INDUSTRIAL AVE,
TE 3
HWAH NJ 07430

ONE: 201.684.0055
X: 201.684.0066

Transcend Wireless

September 21, 2021

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

RE: Notice of Exempt Modification
148 Roberts Street, East Hartford, CT 06108
Latitude: 41.77330556
Longitude: -72.61341667
T-Mobile Site#: CTHA505A - Anchor/L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 100' level of the 130' monopole located at 148 Roberts Street in East Hartford, CT. The monopole is owned by American Tower and the property is owned by Caro LLC. T-Mobile now intends to replace three (3) of its existing antennas with six (6) L700/L600/N600/L1900/L2100/U2100/L2500/N2500 antennas. The new antennas would be installed at the same 100' level of the tower. The new antennas support 5G services.

Planned Modifications:
Tower:
Install New:
(3) Ericsson AIR6449 B41 Antennas
(3) RFS APXVAALL24 43-U-NA20 Antennas
(3) Radio 4449 B71 B85
(3) Radio 4415 B66
(3) SDX 1926Q-43 Diplexers
(3) 1 ⅝" Hybrid Cables

To Be Removed:
(3) Ericsson AIR21 KRC118023-1 Antennas
(1) 1 ⅝" Hybrid Cable

To Remain:

(3) AIR32 B66A/B2A Antennas
(6) ⅞" Coax Cables

Ground Work:
Install (1) 6160 Equipment Cabinet, (1) Battery Cabinet B160, and (2) BB6648

This facility was approved by the Connecticut Siting Council in Docket No. 228 on November 7, 2002. The Docket is attached. None of the modifications break the conditions given.

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 Mayor Marcia Leclerc, Elected Official, and The Planning and Zoning Department of Madison, 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: Marcia Leclerc - Mayor of East Hartford
Jeffrey Cormier - Town Planner
Caro LLC - Property Owner
American Towers - Tower Owner

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS 1 OF 1

SHIP TO:
TOWN PLANNER
JEFFREY CORMIER
740 MAIN STREET
EAST HARTFORD CT 06108

CT 061 9-01

UPS GROUND
TRACKING #: 1Z V25 742 03 9306 9899

BILLING: P/P

Reference #1: CTHA505A

XOL 21.07.05 NV45 32.0A 08/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS 1 OF 1

SHIP TO:
MAYOR MARCIA LECLERC
740 MAIN STREET
EAST HARTFORD CT 06108

CT 061 9-01

UPS GROUND
TRACKING #: 1Z V25 742 03 9331 1885

BILLING: P/P

Reference #1: CTHA505A

XOL 21.07.05 NV45 32.0A 08/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
CARO LLC
685 MATSON HILL ROAD
GLASTONBURY CT 06073

CT 061 9-01

UPS GROUND
TRACKING #: 1Z V25 742 03 9641 5553

BILLING: P/P

Reference #1: CTHA505A

XOL 21.09.06 NV45 38.0A 09/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

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

MA 018 9-04

UPS GROUND
TRACKING #: 1Z V25 742 03 9103 1904

BILLING: P/P

Reference #1: CTHA505A

XOL 21.07.05 NV45 32.0A 08/2021*

Hello, your package has been delivered.

Delivery Date: Thursday, 08/12/2021

Delivery Time: 3:49 PM

Left At: FRONT DESK

Signed by: MICHELLE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420393311885
Ship To:	MAYOR MARCIA LECLERC 740 MAIN STREET EAST HARTFORD, CT 06108 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA505A

Hello, your package has been delivered.

Delivery Date: Monday, 08/16/2021

Delivery Time: 12:02 PM

Left At: INSIDE DELIV

Signed by: ANCRI

TRANSCEND WIRELESS

Tracking Number:	1ZV257420391031904
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:	CTHA505A

Hello, your package has been delivered.

Delivery Date: Friday, 08/13/2021

Delivery Time: 11:50 AM

Left At: FRONT DESK

Signed by: MICHLLE

TRANSCEND WIRELESS

Tracking Number:	1ZV257420393069899
Ship To:	JEFFREY CORMIER 740 MAIN STREET EAST HARTFORD, CT 06108 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA505A

Hello, your package has been delivered.

Delivery Date: Wednesday, 09/22/2021

Delivery Time: 5:58 PM

Left At: FRONT DOOR

TRANSCEND WIRELESS

Tracking Number:	1ZV257420396415553
Ship To:	CARO LLC 685 MATSON HILL ROAD GLASTONBURY, CT 06073 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA505A


148 roberts
148
144
192
188
210
42
36
Wrobel
2004

Town of East Hartford Property Summary Report

148 ROBERTS ST

MAP LOT:	35-18A	**CAMA PID:**	50278
LOCATION:	148 ROBERTS ST		
OWNER NAME:	CARO LLC / C/O PROPERTY TAX DEPT		

OWNER OF RECORD
CARO LLC
C/O PROPERTY TAX DEPT
P O BOX 723597
ATLANTA, GA 31139

LIVING AREA:		**ZONING:**		**ACREAGE:**	1.07

SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
CARO LLC C/O PROPERTY TAX DEPT	3560/0154	26-Sep-2015	$0.00
DOUBLE E PROPERTIES OF MIDDLETOWN LLC C/O CARMINE	3442/0174	28-Dec-2013	$0.00
DOUBLE E PROPERTIES OF EAST HARTFORD LLC C/O CARMINE	3205/0125	05-Oct-2010	$0.00

CURRENT PARCEL ASSESSMENT

TOTAL:	$91,520.00	**IMPROVEMENTS:**	$2,790.00	**LAND:**	$88,730.00

ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2019	$91,520.00	$2,790.00	$88,730.00
2018	$91,520.00	$2,790.00	$88,730.00
2017	$91,520.00	$2,790.00	$88,730.00
2016	$91,520.00	$2,790.00	$88,730.00
2015	$91,510.00	$2,780.00	$88,730.00

Town of East Hartford Property Summary Report

148 ROBERTS ST

MAP LOT:	35-18A	**CAMA PID:**	50278
LOCATION:	148 ROBERTS ST		
OWNER NAME:	CARO LLC / C/O PROPERTY TAX DEPT		

BUILDING # 1

YEAR BUILT		**EXT WALL 1**	
STYLE		**INT WALLS 1**	
MODEL	Vacant	**HEAT FUEL**	
STORIES		**HEAT TYPE**	
OCCUPANCY	Comm w/ OB	**AC TYPE**	
ROOF		**BEDROOMS**	
ROOF COVER		**FULL BATHS**	
FLOOR COVER 1		**HALF BATHS**	
% BSMT	null	**TOTAL ROOMS**	
% FIN BSMT	null	**% REC RM**	null
% SEMI FIN		**% ATTIC FINISH**	null
BSMT GARAGE	null	**FIREPLACES**	null

EXTRA FEATURES

DESCRIPTION	CODE	UNITS
Fence-C/L	FN1	260.00 L.F.

Filing Guides
Meetings & Minutes
Public Participation
Audio Link to New Britain Hearing Rooms
Programs & Services
Telecommunications Database
Publications
Other Resources
Statutes & Regulations
Electric Transmission Upgrade Projects
Frequently Asked Questions

Robert Stein,
Chairman

Melanie Bachman,
Acting Executive Director

NOTICE TO USERS

The Connecticut Siting Council posts filed documents to this site as a public service.The Council disclaims any liability for the content of submissions made by parties, intervenors, public officials, and the general public. Further, while the Council seeks to be complete in its postings, the Council urges users of this site to confirm with the submitter the completeness of the postings made. The posting of any

Decisions

Printable Version

DOCKET NO. 228 – The Marcus Group, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a cellular telecommunications facility at 148 Roberts Street, East Hartford, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	November 7, 2002

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes **§** 16-50k, be issued to The Marcus Group (Marcus) for the construction, maintenance and operation of a wireless telecommunications facility at the proposed prime site located at 148 Roberts Street, East Hartford, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless LLC, Cellco Partnership b/b/a Verizon Wireless, Nextel Communications of the Mid-Atlantic, and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level. The access road to the facility shall be finished with gravel. The north edge of the facility compound shall be a minimum distance of 52 feet to the nearest wetland area.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location and specifications for the tower, tower foundation, antennas, equipment buildings, security fence, access road, utility line, and landscaping plan. The D&M Plan shall also include construction plans to be submitted prior to construction for site clearing, water drainage, and erosion and sedimentation control consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. If the facility does not initially provide, or permanently ceases to provide wireless services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60

days after such antennas become obsolete and ceases to function.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

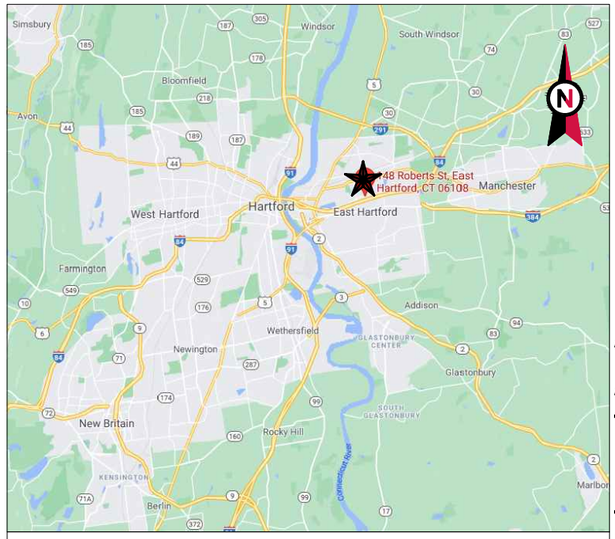
Pursuant to General Statutes **§** 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and The East Hartford Gazette.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
The Marcus Group, LLC	Julie Donaldson Kohler, Esq. Hurwitz & Sagarin, LLC 147 N. Broad Street Milford, CT 06460 (203) 877-8000
Intervenor	**Its Representative**
Cellco Partnership d/b/a Verizon Wireless	Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597 (860) 275-8200

Content Last Modified on 11/18/2002 9:22:37 AM



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: EAST HARTFORD
ATC SITE NUMBER: 370626
T-MOBILE SITE NAME: CROWN E. HARTFORD MONOPOLE
T-MOBILE SITE NUMBER: CTHA505A
SITE ADDRESS: 148 ROBERTS ST.
EAST HARTFORD, CT, 06108

T-MOBILE ANCHOR ANTENNA AMENDMENT PLAN
67D5997DB_2XAIR+1OP 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: EVER SOURCE
PHONE: (877) 659-6326

TELEPHONE COMPANY: FRONTEIR COMMUNICATION
PHONE: (800) 376- 6843

CBYD.COM 811 Call Before You Dig, Inc.

PROJECT SUMMARY

SITE ADDRESS:

148 ROBERTS ST.

EAST HARTFORD, CT, 06108

COUNTY: HARTFORD

GEOGRAPHIC COORDINATES:

LATITUDE: 41.77330556

LONGITUDE: -72.61341667

GROUND ELEVATION: 50' 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: 17166

PROPERTY OWNER:

CARO LLC
C/O PROPERTY TAX DEPT
PO BOX 723597
ATLANTA, GA, 33139

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 KRC118046-1_B2P_B4A ANTENNA(s) AND (1) 9X18 (1 5/8") HYBRID CABLE(s)

INSTALL (3) AIR6449 B41 ANTENNA(s),(3) APXVAALL24 43-U-NA20 ANTENNA(s), (3) RADIO 4449 B71 B85A RRH(s),(3) 4415 B66 RRH(s), (3) SDX 1926Q-43 DIPLEXER(s) AND (3) 9X18 (1 5/8") HYBRID CABLE(s)

EXISTING (3) AIR32 B66AA/B2A ANTENNA(s), AND (6) 3X6 (7/8") COAX CABLE(s) TO REMAIN

GROUND WORK:

INSTALL (1) ENCLOSURE 6160 CABINET, (1) B160 CABINET AND (2) BB6648

EXISTING (1) RBS 6201 ODE CABINET, (1) DUW30 AND (1) BB6648 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 HARTFORD:

PROCEED FROM HARTFORD, CT. HEAD NORTH ON MAIN ST TOWARD GOLD ST 0.2 MI TURN RIGHT ONTO CENTRAL ROW 341 FT BEAR RIGHT ONTO AMERICAN ROW, THEN KEEP LEFT TO GET ONTO STATE ST 0.1 MI TAKE THE RAMP ON THE LEFT FOR CT-2 EAST AND HEAD TOWARD NEW LONDON / NORWICH 0.5 MI AT EXIT 2, HEAD RIGHT ON THE RAMP FOR I-84 EAST TOWARD BOSTON / E HARTFORD 1.6 MI AT EXIT 58, HEAD RIGHT ON THE RAMP FOR ROBERTS ST TOWARD BURNSIDE AVE / SILVER LANE 0.2 MI TURN LEFT ONTO ROBERTS ST 0.9 MI ARRIVE AT ROBERTS ST

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	07/12/21	RCG
G-002	GENERAL NOTES	0	07/12/21	RCG
C-101	DETAILED SITE PLAN	0	07/12/21	RCG
C-102	DETAILED GROUND PLAN	0	07/12/21	RCG
C-201	TOWER ELEVATION	0	07/12/21	RCG
C-401	ANTENNA INFORMATION & SCHEDULE	0	07/12/21	RCG
C-501	CONSTRUCTION DETAILS	0	07/12/21	RCG
E-501	GROUNDING DETAILS	0	07/12/21	RCG
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
R-605	SUPPLEMENTAL			

AMERICAN TOWER®

Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:
370626
ATC SITE NAME:
EAST HARTFORD
T-MOBILE SITE NAME:
CROWN E. HARTFORD MONOPOLE
SITE ADDRESS:
148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

T-Mobile

DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

GENERAL CONSTRUCTION NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:

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

   B. INSTALL 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®

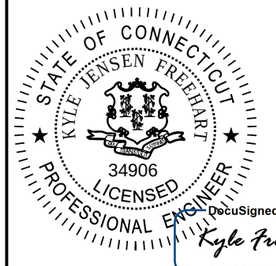
Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:
370626
ATC SITE NAME:
EAST HARTFORD
T-MOBILE SITE NAME:
CROWN E. HARTFORD MONOPOLE
SITE ADDRESS:
148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:



T-Mobile

DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

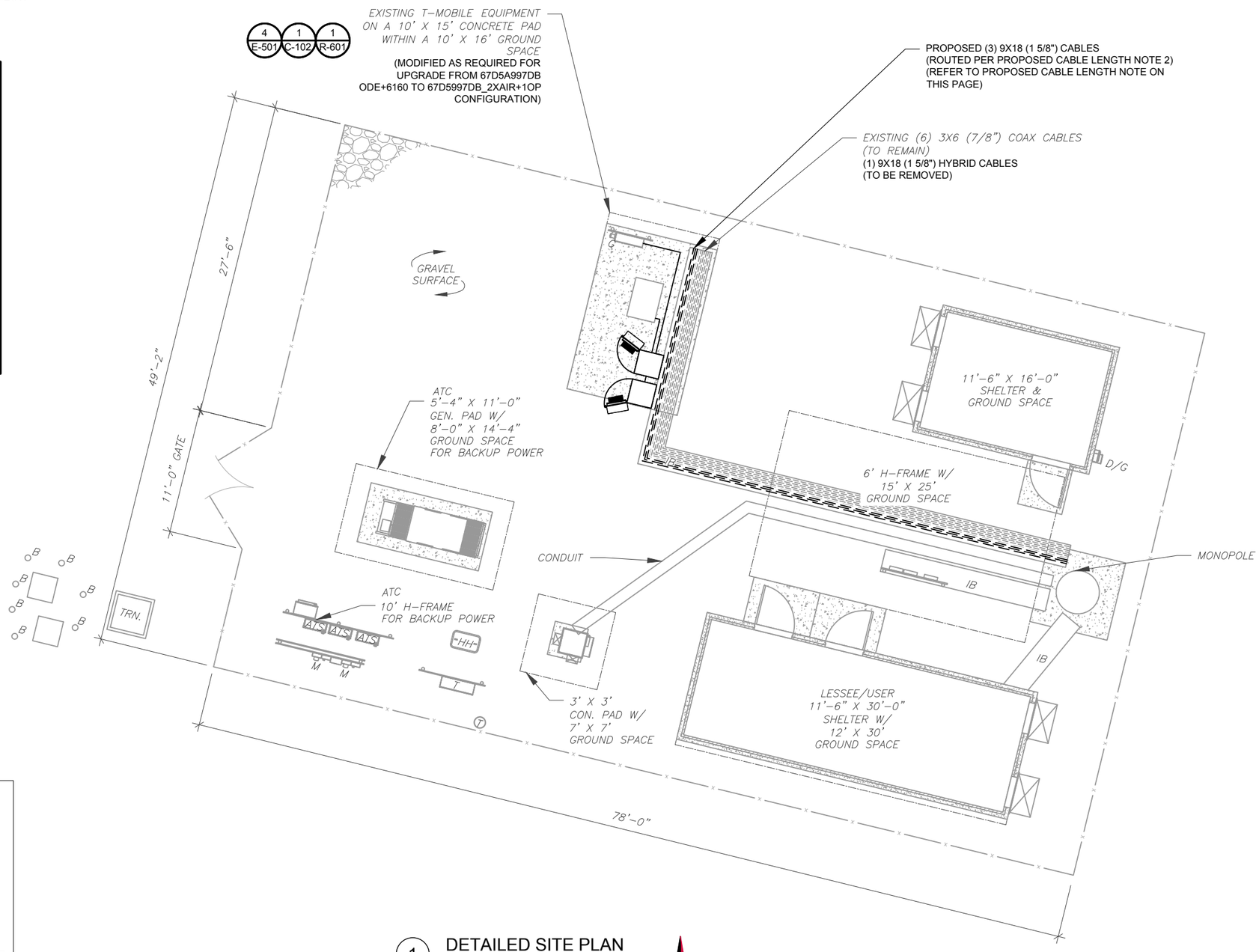
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

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 **67'**. 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®

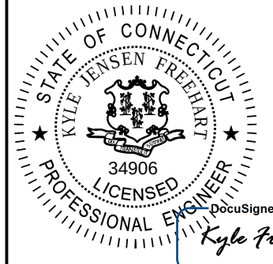
Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:
370626
ATC SITE NAME:
EAST HARTFORD
T-MOBILE SITE NAME:
CROWN E. HARTFORD MONOPOLE
SITE ADDRESS:
148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:



T-Mobile

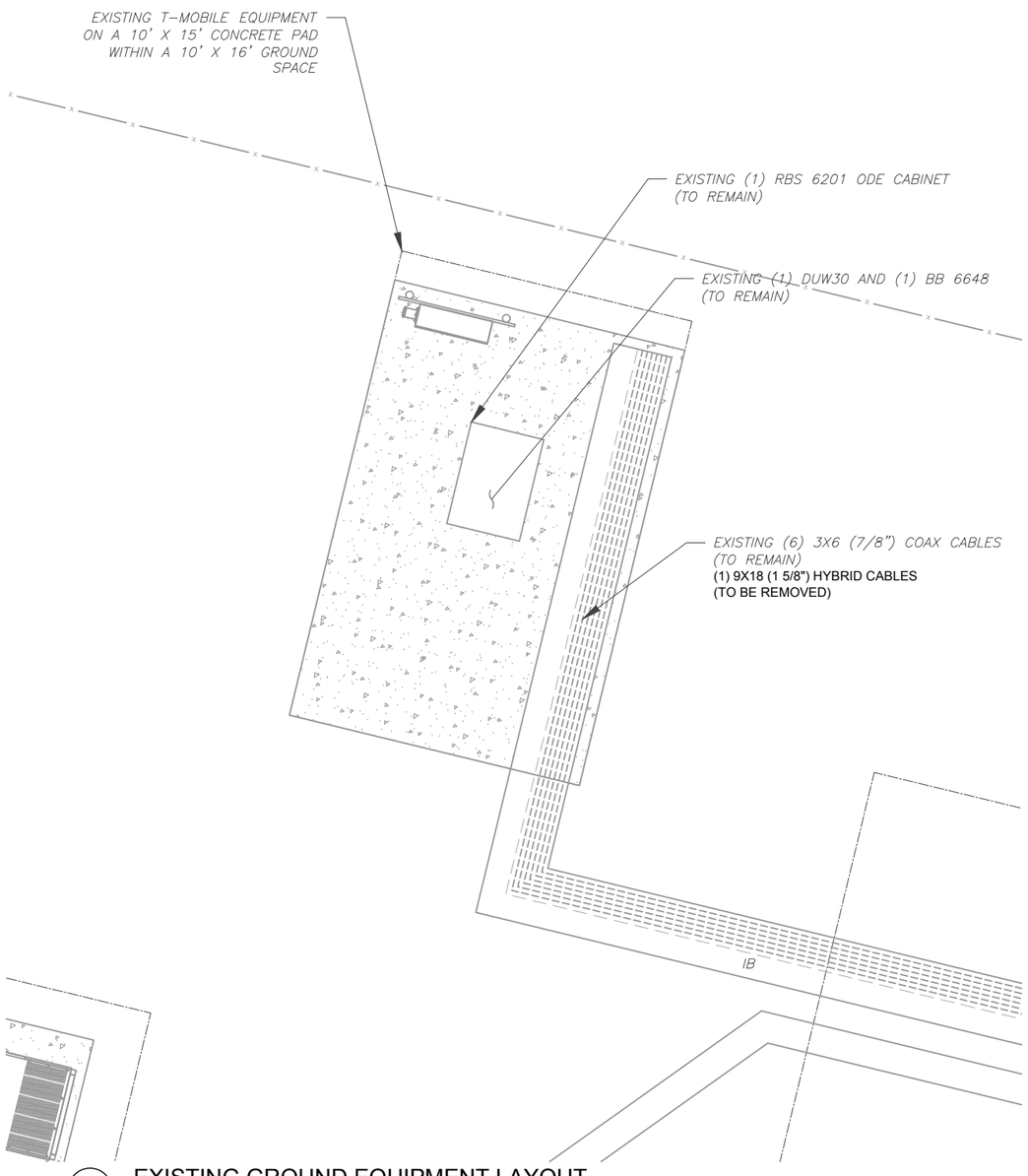
DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

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.

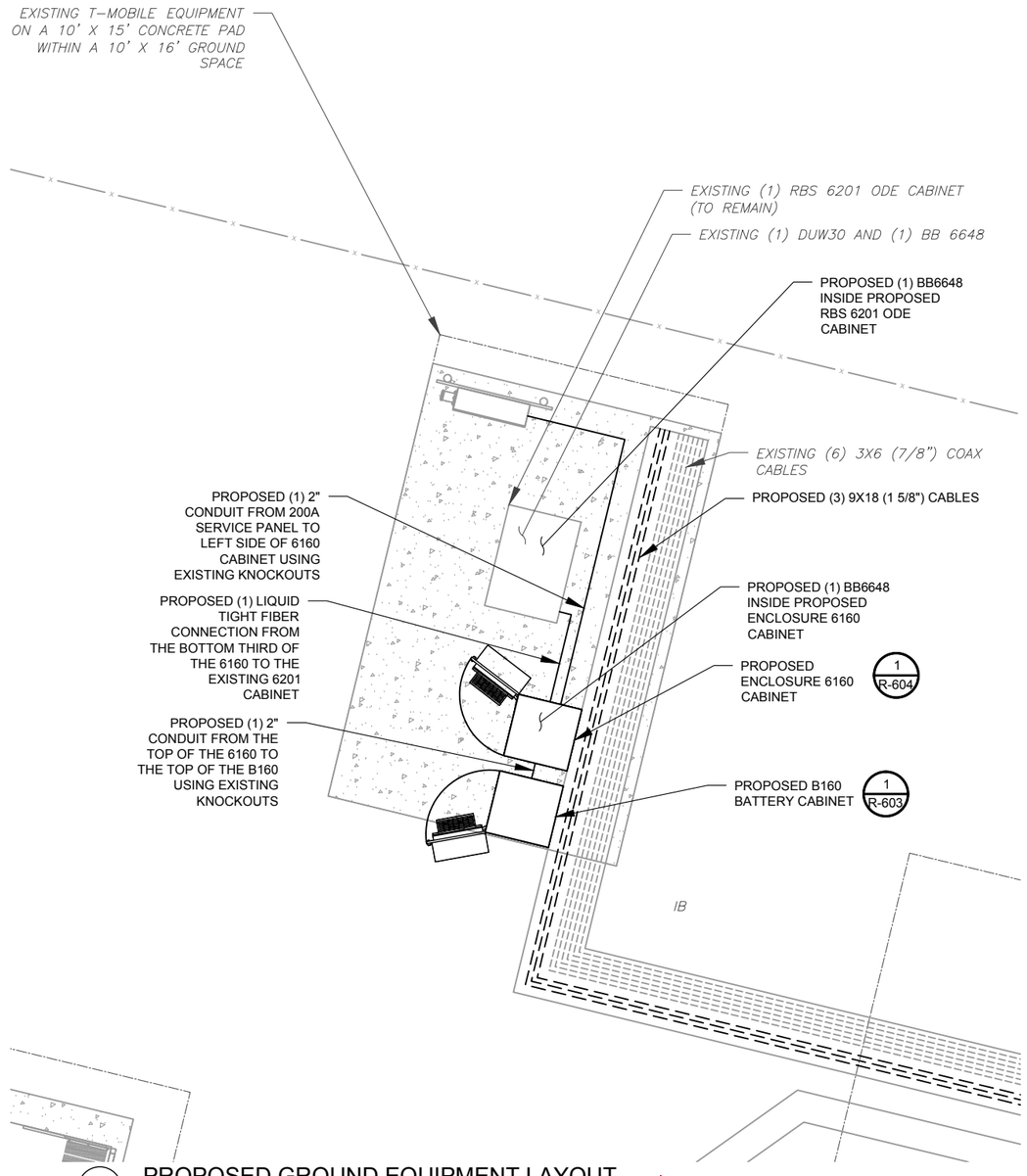


1 EXISTING GROUND EQUIPMENT LAYOUT

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)

AMERICAN TOWER®

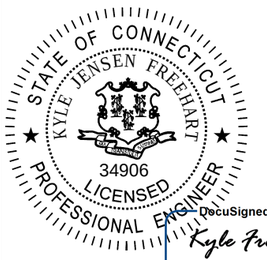
Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:
370626
ATC SITE NAME:
EAST HARTFORD
T-MOBILE SITE NAME:
CROWN E. HARTFORD MONOPOLE
SITE ADDRESS:
148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:

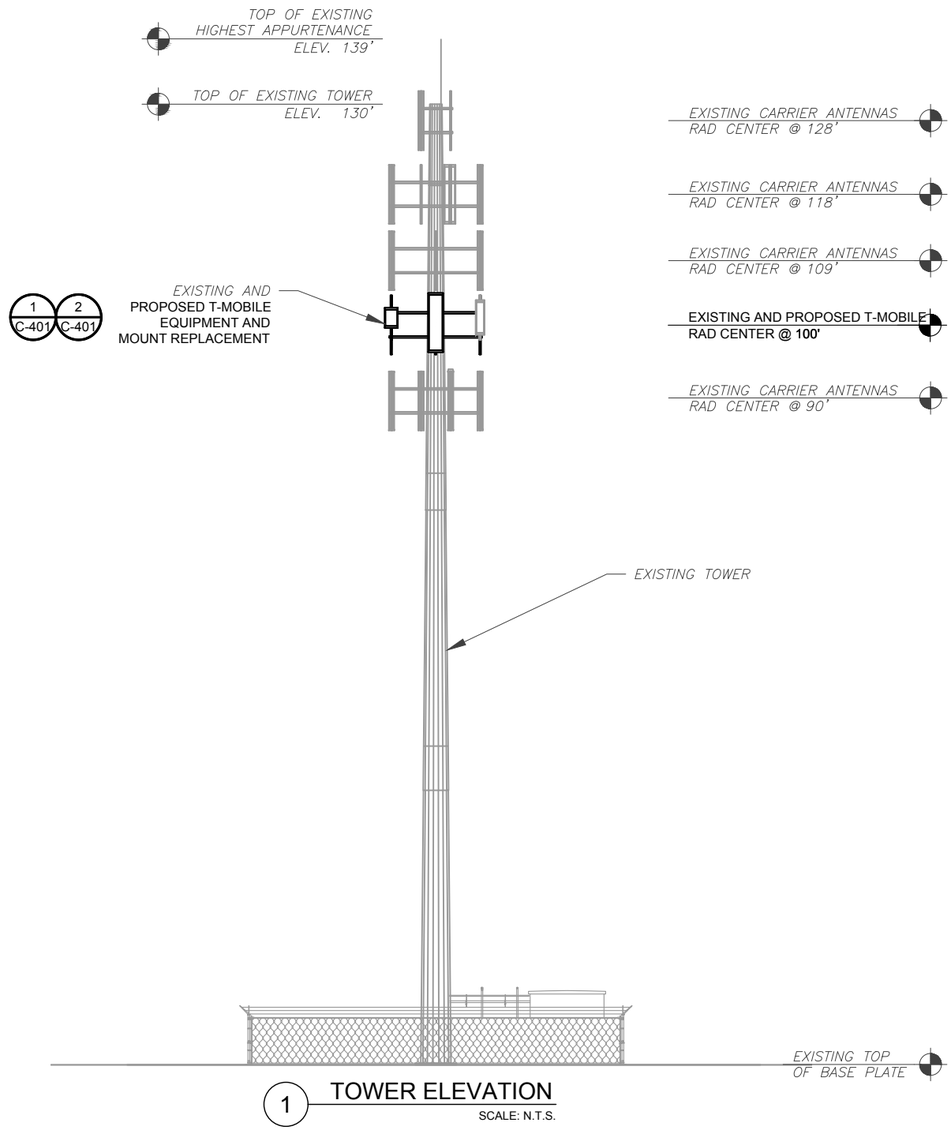


T-Mobile

DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

DETAILED GROUND PLAN

SHEET NUMBER:	REVISION:
C-102	0



1 TOWER ELEVATION

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 06/02/21, THE PROPOSED 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.)

AMERICAN TOWER®

Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:

370626

ATC SITE NAME:

EAST HARTFORD

T-MOBILE SITE NAME:

CROWN E. HARTFORD MONOPOLE

SITE ADDRESS:

148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

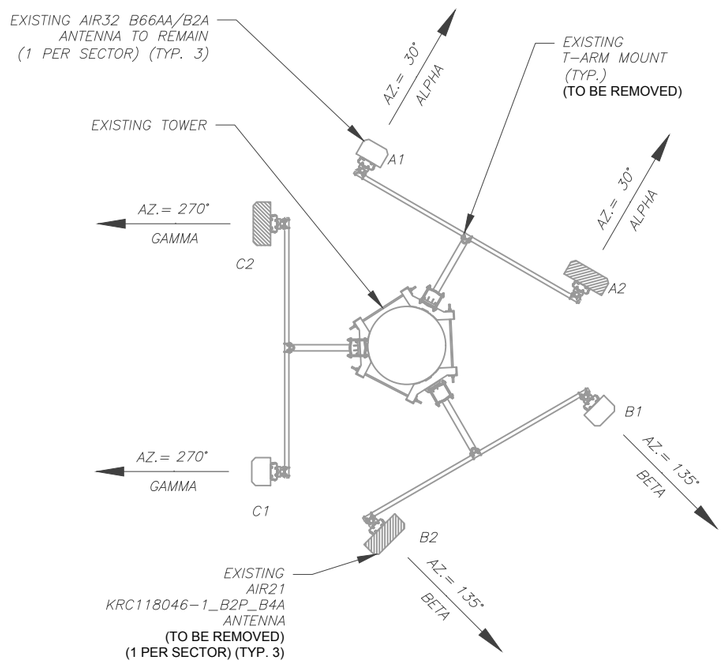
DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

T-Mobile

DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

TOWER ELEVATION

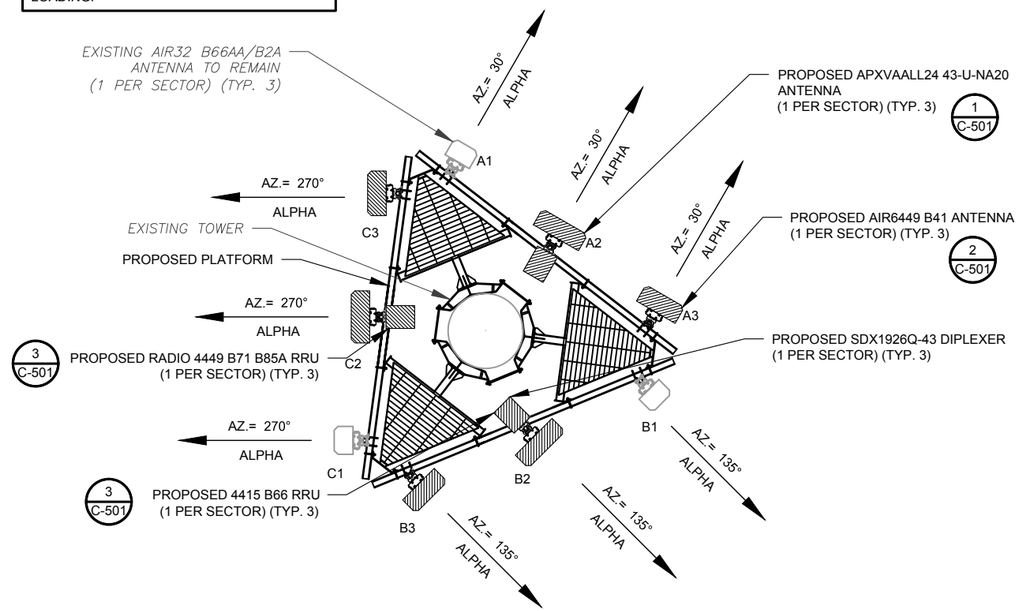
SHEET NUMBER:	REVISION:
C-201	0



1 EXISTING ANTENNA PLAN

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 06/02/21, THE PROPOSED MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.



CONTRACTOR SHALL RE-ORIENT ANTENNA MOUNT(s) AS NECESSARY TO ACHIEVE PROPOSED ANTENNA AZIMUTHS

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	100'	30°	A1	AIR32 B66AA/B2A	L2100/L1900	0°/2°	REL	–	–
			A2	AIR21 KRC118046-1_B2P_B4A	U2100	0°/2°	RMV	–	–
BETA	100'	135°	B1	AIR32 B66AA/B2A	L2100/L1900	0°/2°	REL	–	–
			B2	AIR21 KRC118046-1_B2P_B4A	U2100	0°/2°	RMV	–	–
GAMMA	100'	270°	C1	AIR32 B66AA/B2A	L2100/L1900	0°/2°	REL	–	–
			C2	AIR21 KRC118046-1_B2P_B4A	U2100	0°/2°	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	100'	30°	A1	AIR32 B66AA/B2A	L2100/L1900	0°/2°	RMN	-	-
			A2	APXVAALL21 43-U-NA20	L700/L600/N600/L1900 /U2100	0°/-	ADD	RADIO 4449 B71 B85A 4415 B66 SDX1926Q-43	ADD ADD ADD
			A3	AIR6449 B41	L2500/N2500	0°/-	ADD	-	-
BETA	100'	135°	B1	AIR32 B66AA/B2A	L2100/L1900	0°/2°	RMN	-	-
			B2	APXVAALL21 43-U-NA20	L700/L600/N600/L1900 /U2100	0°/-	ADD	RADIO 4449 B71 B85A 4415 B66 SDX1926Q-43	ADD ADD ADD
			B3	AIR6449 B41	L2500/N2500	0°/-	ADD	-	-
GAMMA	100'	270°	C1	AIR32 B66AA/B2A	L2100/L1900	0°/2°	RMN	-	-
			C2	APXVAALL21 43-U-NA20	L700/L600/N600/L1900 /U2100	0°/-	ADD	RADIO 4449 B71 B85A 4415 B66 SDX1926Q-43	ADD ADD ADD
			C3	AIR6449 B41	L2500/N2500	0°/-	ADD	-	-

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(6) 3X6 (7/8")	–	RMN
–	–	–	(6) 9X18 (1 5/8")	RMV

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(6) 3X6 (7/8")	–	RMN
-	-	-	(3) 9X18 (1 5/8")	ADD

AMERICAN TOWER®

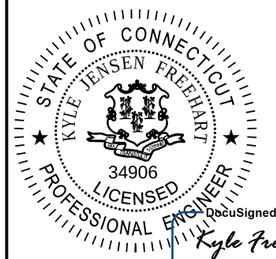
Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:
370626
ATC SITE NAME:
EAST HARTFORD
T-MOBILE SITE NAME:
CROWN E. HARTFORD MONOPOLE
SITE ADDRESS:
148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:

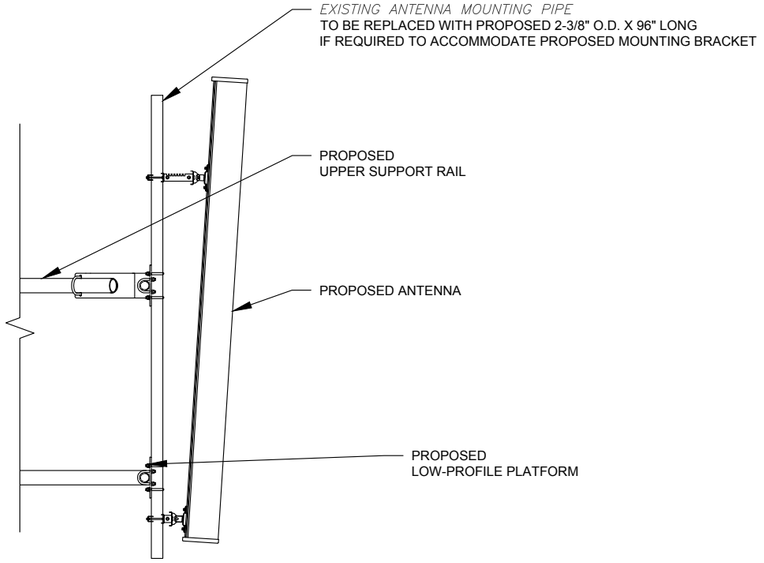


T-Mobile

DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

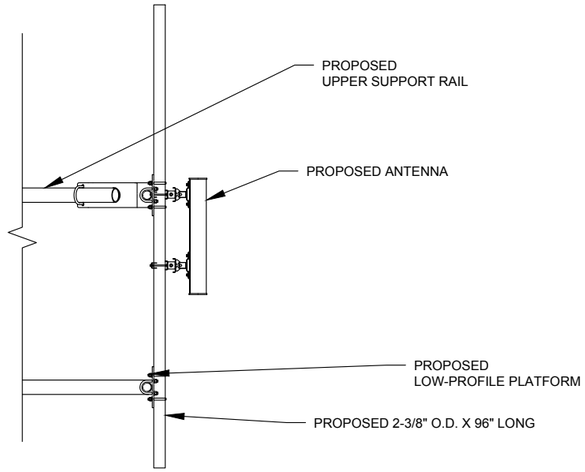
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



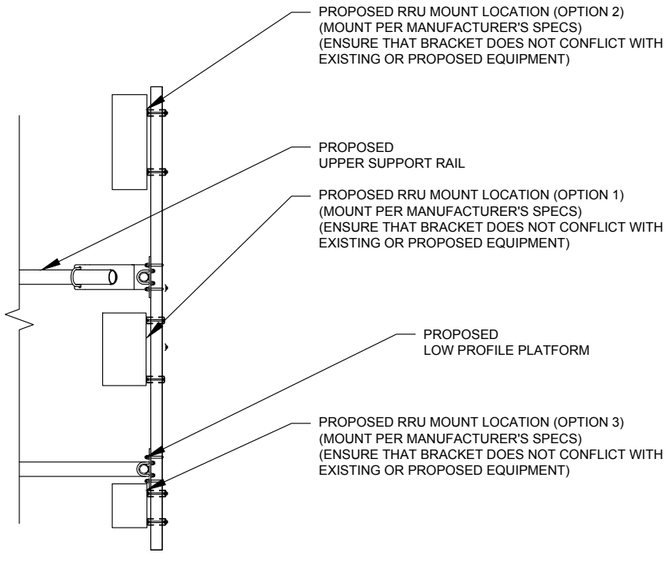
1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



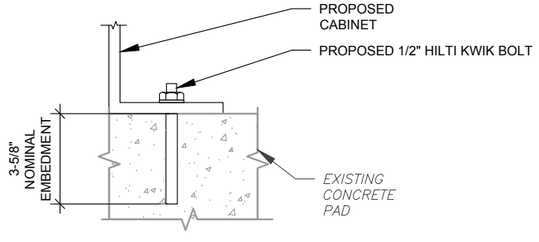
2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL

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®

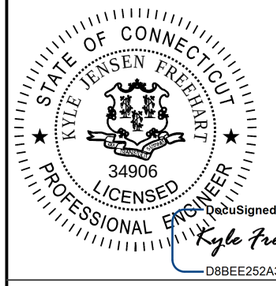
Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:
370626
ATC SITE NAME:
EAST HARTFORD
T-MOBILE SITE NAME:
CROWN E. HARTFORD MONOPOLE
SITE ADDRESS:
148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:

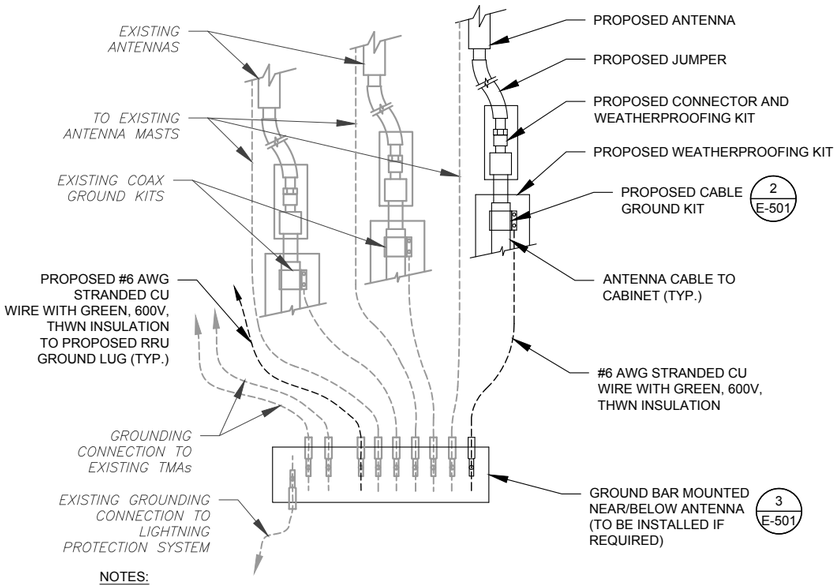


T-Mobile

DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

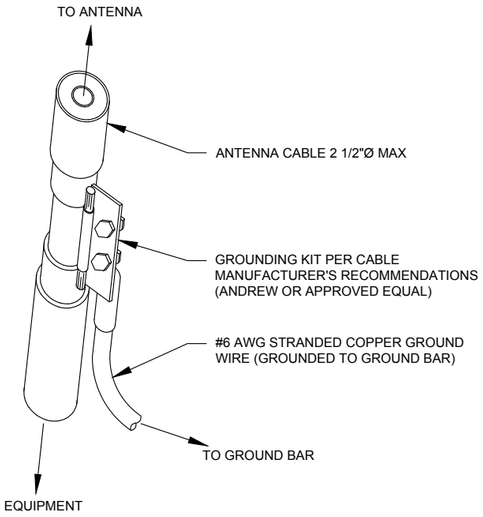


NOTES:

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.

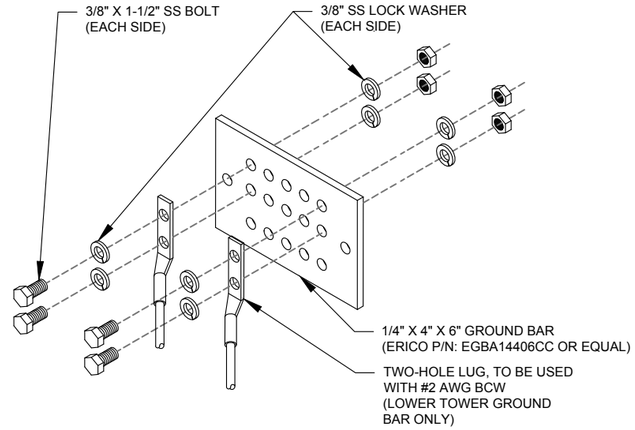


GROUND KIT NOTES:

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.

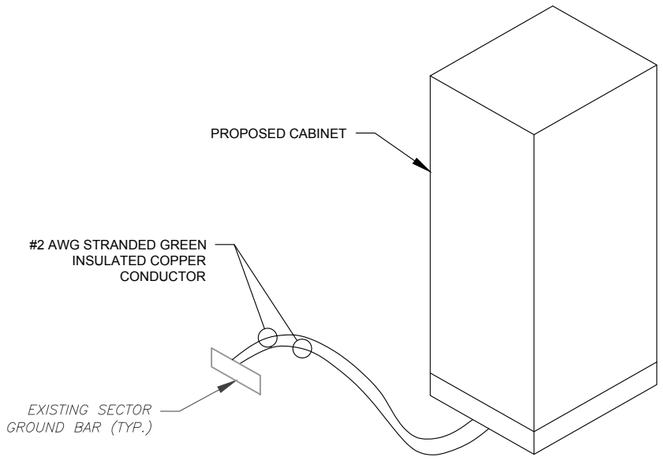


GROUND BAR NOTES:

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®

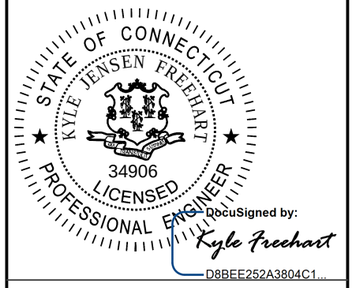
Kimley»Horn

COA: 17166
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

REV.	DESCRIPTION	BY	DATE
A	PRELIM	ARC	06/11/21
0	ISSUED FOR CONSTRUCTION	RCG	07/12/21

ATC SITE NUMBER:
370626
ATC SITE NAME:
EAST HARTFORD
T-MOBILE SITE NAME:
CROWN E. HARTFORD MONOPOLE
SITE ADDRESS:
148 ROBERTS ST.
EAST HARTFORD, CT, 06108

SEAL:



T-Mobile

DATE DRAWN:	07/12/21
ATC JOB NO:	13677849
CUSTOMER ID:	CROWN E. HARTFORD MONOPOLE
CUSTOMER #:	CTHA505A

GROUNDING DETAILS

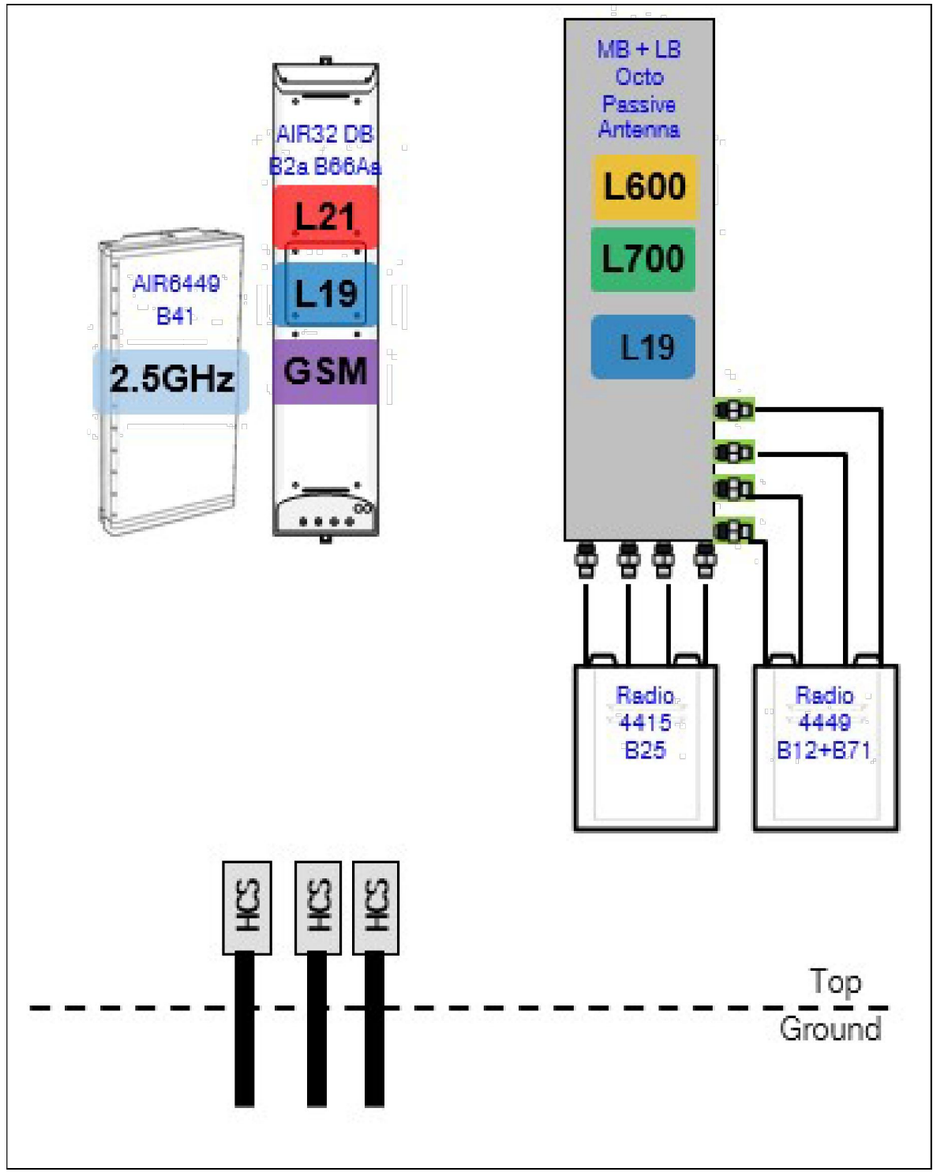
SHEET NUMBER:	REVISION:
E-501	0

Section 5 - RAN Equipment

Existing RAN Equipment		
Template: 95ADB		
Enclosure	**1**	**2**
Enclosure Type	RBS 6201 ODE	Ancillary Equipment (Ericsson)
Baseband	DUW30 (U2100); BB 6630 (L2100, L1900)	
Hybrid Cable System		Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select Length & AWG*

Proposed RAN Equipment			
Template: 67D5A997DB ODE+6160			
Enclosure	**1**	**2**	**3**
Enclosure Type	RBS 6201 ODE	Enclosure 6160	B160
Baseband	DUW30 (U2100); BB 6648 (L2100, L1900); BB 6648 (L700, L600, N600)	BB 6648 (L2500, N2500)	
Hybrid Cable System	Ericsson Hybrid Trunk 6/24 4AWG 40m **(x 2)**	Ericsson Hybrid Trunk 6/24 4AWG 40m PSU 4813	
Transport System		CSR IXRe V2 (Gen2)	

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

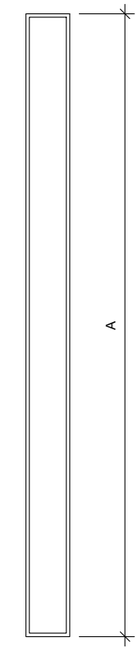


2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

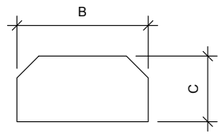
NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0



FRONT VIEW

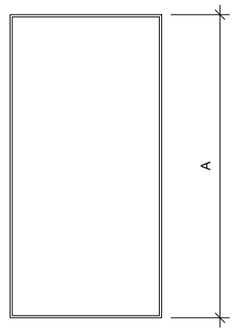


TOP VIEW

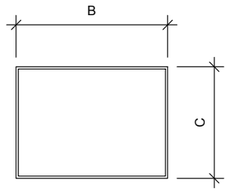
1 ANTENNA SPECIFICATIONS

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
APXVAALL24 43-U-NA20	95.9"	12.9"	8.7"	122.8



FRONT VIEW



TOP VIEW

2 RRU SPECIFICATIONS

FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

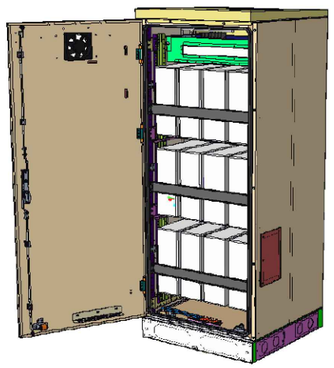
RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
RADIO 4449 B71 B85A	15.0"	13.2"	10.5"	75
4415 B66	15.0"	13.2"	5.4"	46

SUPPLEMENTAL

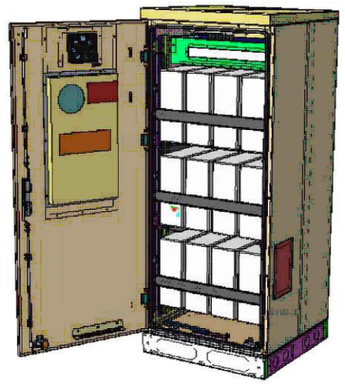
SHEET NUMBER: R-602

REVISION: 0

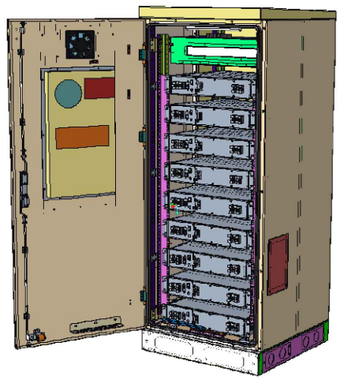
Enclosure B160



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

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

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

This report was prepared for American Tower Corporation by

Antenna Mount Analysis Report

ATC Site Name	:	**East Hartford**
ATC Site Number	:	**370626**
Engineering Number	:	**13677849_C8_02**
Mount Elevation	:	**100 ft**
Carrier	:	**T-MOBILE**
Carrier Site Name	:	**Crown E. Hartford Monopole**
Carrier Site Number	:	**CTHA505A**
Site Location	:	**148 Roberts St.** **East Hartford, CT 06108** **41.77330556, -72.61341667**
County	:	**Hartford**
Date	:	**June 2, 2021**
Max Usage	:	**65%**
Result	:	**Pass**

Prepared By:
Saja Alkhafaji
E.I.T

Reviewed By:
Brian Brewer
P.E.

STATE OF CONNECTICUT · BRIAN J. BREWER · 29510 · LICENSED PROFESSIONAL ENGINEER · 06/03/2021

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 100 ft.

Supporting Documents

Spec Sheet	SitePro1 Drawing #RMQP-4XX, dated 07/09/2015 SitePro1 Drawing # HRK12, dated 07/13/2014
Tower Analysis	ATC by TEP Engineering Number 12948437_C3_02, dated 08/22/2019
RFDS	T-MOBILE CTHA505A_Anchor_5_draft, dated 04/27/2021
Photos	Site Photos, dated 11/11/2019

Analysis

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

Basic Wind Speed:	118 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.5" 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:	$S_s = 0.189$, $S_1 = 0.055$
Site Class:	D - Stiff soil.
Live Loads:	Lm = 500 lbs., Lv = 250 lbs.

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

Install new SitePro1 RMQP platform mount with HRK12 handrail kit at 100-ft.

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.

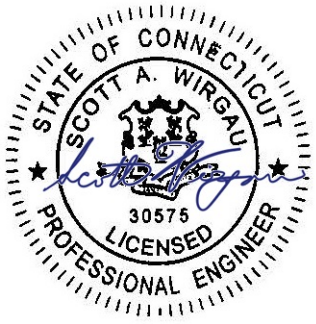
SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-605	0

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**130 ft Monopole**
ATC Site Name	:	**East Hartford, CT**
ATC Asset Number	:	**370626**
Engineering Number	:	**13677849_C3_03**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**Crown E. Hartford Monopole**
Carrier Site Number	:	**CTHA505A**
Site Location	:	**148 Roberts St.** **East Hartford, CT 06108-0000** **41.773300,-72.613400**
County	:	**Hartford**
Date	:	**June 14, 2021**
Max Usage	:	**67%**
Result	:	**Pass**



Prepared By:
Lyle Morin
Structural Engineer I

Reviewed By:

Authorized by "EOR"
14 Jun 2021 04:19:19 cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 130 ft monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	Glen Martin Engineering Drawing #MP1400800-0001, dated August 20, 2003
Foundation Drawing	Glen Martin Engineering Drawing #GME-03309, dated August 26, 2003
Geotechnical Report	Geotechnical Engineering Project Name: The Marcus Group, dated April 25, 2003
Mount Analysis	ATC Engineering #13677849_C8_02, dated June 2, 2021

Analysis

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

Basic Wind Speed:	118 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1 1/2" 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
Crest Height (H):	0 ft
Spectral Response:	Ss = 0.19, 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
128.0	3	DragonWave A-ANT-18G-2-C	T-Arm	(2) 0.41" (10.3mm) Fiber (3) 1 1/4" Hybriflex Cable (1) 1.7" (43.2mm) Hybrid (3) 1/2" Coax (2) 2" Carflex Non-Metallic Conduit (3) 5/8" Coax	CLEARWIRE CORPORATION
	3	Argus LLPX310R			
	3	Nokia 2.5G MAA - AAHC(64T64R)			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	6	Alcatel-Lucent RRH2x50-08			
	3	DragonWave Horizon Compact (11.5 lbs)			
	3	Commscope NNVV-65B-R4			
118.0	3	Andrew LNX-6513DS-A1M (32.6lb)	Platform w/ Handrails	(6) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	2	RFS DB-T1-6Z-8AB-0Z			
	3	Samsung MT6407-77A			
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung RT4401-48A			
	3	Commscope NHHSS-65B-R2BT4			
	3	Commscope NHH-65B-R2B			
110.0	3	Generic 48" x 12" Panel	Low Profile Platform	(9) 1 5/8" Coax	SPRINT NEXTEL
100.0	-	-	Triangular Platform with Handrails	(2) 1 5/8" Hybriflex (6) 7/8" Coax	T-MOBILE
90.0	3	Ericsson RRUS 4478 B14	Platform with Handrails	(3) 0.35" (9mm) Fiber (2) 0.39" (10mm) Fiber Trunk (8) 0.76" (19.2mm) 8 AWG 6 (8) 0.78" (19.7mm) 8 AWG 6 (3) 1/2" Coax (6) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS 32 B66			
	3	Ericsson RRUS E2 B29			
	6	Ericsson RRUS-11			
	12	CCI HPA-65R-BUU-H8			
	2	Raycap DC6-48-60-18-8F			
	2	Raycap DC6-48-60-0-8F			
	3	Ericsson RRUS-32 (77 lbs)			
70.0	1	Generic 2' Std. Dish	Flush	(1) 1 5/8" Coax	SPRINT NEXTEL
50.0	1	Generic GPS	Side Arm	(1) 1/2" Coax	

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
100.0	3	Ericsson AIR-32 B2A/B66Aa	-	(6) 7/8" Coax	T-MOBILE
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
100.0	3	Commscope SDX1926Q-43	Triangular Platform with Handrails	(1) 1 5/8" Hybriflex	T-MOBILE
	3	Ericsson Radio 4449 B71 B85A			
	3	Ericsson RRUS 4415 B66			
	3	Ericsson RRUS 4415 B25			
	3	Ericsson Air6449 B41			
	3	Ericsson AIR32 B66Aa/B2a			
	3	RFS APXVAALL24 43-U-NA20			

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

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	52%	Pass
Shaft	62%	Pass
Base Plate	23%	Pass
Flange	11%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	2,740.2	3,699.3	2,373.6	64%
Shear (Kips)	28.5	38.4	25.6	67%
* 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) (°)
128.0	DragonWave A-ANT-18G-2-C	CLEARWIRE CORPORATION	1.283	0.996
100.0	Commscope SDX1926Q-43	T-MOBILE	0.810	0.911
	Ericsson Radio 4449 B71 B85A			
	Ericsson RRUS 4415 B66			
	Ericsson RRUS 4415 B25			
	Ericsson Air6449 B41			
	Ericsson AIR32 B66Aa/B2a			
	RFS APXVAALL24 43-U-NA20			
70.0	Generic 2' Std. Dish	SPRINT NEXTEL	0.393	0.665

***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.

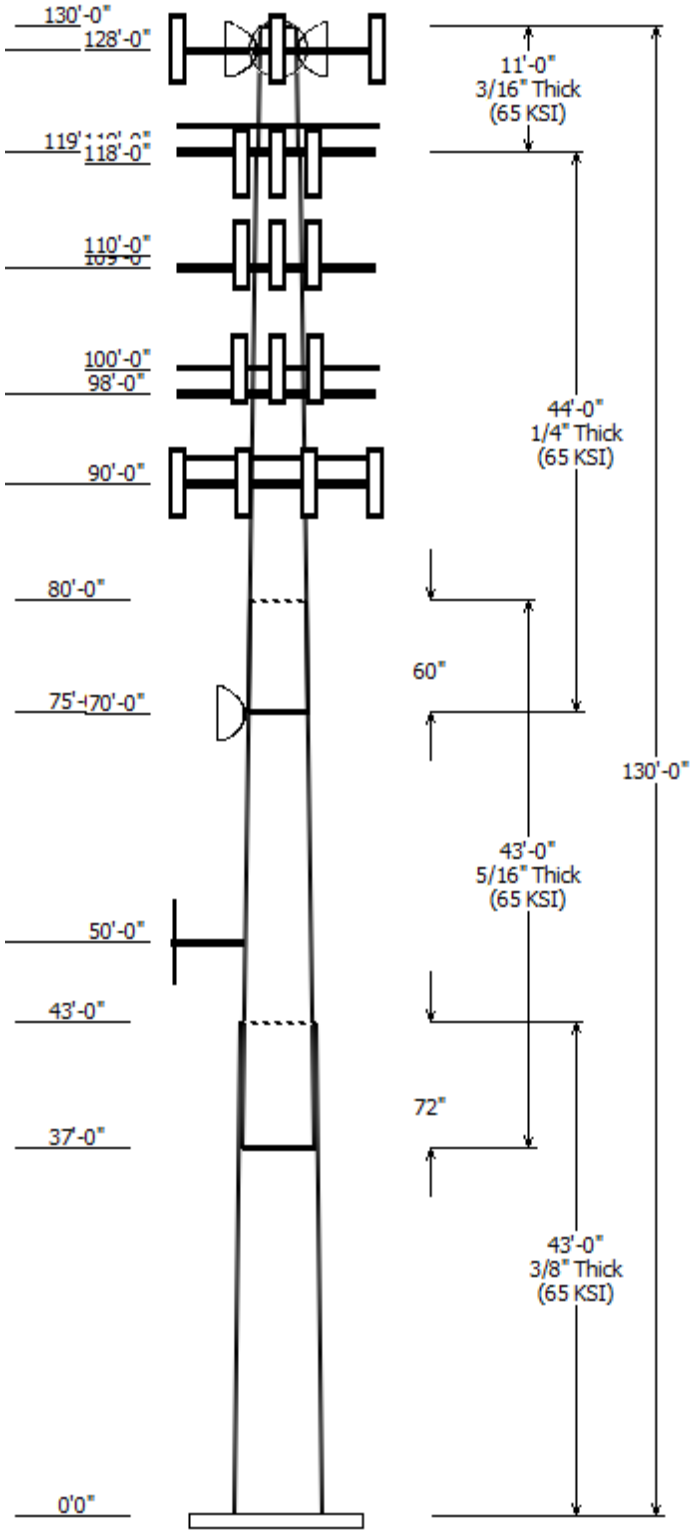
All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with 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 :	370626	Code:	ANSI/TIA-222-H
Location :	East Hartford, CT		
Description :	130 ft. Monopole	Risk Category :	II
Shape :	16 Sides	Exposure :	B
Height :	130.00 (ft)	Topo Method :	Method 1
Base Elev (ft):	0.00	Topographic Category :	1
Taper:	0.233192 (in/ft)		

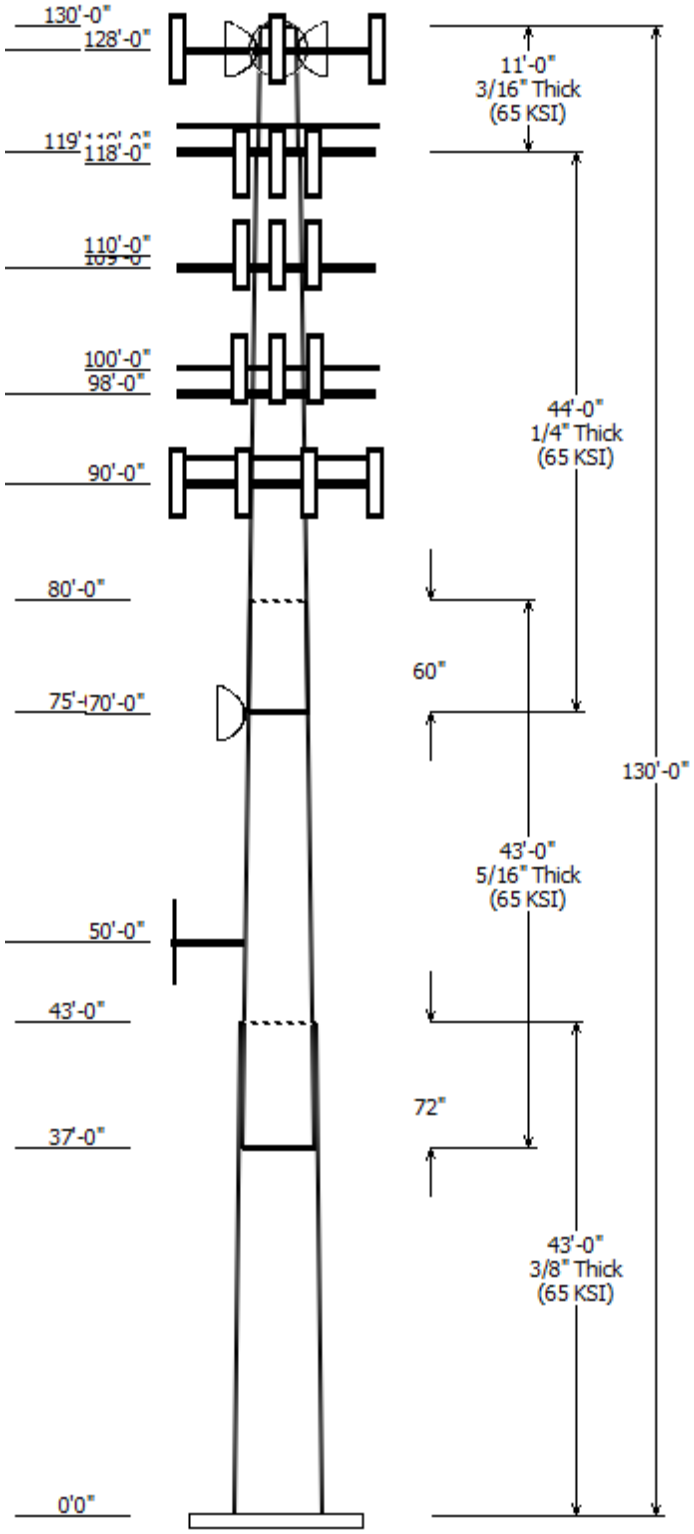


Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	43.000	39.16	49.19	0.375		0.000	16 Sides	65
2	43.000	31.16	41.18	0.313	Slip Joint	72.000	16 Sides	65
3	44.000	22.56	32.82	0.250	Slip Joint	60.000	16 Sides	65
4	11.000	20.00	22.56	0.188	Butt Joint	0.000	16 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
128.000	128.000	3	Infinity T-Arm CT52XC030
128.000	128.000	3	Commscope NNVV-65B-R4
128.000	128.000	3	DragonWave A-ANT-18G-2-C
128.000	128.000	3	Argus LLPX310R
128.000	128.000	3	Alcatel-Lucent 1900 MHz 4X45
128.000	128.000	6	Alcatel-Lucent RRH2x50-08
128.000	128.000	3	DragonWave Horizon Compact
128.000	128.000	3	Nokia 2.5G MAA -
119.000	119.000	1	Round Platform w/ Handrails
118.000	118.000	3	Commscope NHHSS-65B-
118.000	118.000	3	Andrew LNX-6513DS-A1M
118.000	118.000	3	Commscope NHH-65B-R2B
118.000	120.000	2	RFS DB-T1-6Z-8AB-0Z
118.000	118.000	3	Samsung MT6407-77A
118.000	118.000	3	Samsung B5/B13 RRH-BR04C
118.000	118.000	3	Samsung B2/B66A RRH-BR049
118.000	118.000	3	Samsung RT4401-48A
110.000	110.000	3	Generic 48" x 12" Panel
109.000	109.000	1	Round Low Profile Platform
100.000	100.000	3	RFS APXVAALL24 43-U-NA20
100.000	100.000	3	Ericsson AIR32 B66Aa/B2a
100.000	100.000	3	Ericsson Air6449 B41
100.000	100.000	3	Ericsson RRUS 4415 B25
100.000	100.000	3	Ericsson RRUS 4415 B66
100.000	100.000	3	Ericsson Radio 4449 B71 B85A
100.000	100.000	3	Commscope SDX1926Q-43
98.000	98.000	1	PerfectVision PV-RP14M-HR-9-
90.000	90.000	1	Round Platform w/ Handrails
90.000	90.000	6	Ericsson RRUS-11
90.000	90.000	3	Ericsson RRUS-32 (77 lbs)
90.000	90.000	3	Ericsson RRUS E2 B29
90.000	90.000	12	CCI HPA-65R-BUU-H8
90.000	90.000	3	Ericsson RRUS 32 B66
90.000	90.000	3	Ericsson RRUS 32 B2
90.000	90.000	3	Ericsson RRUS 4478 B14
90.000	90.000	2	Raycap DC6-48-60-18-8F
90.000	90.000	2	Raycap DC6-48-60-0-8F
70.000	70.000	1	Generic 2' Std. Dish
50.000	50.000	1	Round Side Arm
50.000	50.000	1	Generic GPS



Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	50.000	1/2" Coax	No
0.000	70.000	1 5/8" Coax	Yes
0.000	90.000	0.35" (9mm) Fiber	No
0.000	90.000	0.39" (10mm)	No
0.000	90.000	0.76" (19.2mm) 8	No
0.000	90.000	0.78" (19.7mm) 8	No
0.000	90.000	1/2" Coax	No
0.000	90.000	2" conduit	No
0.000	100.0	1 5/8" Hybriflex	No
0.000	100.0	1 5/8" Hybriflex	No
0.000	100.0	7/8" Coax	No
0.000	110.0	1 5/8" Coax	No
0.000	118.0	1 5/8" Coax	Yes
0.000	118.0	1 5/8" Hybriflex	Yes
0.000	128.0	0.41" (10.3mm)	No
0.000	128.0	1 1/4" Hybriflex	No
0.000	128.0	1.7" (43.2mm)	No
0.000	128.0	1/2" Coax	No
0.000	128.0	2" Carflex Non-	No
0.000	128.0	5/8" Coax	No

Load Cases

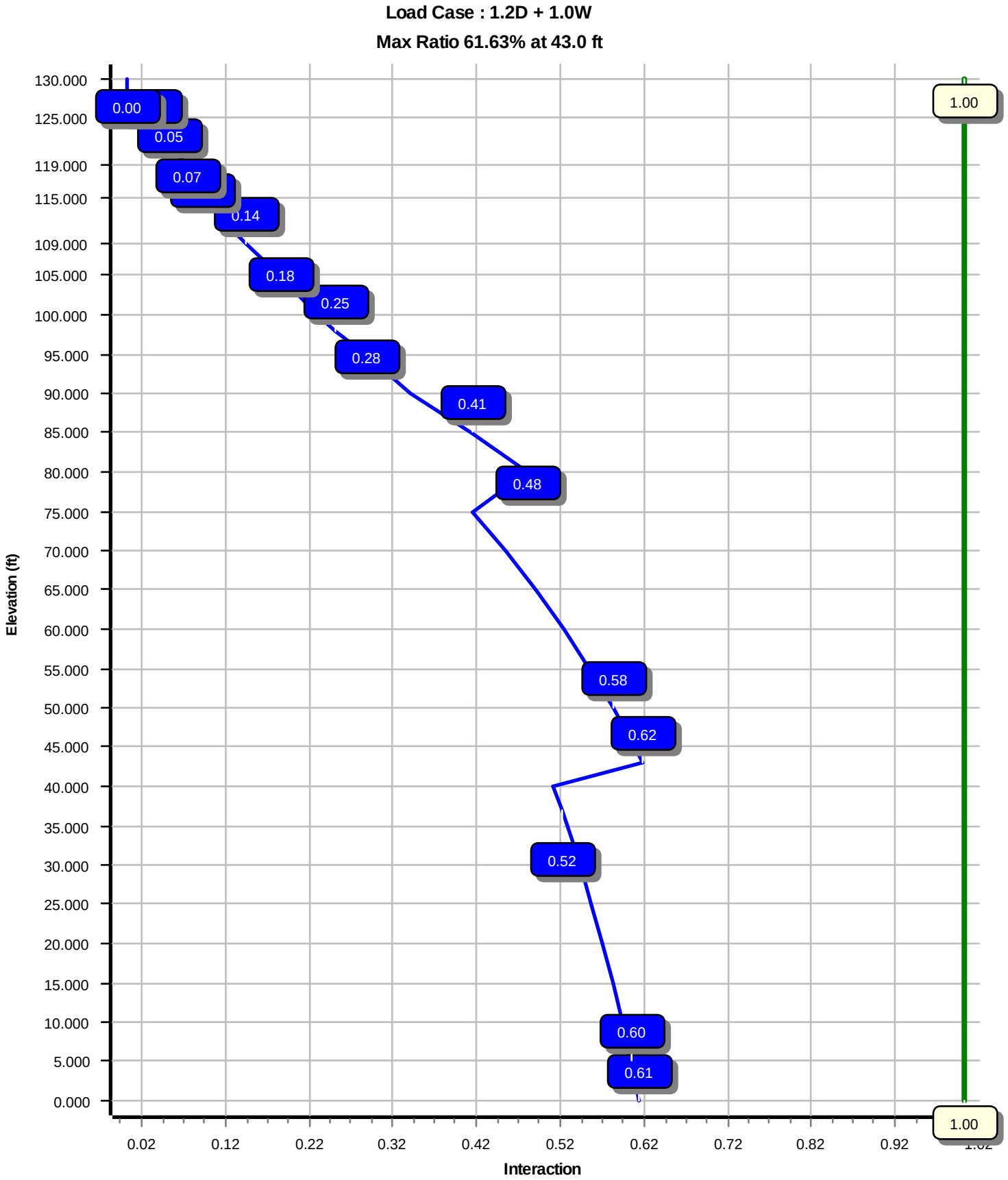
1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	2373.61	25.61	44.97
0.9D + 1.0W	2345.89	25.59	33.72
1.2D + 1.0Di + 1.0Wi	651.92	6.81	72.35
1.2D + 1.0Ev + 1.0Eh	117.09	1.13	44.93
0.9D - 1.0Ev + 1.0Eh	115.36	1.13	31.14
1.0D + 1.0W	545.20	5.92	37.51

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	70.00	4.714	0.665
1.0D + 1.0W	128.00	15.392	0.996


Load Case : 1.2D + 1.0W
Max Ratio 61.63% at 43.0 ft
Elevation (ft)
130.000
125.000
119.000
115.000
109.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.00
0.05
0.07
0.14
0.18
0.25
0.28
0.41
0.48
0.58
0.62
0.52
0.60
0.61
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: 370626 Code: ANSI/TIA-222-H

Site Name: East Hartford, CT Engineering Number:13677849_C3_03 6/14/2021 3:32:29 PM

Customer: T-MOBILE

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	130
Code :	ANSI/TIA-222-H	Base Diameter (in) :	49.19
Shape :	16 Sides	Top Diameter (in) :	20.00
Pole Type :	Taper	Taper (in/ft) :	0.233
Pole Manfacturer :	Glen Martin	Rotation (deg) :	0.00
Kd (non-service) :	0.95	Ke :	1.00

Ice & Wind Parameters

Exposure Category:	B	Design Wind Speed Without Ice:	118 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:	1.50 in
Crest Height:	0 ft	HMSL:	49.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	2.18				
T_L (sec):	6	p:	1	C_s:	0.030
S_s:	0.189	S_1:	0.055	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.202	S_{d1}:	0.088		

Load Cases

1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 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)
1-16	43.000	0.3750	65		0.00	7,667	49.19	0.00	58.39	17579.1	24.10	131.17	39.16	43.00	46.40	8819.0	18.78	104.43	0.233192
2-16	43.000	0.3125	65	Slip	72.00	5,231	41.18	37.00	40.75	8600.2	24.23	131.80	31.16	80.00	30.75	3696.6	17.84	99.71	0.233192
3-16	44.000	0.2500	65	Slip	60.00	3,277	32.82	75.00	25.98	3482.7	24.13	131.30	22.56	119.00	17.80	1119.5	15.96	90.26	0.233192
4-16	11.000	0.1875	65	Butt	0.00	472	22.56	119.00	13.38	846.7	21.95	120.35	20.00	130.00	11.85	587.7	19.23	106.67	0.233192
				Shaft Weight		16,647													

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
128.00	DragonWave Horizon Compact	3	0.80	0.000	11.50	0.721	0.50	33.65	1.282	0.50
128.00	Alcatel-Lucent RRH2x50-08	6	0.80	0.000	52.90	1.701	0.50	111.28	2.551	0.50
128.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	0.000	60.00	2.322	0.50	139.39	3.387	0.50
128.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.80	0.000	103.60	4.203	0.64	214.66	5.524	0.64
128.00	Argus LLPX310R	3	0.80	0.000	28.60	4.292	0.63	117.38	5.921	0.63
128.00	DragonWave A-ANT-18G-2-C	3	1.00	0.000	27.10	4.688	1.00	123.24	5.943	1.00
128.00	Infinity T-Arm CT52XC030	3	0.75	0.000	250.00	9.700	0.67	455.89	17.822	0.67
128.00	Commscope NNVV-65B-R4	3	0.80	0.000	77.40	12.271	0.64	324.93	15.033	0.64
119.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,268.19	51.124	1.00
118.00	Samsung RT4401-48A	3	0.80	0.000	18.60	0.996	0.50	44.98	1.664	0.50
118.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	146.73	2.757	0.50
118.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	126.19	2.757	0.50
118.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.61	181.19	6.193	0.61
118.00	RFS DB-T1-6Z-8AB-0Z	2	0.75	2.000	44.00	4.800	0.72	166.97	6.189	0.72
118.00	Andrew LNX-6513DS-A1M	3	0.80	0.000	32.60	5.846	0.69	164.78	7.911	0.69
118.00	Commscope NHHSS-65B-R2BT4	3	0.80	0.000	51.00	8.079	0.69	220.82	10.812	0.69
118.00	Commscope NHH-65B-R2B	3	0.80	0.000	43.70	8.079	0.69	214.05	10.801	0.69
110.00	Generic 48" x 12" Panel	3	0.80	0.000	30.00	5.067	0.66	139.93	6.884	0.66
109.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,127.66	40.300	1.00
100.00	Commscope SDX1926Q-43	3	0.75	0.000	6.20	0.242	0.50	14.47	0.580	0.50
100.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	132.81	2.467	0.50
100.00	Ericsson RRUS 4415 B66	3	0.75	0.000	46.00	1.650	0.50	87.62	2.467	0.50
100.00	Ericsson RRUS 4415 B25	3	0.75	0.000	46.00	1.842	0.50	93.13	2.704	0.50
100.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	235.00	7.208	0.63
100.00	Ericsson AIR32 B66Aa/B2a	3	0.75	0.000	132.20	6.510	0.71	285.62	8.616	0.71
100.00	RFS APXVAALL24 43-U-NA20	3	0.75	0.000	122.80	20.243	0.63	497.22	23.808	0.63
98.00	PerfectVision PV-RP14M-HR-9-	1	1.00	0.000	2,000.00	27.200	1.00	3,242.41	50.637	1.00
90.00	Raycap DC6-48-60-18-8F	2	0.75	0.000	20.00	1.260	1.00	69.99	1.885	1.00
90.00	Raycap DC6-48-60-0-8F	2	0.75	0.000	32.80	1.360	1.00	87.99	1.990	1.00
90.00	Ericsson RRUS 4478 B14	3	0.75	0.000	59.40	2.021	0.50	117.67	2.917	0.50
90.00	Ericsson RRUS 32 B2	3	0.75	0.000	53.00	2.743	0.50	122.83	3.853	0.50
90.00	Ericsson RRUS 32 B66	3	0.75	0.000	53.00	2.743	0.50	122.83	3.853	0.50
90.00	Ericsson RRUS E2 B29	3	0.75	0.000	60.00	3.145	0.50	136.79	4.245	0.50
90.00	Ericsson RRUS-32 (77 lbs)	3	0.75	0.000	77.00	3.314	0.50	169.34	4.533	0.50
90.00	Ericsson RRUS-11	6	0.75	0.000	55.00	3.792	0.50	140.24	5.011	0.50
90.00	CCI HPA-65R-BUU-H8	12	0.75	0.000	68.00	12.976	0.67	311.97	16.375	0.67
90.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,230.31	50.409	1.00
70.00	Generic 2' Std. Dish	1	1.00	0.000	14.00	5.228	1.00	65.26	6.660	1.00
50.00	Generic GPS	1	1.00	0.000	10.00	0.900	1.00	36.13	1.471	1.00
50.00	Round Side Arm	1	1.00	0.000	150.00	5.200	1.00	215.34	7.627	1.00
Totals	Num Loadings:40	118			14,746.00			32,077.38		

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	128.00	2	0.41" (10.3mm) Fiber	0.41	0.09	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	128.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	128.00	1	1.7" (43.2mm) Hybrid	1.70	1.78	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	128.00	3	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	128.00	2	2" Carflex Non-	2.36	0.68	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	128.00	3	5/8" Coax	0.86	0.15	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	118.00	6	1 5/8" Coax	1.98	0.82	N	5	1.00	1.00	270	1.00	Y	VERIZON WIRELESS
0.00	118.00	2	1 5/8" Hybriflex	1.98	1.30	N	2	1.00	1.00	250	1.00	Y	VERIZON WIRELESS
0.00	110.00	9	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL
0.00	100.00	2	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	100.00	1	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	100.00	6	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	90.00	3	0.35" (9mm) Fiber	0.35	0.05	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	90.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	90.00	8	0.76" (19.2mm) 8 AWG	0.76	0.53	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	90.00	8	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	90.00	3	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	90.00	6	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	70.00	1	1 5/8" Coax	1.98	0.82	N	1	0.00	0.00	300	0.00	Y	SPRINT NEXTEL
0.00	50.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	49.190	58.395	17,579.1	24.10	131.17	75.3	701.0	0.0	0.0
5.00		0.3750	48.024	57.000	16,349.3	23.48	128.06	76.0	667.8	0.0	981.7
10.00		0.3750	46.858	55.605	15,178.2	22.87	124.95	76.7	635.4	0.0	957.9
15.00		0.3750	45.692	54.211	14,064.5	22.25	121.85	77.4	603.8	0.0	934.2
20.00		0.3750	44.526	52.816	13,006.6	21.63	118.74	78.1	573.0	0.0	910.5
25.00		0.3750	43.360	51.421	12,003.1	21.01	115.63	78.8	543.0	0.0	886.7
30.00		0.3750	42.194	50.026	11,052.6	20.39	112.52	79.5	513.8	0.0	863.0
35.00		0.3750	41.028	48.631	10,153.7	19.77	109.41	80.2	485.4	0.0	839.3
37.00	Bot - Section 2	0.3750	40.562	48.074	9,808.2	19.53	108.17	80.5	474.3	0.0	329.1
40.00		0.3750	39.862	47.237	9,304.8	19.16	106.30	80.9	457.9	0.0	898.9
43.00	Top - Section 1	0.3125	39.788	39.352	7,746.9	23.34	127.32	76.2	381.9	0.0	883.2
45.00		0.3125	39.321	38.887	7,475.6	23.04	125.83	76.5	372.9	0.0	266.2
50.00		0.3125	38.155	37.725	6,825.1	22.30	122.10	77.3	350.9	0.0	651.7
55.00		0.3125	36.989	36.562	6,213.5	21.56	118.37	78.2	329.5	0.0	632.0
60.00		0.3125	35.823	35.400	5,639.5	20.81	114.64	79.0	308.8	0.0	612.2
65.00		0.3125	34.657	34.238	5,102.1	20.07	110.90	79.9	288.8	0.0	592.4
70.00		0.3125	33.492	33.075	4,599.9	19.33	107.17	80.7	269.4	0.0	572.6
75.00	Bot - Section 3	0.3125	32.326	31.913	4,131.8	18.59	103.44	81.5	250.7	0.0	552.9
80.00	Top - Section 2	0.2500	31.660	25.049	3,122.0	23.20	126.64	76.3	193.4	0.0	967.2
85.00		0.2500	30.494	24.119	2,787.1	22.27	121.97	77.4	179.3	0.0	418.3
90.00		0.2500	29.328	23.189	2,477.0	21.35	117.31	78.4	165.7	0.0	402.5
95.00		0.2500	28.162	22.260	2,190.8	20.42	112.65	79.5	152.6	0.0	386.6
98.00		0.2500	27.462	21.702	2,030.2	19.86	109.85	80.1	145.0	0.0	224.4
100.0		0.2500	26.996	21.330	1,927.6	19.49	107.98	80.5	140.1	0.0	146.4
105.0		0.2500	25.830	20.400	1,686.3	18.56	103.32	81.6	128.1	0.0	355.0
109.0		0.2500	24.897	19.656	1,508.5	17.82	99.59	82.4	118.8	0.0	272.6
110.0		0.2500	24.664	19.470	1,466.1	17.63	98.66	82.6	116.6	0.0	66.6
115.0		0.2500	23.498	18.540	1,265.9	16.71	93.99	82.6	105.7	0.0	323.4
118.0		0.2500	22.798	17.982	1,155.0	16.15	91.19	82.6	99.4	0.0	186.4
119.0	Top - Section 3	0.2500	22.565	17.796	1,119.5	15.96	90.26	82.6	97.3	0.0	60.9
119.0	Bot - Section 4	0.1875	22.565	13.385	846.7	21.95	120.35	77.7	73.6	0.0	
120.0		0.1875	22.332	13.245	820.5	21.70	119.10	78.0	72.1	0.0	45.3
125.0		0.1875	21.166	12.548	697.6	20.47	112.89	79.4	64.7	0.0	219.4
128.0		0.1875	20.466	12.129	630.1	19.72	109.15	80.3	60.4	0.0	126.0
130.0		0.1875	20.000	11.850	587.7	19.23	106.67	80.8	57.6	0.0	81.6
											16,646.8

Site Number: 370626 Code: ANSI/TIA-222-H

Site Name: East Hartford, CT Engineering Number:13677849_C3_03 6/14/2021 3:32:29 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0W 118 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		201.6	0.0					0.0	0.0	201.6	0.0	0.0	0.0
5.00		401.3	1,178.0					0.0	363.3	401.3	1,541.3	0.0	0.0
10.00		397.6	1,149.5					0.0	363.3	397.6	1,512.8	0.0	0.0
15.00		393.8	1,121.0					0.0	363.3	393.8	1,484.3	0.0	0.0
20.00		390.1	1,092.6					0.0	363.3	390.1	1,455.9	0.0	0.0
25.00		386.4	1,064.1					0.0	363.3	386.4	1,427.4	0.0	0.0
30.00		387.4	1,035.6					0.0	363.3	387.4	1,398.9	0.0	0.0
35.00		274.9	1,007.1					0.0	363.3	274.9	1,370.4	0.0	0.0
37.00	Bot - Section 2	203.2	394.9					0.0	145.3	203.2	540.2	0.0	0.0
40.00		248.8	1,078.7					0.0	218.0	248.8	1,296.6	0.0	0.0
43.00	Top - Section 1	209.1	1,059.9					0.0	218.0	209.1	1,277.8	0.0	0.0
45.00		296.2	319.5					0.0	145.3	296.2	464.8	0.0	0.0
50.00	Appurtenance(s)	429.3	782.1	183.9	0.0	0.0	192.0	0.0	363.3	613.2	1,337.4	0.0	0.0
55.00		437.3	758.3					0.0	362.4	437.3	1,120.7	0.0	0.0
60.00		444.4	734.6					0.0	362.4	444.4	1,097.0	0.0	0.0
65.00		450.9	710.9					0.0	362.4	450.9	1,073.3	0.0	0.0
70.00	Appurtenance(s)	456.7	687.2	173.5	0.0	0.0	16.8	0.0	362.4	630.2	1,066.4	0.0	0.0
75.00	Bot - Section 3	465.8	663.4					0.0	357.5	465.8	1,020.9	0.0	0.0
80.00	Top - Section 2	471.6	1,160.6					0.0	357.5	471.6	1,518.1	0.0	0.0
85.00		473.4	501.9					0.0	357.5	473.4	859.4	0.0	0.0
90.00	Appurtenance(s)	473.9	482.9	4,764.3	0.0	0.0	4,990.6	0.0	357.5	5,238.2	5,831.0	0.0	0.0
95.00		373.9	464.0					0.2	168.0	374.1	632.0	0.0	0.0
98.00	Appurtenance(s)	228.2	269.3	993.7	0.0	0.0	2,400.0	0.3	100.8	1,222.2	2,770.1	0.0	0.0
100.00	Appurtenance(s)	310.3	175.7	1,955.1	0.0	0.0	1,915.9	0.3	67.2	2,265.7	2,158.8	0.0	0.0
105.00		389.8	426.0					0.9	132.7	390.7	558.7	0.0	0.0
109.00	Appurtenance(s)	211.3	327.1	817.3	0.0	0.0	1,800.0	1.0	106.2	1,029.6	2,233.3	0.0	0.0
110.00	Appurtenance(s)	243.8	79.9	303.1	0.0	0.0	108.0	0.3	26.5	547.2	214.4	0.0	0.0
115.00		319.1	388.0					1.7	88.4	320.8	476.5	0.0	0.0
118.00	Appurtenance(s)	144.7	223.7	2,089.5	0.0	401.4	1,481.5	1.2	53.1	2,235.4	1,758.3	0.0	0.0
119.00	Top - Section 3	55.5	73.0	1,050.4	0.0	0.0	2,400.0	0.0	8.7	1,105.9	2,481.7	0.0	0.0
120.00		162.6	54.4					0.0	8.7	162.6	63.0	0.0	0.0
125.00		213.1	263.3					0.0	43.3	213.1	306.6	0.0	0.0
128.00	Appurtenance(s)	122.4	151.1	2,689.8	0.0	0.0	2,390.4	0.0	26.0	2,812.1	2,567.5	0.0	0.0
130.00		44.2	97.9					0.0	0.0	44.2	97.9	0.0	0.0
								Totals:		25,738.7	45,013.5	0.00	0.00

Load Case: 1.2D + 1.0W 118 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	-44.97	-25.61	0.00	-2,373.61	0.00	2,373.61	3,957.37	1,024.83	4,561.65	3,958.89	0.00	0.00	0.612
5.00	-43.35	-25.35	0.00	-2,245.56	0.00	2,245.56	3,898.74	1,000.35	4,346.37	3,806.37	0.10	-0.19	0.602
10.00	-41.75	-25.09	0.00	-2,118.81	0.00	2,118.81	3,838.36	975.87	4,136.30	3,655.00	0.40	-0.38	0.591
15.00	-40.19	-24.82	0.00	-1,993.39	0.00	1,993.39	3,776.22	951.40	3,931.42	3,504.92	0.90	-0.57	0.580
20.00	-38.65	-24.54	0.00	-1,869.31	0.00	1,869.31	3,712.32	926.92	3,731.76	3,356.23	1.60	-0.76	0.568
25.00	-37.15	-24.26	0.00	-1,746.61	0.00	1,746.61	3,646.67	902.44	3,537.29	3,209.08	2.51	-0.96	0.555
30.00	-35.67	-23.97	0.00	-1,625.30	0.00	1,625.30	3,579.26	877.96	3,348.03	3,063.58	3.62	-1.16	0.541
35.00	-34.25	-23.75	0.00	-1,505.44	0.00	1,505.44	3,510.10	853.48	3,163.97	2,919.87	4.95	-1.36	0.526
37.00	-33.67	-23.60	0.00	-1,457.93	0.00	1,457.93	3,481.94	843.69	3,091.80	2,862.92	5.54	-1.45	0.520
40.00	-32.33	-23.39	0.00	-1,387.14	0.00	1,387.14	3,439.17	829.00	2,985.11	2,778.07	6.49	-1.57	0.510
43.00	-31.02	-23.20	0.00	-1,316.98	0.00	1,316.98	2,697.55	690.63	2,485.92	2,181.75	7.51	-1.69	0.616
45.00	-30.50	-22.97	0.00	-1,270.59	0.00	1,270.59	2,677.43	682.47	2,427.54	2,139.70	8.24	-1.78	0.606
50.00	-29.09	-22.43	0.00	-1,155.75	0.00	1,155.75	2,625.91	662.07	2,284.61	2,035.31	10.23	-2.01	0.580
55.00	-27.90	-22.06	0.00	-1,043.60	0.00	1,043.60	2,572.64	641.67	2,146.02	1,932.08	12.46	-2.24	0.552
60.00	-26.74	-21.68	0.00	-933.29	0.00	933.29	2,517.61	621.27	2,011.77	1,830.13	14.92	-2.46	0.522
65.00	-25.61	-21.28	0.00	-824.90	0.00	824.90	2,460.82	600.87	1,881.85	1,729.60	17.62	-2.69	0.489
70.00	-24.50	-20.69	0.00	-718.51	0.00	718.51	2,402.27	580.47	1,756.27	1,630.62	20.55	-2.90	0.452
75.00	-23.43	-20.25	0.00	-615.08	0.00	615.08	2,341.97	560.07	1,635.02	1,533.30	23.70	-3.11	0.412
80.00	-21.88	-19.77	0.00	-513.83	0.00	513.83	1,720.57	439.61	1,259.08	1,107.20	27.06	-3.30	0.479
85.00	-20.98	-19.31	0.00	-415.01	0.00	415.01	1,679.48	423.29	1,167.35	1,040.33	30.62	-3.48	0.413
90.00	-15.45	-13.76	0.00	-318.46	0.00	318.46	1,636.64	406.98	1,079.09	974.39	34.37	-3.67	0.337
95.00	-14.82	-13.38	0.00	-249.64	0.00	249.64	1,592.04	390.66	994.30	909.51	38.30	-3.83	0.285
98.00	-12.12	-11.99	0.00	-209.50	0.00	209.50	1,564.44	380.86	945.09	871.14	40.73	-3.92	0.249
100.00	-10.11	-9.60	0.00	-185.52	0.00	185.52	1,545.69	374.34	912.98	845.81	42.38	-3.98	0.227
105.00	-9.56	-9.18	0.00	-137.54	0.00	137.54	1,497.58	358.02	835.13	783.43	46.61	-4.09	0.183
109.00	-7.40	-8.00	0.00	-100.80	0.00	100.80	1,457.82	344.96	775.35	734.55	50.08	-4.18	0.143
110.00	-7.22	-7.45	0.00	-92.80	0.00	92.80	1,446.53	341.70	760.75	721.90	50.95	-4.19	0.134
115.00	-6.76	-7.10	0.00	-55.56	0.00	55.56	1,377.44	325.38	689.83	654.26	55.38	-4.27	0.090
118.00	-5.18	-4.74	0.00	-33.87	0.00	33.87	1,335.99	315.59	648.95	615.27	58.07	-4.30	0.059
119.00	-2.78	-3.45	0.00	-29.13	0.00	29.13	1,322.18	312.33	635.60	602.54	58.97	-4.30	0.051
119.00	-2.78	-3.45	0.00	-29.13	0.00	29.13	936.41	234.90	479.32	429.14	58.97	-4.30	0.071
120.00	-2.73	-3.28	0.00	-25.68	0.00	25.68	929.99	232.45	469.38	421.71	59.87	-4.31	0.064
125.00	-2.44	-3.05	0.00	-9.25	0.00	9.25	896.83	220.21	421.26	385.08	64.40	-4.34	0.027
128.00	-0.09	-0.05	0.00	-0.10	0.00	0.10	876.09	212.87	393.64	363.52	67.13	-4.35	0.000
130.00	0.00	-0.04	0.00	0.00	0.00	0.00	861.91	207.97	375.75	349.34	68.95	-4.35	0.000

Site Number: 370626 Code: ANSI/TIA-222-H

Site Name: East Hartford, CT Engineering Number:13677849_C3_03 6/14/2021 3:32:32 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.0W 118 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

		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		201.6	0.0					0.0	0.0	201.6	0.0	0.0	0.0
5.00		401.3	883.5					0.0	272.5	401.3	1,156.0	0.0	0.0
10.00		397.6	862.1					0.0	272.5	397.6	1,134.6	0.0	0.0
15.00		393.8	840.8					0.0	272.5	393.8	1,113.3	0.0	0.0
20.00		390.1	819.4					0.0	272.5	390.1	1,091.9	0.0	0.0
25.00		386.4	798.1					0.0	272.5	386.4	1,070.5	0.0	0.0
30.00		387.4	776.7					0.0	272.5	387.4	1,049.2	0.0	0.0
35.00		274.9	755.3					0.0	272.5	274.9	1,027.8	0.0	0.0
37.00	Bot - Section 2	203.2	296.2					0.0	109.0	203.2	405.1	0.0	0.0
40.00		248.8	809.0					0.0	163.5	248.8	972.5	0.0	0.0
43.00	Top - Section 1	209.1	794.9					0.0	163.5	209.1	958.4	0.0	0.0
45.00		296.2	239.6					0.0	109.0	296.2	348.6	0.0	0.0
50.00	Appurtenance(s)	429.3	586.6	183.9	0.0	0.0	144.0	0.0	272.5	613.2	1,003.0	0.0	0.0
55.00		437.3	568.8					0.0	271.8	437.3	840.6	0.0	0.0
60.00		444.4	551.0					0.0	271.8	444.4	822.8	0.0	0.0
65.00		450.9	533.2					0.0	271.8	450.9	805.0	0.0	0.0
70.00	Appurtenance(s)	456.7	515.4	173.5	0.0	0.0	12.6	0.0	271.8	630.2	799.8	0.0	0.0
75.00	Bot - Section 3	465.8	497.6					0.0	268.1	465.8	765.7	0.0	0.0
80.00	Top - Section 2	471.6	870.5					0.0	268.1	471.6	1,138.6	0.0	0.0
85.00		473.4	376.4					0.0	268.1	473.4	644.6	0.0	0.0
90.00	Appurtenance(s)	473.9	362.2	4,764.3	0.0	0.0	3,742.9	0.0	268.1	5,238.2	4,373.2	0.0	0.0
95.00		373.9	348.0					0.2	126.0	374.1	474.0	0.0	0.0
98.00	Appurtenance(s)	228.2	201.9	993.7	0.0	0.0	1,800.0	0.3	75.6	1,222.2	2,077.5	0.0	0.0
100.00	Appurtenance(s)	310.3	131.8	1,955.1	0.0	0.0	1,436.9	0.3	50.4	2,265.7	1,619.1	0.0	0.0
105.00		389.8	319.5					0.9	99.5	390.7	419.0	0.0	0.0
109.00	Appurtenance(s)	211.3	245.3	817.3	0.0	0.0	1,350.0	1.0	79.6	1,029.6	1,675.0	0.0	0.0
110.00	Appurtenance(s)	243.8	59.9	303.1	0.0	0.0	81.0	0.3	19.9	547.2	160.8	0.0	0.0
115.00		319.1	291.0					1.7	66.3	320.8	357.3	0.0	0.0
118.00	Appurtenance(s)	144.7	167.8	2,089.5	0.0	401.4	1,111.1	1.2	39.8	2,235.4	1,318.7	0.0	0.0
119.00	Top - Section 3	55.5	54.8	1,050.4	0.0	0.0	1,800.0	0.0	6.5	1,105.9	1,861.3	0.0	0.0
120.00		162.6	40.8					0.0	6.5	162.6	47.3	0.0	0.0
125.00		213.1	197.5					0.0	32.5	213.1	230.0	0.0	0.0
128.00	Appurtenance(s)	122.4	113.4	2,689.8	0.0	0.0	1,792.8	0.0	19.5	2,812.1	1,925.7	0.0	0.0
130.00		44.2	73.4					0.0	0.0	44.2	73.4	0.0	0.0
								Totals:		25,738.7	33,760.1	0.00	0.00

Load Case: 0.9D + 1.0W — 118 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	-33.72	-25.59	0.00	-2,345.89	0.00	2,345.89	3,957.37	1,024.83	4,561.65	3,958.89	0.00	0.00	0.602
5.00	-32.48	-25.29	0.00	-2,217.93	0.00	2,217.93	3,898.74	1,000.35	4,346.37	3,806.37	0.10	-0.18	0.592
10.00	-31.27	-24.99	0.00	-2,091.46	0.00	2,091.46	3,838.36	975.87	4,136.30	3,655.00	0.39	-0.37	0.581
15.00	-30.07	-24.69	0.00	-1,966.49	0.00	1,966.49	3,776.22	951.40	3,931.42	3,504.92	0.89	-0.56	0.570
20.00	-28.90	-24.39	0.00	-1,843.03	0.00	1,843.03	3,712.32	926.92	3,731.76	3,356.23	1.58	-0.75	0.558
25.00	-27.76	-24.08	0.00	-1,721.09	0.00	1,721.09	3,646.67	902.44	3,537.29	3,209.08	2.47	-0.95	0.545
30.00	-26.63	-23.77	0.00	-1,600.69	0.00	1,600.69	3,579.26	877.96	3,348.03	3,063.58	3.57	-1.15	0.531
35.00	-25.55	-23.53	0.00	-1,481.86	0.00	1,481.86	3,510.10	853.48	3,163.97	2,919.87	4.88	-1.35	0.516
37.00	-25.11	-23.36	0.00	-1,434.80	0.00	1,434.80	3,481.94	843.69	3,091.80	2,862.92	5.46	-1.43	0.509
40.00	-24.10	-23.14	0.00	-1,364.71	0.00	1,364.71	3,439.17	829.00	2,985.11	2,778.07	6.40	-1.55	0.499
43.00	-23.10	-22.95	0.00	-1,295.29	0.00	1,295.29	2,697.55	690.63	2,485.92	2,181.75	7.41	-1.67	0.603
45.00	-22.70	-22.70	0.00	-1,249.40	0.00	1,249.40	2,677.43	682.47	2,427.54	2,139.70	8.13	-1.75	0.594
50.00	-21.63	-22.14	0.00	-1,135.90	0.00	1,135.90	2,625.91	662.07	2,284.61	2,035.31	10.09	-1.98	0.567
55.00	-20.72	-21.75	0.00	-1,025.20	0.00	1,025.20	2,572.64	641.67	2,146.02	1,932.08	12.28	-2.20	0.540
60.00	-19.84	-21.35	0.00	-916.43	0.00	916.43	2,517.61	621.27	2,011.77	1,830.13	14.71	-2.43	0.510
65.00	-18.98	-20.94	0.00	-809.66	0.00	809.66	2,460.82	600.87	1,881.85	1,729.60	17.37	-2.64	0.477
70.00	-18.13	-20.34	0.00	-704.97	0.00	704.97	2,402.27	580.47	1,756.27	1,630.62	20.26	-2.86	0.441
75.00	-17.33	-19.89	0.00	-603.29	0.00	603.29	2,341.97	560.07	1,635.02	1,533.30	23.36	-3.06	0.402
80.00	-16.15	-19.41	0.00	-503.84	0.00	503.84	1,720.57	439.61	1,259.08	1,107.20	26.66	-3.25	0.466
85.00	-15.48	-18.95	0.00	-406.80	0.00	406.80	1,679.48	423.29	1,167.35	1,040.33	30.16	-3.42	0.402
90.00	-11.39	-13.48	0.00	-312.06	0.00	312.06	1,636.64	406.98	1,079.09	974.39	33.85	-3.61	0.328
95.00	-10.92	-13.10	0.00	-244.64	0.00	244.64	1,592.04	390.66	994.30	909.51	37.71	-3.77	0.277
98.00	-8.91	-11.76	0.00	-205.32	0.00	205.32	1,564.44	380.86	945.09	871.14	40.11	-3.85	0.242
100.00	-7.44	-9.40	0.00	-181.81	0.00	181.81	1,545.69	374.34	912.98	845.81	41.73	-3.91	0.220
105.00	-7.03	-8.99	0.00	-134.82	0.00	134.82	1,497.58	358.02	835.13	783.43	45.89	-4.03	0.177
109.00	-5.43	-7.85	0.00	-98.85	0.00	98.85	1,457.82	344.96	775.35	734.55	49.30	-4.10	0.139
110.00	-5.30	-7.30	0.00	-91.00	0.00	91.00	1,446.53	341.70	760.75	721.90	50.16	-4.12	0.130
115.00	-4.96	-6.96	0.00	-54.51	0.00	54.51	1,377.44	325.38	689.83	654.26	54.51	-4.19	0.087
118.00	-3.81	-4.63	0.00	-33.24	0.00	33.24	1,335.99	315.59	648.95	615.27	57.16	-4.22	0.057
119.00	-2.03	-3.39	0.00	-28.61	0.00	28.61	1,322.18	312.33	635.60	602.54	58.04	-4.23	0.049
119.00	-2.03	-3.39	0.00	-28.61	0.00	28.61	936.41	234.90	479.32	429.14	58.04	-4.23	0.069
120.00	-2.00	-3.23	0.00	-25.22	0.00	25.22	929.99	232.45	469.38	421.71	58.93	-4.24	0.062
125.00	-1.78	-3.00	0.00	-9.09	0.00	9.09	896.83	220.21	421.26	385.08	63.38	-4.27	0.026
128.00	-0.07	-0.05	0.00	-0.10	0.00	0.10	876.09	212.87	393.64	363.52	66.06	-4.27	0.000
130.00	0.00	-0.04	0.00	0.00	0.00	0.00	861.91	207.97	375.75	349.34	67.85	-4.27	0.000

Site Number: 370626 Code: ANSI/TIA-222-H

Site Name: East Hartford, CT Engineering Number:13677849_C3_03 6/14/2021 3:32:36 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.50 in Radial Ice 23 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		60.6	0.0					0.0	0.0	60.6	0.0	0.0	0.0
5.00		120.1	1,538.3					0.0	484.4	120.1	2,022.7	0.0	0.0
10.00		117.8	1,543.2					0.0	496.3	117.8	2,039.5	0.0	0.0
15.00		115.3	1,525.9					0.0	502.5	115.3	2,028.4	0.0	0.0
20.00		112.7	1,501.3					0.0	506.7	112.7	2,008.0	0.0	0.0
25.00		110.1	1,472.9					0.0	510.0	110.1	1,982.9	0.0	0.0
30.00		108.7	1,442.1					0.0	512.8	108.7	1,954.9	0.0	0.0
35.00		76.3	1,409.7					0.0	515.1	76.3	1,924.8	0.0	0.0
37.00	Bot - Section 2	55.7	555.8					0.0	206.6	55.7	762.4	0.0	0.0
40.00		67.5	1,321.3					0.0	310.5	67.5	1,631.8	0.0	0.0
43.00	Top - Section 1	56.5	1,300.3					0.0	311.1	56.5	1,611.5	0.0	0.0
45.00		79.5	479.0					0.0	207.8	79.5	686.7	0.0	0.0
50.00	Appurtenance(s)	113.7	1,172.5	49.2	0.0	0.0	268.8	0.0	520.5	162.9	1,961.8	0.0	0.0
55.00		113.6	1,141.2					0.0	521.1	113.6	1,662.4	0.0	0.0
60.00		113.2	1,109.5					0.4	522.5	113.6	1,632.0	0.0	0.0
65.00		112.4	1,077.2					1.3	523.8	113.7	1,601.0	0.0	0.0
70.00	Appurtenance(s)	111.3	1,044.5	39.7	0.0	0.0	60.1	2.3	524.9	153.3	1,629.6	0.0	0.0
75.00	Bot - Section 3	110.8	1,011.5					3.3	507.3	114.1	1,518.8	0.0	0.0
80.00	Top - Section 2	110.0	1,504.3					4.3	508.2	114.3	2,012.5	0.0	0.0
85.00		108.3	835.7					4.9	509.1	113.2	1,344.8	0.0	0.0
90.00	Appurtenance(s)	106.3	806.6	1,204.0	0.0	0.0	10,067.3	6.0	509.9	1,316.3	11,383.8	0.0	0.0
95.00		83.7	777.3					7.1	321.2	90.8	1,098.5	0.0	0.0
98.00	Appurtenance(s)	51.5	453.7	332.2	0.0	0.0	3,456.4	4.8	193.1	388.5	4,103.2	0.0	0.0
100.00	Appurtenance(s)	70.8	297.0	441.9	0.0	0.0	3,992.4	3.4	128.9	516.1	4,418.3	0.0	0.0
105.00		89.6	717.9					9.4	287.4	99.0	1,005.4	0.0	0.0
109.00	Appurtenance(s)	49.0	553.8	272.5	0.0	0.0	2,334.7	8.3	230.4	329.9	3,118.9	0.0	0.0
110.00	Appurtenance(s)	57.4	136.2	73.9	0.0	0.0	389.0	2.2	57.7	133.5	582.9	0.0	0.0
115.00		75.6	657.9					11.7	244.5	87.3	902.4	0.0	0.0
118.00	Appurtenance(s)	37.1	381.7	506.9	0.0	92.9	3,525.2	7.6	147.0	551.6	4,053.8	0.0	0.0
119.00	Top - Section 3	18.3	125.3	354.5	0.0	0.0	3,482.2	0.0	8.7	372.8	3,616.2	0.0	0.0
120.00		53.9	106.2					0.0	8.7	53.9	114.8	0.0	0.0
125.00		70.8	510.4					0.0	43.3	70.8	553.7	0.0	0.0
128.00	Appurtenance(s)	41.7	295.3	686.4	0.0	0.0	4,870.5	0.0	26.0	728.1	5,191.8	0.0	0.0
130.00		15.7	192.2					0.0	0.0	15.7	192.2	0.0	0.0
								Totals:		6,833.98	72,352.3	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.50 in Radial Ice 23 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	-72.35	-6.81	0.00	-651.92	0.00	651.92	3,957.37	1,024.83	4,561.65	3,958.89	0.00	0.00	0.183
5.00	-70.32	-6.75	0.00	-617.89	0.00	617.89	3,898.74	1,000.35	4,346.37	3,806.37	0.03	-0.05	0.180
10.00	-68.27	-6.69	0.00	-584.14	0.00	584.14	3,838.36	975.87	4,136.30	3,655.00	0.11	-0.10	0.178
15.00	-66.24	-6.63	0.00	-550.69	0.00	550.69	3,776.22	951.40	3,931.42	3,504.92	0.25	-0.16	0.175
20.00	-64.23	-6.58	0.00	-517.53	0.00	517.53	3,712.32	926.92	3,731.76	3,356.23	0.44	-0.21	0.172
25.00	-62.24	-6.52	0.00	-484.65	0.00	484.65	3,646.67	902.44	3,537.29	3,209.08	0.69	-0.27	0.168
30.00	-60.28	-6.46	0.00	-452.07	0.00	452.07	3,579.26	877.96	3,348.03	3,063.58	1.00	-0.32	0.164
35.00	-58.35	-6.41	0.00	-419.79	0.00	419.79	3,510.10	853.48	3,163.97	2,919.87	1.37	-0.38	0.160
37.00	-57.58	-6.38	0.00	-406.97	0.00	406.97	3,481.94	843.69	3,091.80	2,862.92	1.53	-0.40	0.159
40.00	-55.95	-6.33	0.00	-387.84	0.00	387.84	3,439.17	829.00	2,985.11	2,778.07	1.79	-0.44	0.156
43.00	-54.33	-6.29	0.00	-368.85	0.00	368.85	2,697.55	690.63	2,485.92	2,181.75	2.08	-0.47	0.189
45.00	-53.64	-6.25	0.00	-356.27	0.00	356.27	2,677.43	682.47	2,427.54	2,139.70	2.28	-0.49	0.187
50.00	-51.68	-6.12	0.00	-325.04	0.00	325.04	2,625.91	662.07	2,284.61	2,035.31	2.83	-0.56	0.179
55.00	-50.01	-6.05	0.00	-294.43	0.00	294.43	2,572.64	641.67	2,146.02	1,932.08	3.45	-0.62	0.172
60.00	-48.37	-5.97	0.00	-264.18	0.00	264.18	2,517.61	621.27	2,011.77	1,830.13	4.14	-0.69	0.164
65.00	-46.77	-5.89	0.00	-234.33	0.00	234.33	2,460.82	600.87	1,881.85	1,729.60	4.89	-0.75	0.155
70.00	-45.13	-5.76	0.00	-204.90	0.00	204.90	2,402.27	580.47	1,756.27	1,630.62	5.71	-0.81	0.145
75.00	-43.61	-5.67	0.00	-176.11	0.00	176.11	2,341.97	560.07	1,635.02	1,533.30	6.59	-0.87	0.134
80.00	-41.59	-5.56	0.00	-147.78	0.00	147.78	1,720.57	439.61	1,259.08	1,107.20	7.53	-0.93	0.158
85.00	-40.25	-5.46	0.00	-119.98	0.00	119.98	1,679.48	423.29	1,167.35	1,040.33	8.53	-0.98	0.139
90.00	-28.88	-3.97	0.00	-92.68	0.00	92.68	1,636.64	406.98	1,079.09	974.39	9.58	-1.03	0.113
95.00	-27.78	-3.88	0.00	-72.82	0.00	72.82	1,592.04	390.66	994.30	909.51	10.69	-1.08	0.098
98.00	-23.69	-3.42	0.00	-61.19	0.00	61.19	1,564.44	380.86	945.09	871.14	11.37	-1.10	0.085
100.00	-19.28	-2.83	0.00	-54.35	0.00	54.35	1,545.69	374.34	912.98	845.81	11.84	-1.12	0.077
105.00	-18.28	-2.72	0.00	-40.22	0.00	40.22	1,497.58	358.02	835.13	783.43	13.03	-1.16	0.064
109.00	-15.16	-2.33	0.00	-29.36	0.00	29.36	1,457.82	344.96	775.35	734.55	14.01	-1.18	0.050
110.00	-14.58	-2.18	0.00	-27.03	0.00	27.03	1,446.53	341.70	760.75	721.90	14.26	-1.18	0.048
115.00	-13.68	-2.08	0.00	-16.10	0.00	16.10	1,377.44	325.38	689.83	654.26	15.51	-1.21	0.035
118.00	-9.64	-1.45	0.00	-9.76	0.00	9.76	1,335.99	315.59	648.95	615.27	16.27	-1.21	0.023
119.00	-6.03	-1.00	0.00	-8.32	0.00	8.32	1,322.18	312.33	635.60	602.54	16.53	-1.22	0.018
119.00	-6.03	-1.00	0.00	-8.32	0.00	8.32	936.41	234.90	479.32	429.14	16.53	-1.22	0.026
120.00	-5.92	-0.94	0.00	-7.32	0.00	7.32	929.99	232.45	469.38	421.71	16.78	-1.22	0.024
125.00	-5.37	-0.86	0.00	-2.62	0.00	2.62	896.83	220.21	421.26	385.08	18.06	-1.23	0.013
128.00	-0.19	-0.02	0.00	-0.04	0.00	0.04	876.09	212.87	393.64	363.52	18.83	-1.23	0.000
130.00	0.00	-0.02	0.00	0.00	0.00	0.00	861.91	207.97	375.75	349.34	19.35	-1.23	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 Iterations

Gust Response Factor :1.10
Dead Load 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		46.6	0.0					0.0	0.0	46.6	0.0	0.0	0.0
5.00		92.8	981.7					0.0	302.7	92.8	1,284.4	0.0	0.0
10.00		92.0	957.9					0.0	302.7	92.0	1,260.7	0.0	0.0
15.00		91.1	934.2					0.0	302.7	91.1	1,236.9	0.0	0.0
20.00		90.2	910.5					0.0	302.7	90.2	1,213.2	0.0	0.0
25.00		89.4	886.7					0.0	302.7	89.4	1,189.5	0.0	0.0
30.00		89.6	863.0					0.0	302.7	89.6	1,165.8	0.0	0.0
35.00		63.6	839.3					0.0	302.7	63.6	1,142.0	0.0	0.0
37.00	Bot - Section 2	47.0	329.1					0.0	121.1	47.0	450.2	0.0	0.0
40.00		57.5	898.9					0.0	181.7	57.5	1,080.5	0.0	0.0
43.00	Top - Section 1	48.4	883.2					0.0	181.7	48.4	1,064.9	0.0	0.0
45.00		68.5	266.2					0.0	121.1	68.5	387.3	0.0	0.0
50.00	Appurtenance(s)	99.3	651.7	42.5	0.0	0.0	160.0	0.0	302.7	141.8	1,114.5	0.0	0.0
55.00		101.2	632.0					0.0	302.0	101.2	934.0	0.0	0.0
60.00		102.8	612.2					0.0	302.0	102.8	914.2	0.0	0.0
65.00		104.3	592.4					0.0	302.0	104.3	894.4	0.0	0.0
70.00	Appurtenance(s)	105.7	572.6	40.1	0.0	0.0	14.0	0.0	302.0	145.8	888.6	0.0	0.0
75.00	Bot - Section 3	107.8	552.9					0.0	297.9	107.8	850.8	0.0	0.0
80.00	Top - Section 2	109.1	967.2					0.0	297.9	109.1	1,265.1	0.0	0.0
85.00		109.5	418.3					0.0	297.9	109.5	716.2	0.0	0.0
90.00	Appurtenance(s)	109.6	402.5	1,102.1	0.0	0.0	4,158.8	0.0	297.9	1,211.8	4,859.2	0.0	0.0
95.00		86.5	386.6					0.0	140.0	86.5	526.6	0.0	0.0
98.00	Appurtenance(s)	52.8	224.4	229.9	0.0	0.0	2,000.0	0.1	84.0	282.7	2,308.4	0.0	0.0
100.00	Appurtenance(s)	71.8	146.4	452.3	0.0	0.0	1,596.6	0.1	56.0	524.1	1,799.0	0.0	0.0
105.00		90.2	355.0					0.2	110.6	90.4	465.6	0.0	0.0
109.00	Appurtenance(s)	48.9	272.6	189.1	0.0	0.0	1,500.0	0.2	88.5	238.2	1,861.1	0.0	0.0
110.00	Appurtenance(s)	56.4	66.6	70.1	0.0	0.0	90.0	0.1	22.1	126.6	178.7	0.0	0.0
115.00		73.8	323.4					0.4	73.7	74.2	397.1	0.0	0.0
118.00	Appurtenance(s)	33.5	186.4	483.4	0.0	92.8	1,234.6	0.3	44.2	517.1	1,465.2	0.0	0.0
119.00	Top - Section 3	12.8	60.9	243.0	0.0	0.0	2,000.0	0.0	7.2	255.8	2,068.1	0.0	0.0
120.00		37.6	45.3					0.0	7.2	37.6	52.5	0.0	0.0
125.00		49.3	219.4					0.0	36.1	49.3	255.5	0.0	0.0
128.00	Appurtenance(s)	28.3	126.0	622.2	0.0	0.0	1,992.0	0.0	21.7	650.5	2,139.6	0.0	0.0
130.00		10.2	81.6					0.0	0.0	10.2	81.6	0.0	0.0
								Totals:		5,954.17	37,511.2	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 Iterations

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.51	-5.92	0.00	-545.20	0.00	545.20	3,957.37	1,024.83	4,561.65	3,958.89	0.00	0.00	0.147
5.00	-36.22	-5.86	0.00	-515.59	0.00	515.59	3,898.74	1,000.35	4,346.37	3,806.37	0.02	-0.04	0.145
10.00	-34.96	-5.79	0.00	-486.31	0.00	486.31	3,838.36	975.87	4,136.30	3,655.00	0.09	-0.09	0.142
15.00	-33.71	-5.72	0.00	-457.37	0.00	457.37	3,776.22	951.40	3,931.42	3,504.92	0.21	-0.13	0.139
20.00	-32.50	-5.65	0.00	-428.76	0.00	428.76	3,712.32	926.92	3,731.76	3,356.23	0.37	-0.18	0.137
25.00	-31.30	-5.59	0.00	-400.50	0.00	400.50	3,646.67	902.44	3,537.29	3,209.08	0.58	-0.22	0.133
30.00	-30.13	-5.51	0.00	-372.57	0.00	372.57	3,579.26	877.96	3,348.03	3,063.58	0.83	-0.27	0.130
35.00	-28.99	-5.46	0.00	-345.00	0.00	345.00	3,510.10	853.48	3,163.97	2,919.87	1.14	-0.31	0.126
37.00	-28.54	-5.42	0.00	-334.08	0.00	334.08	3,481.94	843.69	3,091.80	2,862.92	1.27	-0.33	0.125
40.00	-27.45	-5.37	0.00	-317.80	0.00	317.80	3,439.17	829.00	2,985.11	2,778.07	1.49	-0.36	0.122
43.00	-26.39	-5.33	0.00	-301.68	0.00	301.68	2,697.55	690.63	2,485.92	2,181.75	1.72	-0.39	0.148
45.00	-26.00	-5.27	0.00	-291.03	0.00	291.03	2,677.43	682.47	2,427.54	2,139.70	1.89	-0.41	0.146
50.00	-24.88	-5.15	0.00	-264.65	0.00	264.65	2,625.91	662.07	2,284.61	2,035.31	2.35	-0.46	0.140
55.00	-23.94	-5.06	0.00	-238.92	0.00	238.92	2,572.64	641.67	2,146.02	1,932.08	2.86	-0.51	0.133
60.00	-23.02	-4.97	0.00	-213.62	0.00	213.62	2,517.61	621.27	2,011.77	1,830.13	3.42	-0.56	0.126
65.00	-22.13	-4.87	0.00	-188.78	0.00	188.78	2,460.82	600.87	1,881.85	1,729.60	4.04	-0.62	0.118
70.00	-21.23	-4.74	0.00	-164.41	0.00	164.41	2,402.27	580.47	1,756.27	1,630.62	4.71	-0.66	0.110
75.00	-20.38	-4.64	0.00	-140.72	0.00	140.72	2,341.97	560.07	1,635.02	1,533.30	5.44	-0.71	0.101
80.00	-19.11	-4.52	0.00	-117.55	0.00	117.55	1,720.57	439.61	1,259.08	1,107.20	6.21	-0.76	0.117
85.00	-18.40	-4.42	0.00	-94.93	0.00	94.93	1,679.48	423.29	1,167.35	1,040.33	7.02	-0.80	0.102
90.00	-13.55	-3.15	0.00	-72.84	0.00	72.84	1,636.64	406.98	1,079.09	974.39	7.88	-0.84	0.083
95.00	-13.03	-3.06	0.00	-57.10	0.00	57.10	1,592.04	390.66	994.30	909.51	8.78	-0.88	0.071
98.00	-10.72	-2.74	0.00	-47.93	0.00	47.93	1,564.44	380.86	945.09	871.14	9.34	-0.90	0.062
100.00	-8.93	-2.19	0.00	-42.44	0.00	42.44	1,545.69	374.34	912.98	845.81	9.72	-0.91	0.056
105.00	-8.47	-2.10	0.00	-31.47	0.00	31.47	1,497.58	358.02	835.13	783.43	10.69	-0.94	0.046
109.00	-6.61	-1.83	0.00	-23.07	0.00	23.07	1,457.82	344.96	775.35	734.55	11.48	-0.96	0.036
110.00	-6.43	-1.70	0.00	-21.24	0.00	21.24	1,446.53	341.70	760.75	721.90	11.68	-0.96	0.034
115.00	-6.04	-1.62	0.00	-12.72	0.00	12.72	1,377.44	325.38	689.83	654.26	12.70	-0.98	0.024
118.00	-4.58	-1.08	0.00	-7.76	0.00	7.76	1,335.99	315.59	648.95	615.27	13.32	-0.98	0.016
119.00	-2.52	-0.79	0.00	-6.67	0.00	6.67	1,322.18	312.33	635.60	602.54	13.52	-0.99	0.013
119.00	-2.52	-0.79	0.00	-6.67	0.00	6.67	936.41	234.90	479.32	429.14	13.52	-0.99	0.018
120.00	-2.46	-0.75	0.00	-5.88	0.00	5.88	929.99	232.45	469.38	421.71	13.73	-0.99	0.017
125.00	-2.21	-0.70	0.00	-2.12	0.00	2.12	896.83	220.21	421.26	385.08	14.77	-0.99	0.008
128.00	-0.08	-0.01	0.00	-0.02	0.00	0.02	876.09	212.87	393.64	363.52	15.39	-1.00	0.000
130.00	0.00	-0.01	0.00	0.00	0.00	0.00	861.91	207.97	375.75	349.34	15.81	-1.00	0.000

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period (S_s):	0.19
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}):	0.20
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):	2.18
Redundancy Factor (p):	1.00
Seismic Force Distribution Exponent (k):	1.84
Total Unfactored Dead Load:	37.51 k
Seismic Base Shear (E):	1.13 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)
33	129.00	82	626	0.005	6	101
32	126.50	148	1,092	0.009	10	183
31	122.50	256	1,781	0.015	17	317
30	119.50	53	350	0.003	3	65
29	118.50	68	447	0.004	4	84
28	116.50	231	1,466	0.012	14	286
27	112.50	397	2,367	0.020	22	492
26	109.50	89	503	0.004	5	110
25	107.00	361	1,963	0.016	18	448
24	102.50	466	2,338	0.019	22	577
23	99.00	202	954	0.008	9	251
22	96.50	308	1,386	0.012	13	382
21	92.50	527	2,189	0.018	21	653
20	87.50	700	2,629	0.022	25	869
19	82.50	716	2,412	0.020	23	888
18	77.50	1,265	3,798	0.032	36	1,569
17	72.50	851	2,259	0.019	21	1,055
16	67.50	875	2,036	0.017	19	1,085
15	62.50	894	1,807	0.015	17	1,109
14	57.50	914	1,584	0.013	15	1,134
13	52.50	934	1,369	0.011	13	1,158
12	47.50	954	1,164	0.010	11	1,184
11	44.00	387	410	0.003	4	480
10	41.50	1,065	1,013	0.008	9	1,321
9	38.50	1,081	895	0.007	8	1,340

8	36.00	450	330	0.003	3	558
7	32.50	1,142	692	0.006	6	1,416
6	27.50	1,166	520	0.004	5	1,446
5	22.50	1,189	367	0.003	3	1,475
4	17.50	1,213	235	0.002	2	1,505
3	12.50	1,237	129	0.001	1	1,534
2	7.50	1,261	51	0.000	0	1,564
1	2.50	1,284	7	0.000	0	1,593
DragonWave Horizon C	128.00	34	261	0.002	2	43
Alcatel-Lucent RRH2x	128.00	317	2,399	0.020	22	394
Alcatel-Lucent 1900	128.00	180	1,361	0.011	13	223
Nokia 2.5G MAA - AAH	128.00	311	2,349	0.020	22	385
Argus LLPX310R	128.00	86	649	0.005	6	106
DragonWave A-ANT-18G	128.00	81	615	0.005	6	101
Infinity T-Arm CT52X	128.00	750	5,669	0.047	53	930
Commscope NNVV-65B-R	128.00	232	1,755	0.015	16	288
Round Platform w/ Ha	119.00	2,000	13,220	0.110	124	2,481
Samsung RT4401-48A	118.00	56	363	0.003	3	69
Samsung B2/B66A RRH-	118.00	253	1,648	0.014	15	314
Samsung B5/B13 RRH-B	118.00	211	1,373	0.011	13	262
Samsung MT6407-77A	118.00	245	1,593	0.013	15	304
RFS DB-T1-6Z-8AB-0Z	118.00	88	573	0.005	5	109
Andrew LNX-6513DS-A1	118.00	98	636	0.005	6	121
Commscope NHHSS-65B-	118.00	153	996	0.008	9	190
Commscope NHH-65B-R2	118.00	131	853	0.007	8	163
Generic 48" x 12" Pa	110.00	90	515	0.004	5	112
Round Low Profile Pl	109.00	1,500	8,436	0.070	79	1,860
Commscope SDX1926Q-4	100.00	19	89	0.001	1	23
Ericsson Radio 4449	100.00	225	1,080	0.009	10	279
Ericsson RRUS 4415 B	100.00	138	662	0.006	6	171
Ericsson RRUS 4415 B	100.00	138	662	0.006	6	171
Ericsson Air6449 B41	100.00	312	1,497	0.012	14	387
Ericsson AIR32 B66Aa	100.00	397	1,903	0.016	18	492
RFS APXVAALL24 43-U-	100.00	368	1,768	0.015	17	457
PerfectVision PV-RP1	98.00	2,000	9,247	0.077	87	2,481
Raycap DC6-48-60-18-	90.00	40	158	0.001	1	50
Raycap DC6-48-60-0-8	90.00	66	259	0.002	2	81
Ericsson RRUS 4478 B	90.00	178	704	0.006	7	221
Ericsson RRUS 32 B2	90.00	159	629	0.005	6	197
Ericsson RRUS 32 B66	90.00	159	629	0.005	6	197
Ericsson RRUS E2 B29	90.00	180	712	0.006	7	223
Ericsson RRUS-32 (77	90.00	231	913	0.008	9	287
Ericsson RRUS-11	90.00	330	1,304	0.011	12	409
CCI HPA-65R-BUU-H8	90.00	816	3,226	0.027	30	1,012
Round Platform w/ Ha	90.00	2,000	7,906	0.066	74	2,481
Generic 2' Std. Dish	70.00	14	35	0.000	0	17
Generic GPS	50.00	10	13	0.000	0	12
Round Side Arm	50.00	150	201	0.002	2	186
		37,511	120,027	1.000	1,125	46,526

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)
33	129.00	82	626	0.005	6	70
32	126.50	148	1,092	0.009	10	127
31	122.50	256	1,781	0.015	17	220
30	119.50	53	350	0.003	3	45
29	118.50	68	447	0.004	4	59
28	116.50	231	1,466	0.012	14	198
27	112.50	397	2,367	0.020	22	341

26	109.50	89	503	0.004	5	76
25	107.00	361	1,963	0.016	18	310
24	102.50	466	2,338	0.019	22	400
23	99.00	202	954	0.008	9	174
22	96.50	308	1,386	0.012	13	265
21	92.50	527	2,189	0.018	21	453
20	87.50	700	2,629	0.022	25	602
19	82.50	716	2,412	0.020	23	616
18	77.50	1,265	3,798	0.032	36	1,088
17	72.50	851	2,259	0.019	21	731
16	67.50	875	2,036	0.017	19	752
15	62.50	894	1,807	0.015	17	769
14	57.50	914	1,584	0.013	15	786
13	52.50	934	1,369	0.011	13	803
12	47.50	954	1,164	0.010	11	821
11	44.00	387	410	0.003	4	333
10	41.50	1,065	1,013	0.008	9	915
9	38.50	1,081	895	0.007	8	929
8	36.00	450	330	0.003	3	387
7	32.50	1,142	692	0.006	6	982
6	27.50	1,166	520	0.004	5	1,002
5	22.50	1,189	367	0.003	3	1,023
4	17.50	1,213	235	0.002	2	1,043
3	12.50	1,237	129	0.001	1	1,063
2	7.50	1,261	51	0.000	0	1,084
1	2.50	1,284	7	0.000	0	1,104
DragonWave Horizon C	128.00	34	261	0.002	2	30
Alcatel-Lucent RRH2x	128.00	317	2,399	0.020	22	273
Alcatel-Lucent 1900	128.00	180	1,361	0.011	13	155
Nokia 2.5G MAA - AAH	128.00	311	2,349	0.020	22	267
Argus LLPX310R	128.00	86	649	0.005	6	74
DragonWave A-ANT-18G	128.00	81	615	0.005	6	70
Infinity T-Arm CT52X	128.00	750	5,669	0.047	53	645
Commscope NNVV-65B-R	128.00	232	1,755	0.015	16	200
Round Platform w/ Ha	119.00	2,000	13,220	0.110	124	1,719
Samsung RT4401-48A	118.00	56	363	0.003	3	48
Samsung B2/B66A RRH-	118.00	253	1,648	0.014	15	218
Samsung B5/B13 RRH-B	118.00	211	1,373	0.011	13	181
Samsung MT6407-77A	118.00	245	1,593	0.013	15	210
RFS DB-T1-6Z-8AB-0Z	118.00	88	573	0.005	5	76
Andrew LNX-6513DS-A1	118.00	98	636	0.005	6	84
Commscope NHHSS-65B-	118.00	153	996	0.008	9	132
Commscope NHH-65B-R2	118.00	131	853	0.007	8	113
Generic 48" x 12" Pa	110.00	90	515	0.004	5	77
Round Low Profile Pl	109.00	1,500	8,436	0.070	79	1,290
Commscope SDX1926Q-4	100.00	19	89	0.001	1	16
Ericsson Radio 4449	100.00	225	1,080	0.009	10	193
Ericsson RRUS 4415 B	100.00	138	662	0.006	6	119
Ericsson RRUS 4415 B	100.00	138	662	0.006	6	119
Ericsson Air6449 B41	100.00	312	1,497	0.012	14	268
Ericsson AIR32 B66Aa	100.00	397	1,903	0.016	18	341
RFS APXVAALL24 43-U-	100.00	368	1,768	0.015	17	317
PerfectVision PV-RP1	98.00	2,000	9,247	0.077	87	1,719
Raycap DC6-48-60-18-	90.00	40	158	0.001	1	34
Raycap DC6-48-60-0-8	90.00	66	259	0.002	2	56
Ericsson RRUS 4478 B	90.00	178	704	0.006	7	153
Ericsson RRUS 32 B2	90.00	159	629	0.005	6	137
Ericsson RRUS 32 B66	90.00	159	629	0.005	6	137
Ericsson RRUS E2 B29	90.00	180	712	0.006	7	155
Ericsson RRUS-32 (77	90.00	231	913	0.008	9	199
Ericsson RRUS-11	90.00	330	1,304	0.011	12	284
CCI HPA-65R-BUU-H8	90.00	816	3,226	0.027	30	701
Round Platform w/ Ha	90.00	2,000	7,906	0.066	74	1,719
Generic 2' Std. Dish	70.00	14	35	0.000	0	12

Generic GPS	50.00	10	13	0.000	0	9
Round Side Arm	50.00	150	201	0.002	2	129
		37,511	120,027	1.000	1,125	32,248

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	-44.93	-1.13	0.00	-117.09	0.00	117.09	3,957.37	1,024.83	4,561.65	3,958.89	0.00	0.00	0.041
5.00	-43.37	-1.13	0.00	-111.45	0.00	111.45	3,898.74	1,000.35	4,346.37	3,806.37	0.00	-0.01	0.040
10.00	-41.83	-1.14	0.00	-105.77	0.00	105.77	3,838.36	975.87	4,136.30	3,655.00	0.02	-0.02	0.040
15.00	-40.33	-1.14	0.00	-100.07	0.00	100.07	3,776.22	951.40	3,931.42	3,504.92	0.04	-0.03	0.039
20.00	-38.85	-1.15	0.00	-94.35	0.00	94.35	3,712.32	926.92	3,731.76	3,356.23	0.08	-0.04	0.039
25.00	-37.41	-1.15	0.00	-88.62	0.00	88.62	3,646.67	902.44	3,537.29	3,209.08	0.12	-0.05	0.038
30.00	-35.99	-1.15	0.00	-82.88	0.00	82.88	3,579.26	877.96	3,348.03	3,063.58	0.18	-0.06	0.037
35.00	-35.43	-1.15	0.00	-77.15	0.00	77.15	3,510.10	853.48	3,163.97	2,919.87	0.25	-0.07	0.037
37.00	-34.09	-1.14	0.00	-74.86	0.00	74.86	3,481.94	843.69	3,091.80	2,862.92	0.28	-0.07	0.036
40.00	-32.77	-1.13	0.00	-71.44	0.00	71.44	3,439.17	829.00	2,985.11	2,778.07	0.32	-0.08	0.035
43.00	-32.29	-1.13	0.00	-68.04	0.00	68.04	2,697.55	690.63	2,485.92	2,181.75	0.38	-0.09	0.043
45.00	-31.11	-1.12	0.00	-65.78	0.00	65.78	2,677.43	682.47	2,427.54	2,139.70	0.41	-0.09	0.042
50.00	-29.75	-1.11	0.00	-60.17	0.00	60.17	2,625.91	662.07	2,284.61	2,035.31	0.51	-0.10	0.041
55.00	-28.62	-1.10	0.00	-54.61	0.00	54.61	2,572.64	641.67	2,146.02	1,932.08	0.63	-0.11	0.039
60.00	-27.51	-1.09	0.00	-49.10	0.00	49.10	2,517.61	621.27	2,011.77	1,830.13	0.75	-0.13	0.038
65.00	-26.42	-1.07	0.00	-43.67	0.00	43.67	2,460.82	600.87	1,881.85	1,729.60	0.89	-0.14	0.036
70.00	-25.35	-1.05	0.00	-38.32	0.00	38.32	2,402.27	580.47	1,756.27	1,630.62	1.04	-0.15	0.034
75.00	-23.78	-1.02	0.00	-33.06	0.00	33.06	2,341.97	560.07	1,635.02	1,533.30	1.20	-0.16	0.032
80.00	-22.89	-1.00	0.00	-27.98	0.00	27.98	1,720.57	439.61	1,259.08	1,107.20	1.38	-0.17	0.039
85.00	-22.02	-0.97	0.00	-23.00	0.00	23.00	1,679.48	423.29	1,167.35	1,040.33	1.56	-0.18	0.035
90.00	-16.21	-0.78	0.00	-18.14	0.00	18.14	1,636.64	406.98	1,079.09	974.39	1.76	-0.19	0.029
95.00	-15.83	-0.77	0.00	-14.24	0.00	14.24	1,592.04	390.66	994.30	909.51	1.96	-0.20	0.026
98.00	-13.10	-0.66	0.00	-11.93	0.00	11.93	1,564.44	380.86	945.09	871.14	2.09	-0.21	0.022
100.00	-10.54	-0.56	0.00	-10.60	0.00	10.60	1,545.69	374.34	912.98	845.81	2.17	-0.21	0.019
105.00	-10.09	-0.54	0.00	-7.79	0.00	7.79	1,497.58	358.02	835.13	783.43	2.40	-0.22	0.017
109.00	-8.12	-0.45	0.00	-5.62	0.00	5.62	1,457.82	344.96	775.35	734.55	2.58	-0.22	0.013
110.00	-7.52	-0.42	0.00	-5.17	0.00	5.17	1,446.53	341.70	760.75	721.90	2.63	-0.22	0.012
115.00	-7.23	-0.41	0.00	-3.05	0.00	3.05	1,377.44	325.38	689.83	654.26	2.86	-0.22	0.010
118.00	-5.62	-0.32	0.00	-1.82	0.00	1.82	1,335.99	315.59	648.95	615.27	3.00	-0.23	0.007
119.00	-3.07	-0.19	0.00	-1.50	0.00	1.50	1,322.18	312.33	635.60	602.54	3.05	-0.23	0.005
119.00	-3.07	-0.19	0.00	-1.50	0.00	1.50	936.41	234.90	479.32	429.14	3.05	-0.23	0.007
120.00	-2.75	-0.17	0.00	-1.31	0.00	1.31	929.99	232.45	469.38	421.71	3.10	-0.23	0.006
125.00	-2.57	-0.16	0.00	-0.47	0.00	0.47	896.83	220.21	421.26	385.08	3.33	-0.23	0.004
128.00	0.00	0.00	0.00	0.00	0.00	0.00	876.09	212.87	393.64	363.52	3.48	-0.23	0.000
130.00	0.00	0.00	0.00	0.00	0.00	0.00	861.91	207.97	375.75	349.34	3.57	-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	-31.14	-1.13	0.00	-115.36	0.00	115.36	3,957.37	1,024.83	4,561.65	3,958.89	0.00	0.00	0.037
5.00	-30.06	-1.13	0.00	-109.73	0.00	109.73	3,898.74	1,000.35	4,346.37	3,806.37	0.00	-0.01	0.037
10.00	-29.00	-1.13	0.00	-104.07	0.00	104.07	3,838.36	975.87	4,136.30	3,655.00	0.02	-0.02	0.036
15.00	-27.95	-1.14	0.00	-98.39	0.00	98.39	3,776.22	951.40	3,931.42	3,504.92	0.04	-0.03	0.035
20.00	-26.93	-1.14	0.00	-92.71	0.00	92.71	3,712.32	926.92	3,731.76	3,356.23	0.08	-0.04	0.035
25.00	-25.93	-1.14	0.00	-87.02	0.00	87.02	3,646.67	902.44	3,537.29	3,209.08	0.12	-0.05	0.034
30.00	-24.95	-1.13	0.00	-81.34	0.00	81.34	3,579.26	877.96	3,348.03	3,063.58	0.18	-0.06	0.034
35.00	-24.56	-1.13	0.00	-75.67	0.00	75.67	3,510.10	853.48	3,163.97	2,919.87	0.24	-0.07	0.033
37.00	-23.63	-1.13	0.00	-73.41	0.00	73.41	3,481.94	843.69	3,091.80	2,862.92	0.27	-0.07	0.032
40.00	-22.71	-1.12	0.00	-70.03	0.00	70.03	3,439.17	829.00	2,985.11	2,778.07	0.32	-0.08	0.032
43.00	-22.38	-1.12	0.00	-66.68	0.00	66.68	2,697.55	690.63	2,485.92	2,181.75	0.37	-0.08	0.039
45.00	-21.56	-1.11	0.00	-64.45	0.00	64.45	2,677.43	682.47	2,427.54	2,139.70	0.41	-0.09	0.038
50.00	-20.62	-1.09	0.00	-58.92	0.00	58.92	2,625.91	662.07	2,284.61	2,035.31	0.51	-0.10	0.037
55.00	-19.83	-1.08	0.00	-53.45	0.00	53.45	2,572.64	641.67	2,146.02	1,932.08	0.62	-0.11	0.035
60.00	-19.06	-1.07	0.00	-48.05	0.00	48.05	2,517.61	621.27	2,011.77	1,830.13	0.74	-0.12	0.034
65.00	-18.31	-1.05	0.00	-42.71	0.00	42.71	2,460.82	600.87	1,881.85	1,729.60	0.88	-0.13	0.032
70.00	-17.57	-1.03	0.00	-37.46	0.00	37.46	2,402.27	580.47	1,756.27	1,630.62	1.02	-0.15	0.030
75.00	-16.48	-0.99	0.00	-32.32	0.00	32.32	2,341.97	560.07	1,635.02	1,533.30	1.18	-0.16	0.028
80.00	-15.87	-0.97	0.00	-27.34	0.00	27.34	1,720.57	439.61	1,259.08	1,107.20	1.35	-0.17	0.034
85.00	-15.26	-0.95	0.00	-22.48	0.00	22.48	1,679.48	423.29	1,167.35	1,040.33	1.53	-0.18	0.031
90.00	-11.24	-0.76	0.00	-17.74	0.00	17.74	1,636.64	406.98	1,079.09	974.39	1.72	-0.19	0.025
95.00	-10.97	-0.75	0.00	-13.92	0.00	13.92	1,592.04	390.66	994.30	909.51	1.92	-0.20	0.022
98.00	-9.08	-0.65	0.00	-11.67	0.00	11.67	1,564.44	380.86	945.09	871.14	2.05	-0.20	0.019
100.00	-7.30	-0.55	0.00	-10.37	0.00	10.37	1,545.69	374.34	912.98	845.81	2.13	-0.20	0.017
105.00	-6.99	-0.53	0.00	-7.62	0.00	7.62	1,497.58	358.02	835.13	783.43	2.35	-0.21	0.014
109.00	-5.63	-0.44	0.00	-5.50	0.00	5.50	1,457.82	344.96	775.35	734.55	2.53	-0.22	0.011
110.00	-5.21	-0.41	0.00	-5.05	0.00	5.05	1,446.53	341.70	760.75	721.90	2.58	-0.22	0.011
115.00	-5.01	-0.40	0.00	-2.98	0.00	2.98	1,377.44	325.38	689.83	654.26	2.80	-0.22	0.008
118.00	-3.89	-0.32	0.00	-1.78	0.00	1.78	1,335.99	315.59	648.95	615.27	2.94	-0.22	0.006
119.00	-2.13	-0.18	0.00	-1.47	0.00	1.47	1,322.18	312.33	635.60	602.54	2.99	-0.22	0.004
119.00	-2.13	-0.18	0.00	-1.47	0.00	1.47	936.41	234.90	479.32	429.14	2.99	-0.22	0.006
120.00	-1.91	-0.16	0.00	-1.28	0.00	1.28	929.99	232.45	469.38	421.71	3.04	-0.22	0.005
125.00	-1.78	-0.15	0.00	-0.46	0.00	0.46	896.83	220.21	421.26	385.08	3.27	-0.22	0.003
128.00	0.00	0.00	0.00	0.00	0.00	0.00	876.09	212.87	393.64	363.52	3.41	-0.22	0.000
130.00	0.00	0.00	0.00	0.00	0.00	0.00	861.91	207.97	375.75	349.34	3.50	-0.22	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	25.61	0.00	44.97	0.00	0.00	2373.61	43.00	0.62
0.9D + 1.0W	25.59	0.00	33.72	0.00	0.00	2345.89	43.00	0.60
1.2D + 1.0Di + 1.0Wi	6.81	0.00	72.35	0.00	0.00	651.92	43.00	0.19
1.2D + 1.0Ev + 1.0Eh	1.13	0.00	44.93	0.00	0.00	117.09	43.00	0.04
0.9D - 1.0Ev + 1.0Eh	1.13	0.00	31.14	0.00	0.00	115.36	43.00	0.04
1.0D + 1.0W	5.92	0.00	37.51	0.00	0.00	545.20	43.00	0.15

Base Plate & Anchor Rod Analysis

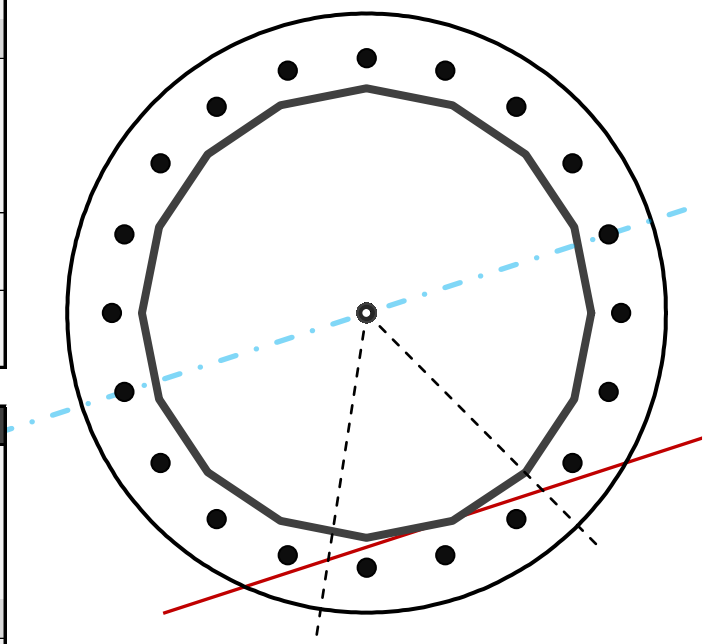
Pole Dimensions		
Number of Sides	16	-
Diameter	49.19	in
Thickness	3/8	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2,373.6	k-ft
Axial, Pu	45.0	k
Shear, Vu	25.6	k
Neutral Axis	198	°

Report Capacities		
Component	Capacity	Result
Base Plate	23%	Pass
Anchor Rods	52%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	67	in
Thickness	2 1/2	in
Grade	A572-55	
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	514.7	k
Bending Stress, ϕMn	2236.3	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, ø	2 1/2	in
Bolt Circle	57	in
Grade	Other	
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Spacing	9.0	in
Orientation Offset	0	°
Applied Force, Pu	106.9	k
Anchor Rods, ϕPn	209.9	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	25.6	2373.6	1.00
Anchor Rod Forces	25.6	2373.6	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	57.1400	3.5713	0.1680		17022.58
Bolt	4.9087	3.9988	1.2725	4	29583.19
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	Round	-
Diameter, D	67	in
Thickness, t	2.5	in
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Base Plate Chord	45.490	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	20	-
Rod Diameter, d	2.5	in
Bolt Circle, BC	57	in
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Applied Axial, Pu	106.9	k
Applied Shear, Vu	0.6	k
Compressive Capacity, ϕPn	209.9	k
Tensile Capacity, ϕRnt	0.509	OK
Interaction Capacity	0.515	OK

External Base Plate		
Chord Length AA	33.736	in
Additional AA	5.000	in
Section Modulus, Z	60.524	in^3
Applied Moment, Mu	514.7	k-ft
Bending Capacity, ϕMn	2996.0	k-ft
Capacity, Mu/ϕMn	0.172	OK
Chord Length AB	32.278	in
Additional AB	5.000	in
Section Modulus, Z	58.247	in^3
Applied Moment, Mu	364.7	k-ft
Bending Capacity, ϕMn	2883.2	k-ft
Capacity, Mu/ϕMn	0.126	OK
Bend Line Length	28.914	in
Additional Bend Line	0.000	in
Section Modulus, Z	45.178	in^3
Applied Moment, Mu	514.7	k-ft
Bending Capacity, ϕMn	2236.3	k-ft
Capacity, Mu/ϕMn	0.230	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		

Flange Plate Analysis

Flange Plate

Plate Type	***Flange***	***@ 119 ft***
Pole Diameter	22	in
Pole Thickness	0.1875	in
Plate Diameter	31	in
Plate Thickness	1	in
Plate Fy	36	ksi
Weld Length	0.3125	in
f_s Resistance	61.38	k-in
Applied	9.95	k-in

Code Rev.	***H***
Moment	29.1 k-ft
Axial	2.8 k

Required Flange Thickness:
0.40 in OK

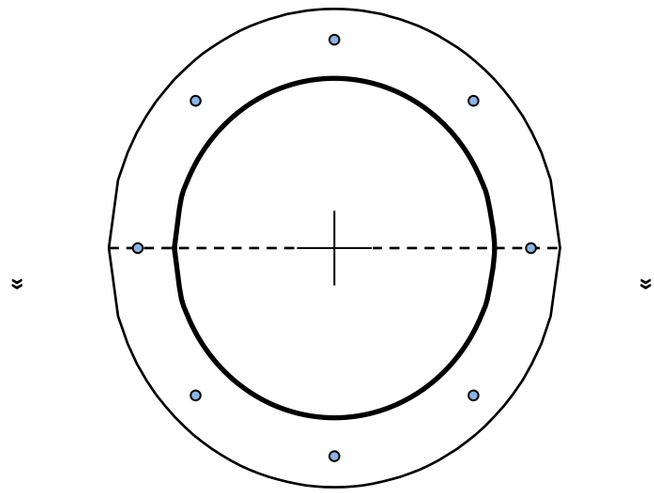
Date	6/14/2021
Engineer	L. Morin
Site #	370626
Carrier	T-MOBILE

Stiffeners

#	

Bolts

#	***8***	
Bolt Circle	27	in
(R)adial / (S)quare	R	
Bolt Gap	6	in
Diameter	1	in
Hole Diameter	1.125	in
Type	A325	
Fy	92	ksi
Fu	120	ksi
f_s Resistance	54.52	k
Applied	6.12	k



Reinforcement

#	

Plate Stress Ratio:
16% Pass

Bolt Stress Ratio:
11% Pass

Extra Bolts O

#	

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

Kimley»Horn

Antenna Mount Analysis Report

ATC Site Name	:	**East Hartford**
ATC Site Number	:	**370626**
Engineering Number	:	**13677849_C8_02**
Mount Elevation	:	**100 ft**
Carrier	:	**T-MOBILE**
Carrier Site Name	:	**Crown E. Hartford Monopole**
Carrier Site Number	:	**CTHA505A**
Site Location	:	**148 Roberts St.** **East Hartford, CT 06108** **41.77330556, -72.61341667**
County	:	**Hartford**
Date	:	**June 2, 2021**
Max Usage	:	**65%**
Result	:	**Pass**

Prepared By:
Saja Alkhafaji
E.I.T

Reviewed By:
Brian Brewer
P.E.

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

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for T-MOBILE at 100 ft.

Supporting Documents

Spec Sheet	SitePro1 Drawing #RMQP-4XX, dated 07/09/2015 SitePro1 Drawing # HRK12, dated 07/13/2014
Tower Analysis	ATC by TEP Engineering Number 12948437_C3_02, dated 08/22/2019
RFDS	T-MOBILE CTHA505A_Anchor_5_draft, dated 04/27/2021
Photos	Site Photos, dated 11/11/2019

Analysis

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

Basic Wind Speed:	118 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.5" 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 = 0.189, S_1 = 0.055
Site Class:	D - Stiff soil.
Live Loads:	Lm = 500 lbs., Lv = 250 lbs.

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

Install new SitePro1 RMQP platform mount with HRK12 handrail kit at 100-ft.

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
100	100	3	Ericsson Air6449 B41
		3	RFS APXVAALL24 43-U-NA20
		3	Ericsson AIR32 B66Aa/B2a
		3	Commscope SDX1926Q-43
		3	Ericsson Radio 4449 B71 B85A
		3	Ericsson RRUS 4415 B66
		3	Ericsson RRUS 4415 B25

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Connection Plates	65%	Pass
Mount Pipes	55%	Pass
Stand-Off Horizontals	53%	Pass
Support Rails	27%	Pass
Corner Plates	26%	Pass
Face Horizontals	23%	Pass
Grating Angles	11%	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)	50.42
Ground Effect Factor, K_e	1.00

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	100.00
Structure Height (ft)	130.50
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)	118.00
Velocity Pressure Coeff., K_z	0.99
Velocity Pressure, q_z **(w/o Ice)** (psf)	33.40

Ice Load Summary	
Basic Wind Speed w/ Ice, V_i (mph)	50.00
Design Ice Thick. (ASCE 7-16) , t_i (in)	1.5
Velocity Pressure, q_z **(w/ Ice)** (psf)	6.00
Escalated Ice Thick. @ Mount, t_{iz} (in)	1.68

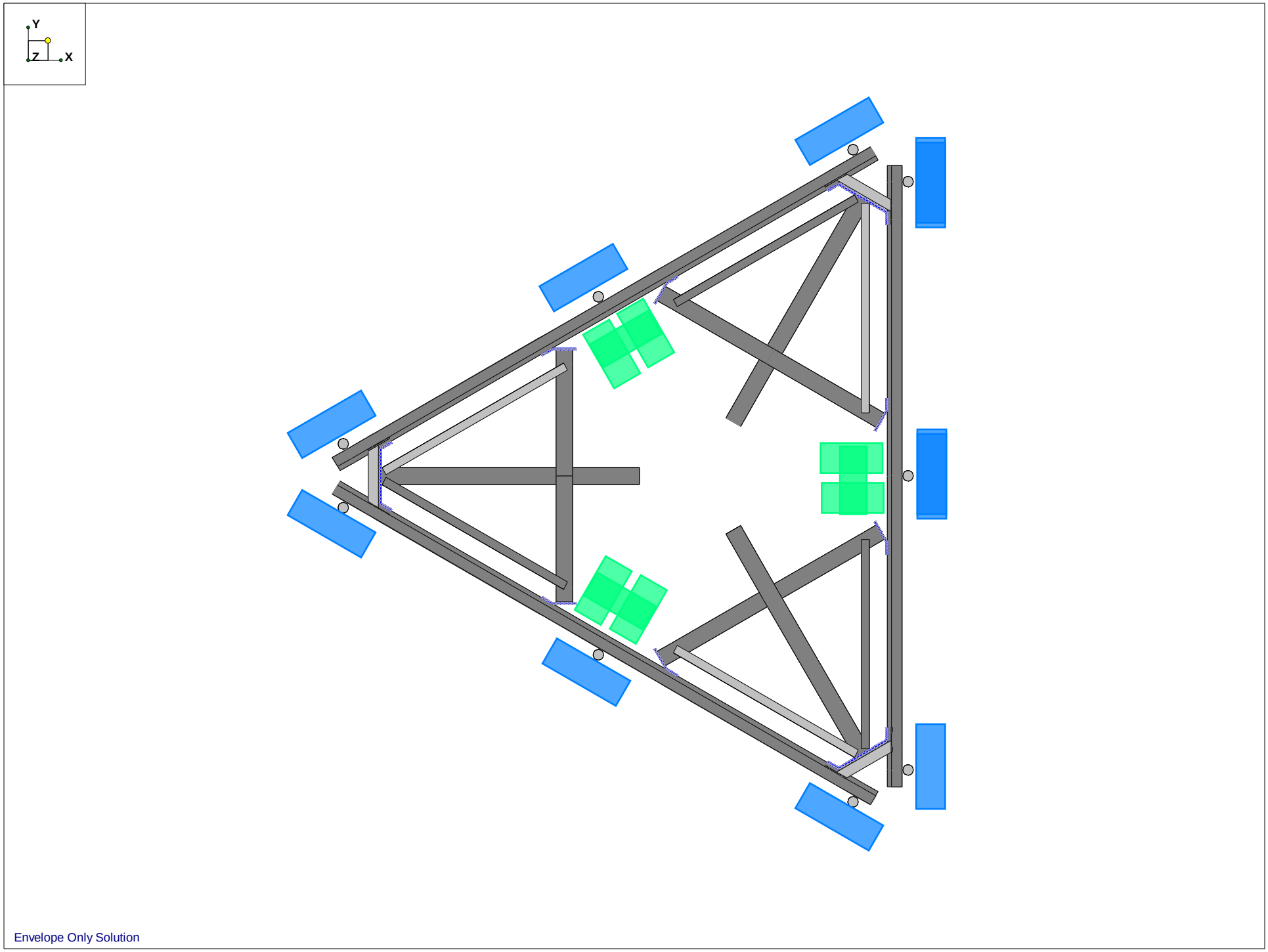
Seismic Load Summary	
Spectral Response (Short Periods), S_s	0.189
Spectral Response (1-Sec. Period), S_1	0.055
Site Class	D
Seismic Design Category	B
Seismic Risk Category	II

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

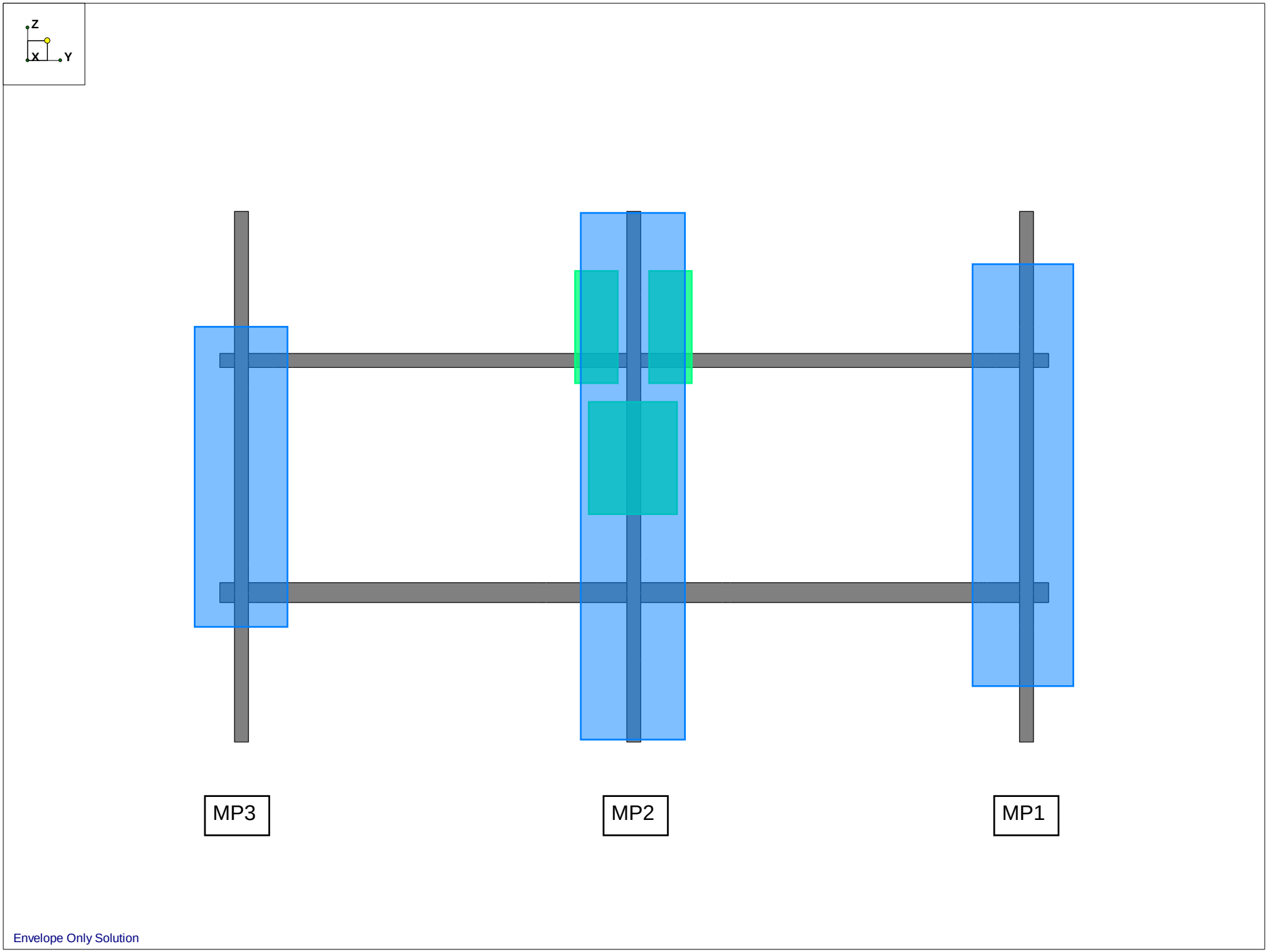
Kimley»Horn

Date	May 25, 2021
Client	American Tower
Site #	370626
Site Name	EAST HARTFORD
Project #	011916045

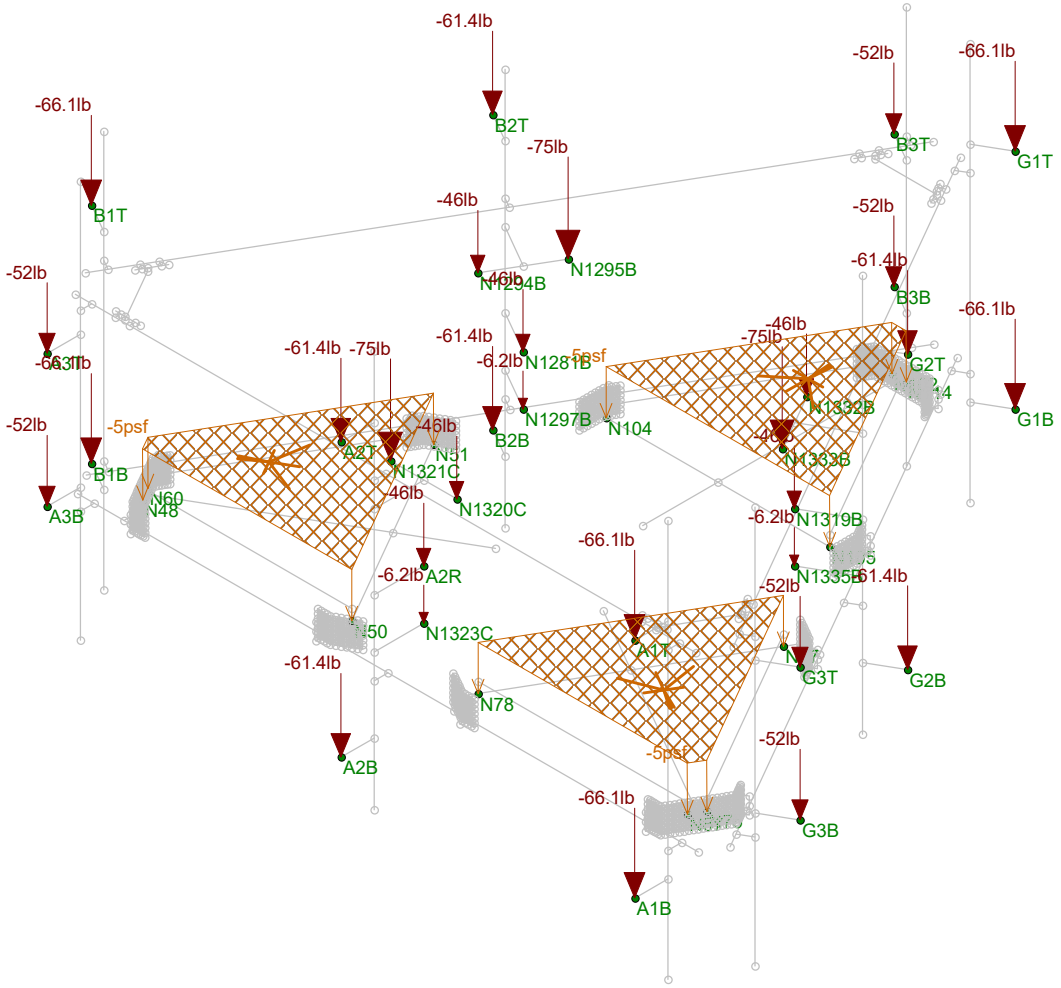
Antenna Name	Qty	Shape	Dimensions (in)			Weight (lb)	Joint Labels								EPA (ft^2)		Wind Force, F_A (lb)			
																	No Ice		With Ice	
			H	W	D		Alpha		Beta		Gamma		Delta		Front	Side	Front	Side	Front	Side
Air6449 B41	3	Flat	33.1	20.6	8.6	104	A3B	A3T	B3B	B3T	G3B	G3T			5.68	2.49	170.82	74.88	39.27	20
APXVAALL24 43-U-NA20	3	Flat	95.9	24	8.5	122.8	A2B	A2T	B2B	B2T	G2B	G2T			20.24	8.73	608.56	262.55	127.22	63.75
AIR32 B66Aa/B2a	3	Flat	56.6	12.9	8.7	132.2	A1B	A1T	B1B	B1T	G1B	G1T			6.51	4.71	195.71	141.67	45.76	35.48
SDX1926Q-43	3	Flat	4.2	6.9	2.9	6.2	N1323C		N1297B		N1335B				0.12	0.1	3.63	3.05	1.74	2.12
Radio 4449 B71 B85A	3	Flat	15	13.2	10.5	75	N1321C		N1295B		N1333B				0.66	0.83	19.73	24.8	5.72	6.83
RRUS 4415 B66	3	Flat	15	13.2	5.4	46	A2R		N1281B		N1319B				0.83	0.68	24.8	20.5	6.83	7.22
RRUS 4415 B25	3	Flat	16.5	13.4	5.9	46	N1320C		N1294B		N1332B				0.92	0.82	27.7	24.66	7.48	8.26



Envelope Only Solution

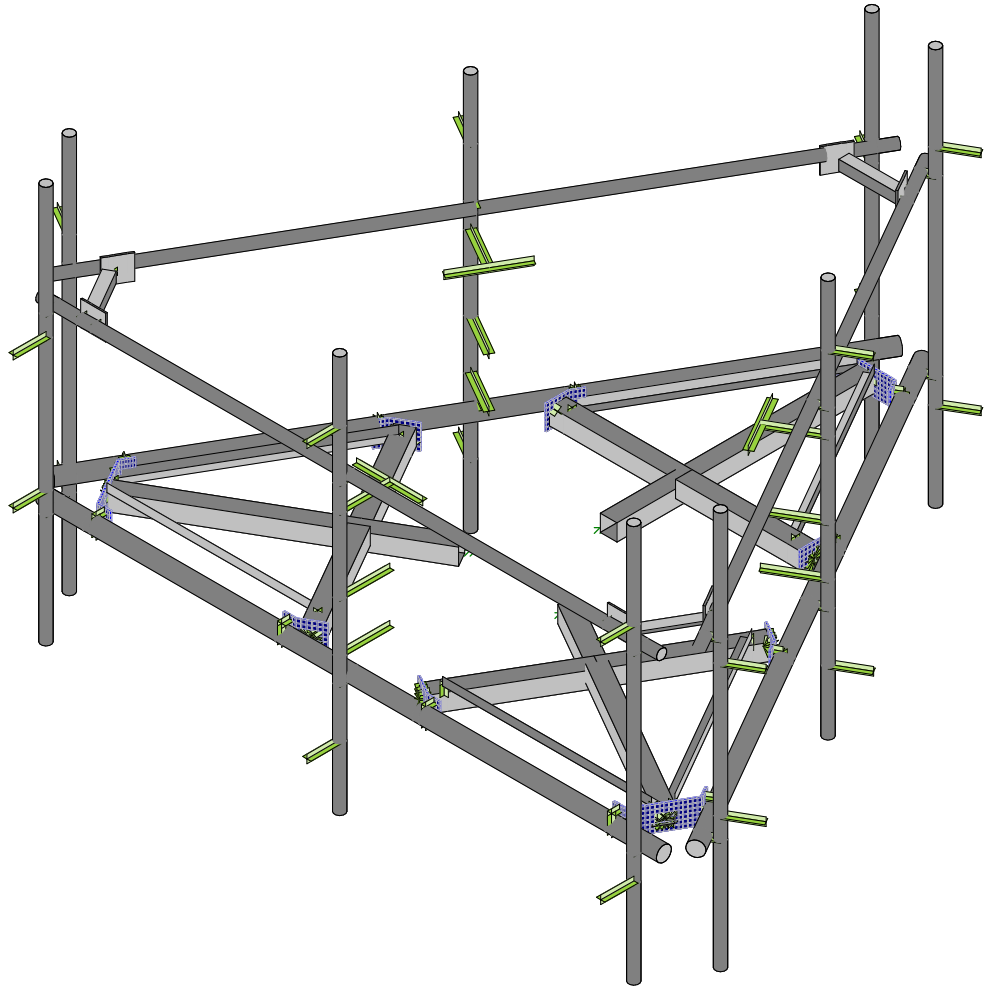


Envelope Only Solution



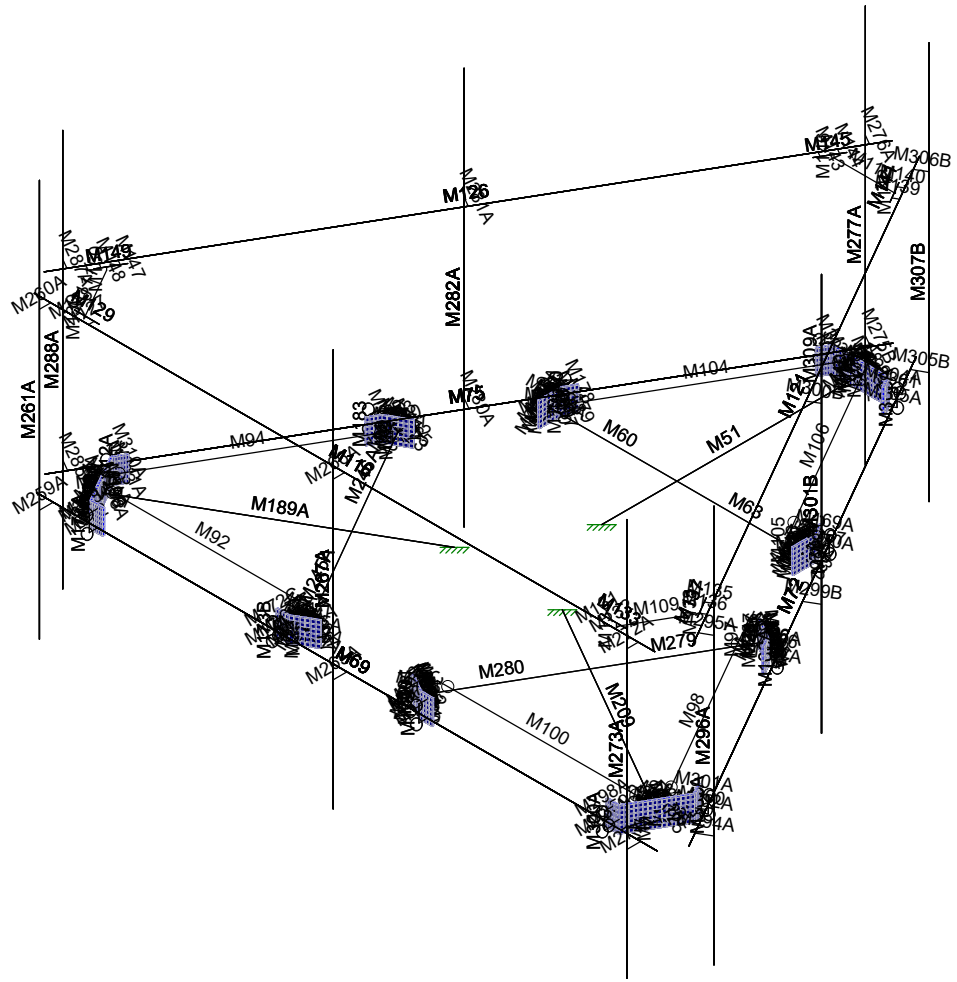
Loads: DL - Dead Load

Kimley-Horn and Associates, Inc.	370626	SK - 1
SSA		May 25, 2021 at 6:32 PM
011916045		370626.r3d



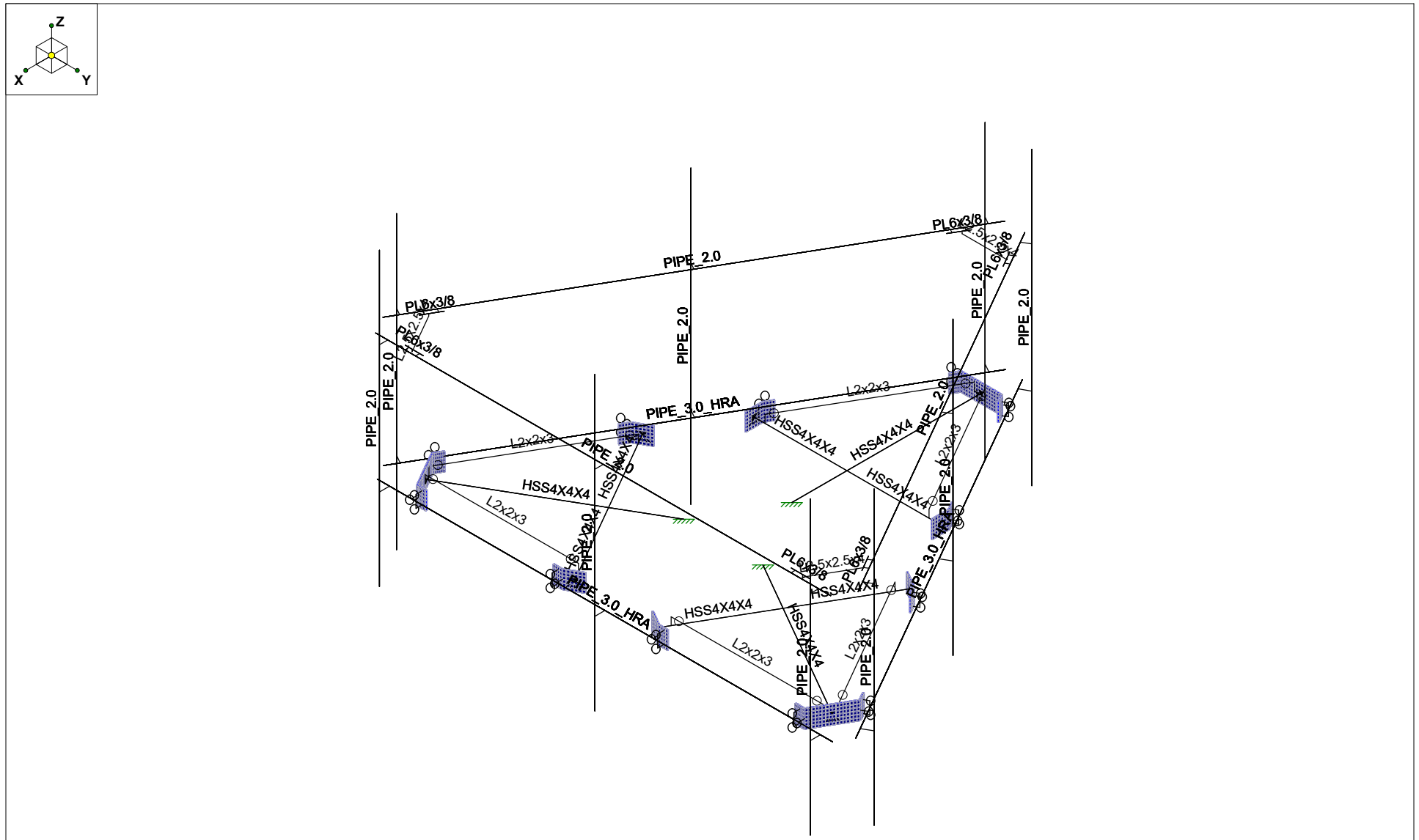
Envelope Only Solution

Kimley-Horn and Associates, Inc.	370626	SK - 2
SSA		May 25, 2021 at 6:46 PM
011916045		370626.r3d



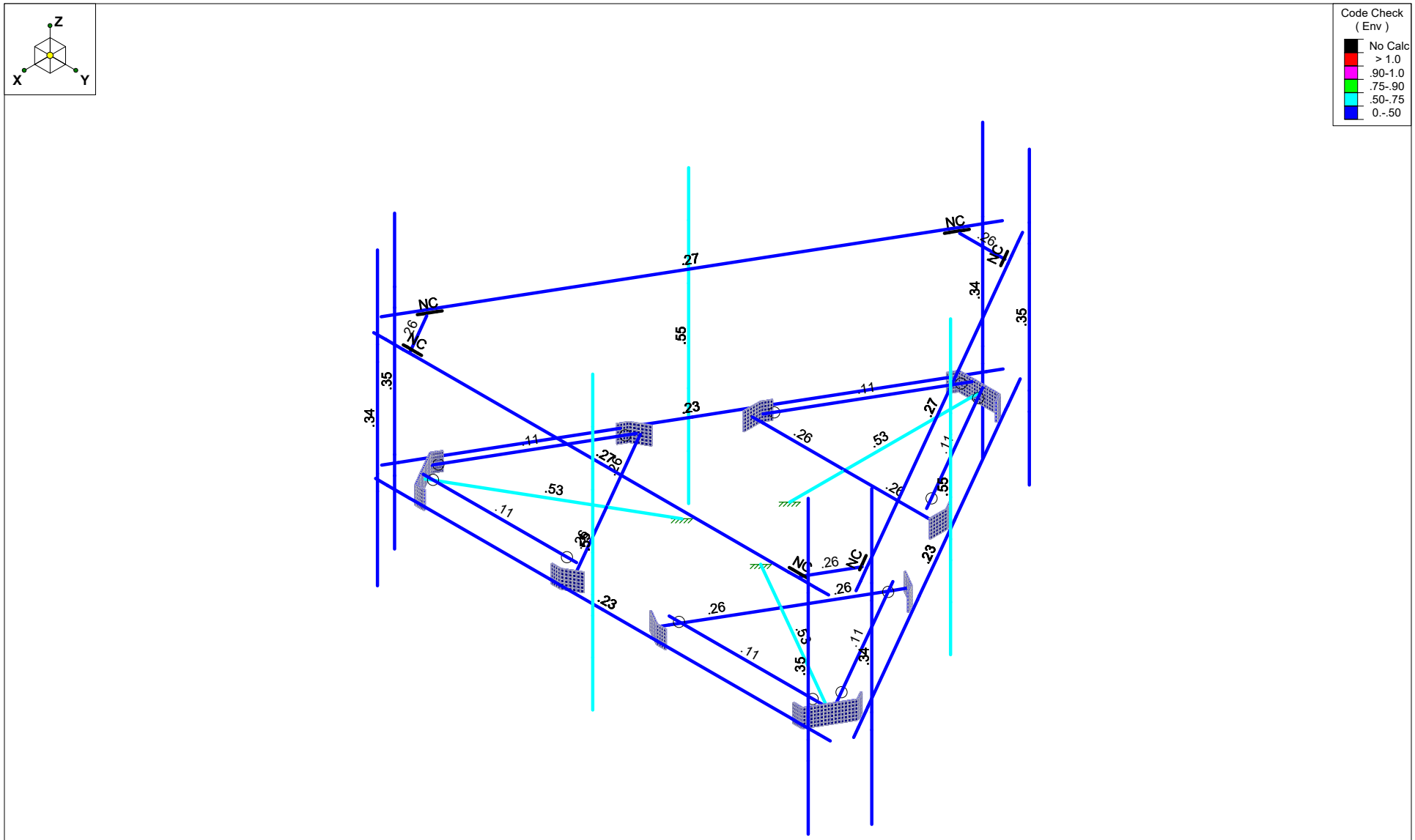
Envelope Only Solution

Kimley-Horn and Associates, Inc.	370626	SK - 3
SSA		May 25, 2021 at 6:48 PM
011916045		370626.r3d



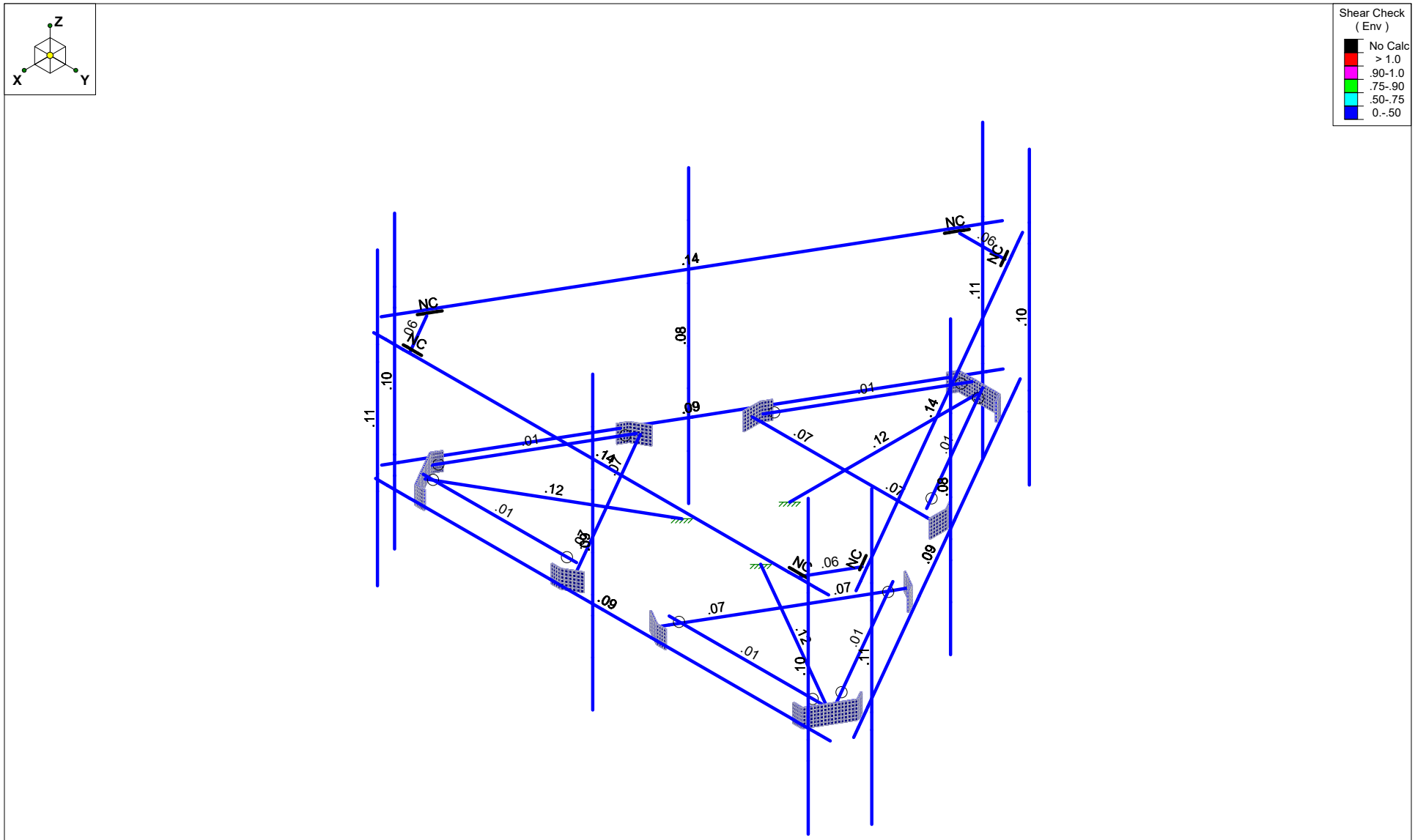
Envelope Only Solution

Kimley-Horn and Associates, Inc.	370626	SK - 4
SSA		May 25, 2021 at 6:48 PM
011916045		370626.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Kimley-Horn and Associates, Inc.	370626	SK - 5
SSA		May 25, 2021 at 6:49 PM
011916045		370626.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Kimley-Horn and Associates, Inc.	370626	SK - 6
SSA		May 25, 2021 at 6:49 PM
011916045		370626.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	N35	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N61	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N88	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M26	N48	N60			RIGID	None	None	RIGID	Typical
2	M44	N75	N87			RIGID	None	None	RIGID	Typical
3	M51	N88	N100			Offset Horiz	Beam	None	Q235	Typical
4	M60	N98	N103			Offset Horiz	Beam	None	Q235	Typical
5	M62	N102	N114			RIGID	None	None	RIGID	Typical
6	M63	N103	N99			Offset Horiz	Beam	None	Q235	Typical
7	M69	N115	N116			Face Horiz	Beam	None	A53 Gr.B	Typical
8	M72	N123	N124			Face Horiz	Beam	None	A53 Gr.B	Typical
9	M75	N131	N132			Face Horiz	Beam	None	A53 Gr.B	Typical
10	M91	N158	N50			RIGID	None	None	RIGID	Typical
11	M92	N158	N160			Grating Angle	Beam	None	Q235	Typical
12	M93	N159	N51			RIGID	None	None	RIGID	Typical
13	M94	N159	N161		270	Grating Angle	Beam	None	Q235	Typical
14	M95	N160	N48			RIGID	None	None	RIGID	Typical
15	M96	N161	N60			RIGID	None	None	RIGID	Typical
16	M97	N162	N77			RIGID	None	None	RIGID	Typical
17	M98	N162	N164			Grating Angle	Beam	None	Q235	Typical
18	M99	N163	N78			RIGID	None	None	RIGID	Typical
19	M100	N163	N165		270	Grating Angle	Beam	None	Q235	Typical
20	M101	N164	N75			RIGID	None	None	RIGID	Typical
21	M102	N165	N87			RIGID	None	None	RIGID	Typical
22	M103	N166	N104			RIGID	None	None	RIGID	Typical
23	M104	N166	N168			Grating Angle	Beam	None	Q235	Typical
24	M105	N167	N105			RIGID	None	None	RIGID	Typical
25	M106	N167	N169		270	Grating Angle	Beam	None	Q235	Typical
26	M107	N168	N102			RIGID	None	None	RIGID	Typical
27	M108	N169	N114			RIGID	None	None	RIGID	Typical
28	M109	N171	N172		90	HRK12 Angle	Beam	None	Q235	Typical
29	M110	N173	N174		90	HRK12 Angle	Beam	None	Q235	Typical
30	M111	N175	N170		90	HRK12 Angle	Beam	None	Q235	Typical
31	M116	N185	N184			HRK12 Pipe	Beam	None	A53 Gr.B	Typical
32	M121	N195	N194			HRK12 Pipe	Beam	None	A53 Gr.B	Typical
33	M126	N205	N204			HRK12 Pipe	Beam	None	A53 Gr.B	Typical
34	M127	N208	N206			RIGID	None	None	RIGID	Typical
35	M128	N209	N207			RIGID	None	None	RIGID	Typical
36	M129	N210	N211			HRK12 Plate	Beam	None	Q235	Typical
37	M130	N218	N170			RIGID	None	None	RIGID	Typical
38	M131	N221	N219			RIGID	None	None	RIGID	Typical
39	M132	N222	N220			RIGID	None	None	RIGID	Typical
40	M133	N223	N224			HRK12 Plate	Beam	None	Q235	Typical
41	M134	N225	N171			RIGID	None	None	RIGID	Typical
42	M135	N228	N226			RIGID	None	None	RIGID	Typical
43	M136	N229	N227			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
44	M137	N230	N231			HRK12 Plate	Beam	None	Q235	Typical
45	M138	N232	N172			RIGID	None	None	RIGID	Typical
46	M139	N235	N233			RIGID	None	None	RIGID	Typical
47	M140	N236	N234			RIGID	None	None	RIGID	Typical
48	M141	N237	N238			HRK12 Plate	Beam	None	Q235	Typical
49	M142	N239	N173			RIGID	None	None	RIGID	Typical
50	M143	N242	N240			RIGID	None	None	RIGID	Typical
51	M144	N243	N241			RIGID	None	None	RIGID	Typical
52	M145	N244	N245			HRK12 Plate	Beam	None	Q235	Typical
53	M146	N246	N174			RIGID	None	None	RIGID	Typical
54	M147	N249	N247			RIGID	None	None	RIGID	Typical
55	M148	N250	N248			RIGID	None	None	RIGID	Typical
56	M149	N251	N252			HRK12 Plate	Beam	None	Q235	Typical
57	M150	N253	N175			RIGID	None	None	RIGID	Typical
58	M171A	N277	N276			RIGID	None	None	RIGID	Typical
59	M172	N279	N278			RIGID	None	None	RIGID	Typical
60	M172A	N276	N278			RIGID	None	None	RIGID	Typical
61	M172C	N365A	N366A			RIGID	None	None	RIGID	Typical
62	M173A	N367A	N368A			RIGID	None	None	RIGID	Typical
63	M173B	N366A	N368A			RIGID	None	None	RIGID	Typical
64	M173C	N402	N403			RIGID	None	None	RIGID	Typical
65	M174	N404	N405			RIGID	None	None	RIGID	Typical
66	M175	N403	N405			RIGID	None	None	RIGID	Typical
67	M166A	N520	N521			RIGID	None	None	RIGID	Typical
68	M167A	N522	N523			RIGID	None	None	RIGID	Typical
69	M168A	N521	N523			RIGID	None	None	RIGID	Typical
70	M169A	N557	N558			RIGID	None	None	RIGID	Typical
71	M170A	N559	N560			RIGID	None	None	RIGID	Typical
72	M171C	N558	N560			RIGID	None	None	RIGID	Typical
73	M178	N700	N701			RIGID	None	None	RIGID	Typical
74	M179	N702	N703			RIGID	None	None	RIGID	Typical
75	M180	N701	N703			RIGID	None	None	RIGID	Typical
76	M181	N737	N738			RIGID	None	None	RIGID	Typical
77	M182	N739	N740			RIGID	None	None	RIGID	Typical
78	M183	N738	N740			RIGID	None	None	RIGID	Typical
79	M181A	N786	N100			RIGID	None	None	RIGID	Typical
80	M182A	N782	N100			RIGID	None	None	RIGID	Typical
81	M183A	N842	N100			RIGID	None	None	RIGID	Typical
82	M184	N846	N100			RIGID	None	None	RIGID	Typical
83	M185	N785	N100			RIGID	None	None	RIGID	Typical
84	M186	N784	N100			RIGID	None	None	RIGID	Typical
85	M187	N783	N100			RIGID	None	None	RIGID	Typical
86	M188	N801	N100			RIGID	None	None	RIGID	Typical
87	M189	N816	N100			RIGID	None	None	RIGID	Typical
88	M190	N831	N100			RIGID	None	None	RIGID	Typical
89	M191	N845	N100			RIGID	None	None	RIGID	Typical
90	M192	N844	N100			RIGID	None	None	RIGID	Typical
91	M193	N843	N100			RIGID	None	None	RIGID	Typical
92	M194	N827	N100			RIGID	None	None	RIGID	Typical
93	M195	N812	N100			RIGID	None	None	RIGID	Typical
94	M196	N797	N100			RIGID	None	None	RIGID	Typical
95	M189A	N35	N864A			Offset Horiz	Beam	None	Q235	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
96	M193A	N906	N864A			RIGID	None	None	RIGID	Typical
97	M194A	N902	N864A			RIGID	None	None	RIGID	Typical
98	M195A	N962	N864A			RIGID	None	None	RIGID	Typical
99	M196A	N966	N864A			RIGID	None	None	RIGID	Typical
100	M197	N905	N864A			RIGID	None	None	RIGID	Typical
101	M198	N904	N864A			RIGID	None	None	RIGID	Typical
102	M199	N903	N864A			RIGID	None	None	RIGID	Typical
103	M200	N921	N864A			RIGID	None	None	RIGID	Typical
104	M201	N936	N864A			RIGID	None	None	RIGID	Typical
105	M202	N951	N864A			RIGID	None	None	RIGID	Typical
106	M203	N965	N864A			RIGID	None	None	RIGID	Typical
107	M204	N964	N864A			RIGID	None	None	RIGID	Typical
108	M205	N963	N864A			RIGID	None	None	RIGID	Typical
109	M206	N947	N864A			RIGID	None	None	RIGID	Typical
110	M207	N932	N864A			RIGID	None	None	RIGID	Typical
111	M208	N917	N864A			RIGID	None	None	RIGID	Typical
112	M209	N61	N990			Offset Horiz	Beam	None	Q235	Typical
113	M213	N1032	N990			RIGID	None	None	RIGID	Typical
114	M214	N1028	N990			RIGID	None	None	RIGID	Typical
115	M215	N1088	N990			RIGID	None	None	RIGID	Typical
116	M216	N1092	N990			RIGID	None	None	RIGID	Typical
117	M217	N1031	N990			RIGID	None	None	RIGID	Typical
118	M218	N1030	N990			RIGID	None	None	RIGID	Typical
119	M219	N1029	N990			RIGID	None	None	RIGID	Typical
120	M220	N1047	N990			RIGID	None	None	RIGID	Typical
121	M221	N1062	N990			RIGID	None	None	RIGID	Typical
122	M222	N1077	N990			RIGID	None	None	RIGID	Typical
123	M223	N1091	N990			RIGID	None	None	RIGID	Typical
124	M224	N1090	N990			RIGID	None	None	RIGID	Typical
125	M225	N1089	N990			RIGID	None	None	RIGID	Typical
126	M226	N1073	N990			RIGID	None	None	RIGID	Typical
127	M227	N1058	N990			RIGID	None	None	RIGID	Typical
128	M228	N1043	N990			RIGID	None	None	RIGID	Typical
129	M225A	N1079A	N98			RIGID	None	None	RIGID	Typical
130	M226A	N1083A	N98			RIGID	None	None	RIGID	Typical
131	M227A	N1103A	N98			RIGID	None	None	RIGID	Typical
132	M228A	N1107A	N98			RIGID	None	None	RIGID	Typical
133	M229	N1082A	N98			RIGID	None	None	RIGID	Typical
134	M230	N1081A	N98			RIGID	None	None	RIGID	Typical
135	M231	N1080A	N98			RIGID	None	None	RIGID	Typical
136	M232	N1085A	N98			RIGID	None	None	RIGID	Typical
137	M233	N1091A	N98			RIGID	None	None	RIGID	Typical
138	M234	N1097A	N98			RIGID	None	None	RIGID	Typical
139	M235	N1104A	N98			RIGID	None	None	RIGID	Typical
140	M236	N1105A	N98			RIGID	None	None	RIGID	Typical
141	M237	N1106A	N98			RIGID	None	None	RIGID	Typical
142	M238	N1101A	N98			RIGID	None	None	RIGID	Typical
143	M239	N1095A	N98			RIGID	None	None	RIGID	Typical
144	M240	N1089A	N98			RIGID	None	None	RIGID	Typical
145	M241	N1129	N99			RIGID	None	None	RIGID	Typical
146	M242	N1133	N99			RIGID	None	None	RIGID	Typical
147	M243	N1153	N99			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
148	M244	N1157	N99			RIGID	None	None	RIGID	Typical
149	M245	N1132	N99			RIGID	None	None	RIGID	Typical
150	M246	N1131	N99			RIGID	None	None	RIGID	Typical
151	M247	N1130	N99			RIGID	None	None	RIGID	Typical
152	M248	N1135	N99			RIGID	None	None	RIGID	Typical
153	M249	N1141	N99			RIGID	None	None	RIGID	Typical
154	M250	N1147	N99			RIGID	None	None	RIGID	Typical
155	M251	N1154	N99			RIGID	None	None	RIGID	Typical
156	M252	N1155	N99			RIGID	None	None	RIGID	Typical
157	M253	N1156	N99			RIGID	None	None	RIGID	Typical
158	M254	N1151	N99			RIGID	None	None	RIGID	Typical
159	M255	N1145	N99			RIGID	None	None	RIGID	Typical
160	M256	N1139	N99			RIGID	None	None	RIGID	Typical
161	M245A	N1149A	N49			Offset Horiz	Beam	None	Q235	Typical
162	M246A	N49	N1150A			Offset Horiz	Beam	None	Q235	Typical
163	M247A	N1172	N1149A			RIGID	None	None	RIGID	Typical
164	M248A	N1176	N1149A			RIGID	None	None	RIGID	Typical
165	M249A	N1196	N1149A			RIGID	None	None	RIGID	Typical
166	M250A	N1200	N1149A			RIGID	None	None	RIGID	Typical
167	M251A	N1175	N1149A			RIGID	None	None	RIGID	Typical
168	M252A	N1174	N1149A			RIGID	None	None	RIGID	Typical
169	M253A	N1173	N1149A			RIGID	None	None	RIGID	Typical
170	M254A	N1178	N1149A			RIGID	None	None	RIGID	Typical
171	M255A	N1184	N1149A			RIGID	None	None	RIGID	Typical
172	M256A	N1190	N1149A			RIGID	None	None	RIGID	Typical
173	M257	N1197	N1149A			RIGID	None	None	RIGID	Typical
174	M258	N1198	N1149A			RIGID	None	None	RIGID	Typical
175	M259	N1199	N1149A			RIGID	None	None	RIGID	Typical
176	M260	N1194	N1149A			RIGID	None	None	RIGID	Typical
177	M261	N1188	N1149A			RIGID	None	None	RIGID	Typical
178	M262	N1182	N1149A			RIGID	None	None	RIGID	Typical
179	M263	N1214	N1150A			RIGID	None	None	RIGID	Typical
180	M264	N1218	N1150A			RIGID	None	None	RIGID	Typical
181	M265	N1238	N1150A			RIGID	None	None	RIGID	Typical
182	M266	N1242	N1150A			RIGID	None	None	RIGID	Typical
183	M267	N1217	N1150A			RIGID	None	None	RIGID	Typical
184	M268	N1216	N1150A			RIGID	None	None	RIGID	Typical
185	M269	N1215	N1150A			RIGID	None	None	RIGID	Typical
186	M270	N1220	N1150A			RIGID	None	None	RIGID	Typical
187	M271	N1226	N1150A			RIGID	None	None	RIGID	Typical
188	M272	N1232	N1150A			RIGID	None	None	RIGID	Typical
189	M273	N1239	N1150A			RIGID	None	None	RIGID	Typical
190	M274	N1240	N1150A			RIGID	None	None	RIGID	Typical
191	M275	N1241	N1150A			RIGID	None	None	RIGID	Typical
192	M276	N1236	N1150A			RIGID	None	None	RIGID	Typical
193	M277	N1230	N1150A			RIGID	None	None	RIGID	Typical
194	M278	N1224	N1150A			RIGID	None	None	RIGID	Typical
195	M279	N1250	N76			Offset Horiz	Beam	None	Q235	Typical
196	M280	N76	N1251			Offset Horiz	Beam	None	Q235	Typical
197	M281	N1273	N1250			RIGID	None	None	RIGID	Typical
198	M282	N1277	N1250			RIGID	None	None	RIGID	Typical
199	M283	N1297	N1250			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
200	M284	N1301	N1250			RIGID	None	None	RIGID	Typical
201	M285	N1276	N1250			RIGID	None	None	RIGID	Typical
202	M286	N1275	N1250			RIGID	None	None	RIGID	Typical
203	M287	N1274	N1250			RIGID	None	None	RIGID	Typical
204	M288	N1279	N1250			RIGID	None	None	RIGID	Typical
205	M289	N1285	N1250			RIGID	None	None	RIGID	Typical
206	M290	N1291	N1250			RIGID	None	None	RIGID	Typical
207	M291	N1298	N1250			RIGID	None	None	RIGID	Typical
208	M292	N1299	N1250			RIGID	None	None	RIGID	Typical
209	M293	N1300	N1250			RIGID	None	None	RIGID	Typical
210	M294	N1295	N1250			RIGID	None	None	RIGID	Typical
211	M295	N1289	N1250			RIGID	None	None	RIGID	Typical
212	M296	N1283	N1250			RIGID	None	None	RIGID	Typical
213	M297	N1315	N1251			RIGID	None	None	RIGID	Typical
214	M298	N1319	N1251			RIGID	None	None	RIGID	Typical
215	M299	N1339	N1251			RIGID	None	None	RIGID	Typical
216	M300	N1343	N1251			RIGID	None	None	RIGID	Typical
217	M301	N1318	N1251			RIGID	None	None	RIGID	Typical
218	M302	N1317	N1251			RIGID	None	None	RIGID	Typical
219	M303	N1316	N1251			RIGID	None	None	RIGID	Typical
220	M304	N1321	N1251			RIGID	None	None	RIGID	Typical
221	M305	N1327	N1251			RIGID	None	None	RIGID	Typical
222	M306	N1333	N1251			RIGID	None	None	RIGID	Typical
223	M307	N1340	N1251			RIGID	None	None	RIGID	Typical
224	M308	N1341	N1251			RIGID	None	None	RIGID	Typical
225	M309	N1342	N1251			RIGID	None	None	RIGID	Typical
226	M310	N1337	N1251			RIGID	None	None	RIGID	Typical
227	M311	N1331	N1251			RIGID	None	None	RIGID	Typical
228	M312	N1325	N1251			RIGID	None	None	RIGID	Typical
229	M298A	N1099B	N1098B			RIGID	None	None	RIGID	Typical
230	M299A	N1101B	N1100B			RIGID	None	None	RIGID	Typical
231	M300A	N1098B	N1100B			RIGID	None	None	RIGID	Typical
232	M301A	N1145B	N1144B			RIGID	None	None	RIGID	Typical
233	M302A	N1147A	N1146A			RIGID	None	None	RIGID	Typical
234	M303A	N1144B	N1146A		240	RIGID	None	None	RIGID	Typical
235	M304A	N1200A	N1199A			RIGID	None	None	RIGID	Typical
236	M305A	N1202A	N1201A			RIGID	None	None	RIGID	Typical
237	M306A	N1199A	N1201A		240	RIGID	None	None	RIGID	Typical
238	M307A	N1249A	N1248A			RIGID	None	None	RIGID	Typical
239	M308A	N1251B	N1250B			RIGID	None	None	RIGID	Typical
240	M309A	N1248A	N1250B		120	RIGID	None	None	RIGID	Typical
241	M310A	N1304A	N1303A			RIGID	None	None	RIGID	Typical
242	M311A	N1306A	N1305A			RIGID	None	None	RIGID	Typical
243	M312A	N1303A	N1305A		120	RIGID	None	None	RIGID	Typical
244	M259A	M3	N1230B			RIGID	None	None	RIGID	Typical
245	M260A	N1232B	N1231B			RIGID	None	None	RIGID	Typical
246	M261A	N1233B	N1228B			Mount Pipe	Column	None	A53 Gr.B	Typical
247	M262A	N1235B	A3B			RIGID	None	None	RIGID	Typical
248	M263A	N1234B	A3T			RIGID	None	None	RIGID	Typical
249	M265A	M2	N1242C			RIGID	None	None	RIGID	Typical
250	M266A	N1244C	N1243B			RIGID	None	None	RIGID	Typical
251	M267A	N1245B	N1240C			Mount Pipe	Column	None	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
252	M268A	N1247B	A2B			RIGID	None	None	RIGID	Typical
253	M269A	N1246B	A2T			RIGID	None	None	RIGID	Typical
254	M270A	N1250C	A2R			RIGID	None	None	RIGID	Typical
255	M271A	M1	N1254A			RIGID	None	None	RIGID	Typical
256	M272A	N1256A	N1255A			RIGID	None	None	RIGID	Typical
257	M273A	N1257A	N1252A			Mount Pipe	Column	None	A53 Gr.B	Typical
258	M274A	N1259A	A1B			RIGID	None	None	RIGID	Typical
259	M275A	N1258A	A1T			RIGID	None	None	RIGID	Typical
260	M358	N37	N1426			RIGID	None	None	RIGID	Typical
261	M359	N62	N1427			RIGID	None	None	RIGID	Typical
262	M360	N63	N1428			RIGID	None	None	RIGID	Typical
263	M361	N89	N1429			RIGID	None	None	RIGID	Typical
264	M362	N90	N1430			RIGID	None	None	RIGID	Typical
265	M363	N36	N1431			RIGID	None	None	RIGID	Typical
266	M364	N43	N1432			RIGID	None	None	RIGID	Typical
267	M365	N66	N1433			RIGID	None	None	RIGID	Typical
268	M366	N70	N1434			RIGID	None	None	RIGID	Typical
269	M367	N93	N1435			RIGID	None	None	RIGID	Typical
270	M368	N97	N1436			RIGID	None	None	RIGID	Typical
271	M369	N39	N1437			RIGID	None	None	RIGID	Typical
272	M304C	N1318C	N1319C			RIGID	None	None	RIGID	Typical
273	M305C	N1321C	N1320C			RIGID	None	None	RIGID	Typical
274	M306C	N1322C	N1323C			RIGID	None	None	RIGID	Typical
275	M275B	N1261A	N1262B			RIGID	None	None	RIGID	Typical
276	M276A	N1264B	N1263B			RIGID	None	None	RIGID	Typical
277	M277A	N1265C	N1260A			Mount Pipe	Column	None	A53 Gr.B	Typical
278	M278A	N1267C	B3B			RIGID	None	None	RIGID	Typical
279	M279A	N1266C	B3T			RIGID	None	None	RIGID	Typical
280	M280A	N1271C	N1272C			RIGID	None	None	RIGID	Typical
281	M281A	N1274C	N1273C			RIGID	None	None	RIGID	Typical
282	M282A	N1275C	N1270C			Mount Pipe	Column	None	A53 Gr.B	Typical
283	M283A	N1277C	B2B			RIGID	None	None	RIGID	Typical
284	M284A	N1276C	B2T			RIGID	None	None	RIGID	Typical
285	M285A	N1280B	N1281B			RIGID	None	None	RIGID	Typical
286	M286A	N1283B	N1284B			RIGID	None	None	RIGID	Typical
287	M287A	N1286B	N1285B			RIGID	None	None	RIGID	Typical
288	M288A	N1287B	N1282B			Mount Pipe	Column	None	A53 Gr.B	Typical
289	M289A	N1289B	B1B			RIGID	None	None	RIGID	Typical
290	M290A	N1288B	B1T			RIGID	None	None	RIGID	Typical
291	M291A	N1292B	N1293B			RIGID	None	None	RIGID	Typical
292	M292A	N1295B	N1294B			RIGID	None	None	RIGID	Typical
293	M293A	N1296B	N1297B			RIGID	None	None	RIGID	Typical
294	M294A	N1299B	N1300B			RIGID	None	None	RIGID	Typical
295	M295A	N1302B	N1301B			RIGID	None	None	RIGID	Typical
296	M296A	N1303B	N1298B			Mount Pipe	Column	None	A53 Gr.B	Typical
297	M297A	N1305B	G3B			RIGID	None	None	RIGID	Typical
298	M298B	N1304B	G3T			RIGID	None	None	RIGID	Typical
299	M299B	N1309B	N1310B			RIGID	None	None	RIGID	Typical
300	M300B	N1312B	N1311B			RIGID	None	None	RIGID	Typical
301	M301B	N1313B	N1308B			Mount Pipe	Column	None	A53 Gr.B	Typical
302	M302B	N1315B	G2B			RIGID	None	None	RIGID	Typical
303	M303B	N1314B	G2T			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
304	M304B	N1318B	N1319B			RIGID	None	None	RIGID	Typical
305	M305B	N1321B	N1322B			RIGID	None	None	RIGID	Typical
306	M306B	N1324B	N1323B			RIGID	None	None	RIGID	Typical
307	M307B	N1325B	N1320B			Mount Pipe	Column	None	A53 Gr.B	Typical
308	M308B	N1327B	G1B			RIGID	None	None	RIGID	Typical
309	M309B	N1326B	G1T			RIGID	None	None	RIGID	Typical
310	M310B	N1330B	N1331B			RIGID	None	None	RIGID	Typical
311	M311B	N1333B	N1332B			RIGID	None	None	RIGID	Typical
312	M312B	N1334B	N1335B			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	M51	Offset Horiz	62.257									Lateral
2	M60	Offset Horiz	30.438			Lbyy						Lateral
3	M63	Offset Horiz	30.437			Lbyy						Lateral
4	M69	Face Horiz	150			Lbyy						Lateral
5	M72	Face Horiz	150			Lbyy						Lateral
6	M75	Face Horiz	150			Lbyy						Lateral
7	M92	Grating Angle	50.542			Lbyy						Lateral
8	M94	Grating Angle	50.542			Lbyy						Lateral
9	M98	Grating Angle	50.542			Lbyy						Lateral
10	M100	Grating Angle	50.542			Lbyy						Lateral
11	M104	Grating Angle	50.542			Lbyy						Lateral
12	M106	Grating Angle	50.542			Lbyy						Lateral
13	M109	HRK12 Angle	14.902			Lbyy						Lateral
14	M110	HRK12 Angle	14.902			Lbyy						Lateral
15	M111	HRK12 Angle	14.902			Lbyy						Lateral
16	M116	HRK12 Pipe	150			Lbyy						Lateral
17	M121	HRK12 Pipe	150			Lbyy						Lateral
18	M126	HRK12 Pipe	150			Lbyy						Lateral
19	M129	HRK12 Plate	6			Lbyy						Lateral
20	M133	HRK12 Plate	6			Lbyy						Lateral
21	M137	HRK12 Plate	6			Lbyy						Lateral
22	M141	HRK12 Plate	6			Lbyy						Lateral
23	M145	HRK12 Plate	6			Lbyy						Lateral
24	M149	HRK12 Plate	6			Lbyy						Lateral
25	M189A	Offset Horiz	62.257									Lateral
26	M209	Offset Horiz	62.257									Lateral
27	M245A	Offset Horiz	30.438			Lbyy						Lateral
28	M246A	Offset Horiz	30.437			Lbyy						Lateral
29	M279	Offset Horiz	30.438			Lbyy						Lateral
30	M280	Offset Horiz	30.437			Lbyy						Lateral
31	M261A	Mount Pipe	96			Lbyy						Lateral
32	M267A	Mount Pipe	96			Lbyy						Lateral
33	M273A	Mount Pipe	96			Lbyy						Lateral
34	M277A	Mount Pipe	96			Lbyy						Lateral
35	M282A	Mount Pipe	96			Lbyy						Lateral
36	M288A	Mount Pipe	96			Lbyy						Lateral
37	M296A	Mount Pipe	96			Lbyy						Lateral
38	M301B	Mount Pipe	96			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
39	M307B	Mount Pipe	96			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	30			3	
2	Dead of Ice	RL				30		39	3	
3	BLC 1 Transient Area...	None						36		
4	Structure Wind (0)	None						78		
5	Structure Wind (30)	None						78		
6	Structure Wind (45)	None						78		
7	Structure Wind (60)	None						78		
8	Structure Wind (90)	None						78		
9	Structure Wind (120)	None						78		
10	Structure Wind (135)	None						78		
11	Structure Wind (150)	None						78		
12	Structure Wind w/ Ice...	None						78		
13	Structure Wind w/ Ice...	None						78		
14	Structure Wind w/ Ice...	None						78		
15	Structure Wind w/ Ice...	None						78		
16	Structure Wind w/ Ice...	None						78		
17	Structure Wind w/ Ice...	None						78		
18	Structure Wind w/ Ice...	None						78		
19	Structure Wind w/ Ice...	None						78		
20	Antenna Wind (0)	None				60				
21	Antenna Wind (30)	None				60				
22	Antenna Wind (45)	None				60				
23	Antenna Wind (60)	None				60				
24	Antenna Wind (90)	None				60				
25	Antenna Wind (120)	None				60				
26	Antenna Wind (135)	None				60				
27	Antenna Wind (150)	None				60				
28	Antenna Wind w/ Ice ...	None				60				
29	Antenna Wind w/ Ice ...	None				60				
30	Antenna Wind w/ Ice ...	None				60				
31	Antenna Wind w/ Ice ...	None				60				
32	Antenna Wind w/ Ice ...	None				60				
33	Antenna Wind w/ Ice ...	None				60				
34	Antenna Wind w/ Ice ...	None				60				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
35	Antenna Wind w/ Ice ...	None				60				
36	Seismic X	ELX				30		39		
37	Seismic Y	ELY				30		39		
38	Maintenance Live Lm ...	OL1				1				
39	Maintenance Live Lm ...	OL2				1				
40	Maintenance Live Lm ...	OL3				1				
41	BLC 2 Transient Area...	None						36		
43	Maintenance Live Lv (...	OL6					1			
44	Maintenance Live Lv (...	OL7					1			
45	Maintenance Live Lv (...	OL8					1			

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	Summary: 1.0D + 1...	Yes	Y		DL	1	20	1																
2	1.4D	Yes	Y		DL	1.4																		
3	1.2D + 1.0W(0)	Yes	Y		DL	1.2	4	1	20	1														
4	1.2D + 1.0W(30)	Yes	Y		DL	1.2	5	1	21	1														
5	1.2D + 1.0W(45)	Yes	Y		DL	1.2	6	1	22	1														
6	1.2D + 1.0W(60)	Yes	Y		DL	1.2	7	1	23	1														
7	1.2D + 1.0W(90)	Yes	Y		DL	1.2	8	1	24	1														
8	1.2D + 1.0W(120)	Yes	Y		DL	1.2	9	1	25	1														
9	1.2D + 1.0W(135)	Yes	Y		DL	1.2	10	1	26	1														
10	1.2D + 1.0W(150)	Yes	Y		DL	1.2	11	1	27	1														
11	1.2D + 1.0W(180)	Yes	Y		DL	1.2	4	-1	20	-1														
12	1.2D + 1.0W(210)	Yes	Y		DL	1.2	5	-1	21	-1														
13	1.2D + 1.0W(225)	Yes	Y		DL	1.2	6	-1	22	-1														
14	1.2D + 1.0W(240)	Yes	Y		DL	1.2	7	-1	23	-1														
15	1.2D + 1.0W(270)	Yes	Y		DL	1.2	8	-1	24	-1														
16	1.2D + 1.0W(300)	Yes	Y		DL	1.2	9	-1	25	-1														
17	1.2D + 1.0W(315)	Yes	Y		DL	1.2	10	-1	26	-1														
18	1.2D + 1.0W(330)	Yes	Y		DL	1.2	11	-1	27	-1														
19	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	12	1	28	1												
20	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	13	1	29	1												
21	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	14	1	30	1												
22	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	15	1	31	1												
23	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	16	1	32	1												
24	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	17	1	33	1												
25	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	18	1	34	1												
26	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	19	1	35	1												
27	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	12	-1	28	-1												
28	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	13	-1	39	-1												
29	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	14	-1	30	-1												
30	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	15	-1	31	-1												
31	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	16	-1	32	-1												
32	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	17	-1	33	-1												
33	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	18	-1	34	-1												
34	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	19	-1	35	-1												
35	1.2D + 1.0E(0)	Yes	Y		DL	1.2	ELX	-1	ELY															
36	1.2D + 1.0E(30)	Yes	Y		DL	1.2	ELX	-.866	ELY	.5														
37	1.2D + 1.0E(45)	Yes	Y		DL	1.2	ELX	-.707	ELY	.707														

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
38	1.2D + 1.0E(60)	Yes	Y		DL	1.2	ELX	-.5	ELY	.866																
39	1.2D + 1.0E(90)	Yes	Y		DL	1.2	ELX	-2.2..	ELY	1																
40	1.2D + 1.0E(120)	Yes	Y		DL	1.2	ELX	.5	ELY	.866																
41	1.2D + 1.0E(135)	Yes	Y		DL	1.2	ELX	.707	ELY	.707																
42	1.2D + 1.0E(150)	Yes	Y		DL	1.2	ELX	.866	ELY	.5																
43	1.2D + 1.0E(180)	Yes	Y		DL	1.2	ELX	1	ELY	4.5...																
44	1.2D + 1.0E(210)	Yes	Y		DL	1.2	ELX	.866	ELY	-.5																
45	1.2D + 1.0E(225)	Yes	Y		DL	1.2	ELX	.707	ELY	-.707																
46	1.2D + 1.0E(240)	Yes	Y		DL	1.2	ELX	.5	ELY	-.866																
47	1.2D + 1.0E(270)	Yes	Y		DL	1.2	ELX	6.8...	ELY	-1																
48	1.2D + 1.0E(300)	Yes	Y		DL	1.2	ELX	-.5	ELY	-.866																
49	1.2D + 1.0E(315)	Yes	Y		DL	1.2	ELX	-.707	ELY	-.707																
50	1.2D + 1.0E(330)	Yes	Y		DL	1.2	ELX	-.866	ELY	-.5																
51	0.9D + 1.0E(0)	Yes	Y		DL	1.2	ELX	-1	ELY																	
52	0.9D + 1.0E(30)	Yes	Y		DL	1.2	ELX	-.866	ELY	.5																
53	0.9D + 1.0E(45)	Yes	Y		DL	1.2	ELX	-.707	ELY	.707																
54	0.9D + 1.0E(60)	Yes	Y		DL	1.2	ELX	-.5	ELY	.866																
55	0.9D + 1.0E(90)	Yes	Y		DL	1.2	ELX	-2.2..	ELY	1																
56	0.9D + 1.0E(120)	Yes	Y		DL	1.2	ELX	.5	ELY	.866																
57	0.9D + 1.0E(135)	Yes	Y		DL	1.2	ELX	.707	ELY	.707																
58	0.9D + 1.0E(150)	Yes	Y		DL	1.2	ELX	.866	ELY	.5																
59	0.9D + 1.0E(180)	Yes	Y		DL	1.2	ELX	1	ELY	4.5...																
60	0.9D + 1.0E(210)	Yes	Y		DL	1.2	ELX	.866	ELY	-.5																
61	0.9D + 1.0E(225)	Yes	Y		DL	1.2	ELX	.707	ELY	-.707																
62	0.9D + 1.0E(240)	Yes	Y		DL	1.2	ELX	.5	ELY	-.866																
63	0.9D + 1.0E(270)	Yes	Y		DL	1.2	ELX	6.8...	ELY	-1																
64	0.9D + 1.0E(300)	Yes	Y		DL	1.2	ELX	-.5	ELY	-.866																
65	0.9D + 1.0E(315)	Yes	Y		DL	1.2	ELX	-.707	ELY	-.707																
66	0.9D + 1.0E(330)	Yes	Y		DL	1.2	ELX	-.866	ELY	-.5																
67	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	4	.065	20	.065	OL1	1.5														
68	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	5	.065	21	.065	OL1	1.5														
69	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	6	.065	22	.065	OL1	1.5														
70	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	7	.065	23	.065	OL1	1.5														
71	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	8	.065	24	.065	OL1	1.5														
72	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	9	.065	25	.065	OL1	1.5														
73	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	10	.065	26	.065	OL1	1.5														
74	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	11	.065	27	.065	OL1	1.5														
75	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	4	-.065	20	-.065	OL1	1.5														
76	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	5	-.065	21	-.065	OL1	1.5														
77	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	6	-.065	22	-.065	OL1	1.5														
78	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	7	-.065	23	-.065	OL1	1.5														
79	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	8	-.065	24	-.065	OL1	1.5														
80	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	9	-.065	25	-.065	OL1	1.5														
81	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	10	-.065	26	-.065	OL1	1.5														
82	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	11	-.065	27	-.065	OL1	1.5														
83	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	4	.065	20	.065	OL2	1.5														
84	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	5	.065	21	.065	OL2	1.5														
85	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	6	.065	22	.065	OL2	1.5														
86	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	7	.065	23	.065	OL2	1.5														
87	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	8	.065	24	.065	OL2	1.5														
88	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	9	.065	25	.065	OL2	1.5														
89	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	10	.065	26	.065	OL2	1.5														

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
90	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	11	.065	27	.065	OL2	1.5														
91	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	4	-.065	20	-.065	OL2	1.5														
92	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	5	-.065	21	-.065	OL2	1.5														
93	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	6	-.065	22	-.065	OL2	1.5														
94	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	7	-.065	23	-.065	OL2	1.5														
95	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	8	-.065	24	-.065	OL2	1.5														
96	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	9	-.065	25	-.065	OL2	1.5														
97	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	10	-.065	26	-.065	OL2	1.5														
98	1.2D + 1.5Lm(2) + ...	Yes	Y		DL	1.2	11	-.065	27	-.065	OL2	1.5														
99	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	4	.065	20	.065	OL3	1.5														
100	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	5	.065	21	.065	OL3	1.5														
101	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	6	.065	22	.065	OL3	1.5														
102	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	7	.065	23	.065	OL3	1.5														
103	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	8	.065	24	.065	OL3	1.5														
104	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	9	.065	25	.065	OL3	1.5														
105	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	10	.065	26	.065	OL3	1.5														
106	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	11	.065	27	.065	OL3	1.5														
107	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	4	-.065	20	-.065	OL3	1.5														
108	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	5	-.065	21	-.065	OL3	1.5														
109	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	6	-.065	22	-.065	OL3	1.5														
110	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	7	-.065	23	-.065	OL3	1.5														
111	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	8	-.065	24	-.065	OL3	1.5														
112	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	9	-.065	25	-.065	OL3	1.5														
113	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	10	-.065	26	-.065	OL3	1.5														
114	1.2D + 1.5Lm(3) + ...	Yes	Y		DL	1.2	11	-.065	27	-.065	OL3	1.5														
115	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	4	.065	20	.065	OL6	1.5														
116	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	5	.065	21	.065	OL6	1.5														
117	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	6	.065	22	.065	OL6	1.5														
118	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	7	.065	23	.065	OL6	1.5														
119	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	8	.065	24	.065	OL6	1.5														
120	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	9	.065	25	.065	OL6	1.5														
121	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	10	.065	26	.065	OL6	1.5														
122	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	11	.065	27	.065	OL6	1.5														
123	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	4	-.065	20	-.065	OL6	1.5														
124	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	5	-.065	21	-.065	OL6	1.5														
125	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	6	-.065	22	-.065	OL6	1.5														
126	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	7	-.065	23	-.065	OL6	1.5														
127	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	8	-.065	24	-.065	OL6	1.5														
128	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	9	-.065	25	-.065	OL6	1.5														
129	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	10	-.065	26	-.065	OL6	1.5														
130	1.2D + 1.5Lv(1) + 1...	Yes	Y		DL	1.2	11	-.065	27	-.065	OL6	1.5														
131	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	4	.065	20	.065	OL7	1.5														
132	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	5	.065	21	.065	OL7	1.5														
133	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	6	.065	22	.065	OL7	1.5														
134	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	7	.065	23	.065	OL7	1.5														
135	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	8	.065	24	.065	OL7	1.5														
136	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	9	.065	25	.065	OL7	1.5														
137	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	10	.065	26	.065	OL7	1.5														
138	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	11	.065	27	.065	OL7	1.5														
139	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	4	-.065	20	-.065	OL7	1.5														
140	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	5	-.065	21	-.065	OL7	1.5														
141	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	6	-.065	22	-.065	OL7	1.5														

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
142	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	7	-.065	23	-.065	OL7	1.5														
143	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	8	-.065	24	-.065	OL7	1.5														
144	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	9	-.065	25	-.065	OL7	1.5														
145	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	10	-.065	26	-.065	OL7	1.5														
146	1.2D + 1.5Lv(2) + 1...	Yes	Y		DL	1.2	11	-.065	27	-.065	OL7	1.5														
147	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	4	.065	20	.065	OL8	1.5														
148	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	5	.065	21	.065	OL8	1.5														
149	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	6	.065	22	.065	OL8	1.5														
150	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	7	.065	23	.065	OL8	1.5														
151	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	8	.065	24	.065	OL8	1.5														
152	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	9	.065	25	.065	OL8	1.5														
153	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	10	.065	26	.065	OL8	1.5														
154	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	11	.065	27	.065	OL8	1.5														
155	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	4	-.065	20	-.065	OL8	1.5														
156	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	5	-.065	21	-.065	OL8	1.5														
157	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	6	-.065	22	-.065	OL8	1.5														
158	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	7	-.065	23	-.065	OL8	1.5														
159	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	8	-.065	24	-.065	OL8	1.5														
160	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	9	-.065	25	-.065	OL8	1.5														
161	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	10	-.065	26	-.065	OL8	1.5														
162	1.2D + 1.5Lv(3) + 1...	Yes	Y		DL	1.2	11	-.065	27	-.065	OL8	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	N35	max	1363.569	3	917.445	14	3008.361	30	-144.818	6	54.499	4	1330.893	18
2		min	-739.395	11	-2002.927	6	383.931	6	-5633.367	30	-3268.675	29	-1328.038	10
3	N61	max	1346.841	3	1971.835	16	3005.785	24	5617.613	24	61.367	18	1331.083	12
4		min	-718.941	11	-888.869	8	382.694	16	147.658	16	-3297.823	26	-1328.09	4
5	N88	max	1042.907	3	1131.895	15	3008.439	19	732.588	7	6497.496	19	1331.027	7
6		min	-2295.005	11	-1129.511	7	383.595	11	-724.116	15	168.628	11	-1328.196	15
7	Totals:	max	3753.317	3	3753.075	15	8361.205	22						
8		min	-3753.341	11	-3753.178	7	2908.167	1						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Che...	Lo...	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y...	phi*Mn z-...	Cb	Eqn
1	M282A	PIPE_2.0	.552	68.716	8	.081	26...		10	14916.096	32130	1871.625	1871.625	2.202	H1-1b
2	M267A	PIPE_2.0	.552	68.716	3	.086	26...		5	14916.096	32130	1871.625	1871.625	3.546	H1-1b
3	M301B	PIPE_2.0	.552	68.716	14	.081	26...		15	14916.096	32130	1871.625	1871.625	2.202	H1-1b
4	M189A	HSS4X4X4	.535	0	29	.118	0	y	28	97435.587	106155	12311.25	12311.25	2.769	H1-1b
5	M51	HSS4X4X4	.534	0	19	.117	0	y	22	97435.587	106155	12311.25	12311.25	2.766	H1-1b
6	M209	HSS4X4X4	.534	0	24	.117	0	y	27	97435.587	106155	12311.25	12311.25	2.765	H1-1b
7	M307B	PIPE_2.0	.351	68.716	26	.096	68...		14	14916.096	32130	1871.625	1871.625	1.445	H1-1b
8	M273A	PIPE_2.0	.351	68.716	31	.096	68...		3	14916.096	32130	1871.625	1871.625	3.619	H1-1b
9	M288A	PIPE_2.0	.351	68.716	20	.098	68...		9	14916.096	32130	1871.625	1871.625	2.764	H1-1b
10	M261A	PIPE_2.0	.339	68.716	9	.107	31...		10	14916.096	32130	1871.625	1871.625	3.825	H1-1b
11	M296A	PIPE_2.0	.337	68.716	3	.107	31...		4	14916.096	32130	1871.625	1871.625	3.254	H1-1b
12	M277A	PIPE_2.0	.337	68.716	14	.107	31...		15	14916.096	32130	1871.625	1871.625	4.272	H1-1b
13	M116	PIPE_2.0	.275	140.5...	13	.141	13...		3	6295.422	32130	1871.625	1871.625	1.842	H1-1b
14	M121	PIPE_2.0	.270	140.5...	8	.141	13...		14	6295.422	32130	1871.625	1871.625	1.807	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Che...	Lo...	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y...	phi*Mn z-...	Cb	Eqn
15	M126	PIPE_2.0	.270	140.5...	3	.141	13...		8	6295.422	32130	1871.625	1871.625	1.807	H1-1b
16	M245A	HSS4X4X4	.263	30.438	29	.066	3....	z	3	104002.36	106155	12311.25	12311.25	1.631	H1-1b
17	M60	HSS4X4X4	.262	30.438	19	.066	3....	z	8	104002.36	106155	12311.25	12311.25	1.638	H1-1b
18	M279	HSS4X4X4	.262	30.438	24	.067	3....	z	13	104002.36	106155	12311.25	12311.25	1.638	H1-1b
19	M109	L2.5x2.5x4	.262	0	3	.058	0	z	12	35695.317	37485	1082.622	2466.905	2.243	H2-1
20	M111	L2.5x2.5x4	.262	0	8	.058	0	z	18	35695.317	37485	1082.622	2466.905	2.243	H2-1
21	M110	L2.5x2.5x4	.262	0	14	.058	0	z	7	35695.317	37485	1082.622	2466.905	2.243	H2-1
22	M280	HSS4X4X4	.260	0	25	.066	27...	z	3	104002.416	106155	12311.25	12311.25	1.624	H1-1b
23	M246A	HSS4X4X4	.260	0	30	.066	27...	z	8	104002.416	106155	12311.25	12311.25	1.631	H1-1b
24	M63	HSS4X4X4	.259	0	19	.066	27...	z	14	104002.416	106155	12311.25	12311.25	1.631	H1-1b
25	M72	PIPE_3.0_...	.228	57.632	25	.091	11...		12	28250.554	65205	5748.75	5748.75	2.567	H1-1b
26	M69	PIPE_3.0_...	.228	57.632	30	.091	11...		18	28250.554	65205	5748.75	5748.75	2.55	H1-1b
27	M75	PIPE_3.0_...	.227	57.632	19	.091	11...		7	28250.554	65205	5748.75	5748.75	2.549	H1-1b
28	M92	L2x2x3	.108	25.271	33	.007	50...	y	34	9585.427	22743	542.224	1048.04	1.136	H2-1
29	M104	L2x2x3	.108	25.271	22	.007	50...	y	23	9585.427	22743	542.224	1048.04	1.136	H2-1
30	M98	L2x2x3	.108	25.271	27	.007	0	y	29	9585.427	22743	542.224	1048.04	1.136	H2-1
31	M100	L2x2x3	.107	25.271	21	.007	0	z	20	9585.492	22743	542.224	1048.041	1.136	H2-1
32	M94	L2x2x3	.107	25.271	27	.007	0	z	26	9585.492	22743	542.224	1048.041	1.136	H2-1
33	M106	L2x2x3	.107	25.271	32	.007	50...	z	31	9585.492	22743	542.224	1048.041	1.136	H2-1

Envelope Plate/Shell Principal Stresses

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC
1	P828	max	T	18.395	13	3.739	13	7.328	13	1.291	4	16.839	13
2		min		-4.48	5	-18.196	5	.195	17	-.3	16	.557	49
3		max	B	15.949	5	4.676	5	5.636	5	2.349	160	14.2	5
4		min		-4.008	13	-14.232	13	.151	100	-.766	143	.266	100
5	P685	max	T	18.19	7	3.634	7	7.278	7	1.291	15	16.673	7
6		min		-4.384	15	-17.979	15	.167	91	-.3	11	.415	91
7		max	B	15.657	15	4.574	15	5.541	15	2.318	133	13.945	15
8		min		-3.899	7	-13.953	7	.106	88	-.783	148	.228	88
9	P756	max	T	18.189	18	3.633	18	7.278	18	1.292	9	16.672	18
10		min		-4.385	10	-17.98	10	.244	106	-.306	5	.489	105
11		max	B	15.661	10	4.576	10	5.543	10	2.345	93	13.948	10
12		min		-3.898	18	-13.951	18	.162	36	-.748	132	.285	35
13	P798	max	T	17.288	6	4.416	6	6.745	14	1.847	12	15.557	6
14		min		-3.023	14	-16.512	14	.209	9	.278	7	.742	42
15		max	B	12.168	14	3.331	14	5.546	6	2.237	158	14.041	6
16		min		-4.694	6	-15.786	6	.037	67	-.738	99	.194	72
17	P726	max	T	17.285	11	4.416	11	6.746	3	1.847	18	15.554	11
18		min		-3.022	3	-16.515	3	.152	109	.277	13	.743	47
19		max	B	12.168	3	3.33	3	5.546	11	2.282	84	14.041	11
20		min		-4.694	11	-15.787	11	.154	83	-.766	83	.521	83
21	P655	max	T	17.282	16	4.414	16	6.746	8	1.847	7	15.552	16
22		min		-3.023	8	-16.515	8	.247	83	.278	18	.641	84
23		max	B	12.17	8	3.331	8	5.544	16	2.307	78	14.036	16
24		min		-4.692	16	-15.781	16	.059	67	-.515	77	.209	76
25	P696	max	T	10.845	14	3.288	14	5.771	6	1.947	10	14.396	6
26		min		-4.587	6	-16.13	6	.154	108	.306	11	.267	108
27		max	B	15.395	6	4.503	6	5.446	6	1.982	18	13.71	6
28		min		-3.558	14	-13.518	14	.055	48	.226	3	.205	95

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC
29	P768	max	T	10.857	8	3.291	8	5.767	16	2.021	5	14.386	16
30		min		-4.586	16	-16.119	16	.169	71	.306	6	.293	71
31		max	B	15.388	16	4.5	16	5.444	16	2.08	112	13.704	16
32		min		-3.561	8	-13.528	8	.056	43	.121	13	.248	155
33	P840	max	T	10.861	3	3.291	3	5.766	11	1.947	15	14.382	11
34		min		-4.584	11	-16.115	11	.349	131	.306	16	.767	131
35		max	B	15.386	11	4.5	11	5.443	11	2.292	68	13.702	11
36		min		-3.561	3	-13.528	3	.027	88	-.752	69	.233	135
37	P786	max	T	15.529	17	3.57	18	6.007	17	2.211	68	14.104	17
38		min		-3.325	10	-12.939	9	.045	68	-.645	13	.235	68
39		max	B	14.912	10	3.324	10	5.887	18	1.336	5	13.939	18
40		min		-3.616	18	-15.39	18	.13	38	-.384	6	.239	150
41	P792	max	T	15.783	17	4.621	17	5.581	17	2.344	123	14.054	17
42		min		-3.87	9	-13.735	9	.136	82	-.724	87	.263	152
43		max	B	17.768	9	3.608	9	7.08	9	1.293	18	16.317	17
44		min		-4.424	17	-18.073	17	.178	5	-.297	7	.523	38
45	P822	max	T	15.364	13	3.436	12	5.973	13	1.325	17	13.978	5
46		min		-3.612	4	-15.422	5	.141	48	-.387	16	.255	48
47		max	B	15.704	5	3.579	4	6.081	5	1.821	104	14.267	5
48		min		-3.434	12	-13.428	13	.056	114	-.739	29	.253	99
49	P679	max	T	15.363	7	3.437	7	5.963	7	1.276	14	13.966	7
50		min		-3.61	15	-15.408	15	.092	90	-.387	11	.161	90
51		max	B	15.459	15	3.577	15	5.941	15	1.924	67	14.017	15
52		min		-3.434	7	-13.196	7	.04	76	-.746	23	.189	77
53	P750	max	T	15.362	18	3.436	18	5.963	18	1.278	9	13.965	18
54		min		-3.611	10	-15.409	10	.142	38	-.387	6	.256	38
55		max	B	15.463	10	3.578	10	5.943	10	2.336	110	14.021	10
56		min		-3.433	18	-13.193	18	.239	50	-.773	98	.42	50
57	P690	max	T	11.923	14	3.257	14	5.52	6	2.248	104	13.958	6
58		min		-4.651	6	-15.69	6	.071	99	-.7	99	.219	106
59		max	B	17.322	6	4.378	6	6.628	14	1.848	15	15.6	6
60		min		-2.958	14	-16.214	14	.248	98	.275	4	.609	97
61	P762	max	T	11.935	8	3.26	8	5.516	16	2.336	67	13.95	16
62		min		-4.648	16	-15.68	16	.023	99	-.645	5	.17	110
63		max	B	17.313	16	4.374	16	6.631	8	1.848	10	15.592	16
64		min		-2.962	8	-16.225	8	.252	45	.275	15	.718	44
65	P714	max	T	15.388	7	3.572	7	5.908	7	2.268	99	13.949	7
66		min		-3.321	15	-12.787	15	.056	106	-.658	106	.174	106
67		max	B	14.9	15	3.32	15	5.89	7	1.282	8	13.946	7
68		min		-3.619	7	-15.399	7	.076	93	-.384	11	.142	93
69	P834	max	T	11.937	3	3.261	3	5.515	11	2.312	83	13.947	11
70		min		-4.647	11	-15.677	11	.049	132	-.582	146	.176	131
71		max	B	17.312	11	4.374	11	6.631	3	1.848	5	15.593	11
72		min		-2.963	3	-16.225	3	.152	72	.273	9	.617	136
73	P858	max	T	15.372	12	3.568	12	5.902	12	2.283	80	13.935	12
74		min		-3.325	4	-12.803	4	.086	131	-.766	72	.2	146
75		max	B	14.911	4	3.324	4	5.887	12	1.282	14	13.937	12
76		min		-3.616	12	-15.389	12	.114	93	-.384	16	.22	143
77	P720	max	T	15.588	7	4.547	7	5.521	7	2.351	126	13.885	7
78		min		-3.78	15	-13.528	15	.121	104	-.769	95	.214	104
79		max	B	17.647	15	3.524	15	7.061	15	1.293	7	16.229	7
80		min		-4.357	7	-17.963	7	.161	91	-.297	12	.343	92

Mount Analysis Square Plate Connection

TIA Revision:	TIA-222-H	Select

SITE DATA	
Site Number:	370626
Site Name:	East Hartford
Project Number:	11916045

REACTIONS		
Moment:	6.495	kip-ft
Axial:	1.649	kips
Shear:	3.009	kips

Load Combination	24

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

BOLT RESULTS		
Max Bolt (Cu+ Vu/η):	9.60	kips
Axial Design Strength:	21.70	kips
Stress Ratio	44.24%	

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

PLATE RESULTS		
Base Plate Stress:	20.93	ksi
Bending Strength:	32.40	ksi
Stress Ratio:	64.59%	

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

RAN Template:	A&L Template:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Section 1 - Site Information

Site ID: CTHA505A
Status: Draft
Version: 5
Project Type: Anchor
Approved: Not Approved
Approved By: Not Approved
Last Modified: 4/18/2021 9:44:22 PM
Last Modified By: Dominic.Kallas2@T-Mobile.com

Site Name: Crown E. Hartford Monopole
Site Class: Monopole
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: <undefined>

Latitude: 41.77330000
Longitude: -72.61350000
Address: 148 Roberts Street
City, State: East Hartford, CT
Region: NORTHEAST

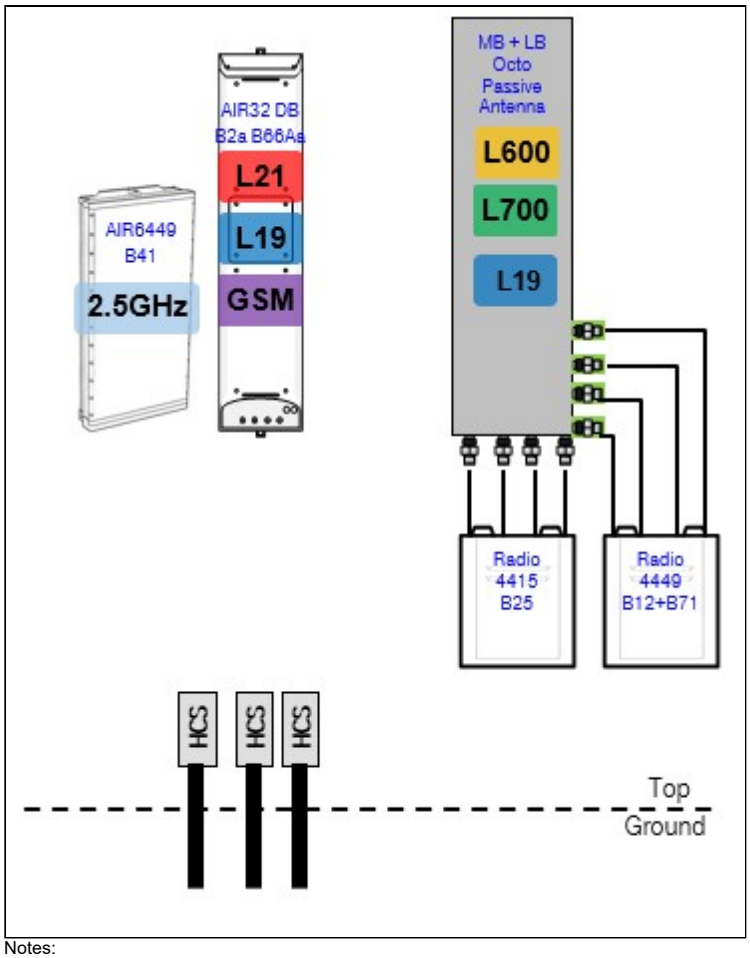
RAN Template: 67D5A997DB ODE+6160			**AL Template:** 67D5997DB_2xAIR+1OP (U21 Market)	
Sector Count: 3	**Antenna Count:** 9	**Coax Line Count:** 0	**TMA Count:** 0	**RRU Count:** 9

Section 2 - Existing Template Images

----- This section is intentionally blank. -----

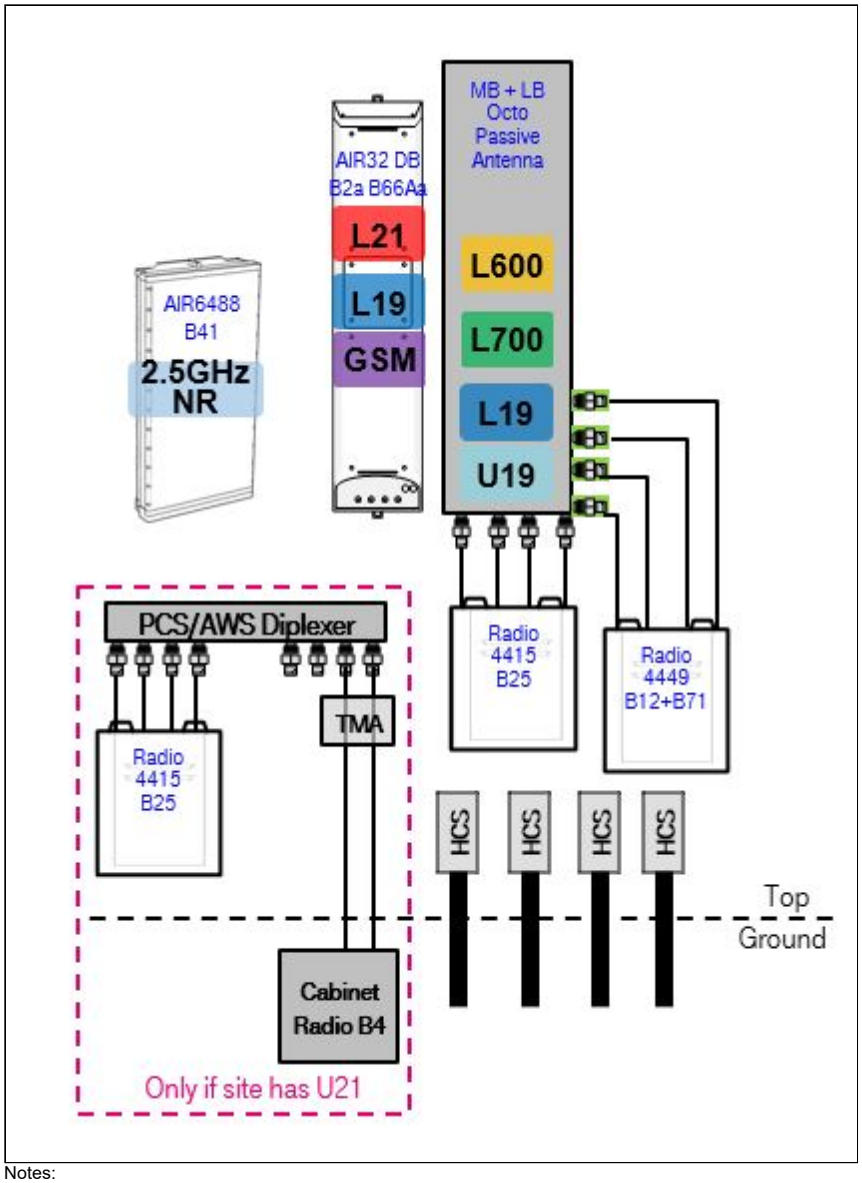
Section 3 - Proposed Template Images

67D5A997DB_2xAIR+1xOP.jpg



Notes:

67D5997DB_2xAIR+1OP.JPG


MB + LB
Octo
Passive
Antenna
AIR32 DB
B2a B66Aa
L21
L19
GSM
L600
L700
L19
U19
AIR6488
B41
2.5GHz
NR
PCS/AWS Diplexer
TMA
Radio
4415
B25
Radio
4415
B25
Radio
4449
B12+B71
HCS
HCS
HCS
HCS
Top
Ground
Cabinet
Radio B4
Only if site has U21

Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

RAN Template:	A&L Template:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 95ADB

Enclosure	1	2
Enclosure Type	RBS 6201 ODE	Ancillary Equipment (Ericsson)
Baseband	DUW30 [U2100]; BB 6630 [L2100, L1900]	
Hybrid Cable System		Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select Length & AWG*

Proposed RAN Equipment

Template: 67D5A997DB ODE+6160

Enclosure	1	2	3
Enclosure Type	RBS 6201 ODE	Enclosure 6160	B160
Baseband	DUW30 [U2100]; BB 6648 [L2100, L1900]; BB 6648 [L700, L600, N600]	BB 6648 [L2500, N2500]	
Hybrid Cable System	Ericsson Hybrid Trunk 6/24 4AWG 40m **(x 2)**	Ericsson Hybrid Trunk 6/24 4AWG 40m PSU 4813	
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Add (1) BB6648 for L600, L700, and N600 (MMBB - Mixed Mode Baseband) to existing RBS6201 ODE base station 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: (6) coaxial lines; (1) 9X18 HCS

Remove all coaxial lines.

Remove 9X18 HCS.

Add (3) 6X24 HCS as follows: (2) terminating at the ODE; (1) terminating at the Enclosure 6160 (Connect DC for AIR6449 B41 to the PSU4813 Voltage Booster).

RAN Template:	A&L Template:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Section 6 - A&L Equipment

Existing Template: 95ADB_2xAIR
Proposed Template: 67D5997DB_2xAIR+1OP (U21 Market)

Sector 1 (Existing) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR21 KRC118046-1_B2P_B4A (Quad)	
Azimuth	30				30	
M. Tilt	0				0	
Height	100				100	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L2100	L2100	L1900	L1900	U2100	
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	
Cables	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.		Fiber Jumper **(x2)**	
TMAs						
Diplexers / Combiners						
Radio						
Sector Equipment						

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1				2				3	
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAALL24_43-U-NA20 (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)	
Azimuth	30				30				30	
M. Tilt	0				0				0	
Height	100				100				100	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**
Active Tech.	L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100	L2500 N2500	L2500 N2500
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt										
Cables	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**
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 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna) Radio 4415 B66A (At Antenna)		
Sector Equipment										

Unconnected Equipment:

Scope of Work:

New Platform with three mounts per sector.

Add handrail kit.

Keep AIR32 B66A/B2A Dual Band for L2100 and L1900 1st Carrier in Position 1.

Remove AIR21 B2A/B4P from Position 2.

Install (1) Low-Band/Mid-Band Octo in Position 2.

Add (1) Radio 4449 B71+B85 for L600, L700, and N600 in Position 2 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Add (1) PCS/AWS 8:4 diplexer to Position 2 at antenna, and connect its four common ports to the Mid-Band ports of the Octo Antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to Position 2 near antenna, and connect its ports to the four PCS ports of the diplexer.

Add (1) Radio 4415 B66 for U2100, to Position 2 near antenna, and connect two of its ports to two AWS ports of the diplexer.

Make sure to install metal caps on all empty ports of AWS/PCS diplexer for load balancing.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 3.

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:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Sector 2 (Existing) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR21 KRC118046-1_B2P_B4A (Quad)	
Azimuth	135				135	
M. Tilt	0				0	
Height	100				100	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L2100	L2100	L1900	L1900	U2100	
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	4	
Cables	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft. **(x2)**	
TMAs						
Diplexers / Combiners						
Radio						
Sector Equipment						

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1				2				3	
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAALL24_43-U-NA20 (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)	
Azimuth	135				135				135	
M. Tilt	0				0				0	
Height	100				100				100	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**
Active Tech.	L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100	L2500 N2500	L2500 N2500
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt										
Cables	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**
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 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna) Radio 4415 B66A (At Antenna)		
Sector Equipment										

Unconnected Equipment:

Scope of Work:

New Platform with three mounts per sector.

Add handrail kit.

Keep AIR32 B66A/B2A Dual Band for L2100 and L1900 1st Carrier in Position 1.

Remove AIR21 B2A/B4P from Position 2.

Install (1) Low-Band/Mid-Band Octo in Position 2.

Add (1) Radio 4449 B71+B85 for L600, L700, and N600 in Position 2 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Add (1) PCS/AWS 8:4 diplexer to Position 2 at antenna, and connect its four common ports to the Mid-Band ports of the Octo Antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to Position 2 near antenna, and connect its ports to the four PCS ports of the diplexer.

Add (1) Radio 4415 B66 for U2100, to Position 2 near antenna, and connect two of its ports to two AWS ports of the diplexer.

Make sure to install metal caps on all empty ports of AWS/PCS diplexer for load balancing.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 3.

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:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Sector 3 (Existing) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR21 KRC118046-1_B2P_B4A (Quad)	
Azimuth	270				270	
M. Tilt	0				0	
Height	100				100	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L2100	L2100	L1900	L1900	U2100	
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	
Cables	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft. **(x2)**	
TMAs						
Diplexers / Combiners						
Radio						
Sector Equipment						

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1				2				3	
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAALL24_43-U-NA20 (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)	
Azimuth	270				270				270	
M. Tilt	0				0				0	
Height	100				100				100	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**
Active Tech.	L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100	L2500 N2500	L2500 N2500
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt										
Cables	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Coax Jumper **(x2)** Fiber Jumper **(x2)**	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**
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 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna) Radio 4415 B66A (At Antenna)		
Sector Equipment										

Unconnected Equipment:

Scope of Work:

New Platform with three mounts per sector.

Add handrail kit.

Keep AIR32 B66A/B2A Dual Band for L2100 and L1900 1st Carrier in Position 1.

Remove AIR21 B2A/B4P from Position 2.

Install (1) Low-Band/Mid-Band Octo in Position 2.

Add (1) Radio 4449 B71+B85 for L600, L700, and N600 in Position 2 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Add (1) PCS/AWS 8:4 diplexer to Position 2 at antenna, and connect its four common ports to the Mid-Band ports of the Octo Antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to Position 2 near antenna, and connect its ports to the four PCS ports of the diplexer.

Add (1) Radio 4415 B66 for U2100, to Position 2 near antenna, and connect two of its ports to two AWS ports of the diplexer.

Make sure to install metal caps on all empty ports of AWS/PCS diplexer for load balancing.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 3.

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:
67D5A997DB ODE+6160	67D5997DB_2xAIR+1OP (U21 Market)

CTHA505A_Anchor_5_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L600_CMP5

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

----- This section is intentionally blank. -----

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: CTHA505A

Crown E. Hartford Monopole
148 Roberts Street
East Hartford, Connecticut 06108

June 28, 2021

EBI Project Number: 6221003244

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**52.56%**

June 28, 2021

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

Emissions Analysis for Site: CTHA505A - Crown E. Hartford Monopole

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **148 Roberts Street** in **East Hartford, 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 148 Roberts Street in East Hartford, 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 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.

5) 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.

6) 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.

7) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.

8) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.

9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

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

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

13) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power

levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 100 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 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):	8,728.31	ERP (W):	8,728.31	ERP (W):	8,728.31
Antenna A1 MPE %:	**3.55%**	Antenna B1 MPE %:	**3.55%**	Antenna C1 MPE %:	**3.55%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,010.27	ERP (W):	11,010.27	ERP (W):	11,010.27
Antenna A2 MPE %:	**6.81%**	Antenna B2 MPE %:	**6.81%**	Antenna C2 MPE %:	**6.81%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
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):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 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 A3 MPE %:	**14.79%**	Antenna B3 MPE %:	**14.79%**	Antenna C3 MPE %:	**14.79%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	25.15%
Verizon	6.69%
Sprint	7.14%
AT&T	13.58%
Site Total MPE % :	52.56%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	25.15%
T-Mobile Sector B Total:	25.15%
T-Mobile Sector C Total:	25.15%
Site Total MPE % :	52.56%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz LTE	2	2056.61	100.0	16.74	1900 MHz LTE	1000	1.67%
T-Mobile 2100 MHz LTE	2	2307.55	100.0	18.78	2100 MHz LTE	1000	1.88%
T-Mobile 600 MHz LTE	2	591.73	100.0	4.82	600 MHz LTE	400	1.20%
T-Mobile 600 MHz NR	1	1577.94	100.0	6.42	600 MHz NR	400	1.61%
T-Mobile 700 MHz LTE	2	695.22	100.0	5.66	700 MHz LTE	467	1.21%
T-Mobile 1900 MHz LTE	2	2104.51	100.0	17.13	1900 MHz LTE	1000	1.71%
T-Mobile 2100 MHz UMTS	2	1324.71	100.0	10.78	2100 MHz UMTS	1000	1.08%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	100.0	44.94	2500 MHz LTE 1C & 2C Traffic	1000	4.49%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	100.0	4.37	2500 MHz LTE 1C & 2C Broadcast	1000	0.44%
T-Mobile 2500 MHz NR Traffic	1	22089.26	100.0	89.88	2500 MHz NR Traffic	1000	8.99%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	100.0	8.74	2500 MHz NR Broadcast	1000	0.87%
						Total:	**25.15%**

• 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:	25.15%
Sector B:	25.15%
Sector C:	25.15%
T-Mobile Maximum MPE % (Sector A):	25.15%
Site Total:	52.56%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **52.56%** 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.