December 14, 2020

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

RE: **Notice of Exempt Modification for T-Mobile:**
Crown Site ID: 806362 - T-Mobile Site ID: CT11494B
347 East Street, Wolcott, CT 06716
Latitude: 41.559500 / Longitude: -72.946900

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 186-foot mount on the existing 180-foot Monopole Tower, located at 347 East Street in Wolcott, CT. The tower is owned by Crown Castle and the property is owned by Agostinho V & Joanne Rodrigues. T-Mobile now intends to add three (3) new antennas and ancillary equipment at the 186-ft level. 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:

Install New:
(3) AIR6449 B41 5G Antenna 2500 MHz
(3) Radio 4415 B25
(3) Diplexer SDX1926Q-43

Remove:
(3) TMA

Ground:

Install New:
(1) 6160 equipment cabinet
(1) B160 battery cabinet
(1) Emerson cabinet
(1) BB 6630
(1) BB 6648
(1) PSU 4813 voltage booster
(1) IXRE router

Remove:
(1) RBS 3106 Cabinet

The facility was approved by the Connecticut Siting Council in Docket No. 56 on April 14, 1986. The approval was given with conditions which this proposed exempt modification is following.

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 Thomas G. Dunn, Mayor for the Town of Wolcott, David Kalinowski, Zoning Inspector, and Mr. and Mrs. Rodrigues, the property owners.

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.

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

cc:

The Honorable Thomas G. Dunn, Mayor *(via email only to tdunn@wolcottct.org)*
Town Hall
10 Kenea Avenue
Wolcott, CT 06716

David Kalinowski, Zoning Inspector *(via email only to dkalinowski@wolcottct.org)*
Town Hall
10 Kenea Avenue
Wolcott, CT 06716

Augostinho & Joanne Rodrigues
347 East Street
Wolcott, CT 06716

Zajac, Richard

From: Zajac, Richard
Sent: Monday, December 14, 2020 11:36 AM
To: 'tdunn@wolcottct.org'
Subject: Connecticut Siting Council exempt modification application notification
Attachments: CSC Exempt Modification Application - 347 East St.pdf

Good morning Mr. Dunn,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 347 East Street in Wolcott.

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

Zajac, Richard

From: Zajac, Richard
Sent: Monday, December 14, 2020 11:39 AM
To: 'dkalinowski@wolcottct.org'
Subject: Connecticut Siting Council exempt modification application notification
Attachments: CSC Exempt Modification Application - 347 East St.pdf

Good morning Mr. Kalinowski,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 347 East Street in Wolcott.

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

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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 ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Exhibit A

Original Facility Approval

DOCKET NO. 56

AN APPLICATION OF METRO MOBILE CTS OF NEW HAVEN, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF FACILITIES TO PROVIDE CELLULAR SERVICE IN NEW HAVEN COUNTY.	:	CONNECTICUT SITING COUNCIL April 14, 1986

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

Pursuant to the foregoing opinion, the Council hereby directs that a certificate of environmental compatibility and public need as required by section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of New Haven, Inc., for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Wolcott, Naugatuck, West Haven (existing tower), Milford, Hamden (existing tower), Guilford, and North Branford subject to the conditions below.

1. The proposed and alternate Beacon Falls sites are rejected without prejudice.
2. The Wolcott tower shall be constructed to meet Zone C wind loading with 1" of radial ice and shall not exceed 180' in height excluding antennas.
3. The Naugatuck tower shall not exceed 160' in height, excluding antennas. The certificate holder shall offer to remove the existing privately owned, unused tower now on the site.
4. Any future actions requiring the removal of the existing West Haven or Hamden towers to be shared by the certificate holder shall also apply to the equipment mounted on those towers by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

5. The Milford tower shall be a monopole structure not to exceed 100' in height, excluding antennas.
6. The Guilford tower shall be a monopole structure not to exceed 150' in height, excluding antennas.
7. The North Branford Route 17 site is rejected. The North Branford East Reeds Gap Road tower shall not exceed 160' in height, excluding antennas.
8. The certificate holder shall submit a development and management plan for the Wolcott, Naugatuck, Milford, Hamden, Guilford, and North Branford sites pursuant to sections 16-50j-75 through 16-50j-77 of the RSA, except that irrelevant items in section 16-50j-76 need only be identified as such. In addition to the requirements of section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter at the Wolcott, Milford, Hamden, Guilford, and North Branford sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.
9. All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the site development and management plan required by order 8.
10. The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with 16-50j-73, the

certificate holder shall notify the Council of the addition of any equipment to any approved tower.

11. A fence not lower than 8' shall surround each tower and associated equipment.
12. Unless necessary to comply with order 13, below, no lights shall be installed on any of these towers.
13. The facilities' construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to sections 16-50i and 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.
14. Construction activities shall take place during daylight working hours.
15. This decision and order shall be void and the towers and associated equipment shall be dismantled and removed, or reapplication for any new use shall be made to the CSC before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.
16. This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the decision and order shall be served on each person listed below. A notice

of the issuance shall be published in The Record-Journal, The New Haven Register, The Branford Review, The Evening Sentinel, The Waterbury American, and The Waterbury Republican.

The parties to this proceeding are:

Metro Mobile CTS of New Haven, Inc. (Applicant)
5 Eversley Avenue
Norwalk, Connecticut 06855

ATTN: Armand Mascioli
General Manager

Mr. Kevin B. Sullivan, Esq. (its attorneys)
Byrne, Slater, Sandler, Shulman & Rouse, P.C.
111 Pearl Street
P.O. Box 3216
Hartford, Connecticut 06103

Mr. Richard Rubin, Esq.
Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D.C. 20036

Guilford Conservation Commission represented by:

Mr. David B. Damer
Chairman
Guilford Conservation Commission
440 Great Hill Road
Guilford, Connecticut 06437

Mr. Robert W. Griswold, Jr.
100 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Town of Hamden
Memorial Town Hall
2372 Whitney Avenue
Hamden, Connecticut 06518

ATTN: Shirley Gonzales
Town Planner

Guilford Planning and Zoning Commission — represented by:

Mr. David W. Fisher
Chairman
Town Hall
31 Park Street
Guilford, Connecticut 06437

Town of Hamden — represented by:

John DeNicola, Jr.
Mayor
Town of Hamden
Memorial Town Hall
2372 Whitney Avenue
New Haven, Connecticut 06518

Citizens Park Council of New Haven — represented by:

Mr. John J. Ciarleglio
President
Citizens Park Council
of New Haven
36 Elmwood Road
New Haven, Connecticut 06515

Mr. Thomas V. Keating
343 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Ms. Evelyn M. Sirowich
245 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Mr. Jack B. Levine
11 White Birch Lane
Beacon Falls, Connecticut 06403

Southern New England Telephone Company — represented by:

Mr. Peter J. Tyrrell, Esq.
227 Church Street
New Haven, Connecticut 06506

Mr. Dennis Bialecki
96 West Road
Beacon Falls, Connecticut 06403

Brittany Woods Homeowner's Association — represented by:

Mr. Stephen P. Del Sole, Esq.
Del Sole & Del Sole
152 Temple Street
P.O. Box 405
New Haven, Connecticut 06502-0405

Ms. Barbara G. Schlein
Box 2993 Westville Station
New Haven, Connecticut 06515

Mr. & Mrs. Joseph T. Farrell, Jr.
334 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Town of Beacon Falls — represented by:

The Honorable Leonard F. D'Amico
First Selectman
10 Maple Avenue
Beacon Falls, Connecticut 06403

West Rock Ridge Park Association — represented by:

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

Department of Parks,
Recreation & Trees — represented by:

Mr. Robert G. Sheeley
Director
Parks, Recreation & Trees
P.O. Box 1416
New Haven, Connecticut 06506

Town of Wallingford — represented by:

William W. Dickinson, Jr.
Mayor
Municipal Building
350 Center Street
P.O. Box 427
Wallingford, Connecticut 06492

New Haven Sierra Club — represented by:

Ms. Laurie Klein
270 Edgewood Avenue
New Haven, Connecticut 06511

Peter M. Lerner
State Representative
8 Merritt Avenue
Woodbridge, Connecticut 06525

Carleton J. Benson
State Representative
161 Scott Road
Prospect, Connecticut 06712

Dr. Stephen Collins (service waived)
Vice Chairman
West Rock State Park
Advisory Council
Bethany, Connecticut

Mr. Louis Melillo (service wavied)
985 Wintergreen Avenue
Hamden, Connecticut

Mr. John McGeever (service waived)
339 Rimmon Hill
Beacon Falls, Connecticut 06403

Senator John Consoli (service waived)
51 Luke Hill Road
Bethany, Connecticut 06525

Representative George P. Bassing (service waived)
14 Oakwood Drive
Seymour, Connecticut 06483

Dr. George D. Whitney (service waived)
858 Oakwood Road
Orange, Connecticut

Mr. Steve Molnar (service waived)
205 West Road
Beacon Falls, Connecticut

Mr. James W. Grandy (service waived)
President
Hamden Land Conservation Trust
Hamden, Connecticut

Senator Richard S. Eaton (service waived)
269 Mulberry Point Road
Guilford, Connecticut 06437

Representative Robert M. Ward
719 Totoket Road
Northford, Connecticut 06472

Town of North Branford — represented by:

John Gesmonde, Esquire
3127 Whitney Avenue
Hamden, Connecticut 06518

Regina Smith
1887 Middletown Avenue
Northford, Connecticut 06472 — (service waived)

Richard A. Nizolek
The Restland Farm Corporation
Route 17
Northford, Connecticut 06472

Mary Liska
83 Reeds Gap Road
Northford, Connecticut 06472

Ben Bullard
50 Christmas Hill Road
Guilford, Connecticut 06437 — (service waived)

Roland Robichaud
31 Berncliff Drive
North Branford, Connecticut 06471 — (service waived)

Irene Flynn
1926 Middletown Avenue
Northford, Connecticut 06472 — (service waived)

Charles Pope
199 Donalds Road
Guilford, Connecticut 06437

Richard Abate
131 Manor Road
Guilford, Connecticut 06437 — (service waived)

City of Milford — represented by:

Mayor Alberta Jagoe
Alderman Maurice Condon
Alderman Frederick Lisman
City Hall
River Street
Milford, Connecticut 06460

Thomas Scelfo
81 Berncliff Drive
North Branford, Connecticut 06471 — (service waived)

Senator Thomas Scott (service waived)
22 Meyers Court
Milford, Connecticut 06460

Helen Moore (service waived)
385 Oronoque Road
Milford, Connecticut 06460

William Barberi (service waived)
298 Oronoque Road
Milford, Connecticut 06460

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

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

Dated at New Britain, Connecticut, this 14th day of April, 1986.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner John Downey Designee: Commissioner Peter G. Boucher	Absent
Commissioner Stanley Pac Designee: Christopher Cooper	No
Owen L. Clark	Yes
Mortimer A. Gelston	Yes
James G. Horsfall	Yes
Pamela B. Katz	Yes
William H. Smith	No
Colin C. Tait	No

STATE OF CONNECTICUT)
: ss. New Britain, April 14, 1986
COUNTY OF HARTFORD)

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

ATTEST:

Christopher S. Wood

Christopher S. Wood, Executive Director
Connecticut Siting Council

Exhibit B

Property Card

347 EAST ST

Location	347 EAST ST	**Mblu**	131/ 1/ 19/ /
Acct#	R0478100	**Owner**	RODRIGUES AGOSTINHO V &
Assessment	$453,670	**Appraisal**	$648,090
PID	5352	**Building Count**	3

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$401,720	$246,370	$648,090
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$281,210	$172,460	$453,670

Owner of Record

Owner	RODRIGUES AGOSTINHO V &	**Sale Price**	$0
Co-Owner	JOANNE	**Certificate**	
Address	347 EAST ST WOLCOTT, CT 06716	**Book & Page**	0131/0023
		Sale Date	06/27/1980
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
RODRIGUES AGOSTINHO V &	$0		0131/0023	25	06/27/1980

Building Information

Building 1 : Section 1

Year Built:	1930
Living Area:	3,139
Replacement Cost:	$339,418
Building Percent Good:	62
Replacement Cost Less Depreciation:	$210,440

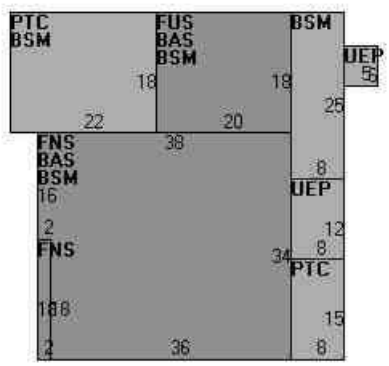
Building Attributes

Field	Description
Style	Colonial
Model	Residential
Grade:	B
Stories	1.9
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gambrel
Roof Cover	Arch Shingles
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Carpet
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Percent	35% CAC
Total Bedrooms:	5 Bedrooms
Full Bthrms:	3
Half Baths:	0
Extra Fixtures	0
Total Rooms:	9
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	1
Fireplace(s)	0
% Attic Fin	0
LF Dormer	12
Foundation	Poured Conc
Bsmt Gar(s)	0
Bsmt %	100
SF FBM	0.00
SF Rec Rm	182
Fin Bsmt Qual	LQ
Bsmt Access	Int & Ext
Fndtn Cndtn	
Basement	

Building Photo

(http://images.vgsi.com/photos/WolcottCTPhotos/\00\01\17\56.jpg)

Building Layout



(http://images.vgsi.com/photos/WolcottCTPhotos//Sketches/5352_5352.jpg

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,616	1,616
FNS	Finished 90% Story	1,292	1,163
FUS	Finished Upper Story	360	360
BSM	Basement	2,212	0
PTC	Concrete Patio	516	0
UEP	Unfin. Enclosed Porch	126	0
		6,122	3,139

Building 2 : Section 1

Year Built: 1910
Living Area: 1,308

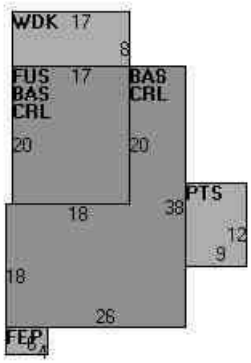
Replacement Cost: $134,245
Building Percent Good: 60
Replacement Cost Less Depreciation: $80,550

Building Attributes : Bldg 2 of 3	
Field	**Description**
Style	Conventional
Model	Residential
Grade:	D
Stories	1
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Arch Shingles
Interior Wall 1	Plaster
Interior Wall 2	
Interior Flr 1	Carpet
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Percent	None
Total Bedrooms:	2 Bedrooms
Full Bthrms:	1
Half Baths:	0
Extra Fixtures	0
Total Rooms:	5
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	1
Fireplace(s)	0
% Attic Fin	0
LF Dormer	0
Foundation	Poured Conc
Bsmt Gar(s)	0
Bsmt %	0
SF FBM	0.00
SF Rec Rm	0
Fin Bsmt Qual	
Bsmt Access	None
Fndtn Cndtn	
Basement	

Building Photo

(http://images.vgsi.com/photos/WolcottCTPhotos//\00\01\17\57.jpg)

Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	968	968
FUS	Finished Upper Story	340	340
CRL	Crawl Space	968	0
FEP	Finished Enclosed Porch	24	0
PTS	Stone Patio	108	0
WDK	Deck	136	0
		2,544	1,308

Building 3 : Section 1

Year Built: 1912
Living Area: 1,481
Replacement Cost: $160,287
Building Percent Good: 60
Replacement Cost Less Depreciation: $96,170

Building Attributes : Bldg 3 of 3	
Field	**Description**
Style	Conventional
Model	Residential
Grade:	D
Stories	1.65
Occupancy	2
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Arch Shingles
Interior Wall 1	Plaster
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	Carpet
Heat Fuel	Oil
Heat Type:	Hot Water
AC Percent	None
Total Bedrooms:	3 Bedrooms
Full Bthrms:	2
Half Baths:	0
Extra Fixtures	0
Total Rooms:	7
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	2
Fireplace(s)	0
% Attic Fin	0
LF Dormer	0
Foundation	Poured Conc
Bsmt Gar(s)	0
Bsmt %	100
SF FBM	0.00
SF Rec Rm	0
Fin Bsmt Qual	

Building Photo

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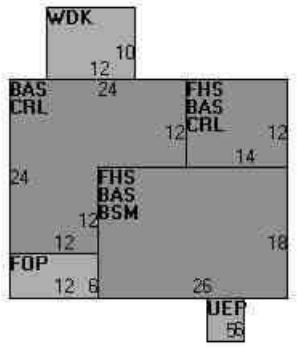
Building Layout



(http://images.vgsi.com/photos/WolcottCTPhotos//Sketches/5352_20143.jp

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,068	1,068
FHS	Finished Half Story	636	413
BSM	Basement	468	0
CRL	Crawl Space	600	0
FOP	Open Porch	72	0
UEP	Unfin. Enclosed Porch	30	0
WDK	Deck	120	0
		2,994	1,481

Bsmt Access	Int & Ext
Fndtn Cndtn	
Basement	

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
SOL	Solar Array	39.00 UNITS	$0	1

Land

Land Use

Use Code	112
Description	Multiple Houses
Zone	R-30
Neighborhood	6C
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	2.20
Frontage	
Depth	
Assessed Value	$172,460
Appraised Value	$246,370

Outbuildings

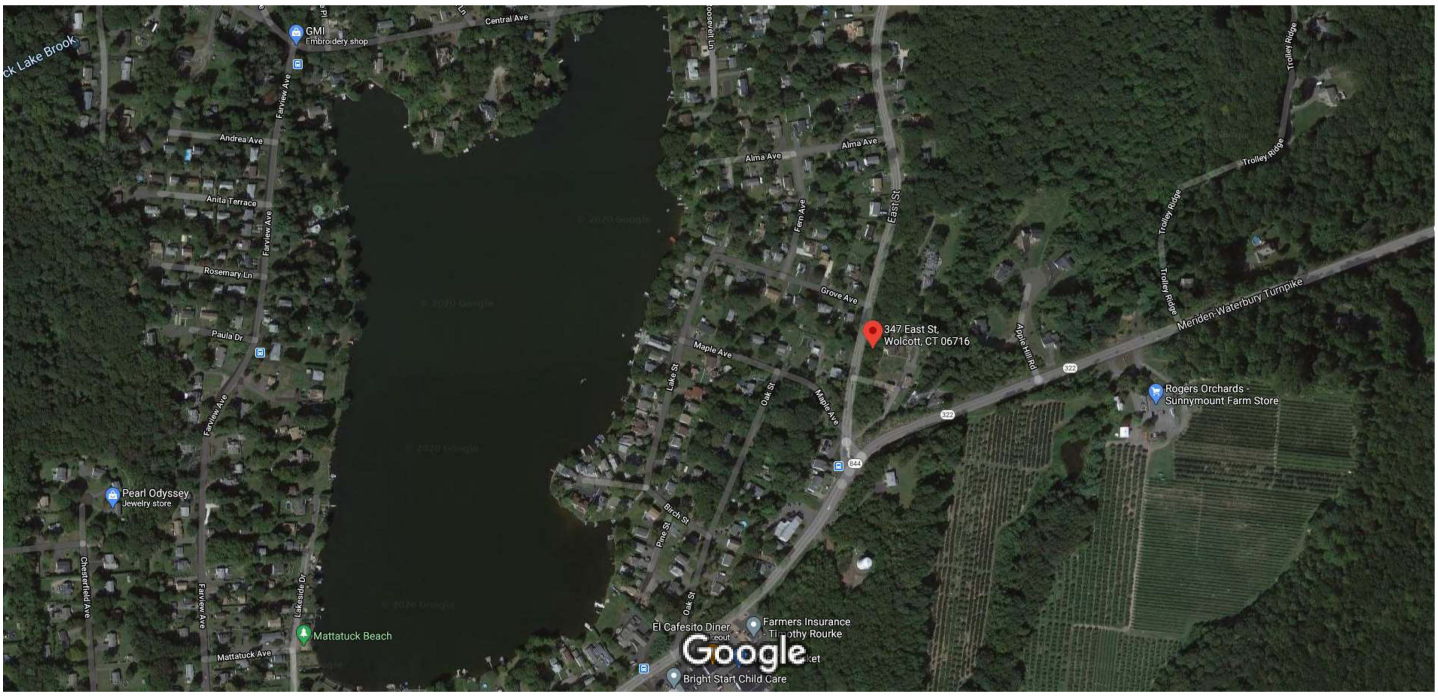
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FGR1	Garage	FR	Frame	672.00 S.F.	$5,880	1
FGR1	Garage	FR	Frame	560.00 S.F.	$4,900	1
FOP	Porch			480.00 S.F.	$2,760	1
PTO	Patio	CN	Concrete	408.00 S.F.	$1,020	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$401,720	$246,370	$648,090
2018	$401,720	$246,370	$648,090
2017	$401,720	$246,370	$648,090

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$281,210	$172,460	$453,670
2018	$281,210	$172,460	$453,670
2017	$281,210	$172,460	$453,670

Google Maps 347 East St



200 ft

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11494B
T-MOBILE SITE NAME: CT494/CCASTLE-WOLCOTT-SST
SITE TYPE: SELF-SUPPORT TOWER
TOWER HEIGHT: 180'-0"

BUSINESS UNIT #: 806362
SITE ADDRESS: 347 EAST ST, WOLCOTT, CT 06716
COUNTY: NEW HAVEN
JURISDICTION: CONNECTICUT SITING COUNCIL

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5A997DB HYBRID

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	NHV 108 943133
SITE ADDRESS:	347 EAST ST WOLCOTT, CT 06716
COUNTY:	NEW HAVEN
MAP/PARCEL #:	131/ 1/ 19/ /
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.559558°
LONGITUDE:	-72.946972°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	744'
CURRENT ZONING:	R-30
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	RODRIGUES AGOSTINHO V & JOANNE 347 EAST ST WOLCOTT, CT 06716
TOWER OWNER:	CROWN CASTLE USA INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054
ELECTRIC PROVIDER:	NOT PROVIDED
TELCO PROVIDER:	NOT PROVIDED

PROJECT TEAM

A&E FIRM:	CROWN CASTLE USA INC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317 CROWNAE.APPROVAL@CROWNCASTLE.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3530 TORINGDON WAY, SUITE 300 CHARLOTTE, NC 28277

DRAWING INDEX

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ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 24X36. 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.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (3) TMAs
- REMOVE (6) 1 5/8" COAX CABLES
- INSTALL (3) ANTENNAS
- INSTALL (3) RADIOS
- INSTALL (3) DIPLEXERS
- INSTALL (3) 6x12 HYBRID CABLE

GROUND SCOPE OF WORK:
- REMOVE (1) RBS 3106 CABINET
- INSTALL (1) 6160 CABINET
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) EMERSON CABINET
- INSTALL (1) BB 6630
- INSTALL (1) BB 6648
- INSTALL (1) PSU4813 VOLTAGE BOOSTER
- INSTALL (1) iXRe ROUTER

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER

LOCATION MAP

NO SCALE

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	20015 IBC / 2018 CONNECTICUT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	CROWN CASTLE
DATED:	10/14/20
MOUNT ANALYSIS:	INFINIGY ENGINEERING, PLLC
DATED:	10/9/20
RFDS REVISION:	3
DATED:	9/23/20
ORDER ID:	529724
REVISION:	0

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APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.		
LAND USE PLANNER		
T-MOBILE		
OPERATIONS		
RF		
NETWORK		
BACKHAUL		
CONSTRUCTION MANAGER		

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CT11494B

BU #: **806362**
NHV 108 943133

347 EAST ST
WOLCOTT, CT 06716

EXISTING
180'-0" SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/4/20	JTS	CONSTRUCTION	MTJ
1	11/6/20	JTS	CONSTRUCTION	MTJ
2	11/19/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	GEH	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
MATTHEW T. JOHNSON
No. 23924
LICENSED PROFESSIONAL ENGINEER
12/9/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

SHEET NUMBER: T-1
REVISION: 3

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "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.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE" AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER — 40 ksi
   #5 BARS AND LARGER — 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH — 3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   - #6 BARS AND LARGER — 2"
   - #5 BARS AND SMALLER — 1–1/2"

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   - SLAB AND WALLS — 3/4"
   - BEAMS AND COLUMNS — 1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   - 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   - 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE

SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CT11494B

BU #: **806362**
NHV 108 943133

347 EAST ST
WOLCOTT, CT 06716

EXISTING
180'-0" SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/4/20	JTS	CONSTRUCTION	MTJ
1	11/6/20	JTS	CONSTRUCTION	MTJ
2	11/19/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	GEH	CONSTRUCTION	MTJ

STATE OF CONNECTICUT · CHAD TUTTLE · No. 23924 · LICENSED · PROFESSIONAL ENGINEER
12/9/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

SHEET NUMBER: **T-2**
REVISION: **3**

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS OR FROM ASSESSORS MAPS. 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

1 OVERALL SITE PLAN

SCALE: 30' 15' 0 30' 1"=30'-0" (FULL SIZE) 1"=60'-0" (11x17)

N

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No. 23924
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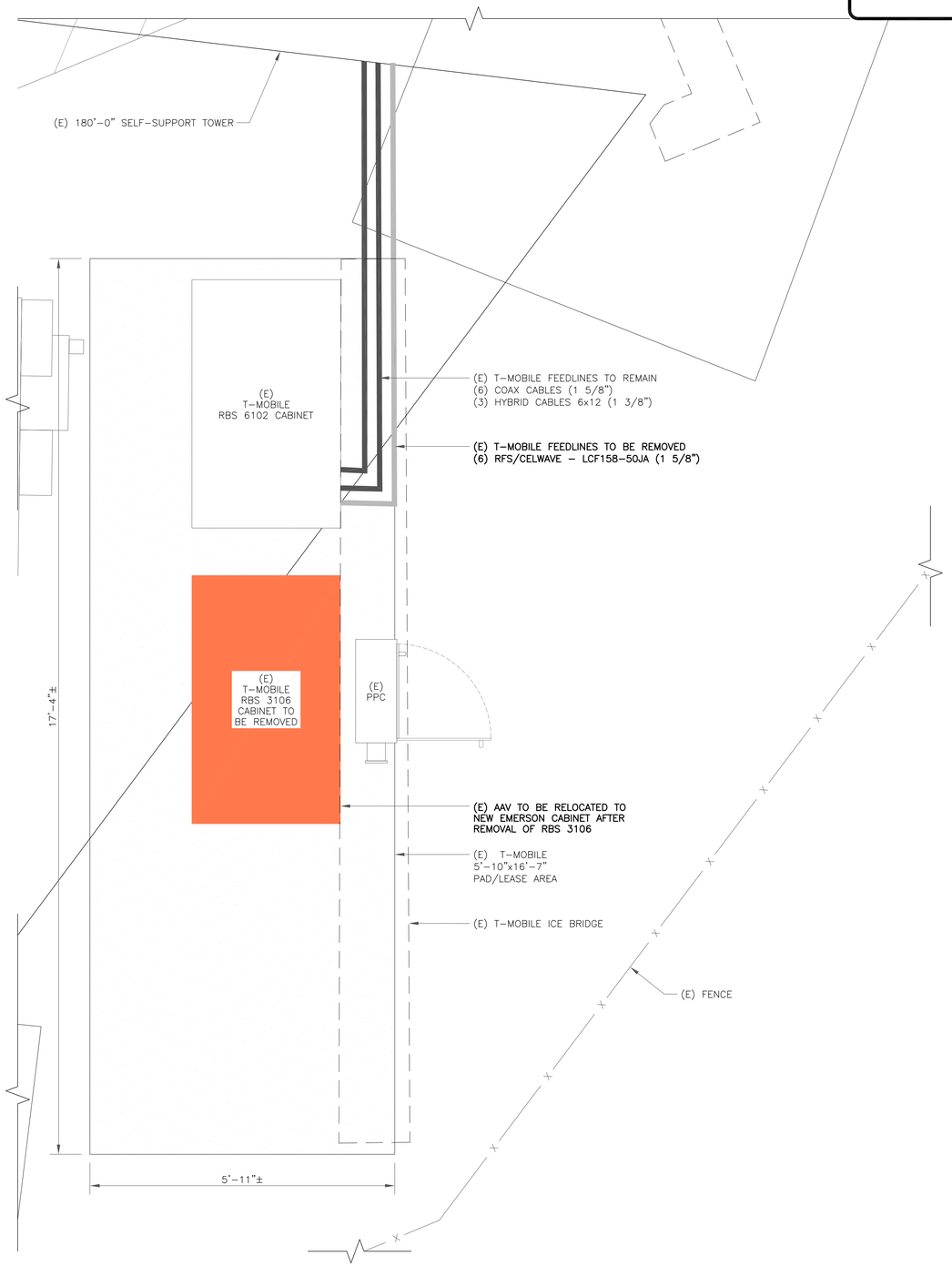
SHEET NUMBER: C-1.1

REVISION: 3

104053.011.01_NHV 108_CC_TMO_NE_CD Upgrades.dwg – Sheet:C-1.1 – User: rcarson – Dec 09, 2020 – 10:48am

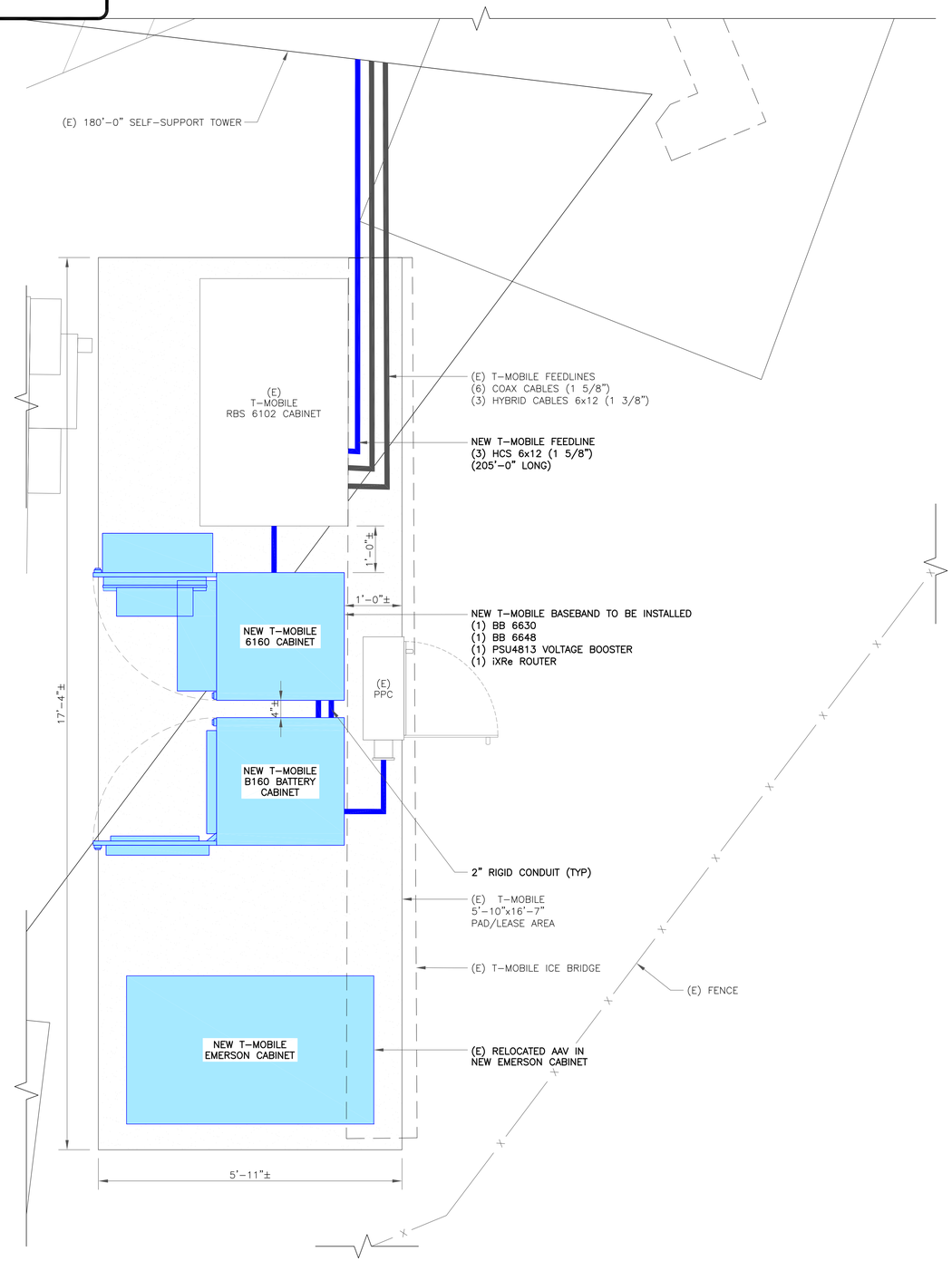
EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW



1 EXISTING EQUIPMENT PLAN
SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

N



2 FINAL EQUIPMENT PLAN
SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

N

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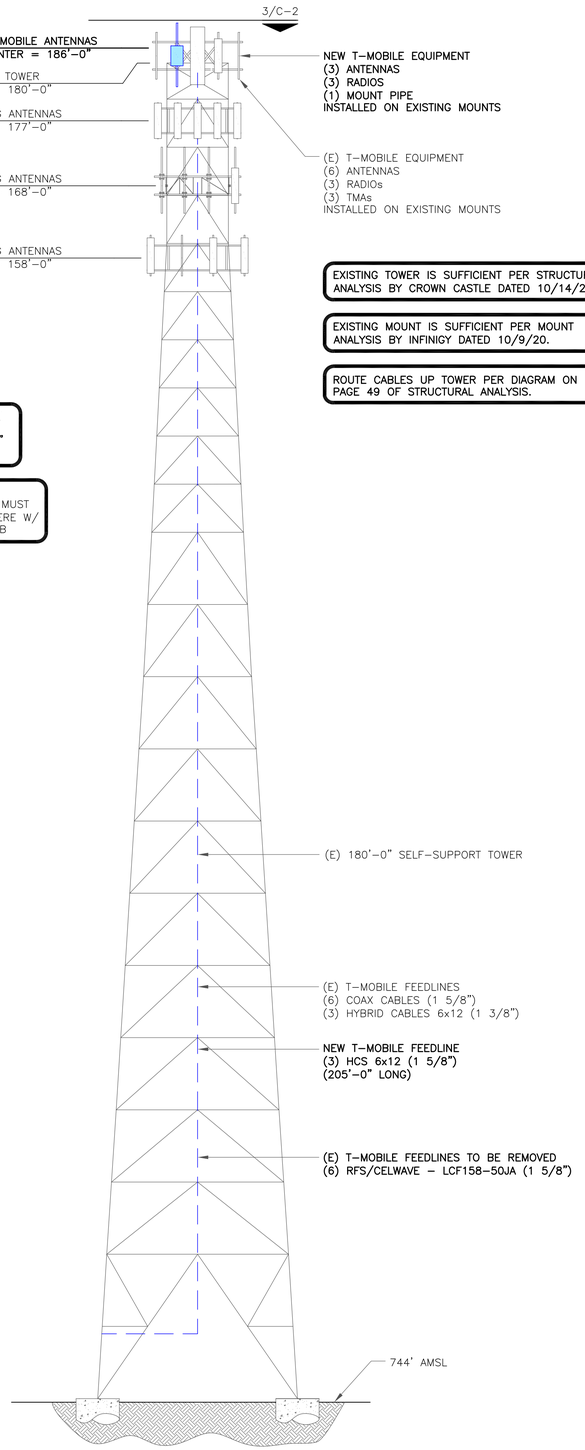
SHEET NUMBER: C-1.2

REVISION: 3



EXISTING TOWER IS SUFFICIENT PER STRUCTURAL ANALYSIS BY CROWN CASTLE DATED 10/14/20.

EXISTING MOUNT IS SUFFICIENT PER MOUNT ANALYSIS BY INFINIGY DATED 10/9/20.

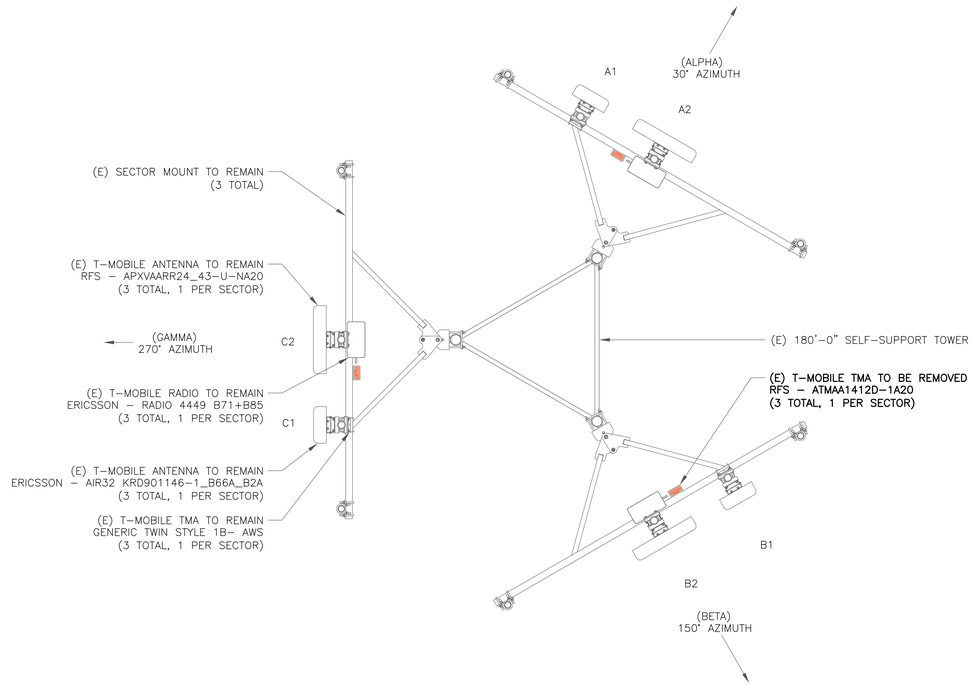
ROUTE CABLES UP TOWER PER DIAGRAM ON PAGE 49 OF STRUCTURAL ANALYSIS.

T-MOBILE EQUIPMENT

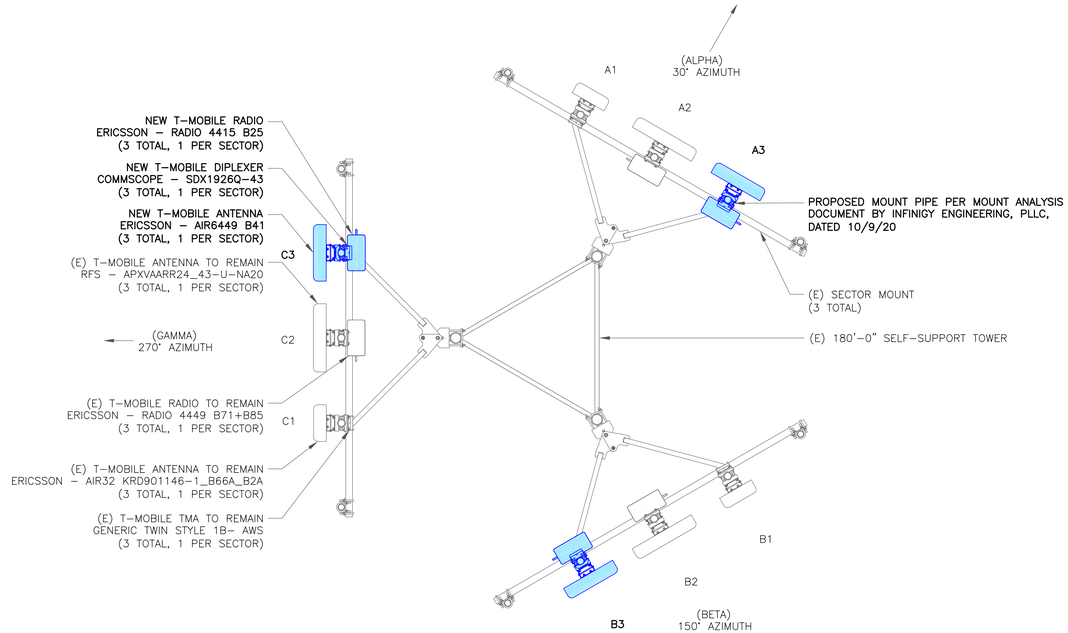
ANTENNA CL: 186'-0"
MOUNT CL: 186'-0"

ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
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BU #: **806362**
NHV 108 943133

347 EAST ST
WOLCOTT, CT 06716

EXISTING
180'-0" SELF-SUPPORT TOWER

ISSUED FOR:

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2	11/19/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	GEH	CONSTRUCTION	MTJ

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SHEET NUMBER: C-2

REVISION: 3

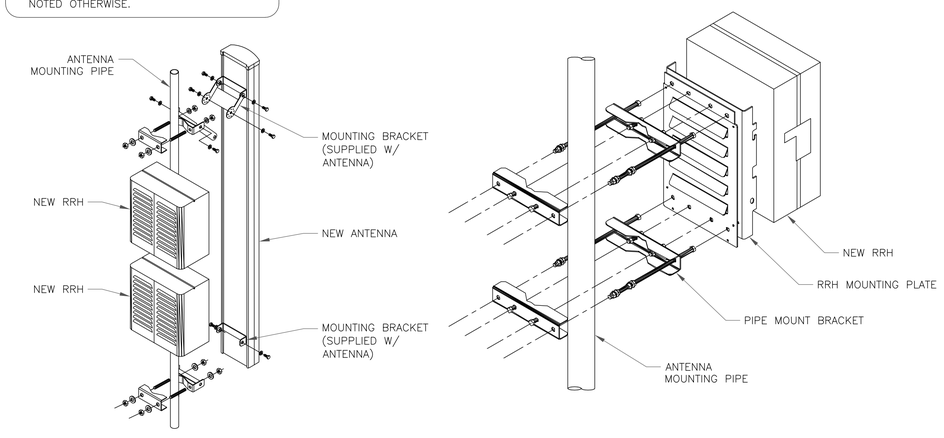
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	CABLE TYPE	CABLE DIAMETER	CABLE LENGTH
ALPHA	A-1	L2100/L1900/ G1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	30°	2°	-	186'-0"	(1) KRY 112 144/1	(2) COAX	1 5/8"	205'-0"
	A-2	L700/L600/N600/ U1900/U2100/ L1900	RFS	APXVAARR24_43-U-NA20	30°	2°	-	186'-0"	(1) 4449 B71+B85	(1) FIBER	6x12 HYBRID	205'-0"
	A-3	**L2500/N2500**	**ERICSSON**	**AIR6449 B41**	**30°**	**2°**	-	**186'-0"**	**(1) RADIO 4415 B25 (1) SDX1926Q-43**	**(1) FIBER**	**6x12 HYBRID**	**205'-0"**
BETA	B-1	L2100/L1900/ G1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	150°	2°	-	186'-0"	(1) KRY 112 144/1	(2) COAX	1 5/8"	205'-0"
	B-2	L700/L600/N600/ U1900/U2100/ L1900	RFS	APXVAARR24_43-U-NA20	150°	2°	-	186'-0"	(1) 4449 B71+B85	(1) FIBER	6x12 HYBRID	205'-0"
	B-3	**L2500/N2500**	**ERICSSON**	**AIR6449 B41**	**150°**	**2°**	-	**186'-0"**	**(1) RADIO 4415 B25 (1) SDX1926Q-43**	**(1) FIBER**	**6x12 HYBRID**	**205'-0"**
GAMMA	C-1	L2100/L1900/ G1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	270°	2°	-	186'-0"	(1) KRY 112 144/1	(2) COAX	1 5/8"	205'-0"
	C-2	L700/L600/N600/ U1900/U2100/ L1900	RFS	APXVAARR24_43-U-NA20	270°	2°	-	186'-0"	(1) 4449 B71+B85	(1) FIBER	6x12 HYBRID	205'-0"
	C-3	**L2500/N2500**	**ERICSSON**	**AIR6449 B41**	**270°**	**2°**	-	**186'-0"**	**(1) RADIO 4415 B25 (1) SDX1926Q-43**	**(1) FIBER**	**6x12 HYBRID**	**205'-0"**

1 ANTENNA & FEEDLINE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
CT11494B

BU #: **806362**
NHV 108 943133

347 EAST ST
WOLCOTT, CT 06716

EXISTING
180'-0" SELF-SUPPORT TOWER

ISSUED FOR:

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3	12/9/20	GEH	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
GREGORY E. HOLLENBECK
No. 23924
LICENSED
PROFESSIONAL ENGINEER
12/9/20

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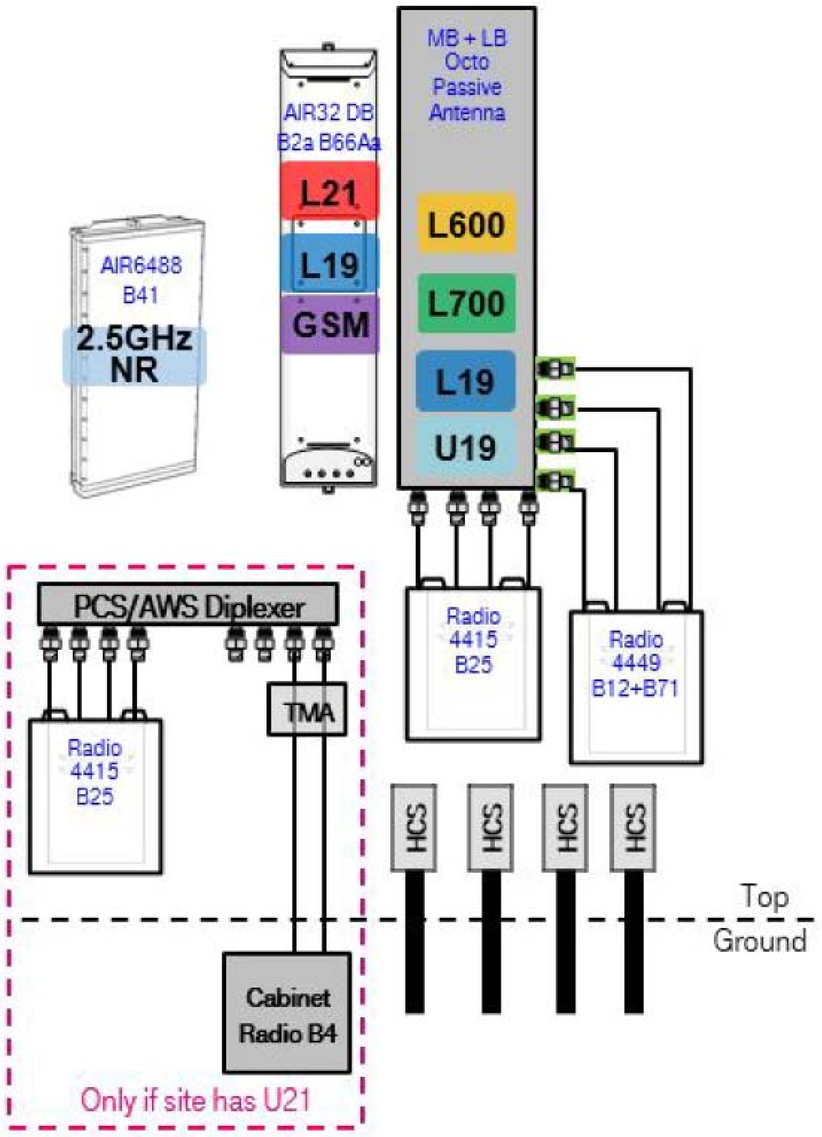
SHEET NUMBER: C-3

REVISION: 3



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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12/9/20

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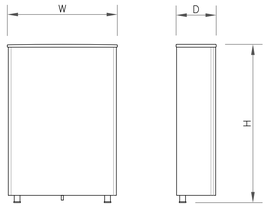
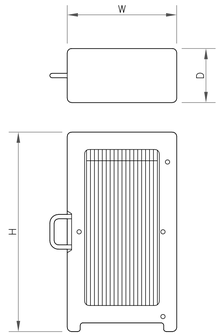
SHEET NUMBER: C-4
REVISION: 3



ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR6449 B41
WIDTH	20.51"
DEPTH	8.54"
HEIGHT	33.11"
WEIGHT	114.63 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4415 B25
WIDTH	13.19"
DEPTH	5.39"
HEIGHT	14.96"
WEIGHT	44 LBS

2 RRU SPECS
SCALE: NOT TO SCALE

DIPLEXER SPECIFICATIONS	
MANUFACTURER	COMMSCOPE
MODEL #	SDX1926Q-43 | E14F05P86
WIDTH	6.92"
DEPTH	2.91"
HEIGHT	4.17"
WEIGHT	7.39 LBS

3 DIPLEXER SPECS
SCALE: NOT TO SCALE

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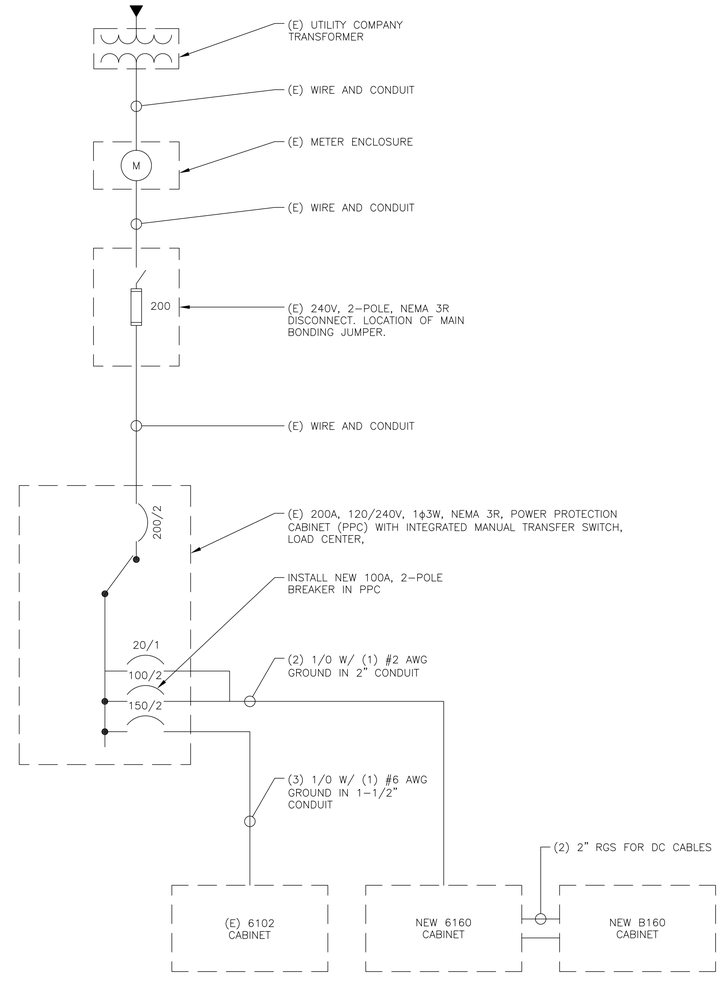
SHEET NUMBER: C-5
REVISION: 3

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
EQUIPMENT	2	60A	1	2	30A	2	EQUIPMENT
			3	4			
UMTS	2	50A	5	6			
			7	8			
6160 CABINET	**2**	**100A**	9	10			
			11	12			
6160 GFCI	**1**	**20A**	13	14			
			15	16			
			17	18			
			19	20			
			21	22	150A	3	**6102 CABINET**
			23	24			

RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □_____,	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY | MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS | GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL		

REPLACE EXISTING BREAKER IN POSITION 9 AND 11 WITH A NEW 2P 100A BREAKER.
REPLACE EXISTING BREAKER IN POSITION 13 WITH A NEW 1P 20A BREAKER.
REPLACE EXISTING BREAKER IN POSITION 20, 22 AND 24 WITH A NEW 3P 150A BREAKER.
INSTALL NEW WIRES FOR NEW 6160 CABINET USING (2) 1/0 WITH (1) #2 AWG GROUND IN 2" CONDUIT
REPLACE EXISTING WIRES FOR EXISTING 6201 CABINET WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG IN 1 1/2" CONDUIT.
IF 100A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE



NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CT11494B

BU #: **806362**
NHV 108 943133

347 EAST ST
WOLCOTT, CT 06716

EXISTING
180'-0" SELF-SUPPORT TOWER

ISSUED FOR:

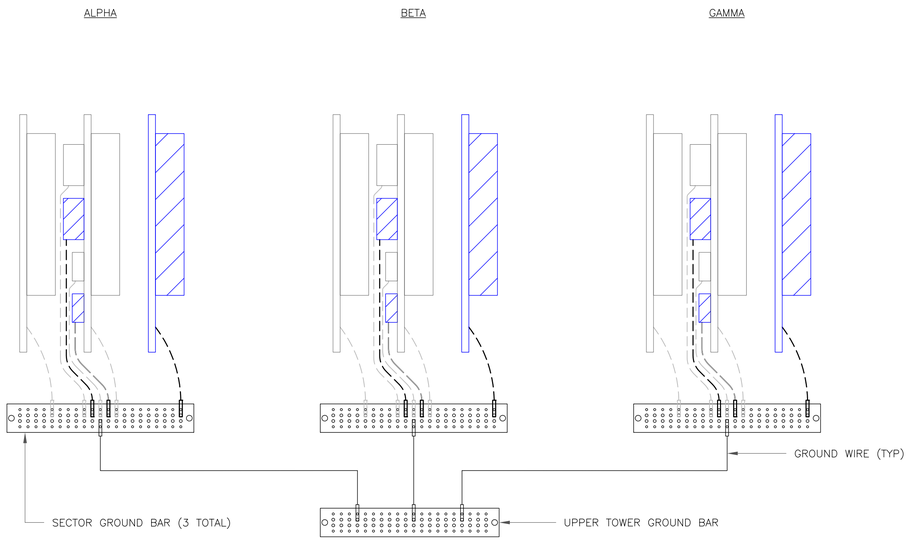
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/4/20	JTS	CONSTRUCTION	MTJ
1	11/6/20	JTS	CONSTRUCTION	MTJ
2	11/19/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	GEH	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
12/9/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

SHEET NUMBER: E-1

REVISION: 3



NOTE:

ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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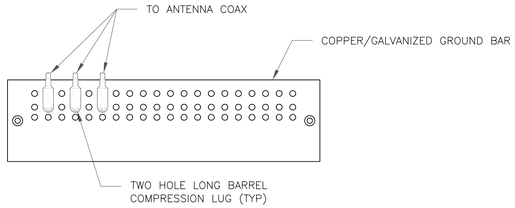
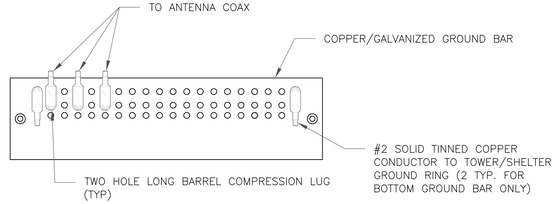


NOTES:

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 ANTENNA MOUNT STEEL.

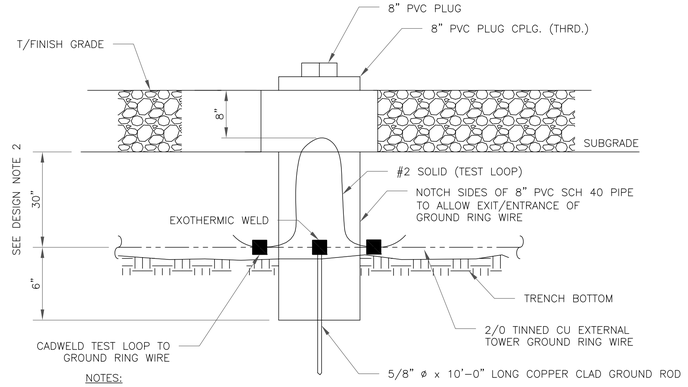
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

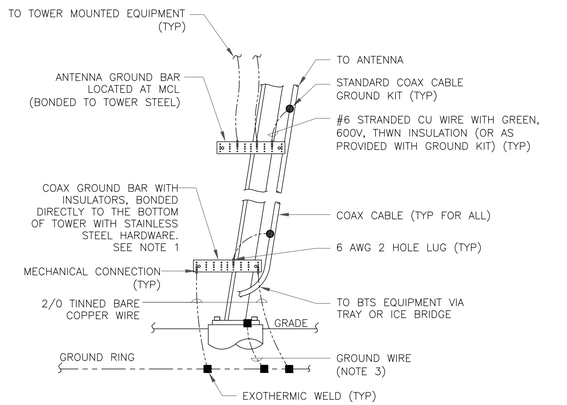
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

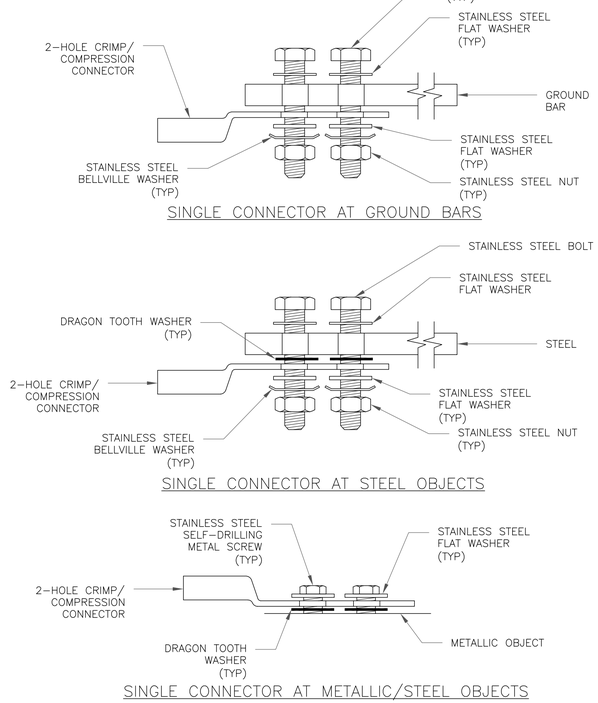
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



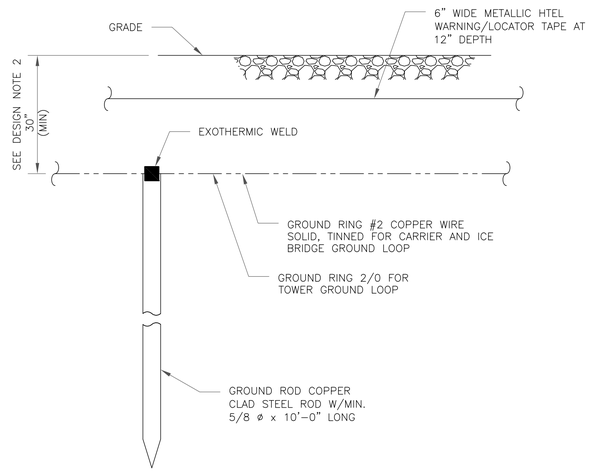
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
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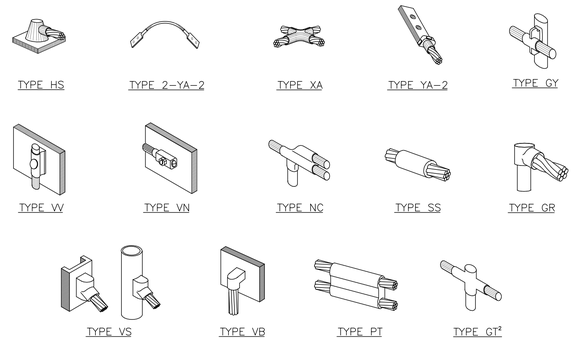
SHEET NUMBER: G-2
REVISION: 3

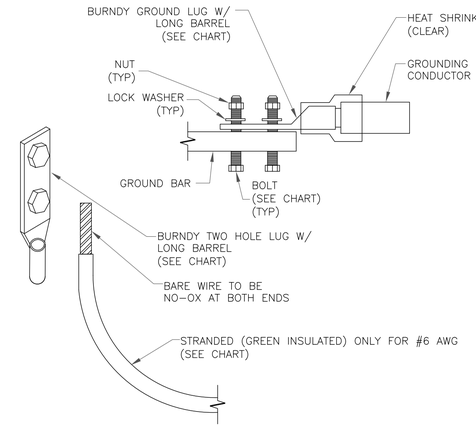


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

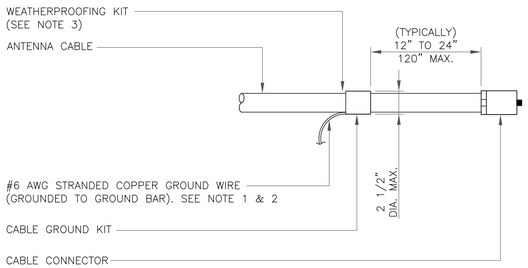
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. 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.

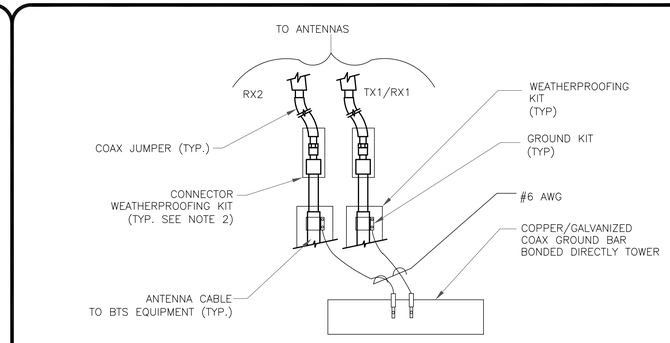
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

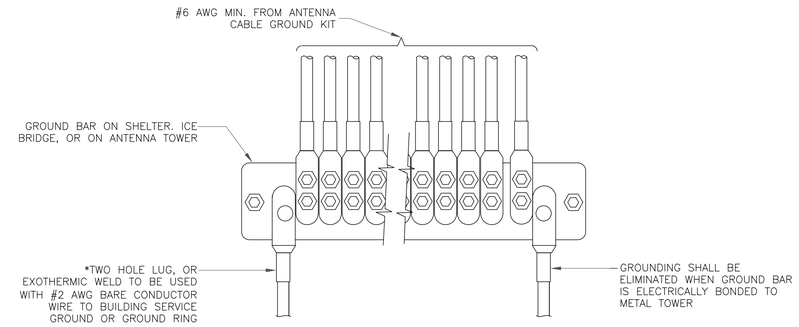
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



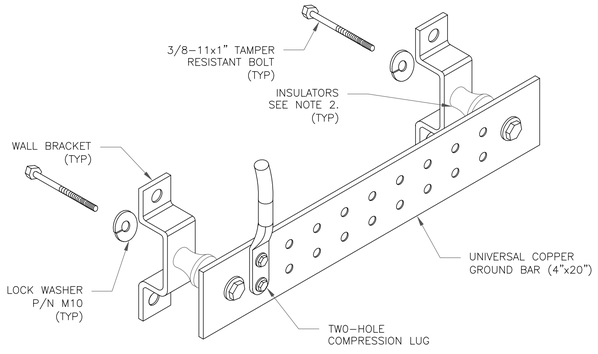
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



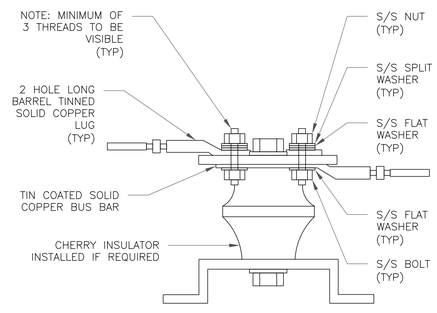
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



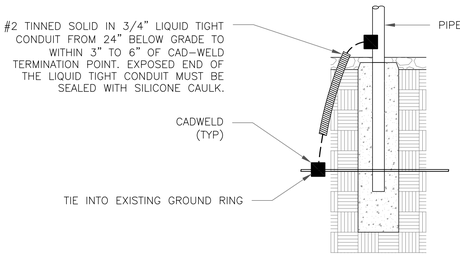
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-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.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
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T-MOBILE SITE NUMBER:
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EXISTING
180'-0" SELF-SUPPORT TOWER

ISSUED FOR:

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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

SHEET NUMBER: G-3
REVISION: 3

Exhibit D

Structural Analysis Report

Date: **October 14, 2020**

Rebecca Klein
Crown Castle
6325 Ardrey Kell Rd Suite 600
Charlotte, NC 28277

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11494B
	Carrier Site Name:	CT494/CCASTLE-WOLCOTT-SST
Crown Castle Designation:	**Crown Castle BU Number:**	806362
	Crown Castle Site Name:	NHV 108 943133
	Crown Castle JDE Job Number:	620133
	Crown Castle Work Order Number:	1890935
	Crown Castle Order Number:	529724 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1890935

Site Data: **INTERSECTION OF RTE 322/MERIDIAN RDWOLCOTT SITE, WOLCOTT, New Haven County, CT**
Latitude *41° 33' 34.41"*, Longitude *-72° 56' 49.1"*
185 Foot - Self Support Tower

Dear Rebecca Klein,

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:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 91.7%**

This analysis utilizes an ultimate 3-second gust wind speed of 125 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.

Structural analysis prepared by: Subhash Mandal

Respectfully submitted by:

STATE OF CONNECTICUT
TERRY P. STYRAN
31522
LICENSED
PROFESSIONAL ENGINEER

Terry P Styran
2020.10.15
16:35:02 -04'00'

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

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 185 ft Self Support tower designed by ROHN. The tower has been modified per reinforcement drawings provided by Jacobs, in October of 2018.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-H
Risk Category: II
Wind Speed: 125
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)
186.0	186.0	3	commscope	SDX1926Q-43	2 10	1-3/8 1-5/8
		3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RRUS 4415 B25		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	sitepro1	VFA12-HD		

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)
177.0	177.0	3	alcatel lucent	RRH2X60-AWS	1 13	1/2 1-5/8
		3	alcatel lucent	RRH2X60-PCS		
		3	alcatel lucent	RRH2x60-700		
		2	andrew	DB846F65ZAXY w/ Mount Pipe		
		2	antel	LPA-80063/6CFx5 w/ Mount Pipe		
		6	commscope	SBNHH-1D45B w/ Mount Pipe		
		3	commscope	SBNHH-1D65B w/ Mount Pipe		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
		2	swedcom	SC-E 6014 rev2 w/ Mount Pipe		
		1	tower mounts	Sector Mount [SM 504-3]		
168.0	168.0	1	andrew	VHLP2-11	1 6	1/4 5/16
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	dragonwave	HORIZON DUO	3	1-1/4
		3	nokia	AHCC		
		3	nokia	AHFIB_CCIV2		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		3	samsung telecommunications	FDD_R6_RRH		
		3	tower mounts	Site Pro 1 VFA12-HD		
158.0	160.0	3	cci antennas	DMP65R-BU8D w/ Mount Pipe	2 6 12 2	RC 3/4 1-1/4 3/8
		3	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		1	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66A		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		6	kaelus	DBC0061F1V51-2		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		2	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8F		
	158.0	3	communication components inc.	DTMABP7819VG12A		
		3	powerwave technologies	7020.00		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Sector Mount [SM 502-3]		
40.0	40.0	1	gps	GPS_A	-	-
		1	tower mounts	Side Arm Mount [SO 306-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH	2303630	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn	217670	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn	529684	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Jacobs	7656058	CCISITES
4-POST-MODIFICATION INSPECTION	ETS	8288884	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
T1	185 - 180	Leg	Pipe 2.875" x 0.203" (2.5 STD)	2	-3.853	40.516	9.5	Pass
T2	180 - 160	Leg	Pipe 2.875" x 0.203" (2.5 STD)	13	-26.440	47.805	55.3	Pass
T3	160 - 140	Leg	Pipe 3.5" x 0.300" (3 XS)	54	-72.672	100.549	72.3	Pass
T4	140 - 120	Leg	Pipe 4.5" x 0.337" (4 XS)	93	-114.503	169.398	67.6	Pass
T5	120 - 100	Leg	Pipe 5.5" x 0.375" (5 EH)	132	-145.989	207.090	70.5	Pass
T6	100 - 80	Leg	Pipe 5.5" x 0.375" (5 EH)	159	-179.753	207.002	86.8	Pass
T7	80 - 60	Leg	Pipe 6.625" x 0.340" (6 EHS)	186	-210.612	256.163	82.2	Pass
T8	60 - 40	Leg	Pipe 6.625" x 0.432" (6 XS)	213	-241.219	318.804	75.7	Pass
T9	40 - 20	Leg	Pipe 6.625" x 0.432" (6 XS)	240	-270.380	318.764	84.8	Pass
T10	20 - 0	Leg	Pipe 8.75" x 0.375" (8 EHS)	267	-282.914	413.697	68.4	Pass
T1	185 - 180	Diagonal	L 2 x 2 x 1/4	10	-1.805	13.742	13.1 17.9 (b)	Pass
T2	180 - 160	Diagonal	Pipe 2.375" x 0.154" (2 STD)	17	-9.403	18.519	50.8	Pass
T3	160 - 140	Diagonal	Pipe 2.375" x 0.154" (2 STD)	59	-10.539	16.359	64.4	Pass
T4	140 - 120	Diagonal	Pipe 2.375" x 0.154" (2 STD)	99	-10.258	14.024	73.1	Pass
T5	120 - 100	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	138	-12.645	17.183	73.6	Pass
T6	100 - 80	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	165	-11.528	15.003	76.8	Pass
T7	80 - 60	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	192	-12.177	13.285	91.7	Pass
T8	60 - 40	Diagonal	Pipe 2.875" x 0.276" (2.5 XS)	219	-12.603	14.663	86.0	Pass
T9	40 - 20	Diagonal	Pipe 3.5" x 0.216" (3 STD)	246	-12.447	20.089	62.0	Pass
T10	20 - 0	Diagonal	Pipe 3.5" x 0.216" (3 STD)	279	-19.765	33.778	58.5	Pass
T2	180 - 160	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	19	-5.017	23.693	21.2	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T3	160 - 140	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	58	-6.599	20.062	32.9	Pass
T4	140 - 120	Horizontal	Pipe 2.375" x 0.154" (2 STD)	97	-7.074	28.514	24.8	Pass
T5	120 - 100	Horizontal	Pipe 2.375" x 0.154" (2 STD)	136	-7.473	23.744	31.5	Pass
T6	100 - 80	Horizontal	Pipe 2.375" x 0.154" (2 STD)	163	-7.557	17.591	43.0	Pass
T7	80 - 60	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	190	-8.500	30.294	28.1 29.5 (b)	Pass
T8	60 - 40	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	217	-9.183	23.431	39.2	Pass
T9	40 - 20	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	244	-9.337	18.553	50.3	Pass
T10	20 - 0	Horizontal	Pipe 3.5" x 0.216" (3 STD)	275	-10.582	33.261	31.8	Pass
T1	185 - 180	Top Girt	L 2 x 2 x 1/4	4	-0.362	4.664	7.8	Pass
T10	20 - 0	Redund Horz 1 Bracing	Rohn 1.5" x 11 ga	280	-4.912	5.846	84.0	Pass
T10	20 - 0	Redund Diag 1 Bracing	2L 2 x 2 x 1/4 (1/4)	281	-4.474	12.218	36.6	Pass
T10	20 - 0	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	282	-0.032	12.885	0.2	Pass
T10	20 - 0	Redund Hip Diagonal 1 Bracing	Pipe 2.875" x 0.203" (2.5 STD)	283	-0.079	11.130	0.7	Pass
T2	180 - 160	Inner Bracing	L 2 x 2 x 1/8	27	-0.006	8.787	0.4	Pass
T3	160 - 140	Inner Bracing	L 2 x 2 x 1/8	66	-0.006	6.461	0.5	Pass
T4	140 - 120	Inner Bracing	L 2 x 2 x 1/8	105	-0.007	4.417	0.6	Pass
T5	120 - 100	Inner Bracing	L 2 x 2 x 1/8	143	-0.008	3.339	0.6	Pass
T6	100 - 80	Inner Bracing	L 2.5 x 2.5 x 3/16	171	-0.010	6.987	0.5	Pass
T7	80 - 60	Inner Bracing	L 3 x 3 x 3/16	198	-0.012	9.162	0.6	Pass
T8	60 - 40	Inner Bracing	L 3.5 x 3.5 x 1/4	225	-0.014	14.989	0.5	Pass
T9	40 - 20	Inner Bracing	L 3.5 x 3.5 x 1/4	252	-0.015	11.368	0.6	Pass
T10	20 - 0	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	296	-0.016	31.107	0.5	Pass
							Summary	
						Leg (T6)	86.8	Pass
						Diagonal (T7)	91.7	Pass
						Horizontal (T9)	50.3	Pass
						Top Girt (T1)	7.8	Pass
						Redund Horz 1 Bracing (T10)	84.0	Pass
						Redund Diag 1 Bracing (T10)	36.6	Pass
						Redund Hip 1 Bracing (T10)	0.2	Pass
						Redund Hip Diagonal 1 Bracing	0.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						(T10)		
						Inner Bracing (T5)	0.6	Pass
						Bolt Checks	62.3	Pass
						Rating =	91.7	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	39.1	Pass
1	Base Foundation (Structure)	0	61.4	Pass
1	Base Foundation (Soil Interaction)	0	32.6	Pass

Structure Rating (max from all components) =	91.7%

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

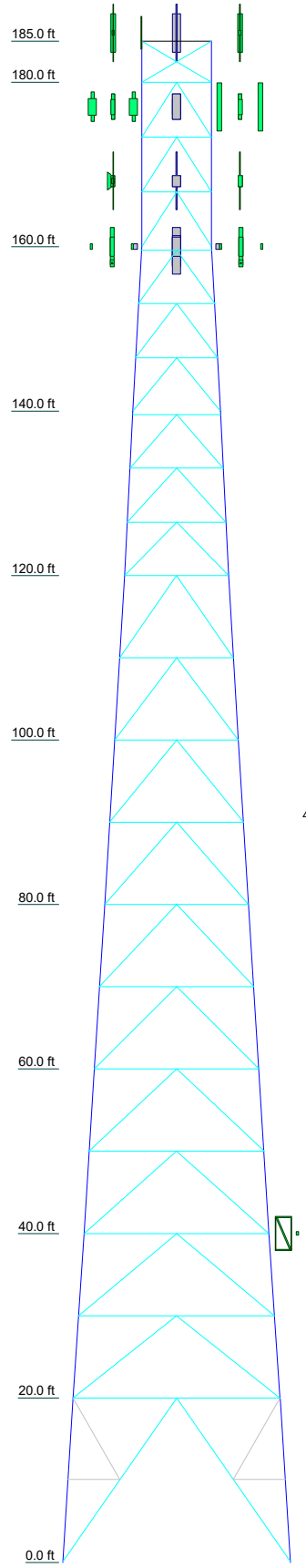
4.1) Recommendations

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	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	B	Pipe 6.625" x 0.432" (6 XS)		A	Pipe 5.5" x 0.375" (5 EH)		Pipe 4.5" x 0.337" (4 XS)	Pipe 3.5" x 0.300" (3 XS)	Pipe 2.875" x 0.203" (2.5 STD)	
Leg Grade	A500-50			A513-50			A618-50			A53-A
Diagonals	Pipe 3.5" x 0.216" (3 STD)		D		Pipe 2.875" x 0.203" (2.5 STD)		Pipe 2.375" x 0.154" (2 STD)			C
Diagonal Grade					A618-50					E
Top Girts					N.A.					C
Horizontals	Pipe 3.5" x 0.216" (3 STD)		Pipe 2.875" x 0.203" (2.5 STD)			Pipe 2.375" x 0.154" (2 STD)		Pipe 1.9" x 0.145" (1.5 STD)		N.A.
Red. Horizontals	Rohn 1.5" x 11 ga					N.A.				
Red. Diagonals	2L 2 x 2 x 1/4 (1/4)					N.A.				
Red. Hips	F					N.A.				
Inner Bracing	Pipe 3.5" x 0.216" (3 STD)		L 3.5 x 3.5 x 1/4		L 2.5 x 2.5 x 3/16		L 2 x 2 x 1/8			N.A.
Face Width (ft)	27.6771	25.1771	22.5417	20.0417	17.5417	14.9583	12.7083	10.625	8.54167	8.5
# Panels @ (ft)	1 @ 19.9167			10 @ 10			6 @ 6.52778		3 @ 6.66667	1 @ 5
Weight (K)	27.8	5.0	4.6	4.4	3.3	2.8	2.6	2.0	1.5	1.2	0.4



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pipe 6.625" x 0.340" (6 EHS)	D	Pipe 2.875" x 0.276" (2.5 XS)
B	Pipe 8.75" x 0.375" (8 EHS)	E	A572-50
C	L 2 x 2 x 1/4	F	Pipe 1.9" x 0.145" (1.5 STD)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-A	30 ksi	48 ksi	A513-50	50 ksi	66 ksi
A572-50	50 ksi	65 ksi	A500-50	50 ksi	62 ksi
A618-50	50 ksi	70 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 125 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: 91.7%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 311 K
SHEAR: 38 K

UPLIFT: -274 K
SHEAR: 35 K

AXIAL 152 K
SHEAR 18 K *MOMENT 2022 kip-ft*
TORQUE 20 kip-ft
50 mph WIND - 1.500 in ICE

AXIAL 66 K
SHEAR 63 K *MOMENT 6978 kip-ft*
TORQUE 94 kip-ft
REACTIONS - 125 mph WIND

CROWN CASTLE
The Pathway to Possible
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: 724-416-2000
FAX: -

Job: **BU 806362**			
Project:			
Client: Crown Castle	Drawn by: SMandal	App'd:	
Code: TIA-222-H	Date: 10/14/20	Scale: NTS	
Path: C:\Users\smandal\Desktop\WIP\806362\WO 1890935 - SA\Prod\806362_RPA.eri		Dwg No. E-1	

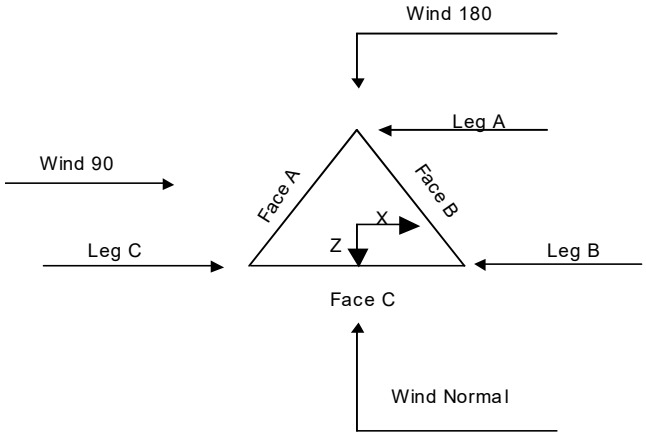
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 185.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 8.500 ft at the top and 27.677 ft at the base.
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: 745.000 ft.
5) Basic wind speed of 125 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) Deflections calculated using a wind speed of 60 mph.
16) Pressures are calculated at each section.
17) Tower analysis based on target reliabilities in accordance with Annex S.
18) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
19) Stress ratio used in tower member design is 1.05.
20) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	185.000-180.000			8.500	1	5.000
T2	180.000-160.000		B054	8.500	1	20.000
T3	160.000-140.000		C039	8.542	1	20.000
T4	140.000-120.000		D061	10.625	1	20.000
T5	120.000-100.000		E075	12.708	1	20.000
T6	100.000-80.000		F023	14.958	1	20.000
T7	80.000-60.000		G043	17.542	1	20.000
T8	60.000-40.000		H014	20.042	1	20.000
T9	40.000-20.000		J021	22.542	1	20.000
T10	20.000-0.000		K029	25.177	1	20.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	185.000-180.000	5.000	X Brace	No	Yes	0.000	0.000
T2	180.000-160.000	6.667	K Brace Down	No	Yes	0.000	0.000
T3	160.000-140.000	6.528	K Brace Down	No	Yes	5.000	0.000
T4	140.000-120.000	6.528	K Brace Down	No	Yes	5.000	0.000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T5	120.000-100.000	10.000	K Brace Down	No	Yes	0.000	0.000
T6	100.000-80.000	10.000	K Brace Down	No	Yes	0.000	0.000
T7	80.000-60.000	10.000	K Brace Down	No	Yes	0.000	0.000
T8	60.000-40.000	10.000	K Brace Down	No	Yes	0.000	0.000
T9	40.000-20.000	10.000	K Brace Down	No	Yes	0.000	0.000
T10	20.000-0.000	19.917	K1 Down	No	Yes	0.000	1.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 185.000-180.000	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A53-A (30 ksi)	Equal Angle	L 2 x 2 x 1/4	A572-50 (50 ksi)
T2 180.000-160.000	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T3 160.000-140.000	Pipe	Pipe 3.5" x 0.300" (3 XS)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T4 140.000-120.000	Pipe	Pipe 4.5" x 0.337" (4 XS)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T5 120.000-100.000	Pipe	Pipe 5.5" x 0.375" (5 EH)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T6 100.000-80.000	Pipe	Pipe 5.5" x 0.375" (5 EH)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T7 80.000-60.000	Pipe	Pipe 6.625" x 0.340" (6 EHS)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T8 60.000-40.000	Pipe	Pipe 6.625" x 0.432" (6 XS)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.276" (2.5 XS)	A618-50 (50 ksi)
T9 40.000-20.000	Pipe	Pipe 6.625" x 0.432" (6 XS)	A513-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T10 20.000-0.000	Pipe	Pipe 8.75" x 0.375" (8 EHS)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 185.000-180.000	Equal Angle	L 2 x 2 x 1/4	A572-50 (50 ksi)	Pipe		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T2 180.000-160.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T3 160.000-140.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T4 140.000-120.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T5 120.000-100.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T6 100.000-80.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T7 80.000-60.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T8 60.000-40.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T9 40.000-20.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T10 20.000-0.000	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T2 180.000-160.000	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T3 160.000-140.000	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T4 140.000-120.000	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T5 120.000-100.000	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T6 100.000-80.000	Pipe		A618-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T7 80.000-60.000	Pipe		A618-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T8 60.000-40.000	Pipe		A618-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)
T9 40.000-20.000	Pipe		A618-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)
T10 20.000-0.000	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T10 20.000-0.000	A618-50 (50 ksi)	Horizontal (1)	Pipe	Rohn 1.5" x 11 ga	1
		Diagonal (1)	Double Angle	2L 2 x 2 x 1/4 (1/4)	1
		Hip (1)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	1
		Hip Diagonal (1)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	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

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	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
T1 185.000-180.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 180.000-160.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 160.000-140.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 140.000-120.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 120.000-100.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 100.000-80.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 80.000-60.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 60.000-40.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 40.000-20.000	0.000	0.250	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 20.000-0.000	0.000	0.375	A36 (36 ksi)	1.03	1.03	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 185.000-180.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 180.000-160.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 160.000-140.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 140.000-120.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 120.000-100.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 100.000-80.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 80.000-60.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 60.000-40.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 40.000-20.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 20.000-0.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 185.000-180.000	0.000	1	0.000	0.75	0.000	0.75	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T2 180.000-160.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T3 160.000-140.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T4 140.000-120.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T5 120.000-100.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T6 100.000-80.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T7 80.000-60.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T8 60.000-40.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T9 40.000-20.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T10 20.000-0.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 185.000-180.000	Flange	0.750 A325N	4	0.500 A325X	1	0.500 A325N	1	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 180.000-160.000	Flange	0.750 A325N	4	0.625 A325N	3	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T3 160.000-140.000	Flange	0.875 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T4 140.000-120.000	Flange	1.000 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T5 120.000-100.000	Flange	1.000 A325N	4	0.625 A325N	3	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T6 100.000-80.000	Flange	1.000 A325N	6	0.625 A325N	3	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T7 80.000-60.000	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T8 60.000-40.000	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T9 40.000-20.000	Flange	1.000 A325N	8	0.625 A325N	3	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T10 20.000-0.000	Flange	1.000 A449	0	0.750 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
Face A													
LDF4-	A	No	No	Ar (CaAa)	40.000 -	0.000	-0.44	1	1	0.500	0.630		0.000

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
50A(1/2")					0.000								
561(1-5/8")	A	No	No	Ar (CaAa)	177.000 - 0.000	0.000	-0.4	12	2	0.500	1.625		0.001
561(1-5/8")	A	No	No	Ar (CaAa)	177.000 - 0.000	0.000	-0.41	1	1	0.500	1.625		0.001
1.5" flat Cable Ladder Rail *****	A	No	No	Af (CaAa)	177.000 - 0.000	0.000	-0.4	2	2	24.000 1.500	1.500		0.002
CAT5E(1/4)	A	No	No	Ar (CaAa)	168.000 - 0.000	0.000	0.4	1	1	0.260	0.260		0.000
9207(5/16)	A	No	No	Ar (CaAa)	168.000 - 0.000	0.000	0.4	6	2	0.330	0.330		0.001
HB114-1-0813U4-M5J(1-1/4)	A	No	No	Ar (CaAa)	168.000 - 0.000	0.000	0.43	3	3	1.540	1.540		0.001
1.5" flat Cable Ladder Rail **Face C**	A	No	No	Af (CaAa)	168.000 - 0.000	0.000	0.45	2	2	24.000 1.500	1.500		0.002
LCF158-50JA(1 5/8")	C	No	No	Ar (CaAa)	185.000 - 0.000	-2.500	-0.4	12	9	0.500	2.010		0.001
1.5" flat Cable Ladder Rail *****	C	No	No	Af (CaAa)	185.000 - 0.000	-2.500	-0.4	2	2	28.000 1.500	1.500		0.002
2" Rigid Conduit	C	No	No	Ar (CaAa)	158.000 - 0.000	0.000	-0.33	2	2	0.500	2.000		0.003
FB-L98B-034-XXX(3/8")	C	No	No	Ar (CaAa)	158.000 - 0.000	0.000	-0.31	2	2	0.000	0.394		0.000
WR-VG86ST-BRD(3/4")	C	No	No	Ar (CaAa)	158.000 - 0.000	0.000	-0.32	4	4	0.500	0.795		0.001
WR-VG86ST-BRD(3/4)	C	No	No	Ar (CaAa)	158.000 - 0.000	0.000	-0.33	2	2	0.795 0.500	0.795		0.001
HB114-1-0813U4-M5J(1-1/4)	C	No	No	Ar (CaAa)	158.000 - 0.000	0.000	-0.35	12	12	0.500	1.540		0.001
1.5" flat Cable Ladder Rail *****	C	No	No	Af (CaAa)	158.000 - 0.000	0.000	-0.35	2	2	28.000 1.500	1.500		0.002
Safety Line 3/8 *****	C	No	No	Ar (CaAa)	180.000 - 0.000	0.000	0.5	1	1	0.500	0.375		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf
*****								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	185.000-180.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	14.560	0.000	0.073
T2	180.000-160.000	A	0.000	0.000	53.901	0.000	0.446
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	58.990	0.000	0.297
T3	160.000-140.000	A	0.000	0.000	75.970	0.000	0.640
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	118.457	0.000	0.787
T4	140.000-120.000	A	0.000	0.000	75.970	0.000	0.640
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	125.065	0.000	0.842
T5	120.000-100.000	A	0.000	0.000	75.970	0.000	0.640
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	125.065	0.000	0.842
T6	100.000-80.000	A	0.000	0.000	75.970	0.000	0.640
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	125.065	0.000	0.842
T7	80.000-60.000	A	0.000	0.000	75.970	0.000	0.640
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	125.065	0.000	0.842
T8	60.000-40.000	A	0.000	0.000	75.970	0.000	0.640
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	125.065	0.000	0.842
T9	40.000-20.000	A	0.000	0.000	77.230	0.000	0.643
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	125.065	0.000	0.842
T10	20.000-0.000	A	0.000	0.000	77.230	0.000	0.643
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	125.065	0.000	0.842

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_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	185.000-180.000	A	1.513	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	21.916	0.000	0.350
T2	180.000-160.000	A	1.502	0.000	0.000	91.215	0.000	1.566
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	94.270	0.000	1.465
T3	160.000-140.000	A	1.483	0.000	0.000	145.107	0.000	2.334
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	240.492	0.000	3.371
T4	140.000-120.000	A	1.462	0.000	0.000	144.175	0.000	2.306
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	255.520	0.000	3.542
T5	120.000-100.000	A	1.438	0.000	0.000	143.105	0.000	2.274
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	254.076	0.000	3.492
T6	100.000-80.000	A	1.410	0.000	0.000	141.843	0.000	2.236
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	252.373	0.000	3.434
T7	80.000-60.000	A	1.375	0.000	0.000	140.298	0.000	2.190
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	250.290	0.000	3.364
T8	60.000-40.000	A	1.329	0.000	0.000	138.291	0.000	2.131
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	247.583	0.000	3.274
T9	40.000-20.000	A	1.263	0.000	0.000	141.683	0.000	2.109
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	243.648	0.000	3.145
T10	20.000-0.000	A	1.132	0.000	0.000	135.368	0.000	1.939
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	235.848	0.000	2.896

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	185.000-180.000	14.054	3.586	13.384	4.170
T2	180.000-160.000	4.151	3.545	1.213	2.522
T3	160.000-140.000	10.379	1.185	9.195	0.006
T4	140.000-120.000	12.796	1.754	11.637	0.563
T5	120.000-100.000	15.016	2.116	13.775	0.718
T6	100.000-80.000	17.322	2.478	15.945	0.864
T7	80.000-60.000	19.241	2.746	17.783	0.968
T8	60.000-40.000	21.281	3.043	19.872	1.068
T9	40.000-20.000	21.950	3.563	19.910	2.158
T10	20.000-0.000	23.672	3.873	21.987	2.134

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	13	LCF158-50JA(1 5/8")	180.00 - 185.00	0.6000	0.6000
T1	17	1.5" flat Cable Ladder Rail	180.00 - 185.00	0.6000	0.6000
T2	3	561(1-5/8")	160.00 - 177.00	0.6000	0.6000
T2	4	561(1-5/8")	160.00 - 177.00	0.6000	0.6000
T2	5	1.5" flat Cable Ladder Rail	160.00 - 177.00	0.6000	0.6000
T2	7	CAT5E(1/4)	160.00 - 168.00	0.6000	0.6000
T2	8	9207(5/16)	160.00 - 168.00	0.6000	0.6000
T2	9	HB114-1-0813U4-M5J(1-1/4)	160.00 - 168.00	0.6000	0.6000
T2	11	1.5" flat Cable Ladder Rail	160.00 - 168.00	0.6000	0.6000
T2	13	LCF158-50JA(1 5/8")	160.00 - 180.00	0.6000	0.6000
T2	17	1.5" flat Cable Ladder Rail	160.00 - 180.00	0.6000	0.6000
T2	26	Safety Line 3/8	160.00 - 180.00	0.6000	0.6000
T3	3	561(1-5/8")	140.00 - 160.00	0.6000	0.6000
T3	4	561(1-5/8")	140.00 - 160.00	0.6000	0.6000
T3	5	1.5" flat Cable Ladder Rail	140.00 - 160.00	0.6000	0.6000
T3	7	CAT5E(1/4)	140.00 - 160.00	0.6000	0.6000
T3	8	9207(5/16)	140.00 - 160.00	0.6000	0.6000
T3	9	HB114-1-0813U4-M5J(1-1/4)	140.00 - 160.00	0.6000	0.6000
T3	11	1.5" flat Cable Ladder Rail	140.00 - 160.00	0.6000	0.6000
T3	13	LCF158-50JA(1 5/8")	140.00 - 160.00	0.6000	0.6000
T3	17	1.5" flat Cable Ladder Rail	140.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	19	2" Rigid Conduit	140.00 - 160.00	0.6000	0.6000
T3	20	FB-L98B-034-XXX(3/8")	140.00 - 158.00	0.0000	0.0000
T3	21	WR-VG86ST-BRD(3/4")	140.00 - 158.00	0.0000	0.0000
T3	22	WR-VG86ST-BRD(3/4)	140.00 - 158.00	0.6000	0.6000
T3	23	HB114-1-0813U4-M5J(1-1/4)	140.00 - 158.00	0.6000	0.6000
T3	24	1.5" flat Cable Ladder Rail	140.00 - 158.00	0.6000	0.6000
T3	26	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T4	3	561(1-5/8")	120.00 - 140.00	0.6000	0.6000
T4	4	561(1-5/8")	120.00 - 140.00	0.6000	0.6000
T4	5	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T4	7	CAT5E(1/4)	120.00 - 140.00	0.6000	0.6000
T4	8	9207(5/16)	120.00 - 140.00	0.6000	0.6000
T4	9	HB114-1-0813U4-M5J(1-1/4)	120.00 - 140.00	0.6000	0.6000
T4	11	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T4	13	LCF158-50JA(1 5/8")	120.00 - 140.00	0.6000	0.6000
T4	17	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T4	19	2" Rigid Conduit	120.00 - 140.00	0.6000	0.6000
T4	20	FB-L98B-034-XXX(3/8")	120.00 - 140.00	0.0000	0.0000
T4	21	WR-VG86ST-BRD(3/4")	120.00 - 140.00	0.0000	0.0000
T4	22	WR-VG86ST-BRD(3/4)	120.00 - 140.00	0.6000	0.6000
T4	23	HB114-1-0813U4-M5J(1-1/4)	120.00 - 140.00	0.6000	0.6000
T4	24	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T4	26	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T5	3	561(1-5/8")	100.00 - 120.00	0.6000	0.6000
T5	4	561(1-5/8")	100.00 - 120.00	0.6000	0.6000
T5	5	1.5" flat Cable Ladder Rail	100.00 - 120.00	0.6000	0.6000
T5	7	CAT5E(1/4)	100.00 - 120.00	0.6000	0.6000
T5	8	9207(5/16)	100.00 - 120.00	0.6000	0.6000
T5	9	HB114-1-0813U4-M5J(1-1/4)	100.00 - 120.00	0.6000	0.6000
T5	11	1.5" flat Cable Ladder Rail	100.00 - 120.00	0.6000	0.6000
T5	13	LCF158-50JA(1 5/8")	100.00 - 120.00	0.6000	0.6000
T5	17	1.5" flat Cable Ladder Rail	100.00 - 120.00	0.6000	0.6000
T5	19	2" Rigid Conduit	100.00 - 120.00	0.6000	0.6000
T5	20	FB-L98B-034-XXX(3/8")	100.00 - 120.00	0.0000	0.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	21	WR-VG86ST-BRD(3/4")	100.00 - 120.00	0.0000	0.0000
T5	22	WR-VG86ST-BRD(3/4)	100.00 - 120.00	0.6000	0.6000
T5	23	HB114-1-0813U4-M5J(1-1/4)	100.00 - 120.00	0.6000	0.6000
T5	24	1.5" flat Cable Ladder Rail	100.00 - 120.00	0.6000	0.6000
T5	26	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T6	3	561(1-5/8")	80.00 - 100.00	0.6000	0.6000
T6	4	561(1-5/8")	80.00 - 100.00	0.6000	0.6000
T6	5	1.5" flat Cable Ladder Rail	80.00 - 100.00	0.6000	0.6000
T6	7	CAT5E(1/4)	80.00 - 100.00	0.6000	0.6000
T6	8	9207(5/16)	80.00 - 100.00	0.6000	0.6000
T6	9	HB114-1-0813U4-M5J(1-1/4)	80.00 - 100.00	0.6000	0.6000
T6	11	1.5" flat Cable Ladder Rail	80.00 - 100.00	0.6000	0.6000
T6	13	LCF158-50JA(1 5/8")	80.00 - 100.00	0.6000	0.6000
T6	17	1.5" flat Cable Ladder Rail	80.00 - 100.00	0.6000	0.6000
T6	19	2" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T6	20	FB-L98B-034-XXX(3/8")	80.00 - 100.00	0.0000	0.0000
T6	21	WR-VG86ST-BRD(3/4")	80.00 - 100.00	0.0000	0.0000
T6	22	WR-VG86ST-BRD(3/4)	80.00 - 100.00	0.6000	0.6000
T6	23	HB114-1-0813U4-M5J(1-1/4)	80.00 - 100.00	0.6000	0.6000
T6	24	1.5" flat Cable Ladder Rail	80.00 - 100.00	0.6000	0.6000
T6	26	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T7	3	561(1-5/8")	60.00 - 80.00	0.6000	0.6000
T7	4	561(1-5/8")	60.00 - 80.00	0.6000	0.6000
T7	5	1.5" flat Cable Ladder Rail	60.00 - 80.00	0.6000	0.6000
T7	7	CAT5E(1/4)	60.00 - 80.00	0.6000	0.6000
T7	8	9207(5/16)	60.00 - 80.00	0.6000	0.6000
T7	9	HB114-1-0813U4-M5J(1-1/4)	60.00 - 80.00	0.6000	0.6000
T7	11	1.5" flat Cable Ladder Rail	60.00 - 80.00	0.6000	0.6000
T7	13	LCF158-50JA(1 5/8")	60.00 - 80.00	0.6000	0.6000
T7	17	1.5" flat Cable Ladder Rail	60.00 - 80.00	0.6000	0.6000
T7	19	2" Rigid Conduit	60.00 - 80.00	0.6000	0.6000
T7	20	FB-L98B-034-XXX(3/8")	60.00 - 80.00	0.0000	0.0000
T7	21	WR-VG86ST-BRD(3/4")	60.00 - 80.00	0.0000	0.0000
T7	22	WR-VG86ST-BRD(3/4)	60.00 - 80.00	0.6000	0.6000
T7	23	HB114-1-0813U4-M5J(1-	60.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		1/4)	80.00		
T7	24	1.5" flat Cable Ladder Rail	60.00 - 80.00	0.6000	0.6000
T7	26	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T8	3	561(1-5/8")	40.00 - 60.00	0.6000	0.6000
T8	4	561(1-5/8")	40.00 - 60.00	0.6000	0.6000
T8	5	1.5" flat Cable Ladder Rail	40.00 - 60.00	0.6000	0.6000
T8	7	CAT5E(1/4)	40.00 - 60.00	0.6000	0.6000
T8	8	9207(5/16)	40.00 - 60.00	0.6000	0.6000
T8	9	HB114-1-0813U4-M5J(1-1/4)	40.00 - 60.00	0.6000	0.6000
T8	11	1.5" flat Cable Ladder Rail	40.00 - 60.00	0.6000	0.6000
T8	13	LCF158-50JA(1 5/8")	40.00 - 60.00	0.6000	0.6000
T8	17	1.5" flat Cable Ladder Rail	40.00 - 60.00	0.6000	0.6000
T8	19	2" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T8	20	FB-L98B-034-XXX(3/8")	40.00 - 60.00	0.0000	0.0000
T8	21	WR-VG86ST-BRD(3/4")	40.00 - 60.00	0.0000	0.0000
T8	22	WR-VG86ST-BRD(3/4)	40.00 - 60.00	0.6000	0.6000
T8	23	HB114-1-0813U4-M5J(1-1/4)	40.00 - 60.00	0.6000	0.6000
T8	24	1.5" flat Cable Ladder Rail	40.00 - 60.00	0.6000	0.6000
T8	26	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T9	2	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T9	3	561(1-5/8")	20.00 - 40.00	0.6000	0.6000
T9	4	561(1-5/8")	20.00 - 40.00	0.6000	0.6000
T9	5	1.5" flat Cable Ladder Rail	20.00 - 40.00	0.6000	0.6000
T9	7	CAT5E(1/4)	20.00 - 40.00	0.6000	0.6000
T9	8	9207(5/16)	20.00 - 40.00	0.6000	0.6000
T9	9	HB114-1-0813U4-M5J(1-1/4)	20.00 - 40.00	0.6000	0.6000
T9	11	1.5" flat Cable Ladder Rail	20.00 - 40.00	0.6000	0.6000
T9	13	LCF158-50JA(1 5/8")	20.00 - 40.00	0.6000	0.6000
T9	17	1.5" flat Cable Ladder Rail	20.00 - 40.00	0.6000	0.6000
T9	19	2" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T9	20	FB-L98B-034-XXX(3/8")	20.00 - 40.00	0.0000	0.0000
T9	21	WR-VG86ST-BRD(3/4")	20.00 - 40.00	0.0000	0.0000
T9	22	WR-VG86ST-BRD(3/4)	20.00 - 40.00	0.6000	0.6000
T9	23	HB114-1-0813U4-M5J(1-1/4)	20.00 - 40.00	0.6000	0.6000
T9	24	1.5" flat Cable Ladder Rail	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	26	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T10	2	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T10	3	561(1-5/8")	0.00 - 20.00	0.6000	0.6000
T10	4	561(1-5/8")	0.00 - 20.00	0.6000	0.6000
T10	5	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T10	7	CAT5E(1/4)	0.00 - 20.00	0.6000	0.6000
T10	8	9207(5/16)	0.00 - 20.00	0.6000	0.6000
T10	9	HB114-1-0813U4-M5J(1-1/4)	0.00 - 20.00	0.6000	0.6000
T10	11	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T10	13	LCF158-50JA(1 5/8")	0.00 - 20.00	0.6000	0.6000
T10	17	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T10	19	2" Rigid Conduit	0.00 - 20.00	0.6000	0.6000
T10	20	FB-L98B-034-XXX(3/8")	0.00 - 20.00	0.0000	0.0000
T10	21	WR-VG86ST-BRD(3/4")	0.00 - 20.00	0.0000	0.0000
T10	22	WR-VG86ST-BRD(3/4)	0.00 - 20.00	0.6000	0.6000
T10	23	HB114-1-0813U4-M5J(1-1/4)	0.00 - 20.00	0.6000	0.6000
T10	24	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T10	26	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8"x4'	C	From Leg	0.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.250 0.664 0.973 1.494	0.250 0.664 0.973 1.494	0.031 0.034 0.039 0.059
*****									
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.747 7.202 7.648 8.565	6.070 6.867 7.583 9.063	0.153 0.214 0.282 0.441
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.747 7.202 7.648 8.565	6.070 6.867 7.583 9.063	0.153 0.214 0.282 0.441
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.747 7.202 7.648 8.565	6.070 6.867 7.583 9.063	0.153 0.214 0.282 0.441
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.186 0.315 0.458 0.788
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.186 0.315 0.458 0.788

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.186 0.315 0.458 0.788
KRY 112 144/1	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.350 0.426 0.509 0.698	0.175 0.234 0.301 0.456	0.011 0.014 0.019 0.032
KRY 112 144/1	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.350 0.426 0.509 0.698	0.175 0.234 0.301 0.456	0.011 0.014 0.019 0.032
KRY 112 144/1	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.350 0.426 0.509 0.698	0.175 0.234 0.301 0.456	0.011 0.014 0.019 0.032
VFA12-HD	A	From Leg	2.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.200 19.500 25.800 38.400	9.200 14.600 20.000 30.800	0.658 0.804 0.950 1.242
VFA12-HD	B	From Leg	2.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.200 19.500 25.800 38.400	9.200 14.600 20.000 30.800	0.658 0.804 0.950 1.242
VFA12-HD	C	From Leg	2.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.200 19.500 25.800 38.400	9.200 14.600 20.000 30.800	0.658 0.804 0.950 1.242
(2) 7'x2'' Antenna Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.663 2.391 2.825 3.706	1.663 2.391 2.825 3.706	0.026 0.039 0.056 0.105
(2) 7'x2'' Antenna Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.663 2.391 2.825 3.706	1.663 2.391 2.825 3.706	0.026 0.039 0.056 0.105
(2) 7'x2'' Antenna Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.663 2.391 2.825 3.706	1.663 2.391 2.825 3.706	0.026 0.039 0.056 0.105
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.870 6.233 6.606 7.382	3.270 3.728 4.203 5.200	0.128 0.177 0.232 0.359
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.870 6.233 6.606 7.382	3.270 3.728 4.203 5.200	0.128 0.177 0.232 0.359
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.870 6.233 6.606 7.382	3.270 3.728 4.203 5.200	0.128 0.177 0.232 0.359

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
SDX1926Q-43	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.006 0.009 0.012 0.023
SDX1926Q-43	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.006 0.009 0.012 0.023
SDX1926Q-43	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.006 0.009 0.012 0.023
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RRUS 4415 B25	A	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.044 0.056 0.071 0.109
RRUS 4415 B25	B	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.044 0.056 0.071 0.109
RRUS 4415 B25	C	From Leg	4.000 0.000 0.000	0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.044 0.056 0.071 0.109
***** *****									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.100 6.800 7.510 8.980	6.810 7.520 8.240 9.730	0.059 0.120 0.192 0.370
(2) LPA-80063/6CFx5 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice 2" Ice	9.805 10.373 10.907 11.998	10.195 11.363 12.246 14.063	0.052 0.144 0.245 0.475
(2) SC-E 6014 rev2 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.564 3.905 4.256 4.984	4.223 4.780 5.353 6.548	0.032 0.071 0.116 0.225
(2) SBNHH-1D45B w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice	8.260 8.830 9.410	4.390 4.910 5.430	0.090 0.168 0.257

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	10.610	6.530	0.470
						2" Ice			
(2) SBNHH-1D45B w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	8.260	4.390	0.090
						1/2" Ice	8.830	4.910	0.168
						1" Ice	9.410	5.430	0.257
						2" Ice	10.610	6.530	0.470
(2) SBNHH-1D45B w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	8.260	4.390	0.090
						1/2" Ice	8.830	4.910	0.168
						1" Ice	9.410	5.430	0.257
						2" Ice	10.610	6.530	0.470
SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	4.090	3.300	0.066
						1/2" Ice	4.490	3.680	0.130
						1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	4.090	3.300	0.066
						1/2" Ice	4.490	3.680	0.130
						1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	4.090	3.300	0.066
						1/2" Ice	4.490	3.680	0.130
						1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
RRH2x60-700	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	3.500	1.816	0.060
						1/2" Ice	3.761	2.052	0.083
						1" Ice	4.029	2.289	0.109
						2" Ice	4.585	2.785	0.173
RRH2x60-700	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	3.500	1.816	0.060
						1/2" Ice	3.761	2.052	0.083
						1" Ice	4.029	2.289	0.109
						2" Ice	4.585	2.785	0.173
RRH2x60-700	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	3.500	1.816	0.060
						1/2" Ice	3.761	2.052	0.083
						1" Ice	4.029	2.289	0.109
						2" Ice	4.585	2.785	0.173
RRH2X60-AWS	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	3.500	1.816	0.060
						1/2" Ice	3.761	2.052	0.083
						1" Ice	4.029	2.289	0.109
						2" Ice	4.585	2.785	0.173
RRH2X60-AWS	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	3.500	1.816	0.060
						1/2" Ice	3.761	2.052	0.083
						1" Ice	4.029	2.289	0.109
						2" Ice	4.585	2.785	0.173
RRH2X60-AWS	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	3.500	1.816	0.060
						1/2" Ice	3.761	2.052	0.083
						1" Ice	4.029	2.289	0.109
						2" Ice	4.585	2.785	0.173
RRH2X60-PCS	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	2.200	1.723	0.055
						1/2" Ice	2.393	1.901	0.075
						1" Ice	2.593	2.087	0.099
						2" Ice	3.015	2.480	0.155
RRH2X60-PCS	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice	2.200	1.723	0.055
						1/2" Ice	2.393	1.901	0.075
						1" Ice	2.593	2.087	0.099

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	3.015	2.480	0.155
						2" Ice			
RRH2X60-PCS	C	From Leg	4.000	0.000	177.000	No Ice	2.200	1.723	0.055
			0.000			1/2"	2.393	1.901	0.075
			0.000			Ice	2.593	2.087	0.099
						1" Ice	3.015	2.480	0.155
						2" Ice			
(2) DB-T1-6Z-8AB-0Z	C	From Leg	4.000	0.000	177.000	No Ice	4.800	2.000	0.044
			0.000			1/2"	5.070	2.193	0.080
			0.000			Ice	5.348	2.393	0.120
						1" Ice	5.926	2.815	0.213
						2" Ice			
Sector Mount [SM 504-3]	C	None		0.000	177.000	No Ice	31.050	31.050	1.708
						1/2"	43.830	43.830	2.326
						Ice	56.440	56.440	3.143
						1" Ice	81.280	81.280	5.358
						2" Ice			
*****									
FDD_R6_RRH	A	From Leg	4.000	0.000	168.000	No Ice	1.533	0.684	0.033
			0.000			1/2"	1.690	0.800	0.045
			0.000			Ice	1.854	0.923	0.058
						1" Ice	2.204	1.193	0.094
						2" Ice			
FDD_R6_RRH	B	From Leg	4.000	0.000	168.000	No Ice	1.533	0.684	0.033
			0.000			1/2"	1.690	0.800	0.045
			0.000			Ice	1.854	0.923	0.058
						1" Ice	2.204	1.193	0.094
						2" Ice			
FDD_R6_RRH	C	From Leg	4.000	0.000	168.000	No Ice	1.533	0.684	0.033
			0.000			1/2"	1.690	0.800	0.045
			0.000			Ice	1.854	0.923	0.058
						1" Ice	2.204	1.193	0.094
						2" Ice			
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.000	0.000	168.000	No Ice	7.550	4.230	0.110
			0.000			1/2"	8.040	4.670	0.197
			0.000			Ice	8.530	5.120	0.296
						1" Ice	9.560	6.050	0.529
						2" Ice			
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.000	0.000	168.000	No Ice	7.550	4.230	0.110
			0.000			1/2"	8.040	4.670	0.197
			0.000			Ice	8.530	5.120	0.296
						1" Ice	9.560	6.050	0.529
						2" Ice			
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.000	0.000	168.000	No Ice	7.550	4.230	0.110
			0.000			1/2"	8.040	4.670	0.197
			0.000			Ice	8.530	5.120	0.296
						1" Ice	9.560	6.050	0.529
						2" Ice			
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.000	0.000	168.000	No Ice	4.090	2.860	0.077
			0.000			1/2"	4.480	3.230	0.127
			0.000			Ice	4.880	3.610	0.185
						1" Ice	5.710	4.400	0.331
						2" Ice			
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.000	0.000	168.000	No Ice	4.090	2.860	0.077
			0.000			1/2"	4.480	3.230	0.127
			0.000			Ice	4.880	3.610	0.185
						1" Ice	5.710	4.400	0.331
						2" Ice			
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.000	0.000	168.000	No Ice	4.090	2.860	0.077
			0.000			1/2"	4.480	3.230	0.127
			0.000			Ice	4.880	3.610	0.185
						1" Ice	5.710	4.400	0.331
						2" Ice			
AHCC	A	From Leg	4.000	0.000	168.000	No Ice	1.628	1.139	0.045
			0.000			1/2"	1.790	1.281	0.060

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			Ice	1.959	1.431	0.078
						1" Ice	2.320	1.753	0.121
						2" Ice			
AHCC	B	From Leg	4.000	0.000	168.000	No Ice	1.628	1.139	0.045
			0.000			1/2"	1.790	1.281	0.060
			0.000			Ice	1.959	1.431	0.078
						1" Ice	2.320	1.753	0.121
						2" Ice			
AHCC	C	From Leg	4.000	0.000	168.000	No Ice	1.628	1.139	0.045
			0.000			1/2"	1.790	1.281	0.060
			0.000			Ice	1.959	1.431	0.078
						1" Ice	2.320	1.753	0.121
						2" Ice			
AHFIB_CCIV2	A	From Leg	4.000	0.000	168.000	No Ice	2.793	1.526	0.066
			0.000			1/2"	3.014	1.707	0.087
			0.000			Ice	3.243	1.895	0.111
						1" Ice	3.723	2.293	0.168
						2" Ice			
AHFIB_CCIV2	B	From Leg	4.000	0.000	168.000	No Ice	2.793	1.526	0.066
			0.000			1/2"	3.014	1.707	0.087
			0.000			Ice	3.243	1.895	0.111
						1" Ice	3.723	2.293	0.168
						2" Ice			
AHFIB_CCIV2	C	From Leg	4.000	0.000	168.000	No Ice	2.793	1.526	0.066
			0.000			1/2"	3.014	1.707	0.087
			0.000			Ice	3.243	1.895	0.111
						1" Ice	3.723	2.293	0.168
						2" Ice			
HORIZON DUO	C	From Leg	4.000	0.000	168.000	No Ice	0.469	0.294	0.007
			0.000			1/2"	0.556	0.365	0.012
			0.000			Ice	0.650	0.444	0.018
						1" Ice	0.861	0.624	0.036
						2" Ice			
Site Pro 1 VFA12-HD	A	From Leg	2.000	0.000	168.000	No Ice	13.200	9.200	0.658
			0.000			1/2"	19.500	14.600	0.804
			0.000			Ice	25.800	19.500	1.015
						1" Ice	38.400	30.800	1.242
						2" Ice			
Site Pro 1 VFA12-HD	B	From Leg	2.000	0.000	168.000	No Ice	13.200	9.200	0.658
			0.000			1/2"	19.500	14.600	0.804
			0.000			Ice	25.800	19.500	1.015
						1" Ice	38.400	30.800	1.242
						2" Ice			
Site Pro 1 VFA12-HD	C	From Leg	2.000	0.000	168.000	No Ice	13.200	9.200	0.658
			0.000			1/2"	19.500	14.600	0.804
			0.000			Ice	25.800	19.500	1.015
						1" Ice	38.400	30.800	1.242
						2" Ice			
(2) 7'x2" Antenna Mount Pipe	A	From Leg	4.000	0.000	168.000	No Ice	1.663	1.663	0.026
			0.000			1/2"	2.391	2.391	0.039
			0.000			Ice	2.825	2.825	0.056
						1" Ice	3.706	3.706	0.105
						2" Ice			
(2) 7'x2" Antenna Mount Pipe	B	From Leg	4.000	0.000	168.000	No Ice	1.663	1.663	0.026
			0.000			1/2"	2.391	2.391	0.039
			0.000			Ice	2.825	2.825	0.056
						1" Ice	3.706	3.706	0.105
						2" Ice			
(2) 7'x2" Antenna Mount Pipe	C	From Leg	4.000	0.000	168.000	No Ice	1.663	1.663	0.026
			0.000			1/2"	2.391	2.391	0.039
			0.000			Ice	2.825	2.825	0.056
						1" Ice	3.706	3.706	0.105
						2" Ice			
*****									
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.746 6.179 6.607 7.488	4.254 5.014 5.711 7.155	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.746 6.179 6.607 7.488	4.254 5.014 5.711 7.155	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.746 6.179 6.607 7.488	4.254 5.014 5.711 7.155	0.055 0.103 0.157 0.287
QS66512-2 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.040 4.420 4.820 5.630	4.180 4.570 4.970 5.790	0.137 0.206 0.287 0.482
QS66512-2 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.040 4.420 4.820 5.630	4.180 4.570 4.970 5.790	0.137 0.206 0.287 0.482
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	11.850 12.770 13.710 15.640	8.990 9.880 10.790 12.660	0.115 0.210 0.319 0.580
DTMABP7819VG12A	A	From Leg	4.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.976 1.100 1.232 1.517	0.339 0.419 0.510 0.714	0.019 0.026 0.036 0.060
DTMABP7819VG12A	B	From Leg	4.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.976 1.100 1.232 1.517	0.339 0.419 0.510 0.714	0.019 0.026 0.036 0.060
DTMABP7819VG12A	C	From Leg	4.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.976 1.100 1.232 1.517	0.339 0.419 0.510 0.714	0.019 0.026 0.036 0.060
7020.00	A	From Leg	4.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
7020.00	B	From Leg	4.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
7020.00	C	From Leg	4.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
DC6-48-60-18-8F	A	From Leg	4.000 0.000 2.000	0.000	158.000	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

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DC6-48-60-18-8F	A	From Leg	4.000 0.000 0.000	0.000	158.000	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
(2) DBC0061F1V51-2	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.413 0.496 0.586 0.788	0.433 0.518 0.609 0.815	0.025 0.031 0.038 0.057
(2) DBC0061F1V51-2	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.413 0.496 0.586 0.788	0.433 0.518 0.609 0.815	0.025 0.031 0.038 0.057
(2) DBC0061F1V51-2	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.413 0.496 0.586 0.788	0.433 0.518 0.609 0.815	0.025 0.031 0.038 0.057
RRUS 32 B30	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
RRUS 32 B30	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
RRUS 32 B30	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
RRUS 32 B2	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.000 13.760 15.340	6.050 6.710 7.390 8.790	0.089 0.176 0.275 0.508
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.000 13.760 15.340	6.050 6.710 7.390 8.790	0.089 0.176 0.275 0.508
OPA65R-BU6D w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.000 13.760 15.340	6.050 6.710 7.390 8.790	0.089 0.176 0.275 0.508

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DMP65R-BU8D w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	15.890 16.810 17.760 19.700	7.890 8.740 9.600 11.370	0.139 0.252 0.380 0.679
DMP65R-BU8D w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	15.890 16.810 17.760 19.700	7.890 8.740 9.600 11.370	0.139 0.252 0.380 0.679
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	15.890 16.810 17.760 19.700	7.890 8.740 9.600 11.370	0.139 0.252 0.380 0.679
DC6-48-60-18-8F	A	From Leg	4.000 0.000 0.000	0.000	158.000	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
RRUS 4478 B14_CCIV2	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.021 2.200 2.386 2.780	1.246 1.396 1.554 1.891	0.059 0.077 0.097 0.147
RRUS 4478 B14_CCIV2	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.021 2.200 2.386 2.780	1.246 1.396 1.554 1.891	0.059 0.077 0.097 0.147
RRUS 4478 B14_CCIV2	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.021 2.200 2.386 2.780	1.246 1.396 1.554 1.891	0.059 0.077 0.097 0.147
RRUS 32 B66A	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.864 3.090 3.323 3.813	1.782 1.973 2.171 2.589	0.055 0.077 0.103 0.165
RRUS 32 B66A	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.864 3.090 3.323 3.813	1.782 1.973 2.171 2.589	0.055 0.077 0.103 0.165
RRUS 32 B66A	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.864 3.090 3.323 3.813	1.782 1.973 2.171 2.589	0.055 0.077 0.103 0.165
RRUS 4449 B5/B12	A	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
RRUS 4449 B5/B12	B	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
RRUS 4449 B5/B12	C	From Leg	4.000 0.000 2.000	0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Sector Mount [SM 502-3]	C	None		0.000	158.000	No Ice 1/2" Ice 1" Ice 2" Ice	29.820 42.210 54.430 78.490	29.820 42.210 54.430 78.490	1.673 2.266 3.052 5.180
***** *****									
GPS_A	B	From Leg	4.000 0.000 0.000	0.000	40.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.255 0.320 0.393 0.561	0.255 0.320 0.393 0.561	0.001 0.005 0.010 0.025
Side Arm Mount [SO 306-1]	B	From Leg	2.000 0.000 0.000	0.000	40.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.410 0.810 1.230 2.080	2.260 3.830 5.480 9.370	0.042 0.062 0.094 0.187
*****									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-11	C	Paraboloid w/o Radome	From Leg	4.000 0.000 0.000	-90.000		168.000	2.175	No Ice 1/2" Ice 1" Ice 2" Ice	3.720 4.010 4.300 4.880	0.027 0.050 0.070 0.110
*****											

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

Comb. No.	Description
21	0.9 Dead+1.0 Wind 270 deg - No Ice
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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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
T1	185 - 180	Leg	Max Tension	14	1.239	0.00	0.00
			Max. Compression	31	-3.853	-0.19	-0.11
			Max. Mx	8	-0.078	-0.95	-0.02
			Max. My	2	-0.716	-0.07	1.01
			Max. Vy	20	1.271	0.00	0.00
			Max. Vx	3	1.289	0.00	0.00
		Diagonal	Max Tension	15	1.553	0.00	0.00
			Max. Compression	2	-1.805	0.00	0.00
			Max. Mx	32	0.216	0.03	0.00
			Max. My	14	1.518	0.01	0.00
			Max. Vy	32	-0.032	0.03	0.00
			Max. Vx	14	-0.000	0.00	0.00
		Top Girt	Max Tension	2	0.528	0.00	0.00
			Max. Compression	15	-0.362	0.00	0.00
			Max. Mx	26	0.164	-0.11	0.00
			Max. Vy	26	0.051	0.00	0.00
T2	180 - 160	Leg	Max Tension	15	17.808	-0.34	-0.03
			Max. Compression	18	-26.440	-0.24	0.01
			Max. Mx	6	0.074	1.78	-0.07
			Max. My	4	-3.142	-0.00	1.92
			Max. Vy	6	-0.919	-0.94	-0.09
			Max. Vx	4	-1.015	0.02	-1.05
		Diagonal	Max Tension	21	9.330	0.00	0.00
			Max. Compression	20	-9.403	0.00	0.00
			Max. Mx	26	-0.075	0.05	0.00
			Max. Vy	26	-0.025	0.00	0.00
		Horizontal	Max Tension	20	5.092	-0.02	0.00
			Max. Compression	13	-5.017	-0.01	-0.00
			Max. Mx	33	-0.080	-0.04	-0.00
			Max. My	3	0.490	0.00	0.01
			Max. Vy	33	-0.031	-0.04	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	3	-0.003	0.00	0.01
		Inner Bracing	Max Tension	3	0.006	0.00	0.00
			Max. Compression	14	-0.006	0.00	0.00
			Max. Mx	26	-0.000	-0.02	0.00
			Max. Vy	26	0.021	0.00	0.00
T3	160 - 140	Leg	Max Tension	15	59.290	1.06	-0.02
			Max. Compression	2	-72.672	-1.08	0.01
			Max. Mx	14	30.580	-2.25	0.14
			Max. My	16	-4.982	-0.11	1.47
			Max. Vy	14	6.074	-2.25	0.14
			Max. Vx	17	-3.232	-0.08	1.47
		Diagonal	Max Tension	13	10.457	0.00	0.00
			Max. Compression	12	-10.539	0.00	0.00
			Max. Mx	26	-0.038	0.06	0.00
			Max. Vy	26	-0.031	0.00	0.00
		Horizontal	Max Tension	12	6.627	-0.01	-0.00
			Max. Compression	13	-6.599	-0.01	-0.00
			Max. Mx	33	0.075	-0.04	-0.00
			Max. My	2	1.670	0.00	0.01
			Max. Vy	33	-0.033	-0.04	-0.00
			Max. Vx	2	-0.003	0.00	0.01
		Inner Bracing	Max Tension	3	0.007	0.00	0.00
			Max. Compression	14	-0.009	0.00	0.00
			Max. Mx	26	-0.004	-0.03	0.00
			Max. Vy	26	0.025	0.00	0.00
T4	140 - 120	Leg	Max Tension	15	98.885	-0.38	0.04
			Max. Compression	2	-114.503	0.44	-0.09
			Max. Mx	2	-87.629	2.93	-0.17
			Max. My	17	-5.820	-0.00	1.48
			Max. Vy	2	-9.603	2.93	-0.17
			Max. Vx	17	-4.197	-0.00	1.48
		Diagonal	Max Tension	13	10.659	0.00	0.00
			Max. Compression	24	-10.757	0.00	0.00
			Max. Mx	26	-0.051	0.08	0.00
			Max. Vy	26	-0.036	0.00	0.00
		Horizontal	Max Tension	24	7.122	0.00	0.00
			Max. Compression	25	-7.074	0.00	0.00
			Max. Mx	33	-0.215	-0.07	-0.00
			Max. My	3	0.867	0.01	0.02
			Max. Vy	33	0.047	-0.07	-0.00
			Max. Vx	3	0.003	0.00	0.00
		Inner Bracing	Max Tension	3	0.006	0.00	0.00
			Max. Compression	14	-0.009	0.00	0.00
			Max. Mx	26	-0.004	-0.04	0.00
			Max. Vy	26	0.029	0.00	0.00
T5	120 - 100	Leg	Max Tension	15	128.189	-0.50	0.11
			Max. Compression	2	-145.989	0.57	-0.12
			Max. Mx	14	125.690	-0.58	0.12
			Max. My	16	-10.688	-0.02	0.70
			Max. Vy	22	0.097	-0.56	0.02
			Max. Vx	5	0.188	-0.02	-0.67
		Diagonal	Max Tension	25	12.504	0.00	0.00
			Max. Compression	24	-12.671	0.00	0.00
			Max. Mx	26	0.005	0.17	0.00
			Max. Vy	26	0.056	0.00	0.00
		Horizontal	Max Tension	24	7.511	0.00	0.00
			Max. Compression	24	-7.473	0.00	0.00
			Max. Mx	33	-0.369	-0.09	-0.00
			Max. My	2	1.232	0.01	0.02
			Max. Vy	33	-0.052	-0.09	-0.00
			Max. Vx	2	-0.002	0.00	0.00
		Inner Bracing	Max Tension	3	0.003	0.00	0.00
			Max. Compression	14	-0.008	0.00	0.00
			Max. Mx	26	-0.007	-0.06	0.00
			Max. Vy	26	0.033	0.00	0.00
T6	100 - 80	Leg	Max Tension	15	159.229	-0.48	0.10
			Max. Compression	2	-179.753	0.58	-0.12
			Max. Mx	14	156.357	-0.60	0.12
			Max. My	16	-12.510	-0.02	0.78

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	22	0.099	-0.57	0.02
			Max. Vx	17	-0.191	-0.02	0.78
		Diagonal	Max Tension	25	11.302	0.00	0.00
			Max. Compression	24	-11.528	0.00	0.00
			Max. Mx	26	-0.005	0.21	0.00
			Max. Vy	26	-0.064	0.00	0.00
		Horizontal	Max Tension	14	7.572	-0.03	0.01
			Max. Compression	3	-7.557	0.00	0.00
			Max. Mx	33	-0.395	-0.11	-0.00
			Max. My	2	1.761	-0.00	0.01
			Max. Vy	33	0.059	-0.11	-0.00
			Max. Vx	2	0.002	-0.00	0.01
		Inner Bracing	Max Tension	3	0.001	0.00	0.00
			Max. Compression	33	-0.010	0.00	0.00
			Max. Mx	26	-0.009	-0.10	0.00
			Max. Vy	26	-0.050	0.00	0.00
T7	80 - 60	Leg	Max Tension	15	187.066	-0.77	0.08
			Max. Compression	2	-210.612	0.70	-0.13
			Max. Mx	14	170.010	-0.77	0.08
			Max. My	16	-14.519	-0.03	0.92
			Max. Vy	22	0.113	-0.73	0.02
			Max. Vx	16	-0.185	-0.02	0.86
		Diagonal	Max Tension	25	11.864	0.00	0.00
			Max. Compression	24	-12.177	0.00	0.00
			Max. Mx	26	-0.083	0.26	0.00
			Max. Vy	26	-0.072	0.00	0.00
		Horizontal	Max Tension	14	8.563	-0.06	0.01
			Max. Compression	3	-8.500	0.00	0.00
			Max. Mx	33	-0.373	-0.19	-0.00
			Max. My	3	-0.556	-0.00	0.02
			Max. Vy	33	0.088	-0.19	-0.00
			Max. Vx	3	-0.002	0.00	0.00
		Inner Bracing	Max Tension	3	0.001	0.00	0.00
			Max. Compression	33	-0.012	0.00	0.00
			Max. Mx	26	-0.011	-0.16	0.00
			Max. Vy	26	0.066	0.00	0.00
T8	60 - 40	Leg	Max Tension	15	214.081	-0.73	0.08
			Max. Compression	2	-241.219	0.56	-0.09
			Max. Mx	14	197.150	-0.73	0.08
			Max. My	16	-15.153	-0.03	0.92
			Max. Vy	22	-0.106	-0.68	0.01
			Max. Vx	17	0.180	-0.02	0.92
		Diagonal	Max Tension	25	12.153	0.00	0.00
			Max. Compression	24	-12.603	0.00	0.00
			Max. Mx	26	-0.164	0.35	0.00
			Max. Vy	26	-0.093	0.00	0.00
		Horizontal	Max Tension	24	9.325	0.00	0.00
			Max. Compression	3	-9.183	0.00	0.00
			Max. Mx	33	-0.321	-0.22	-0.00
			Max. My	14	0.746	-0.14	-0.02
			Max. Vy	33	-0.096	-0.22	-0.00
			Max. Vx	14	-0.002	0.00	0.00
		Inner Bracing	Max Tension	1	0.000	0.00	0.00
			Max. Compression	33	-0.014	0.00	0.00
			Max. Mx	26	-0.013	-0.25	0.00
			Max. Vy	26	0.093	0.00	0.00
T9	40 - 20	Leg	Max Tension	15	239.283	-1.25	0.03
			Max. Compression	2	-270.380	-2.08	-0.25
			Max. Mx	2	-270.380	-2.08	-0.25
			Max. My	16	-19.473	-0.38	2.93
			Max. Vy	2	0.408	1.36	-0.03
			Max. Vx	16	-0.415	-0.38	2.93
		Diagonal	Max Tension	25	11.926	0.00	0.00
			Max. Compression	24	-12.447	0.00	0.00
			Max. Mx	26	-0.210	0.43	0.00
			Max. Vy	26	0.106	0.00	0.00
		Horizontal	Max Tension	24	9.664	0.00	0.00
			Max. Compression	3	-9.383	0.00	0.00
			Max. Mx	33	0.771	-0.26	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-2.082	-0.16	-0.02
			Max. Vy	33	-0.104	-0.26	-0.00
			Max. Vx	14	0.001	0.00	0.00
		Inner Bracing	Max Tension	1	0.000	0.00	0.00
			Max. Compression	33	-0.016	0.00	0.00
			Max. Mx	26	-0.015	-0.30	0.00
			Max. Vy	26	0.100	0.00	0.00
T10	20 - 0	Leg	Max Tension	15	276.019	1.25	-0.11
			Max. Compression	2	-313.198	0.00	0.00
			Max. Mx	2	-282.768	8.22	0.39
			Max. My	16	-20.533	-0.38	2.93
			Max. Vy	2	-15.622	0.00	0.00
			Max. Vx	17	-7.578	0.00	-0.00
		Diagonal	Max Tension	25	18.802	-0.19	0.12
			Max. Compression	2	-19.765	0.00	0.00
			Max. Mx	14	13.711	-0.26	0.09
			Max. My	12	-18.488	0.04	-0.13
			Max. Vy	33	-0.070	-0.18	0.01
			Max. Vx	12	0.011	0.04	-0.13
		Horizontal	Max Tension	14	10.645	-0.16	0.01
			Max. Compression	3	-10.582	0.00	0.00
			Max. Mx	33	-0.510	-0.38	-0.01
			Max. My	3	-0.675	-0.05	0.02
			Max. Vy	33	0.131	-0.38	-0.01
			Max. Vx	3	0.002	-0.05	0.02
		Redund Horz 1 Bracing	Max Tension	2	4.912	0.00	0.00
			Max. Compression	2	-4.912	0.00	0.00
			Max. Mx	26	0.736	0.03	0.00
			Max. Vy	26	-0.018	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	2	4.474	0.00	0.00
			Max. Compression	2	-4.474	0.00	0.00
			Max. Mx	26	0.670	0.13	0.00
			Max. My	26	0.743	0.00	0.01
			Max. Vy	26	-0.044	0.00	0.00
			Max. Vx	26	-0.003	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	13	0.020	0.00	0.00
			Max. Compression	24	-0.032	0.00	0.00
			Max. Mx	26	-0.012	0.04	0.00
			Max. Vy	26	-0.024	0.00	0.00
		Redund Hip Diagonal 1 Bracing	Max Tension	2	0.070	0.00	0.00
			Max. Compression	33	-0.079	0.00	0.00
			Max. Mx	26	0.059	0.27	0.00
			Max. Vy	26	0.072	0.00	0.00
		Inner Bracing	Max Tension	17	0.000	0.00	0.00
			Max. Compression	28	-0.017	0.00	0.00
			Max. Mx	26	-0.016	0.32	0.00
			Max. Vy	26	-0.100	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	284.299	29.860	-16.052
	Max. H_x	18	284.299	29.860	-16.052
	Max. H_z	5	-230.093	-24.920	15.427
	Min. Vert	7	-244.619	-26.934	14.418
	Min. H_x	7	-244.619	-26.934	14.418
	Min. H_z	16	269.225	27.811	-16.996
Leg B	Max. Vert	10	275.294	-28.208	-15.982
	Max. H_x	23	-234.197	25.308	14.324

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_z	25	-226.151	23.271	17.332
	Min. Vert	23	-234.197	25.308	14.324
	Min. H_x	10	275.294	-28.208	-15.982
	Min. H_z	12	266.524	-26.105	-18.947
Leg A	Max. Vert	2	311.261	1.360	38.126
	Max. H_x	20	21.465	3.814	1.922
	Max. H_z	2	311.261	1.360	38.126
	Min. Vert	15	-274.224	-1.360	-34.786
	Min. H_x	9	15.475	-3.823	1.396
	Min. H_z	15	-274.224	-1.360	-34.786

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	55.017	0.000	0.000	30.73	-12.36	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	66.020	-0.060	-63.118	-6933.15	-2.77	64.70
0.9 Dead+1.0 Wind 0 deg - No Ice	49.515	-0.060	-63.118	-6942.37	0.94	64.70
1.2 Dead+1.0 Wind 30 deg - No Ice	66.020	30.739	-53.453	-5895.12	-3419.94	92.82
0.9 Dead+1.0 Wind 30 deg - No Ice	49.515	30.739	-53.453	-5904.34	-3416.24	92.82
1.2 Dead+1.0 Wind 60 deg - No Ice	66.020	47.886	-27.616	-3088.53	-5442.37	48.06
0.9 Dead+1.0 Wind 60 deg - No Ice	49.515	47.886	-27.616	-3097.75	-5438.66	48.06
1.2 Dead+1.0 Wind 90 deg - No Ice	66.020	47.212	-0.029	33.92	-5569.35	8.40
0.9 Dead+1.0 Wind 90 deg - No Ice	49.515	47.212	-0.029	24.70	-5565.65	8.40
1.2 Dead+1.0 Wind 120 deg - No Ice	66.020	45.727	26.319	3045.87	-5251.71	11.70
0.9 Dead+1.0 Wind 120 deg - No Ice	49.515	45.727	26.319	3036.65	-5248.00	11.70
1.2 Dead+1.0 Wind 150 deg - No Ice	66.020	30.300	52.431	5859.64	-3384.47	-29.48
0.9 Dead+1.0 Wind 150 deg - No Ice	49.515	30.300	52.431	5850.42	-3380.76	-29.48
1.2 Dead+1.0 Wind 180 deg - No Ice	66.020	-0.046	62.905	6977.73	-9.07	-65.72
0.9 Dead+1.0 Wind 180 deg - No Ice	49.515	-0.046	62.905	6968.51	-5.36	-65.72
1.2 Dead+1.0 Wind 210 deg - No Ice	66.020	-30.849	53.323	5947.09	3408.72	-94.38
0.9 Dead+1.0 Wind 210 deg - No Ice	49.515	-30.849	53.323	5937.87	3412.42	-94.38
1.2 Dead+1.0 Wind 240 deg - No Ice	66.020	-48.012	27.693	3171.86	5428.19	-48.03
0.9 Dead+1.0 Wind 240 deg - No Ice	49.515	-48.012	27.693	3162.64	5431.90	-48.03
1.2 Dead+1.0 Wind 270 deg - No Ice	66.020	-47.270	-0.131	12.98	5549.35	-9.82
0.9 Dead+1.0 Wind 270 deg - No Ice	49.515	-47.270	-0.131	3.76	5553.06	-9.82
1.2 Dead+1.0 Wind 300 deg - No Ice	66.020	-45.603	-26.370	-2983.94	5206.89	-12.63
0.9 Dead+1.0 Wind 300 deg - No Ice	49.515	-45.603	-26.370	-2993.16	5210.59	-12.63
1.2 Dead+1.0 Wind 330 deg - No Ice	66.020	-30.335	-52.491	-5796.01	3360.66	28.86
0.9 Dead+1.0 Wind 330 deg - No Ice	49.515	-30.335	-52.491	-5805.23	3364.37	28.86

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Ice	151.636	0.000	0.000	114.89	-75.65	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	151.636	-0.004	-17.517	-1795.70	-73.90	16.74
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	151.636	8.277	-14.387	-1472.52	-987.32	19.64
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	151.636	13.310	-7.693	-746.37	-1567.31	10.26
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	151.636	14.011	-0.014	113.67	-1677.08	1.36
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	151.636	13.174	7.595	966.92	-1554.77	1.51
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	151.636	8.324	14.433	1703.00	-992.43	-5.88
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	151.636	-0.017	17.484	2021.05	-73.87	-16.94
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	151.636	-8.298	14.361	1698.00	839.66	-19.95
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	151.636	-13.327	7.704	977.38	1417.92	-10.26
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	151.636	-14.022	-0.018	110.81	1527.69	-1.64
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	151.636	-13.158	-7.610	-740.14	1401.63	-1.69
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	151.636	-8.331	-14.445	-1475.22	842.29	5.76
Dead+Wind 0 deg - Service	55.017	-0.015	-15.308	-1659.68	-9.43	15.69
Dead+Wind 30 deg - Service	55.017	7.455	-12.964	-1407.93	-838.19	22.51
Dead+Wind 60 deg - Service	55.017	11.614	-6.698	-727.26	-1328.68	11.66
Dead+Wind 90 deg - Service	55.017	11.450	-0.007	30.02	-1359.48	2.04
Dead+Wind 120 deg - Service	55.017	11.090	6.383	760.49	-1282.44	2.84
Dead+Wind 150 deg - Service	55.017	7.348	12.716	1442.91	-829.58	-7.15
Dead+Wind 180 deg - Service	55.017	-0.011	15.256	1714.07	-10.96	-15.94
Dead+Wind 210 deg - Service	55.017	-7.482	12.932	1464.11	817.94	-22.89
Dead+Wind 240 deg - Service	55.017	-11.644	6.716	791.05	1307.72	-11.65
Dead+Wind 270 deg - Service	55.017	-11.464	-0.032	24.94	1337.10	-2.38
Dead+Wind 300 deg - Service	55.017	-11.060	-6.395	-701.89	1254.05	-3.06
Dead+Wind 330 deg - Service	55.017	-7.357	-12.730	-1383.90	806.29	7.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-55.017	0.000	0.000	55.017	0.000	0.000%
2	-0.060	-66.020	-63.118	0.060	66.020	63.118	0.000%
3	-0.060	-49.515	-63.118	0.060	49.515	63.118	0.000%
4	30.739	-66.020	-53.453	-30.739	66.020	53.453	0.000%
5	30.739	-49.515	-53.453	-30.739	49.515	53.453	0.000%
6	47.886	-66.020	-27.616	-47.886	66.020	27.616	0.000%
7	47.886	-49.515	-27.616	-47.886	49.515	27.616	0.000%
8	47.212	-66.020	-0.029	-47.212	66.020	0.029	0.000%
9	47.212	-49.515	-0.029	-47.212	49.515	0.029	0.000%
10	45.727	-66.020	26.319	-45.727	66.020	-26.319	0.000%
11	45.727	-49.515	26.319	-45.727	49.515	-26.319	0.000%
12	30.300	-66.020	52.431	-30.300	66.020	-52.431	0.000%
13	30.300	-49.515	52.431	-30.300	49.515	-52.431	0.000%
14	-0.046	-66.020	62.905	0.046	66.020	-62.905	0.000%
15	-0.046	-49.515	62.905	0.046	49.515	-62.905	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
16	-30.849	-66.020	53.323	30.849	66.020	-53.323	0.000%
17	-30.849	-49.515	53.323	30.849	49.515	-53.323	0.000%
18	-48.012	-66.020	27.693	48.012	66.020	-27.693	0.000%
19	-48.012	-49.515	27.693	48.012	49.515	-27.693	0.000%
20	-47.270	-66.020	-0.131	47.270	66.020	0.131	0.000%
21	-47.270	-49.515	-0.131	47.270	49.515	0.131	0.000%
22	-45.603	-66.020	-26.370	45.603	66.020	26.370	0.000%
23	-45.603	-49.515	-26.370	45.603	49.515	26.370	0.000%
24	-30.335	-66.020	-52.491	30.335	66.020	52.491	0.000%
25	-30.335	-49.515	-52.491	30.335	49.515	52.491	0.000%
26	0.000	-151.636	0.000	-0.000	151.636	-0.000	0.000%
27	-0.004	-151.636	-17.517	0.004	151.636	17.517	0.000%
28	8.277	-151.636	-14.387	-8.277	151.636	14.387	0.000%
29	13.310	-151.636	-7.693	-13.310	151.636	7.693	0.000%
30	14.011	-151.636	-0.014	-14.011	151.636	0.014	0.000%
31	13.174	-151.636	7.595	-13.174	151.636	-7.595	0.000%
32	8.324	-151.636	14.433	-8.324	151.636	-14.433	0.000%
33	-0.017	-151.636	17.484	0.017	151.636	-17.484	0.000%
34	-8.298	-151.636	14.361	8.298	151.636	-14.361	0.000%
35	-13.327	-151.636	7.704	13.327	151.636	-7.704	0.000%
36	-14.022	-151.636	-0.018	14.022	151.636	0.018	0.000%
37	-13.158	-151.636	-7.610	13.158	151.636	7.610	0.000%
38	-8.331	-151.636	-14.445	8.331	151.636	14.445	0.000%
39	-0.015	-55.017	-15.308	0.015	55.017	15.308	0.000%
40	7.455	-55.017	-12.964	-7.455	55.017	12.964	0.000%
41	11.614	-55.017	-6.698	-11.614	55.017	6.698	0.000%
42	11.450	-55.017	-0.007	-11.450	55.017	0.007	0.000%
43	11.090	-55.017	6.383	-11.090	55.017	-6.383	0.000%
44	7.348	-55.017	12.716	-7.348	55.017	-12.716	0.000%
45	-0.011	-55.017	15.256	0.011	55.017	-15.256	0.000%
46	-7.482	-55.017	12.932	7.482	55.017	-12.932	0.000%
47	-11.644	-55.017	6.716	11.644	55.017	-6.716	0.000%
48	-11.464	-55.017	-0.032	11.464	55.017	0.032	0.000%
49	-11.060	-55.017	-6.395	11.060	55.017	6.395	0.000%
50	-7.357	-55.017	-12.730	7.357	55.017	12.730	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	185 - 180	4.163	45	0.206	0.059
T2	180 - 160	3.945	45	0.206	0.059
T3	160 - 140	3.076	45	0.192	0.054
T4	140 - 120	2.289	45	0.165	0.046
T5	120 - 100	1.626	45	0.136	0.037
T6	100 - 80	1.096	45	0.111	0.029
T7	80 - 60	0.682	45	0.083	0.021
T8	60 - 40	0.377	45	0.058	0.015
T9	40 - 20	0.167	45	0.038	0.010
T10	20 - 0	0.042	39	0.017	0.005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
186.000	Lightning Rod 5/8"x4'	45	4.163	0.206	0.059	165145
177.000	(2) DB846F65ZAXY w/ Mount Pipe	45	3.813	0.205	0.059	239216
168.000	VHLP2-11	45	3.419	0.200	0.057	98861

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.000	7770.00 w/ Mount Pipe	45	2.992	0.190	0.053	45350
40.000	GPS_A	45	0.167	0.038	0.010	62313

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	185 - 180	16.953	14	0.838	0.243
T2	180 - 160	16.069	14	0.836	0.242
T3	160 - 140	12.533	14	0.780	0.223
T4	140 - 120	9.332	14	0.669	0.188
T5	120 - 100	6.631	14	0.552	0.150
T6	100 - 80	4.475	14	0.450	0.119
T7	80 - 60	2.788	14	0.338	0.088
T8	60 - 40	1.545	14	0.236	0.063
T9	40 - 20	0.688	3	0.153	0.042
T10	20 - 0	0.172	2	0.069	0.022

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
186.000	Lightning Rod 5/8"x4'	14	16.953	0.838	0.243	42011
177.000	(2) DB846F65ZAXY w/ Mount Pipe	14	15.534	0.833	0.241	63401
168.000	VHLP2-11	14	13.929	0.811	0.234	25025
158.000	7770.00 w/ Mount Pipe	14	12.193	0.771	0.220	11244
40.000	GPS_A	3	0.688	0.153	0.042	15355

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	185	Leg	A325N	0.750	4	0.321	30.101	0.011	1.05	Bolt Tension
		Diagonal	A325X	0.500	1	1.553	8.265	0.188	1.05	Gusset Bearing
		Top Girt	A325N	0.500	1	0.528	8.265	0.064	1.05	Gusset Bearing
T2	180	Leg	A325N	0.750	4	4.452	30.101	0.148	1.05	Bolt Tension
		Diagonal	A325N	0.625	3	3.134	13.806	0.227	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	2.546	13.806	0.184	1.05	Bolt Shear
T3	160	Leg	A325N	0.875	4	14.823	41.556	0.357	1.05	Bolt Tension
		Diagonal	A325N	0.625	3	3.513	13.806	0.254	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	3.313	13.806	0.240	1.05	Bolt Shear
T4	140	Leg	A325N	1.000	4	24.721	54.517	0.453	1.05	Bolt Tension
		Diagonal	A325N	0.625	3	3.586	13.806	0.260	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	3.561	13.806	0.258	1.05	Bolt Shear
T5	120	Leg	A325N	1.000	4	32.047	54.517	0.588	1.05	Bolt Tension
		Diagonal	A325N	0.625	3	4.224	13.806	0.306	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	3.756	13.806	0.272	1.05	Bolt Shear
T6	100	Leg	A325N	1.000	6	26.538	54.517	0.487	1.05	Bolt Tension
		Diagonal	A325N	0.625	3	3.843	13.806	0.278	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	3.786	13.806	0.274	1.05	Bolt Shear
T7	80	Leg	A325N	1.000	6	31.178	54.517	0.572	1.05	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.625	3	4.059	13.806	0.294	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	4.281	13.806	0.310	1.05	Bolt Shear
T8	60	Leg	A325N	1.000	6	35.680	54.517	0.654	1.05	Bolt Tension
		Diagonal	A325N	0.625	3	4.201	13.806	0.304	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	4.663	13.806	0.338	1.05	Bolt Shear
T9	40	Leg	A325N	1.000	8	29.910	54.517	0.549	1.05	Bolt Tension
		Diagonal	A325N	0.625	3	4.149	13.806	0.301	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	4.832	13.806	0.350	1.05	Bolt Shear
T10	20	Diagonal	A325N	0.750	3	6.588	19.880	0.331	1.05	Bolt Shear
		Horizontal	A325N	0.750	2	5.323	19.880	0.268	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	185 - 180	Pipe 2.875" x 0.203" (2.5 STD)	5.000	5.000	63.3 K=1.00	1.704	-3.853	38.586	0.100 [1]
T2	180 - 160	Pipe 2.875" x 0.203" (2.5 STD)	20.000	6.667	84.4 K=1.00	1.704	-26.440	45.528	0.581 [1]
T3	160 - 140	Pipe 3.5" x 0.300" (3 XS)	20.036	6.540	69.1 K=1.00	3.016	-72.672	95.761	0.759 [1]
T4	140 - 120	Pipe 4.5" x 0.337" (4 XS)	20.036	6.540	53.1 K=1.00	4.407	-114.503	161.331	0.710 [1]
T5	120 - 100	Pipe 5.5" x 0.375" (5 EH)	20.042	10.021	66.2 K=1.00	6.038	-145.989	197.229	0.740 [1]
T6	100 - 80	Pipe 5.5" x 0.375" (5 EH)	20.056	10.028	66.2 K=1.00	6.038	-179.753	197.145	0.912 [1]
T7	80 - 60	Pipe 6.625" x 0.340" (6 EHS)	20.052	10.026	54.1 K=1.00	6.713	-210.612	243.965	0.863 [1]
T8	60 - 40	Pipe 6.625" x 0.432" (6 XS)	20.052	10.026	54.8 K=1.00	8.405	-241.219	303.623	0.794 [1]
T9	40 - 20	Pipe 6.625" x 0.432" (6 XS)	20.058	10.029	54.8 K=1.00	8.405	-270.380	303.585	0.891 [1]
T10	20 - 0	Pipe 8.75" x 0.375" (8 EHS)	20.052	9.984	40.4 K=1.00	9.867	-282.914	393.997	0.718 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	185 - 180	L 2 x 2 x 1/4	9.862	4.667	143.2 K=1.00	0.938	-1.805	13.087	0.138 [1]
T2	180 - 160	Pipe 2.375" x 0.154" (2 STD)	7.917	7.695	117.3 K=1.00	1.075	-9.403	17.637	0.533 [1]
T3	160 - 140	Pipe 2.375" x 0.154" (2 STD)	8.419	8.188	124.8 K=1.00	1.075	-10.539	15.580	0.676 [1]
T4	140 - 120	Pipe 2.375" x 0.154" (2 STD)	9.112	8.843	134.8 K=1.00	1.075	-10.258	13.356	0.768 [1]
T5	120 - 100	Pipe 2.875" x 0.203" (2.5 STD)	12.492	12.109	153.4 K=1.00	1.704	-12.645	16.364	0.773 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T6	100 - 80	Pipe 2.875" x 0.203" (2.5 STD)	13.307	12.959	164.1 K=1.00	1.704	-11.528	14.288	0.807 [1]
T7	80 - 60	Pipe 2.875" x 0.203" (2.5 STD)	14.162	13.772	174.4 K=1.00	1.704	-12.177	12.652	0.962 [1]
T8	60 - 40	Pipe 2.875" x 0.276" (2.5 XS)	15.072	14.703	190.9 K=1.00	2.254	-12.603	13.964	0.902 [1]
T9	40 - 20	Pipe 3.5" x 0.216" (3 STD)	16.082	15.729	162.2 K=1.00	2.228	-12.447	19.132	0.651 [1]
T10	20 - 0	Pipe 3.5" x 0.216" (3 STD)	24.260	12.130	125.1 K=1.00	2.228	-19.765	32.170	0.614 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160	Pipe 1.9" x 0.145" (1.5 STD)	8.528	4.144	79.9 K=1.00	0.799	-5.017	22.564	0.222 [1]
T3	160 - 140	Pipe 1.9" x 0.145" (1.5 STD)	9.945	4.827	93.0 K=1.00	0.799	-6.599	19.107	0.345 [1]
T4	140 - 120	Pipe 2.375" x 0.154" (2 STD)	12.028	5.827	88.8 K=1.00	1.075	-7.074	27.156	0.260 [1]
T5	120 - 100	Pipe 2.375" x 0.154" (2 STD)	13.833	6.688	102.0 K=1.00	1.075	-7.473	22.613	0.330 [1]
T6	100 - 80	Pipe 2.375" x 0.154" (2 STD)	16.250	7.896	120.4 K=1.00	1.075	-7.557	16.753	0.451 [1]
T7	80 - 60	Pipe 2.875" x 0.203" (2.5 STD)	18.792	9.120	115.5 K=1.00	1.704	-8.500	28.852	0.295 [1]
T8	60 - 40	Pipe 2.875" x 0.203" (2.5 STD)	21.292	10.370	131.3 K=1.00	1.704	-9.183	22.315	0.412 [1]
T9	40 - 20	Pipe 2.875" x 0.203" (2.5 STD)	23.859	11.654	147.6 K=1.00	1.704	-9.337	17.669	0.528 [1]
T10	20 - 0	Pipe 3.5" x 0.216" (3 STD)	25.177	12.224	126.1 K=1.00	2.228	-10.582	31.677	0.334 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	185 - 180	L 2 x 2 x 1/4 KL/R > 200 (C) - 4	8.500	8.010	245.8 K=1.00	0.938	-0.362	4.442	0.082 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	Rohn 1.5" x 11 ga	6.294	5.930	145.3 K=1.00	0.520	-4.912	5.568	0.882 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	2L 2 x 2 x 1/4 (1/4) 2L 'a' > 62.035 in - 281	11.466	10.730	214.1 K=1.00	1.875	-4.474	11.636	0.384 [1]

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.294	6.294	121.3 K=1.00	0.799	-0.032	12.272	0.003 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	Pipe 2.875" x 0.203" (2.5 STD)	15.046	15.046	190.6 K=1.00	1.704	-0.079	10.600	0.007 [1]

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	180 - 160	L 2 x 2 x 1/8	4.264	4.264	128.7 K=1.00	0.484	-0.006	8.369	0.001 [1]
T3	160 - 140	L 2 x 2 x 1/8	4.293	4.293	129.6 K=1.00	0.484	-0.009	8.258	0.001 [1]
T4	140 - 120	L 2 x 2 x 1/8	6.014	6.014	181.5 K=1.00	0.484	-0.007	4.207	0.002 [1]
T5	120 - 100	L 2 x 2 x 1/8	6.917	6.917	208.8 K=1.00	0.484	-0.008	3.180	0.002 [1]
T6	100 - 80	L 2.5 x 2.5 x 3/16	8.125	8.125	197.0	0.902	-0.010	6.654	0.001 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	80 - 60	L 3 x 3 x 3/16	9.396	9.396	K=1.00 189.1	1.090	-0.012	8.725	0.001 [1]
T8	60 - 40	L 3.5 x 3.5 x 1/4	10.646	10.646	K=1.00 184.1	1.690	-0.014	14.275	0.001 [1]
T9	40 - 20	L 3.5 x 3.5 x 1/4	11.930	11.930	K=1.00 206.3	1.690	-0.015	11.368	0.001*[1]
T10	20 - 0	Pipe 3.5" x 0.216" (3 STD)	12.589	12.589	K=1.00 129.8 K=1.00	2.228	-0.017	29.626	0.001 [1]

* DL controls
[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	185 - 180	Pipe 2.875" x 0.203" (2.5 STD)	5.000	5.000	63.3	1.704	1.239	46.009	0.027 [1]
T2	180 - 160	Pipe 2.875" x 0.203" (2.5 STD)	20.000	6.667	84.4	1.704	17.808	76.682	0.232 [1]
T3	160 - 140	Pipe 3.5" x 0.300" (3 XS)	20.036	6.540	69.1	3.016	59.291	135.717	0.437 [1]
T4	140 - 120	Pipe 4.5" x 0.337" (4 XS)	20.036	6.540	53.1	4.407	98.885	198.335	0.499 [1]
T5	120 - 100	Pipe 5.5" x 0.375" (5 EH)	20.042	10.021	66.2	6.038	128.189	271.699	0.472 [1]
T6	100 - 80	Pipe 5.5" x 0.375" (5 EH)	20.056	10.028	66.2	6.038	159.229	271.699	0.586 [1]
T7	80 - 60	Pipe 6.625" x 0.340" (6 EHS)	20.052	10.026	54.1	6.713	187.066	302.097	0.619 [1]
T8	60 - 40	Pipe 6.625" x 0.432" (6 XS)	20.052	10.026	54.8	8.405	214.081	378.222	0.566 [1]
T9	40 - 20	Pipe 6.625" x 0.432" (6 XS)	20.058	10.029	54.8	8.405	239.283	378.222	0.633 [1]
T10	20 - 0	Pipe 8.75" x 0.375" (8 EHS)	20.052	0.084	0.3	9.867	276.019	443.995	0.622 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	185 - 180	L 2 x 2 x 1/4	9.862	4.667	94.4	0.586	1.553	28.583	0.054 [1]
T2	180 - 160	Pipe 2.375" x 0.154" (2 STD)	7.917	7.695	117.3	1.075	9.330	48.354	0.193 [1]
T3	160 - 140	Pipe 2.375" x 0.154" (2 STD)	8.419	8.188	124.8	1.075	10.457	48.354	0.216 [1]
T4	140 - 120	Pipe 2.375" x 0.154" (2 STD)	8.651	8.383	127.8	1.075	10.659	48.354	0.220 [1]
T5	120 - 100	Pipe 2.875" x 0.203" (2.5 STD)	12.163	11.781	149.2	1.704	12.505	76.682	0.163 [1]
T6	100 - 80	Pipe 2.875" x 0.203" (2.5 STD)	12.890	12.543	158.9	1.704	11.302	76.682	0.147 [1]
T7	80 - 60	Pipe 2.875" x 0.203" (2.5 STD)	14.162	13.772	174.4	1.704	11.864	76.682	0.155 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T8	60 - 40	Pipe 2.875" x 0.276" (2.5 XS)	15.072	14.703	190.9	2.254	12.153	101.409	0.120 [1]
T9	40 - 20	Pipe 3.5" x 0.216" (3 STD)	16.082	15.729	162.2	2.228	11.926	100.281	0.119 [1]
T10	20 - 0	Pipe 3.5" x 0.216" (3 STD)	24.260	12.130	125.1	2.228	18.802	100.281	0.187 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160	Pipe 1.9" x 0.145" (1.5 STD)	8.528	4.144	79.9	0.799	5.092	35.976	0.142 [1]
T3	160 - 140	Pipe 1.9" x 0.145" (1.5 STD)	9.945	4.827	93.0	0.799	6.627	35.976	0.184 [1]
T4	140 - 120	Pipe 2.375" x 0.154" (2 STD)	12.028	5.827	88.8	1.075	7.122	48.354	0.147 [1]
T5	120 - 100	Pipe 2.375" x 0.154" (2 STD)	13.833	6.688	102.0	1.075	7.511	48.354	0.155 [1]
T6	100 - 80	Pipe 2.375" x 0.154" (2 STD)	16.250	7.896	120.4	1.075	7.572	48.354	0.157 [1]
T7	80 - 60	Pipe 2.875" x 0.203" (2.5 STD)	18.792	9.120	115.5	1.704	8.563	76.682	0.112 [1]
T8	60 - 40	Pipe 2.875" x 0.203" (2.5 STD)	21.292	10.370	131.3	1.704	9.325	76.682	0.122 [1]
T9	40 - 20	Pipe 2.875" x 0.203" (2.5 STD)	23.859	11.654	147.6	1.704	9.664	76.682	0.126 [1]
T10	20 - 0	Pipe 3.5" x 0.216" (3 STD)	25.177	12.224	126.1	2.228	10.645	100.281	0.106 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	185 - 180	L 2 x 2 x 1/4	8.500	8.010	162.8	0.586	0.528	28.583	0.018 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T10	20 - 0	Rohn 1.5" x 11 ga	6.294	5.930	145.3	0.520	4.912	23.411	0.210 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	2L 2 x 2 x 1/4 (1/4) 2L 'a' > 62.035 in - 287	11.466	10.730	211.5	1.875	4.474	84.375	0.053 [1]

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.294	6.294	121.3	0.799	0.020	35.976	0.001 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	Pipe 2.875" x 0.203" (2.5 STD)	15.046	15.046	190.6	1.704	0.070	76.682	0.001 [1]

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	180 - 160	L 2 x 2 x 1/8	4.264	4.264	81.7	0.484	0.006	15.694	0.000 [1]
T3	160 - 140	L 2 x 2 x 1/8	4.293	4.293	82.3	0.484	0.007	15.694	0.000 [1]
T4	140 - 120	L 2 x 2 x 1/8	5.334	5.334	102.2	0.484	0.006	15.694	0.000 [1]
T5	120 - 100	L 2 x 2 x 1/8	6.354	6.354	121.8	0.484	0.003	15.694	0.000 [1]
T6	100 - 80	L 2.5 x 2.5 x 3/16	7.479	7.479	115.3	0.902	0.001	29.225	0.000 [1]
T7	80 - 60	L 3 x 3 x 3/16	8.771	8.771	112.0	1.090	0.001	35.311	0.000 [1]
T10	20 - 0	Pipe 3.5" x 0.216" (3 STD)	12.589	12.589	129.8	2.228	0.000	70.197	0.000 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

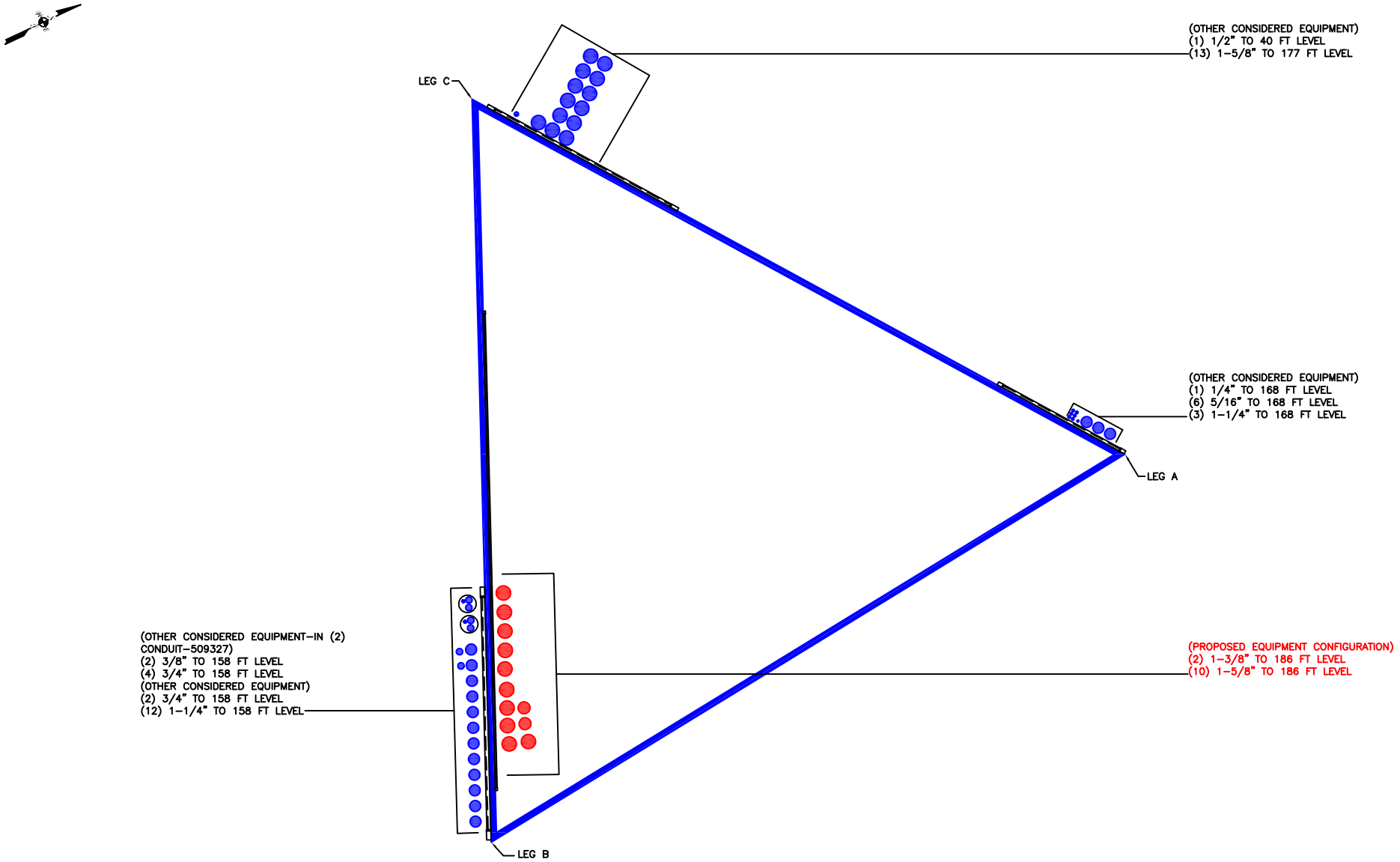
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	185 - 180	Leg	Pipe 2.875" x 0.203" (2.5	2	-3.853	40.516	9.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
			STD)					
T2	180 - 160	Leg	Pipe 2.875" x 0.203" (2.5 STD)	13	-26.440	47.805	55.3	Pass
T3	160 - 140	Leg	Pipe 3.5" x 0.300" (3 XS)	54	-72.672	100.549	72.3	Pass
T4	140 - 120	Leg	Pipe 4.5" x 0.337" (4 XS)	93	-114.503	169.398	67.6	Pass
T5	120 - 100	Leg	Pipe 5.5" x 0.375" (5 EH)	132	-145.989	207.090	70.5	Pass
T6	100 - 80	Leg	Pipe 5.5" x 0.375" (5 EH)	159	-179.753	207.002	86.8	Pass
T7	80 - 60	Leg	Pipe 6.625" x 0.340" (6 EHS)	186	-210.612	256.163	82.2	Pass
T8	60 - 40	Leg	Pipe 6.625" x 0.432" (6 XS)	213	-241.219	318.804	75.7	Pass
T9	40 - 20	Leg	Pipe 6.625" x 0.432" (6 XS)	240	-270.380	318.764	84.8	Pass
T10	20 - 0	Leg	Pipe 8.75" x 0.375" (8 EHS)	267	-282.914	413.697	68.4	Pass
T1	185 - 180	Diagonal	L 2 x 2 x 1/4	10	-1.805	13.742	13.1	Pass
							17.9 (b)	
T2	180 - 160	Diagonal	Pipe 2.375" x 0.154" (2 STD)	17	-9.403	18.519	50.8	Pass
T3	160 - 140	Diagonal	Pipe 2.375" x 0.154" (2 STD)	59	-10.539	16.359	64.4	Pass
T4	140 - 120	Diagonal	Pipe 2.375" x 0.154" (2 STD)	99	-10.258	14.024	73.1	Pass
T5	120 - 100	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	138	-12.645	17.183	73.6	Pass
T6	100 - 80	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	165	-11.528	15.003	76.8	Pass
T7	80 - 60	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	192	-12.177	13.285	91.7	Pass
T8	60 - 40	Diagonal	Pipe 2.875" x 0.276" (2.5 XS)	219	-12.603	14.663	86.0	Pass
T9	40 - 20	Diagonal	Pipe 3.5" x 0.216" (3 STD)	246	-12.447	20.089	62.0	Pass
T10	20 - 0	Diagonal	Pipe 3.5" x 0.216" (3 STD)	279	-19.765	33.778	58.5	Pass
T2	180 - 160	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	19	-5.017	23.693	21.2	Pass
T3	160 - 140	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	58	-6.599	20.062	32.9	Pass
T4	140 - 120	Horizontal	Pipe 2.375" x 0.154" (2 STD)	97	-7.074	28.514	24.8	Pass
T5	120 - 100	Horizontal	Pipe 2.375" x 0.154" (2 STD)	136	-7.473	23.744	31.5	Pass
T6	100 - 80	Horizontal	Pipe 2.375" x 0.154" (2 STD)	163	-7.557	17.591	43.0	Pass
T7	80 - 60	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	190	-8.500	30.294	28.1	Pass
							29.5 (b)	
T8	60 - 40	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	217	-9.183	23.431	39.2	Pass
T9	40 - 20	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	244	-9.337	18.553	50.3	Pass
T10	20 - 0	Horizontal	Pipe 3.5" x 0.216" (3 STD)	275	-10.582	33.261	31.8	Pass
T1	185 - 180	Top Girt	L 2 x 2 x 1/4	4	-0.362	4.664	7.8	Pass
T10	20 - 0	Redund Horz 1 Bracing	Rohn 1.5" x 11 ga	280	-4.912	5.846	84.0	Pass
T10	20 - 0	Redund Diag 1 Bracing	2L 2 x 2 x 1/4 (1/4)	281	-4.474	12.218	36.6	Pass
T10	20 - 0	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	282	-0.032	12.885	0.2	Pass
T10	20 - 0	Redund Hip Diagonal 1 Bracing	Pipe 2.875" x 0.203" (2.5 STD)	283	-0.079	11.130	0.7	Pass
T2	180 - 160	Inner Bracing	L 2 x 2 x 1/8	27	-0.006	8.787	0.4	Pass
T3	160 - 140	Inner Bracing	L 2 x 2 x 1/8	66	-0.006	6.461	0.5	Pass
T4	140 - 120	Inner Bracing	L 2 x 2 x 1/8	105	-0.007	4.417	0.6	Pass
T5	120 - 100	Inner Bracing	L 2 x 2 x 1/8	143	-0.008	3.339	0.6	Pass
T6	100 - 80	Inner Bracing	L 2.5 x 2.5 x 3/16	171	-0.010	6.987	0.5	Pass
T7	80 - 60	Inner Bracing	L 3 x 3 x 3/16	198	-0.012	9.162	0.6	Pass
T8	60 - 40	Inner Bracing	L 3.5 x 3.5 x 1/4	225	-0.014	14.989	0.5	Pass
T9	40 - 20	Inner Bracing	L 3.5 x 3.5 x 1/4	252	-0.015	11.368	0.6	Pass
T10	20 - 0	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	296	-0.016	31.107	0.5	Pass
							Summary	
						Leg (T6)	86.8	Pass
						Diagonal (T7)	91.7	Pass
						Horizontal (T9)	50.3	Pass
						Top Girt (T1)	7.8	Pass
						Redund Horz 1 Bracing (T10)	84.0	Pass
						Redund Diag 1 Bracing	36.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$øP_{allow}$ K	% Capacity	Pass Fail
						(T10) Redund Hip 1 Bracing	0.2	Pass
						(T10) Redund Hip Diagonal 1 Bracing	0.7	Pass
						(T10) Inner Bracing (T5)	0.6	Pass
						Bolt Checks	62.3	Pass
						RATING =	**91.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 40 FT LEVEL
(13) 1-5/8" TO 177 FT LEVEL
LEG C
(OTHER CONSIDERED EQUIPMENT)
(1) 1/4" TO 168 FT LEVEL
(6) 5/16" TO 168 FT LEVEL
(3) 1-1/4" TO 168 FT LEVEL
LEG A
(OTHER CONSIDERED EQUIPMENT-IN (2) CONDUIT-509327)
(2) 3/8" TO 158 FT LEVEL
(4) 3/4" TO 158 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 3/4" TO 158 FT LEVEL
(12) 1-1/4" TO 158 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-3/8" TO 186 FT LEVEL
(10) 1-5/8" TO 186 FT LEVEL
LEG B

APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info	
BU #	806362
Site Name	NHV 108 943133
Order #	529724 Rev.0

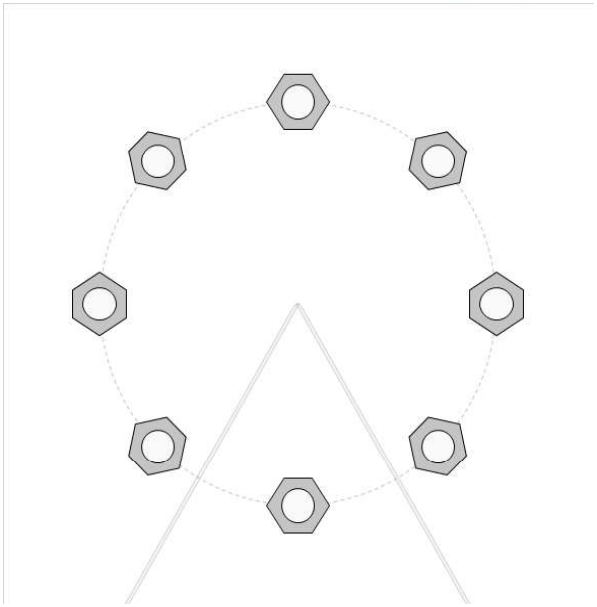
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	0.00	274.22
Shear Force (kips)	0.00	34.81

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

(8) 1" ø bolts (A449 N; Fy=92 ksi, Fu=120 ksi)

l_{ar} (in): 0

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_t = 34.28	ϕPn_t = 54.54	**Stress Rating**
Vu = 4.35	ϕVn = 35.34	**39.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Pier and Pad Foundation

BU # :	806362
Site Name:	NHV 108943133
App. Number:	529724 Rev.0

TIA-222 Revision:	H
Tower Type:	Self Support

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	311.26	kips
Compression Shear, Vu_comp:	38.15	kips
Uplift, P_{uplift}:	274.22	kips
Uplift Shear, V_{u_uplift}:	34.81	kips
Tower Height, **H**:	185	ft
Base Face Width, **BW**:	27.6771	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	3	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	16	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	13	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	12.5	ft
Pad Width, **W**:	8.75	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom), **Sp**:	7	
Pad Rebar Quantity (Bottom), **mp**:	10	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	135	pcf
Ultimate Gross Bearing, Qult:	24.000	ksf
Cohesion, **Cu**:	7.000	ksf
Friction Angle, φ:	0	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.4	
Neglected Depth, **N**:	3.34	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Uplift (kips)	943.03	274.22	**27.7%**	**Pass**
Lateral (Sliding) (kips)	444.72	34.81	**7.5%**	**Pass**
Bearing Pressure (ksf)	18.00	6.15	**32.6%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	1152.18	419.65	**34.7%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	880.95	382.91	**41.4%**	**Pass**
Pier Compression (kip)	1956.74	325.26	**15.8%**	**Pass**
*Pad Flexure (kip*ft)*	513.41	147.95	**27.4%**	**Pass**
Pad Shear - 1-way (kips)	169.84	44.19	**24.8%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.075	**43.4%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	1026.82	251.79	**23.4%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.106	**61.4%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	1026.82	229.75	**21.3%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating*:	**32.6%**
Structural Rating*:	**61.4%**

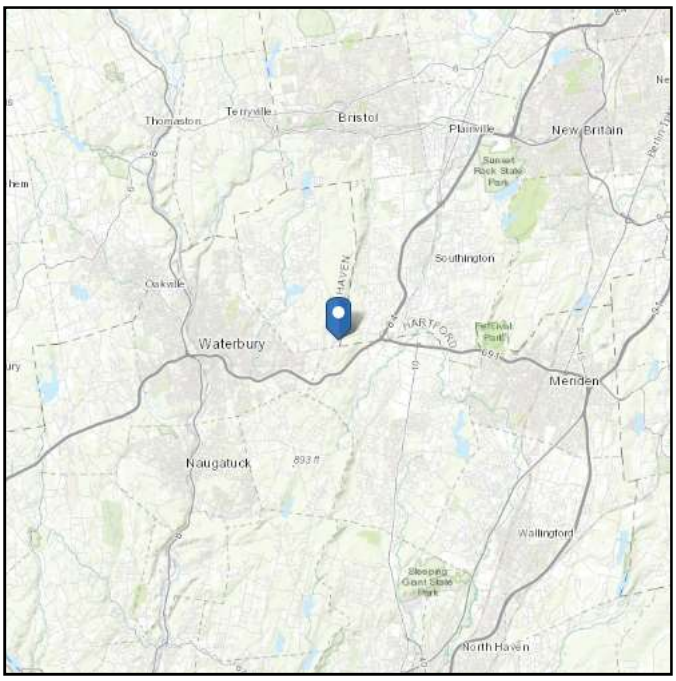
Version 3.4.0

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 745.17 ft (NAVD 88)
Latitude: 41.559558
Longitude: -72.946972



Wind

Results:

Wind Speed:	125 Vmph Per Jurisdiction
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Mon Oct 12 2020

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Oct 12 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.

BU:	806362	Structure:	A
WO:	1890935		
Order:	529724	Rev:	0

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	47.559558	+	47	33	34.41
Long:	-72.946972	-	72	56	49.10

Code and Site Parameters

Seismic Design Code:	ASCE 7-10	
Site Soil:	D	Stiff Soil (Default)
Risk Category:	II	

USGS Seismic Reference			
	S_S:	0.1870	g
	S_1:	0.0640	g
	T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1
Acceleration-based site coefficient, F_a:	1.6000
Velocity-based site coefficient, F_v:	2.4000

Design spectral response acceleration short period, S_{DS}:	0.1995	g
Design spectral response acceleration 1 s period, S_{D1}:	0.1024	g

Seismic Design Category Based on S_{DS}:	B
Seismic Design Category Based on S_{D1}:	B
Seismic Design Category Based on S_1:	N/A

Controlling Seismic Design Category:	B

Exhibit E

Mount Analysis

Date: **October 9, 2020**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300,
Charlotte, NC 28277
704-405-6589

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Anchor**	
	Carrier Site Number:	CT11494B
	Carrier Site Name:	CT494/CCastle-Wolcott-SST
Crown Castle Designation:	**Crown Castle BU Number:**	806362
	Crown Castle Site Name:	NHV 108 943133
	Crown Castle JDE Job Number:	620133
	Crown Castle Order Number:	529724 Rev. 0
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:**	1039-Z0001-B
Site Data:	**Intersection of Rte 322/Meridian Rd Wolcott Site, Wolcott, New Haven County, CT 06716 Latitude 41°33'34.41" Longitude -72°56'49.10"**	
Structure Information:	**Tower Height & Type:**	**185.0 ft Self Support**
	Mount Elevation:	**186.0 ft**
	Mount Type:	**14.0 ft Sector Frame**

Dear Darcy Tarr,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of T-Mobile's 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 for fall protection or rigging 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:

Sector Frame **Sufficient**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jacques Grimaldi, M.S., P.E.

Respectfully Submitted by:
John S. Stevens, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. PEN.0024705

Date Stamped: 10/09/20

TABLE OF CONTENTS

1) INTRODUCTION

This is a existing 3 sector 14.0 ft Sector Frame, designed by ROHN.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.187
Seismic S_1:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
186.0	186.0	3	ERICSSON	AIR 32 B2A/B66AA	14.0 ft Sector Frame {Addition of (1) 8' pipe mount per sector}
		3	ERICSSON	AIR6449 B41_T-MOBILE	
		3	RFS/CELWAVE	APXVAARR24_43-U-NA20	
		3	COMMSCOPE	SDX1926Q-43	
		3	ERICSSON	KRY 112 144/1	
		3	ERICSSON	RADIO 4449 B71 B85A_T-MOBILE	
		3	ERICSSON	RRUS 4415 B25	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	529724 Rev. 0	CCI Sites
Loading Documents	T-Mobile	RFDS Version:3	TSA
Tower Manufacturer Drawings	ROHN	529684	CCI Sites

3.1) Analysis Method

RISA-3D (Version 18.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool V2.1.4, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

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

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A529 (GR 36)
HSS (Rectangular)	ASTM A500 (GR. C-50)
Pipe	ASTM A500 (GR. C-50) and A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP4	186.0	55.4	Pass
	Standoff Bracing(s)	M9		53.6	Pass
	Standoff(s)	M3		33.5	Pass
	Horizontal(s)	M1		16.3	Pass
	Mount Connection(s)	--		93.5	Pass

Structure Rating (max from all components) =	93.5%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[2]	Notes
N31	Existing	1,784.3	Leg	Pipe_2.5 STD	2,276.4	1,2

Notes:

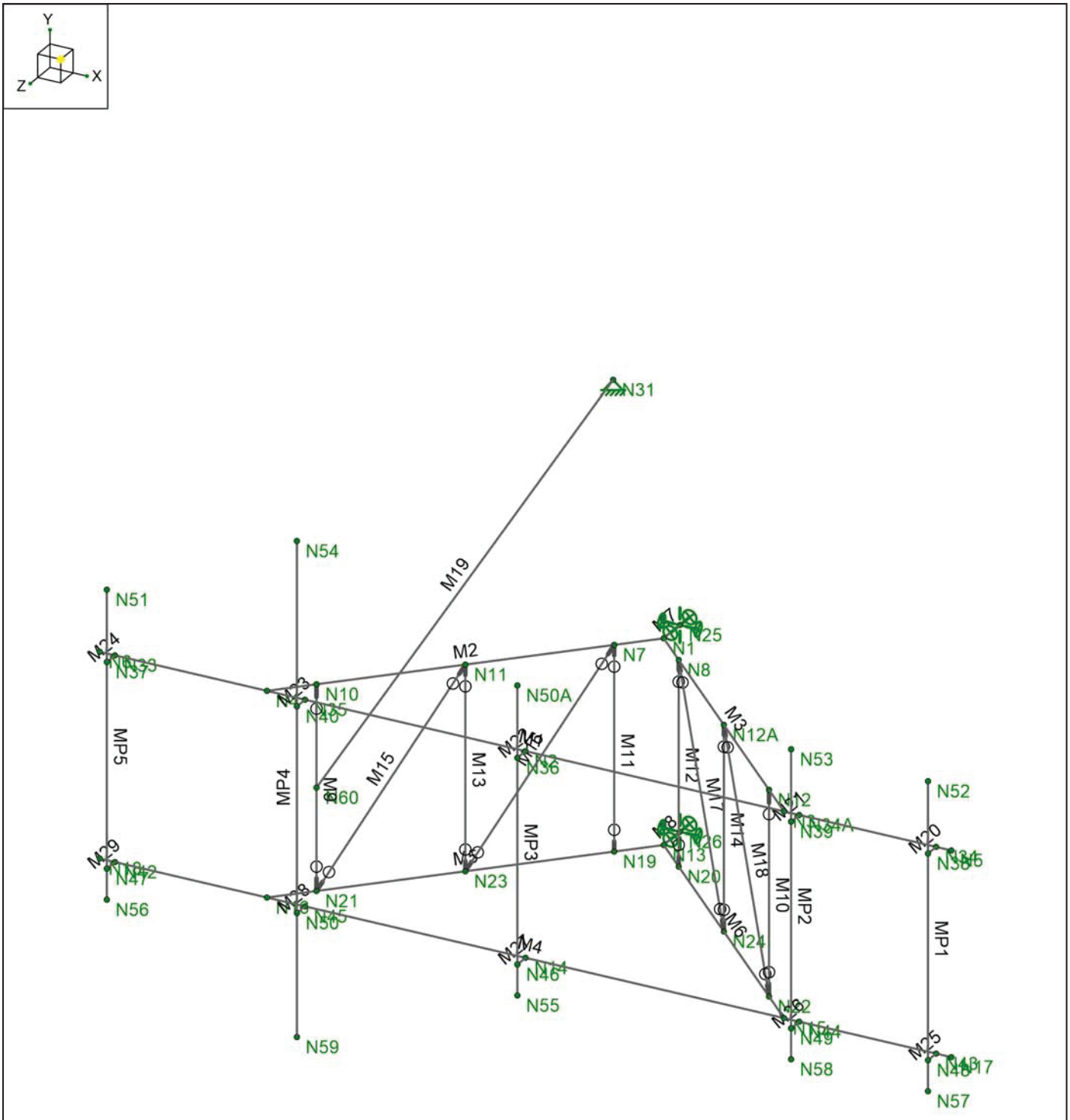
1) Tieback connection point is within 25% of either end of the connected tower member
2) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

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

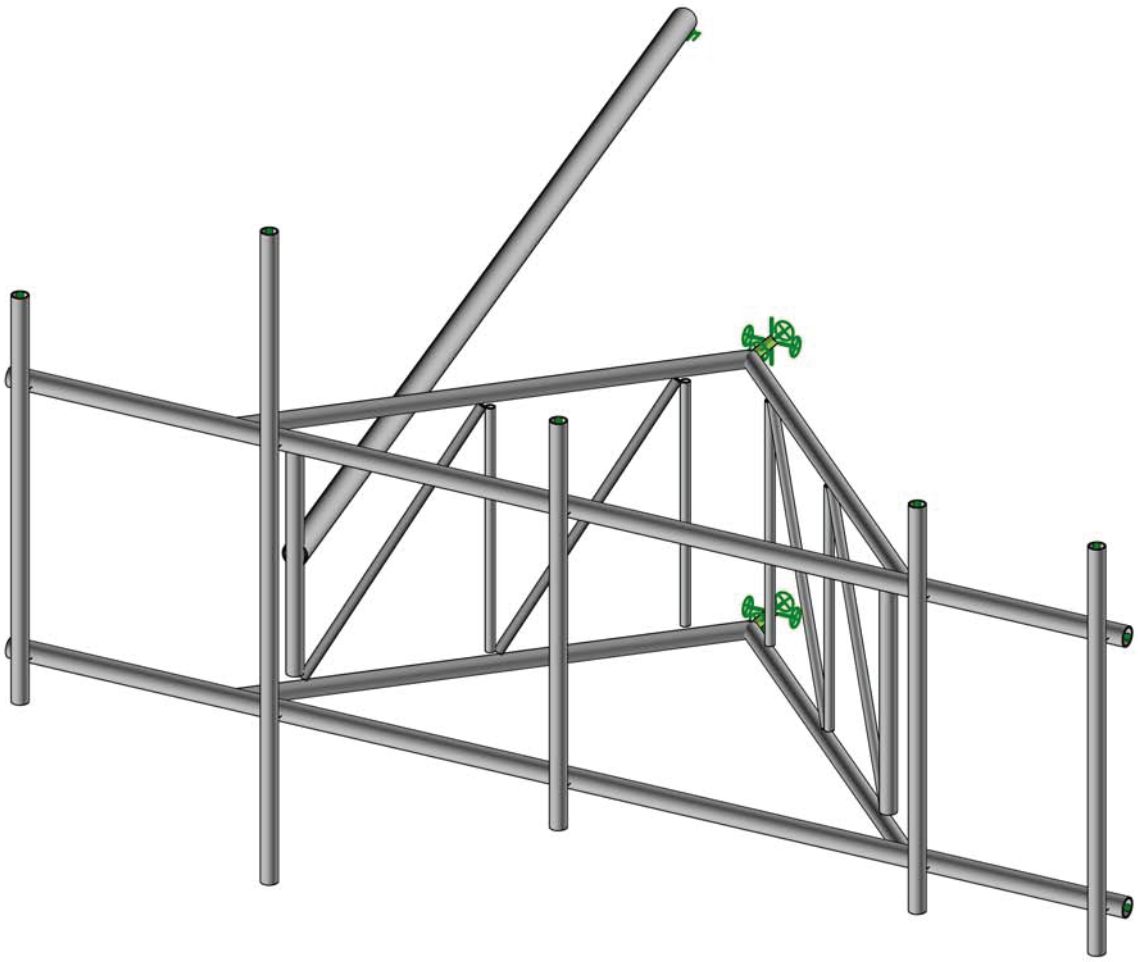
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Infinigy Engineering, PLLC	806362	Wire Frame
JG		Oct 09, 2020
1039-Z0001-B		806362_loaded.r3d



Envelope Only Solution

Infinigy Engineering, PLLC	806362	Rendered
JG		Oct 09, 2020
1039-Z0001-B		806362_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	T-Mobile
Engineer:	Jacques Grimaldi

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil	
Ground Elevation:	745	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	186.0	ft
Tower Height AGL:	185.0	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_e):	0.97	*Rev H Only
Rooftop Speed-Up (K_s):	1.00	*Rev H Only
Topographic Factor (K_{zt}):	1.00	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	125	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	106.69	psf
Round Pressure:	64.02	psf
Ice Wind Pressure:	10.24	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.19	g
1-Second Accel. (S_1):	0.06	g
Short-Period Design (S_{DS}):	0.20	
1-Second Design (S_{D1}):	0.10	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	

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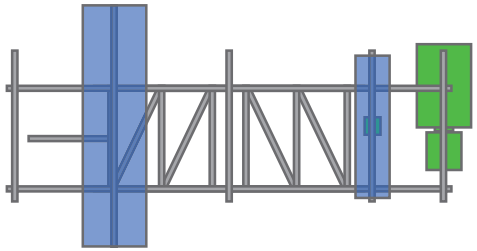
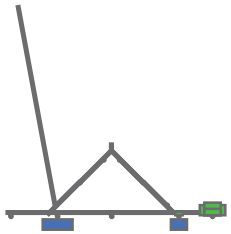
Infinigy Load Calculator V2.1.4

Program Inputs

ELEVATION VIEW



PLAN VIEW



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APPURTENANCE INFORMATION

Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
ERICSSON AIR 32 B2A/B66AA	186.0	3	0.90	53.35	6.51	4.71	312.56	226.25	132.20	13.11	MP2
ERICSSON AIR6449 B41_T-MOBILE	186.0	3	0.90	53.35	5.66	2.48	271.62	118.86	114.63	11.37	MP1
RFS/CELWAVE APXVAARR24_43-U-NA20	186.0	3	0.90	53.35	14.69	6.87	705.47	330.01	128.00	12.70	MP4
COMMSCOPE SDX1926Q-43	186.0	3	0.90	53.35	0.24	0.10	11.56	4.86	6.17	0.61	MP1
ERICSSON KRY 112 144/1	186.0	3	0.90	53.35	0.35	0.18	16.80	8.40	11.00	1.09	MP2
RICSSON RADIO 4449 B71 B85A_T-MOBILE	186.0	3	0.90	53.35	1.97	1.59	94.59	76.17	73.21	7.26	MP1
ERICSSON TME-RRUS 4415 B25	186.0	3	0.90	53.35	1.64	0.68	78.95	32.59	44.00	4.36	MP1

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N6	N5	Horizontal	None	None	A500 Gr. C	Typical
2	M2	N1	N4	Standoff	None	None	A500 Gr. C	Typical
3	M3	N1	N3	Standoff	None	None	A500 Gr. C	Typical
4	M4	N18	N17	Horizontal	None	None	A500 Gr. C	Typical
5	M5	N13	N16	Standoff	None	None	A500 Gr. C	Typical
6	M6	N13	N15	Standoff	None	None	A500 Gr. C	Typical
7	M7	N25	N1	RIGID	None	None	RIGID	Typical
8	M8	N26	N13	RIGID	None	None	RIGID	Typical
9	M9	N10	N21	Tieback Mount Pipe	None	None	A500 Gr. C	Typical
10	M10	N12	N22	Tieback Mount Pipe	None	None	A500 Gr. C	Typical
11	M11	N7	N19	Standoff Bracing	None	None	A500 Gr. C	Typical
12	M12	N8	N20	Standoff Bracing	None	None	A500 Gr. C	Typical
13	M13	N11	N23	Standoff Bracing	None	None	A500 Gr. C	Typical
14	M14	N12A	N24	Standoff Bracing	None	None	A500 Gr. C	Typical
15	M15	N11	N21	Standoff Bracing	None	None	A500 Gr. C	Typical
16	M16	N7	N23	Standoff Bracing	None	None	A500 Gr. C	Typical
17	M17	N8	N24	Standoff Bracing	None	None	A500 Gr. C	Typical
18	M18	N12A	N22	Standoff Bracing	None	None	A500 Gr. C	Typical
19	M19	N60	N31	Tieback	None	None	A500 Gr. C	Typical
20	M20	N38	N34	RIGID	None	None	RIGID	Typical
21	M21	N39	N34A	RIGID	None	None	RIGID	Typical
22	M22	N36	N2	RIGID	None	None	RIGID	Typical
23	M23	N40	N35	RIGID	None	None	RIGID	Typical
24	M24	N37	N33	RIGID	None	None	RIGID	Typical
25	M25	N48	N43	RIGID	None	None	RIGID	Typical
26	M26	N49	N44	RIGID	None	None	RIGID	Typical
27	M27	N46	N14	RIGID	None	None	RIGID	Typical
28	M28	N50	N45	RIGID	None	None	RIGID	Typical
29	M29	N47	N42	RIGID	None	None	RIGID	Typical
30	MP5	N51	N56	Antenna Mount Pipe	None	None	A53 Gr.B	Typical
31	MP4	N54	N59	Antenna Mount Pipe	None	None	A53 Gr.B	Typical
32	MP3	N50A	N55	Antenna Mount Pipe	None	None	A53 Gr.B	Typical
33	MP2	N53	N58	Antenna Mount Pipe	None	None	A53 Gr.B	Typical
34	MP1	N52	N57	Antenna Mount Pipe	None	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		12	42	0
3	Total General		12	42	0
4					
5	Hot Rolled Steel				
6	A500 Gr. C	PIPE_1.0	8	321.2	42.714
7	A500 Gr. C	PIPE_2.0	6	358.5	103.691
8	A500 Gr. C	PIPE_2.5	2	336	153.397
9	A500 Gr. C	PIPE_3.0	1	170.6	100.148
10	A53 Gr.B	PIPE_2.0	5	336	97.183
11	Total HR Steel		22	1522.3	497.133

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	Self Weight	DL		-1			10	
2	Wind Load AZI 0	WLZ					20	
3	Wind Load AZI 30	None					20	
4	Wind Load AZI 60	None					20	
5	Wind Load AZI 90	WLX					20	
6	Wind Load AZI 120	None					20	
7	Wind Load AZI 150	None					20	
8	Wind Load AZI 180	None					20	
9	Wind Load AZI 210	None					20	
10	Wind Load AZI 240	None					20	
11	Wind Load AZI 270	None					20	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
12	Wind Load AZI 300	None					20	
13	Wind Load AZI 330	None					20	
14	Distr. Wind Load Z	WLZ						34
15	Distr. Wind Load X	WLX						34
16	Ice Weight	OL1					10	34
17	Ice Wind Load AZI 0	OL2					20	
18	Ice Wind Load AZI 30	None					20	
19	Ice Wind Load AZI 60	None					20	
20	Ice Wind Load AZI 90	OL3					20	
21	Ice Wind Load AZI 120	None					20	
22	Ice Wind Load AZI 150	None					20	
23	Ice Wind Load AZI 180	None					20	
24	Ice Wind Load AZI 210	None					20	
25	Ice Wind Load AZI 240	None					20	
26	Ice Wind Load AZI 270	None					20	
27	Ice Wind Load AZI 300	None					20	
28	Ice Wind Load AZI 330	None					20	
29	Distr. Ice Wind Load Z	OL2						34
30	Distr. Ice Wind Load X	OL3						34
31	Seismic Load Z	ELZ			-0.099		10	
32	Seismic Load X	ELX	-0.099				10	
33	Service Live Loads	LL				1		
34	Maintenance Load 1	LL				1		
35	Maintenance Load 2	LL				1		
36	Maintenance Load 3	LL				1		
37	Maintenance Load 4	LL				1		
38	Maintenance Load 5	LL				1		

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4								
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15			
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1		
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15			
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-0.866	15	-0.5		
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1		
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1						
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30	
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	0.866	30	0.5
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	16	1	21	1	29	-0.5	30	0.866
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.24	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.24	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.24	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.24	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.24	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.24	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.24	31	-1	32					
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.24	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.24	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.24	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.24	31	0.5	32	-0.866				
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.24	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.86	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.86	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.86	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.86	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.86	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.86	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.86	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.86	31	-0.866	32	-0.5				
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.86	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.86	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.86	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.86	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.23	14	0.23	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.23	14	0.2	15	0.115	33	1.5
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.23	14	0.115	15	0.2	33	1.5
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.23	14		15	0.23	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.23	14	-0.115	15	0.2	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.23	14	-0.2	15	0.115	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.23	14	-0.23	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.23	14	-0.2	15	-0.115	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.23	14	-0.115	15	-0.2	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.23	14		15	-0.23	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.23	14	0.115	15	-0.2	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.23	14	0.2	15	-0.115	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.058	14	0.058	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.058	14	0.05	15	0.029
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.058	14	0.029	15	0.05
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.058	14		15	0.058
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.058	14	-0.029	15	0.05
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.058	14	-0.05	15	0.029
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.058	14	-0.058	15	
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.058	14	-0.05	15	-0.029
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.058	14	-0.029	15	-0.05
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.058	14		15	-0.058
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.058	14	0.029	15	-0.05
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.058	14	0.05	15	-0.029
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.058	14	0.058	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.058	14	0.05	15	0.029
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.058	14	0.029	15	0.05
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.058	14		15	0.058
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.058	14	-0.029	15	0.05
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.058	14	-0.05	15	0.029
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.058	14	-0.058	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.058	14	-0.05	15	-0.029
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.058	14	-0.029	15	-0.05

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.058	14		15	-0.058
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.058	14	0.029	15	-0.05
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.058	14	0.05	15	-0.029
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.058	14	0.058	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.058	14	0.05	15	0.029
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.058	14	0.029	15	0.05
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.058	14		15	0.058
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.058	14	-0.029	15	0.05
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.058	14	-0.05	15	0.029
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.058	14	-0.058	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.058	14	-0.05	15	-0.029
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.058	14	-0.029	15	-0.05
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.058	14		15	-0.058
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.058	14	0.029	15	-0.05
111	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.058	14	0.05	15	-0.029
112	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.058	14	0.058	15	
113	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.058	14	0.05	15	0.029
114	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.058	14	0.029	15	0.05
115	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.058	14		15	0.058
116	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.058	14	-0.029	15	0.05
117	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.058	14	-0.05	15	0.029
118	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.058	14	-0.058	15	
119	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.058	14	-0.05	15	-0.029
120	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.058	14	-0.029	15	-0.05
121	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.058	14		15	-0.058
122	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.058	14	0.029	15	-0.05
123	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.058	14	0.05	15	-0.029
124	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.058	14	0.058	15	
125	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.058	14	0.05	15	0.029
126	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.058	14	0.029	15	0.05
127	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.058	14		15	0.058
128	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.058	14	-0.029	15	0.05
129	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.058	14	-0.05	15	0.029
130	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.058	14	-0.058	15	
131	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.058	14	-0.05	15	-0.029
132	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.058	14	-0.029	15	-0.05
133	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.058	14		15	-0.058
134	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.058	14	0.029	15	-0.05

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	840.887	127	1790.05	33	1133.564	25	-429.668	15	0	134	579.516	86
2		min	-1753.383	85	460.791	51	-3718.095	32	-1688.185	37	0	1	-292.662	128
3	N26	max	1738.645	79	1442.157	27	3661.495	38	-351.407	60	0	134	521.565	86
4		min	-825.667	133	372.438	57	-772.311	19	-1363.73	30	0	1	-262.767	128
5	N31	max	410.976	5	107.679	31	1728.536	6	0	134	0	134	0	134
6		min	-414.109	23	29.06	73	-1738.095	24	0	1	0	1	0	1
7	Totals:	max	1920.289	5	3333.001	37	2831.577	14						
8		min	-1920.285	23	865.779	55	-2831.578	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	MP4	PIPE_2.0	0.554	32	8	0.044	32	2	14916.096	32130	1871.625	1871.625	2.348	H1-1b
2	M9	PIPE_2.0	0.536	17.5	12	0.149	17.5	12	39676.352	45900	2673.75	2673.75	1.403	H1-1b
3	M3	PIPE_2.0	0.335	0	84	0.095	0	87	24722.261	45900	2673.75	2673.75	3	H1-1b
4	M6	PIPE_2.0	0.326	0	77	0.087	63.861	82	24722.261	45900	2673.75	2673.75	3	H1-1b
5	MP1	PIPE_2.0	0.303	53.75	77	0.047	53.75	8	23808.54	32130	1871.625	1871.625	1.597	H1-1b
6	MP2	PIPE_2.0	0.279	53.75	81	0.044	14.375	82	23808.54	32130	1871.625	1871.625	1.596	H1-1b
7	MP5	PIPE_2.0	0.27	53.75	125	0.037	14.375	129	23808.54	32130	1871.625	1871.625	1.594	H1-1b
8	M2	PIPE_2.0	0.231	0	128	0.1	63.861	13	24722.261	45900	2673.75	2673.75	2.974	H1-1b
9	M5	PIPE_2.0	0.222	0	134	0.101	63.861	7	24722.261	45900	2673.75	2673.75	2.894	H1-1b
10	M1	PIPE_2.5	0.163	134.75	8	0.148	33.25	2	11606.18	72450	5137.5	5137.5	2.313	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
11	MP3	PIPE_2.0	0.156	53.75	86	0.046	53.75	86	23808.54	32130	1871.625	1871.625	1.586	H1-1b
12	M14	PIPE_1.0	0.152	36	36	0.012	36	96	12354.977	21105	663.75	663.75	1.136	H1-1b*
13	M4	PIPE_2.5	0.144	138.25	76	0.134	33.25	8	11606.18	72450	5137.5	5137.5	1.943	H1-1b
14	M13	PIPE_1.0	0.115	36	129	0.012	36	95	12354.977	21105	663.75	663.75	1.136	H1-1b*
15	M19	PIPE_3.0	0.09	0	6	0.007	0	36	22118.145	93150	8212.5	8212.5	1.784	H1-1b
16	M18	PIPE_1.0	0.079	22.147	28	0.015	44.295	2	9382.901	21105	663.75	663.75	1.136	H1-1b
17	M17	PIPE_1.0	0.075	22.147	28	0.019	44.295	11	9382.901	21105	663.75	663.75	1.136	H1-1b
18	M12	PIPE_1.0	0.067	36	38	0.06	36	86	12354.977	21105	663.75	663.75	1.136	H1-1b*
19	M16	PIPE_1.0	0.064	22.147	38	0.023	44.295	10	9382.901	21105	663.75	663.75	1.136	H1-1b
20	M15	PIPE_1.0	0.06	22.147	38	0.012	44.295	13	9382.901	21105	663.75	663.75	1.136	H1-1b
21	M11	PIPE_1.0	0.052	36	28	0.059	36	86	12354.977	21105	663.75	663.75	1.136	H1-1b*
22	M10	PIPE_2.0	0.025	35	76	0.024	35	82	39676.352	45900	2673.75	2673.75	1	H1-1b*

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.4

PROJECT DATA	
Site Name:	NHV 108 943133
Site Number:	806362
Job Code:	1039-Z0001-B
Connection Description:	Standoff To Tower

APPLIED LOADS		
Bolt Tension:	5971.41	lbs
Bolt Shear:	790.42	lbs
Sliding Force:	1789.54	lbs
Torsion About Leg:	0.00	lbs-ft

BOLT PROPERTIES		
Bolt Type:	U-Bolt	-
Bolt Diameter:	0.5	in
Bolt Grade:	A307	-
# of U-Bolts:	2	-
Leg Diameter:	2.875	in
Threads Excluded?	No	-

BOLT CHECK		
Tensile Strength	6385.43	
Shear Strength	4417.86	
Tensile Usage	93.5%	
Shear Usage	17.9%	
Interaction Check	0.91	***≤1.05***
Result	Pass	

SLIP CHECK		
Torsional Resistance	861.77	
Sliding Resistance	7193.92	
Torsional Usage	0.0%	
Sliding Usage	24.9%	
Interaction Check	0.06	***≤1.05***
Result	Pass	

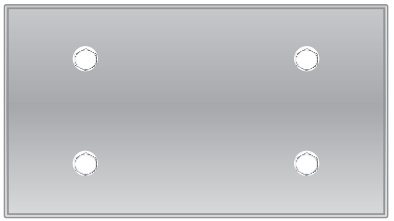

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11494B

CT494/CCastle-Wolcott-SST
347 East Street
Wolcott, Connecticut 06716

October 27, 2020

EBI Project Number: 6220005552

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.97%**

October 27, 2020

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

Emissions Analysis for Site: CT11494B - CT494/CCastle-Wolcott-SST

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **347 East Street** in **Wolcott, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 347 East Street in Wolcott, 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) 2 UMTS 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.

6) 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.

7) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

8) 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.

9) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

10) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

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

13) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power

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

14) The antenna mounting height centerline of the proposed antennas is 186 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 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):	186 feet	Height (AGL):	186 feet	Height (AGL):	186 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 %:	**1.33%**	Antenna B1 MPE %:	**1.33%**	Antenna C1 MPE %:	**1.33%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	186 feet	Height (AGL):	186 feet	Height (AGL):	186 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	13,259.22	ERP (W):	13,259.22	ERP (W):	13,259.22
Antenna A2 MPE %:	**1.96%**	Antenna B2 MPE %:	**1.96%**	Antenna C2 MPE %:	**1.96%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	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):	186 feet	Height (AGL):	186 feet	Height (AGL):	186 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A3 MPE %:	**2.67%**	Antenna B3 MPE %:	**2.67%**	Antenna C3 MPE %:	**2.67%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	5.96%
AT&T	1.79%
Clearwire	2.68%
Verizon	1.54%
Site Total MPE % :	11.97%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	5.96%
T-Mobile Sector B Total:	5.96%
T-Mobile Sector C Total:	5.96%
Site Total MPE % :	11.97%

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 (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	186.0	4.27	1900 MHz GSM	1000	0.43%
T-Mobile 1900 MHz LTE	2	2056.61	186.0	4.27	1900 MHz LTE	1000	0.43%
T-Mobile 2100 MHz LTE	2	2307.55	186.0	4.80	2100 MHz LTE	1000	0.48%
T-Mobile 600 MHz LTE	2	591.73	186.0	1.23	600 MHz LTE	400	0.31%
T-Mobile 600 MHz NR	1	1577.94	186.0	1.64	600 MHz NR	400	0.41%
T-Mobile 700 MHz LTE	2	648.82	186.0	1.35	700 MHz LTE	467	0.29%
T-Mobile 1900 MHz UMTS	2	1101.85	186.0	2.29	1900 MHz UMTS	1000	0.23%
T-Mobile 1900 MHz LTE	2	2203.69	186.0	4.58	1900 MHz LTE	1000	0.46%
T-Mobile 2100 MHz UMTS	2	1294.56	186.0	2.69	2100 MHz UMTS	1000	0.27%
T-Mobile 2500 MHz LTE	2	6412.98	186.0	13.33	2500 MHz LTE	1000	1.33%
T-Mobile 2500 MHz NR	2	6412.98	186.0	13.33	2500 MHz NR	1000	1.33%
						Total:	**5.96%**

• 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:	5.96%
Sector B:	5.96%
Sector C:	5.96%
T-Mobile Maximum MPE % (Sector A):	5.96%
Site Total:	11.97%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.97%** 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 well within the allowable 100% threshold standard per the federal government.