



January 15, 2021

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

RE: **Notice of Exempt Modification for T-Mobile:
842862 - T-Mobile Site ID: CT11623B
259 Commerce Street, East Haven, CT 06512
Latitude: 41° 15' 22.88"/ Longitude: -72° 52' 32.80"**

Dear Ms. Bachman:

T-Mobile currently maintains six (6) total antennas at the 47-foot mount on the existing 58-foot monopole at 259 Commerce Street in East Haven, Connecticut. The tower is owned by Crown Castle and the property is owned by Stephen J. Viglione. T-Mobile now intends to replace three (3) existing antennas as well as add three (3) new antennas and ancillary equipment. The new antennas will be installed at the 47-ft level of the tower. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modifications:

Tower:

Remove:

(12) 1 5/8" Coax
(6) TMA

Remove and Replace:

(3) APX16DWV-16DWVS-C Antenna 1900/2100 MHz (**REMOVE**) - (3) AIR32
KRD901146-1_B66A_B2A (**REPLACE**)

Install New:

(2) 6x12 HCS 1 5/8" Hybrid Fiber Line
(3) Radio 4415 B25
(3) AIR6449 B41 5G antenna

Existing to Remain:

(3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz

Ground:

Remove:

- (1) 6201 cabinet
- (6) RUS01 B12s
- (3) RUS01 B2s
- (6) RUS01 B4s

Install new:

- (1) 6160 equipment cabinet
- (1) B160 battery cabinet
- (1) BB 6630 baseband radio
- (1) BB 6648 baseband radio
- (1) PSU 4813

The facility was approved by the Siting Council in Petition Number 634 on July 8, 2003. No conditions were attached that would be impacted by this modification.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Honorable Joseph A. Carfora, Mayor of the Town of East Haven, as well as, the East Haven Planning & Zoning Department, and Stephen J. Viglione, the property owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification 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 Communication 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.

Melanie A. Bachman

Page 3

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

Sincerely,



Richard Zajac
Site Acquisition Specialist
4545 East River Road, Suite 320
West Henrietta, NY 14586
(585) 445-5896
richard.zajac@crowncastle.com

Attachments

cc:

The Honorable Joseph A. Carfora, Mayor
Town of East Haven
Town Hall – Upper Level
250 Main Street
East Haven, CT 06512-3004
(203) 468-3204

Ellen Pellegrino, Deputy Zoning Officer (*via email to: epellegrino@townofeasthavenct.org*)
Town Hall – Lower Level
250 Main Street
East Haven, CT 06512-3004
(203) 468-3349

Stephen J. Viglione
259 Commerce Street
East Haven, CT 06512-4147
203-467-8388

ORIGIN ID: ONHA (585) 445-5896
RICHARD ZAJAC
CROWN CASTLE
629 KAYLEIGH DR

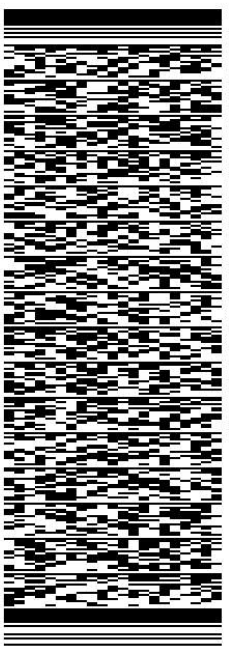
SHIP DATE: 15 JAN 21
ACT WGT: 1.00 LB
CAD: 112911364/NET4280

WEBSTER, NY 14580
UNITED STATES US

BILL SENDER

TO **JOSEPH A. CARFORA, MAYOR**
TOWN OF EAST HAVEN
250 MAIN STREET
TOWN HALL - UPPER LEVEL
EAST HAVEN CT 06512
REF: 799001 7690
(203) 468-3204
INV/ PO: DEPT:

56BJ111136/B766



TRK# 7826 3694 6058
0201
MON - 18 JAN 4:30P
STANDARD OVERNIGHT

XE EFBA
06512
CT-US BDL

After printing this label:

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Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Zajac, Richard

From: Zajac, Richard
Sent: Friday, January 15, 2021 9:50 AM
To: epellegrino@townofeasthavenct.org
Subject: Connecticut Siting Council exempt modification application notification
Attachments: CSC Exempt Modification Application - 259 Commerce St.pdf

Good morning Ms. Pellegrino,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 259 Commerce Street in East Haven.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,
RICH ZAJAC
Site Acquisition Specialist
T: (585) 445-5896 M: (607) 346-7212
F: (724) 416-4461
CROWN CASTLE
4545 East River Road, Suite 320
West Henrietta, NY 14586

ORIGIN ID: ONHA (585) 445-5896

RICHARD ZAJAC
CROWN CASTLE
629 KAYLEIGH DR

WEBSTER, NY 14580
UNITED STATES US

SHIP DATE: 15 JAN 21
ACT WGT: 1.00 LB
CAD: 112911364INET4280

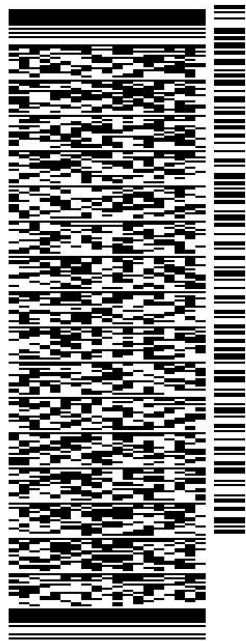
BILL SENDER

TO **STEPHEN J. VIGLIONE**

259 COMMERCE STREET

EAST HAVEN CT 06512

(203) 467-8388 REF: 799001 7680
INV/ PO: DEPT:



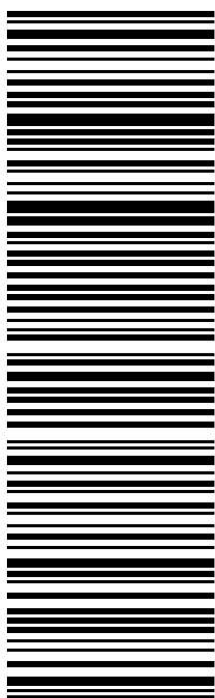
56BJ11/1136/B766

TRK# 0201 **7826 3706 5732**

MON - 18 JAN 4:30P
STANDARD OVERNIGHT

XE EFBA

06512
CT-US **BDL**



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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Exhibit A

Original Facility Approval

Petition No. 634
AT&T Wireless
East Haven, Connecticut
Staff Report
July 8, 2003

On June 10, 2003, Connecticut Siting Council (Council) member Philip T. Ashton and S. Derek Phelps of staff met with AT&T Wireless representatives at 259 Commerce Street in East Haven. Other persons in attendance were Lucia Chiocchio, Esq., of Cuddy & Feder LLP; Doug Frost, Engineering Technician, of NATCOMM, LLC; Kumar Rughoobur, RF Engineer, of WFI; Ray Vergati, Project Director, of Optasite, Inc.; and George Mingione, Planning and Zoning Administrator of the Town of East Haven. AT&T Wireless proposes to replace and expand an existing lattice tower and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

Specifically, AT&T Wireless proposes to replace and expand an existing 48' lattice tower (with a whip antenna extending to 61') with a 57' monopole to be relocated approximately 8' to 10' from the location of the existing tower. AT&T would attach six panel antennas on T-arms to the replacement tower. The property owner's whip antenna would not be reinstalled.

The existing lattice tower is located adjacent to the west side of the existing tower. The replacement monopole is 9' taller than the existing tower, but the overall height of the proposed facility will be approximately 1' lower in total height.

The proposed tower needs to be relocated approximately 8' to 10' from the location of the existing lattice tower for construction purposes. Associated equipment cabinets will be installed on a 7' x 13' concrete pad located at the base of the pole surrounded by an 8' vinyl stockade fence, which will be screened with 6' evergreen trees. The utilities will be installed underground.

At the request of the Council, AT&T Wireless wrote to six nearby residents on June 12, 2003, whose homes are within sight of the proposed tower location to advise them of the petition application. Those homeowners are: Antonio Rossano; Robert A. Esposito; Rita Compano; Phyllis Naqstri and Linda Lawson; Sebastian and Maria DiBona; and Anne M. Fitzgerald. These persons were asked to forward comments to the Council by June 3, 2003. One resident, Rita Compano, sent a letter stating that she is not in favor of the petition primarily on the basis of concerns that it will adversely affect the property value of her home.

George Mingione, Planning and Zoning Administrator of the Town of East Haven, wrote to the Council in a letter dated June 11, 2003, stating that the town's preference is for vinyl fencing around the tower compound, not less than six feet tall, with evergreen plantings.

Exhibit B

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2016.



TOWN of EAST HAVEN ASSESSOR



Information on the Property Records for the Municipality of East Haven was last updated on 4/12/2019.

Property Summary Information

Parcel Data And Values

Building ▾

Outbuildings

Sales

Permits

Parcel Information

Location:	259 COMMERCE ST	Property Use:	Industrial	Primary Use:	Light Industrial
Unique ID:	V0098600	Map Block Lot:	090 1013 005	Acres:	0.49
490 Acres:	0.00	Zone:	LI-2	Volume / Page:	0322/0838
Developers Map / Lot:	PT.4&7	Census:	1801000		

Value Information

	Appraised Value	Assessed Value
Land	114,000	79,800
Buildings	587,740	411,420

	Appraised Value	Assessed Value
Detached Outbuildings	54,682	38,280
Total	756,422	529,500

Owner's Information

Owner's Data

VIGLIONE STEPHEN J
259 COMMERCE ST
EAST HAVEN CT 06512

[Back To Search \(JavaScript:window.history.back\(1\);\)](#)

[Print View \(PrintPage.aspx?towncode=044&uniqueid=V0098600\)](#)

Information Published With Permission From The Assessor

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Parcel Data And Values

Building ▾

Outbuildings

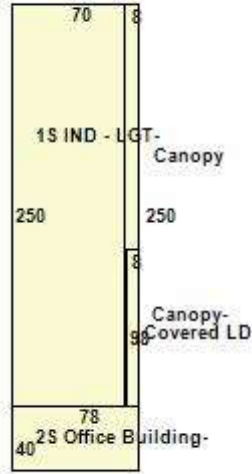
Sales

Permits

Building 1



(Images/Towns/EastHavenWeb/Pictures/V0098600-01.JPG)



(Images/Towns/EastHavenWeb/Sketches/V0098600_01.jpg)

Category:	Industrial	Use:	Light Manu	GLA:	23,740
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	1956
Heating:	FHA	Fuel:	Gas	Cooling Percent:	20
Siding:	Concrete Block/B. V. Solid	Roof Material:		Beds/Units:	0

Special Features

Wet Sprinklers	3160
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Attached Components

Type:	Year Built:	Area:
Canopy	1984	2,078
Covered Loading Dock	1984	783

[Back To Search \(JavaScript>window.history.back\(1\);\)](#)

[Print View \(PrintPage.aspx?towncode=044&uniqueid=V0098600\)](#)

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TOWN of EAST HAVEN ASSESSOR



Information on the Property Records for the Municipality of East Haven was last updated on 4/12/2019.

Property Summary Information

Parcel Data And Values

Building ▾

Outbuildings

Sales

Permits

Building 2



(Images/Towns/EastHavenWeb/Pictures/V0098600-02.JPG)



(Images/Towns/EastHavenWeb/Sketches/V0098600_02.jpg)

Category:	Cell Tower	Use:	Cell Site	GLA:	5
Stories:	0.00	Construction:	Metal	Year Built:	2011
Heating:		Fuel:		Cooling Percent:	0
Siding:		Roof Material:		Beds/Units:	1

Special Features

Attached Components

[Back To Search \(JavaScript:window.history.back\(1\);\)](#)

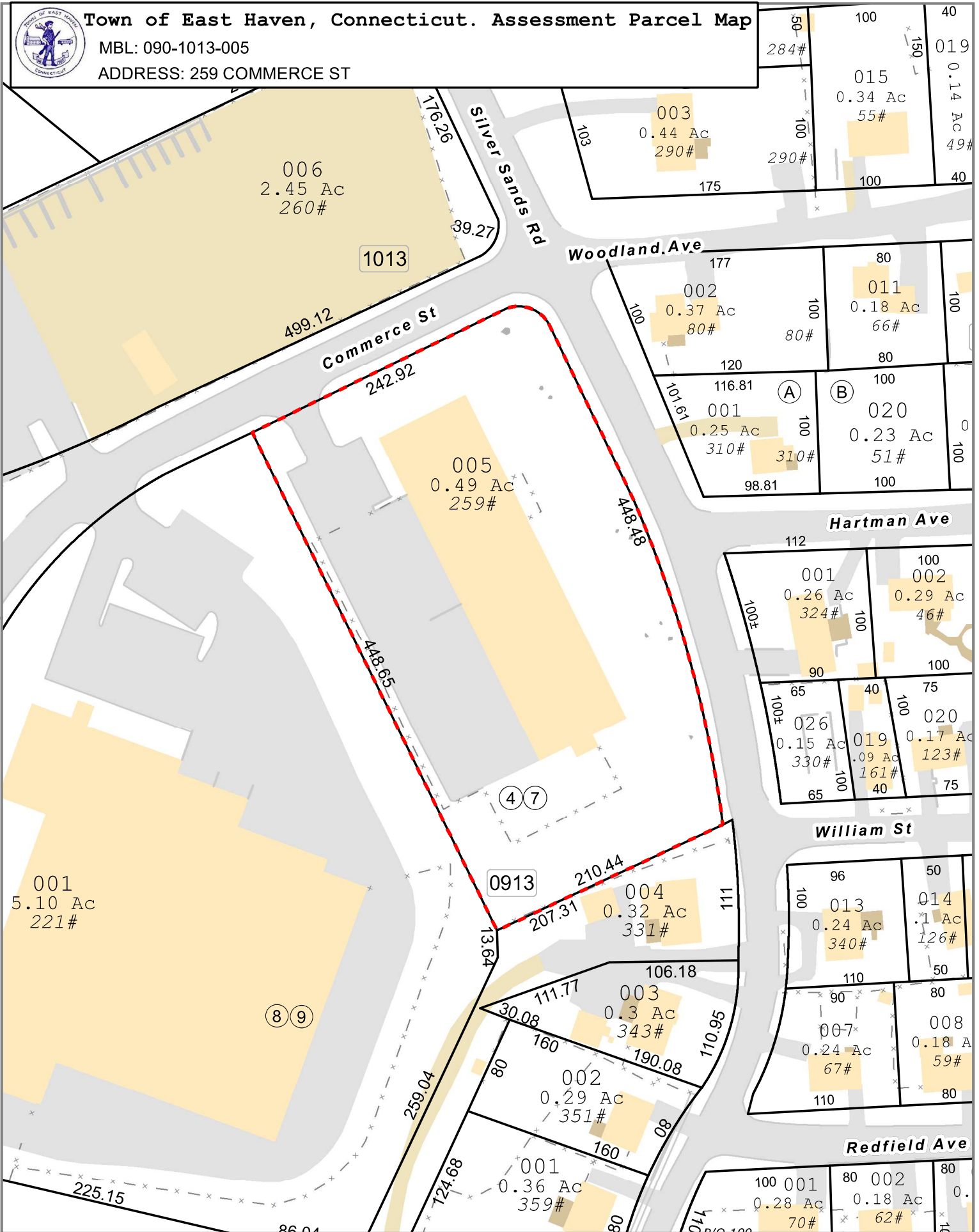
[Print View \(PrintPage.aspx?towncode=044&uniqueid=V0098600\)](#)



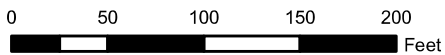
Town of East Haven, Connecticut. Assessment Parcel Map

MBL: 090-1013-005

ADDRESS: 259 COMMERCE ST



1 inch = 100 feet



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

Map Produced: 10/2018

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11623B
T-MOBILE SITE NAME: CT623/E. HAVEN ATT_MP
T-MOBILE PROJECT: ANCHOR

BUSINESS UNIT #: 842862
SITE ADDRESS: 259 COMMERCE STREET
 EAST HAVEN , CT 06512
COUNTY: NEW HAVEN
SITE TYPE: MONOPOLE
TOWER HEIGHT: 59'-0"

T-Mobile

12920 SE 38TH STREET
 BELLEVUE, WA 98006

CROWN CASTLE

3 CORPORATE PARK DRIVE, SUITE 101
 CLIFTON PARK, NY 12065

Kimley»Horn

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

T-MOBILE SITE NUMBER:
CT11623B

BU #: 842862
EAST HAVEN SOUTH

259 COMMERCE STREET
 EAST HAVEN , CT 06512

EXISTING 59'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/04/20	LMS	ISSUED FOR CONSTR.	MCK
1	11/05/20	LMS	REVISED PER CLIENT	MCK
2	12/15/20	ECW	REVISED PER CLIENT	MCK



12/17/20
 Exp. 01/31/21

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 UNLESS THEY ARE ACTING UNDER THE DIRECTION
 OF A LICENSED PROFESSIONAL ENGINEER,
 TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-1
REVISION: 2

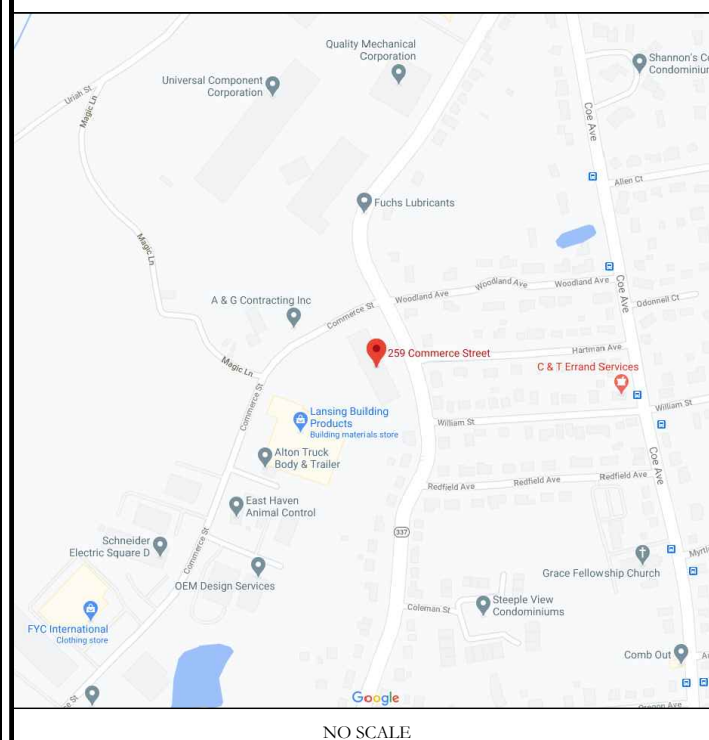
SITE INFORMATION

CROWN CASTLE USA INC. EAST HAVEN SOUTH
SITE NAME:
SITE ADDRESS: 259 COMMERCE STREET
 EAST HAVEN , CT 06512
COUNTY: NEW HAVEN
MAP/PARCEL #: 0901013005
AREA OF CONSTRUCTION: EXISTING
LATTITUDE: 41° 15' 22.88" N
LONGITUDE: 72° 52' 32.80" W
LAT/LONG TYPE: NAD83
GROUND ELEVATION: 31'
CURRENT ZONING: EXEMPT
JURISDICTION: NEW HAVEN COUNTY
OCCUPANCY CLASSIFICATION: U
TYPE OF CONSTRUCTION: IIB
A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR
 HUMAN HABITATION
PROPERTY OWNER: STEPHEN J VIGLIONE
 259 COMMERCE STREET
 EAST HAVEN, CT 06512
TOWER OWNER: CROWN CASTLE
 2000 CORPORATE DRIVE
 CANONSBURG, PA 15317
CARRIER/APPLICANT: T-MOBILE
 12920 SE 38TH STREET
 BELLEVUE, WA 98006
ELECTRIC PROVIDER: UNITED ILLUMINATING COMPANY
 (800) 722-5584
TELCO PROVIDER: AT&T
 (800) 822-2020

DRAWING INDEX

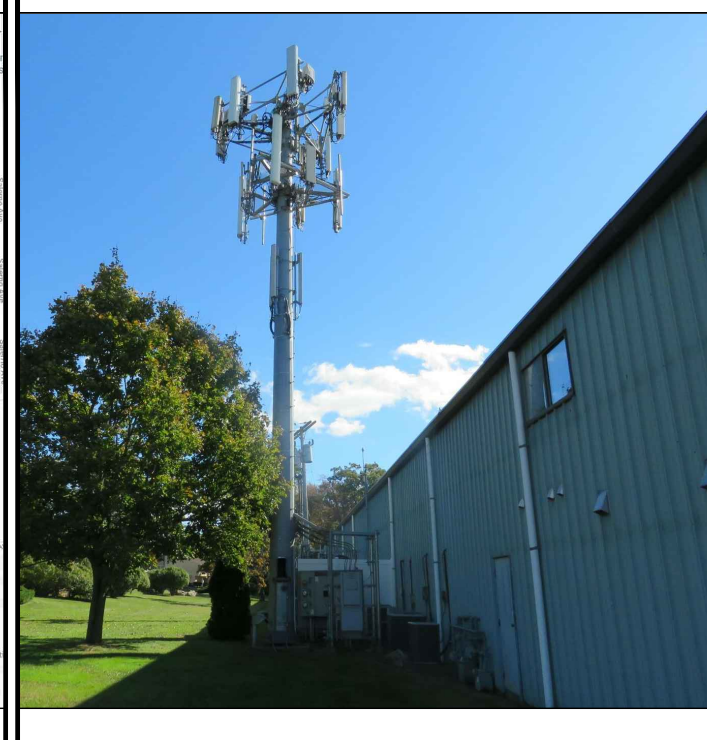
SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	EXISTING EQUIPMENT PLAN
C-1.3	FINAL EQUIPMENT PLAN
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	FINAL EQUIPMENT SCHEDULE
C-4	EQUIPMENT SPECS
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
E-1	PANEL SCHEDULE & ONE-LINE DIAGRAM
G-1	GROUNDING DETAILS

LOCATION MAP



NO SCALE

SITE PHOTO



PROJECT TEAM

A&E FIRM: KIMLEY-HORN & ASSOCIATES, INC. COA: PEC.0000738
 3875 EMBASSY PKWY, SUITE 280
 AKRON, OH 44333
 KEVIN.CLEMENTS@KIMLEY-HORN.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS: 3 CORPORATE PARK DRIVE, SUITE 101
 CLIFTON PARK, NY 12065
 CATHERINE COVINGTON - PROJECT MANAGER
 CATHERINE.COVINGTON@CROWNCastle.COM

SCOPING NOTES

- GROUND SCOPE OF WORK:
 - REMOVE (1) 6201 CABINET
 - REMOVE (6) RUS01 B12s
 - REMOVE (3) RUS01 B2s
 - REMOVE (6) RUS01 B4s
 - REMOVE (12) COAX CABLES
 - INSTALL (1) 6160 SSC CABINET
 - INSTALL (1) B160 BATTERY CABINET
 - INSTALL (1) BB 6630 BASEBAND RADIOS
 - INSTALL (1) BB 6648 BASEBAND RADIO
 - INSTALL (1) PSU 4813
 - INSTALL (2) HYBRID CABLES
- TOWER SCOPE OF WORK:
 - REMOVE (6) TMAs
 - REMOVE (3) ANTENNAS
 - INSTALL (6) ANTENNAS
 - INSTALL (3) RRH'S
- ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
- PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

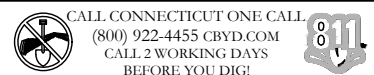
APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

- STRUCTURAL ANALYSIS: B+T GROUP (JOB#: 98372.006.01)
 DATED: 4/27/19
- MOUNT ANALYSIS: PAUL J FORD & COMPANY (JOB#: A37520-2250.001-7190)
 DATED: 10/19/20
- RFDS REVISION: 7
 DATED: 09/23/20



SITE PLAN DISCLAIMER:
 PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.

T-Mobile
 12920 SE 38TH STREET
 BELLEVUE, WA 98006

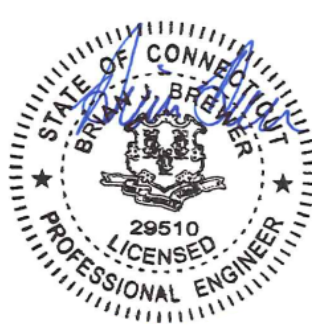
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 CLIFTON PARK, NY 12065

Kimley»Horn
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 RALEIGH, NC 27601

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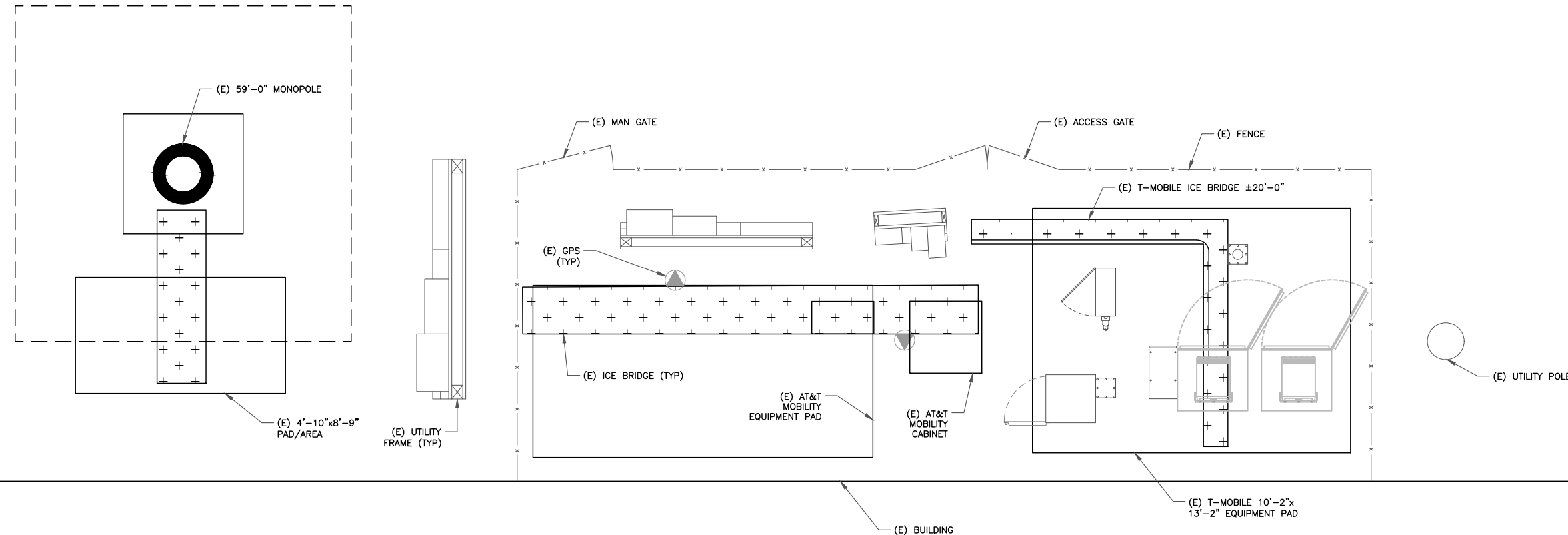
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12/17/20
 Exp. 01/31/21

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1 OVERALL SITE PLAN
 SCALE:  3/8"=1'-0" (FULL SIZE)
 3/16"=1'-0" (11x17)



SHEET NUMBER: **C-1.1** REVISION: **2**

INSTALLER NOTE:
 AMIAs ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAs ARE TO BE SUBSTITUTED WITH AMOBs. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING APPROPRIATE LOCATION WITHIN T-MOBILE LEASE AREA FOR AMOB MOUNTING AND PROVIDE TO CONSTRUCTION MANAGER. AMOB LOCATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

T-Mobile
 12920 SE 38TH STREET
 BELLEVUE, WA 98006

CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101
 CLIFTON PARK, NY 12065

Kimley»Horn
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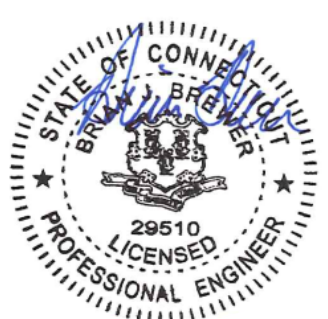
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259 COMMERCE STREET
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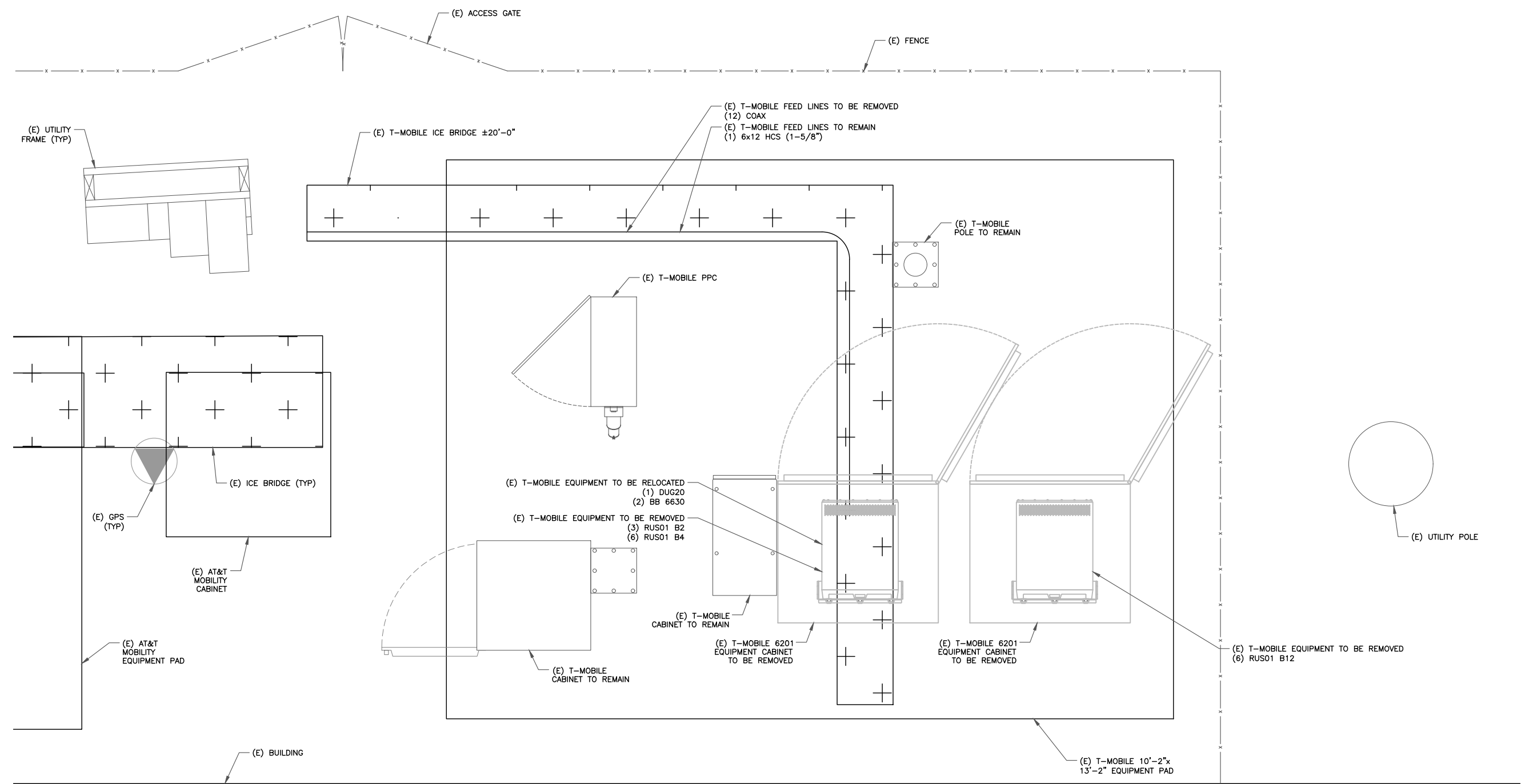
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1 EXISTING EQUIPMENT PLAN
 SCALE: 1"=1'-0" (FULL SIZE)
 1/2"=1'-0" (11x17)



SHEET NUMBER: **C-1.2** REVISION: **2**

INSTALLER NOTE:
 AMIAS ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAS ARE TO BE SUBSTITUTED WITH AMOBs. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING APPROPRIATE LOCATION WITHIN T-MOBILE LEASE AREA FOR AMOB MOUNTING AND PROVIDE TO CONSTRUCTION MANAGER. AMOB LOCATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

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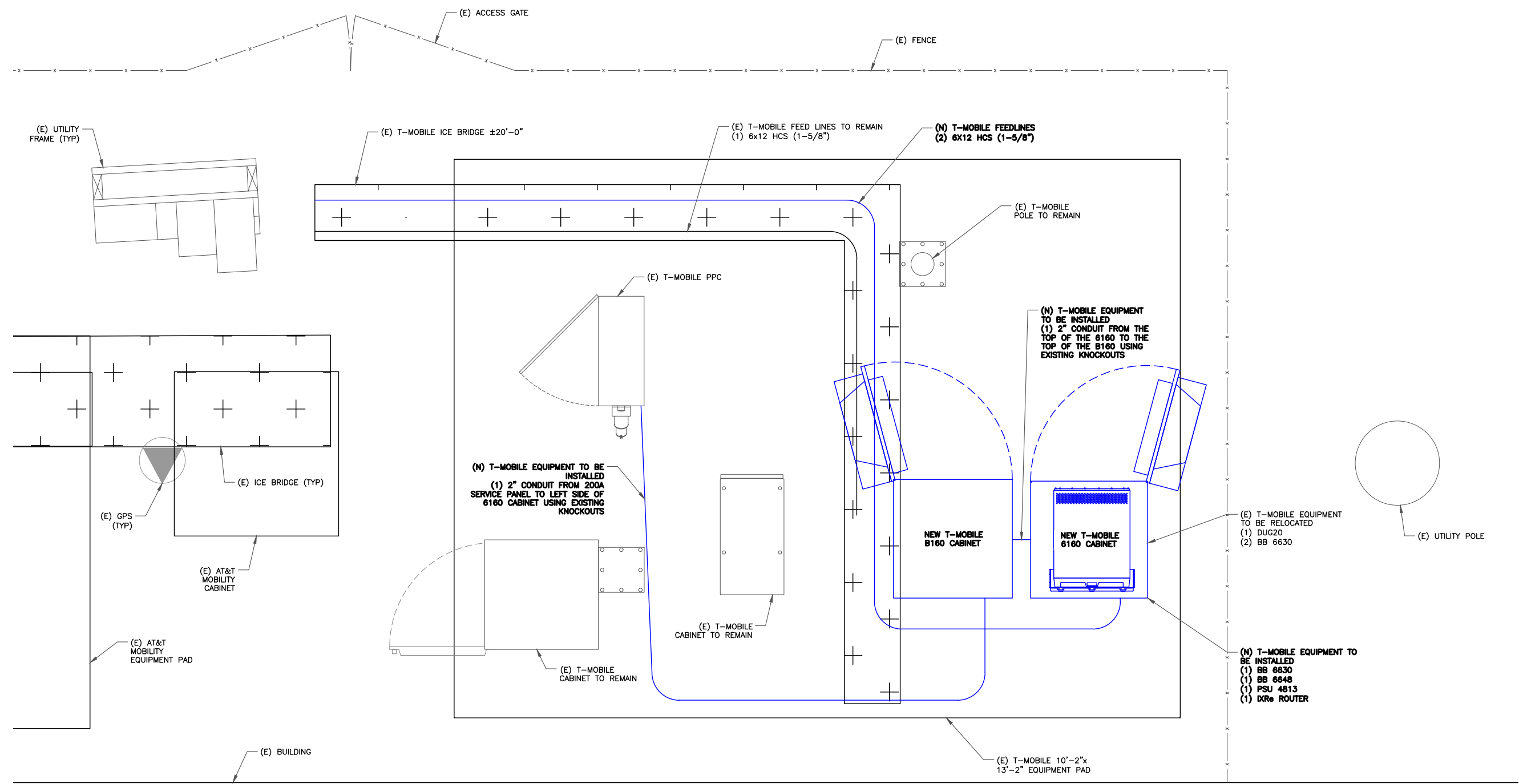
T-MOBILE SITE NUMBER:
CT11623B
 BU #: 842862
EAST HAVEN SOUTH
 259 COMMERCE STREET
 EAST HAVEN, CT 06512
 EXISTING 59'-0" MONOPOLE

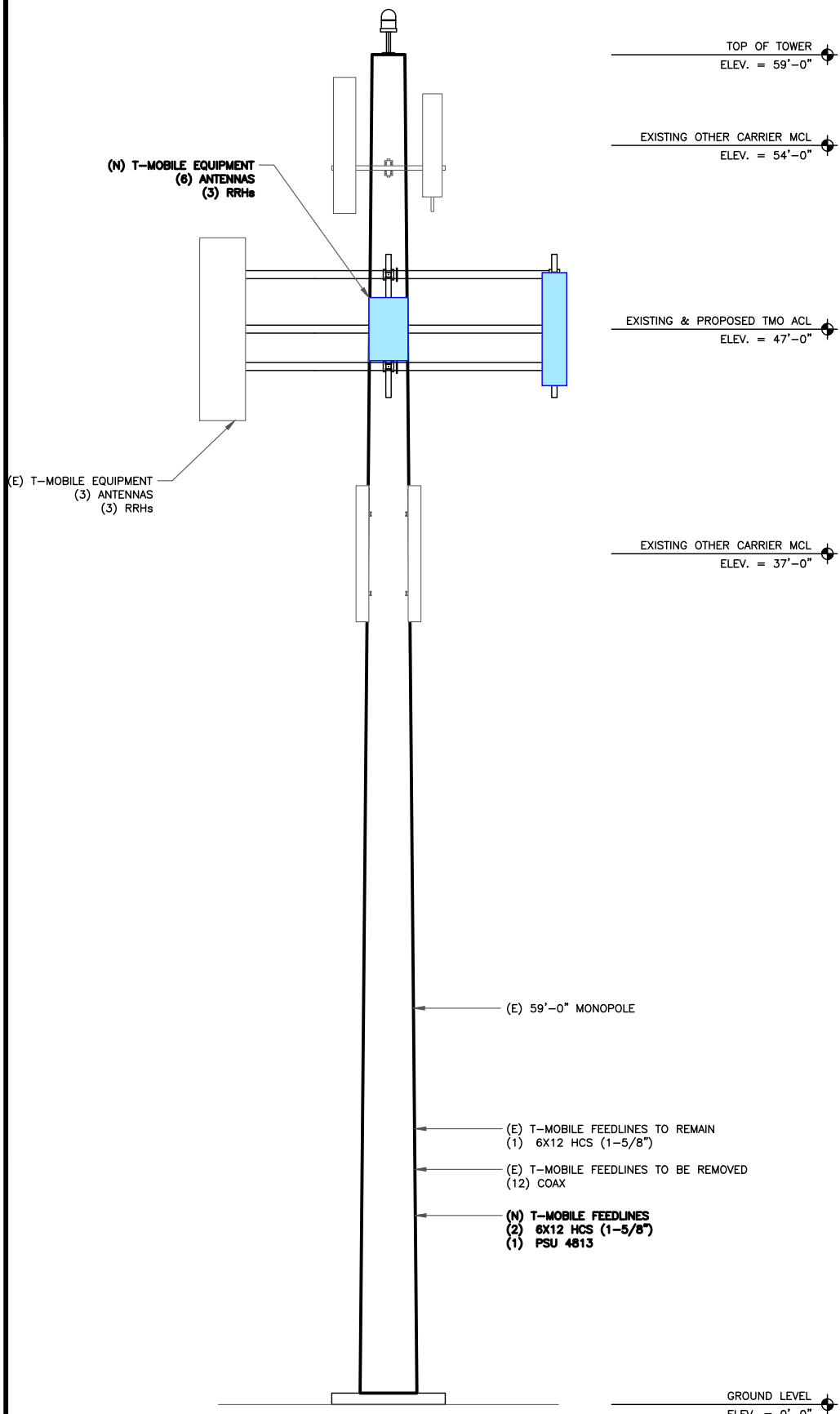
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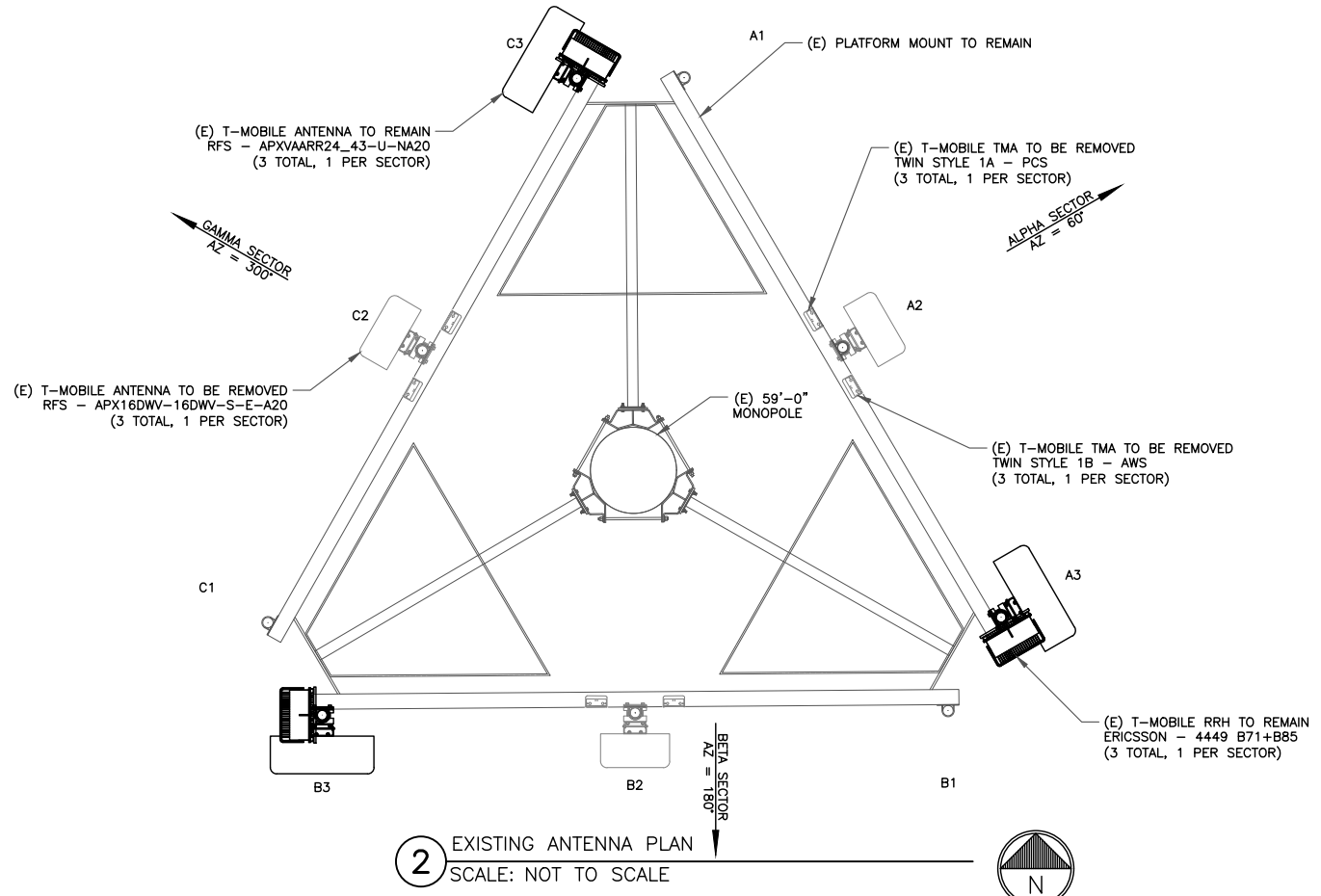
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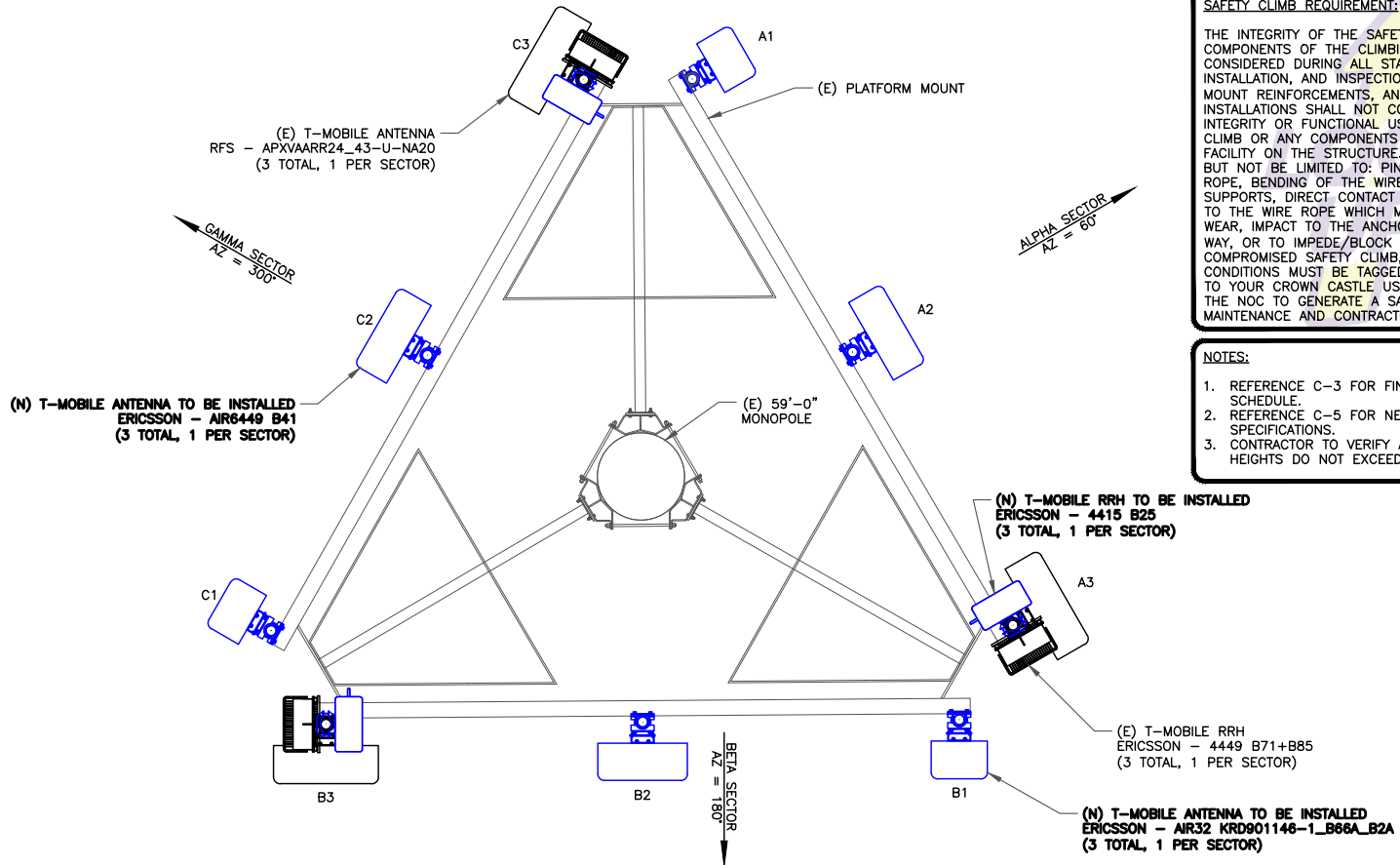




1 FINAL ELEVATION SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN SCALE: NOT TO SCALE

"LOOK UP" - CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

NOTES:

1. REFERENCE C-3 FOR FINAL EQUIPMENT SCHEDULE.
2. REFERENCE C-5 FOR NEW EQUIPMENT SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL ANTENNA TIP HEIGHTS DO NOT EXCEED BEACON BASE HEIGHT.

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T-MOBILE SITE NUMBER:
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BU #: 842862
EAST HAVEN SOUTH

259 COMMERCE STREET
 EAST HAVEN, CT 06512

EXISTING 59'-0" MONOPOLE

ISSUED FOR:

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STATE OF CONNECTICUT
 BRUCE BREWER
 29510
 PROFESSIONAL ENGINEER

12/17/20
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**FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)**

ALPHA																		
POSITION	ANTENNA				RADIO			DIPLEXER		TMA		SURGE PROTECTION		CABLES				
	TECH.	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
A1	L2100/L1900/G1900	(N) ERICSSON - AIR32 KRD901146-1_B66A_B2A	60°	47'-0"	-	-	-	-	-	-	-	-	-	-	1	(N) HYBRID	1-5/8"	97'-0"
A2	L2500/N2500	(N) ERICSSON - AIR6449 B41	60°	47'-0"	-	-	-	-	-	-	-	-	-	-	1	(N) HYBRID	1-5/8"	97'-0"
A3	L700/L600/N600/ L1900	(E) RFS - APXVAARR24_43-U-NA20	60°	47'-0"	1 1	(N) 4415 B25 (E) 4449 B71+B85	TOWER	-	-	-	-	-	-	-	1	(E) HYBRID	1-5/8"	97'-0"
BETA																		
B1	L2100/L1900/G1900	(N) ERICSSON - AIR32 KRD901146-1_B66A_B2A	180°	47'-0"	-	-	-	-	-	-	-	-	-	-	SHARED			
B2	L2500/N2500	(N) ERICSSON - AIR6449 B41	180°	47'-0"	-	-	-	-	-	-	-	-	-					
B3	L700/L600/N600/ L1900	(E) RFS - APXVAARR24_43-U-NA20	180°	47'-0"	1 1	(N) 4415 B25 (E) 4449 B71+B85	TOWER	-	-	-	-	-	-					
GAMMA																		
C1	L2100/L1900/G1900	(N) ERICSSON - AIR32 KRD901146-1_B66A_B2A	300°	47'-0"	-	-	-	-	-	-	-	-	-	-	SHARED			
C2	L2500/N2500	(N) ERICSSON - AIR6449 B41	300°	47'-0"	-	-	-	-	-	-	-	-	-					
C3	L700/L600/N600/ L1900	(E) RFS - APXVAARR24_43-U-NA20	300°	47'-0"	1 1	(N) 4415 B25 (E) 4449 B71+B85	TOWER	-	-	-	-	-	-					
															0	(E) UNUSED	-	-

NOTE:
(E) - EXISTING
(N) - NEW



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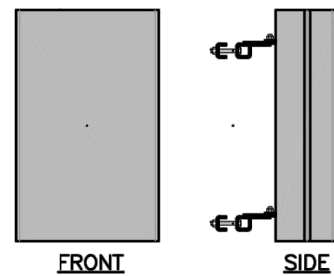
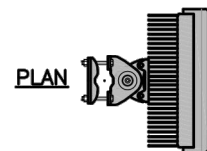
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L25+N25 ANTENNA DIMENSIONS	
MODEL #	AIR 6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.5"
WEIGHT	103 LBS



1 ANTENNA SPECIFICATIONS
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

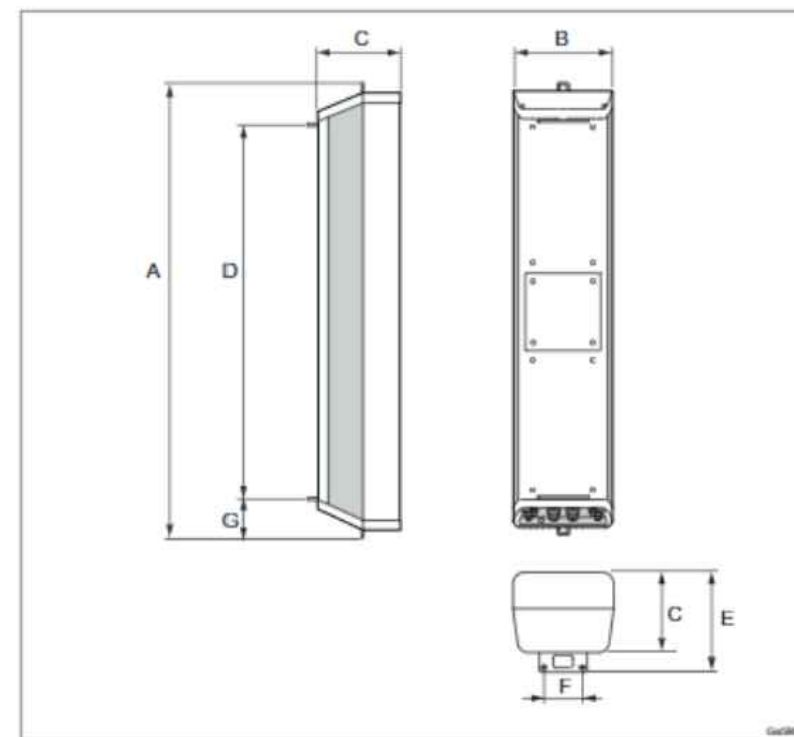


Figure 6 AIR Unit Dimensions

Table 7 AIR Unit Dimensions

AIR Unit Type	Height (A)	Width (B)	Depth (C)	Distance between mounting brackets (D)	Depth including mounting brackets (E)	Distance between stud holes on mounting brackets (F)	Distance between lower mounting bracket and the lower end of the AIR unit (G)
AIR 32 B4A B2P (1.4 m unit)	1505 mm	327 mm	220 mm	1249 mm	271 mm	110 mm	123 mm
AIR 32 B7A HBP LBP (2.0 m unit)	2014 mm	389 mm	284 mm	1752 mm	335 mm	110 mm	131 mm
AIR 32 B7AA HBP LBP (2.0 m unit)	2014 mm	389 mm	284 mm	1752 mm	335 mm	110 mm	131 mm
AIR 32 B2A B66AA (1.4 m unit)	1505 mm	327 mm	220 mm	1249 mm	271 mm	110 mm	123 mm
AIR 32 B66AA B7P LBP (2.0 m unit)	2014 mm	389 mm	284 mm	1752 mm	335 mm	110 mm	131 mm

3 ANTENNA SPECIFICATIONS
SCALE: NOT TO SCALE

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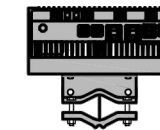
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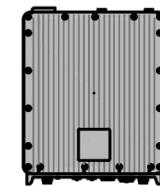
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1 NOT USED
SCALE: NOT TO SCALE

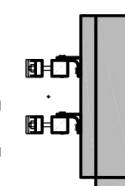
RADIO 4415 DIMENSIONS	
MODEL #	RADIO 4415 B66A RADIO 4415 B25
MANUF.	ERICSSON
WIDTH	13.47"
DEPTH	6.30"
HEIGHT	16.54"
WEIGHT	49.6 LBS



PLAN



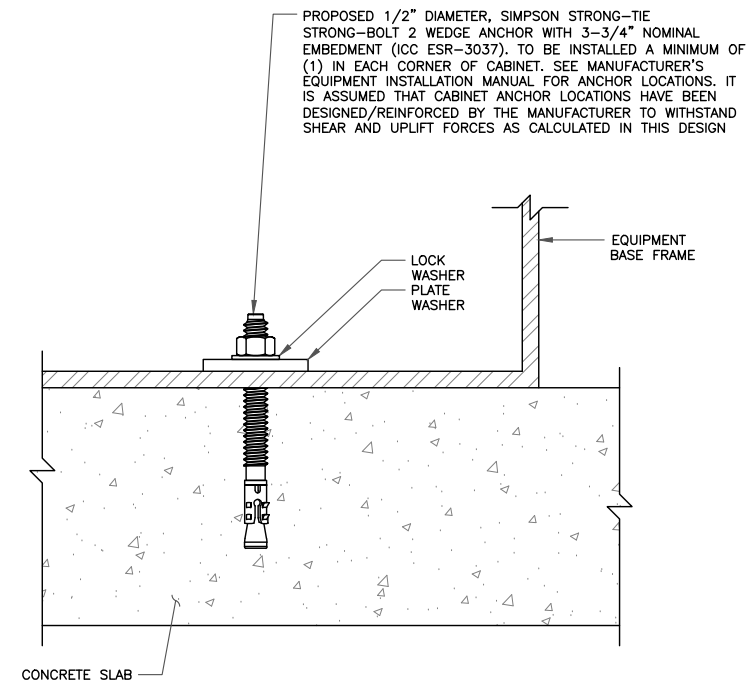
FRONT



SIDE

2 RADIO 4415 B25 DETAIL
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE



4 CABINET ANCHOR DETAIL
SCALE: NOT TO SCALE

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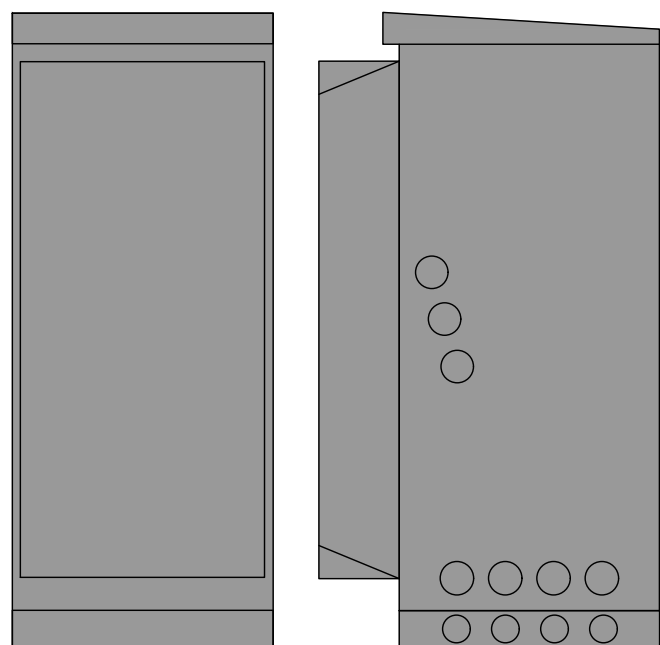
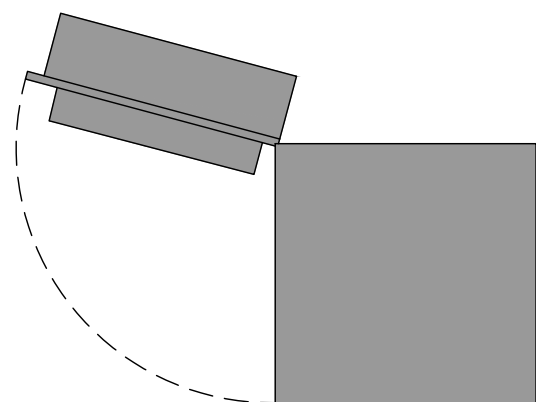
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29510
LICENSED PROFESSIONAL ENGINEER

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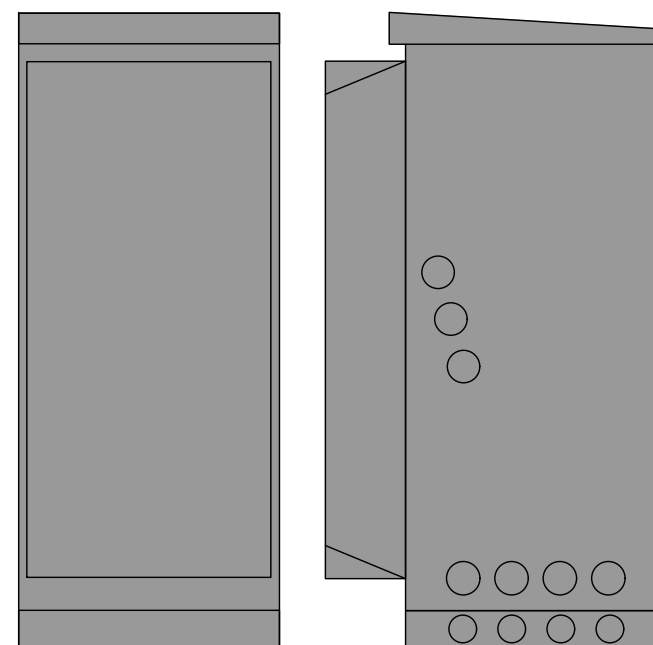
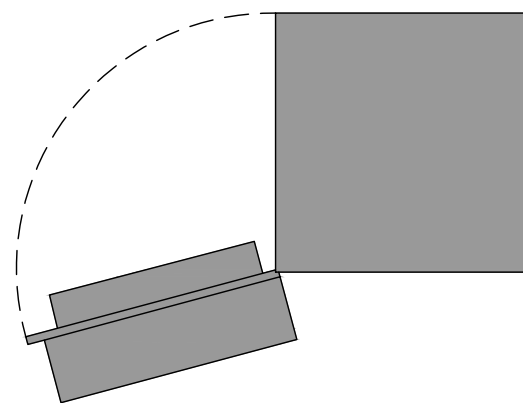
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CABINET DIMENSIONS	
MODEL #	6160 SITE SUPPORT CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH (W/ DOOR)	33.5"
WEIGHT	1500 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



CABINET DIMENSIONS	
MODEL #	B160 BATTERY CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	2000 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



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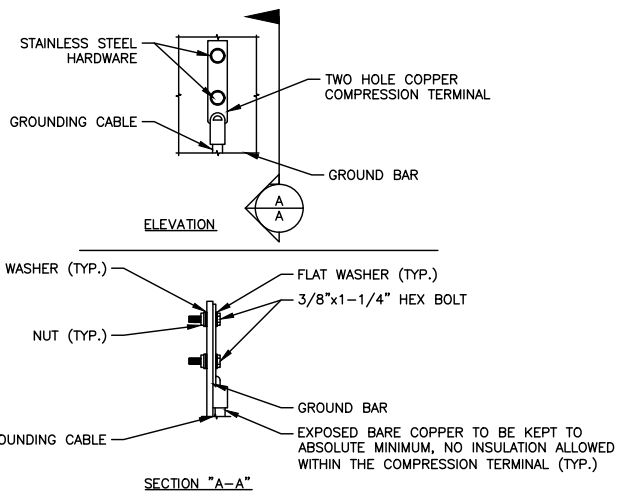


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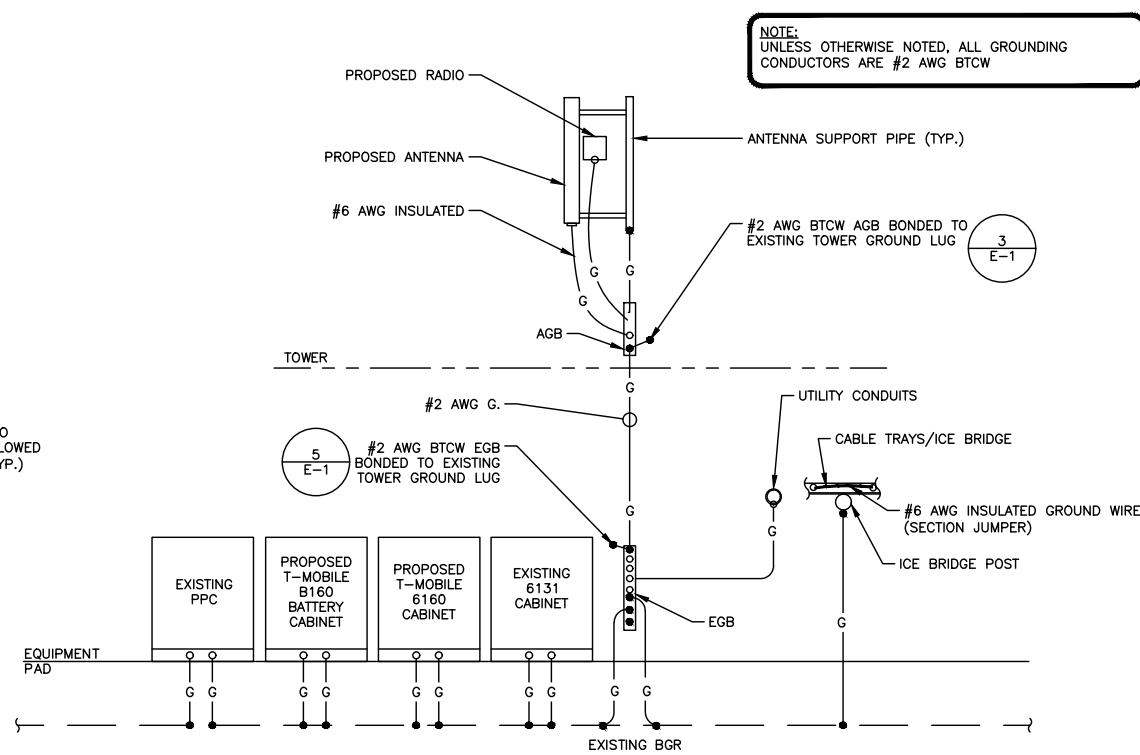
SHEET NUMBER:
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REVISION:
2



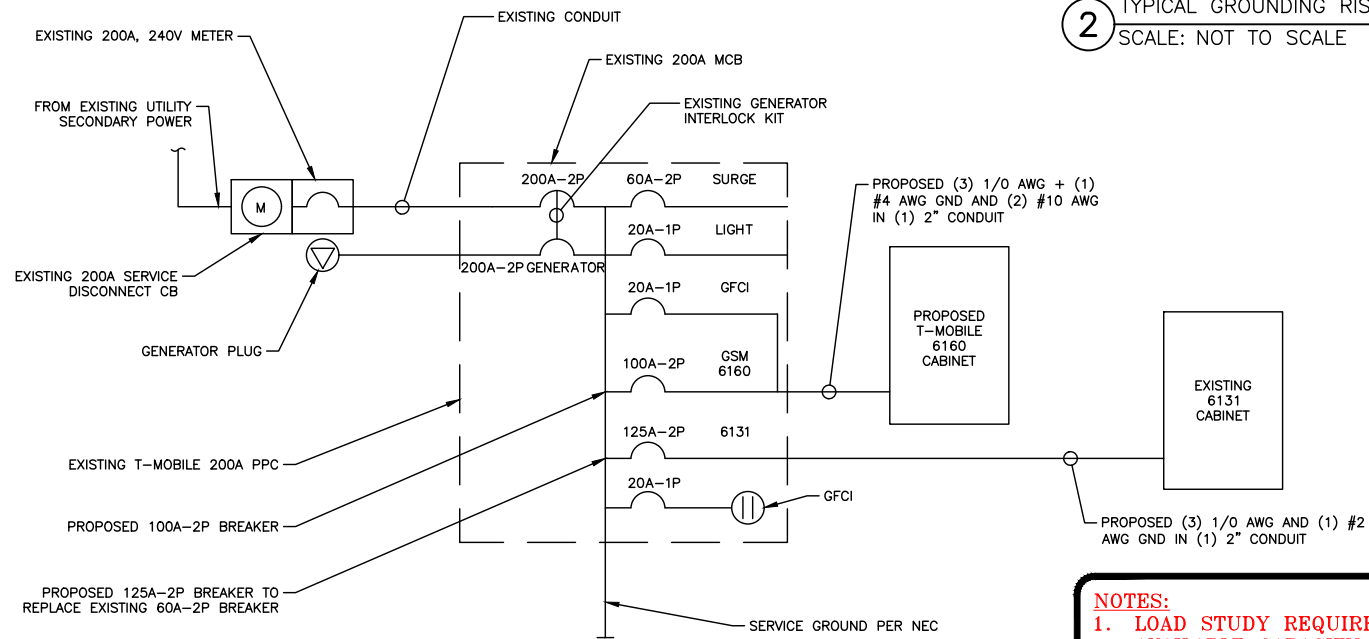
- NOTES:**
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 - CADWELD DOWNLEADS FROM UPPER/AGB/EGB, LOWER EGB, AND MGB.

1 TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE



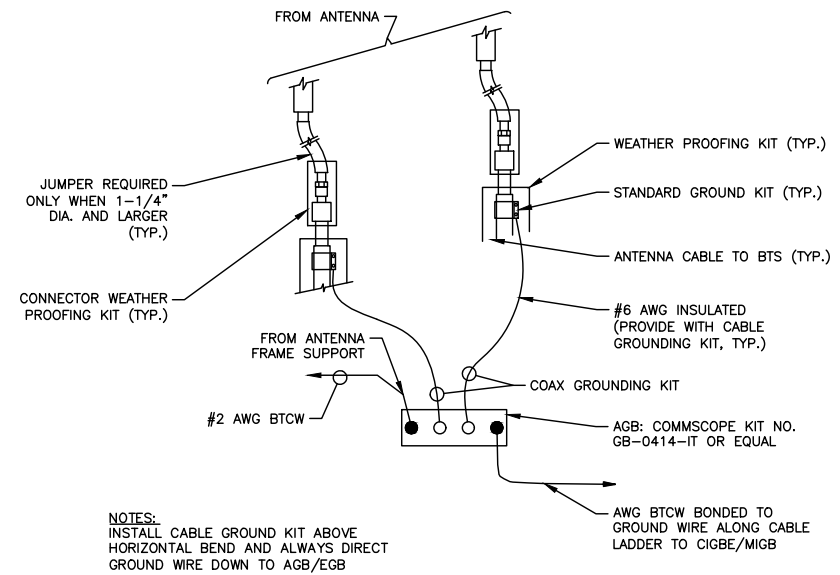
NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

2 TYPICAL GROUNDING RISER DIAGRAM
SCALE: NOT TO SCALE



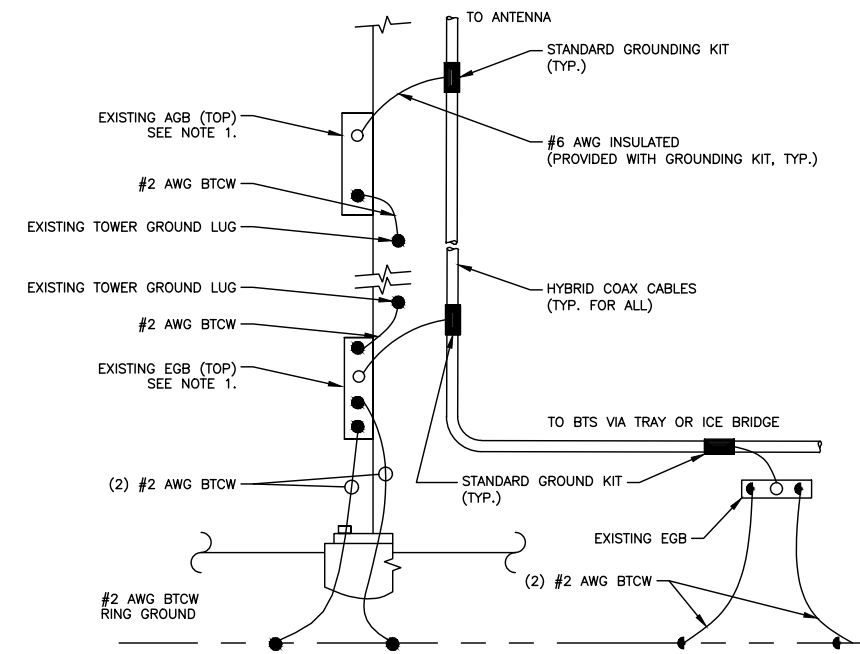
4 ONE LINE POWER DIAGRAM
SCALE: NOT TO SCALE

- NOTES:**
- LOAD STUDY REQUIRED TO CONFIRM AVAILABLE CAPACITY PRIOR TO BREAKER UPGRADE
 - GC TO REPLACE LOSS OF COMMERCIAL POWER RELAY CURRENTLY INSTALLED



- NOTES:**
- INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB

3 GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE



- NOTES:**
- NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
 - A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

5 TOWER BOTTOM CABLE GROUNDING DETAIL
SCALE: NOT TO SCALE

- USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
- ALL GROUND CONNECTION TO BE BURNDY HYBRID COMPRESSION TYPE CONNECTORS OR CAD WELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
- CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLES GROUND KITS, AND ALIA TO EGB PLACED NEAR THE ANTENNA LOCATION.
- BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
- TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
- BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
- VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

ELECTRICAL & GROUNDING NOTES:

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
- RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- GROUNDING SHALL COMPLY WITH NEC ART. 250.
- GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

ELECTRICAL LEGEND

A	AMPERE	○	MECHANICAL CONNECTION
V	VOLT	◐	CADWELD CONNECTION
KWH	KILOWATT - HOUR	○	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
C	CONDUIT	—	GROUND COPPER WIRE, SIZE AS NOTED
GRC	GALVANIZED RIGID CONDUIT	—	EXPOSED WIRING
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)	—	INSULATED GROUNDING CONDUCTOR (#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
G	GROUND	⊕	5/8"x6' COPPER CLAD STAINLESS STEEL GROUND ROD
⊕	GROUND	⊕	EXOTHERMIC (CAD WELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION
MGB	MASTER GROUND BAR	⊕	PPC
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR	⊕	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

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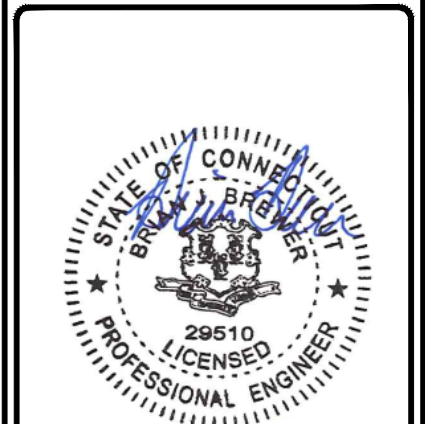
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EXISTING 59'-0" MONOPOLE

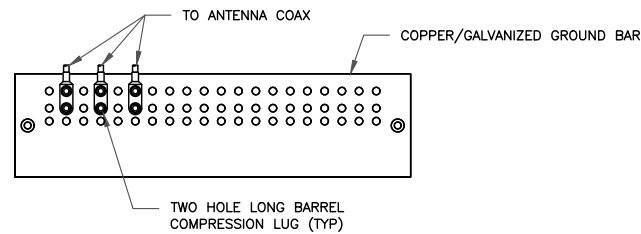
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/04/20	LMS	ISSUED FOR CONSTR.	MCK
1	11/05/20	LMS	REVISED PER CLIENT	MCK
2	12/15/20	ECW	REVISED PER CLIENT	MCK



12/17/20
Exp. 01/31/21
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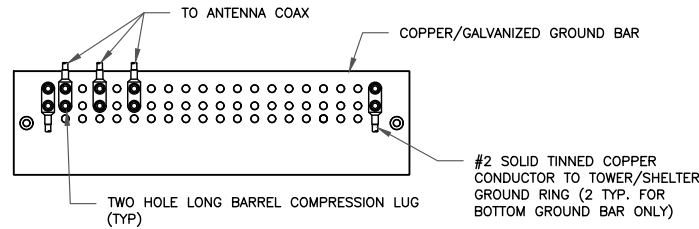
SHEET NUMBER: **E-1** REVISION: **2**



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE

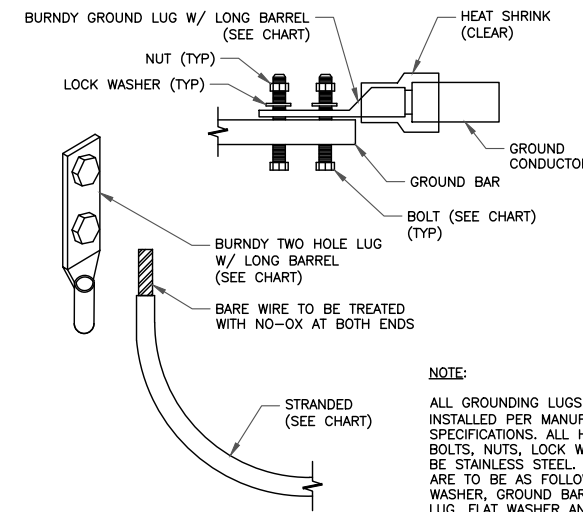


NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE

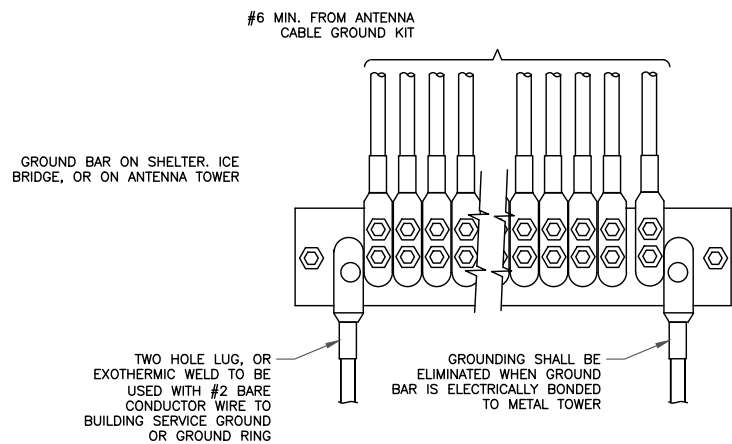
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



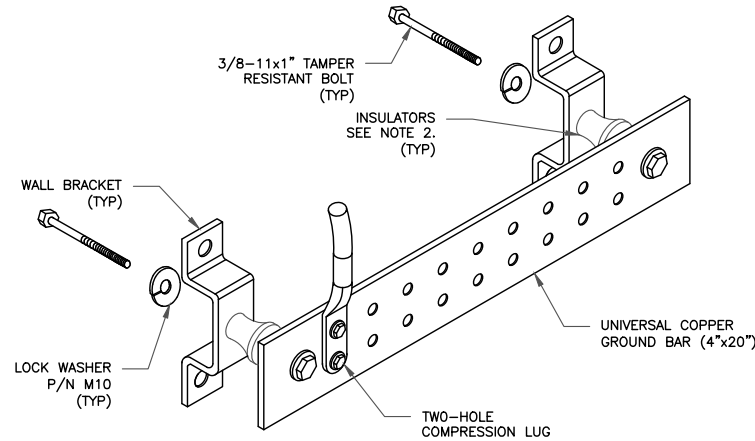
NOTE:

ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



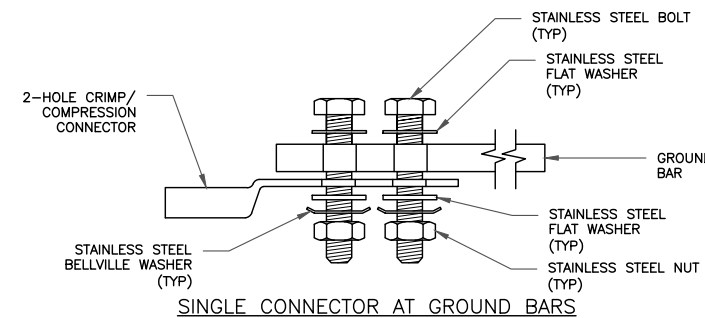
4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



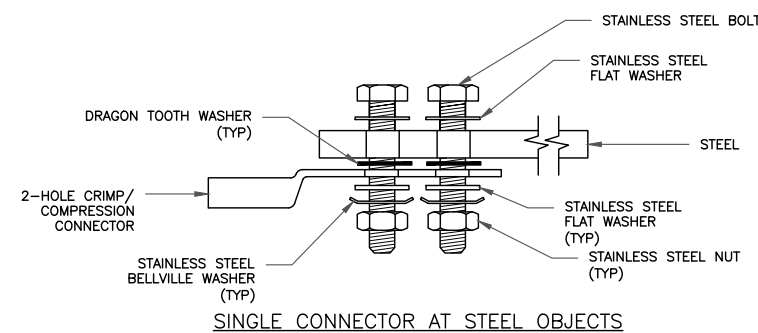
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY GAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL. USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

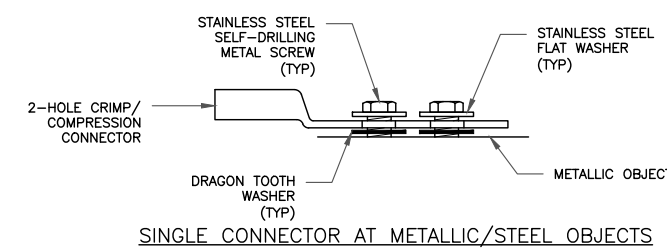
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

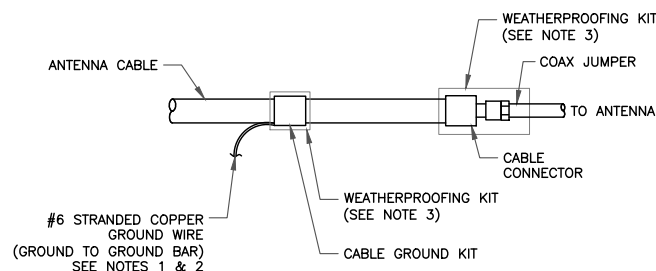


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

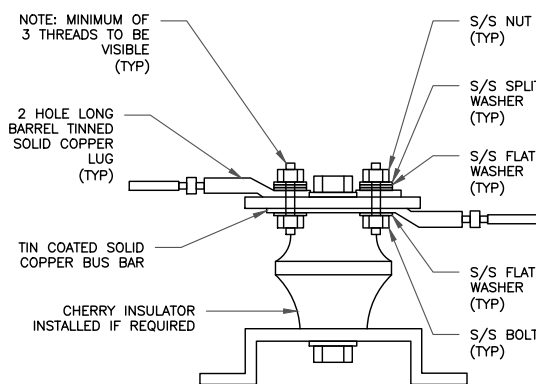
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

T-Mobile

12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE

3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley Horn

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

T-MOBILE SITE NUMBER:
CT11623B

BU #: 842862
EAST HAVEN SOUTH

259 COMMERCE STREET
EAST HAVEN, CT 06512

EXISTING 59'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/04/20	LMS	ISSUED FOR CONSTR.	MCK
1	11/05/20	LMS	REVISED PER CLIENT	MCK
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12/17/20
Exp. 01/31/21

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SHEET NUMBER: **G-1** REVISION: **2**

Exhibit D

Structural Analysis Report



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Date: **October 21, 2020**

Cheryl Schultz
Crown Castle
6325 Ardrey Kell Rd, Suite 600
Charlotte, NC

Subject: **Structural Analysis Report**

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CT11623B

Crown Castle Designation: **Crown Castle BU Number:** 842862 28277
Crown Castle Site Name: EAST HAVEN SOUTH
Crown Castle JDE Job Number: 620146
Crown Castle Work Order Number: 1892946
Crown Castle Order Number: 529726 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1892946

Site Data: **259 COMMERCE STREET, EAST HAVEN, New Haven County, CT**
Latitude 41° 15' 22.88", Longitude -72° 52' 32.8"
58 Foot - Monopole Tower

Dear Cheryl Schultz,

Crown Castle is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration **Sufficient Capacity – 84.5%**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Dolly Hsu, E.I.T.

Respectfully submitted by:



Terry P Styran
2020.10.23 11:08:44
-04'00'

Terry P. Styran, P.E.
Senior Project Engineer

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1) INTRODUCTION

This tower is a 58 ft Monopole tower designed by FWT INC.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
47.0	47.0	3	ericsson	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RRUS 4415 B25		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		1	tower mounts	Miscellaneous [NA 507-1]		
		1	tower mounts	Platform Mount [LP 303-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
54.0	55.0	3	ericsson	RRUS 32	2 6 6 2	3/8 3/4 7/8 Conduit
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 8843 B2/B66A		
		3	kathrein	800 10121 w/ Mount Pipe		
		3	kathrein	80010965 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	quintel technology	QS66512-6 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C		
	3	raycap	DC6-48-60-18-8F			
	54.0	3	site pro 1	STK-U		
		1	tower mounts	Pipe Mount [PM 602-3]		
1		tower mounts	Sector Mount [SM 502-3]			
37.0	37.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Jaworski Geotech Inc.	4291659	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FWT, Inc.	4529325	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FWT, Inc.	4291655	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 Standard.

3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	58 - 50.5	Pole	TP19.078x17.393x0.188	1	-2.588	690.552	4.1	Pass
L2	50.5 - 0	Pole	TP30.05x18.141x0.188	2	-14.166	1091.643	84.5	Pass
							Summary	
						Pole (L2)	84.5	Pass
						Rating =	84.5	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	69.6	Pass
1	Base Plate	0	72.2	Pass
1	Base Foundation (Structure)	0	37.0	Pass
1	Base Foundation (Soil Interaction)	0	56.5	Pass

Structure Rating (max from all components) =	84.5%
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

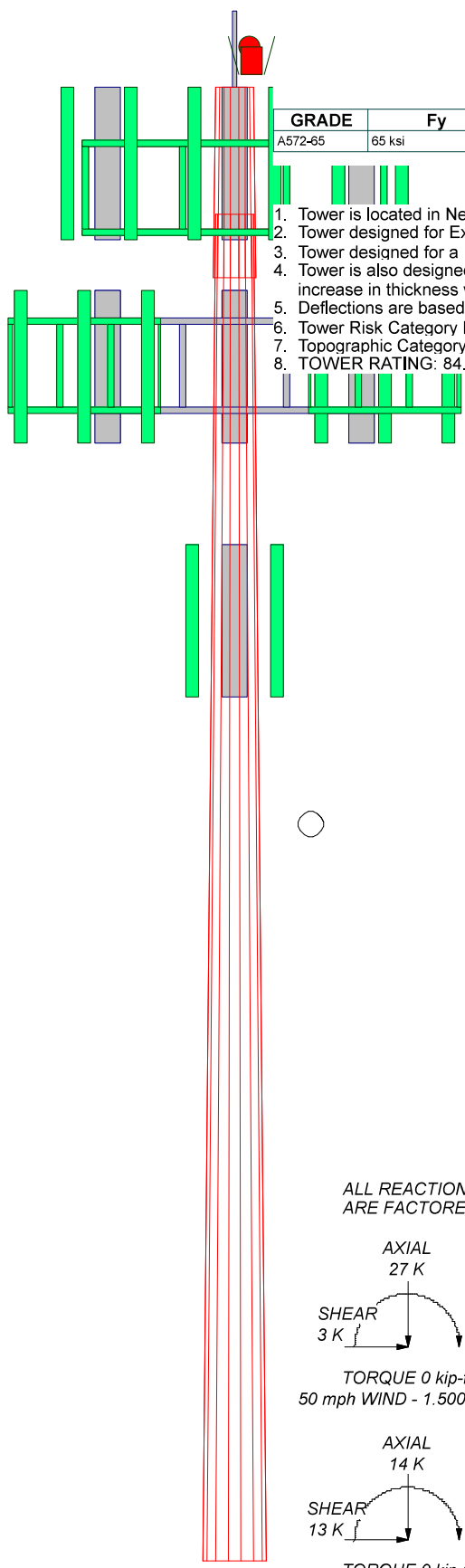
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2
Length (ft)	7.500	53.000
Number of Sides	18	18
Thickness (in)	0.188	0.188
Socket Length (ft)	2.500	
Top Dia (in)	17.393	18.141
Bot Dia (in)	19.078	30.050
Grade	A572-65	A572-65
Weight (K)	0.3	2.6

58.0 ft
50.5 ft
0.0 ft



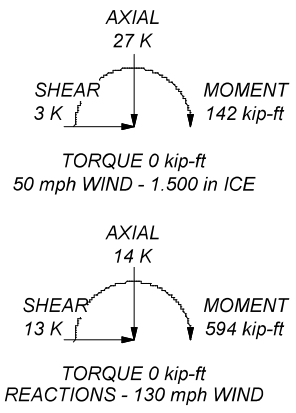
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 84.5%

ALL REACTIONS ARE FACTORED



CROWN CASTLE
 2000 Corporate Drive
 Canonsburg, PA 15317
 Phone: (724) 416-2000
 FAX:

Job: BU# 842862		
Project:	Client: Crown Castle	Drawn by: Dolly Hsu
Code: TIA-222-H	Date: 10/21/20	App'd: Scale: NTS
Path:	Dwg No. E-1	

C:\Users\dhsu\Documents\Weekend\WP\842862\WO 1892946 - SA\Prof\842862_RPA.dwg

Tower Input Data

The tower is a monopole.
 This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- 3) Tower is located in New Haven County, Connecticut.
- 4) Tower base elevation above sea level: 35.000 ft.
- 5) Basic wind speed of 130 mph.
- 6) Risk Category II.
- 7) Exposure Category C.
- 8) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 9) Topographic Category: 1.
- 10) Crest Height: 0.000 ft.
- 11) Nominal ice thickness of 1.500 in.
- 12) Ice thickness is considered to increase with height.
- 13) Ice density of 56.000 pcf.
- 14) A wind speed of 50 mph is used in combination with ice.
- 15) Temperature drop of 50.000 °F.
- 16) Deflections calculated using a wind speed of 60 mph.
- 17) A non-linear (P-delta) analysis was used.
- 18) Pressures are calculated at each section.
- 19) Stress ratio used in pole design is 1.05.
- 20) Tower analysis based on target reliabilities in accordance with Annex S.
- 21) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 22) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
--	---	---

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	58.000-50.500	7.500	2.500	18	17.393	19.078	0.188	0.750	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L2	50.500-0.000	53.000		18	18.141	30.050	0.188	0.750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	VC in ³	J in ⁴	It/Q in ²	w in	w/t
L1	17.632	10.239	382.955	6.108	8.836	43.342	766.414	5.121	2.731	14.566
	19.343	11.242	506.846	6.706	9.692	52.297	1014.359	5.622	3.028	16.148
L2	18.963	10.685	435.128	6.374	9.216	47.215	870.829	5.343	2.863	15.269
	30.485	17.772	2002.277	10.601	15.265	131.164	4007.188	8.888	4.959	26.447

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 58.000- 50.500				1	1	1			
L2 50.500- 0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter r in	Perimeter r in	Weight plf
FB-L98B-034-XXX(3/8)	C	No	Surface Ar (CaAa)	54.000 - 0.000	2	2	-0.400 -0.350	0.000		0.057
WR-VG86ST-BRD(3/4)	C	No	Surface Ar (CaAa)	54.000 - 0.000	6	4	-0.500 -0.350	0.000		0.584
2" Rigid Conduit	C	No	Surface Ar (CaAa)	54.000 - 0.000	2	2	-0.500 -0.350	2.000		2.800
D ***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CA _A ft ² /ft	Weight plf	
54									
LDF5-50A(7/8)	C	No	No	Inside Pole	54.000 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.330 0.330 0.330 0.330
D ***D***									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	37.000 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.820 0.820 0.820 0.820
D									
LDF4P-50A(1/2")	B	No	No	Inside Pole	58.000 - 0.000	1	No Ice 1/2" Ice	0.000 0.000	0.150 0.150

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_{AA} ft ² /ft	Weight plf
							1" Ice	0.150
							2" Ice	0.150
s HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	47.000 - 0.000	3	No Ice	2.400
							1/2" Ice	2.400
							1" Ice	2.400
							2" Ice	2.400

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	58.000-50.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.001
		C	0.000	0.000	1.400	0.000	0.039
L2	50.500-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.008
		C	0.000	0.000	20.200	0.000	1.086

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	58.000-50.500	A	1.340	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.001
		C		0.000	0.000	5.267	0.000	0.082
L2	50.500-0.000	A	1.237	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.008
		C		0.000	0.000	75.996	0.000	1.706

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	58.000-50.500	1.144	0.926	1.557	1.318
L2	50.500-0.000	2.153	1.744	2.668	2.260

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	6	FB-L98B-034-XXX(3/8)	50.50 - 54.00	1.0000	1.0000
L1	7	WR-VG86ST-BRD(3/4)	50.50 - 54.00	1.0000	1.0000
L1	8	2" Rigid Conduit	50.50 - 54.00	1.0000	1.0000
L2	6	FB-L98B-034-XXX(3/8)	0.00 - 50.50	1.0000	1.0000
L2	7	WR-VG86ST-BRD(3/4)	0.00 - 50.50	1.0000	1.0000
L2	8	2" Rigid Conduit	0.00 - 50.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(2) Side Lighting	B	From Leg	0.000 0.000 0.500	0.000	58.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.108 0.170 0.233 0.389	0.108 0.170 0.233 0.389	0.005 0.007 0.010 0.019
Lightning Rod 1/2" x 2'	A	From Leg	4.000 0.000 1.000	0.000	58.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.100 0.264 0.395 0.685	0.100 0.264 0.395 0.685	0.020 0.021 0.024 0.034
54 800 10121 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.600 4.000 4.420 5.290	2.950 3.340 3.740 4.590	0.072 0.115 0.166 0.297
800 10121 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.600 4.000 4.420 5.290	2.950 3.340 3.740 4.590	0.072 0.115 0.166 0.297
800 10121 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.600 4.000 4.420 5.290	2.950 3.340 3.740 4.590	0.072 0.115 0.166 0.297
DC6-48-60-18-8F	A	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.212 1.892 2.105 2.570	1.212 1.892 2.105 2.570	0.020 0.042 0.067 0.126
80010965 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.260 13.030 13.800 15.410	5.790 6.470 7.170 8.600	0.136 0.226 0.328 0.570
80010965 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.260 13.030 13.800 15.410	5.790 6.470 7.170 8.600	0.136 0.226 0.328 0.570
80010965 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	54.000	No Ice 1/2"	12.260 13.030	5.790 6.470	0.136 0.226

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			1.000			Ice 13.800	7.170	0.328
						1" Ice 15.410	8.600	0.570
						2" Ice		
QS66512-6 w/ MountPipe	A	From Leg	4.000	0.000	54.000	No Ice 4.040	4.180	0.137
			0.000			1/2" 4.420	4.570	0.206
			1.000			Ice 4.820	4.970	0.287
						1" Ice 5.630	5.790	0.482
						2" Ice		
QS66512-6 w/ MountPipe	B	From Leg	4.000	0.000	54.000	No Ice 4.040	4.180	0.137
			0.000			1/2" 4.420	4.570	0.206
			1.000			Ice 4.820	4.970	0.287
						1" Ice 5.630	5.790	0.482
						2" Ice		
QS66512-6 w/ MountPipe	C	From Leg	4.000	0.000	54.000	No Ice 4.040	4.180	0.137
			0.000			1/2" 4.420	4.570	0.206
			1.000			Ice 4.820	4.970	0.287
						1" Ice 5.630	5.790	0.482
						2" Ice		
RRUS 8843 B2/B66A	A	From Leg	4.000	0.000	54.000	No Ice 1.639	1.353	0.072
			0.000			1/2" 1.799	1.500	0.090
			1.000			Ice 1.966	1.655	0.110
						1" Ice 2.323	1.986	0.159
						2" Ice		
RRUS 8843 B2/B66A	B	From Leg	4.000	0.000	54.000	No Ice 1.639	1.353	0.072
			0.000			1/2" 1.799	1.500	0.090
			1.000			Ice 1.966	1.655	0.110
						1" Ice 2.323	1.986	0.159
						2" Ice		
RRUS 8843 B2/B66A	C	From Leg	4.000	0.000	54.000	No Ice 1.639	1.353	0.072
			0.000			1/2" 1.799	1.500	0.090
			1.000			Ice 1.966	1.655	0.110
						1" Ice 2.323	1.986	0.159
						2" Ice		
(2) LGP21401	A	From Leg	4.000	0.000	54.000	No Ice 1.104	0.207	0.014
			0.000			1/2" 1.239	0.274	0.021
			1.000			Ice 1.381	0.348	0.030
						1" Ice 1.688	0.521	0.055
						2" Ice		
(2) LGP21401	B	From Leg	4.000	0.000	54.000	No Ice 1.104	0.207	0.014
			0.000			1/2" 1.239	0.274	0.021
			1.000			Ice 1.381	0.348	0.030
						1" Ice 1.688	0.521	0.055
						2" Ice		
(2) LGP21401	C	From Leg	4.000	0.000	54.000	No Ice 1.104	0.207	0.014
			0.000			1/2" 1.239	0.274	0.021
			1.000			Ice 1.381	0.348	0.030
						1" Ice 1.688	0.521	0.055
						2" Ice		
RRUS 32	A	From Leg	4.000	0.000	54.000	No Ice 2.857	1.777	0.055
			0.000			1/2" 3.083	1.968	0.077
			1.000			Ice 3.316	2.166	0.103
						1" Ice 3.805	2.583	0.165
						2" Ice		
RRUS 32	B	From Leg	4.000	0.000	54.000	No Ice 2.857	1.777	0.055
			0.000			1/2" 3.083	1.968	0.077
			1.000			Ice 3.316	2.166	0.103
						1" Ice 3.805	2.583	0.165
						2" Ice		
RRUS 32	C	From Leg	4.000	0.000	54.000	No Ice 2.857	1.777	0.055
			0.000			1/2" 3.083	1.968	0.077
			1.000			Ice 3.316	2.166	0.103
						1" Ice 3.805	2.583	0.165
						2" Ice		
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	54.000	No Ice 1.968	1.408	0.071
			0.000			1/2" 2.144	1.564	0.090

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			1.000			Ice	2.328	1.727	0.111
						1" Ice	2.718	2.075	0.163
						2" Ice			
(2) RRUS 4449 B5/B12	C	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice	1.968	1.408	0.071
						1/2"	2.144	1.564	0.090
						Ice	2.328	1.727	0.111
						1" Ice	2.718	2.075	0.163
						2" Ice			
(2) DC6-48-60-18-8F	A	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice	1.212	1.212	0.020
						1/2"	1.892	1.892	0.042
						Ice	2.105	2.105	0.067
						1" Ice	2.570	2.570	0.126
						2" Ice			
DC6-48-60-18-8C	B	From Leg	4.000 0.000 1.000	0.000	54.000	No Ice	1.145	1.145	0.026
						1/2"	1.792	1.792	0.047
						Ice	2.002	2.002	0.070
						1" Ice	2.451	2.451	0.125
						2" Ice			
12.5' horizontal x 2.375" Pipe Mount	A	From Leg	6.000 0.000 0.000	0.000	54.000	No Ice	2.969	2.969	0.120
						1/2"	4.247	4.247	0.142
						Ice	5.542	5.542	0.173
						1" Ice	8.054	8.054	0.258
						2" Ice			
12.5' horizontal x 2.375" Pipe Mount	B	From Leg	6.000 0.000 0.000	0.000	54.000	No Ice	2.969	2.969	0.120
						1/2"	4.247	4.247	0.142
						Ice	5.542	5.542	0.173
						1" Ice	8.054	8.054	0.258
						2" Ice			
12.5' horizontal x 2.375" Pipe Mount	C	From Leg	6.000 0.000 0.000	0.000	54.000	No Ice	2.969	2.969	0.120
						1/2"	4.247	4.247	0.142
						Ice	5.542	5.542	0.173
						1" Ice	8.054	8.054	0.258
						2" Ice			
Pipe Mount [PM 602-3]	C	None		0.000	54.000	No Ice	6.670	6.670	0.279
						1/2"	7.700	7.700	0.344
						Ice	8.740	8.740	0.423
						1" Ice	10.900	10.900	0.628
						2" Ice			
Sector Mount [SM 502-3]	C	None		0.000	54.000	No Ice	29.820	29.820	1.673
						1/2"	42.210	42.210	2.266
						Ice	54.430	54.430	3.052
						1" Ice	78.490	78.490	5.180
						2" Ice			
D *47*									
AIR 32 B2A B66AA_T- MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	47.000	No Ice	7.087	6.392	0.194
						1/2"	7.561	7.249	0.257
						Ice	8.021	7.991	0.328
						1" Ice	8.966	9.526	0.493
						2" Ice			
AIR 32 B2A B66AA_T- MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	47.000	No Ice	7.087	6.392	0.194
						1/2"	7.561	7.249	0.257
						Ice	8.021	7.991	0.328
						1" Ice	8.966	9.526	0.493
						2" Ice			
AIR 32 B2A B66AA_T- MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	47.000	No Ice	7.087	6.392	0.194
						1/2"	7.561	7.249	0.257
						Ice	8.021	7.991	0.328
						1" Ice	8.966	9.526	0.493
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	47.000	No Ice	5.870	3.270	0.128
						1/2"	6.233	3.728	0.177
						Ice	6.606	4.203	0.232
						1" Ice	7.382	5.200	0.359
						2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	47.000	No Ice	5.870	3.270	0.128
							1/2"	6.233	3.728	0.177
							Ice	6.606	4.203	0.232
							1" Ice	7.382	5.200	0.359
							2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	47.000	No Ice	5.870	3.270	0.128
							1/2"	6.233	3.728	0.177
							Ice	6.606	4.203	0.232
							1" Ice	7.382	5.200	0.359
							2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	47.000	No Ice	14.690	6.870	0.186
							1/2"	15.460	7.550	0.315
							Ice	16.230	8.250	0.458
							1" Ice	17.820	9.670	0.788
							2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	47.000	No Ice	14.690	6.870	0.186
							1/2"	15.460	7.550	0.315
							Ice	16.230	8.250	0.458
							1" Ice	17.820	9.670	0.788
							2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	47.000	No Ice	14.690	6.870	0.186
							1/2"	15.460	7.550	0.315
							Ice	16.230	8.250	0.458
							1" Ice	17.820	9.670	0.788
							2" Ice			
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000	0.000	0.000	47.000	No Ice	1.970	1.587	0.073
							1/2"	2.147	1.749	0.093
							Ice	2.331	1.918	0.116
							1" Ice	2.721	2.280	0.170
							2" Ice			
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000	0.000	0.000	47.000	No Ice	1.970	1.587	0.073
							1/2"	2.147	1.749	0.093
							Ice	2.331	1.918	0.116
							1" Ice	2.721	2.280	0.170
							2" Ice			
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000	0.000	0.000	47.000	No Ice	1.970	1.587	0.073
							1/2"	2.147	1.749	0.093
							Ice	2.331	1.918	0.116
							1" Ice	2.721	2.280	0.170
							2" Ice			
RRUS 4415 B25	A	From Leg	4.000	0.000	0.000	47.000	No Ice	1.644	0.679	0.044
							1/2"	1.804	0.791	0.056
							Ice	1.972	0.913	0.071
							1" Ice	2.329	1.183	0.109
							2" Ice			
RRUS 4415 B25	B	From Leg	4.000	0.000	0.000	47.000	No Ice	1.644	0.679	0.044
							1/2"	1.804	0.791	0.056
							Ice	1.972	0.913	0.071
							1" Ice	2.329	1.183	0.109
							2" Ice			
RRUS 4415 B25	C	From Leg	4.000	0.000	0.000	47.000	No Ice	1.644	0.679	0.044
							1/2"	1.804	0.791	0.056
							Ice	1.972	0.913	0.071
							1" Ice	2.329	1.183	0.109
							2" Ice			
8' x 2.375" Mount Pipe	A	From Leg	4.000	0.000	0.000	47.000	No Ice	1.900	1.900	0.061
							1/2"	2.728	2.728	0.075
							Ice	3.401	3.401	0.095
							1" Ice	4.396	4.396	0.150
							2" Ice			
8' x 2.375" Mount Pipe	B	From Leg	4.000	0.000	0.000	47.000	No Ice	1.900	1.900	0.061
							1/2"	2.728	2.728	0.075
							Ice	3.401	3.401	0.095
							1" Ice	4.396	4.396	0.150
							2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} _{Front} ft ²	C _{AA} _{Side} ft ²	Weight K
8' x 2.375" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	47.000	No Ice	1.900	1.900	0.061
						1/2" Ice	2.728	2.728	0.075
						Ice	3.401	3.401	0.095
						1" Ice	4.396	4.396	0.150
						2" Ice			
Miscellaneous [NA 507-1]	C	None		0.000	50.000	No Ice	4.560	4.560	0.245
						1/2" Ice	6.390	6.390	0.311
						Ice	8.180	8.180	0.402
						1" Ice	11.660	11.660	0.657
						2" Ice			
Platform Mount [LP 303-1]	C	None		0.000	47.000	No Ice	14.690	14.690	1.250
						1/2" Ice	18.010	18.010	1.569
						Ice	21.340	21.340	1.942
						1" Ice	28.080	28.080	2.852
						2" Ice			
D *37*									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.000 0.000 0.000	0.000	37.000	No Ice	3.790	3.160	0.053
						1/2" Ice	4.380	3.750	0.094
						Ice	4.990	4.350	0.145
						1" Ice	6.250	5.590	0.281
						2" Ice			
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.000 0.000 0.000	0.000	37.000	No Ice	3.790	3.160	0.053
						1/2" Ice	4.380	3.750	0.094
						Ice	4.990	4.350	0.145
						1" Ice	6.250	5.590	0.281
						2" Ice			
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.000 0.000 0.000	0.000	37.000	No Ice	3.790	3.160	0.053
						1/2" Ice	4.380	3.750	0.094
						Ice	4.990	4.350	0.145
						1" Ice	6.250	5.590	0.281
						2" Ice			
D									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice

Comb. No.	Description
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	58 - 50.5	Pole	Max Tension	36	0.000	-0.001	-0.000
			Max. Compression	26	-10.837	0.185	0.148
			Max. Mx	20	-2.588	12.351	-0.164
			Max. My	14	-2.589	0.132	-12.300
			Max. Vy	20	-5.713	9.474	-0.282
			Max. Vx	14	5.680	0.232	-9.446
			Max. Torque	9			0.183
L2	50.5 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-26.800	0.195	-1.160
			Max. Mx	20	-14.166	593.528	-1.425
			Max. My	14	-14.166	0.757	-592.365
			Max. Vy	20	-12.862	593.528	-1.425
			Max. Vx	14	12.830	0.757	-592.365
			Max. Torque	9			0.183

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	34	26.800	1.503	-2.596
	Max. H _x	20	14.192	12.834	-0.009
	Max. H _z	2	14.192	-0.009	12.802
	Max. M _x	2	590.578	-0.009	12.802
	Max. M _z	8	593.072	-12.834	0.009
	Max. Torsion	9	0.182	-12.834	0.009
	Min. Vert	25	10.644	6.409	11.082
	Min. H _x	8	14.192	-12.834	0.009

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H _z	14	14.192	0.009	-12.802
	Min. M _x	14	-592.365	0.009	-12.802
	Min. M _z	20	-593.528	12.834	-0.009
	Min. Torsion	21	-0.181	12.834	-0.009

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	11.826	0.000	0.000	0.723	0.182	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	14.192	0.009	-12.802	-590.578	-0.301	-0.047
0.9 Dead+1.0 Wind 0 deg - No Ice	10.644	0.009	-12.802	-585.773	-0.355	-0.044
1.2 Dead+1.0 Wind 30 deg - No Ice	14.192	6.425	-11.091	-511.599	-296.883	-0.129
0.9 Dead+1.0 Wind 30 deg - No Ice	10.644	6.425	-11.091	-507.466	-294.411	-0.128
1.2 Dead+1.0 Wind 60 deg - No Ice	14.192	11.119	-6.409	-295.297	-513.852	-0.178
0.9 Dead+1.0 Wind 60 deg - No Ice	10.644	11.119	-6.409	-293.006	-509.533	-0.179
1.2 Dead+1.0 Wind 90 deg - No Ice	14.192	12.834	-0.009	0.367	-593.072	-0.179
0.9 Dead+1.0 Wind 90 deg - No Ice	10.644	12.834	-0.009	0.141	-588.080	-0.182
1.2 Dead+1.0 Wind 120 deg - No Ice	14.192	11.110	6.393	296.173	-513.322	-0.132
0.9 Dead+1.0 Wind 120 deg - No Ice	10.644	11.110	6.393	293.428	-509.008	-0.136
1.2 Dead+1.0 Wind 150 deg - No Ice	14.192	6.409	11.082	512.860	-295.965	-0.049
0.9 Dead+1.0 Wind 150 deg - No Ice	10.644	6.409	11.082	508.271	-293.503	-0.053
1.2 Dead+1.0 Wind 180 deg - No Ice	14.192	-0.009	12.802	592.365	0.757	0.048
0.9 Dead+1.0 Wind 180 deg - No Ice	10.644	-0.009	12.802	587.099	0.692	0.044
1.2 Dead+1.0 Wind 210 deg - No Ice	14.192	-6.425	11.091	513.387	297.336	0.131
0.9 Dead+1.0 Wind 210 deg - No Ice	10.644	-6.425	11.091	508.793	294.746	0.130
1.2 Dead+1.0 Wind 240 deg - No Ice	14.192	-11.119	6.409	297.088	514.305	0.178
0.9 Dead+1.0 Wind 240 deg - No Ice	10.644	-11.119	6.409	294.335	509.868	0.180
1.2 Dead+1.0 Wind 270 deg - No Ice	14.192	-12.834	0.009	1.425	593.528	0.178
0.9 Dead+1.0 Wind 270 deg - No Ice	10.644	-12.834	0.009	1.189	588.416	0.181
1.2 Dead+1.0 Wind 300 deg - No Ice	14.192	-11.110	-6.393	-294.382	513.780	0.130
0.9 Dead+1.0 Wind 300 deg - No Ice	10.644	-11.110	-6.393	-292.099	509.347	0.135
1.2 Dead+1.0 Wind 330 deg - No Ice	14.192	-6.409	-11.082	-511.071	296.423	0.048
0.9 Dead+1.0 Wind 330 deg - No Ice	10.644	-6.409	-11.082	-506.943	293.841	0.052
1.2 Dead+1.0 Ice+1.0 Temp	26.800	-0.000	0.000	1.160	0.195	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	26.800	0.002	-2.997	-139.941	0.118	0.007
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	26.800	1.503	-2.596	-121.075	-70.599	-0.042
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	26.800	2.601	-1.500	-69.444	-122.344	-0.081

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 90	26.800	3.002	-0.002	1.118	-141.251	-0.098
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 120	26.800	2.599	1.497	71.704	-122.254	-0.088
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 150	26.800	1.500	2.595	123.400	-70.444	-0.055
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 180	26.800	-0.002	2.997	142.355	0.296	-0.007
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 210	26.800	-1.503	2.596	123.490	71.013	0.043
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 240	26.800	-2.601	1.500	71.859	122.757	0.081
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 270	26.800	-3.002	0.002	1.297	141.665	0.098
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 300	26.800	-2.599	-1.497	-69.289	122.668	0.088
deg+1.0 Ice+1.0Temp						
1.2 Dead+1.0 Wind 330	26.800	-1.500	-2.595	-120.986	70.859	0.055
deg+1.0 Ice+1.0Temp						
Dead+Wind 0 deg - Service	11.826	0.002	-2.568	-117.328	0.083	-0.009
Dead+Wind 30 deg - Service	11.826	1.289	-2.225	-101.562	-59.120	-0.026
Dead+Wind 60 deg - Service	11.826	2.231	-1.286	-58.385	-102.432	-0.036
Dead+Wind 90 deg - Service	11.826	2.575	-0.002	0.636	-118.246	-0.036
Dead+Wind 120 deg - Service	11.826	2.229	1.283	59.684	-102.326	-0.027
Dead+Wind 150 deg - Service	11.826	1.286	2.223	102.939	-58.937	-0.010
Dead+Wind 180 deg - Service	11.826	-0.002	2.568	118.810	0.294	0.009
Dead+Wind 210 deg - Service	11.826	-1.289	2.225	103.044	59.497	0.026
Dead+Wind 240 deg - Service	11.826	-2.231	1.286	59.867	102.808	0.036
Dead+Wind 270 deg - Service	11.826	-2.575	0.002	0.847	118.622	0.036
Dead+Wind 300 deg - Service	11.826	-2.229	-1.283	-58.202	102.703	0.027
Dead+Wind 330 deg - Service	11.826	-1.286	-2.223	-101.457	59.314	0.010

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-11.826	0.000	0.000	11.826	0.000	0.000%
2	0.009	-14.192	-12.802	-0.009	14.192	12.802	0.000%
3	0.009	-10.644	-12.802	-0.009	10.644	12.802	0.000%
4	6.425	-14.192	-11.091	-6.425	14.192	11.091	0.000%
5	6.425	-10.644	-11.091	-6.425	10.644	11.091	0.000%
6	11.119	-14.192	-6.409	-11.119	14.192	6.409	0.000%
7	11.119	-10.644	-6.409	-11.119	10.644	6.409	0.000%
8	12.834	-14.192	-0.009	-12.834	14.192	0.009	0.000%
9	12.834	-10.644	-0.009	-12.834	10.644	0.009	0.000%
10	11.110	-14.192	6.393	-11.110	14.192	-6.393	0.000%
11	11.110	-10.644	6.393	-11.110	10.644	-6.393	0.000%
12	6.409	-14.192	11.082	-6.409	14.192	-11.082	0.000%
13	6.409	-10.644	11.082	-6.409	10.644	-11.082	0.000%
14	-0.009	-14.192	12.802	0.009	14.192	-12.802	0.000%
15	-0.009	-10.644	12.802	0.009	10.644	-12.802	0.000%
16	-6.425	-14.192	11.091	6.425	14.192	-11.091	0.000%
17	-6.425	-10.644	11.091	6.425	10.644	-11.091	0.000%
18	-11.119	-14.192	6.409	11.119	14.192	-6.409	0.000%
19	-11.119	-10.644	6.409	11.119	10.644	-6.409	0.000%
20	-12.834	-14.192	0.009	12.834	14.192	-0.009	0.000%
21	-12.834	-10.644	0.009	12.834	10.644	-0.009	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
22	-11.110	-14.192	-6.393	11.110	14.192	6.393	0.000%
23	-11.110	-10.644	-6.393	11.110	10.644	6.393	0.000%
24	-6.409	-14.192	-11.082	6.409	14.192	11.082	0.000%
25	-6.409	-10.644	-11.082	6.409	10.644	11.082	0.000%
26	0.000	-26.800	0.000	0.000	26.800	-0.000	0.000%
27	0.002	-26.800	-2.997	-0.002	26.800	2.997	0.000%
28	1.503	-26.800	-2.596	-1.503	26.800	2.596	0.000%
29	2.601	-26.800	-1.500	-2.601	26.800	1.500	0.000%
30	3.002	-26.800	-0.002	-3.002	26.800	0.002	0.000%
31	2.599	-26.800	1.497	-2.599	26.800	-1.497	0.000%
32	1.500	-26.800	2.595	-1.500	26.800	-2.595	0.000%
33	-0.002	-26.800	2.997	0.002	26.800	-2.997	0.000%
34	-1.503	-26.800	2.596	1.503	26.800	-2.596	0.000%
35	-2.601	-26.800	1.500	2.601	26.800	-1.500	0.000%
36	-3.002	-26.800	0.002	3.002	26.800	-0.002	0.000%
37	-2.599	-26.800	-1.497	2.599	26.800	1.497	0.000%
38	-1.500	-26.800	-2.595	1.500	26.800	2.595	0.000%
39	0.002	-11.826	-2.568	-0.002	11.826	2.568	0.000%
40	1.289	-11.826	-2.225	-1.289	11.826	2.225	0.000%
41	2.231	-11.826	-1.286	-2.231	11.826	1.286	0.000%
42	2.575	-11.826	-0.002	-2.575	11.826	0.002	0.000%
43	2.229	-11.826	1.283	-2.229	11.826	-1.283	0.000%
44	1.286	-11.826	2.223	-1.286	11.826	-2.223	0.000%
45	-0.002	-11.826	2.568	0.002	11.826	-2.568	0.000%
46	-1.289	-11.826	2.225	1.289	11.826	-2.225	0.000%
47	-2.231	-11.826	1.286	2.231	11.826	-1.286	0.000%
48	-2.575	-11.826	0.002	2.575	11.826	-0.002	0.000%
49	-2.229	-11.826	-1.283	2.229	11.826	1.283	0.000%
50	-1.286	-11.826	-2.223	1.286	11.826	2.223	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00008423
3	Yes	4	0.00000001	0.00003765
4	Yes	5	0.00000001	0.00018999
5	Yes	5	0.00000001	0.00008573
6	Yes	5	0.00000001	0.00019843
7	Yes	5	0.00000001	0.00008978
8	Yes	4	0.00000001	0.00022133
9	Yes	4	0.00000001	0.00014254
10	Yes	5	0.00000001	0.00019080
11	Yes	5	0.00000001	0.00008583
12	Yes	5	0.00000001	0.00019538
13	Yes	5	0.00000001	0.00008818
14	Yes	4	0.00000001	0.00010080
15	Yes	4	0.00000001	0.00005006
16	Yes	5	0.00000001	0.00019929
17	Yes	5	0.00000001	0.00008981
18	Yes	5	0.00000001	0.00019140
19	Yes	5	0.00000001	0.00008597
20	Yes	4	0.00000001	0.00019967
21	Yes	4	0.00000001	0.00012844
22	Yes	5	0.00000001	0.00019694
23	Yes	5	0.00000001	0.00008906
24	Yes	5	0.00000001	0.00019177
25	Yes	5	0.00000001	0.00008648
26	Yes	4	0.00000001	0.00008866
27	Yes	4	0.00000001	0.00070933
28	Yes	4	0.00000001	0.00086427
29	Yes	4	0.00000001	0.00087654
30	Yes	4	0.00000001	0.00071866
31	Yes	4	0.00000001	0.00087556

32	Yes	4	0.00000001	0.00088452
33	Yes	4	0.00000001	0.00072089
34	Yes	4	0.00000001	0.00089025
35	Yes	4	0.00000001	0.00088256
36	Yes	4	0.00000001	0.00072256
37	Yes	4	0.00000001	0.00088132
38	Yes	4	0.00000001	0.00086754
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00004385
41	Yes	4	0.00000001	0.00005296
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00004548
44	Yes	4	0.00000001	0.00005010
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00005375
47	Yes	4	0.00000001	0.00004570
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00005194
50	Yes	4	0.00000001	0.00004612

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	58 - 50.5	5.215	46	0.679	0.001
L2	53 - 0	4.504	46	0.678	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
58.000	(2) Side Lighting	46	5.215	0.679	0.001	4959
54.000	800 10121 w/ Mount Pipe	46	4.642	0.679	0.001	4959
50.000	Miscellaneous[NA 507-1]	46	4.105	0.672	0.001	4351
47.000	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	46	3.731	0.659	0.001	4572
37.000	APXV18-206517S-C w/ Mount Pipe	46	2.648	0.583	0.001	5807

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	58 - 50.5	26.004	18	3.385	0.004
L2	53 - 0	22.464	18	3.380	0.004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
58.000	(2) Side Lighting	18	26.004	3.385	0.004	1003
54.000	800 10121 w/ Mount Pipe	18	23.154	3.385	0.004	1003

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
50.000	Miscellaneous [NA 507-1]	18	20.478	3.347	0.004	880
47.000	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	18	18.617	3.286	0.004	924
37.000	APXV18-206517S-C w/ Mount Pipe	18	13.219	2.905	0.003	1172

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	58 - 50.5 (1)	TP19.078x17.393x0.188	7.500	0.000	0.0	11.242	-2.588	657.669	0.004
L2	50.5 - 0 (2)	TP30.05x18.141x0.188	53.000	0.000	0.0	17.772	-14.166	1039.660	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio M _{ux} / φM _{ux}	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio M _{uy} / φM _{uy}
L1	58 - 50.5 (1)	TP19.078x17.393x0.188	12.405	319.168	0.039	0.000	319.168	0.000
L2	50.5 - 0 (2)	TP30.05x18.141x0.188	593.945	681.328	0.872	0.000	681.328	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	φV _n K	Ratio V _u / φV _n	Actual T _u kip-ft	φT _n kip-ft	Ratio T _u / φT _n
L1	58 - 50.5 (1)	TP19.078x17.393x0.188	3.055	197.301	0.015	0.092	326.402	0.000
L2	50.5 - 0 (2)	TP30.05x18.141x0.188	12.862	311.897	0.041	0.178	815.676	0.000

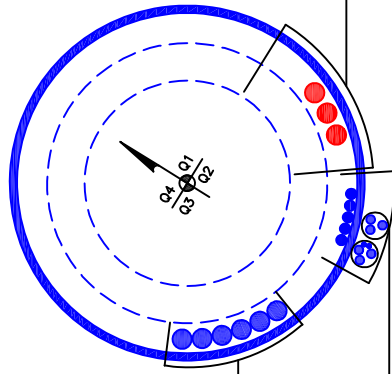
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P _u / φP _n	Ratio M _{ux} / φM _{ux}	Ratio M _{uy} / φM _{uy}	Ratio V _u / φV _n	Ratio T _u / φT _n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	58 - 50.5 (1)	0.004	0.039	0.000	0.015	0.000	0.043	1.050	4.8.2
L2	50.5 - 0 (2)	0.014	0.872	0.000	0.041	0.000	0.887	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
L1	58 - 50.5	Pole	TP19.078x17.393x0.188	1	-2.588	690.552	4.1	Pass
L2	50.5 - 0	Pole	TP30.05x18.141x0.188	2	-14.166	1091.643	84.5	Pass
Summary								
Pole (L2)							84.5	Pass
RATING =							84.5	Pass

APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 37 FT LEVEL

(OTHER CONSIDERED EQUIPMENT-IN (2) 1-1/4" CONDUIT)
(2) 3/8" TO 54 FT LEVEL
(6) 3/4" TO 54 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 7/8" TO 54 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)
(3) 1-5/8" TO 47 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

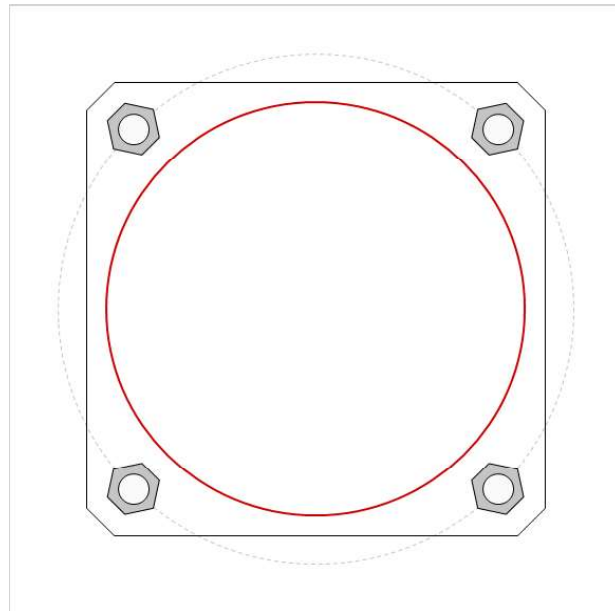


Site Info	
BU #	842862
Site Name	EAST HAVEN SOUTH
Order #	529726 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.5

Applied Loads	
Moment (kip-ft)	593.95
Axial Force (kips)	14.17
Shear Force (kips)	12.86

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data
(4) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 37" BC
Base Plate Data
33" OD x 2" Plate (A 633 Gr. E; $F_y=60$ ksi, $F_u=70$ ksi)
Stiffener Data
N/A
Pole Data
30.05" x 0.1875" 18-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary	<i>(units of kips, kip-in)</i>	
$Pu_c = 195.88$	$\phi Pn_c = 268.39$	Stress Rating
$Vu = 3.22$	$\phi Vn = 120.77$	69.6%
$Mu = n/a$	$\phi Mn = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	40.96	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	72.2%	Pass

Pier and Pad Foundation



BU #: 842862
Site Name: EAST HAVEN SOL
App. Number: 529726 Rev. 0

TIA-222 Revision: H
Tower Type: Monopole

Top & Bot. Pad Rein. Different?:
Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	14.19	kips
Base Shear, V_u comp:	12.83	kips
Moment, M_u :	593.95	ft-kips
Tower Height, H :	58	ft
BP Dist. Above Fdn, bp_{dist} :	2.75	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	102.68	12.83	11.9%	Pass
<i>Bearing Pressure (ksf)</i>	8.09	2.20	27.2%	Pass
<i>Overturning (kip*ft)</i>	1214.61	686.70	56.5%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	1679.58	651.69	37.0%	Pass
<i>Pier Compression (kip)</i>	11934.00	34.44	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	1145.25	213.96	17.8%	Pass
<i>Pad Shear - 1-way (kips)</i>	351.97	53.53	14.5%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.016	9.1%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	1971.95	391.01	18.9%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$:	5	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	9	
Pier Rebar Quantity, mc :	15	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	14	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

*Rating per TIA-222-H Section 15.5

Soil Rating*:	56.5%
Structural Rating*:	37.0%

Pad Properties		
Depth, D :	6.5	ft
Pad Width, W :	14	ft
Pad Thickness, T :	2.5	ft
Pad Rebar Size (Bottom), Sp :	8	
Pad Rebar Quantity (Bottom), mp :	13	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Compressive Strength, $F'c$:	3	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Net Bearing, Q_{net} :	10.000	ksf
Cohesion, Cu :	0.000	ksf
Friction Angle, ϕ :	30	degrees
SPT Blow Count, N_{blows} :	21	
Base Friction, μ :	0.4	
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	8	ft

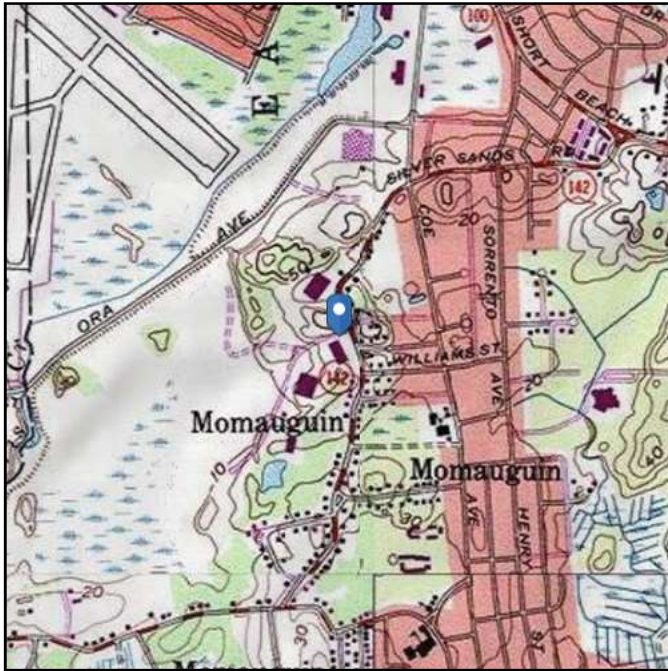
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ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 35.45 ft (NAVD 88)
Latitude: 41.256356
Longitude: -72.875778

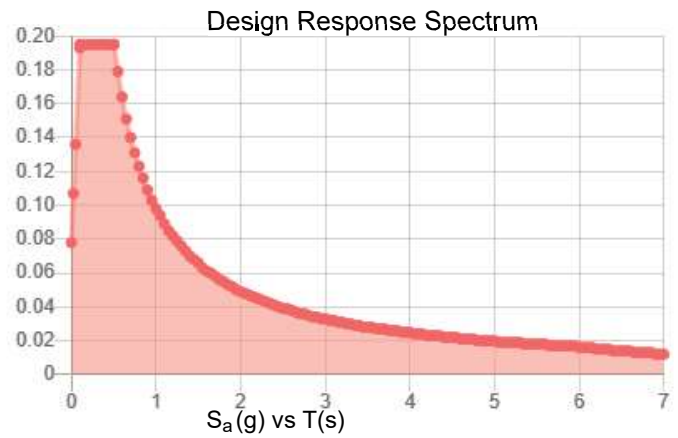
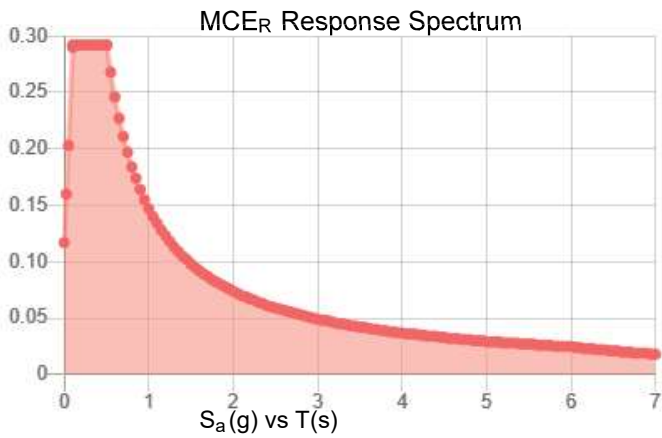


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.182	S_{DS} :	0.195
S_1 :	0.062	S_{D1} :	0.098
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.095
S_{MS} :	0.292	PGA _M :	0.152
S_{M1} :	0.147	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Oct 20 2020

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Oct 20 2020

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Exhibit E

Mount Analysis

Date: October 19, 2020

Darcy Tarr
Crown Castle
6325 Ardrey Kell Road, Suite 600
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679

Subject: Mount Analysis Report

Carrier Designation: T-Mobile Equipment Change-out
Carrier Site Number: CT11623B
Carrier Site Name: N/A

Crown Castle Designation: Crown Castle BU Number: 842862
Crown Castle Site Name: East Haven South
Crown Castle JDE Job Number: 620146
Crown Castle Purchase Order Number: 1578176
Crown Castle Order Number: 529726 Rev. 0

Engineering Firm Designation: Paul J Ford and Company Project Number: A37520-2250.001.7190

Site Data: 259 Commerce Street, East Haven, New Haven County, CT 06512
Latitude 41.256356°, Longitude -72.875778°

Structure Information: Tower Height & Type: 59 Foot Monopole
Mount Elevation: 47 Foot
Mount Type: (3)-Sector 12.5 Foot Platform

Dear Darcy Tarr,

Paul J Ford and Company is pleased to submit this "Mount Analysis Report" to determine the structural integrity of the T-Mobile antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

12.5' Platform

SUFFICIENT

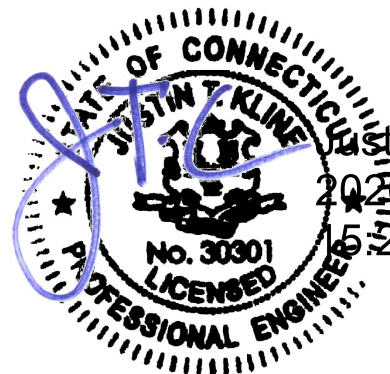
This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by:
MDS

Respectfully submitted by:

Deepesh Savla, PE
Project Manager
dsavla@pauljford.com

AMS



Justin T. Kline

2020.10.19

15:29:37-04'00'

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- 2) ANALYSIS CRITERIA**
 - Table 1 - Proposed Equipment Configuration
- 3) ANALYSIS PROCEDURE**
 - Table 2 - Documents Provided
 - 3.1) Analysis Method
 - 3.2) Assumptions
- 4) ANALYSIS RESULTS**
 - Table 3 - Mount Component Capacity
 - 4.1) Recommendations
- 5) STANDARD CONDITIONS**
- 6) APPENDIX A**
 - SOFTWARE INPUT CALCULATIONS
- 7) APPENDIX B**
 - SOFTWARE ANALYSIS OUTPUT

1) INTRODUCTION

The existing mount under consideration is a (3)-Sector 12.5' Platform mount, mapped by P-SEC on 04/16/2019.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	C
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.182
Seismic S₁:	0.061
Maintenance Loading Wind Speed:	30 mph
Maintenance Load at Mid/End-Points, L_v:	250 lb
Maintenance Load at Mount Pipes, L_m:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
47	47	3	ERICSSON	AIR 32 B2A B66AA_T-MOBILE	(3) 12.5' SECTOR MOUNTS
		3	ERICSSON	AIR6449 B41_T-MOBILE	
		3	RFSCELWAVE	APXVAARR24-43-U-NA20	
		3	ERICSSON	RADIO 4449 B71 B85A_T-MOBILE	
		3	ERICSSON	RRUS 4415 B25	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
MountMapping	P-Sec, 19651-21 Dated: 04/16/2019	8347391	CCISites
Photos	Dated: 09/24/2020	-	CCISites
Order	ID: 529726 Rev. 0 Dated: 10/13/2020	-	CCISites
Radio Frequency Data Sheet	RFDS ID #: CT11623B Version 7.00, Dated: 09/22/2020	-	Crown Castle

3.1) Analysis Method

RISA-3D (version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Paul J. Ford and Company was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C).

3.2) Assumptions

- 1) *The analysis of the existing tower or the effect of the mount attachment to the tower is not within the current scope of work.*
- 2) *The antenna mounting system was properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications and all bolts are tightened as specified by the manufacturer and AISC requirements.*
- 3) *The configuration of antennas, mounts, and other appurtenances are as specified in Table 1.*
- 4) *All member connections have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report. All U-Bolt connections have been properly tightened. This 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.*
- 5) *Steel grades are as follows, unless noted otherwise:*
 - a) *Channel, Solid Round, Angle, Unistrut* *ASTM A53 (GR 35)*
 - b) *Pipe* *ASTM A53 (GR 35)*
 - c) *HSS (Rectangular), Plate* *Q235 Gr B (Fy = 34 ksi, Fu = 58 ksi)*
 - d) *HSS (Round)* *ASTM A53 (GR 35)*
 - e) *Connection Bolts* *ASTM A325*
 - f) *Threaded Rods* *SAE J429 (GR2)*
 - g) *U-Bolts* *SAE J429 (GR2)*
- 6) *Proposed equipment is to be installed in the locations specified in Appendix A. Any changes to the proposed equipment locations will render this report invalid.*

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 3- Mount Component Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Face Horizontals	47	20.5	Pass
1,2	Support Rails		24.4	Pass
1,2	Grating Support Members		24.9	Pass
1,2	Standoff Members		60.2	Pass
1,2	Corner Plates		18.2	Pass
1,2	Mount Pipes		82.2	Pass
1,2	Mount to Tower Connection		45.8	Pass

Mount Rating (max from all components) =	82.2%
---	--------------

Notes:

- 1) See additional documentation in "Appendix B – Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

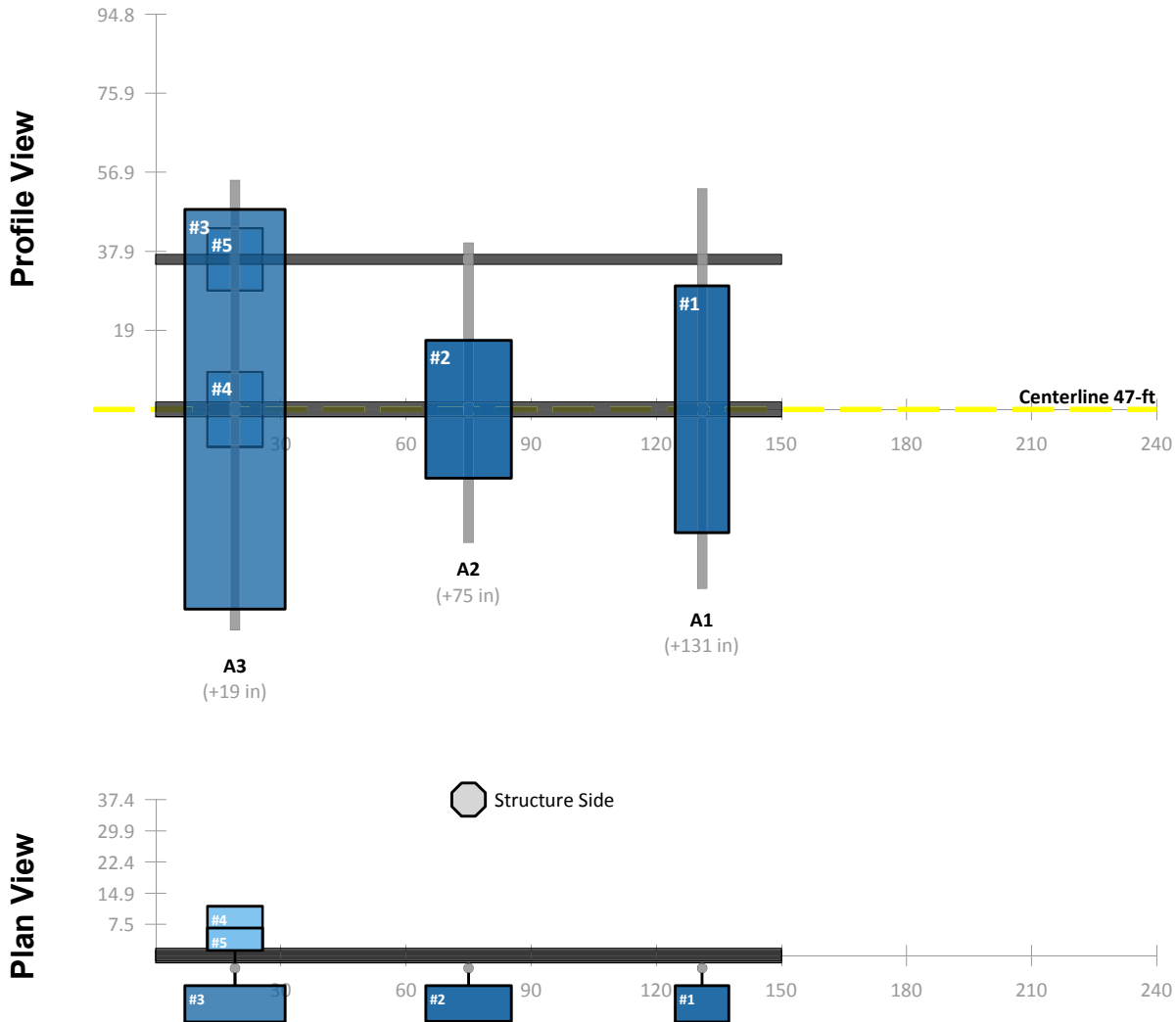
**STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING
SERVICES ON EXISTING MOUNTS BY PAUL J. FORD AND COMPANY**

- 1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.
- 2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.
- 3) The mount has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.
- 4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.
- 5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

APPENDIX A

SOFTWARE INPUT CALCULATION

Sector A (typical)



Ref ID	Type	Manufacturer	Model	Height (in)	Width (in)	Depth (in)	Center Line (ft)	Mount Pipe	Tangential Offset (in)	Normal Offset (in)
#1	Antenna	ERICSSON	AIR 32 B2A B66AA_T-MOBILE	59.25	12.87	8.70	47.00	A1	0.00	3.00
#2	Antenna	ERICSSON	AIR6449 B41_T-MOBILE	33.11	20.51	8.54	47.00	A2	0.00	3.00
#3	Antenna	RFS CELWAVE	APXVAARR24-43-U-NA20	95.90	24.00	8.70	47.00	A3	0.00	3.00
#4	TME/RRH	ERICSSON	RADIO 4449 B71 B85A_T-MOBILE	17.91	13.20	10.63	47.00	A3	0.00	-3.00
#5	TME/RRH	ERICSSON	RRUS 4415 B25	14.96	13.19	5.39	50.00	A3	0.00	-3.00

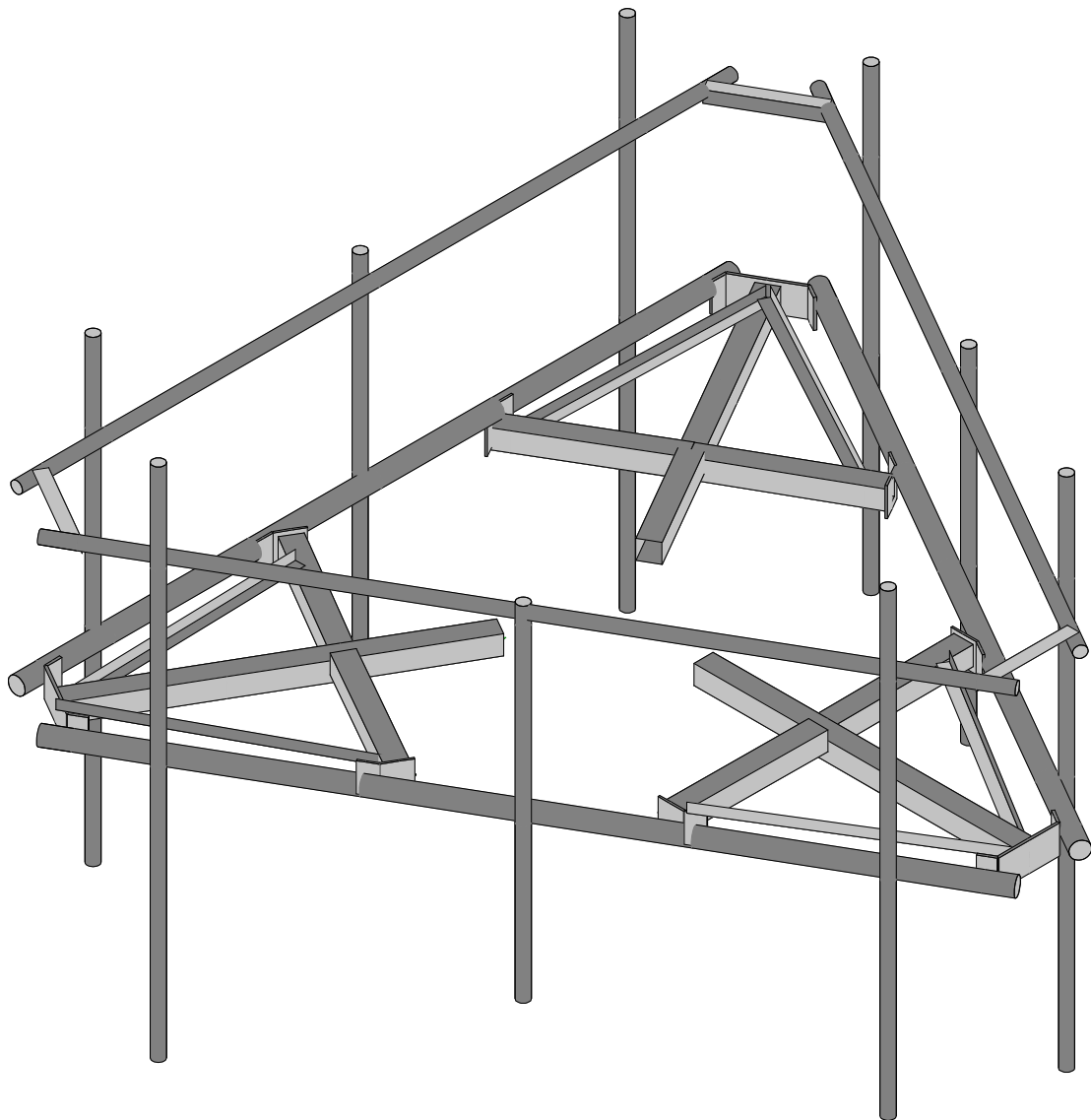
1. A 6" tolerance for proposed equipment is acceptable.

2. Contractor to verify location of existing equipment prior to installation of proposed equipment. Notify for any deviations.

3. Install shall not cause harm to the structure, climbing facility, safety climb, or any system installed on the structure

APPENDIX B

SOFTWARE ANALYSIS OUTPUT



Envelope Only Solution

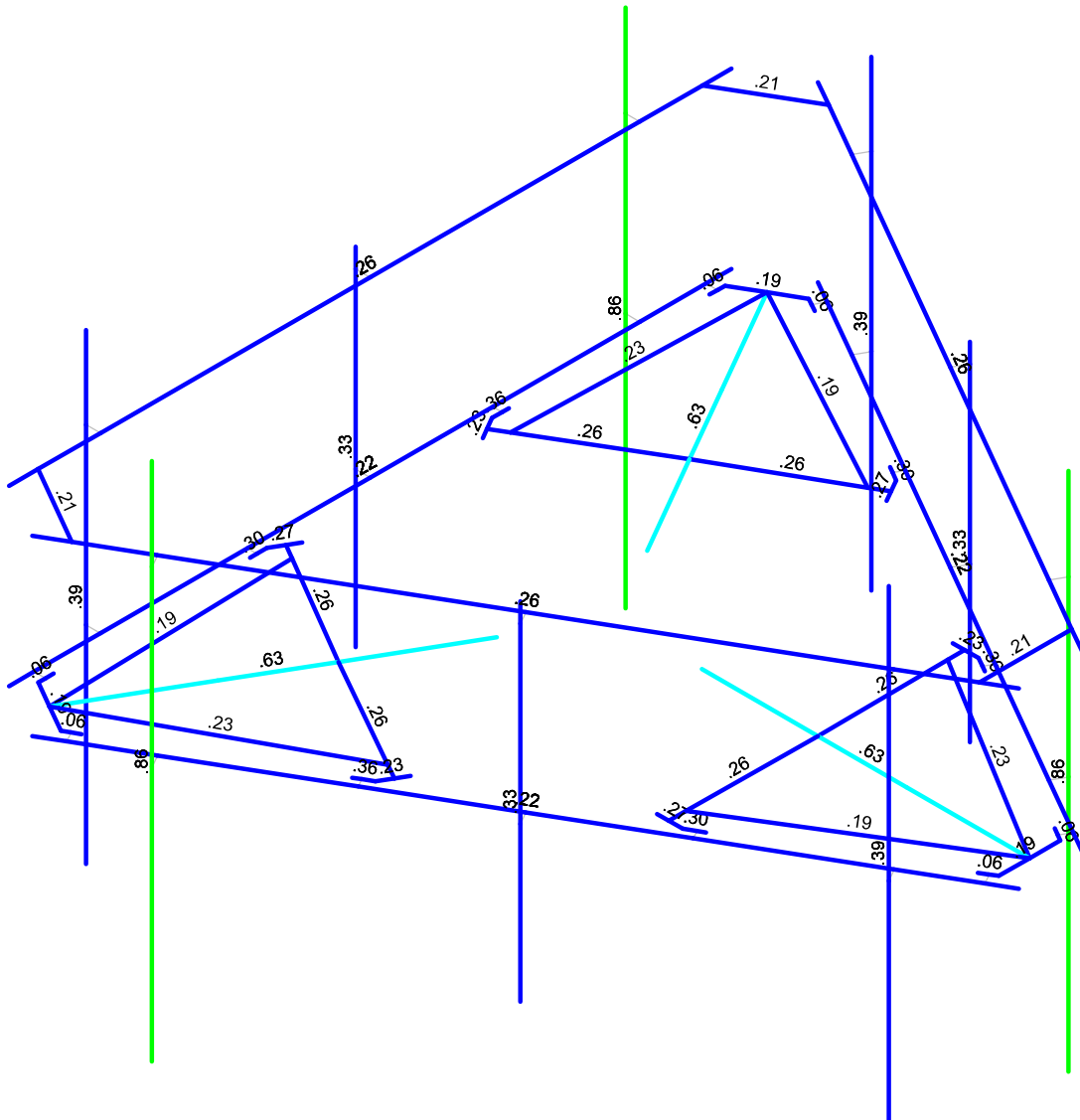
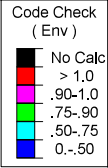
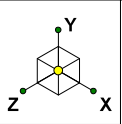
Paul J. Ford and Company
MDS
37520-2250.001.7190

BU# 842862- East Haven South

SK - 1

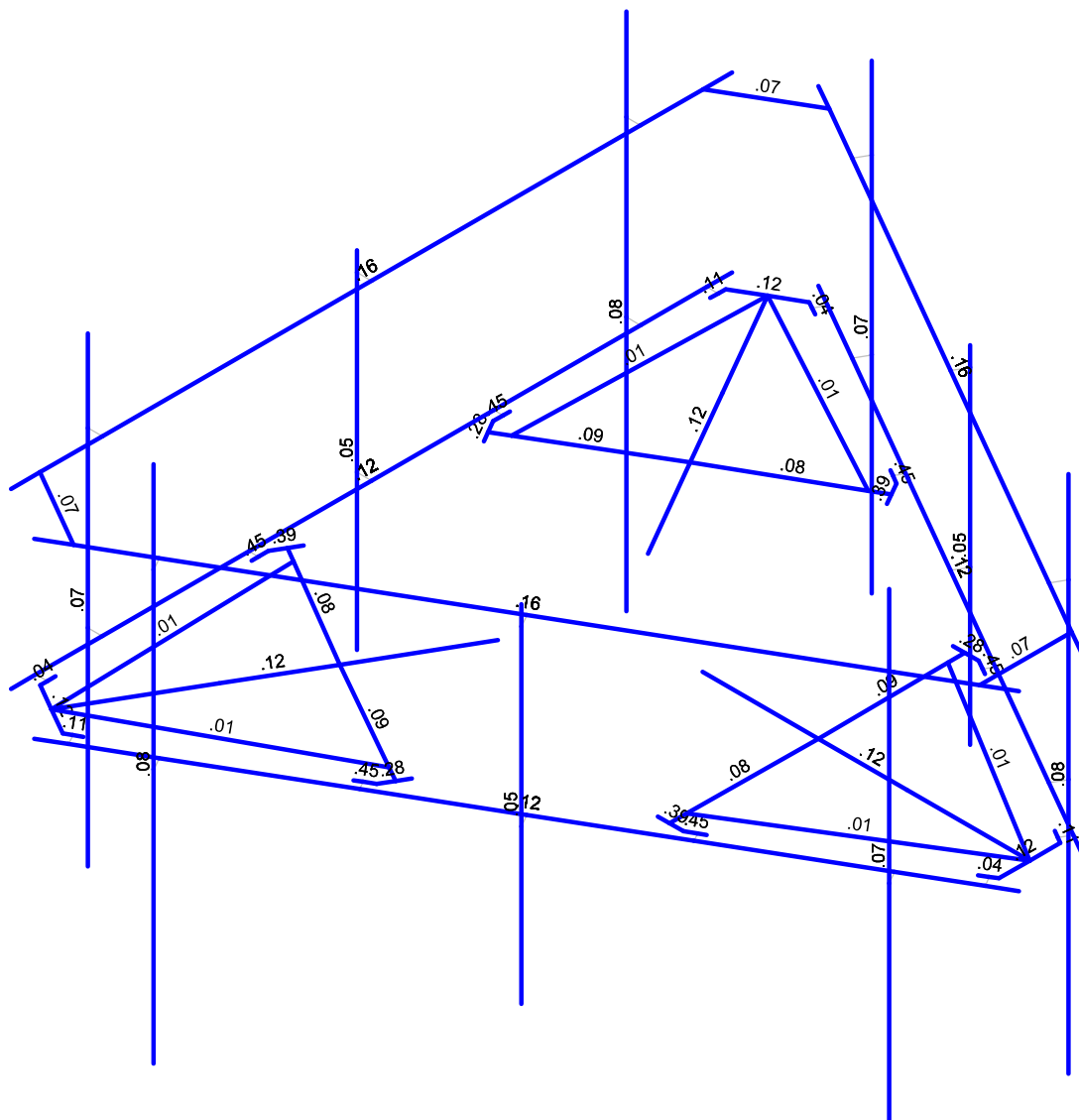
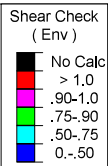
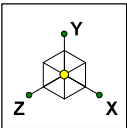
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Envelope Only Solution

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Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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Company : Paul J. Ford and Company
 Designer : MDS
 Job Number : 37520-2250.001.7190
 Model Name : BU# 842862- East Haven South

Oct 19, 2020
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 Checked By: _____

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISACONNECTION CODE	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
3	Q235 Gr B	29000	11154	.3	.65	.527	34	1.4	58	1.3

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M10	N11	N12			RIGID	None	None	RIGID	Typical
2	M14	N18	N19			RIGID	None	None	RIGID	Typical
3	M21	N29	N30			RIGID	None	None	RIGID	Typical
4	M22	N32	N31			RIGID	None	None	RIGID	Typical
5	M25	N35	N36			RIGID	None	None	RIGID	Typical
6	M29	N42	N43			RIGID	None	None	RIGID	Typical
7	M36	N54	N53			RIGID	None	None	RIGID	Typical
8	M37	N56	N55			RIGID	None	None	RIGID	Typical
9	M40	N60	N61			RIGID	None	None	RIGID	Typical
10	M43	N65	N66			RIGID	None	None	RIGID	Typical
11	M50	N77	N76			RIGID	None	None	RIGID	Typical
12	M51	N78	N79			RIGID	None	None	RIGID	Typical
13	M64	N93	N92			RIGID	None	None	RIGID	Typical
14	M65	N95	N94			RIGID	None	None	RIGID	Typical
15	M67	N99	N98			RIGID	None	None	RIGID	Typical
16	M68	N101	N100			RIGID	None	None	RIGID	Typical
17	M70A	N105	N104			RIGID	None	None	RIGID	Typical
18	M71A	N107	N106			RIGID	None	None	RIGID	Typical
19	M15	N22	N20			PL6x0.375	None	None	Q235 Gr B	Typical
20	M16	N21	N22			PL6x0.375	None	None	Q235 Gr B	Typical
21	M18	N26	N24			PL6x0.375	None	None	Q235 Gr B	Typical
22	M19	N25	N26			PL6x0.375	None	None	Q235 Gr B	Typical
23	M30	N46	N44			PL6x0.375	None	None	Q235 Gr B	Typical



Company : Paul J. Ford and Company
 Designer : MDS
 Job Number : 37520-2250.001.7190
 Model Name : BU# 842862- East Haven South

Oct 19, 2020
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 Checked By: _____

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
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25	M33	N50	N48			PL6x0.375	None	None	Q235 Gr B	Typical
26	M34	N49	N50			PL6x0.375	None	None	Q235 Gr B	Typical
27	M44	N69	N67			PL6x0.375	None	None	Q235 Gr B	Typical
28	M45	N68	N69			PL6x0.375	None	None	Q235 Gr B	Typical
29	M47	N73	N71			PL6x0.375	None	None	Q235 Gr B	Typical
30	M48	N72	N73			PL6x0.375	None	None	Q235 Gr B	Typical
31	M9	N10	N15			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
32	M12	N17	N15			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
33	M13	N16	N17			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
34	M24	N34	N39			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
35	M27	N41	N39			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
36	M28	N40	N41			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
37	M39	N59	N62			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
38	M41	N64	N62			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
39	M42	N63	N64			PL 6" x 1/2"	None	None	Q235 Gr B	Typical
40	CBA1	N1	N2			PIPE_3.0	None	None	A53 Gr.B	Typical
41	CBC1	N13	N14			PIPE_3.0	None	None	A53 Gr.B	Typical
42	CBB1	N37	N38			PIPE_3.0	None	None	A53 Gr.B	Typical
43	CBA2	N80	N81			PIPE_2.0	None	None	A53 Gr.B	Typical
44	CBC2	N82	N83			PIPE_2.0	None	None	A53 Gr.B	Typical
45	CBB2	N84	N85			PIPE_2.0	None	None	A53 Gr.B	Typical
46	M2	N9	N3		270	L2x2x3	None	None	A53 Gr.B	Typical
47	M3	N9	N4			L2x2x3	None	None	A53 Gr.B	Typical
48	M4	N33	N5		270	L2x2x3	None	None	A53 Gr.B	Typical
49	M5	N33	N6			L2x2x3	None	None	A53 Gr.B	Typical
50	M6	N58	N7		270	L2x2x3	None	None	A53 Gr.B	Typical
51	M7	N58	N8			L2x2x3	None	None	A53 Gr.B	Typical
52	M73	N87	N86		90	L2.5x2.5x4	None	None	A53 Gr.B	Typical
53	M74	N89	N88		90	L2.5x2.5x4	None	None	A53 Gr.B	Typical
54	M75	N91	N90		90	L2.5x2.5x4	None	None	A53 Gr.B	Typical
55	M17	N23	N28			HSS4X4X4	None	None	Q235 Gr B	Typical
56	M20	N27	N28			HSS4X4X4	None	None	Q235 Gr B	Typical
57	M32	N47	N52			HSS4X4X4	None	None	Q235 Gr B	Typical
58	M35	N51	N52			HSS4X4X4	None	None	Q235 Gr B	Typical
59	M38	N57	N58			HSS4X4X4	None	None	Q235 Gr B	Typical
60	M46	N70	N75			HSS4X4X4	None	None	Q235 Gr B	Typical
61	M49	N74	N75			HSS4X4X4	None	None	Q235 Gr B	Typical
62	M93	N110	N9			HSS4X4X4	None	None	Q235 Gr B	Typical
63	M95A	N111	N33			HSS4X4X4	None	None	Q235 Gr B	Typical
64	M67A	N116	N115			RIGID	None	None	RIGID	Typical
65	M68A	N118	N117			RIGID	None	None	RIGID	Typical
66	M69	N122	N121			RIGID	None	None	RIGID	Typical
67	M70	N124	N123			RIGID	None	None	RIGID	Typical
68	M71	N128	N127			RIGID	None	None	RIGID	Typical
69	M72	N130	N129			RIGID	None	None	RIGID	Typical
70	M76	N134	N133			RIGID	None	None	RIGID	Typical
71	M77	N136	N135			RIGID	None	None	RIGID	Typical
72	M78	N140	N139			RIGID	None	None	RIGID	Typical
73	M79	N142	N141			RIGID	None	None	RIGID	Typical
74	M80	N146	N145			RIGID	None	None	RIGID	Typical
75	M81	N148	N147			RIGID	None	None	RIGID	Typical
76	C3	N96	N97			PIPE_2.0	None	None	A53 Gr.B	Typical
77	C2	N102	N103			PIPE_2.0	None	None	A53 Gr.B	Typical
78	C1	N108	N109			PIPE_2.0	None	None	A53 Gr.B	Typical
79	B1	N131	N132			PIPE_2.0	None	None	A53 Gr.B	Typical
80	A3	N137	N138			PIPE_2.0	None	None	A53 Gr.B	Typical



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 Designer : MDS
 Job Number : 37520-2250.001.7190
 Model Name : BU# 842862- East Haven South

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Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
81	A1	N149	N150			PIPE_2.0	None	None	A53 Gr.B	Typical
82	A2	N143	N144			PIPE_2.0	None	None	A53 Gr.B	Typical
83	B3	N119	N120			PIPE_2.0	None	None	A53 Gr.B	Typical
84	B2	N125	N126			PIPE_2.0	None	None	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M10	BenPIN					Yes	** NA **			None
2	M14	BenPIN					Yes	** NA **			None
3	M21		BenPIN				Yes	** NA **			None
4	M22	BenPIN					Yes	** NA **			None
5	M25	BenPIN					Yes	** NA **			None
6	M29	BenPIN					Yes	** NA **			None
7	M36	BenPIN					Yes	** NA **			None
8	M37	BenPIN					Yes	** NA **			None
9	M40	BenPIN					Yes	** NA **			None
10	M43	BenPIN					Yes	** NA **			None
11	M50	BenPIN					Yes	** NA **			None
12	M51		BenPIN				Yes	** NA **			None
13	M64						Yes	** NA **			None
14	M65						Yes	** NA **			None
15	M67						Yes	** NA **			None
16	M68						Yes	** NA **			None
17	M70A						Yes	** NA **			None
18	M71A						Yes	** NA **			None
19	M15						Yes	** NA **			None
20	M16						Yes	** NA **			None
21	M18						Yes	** NA **			None
22	M19						Yes	** NA **			None
23	M30						Yes	** NA **			None
24	M31						Yes	** NA **			None
25	M33						Yes	** NA **			None
26	M34						Yes	** NA **			None
27	M44						Yes	** NA **			None
28	M45						Yes	** NA **			None
29	M47						Yes	** NA **			None
30	M48						Yes	** NA **			None
31	M9						Yes	** NA **			None
32	M12						Yes	** NA **			None
33	M13						Yes	** NA **			None
34	M24						Yes	** NA **			None
35	M27						Yes	** NA **			None
36	M28						Yes	** NA **			None
37	M39						Yes	** NA **			None
38	M41						Yes	** NA **			None
39	M42						Yes	** NA **			None
40	CBA1						Yes	** NA **			None
41	CBC1						Yes	** NA **			None
42	CBB1						Yes	** NA **			None
43	CBA2						Yes	** NA **			None
44	CBC2						Yes	** NA **			None
45	CBB2						Yes	** NA **			None
46	M2	BenPIN	BenPIN				Yes	** NA **			None
47	M3	BenPIN	BenPIN				Yes	** NA **			None
48	M4	BenPIN	BenPIN				Yes	** NA **			None



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Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
49	M5	BenPIN	BenPIN				Yes	** NA **			None
50	M6	BenPIN	BenPIN				Yes	** NA **			None
51	M7	BenPIN	BenPIN				Yes	** NA **			None
52	M73						Yes	** NA **			None
53	M74						Yes	** NA **			None
54	M75						Yes	** NA **			None
55	M17						Yes	** NA **			None
56	M20						Yes	** NA **			None
57	M32						Yes	** NA **			None
58	M35						Yes	** NA **			None
59	M38						Yes	** NA **			None
60	M46						Yes	** NA **			None
61	M49						Yes	** NA **			None
62	M93						Yes	** NA **			None
63	M95A						Yes	** NA **			None
64	M67A						Yes	** NA **			None
65	M68A						Yes	** NA **			None
66	M69						Yes	** NA **			None
67	M70						Yes	** NA **			None
68	M71						Yes	** NA **			None
69	M72						Yes	** NA **			None
70	M76						Yes	** NA **			None
71	M77						Yes	** NA **			None
72	M78						Yes	** NA **			None
73	M79						Yes	** NA **			None
74	M80						Yes	** NA **			None
75	M81						Yes	** NA **			None
76	C3						Yes	** NA **			None
77	C2						Yes	** NA **			None
78	C1						Yes	** NA **			None
79	B1						Yes	** NA **			None
80	A3						Yes	** NA **			None
81	A1						Yes	** NA **			None
82	A2						Yes	** NA **			None
83	B3						Yes	** NA **			None
84	B2						Yes	** NA **			None

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	M15	PL6x0.375	5.363			Lbyy						Lateral
2	M16	PL6x0.375	3.499			Lbyy						Lateral
3	M18	PL6x0.375	5.363			Lbyy						Lateral
4	M19	PL6x0.375	3.499			Lbyy						Lateral
5	M30	PL6x0.375	5.363			Lbyy						Lateral
6	M31	PL6x0.375	3.499			Lbyy						Lateral
7	M33	PL6x0.375	5.363			Lbyy						Lateral
8	M34	PL6x0.375	3.499			Lbyy						Lateral
9	M44	PL6x0.375	5.363			Lbyy						Lateral
10	M45	PL6x0.375	3.499			Lbyy						Lateral
11	M47	PL6x0.375	5.363			Lbyy						Lateral
12	M48	PL6x0.375	3.499			Lbyy						Lateral
13	M9	PL 6" x 1/2"	3.184			Lbyy						Lateral
14	M12	PL 6" x 1/2"	12.707			Lbyy						Lateral
15	M13	PL 6" x 1/2"	3.184			Lbyy						Lateral
16	M24	PL 6" x 1/2"	3.184			Lbyy						Lateral



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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
17	M27	PL 6" x 1/2"	12.707			Lbyy						Lateral
18	M28	PL 6" x 1/2"	3.184			Lbyy						Lateral
19	M39	PL 6" x 1/2"	3.184			Lbyy						Lateral
20	M41	PL 6" x 1/2"	12.707			Lbyy						Lateral
21	M42	PL 6" x 1/2"	3.184			Lbyy						Lateral
22	CBA1	PIPE 3.0	150			Lbyy						Lateral
23	CBC1	PIPE 3.0	150			Lbyy						Lateral
24	CBB1	PIPE 3.0	150			Lbyy						Lateral
25	CBA2	PIPE 2.0	150			Lbyy						Lateral
26	CBC2	PIPE 2.0	150			Lbyy						Lateral
27	CBB2	PIPE 2.0	150			Lbyy						Lateral
28	M2	L2x2x3	51.837			Lbyy						Lateral
29	M3	L2x2x3	51.837			Lbyy						Lateral
30	M4	L2x2x3	51.837			Lbyy						Lateral
31	M5	L2x2x3	51.837			Lbyy						Lateral
32	M6	L2x2x3	51.837			Lbyy						Lateral
33	M7	L2x2x3	51.837			Lbyy						Lateral
34	M73	L2.5x2.5x4	19.173									Lateral
35	M74	L2.5x2.5x4	19.173									Lateral
36	M75	L2.5x2.5x4	19.173									Lateral
37	M17	HSS4X4X4	30.71			Lbyy						Lateral
38	M20	HSS4X4X4	30.71			Lbyy						Lateral
39	M32	HSS4X4X4	30.71			Lbyy						Lateral
40	M35	HSS4X4X4	30.71			Lbyy						Lateral
41	M38	HSS4X4X4	68.014			Lbyy						Lateral
42	M46	HSS4X4X4	30.71			Lbyy						Lateral
43	M49	HSS4X4X4	30.71			Lbyy						Lateral
44	M93	HSS4X4X4	68.014			Lbyy						Lateral
45	M95A	HSS4X4X4	68.014			Lbyy						Lateral
46	C3	PIPE 2.0	108									Lateral
47	C2	PIPE 2.0	72									Lateral
48	C1	PIPE 2.0	96									Lateral
49	B1	PIPE 2.0	96									Lateral
50	A3	PIPE 2.0	108									Lateral
51	A1	PIPE 2.0	96									Lateral
52	A2	PIPE 2.0	72									Lateral
53	B3	PIPE 2.0	108									Lateral
54	B2	PIPE 2.0	72									Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...Surface(...
1	Dead	None		-1.1			30		3
2	Wind 0	None					60	108	
3	Wind 30	None					60	108	
4	Wind 60	None					60	108	
5	Wind 90	None					60	108	
6	Wind 120	None					60	108	
7	Wind 150	None					60	108	
8	Ice Load	None					30	54	3
9	Ice 0	None					60	108	
10	Ice 30	None					60	108	
11	Ice 60	None					60	108	
12	Ice 90	None					60	108	
13	Ice 120	None					60	108	
14	Ice 150	None					60	108	



Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
15	Lm1	None				1				
16	Lm2	None				1				
17	Lm3	None				1				
18	Lm4	None				1				
19	Lv1	None				1				
20	Lv2	None				1				
21	Lv3	None				1				
22	Lv4	None				1				
23	BLC 1 Transient Area Loads	None						75		
24	BLC 8 Transient Area Loads	None						75		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	
1	1.4 D	Yes	Y		1	1.4															
2	1.2 D + 1.0 Wo @ 0	Yes	Y		1	1.2	2	1													
3	1.2 D + 1.0 Wo @ 30	Yes	Y		1	1.2	3	1													
4	1.2 D + 1.0 Wo @ 60	Yes	Y		1	1.2	4	1													
5	1.2 D + 1.0 Wo @ 90	Yes	Y		1	1.2	5	1													
6	1.2 D + 1.0 Wo @ 120	Yes	Y		1	1.2	6	1													
7	1.2 D + 1.0 Wo @ 150	Yes	Y		1	1.2	7	1													
8	1.2 D + 1.0 Wo @ 180	Yes	Y		1	1.2	2	-1													
9	1.2 D + 1.0 Wo @ 210	Yes	Y		1	1.2	3	-1													
10	1.2 D + 1.0 Wo @ 240	Yes	Y		1	1.2	4	-1													
11	1.2 D + 1.0 Wo @ 270	Yes	Y		1	1.2	5	-1													
12	1.2 D + 1.0 Wo @ 300	Yes	Y		1	1.2	6	-1													
13	1.2 D + 1.0 Wo @ 330	Yes	Y		1	1.2	7	-1													
14	1.2 D + 1.0 Di + 1.0 Wi @ 0	Yes	Y		1	1.2	8	1	9	1											
15	1.2 D + 1.0 Di + 1.0 Wi @ 30	Yes	Y		1	1.2	8	1	10	1											
16	1.2 D + 1.0 Di + 1.0 Wi @ 60	Yes	Y		1	1.2	8	1	11	1											
17	1.2 D + 1.0 Di + 1.0 Wi @ 90	Yes	Y		1	1.2	8	1	12	1											
18	1.2 D + 1.0 Di + 1.0 Wi @ 120	Yes	Y		1	1.2	8	1	13	1											
19	1.2 D + 1.0 Di + 1.0 Wi @ 150	Yes	Y		1	1.2	8	1	14	1											
20	1.2 D + 1.0 Di + 1.0 Wi @ 180	Yes	Y		1	1.2	8	1	9	-1											
21	1.2 D + 1.0 Di + 1.0 Wi @ 210	Yes	Y		1	1.2	8	1	10	-1											
22	1.2 D + 1.0 Di + 1.0 Wi @ 240	Yes	Y		1	1.2	8	1	11	-1											
23	1.2 D + 1.0 Di + 1.0 Wi @ 270	Yes	Y		1	1.2	8	1	12	-1											
24	1.2 D + 1.0 Di + 1.0 Wi @ 300	Yes	Y		1	1.2	8	1	13	-1											
25	1.2 D + 1.0 Di + 1.0 Wi @ 330	Yes	Y		1	1.2	8	1	14	-1											
26	1.2 D + 1.5 Lm1 + 1.0 Wm @ 0	Yes	Y		1	1.2	15	1.5	2	.053											
27	1.2 D + 1.5 Lm1 + 1.0 Wm @ 30	Yes	Y		1	1.2	15	1.5	3	.053											
28	1.2 D + 1.5 Lm1 + 1.0 Wm @ 60	Yes	Y		1	1.2	15	1.5	4	.053											
29	1.2 D + 1.5 Lm1 + 1.0 Wm @ 90	Yes	Y		1	1.2	15	1.5	5	.053											
30	1.2 D + 1.5 Lm1 + 1.0 Wm @ 120	Yes	Y		1	1.2	15	1.5	6	.053											
31	1.2 D + 1.5 Lm1 + 1.0 Wm @ 150	Yes	Y		1	1.2	15	1.5	7	.053											
32	1.2 D + 1.5 Lm1 + 1.0 Wm @ 180	Yes	Y		1	1.2	15	1.5	2	.053											
33	1.2 D + 1.5 Lm1 + 1.0 Wm @ 210	Yes	Y		1	1.2	15	1.5	3	.053											
34	1.2 D + 1.5 Lm1 + 1.0 Wm @ 240	Yes	Y		1	1.2	15	1.5	4	.053											
35	1.2 D + 1.5 Lm1 + 1.0 Wm @ 270	Yes	Y		1	1.2	15	1.5	5	.053											
36	1.2 D + 1.5 Lm1 + 1.0 Wm @ 300	Yes	Y		1	1.2	15	1.5	6	.053											
37	1.2 D + 1.5 Lm1 + 1.0 Wm @ 330	Yes	Y		1	1.2	15	1.5	7	.053											
38	1.2 D + 1.5 Lm2 + 1.0 Wm @ 0	Yes	Y		1	1.2	16	1.5	2	.053											
39	1.2 D + 1.5 Lm2 + 1.0 Wm @ 30	Yes	Y		1	1.2	16	1.5	3	.053											
40	1.2 D + 1.5 Lm2 + 1.0 Wm @ 60	Yes	Y		1	1.2	16	1.5	4	.053											
41	1.2 D + 1.5 Lm2 + 1.0 Wm @ 90	Yes	Y		1	1.2	16	1.5	5	.053											
42	1.2 D + 1.5 Lm2 + 1.0 Wm @ 120	Yes	Y		1	1.2	16	1.5	6	.053											

Load Combinations (Continued)

Description	S	P	S	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B
43	1.2 D + 1.5 Lm2 + 1.0 Wm @ 150	Yes	Y		1	1.2	16	1.5	7	.053																
44	1.2 D + 1.5 Lm2 + 1.0 Wm @ 180	Yes	Y		1	1.2	16	1.5	2	.053																
45	1.2 D + 1.5 Lm2 + 1.0 Wm @ 210	Yes	Y		1	1.2	16	1.5	3	.053																
46	1.2 D + 1.5 Lm2 + 1.0 Wm @ 240	Yes	Y		1	1.2	16	1.5	4	.053																
47	1.2 D + 1.5 Lm2 + 1.0 Wm @ 270	Yes	Y		1	1.2	16	1.5	5	.053																
48	1.2 D + 1.5 Lm2 + 1.0 Wm @ 300	Yes	Y		1	1.2	16	1.5	6	.053																
49	1.2 D + 1.5 Lm2 + 1.0 Wm @ 330	Yes	Y		1	1.2	16	1.5	7	.053																
50	1.2 D + 1.5 Lm3 + 1.0 Wm @ 0	Yes	Y		1	1.2	17	1.5	2	.053																
51	1.2 D + 1.5 Lm3 + 1.0 Wm @ 30	Yes	Y		1	1.2	17	1.5	3	.053																
52	1.2 D + 1.5 Lm3 + 1.0 Wm @ 60	Yes	Y		1	1.2	17	1.5	4	.053																
53	1.2 D + 1.5 Lm3 + 1.0 Wm @ 90	Yes	Y		1	1.2	17	1.5	5	.053																
54	1.2 D + 1.5 Lm3 + 1.0 Wm @ 120	Yes	Y		1	1.2	17	1.5	6	.053																
55	1.2 D + 1.5 Lm3 + 1.0 Wm @ 150	Yes	Y		1	1.2	17	1.5	7	.053																
56	1.2 D + 1.5 Lm3 + 1.0 Wm @ 180	Yes	Y		1	1.2	17	1.5	2	.053																
57	1.2 D + 1.5 Lm3 + 1.0 Wm @ 210	Yes	Y		1	1.2	17	1.5	3	.053																
58	1.2 D + 1.5 Lm3 + 1.0 Wm @ 240	Yes	Y		1	1.2	17	1.5	4	.053																
59	1.2 D + 1.5 Lm3 + 1.0 Wm @ 270	Yes	Y		1	1.2	17	1.5	5	.053																
60	1.2 D + 1.5 Lm3 + 1.0 Wm @ 300	Yes	Y		1	1.2	17	1.5	6	.053																
61	1.2 D + 1.5 Lm3 + 1.0 Wm @ 330	Yes	Y		1	1.2	17	1.5	7	.053																
62	1.2 D + 1.5 Lm4 + 1.0 Wm @ 0	Yes	Y		1	1.2	18	1.5	2	.053																
63	1.2 D + 1.5 Lm4 + 1.0 Wm @ 30	Yes	Y		1	1.2	18	1.5	3	.053																
64	1.2 D + 1.5 Lm4 + 1.0 Wm @ 60	Yes	Y		1	1.2	18	1.5	4	.053																
65	1.2 D + 1.5 Lm4 + 1.0 Wm @ 90	Yes	Y		1	1.2	18	1.5	5	.053																
66	1.2 D + 1.5 Lm4 + 1.0 Wm @ 120	Yes	Y		1	1.2	18	1.5	6	.053																
67	1.2 D + 1.5 Lm4 + 1.0 Wm @ 150	Yes	Y		1	1.2	18	1.5	7	.053																
68	1.2 D + 1.5 Lm4 + 1.0 Wm @ 180	Yes	Y		1	1.2	18	1.5	2	-0.053																
69	1.2 D + 1.5 Lm4 + 1.0 Wm @ 210	Yes	Y		1	1.2	18	1.5	3	-0.053																
70	1.2 D + 1.5 Lm4 + 1.0 Wm @ 240	Yes	Y		1	1.2	18	1.5	4	-0.053																
71	1.2 D + 1.5 Lm4 + 1.0 Wm @ 270	Yes	Y		1	1.2	18	1.5	5	-0.053																
72	1.2 D + 1.5 Lm4 + 1.0 Wm @ 300	Yes	Y		1	1.2	18	1.5	6	-0.053																
73	1.2 D + 1.5 Lm4 + 1.0 Wm @ 330	Yes	Y		1	1.2	18	1.5	7	-0.053																
74	1.2 D + 1.5 Lv1	Yes	Y		1	1.2	19	1.5																		
75	1.2 D + 1.5 Lv2	Yes	Y		1	1.2	20	1.5																		
76	1.2 D + 1.5 Lv3	Yes	Y		1	1.2	21	1.5																		
77	1.2 D + 1.5 Lv4	Yes	Y		1	1.2	22	1.5																		
78	1.0 D	Yes	Y		1	1																				

Envelope Joint Reactions

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC		
1	N57	max	2188.431	11	2821.009	17	1231.861	2	.478	34	2.275	8	7.145	17
2		min	-2105.819	5	1015.191	78	-1233.156	8	-.218	55	-2.281	2	2.544	78
3	N110	max	1638.363	11	2821.074	25	1812.697	13	6.097	25	2.275	4	-1.193	6
4		min	-1680.747	5	1015.22	78	-1882.39	7	2.19	78	-2.281	10	-3.739	24
5	N111	max	1154.793	11	2821.055	21	2050.813	2	-2.217	78	2.275	12	-1.201	34
6		min	-1195.02	5	1015.209	78	-1974.327	8	-6.278	21	-2.281	6	-3.421	22
7	Totals:	max	4981.586	11	8300.359	22	4981.595	2						
8		min	-4981.587	5	3045.62	78	-4981.593	8						

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc	phi*Pnt	phi*Mn y	phi*Mn z	Cb	Eqn	
1	C3	PIPE 2.0	.863	52.875	11	.083	54	11	12143.9...	32130	1.872	1.872	1...	H1-1b	
2	B3	PIPE 2.0	.863	52.875	7	.083	54	7	12143.9...	32130	1.872	1.872	1...	H1-1b	
3	A3	PIPE 2.0	.863	52.875	3	.083	54	3	12143.9...	32130	1.872	1.872	2...	H1-1b	
4	M93	HSS4X4X4	.632	0	22	.120	0	y	44	93367.2...	103122	11.96	11.96	2...	H1-1b



Company : Paul J. Ford and Company
 Designer : MDS
 Job Number : 37520-2250.001.7190
 Model Name : BU# 842862- East Haven South

Oct 19, 2020
 2:36 PM
 Checked By: _____

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc	phi*Pnt	phi*Mn y	phi*Mn z	Cb	Eqn
5	M95A	HSS4X4X4	.632	0	18	.120	0	y	61	93367.2...	103122	11.96	11.96	2...H1-1b
6	M38	HSS4X4X4	.632	0	14	.120	0	y	34	93367.2...	103122	11.96	11.96	2...H1-1b
7	C1	PIPE 2.0	.391	43	14	.072	43	24	14916.0...	32130	1.872	1.872	2...H1-1b	
8	A1	PIPE 2.0	.391	43	18	.072	43	16	14916.0...	32130	1.872	1.872	1...H1-1b	
9	B1	PIPE 2.0	.391	43	22	.072	43	20	14916.0...	32130	1.872	1.872	1...H1-1b	
10	M45	PL6x0.375	.362	1.422	10	.455	3.499	y	17	65316.7...	68850	.538	8.606	1...H1-1b
11	M31	PL6x0.375	.362	1.422	2	.455	3.499	y	21	65316.7...	68850	.538	8.606	1...H1-1b
12	M16	PL6x0.375	.362	1.422	6	.455	3.499	y	25	65316.7...	68850	.538	8.606	1...H1-1b
13	A2	PIPE 2.0	.326	32.25	9	.049	32.25	3	20866.7...	32130	1.872	1.872	1...H1-1b	
14	B2	PIPE 2.0	.326	32.25	13	.049	32.25	7	20866.7...	32130	1.872	1.872	1...H1-1b	
15	C2	PIPE 2.0	.326	32.25	5	.049	32.25	11	20866.7...	32130	1.872	1.872	1...H1-1b	
16	M19	PL6x0.375	.297	1.422	8	.446	3.499	y	25	65316.7...	68850	.538	8.606	1...H1-1b
17	M34	PL6x0.375	.297	1.422	4	.446	3.499	y	21	65316.7...	68850	.538	8.606	1...H1-1b
18	M48	PL6x0.375	.297	1.422	12	.446	3.499	y	17	65316.7...	68850	.538	8.606	1...H1-1b
19	M18	PL6x0.375	.272	2.849	2	.386	2.849	y	23	60835.0...	68850	.538	8.606	1...H1-1b
20	M33	PL6x0.375	.272	2.849	10	.386	2.849	y	19	60835.0...	68850	.538	8.606	1...H1-1b
21	M47	PL6x0.375	.272	2.849	6	.386	2.849	y	15	60835.0...	68850	.538	8.606	1...H1-1b
22	M20	HSS4X4X4	.263	30.71	14	.076	30.71	y	14	101053...	103122	11.96	11.96	1...H1-1b
23	M35	HSS4X4X4	.263	30.71	22	.076	30.71	y	22	101053...	103122	11.96	11.96	1...H1-1b
24	M49	HSS4X4X4	.263	30.71	18	.076	30.71	y	18	101053...	103122	11.96	11.96	1...H1-1b
25	M17	HSS4X4X4	.263	30.71	24	.086	30.71	y	25	101053...	103122	11.96	11.96	1...H1-1b
26	M32	HSS4X4X4	.263	30.71	20	.086	30.71	y	21	101053...	103122	11.96	11.96	1...H1-1b
27	M46	HSS4X4X4	.263	30.71	16	.086	30.71	y	17	101053...	103122	11.96	11.96	1...H1-1b
28	CBC2	PIPE 2.0	.259	75	19	.165	6.25	5	6295.422	32130	1.872	1.872	1...H1-1b	
29	CBA2	PIPE 2.0	.259	75	23	.165	6.25	9	6295.422	32130	1.872	1.872	1...H1-1b	
30	CBB2	PIPE 2.0	.259	75	15	.165	6.25	13	6295.422	32130	1.872	1.872	1...H1-1b	
31	M30	PL6x0.375	.233	2.849	8	.283	2.849	y	25	60835.0...	68850	.538	8.606	1...H1-1b
32	M15	PL6x0.375	.233	2.849	12	.283	2.849	y	17	60835.0...	68850	.538	8.606	1...H1-1b
33	M44	PL6x0.375	.233	2.849	4	.283	2.849	y	21	60835.0...	68850	.538	8.606	1...H1-1b
34	M6	L2x2x3	.230	25.918	3	.010	51.837	z	20	9165.131	22743	.542	1.04	1...H2-1
35	M2	L2x2x3	.230	25.918	11	.010	51.837	z	16	9165.131	22743	.542	1.04	1...H2-1
36	M4	L2x2x3	.230	25.918	7	.010	51.837	z	24	9165.131	22743	.542	1.04	1...H2-1
37	CBC1	PIPE 3.0	.217	100	22	.122	48.438	11	28250.5...	65205	5.749	5.749	2...H1-1b	
38	CBA1	PIPE 3.0	.217	100	14	.122	48.438	3	28250.5...	65205	5.749	5.749	2...H1-1b	
39	CBB1	PIPE 3.0	.217	100	18	.122	48.437	7	28250.5...	65205	5.749	5.749	2...H1-1b	
40	M74	L2.5x2.5x4	.213	19.173	9	.066	0	z	9	34569.0...	37485	1.083	2.467	1...H2-1
41	M75	L2.5x2.5x4	.213	19.173	5	.066	0	z	5	34569.0...	37485	1.083	2.467	1...H2-1
42	M73	L2.5x2.5x4	.213	19.173	13	.066	0	z	13	34569.0...	37485	1.083	2.467	1...H2-1
43	M7	L2x2x3	.190	25.918	7	.012	51.837	y	15	9165.131	22743	.542	1.04	1...H2-1
44	M3	L2x2x3	.190	25.918	3	.012	51.837	y	23	9165.131	22743	.542	1.04	1...H2-1
45	M5	L2x2x3	.190	25.918	11	.012	51.837	y	19	9165.131	22743	.542	1.04	1...H2-1
46	M12	PL 6" x 1/2"	.188	6.354	8	.118	6.354	y	22	62633.4...	91800	.956	11.475	1...H1-1b
47	M27	PL 6" x 1/2"	.188	6.354	4	.118	6.354	y	60	62633.4...	91800	.956	11.475	1...H1-1b
48	M41	PL 6" x 1/2"	.188	6.354	12	.118	6.354	y	32	62633.4...	91800	.956	11.475	1...H1-1b
49	M39	PL 6" x 1/2"	.063	1.659	8	.114	3.184	y	32	89622.19	91800	.956	11.475	2...H1-1b
50	M9	PL 6" x 1/2"	.063	1.659	4	.112	3.184	y	49	89622.19	91800	.956	11.475	2...H1-1b
51	M24	PL 6" x 1/2"	.063	1.659	12	.114	3.184	y	60	89622.19	91800	.956	11.475	2...H1-1b
52	M13	PL 6" x 1/2"	.058	3.184	2	.041	1.659	y	10	89622.19	91800	.956	11.475	2...H1-1b
53	M28	PL 6" x 1/2"	.058	3.184	10	.041	1.659	y	60	89622.19	91800	.956	11.475	2...H1-1b
54	M42	PL 6" x 1/2"	.058	3.184	6	.041	1.659	y	32	89622.19	91800	.956	11.475	2...H1-1b

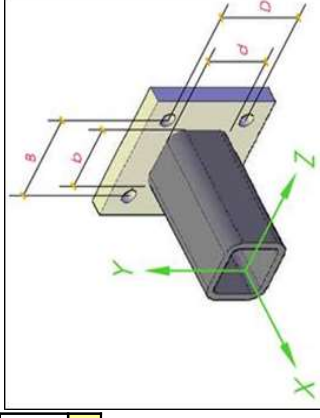
MOUNT TO TOWER CONNECTION CHECKS-LRFD

TIA Rev.	H-15.5	AISC	15th
Mount Type	3-Sector	Checks	Bolts & Welds

REACTIONS FROM RIS3D

NODE	LC	Horizontal Shear (k)	Vertical Shear (k)	Axial along member(k)	Moment about horizontal axis (ft-k)	Moment about Vertical axis (ft-k)	Torque (ft-k)
N67	Envelope	1.23	2.82	2.19	7.15	2.27	0.48

Bolt Information	Type	Dia (in)	Quantity	Vertical Bolt spacing (D) (in)	Horizontal Bolt spacing (B) (in)
		A325N	0.625	4	6



CHECKS	Forces	Strength	Rating
TENSION (K)	9.96	20.7	48.1%
Reduced Tensile Rating			
SHEAR (k)	1.11	12.4	8.9%

Note: Tension reduction not required if tension or shear capacity < 30%

Standoff Member	Type	Width (b) (in)	Depth (d) (in)	thickness (in)	Weld Size	Stiffeners present
	Rectangle	4	4	0.25	0.375	No

WELDS CHECKS	Resultant (k)	Strength (k)	Rating
	3.68	8.35	44.1%

Controlling Rating per TIA-222-H Section 15.5:	45.8%
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Exhibit F

Power Density/RF Emissions Report

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

T-Mobile Existing Facility

Site ID: CT11623B

CT623/E.Haven ATT_MP
259 Commerce Street
East Haven, Connecticut 06512

November 6, 2020

EBI Project Number: 6220005731

Site Compliance Summary	
Compliance Status:	NOT COMPLIANT
Site total MPE% of FCC general population allowable limit:	133.97%

November 6, 2020

T-Mobile

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

Emissions Analysis for Site: CT11623B - CT623/E.Haven ATT_MP

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **259 Commerce Street in East Haven, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. 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 259 Commerce Street in East Haven, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 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.

- 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 channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 8) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) 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.
- 10) 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.
- 11) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 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.

- 12) The antenna mounting height centerline of the proposed antennas is 47 feet above ground level (AGL).
- 13) 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.
- 14) 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 / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	47 feet	Height (AGL):	47 feet	Height (AGL):	47 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A1 MPE %:	20.90%	Antenna B1 MPE %:	20.90%	Antenna C1 MPE %:	20.90%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	47 feet	Height (AGL):	47 feet	Height (AGL):	47 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A2 MPE %:	62.62%	Antenna B2 MPE %:	62.62%	Antenna C2 MPE %:	62.62%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd
Height (AGL):	47 feet	Height (AGL):	47 feet	Height (AGL):	47 feet
Channel Count:	7	Channel Count:	7	Channel Count:	7
Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts
ERP (W):	8,466.41	ERP (W):	8,466.41	ERP (W):	8,466.41
Antenna A3 MPE %:	22.93%	Antenna B3 MPE %:	22.93%	Antenna C3 MPE %:	22.93%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	106.45%
AT&T	26.81%
Metro PCS	0.71%
Site Total MPE % :	133.97%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	106.45%
T-Mobile Sector B Total:	106.45%
T-Mobile Sector C Total:	106.45%
Site Total MPE % :	133.97%

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 ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	47.0	66.94	1900 MHz GSM	1000	6.69%
T-Mobile 1900 MHz LTE	2	2056.61	47.0	66.94	1900 MHz LTE	1000	6.69%
T-Mobile 2100 MHz LTE	2	2307.55	47.0	75.11	2100 MHz LTE	1000	7.51%
T-Mobile 2500 MHz LTE	1	19238.94	47.0	313.11	2500 MHz LTE	1000	31.31%
T-Mobile 2500 MHz NR	1	19238.94	47.0	313.11	2500 MHz NR	1000	31.31%
T-Mobile 600 MHz LTE	2	591.73	47.0	19.26	600 MHz LTE	400	4.82%
T-Mobile 600 MHz NR	1	1577.94	47.0	25.68	600 MHz NR	400	6.42%
T-Mobile 700 MHz LTE	2	648.82	47.0	21.12	700 MHz LTE	467	4.52%
T-Mobile 1900 MHz LTE	2	2203.69	47.0	71.73	1900 MHz LTE	1000	7.17%
						Total:	106.45%

• 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:	106.45%
Sector B:	106.45%
Sector C:	106.45%
T-Mobile Maximum MPE % (Sector A):	106.45%
Site Total:	133.97%
Site Compliance Status:	NOT COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **133.97%** 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 not within the allowable 100% threshold standard per the federal government.