[redacted] Industrial Ave,
[redacted]ite 3
[redacted]ahwah NJ 07430

[redacted]one: 201.684.0055
[redacted]x: 201.684.0066

Transcend Wireless

August 12, 2021

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

RE: Notice of Exempt Modification
2 Dwight Street, North Haven, CT 06473
Latitude: 41.42210556
Longitude: -72.84740556
T-Mobile Site#: CT11398A - Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 130' level of the 150' monopole located at 2 Dwight Street in North Haven CT. The monopole is owned by American Tower and the property is owned by Dwight Street Associates. T-Mobile now intends to replace six (6) of its existing antennas with six (6) L2100/L2500/N2500 antennas. The new antennas would be installed at the same 130' level of the tower with mount modifications. The new antennas support 5G services.

Planned Modifications:
Tower:
Install New:
(3) APX16DWV-16DWV-S-E-A20 Antennas
(3) Ericsson AIR6449 B41 Antennas
(3) Radio 4415 B66
(3) Radio 4424 B25
(1) 1 ⅝" Coax Cable
(3) SDX1926Q-43 Diplexers

Existing to Remain:
(3) APXVAARR24-43-U-NA20 Antennas
(3) Radio 4449 B71 B85
(6) 1 ⅝" Coax Cables
(2) 1 ⅝" Hybrid Cables

To Be Removed:
(3) AIR21 KRC118023 B2A B4P Antennas
(3) AIR 21 KRC118023 B2P B4A Antennas
(3) Radio 4449 B12 B7
(3) KRY 112 114/1 TMAs
(1) 1 ¼" Hybrid Cable
(4) 1 ⅝" Coax Cables

Ground Work:
Install (1) Power Enclosure 6160, (1) Battery Cabinet B160, (1) BB6648, (1) PSU 4813, (1) CSR IXRE, (1) Tower Junction Box

This tower was originally approved by the Connecticut Siting Council on July 24, 1984 in Do. 44. Documentation on the original approval of the tower is enclosed with the submission. The proposed modification complies with all previous approvals.

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 Magaraci, 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 Magaraci - Zoning Enforcement Office
Dwight Street Associates- Property Owner
American Tower - Tower Owner

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

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

CT 065 2-03

UPS GROUND
TRACKING #: 1Z V25 742 03 9554 5067

BILLING: P/P

Reference #1: CT11398A

XOL 21.07.05 NV45 31.0A 07/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
ZONING ENFORCEMENT OFFICER
LAURA MAGARACI
18 CHURCH STREET
NORTH HAVEN CT 06473

CT 065 2-03

UPS GROUND
TRACKING #: 1Z V25 742 03 9342 1739

BILLING: P/P

Reference #1: CT11398A

XOL 21.07.05 NV45 31.0A 07/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
DWIGHT STREET ASSOCIATES
2 DWIGHT STREET
NORTH HAVEN CT 06473

CT 065 2-03

UPS GROUND
TRACKING #: 1Z V25 742 03 9002 1757

BILLING: P/P

Reference #1: CT11398A

XOL 21.07.05 NV45 31.0A 07/2021*

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 9211 9747

BILLING: P/P

Reference #1: CT11398A

XOL 21.07.05 NV45 31.0A 07/2021*

Hello, your package has been delivered.

Delivery Date: Friday, 08/06/2021

Delivery Time: 12:27 PM

Left At: REAR DOOR

Signed by: REL 247

TRANSCEND WIRELESS

Tracking Number:	1ZV257420392119747
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:	CT11398A

Hello, your package has been delivered.

Delivery Date: Friday, 08/06/2021

Delivery Time: 11:19 AM

Left At: INSIDE DELIV

Signed by: OFFICE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420395545067
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:	CT11398A

Hello, your package has been delivered.

Delivery Date: Friday, 08/06/2021

Delivery Time: 11:19 AM

Left At: RECEIVER

Signed by: DESK

TRANSCEND WIRELESS

Tracking Number:	1ZV257420390021757
Ship To:	DWIGHT STREET ASSOCIATES 2 DWIGHT STREET NORTH HAVEN, CT 06473 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT11398A

Hello, your package has been delivered.

Delivery Date: Friday, 08/06/2021

Delivery Time: 11:19 AM

Left At: INSIDE DELIV

Signed by: OFFICE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420393421739
Ship To:	LAURA MAGARACI 18 CHURCH STREET NORTH HAVEN, CT 06473 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT11398A


150T
4T
Quinnipiac River
69

80
Dwight St
21
20

Parcel Information

Location:	2 DWIGHT ST	Property Use:	Industrial	Primary Use:	Warehouse
Unique ID:	336235	Map Block Lot:	100 002	Acres:	13.80
490 Acres:	0.00	Zone:	IL80	Volume / Page:	0758/0254
Developers Map / Lot:		Census:	1672		

Value Information

	Appraised Value	Assessed Value
Land	624,848	437,390
Buildings	2,402,000	1,681,400
Detached Outbuildings	260,000	182,000
Total	3,286,848	2,300,790

Owner's Information

Owner's Data
2 DWIGHT STREET ASSOCIATES LLC 2 DWIGHT ST NORTH HAVEN, CT 06473

Building 1

Category:	Industrial	Use:	Warehouse	GLA:	48,276
Stories:	2.00	Construction:	Steel	Year Built:	2007
Heating:	Forced Hot Air	Fuel:	Natural Gas	Cooling Percent:	25
Siding:	Pre-Cast Concrete	Roof Material:	Tar and Gravel	Beds/Units:	0

Special Features

Comm Frgt Elev	1
Mezzanine Unfinished	2400
Wet Sprinklers	48276

Attached Components

Type:	Year Built:	Area:
Canopy	2007	231
Enclosed Porch	2007	216

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Paving	2007	0.00	0.00	60,000
Cell Tower	2009	0.00	0.00	1

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
2 DWIGHT STREET ASSOCIATES LLC	0758	0254	01/22/2007		$0
FRD ASSOCIATES LLC	0722	0590	10/06/2005		$900,000
MILFORD FREEZER DEVELOPMENT LLC	0554	0253	03/24/2000		$0
ULBRICH FREDERICK C JR	0362	0117	12/19/1986		$0
ULBRICH STAINLESS STEELS	0362	0113	12/19/1986		$0

DOCKET NO. 44

AN APPLICATION SUBMITTED BY THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE AND OPERATION OF FACILITIES TO PROVIDE CELLULAR SERVICE IN NEW HAVEN COUNTY	:	CONNECTICUT SITING COUNCIL
	:	July 24, 1984

D E C I S I O N A N D O R D E R

Pursuant to the foregoing opinion, the Council hereby directs that a certificate of environmental compatibility and public need as required by section 16-50k of the General Statutes of Connecticut, revisions of 1958, revised to 1983, as amended, be issued to the Southern New England Telephone Company for the construction, operation, and maintenance of a telecommunications tower and associated equipment to provide cellular service at each of the following sites:

Jasudowich tract, Brushy Plain Road, Branford, Connecticut;
Town of Guilford tract, Tanner Marsh Road, Guilford, Connecticut;
Bridgeport Avenue, Milford, Connecticut;
Quagliaro tract, Farmdale Drive, Waterbury, Connecticut;
Pease Road, Woodbridge, Connecticut; and
Dwight Street, North Haven, Connecticut.

The facilities shall be constructed, operated, and maintained as specified in the Council's record on this matter, and subject to the following conditions:

1. The towers including antennas shall be no taller than necessary to provide the proposed service and in no event shall exceed

   a) 167' at the Branford site,
   b) 167' at the Guilford site,
   c) 117' at the Milford site,
   d) 167' at the Waterbury site,
   e) 167' at the Woodbridge site,
   f) 167' at the North Haven site;

2. A fence not lower than eight feet shall surround each tower and its associated equipment;

3. The applicant or its successor shall notify the Council if and when directional antennas or any other equipment is added to any of these facilities;
4. The applicant or its successor shall permit, in accordance with representations made by it during the proceeding, public or private entities to share space on the facilities, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing;
5. Unless necessary to comply with condition number six, below, no lights shall be installed on any of these towers;
6. The facilities shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations;
7. The applicant shall submit a development and management plan (D&M) for the Branford, Milford, Woodbridge, and North Haven sites pursuant to sections 16-50j-85 through 16-50j-87 of the regulations of state agencies, except that irrelevant items in section 16-50j-86 need only be identified as such. The D&M plans shall include appropriate evergreen screening of the sites, erosion control measures, reseeding plans, and tree removal plans. The applicant shall comply with the reporting requirements of section 16-50j-87 for all sites;
8. Construction activities shall take place during daylight working hours;
9. This decision and order shall be void and the towers and associated equipment approved herein shall be dismantled and removed, or reapplication for any new use shall be made to the Connecticut

Siting Council before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction;

10. This decision and order shall be void if all construction authorized is not completed within three years of the issuance of this decision.

Pursuant to section 16-50p of the General Statutes, we hereby direct that a copy of the opinion and decision and order be served on each person listed below. A notice of the issuance shall be published in the Hartford Courant, New Haven Register, and the Waterbury Republican.

The parties to this proceeding are

The Southern New England Telephone Company
Room 314
227 Church Street
New Haven, Connecticut 06506

(Applicant)

ATTENTION: Mr. Peter J. Tyrrell
Senior Attorney

(its attorney)

Town of Hamden
Peter F. Villano, Mayor
Shirley Gonzales, Town Planner

represented by:

Mr. Hugh Manke, Esquire
Office of the Town Attorney
Memorial Town Hall
2372 Whitney Avenue
Hamden, Connecticut 06518

Inland Wetlands Agency
Town of Woodbridge

represented by:

Robert J. Klancko
Chairman
Town Hall
11 Meeting House Lane
Woodbridge, Connecticut 06525

Town Plan and Zoning Commission
Town of Woodbridge

represented by:

Norman Fineberg
Chairman
Town Hall
11 Meeting House Lane
Woodbridge, Connecticut 06525

The Honorable Peter M. Lerner
State Representative
State of Connecticut
House of Representatives
State Capitol
Hartford, Connecticut 06115

John Menta
Felicia Tencza

represented by:

Ms. Felicia Tencza
580 Gaylord Mountain Road
Hamden, Connecticut 06518

Ms. Renee Robinson
265 Blue Trail
Hamden, Connecticut 06518

(service waived)

Irene L. Wong
Edson H. Mount
Dr. & Mrs. H.M. Fiskio
Dr. & Mrs. Alexander Gottschalk

represented by:

Dr. & Mrs. Alexander Gottschalk
230 Six Rod Highway
Hamden, Connecticut 06518

The Sleeping Giant Park Association

represented by:

Mr. Dag Pfeiffer
President
Box 14
Quinnipiac College
Hamden, Connecticut 06518

West Rock Ridge Park Association

represented by:

Mr. William L. Dohney, Jr., D.D.S.
President
220 Mountain Road
Hamden, Connecticut 06514

Sierra Club

represented by:

Ms. M. Kim Yanoshick
Executive Director
Hartford Chapter
118 Oak Street
Hartford, Connecticut 06106

Quinnipiac College	represented by: Mr. Richard A. Terry President Hamden, Connecticut 06518
Guilford Conservation Commission	represented by: Ms. Carolyn K. Evans Chairman Town Hall Park Street Guilford, Connecticut 06437
Mrs. Barbara R. Peterson Mary & Phil Faust Anita L. & Richard M. Sullivan	represented by: Anita L. & Richard M. Sullivan 315 Chestnut Lane Hamden, Connecticut 06518
Mrs. Pauline H. Hoff	represented by: Herbert L. Emanuelson, Jr. Emanuelson and Wynne 205 Church Street New Haven, Connecticut 06510
Hamden League of Women Voters	represented by: Mrs. Sherrill Zoller 605 West Woods Road Hamden, Connecticut 06518 (service waived)
Joan Rosenberg 230 Ridewood Avenue Hamden, Connecticut 06517	
Mr. & Mrs. Richard Sykes 110 Blue Trail Hamden, Connecticut 06518	
Thomas & Claudia Sullivan, Jr. 100 Blue Trail Hamden, Connecticut 06518	
Mr. William N. Pantalone 27 Pease Road Woodbridge, Connecticut 06525	(service waived)

INTERVENORS

Metromedia TeleCommunications
Nutmeg Telecommunications, Inc.
CSI of New Haven
CSI of Stamford
Cellular Communications, Inc.
LIN Cellular Corp.
Cellular Mobile Services
Maxcell TeleCommunications, Inc.
Mobile Cellular Telephone, Inc.
Cellular Dynamics
Connecticut Corridor Cellular
Chase/Post Cellular

represented by:

Dwight A. Johnson
Murtha, Cullina, Richter
and Pinney
101 Pearl Street
P.O. Box 3197
Hartford, Connecticut 06103-0197

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut, this 24th day of July, 1984.

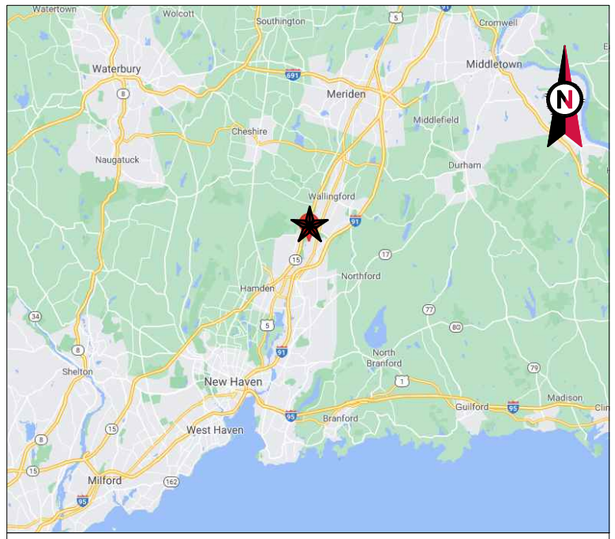
Council Members	Vote Cast
_____) Gloria Dibble Pond Chairperson	Absent
_____) Commissioner John Downey Designee: Commissioner Peter G. Boucher	Absent
Brian Emerick _____) Commissioner Stanley Pac Designee: Brian Emerick	~~Yes~~ ~~Absent~~ Abstain
Owen L. Clark _____) Owen L. Clark	Yes
Fred J. Doocy _____) Fred J. Doocy	Yes
Mortimer A. Gelston _____) Mortimer A. Gelston	Yes
James G. Horsfall _____) James G. Horsfall	Yes
_____) Janet Sitty	Absent
Colin C. Tait _____) Colin C. Tait Acting Chairperson	Yes

STATE OF CONNECTICUT)
: ss. New Britain, July 24, 1984
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Christopher S. Wood, Executive Director
Connecticut Siting Council



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: NORTH HAVEN CT 2
ATC SITE NUMBER: 302539
T-MOBILE SITE NAME: NORTH HAVEN MP X63/64
T-MOBILE SITE NUMBER: CT11398A
SITE ADDRESS: 4 DWIGHT STREET
NORTH HAVEN, CT 06473

T-MOBILE ANCHOR ANTENNA AMENDMENT PLAN
67D5A998C CONFIGURATION

LOCATION MAP

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. 2015 INTERNATIONAL BUILDING CODE (IBC)
2. 2017 NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: ILLUMINATING COMPANY
PHONE: (800) 722-5584

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

CBYD.COM 811
Call Before You Dig, Inc.

PROJECT SUMMARY

SITE ADDRESS:

4 DWIGHT STREET

NORTH HAVEN, CT 06473

COUNTY: NEW HAVEN

GEOGRAPHIC COORDINATES:

LATITUDE: 41.42194444

LONGITUDE: -72.84720000

GROUND ELEVATION: 20' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

ENGINEER:

KIMLEY-HORN
& ASSOCIATES, INC.
421 FAYETTEVILLE ST, STE 600
RALEIGH, NC 27601
COA: PEC.0000738

PROPERTY OWNER:

2 DWIGHT STREET ASSOC. LLC
2 DWIGHT ST
NORTH HAVEN, CT 06473

APPLICANT:

T-MOBILE

SUE EMERY
SUSAN.EMERY@
T-MOBILE.COM

PROJECT DESCRIPTION

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

TOWER WORK:

REMOVE (3) AIR21 KRC118023-1_B2A_B4P ANTENNA(s), (3) AIR21 KRC118023-1_B2P_B4A ANTENNA(s), (3) RADIO 4449 B12 B7 RRU(s), (3) KRY 112 144/1 TMA(s), (1) 9X18 (1 1/4") HYBRID CABLE(s), AND (4) 1 5/8" COAX CABLE(s)

INSTALL (3) AIR6449 B41 ANTENNA(s), (3) APX16DWV-16DWVS-E-A20 ANTENNA(s), (3) RRUS 4415 B66 RRU(s), (3) RADIO 4424 B25 ANTENNA(s), (3) SDX1926Q-43 DIPLEXER(s), AND (1) 6/24 (1 5/8") HYBRID CABLE(s)

EXISTING (3) APXVAAR24_43-U-NA20 ANTENNA(s), (3) RADIO 4449 B71 B85A RRU(s), (6) 1 5/8" COAX CABLE(s), AND (2) 6X12 (1 5/8") HYBRID CABLE(s) TO REMAIN

GROUND WORK:

INSTALL (1) ENCLOSURE 6160 SITE SUPPORT CABINET, (1) B160 BATTERY CABINET, (1) BB 6648, (1) PSU 4813, (1) TOWER JUNCTION BOX AND (1) CSR IXRE V2

EXISTING (1) RBS 6131, (1) DUW30, (1) DUG20, (2) BB 6630, (1) CABINET MOUNTED SIDECAR AND (6) RU22 TO REMAIN

THE PROPOSED PROJECT DOES NOT INCLUDE ELECTRICAL SCOPE

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.

PROJECT LOCATION DIRECTIONS

FROM WAILINGFORD:

TAKE MEADOW ST AND CHURCH ST TO N COLONY RD (0.2 MI)
CONTINUE ON N COLONG RD TO NORTH HAVEN (2.9 MI)
CONTINUE ON DEFCO PARK RD. DRIVE TO DWIGHT ST (0.6 MI)

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	07/15/21	JW
G-002	GENERAL NOTES	0	07/15/21	JW
C-101	DETAILED SITE PLAN	0	07/15/21	JW
C-102	DETAILED GROUND PLAN	0	07/15/21	JW
C-201	TOWER ELEVATION	0	07/15/21	JW
C-401	ANTENNA INFORMATION & SCHEDULE	0	07/15/21	JW
C-501	CONSTRUCTION DETAILS	0	07/15/21	JW
E-501	GROUNDING DETAILS	0	07/15/21	JW
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
R-605	SUPPLEMENTAL			

AMERICAN TOWER®

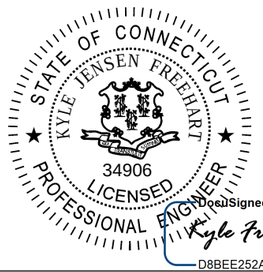
Kimley»Horn

COA: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FAQ	06/09/21
0	ISSUED FOR CONSTRUCTION	JW	07/15/21

ATC SITE NUMBER:
302539
ATC SITE NAME:
NORTH HAVEN CT 2
T-MOBILE SITE NAME:
NORTH HAVEN MP X63/64
SITE ADDRESS:
4 DWIGHT STREET
NORTH HAVEN, CT 06473

SEAL:



DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

T-Mobile

DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

TITLE SHEET

SHEET NUMBER: G-001

REVISION: 0

GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL

   A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   B. AC/TELCO INTERFACE BOX (PPC)
   C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   D. TOWERS, MONOPOLES
   E. TOWER LIGHTING
   F. GENERATORS & LIQUID PROPANE TANK
   G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   H. ANTENNAS (INSTALLED BY OTHERS)
   I. TRANSMISSION LINE
   J. TRANSMISSION LINE JUMPERS
   K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   L. TRANSMISSION LINE GROUND KITS
   M. HANGERS
   N. HOISTING GRIPS
   O. BTS EQUIPMENT

2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.

3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.

4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.

6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.

7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.

8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.

9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.

11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.

12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.

13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.

14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.

15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.

16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.

17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.

18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.

19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.

20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.

21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.

22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.

23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.

24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.

26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.

28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.

30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.

31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.

32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.

33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:

   A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.

   B. INSTALL ANTENNA AS INDICATED ON DRAWINGS AND T-MOBILE SPECIFICATIONS.

   C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

   D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.

   E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.

   F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.

   G. ANTENNA AND COAXIAL CABLE GROUNDING:

i. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.

ii. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS).

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

AMERICAN TOWER®

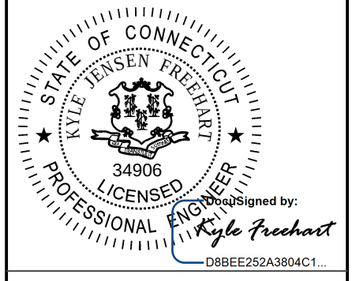
Kimley»Horn

COA: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FAQ	06/09/21
0	ISSUED FOR CONSTRUCTION	JW	07/15/21

ATC SITE NUMBER:
302539
ATC SITE NAME:
NORTH HAVEN CT 2
T-MOBILE SITE NAME:
NORTH HAVEN MP X63/64
SITE ADDRESS:
4 DWIGHT STREET
NORTH HAVEN, CT 06473

SEAL:



T-Mobile

DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

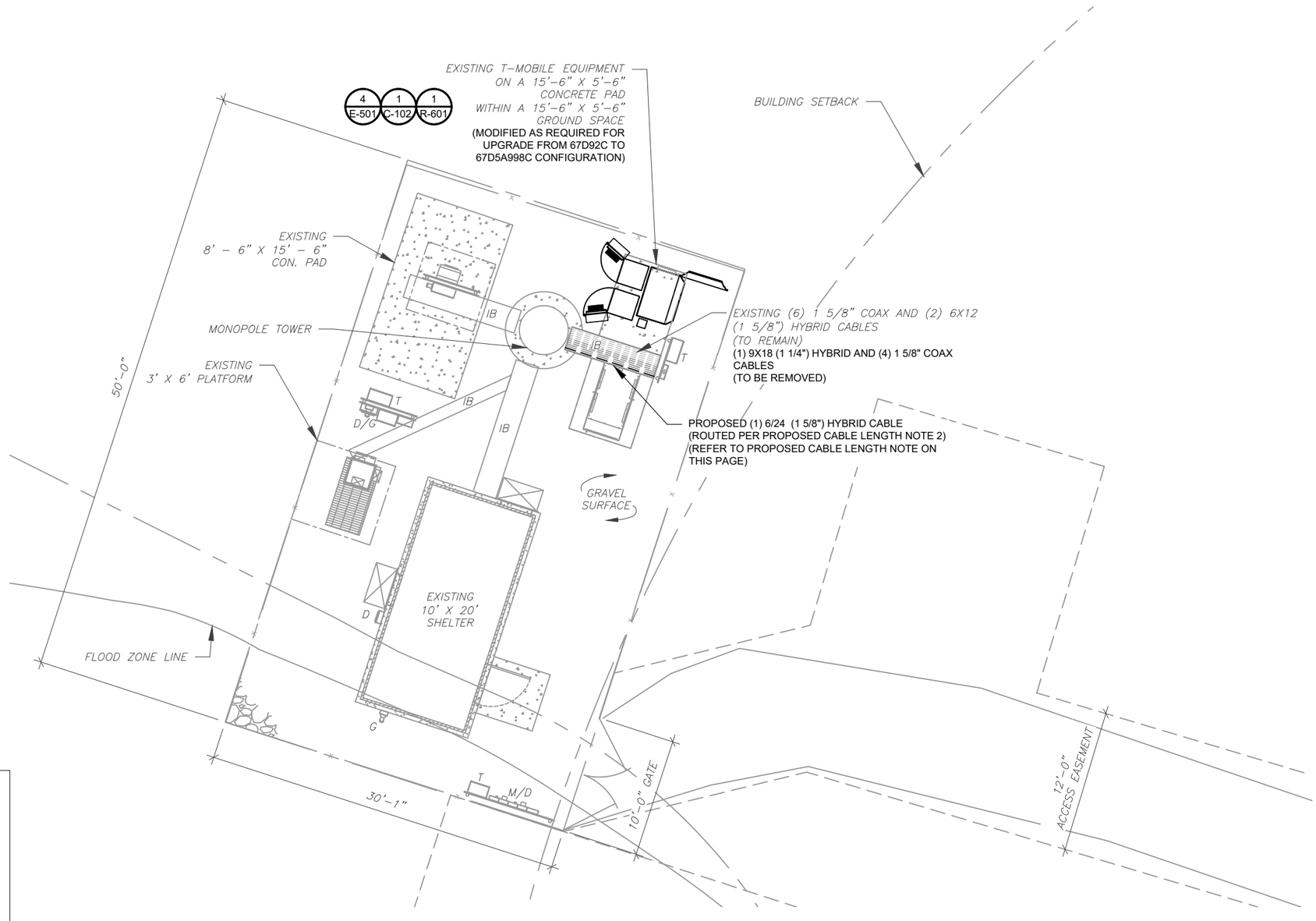
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

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

3. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

LEGEND

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



1 DETAILED SITE PLAN

0 10' 20'

SCALE: 1"=10' (11X17)
1"=5' (22X34)

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.

AMERICAN TOWER®

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421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FAQ	06/09/21
0	ISSUED FOR CONSTRUCTION	JW	07/15/21

ATC SITE NUMBER:
302539
ATC SITE NAME:
NORTH HAVEN CT 2
T-MOBILE SITE NAME:
NORTH HAVEN MP X63/64
SITE ADDRESS:
4 DWIGHT STREET
NORTH HAVEN, CT 06473

SEAL:

STATE OF CONNECTICUT · KYLE JENSEN FREEHART · 34906 LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

T-Mobile

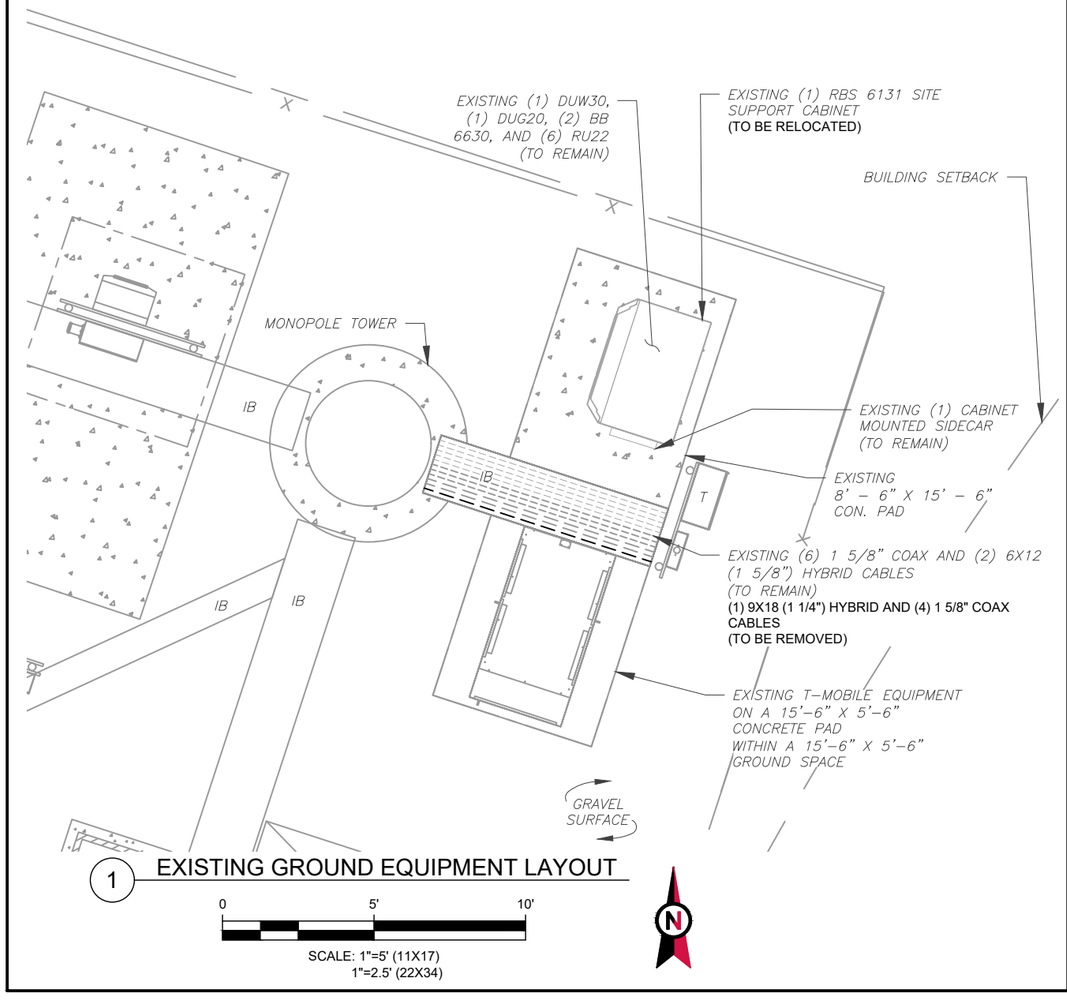
DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

DETAILED SITE PLAN

SHEET NUMBER: C-101
REVISION: 0

SITE PLAN NOTES:

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. 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.

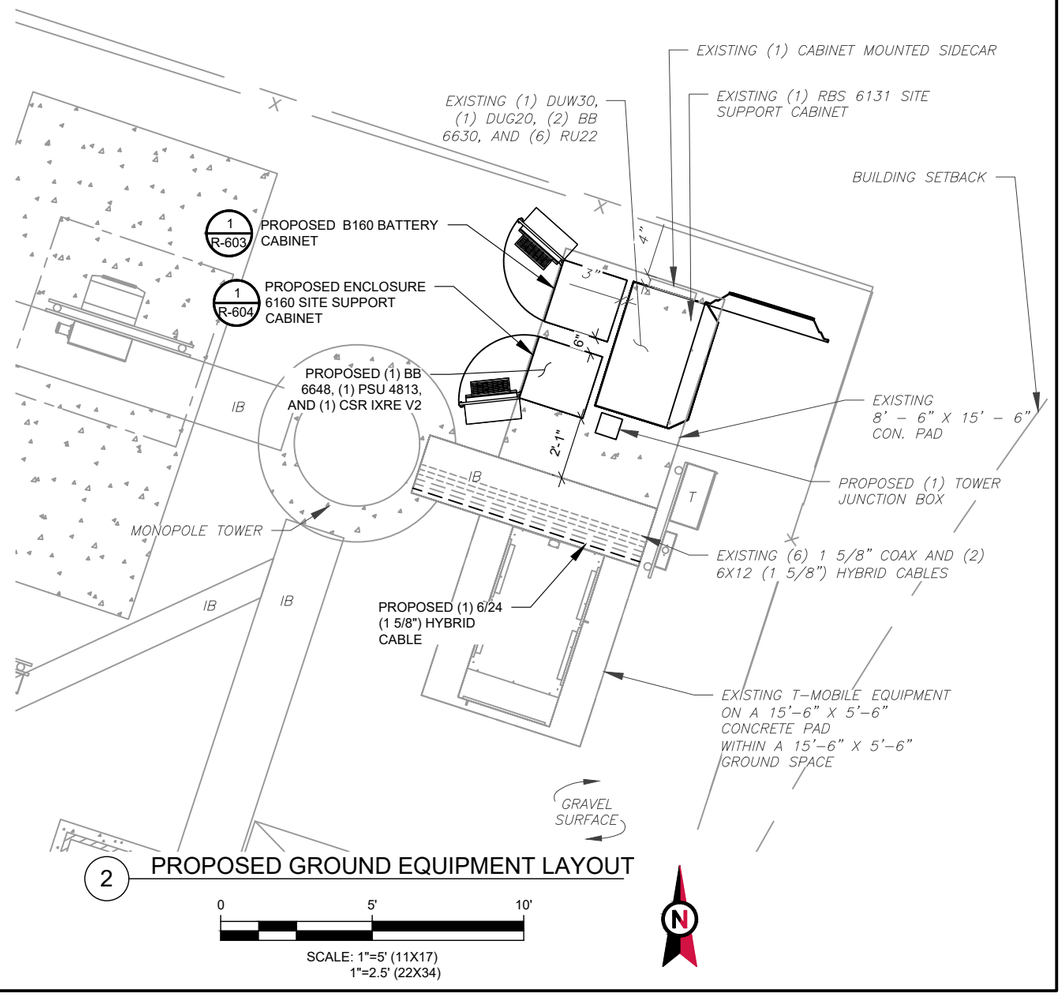


1 EXISTING GROUND EQUIPMENT LAYOUT

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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RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
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ATC SITE NUMBER:
302539
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NORTH HAVEN CT 2
T-MOBILE SITE NAME:
NORTH HAVEN MP X63/64
SITE ADDRESS:
4 DWIGHT STREET
NORTH HAVEN, CT 06473

SEAL:

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

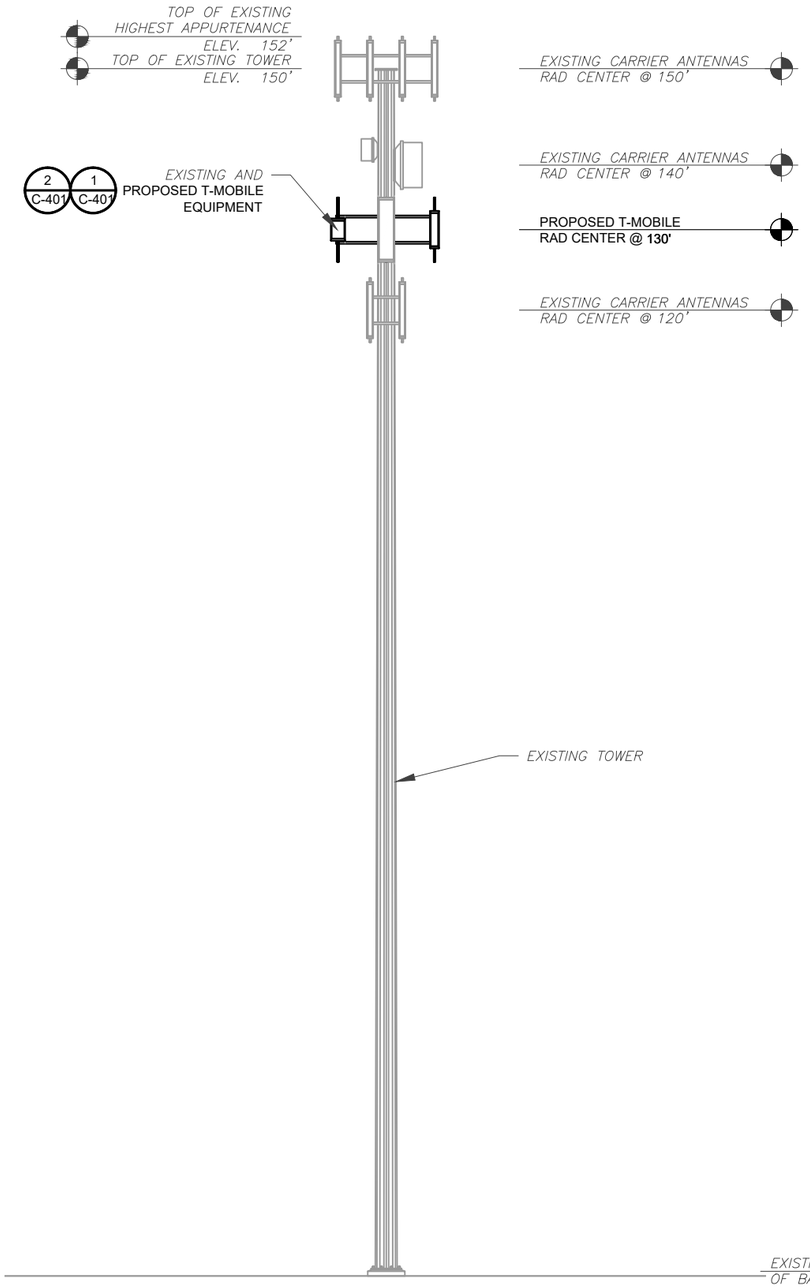
DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

T-Mobile

DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

DETAILED GROUND PLAN

SHEET NUMBER:	REVISION:
C-102	0



1 TOWER ELEVATION
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY KHA, DATED 05/24/21, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.

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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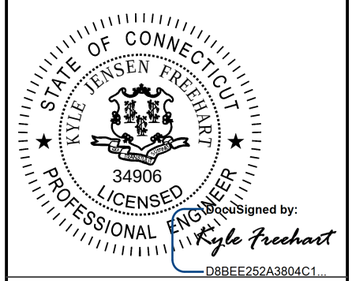
T-MOBILE SITE NAME:
NORTH HAVEN MP X63/64
SITE ADDRESS:
4 DWIGHT STREET
NORTH HAVEN, CT 06473

SEAL:

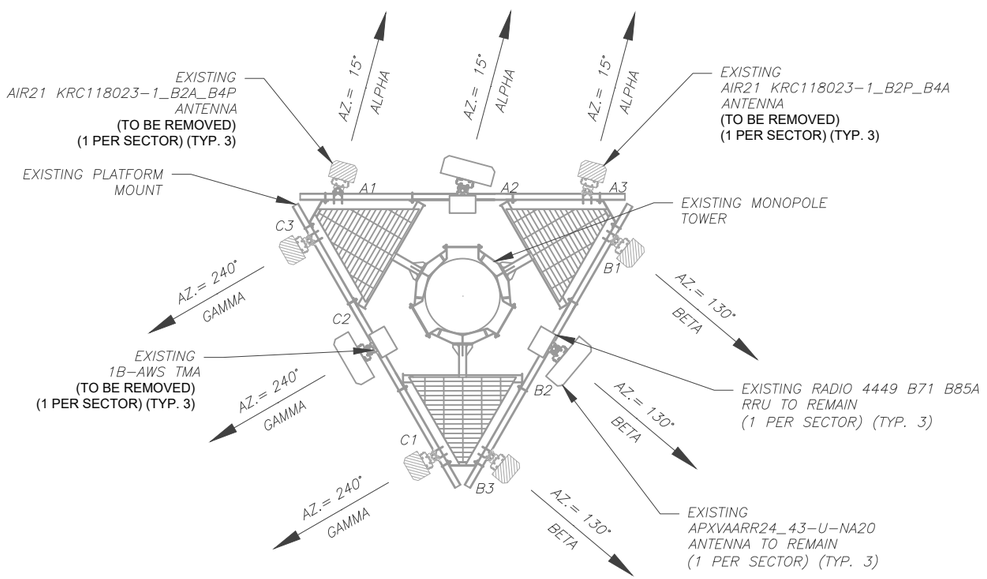


T-Mobile

DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

TOWER ELEVATION

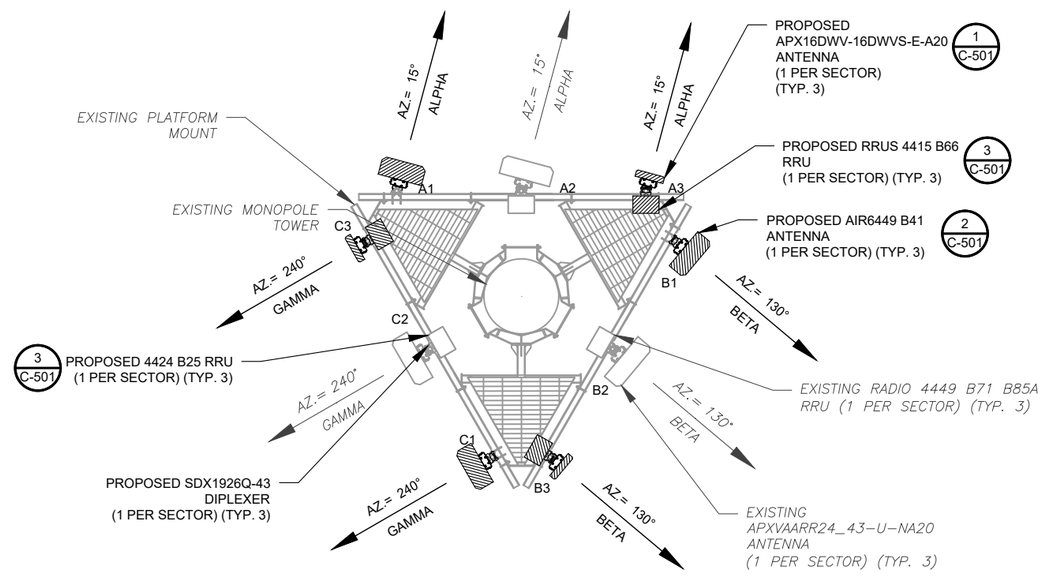
SHEET NUMBER:	REVISION:
C-201	0



1 EXISTING ANTENNA PLAN

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY KHA, DATED 05/24/21, 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	130'	15°	A1	AIR21 KRC118023-1_B2A_B4P	L1900/G1900/U2100	0°/2°/3°	RMV	–	–
			A2	APXVAARR24_43-U-NA20	L700/L600/N600	0°/2°	RMN	RADIO 4449 B71 B85A 1B-AWS	RMN RMV
			A3	AIR21 KRC118023-1_B2P_B4A	L2100	0°/3°	RMV	–	–
BETA	130'	130°	B1	AIR21 KRC118023-1_B2A_B4P	L1900/G1900/U2100	0°/2°/3°	RMV	–	–
			B2	APXVAARR24_43-U-NA20	L700/L600/N600	0°/2°	RMN	RADIO 4449 B71 B85A 1B-AWS	RMN RMV
			B3	AIR21 KRC118023-1_B2P_B4A	L2100	0°/3°	RMV	–	–
GAMMA	130'	240°	C1	AIR21 KRC118023-1_B2A_B4P	L1900/G1900/U2100	0°/2°/3°	RMV	–	–
			C2	APXVAARR24_43-U-NA20	L700/L600/N600	0°/2°	RMN	RADIO 4449 B71 B85A 1B-AWS	RMN RMV
			C3	AIR21 KRC118023-1_B2P_B4A	L2100	0°/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.
3. ROUTE HYBRID JUMPERS TO AVOID DAMAGE FROM BEING STEPPED UPON.

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	130'	15°	A1	AIR6449 B41	L2500/N2500	0°/2°	ADD	-	-
			A2	APXVAARR24_43-U-NA20	L700/L600/N600/L1900/G1900/U2100	0°/2°	RMN	RADIO 4449 B71 B85A 4424 B25 SDX1926Q-43	RMN ADD ADD
			A3	APX16DWV-16DWVS-E-A20	L2100	0°/3°	ADD	RRUS 4415 B66	ADD
BETA	130'	130°	B1	AIR6449 B41	L2500/N2500	0°/2°	ADD	-	-
			B2	APXVAARR24_43-U-NA20	L700/L600/N600/L1900/G1900/U2100	0°/2°	RMN	RADIO 4449 B71 B85A 4424 B25 SDX1926Q-43	RMN ADD ADD
			B3	APX16DWV-16DWVS-E-A20	L2100	0°/3°	ADD	RRUS 4415 B66	ADD
GAMMA	130'	240°	C1	AIR6449 B41	L2500/N2500	0°/2°	ADD	-	-
			C2	APXVAARR24_43-U-NA20	L700/L600/N600/L1900/G1900/U2100	0°/2°	RMN	RADIO 4449 B71 B85A 4424 B25 SDX1926Q-43	RMN ADD ADD
			C3	APX16DWV-16DWVS-E-A20	L2100	0°/3°	ADD	RRUS 4415 B66	ADD

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(4) 1 5/8"	(1) 1 1/4"	RMV
–	–	(6) 1 5/8"	(2) 1 5/8"	RMN

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(1) 1 5/8"	ADD
-	-	(6) 1 5/8"	(2) 1 5/8"	RMN

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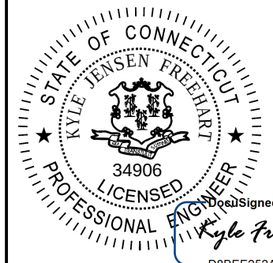
NORTH HAVEN, CT 06473

SEAL:



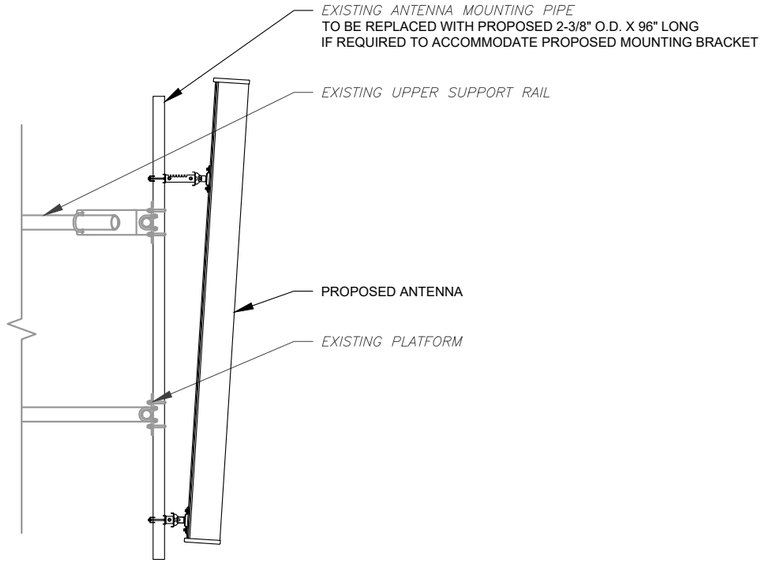
DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

T-Mobile

DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

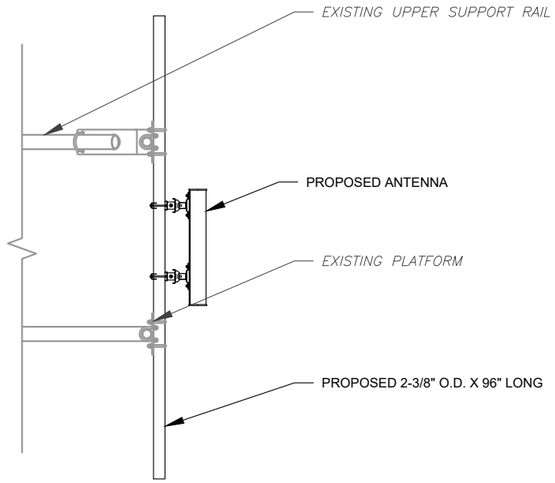
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



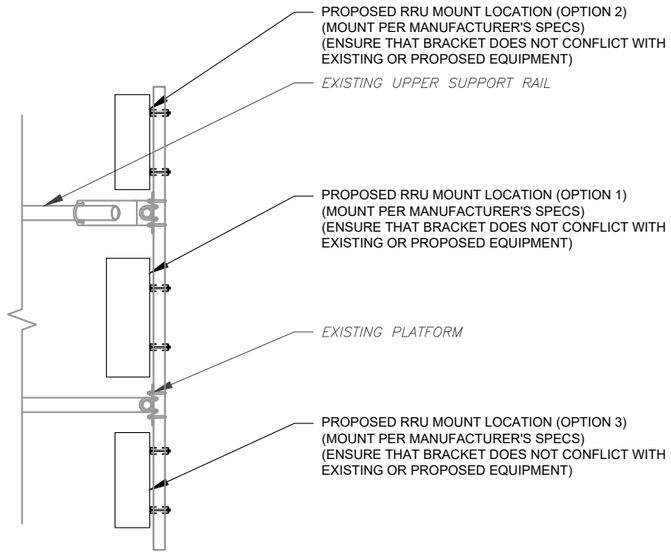
1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



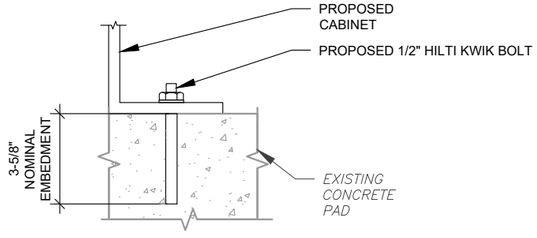
2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



3 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



NOTE:

INSTALL HILTI KWIK BOLT ANCHORS STRICTLY PER INSTALLATION INSTRUCTIONS INCLUDED WITH PRODUCT OR FOUND ONLINE AT WWW.US.HILTI.COM. PROPER INSTALLATION IS CRITICAL FOR FULL PERFORMANCE.

4 CABINET ATTACHMENT DETAIL

SCALE: NOT TO SCALE

AMERICAN TOWER®

Kimley»Horn

COA: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FAQ	06/09/21
0	ISSUED FOR CONSTRUCTION	JW	07/15/21

ATC SITE NUMBER:
302539

ATC SITE NAME:
NORTH HAVEN CT 2

T-MOBILE SITE NAME:
NORTH HAVEN MP X63/64

SITE ADDRESS:
4 DWIGHT STREET
NORTH HAVEN, CT 06473

SEAL:

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED
PROFESSIONAL ENGINEER

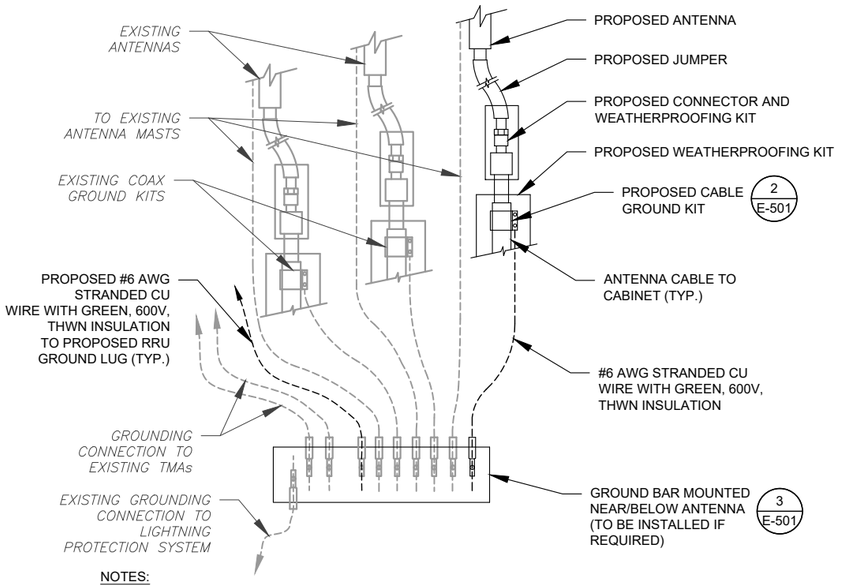
DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

T-Mobile

DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

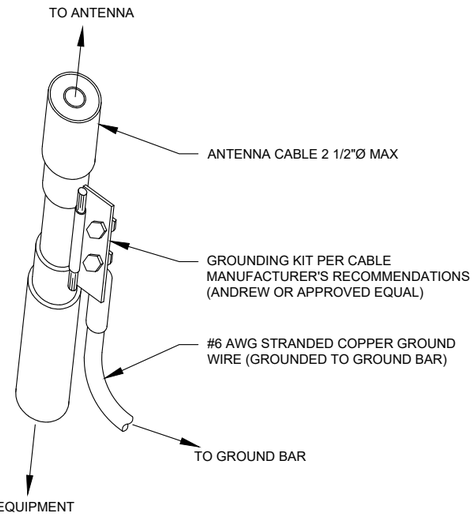


NOTES:

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

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: N.T.S.

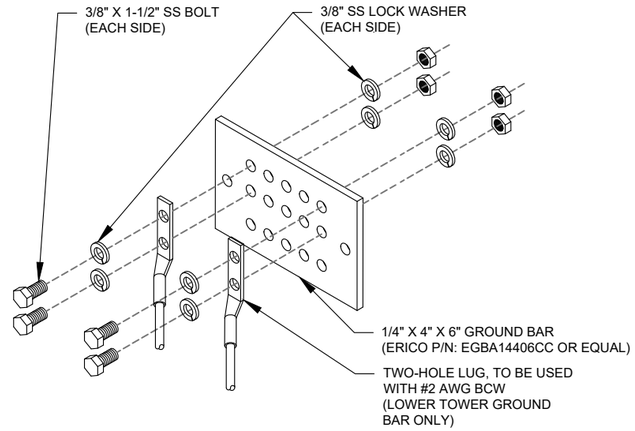


GROUND KIT NOTES:

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

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: N.T.S.

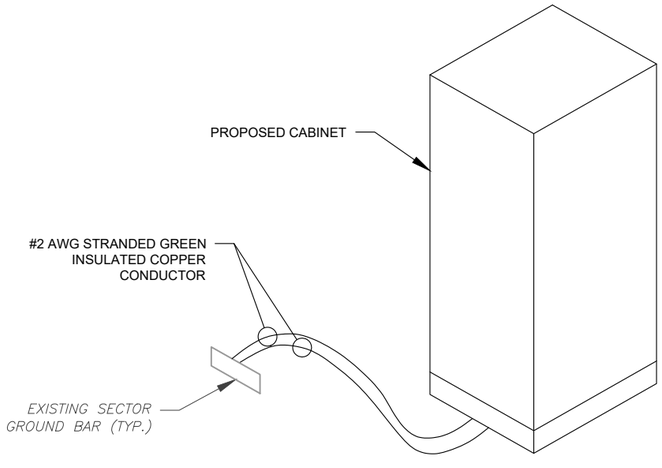


GROUND BAR NOTES:

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

3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.



4 CABINET GROUNDING DETAIL

SCALE: N.T.S.

ELECTRICAL NOTES:

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

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	#8 AWG	1-1/2"
150A/2P	2#1/0 AWG	#8 AWG	1-1/2"

AMERICAN TOWER®

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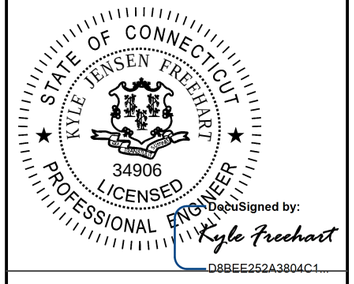
COA: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FAQ	06/09/21
0	ISSUED FOR CONSTRUCTION	JW	07/15/21

ATC SITE NUMBER:
302539
ATC SITE NAME:
NORTH HAVEN CT 2
T-MOBILE SITE NAME:
NORTH HAVEN MP X63/64
SITE ADDRESS:
4 DWIGHT STREET
NORTH HAVEN, CT 06473

SEAL:



T-Mobile

DATE DRAWN:	07/15/21
ATC JOB NO:	13677988
CUSTOMER ID:	NORTH HAVEN MP X63/64
CUSTOMER #:	CT11398A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3 L600_5G POPs

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92C Outdoor

	1
Enclosure	
Enclosure Type	RBS 6131
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 2)**
Radio	RU22 **(x 6)** U2100

Proposed RAN Equipment

Template: 67D5A998C Outdoor

	1	2	3
Enclosure			
Enclosure Type	RBS 6131	Enclosure 6160	B160
Baseband	DUW30 (U2100); DUG20 (G1900); BB 6630 (L2100, L1000); BB 6630 (L700, L600, N600)	BB 6648 (L2500, N2500)	
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* **(x 2)**	Ericsson Hybrid Trunk 6/24 4AWG 50m; PSU 4813	
Radio	RU22 **(x 6)** U2100		
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Remove Nortel Cabinet.

Add (1) Enclosure 6160.

Add (1) Battery Cabinet B160.

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.

Existing: (10) coaxial lines; (2) 6X12 HCS.

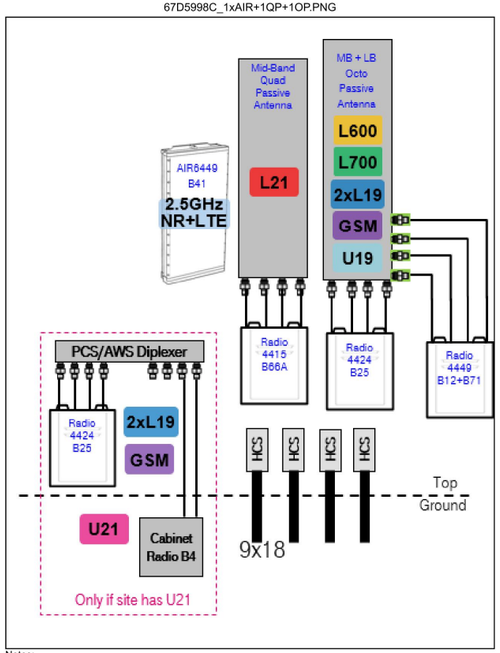
Keep (6) Coaxial Lines for U2100.

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

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

Section 3 - Proposed Template Images

67D5998C_1xAIR+1QP+1OP.PNG



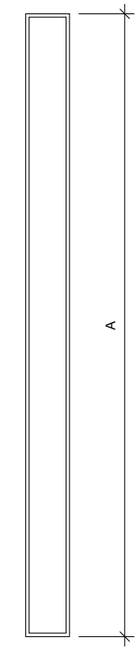
Notes:

2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

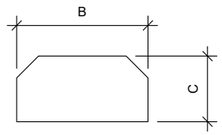
NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0



FRONT VIEW

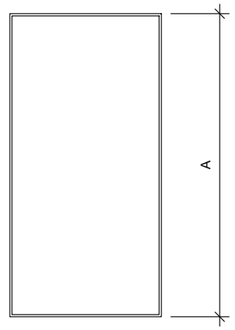


TOP VIEW

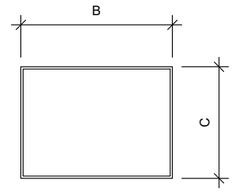
1 ANTENNA SPECIFICATIONS

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
APX16DWV-16DWVS-E-A20	55.9"	13.3"	3.1"	40.7



FRONT VIEW



TOP VIEW

2 RRU SPECIFICATIONS

FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

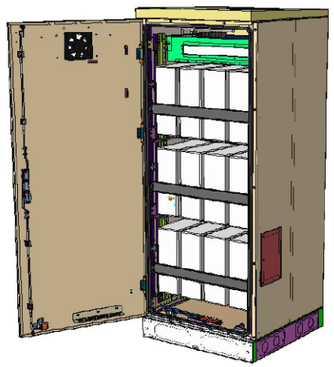
RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
4424 B25	17.1"	14.4"	11.3"	86
RRUS 4415 B66	15.0"	13.2"	5.4"	46

SUPPLEMENTAL

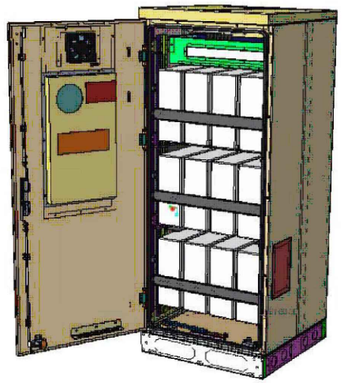
SHEET NUMBER: R-602

REVISION: 0

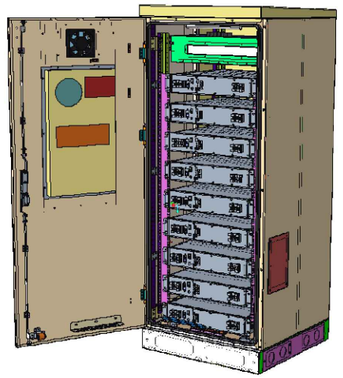
Enclosure B160



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:	REVISION:
R-603	0

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: 0

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

Kimley»Horn

Antenna Mount Analysis Report

ATC Site Name	:	**North Haven CT 2**
ATC Site Number	:	**302539**
Engineering Number	:	**13677988_C8_03**
Mount Elevation	:	**126 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**North Haven MP X63/64**
Carrier Site Number	:	**CT11398A**
Site Location	:	**4 Dwight Street** **North Haven, CT 6473** **41.42194444, -72.8472**
County	:	**New Haven**
Date	:	**May 24, 2021**
Max Usage	:	**87%**
Result	:	**Pass - Pending Mods**

Prepared By:
Joseph Kingston
E.I.T.

Reviewed By:
Kyle Freehart
P.E.

STATE OF CONNECTICUT · KYLE JENSEN FREEHART · 34906 · LICENSED · PROFESSIONAL ENGINEER

Kyle Freehart

Kimley-Horn and Associates, Inc. COA
#PEC.0000738

Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for T-Mobile at 126 ft.

Supporting Documents

Spec Sheet	SitePro1 P/N: HRK12-HD, dated 03/31/2015
Tower Analysis	ATC Engineering #12927158_C3_03, dated 07/18/2019
Mount Analysis	CLS Engineering PLLC Project #41124-12927158-01-MA-R1, dated 07/03/2019
RFDS	T-Mobile CT11398A_Anchor_5, dated 05/08/2021
Photos	Site Photos, dated 01/19/2018

Analysis

This antenna mount was analyzed using RISA-3D v17 analysis software and Kimley-Horn's Mount Analysis Program.

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:	S_s = 0.204, S_1 = 0.054
Site Class:	D - Stiff soil.
Live Loads:	Lm = 500 lbs., Lv = 250 lbs.

Conclusion

Based on the analysis results, the mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report. If the pending modifications cited in the Supporting Documents table are not completed, the results of this analysis are no longer valid, and T-Mobile should contact American Tower's Site Manager for further direction on how to proceed.

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.

Kimley-Horn and Associates, Inc. – 421 Fayetteville St., Suite 600 – Raleigh, NC 27601 – 919.677.2000 Office - www.kimley-horn.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	0

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

Kimley»Horn

Antenna Mount Analysis Report

ATC Site Name	:	**North Haven CT 2**
ATC Site Number	:	**302539**
Engineering Number	:	**13677988_C8_03**
Mount Elevation	:	**126 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**North Haven MP X63/64**
Carrier Site Number	:	**CT11398A**
Site Location	:	**4 Dwight Street** **North Haven, CT 6473** **41.42194444, -72.8472**
County	:	**New Haven**
Date	:	**May 24, 2021**
Max Usage	:	**87%**
Result	:	**Pass - Pending Mods**

Prepared By:
Joseph Kingston
E.I.T.

Reviewed By:
Kyle Freehart
P.E.

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED
PROFESSIONAL ENGINEER

Kyle Freehart
Digitally signed by Kyle Freehart
DN: C=US, E=kyle.freehart@kimley-horn.com, CN=Kyle Freehart
Date: 2021.05.25 16:52:10-04'00'

Kimley-Horn and Associates, Inc. COA #PEC.0000738

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CORPORATION

Table of Contents

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Mount Analysis	CLS Engineering PLLC Project #41124-12927158-01-MA-R1, dated 07/03/2019
RFDS	T-Mobile CT11398A_Anchor_5, dated 05/08/2021
Photos	Site Photos, dated 01/19/2018

Analysis

This antenna mount was analyzed using RISA-3D v17 analysis software and Kimley-Horn's Mount Analysis Program.

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, S_1 = 0.054
Site Class:	D - Stiff soil.
Live Loads:	Lm = 500 lbs., Lv = 250 lbs.

Conclusion

Based on the analysis results, the mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report. If the pending modifications cited in the Supporting Documents table are not completed, the results of this analysis are no longer valid, and T-Mobile should contact American Tower's Site Manager for further direction on how to proceed.

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.

Antenna Loading

Mount Centerline (ft)	Antenna Centerline (ft)	Qty	Antenna Model
126	130	3	RFS APXVAARR24_43-U-NA20
		3	Ericsson Air6449 B41
		3	RFS APX16DWV-16DWVS-E-A20
		3	Commscope SDX1926Q-43
		3	Ericsson RRUS 4415 B66
		3	Ericsson Radio 4449 B71 B85A
		3	Ericsson 4424 B25

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Corner Plates	87%	Pass
Mount Pipes	82%	Pass
Grating Angles	82%	Pass
Flange Plates	70%	Pass
Support Rails	63%	Pass
Stand-Off Horizontals	57%	Pass
Rail Angles	30%	Pass
Face Horizontals	21%	Pass

Standard Conditions

Analysis Method

RISA-3D (version 17.02.00), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A proprietary tool internally developed by Kimley-Horn was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included.

Assumptions

1) The antenna mounting system (including any considered modifications) was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA standards, and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in the Antenna Loading Table and the provided reference information.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members that could not be verified at this time.
5) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (Gr. 36)
HSS (Rectangular)	ASTM A36 (Gr. 36)
Pipe	ASTM A53 (Gr. B-35)
Threaded Rods	ASTM A36 (Gr. 36)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Kimley-Horn should be notified to determine the effect on the structural integrity of the antenna mounting system.

General Criteria	
TIA Standard	H
IBC Edition	2018
Structure Class	-
Risk Category	II

Site-Specific Criteria	
Exposure Category	B
Topographic Factor, K_{zt}	1.00
Structure Base Elev. (AMSL), z_s (ft)	18.79
Ground Effect Factor, K_e	1.00

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	126.00
Structure Height (ft)	152.00
Structure Type	Monopole

Constants	
Wind Direction Probability Factor, K_d	0.95
Gust Effect Factor, G_h	1
Shielding Factor, K_a **(antenna)**	0.9
Shielding Factor, K_a **(mount)**	0.9

Wind Summary	
Basic Wind Speed w/o Ice, **V** (mph)	120.00
Velocity Pressure Coeff., K_z	1.06
Velocity Pressure, q_z **(w/o Ice)** (psf)	36.95

Ice Load Summary	
Basic Wind Speed w/ Ice, V_i (mph)	50.00
Design Ice Thick. (ASCE 7-16) , t_i (in)	1
Velocity Pressure, q_z **(w/ Ice)** (psf)	6.41
Escalated Ice Thick. @ Mount, t_{iz} (in)	1.14

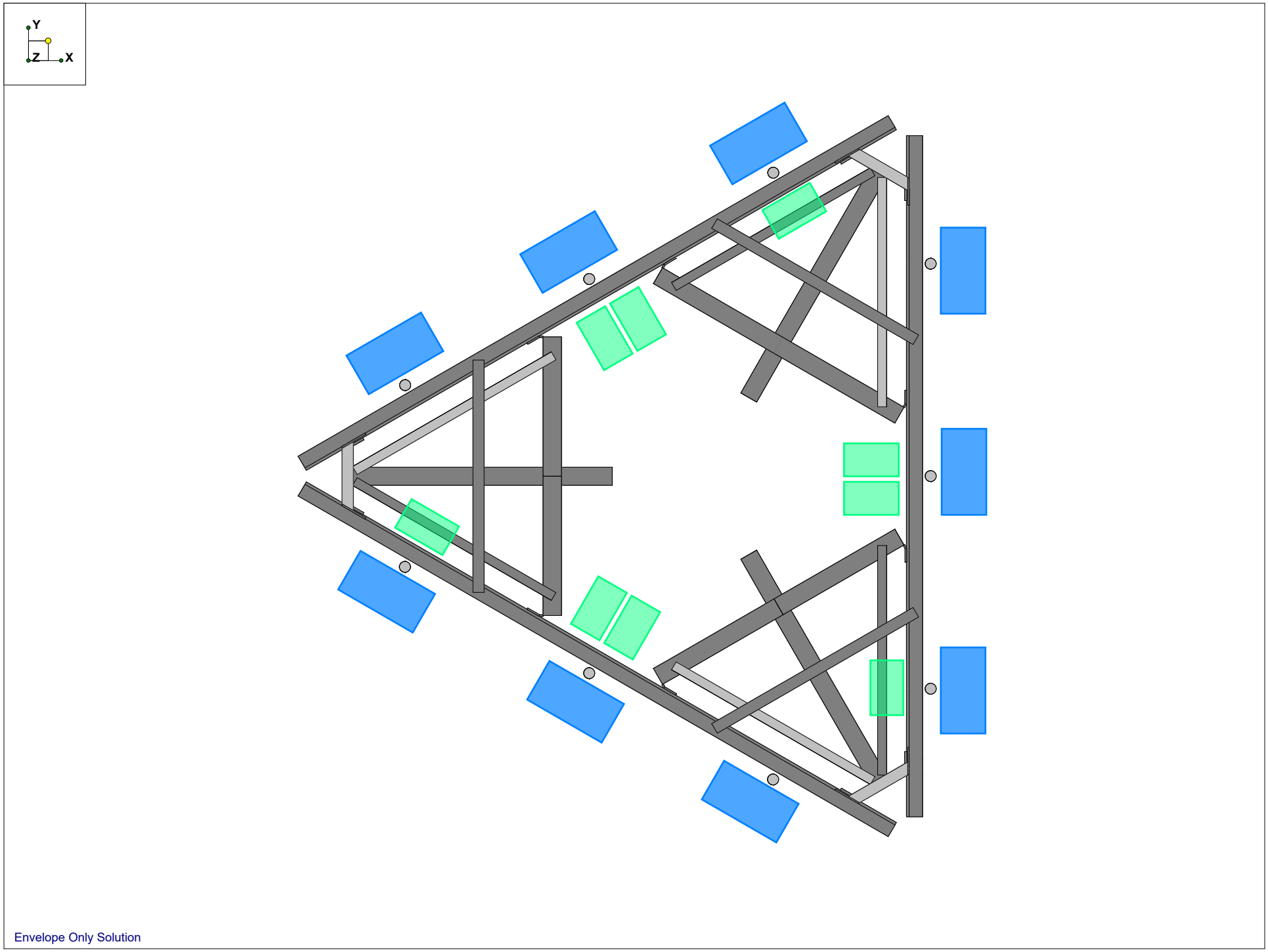
Seismic Load Summary	
Spectral Response (Short Periods), S_s	0.204
Spectral Response (1-Sec. Period), S_1	0.054
Site Class	D
Seismic Design Category	B
Seismic Risk Category	II

Snow Load Summary	
Ground Snow Load, p_g (psf)	-
Snow Load on Flat Roofs, p_f (psf)	-

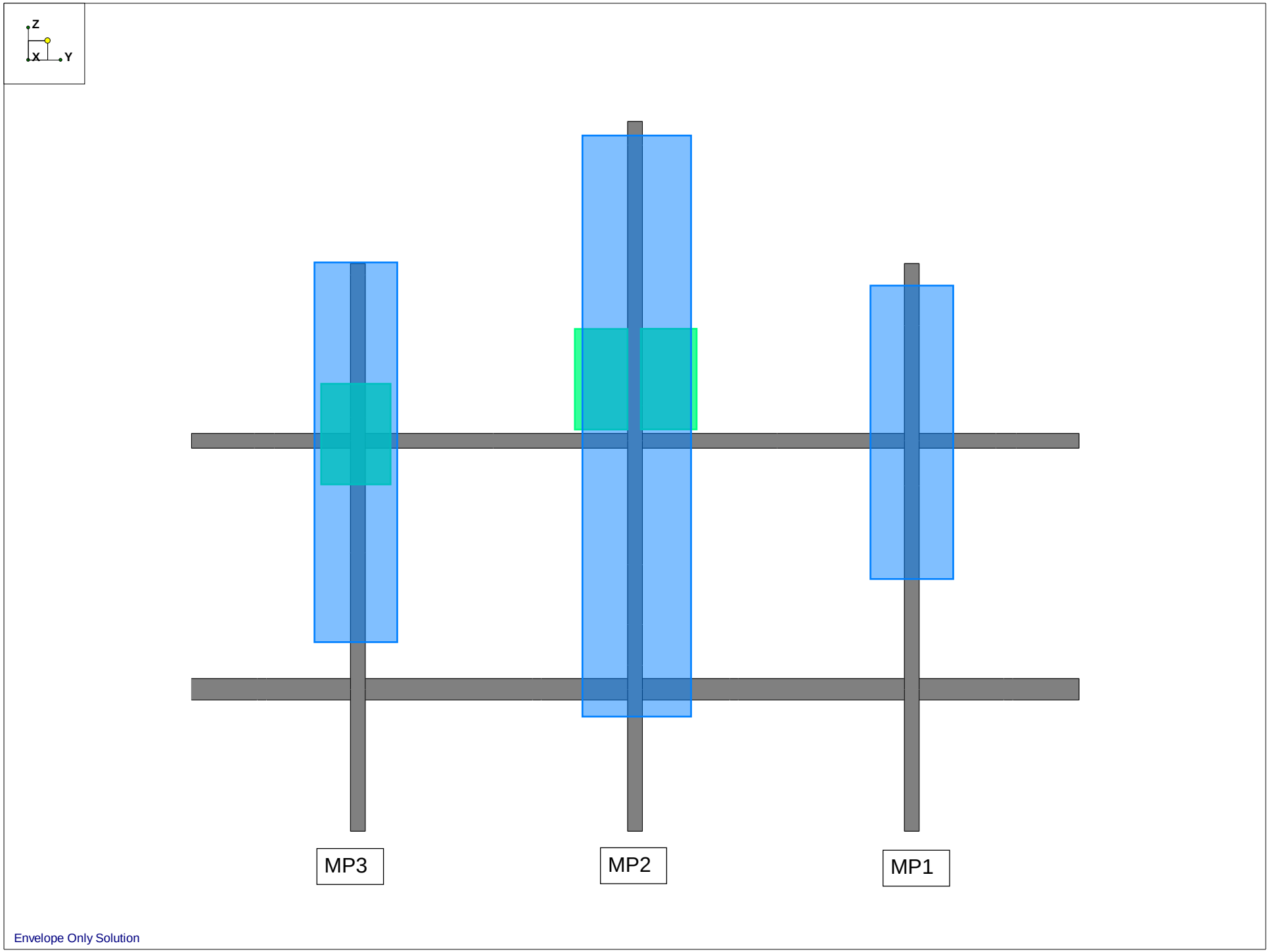
Kimley»Horn

Date	May 24, 2021
Client	American Tower
Site #	302539
Site Name	North Haven CT 2
Project #	11916045

Antenna Name	Qty	Shape	Dimensions (in)			Weight (lb)	Joint Labels								EPA (ft^2)		Wind Force, F_A (lb)			
																	No Ice		With Ice	
			H	W	D		Alpha		Beta		Gamma		Delta		Front	Side	Front	Side	Front	Side
APXVAARR24_43-U-NA20	3	Flat	95.9	24	8.7	127.9	A2T	A2B	B2B	B2T	G2T	G2B								
AIR6449 B41	3	Flat	33.1	20.6	8.6	104	A1T	A1B	B1B	B1T	G1T	G1B								
APX16DWV-16DWVS-E-A20	3	Flat	55.9	13.3	3.1	40.7	A3T	A3B	B3B	B3T	G3T	G3B								
SDX1926Q-43	3	Flat	4.2	6.9	2.9	6.2	A2D				G2D									
RRUS 4415 B66	3	Flat	15	13.2	5.4	46	A3R				G3R									
RADIO 4449 B71 B85A	3	Flat	15	13.2	10.5	75	A2RL				G2RL									
RADIO 4424 B25	3	Flat	17.1	14.4	11.3	86	A2RR				G2RR									



Envelope Only Solution



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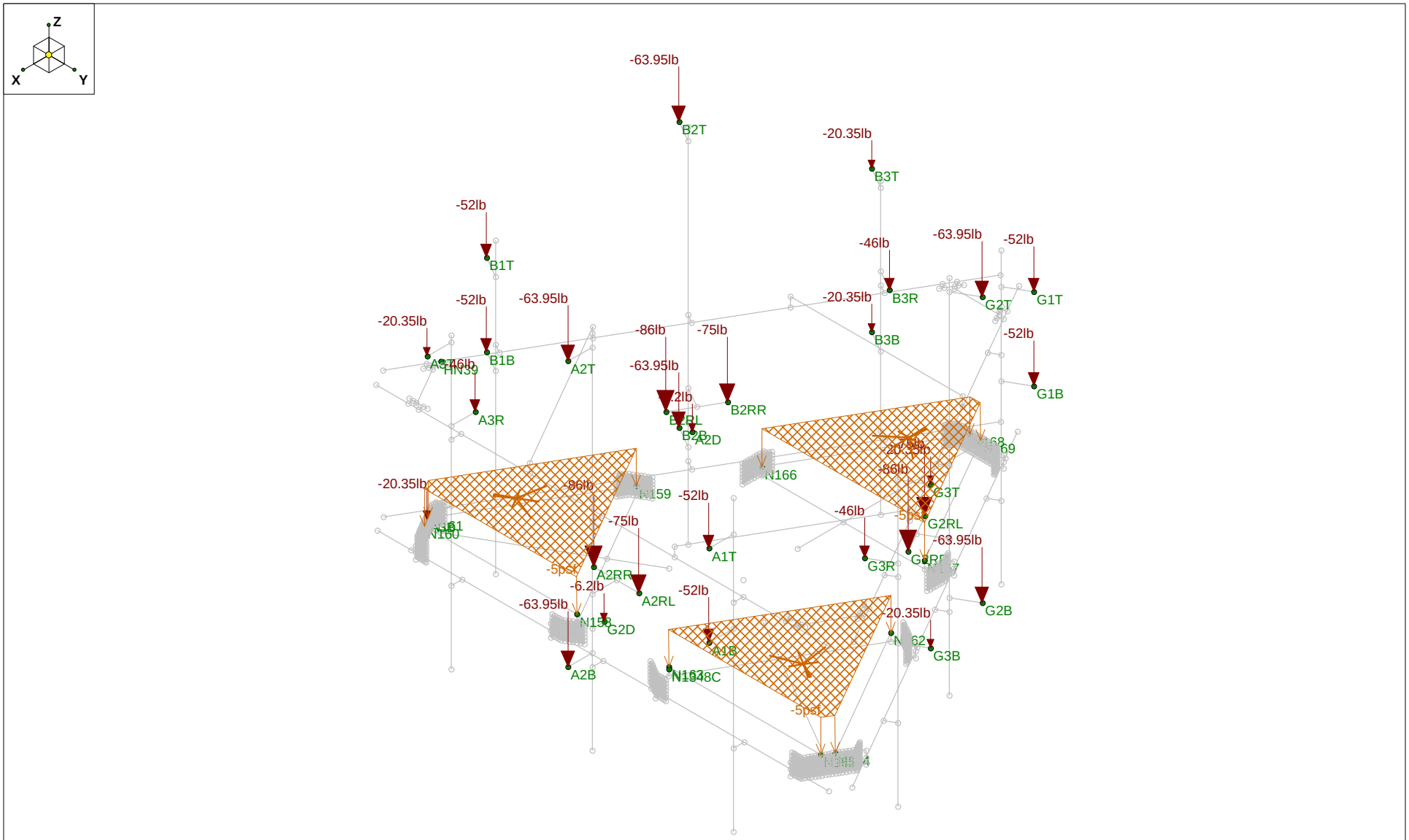
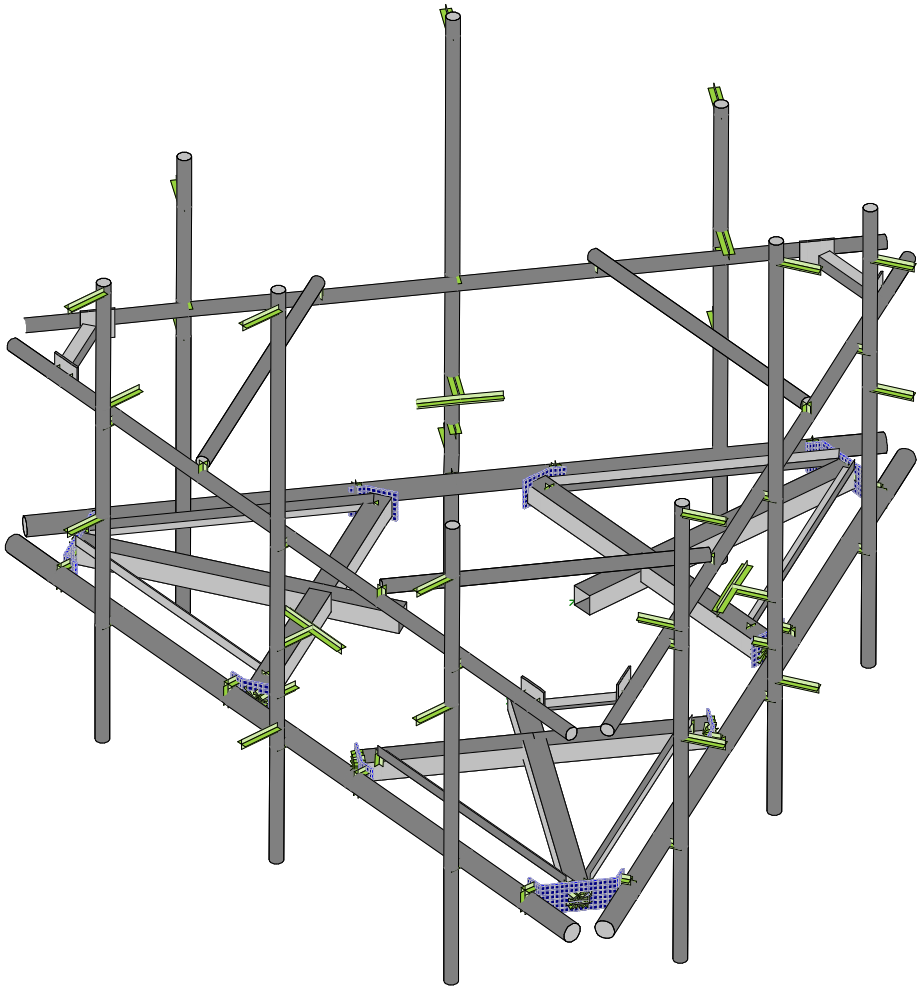


Loads: BLC 1, Dead
Envelope Only Solution

Kimley-Horn and Associates, Inc.	302539	SK - 1
JMK		May 24, 2021 at 8:01 PM
011916045		302539.r3d



Envelope Only Solution

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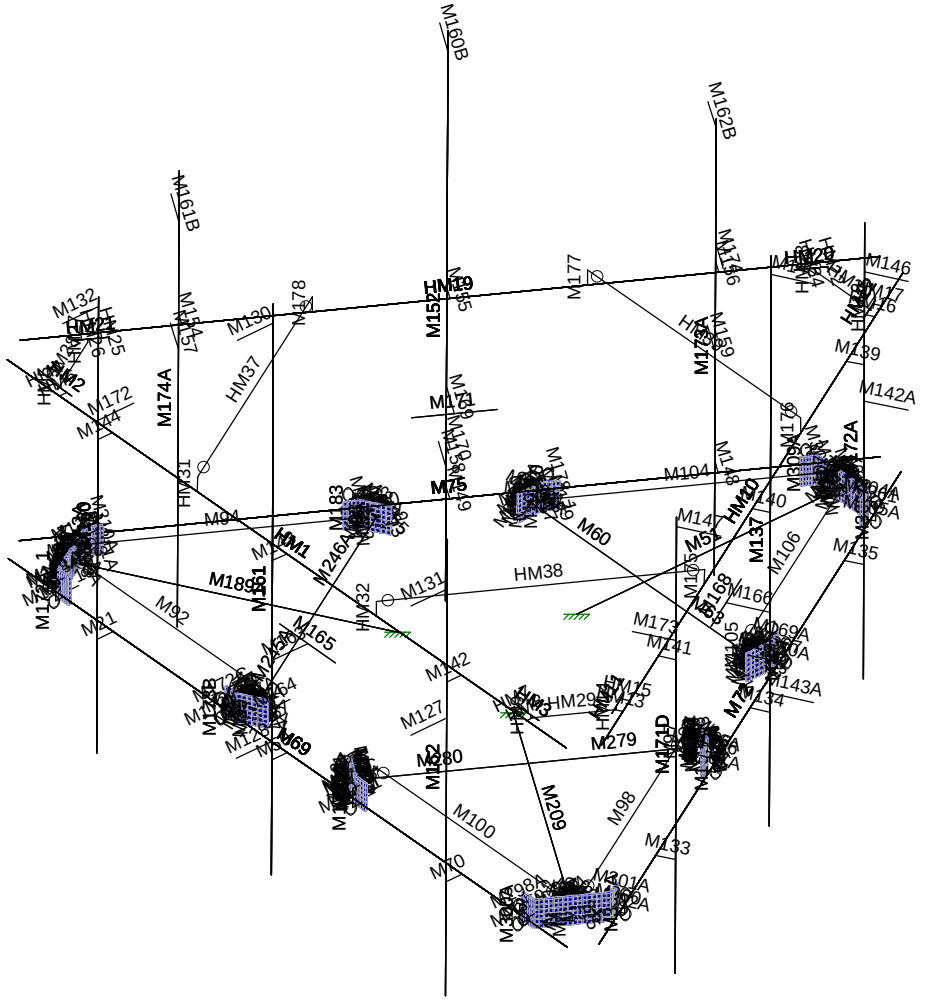

Envelope Only Solution

Kimley-Horn and Associates, Inc.	302539	SK - 3
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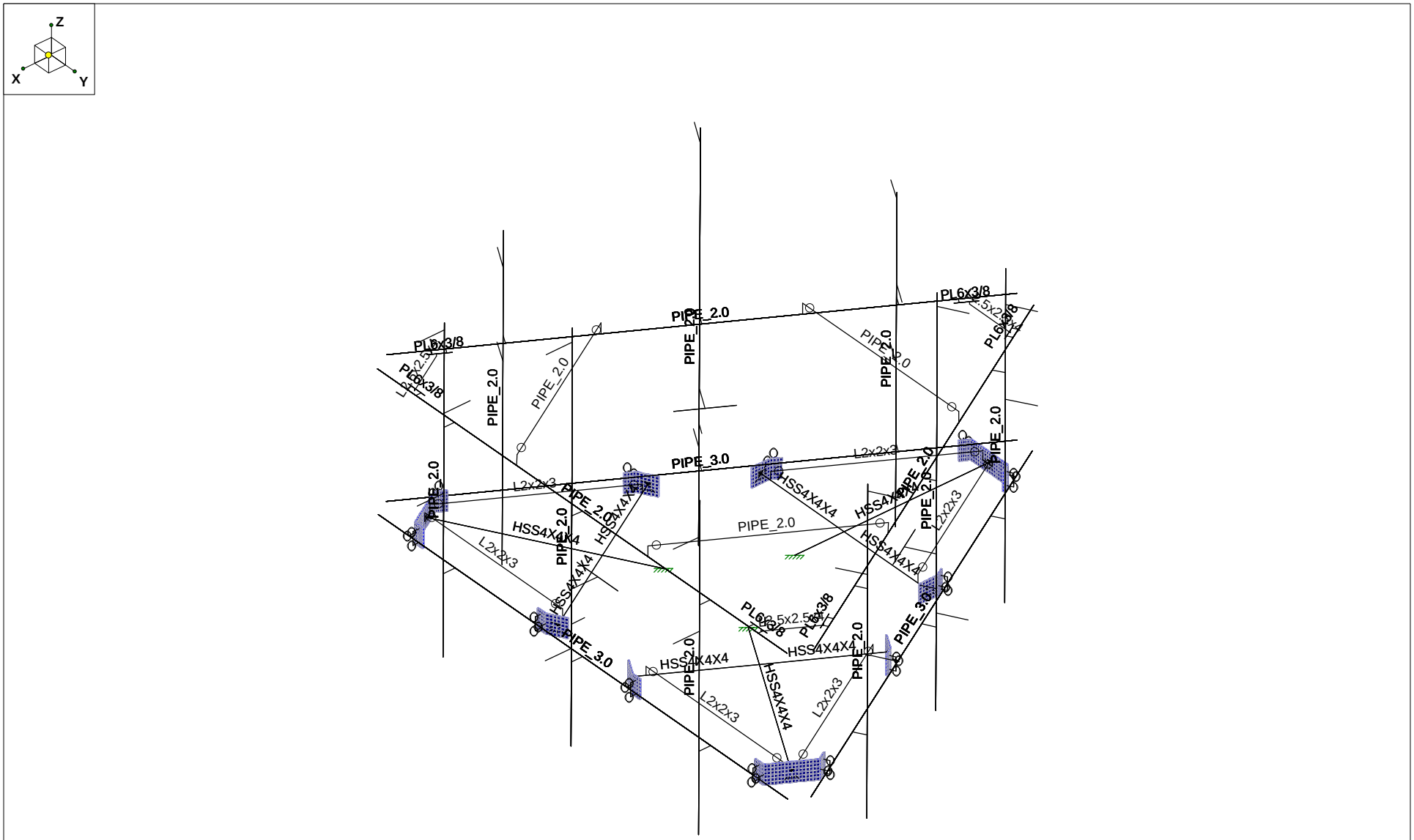

Envelope Only Solution

Kimley-Horn and Associates, Inc.	302539	SK - 4
JMK		May 24, 2021 at 5:23 PM
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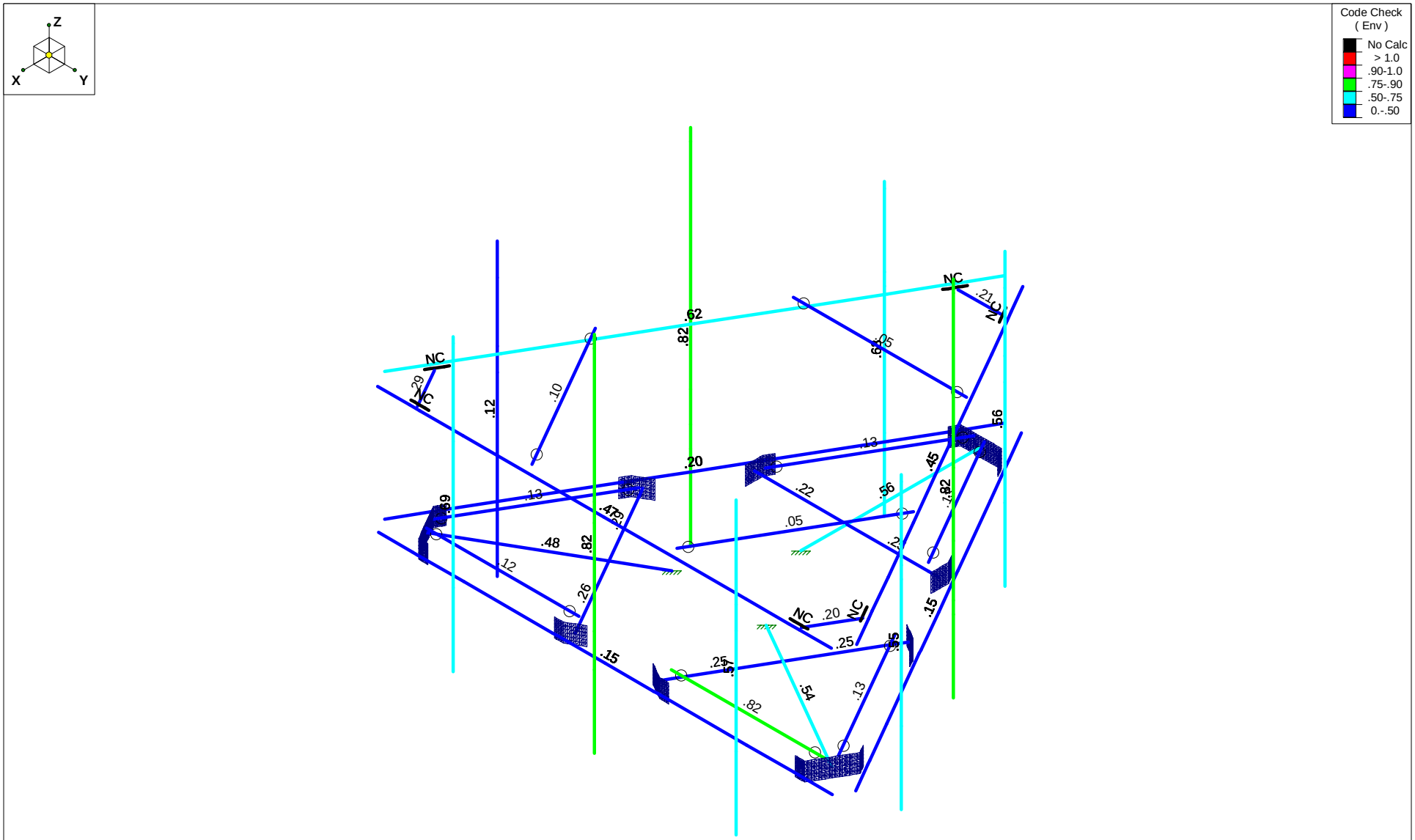

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Kimley-Horn and Associates, Inc.	302539	SK - 5
JMK		May 24, 2021 at 6:17 PM
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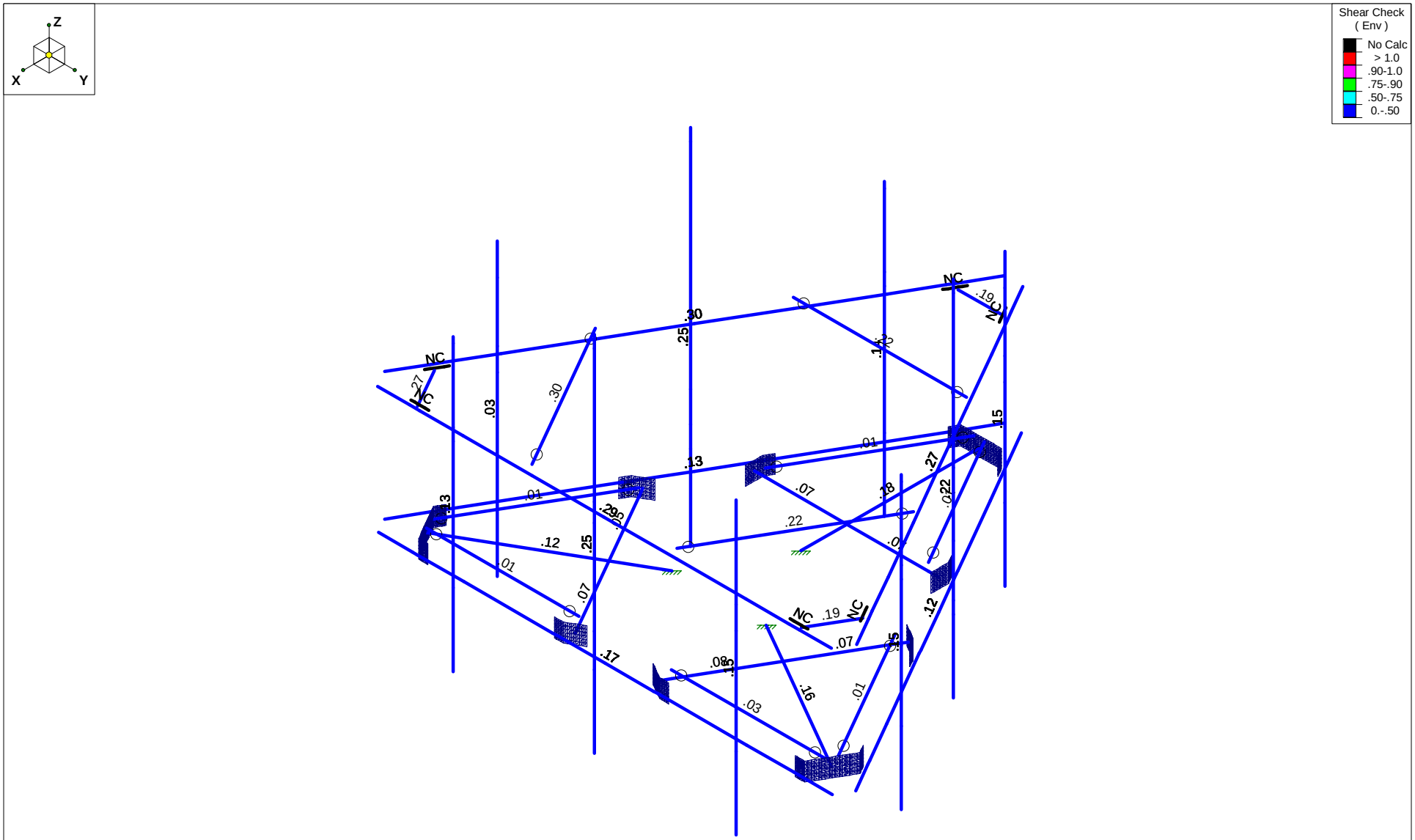


Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Kimley-Horn and Associates, Inc.	302539	SK - 6
JMK		May 24, 2021 at 6:17 PM
011916045		302539.r3d

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N88	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1348A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N1349	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	HM1	HN10	HN1			HRK12 Pipe	Beam	None	A53 Gr.B	Typical
2	HM2	HN15	HN16			HRK12 Plate	Beam	None	A36 Gr.36	Typical
3	HM3	HN7	HN6			HRK12 Plate	Beam	None	A36 Gr.36	Typical
4	HM4	HN13	HN11			RIGID	None	None	RIGID	Typical
5	HM5	HN17	HN18			RIGID	None	None	RIGID	Typical
6	HM6	HN14	HN12			RIGID	None	None	RIGID	Typical
7	HM7	HN5	HN3			RIGID	None	None	RIGID	Typical
8	HM8	HN4	HN2			RIGID	None	None	RIGID	Typical
9	HM9	HN8	HN9			RIGID	None	None	RIGID	Typical
10	HM10	HN28	HN19			HRK12 Pipe	Beam	None	A53 Gr.B	Typical
11	HM11	HN33	HN34			HRK12 Plate	Beam	None	A36 Gr.36	Typical
12	HM12	HN25	HN24			HRK12 Plate	Beam	None	A36 Gr.36	Typical
13	HM13	HN31	HN29			RIGID	None	None	RIGID	Typical
14	HM14	HN35	HN36			RIGID	None	None	RIGID	Typical
15	HM15	HN32	HN30			RIGID	None	None	RIGID	Typical
16	HM16	HN23	HN21			RIGID	None	None	RIGID	Typical
17	HM17	HN22	HN20			RIGID	None	None	RIGID	Typical
18	HM18	HN26	HN27			RIGID	None	None	RIGID	Typical
19	HM19	HN46	HN37			HRK12 Pipe	Beam	None	A53 Gr.B	Typical
20	HM20	HN51	HN52			HRK12 Plate	Beam	None	A36 Gr.36	Typical
21	HM21	HN43	HN42			HRK12 Plate	Beam	None	A36 Gr.36	Typical
22	HM22	HN49	HN47			RIGID	None	None	RIGID	Typical
23	HM23	HN53	HN54			RIGID	None	None	RIGID	Typical
24	HM24	HN50	HN48			RIGID	None	None	RIGID	Typical
25	HM25	HN41	HN39			RIGID	None	None	RIGID	Typical
26	HM26	HN40	HN38			RIGID	None	None	RIGID	Typical
27	HM27	HN44	HN45			RIGID	None	None	RIGID	Typical
28	HM28	HN45	HN18		90	HRK12 Angle	Beam	None	A36 Gr.36	Typical
29	HM29	HN9	HN36		90	HRK12 Angle	Beam	None	A36 Gr.36	Typical
30	HM30	HN27	HN54		90	HRK12 Angle	Beam	None	A36 Gr.36	Typical
31	HM31	HN58	HN57			RIGID	None	None	RIGID	Typical
32	HM32	HN56	HN55			RIGID	None	None	RIGID	Typical
33	HM37	N295	HN58			HRK12 Brace	Beam	None	A53 Gr.B	Typical
34	HM38	HN56	N293			HRK12 Brace	Beam	None	A53 Gr.B	Typical
35	HM39	N291	N297			HRK12 Brace	Beam	None	A53 Gr.B	Typical
36	M21	M3	N119			RIGID	None	None	RIGID	Typical
37	M50	M2	N120			RIGID	None	None	RIGID	Typical
38	M70	M1	N121			RIGID	None	None	RIGID	Typical
39	M160	N260	N13			Mount Pipe	Beam	None	A53 Gr.B	Typical
40	M161	N261	N14			Mount Pipe	Beam	None	A53 Gr.B	Typical
41	M162	N262	N15			Mount Pipe	Beam	None	A53 Gr.B	Typical
42	M142	N243	N231			RIGID	None	None	RIGID	Typical
43	M143	N242	N230			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
44	M144	N241	N229A			RIGID	None	None	RIGID	Typical
45	M127	N155A	A1B			RIGID	None	None	RIGID	Typical
46	M128	N196	A2B			RIGID	None	None	RIGID	Typical
47	M129	N198	A3B			RIGID	None	None	RIGID	Typical
48	M130	N200	A2T			RIGID	None	None	RIGID	Typical
49	M131	N203	A1T			RIGID	None	None	RIGID	Typical
50	M132	N205	A3T			RIGID	None	None	RIGID	Typical
51	M133	N210	N213			RIGID	None	None	RIGID	Typical
52	M134	N211	N214			RIGID	None	None	RIGID	Typical
53	M135	N212	N215			RIGID	None	None	RIGID	Typical
54	M137	N217	N208			Mount Pipe	Beam	None	A53 Gr.B	Typical
55	M139	N225	N222			RIGID	None	None	RIGID	Typical
56	M140	N224	N221			RIGID	None	None	RIGID	Typical
57	M141	B2D	N220			RIGID	None	None	RIGID	Typical
58	M142A	N219	G1B			RIGID	None	None	RIGID	Typical
59	M143A	N227	G2B			RIGID	None	None	RIGID	Typical
60	M144A	N229	G3B			RIGID	None	None	RIGID	Typical
61	M145	N231A	G2T			RIGID	None	None	RIGID	Typical
62	M146	N234	G1T			RIGID	None	None	RIGID	Typical
63	M147	N236	G3T			RIGID	None	None	RIGID	Typical
64	M148	N241A	N244			RIGID	None	None	RIGID	Typical
65	M149	N242A	N245			RIGID	None	None	RIGID	Typical
66	M152	N248	N239			Mount Pipe	Beam	None	A53 Gr.B	Typical
67	M154	N256	N253			RIGID	None	None	RIGID	Typical
68	M155	N255	N252			RIGID	None	None	RIGID	Typical
69	M156	N254	N251			RIGID	None	None	RIGID	Typical
70	M157	N250	B1B			RIGID	None	None	RIGID	Typical
71	M158	N258	B2B			RIGID	None	None	RIGID	Typical
72	M159	N260B	B3B			RIGID	None	None	RIGID	Typical
73	M160B	N262B	B2T			RIGID	None	None	RIGID	Typical
74	M161B	N265	B1T			RIGID	None	None	RIGID	Typical
75	M162B	N267	B3T			RIGID	None	None	RIGID	Typical
76	M163	N202	N269			RIGID	None	None	RIGID	Typical
77	M164	N270	G2D			RIGID	None	None	RIGID	Typical
78	M165	A2RR	A2RL			RIGID	None	None	RIGID	Typical
79	M166	N272B	N273B			RIGID	None	None	RIGID	Typical
80	M167	N274A	N275A			RIGID	None	None	RIGID	Typical
81	M168	G2RR	G2RL			RIGID	None	None	RIGID	Typical
82	M169	N278A	N279A			RIGID	None	None	RIGID	Typical
83	M170	N280	A2D			RIGID	None	None	RIGID	Typical
84	M171	B2RR	B2RL			RIGID	None	None	RIGID	Typical
85	M172	N284	A3R			RIGID	None	None	RIGID	Typical
86	M173	N286	G3R			RIGID	None	None	RIGID	Typical
87	M174	N288	B3R			RIGID	None	None	RIGID	Typical
88	M175	N293	N292			RIGID	None	None	RIGID	Typical
89	M176	N291	N290			RIGID	None	None	RIGID	Typical
90	M177	N297	N296			RIGID	None	None	RIGID	Typical
91	M178	N295	N294			RIGID	None	None	RIGID	Typical
92	M171D	N285	N283			Mount Pipe	Beam	None	A53 Gr.B	Typical
93	M172A	N286A	N284A			Mount Pipe	Beam	None	A53 Gr.B	Typical
94	M173A	N289	N287			Mount Pipe	Beam	None	A53 Gr.B	Typical
95	M174A	N290A	N288A			Mount Pipe	Beam	None	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
96	M26	N48	N60			RIGID	None	None	RIGID	Typical
97	M44	N75	N87			RIGID	None	None	RIGID	Typical
98	M51	N88	N100			Offset Horiz	Beam	None	A36 Gr.36	Typical
99	M60	N98	N103			Offset Horiz	Beam	None	A36 Gr.36	Typical
100	M62	N102	N114			RIGID	None	None	RIGID	Typical
101	M63	N103	N99			Offset Horiz	Beam	None	A36 Gr.36	Typical
102	M69	N115	N116			Face Horiz	Beam	None	A53 Gr.B	Typical
103	M72	N123	N124			Face Horiz	Beam	None	A53 Gr.B	Typical
104	M75	N131	N132			Face Horiz	Beam	None	A53 Gr.B	Typical
105	M91	N158	N50			RIGID	None	None	RIGID	Typical
106	M92	N158	N160			Grating Angle_1	Beam	None	A36 Gr.36	Typical
107	M93	N159	N51			RIGID	None	None	RIGID	Typical
108	M94	N159	N161		270	Grating Angle_1	Beam	None	A36 Gr.36	Typical
109	M95	N160	N48			RIGID	None	None	RIGID	Typical
110	M96	N161	N60			RIGID	None	None	RIGID	Typical
111	M97	N162	N77			RIGID	None	None	RIGID	Typical
112	M98	N162	N164			Grating Angle_1	Beam	None	A36 Gr.36	Typical
113	M99	N163	N78			RIGID	None	None	RIGID	Typical
114	M100	N163	N165		270	Grating Angle_1	Beam	None	A36 Gr.36	Typical
115	M101	N164	N75			RIGID	None	None	RIGID	Typical
116	M102	N165	N87			RIGID	None	None	RIGID	Typical
117	M103	N166	N104			RIGID	None	None	RIGID	Typical
118	M104	N166	N168			Grating Angle_1	Beam	None	A36 Gr.36	Typical
119	M105	N167	N105			RIGID	None	None	RIGID	Typical
120	M106	N167	N169		270	Grating Angle_1	Beam	None	A36 Gr.36	Typical
121	M107	N168	N102			RIGID	None	None	RIGID	Typical
122	M108	N169	N114			RIGID	None	None	RIGID	Typical
123	M171A	N277	N276			RIGID	None	None	RIGID	Typical
124	M172_1	N279	N278			RIGID	None	None	RIGID	Typical
125	M172A_1	N276	N278			RIGID	None	None	RIGID	Typical
126	M172C	N365A	N366A			RIGID	None	None	RIGID	Typical
127	M173A_1	N367A	N368A			RIGID	None	None	RIGID	Typical
128	M173B	N366A	N368A			RIGID	None	None	RIGID	Typical
129	M173C	N402	N403			RIGID	None	None	RIGID	Typical
130	M174_1	N404	N405			RIGID	None	None	RIGID	Typical
131	M175_1	N403	N405			RIGID	None	None	RIGID	Typical
132	M166A	N520	N521			RIGID	None	None	RIGID	Typical
133	M167A	N522	N523			RIGID	None	None	RIGID	Typical
134	M168A	N521	N523			RIGID	None	None	RIGID	Typical
135	M169A	N557	N558			RIGID	None	None	RIGID	Typical
136	M170A	N559	N560			RIGID	None	None	RIGID	Typical
137	M171C	N558	N560			RIGID	None	None	RIGID	Typical
138	M178_1	N700	N701			RIGID	None	None	RIGID	Typical
139	M179	N702	N703			RIGID	None	None	RIGID	Typical
140	M180	N701	N703			RIGID	None	None	RIGID	Typical
141	M181	N737	N738			RIGID	None	None	RIGID	Typical
142	M182	N739	N740			RIGID	None	None	RIGID	Typical
143	M183	N738	N740			RIGID	None	None	RIGID	Typical
144	M181A	N786	N100			RIGID	None	None	RIGID	Typical
145	M182A	N782	N100			RIGID	None	None	RIGID	Typical
146	M183A	N842	N100			RIGID	None	None	RIGID	Typical
147	M184	N846	N100			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
148	M185	N785	N100			RIGID	None	None	RIGID	Typical
149	M186	N784	N100			RIGID	None	None	RIGID	Typical
150	M187	N783	N100			RIGID	None	None	RIGID	Typical
151	M188	N801	N100			RIGID	None	None	RIGID	Typical
152	M189	N816	N100			RIGID	None	None	RIGID	Typical
153	M190	N831	N100			RIGID	None	None	RIGID	Typical
154	M191	N845	N100			RIGID	None	None	RIGID	Typical
155	M192	N844	N100			RIGID	None	None	RIGID	Typical
156	M193	N843	N100			RIGID	None	None	RIGID	Typical
157	M194	N827	N100			RIGID	None	None	RIGID	Typical
158	M195	N812	N100			RIGID	None	None	RIGID	Typical
159	M196	N797	N100			RIGID	None	None	RIGID	Typical
160	M189A	N1348A	N864A			Offset Horiz	Beam	None	A36 Gr.36	Typical
161	M193A	N906	N864A			RIGID	None	None	RIGID	Typical
162	M194A	N902	N864A			RIGID	None	None	RIGID	Typical
163	M195A	N962	N864A			RIGID	None	None	RIGID	Typical
164	M196A	N966	N864A			RIGID	None	None	RIGID	Typical
165	M197	N905	N864A			RIGID	None	None	RIGID	Typical
166	M198	N904	N864A			RIGID	None	None	RIGID	Typical
167	M199	N903	N864A			RIGID	None	None	RIGID	Typical
168	M200	N921	N864A			RIGID	None	None	RIGID	Typical
169	M201	N936	N864A			RIGID	None	None	RIGID	Typical
170	M202	N951	N864A			RIGID	None	None	RIGID	Typical
171	M203	N965	N864A			RIGID	None	None	RIGID	Typical
172	M204	N964	N864A			RIGID	None	None	RIGID	Typical
173	M205	N963	N864A			RIGID	None	None	RIGID	Typical
174	M206	N947	N864A			RIGID	None	None	RIGID	Typical
175	M207	N932	N864A			RIGID	None	None	RIGID	Typical
176	M208	N917	N864A			RIGID	None	None	RIGID	Typical
177	M209	N1349	N990			Offset Horiz	Beam	None	A36 Gr.36	Typical
178	M213	N1032	N990			RIGID	None	None	RIGID	Typical
179	M214	N1028	N990			RIGID	None	None	RIGID	Typical
180	M215	N1088	N990			RIGID	None	None	RIGID	Typical
181	M216	N1092	N990			RIGID	None	None	RIGID	Typical
182	M217	N1031	N990			RIGID	None	None	RIGID	Typical
183	M218	N1030	N990			RIGID	None	None	RIGID	Typical
184	M219	N1029	N990			RIGID	None	None	RIGID	Typical
185	M220	N1047	N990			RIGID	None	None	RIGID	Typical
186	M221	N1062	N990			RIGID	None	None	RIGID	Typical
187	M222	N1077	N990			RIGID	None	None	RIGID	Typical
188	M223	N1091	N990			RIGID	None	None	RIGID	Typical
189	M224	N1090	N990			RIGID	None	None	RIGID	Typical
190	M225	N1089	N990			RIGID	None	None	RIGID	Typical
191	M226	N1073	N990			RIGID	None	None	RIGID	Typical
192	M227	N1058	N990			RIGID	None	None	RIGID	Typical
193	M228	N1043	N990			RIGID	None	None	RIGID	Typical
194	M225A	N1079A	N98			RIGID	None	None	RIGID	Typical
195	M226A	N1083A	N98			RIGID	None	None	RIGID	Typical
196	M227A	N1103A	N98			RIGID	None	None	RIGID	Typical
197	M228A	N1107A	N98			RIGID	None	None	RIGID	Typical
198	M229	N1082A	N98			RIGID	None	None	RIGID	Typical
199	M230	N1081A	N98			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
200	M231	N1080A	N98			RIGID	None	None	RIGID	Typical
201	M232	N1085A	N98			RIGID	None	None	RIGID	Typical
202	M233	N1091A	N98			RIGID	None	None	RIGID	Typical
203	M234	N1097A	N98			RIGID	None	None	RIGID	Typical
204	M235	N1104A	N98			RIGID	None	None	RIGID	Typical
205	M236	N1105A	N98			RIGID	None	None	RIGID	Typical
206	M237	N1106A	N98			RIGID	None	None	RIGID	Typical
207	M238	N1101A	N98			RIGID	None	None	RIGID	Typical
208	M239	N1095A	N98			RIGID	None	None	RIGID	Typical
209	M240	N1089A	N98			RIGID	None	None	RIGID	Typical
210	M241	N1129	N99			RIGID	None	None	RIGID	Typical
211	M242	N1133	N99			RIGID	None	None	RIGID	Typical
212	M243	N1153	N99			RIGID	None	None	RIGID	Typical
213	M244	N1157	N99			RIGID	None	None	RIGID	Typical
214	M245	N1132	N99			RIGID	None	None	RIGID	Typical
215	M246	N1131	N99			RIGID	None	None	RIGID	Typical
216	M247	N1130	N99			RIGID	None	None	RIGID	Typical
217	M248	N1135	N99			RIGID	None	None	RIGID	Typical
218	M249	N1141	N99			RIGID	None	None	RIGID	Typical
219	M250	N1147	N99			RIGID	None	None	RIGID	Typical
220	M251	N1154	N99			RIGID	None	None	RIGID	Typical
221	M252	N1155	N99			RIGID	None	None	RIGID	Typical
222	M253	N1156	N99			RIGID	None	None	RIGID	Typical
223	M254	N1151	N99			RIGID	None	None	RIGID	Typical
224	M255	N1145	N99			RIGID	None	None	RIGID	Typical
225	M256	N1139	N99			RIGID	None	None	RIGID	Typical
226	M245A	N1149A	N49			Offset Horiz	Beam	None	A36 Gr.36	Typical
227	M246A	N49	N1150A			Offset Horiz	Beam	None	A36 Gr.36	Typical
228	M247A	N1172	N1149A			RIGID	None	None	RIGID	Typical
229	M248A	N1176	N1149A			RIGID	None	None	RIGID	Typical
230	M249A	N1196	N1149A			RIGID	None	None	RIGID	Typical
231	M250A	N1200	N1149A			RIGID	None	None	RIGID	Typical
232	M251A	N1175	N1149A			RIGID	None	None	RIGID	Typical
233	M252A	N1174	N1149A			RIGID	None	None	RIGID	Typical
234	M253A	N1173	N1149A			RIGID	None	None	RIGID	Typical
235	M254A	N1178	N1149A			RIGID	None	None	RIGID	Typical
236	M255A	N1184	N1149A			RIGID	None	None	RIGID	Typical
237	M256A	N1190	N1149A			RIGID	None	None	RIGID	Typical
238	M257	N1197	N1149A			RIGID	None	None	RIGID	Typical
239	M258	N1198	N1149A			RIGID	None	None	RIGID	Typical
240	M259	N1199	N1149A			RIGID	None	None	RIGID	Typical
241	M260	N1194	N1149A			RIGID	None	None	RIGID	Typical
242	M261	N1188	N1149A			RIGID	None	None	RIGID	Typical
243	M262	N1182	N1149A			RIGID	None	None	RIGID	Typical
244	M263	N1214	N1150A			RIGID	None	None	RIGID	Typical
245	M264	N1218	N1150A			RIGID	None	None	RIGID	Typical
246	M265	N1238	N1150A			RIGID	None	None	RIGID	Typical
247	M266	N1242	N1150A			RIGID	None	None	RIGID	Typical
248	M267	N1217	N1150A			RIGID	None	None	RIGID	Typical
249	M268	N1216	N1150A			RIGID	None	None	RIGID	Typical
250	M269	N1215	N1150A			RIGID	None	None	RIGID	Typical
251	M270	N1220	N1150A			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
252	M271	N1226	N1150A			RIGID	None	None	RIGID	Typical
253	M272	N1232	N1150A			RIGID	None	None	RIGID	Typical
254	M273	N1239	N1150A			RIGID	None	None	RIGID	Typical
255	M274	N1240	N1150A			RIGID	None	None	RIGID	Typical
256	M275	N1241	N1150A			RIGID	None	None	RIGID	Typical
257	M276	N1236	N1150A			RIGID	None	None	RIGID	Typical
258	M277	N1230	N1150A			RIGID	None	None	RIGID	Typical
259	M278	N1224	N1150A			RIGID	None	None	RIGID	Typical
260	M279	N1250	N76			Offset Horiz	Beam	None	A36 Gr.36	Typical
261	M280	N76	N1251			Offset Horiz	Beam	None	A36 Gr.36	Typical
262	M281	N1273	N1250			RIGID	None	None	RIGID	Typical
263	M282	N1277	N1250			RIGID	None	None	RIGID	Typical
264	M283	N1297	N1250			RIGID	None	None	RIGID	Typical
265	M284	N1301	N1250			RIGID	None	None	RIGID	Typical
266	M285	N1276	N1250			RIGID	None	None	RIGID	Typical
267	M286	N1275	N1250			RIGID	None	None	RIGID	Typical
268	M287	N1274	N1250			RIGID	None	None	RIGID	Typical
269	M288	N1279	N1250			RIGID	None	None	RIGID	Typical
270	M289	N1285	N1250			RIGID	None	None	RIGID	Typical
271	M290	N1291	N1250			RIGID	None	None	RIGID	Typical
272	M291	N1298	N1250			RIGID	None	None	RIGID	Typical
273	M292	N1299	N1250			RIGID	None	None	RIGID	Typical
274	M293	N1300	N1250			RIGID	None	None	RIGID	Typical
275	M294	N1295	N1250			RIGID	None	None	RIGID	Typical
276	M295	N1289	N1250			RIGID	None	None	RIGID	Typical
277	M296	N1283	N1250			RIGID	None	None	RIGID	Typical
278	M297	N1315	N1251			RIGID	None	None	RIGID	Typical
279	M298	N1319	N1251			RIGID	None	None	RIGID	Typical
280	M299	N1339	N1251			RIGID	None	None	RIGID	Typical
281	M300	N1343	N1251			RIGID	None	None	RIGID	Typical
282	M301	N1318	N1251			RIGID	None	None	RIGID	Typical
283	M302	N1317	N1251			RIGID	None	None	RIGID	Typical
284	M303	N1316	N1251			RIGID	None	None	RIGID	Typical
285	M304	N1321	N1251			RIGID	None	None	RIGID	Typical
286	M305	N1327	N1251			RIGID	None	None	RIGID	Typical
287	M306	N1333	N1251			RIGID	None	None	RIGID	Typical
288	M307	N1340	N1251			RIGID	None	None	RIGID	Typical
289	M308	N1341	N1251			RIGID	None	None	RIGID	Typical
290	M309	N1342	N1251			RIGID	None	None	RIGID	Typical
291	M310	N1337	N1251			RIGID	None	None	RIGID	Typical
292	M311	N1331	N1251			RIGID	None	None	RIGID	Typical
293	M312	N1325	N1251			RIGID	None	None	RIGID	Typical
294	M298A	N1099B	N1098B			RIGID	None	None	RIGID	Typical
295	M299A	N1101B	N1100B			RIGID	None	None	RIGID	Typical
296	M300A	N1098B	N1100B			RIGID	None	None	RIGID	Typical
297	M301A	N1145B	N1144B			RIGID	None	None	RIGID	Typical
298	M302A	N1147A	N1146A			RIGID	None	None	RIGID	Typical
299	M303A	N1144B	N1146A		240	RIGID	None	None	RIGID	Typical
300	M304A	N1200A	N1199A			RIGID	None	None	RIGID	Typical
301	M305A	N1202A	N1201A			RIGID	None	None	RIGID	Typical
302	M306A	N1199A	N1201A		240	RIGID	None	None	RIGID	Typical
303	M307A	N1249A	N1248A			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
304	M308A	N1251B	N1250B			RIGID	None	None	RIGID	Typical
305	M309A	N1248A	N1250B		120	RIGID	None	None	RIGID	Typical
306	M310A	N1304A	N1303A			RIGID	None	None	RIGID	Typical
307	M311A	N1306A	N1305A			RIGID	None	None	RIGID	Typical
308	M312A	N1303A	N1305A		120	RIGID	None	None	RIGID	Typical
309	M358	N37	N1426			RIGID	None	None	RIGID	Typical
310	M359	N62	N1427			RIGID	None	None	RIGID	Typical
311	M360	N63	N1428			RIGID	None	None	RIGID	Typical
312	M361	N89	N1429			RIGID	None	None	RIGID	Typical
313	M362	N90	N1430			RIGID	None	None	RIGID	Typical
314	M363	N36	N1431			RIGID	None	None	RIGID	Typical
315	M364	N43	N1432			RIGID	None	None	RIGID	Typical
316	M365	N66	N1433			RIGID	None	None	RIGID	Typical
317	M366	N70	N1434			RIGID	None	None	RIGID	Typical
318	M367	N93	N1435			RIGID	None	None	RIGID	Typical
319	M368	N97	N1436			RIGID	None	None	RIGID	Typical
320	M369	N39	N1437			RIGID	None	None	RIGID	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	HM1	HRK12 Pipe	150									Lateral
2	HM2	HRK12 Plate	6									Lateral
3	HM3	HRK12 Plate	6									Lateral
4	HM10	HRK12 Pipe	150									Lateral
5	HM11	HRK12 Plate	6									Lateral
6	HM12	HRK12 Plate	6									Lateral
7	HM19	HRK12 Pipe	150									Lateral
8	HM20	HRK12 Plate	6									Lateral
9	HM21	HRK12 Plate	6									Lateral
10	HM28	HRK12 Angle	14.975									Lateral
11	HM29	HRK12 Angle	14.975									Lateral
12	HM30	HRK12 Angle	14.975									Lateral
13	HM37	HRK12 Brace	57.186									Lateral
14	HM38	HRK12 Brace	57.186									Lateral
15	HM39	HRK12 Brace	57.186									Lateral
16	M160	Mount Pipe	96			Lbyy						Lateral
17	M161	Mount Pipe	120			Lbyy						Lateral
18	M162	Mount Pipe	96			Lbyy						Lateral
19	M137	Mount Pipe	120			Lbyy						Lateral
20	M152	Mount Pipe	120			Lbyy						Lateral
21	M171D	Mount Pipe	96			Lbyy						Lateral
22	M172A	Mount Pipe	96			Lbyy						Lateral
23	M173A	Mount Pipe	96			Lbyy						Lateral
24	M174A	Mount Pipe	96			Lbyy						Lateral
25	M51	Offset Horiz	59.257									Lateral
26	M60	Offset Horiz	30.438			Lbyy						Lateral
27	M63	Offset Horiz	30.437			Lbyy						Lateral
28	M69	Face Horiz	150			Lbyy						Lateral
29	M72	Face Horiz	150			Lbyy						Lateral
30	M75	Face Horiz	150			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
31	M92	Grating Ang...	50.542			Lbyy						Lateral
32	M94	Grating Ang...	50.542			Lbyy						Lateral
33	M98	Grating Ang...	50.542			Lbyy						Lateral
34	M100	Grating Ang...	50.542			Lbyy						Lateral
35	M104	Grating Ang...	50.542			Lbyy						Lateral
36	M106	Grating Ang...	50.542			Lbyy						Lateral
37	M189A	Offset Horiz	59.257									Lateral
38	M209	Offset Horiz	59.257									Lateral
39	M245A	Offset Horiz	30.438			Lbyy						Lateral
40	M246A	Offset Horiz	30.437			Lbyy						Lateral
41	M279	Offset Horiz	30.438			Lbyy						Lateral
42	M280	Offset Horiz	30.437			Lbyy						Lateral

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[lb/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	490	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	490	50	1.4	65	1.3
8	Q235	29000	11154	.3	.65	490	35	1.5	58	1.2

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL			-1	29			3	
2	Dead of Ice	RL				29		42	3	
3	BLC 1 Transient Area...	None						30		
4	Structure Wind (0)	None						84		
5	Structure Wind (30)	None						84		
6	Structure Wind (45)	None						84		
7	Structure Wind (60)	None						84		
8	Structure Wind (90)	None						84		
9	Structure Wind (120)	None						84		
10	Structure Wind (135)	None						84		
11	Structure Wind (150)	None						84		
12	Structure Wind w/ Ice...	None						84		
13	Structure Wind w/ Ice...	None						84		
14	Structure Wind w/ Ice...	None						84		
15	Structure Wind w/ Ice...	None						84		
16	Structure Wind w/ Ice...	None						84		
17	Structure Wind w/ Ice...	None						84		
18	Structure Wind w/ Ice...	None						84		
19	Structure Wind w/ Ice...	None						84		
20	Antenna Wind (0)	None				58				
21	Antenna Wind (30)	None				58				
22	Antenna Wind (45)	None				58				
23	Antenna Wind (60)	None				58				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
24	Antenna Wind (90)	None				58				
25	Antenna Wind (120)	None				58				
26	Antenna Wind (135)	None				58				
27	Antenna Wind (150)	None				58				
28	Antenna Wind w/ Ice ...	None				58				
29	Antenna Wind w/ Ice ...	None				58				
30	Antenna Wind w/ Ice ...	None				58				
31	Antenna Wind w/ Ice ...	None				58				
32	Antenna Wind w/ Ice ...	None				58				
33	Antenna Wind w/ Ice ...	None				58				
34	Antenna Wind w/ Ice ...	None				58				
35	Antenna Wind w/ Ice ...	None				58				
36	Seismic X	ELX				29		42		
37	Seismic Y	ELY				29		42		
38	Maintenance Live Lm ...	OL1				1				
39	Maintenance Live Lm ...	OL2				1				
40	Maintenance Live Lm ...	OL3				1				
41	BLC 2 Transient Area...	None						30		
43	Maintenance Live Lv (...	OL6					1			
44	Maintenance Live Lv (...	OL7					1			
45	Maintenance Live Lv (...	OL8					1			
46	Maintenance Live Lv (...	OL9					1			

Load Combinations

	Description	Sol...	PD...	SR...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	Summary:...	Yes	Y		DL	1	20	1																		
2	1.4D	Yes	Y		DL	1.4																				
3	1.2D + 1.0...	Yes	Y		DL	1.2	4	1	20	1																
4	1.2D + 1.0...	Yes	Y		DL	1.2	5	1	21	1																
5	1.2D + 1.0...	Yes	Y		DL	1.2	6	1	22	1																
6	1.2D + 1.0...	Yes	Y		DL	1.2	7	1	23	1																
7	1.2D + 1.0...	Yes	Y		DL	1.2	8	1	24	1																
8	1.2D + 1.0...	Yes	Y		DL	1.2	9	1	25	1																
9	1.2D + 1.0...	Yes	Y		DL	1.2	10	1	26	1																
10	1.2D + 1.0...	Yes	Y		DL	1.2	11	1	27	1																
11	1.2D + 1.0...	Yes	Y		DL	1.2	4	-1	20	-1																
12	1.2D + 1.0...	Yes	Y		DL	1.2	5	-1	21	-1																
13	1.2D + 1.0...	Yes	Y		DL	1.2	6	-1	22	-1																
14	1.2D + 1.0...	Yes	Y		DL	1.2	7	-1	23	-1																
15	1.2D + 1.0...	Yes	Y		DL	1.2	8	-1	24	-1																
16	1.2D + 1.0...	Yes	Y		DL	1.2	9	-1	25	-1																
17	1.2D + 1.0...	Yes	Y		DL	1.2	10	-1	26	-1																
18	1.2D + 1.0...	Yes	Y		DL	1.2	11	-1	27	-1																
19	1.2D + 1.0...	Yes	Y		DL	1.2	RL	1	12	1	28	1														
20	1.2D + 1.0...	Yes	Y		DL	1.2	RL	1	13	1	29	1														
21	1.2D + 1.0...	Yes	Y		DL	1.2	RL	1	14	1	30	1														
22	1.2D + 1.0...	Yes	Y		DL	1.2	RL	1	15	1	31	1														
23	1.2D + 1.0...	Yes	Y		DL	1.2	RL	1	16	1	32	1														
24	1.2D + 1.0...	Yes	Y		DL	1.2	RL	1	17	1	33	1														
25	1.2D + 1.0...	Yes	Y		DL	1.2	RL	1	18	1	34	1														

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
26	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	19	1	35	1														
27	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	12	-1	28	-1														
28	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	13	-1	39	-1														
29	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	14	-1	30	-1														
30	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	15	-1	31	-1														
31	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	16	-1	32	-1														
32	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	17	-1	33	-1														
33	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	18	-1	34	-1														
34	1.2D + 1.0..	Yes	Y		DL	1.2	RL	1	19	-1	35	-1														
35	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-1	ELY																	
36	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-.866	ELY	.5																
37	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-.707	ELY	.707																
38	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-.5	ELY	.866																
39	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-2.2...	ELY	1																
40	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	.5	ELY	.866																
41	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	.707	ELY	.707																
42	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	.866	ELY	.5																
43	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	1	ELY	4.53...																
44	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	.866	ELY	-.5																
45	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	.707	ELY	-.707																
46	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	.5	ELY	-.866																
47	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	6.80...	ELY	-1																
48	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-.5	ELY	-.866																
49	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-.707	ELY	-.707																
50	1.2D + 1.0..	Yes	Y		DL	1.2	ELX	-.866	ELY	-.5																
51	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-1	ELY																	
52	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-.866	ELY	.5																
53	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-.707	ELY	.707																
54	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-.5	ELY	.866																
55	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-2.2...	ELY	1																
56	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	.5	ELY	.866																
57	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	.707	ELY	.707																
58	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	.866	ELY	.5																
59	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	1	ELY	4.53...																
60	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	.866	ELY	-.5																
61	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	.707	ELY	-.707																
62	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	.5	ELY	-.866																
63	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	6.80...	ELY	-1																
64	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-.5	ELY	-.866																
65	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-.707	ELY	-.707																
66	0.9D + 1.0..	Yes	Y		DL	1.2	ELX	-.866	ELY	-.5																
67	1.2D + 1.5..	Yes	Y		DL	1.2	4	.063	20	.063	OL1	1.5														
68	1.2D + 1.5..	Yes	Y		DL	1.2	5	.063	21	.063	OL1	1.5														
69	1.2D + 1.5..	Yes	Y		DL	1.2	6	.063	22	.063	OL1	1.5														
70	1.2D + 1.5..	Yes	Y		DL	1.2	7	.063	23	.063	OL1	1.5														
71	1.2D + 1.5..	Yes	Y		DL	1.2	8	.063	24	.063	OL1	1.5														
72	1.2D + 1.5..	Yes	Y		DL	1.2	9	.063	25	.063	OL1	1.5														
73	1.2D + 1.5..	Yes	Y		DL	1.2	10	.063	26	.063	OL1	1.5														
74	1.2D + 1.5..	Yes	Y		DL	1.2	11	.063	27	.063	OL1	1.5														
75	1.2D + 1.5..	Yes	Y		DL	1.2	4	-.063	20	-.063	OL1	1.5														
76	1.2D + 1.5..	Yes	Y		DL	1.2	5	-.063	21	-.063	OL1	1.5														
77	1.2D + 1.5..	Yes	Y		DL	1.2	6	-.063	22	-.063	OL1	1.5														

Load Combinations (Continued)

	Description	Sol...	PD...	SR...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
78	1.2D + 1.5..	Yes	Y		DL	1.2	7	-.063	23	-.063	OL1	1.5														
79	1.2D + 1.5..	Yes	Y		DL	1.2	8	-.063	24	-.063	OL1	1.5														
80	1.2D + 1.5..	Yes	Y		DL	1.2	9	-.063	25	-.063	OL1	1.5														
81	1.2D + 1.5..	Yes	Y		DL	1.2	10	-.063	26	-.063	OL1	1.5														
82	1.2D + 1.5..	Yes	Y		DL	1.2	11	-.063	27	-.063	OL1	1.5														
83	1.2D + 1.5..	Yes	Y		DL	1.2	4	.063	20	.063	OL2	1.5														
84	1.2D + 1.5..	Yes	Y		DL	1.2	5	.063	21	.063	OL2	1.5														
85	1.2D + 1.5..	Yes	Y		DL	1.2	6	.063	22	.063	OL2	1.5														
86	1.2D + 1.5..	Yes	Y		DL	1.2	7	.063	23	.063	OL2	1.5														
87	1.2D + 1.5..	Yes	Y		DL	1.2	8	.063	24	.063	OL2	1.5														
88	1.2D + 1.5..	Yes	Y		DL	1.2	9	.063	25	.063	OL2	1.5														
89	1.2D + 1.5..	Yes	Y		DL	1.2	10	.063	26	.063	OL2	1.5														
90	1.2D + 1.5..	Yes	Y		DL	1.2	11	.063	27	.063	OL2	1.5														
91	1.2D + 1.5..	Yes	Y		DL	1.2	4	-.063	20	-.063	OL2	1.5														
92	1.2D + 1.5..	Yes	Y		DL	1.2	5	-.063	21	-.063	OL2	1.5														
93	1.2D + 1.5..	Yes	Y		DL	1.2	6	-.063	22	-.063	OL2	1.5														
94	1.2D + 1.5..	Yes	Y		DL	1.2	7	-.063	23	-.063	OL2	1.5														
95	1.2D + 1.5..	Yes	Y		DL	1.2	8	-.063	24	-.063	OL2	1.5														
96	1.2D + 1.5..	Yes	Y		DL	1.2	9	-.063	25	-.063	OL2	1.5														
97	1.2D + 1.5..	Yes	Y		DL	1.2	10	-.063	26	-.063	OL2	1.5														
98	1.2D + 1.5..	Yes	Y		DL	1.2	11	-.063	27	-.063	OL2	1.5														
99	1.2D + 1.5..	Yes	Y		DL	1.2	4	.063	20	.063	OL3	1.5														
100	1.2D + 1.5..	Yes	Y		DL	1.2	5	.063	21	.063	OL3	1.5														
101	1.2D + 1.5..	Yes	Y		DL	1.2	6	.063	22	.063	OL3	1.5														
102	1.2D + 1.5..	Yes	Y		DL	1.2	7	.063	23	.063	OL3	1.5														
103	1.2D + 1.5..	Yes	Y		DL	1.2	8	.063	24	.063	OL3	1.5														
104	1.2D + 1.5..	Yes	Y		DL	1.2	9	.063	25	.063	OL3	1.5														
105	1.2D + 1.5..	Yes	Y		DL	1.2	10	.063	26	.063	OL3	1.5														
106	1.2D + 1.5..	Yes	Y		DL	1.2	11	.063	27	.063	OL3	1.5														
107	1.2D + 1.5..	Yes	Y		DL	1.2	4	-.063	20	-.063	OL3	1.5														
108	1.2D + 1.5..	Yes	Y		DL	1.2	5	-.063	21	-.063	OL3	1.5														
109	1.2D + 1.5..	Yes	Y		DL	1.2	6	-.063	22	-.063	OL3	1.5														
110	1.2D + 1.5..	Yes	Y		DL	1.2	7	-.063	23	-.063	OL3	1.5														
111	1.2D + 1.5..	Yes	Y		DL	1.2	8	-.063	24	-.063	OL3	1.5														
112	1.2D + 1.5..	Yes	Y		DL	1.2	9	-.063	25	-.063	OL3	1.5														
113	1.2D + 1.5..	Yes	Y		DL	1.2	10	-.063	26	-.063	OL3	1.5														
114	1.2D + 1.5..	Yes	Y		DL	1.2	11	-.063	27	-.063	OL3	1.5														
115	1.2D + 1.5..	Yes	Y		DL	1.2	4	.063	20	.063	OL6	1.5														
116	1.2D + 1.5..	Yes	Y		DL	1.2	5	.063	21	.063	OL6	1.5														
117	1.2D + 1.5..	Yes	Y		DL	1.2	6	.063	22	.063	OL6	1.5														
118	1.2D + 1.5..	Yes	Y		DL	1.2	7	.063	23	.063	OL6	1.5														
119	1.2D + 1.5..	Yes	Y		DL	1.2	8	.063	24	.063	OL6	1.5														
120	1.2D + 1.5..	Yes	Y		DL	1.2	9	.063	25	.063	OL6	1.5														
121	1.2D + 1.5..	Yes	Y		DL	1.2	10	.063	26	.063	OL6	1.5														
122	1.2D + 1.5..	Yes	Y		DL	1.2	11	.063	27	.063	OL6	1.5														
123	1.2D + 1.5..	Yes	Y		DL	1.2	4	-.063	20	-.063	OL6	1.5														
124	1.2D + 1.5..	Yes	Y		DL	1.2	5	-.063	21	-.063	OL6	1.5														
125	1.2D + 1.5..	Yes	Y		DL	1.2	6	-.063	22	-.063	OL6	1.5														
126	1.2D + 1.5..	Yes	Y		DL	1.2	7	-.063	23	-.063	OL6	1.5														
127	1.2D + 1.5..	Yes	Y		DL	1.2	8	-.063	24	-.063	OL6	1.5														
128	1.2D + 1.5..	Yes	Y		DL	1.2	9	-.063	25	-.063	OL6	1.5														
129	1.2D + 1.5..	Yes	Y		DL	1.2	10	-.063	26	-.063	OL6	1.5														

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
130	1.2D + 1.5..	Yes	Y		DL	1.2	11	-.063	27	-.063	OL6	1.5														
131	1.2D + 1.5..	Yes	Y		DL	1.2	4	.063	20	.063	OL7	1.5														
132	1.2D + 1.5..	Yes	Y		DL	1.2	5	.063	21	.063	OL7	1.5														
133	1.2D + 1.5..	Yes	Y		DL	1.2	6	.063	22	.063	OL7	1.5														
134	1.2D + 1.5..	Yes	Y		DL	1.2	7	.063	23	.063	OL7	1.5														
135	1.2D + 1.5..	Yes	Y		DL	1.2	8	.063	24	.063	OL7	1.5														
136	1.2D + 1.5..	Yes	Y		DL	1.2	9	.063	25	.063	OL7	1.5														
137	1.2D + 1.5..	Yes	Y		DL	1.2	10	.063	26	.063	OL7	1.5														
138	1.2D + 1.5..	Yes	Y		DL	1.2	11	.063	27	.063	OL7	1.5														
139	1.2D + 1.5..	Yes	Y		DL	1.2	4	-.063	20	-.063	OL7	1.5														
140	1.2D + 1.5..	Yes	Y		DL	1.2	5	-.063	21	-.063	OL7	1.5														
141	1.2D + 1.5..	Yes	Y		DL	1.2	6	-.063	22	-.063	OL7	1.5														
142	1.2D + 1.5..	Yes	Y		DL	1.2	7	-.063	23	-.063	OL7	1.5														
143	1.2D + 1.5..	Yes	Y		DL	1.2	8	-.063	24	-.063	OL7	1.5														
144	1.2D + 1.5..	Yes	Y		DL	1.2	9	-.063	25	-.063	OL7	1.5														
145	1.2D + 1.5..	Yes	Y		DL	1.2	10	-.063	26	-.063	OL7	1.5														
146	1.2D + 1.5..	Yes	Y		DL	1.2	11	-.063	27	-.063	OL7	1.5														
147	1.2D + 1.5..	Yes	Y		DL	1.2	4	.063	20	.063	OL8	1.5														
148	1.2D + 1.5..	Yes	Y		DL	1.2	5	.063	21	.063	OL8	1.5														
149	1.2D + 1.5..	Yes	Y		DL	1.2	6	.063	22	.063	OL8	1.5														
150	1.2D + 1.5..	Yes	Y		DL	1.2	7	.063	23	.063	OL8	1.5														
151	1.2D + 1.5..	Yes	Y		DL	1.2	8	.063	24	.063	OL8	1.5														
152	1.2D + 1.5..	Yes	Y		DL	1.2	9	.063	25	.063	OL8	1.5														
153	1.2D + 1.5..	Yes	Y		DL	1.2	10	.063	26	.063	OL8	1.5														
154	1.2D + 1.5..	Yes	Y		DL	1.2	11	.063	27	.063	OL8	1.5														
155	1.2D + 1.5..	Yes	Y		DL	1.2	4	-.063	20	-.063	OL8	1.5														
156	1.2D + 1.5..	Yes	Y		DL	1.2	5	-.063	21	-.063	OL8	1.5														
157	1.2D + 1.5..	Yes	Y		DL	1.2	6	-.063	22	-.063	OL8	1.5														
158	1.2D + 1.5..	Yes	Y		DL	1.2	7	-.063	23	-.063	OL8	1.5														
159	1.2D + 1.5..	Yes	Y		DL	1.2	8	-.063	24	-.063	OL8	1.5														
160	1.2D + 1.5..	Yes	Y		DL	1.2	9	-.063	25	-.063	OL8	1.5														
161	1.2D + 1.5..	Yes	Y		DL	1.2	10	-.063	26	-.063	OL8	1.5														
162	1.2D + 1.5..	Yes	Y		DL	1.2	11	-.063	27	-.063	OL8	1.5														
163	1.2D + 1.5..	Yes	Y		DL	1.2	4	.063	20	.063	OL9	1.5														
164	1.2D + 1.5..	Yes	Y		DL	1.2	5	.063	21	.063	OL9	1.5														
165	1.2D + 1.5..	Yes	Y		DL	1.2	6	.063	22	.063	OL9	1.5														
166	1.2D + 1.5..	Yes	Y		DL	1.2	7	.063	23	.063	OL9	1.5														
167	1.2D + 1.5..	Yes	Y		DL	1.2	8	.063	24	.063	OL9	1.5														
168	1.2D + 1.5..	Yes	Y		DL	1.2	9	.063	25	.063	OL9	1.5														
169	1.2D + 1.5..	Yes	Y		DL	1.2	10	.063	26	.063	OL9	1.5														
170	1.2D + 1.5..	Yes	Y		DL	1.2	11	.063	27	.063	OL9	1.5														
171	1.2D + 1.5..	Yes	Y		DL	1.2	4	-.063	20	-.063	OL9	1.5														
172	1.2D + 1.5..	Yes	Y		DL	1.2	5	-.063	21	-.063	OL9	1.5														
173	1.2D + 1.5..	Yes	Y		DL	1.2	6	-.063	22	-.063	OL9	1.5														
174	1.2D + 1.5..	Yes	Y		DL	1.2	7	-.063	23	-.063	OL9	1.5														
175	1.2D + 1.5..	Yes	Y		DL	1.2	8	-.063	24	-.063	OL9	1.5														
176	1.2D + 1.5..	Yes	Y		DL	1.2	9	-.063	25	-.063	OL9	1.5														
177	1.2D + 1.5..	Yes	Y		DL	1.2	10	-.063	26	-.063	OL9	1.5														
178	1.2D + 1.5..	Yes	Y		DL	1.2	11	-.063	27	-.063	OL9	1.5														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N88	max	1237.898	3	1284.236	15	2856.602	3	1238.769	7	7075.634	3	1364.824	7
2		min	-2176.788	11	-1301.491	7	-563.973	11	-1237.024	15	-2993.046	11	-1364.026	15
3	N1348A	max	1476.443	3	1258.65	14	2882.649	14	1825.555	6	838.249	5	1356.267	18
4		min	-1010.533	11	-2010.888	6	-622.786	6	-5208.308	14	-3032.271	13	-1349.357	10
5	N1349	max	1409.906	3	1952.336	16	2861.647	8	5751.923	8	1604.771	18	1364.31	12
6		min	-936.901	11	-1181.216	8	-610.456	16	-2425.286	16	-3600.16	10	-1387.931	4
7	Totals:	max	4124.246	3	4136.352	15	6522.268	19						
8		min	-4124.222	11	-4136.413	7	2824.718	1						

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

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M100	L2x2x3	.821	25.271	166	.030	0	z	165	9618.956	23392.8	557.717	1105.322	1....	H2-1
2	M152	PIPE_2.0	.821	53.684	16	.254	96		3	9836.597	32130	1871.625	1871.625	1....	H1-1b
3	M161	PIPE_2.0	.821	53.684	11	.247	96		16	9836.597	32130	1871.625	1871.625	1....	H1-1b
4	M137	PIPE_2.0	.821	53.684	6	.218	96		8	9836.597	32130	1871.625	1871.625	1....	H1-1b
5	M160	PIPE_2.0	.689	71.747	18	.134	48.505		8	14916.096	32130	1871.625	1871.625	1....	H1-1b
6	M173A	PIPE_2.0	.630	71.747	14	.142	48.505		14	14916.096	32130	1871.625	1871.625	2....	H1-1b
7	HM19	PIPE_2.0	.623	75	18	.302	75		8	6295.422	32130	1871.625	1871.625	1....	H3-6
8	M162	PIPE_2.0	.571	71.747	13	.146	37.389		14	14916.096	32130	1871.625	1871.625	1....	H1-1b
9	M51	HSS4X4X4	.565	0	3	.181	0	y	6	100806.7...	109188	12663	12663	2....	H1-1b
10	M172A	PIPE_2.0	.557	71.747	7	.149	37.389		8	14916.096	32130	1871.625	1871.625	1....	H1-1b
11	M171D	PIPE_2.0	.551	71.747	3	.154	48.505		3	14916.096	32130	1871.625	1871.625	2....	H1-1b
12	M209	HSS4X4X4	.537	0	9	.163	0	y	11	100806.7...	109188	12663	12663	2....	H1-1b
13	M189A	HSS4X4X4	.480	0	14	.123	0	y	15	100806.7...	109188	12663	12663	2....	H1-1b
14	HM1	PIPE_2.0	.473	75	10	.293	98.684		18	6295.422	32130	1871.625	1871.625	1....	H3-6
15	HM10	PIPE_2.0	.454	75	7	.268	98.684		13	6295.422	32130	1871.625	1871.625	1....	H3-6
16	HM28	L2.5x2.5x4	.295	14.975	11	.268	0	y	18	36645.617	38556	1113.554	2537.388	1....	H2-1
17	M246A	HSS4X4X4	.286	0	14	.052	0	y	14	106911.3...	109188	12663	12663	1....	H1-1b
18	M245A	HSS4X4X4	.260	30.438	13	.068	30.438	y	77	106911.2...	109188	12663	12663	1....	H1-1b
19	M63	HSS4X4X4	.253	0	3	.075	0	y	4	106911.3...	109188	12663	12663	1....	H1-1b
20	M279	HSS4X4X4	.252	30.438	8	.073	3.364	z	14	106911.2...	109188	12663	12663	1....	H1-1b
21	M280	HSS4X4X4	.248	0	8	.082	27.073	z	3	106911.3...	109188	12663	12663	1....	H1-1b
22	M60	HSS4X4X4	.225	30.438	3	.073	3.364	z	8	106911.2...	109188	12663	12663	1....	H1-1b
23	HM30	L2.5x2.5x4	.208	14.975	7	.187	0	z	7	36645.617	38556	1113.554	2537.388	2....	H2-1
24	M75	PIPE_3.0	.203	75	11	.133	75		18	28250.554	65205	5748.75	5748.75	1....	H1-1b
25	HM29	L2.5x2.5x4	.201	14.975	12	.193	0	z	12	36645.617	38556	1113.554	2537.388	2....	H2-1
26	M72	PIPE_3.0	.151	57.632	8	.115	27.632		4	28250.554	65205	5748.75	5748.75	1....	H1-1b
27	M69	PIPE_3.0	.151	92.368	23	.168	13.421		10	28250.554	65205	5748.75	5748.75	3....	H1-1b
28	M104	L2x2x3	.131	24.473	22	.009	0	y	24	9618.888	23392.8	557.717	1074.244	1....	H2-1
29	M94	L2x2x3	.130	24.473	27	.010	0	z	27	9618.956	23392.8	557.717	1074.204	1....	H2-1
30	M106	L2x2x3	.129	24.473	32	.009	0	z	31	9618.956	23392.8	557.717	1074.206	1....	H2-1
31	M98	L2x2x3	.129	24.473	27	.009	0	y	27	9618.888	23392.8	557.717	1074.245	1....	H2-1
32	M92	L2x2x3	.124	24.473	19	.008	0	y	33	9618.888	23392.8	557.717	1074.035	1....	H2-1
33	M174A	PIPE_2.0	.120	29.811	16	.029	30.316		18	14916.096	32130	1871.625	1871.625	2....	H1-1b
34	HM37	PIPE_2.0	.096	30.098	17	.300	0		18	24471.233	32130	1871.625	1871.625	1....	H3-6
35	HM39	PIPE_2.0	.051	27.69	15	.219	0		15	24471.233	32130	1871.625	1871.625	1....	H3-6
36	HM38	PIPE_2.0	.050	27.69	4	.221	0		12	24471.233	32130	1871.625	1871.625	1....	H3-6

Envelope Plate/Shell Principal Stresses

	Plate		Sur...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [k...	LC	Angle [rad]	LC	Von Mises [ksi]	LC
1	P756	max	T	31.169	18	7.622	18	11.773	18	2.1	122	28.143	18
2		min		-7.282	10	-29.233	10	.011	122	-.765	30	.119	158
3		max	B	25.928	10	7.671	10	9.626	18	2.353	123	24.359	18
4		min		-8.133	18	-27.385	18	.084	39	-.741	158	.151	166
5	P726	max	T	28.709	11	7.1	10	11.637	3	2.164	75	27.453	3
6		min		-7.036	18	-30.276	3	.019	158	-.002	30	.189	45
7		max	B	25.871	18	7.659	18	9.154	3	2.337	90	23.018	18
8		min		-7.616	10	-25.538	10	.076	46	-.733	46	.164	46
9	P750	max	T	26.816	18	6.141	18	10.338	18	2.25	141	24.334	18
10		min		-5.912	10	-24.929	10	.004	113	-.784	135	.202	158
11		max	B	25.578	10	6.137	10	9.941	18	2.353	165	24.089	18
12		min		-6.907	18	-26.788	18	.097	164	-.778	91	.246	165
13	P828	max	T	26.72	12	5.865	12	10.428	12	1.288	4	24.324	12
14		min		-6.059	4	-25.277	4	.139	148	-.312	16	.325	50
15		max	B	21.787	4	6.361	4	7.75	12	2.3	97	19.405	12
16		min		-6.263	12	-21.763	12	.085	48	-.784	151	.171	48
17	P732	max	T	25.271	11	7.073	11	9.725	3	2.349	124	23.759	3
18		min		-7.032	3	-26.482	3	.027	167	-.646	151	.218	151
19		max	B	25.346	3	7.585	18	9.311	11	2.326	133	23.054	10
20		min		-7.413	10	-25.848	10	.05	177	-.781	164	.198	164
21	P798	max	T	23.885	5	5.728	5	9.936	13	2.02	9	22.885	13
22		min		-5.149	13	-25.02	13	.169	38	.154	8	.476	39
23		max	B	19.777	13	5.594	13	7.362	5	2.326	25	18.542	5
24		min		-6.099	5	-20.824	5	.075	103	-.738	96	.165	42
25	P685	max	T	23.623	7	4.991	7	9.316	7	1.298	15	21.565	7
26		min		-5.078	15	-22.07	15	.06	140	-.324	11	.165	83
27		max	B	18.466	15	5.324	15	6.7	7	2.344	3	16.72	7
28		min		-5.336	7	-18.737	7	.042	91	-.75	91	.098	91
29	P822	max	T	22.547	12	5.197	12	8.675	12	1.347	33	20.45	12
30		min		-5.159	4	-21.468	4	.018	50	-.513	16	.132	165
31		max	B	21.422	4	5.094	4	8.164	4	2.326	8	19.384	4
32		min		-5.342	12	-20.852	12	.038	80	-.77	138	.168	80
33	P655	max	T	20.615	16	4.736	15	8.815	8	1.87	4	20.07	8
34		min		-4.23	7	-21.842	8	.083	130	.17	3	.344	83
35		max	B	16.591	7	4.656	7	6.194	15	2.342	2	15.559	15
36		min		-5.076	15	-17.463	15	.076	114	-.694	163	.158	36
37	P87	max	T	15.055	18	.448	93	11.206	18	2.356	171	19.787	18
38		min		.315	39	-14.387	10	.052	159	-.784	138	.278	39
39		max	B	14.371	10	.45	29	11.247	18	2.356	177	19.896	18
40		min		.337	41	-15.288	18	.049	41	-.782	159	.3	41
41	P90	max	T	14.379	10	-.577	150	11.119	10	2.344	24	19.532	10
42		min		-.566	31	-15.106	18	.165	150	-.777	154	.501	150
43		max	B	15.813	18	-.754	59	12.318	18	2.341	4	21.62	18
44		min		-.725	29	-14.938	10	.248	156	-.785	130	.668	43
45	P88	max	T	11.304	10	.048	55	11.049	18	2.348	99	19.15	18
46		min		-.007	124	-11.726	18	.017	39	-.775	100	.051	46
47		max	B	12.069	18	.038	112	11.871	18	.84	10	20.562	18
48		min		-.021	40	-12.031	3	.037	112	-.734	5	.084	167
49	P113	max	T	12.824	4	-1.075	59	11.002	4	2.346	3	19.143	4
50		min		-.823	26	-12.437	12	.424	43	-.766	164	.981	43
51		max	B	12.564	12	-.616	174	9.414	12	2.326	9	16.606	12

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Sur...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [k...	LC	Angle [rad]	LC	Von Mises [ksi]	LC
52		min		-.625	23	-13.15	4	.183	174	-.783	29	.536	174
53	P89	max	T	11.787	10	.044	55	11	18	2.329	13	19.089	18
54		min		-.01	46	-12.182	18	.021	46	.756	17	.046	91
55		max	B	13.423	18	-.148	157	12.358	18	2.353	134	21.431	18
56		min		-.261	100	-12.559	10	.047	157	-.784	45	.13	157
57	P804	max	T	20.707	5	5.905	5	7.752	13	2.284	151	18.955	13
58		min		-5.626	13	-21.131	13	.015	163	-.7	167	.205	50
59		max	B	18.713	13	5.467	13	7.564	5	1.981	17	18.736	5
60		min		-5.838	4	-20.958	5	.036	159	.311	16	.153	46
61	P864	max	T	21.073	12	6.052	12	7.525	4	2.344	92	18.793	12
62		min		-5.969	4	-21.02	4	.076	48	-.73	159	.133	48
63		max	B	26.693	4	5.566	4	10.564	4	1.3	13	24.391	4
64		min		-5.747	12	-25.497	12	.084	124	-.681	108	.245	41
65	P858	max	T	20.392	12	4.81	12	7.791	12	2.295	55	18.463	12
66		min		-5.039	4	-19.807	4	.032	161	-.767	89	.166	49
67		max	B	22.24	4	5.033	4	8.604	4	2.093	63	20.199	4
68		min		-5.081	12	-21.358	12	.036	47	-.72	123	.136	41
69	P720	max	T	19.758	7	5.695	7	7.294	15	2.34	71	18.237	15
70		min		-5.857	15	-20.446	15	.053	172	-.771	155	.119	172
71		max	B	25.431	15	5.477	15	9.977	15	1.499	90	23.183	15
72		min		-5.422	7	-23.645	7	.036	116	-.391	83	.146	138
73	P93	max	T	13.853	10	-.135	150	10.252	18	2.349	174	18.231	18
74		min		-.313	93	-14.382	18	.024	150	-.785	157	.118	150
75		max	B	13.053	18	.096	112	10.218	18	2.354	4	17.923	18
76		min		.186	40	-11.625	10	.083	40	-.767	5	.177	40
77	P94	max	T	14.154	10	.003	150	10.185	18	2.353	109	18.166	18
78		min		-.245	93	-14.519	18	.009	2	-.785	123	.065	2
79		max	B	13.855	18	.142	30	10.835	18	2.355	118	19.008	18
80		min		-.065	40	-12.722	10	.018	167	-.785	147	.035	167
81	P768	max	T	14.344	9	4.405	10	7.22	17	1.901	3	18.088	17
82		min		-5.916	18	-20.288	17	.457	105	.344	7	.989	105
83		max	B	18.125	17	5.249	17	6.438	17	2.278	13	16.154	17
84		min		-4.206	9	-15.789	9	.029	78	.119	14	.243	42
85	P233	max	T	12.318	15	-.727	85	10.372	15	2.34	14	18.069	15
86		min		-.775	21	-11.603	7	.259	86	-.775	13	.65	85
87		max	B	11.633	7	-.494	91	8.818	7	2.31	4	15.531	7
88		min		-.604	34	-12.461	15	.133	91	-.783	3	.428	91
89	P112	max	T	11.045	4	-.263	58	10.414	4	2.356	16	18.049	4
90		min		-.303	82	-10.637	12	.06	42	-.784	129	.228	42
91		max	B	10.3	12	.078	144	9.48	4	2.329	8	16.45	4
92		min		.001	153	-10.465	4	.015	153	.752	5	.029	153
93	P786	max	T	19.856	18	4.788	18	7.534	18	2.34	77	17.947	18
94		min		-4.409	10	-16.892	10	.045	105	-.776	107	.177	104
95		max	B	18.369	10	4.081	10	7.243	18	1.238	18	17.074	18
96		min		-4.338	18	-18.825	18	.194	150	-.332	7	.363	39
97	P679	max	T	19.725	7	4.442	7	7.642	7	1.922	124	17.922	7
98		min		-4.42	15	-18.505	15	.026	49	-.626	111	.13	50
99		max	B	18	15	4.154	15	6.923	15	2.329	3	16.324	15
100		min		-4.457	7	-17.754	7	.008	90	-.755	147	.128	108
101	P834	max	T	19.289	3	5.341	4	7.159	11	2.345	94	17.878	11
102		min		-5.786	12	-20.037	11	.073	171	-.766	171	.136	170
103		max	B	24.233	11	5.397	11	10.276	3	2.142	107	23.395	3

Mount Analysis Square Plate Connection

TIA Revision:	TIA-222-H	Select

SITE DATA	
Site Number:	302539
Site Name:	North Haven CT 2
Project Number:	11916045

REACTIONS		
Moment:	7.080	kip-ft
Axial:	1.238	kips
Shear:	2.853	kips

BOLT DATA		
Quantity:	4	
Diameter:	0.625	in
Material:	A325	Select
Fy:	92	ksi
Fu:	120	ksi
Bolt Spacing:	6	in

Load Combination	

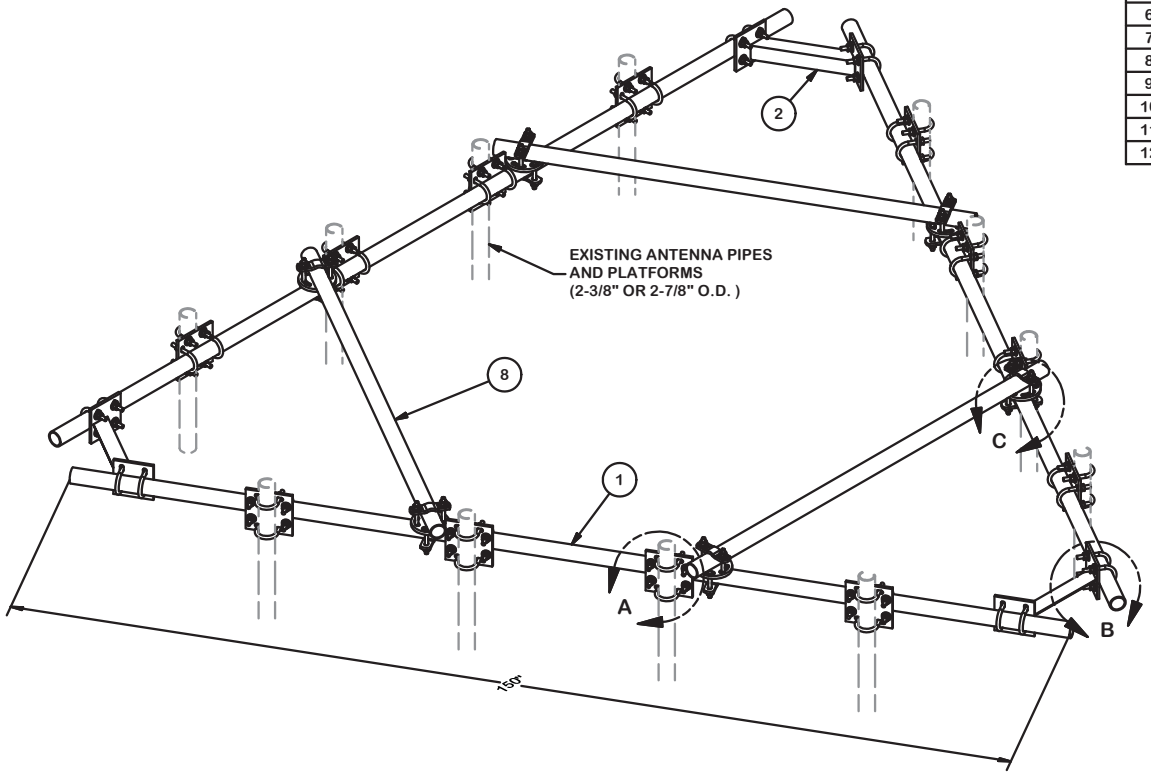
BOLT RESULTS		
Max Bolt (Cu+ Vu/η):	10.32	kips
Axial Design Strength:	21.70	kips
Stress Ratio	47.58%	

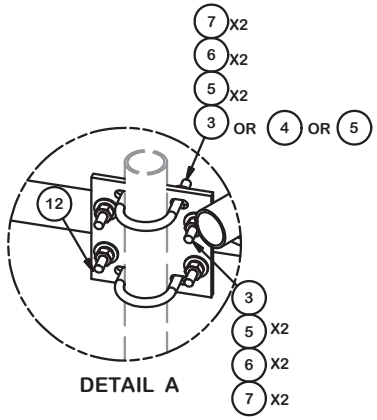
PLATE DATA		
Width:	8	in
Thickness:	0.75	in
Fy:	36	ksi

PLATE RESULTS		
Base Plate Stress:	22.51	ksi
Bending Strength:	32.40	ksi
Stress Ratio:	69.47%	

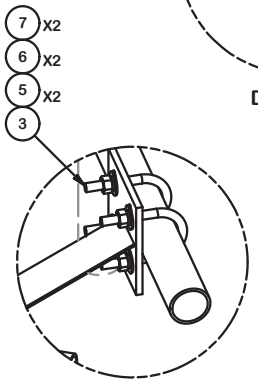
SUPPORT ARM DATA		
Type:	HSST	Select
Diameter/Width:	4	in
Thickness	0.25	in
Fy:	36	ksi
Number of Sides:	4	

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	15.42
4	24	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.26	6.17
5	144	G12FW	1/2" HDG USS FLATWASHER		0.03	4.91
6	144	G12LW	1/2" HDG LOCKWASHER		0.01	2.00
7	144	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	10.31
8	3	P272	2-3/8" X 72" SCH 40 GALVANIZED PIPE	72 in	23.07	69.20
9	6	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALV.)		2.48	14.90
10	12	X-100064	CLAMP (S) (4" V-CLAMP) GALVANIZED		0.91	10.95
11	24	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	6.48
12	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
					TOTAL WT. #	406.61

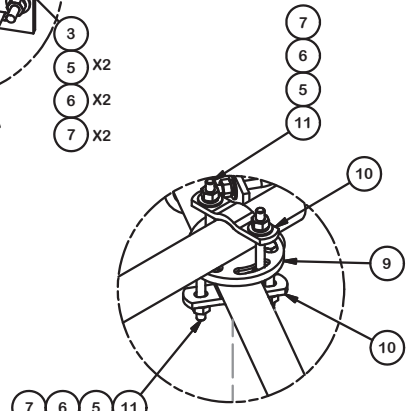




DETAIL A



DETAIL B



DETAIL C

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION
HEAY DUTY HANDRAIL KIT
FOR 12' PLATFORMS WITH
2-3/8" OR 2-7/8" ANTENNA PIPES

SITE PRO 1
A valmont COMPANY

Engineering Support Team:
1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
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AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

TOWER ENGINEERING PROFESSIONALS

Structural Analysis Report

Structure	:	**150 ft Monopole**
ATC Site Name	:	**North Haven CT 2, CT**
ATC Asset Number	:	**302539**
Engineering Number	:	**13677988_C3_02**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**North Haven MP X63/64**
Carrier Site Number	:	**CT11398A**
Site Location	:	**4 Dwight Street** **North Haven, CT 06473-1138** **41.421900,-72.847200**
County	:	**New Haven**
Date	:	**May 24, 2021**
Max Usage	:	**52%**
Result	:	**Pass**

Prepared By:
Greg Trotta

Reviewed By:

STATE OF CONNECTICUT
GRAHAM M. ANDRES
29538
LICENSED
PROFESSIONAL ENGINEER

6/15/21

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	Valmont Drawing #DC1777Z, dated June 29, 1994
Foundation Drawing	SAC Engineering Site #027, dated July 20, 1994
Geotechnical Report	GEOServices Project #21-07254, dated November 28, 2007
Mount Analysis	CLS Engineering PLLC Project #41124-12927158-01-MA-R1, dated July 3, 2019

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" 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

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
151.0	12	Decibel DB844H90E-XY	T-Arms	(12) 1 5/8" Coax	SPRINT NEXTEL
140.0	1	DragonWave A-ANT-23G-1-C	Side Arms	(4) 1/2" Coax (1) 2" conduit (6) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
	3	DragonWave Horizon Compact			
	3	NextNet BTS-2500			
	1	DragonWave A-ANT-11G-2.5-C			
	3	Argus LPX310R			
	1	DragonWave A-ANT-18G-2-C			
130.0	3	RFS APXVAARR24_43-U-NA20	Low Profile Platform	(2) 1 5/8" (1.63"-41.3mm) Fiber (6) 1 5/8" Coax	T-MOBILE
120.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	METRO PCS INC

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
130.0	3	Ericsson KRY 112 144/1	-	(1) 1 1/4" Hybriflex Cable	T-MOBILE
	3	Ericsson AIR 21, 1.3M, B4A B2P			
	3	Ericsson AIR 21, 1.3 M, B2A B4P			
	3	Ericsson Radio 4449 B12,B71			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
130.0	3	Commscope SDX1926Q-43	Platform with Handrails	(1) 1 5/8" Hybriflex	T-MOBILE
	3	Ericsson RRUS 4415 B66			
	3	Ericsson Radio 4449 B71 B85A			
	3	Ericsson 4424 B25			
	3	Ericsson Air6449 B41			
	3	RFS APX16DWV-16DWVS-E-A20			

[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	47%	Pass
Shaft	46%	Pass
Base Plate	13%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,567.2	4,815.7	2,074.7	43%
Shear (Kips)	30.5	41.1	21.5	52%
* 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 and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
140.0	DragonWave A-ANT-23G-1-C	CLEARWIRE CORPORATION	1.033	0.745
	DragonWave A-ANT-18G-2-C			
	DragonWave A-ANT-11G-2.5-C			
130.0	Commscope SDX1926Q-43	T-MOBILE	0.904	0.731
	Ericsson Radio 4449 B71 B85A			
	Ericsson RRUS 4415 B66			
	Ericsson 4424 B25			
	Ericsson Air6449 B41			
	RFS APX16DWV-16DWVS-E-A20			

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

Standard Conditions

All engineering services performed by A.T. Engineering 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:

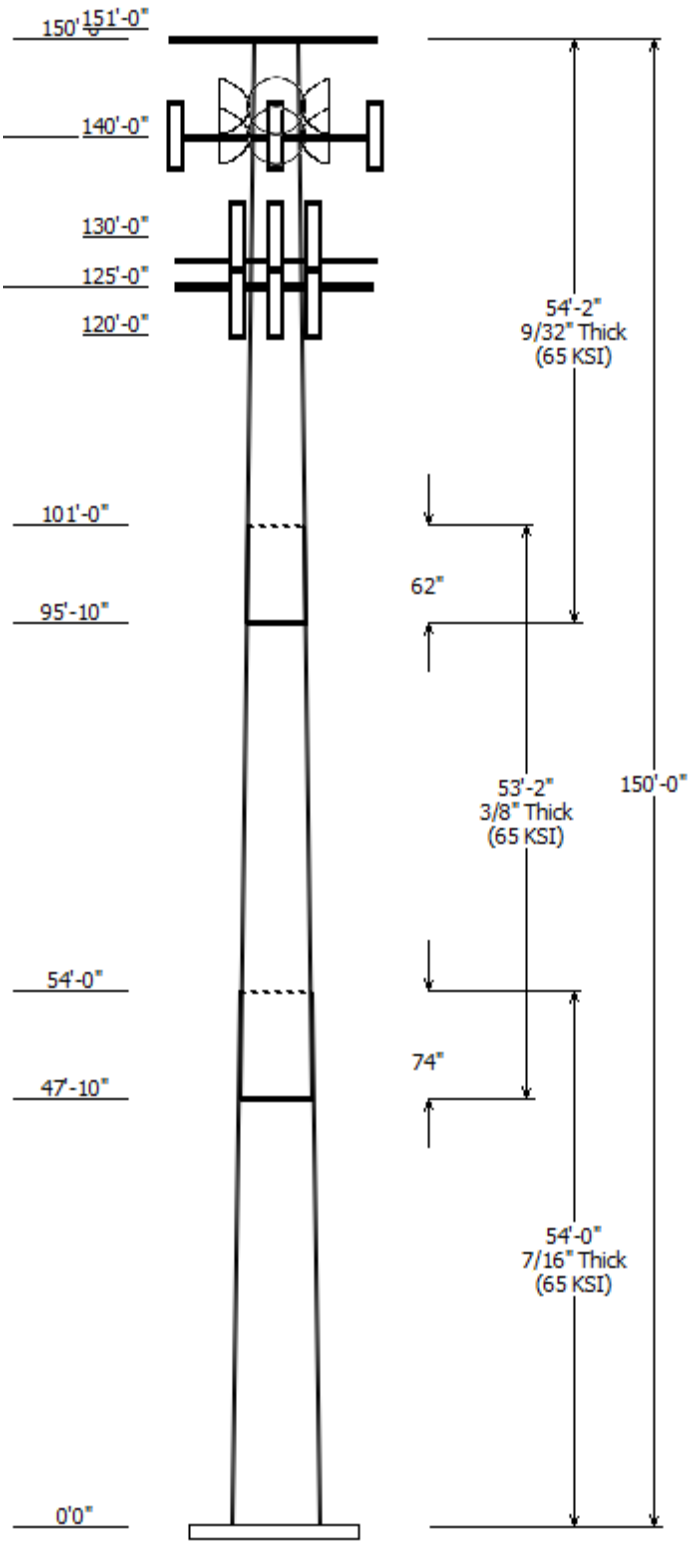
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

Client :	T-MOBILE		
Pole :	302539	Code:	ANSI/TIA-222-H
Location :	North Haven CT 2, CT		
Description :	150 ft Valmont Monopole	Risk Category :	II
Shape :	12 Sides	Exposure :	B
Height :	150.00 (ft)	Topo Method :	Method 1
Base Elev (ft):	0.00	Topographic Category :	1
Taper:	0.182016 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	54.000	39.77	49.60	0.438		0.000	12 Sides	65
2	53.167	31.96	41.64	0.375	Slip Joint	74.000	12 Sides	65
3	54.167	23.61	33.46	0.281	Slip Joint	62.000	12 Sides	65

Discrete Appurtenance

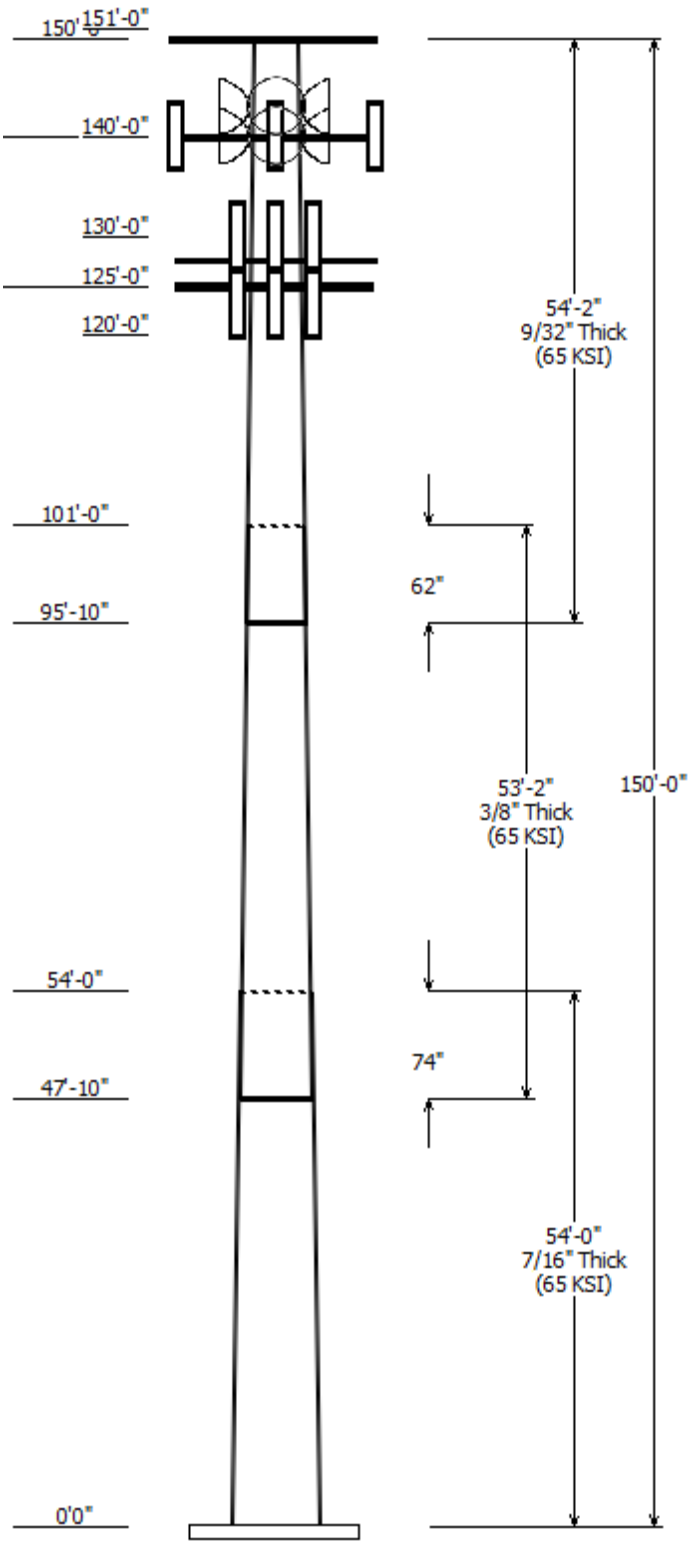
Attach Elev (ft)	Force Elev (ft)	Qty	Description
151.000	151.000	12	Decibel DB844H90E-XY
150.000	150.000	3	Round T-Arm
140.000	140.000	3	Flat Side Arm
140.000	140.000	1	DragonWave A-ANT-11G-2.5-C
140.000	141.000	1	DragonWave A-ANT-18G-2-C
140.000	140.000	3	Argus LPX310R
140.000	140.000	3	NextNet BTS-2500
140.000	141.000	1	DragonWave A-ANT-23G-1-C
140.000	141.000	3	DragonWave Horizon Compact
130.000	130.000	3	RFS APXVAARR24_43-U-NA20
130.000	130.000	3	RFS APX16DWV-16DWVS-E-A20
130.000	130.000	3	Ericsson Air6449 B41
130.000	130.000	3	Ericsson 4424 B25
130.000	130.000	3	Ericsson Radio 4449 B71 B85A
130.000	130.000	3	Commscope SDX1926Q-43
130.000	130.000	3	Ericsson RRUS 4415 B66
125.000	125.000	1	Round Platform w/ Handrails
120.000	121.000	3	RFS APXV18-206517S-C

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	120.0	1 5/8" Coax	No
0.000	130.0	1 5/8" (1.63"-	No
0.000	130.0	1 5/8" Coax	No
0.000	130.0	1 5/8" Hybriflex	No
0.000	140.0	1/2" Coax	No
0.000	140.0	2" conduit	No
0.000	140.0	5/16" (0.31"-	No
0.000	141.0	1/2" Coax	No
0.000	151.0	1 5/8" Coax	No

Load Cases

1.2D + 1.0W	120 mph with No Ice
0.9D + 1.0W	120 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

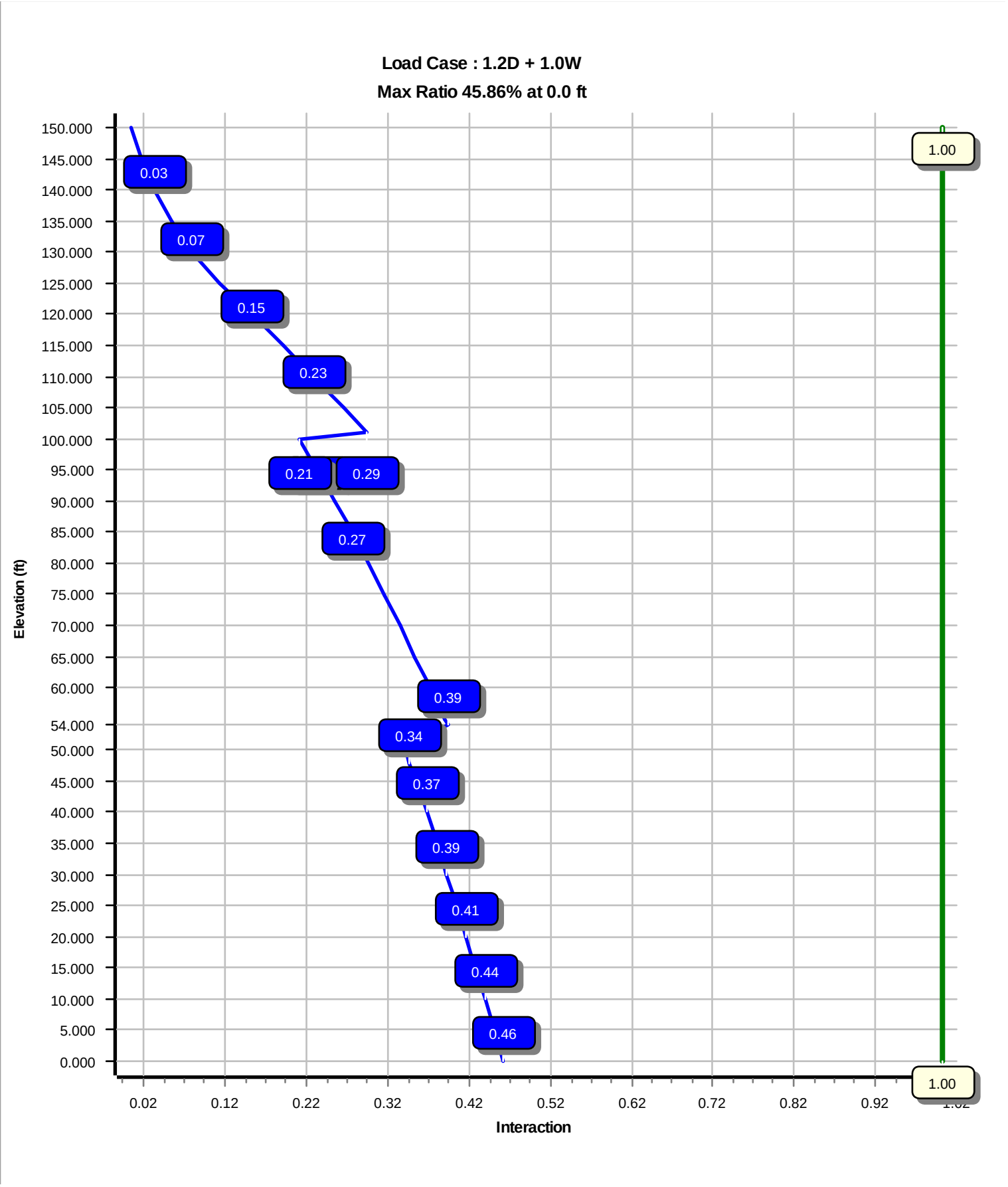


Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	2074.68	21.50	39.85
0.9D + 1.0W	2056.89	21.49	29.88
1.2D + 1.0Di + 1.0Wi	479.55	4.92	50.88
1.2D + 1.0Ev + 1.0Eh	147.62	1.30	39.69
0.9D - 1.0Ev + 1.0Eh	146.05	1.30	27.34
1.0D + 1.0W	461.52	4.81	33.23

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	140.00	11.765	0.707
1.0D + 1.0W	140.00	11.765	0.707
1.0D + 1.0W	140.00	11.765	0.707


Load Case : 1.2D + 1.0W
Max Ratio 45.86% at 0.0 ft
Elevation (ft)
150.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
54.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.03
0.07
0.15
0.23
0.21
0.29
0.27
0.39
0.34
0.37
0.39
0.41
0.44
0.46
1.00
1.00
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 302539 **Code: ANSI/TIA-222-H**

Site Name: North Haven CT 2, CT **Engineering Number:13677988_C3_02** **5/24/2021 5:23:53 PM**

Customer: T-MOBILE

Analysis Parameters

Location :	**New Haven County, CT**	**Height (ft) :**	**150**
Code :	**ANSI/TIA-222-H**	**Base Diameter (in) :**	**49.60**
Shape :	**12 Sides**	**Top Diameter (in) :**	**23.61**
Pole Type :	**Taper**	**Taper (in/ft) :**	**0.182**
Pole Manfacturer :	**Valmont**	**Rotation (deg) :**	**0.00**
Kd (non-service) :	**0.95**	**Ke :**	**1.00**

Ice & Wind Parameters

Exposure Category:	**B**	**Design Wind Speed Without Ice:**	**120 mph**
Risk Category:	**II**	**Design Wind Speed With Ice:**	**50 mph**
Topographic Factor Procedure:	**Method 1**	**Operational Wind Speed:**	**60 mph**
Topographic Category:	**1**	**Design Ice Thickness:**	**1.00 in**
Crest Height:	**0 ft**	**HMSL:**	**18.00 ft**

Seismic Parameters

Analysis Method:	**Equivalent Lateral Force Method**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**2.00**				
T_L (sec):	**6**	**p:**	**1.3**	**C_s:**	**0.030**
S_s:	**0.204**	**S_1:**	**0.054**	**C_s Max:**	**0.030**
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 with No Ice**
0.9D + 1.0W	**120 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 1.00 in Radial Ice**
1.2D + 1.0Ev + 1.0Eh	**Seismic**
0.9D - 1.0Ev + 1.0Eh	**Seismic (Reduced DL)**
1.0D + 1.0W	**Serviceability 60 mph**

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-12	54.000	0.4375	65		0.00	11,454	49.60	0.00	69.26	21365.7	28.23	113.37	39.77	54.00	55.41	10942.2	22.21	90.90	0.182016
2-12	53.167	0.3750	65	Slip	74.00	7,958	41.64	47.83	49.83	10832.4	27.61	111.05	31.96	101.00	38.15	4859.3	20.70	85.24	0.182016
3-12	54.167	0.2813	65	Slip	62.00	4,717	33.46	95.83	30.06	4225.4	29.74	119.00	23.61	150.00	21.13	1467.6	20.35	83.95	0.182016
				Shaft Weight		24,129													

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
151.00	Decibel DB844H90E-XY	12	0.80	0.000	14.00	3.615	0.73	81.65	3.615	0.73
150.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	389.38	15.198	0.67
140.00	DragonWave Horizon Compact	3	0.80	1.000	10.60	0.721	0.50	25.49	1.098	0.50
140.00	DragonWave A-ANT-23G-1-C	1	0.80	1.000	15.00	1.610	1.00	38.40	2.111	1.00
140.00	NextNet BTS-2500	3	0.80	0.000	35.00	1.817	0.50	65.71	2.424	0.50
140.00	Argus LPX310R	3	0.80	0.000	13.00	2.058	0.67	41.23	2.985	0.67
140.00	DragonWave A-ANT-18G-2-C	1	0.80	1.000	27.10	4.688	1.00	91.73	5.532	1.00
140.00	Flat Side Arm	3	1.00	0.000	150.00	6.300	0.67	198.44	7.928	0.67
140.00	DragonWave A-ANT-11G-2.5-C	1	0.80	0.000	47.60	8.670	1.00	164.94	9.814	1.00
130.00	Commscope SDX1926Q-43	3	0.75	0.000	6.20	0.242	0.50	11.85	0.473	0.50
130.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	114.53	2.208	0.50
130.00	Ericsson RRUS 4415 B66	3	0.75	0.000	46.00	1.650	0.50	74.46	2.208	0.50
130.00	Ericsson 4424 B25	3	0.75	0.000	86.00	2.052	0.67	133.92	2.672	0.67
130.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	193.57	6.725	0.63
130.00	RFS APX16DWV-16DWVS-E-A20	3	0.75	0.000	40.70	6.586	0.60	117.48	8.009	0.60
130.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.243	0.63	385.93	22.681	0.63
125.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	2,848.27	43.202	1.00
120.00	RFS APXV18-206517S-C	3	1.00	1.000	26.40	5.160	0.68	86.81	6.702	0.68
Totals	Num Loadings:18	55			5,170.10			9,639.56		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	151.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL
0.00	141.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	140.00	3	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	140.00	1	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	140.00	6	5/16" (0.31"-7.9mm)	0.31	0.05	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	130.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	130.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	130.00	1	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	120.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	METRO PCS INC

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	49.600	69.257	21,365.7	28.23	113.37	73.9	832.2	0.0	0.0
5.00		0.4375	48.690	67.975	20,200.9	27.68	111.29	74.5	801.5	0.0	1,167.4
10.00		0.4375	47.780	66.693	19,079.3	27.12	109.21	75.1	771.4	0.0	1,145.6
15.00		0.4375	46.870	65.411	18,000.1	26.56	107.13	75.7	741.9	0.0	1,123.8
20.00		0.4375	45.959	64.129	16,962.2	26.00	105.05	76.4	713.0	0.0	1,102.0
25.00		0.4375	45.049	62.847	15,965.1	25.45	102.97	77.0	684.6	0.0	1,080.2
30.00		0.4375	44.139	61.565	15,007.8	24.89	100.89	77.6	656.9	0.0	1,058.4
35.00		0.4375	43.229	60.283	14,089.6	24.33	98.81	78.2	629.6	0.0	1,036.6
40.00		0.4375	42.319	59.001	13,209.7	23.77	96.73	78.8	603.0	0.0	1,014.7
45.00		0.4375	41.409	57.719	12,367.1	23.22	94.65	79.4	577.0	0.0	992.9
47.83	Bot - Section 2	0.4375	40.893	56.992	11,906.0	22.90	93.47	79.7	562.5	0.0	553.0
50.00		0.4375	40.499	56.437	11,561.2	22.66	92.57	80.0	551.5	0.0	783.8
54.00	Top - Section 1	0.3750	40.521	48.476	9,972.4	26.81	108.06	75.5	475.4	0.0	1,427.0
55.00		0.3750	40.339	48.256	9,837.3	26.68	107.57	75.6	471.1	0.0	164.6
60.00		0.3750	39.429	47.158	9,180.5	26.03	105.14	76.3	449.8	0.0	811.7
65.00		0.3750	38.519	46.059	8,553.5	25.38	102.72	77.0	429.0	0.0	793.0
70.00		0.3750	37.609	44.960	7,955.7	24.73	100.29	77.7	408.7	0.0	774.3
75.00		0.3750	36.699	43.861	7,386.5	24.08	97.86	78.5	388.8	0.0	755.6
80.00		0.3750	35.789	42.762	6,845.1	23.43	95.44	79.2	369.5	0.0	736.9
85.00		0.3750	34.878	41.663	6,330.8	22.78	93.01	79.9	350.7	0.0	718.2
90.00		0.3750	33.968	40.564	5,843.0	22.13	90.58	80.6	332.3	0.0	699.5
95.00		0.3750	33.058	39.465	5,380.8	21.48	88.16	81.3	314.4	0.0	680.8
95.83	Bot - Section 3	0.3750	32.907	39.282	5,306.3	21.37	87.75	81.4	311.5	0.0	111.6
100.0		0.3750	32.148	38.366	4,943.7	20.83	85.73	81.9	297.1	0.0	971.7
101.0	Top - Section 2	0.2813	32.529	29.204	3,876.3	28.85	115.66	73.3	230.2	0.0	229.8
105.0		0.2813	31.801	28.545	3,619.7	28.15	113.07	74.0	219.9	0.0	393.0
110.0		0.2813	30.891	27.721	3,315.1	27.29	109.83	75.0	207.3	0.0	478.6
115.0		0.2813	29.980	26.896	3,028.1	26.42	106.60	75.9	195.1	0.0	464.6
120.0		0.2813	29.070	26.072	2,758.2	25.55	103.36	76.8	183.3	0.0	450.6
125.0		0.2813	28.160	25.248	2,504.8	24.68	100.13	77.8	171.8	0.0	436.6
130.0		0.2813	27.250	24.424	2,267.4	23.82	96.89	78.7	160.7	0.0	422.6
135.0		0.2813	26.340	23.600	2,045.5	22.95	93.65	79.7	150.0	0.0	408.5
140.0		0.2813	25.430	22.775	1,838.6	22.08	90.42	80.6	139.7	0.0	394.5
145.0		0.2813	24.520	21.951	1,646.1	21.22	87.18	81.6	129.7	0.0	380.5
150.0		0.2813	23.610	21.127	1,467.6	20.35	83.95	81.9	120.1	0.0	366.5
											24,129.1

Load Case: 1.2D + 1.0W — 120 mph with No Ice — 23 Iterations

Gust Response Factor :1.10
Dead Load Factor :1.20
Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		271.4	0.0					0.0	0.0	271.4	0.0	0.0	0.0
5.00		537.7	1,400.9					0.0	172.5	537.7	1,573.4	0.0	0.0
10.00		527.6	1,374.7					0.0	172.5	527.6	1,547.2	0.0	0.0
15.00		517.6	1,348.6					0.0	172.5	517.6	1,521.1	0.0	0.0
20.00		507.5	1,322.4					0.0	172.5	507.5	1,494.9	0.0	0.0
25.00		497.5	1,296.2					0.0	172.5	497.5	1,468.7	0.0	0.0
30.00		493.2	1,270.0					0.0	172.5	493.2	1,442.5	0.0	0.0
35.00		498.9	1,243.9					0.0	172.5	498.9	1,416.4	0.0	0.0
40.00		507.5	1,217.7					0.0	172.5	507.5	1,390.2	0.0	0.0
45.00		401.5	1,191.5					0.0	172.5	401.5	1,364.0	0.0	0.0
47.83	Bot - Section 2	260.1	663.6					0.0	97.7	260.1	761.3	0.0	0.0
50.00		325.7	940.5					0.0	74.8	325.7	1,015.3	0.0	0.0
54.00	Top - Section 1	264.5	1,712.4					0.0	138.0	264.5	1,850.4	0.0	0.0
55.00		318.4	197.5					0.0	34.5	318.4	232.0	0.0	0.0
60.00		531.1	974.0					0.0	172.5	531.1	1,146.5	0.0	0.0
65.00		530.8	951.6					0.0	172.5	530.8	1,124.1	0.0	0.0
70.00		529.4	929.1					0.0	172.5	529.4	1,101.6	0.0	0.0
75.00		526.9	906.7					0.0	172.5	526.9	1,079.2	0.0	0.0
80.00		523.4	884.3					0.0	172.5	523.4	1,056.8	0.0	0.0
85.00		519.0	861.8					0.0	172.5	519.0	1,034.3	0.0	0.0
90.00		513.8	839.4					0.0	172.5	513.8	1,011.9	0.0	0.0
95.00		297.8	817.0					0.0	172.5	297.8	989.5	0.0	0.0
95.83	Bot - Section 3	255.9	134.0					0.0	28.7	255.9	162.7	0.0	0.0
100.00		264.6	1,166.1					0.0	143.8	264.6	1,309.8	0.0	0.0
101.00	Top - Section 2	253.2	275.8					0.0	34.5	253.2	310.3	0.0	0.0
105.00		451.7	471.6					0.0	138.0	451.7	609.6	0.0	0.0
110.00		494.8	574.4					0.0	172.5	494.8	746.9	0.0	0.0
115.00		486.4	557.5					0.0	172.5	486.4	730.0	0.0	0.0
120.00	Appurtenance(s)	477.4	540.7	422.9	0.0	422.9	95.0	0.0	172.5	900.3	808.3	0.0	0.0
125.00	Appurtenance(s)	467.9	523.9	1,102.9	0.0	0.0	2,400.0	0.0	143.0	1,570.8	3,066.9	0.0	0.0
130.00	Appurtenance(s)	457.9	507.1	2,161.8	0.0	0.0	1,748.9	0.0	143.0	2,619.6	2,398.9	0.0	0.0
135.00		447.4	490.2					0.0	86.3	447.4	576.6	0.0	0.0
140.00	Appurtenance(s)	436.4	473.4	1,298.6	0.0	247.8	858.6	0.0	86.3	1,735.0	1,418.4	0.0	0.0
145.00		425.0	456.6					0.0	59.2	425.0	515.8	0.0	0.0
150.00	Appurtenance(s)	209.6	439.8	624.6	0.0	0.0	900.0	0.0	59.0	834.3	1,398.8	0.0	0.0
								Totals:		20,640.5	39,674.3	0.00	0.00

Load Case: 1.2D + 1.0W — 120 mph with No Ice — 23 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	-39.85	-21.50	0.00	-2,074.68	0.00	2,074.68	4,607.63	1,215.47	5,637.04	4,613.61	0.00	0.00	0.459
5.00	-38.23	-21.05	0.00	-1,967.18	0.00	1,967.18	4,559.53	1,192.97	5,430.33	4,480.18	0.07	-0.13	0.448
10.00	-36.63	-20.60	0.00	-1,861.92	0.00	1,861.92	4,510.02	1,170.47	5,227.48	4,347.20	0.29	-0.27	0.437
15.00	-35.07	-20.16	0.00	-1,758.90	0.00	1,758.90	4,459.11	1,147.97	5,028.50	4,214.75	0.64	-0.40	0.425
20.00	-33.53	-19.72	0.00	-1,658.10	0.00	1,658.10	4,406.80	1,125.47	4,833.37	4,082.90	1.14	-0.54	0.414
25.00	-32.02	-19.28	0.00	-1,559.50	0.00	1,559.50	4,353.08	1,102.97	4,642.11	3,951.73	1.77	-0.67	0.402
30.00	-30.54	-18.84	0.00	-1,463.09	0.00	1,463.09	4,297.96	1,080.46	4,454.70	3,821.33	2.55	-0.81	0.390
35.00	-29.09	-18.39	0.00	-1,368.88	0.00	1,368.88	4,241.44	1,057.96	4,271.16	3,691.77	3.47	-0.94	0.378
40.00	-27.67	-17.92	0.00	-1,276.93	0.00	1,276.93	4,183.52	1,035.46	4,091.48	3,563.12	4.53	-1.08	0.365
45.00	-26.28	-17.54	0.00	-1,187.32	0.00	1,187.32	4,124.19	1,012.96	3,915.66	3,435.47	5.73	-1.21	0.352
47.83	-25.51	-17.29	0.00	-1,137.63	0.00	1,137.63	4,089.95	1,000.21	3,817.74	3,363.62	6.47	-1.29	0.345
50.00	-24.47	-16.98	0.00	-1,100.16	0.00	1,100.16	4,063.46	990.46	3,743.70	3,308.90	7.07	-1.34	0.339
54.00	-22.61	-16.70	0.00	-1,032.24	0.00	1,032.24	3,292.85	850.76	3,222.08	2,691.25	8.24	-1.45	0.391
55.00	-22.36	-16.41	0.00	-1,015.54	0.00	1,015.54	3,284.08	846.90	3,192.94	2,671.80	8.55	-1.47	0.387
60.00	-21.19	-15.90	0.00	-933.52	0.00	933.52	3,239.39	827.61	3,049.22	2,574.87	10.17	-1.62	0.369
65.00	-20.05	-15.38	0.00	-854.04	0.00	854.04	3,193.31	808.33	2,908.80	2,478.53	11.93	-1.75	0.351
70.00	-18.93	-14.86	0.00	-777.15	0.00	777.15	3,145.81	789.04	2,771.70	2,382.84	13.84	-1.89	0.333
75.00	-17.84	-14.34	0.00	-702.85	0.00	702.85	3,096.92	769.76	2,637.91	2,287.90	15.89	-2.02	0.313
80.00	-16.77	-13.81	0.00	-631.17	0.00	631.17	3,046.62	750.47	2,507.43	2,193.77	18.08	-2.15	0.294
85.00	-15.73	-13.29	0.00	-562.11	0.00	562.11	2,994.92	731.18	2,380.25	2,100.54	20.40	-2.27	0.273
90.00	-14.71	-12.76	0.00	-495.68	0.00	495.68	2,941.82	711.90	2,256.39	2,008.29	22.84	-2.39	0.252
95.00	-13.72	-12.44	0.00	-431.87	0.00	431.87	2,887.31	692.61	2,135.83	1,917.09	25.41	-2.51	0.230
95.83	-13.56	-12.19	0.00	-421.50	0.00	421.50	2,878.09	689.40	2,116.06	1,902.00	25.85	-2.53	0.227
100.00	-12.25	-11.88	0.00	-370.72	0.00	370.72	2,827.97	673.33	2,018.59	1,824.81	28.09	-2.61	0.208
101.00	-11.94	-11.62	0.00	-358.85	0.00	358.85	1,925.36	512.53	1,559.14	1,264.78	28.64	-2.63	0.290
105.00	-11.34	-11.16	0.00	-312.37	0.00	312.37	1,901.32	500.96	1,489.56	1,220.55	30.88	-2.71	0.262
110.00	-10.59	-10.65	0.00	-256.57	0.00	256.57	1,870.02	486.50	1,404.81	1,165.48	33.79	-2.82	0.226
115.00	-9.87	-10.14	0.00	-203.33	0.00	203.33	1,837.31	472.03	1,322.54	1,110.74	36.80	-2.92	0.189
120.00	-9.10	-9.21	0.00	-152.20	0.00	152.20	1,803.20	457.57	1,242.75	1,056.40	39.91	-3.01	0.150
125.00	-6.11	-7.49	0.00	-106.14	0.00	106.14	1,767.68	443.10	1,165.45	1,002.54	43.09	-3.07	0.110
130.00	-3.86	-4.74	0.00	-68.71	0.00	68.71	1,730.77	428.64	1,090.62	949.24	46.34	-3.12	0.075
135.00	-3.30	-4.27	0.00	-44.98	0.00	44.98	1,692.45	414.17	1,018.28	896.58	49.63	-3.16	0.052
140.00	-1.98	-2.46	0.00	-23.40	0.00	23.40	1,652.72	399.71	948.43	844.63	52.95	-3.18	0.029
145.00	-1.49	-2.00	0.00	-11.11	0.00	11.11	1,611.60	385.24	881.05	793.48	56.29	-3.20	0.015
150.00	0.00	-1.92	0.00	-1.08	0.00	1.08	1,557.27	370.78	816.16	737.61	59.64	-3.20	0.001

Load Case: 0.9D + 1.0W — 120 mph with No Ice (Reduced DL) — 23 Iterations

Gust Response Factor :1.10
Dead Load Factor :0.90
Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		271.4	0.0					0.0	0.0	271.4	0.0	0.0	0.0
5.00		537.7	1,050.7					0.0	129.4	537.7	1,180.1	0.0	0.0
10.00		527.6	1,031.1					0.0	129.4	527.6	1,160.4	0.0	0.0
15.00		517.6	1,011.4					0.0	129.4	517.6	1,140.8	0.0	0.0
20.00		507.5	991.8					0.0	129.4	507.5	1,121.2	0.0	0.0
25.00		497.5	972.2					0.0	129.4	497.5	1,101.5	0.0	0.0
30.00		493.2	952.5					0.0	129.4	493.2	1,081.9	0.0	0.0
35.00		498.9	932.9					0.0	129.4	498.9	1,062.3	0.0	0.0
40.00		507.5	913.3					0.0	129.4	507.5	1,042.6	0.0	0.0
45.00		401.5	893.6					0.0	129.4	401.5	1,023.0	0.0	0.0
47.83	Bot - Section 2	260.1	497.7					0.0	73.3	260.1	571.0	0.0	0.0
50.00		325.7	705.4					0.0	56.1	325.7	761.5	0.0	0.0
54.00	Top - Section 1	264.5	1,284.3					0.0	103.5	264.5	1,387.8	0.0	0.0
55.00		318.4	148.1					0.0	25.9	318.4	174.0	0.0	0.0
60.00		531.1	730.5					0.0	129.4	531.1	859.9	0.0	0.0
65.00		530.8	713.7					0.0	129.4	530.8	843.1	0.0	0.0
70.00		529.4	696.9					0.0	129.4	529.4	826.2	0.0	0.0
75.00		526.9	680.0					0.0	129.4	526.9	809.4	0.0	0.0
80.00		523.4	663.2					0.0	129.4	523.4	792.6	0.0	0.0
85.00		519.0	646.4					0.0	129.4	519.0	775.8	0.0	0.0
90.00		513.8	629.5					0.0	129.4	513.8	758.9	0.0	0.0
95.00		297.8	612.7					0.0	129.4	297.8	742.1	0.0	0.0
95.83	Bot - Section 3	255.9	100.5					0.0	21.6	255.9	122.0	0.0	0.0
100.00		264.6	874.6					0.0	107.8	264.6	982.4	0.0	0.0
101.00	Top - Section 2	253.2	206.8					0.0	25.9	253.2	232.7	0.0	0.0
105.00		451.7	353.7					0.0	103.5	451.7	457.2	0.0	0.0
110.00		494.8	430.8					0.0	129.4	494.8	560.2	0.0	0.0
115.00		486.4	418.2					0.0	129.4	486.4	547.5	0.0	0.0
120.00	Appurtenance(s)	477.4	405.5	422.9	0.0	422.9	71.3	0.0	129.4	900.3	606.2	0.0	0.0
125.00	Appurtenance(s)	467.9	392.9	1,102.9	0.0	0.0	1,800.0	0.0	107.2	1,570.8	2,300.2	0.0	0.0
130.00	Appurtenance(s)	457.9	380.3	2,161.8	0.0	0.0	1,311.7	0.0	107.2	2,619.6	1,799.2	0.0	0.0
135.00		447.4	367.7					0.0	64.8	447.4	432.4	0.0	0.0
140.00	Appurtenance(s)	436.4	355.1	1,298.6	0.0	247.8	643.9	0.0	64.8	1,735.0	1,063.8	0.0	0.0
145.00		425.0	342.4					0.0	44.4	425.0	386.9	0.0	0.0
150.00	Appurtenance(s)	209.6	329.8	624.6	0.0	0.0	675.0	0.0	44.3	834.3	1,049.1	0.0	0.0
								Totals:		20,640.5	29,755.7	0.00	0.00

Load Case: 0.9D + 1.0W — 120 mph with No Ice (Reduced DL) — 23 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	-29.88	-21.49	0.00	-2,056.89	0.00	2,056.89	4,607.63	1,215.47	5,637.04	4,613.61	0.00	0.00	0.453
5.00	-28.65	-21.02	0.00	-1,949.45	0.00	1,949.45	4,559.53	1,192.97	5,430.33	4,480.18	0.07	-0.13	0.442
10.00	-27.45	-20.55	0.00	-1,844.37	0.00	1,844.37	4,510.02	1,170.47	5,227.48	4,347.20	0.28	-0.27	0.431
15.00	-26.26	-20.09	0.00	-1,741.62	0.00	1,741.62	4,459.11	1,147.97	5,028.50	4,214.75	0.63	-0.40	0.419
20.00	-25.10	-19.63	0.00	-1,641.19	0.00	1,641.19	4,406.80	1,125.47	4,833.37	4,082.90	1.13	-0.53	0.408
25.00	-23.96	-19.17	0.00	-1,543.06	0.00	1,543.06	4,353.08	1,102.97	4,642.11	3,951.73	1.76	-0.67	0.396
30.00	-22.84	-18.72	0.00	-1,447.18	0.00	1,447.18	4,297.96	1,080.46	4,454.70	3,821.33	2.53	-0.80	0.384
35.00	-21.74	-18.26	0.00	-1,353.58	0.00	1,353.58	4,241.44	1,057.96	4,271.16	3,691.77	3.44	-0.93	0.372
40.00	-20.67	-17.78	0.00	-1,262.30	0.00	1,262.30	4,183.52	1,035.46	4,091.48	3,563.12	4.49	-1.07	0.360
45.00	-19.62	-17.39	0.00	-1,173.42	0.00	1,173.42	4,124.19	1,012.96	3,915.66	3,435.47	5.67	-1.20	0.347
47.83	-19.04	-17.14	0.00	-1,124.14	0.00	1,124.14	4,089.95	1,000.21	3,817.74	3,363.62	6.41	-1.27	0.339
50.00	-18.26	-16.82	0.00	-1,087.00	0.00	1,087.00	4,063.46	990.46	3,743.70	3,308.90	7.00	-1.33	0.333
54.00	-16.86	-16.54	0.00	-1,019.71	0.00	1,019.71	3,292.85	850.76	3,222.08	2,691.25	8.16	-1.43	0.384
55.00	-16.67	-16.25	0.00	-1,003.16	0.00	1,003.16	3,284.08	846.90	3,192.94	2,671.80	8.46	-1.46	0.381
60.00	-15.79	-15.73	0.00	-921.93	0.00	921.93	3,239.39	827.61	3,049.22	2,574.87	10.06	-1.60	0.363
65.00	-14.92	-15.21	0.00	-843.28	0.00	843.28	3,193.31	808.33	2,908.80	2,478.53	11.81	-1.74	0.345
70.00	-14.08	-14.69	0.00	-767.23	0.00	767.23	3,145.81	789.04	2,771.70	2,382.84	13.70	-1.87	0.327
75.00	-13.26	-14.16	0.00	-693.79	0.00	693.79	3,096.92	769.76	2,637.91	2,287.90	15.73	-2.00	0.308
80.00	-12.46	-13.64	0.00	-622.97	0.00	622.97	3,046.62	750.47	2,507.43	2,193.77	17.89	-2.13	0.288
85.00	-11.67	-13.12	0.00	-554.77	0.00	554.77	2,994.92	731.18	2,380.25	2,100.54	20.18	-2.25	0.268
90.00	-10.91	-12.59	0.00	-489.19	0.00	489.19	2,941.82	711.90	2,256.39	2,008.29	22.60	-2.37	0.248
95.00	-10.17	-12.28	0.00	-426.22	0.00	426.22	2,887.31	692.61	2,135.83	1,917.09	25.14	-2.48	0.226
95.83	-10.05	-12.02	0.00	-416.00	0.00	416.00	2,878.09	689.40	2,116.06	1,902.00	25.57	-2.50	0.223
100.00	-9.06	-11.73	0.00	-365.89	0.00	365.89	2,827.97	673.33	2,018.59	1,824.81	27.79	-2.58	0.204
101.00	-8.83	-11.47	0.00	-354.17	0.00	354.17	1,925.36	512.53	1,559.14	1,264.78	28.33	-2.60	0.285
105.00	-8.38	-11.01	0.00	-308.29	0.00	308.29	1,901.32	500.96	1,489.56	1,220.55	30.55	-2.68	0.257
110.00	-7.82	-10.50	0.00	-253.24	0.00	253.24	1,870.02	486.50	1,404.81	1,165.48	33.42	-2.79	0.222
115.00	-7.29	-10.00	0.00	-200.72	0.00	200.72	1,837.31	472.03	1,322.54	1,110.74	36.39	-2.89	0.185
120.00	-6.72	-9.08	0.00	-150.28	0.00	150.28	1,803.20	457.57	1,242.75	1,056.40	39.46	-2.97	0.146
125.00	-4.49	-7.40	0.00	-104.88	0.00	104.88	1,767.68	443.10	1,165.45	1,002.54	42.61	-3.04	0.107
130.00	-2.83	-4.69	0.00	-67.90	0.00	67.90	1,730.77	428.64	1,090.62	949.24	45.82	-3.09	0.073
135.00	-2.42	-4.22	0.00	-44.46	0.00	44.46	1,692.45	414.17	1,018.28	896.58	49.07	-3.12	0.051
140.00	-1.46	-2.43	0.00	-23.13	0.00	23.13	1,652.72	399.71	948.43	844.63	52.36	-3.15	0.028
145.00	-1.09	-1.98	0.00	-10.99	0.00	10.99	1,611.60	385.24	881.05	793.48	55.66	-3.16	0.015
150.00	0.00	-1.92	0.00	-1.08	0.00	1.08	1,557.27	370.78	816.16	737.61	58.97	-3.16	0.001

Site Number: 302539 Code: ANSI/TIA-222-H

Site Name: North Haven CT 2, CT Engineering Number:13677988_C3_02 5/24/2021 5:23:58 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 21 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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		61.3	0.0					0.0	0.0	61.3	0.0	0.0	0.0
5.00		121.7	1,648.5					0.0	172.5	121.7	1,821.0	0.0	0.0
10.00		119.9	1,646.5					0.0	172.5	119.9	1,819.0	0.0	0.0
15.00		117.8	1,629.4					0.0	172.5	117.8	1,801.9	0.0	0.0
20.00		115.8	1,607.5					0.0	172.5	115.8	1,780.0	0.0	0.0
25.00		113.6	1,583.1					0.0	172.5	113.6	1,755.6	0.0	0.0
30.00		112.9	1,557.0					0.0	172.5	112.9	1,729.5	0.0	0.0
35.00		114.3	1,529.9					0.0	172.5	114.3	1,702.4	0.0	0.0
40.00		116.5	1,502.0					0.0	172.5	116.5	1,674.5	0.0	0.0
45.00		92.3	1,473.4					0.0	172.5	92.3	1,645.9	0.0	0.0
47.83	Bot - Section 2	59.8	822.8					0.0	97.7	59.8	920.5	0.0	0.0
50.00		74.9	1,064.0					0.0	74.8	74.9	1,138.7	0.0	0.0
54.00	Top - Section 1	60.9	1,937.8					0.0	138.0	60.9	2,075.8	0.0	0.0
55.00		73.4	253.9					0.0	34.5	73.4	288.4	0.0	0.0
60.00		122.5	1,251.2					0.0	172.5	122.5	1,423.7	0.0	0.0
65.00		122.7	1,224.8					0.0	172.5	122.7	1,397.3	0.0	0.0
70.00		122.5	1,198.2					0.0	172.5	122.5	1,370.7	0.0	0.0
75.00		122.1	1,171.4					0.0	172.5	122.1	1,343.9	0.0	0.0
80.00		121.5	1,144.4					0.0	172.5	121.5	1,316.9	0.0	0.0
85.00		120.7	1,117.1					0.0	172.5	120.7	1,289.6	0.0	0.0
90.00		119.8	1,089.7					0.0	172.5	119.8	1,262.2	0.0	0.0
95.00		69.5	1,062.2					0.0	172.5	69.5	1,234.7	0.0	0.0
95.83	Bot - Section 3	59.8	174.8					0.0	28.7	59.8	203.5	0.0	0.0
100.00		61.8	1,369.6					0.0	143.8	61.8	1,513.3	0.0	0.0
101.00	Top - Section 2	59.3	324.5					0.0	34.5	59.3	359.0	0.0	0.0
105.00		105.8	662.7					0.0	138.0	105.8	800.7	0.0	0.0
110.00		116.2	807.6					0.0	172.5	116.2	980.1	0.0	0.0
115.00		114.5	785.2					0.0	172.5	114.5	957.7	0.0	0.0
120.00	Appurtenance(s)	112.6	762.7	95.4	0.0	95.4	236.4	0.0	172.5	208.0	1,171.6	0.0	0.0
125.00	Appurtenance(s)	110.6	740.1	304.1	0.0	0.0	2,848.3	0.0	143.0	414.8	3,731.4	0.0	0.0
130.00	Appurtenance(s)	108.6	717.5	441.6	0.0	0.0	3,029.0	0.0	143.0	550.1	3,889.5	0.0	0.0
135.00		106.4	694.7					0.0	86.3	106.4	781.0	0.0	0.0
140.00	Appurtenance(s)	104.1	671.9	283.2	0.0	54.1	1,306.8	0.0	86.3	387.3	2,065.0	0.0	0.0
145.00		101.7	648.9					0.0	59.2	101.7	708.2	0.0	0.0
150.00	Appurtenance(s)	50.3	626.0	169.9	0.0	0.0	1,228.1	0.0	59.0	220.2	1,913.2	0.0	0.0
								Totals:		4,782.24	49,866.3	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 1.00 in Radial Ice — 21 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	-50.88	-4.92	0.00	-479.55	0.00	479.55	4,607.63	1,215.47	5,637.04	4,613.61	0.00	0.00	0.115
5.00	-49.05	-4.83	0.00	-454.94	0.00	454.94	4,559.53	1,192.97	5,430.33	4,480.18	0.02	-0.03	0.112
10.00	-47.23	-4.73	0.00	-430.81	0.00	430.81	4,510.02	1,170.47	5,227.48	4,347.20	0.07	-0.06	0.110
15.00	-45.43	-4.64	0.00	-407.16	0.00	407.16	4,459.11	1,147.97	5,028.50	4,214.75	0.15	-0.09	0.107
20.00	-43.65	-4.54	0.00	-383.98	0.00	383.98	4,406.80	1,125.47	4,833.37	4,082.90	0.26	-0.12	0.104
25.00	-41.89	-4.45	0.00	-361.28	0.00	361.28	4,353.08	1,102.97	4,642.11	3,951.73	0.41	-0.16	0.101
30.00	-40.16	-4.35	0.00	-339.06	0.00	339.06	4,297.96	1,080.46	4,454.70	3,821.33	0.59	-0.19	0.098
35.00	-38.45	-4.25	0.00	-317.31	0.00	317.31	4,241.44	1,057.96	4,271.16	3,691.77	0.80	-0.22	0.095
40.00	-36.78	-4.15	0.00	-296.07	0.00	296.07	4,183.52	1,035.46	4,091.48	3,563.12	1.05	-0.25	0.092
45.00	-35.13	-4.06	0.00	-275.34	0.00	275.34	4,124.19	1,012.96	3,915.66	3,435.47	1.33	-0.28	0.089
47.83	-34.21	-4.01	0.00	-263.83	0.00	263.83	4,089.95	1,000.21	3,817.74	3,363.62	1.50	-0.30	0.087
50.00	-33.07	-3.94	0.00	-255.16	0.00	255.16	4,063.46	990.46	3,743.70	3,308.90	1.64	-0.31	0.085
54.00	-30.99	-3.87	0.00	-239.41	0.00	239.41	3,292.85	850.76	3,222.08	2,691.25	1.91	-0.34	0.098
55.00	-30.70	-3.81	0.00	-235.54	0.00	235.54	3,284.08	846.90	3,192.94	2,671.80	1.98	-0.34	0.098
60.00	-29.28	-3.69	0.00	-216.51	0.00	216.51	3,239.39	827.61	3,049.22	2,574.87	2.35	-0.37	0.093
65.00	-27.88	-3.57	0.00	-198.05	0.00	198.05	3,193.31	808.33	2,908.80	2,478.53	2.76	-0.41	0.089
70.00	-26.51	-3.46	0.00	-180.18	0.00	180.18	3,145.81	789.04	2,771.70	2,382.84	3.21	-0.44	0.084
75.00	-25.16	-3.34	0.00	-162.90	0.00	162.90	3,096.92	769.76	2,637.91	2,287.90	3.68	-0.47	0.079
80.00	-23.85	-3.22	0.00	-146.21	0.00	146.21	3,046.62	750.47	2,507.43	2,193.77	4.19	-0.50	0.074
85.00	-22.56	-3.10	0.00	-130.13	0.00	130.13	2,994.92	731.18	2,380.25	2,100.54	4.73	-0.53	0.069
90.00	-21.29	-2.97	0.00	-114.65	0.00	114.65	2,941.82	711.90	2,256.39	2,008.29	5.29	-0.55	0.064
95.00	-20.06	-2.90	0.00	-99.78	0.00	99.78	2,887.31	692.61	2,135.83	1,917.09	5.89	-0.58	0.059
95.83	-19.86	-2.84	0.00	-97.37	0.00	97.37	2,878.09	689.40	2,116.06	1,902.00	5.99	-0.58	0.058
100.00	-18.34	-2.77	0.00	-85.53	0.00	85.53	2,827.97	673.33	2,018.59	1,824.81	6.51	-0.61	0.053
101.00	-17.98	-2.71	0.00	-82.77	0.00	82.77	1,925.36	512.53	1,559.14	1,264.78	6.64	-0.61	0.075
105.00	-17.18	-2.60	0.00	-71.94	0.00	71.94	1,901.32	500.96	1,489.56	1,220.55	7.16	-0.63	0.068
110.00	-16.20	-2.48	0.00	-58.94	0.00	58.94	1,870.02	486.50	1,404.81	1,165.48	7.83	-0.65	0.059
115.00	-15.25	-2.36	0.00	-46.55	0.00	46.55	1,837.31	472.03	1,322.54	1,110.74	8.52	-0.68	0.050
120.00	-14.08	-2.14	0.00	-34.66	0.00	34.66	1,803.20	457.57	1,242.75	1,056.40	9.24	-0.70	0.041
125.00	-10.35	-1.68	0.00	-23.95	0.00	23.95	1,767.68	443.10	1,165.45	1,002.54	9.98	-0.71	0.030
130.00	-6.47	-1.09	0.00	-15.53	0.00	15.53	1,730.77	428.64	1,090.62	949.24	10.73	-0.72	0.020
135.00	-5.69	-0.97	0.00	-10.11	0.00	10.11	1,692.45	414.17	1,018.28	896.58	11.49	-0.73	0.015
140.00	-3.63	-0.56	0.00	-5.20	0.00	5.20	1,652.72	399.71	948.43	844.63	12.26	-0.74	0.008
145.00	-2.92	-0.45	0.00	-2.42	0.00	2.42	1,611.60	385.24	881.05	793.48	13.03	-0.74	0.005
150.00	0.00	-0.41	0.00	-0.19	0.00	0.19	1,557.27	370.78	816.16	737.61	13.81	-0.74	0.000

Site Number: 302539 | Code: ANSI/TIA-222-H |

Site Name: North Haven CT 2, CT | Engineering Number:13677988_C3_02 | 5/24/2021 5:24:01 PM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W | Serviceability 60 mph | 21 Iterations

Gust Response Factor :1.10
Dead Load Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		60.7	0.0					0.0	0.0	60.7	0.0	0.0	0.0
5.00		120.3	1,167.4					0.0	143.8	120.3	1,311.2	0.0	0.0
10.00		118.0	1,145.6					0.0	143.8	118.0	1,289.4	0.0	0.0
15.00		115.8	1,123.8					0.0	143.8	115.8	1,267.6	0.0	0.0
20.00		113.5	1,102.0					0.0	143.8	113.5	1,245.7	0.0	0.0
25.00		111.3	1,080.2					0.0	143.8	111.3	1,223.9	0.0	0.0
30.00		110.3	1,058.4					0.0	143.8	110.3	1,202.1	0.0	0.0
35.00		111.6	1,036.6					0.0	143.8	111.6	1,180.3	0.0	0.0
40.00		113.5	1,014.7					0.0	143.8	113.5	1,158.5	0.0	0.0
45.00		89.8	992.9					0.0	143.8	89.8	1,136.7	0.0	0.0
47.83	Bot - Section 2	58.2	553.0					0.0	81.5	58.2	634.4	0.0	0.0
50.00		72.8	783.8					0.0	62.3	72.8	846.1	0.0	0.0
54.00	Top - Section 1	59.2	1,427.0					0.0	115.0	59.2	1,542.0	0.0	0.0
55.00		71.2	164.6					0.0	28.8	71.2	193.3	0.0	0.0
60.00		118.8	811.7					0.0	143.8	118.8	955.4	0.0	0.0
65.00		118.7	793.0					0.0	143.8	118.7	936.7	0.0	0.0
70.00		118.4	774.3					0.0	143.8	118.4	918.0	0.0	0.0
75.00		117.9	755.6					0.0	143.8	117.9	899.3	0.0	0.0
80.00		117.1	736.9					0.0	143.8	117.1	880.6	0.0	0.0
85.00		116.1	718.2					0.0	143.8	116.1	861.9	0.0	0.0
90.00		114.9	699.5					0.0	143.8	114.9	843.2	0.0	0.0
95.00		66.6	680.8					0.0	143.8	66.6	824.6	0.0	0.0
95.83	Bot - Section 3	57.3	111.6					0.0	24.0	57.3	135.6	0.0	0.0
100.00		59.2	971.7					0.0	119.8	59.2	1,091.5	0.0	0.0
101.00	Top - Section 2	56.6	229.8					0.0	28.7	56.6	258.6	0.0	0.0
105.00		101.0	393.0					0.0	115.0	101.0	508.0	0.0	0.0
110.00		110.7	478.6					0.0	143.8	110.7	622.4	0.0	0.0
115.00		108.8	464.6					0.0	143.8	108.8	608.4	0.0	0.0
120.00	Appurtenance(s)	106.8	450.6	94.6	0.0	94.6	79.2	0.0	143.8	201.4	673.6	0.0	0.0
125.00	Appurtenance(s)	104.7	436.6	246.7	0.0	0.0	2,000.0	0.0	119.2	351.4	2,555.7	0.0	0.0
130.00	Appurtenance(s)	102.4	422.6	483.6	0.0	0.0	1,457.4	0.0	119.2	586.0	1,999.1	0.0	0.0
135.00		100.1	408.5					0.0	72.0	100.1	480.5	0.0	0.0
140.00	Appurtenance(s)	97.6	394.5	290.5	0.0	55.4	715.5	0.0	72.0	388.1	1,182.0	0.0	0.0
145.00		95.1	380.5					0.0	49.4	95.1	429.8	0.0	0.0
150.00	Appurtenance(s)	46.9	366.5	139.7	0.0	0.0	750.0	0.0	49.2	186.6	1,165.7	0.0	0.0
								Totals:		4,616.97	33,061.9	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 21 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	-33.23	-4.81	0.00	-461.52	0.00	461.52	4,607.63	1,215.47	5,637.04	4,613.61	0.00	0.00	0.107
5.00	-31.92	-4.70	0.00	-437.49	0.00	437.49	4,559.53	1,192.97	5,430.33	4,480.18	0.02	-0.03	0.105
10.00	-30.62	-4.60	0.00	-413.97	0.00	413.97	4,510.02	1,170.47	5,227.48	4,347.20	0.06	-0.06	0.102
15.00	-29.35	-4.50	0.00	-390.97	0.00	390.97	4,459.11	1,147.97	5,028.50	4,214.75	0.14	-0.09	0.099
20.00	-28.11	-4.40	0.00	-368.49	0.00	368.49	4,406.80	1,125.47	4,833.37	4,082.90	0.25	-0.12	0.097
25.00	-26.88	-4.30	0.00	-346.50	0.00	346.50	4,353.08	1,102.97	4,642.11	3,951.73	0.39	-0.15	0.094
30.00	-25.68	-4.20	0.00	-325.02	0.00	325.02	4,297.96	1,080.46	4,454.70	3,821.33	0.57	-0.18	0.091
35.00	-24.49	-4.09	0.00	-304.04	0.00	304.04	4,241.44	1,057.96	4,271.16	3,691.77	0.77	-0.21	0.088
40.00	-23.33	-3.99	0.00	-283.58	0.00	283.58	4,183.52	1,035.46	4,091.48	3,563.12	1.01	-0.24	0.085
45.00	-22.20	-3.90	0.00	-263.64	0.00	263.64	4,124.19	1,012.96	3,915.66	3,435.47	1.27	-0.27	0.082
47.83	-21.56	-3.85	0.00	-252.59	0.00	252.59	4,089.95	1,000.21	3,817.74	3,363.62	1.44	-0.29	0.080
50.00	-20.71	-3.77	0.00	-244.26	0.00	244.26	4,063.46	990.46	3,743.70	3,308.90	1.57	-0.30	0.079
54.00	-19.17	-3.71	0.00	-229.16	0.00	229.16	3,292.85	850.76	3,222.08	2,691.25	1.83	-0.32	0.091
55.00	-18.98	-3.65	0.00	-225.44	0.00	225.44	3,284.08	846.90	3,192.94	2,671.80	1.90	-0.33	0.090
60.00	-18.02	-3.53	0.00	-207.21	0.00	207.21	3,239.39	827.61	3,049.22	2,574.87	2.26	-0.36	0.086
65.00	-17.08	-3.42	0.00	-189.56	0.00	189.56	3,193.31	808.33	2,908.80	2,478.53	2.65	-0.39	0.082
70.00	-16.16	-3.30	0.00	-172.48	0.00	172.48	3,145.81	789.04	2,771.70	2,382.84	3.08	-0.42	0.078
75.00	-15.26	-3.18	0.00	-155.98	0.00	155.98	3,096.92	769.76	2,637.91	2,287.90	3.53	-0.45	0.073
80.00	-14.38	-3.07	0.00	-140.07	0.00	140.07	3,046.62	750.47	2,507.43	2,193.77	4.02	-0.48	0.069
85.00	-13.52	-2.95	0.00	-124.74	0.00	124.74	2,994.92	731.18	2,380.25	2,100.54	4.53	-0.51	0.064
90.00	-12.68	-2.83	0.00	-110.01	0.00	110.01	2,941.82	711.90	2,256.39	2,008.29	5.08	-0.53	0.059
95.00	-11.85	-2.76	0.00	-95.85	0.00	95.85	2,887.31	692.61	2,135.83	1,917.09	5.65	-0.56	0.054
95.83	-11.72	-2.70	0.00	-93.55	0.00	93.55	2,878.09	689.40	2,116.06	1,902.00	5.74	-0.56	0.053
100.00	-10.63	-2.64	0.00	-82.28	0.00	82.28	2,827.97	673.33	2,018.59	1,824.81	6.24	-0.58	0.049
101.00	-10.37	-2.58	0.00	-79.65	0.00	79.65	1,925.36	512.53	1,559.14	1,264.78	6.36	-0.59	0.068
105.00	-9.86	-2.48	0.00	-69.33	0.00	69.33	1,901.32	500.96	1,489.56	1,220.55	6.86	-0.60	0.062
110.00	-9.24	-2.36	0.00	-56.95	0.00	56.95	1,870.02	486.50	1,404.81	1,165.48	7.51	-0.63	0.054
115.00	-8.63	-2.25	0.00	-45.14	0.00	45.14	1,837.31	472.03	1,322.54	1,110.74	8.18	-0.65	0.045
120.00	-7.96	-2.04	0.00	-33.80	0.00	33.80	1,803.20	457.57	1,242.75	1,056.40	8.87	-0.67	0.036
125.00	-5.41	-1.66	0.00	-23.58	0.00	23.58	1,767.68	443.10	1,165.45	1,002.54	9.57	-0.68	0.027
130.00	-3.41	-1.05	0.00	-15.26	0.00	15.26	1,730.77	428.64	1,090.62	949.24	10.30	-0.69	0.018
135.00	-2.93	-0.95	0.00	-10.00	0.00	10.00	1,692.45	414.17	1,018.28	896.58	11.03	-0.70	0.013
140.00	-1.76	-0.55	0.00	-5.20	0.00	5.20	1,652.72	399.71	948.43	844.63	11.76	-0.71	0.007
145.00	-1.33	-0.45	0.00	-2.47	0.00	2.47	1,611.60	385.24	881.05	793.48	12.51	-0.71	0.004
150.00	0.00	-0.43	0.00	-0.24	0.00	0.24	1,557.27	370.78	816.16	737.61	13.25	-0.71	0.000

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period (S_S):	0.20	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.22	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.09	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.00	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.75	
Total Unfactored Dead Load:	33.23	k
Seismic Base Shear (E):	1.30	k

Load Case 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)
34	147.50	416	2,624	0.034	45	517
33	142.50	430	2,554	0.034	44	535
32	137.50	466	2,603	0.034	44	580
31	132.50	480	2,513	0.033	43	597
30	127.50	542	2,649	0.035	45	674
29	122.50	556	2,533	0.033	43	691
28	117.50	594	2,519	0.033	43	739
27	112.50	608	2,389	0.031	41	757
26	107.50	622	2,257	0.030	38	774
25	103.00	508	1,709	0.022	29	632
24	100.50	259	833	0.011	14	322
23	97.92	1,092	3,360	0.044	57	1,357
22	95.42	136	399	0.005	7	169
21	92.50	825	2,298	0.030	39	1,025
20	87.50	843	2,132	0.028	36	1,049
19	82.50	862	1,966	0.026	33	1,072
18	77.50	881	1,800	0.024	31	1,095
17	72.50	899	1,635	0.021	28	1,118
16	67.50	918	1,473	0.019	25	1,142
15	62.50	937	1,313	0.017	22	1,165
14	57.50	955	1,157	0.015	20	1,188
13	54.50	193	213	0.003	4	240
12	52.00	1,542	1,566	0.021	27	1,917
11	48.92	846	772	0.010	13	1,052
10	46.42	634	528	0.007	9	789

9	42.50	1,137	811	0.011	14	1,413
8	37.50	1,158	664	0.009	11	1,441
7	32.50	1,180	526	0.007	9	1,468
6	27.50	1,202	400	0.005	7	1,495
5	22.50	1,224	286	0.004	5	1,522
4	17.50	1,246	188	0.002	3	1,549
3	12.50	1,268	106	0.001	2	1,576
2	7.50	1,289	44	0.001	1	1,603
1	2.50	1,311	7	0.000	0	1,630
Decibel DB844H90E-XY	150.00	168	1,092	0.014	19	209
Round T-Arm	150.00	750	4,875	0.064	83	933
DragonWave Horizon C	140.00	32	183	0.002	3	40
DragonWave A-ANT-23G	140.00	15	86	0.001	1	19
NextNet BTS-2500	140.00	105	605	0.008	10	131
Argus LPX310R	140.00	39	225	0.003	4	48
DragonWave A-ANT-18G	140.00	27	156	0.002	3	34
Flat Side Arm	140.00	450	2,592	0.034	44	560
DragonWave A-ANT-11G	140.00	48	274	0.004	5	59
Commscope SDX1926Q-4	130.00	19	94	0.001	2	23
Ericsson Radio 4449	130.00	225	1,138	0.015	19	280
Ericsson RRUS 4415 B	130.00	138	698	0.009	12	172
Ericsson 4424 B25	130.00	258	1,305	0.017	22	321
Ericsson Air6449 B41	130.00	312	1,578	0.021	27	388
RFS APX16DWV-16DWVS-	130.00	122	618	0.008	11	152
RFS APXVAARR24_43-U-	130.00	384	1,941	0.026	33	477
Round Platform w/ Ha	125.00	2,000	9,445	0.124	161	2,487
RFS APXV18-206517S-C	120.00	79	348	0.005	6	98
		33,230	76,080	1.000	1,296	41,322

Load Case 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)
34	147.50	416	2,624	0.034	45	356
33	142.50	430	2,554	0.034	44	368
32	137.50	466	2,603	0.034	44	400
31	132.50	480	2,513	0.033	43	412
30	127.50	542	2,649	0.035	45	464
29	122.50	556	2,533	0.033	43	476
28	117.50	594	2,519	0.033	43	509
27	112.50	608	2,389	0.031	41	521
26	107.50	622	2,257	0.030	38	533
25	103.00	508	1,709	0.022	29	435
24	100.50	259	833	0.011	14	221
23	97.92	1,092	3,360	0.044	57	935
22	95.42	136	399	0.005	7	116
21	92.50	825	2,298	0.030	39	706
20	87.50	843	2,132	0.028	36	722
19	82.50	862	1,966	0.026	33	738
18	77.50	881	1,800	0.024	31	754
17	72.50	899	1,635	0.021	28	770
16	67.50	918	1,473	0.019	25	786
15	62.50	937	1,313	0.017	22	802
14	57.50	955	1,157	0.015	20	818
13	54.50	193	213	0.003	4	166
12	52.00	1,542	1,566	0.021	27	1,321
11	48.92	846	772	0.010	13	725
10	46.42	634	528	0.007	9	543
9	42.50	1,137	811	0.011	14	974
8	37.50	1,158	664	0.009	11	992
7	32.50	1,180	526	0.007	9	1,011

6	27.50	1,202	400	0.005	7	1,030
5	22.50	1,224	286	0.004	5	1,048
4	17.50	1,246	188	0.002	3	1,067
3	12.50	1,268	106	0.001	2	1,086
2	7.50	1,289	44	0.001	1	1,104
1	2.50	1,311	7	0.000	0	1,123
Decibel DB844H90E-XY	150.00	168	1,092	0.014	19	144
Round T-Arm	150.00	750	4,875	0.064	83	642
DragonWave Horizon C	140.00	32	183	0.002	3	27
DragonWave A-ANT-23G	140.00	15	86	0.001	1	13
NextNet BTS-2500	140.00	105	605	0.008	10	90
Argus LPX310R	140.00	39	225	0.003	4	33
DragonWave A-ANT-18G	140.00	27	156	0.002	3	23
Flat Side Arm	140.00	450	2,592	0.034	44	385
DragonWave A-ANT-11G	140.00	48	274	0.004	5	41
Commscope SDX1926Q-4	130.00	19	94	0.001	2	16
Ericsson Radio 4449	130.00	225	1,138	0.015	19	193
Ericsson RRUS 4415 B	130.00	138	698	0.009	12	118
Ericsson 4424 B25	130.00	258	1,305	0.017	22	221
Ericsson Air6449 B41	130.00	312	1,578	0.021	27	267
RFS APX16DWV-16DWVS-	130.00	122	618	0.008	11	105
RFS APXVAARR24_43-U-	130.00	384	1,941	0.026	33	329
Round Platform w/ Ha	125.00	2,000	9,445	0.124	161	1,713
RFS APXV18-206517S-C	120.00	79	348	0.005	6	68
		33,230	76,080	1.000	1,296	28,461

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

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	-39.69	-1.30	0.00	-147.62	0.00	147.62	4,607.63	1,215.47	5,637.04	4,613.61	0.00	0.00	0.041
5.00	-38.09	-1.30	0.00	-141.13	0.00	141.13	4,559.53	1,192.97	5,430.33	4,480.18	0.01	-0.01	0.040
10.00	-36.51	-1.31	0.00	-134.61	0.00	134.61	4,510.02	1,170.47	5,227.48	4,347.20	0.02	-0.02	0.039
15.00	-34.96	-1.31	0.00	-128.08	0.00	128.08	4,459.11	1,147.97	5,028.50	4,214.75	0.05	-0.03	0.038
20.00	-33.44	-1.31	0.00	-121.53	0.00	121.53	4,406.80	1,125.47	4,833.37	4,082.90	0.08	-0.04	0.037
25.00	-31.94	-1.31	0.00	-114.98	0.00	114.98	4,353.08	1,102.97	4,642.11	3,951.73	0.13	-0.05	0.036
30.00	-30.48	-1.30	0.00	-108.44	0.00	108.44	4,297.96	1,080.46	4,454.70	3,821.33	0.18	-0.06	0.035
35.00	-29.04	-1.29	0.00	-101.93	0.00	101.93	4,241.44	1,057.96	4,271.16	3,691.77	0.25	-0.07	0.034
40.00	-27.62	-1.28	0.00	-95.46	0.00	95.46	4,183.52	1,035.46	4,091.48	3,563.12	0.33	-0.08	0.033
45.00	-26.83	-1.28	0.00	-89.04	0.00	89.04	4,124.19	1,012.96	3,915.66	3,435.47	0.42	-0.09	0.032
47.83	-25.78	-1.26	0.00	-85.42	0.00	85.42	4,089.95	1,000.21	3,817.74	3,363.62	0.47	-0.09	0.032
50.00	-23.86	-1.24	0.00	-82.68	0.00	82.68	4,063.46	990.46	3,743.70	3,308.90	0.51	-0.10	0.031
54.00	-23.62	-1.24	0.00	-77.73	0.00	77.73	3,292.85	850.76	3,222.08	2,691.25	0.60	-0.11	0.036
55.00	-22.43	-1.22	0.00	-76.50	0.00	76.50	3,284.08	846.90	3,192.94	2,671.80	0.62	-0.11	0.035
60.00	-21.27	-1.20	0.00	-70.42	0.00	70.42	3,239.39	827.61	3,049.22	2,574.87	0.74	-0.12	0.034
65.00	-20.13	-1.17	0.00	-64.44	0.00	64.44	3,193.31	808.33	2,908.80	2,478.53	0.87	-0.13	0.032
70.00	-19.01	-1.14	0.00	-58.59	0.00	58.59	3,145.81	789.04	2,771.70	2,382.84	1.02	-0.14	0.031
75.00	-17.91	-1.11	0.00	-52.87	0.00	52.87	3,096.92	769.76	2,637.91	2,287.90	1.17	-0.15	0.029
80.00	-16.84	-1.08	0.00	-47.30	0.00	47.30	3,046.62	750.47	2,507.43	2,193.77	1.33	-0.16	0.027
85.00	-15.79	-1.04	0.00	-41.90	0.00	41.90	2,994.92	731.18	2,380.25	2,100.54	1.50	-0.17	0.025
90.00	-14.77	-1.00	0.00	-36.68	0.00	36.68	2,941.82	711.90	2,256.39	2,008.29	1.68	-0.18	0.023
95.00	-14.60	-1.00	0.00	-31.67	0.00	31.67	2,887.31	692.61	2,135.83	1,917.09	1.87	-0.19	0.022
95.83	-13.24	-0.94	0.00	-30.84	0.00	30.84	2,878.09	689.40	2,116.06	1,902.00	1.91	-0.19	0.021
100.00	-12.92	-0.92	0.00	-26.93	0.00	26.93	2,827.97	673.33	2,018.59	1,824.81	2.07	-0.19	0.019
101.00	-12.29	-0.89	0.00	-26.01	0.00	26.01	1,925.36	512.53	1,559.14	1,264.78	2.11	-0.20	0.027
105.00	-11.52	-0.85	0.00	-22.44	0.00	22.44	1,901.32	500.96	1,489.56	1,220.55	2.28	-0.20	0.024
110.00	-10.76	-0.81	0.00	-18.18	0.00	18.18	1,870.02	486.50	1,404.81	1,165.48	2.49	-0.21	0.021
115.00	-10.02	-0.77	0.00	-14.13	0.00	14.13	1,837.31	472.03	1,322.54	1,110.74	2.72	-0.22	0.018
120.00	-9.23	-0.71	0.00	-10.31	0.00	10.31	1,803.20	457.57	1,242.75	1,056.40	2.95	-0.22	0.015
125.00	-6.07	-0.50	0.00	-6.73	0.00	6.73	1,767.68	443.10	1,165.45	1,002.54	3.18	-0.23	0.010
130.00	-3.66	-0.32	0.00	-4.25	0.00	4.25	1,730.77	428.64	1,090.62	949.24	3.42	-0.23	0.007
135.00	-3.08	-0.27	0.00	-2.66	0.00	2.66	1,692.45	414.17	1,018.28	896.58	3.66	-0.23	0.005
140.00	-1.66	-0.15	0.00	-1.30	0.00	1.30	1,652.72	399.71	948.43	844.63	3.90	-0.23	0.003
145.00	-1.14	-0.11	0.00	-0.53	0.00	0.53	1,611.60	385.24	881.05	793.48	4.15	-0.23	0.001
150.00	0.00	-0.10	0.00	0.00	0.00	0.00	1,557.27	370.78	816.16	737.61	4.39	-0.23	0.000

Load Case 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 (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	-27.34	-1.30	0.00	-146.05	0.00	146.05	4,607.63	1,215.47	5,637.04	4,613.61	0.00	0.00	0.038
5.00	-26.23	-1.30	0.00	-139.56	0.00	139.56	4,559.53	1,192.97	5,430.33	4,480.18	0.01	-0.01	0.037
10.00	-25.15	-1.30	0.00	-133.06	0.00	133.06	4,510.02	1,170.47	5,227.48	4,347.20	0.02	-0.02	0.036
15.00	-24.08	-1.30	0.00	-126.55	0.00	126.55	4,459.11	1,147.97	5,028.50	4,214.75	0.05	-0.03	0.035
20.00	-23.03	-1.30	0.00	-120.03	0.00	120.03	4,406.80	1,125.47	4,833.37	4,082.90	0.08	-0.04	0.035
25.00	-22.00	-1.30	0.00	-113.52	0.00	113.52	4,353.08	1,102.97	4,642.11	3,951.73	0.13	-0.05	0.034
30.00	-20.99	-1.29	0.00	-107.03	0.00	107.03	4,297.96	1,080.46	4,454.70	3,821.33	0.18	-0.06	0.033
35.00	-20.00	-1.28	0.00	-100.58	0.00	100.58	4,241.44	1,057.96	4,271.16	3,691.77	0.25	-0.07	0.032
40.00	-19.02	-1.27	0.00	-94.16	0.00	94.16	4,183.52	1,035.46	4,091.48	3,563.12	0.32	-0.08	0.031
45.00	-18.48	-1.26	0.00	-87.81	0.00	87.81	4,124.19	1,012.96	3,915.66	3,435.47	0.41	-0.09	0.030
47.83	-17.76	-1.25	0.00	-84.23	0.00	84.23	4,089.95	1,000.21	3,817.74	3,363.62	0.47	-0.09	0.029
50.00	-16.44	-1.22	0.00	-81.52	0.00	81.52	4,063.46	990.46	3,743.70	3,308.90	0.51	-0.10	0.029
54.00	-16.27	-1.22	0.00	-76.63	0.00	76.63	3,292.85	850.76	3,222.08	2,691.25	0.59	-0.11	0.033
55.00	-15.45	-1.20	0.00	-75.40	0.00	75.40	3,284.08	846.90	3,192.94	2,671.80	0.62	-0.11	0.033
60.00	-14.65	-1.18	0.00	-69.40	0.00	69.40	3,239.39	827.61	3,049.22	2,574.87	0.73	-0.12	0.031
65.00	-13.86	-1.16	0.00	-63.50	0.00	63.50	3,193.31	808.33	2,908.80	2,478.53	0.86	-0.13	0.030
70.00	-13.09	-1.13	0.00	-57.72	0.00	57.72	3,145.81	789.04	2,771.70	2,382.84	1.00	-0.14	0.028
75.00	-12.34	-1.10	0.00	-52.07	0.00	52.07	3,096.92	769.76	2,637.91	2,287.90	1.15	-0.15	0.027
80.00	-11.60	-1.06	0.00	-46.58	0.00	46.58	3,046.62	750.47	2,507.43	2,193.77	1.31	-0.16	0.025
85.00	-10.88	-1.03	0.00	-41.26	0.00	41.26	2,994.92	731.18	2,380.25	2,100.54	1.48	-0.17	0.023
90.00	-10.17	-0.99	0.00	-36.12	0.00	36.12	2,941.82	711.90	2,256.39	2,008.29	1.66	-0.18	0.021
95.00	-10.05	-0.98	0.00	-31.18	0.00	31.18	2,887.31	692.61	2,135.83	1,917.09	1.85	-0.18	0.020
95.83	-9.12	-0.92	0.00	-30.36	0.00	30.36	2,878.09	689.40	2,116.06	1,902.00	1.88	-0.18	0.019
100.00	-8.90	-0.91	0.00	-26.52	0.00	26.52	2,827.97	673.33	2,018.59	1,824.81	2.05	-0.19	0.018
101.00	-8.46	-0.88	0.00	-25.61	0.00	25.61	1,925.36	512.53	1,559.14	1,264.78	2.09	-0.19	0.025
105.00	-7.93	-0.84	0.00	-22.10	0.00	22.10	1,901.32	500.96	1,489.56	1,220.55	2.25	-0.20	0.022
110.00	-7.41	-0.80	0.00	-17.90	0.00	17.90	1,870.02	486.50	1,404.81	1,165.48	2.46	-0.21	0.019
115.00	-6.90	-0.75	0.00	-13.91	0.00	13.91	1,837.31	472.03	1,322.54	1,110.74	2.68	-0.21	0.016
120.00	-6.36	-0.70	0.00	-10.15	0.00	10.15	1,803.20	457.57	1,242.75	1,056.40	2.91	-0.22	0.013
125.00	-4.18	-0.49	0.00	-6.63	0.00	6.63	1,767.68	443.10	1,165.45	1,002.54	3.14	-0.22	0.009
130.00	-2.52	-0.31	0.00	-4.19	0.00	4.19	1,730.77	428.64	1,090.62	949.24	3.37	-0.23	0.006
135.00	-2.12	-0.27	0.00	-2.62	0.00	2.62	1,692.45	414.17	1,018.28	896.58	3.61	-0.23	0.004
140.00	-1.14	-0.15	0.00	-1.28	0.00	1.28	1,652.72	399.71	948.43	844.63	3.85	-0.23	0.002
145.00	-0.79	-0.10	0.00	-0.52	0.00	0.52	1,611.60	385.24	881.05	793.48	4.09	-0.23	0.001
150.00	0.00	-0.10	0.00	0.00	0.00	0.00	1,557.27	370.78	816.16	737.61	4.33	-0.23	0.000

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	21.50	0.00	39.85	0.00	0.00	2074.68	0.00	0.46
0.9D + 1.0W	21.49	0.00	29.88	0.00	0.00	2056.89	0.00	0.45
1.2D + 1.0Di + 1.0Wi	4.92	0.00	50.88	0.00	0.00	479.55	0.00	0.12
1.2D + 1.0Ev + 1.0Eh	1.30	0.00	39.69	0.00	0.00	147.62	0.00	0.04
0.9D - 1.0Ev + 1.0Eh	1.30	0.00	27.34	0.00	0.00	146.05	0.00	0.04
1.0D + 1.0W	4.81	0.00	33.23	0.00	0.00	461.52	0.00	0.11

Base Plate & Anchor Rod Analysis

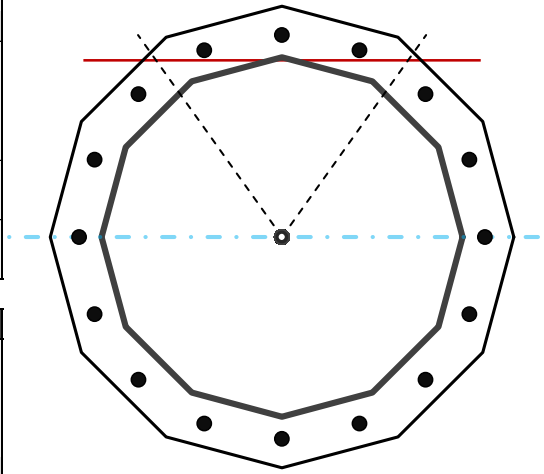
Pole Dimensions		
Number of Sides	12	-
Diameter	49.6	in
Thickness	7/16	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2,074.7	k-ft
Axial, Pu	39.9	k
Shear, Vu	21.5	k
Neutral Axis	0	°

Report Capacities		
Component	Capacity	Result
Base Plate	13%	Pass
Anchor Rods	47%	Pass
Dwyidag	-	-

Base Plate		
Number of Sides	12	-
Diameter, ø	63.85	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	491.5	k
Bending Stress, ϕMn	3804.2	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	57.85	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing		in
Orientation Offset		°
Applied Force, Pu	114.6	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	21.5	2074.7	1.00
Anchor Rod Forces	21.5	2074.7	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	66.8020	5.5668	0.3568		20186.43
Bolt	3.9761	3.2477	0.8393	4.5	20002.80
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	63.85	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	40.208	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	57.85	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	114.6	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	243.6	k
Tensile Capacity, ϕRnt	0.471	OK
Interaction Capacity	0.471	OK

External Base Plate		
Chord Length AA	40.573	in
Additional AA	5.500	in
Section Modulus, Z	87.106	in^3
Applied Moment, Mu	491.5	k-ft
Bending Capacity, ϕMn	4703.7	k-ft
Capacity, Mu/ϕMn	0.104	OK
Chord Length AB	38.818	in
Additional AB	5.500	in
Section Modulus, Z	83.790	in^3
Applied Moment, Mu	229.0	k-ft
Bending Capacity, ϕMn	4524.6	k-ft
Capacity, Mu/ϕMn	0.051	OK
Bend Line Length	37.262	in
Additional Bend Line	0.000	in
Section Modulus, Z	70.448	in^3
Applied Moment, Mu	491.5	k-ft
Bending Capacity, ϕMn	3804.2	k-ft
Capacity, Mu/ϕMn	0.129	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:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Section 1 - Site Information

Site ID: CT11398A
Status: Draft
Version: 5
Project Type: Anchor
Approved: Not Approved
Approved By: Not Approved
Last Modified: 4/30/2021 11:15:07 AM
Last Modified By: Dominic.Kallas2@T-Mobile.com

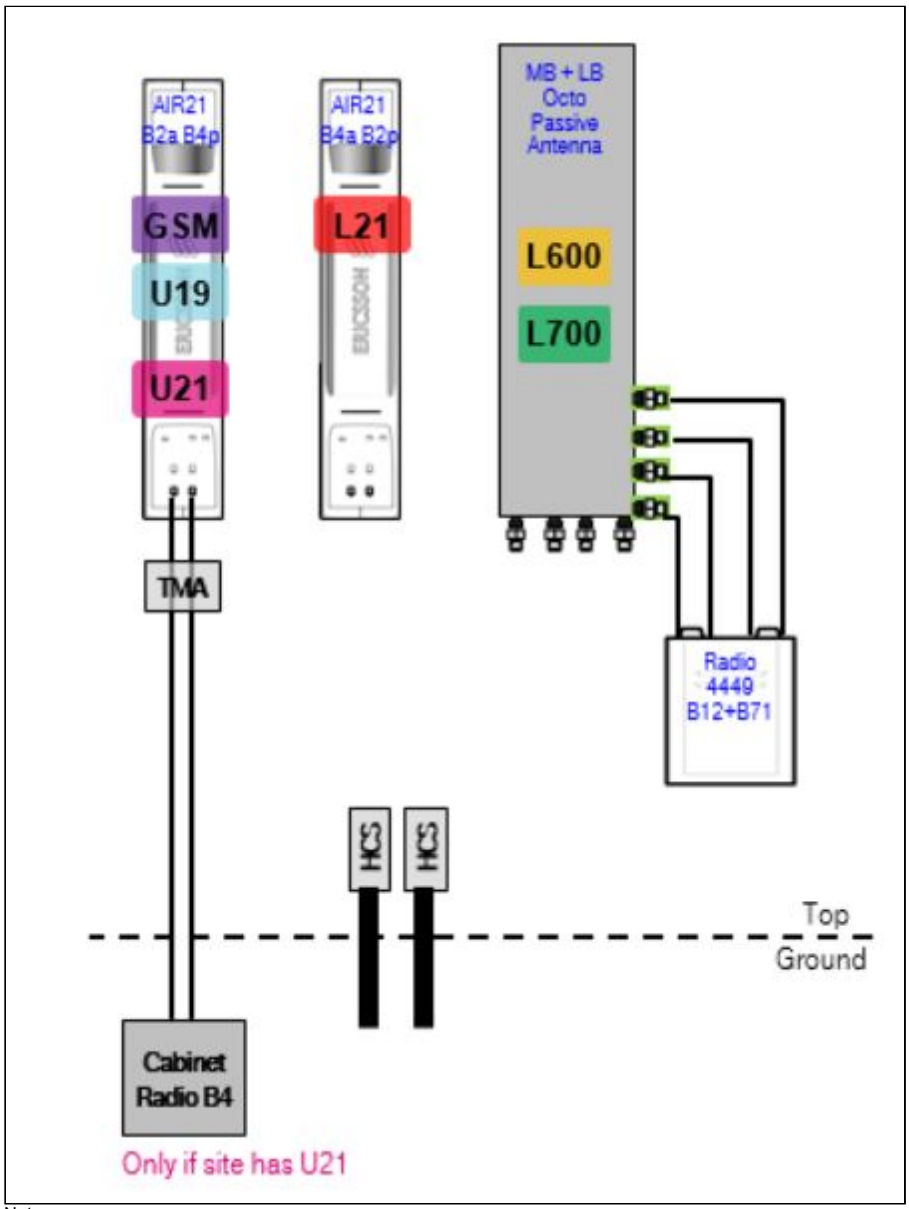
Site Name: North Haven MP X63/64
Site Class: Self Support Tower
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: <undefined>

Latitude: 41.42206000
Longitude: -72.84739000
Address: 2 Dwight Street
City, State: North Haven, CT
Region: NORTHEAST

RAN Template: 67D5A998C Outdoor			AL Template: 67D5998C_1xAIR+1QP+1OP	
Sector Count: 3	**Antenna Count:** 9	**Coax Line Count:** 6	**TMA Count:** 0	**RRU Count:** 9

Section 2 - Existing Template Images

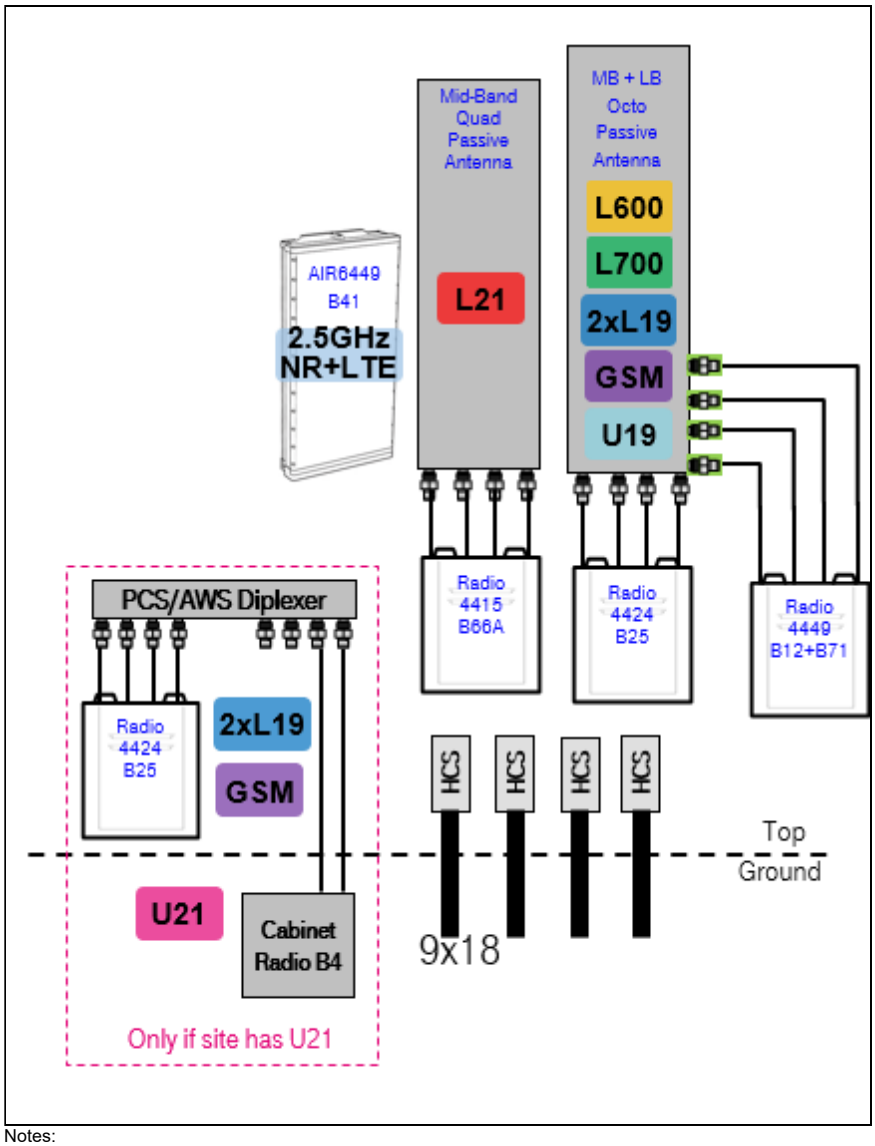
67D02C.JPG



Notes:

Section 3 - Proposed Template Images

67D5998C_1xAIR+1QP+1OP.PNG



Notes:

Section 4 - Siteplan Images

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RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92C Outdoor

Enclosure	1
Enclosure Type	RBS 6131
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 2)**
Radio	RU22 **(x 6)** [U2100]

Proposed RAN Equipment

Template: 67D5A998C Outdoor

Enclosure	1	2	3
Enclosure Type	RBS 6131	Enclosure 6160	B160
Baseband	DUW30 [U2100] · DUG20 [G1900] · BB 6630 [L2100] [L1900] · BB 6630 [L700] [L600] [N600]	BB 6648 [L2500] [N2500]	
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* **(x 2)**	Ericsson Hybrid Trunk 6/24 4AWG 50m · PSU 4813	
Radio	RU22 **(x 6)** [U2100]		
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Remove Nortel Cabinet.

Add (1) Enclosure 6160.

Add (1) Battery Cabinet B160.

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.

Existing: (10) coaxial lines; (2) 6X12 HCS.

Keep (6) Coaxial Lines for U2100.

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

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Section 6 - A&L Equipment

Existing Template: 67D92C_2xAIR+1OP
Proposed Template: 67D5998C_1xAIR+1QP+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	15		15				15	
M. Tilt	2		0				0	
Height	130		130				130	
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	2	3	2	2			3	
Cables	Fiber Jumper - 15 ft.	1-5/8" Coax - 150 ft.	Coax Jumper - 15 ft. Fiber Jumper - 15 ft.	Coax Jumper - 15 ft.			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 - 150 ft.

Scope of Work:

Swap (1) LNX 6515 Antenna with (1) 8' Octoport antenna @ P2. Swap (1) RRUS11 B12 with (1) Radio 4449.

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

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		RFS - APXVAARR24_43-U-NA20 (Octo)				RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	15		15				15	
M. Tilt	2		0				0	
Height	130		130				130	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2500 N2500	L2500 N2500	L700 L600 N600	L700 L600 N600	L1900 G1900	U2100 L1900 G1900	L2100	L2100
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	3	2	2	2	2	3	3
Cables	Fiber Jumper - 15 ft. **(x2)**	Fiber Jumper - 15 ft. **(x2)**	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft. **(x2)**	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft. **(x2)** 1-5/8" Coax - 150 ft. **(x2)**	Fiber Jumper - 15 ft.	Fiber Jumper - 15 ft.
TMAs								
Diplexers / Combiners					Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	SHARED Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)		
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna)	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Remove all TMAs.

Remove all coaxial lines.

Remove AIR21 B2A/B4P from Position 1.

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

Add (1) Radio 4424 B25 for L1900 (Both Carriers) and GSM to Position 2 near antenna, and connect its ports to the Mid-Band ports of the Octo Antenna.

Replace AIR21 B2P/B4A with (1) Mid-Band Quad for L2100 in Position 3.

Add (1) Radio 4415 B66 for L2100 to Position 3 at antenna.

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

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

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Sector 2 (Existing) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	130		130				130	
M. Tilt	2		0				2	
Height	130		130				130	
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	2	0	2	2			0	
Cables	Fiber Jumper - 15 ft.	1-5/8" Coax - 150 ft.	Coax Jumper - 15 ft. Fiber Jumper - 15 ft.	Coax Jumper - 15 ft.			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 - 150 ft.

Scope of Work:

Swap (1) LNX 6515 Antenna with (1) 8' Octoport antenna @ P2. Swap (1) RRUS11 B12 with (1) Radio 4449.

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

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		RFS - APXVAARR24_43-U-NA20 (Octo)				RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	130		130				130	
M. Tilt	2		0				2	
Height	130		130				130	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2500 N2500	L2500 N2500	L700 L600 N600	L700 L600 N600	L1900 G1900	U2100 L1900 G1900	L2100	L2100
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	3	2	2	2	2	3	3
Cables	Fiber Jumper - 15 ft. **(x2)**	Fiber Jumper - 15 ft. **(x2)**	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft. **(x2)**	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft. **(x2)** 1-5/8" Coax - 150 ft. **(x2)**	Fiber Jumper - 15 ft.	Fiber Jumper - 15 ft.
TMAs								
Diplexers / Combiners					Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	SHARED Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)		
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna)	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Remove all TMAs.

Remove all coaxial lines.

Remove AIR21 B2A/B4P from Position 1.

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

Add (1) Radio 4424 B25 for L1900 (Both Carriers) and GSM to Position 2 near antenna, and connect its ports to the Mid-Band ports of the Octo Antenna.

Replace AIR21 B2P/B4A with (1) Mid-Band Quad for L2100 in Position 3.

Add (1) Radio 4415 B66 for L2100 to Position 3 at antenna.

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

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

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Sector 3 (Existing) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	240		240				240	
M. Tilt	2		0				2	
Height	130		130				130	
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	2	0	2	2			0	
Cables	Fiber Jumper - 15 ft.	1-5/8" Coax - 150 ft.	Coax Jumper - 15 ft. Fiber Jumper - 15 ft.	Coax Jumper - 15 ft.			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 - 150 ft.
Cable: 1-5/8" Coax - 150 ft.

Scope of Work:

Swap (1) LNX 6515 Antenna with (1) 8' Octoport antenna @ P2. Swap (1) RRUS11 B12 with (1) Radio 4449.

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

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		RFS - APXVAARR24_43-U-NA20 (Octo)				RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	240		240				240	
M. Tilt	2		0				2	
Height	130		130				130	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2500 N2500	L2500 N2500	L700 L600 N600	L700 L600 N600	L1900 G1900	U2100 L1900 G1900	L2100	L2100
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	3	2	2	2	2	3	3
Cables	Fiber Jumper - 15 ft. **(x2)**	Fiber Jumper - 15 ft. **(x2)**	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft.	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft. **(x2)**	Coax Jumper - 15 ft. **(x2)** Fiber Jumper - 15 ft. **(x2)** 1-5/8" Coax - 150 ft. **(x2)**	Fiber Jumper - 15 ft.	Fiber Jumper - 15 ft.
TMAs								
Diplexers / Combiners					Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	SHARED Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)		
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna)	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Remove all TMAs.

Remove all coaxial lines.

Remove AIR21 B2A/B4P from Position 1.

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

Add (1) Radio 4424 B25 for L1900 (Both Carriers) and GSM to Position 2 near antenna, and connect its ports to the Mid-Band ports of the Octo Antenna.

Replace AIR21 B2P/B4A with (1) Mid-Band Quad for L2100 in Position 3.

Add (1) Radio 4415 B66 for L2100 to Position 3 at antenna.

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

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

RAN Template:	A&L Template:
67D5A998C Outdoor	67D5998C_1xAIR+1QP+1OP

CT11398A_Anchor_5_draft

Print Name: Preliminary (Scoped_with_U2100)
PORs: Anchor_Phase 3
L600_5G POPs

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

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Proposed Power Systems Equipment

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: CT11398A

North Haven MP X63/64
2 Dwight Street
North Haven, Connecticut 06473

June 28, 2021

EBI Project Number: 6221003243

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**16.19%**

June 28, 2021

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

Emissions Analysis for Site: CT11398A - North Haven MP X63/64

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **2 Dwight Street** 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 2 Dwight Street 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 channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 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 channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 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 channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 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 130 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):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 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 %:	**8.50%**	Antenna B1 MPE %:	**8.50%**	Antenna C1 MPE %:	**8.50%**
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	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Channel Count:	13	Channel Count:	13	Channel Count:	13
Total TX Power (W):	500 Watts	Total TX Power (W):	500 Watts	Total TX Power (W):	500 Watts
ERP (W):	15,462.91	ERP (W):	15,462.91	ERP (W):	15,462.91
Antenna A2 MPE %:	**4.93%**	Antenna B2 MPE %:	**4.93%**	Antenna C2 MPE %:	**4.93%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A3 MPE %:	**1.09%**	Antenna B3 MPE %:	**1.09%**	Antenna C3 MPE %:	**1.09%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	14.52%
Nextel	0.4%
Sprint	0.23%
Clearwire	0.1%
Metro PCS	0.94%
Site Total MPE % :	16.19%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	14.52%
T-Mobile Sector B Total:	14.52%
T-Mobile Sector C Total:	14.52%
Site Total MPE % :	16.19%

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	130.0	25.82	2500 MHz LTE 1C & 2C Traffic	1000	2.58%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	130.0	2.51	2500 MHz LTE 1C & 2C Broadcast	1000	0.25%
T-Mobile 2500 MHz NR Traffic	1	22089.26	130.0	51.65	2500 MHz NR Traffic	1000	5.16%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	130.0	5.02	2500 MHz NR Broadcast	1000	0.50%
T-Mobile 600 MHz LTE	2	591.73	130.0	2.77	600 MHz LTE	400	0.69%
T-Mobile 600 MHz NR	1	1577.94	130.0	3.69	600 MHz NR	400	0.92%
T-Mobile 700 MHz LTE	2	648.82	130.0	3.03	700 MHz LTE	467	0.65%
T-Mobile 1900 MHz GSM	4	1101.85	130.0	10.31	1900 MHz GSM	1000	1.03%
T-Mobile 1900 MHz LTE	2	2203.69	130.0	10.31	1900 MHz LTE	1000	1.03%
T-Mobile 2100 MHz UMTS	2	1294.56	130.0	6.05	2100 MHz UMTS	1000	0.61%
T-Mobile 2100 MHz LTE	2	2334.27	130.0	10.92	2100 MHz LTE	1000	1.09%
						Total:	**14.52%**

• 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:	14.52%
Sector B:	14.52%
Sector C:	14.52%
T-Mobile Maximum MPE % (Sector A):	14.52%
Site Total:	16.19%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.19%** 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.