ft
Bending Capacity, ϕMn	4935.5	k-ft
Capacity, Mu/ϕMn	0.079	OK
Chord Length AB	40.916	in
Additional AB	5.500	in
Section Modulus, Z	87.755	in^3
Applied Moment, Mu	201.8	k-ft
Bending Capacity, ϕMn	4738.7	k-ft
Capacity, Mu/ϕMn	0.043	OK
Bend Line Length	32.376	in
Additional Bend Line	0.000	in
Section Modulus, Z	61.211	in^3
Applied Moment, Mu	391.5	k-ft
Bending Capacity, ϕMn	3305.4	k-ft
Capacity, Mu/ϕMn	0.118	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

RAN Template:	A&L Template:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Section 1 - Site Information

Site ID: CTNH735A
Status: Draft
Version: 6
Project Type: Anchor
Approved: Not Approved
Approved By: Not Approved
Last Modified: 8/16/2021 4:24:39 PM
Last Modified By: Hansraj.Rana4@T-Mobile.com

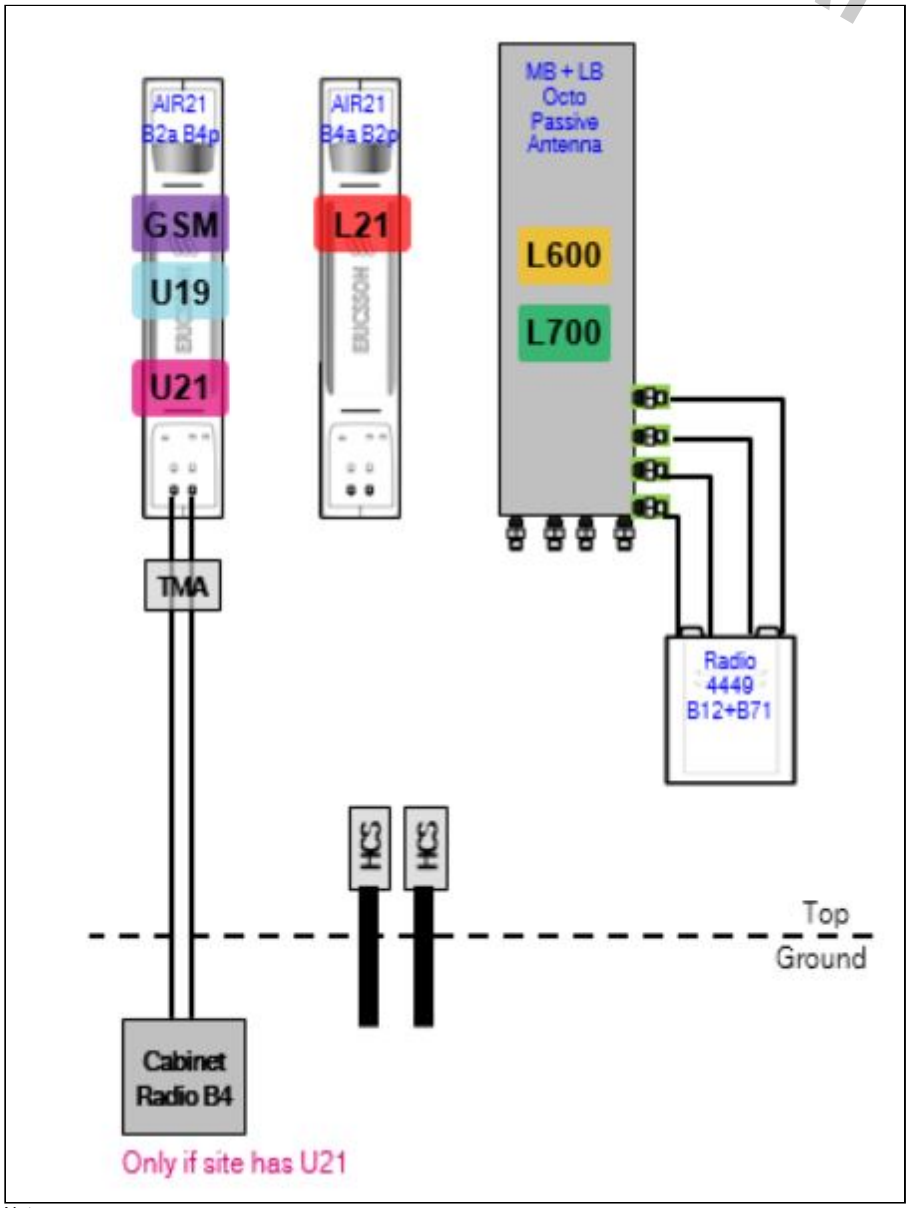
Site Name: CT11051 Replacement
Site Class: Monopole
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Not Specified

Latitude: 41.39783000
Longitude: -72.85667000
Address: 125 Washington Ave
City, State: North Haven, CT
Region: NORTHEAST

RAN Template: 67D5A998E Outdoor			AL Template: 67D5998E_1xAIR+1OP	
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 0	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

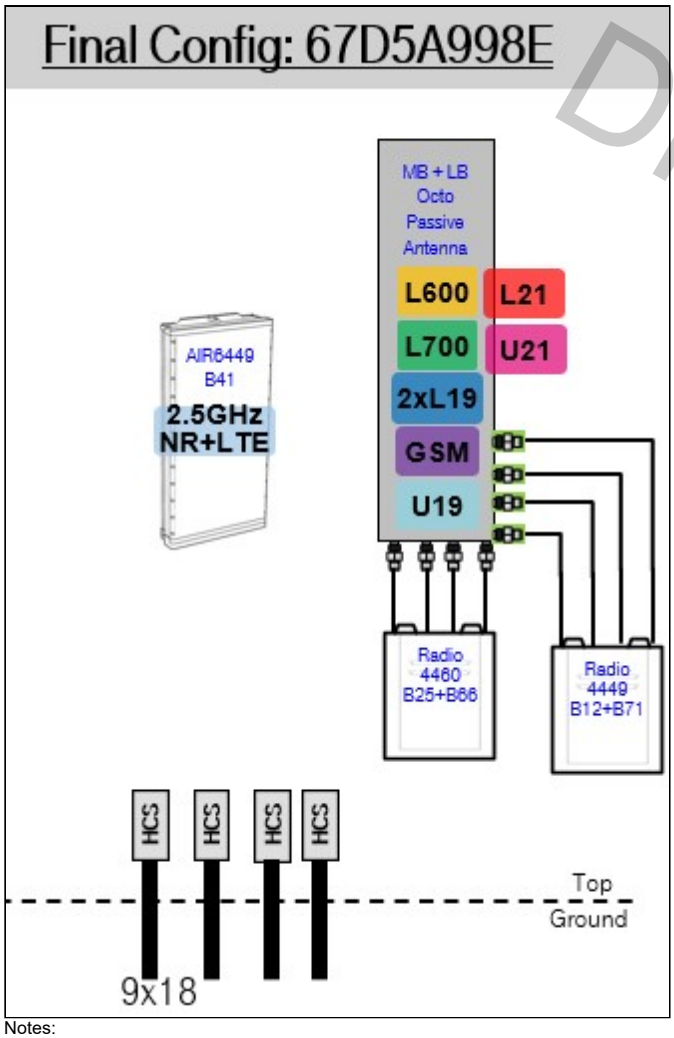
67D02C.JPG



Notes:

Section 3 - Proposed Template Images

67D5A998E.jpg



Notes:

Section 4 - Siteplan Images

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RAN Template:	A&L Template:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92C Outdoor

Enclosure	1	2
Enclosure Type	RBS 6131	S12000 Outdoor
Baseband	DUW30 (U2100); DUG20 (G1900); BB 6630 (L1900, L2100); BB 6630 (L700, L600, N600)	
Hybrid Cable System	Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select Length & AWG* **(x 3)**	
Radio	RUS01 B4 **(x 3)** (U2100)	

Proposed RAN Equipment

Template: 67D5A998E Outdoor

Enclosure	1	2	3
Enclosure Type	RBS 6131	Enclosure 6160	B160
Baseband	DUW30 (U2100); DUG20 (G1900); BB 6630 (L700, L600, N600); BB 6630 (L2100, L1900)	BB 6648 (L2500, N2500)	
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* **(x 3)**	PSU 4813 Ericsson Hybrid Trunk 6/24 4AWG 100m	
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Remove Nortel Cabinet.

Remove and return all cabinet radios from existing base station cabinet.

Add (1) Enclosure 6160.

Add (1) iXRe Router to new Enclosure 6160.

Add (1) BB6648 for L2500 and N2500 (MMBB - Mixed Mode Baseband) to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to new Enclosure 6160.

Add (1) Battery Cabinet B160.

Existing : (3) 6X12 (1) 9x18 (Remove 1 - 9x18)

Add (1) 6X24 HCS terminating at the Enclosure 6160. Connect DC for the AIR6449 B41 to the PSU4813 Voltage Booster.

*** Install full platform with handrail kit. ***

RAN Template:	A&L Template:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Section 6 - A&L Equipment

Existing Template: 67D92C_2xAIR+1OP
Proposed Template: 67D5998E_1xAIR+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2	3			4	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	80			80			80	
M. Tilt	2			0			2	
Height	109			109			109	
Ports	P1	P2		P3	P4	P5	P7	P8
Active Tech.	L1900 G1900	U2100		L700 L600 N600	L700 L600 N600		L2100	
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	0	3		2	2		3	
Cables	Fiber Jumper - 15 ft. **(x2)**	1-5/8" Coax - 155 ft. **(x2)**		Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)**		Fiber Jumper - 15 ft.	
TMAs		Generic Twin Style 1B - AWS (AtAntenna)						
Diplexers / Combiners								
Radio				Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)			
Sector Equipment								

Unconnected Equipment:

Cable: 1-5/8" Coax - 155 ft.

Scope of Work:

Replace LB Dual in Position 2 with (1) LB/MB Octo in Position 3.
Replace RRUS11 B12 in Position 2 with (1) Radio 4449 B71+B12 for L600 and L700 in Position 3.
Position 2 will be left empty.
Remove (1) Coaxial Line.

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

RAN Template:	A&L Template:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro						
Antenna	1		2	3			
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	80			80			
M. Tilt	0			0			
Height	109			109			
Ports	P1	P2		P3	P4	P5	P6
Active Tech.	L2500 N2500	L2500 N2500		L700 L600 N600	L700 L600 N600	U2100 L2100 L1900 G1900	U2100 L2100 L1900 G1900
Dark Tech.							
Restricted Tech.							
Decomm. Tech.							
E. Tilt	2	2		2	2	2	2
Cables	Fiber Jumper	Fiber Jumper		Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**
TMAs							
Diplexers / Combiners							
Radio				Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment							

Unconnected Equipment:

Scope of Work:

There will be Two antennae per sector.

Remove all TMAs.

Remove all Coaxial Lines.

Remove AIR21 B2P/B4A from Position 1.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 1.

Add (1) Radio 4460 B25+B66 for L2100, L1900, U2100 and GSM to Position 3 at antenna.

Remove AIR21 from Position 4.

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:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Sector 2 (Existing) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1		2	3				4	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	190			190				190	
M. Tilt	2			0				2	
Height	109			109				109	
Ports	P1	P2		P3	P4	P5	P6	P7	P8
Active Tech.	L1900 G1900	U2100		L700 L600 N600	L700 L600 N600			L2100	
Dark Tech.									
Restricted Tech.									
Decomm. Tech.									
E. Tilt	0	3		2	2			3	
Cables	Fiber Jumper - 15 ft. **(x2)**	1-5/8" Coax - 155 ft. **(x2)**		Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)**			Fiber Jumper - 15 ft.	
TMAs		Generic Twin Style 1B - AWS (AtAntenna)							
Diplexers / Combiners									
Radio				Radio 4449 B71+B85 (Antenna)	SHARED Radio 4449 B71+B85 (Antenna)				
Sector Equipment									

Unconnected Equipment:

Cable: 1-5/8" Coax - 155 ft.

Scope of Work:

Replace LB Dual in Position 2 with (1) LB/MB Octo in Position 3.
Replace RRUS11 B12 in Position 2 with (1) Radio 4449 B71+B12 for L600 and L700 in Position 3.
Position 2 will be left empty.
Remove (1) Coaxial Line.

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

RAN Template:	A&L Template:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro						
Antenna	1		2	3			
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	190			190			
M. Tilt	0		0	0			
Height	109			109			
Ports	P1	P2		P3	P4	P5	P6
Active Tech.	L2500 N2500	L2500 N2500		L700 L600 N600	L700 L600 N600	U2100 L2100 L1900 G1900	U2100 L2100 L1900 G1900
Dark Tech.							
Restricted Tech.							
Decomm. Tech.							
E. Tilt	2	2		2	2	2	2
Cables	Fiber Jumper	Fiber Jumper		Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**
TMAs							
Diplexers / Combiners							
Radio				Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment							

Unconnected Equipment:

Scope of Work:

There will be Two antennae per sector.

Remove all TMAs.

Remove all Coaxial Lines.

Remove AIR21 B2P/B4A from Position 1.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 1.

Add (1) Radio 4460 B25+B66 for L2100, L1900, U2100 and GSM to Position 3 at antenna.

Remove AIR21 from Position 4.

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:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Sector 3 (Existing) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1		2	3				4	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	290			290				290	
M. Tilt	2			0				2	
Height	109			109				109	
Ports	P1	P2		P3	P4	P5	P6	P7	P8
Active Tech.	L1900 G1900	U2100		L700 L600 N600	L700 L600 N600			L2100	
Dark Tech.									
Restricted Tech.									
Decomm. Tech.									
E. Tilt	0	2		2	2			2	
Cables	Fiber Jumper - 15 ft. **(x2)**	1-5/8" Coax - 155 ft. **(x2)**		Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)**			Fiber Jumper - 15 ft.	
TMAs		Generic Twin Style 1B - AWS (AtAntenna)							
Diplexers / Combiners									
Radio				Radio 4449 B71+B85 (Antenna)	SHARED Radio 4449 B71+B85 (Antenna)				
Sector Equipment									

Unconnected Equipment:

Cable: 1-5/8" Coax - 155 ft.

Scope of Work:

Replace LB Dual in Position 2 with (1) LB/MB Octo in Position 3.
Replace RRUS11 B12 in Position 2 with (1) Radio 4449 B71+B12 for L600 and L700 in Position 3.
Position 2 will be left empty.
Remove (1) Coaxial Line.

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

RAN Template:	A&L Template:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro						
Antenna	1		2	3			
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	290			290			
M. Tilt	0		0	0			
Height	109			109			
Ports	P1	P2		P3	P4	P5	P6
Active Tech.	L2500 N2500	L2500 N2500		L700 L600 N600	L700 L600 N600	U2100 L2100 L1900 G1900	U2100 L2100 L1900 G1900
Dark Tech.							
Restricted Tech.							
Decomm. Tech.							
E. Tilt	2	2		2	2	2	2
Cables	Fiber Jumper	Fiber Jumper		Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**
TMAs							
Diplexers / Combiners							
Radio				Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment							

Unconnected Equipment:

Scope of Work:

There will be Two antennae per sector.

Remove all TMAs.

Remove all Coaxial Lines.

Remove AIR21 B2P/B4A from Position 1.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 1.

Add (1) Radio 4460 B25+B66 for L2100, L1900, U2100 and GSM to Position 3 at antenna.

Remove AIR21 from Position 4.

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:
67D5A998E Outdoor	67D5998E_1xAIR+1OP

CTNH735A_Anchor_6_draft

Print Name: Standard (Scoping_P-RFDS_A)
PORs: Anchor_Phase 3

Section 7 - Power Systems Equipment

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

	Proposed Power Systems Equipment
Enclosure	1
Enclosure Type	Enclosure 6160

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: CTNH735A

CT11051 Replacement
125 Washington Avenue
North Haven, Connecticut 06473

November 29, 2021

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**28.02%**

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

November 29, 2021

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

Emissions Analysis for Site: CTNH735A - CT11051 Replacement

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **125 Washington Avenue** in **North Haven, 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 125 Washington Avenue in North Haven, 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 power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

8) 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 60 Watts.

9) 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 20 Watts.

10) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

11) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

12) 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.

13) 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.

14) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 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.

15) The antenna mounting height centerline of the proposed antennas is 109 feet above ground level (AGL).

16) 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.

17) 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:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
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:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	109 feet	Height (AGL):	109 feet	Height (AGL):	109 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A1 MPE %:	**12.32%**	Antenna B1 MPE %:	**12.32%**	Antenna C1 MPE %:	**12.32%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd / 16.35 dBd
Height (AGL):	109 feet	Height (AGL):	109 feet	Height (AGL):	109 feet
Channel Count:	15	Channel Count:	15	Channel Count:	15
Total TX Power (W):	620 Watts	Total TX Power (W):	620 Watts	Total TX Power (W):	620 Watts
ERP (W):	20,641.14	ERP (W):	20,641.14	ERP (W):	20,641.14
Antenna A2 MPE %:	**8.90%**	Antenna B2 MPE %:	**8.90%**	Antenna C2 MPE %:	**8.90%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	21.22%
AT&T	6.59%
XM Sat Radio	0.21%
Site Total MPE % :	28.02%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	21.22%
T-Mobile Sector B Total:	21.22%
T-Mobile Sector C Total:	21.22%
Site Total MPE % :	28.02%

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 2500 MHz LTE 1C & 2C Traffic	1	11044.63	109.0	37.43	2500 MHz LTE 1C & 2C Traffic	1000	3.74%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	109.0	3.64	2500 MHz LTE 1C & 2C Broadcast	1000	0.36%
T-Mobile 2500 MHz NR Traffic	1	22089.26	109.0	74.86	2500 MHz NR Traffic	1000	7.49%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	109.0	7.28	2500 MHz NR Broadcast	1000	0.73%
T-Mobile 600 MHz LTE	2	591.73	109.0	4.01	600 MHz LTE	400	1.00%
T-Mobile 600 MHz NR	1	1577.94	109.0	5.35	600 MHz NR	400	1.34%
T-Mobile 700 MHz LTE	2	648.82	109.0	4.40	700 MHz LTE	467	0.94%
T-Mobile 1900 MHz GSM	4	1101.85	109.0	14.94	1900 MHz GSM	1000	1.49%
T-Mobile 1900 MHz LTE	2	2203.69	109.0	14.94	1900 MHz LTE	1000	1.49%
T-Mobile 2100 MHz UMTS	2	1294.56	109.0	8.77	2100 MHz UMTS	1000	0.88%
T-Mobile 2100 MHz LTE	2	2589.11	109.0	17.55	2100 MHz LTE	1000	1.75%
						Total:	**21.22%**

• 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:	21.22%
Sector B:	21.22%
Sector C:	21.22%
T-Mobile Maximum MPE % (Sector A):	21.22%
Site Total:	28.02%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **28.02%** 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.