STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

August 7, 2013

Julie D. Kohler, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604

RE: **EM-T-MOBILE-033-130719** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 179 Shunpike Road, Cromwell, Connecticut.

Dear Attorney Kohler:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Prior to antenna installation, the tower modifications depicted on Sheet SK-1 included in the Detailed Structural Analysis and Modification of an Existing 170' Self Supporting Lattice Tower and Foundation prepared by URS Corporation dated July 8, 2013, and stamped by Richard Sambor shall be implemented;
- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the requirements of the structural analysis;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated July 18, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

CONNECTICUT SITING COUNCIL

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/jb

c: The Honorable Mertie Terry, First Selectman, Town of Cromwell
Frederic Curtin, Zoning Enforcement Officer, Town of Cromwell
Cromwell Fire District

COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

May 6, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: T-Mobile Compliance Filings – Third Quarter Audit (July 1, 2013 – Sept. 30, 2013)
Connecticut Siting Council Letter, dated May 4, 2013

Dear Attorney Bachman:

In response to your letter dated May 4, 2015, enclosed herein are copies of T-Mobile's compliance filings for the Connecticut Siting Council's third quarter audit of T-Mobile's exempt modification acknowledgments for the following sites:

EM-T-MOBILE-0004130531, 81 Montevideo Road, Avon
EM-T-MOBILE-033-130719, 179 Shunpike Road, Cromwell
EM-T-MOBILE-166-13076, Andrews Road, Wolcott

Copies were inadvertently omitted from T-Mobile's May 1, 2015 bulk filing, but were timely filed at the end of April. Copies have already been provided by electronic mail and overnight mail.

Please do not hesitate to let me know if you have any questions.

Sincerely,

Rachel Schwartzman

Rachel A. Schwartzman

cc: Julie Kohler, Esq.

COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

April 23, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: EM-T-MOBILE-004-130531
T-Mobile Site ID CT11284A
81 Montevideo Road, Avon, CT
Notice of Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T-Mobile Northeast LLC ("T-Mobile") notice of exempt modification on July 9, 3013. T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of December 12, 2013.

Please don't hesitate to contact me with any questions.

Sincerely,

Rachel A. Schwartzman

cc: Samuel Simons, T-Mobile
Mark Richard, T-Mobile
Robert Stanford, Vertical Development, LLC
Julie Kohler, Esq.

COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

April 28, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: EM-T-MOBILE-033-130719
T-Mobile Site ID CT11059C
179 Shunpike Road, Cromwell, CT
Notice of Compliance with Conditions and Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T-Mobile Northeast LLC ("T-Mobile") notice of exempt modification on August 7, 2013.

The Council imposed the following condition in its acknowledgment:

- Prior to antenna installation, the tower modifications depicted on Sheet SK-1 in the Detailed Structural Analysis and Modification of an Existing 170' Self Supporting Lattice Tower and Foundation prepare by URS Corporation dated July 8, 2013, and stamped by Richard Sambor shall be implemented; and

- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendations of the structural analysis.

The attached PE Closeout Letter, dated April 2015, provides evidence of compliance with the conditions outlined by the Council.

In addition, T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of June 11, 2014.

Please don't hesitate to contact me with any questions.

Sincerely,

Rachel Schwartzman

Rachel A. Schwartzman, Esq.

cc: Samuel Simons, T-Mobile
Mark Richard, T-Mobile
Rob Stanford, Vertical Development LLC
Julie Kohler, Esq.

CENTEK engineering

Centered on Solutions℠

April 27, 2015

Mr. Sam Simons
T-Mobile
35 Griffin Road South
Bloomfield, CT 06002

Re: Existing Telecommunications Facility Tower Certification Letter

Project: **T-Mobile CT11059C**
179 Shunpike Road, Cromwell, CT

Tower Owner: **Cromwell Fire District**
1 West Street, Cromwell, CT

Engineer: **URS Corporation**
500 Enterprise Drive, Rocky Hill, CT

Centek Project No.: 15097.000 Rev-1

CSC Exempt Mod Reference No.: EM-T-Mobile-033-130719

Dear Mr. Simons,

We are providing this "Existing Telecommunications Facility Tower Certification Letter" with regard to the antenna upgrade by T-Mobile at the above referenced project.

The following are the basis for substantiating compliance with the URS Corporation structural analysis report (URS Project No. 36928659.00000) dated July 8, 2013:

- Review of the URS Corporation structural analysis report dated 07/08/2013 and subsequent structural analysis report dated 09/09/2013 Rev-1.
- Review of the URS Corporation reinforcement drawing SK-1 dated 07/08/2013 and the subsequent reinforcement drawing SK-1 dated 09/09/2013.
- Centek Engineering Welding Inspection Report dated 04/28/2015.
- Review of the Atlantis Group Lease Exhibit dated 07/12/13 Rev.0.
- Review of the AECOM Post Construction Verification Letter dated 04/24/2015 confirming that the tower reinforcements have been implemented and are in general compliance with the structural analysis report dated 07/08/2013.

The structural analysis prepared by URS Corporation demonstrates the tower will not exceed 100 percent of the post construction structural rating, and satisfies the Connecticut Siting Council's Conditions of approval dated 08/07/2013. The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above. This certification is not a review of the adequacy or effectiveness of the referenced structural analysis.

Sincerely,

Carlo F. Centore, PE
Principal ~ Structural Engineer

STATE OF CONNECTICUT CARLO F. CENTORE NO. 18084 LICENSED PROFESSIONAL ENGINEER

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

COHEN and WOLF PC
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

April 28, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: EM-T-MOBILE-166-130726
T-Mobile Site ID CT11403A
Andrews Road, Wolcott, CT
Notice of Compliance with Conditions and Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T-Mobile Northeast LLC ("T-Mobile") notice of exempt modification on August 20, 2013.

The Council imposed the following condition in its acknowledgment:

- The coax lines shall be installed as shown in Figure 1 of the Structural Analysis prepared by FDH Engineering dated July 3, 2013 and stamped by Christopher Murphy; and

- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendations of the structural analysis.

The attached PE Closeout Letter, dated February April 23, 2015, provides evidence of compliance with the conditions outlined by the Council.

In addition, T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of June 10, 2014.

Please don't hesitate to contact me with any questions.

Sincerely,

Rachel A. Schwartzman, Esq.

cc: Samuel Simons, T-Mobile
Mark Richard, T-Mobile
Rob Stanford, Vertical Development LLC
Julie Kohler, Esq.

CENTEK engineering

Centered on Solutions

April 23, 2015

Mr. Matt Bandle
Vertical Development
11 Sycamore Way #112
Branford, CT 06405

Re: Existing Telecommunications Facility Tower Certification Letter

Project:	**T-Mobile CT11403** Andrews Road, Wolcott, CT
Tower Owner:	**SBA Communications** 8051 Congress Avenue, Boca Raton, FL
Engineer:	**FDH Engineering** 6521 Meridien Drive, Raleigh, NC

Centek Project No.: 15098.000
CSC Exempt Mod Reference No.: EM-T-Mobile-166-130726

Dear Mr. Bandle,

We are providing this "Existing Telecommunications Facility Tower Certification Letter" with regard to the antenna upgrade by T-Mobile at the above referenced project.

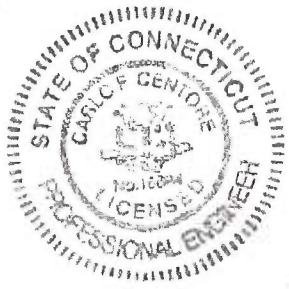
The following are the basis for substantiating compliance with the FDH Engineering structural analysis report (FDH Project No. 1337661400 (R1)) dated July 3, 2013:

- Review of the FDH structural analysis report dated 07/03/2013.
- Field observations by Centek personnel of the coax installation on 04/23/2015 which determined all coax lines were installed in general compliance with the recommendations of the structural analysis report prepared by FDH Engineering on 07/03/2013.

The structural analysis prepared by FDH Engineering demonstrates the tower will not exceed 100 percent of the post construction structural rating. The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above. This certification is not a review of the adequacy or effectiveness of the referenced structural analysis.

Sincerely,

Carlo F. Centore, PE
Principal ~ Structural Engineer



63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

December 23, 2014

Via Electronic and Overnight Mail

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: T-Mobile Exempt Modification Compliance Filings
Connecticut Siting Council Audit Letter dated November 3, 2014
Request For Extension of Time

Dear Attorney Bachman:

T-Mobile Northeast, LLC ("T-Mobile") respectfully requests a 60-day extension of time to March 2, 2015 to respond to the Council's request, dated November 3, 2014, for exempt modification compliance data. The attached spreadsheet provides a list of the sites for which T-Mobile seeks a requested extension.

T-Mobile is actively compiling all of the requested information but needs additional time to provide the necessary documentation.

Please do not hesitate to let me know if you have any questions.

Sincerely,

Rachel Schwartzman

Rachel A. Schwartzman, Esq.

RAS/lcc
Enclosure

cc: Samuel Simons, T-Mobile Northeast, LLC (via electronic mail)
Mark Richard, T-Mobile Northeast, LLC (via electronic mail)
Robert Stanford, Vertical Development, LLC (via electronic mail)
Julie Kohler, Esq.

EM/TS #	Address	Town	Council Additional Conditions	Compliance with Council Additional Conditions Received	Notice of Completion Received	Decision Date
EM-T-MOBILE-043-130222	1455 Forbes Street	East Hartford	Yes	No	No	3/12/2013
EM-T-MOBILE-057-130220	150 Butternut Hollow Road	Greenwich	N/A	N/A	No	3/12/2013
EM-T-MOBILE-135-130318	555 Main Street	Stamford	Yes	No	No	4/9/2013
EM-T-MOBILE-006-130528	60 Rice Lane	Beacon Falls	Yes	No	No	6/26/2013
EM-T-MOBILE-002-130529	401 Wakelee Avenue	Ansonia	N/A	N/A	No	6/27/2013
EM-T-MOBILE-004-130531	81 Montevideo Road	Avon	N/A	N/A	No	7/9/2013
EM-T-MOBILE-034-130531A	41 Padanaram Road	Danbury	Yes	No	No	7/9/2013
EM-T-MOBILE-034-130531B	303 Boxwood Lane	Danbury	N/A	N/A	No	7/9/2013
EM-T-MOBILE-091-130531A	302 Ball Pond Road	New Fairfield	N/A	N/A	No	7/9/2013
EM-T-MOBILE-091-130531B	37 Titicus Mountain Road	New Fairfield	N/A	N/A	No	7/9/2013
EM-T-MOBILE-148-130531	90 N. Plains Industrial Road	Wallingford	N/A	N/A	No	7/9/2013
EM-T-MOBILE-101-130611	125 Washington Avenue	North Haven	N/A	N/A	No	7/10/2013
EM-T-MOBILE-009-130611	38 Spring Hill Lane	Bethel	Yes	No	No	7/11/2013
EM-T-MOBILE-017-130611	2 Willis Street	Bristol	Yes	No	No	7/12/2013
EM-T-MOBILE-110-130621	335 S. Washington Street	Plainville	N/A	N/A	No	7/12/2013
EM-T-MOBILE-033-130719	179 Shunpike Road	Cromwell	Yes	No	No	8/7/2013
EM-T-MOBILE-049-130718	1 Ecology Drive	Enfield	N/A	N/A	No	8/7/2013
EM-T-MOBILE-014-130724	405 Brushy Plain Road	Branford	Yes	No	No	8/13/2013
EM-T-MOBILE-017-130729	985 Farmington Avenue	Bristol	N/A	N/A	No	8/20/2013
EM-T-MOBILE-034-130726	7 West View Drive	Danbury	N/A	N/A	No	8/20/2013
EM-T-MOBILE-166-130726	Andrews Road	Wolcott	Yes	No	No	8/20/2013
EM-T-MOBILE-166-130816	Route 322/Meridian Road	Wolcott	N/A	N/A	No	9/3/2013
EM-T-MOBILE-080-130903	11 West Peak Drive	Meriden	Yes	No	No	9/18/2013

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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www.ct.gov/csc

December 24, 2014

Rachel A. Schwartzman, Esq.
Cohen and Wolf, P.C.
P.O. Box 1821
Bridgeport, CT 06601

RE:

EM-T-MOBILE-004-130531	81 Montevideo Road	Avon
EM-T-MOBILE-009-130611	38 Spring Hill Lane	Bethel
EM-T-MOBILE-014-130724	405 Brushy Plain Road	Branford
EM-T-MOBILE-017-130611	2 Willis Street	Bristol
EM-T-MOBILE-017-130729	985 Farmington Avenue	Bristol
EM-T-MOBILE-033-130719	179 Shunpike Road	Cromwell
EM-T-MOBILE-034-130531A	41 Padanaram Road	Danbury
EM-T-MOBILE-034-130531B	303 Boxwood Lane	Danbury
EM-T-MOBILE-034-130726	7 West View Drive	Danbury
EM-T-MOBILE-043-130222	1455 Forbes Street	East Hartford
EM-T-MOBILE-049-130718	1 Ecology Drive	Enfield
EM-T-MOBILE-057-130220	150 Butternut Hollow Road	Greenwich
EM-T-MOBILE-080-130903	11 West Peak Drive	Meriden
EM-T-MOBILE-091-130531A	302 Ball Pond Road	New Fairfield
EM-T-MOBILE-091-130531B	37 Titicus Mountain Road	New Fairfield
EM-T-MOBILE-101-130611	125 Washington Avenue	North Haven
EM-T-MOBILE-110-130621	335 S. Washington Street	Plainville
EM-T-MOBILE-135-130318	555 Main Street	Stamford
EM-T-MOBILE-148-130531	90 N. Plains Industrial Road	Wallingford
EM-T-MOBILE-166-130726	Andrews Road	Wolcott
EM-T-MOBILE-166-130816	Route 322/Meridian Road	Wolcott

Dear Attorney Schwartzman:

The Connecticut Siting Council (Council) is in receipt of your letter dated December 23, 2014, submitted on behalf of T-Mobile, requesting an extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council hereby grants a 60-day extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications to March 2, 2015.

This extension is granted with the understanding that the Council will be notified should T-Mobile need additional time beyond 60 days to submit a notice of completion and associated post modification inspection reports or decide not to proceed with construction.

Thank you for your attention to this matter.

Sincerley,

Melanie A. Bachman
Acting Executive Director

MAB/cm

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC AND FIRST CLASS MAIL

March 2, 2015

Rachel A. Schwartzman, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604

RE: EM-T-MOBILE-049-130724, 1Ecology Drive, Enfield
EM-T-MOBILE-014-130724405, Brushy Plains Road, Branford
EM-T-MOBILE-080-130903, 11West Peak Drive, Meriden
EM-T-MOBILE-034-130531A, 41Padnaram Road, Danbury
EM-T-MOBILE-091-130531A, 302 Ball Pond Road, New Fairfield
EM-T-MOBILE-009-130611, 38 Spring Hill Road, Bethel
EM-T-MOBILE-017-130611, 2 Willis Street, Bristol
EM-T-MOBILE-034-130726, 7 West View, Danbury
EM-T-MOBILE-166-130816, Route 322 aka Meriden Road aka 347 East Street, Wolcott
EM-T-MOBILE-004-130531, 81 Montevideo Road, Avon
EM-T-MOBILE-033-130719, 179 Shunpike Road, Cromwell
EM-T-MOBILE-166-130726, Andrew Road, Wolcott

Dear Attorney Schwartzman:

The Connecticut Siting Council (Council) is in receipt of your letter dated February 27, 2015, submitted on behalf of T-Mobile Northeast, LLC, requesting an extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council hereby grants a 60-day extension of time, until May 2, 2015, to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

This extension is granted with the understanding that the Council will be notified should T-Mobile Northeast, LLC need additional time beyond 60 days to submit a notice of completion and associated post modification inspection reports or decide not to proceed with construction.

Thank you for your attention to this matter.

Sincerely,

Melanie A. Bachman
Acting Executive Director

MAB/cm

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

May 4, 2015

Rachel A. Schwartzman, Esq.
Cohen and Wolf, P.C.
P.O. Box 1821
Bridgeport, CT 06601

RE:			
	EM-T-MOBILE-004-130531	81 Montevideo Road	Avon
	EM-T-MOBILE-033-130719	179 Shunpike Road	Cromwell
	EM-T-MOBILE-166-130726	Andrews Road	Wolcott

Dear Attorney Schwartzman:

The Connecticut Siting Council (Council) is in receipt of your letter dated May 1, 2015, submitted on behalf of T-Mobile, requesting an extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council hereby grants a 60-day extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications to July 2, 2015.

This extension is granted with the understanding that the Council will be notified should T-Mobile need additional time beyond 60 days to submit a notice of completion and associated post modification inspection reports or decide not to proceed with construction.

Thank you for your attention to this matter.

Sincerley,

Melanie A. Bachman
Acting Executive Director

MAB/cm

COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

July 18, 2013

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification
Town of Cromwell Fire District/T-Mobile co-location
Site ID CT11059C
179 Shunpike Road, Cromwell

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, the Town of Cromwell Fire District ("Fire District") owns the existing lattice telecommunications tower and related facility at 179 Shunpike Road, Cromwell Connecticut (latitude 41.62328 / longitude -72.67901). T-Mobile intends to replace six antennas and related equipment at this existing telecommunications facility in Cromwell ("Cromwell Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman, Mertie Terry. The Fire District is also the property owner.

The existing Cromwell Facility consists of a 170 foot tall lattice structure. T-Mobile plans to replace six antennas and remove 3 TMAs (tower mounted amplifiers) at a centerline of 125 feet. (See the plans revised to July 12, 2013 attached hereto as Exhibit A). T-Mobile will also upgrade one of its equipment cabinets, install hybrid cable and reuse existing coax cables. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications once structural reinforcements have been completed, as indicated in the structural analysis dated July 8, 2013 and attached hereto as Exhibit B.

The planned modifications to the Cromwell Facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

COHEN and WOLF P.C. ATTORNEYS AT LAW

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement antennas will be installed at the 125 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The installation of the T-Mobile replacement equipment in the existing compound, as reflected on the attached site plan, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated July 18, 2013 T-Mobile's operations would add 0.736% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 82.316% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

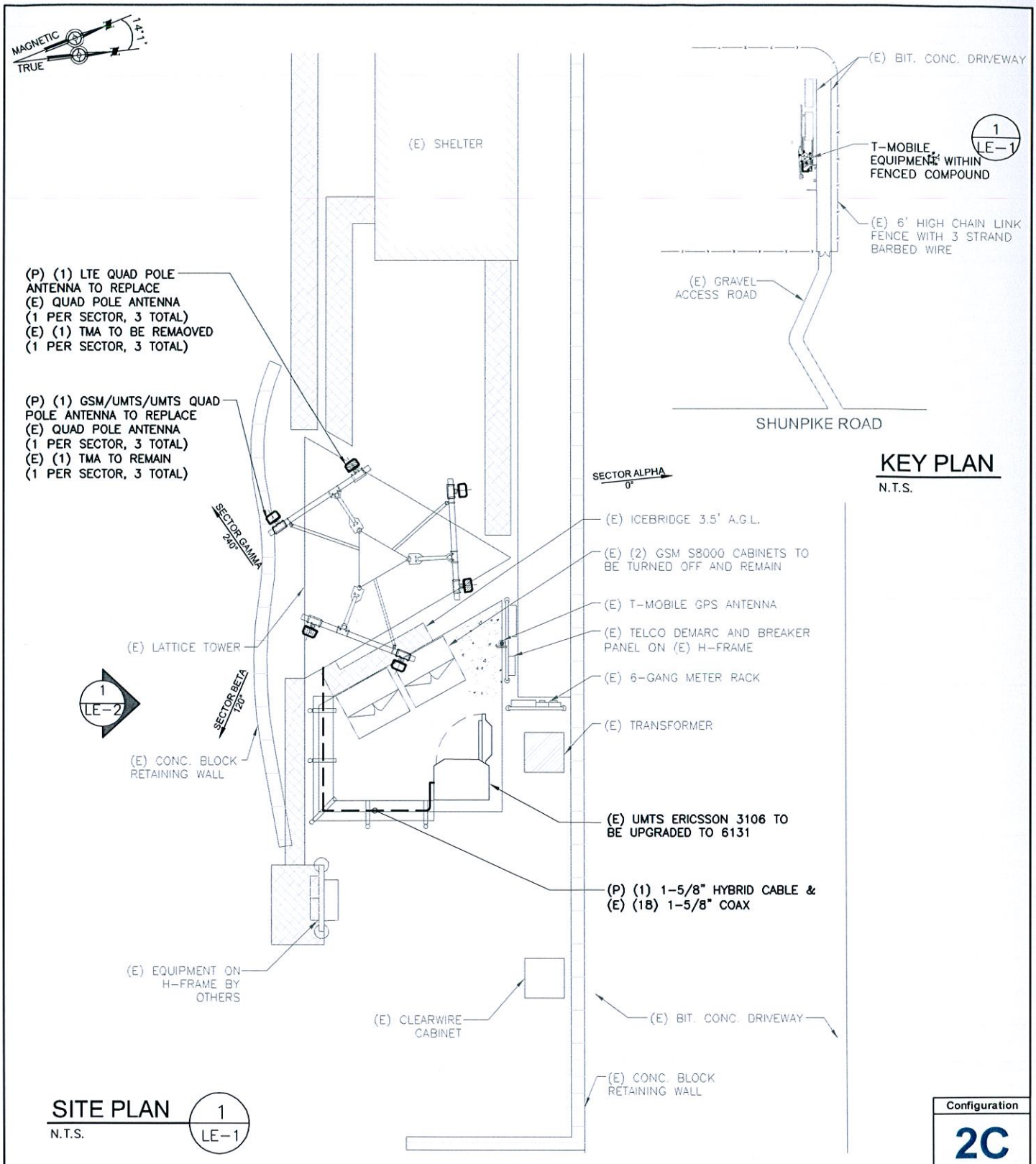
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Cromwell Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Julie D. Kohler, Esq.

cc: Town of Cromwell, First Selectman, Mertie Terry
Town of Cromwell Fire District
Scott Chase, Northeast Site Solutions

EXHIBIT A



KEY PLAN
N.T.S.

SITE PLAN
N.T.S.

1
LE-1

Configuration
2C

SUBMITTALS	
LE REV A	04.24.13
LE REV 0	07.12.13

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11059C

SITE NAME:
ROCKYHILL/ I-91/ X23

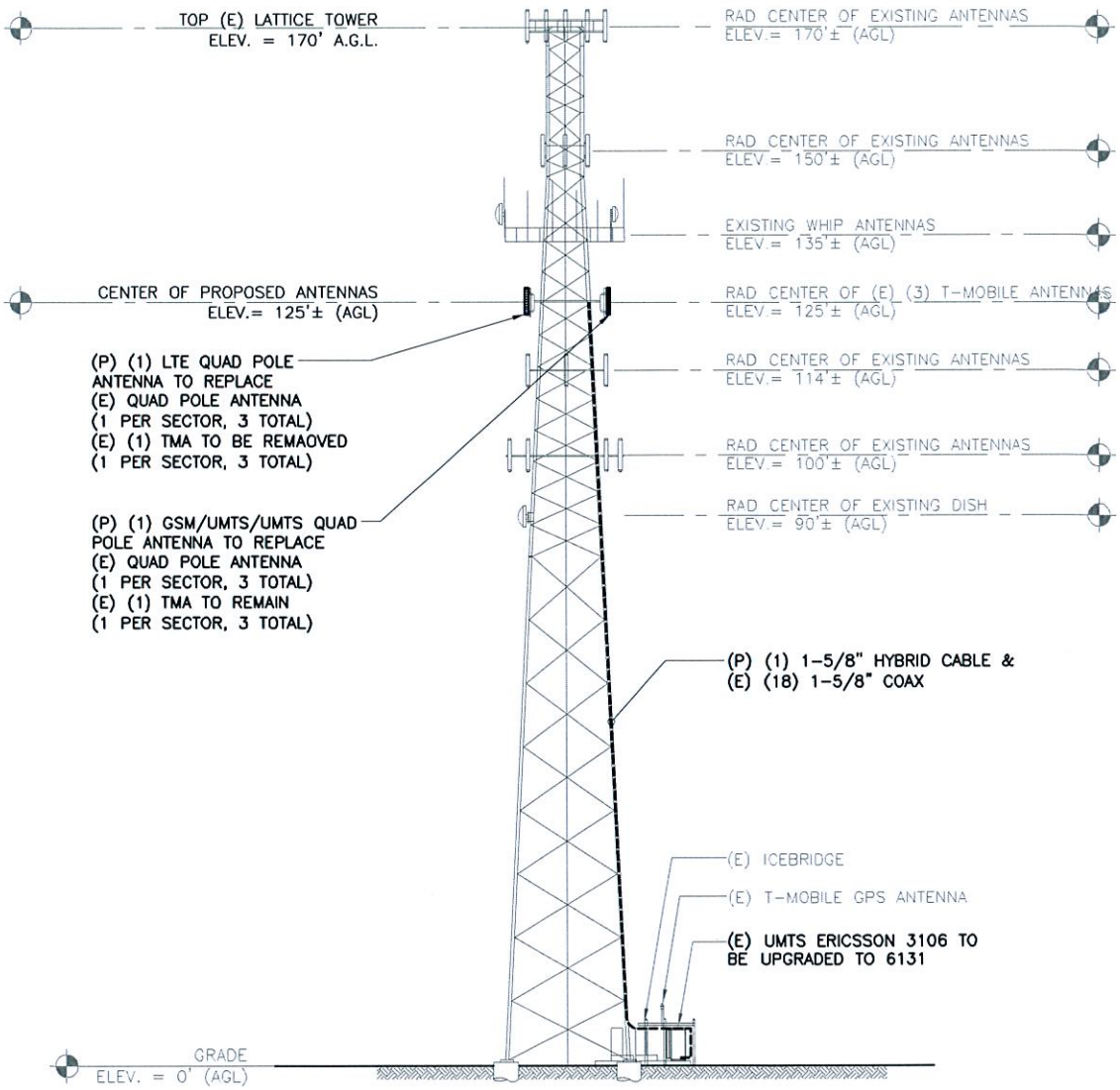
SITE ADDRESS:
179 SHUNPIKE ROAD
CROMWELL, CT 06416

NORTHEAST TOWERS
199 BRICKYARD ROAD
FARMINGTON, CT 06032
OFFICE: (860) 677-1999

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: MB | CHECKED BY: SM



SOUTH ELEVATION

N.T.S.

1
LE-2

Configuration

2C

SUBMITTALS	
LE REV A	04.24.13
LE REV 0	07.12.13

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11059C

SITE NAME:
ROCKYHILL/ I-91/ X23

SITE ADDRESS:
179 SHUNPIKE ROAD
CROMWELL, CT 06416

NORTHEAST TOWERS
199 BRICKYARD ROAD
FARMINGTON, CT 06032
OFFICE: (860) 677-1999

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: MB | CHECKED BY: SM

EXHIBIT B

DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 170' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT

T-Mobile Site ID: **CT11059C**
Address: **179 Shunpike Road**
Cromwell, CT

prepared for

Cromwell Fire District

1 West Street
Cromwell, Connecticut 06416

T-Mobile

prepared by

URS

URS CORPORATION
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CT 06067
TEL. 860-529-8882

36928659.00000
CFD-007

July 8, 2013

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the existing 170' self supporting lattice tower located at 179 Shunpike Road in Cromwell, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code which requires a three second gust wind speed of 100 mph which converts to an 80 mph fastest mile per 2003 IBC (Table 1609.3.1) and the TIA/EIA-222-F standard for a wind velocity of 85 mph (fastest mile). The wind speed from the Connecticut State Building Code governs the design at 85 mph (fastest mile) and 74 mph (fastest mile) concurrent with ½ " ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report.

An Antenna upgrade is proposed by T-Mobile and is as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
Remove: **(3) RFS APX16DWV-16DWVS-A20 Antennas** **(3) RFS APX16DWV-16DWV-S Antennas** **(3) Andrew Twin AWS TMA's**	**T-Mobile (Existing)**	**@ 125'**
Install: **(6) Ericsson AIR21 B4A/B2P Antennas** **(1) 1 5/8 Hybrid Cable**	**T-Mobile (Proposed)**	**@ 125'**

The results of the analysis with modification indicates that the tower has the capacity to support the proposed loading conditions. **The tower and its foundation are considered structurally adequate once the modifications indicated on sheet SK-1 in Section 6 of this report are performed with the wind load classification specified above and the proposed antenna loading.**

This analysis is based on:

1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
2) Tower geometry, structural member sizes, and Foundation information taken from a tower report prepared by PiROD Inc., ENG. File No. A-116398, dated November 18, 1999.
3) Foundation modification drawings prepared by Teconic, dated May 5, 2004.
4) Existing inventory taken from a tower mapping and inventory prepared by Northeast Towers, Inc performed on February 9, 2012.
5) Structural analysis performed by URS Corp, project number CFD-006 / 36922435 signed and sealed April 10, 2013.
6) Structural analysis performed by URS Corp. project number NSS-001 / 36922439 signed and sealed May 8, 2013.
7) Structural analysis performed by URS Corp., project number VZ5-133 / 36922291 signed and sealed on May 20, 2013.
8) T-Mobile antenna revisions based on radio frequency data sheet, dated March 28, 2013.

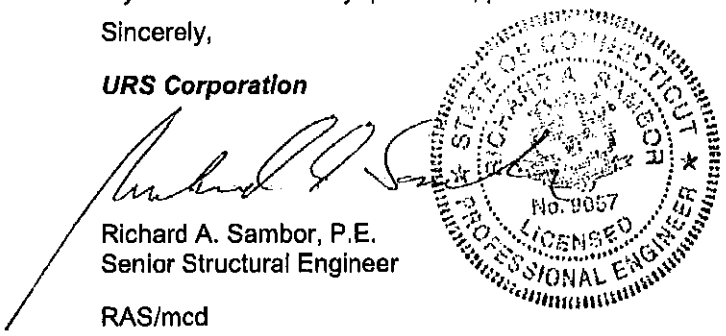
1. EXECUTIVE SUMMARY (continued)

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration as well as the physical condition of the tower and connections. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

URS Corporation



Richard A. Sambor, P.E.
Senior Structural Engineer

RAS/mcd

2. INTRODUCTION

The subject tower is located at 179 Shunpike Road in Cromwell, Connecticut. The structure is a 170' self supporting lattice tower designed and manufactured by PiROD Inc.

The current inventory with proposed modification is summarized in the table below:

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(1) Tx Rx 101-90-08 antenna	Town (existing)	15' Mast pipe on 9 Arm Halo Mount	183'	(1) 7/8"
(1) 8 Bay Dipole (3" dia x 20')	Town (existing)	9 Arm Halo Mount	178'	(1) 7/8"
(1) 2 ½" dia x 20' Whip	Town (existing)	9 Arm Halo Mount	178'	(1) 1 1/2"
(3) 2 ½" dia x 15' Whip	Town (existing)	9 Arm Halo Mount	175'	(3) 7/8"
1 ½" dia x 12' Whip	Town (existing)	9 Arm Halo Mount	174'	(1) 7/8"
(1) Radiowaves HPD2-4.7 w/ Radome (1) Cambium PTP49600 Antenna	CPD (existing)	Leg Mounted	168'	(1) WB3176A – Copper Clad Outdoor Cable (2) 4' 1/2" Jumper Cables
(1) SU-RA-HP-2.4 (1' x 1' Antenna)	Town (existing)	9 Arm Halo Mount	168'	(1) 3/8"
(6) Decibel 950G65VTZE-M antennas	Sprint (existing)	9 Arm Halo Mount	168'	(6) 1 5/8"
(3) APXV18-206517S	Unknown (existing)	Leg Mount	159'-6"	(6) 1 5/8"
(1) Sinclair SC420-HF1LDF Omni	CPD (existing)	Pipe mount	158'-6"	(1) 1 5/8" Low Density Foam Cable
(2) 3" dia x 20' Whip	Town (existing)	20' Platform	144'	(2) 7/8"
(1) 2 ½" x 20' Whip	Town (existing)	20' Platform	144'	(1) 1/2"
2" dia x 15' Whip	Town (existing)	20' Platform	141'	(1) 1/2"
(1) 1.5" dia x 10' Whip	Town (existing)	20' Platform	139'	(1) 1/2"
(1) 3.5 dia. X 9' Whip	Town (existing)	20' Platform	138'-6"	---
(3) Argus LLPX310R antennas (3) Samsung Remote Radio Heads U-RAS (3) Andrew VHLP2.5 Dish (2.5 dia) (1) Andrew VHLP2 dish (2' dia) Gamma Sector	Clearwire (existing)	20' Platform	134'	(6) CAT 5 cable (4) 1/2"
(6) Ericsson AIR21 B4A/B2P Antennas	**T-Mobile (Proposed)**	Same as Below	**125'**	**(1) 1 5/8" Hybrid Cable**
(3) Twin PCS TMA's	T-Mobile (existing)	(3) T-Frames	125'	(18) 1 5/8"
(6) Powerwave 7770 (12) TMA's (3) KMW AM-X-CD-16-65-00T-RET (6) RRU (1) Surge Suppressor	AT&T (existing)	(3) T-Frames	115'	(12) 1 5/8" (3) Optic Fiber & (6) DC Cables (Located within 3" dia Flex Conduit)

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
(2) SWCP 2x5514 antennas, (6) SC-E 6014 Rev 2 antennas, (3) BXA-171063-12BF _2 antennas, (6) FD9R6004/2C-3L Diplexers, (1) BXA-70063-6CF-2 antenna (Beta Sector)	Verizon (existing)	(3) T-Frames (PiROD part #800093)	101'	(12) 1 5/8"
(1) 3" x 2" x 22" Panel (1) TMA	AT&T (existing)	Pipe Mount	87'	(2) CAT 5
(1) 3' Dish (1) TMA	AT&T (existing)	3' Stand-off	83'	(2) CAT 5
(1) 3" x 2" x 22" Panel (1) TMA	AT&T (existing)	3' Stand-off	80'	(2) CAT 5
(1) Camera	Unknown (existing)	Leg Mounted	30'	(2) 1/2"
(1) 3' Yagi	Unknown (existing)	Leg Mounted	24'	(1) 1/2"

This structural analysis of the communications tower was performed by URS Corporation (URS) for the Cromwell Fire District. The purpose of this analysis was to investigate the structural integrity of the modified tower with its existing and proposed T-Mobile antenna loads. This analysis was conducted to evaluate stress on the tower and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the Connecticut State Building Code, TIA/EIA-222-F - Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, and the American Institute of Steel Construction (AISC) Manual of Steel Construction – Allowable Stress Design (ASD).

The analysis was conducted using TNX Tower 6.0. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Basic Wind Speed:

- Middlesex County; v = **85** mph (fastest mile) [Section 16 of TIA/EIA-222-F-1996]
- Cromwell; v = 100mph (3 second gust) equivalent to 80mph (fastest mile) [Appendix K, 2005 Connecticut State Building Code Supplement]

Loading Cases:

Load Condition 1 = 85 mph (fastest mile) Wind Load (without ice) + Tower Dead Load
Load Condition 2 = 74 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

Please note that wind pressure is a function of velocity squared. Under Load Condition 2, a 25 percent reduction in wind pressure is allowed by code to account for the unlikelihood of the full wind pressure and ice load occurring at the same time. The same results may be achieved by utilizing a lower wind pressure without taking the 25 percent reduction, as shown above.

The TIA/EIA standard permits a one-third increase in allowable stresses for towers and monopoles less than 700 feet tall. For the purposes of this analysis, in computing the load capacity the allowable stresses of the tower members were increased by one-third.

4. FINDINGS AND EVALUATION

Stresses on the tower structure and foundation were evaluated to compare with allowable stresses in accordance with AISC. The results of the analysis indicate that the calculated stresses on the structure with the proposed loading are within the allowable stresses. Additionally, the anchor bolts and foundation were found to be within the allowable limits.

TABLE 1: Tower Component Stress vs. Capacity Summary:

Component/ (Section No.)	Existing Component Size	Controlling Component/Elevation	Percent Capacity	Pass/Fail
Tower Leg (T7)	PiROD Truss Leg	Compression 60'-80'	**98.4%**	**Pass**
Diagonal (T9)	L3 1/2x3 1/2x5/16	Compression 20'-40'	**92.1%**	**Pass**
Top Girt (T1)	7/8" SR	Compression 150'-170'	**3.6%**	**Pass**
Bottom Girt (T1)	7/8" SR	Compression 150'-170'	**3.8%**	**Pass**
Mid Girt (T4)	L3x3x3/16	Compression 100'-120'	**26.5%**	**Pass**
Bolt Checks				
Anchor Bolts	(6) 1-1/4"	Tension	**78%**	**Pass**

TABLE 2: Foundation Summary

Foundation	Component	Stress (% capacity/FOS)	Pass/Fail	Comments:
Drilled Concrete Caisson	Uplift	91.0%/2.20	**Pass**	Min. F.O.S of 2.0 req'd per IBC 2003 Section 3108.4.2

5. CONCLUSIONS AND RECOMMENDATIONS

The results of the analysis indicate that the modified tower structure has the capacity to support the proposed loading conditions. **The tower and its foundation are considered structurally adequate once the modifications indicated on sheet SK-1 in Section 6 of this report are performed with the wind load classification specified above and the proposed antenna loading.**

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations were properly constructed to support original design loads as specified in the original design documents.
10. All coaxial cable is installed as specified in Section 6 of this report.

URS is not responsible for any modifications completed prior to or hereafter in which URS is not or was not directly involved. Modifications include but are not limited to:

A. Adding antennas
B. Removing/replacing antennas
C. Adding coaxial cables

URS hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact URS. URS disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

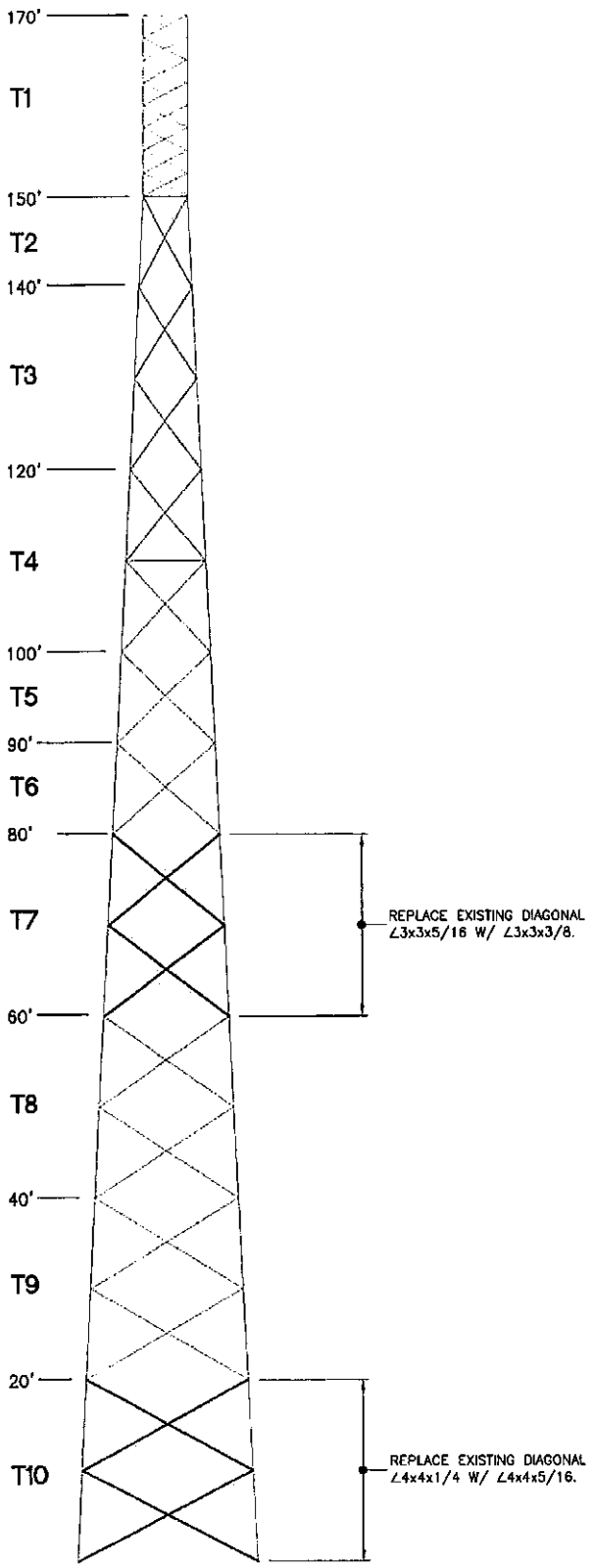
Ongoing and Periodic Inspection and Maintenance:

After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

6. DRAWINGS AND DATA

TOWER REINFORCING DRAWING SK-1



1 / SK-1 TOWER ELEVATION

SCALE: 1"=20'-0"

STRUCTURAL NOTES

STRUCTURAL STEEL MATERIAL:

STRUCTURAL STEEL BEAMS, CHANNELS & PLATES		ASTM A572 GRADE 50
STRUCTURAL STEEL ANGLES		ASTM A36
PIPE COLUMN		ASTM A53 GRADE B
STUB COLUMNS	FY=46 KSI	ASTM A500
BOLTS		ASTM A325-N

STRUCTURAL STEEL SHALL CONFORM TO ALL REQUIREMENTS OF THE 1999 AISC-LRFD SPECIFICATION, AS REFERENCED IN THE CODE.

UNLESS OTHERWISE NOTED, ALL STEEL WILL BE GALVANIZED IN ACCORDANCE WITH ASTM 123 AFTER FABRICATION. TOUCH UP ALL DAMAGED GALVANIZED STEEL WITH APPROVED COLD ZINC, "GALVANOX", "DRY GALV", "ZINC-IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH-UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 2 SETS OF PRINTS FOR THE ENGINEER REVIEW.

EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENT ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REFERENCE ONLY.

CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 5/16" AND MINIMUM OF (2) 3/4" BOLTS.

ALL BOLT HOLES WILL BE DRILLED OR PUNCHED, WITH BURRS REMOVED PRIOR TO COATING.

MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.

ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER IN ACCORDANCE WITH AWS STANDARDS, USING E70XX ELECTRODES UNLESS OTHERWISE NOTED. WHERE WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZES PER "PREQUALIFIED WELDED JOINTS" TABLES IN AISC "MANUAL OF STEEL CONSTRUCTION", NINTH EDITION.

CONNECTIONS / FIELD ASSEMBLY:

BOLTED CONNECTIONS: UNLESS OTHERWISE NOTED, ALL JOINTS ARE BEARING TYPE, REQUIRING 3/4" DIA. A325-N BOLTS, A563 NUTS AND F436 WASHERS, ALL GALVANIZED. BEVELED WASHERS SHALL BE USED ON BEAM FLANGES HAVING A SLOPE GREATER THAN 1:20.

NON-STRUCTURAL CONNECTIONS, SUCH AS FOR STEEL GRATING, MAY USE 5/8" DIA. GALVANIZED ASTM A307 BOLTS, UNLESS OTHERWISE NOTED.

STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.

COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

IF WELDING GALVANIZED MATERIALS, USE PRECAUTIONS & PROCEDURES PER AWS D1.1.

INSPECTIONS:

SPECIAL INSPECTIONS REQUIRED PER THE 2005 CONNECTICUT STATE BUILDING CODE FOR STRUCTURAL STEEL WORK.

OWNER WILL SUPPLY THE SERVICES OF A SPECIAL INSPECTOR AND TESTING AGENTS AS REQUIRED. CONTRACTOR SHALL COORDINATE INSPECTIONS OF FABRICATOR'S AND ERECTOR'S WORK AND MATERIALS TO MEET THE REQUIREMENTS OF THE STATEMENT OF SPECIAL INSPECTIONS FOR THIS PROJECT.

COPIES OF TESTING AND INSPECTION REPORTS WILL BE PROVIDED TO THE OWNER, BUILDING OFFICIAL, ENGINEER OF RECORD AND CONTRACTOR.

REPLACEMENT OF TOWER MEMBERS AND BOLTS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE TOWER WHILE MEMBERS ARE REPLACED.

ONLY ONE MEMBER PER TOWER FACE SHALL BE REPLACED AT A TIME.

THE CONTRACTOR SHALL PREPARE AND MINIMIZE THE TIME THAT MEMBERS ARE NOT CONNECTED TO THE TOWER.

ALL MEMBERS SHALL BE LEFT FULLY CONNECTED AT THE END OF THE WORK DAY.

THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM MEMBER REPLACEMENT IN A WIND.

PROJECT NO. 36928659
Designed by: MCD
Drawn by: MCD
Checked by: KB
Approved by: ICA

URS CORPORATION AES
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
860-529-8882

TOWER ELEVATION

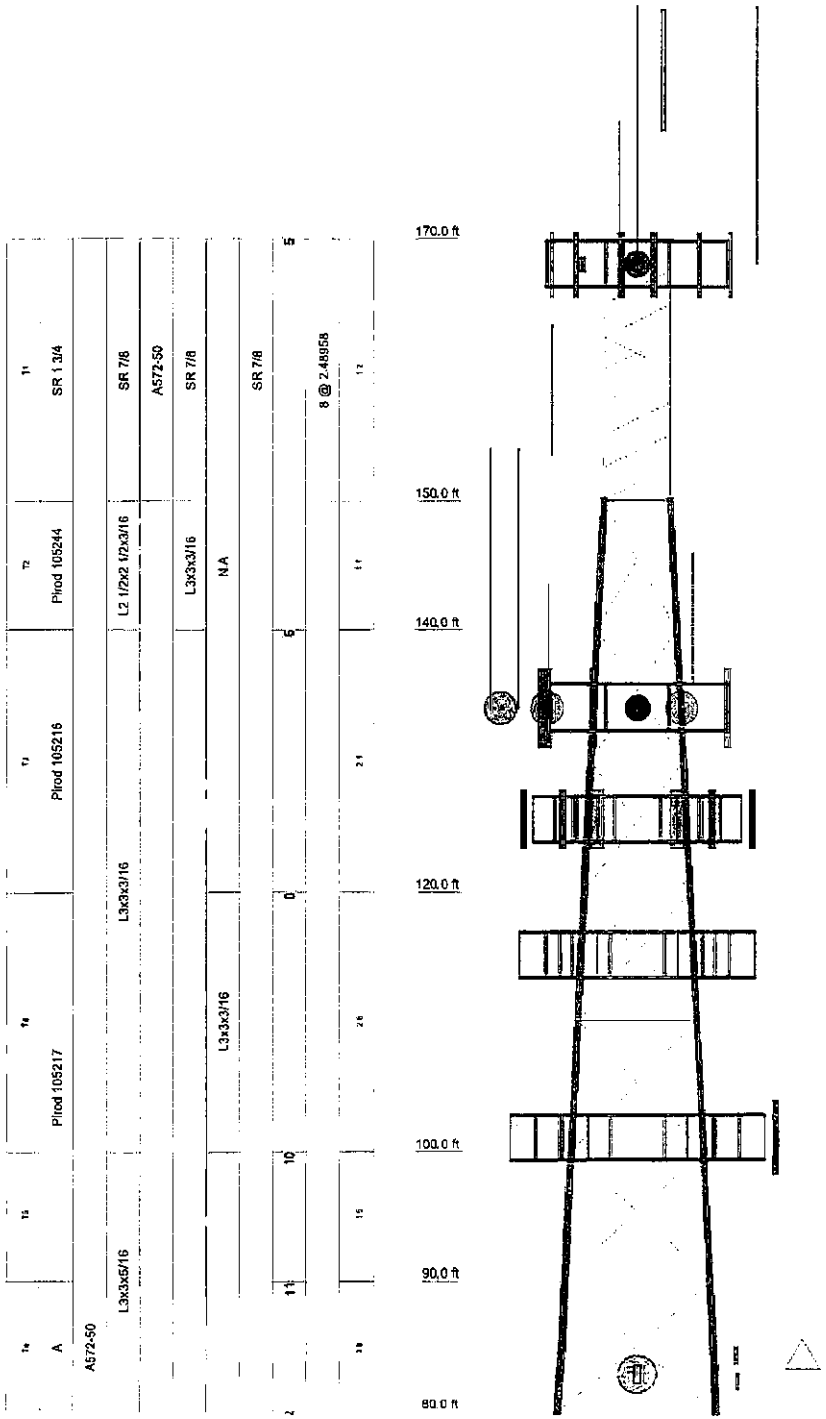
CROMWELL FIRE DISTRICT TOWER
SITE ADDRESS: 179 SHUNPIKE ROAD
CROMWELL, CT

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 07/08/13
Job No. CFD-007 | File No.

Dwg. No. SK-1
Dwg. 1 of 1

TNX TOWER INPUT/OUTPUT SUMMARY



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
101-90-08-0-01 (Municipal)	183	(2) TMA (shielded) (ATI)	115
15' Mount Pipe (Municipal)	179.75	(2) TMA (shielded) (ATI)	115
3" Dia 20' Omni (Municipal)	178	PIROD 12' Lightweight T-Frame (ATI)	115
2.5" x 20'6" Whip (Municipal)	178	PIROD 12' Lightweight T-Frame (ATI)	115
2.5" x 14' Omni (Municipal)	175	(2) TMA (shielded) (ATI)	115
2.5" x 14' Omni (Municipal)	175	7770.00 (ATI)	115
2.5" x 14' Omni (Municipal)	175	7770.00 (ATI)	115
1.5" x 12' Omni (Municipal)	174	7770.00 (ATI)	115
9 Arm Halo Mount (Municipal)	168	7770.00 (ATI)	115
SU-RA-HP-2.4 Antenna (Municipal)	168	7770.00 (ATI)	115
950G65VTZE-M (Sprint)	168	7770.00 (ATI)	115
950G65VTZE-M (Sprint)	168	AM-X-CD-16-65-00T-RET (6') (ATI)	115
950G65VTZE-M (Sprint)	168	AM-X-CD-16-65-00T-RET (6') (ATI)	115
950G65VTZE-M (Sprint)	168	AM-X-CD-16-65-00T-RET (6') (ATI)	115
950G65VTZE-M (Sprint)	168	(2) REMOTE RADIO HEAD (RRH) (ATI)	115
950G65VTZE-M (Sprint)	168	(2) REMOTE RADIO HEAD (RRH) (ATI)	115
PTP49600 (CPD)	168	(2) REMOTE RADIO HEAD (RRH) (ATI)	115
HPD2-4.7	168	Surge Suppressor (ATI)	115
APXV18-206517S-C w/ mounting hardware	159.5	PIROD 12' Lightweight T-Frame (ATI)	115
APXV18-206517S-C w/ mounting hardware	159.5	(2) TMA (shielded) (ATI)	115
APXV18-206517S-C w/ mounting hardware	159.5	(2) TMA (shielded) (ATI)	115
SC420-HF1LDF (Municipal)	158.5	(2) TMA (shielded) (ATI)	115
3" Dia 20' Omni (Municipal)	144	SC-E 6014 rev2 (Verizon)	101
3" Dia 20' Omni (Municipal)	144	BXA-171063-12BF (Verizon)	101
2.5" x 20'6" Whip (Municipal)	144	SC-E 6014 rev2 (Verizon)	101
2" Dia 15' Omni (Municipal)	141	SC-E 6014 rev2 (Verizon)	101
1.5" x 10' Omni (Municipal)	139	PIROD 12' Lightweight T-Frame (Verizon)	101
9' Whip (Municipal)	138.5	SC-E 6014 rev2 (Verizon)	101
PIROD 20' Universal Platform (Municipal)	134	PIROD 12' Lightweight T-Frame (Verizon)	101
Argus LLPX310R (Clearwire)	134	PIROD 12' Lightweight T-Frame (Verizon)	101
Argus LLPX310R (Clearwire)	134	SC-E 6014 rev2 (Verizon)	101
Argus LLPX310R (Clearwire)	134	BXA-171063-12BF (Verizon)	101
REMOTE RADIO HEAD (RRH) (Clearwire)	134	(2) Diplexer (Verizon)	101
REMOTE RADIO HEAD (RRH) (Clearwire)	134	(2) Diplexer (Verizon)	101
REMOTE RADIO HEAD (RRH) (Clearwire)	134	(2) Diplexer (Verizon)	101
VHLP2.5-180 (Clearwire)	134	BXA-171063-12BF (Verizon)	101
VHLP2.5-180 (Clearwire)	134	BXA-70063-6CF (Verizon)	101
VHLP2.5-180 (Clearwire)	134	SWCP 2x5514 (Verizon)	101
VHLP2-180 (Clearwire)	134	SC-E 6014 rev2 (Verizon)	101
AIR B2A/B4P (T-Mobile)	125.5	SWCP 2x5514 (Verizon)	101
AIR B2A/B4P (T-Mobile)	125.5	3'x2'x22" Panel	87
AIR B2A/B4P (T-Mobile)	125.5	TMA	84.5
AIR B2A/B4P (T-Mobile)	125.5	3' Stand-off	83.5
AIR B2A/B4P (T-Mobile)	125.5	3' Stand-off	83.5
AIR B2A/B4P (T-Mobile)	125.5	3' Dish	83
Twin PCS TMA (T-Mobile)	125.5	TMA	83
Twin PCS TMA (T-Mobile)	125.5	TMA	82.5
Twin PCS TMA (T-Mobile)	125.5	3'x2'x22" Panel	80
PIROD 10' Lightweight T-Frame (T-Mobile)	125.5	Camera	30
PIROD 10' Lightweight T-Frame (T-Mobile)	125.5	PC9013N	24
PIROD 10' Lightweight T-Frame (T-Mobile)	125.5		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pirod 105217 reinf w/ 1" dia bar		

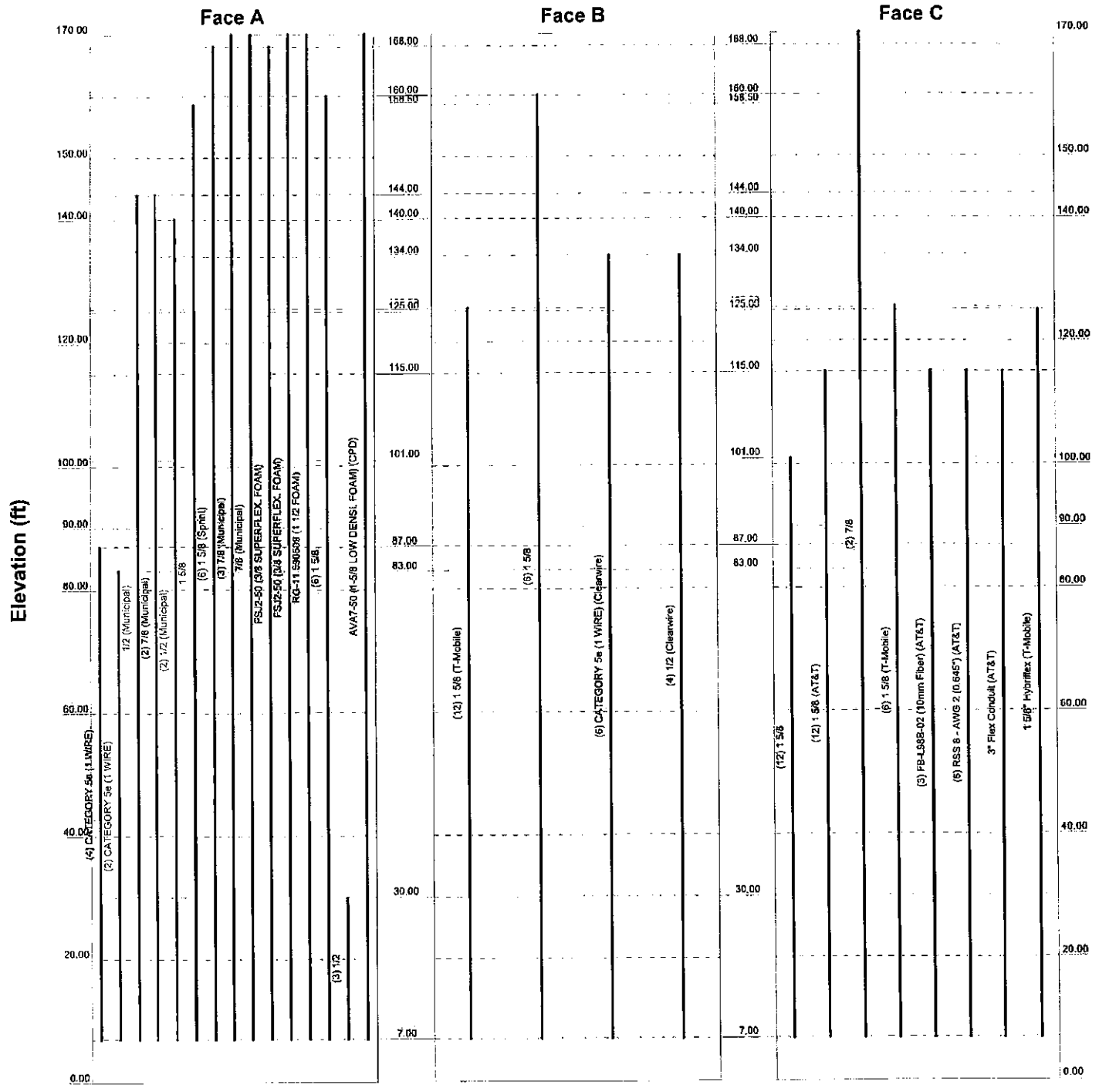
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TNX TOWER FEEDLINE DISTRIBUTION CHART

Feedline Distribution Chart
0' - 170'

_____ Round _____ Flat _____ App In Face _____ App Out Face _____ Truss Leg



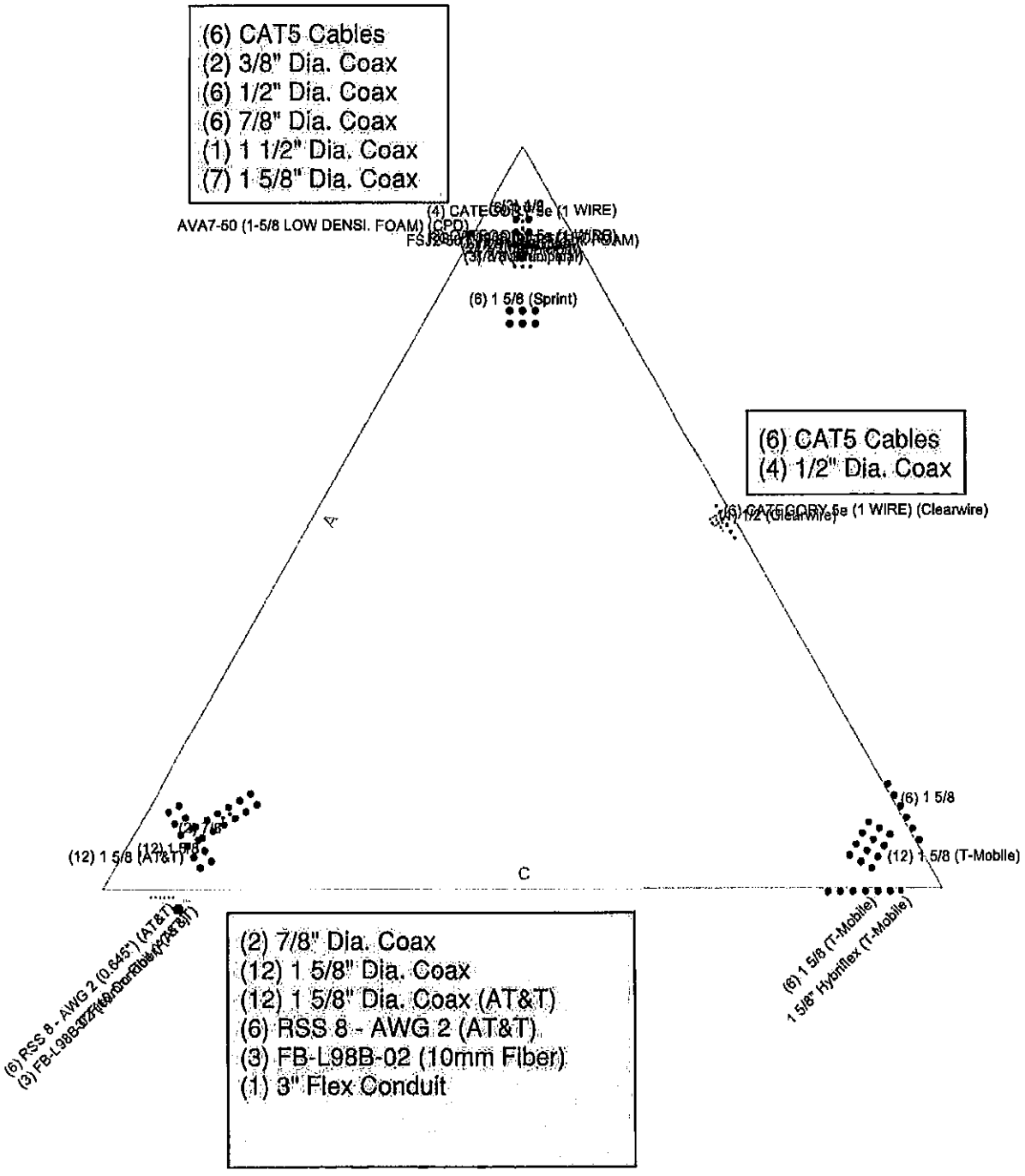
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job:	PiROD U20'-0"x170' Lattice Tower		
Project:	CFD-007 / Cromwell, CT Tower MOD		
Client: T-Mobile	Drawn by: Michael_Dalickas	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/13	Scale: NTS	
Path:		Dwg No. E-7	

TNX TOWER FEEDLINE PLAN

Feedline Plan

Round Flat _____ App In Face App Out Face Truss-Leg



URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job: *PIROD U20'-0"x170' Lattice Tower*			
Project: *CFD-007 / Cromwell, CT Tower MOD*			
Client: T-Mobile	Drawn by: Michael_Dalickas	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/13	Scale: NTS	
Path:		Dwg No. E-7	

TNX TOWER DETAILED OUTPUT

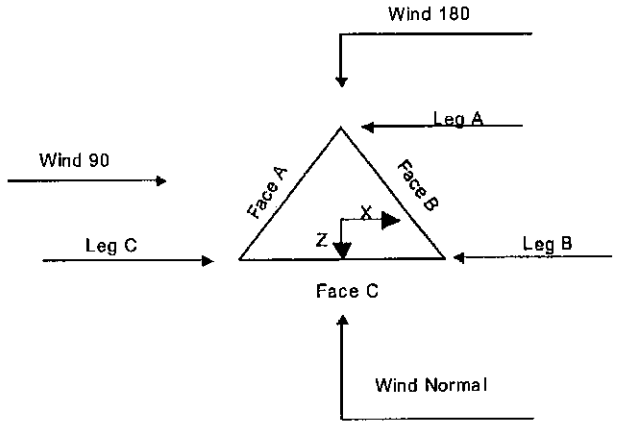
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 170.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 20.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	√ Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	√ Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	√ SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	170.00-150.00			5.00	1	20.00
T2	150.00-140.00		U6.0 105244	5.00	1	10.00
T3	140.00-120.00		U8.0 105216	6.00	1	20.00
T4	120.00-100.00		U10.0 105217 L3x3/16	8.00	1	20.00
T5	100.00-90.00		U12.0 105216	10.00	1	10.00
T6	90.00-80.00		U12.0 105216	11.00	1	10.00
T7	80.00-60.00		U14.0 105218	12.00	1	20.00
T8	60.00-40.00		U16.0 105219	14.00	1	20.00
T9	40.00-20.00		U18.0 105219	16.00	1	20.00
T10	20.00-0.00		U20.0 105219 L4x1/4	18.00	1	20.00

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	170.00-150.00	2.49	X Brace	No	No	0.0000	1.0000
T2	150.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T4	120.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T5	100.00-90.00	10.00	X Brace	No	No	0.0000	0.0000

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
T6	90.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T7	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T8	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 170.00-150.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 150.00-140.00	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T4 120.00-100.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T5 100.00-90.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T6 90.00-80.00	Truss Leg	Pirod 105217 reinf w/ 1" dia bar	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T7 80.00-60.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)
T8 60.00-40.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T9 40.00-20.00	Truss Leg	Pirod 105219 reinf w /1" dia bar	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T10 20.00-0.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A36 (36 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 170.00-150.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 150.00-140.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 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
T4 120.00-100.00	1	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	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
T1 170.00-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T2 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T5 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T6 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt
T10 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	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 170.00-150.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 150.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 140.00-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 120.00-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 100.00-90.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 90.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T7	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
20.00-0.00				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	Truss-Leg K Factors: Truss-Legs Used As Leg Members — Leg Panels	X Brace Diagonals	Z Brace Diagonals	Truss-Legs Used As Inner Members — Leg Panels	X Brace Diagonals	Z Brace Diagonals
T2	1	0.5	0.85	1	0.5	0.85
150.00-140.00						
T3	1	0.5	0.85	1	0.5	0.85
140.00-120.00						
T4	1	0.5	0.85	1	0.5	0.85
120.00-100.00						
T5	1	0.5	0.85	1	0.5	0.85
100.00-90.00						
T6	1	0.5	0.85	1	0.5	0.85
90.00-80.00						
T7	1	0.5	0.85	1	0.5	0.85
80.00-60.00						
T8	1	0.5	0.85	1	0.5	0.85
60.00-40.00						
T9	1	0.5	0.85	1	0.5	0.85
40.00-20.00						
T10	1	0.5	0.85	1	0.5	0.85
20.00-0.00						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
170.00-150.00														

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
T2 150.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T3 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T4 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T5 100.00-90.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T6 90.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	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 170.00-150.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 150.00-140.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 140.00-120.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 120.00-100.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0
T5 100.00-90.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 90.00-80.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-0.00	Flange	0.0000 A325N	0	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset In	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
CATEGORY	A	No	Ar (Leg)	87.00 - 7.00	0.0000	0.1	4	4	1.0000	1.0000		0.21

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
5e (1 WIRE) CATEGORY	A	No	Ar (Leg)	83.00 - 7.00	0.0000	0.12	2	2	1.0000	1.0000		0.21
5e (1 WIRE) 1/2 (Municipal)	A	No	Ar (Leg)	144.00 - 7.00	0.0000	0.125	1	1	0.5800	0.5800		0.25
7/8 (Municipal)	A	No	Ar (Leg)	144.00 - 7.00	0.0000	0.125	2	1	1.0000	1.1100		0.54
1/2 (Municipal)	A	No	Ar (Leg)	140.00 - 7.00	0.0000	0.13	2	1	0.5800	0.5800		0.25
1 5/8	A	No	Ar (Leg)	158.50 - 7.00	0.0000	0.13	1	1	1.5000	1.9800		1.04
1 5/8 (Sprint)	A	No	Ar (Leg)	168.00 - 7.00	0.0000	0.2	6	2	1.5000	1.9800		1.04
7/8 (Municipal)	A	No	Ar (Leg)	170.00 - 7.00	0.0000	0.14	3	1	1.0000	1.1100		0.54
7/8 (Municipal)	A	No	Ar (Leg)	170.00 - 7.00	0.0000	0.14	1	1	1.1100	1.1100		0.54
FSJ2-50 (3/8 SUPERFLEX. FOAM)	A	No	Ar (Leg)	168.00 - 7.00	0.0000	0.12	1	1	0.4300	0.4300		0.08
FSJ2-50 (3/8 SUPERFLEX. FOAM)	A	No	Ar (Leg)	170.00 - 7.00	0.0000	0.12	1	1	0.4300	0.4300		0.08
RG-11 590609 (1 1/2 FOAM)	A	No	Ar (Leg)	170.00 - 7.00	0.0000	0.12	1	1	1.5000	1.5900		0.94
1 5/8 (T-Mobile)	B	No	Ar (Leg)	125.50 - 7.00	0.0000	0.1	12	3	1.5000	1.9800		1.04
1 5/8	B	Yes	Ar (CfAe)	160.00 - 7.00	0.0000	0.4	6	6	1.5000	1.9800		1.04
1 5/8	C	No	Ar (Leg)	101.00 - 7.00	0.0000	0.17	12	6	1.5000	1.9800		1.04
1 5/8 (AT&T)	C	No	Ar (Leg)	115.00 - 7.00	0.0000	0.12	12	2	1.5000	1.9800		1.04
7/8	C	No	Ar (Leg)	170.00 - 7.00	0.0000	0.17	2	2	1.0000	1.1100		0.54
1 5/8	A	No	Ar (Leg)	160.00 - 7.00	0.0000	0.1	6	3	1.5000	1.9800		1.04
1 5/8 (T-Mobile)	C	Yes	Ar (CfAe)	125.50 - 7.00	0.0000	-0.4	6	6	1.5000	1.9800		1.04
CATEGORY 5e (1 WIRE) (Clearwire)	B	Yes	Ar (CfAe)	134.00 - 7.00	-2.0000	0	6	6	1.0000	1.0000		0.21
1/2 (Clearwire)	B	Yes	Ar (CfAe)	134.00 - 7.00	-4.0000	0	4	4	0.5800	0.5800		0.25
FB-L98B-02 (10mm Fiber) (AT&T)	C	Yes	Ar (CfAe)	115.00 - 7.00	3.0000	0.4	3	3	0.3937	0.3937		0.03
RSS 8 - AWG 2 (0.645") (AT&T)	C	Yes	Ar (CfAe)	115.00 - 7.00	2.0000	0.43	6	6	0.6450	0.6450		0.30
3" Flex Conduit (AT&T)	C	Yes	Ar (CfAe)	115.00 - 7.00	4.0000	0.41	1	1	0.0000	3.0000		3.00
1/2	A	No	Ar (Leg)	30.00 - 7.00	0.0000	0.08	3	1	0.5800	0.5800		0.25
AVA7-50 (1-5/8 LOW DENSI. FOAM) (CPD)	A	Yes	Ar (CfAe)	170.00 - 7.00	0.0000	0.38	1	1	1.5000	1.9800		0.72
1 5/8" Hybriflex (T-Mobile)	C	Yes	Ar (CfAe)	125.00 - 7.00	0.0000	-0.45	1	1	1.5000	1.6250		0.21

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	170.00-150.00	A	42.591	0.000	0.000	0.000	0.26
		B	45.491	0.000	0.000	0.000	0.06
		C	3.700	0.000	0.000	0.000	0.02
T2	150.00-140.00	A	28.094	0.000	0.000	0.000	0.18
		B	34.494	0.000	0.000	0.000	0.06
		C	1.850	0.000	0.000	0.000	0.01
T3	140.00-120.00	A	60.922	0.000	0.000	0.000	0.39
		B	90.087	0.000	0.000	0.000	0.23
		C	16.480	0.000	0.000	0.000	0.06
T4	120.00-100.00	A	87.221	0.000	0.000	0.000	0.39
		B	111.801	0.000	0.000	0.000	0.42
		C	86.784	0.000	0.000	0.000	0.42
T5	100.00-90.00	A	63.335	0.000	0.000	0.000	0.19
		B	55.900	0.000	0.000	0.000	0.21
		C	64.794	0.000	0.000	0.000	0.37
T6	90.00-80.00	A	66.169	0.000	0.000	0.000	0.20
		B	58.734	0.000	0.000	0.000	0.21
		C	64.794	0.000	0.000	0.000	0.37
T7	80.00-60.00	A	136.670	0.000	0.000	0.000	0.41
		B	121.801	0.000	0.000	0.000	0.42
		C	129.588	0.000	0.000	0.000	0.75
T8	60.00-40.00	A	136.670	0.000	0.000	0.000	0.41
		B	121.801	0.000	0.000	0.000	0.42
		C	129.588	0.000	0.000	0.000	0.75
T9	40.00-20.00	A	138.120	0.000	0.000	0.000	0.42
		B	123.251	0.000	0.000	0.000	0.42
		C	129.588	0.000	0.000	0.000	0.75
T10	20.00-0.00	A	90.721	0.000	0.000	0.000	0.28
		B	81.055	0.000	0.000	0.000	0.27
		C	84.232	0.000	0.000	0.000	0.49

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	170.00-150.00	A	0.500	58.616	3.517	0.000	0.000	0.69
		B		65.033	0.000	0.000	0.000	0.15
		C		3.517	3.517	0.000	0.000	0.07
T2	150.00-140.00	A	0.500	38.169	1.758	0.000	0.000	0.47
		B		48.828	0.000	0.000	0.000	0.15
		C		1.758	1.758	0.000	0.000	0.03
T3	140.00-120.00	A	0.500	86.705	3.517	0.000	0.000	1.02
		B		119.315	15.727	0.000	0.000	0.64
		C		19.922	3.517	0.000	0.000	0.16
T4	120.00-100.00	A	0.500	114.338	3.517	0.000	0.000	1.02
		B		139.867	22.467	0.000	0.000	1.16
		C		100.002	13.548	0.000	0.000	1.08
T5	100.00-90.00	A	0.500	77.894	1.758	0.000	0.000	0.51
		B		69.934	11.233	0.000	0.000	0.58
		C		72.192	8.446	0.000	0.000	0.94
T6	90.00-80.00	A	0.500	79.560	5.758	0.000	0.000	0.55
		B		71.600	15.233	0.000	0.000	0.58
		C		72.192	8.446	0.000	0.000	0.94
T7	80.00-60.00	A	0.500	162.454	16.850	0.000	0.000	1.18

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
		B		146.534	35.800	0.000	0.000	1.16
		C		144.384	16.891	0.000	0.000	1.88
T8	60.00-40.00	A	0.500	162.454	16.850	0.000	0.000	1.18
		B		146.534	35.800	0.000	0.000	1.16
		C		144.384	16.891	0.000	0.000	1.88
T9	40.00-20.00	A	0.500	165.704	16.850	0.000	0.000	1.21
		B		149.784	35.800	0.000	0.000	1.16
		C		144.384	16.891	0.000	0.000	1.88
T10	20.00-0.00	A	0.500	109.820	10.953	0.000	0.000	0.80
		B		99.472	23.270	0.000	0.000	0.75
		C		93.849	10.979	0.000	0.000	1.22

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	170.00-150.00	A	0.239	0.771	0.000	0.000
		B	0.717	2.313	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	150.00-140.00	A	0.000	0.106	0.184	0.277
		B	0.000	0.639	1.103	1.659
		C	0.000	0.000	0.000	0.000
T3	140.00-120.00	A	0.000	0.145	0.289	0.435
		B	0.000	1.449	2.581	4.348
		C	0.000	0.271	0.536	0.813
T4	120.00-100.00	A	0.000	0.145	0.288	0.434
		B	0.000	1.696	2.942	5.088
		C	0.000	1.544	2.846	4.631
T5	100.00-90.00	A	0.000	0.057	0.114	0.171
		B	0.000	0.670	1.162	2.010
		C	0.000	0.682	1.240	2.046
T6	90.00-80.00	A	0.000	0.055	0.109	0.165
		B	0.000	0.643	1.115	1.929
		C	0.000	0.655	1.190	1.964
T7	80.00-60.00	A	0.000	0.105	0.208	0.314
		B	0.000	1.225	2.125	3.676
		C	0.000	1.247	2.268	3.742
T8	60.00-40.00	A	0.000	0.100	0.231	0.348
		B	0.000	1.167	2.361	4.084
		C	0.000	1.188	2.520	4.158
T9	40.00-20.00	A	0.000	0.096	0.223	0.336
		B	0.000	1.126	2.279	3.942
		C	0.000	1.147	2.432	4.013
T10	20.00-0.00	A	0.000	0.061	0.162	0.243
		B	0.000	0.713	1.649	2.852
		C	0.000	0.726	1.760	2.903

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	170.00-150.00	1.2659	-6.5122	1.2632	-5.9986
T2	150.00-140.00	1.8968	-5.3264	1.9370	-4.9951
T3	140.00-120.00	4.5561	-5.7642	4.3223	-5.8175
T4	120.00-100.00	3.6431	-0.3105	4.0740	-1.3711
T5	100.00-90.00	-0.3843	2.0988	1.0488	0.5725
T6	90.00-80.00	-0.3884	1.4438	1.1140	-0.1879
T7	80.00-60.00	-0.4088	0.9784	1.2482	-0.7523
T8	60.00-40.00	-0.4859	1.0391	1.3662	-0.8892
T9	40.00-20.00	-0.5174	0.8596	1.5305	-1.4387
T10	20.00-0.00	-0.5088	0.5013	1.3500	-1.7363

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
PC9013N	A	From Leg	1.00 0.00 0.00	0.0000	24.00	No Ice 1/2" Ice	0.46 0.52	0.46 0.52	0.00 0.00
3"x2"x22" Panel	B	From Leg	2.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	0.65 0.81	0.47 0.61	0.05 0.05
TMA	B	From Leg	2.00 0.00 0.00	0.0000	82.50	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	0.00 0.01
TMA	B	From Leg	2.00 0.00 0.00	0.0000	84.50	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	0.00 0.01
3"x2"x22" Panel	B	From Leg	2.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice	0.65 0.81	0.47 0.61	0.05 0.05
3' Stand-off	B	From Leg	1.50 0.00 0.00	0.0000	83.50	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	0.05 0.07
3' Stand-off	A	From Leg	1.50 0.00 0.00	0.0000	83.50	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	0.05 0.07
TMA	A	From Leg	2.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	0.00 0.01
SC-E 6014 rev2 (Verizon)	A	From Leg	4.00 6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
BXA-171063-12BF (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	0.02 0.04
SWCP 2x5514 (Verizon)	A	From Leg	4.00 -4.00 0.00	0.0000	101.00	No Ice 1/2" Ice	7.01 7.44	5.70 6.12	0.02 0.07
SC-E 6014 rev2 (Verizon)	A	From Leg	4.00 -6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
SC-E 6014 rev2 (Verizon)	B	From Leg	4.00 6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
BXA-171063-12BF (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	0.02 0.04
SC-E 6014 rev2 (Verizon)	B	From Leg	4.00 -6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
SC-E 6014 rev2 (Verizon)	C	From Leg	4.00 6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
BXA-171063-12BF (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	0.02 0.04
SWCP 2x5514 (Verizon)	C	From Leg	4.00 -4.00 0.00	0.0000	101.00	No Ice 1/2" Ice	7.01 7.44	5.70 6.12	0.02 0.07
SC-E 6014 rev2 (Verizon)	C	From Leg	4.00 -6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
PiROD 12' Lightweight T-Frame (Verizon)	A	From Leg	2.00 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	10.20 16.20	10.20 16.20	0.25 0.35
PiROD 12' Lightweight T-Frame (Verizon)	B	From Leg	2.00 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	10.20 16.20	10.20 16.20	0.25 0.35
PiROD 12' Lightweight T-Frame (Verizon)	C	From Leg	2.00 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	10.20 16.20	10.20 16.20	0.25 0.35
(2) TMA (shielded) (AT&T)	A	From Leg	4.00 6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
(2) TMA (shielded) (AT&T)	A	From Leg	4.00 -6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
(2) TMA (shielded) (AT&T)	B	From Leg	4.00 6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
(2) TMA (shielded) (AT&T)	B	From Leg	4.00 -6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
(2) TMA (shielded) (AT&T)	C	From Leg	4.00 6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
(2) TMA (shielded) (AT&T)	C	From Leg	4.00 -6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
PiROD 12' Lightweight T-Frame (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.20 16.20	10.20 16.20	0.25 0.35
PiROD 12' Lightweight T-Frame (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.20 16.20	10.20 16.20	0.25 0.35
PiROD 12' Lightweight T-Frame (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.20 16.20	10.20 16.20	0.25 0.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
PiROD 10' Lightweight	A	From Leg	2.00	0.0000	125.50	No Ice	9.30	9.30	0.25
T-Frame			0.00			1/2" Ice	14.50	14.50	0.34
(T-Mobile)			0.00						
PiROD 10' Lightweight	B	From Leg	2.00	0.0000	125.50	No Ice	9.30	9.30	0.25
T-Frame			0.00			1/2" Ice	14.50	14.50	0.34
(T-Mobile)			0.00						
PiROD 10' Lightweight	C	From Leg	2.00	0.0000	125.50	No Ice	9.30	9.30	0.25
T-Frame			0.00			1/2" Ice	14.50	14.50	0.34
(T-Mobile)			0.00						
3" Dia 20' Omni	C	From Face	6.00	0.0000	144.00	No Ice	6.00	6.00	0.06
(Municipal)			9.00			1/2" Ice	8.03	8.03	0.10
			0.00						
PiROD 20' Universal	C	None		0.0000	134.00	No Ice	33.10	33.10	2.27
Platform						1/2" Ice	47.10	47.10	2.70
(Municipal)									
3" Dia 20' Omni	A	From Face	6.00	0.0000	144.00	No Ice	6.00	6.00	0.06
(Municipal)			-9.00			1/2" Ice	8.03	8.03	0.10
			0.00						
9' Whip	A	From Face	6.00	0.0000	138.50	No Ice	5.85	5.85	0.12
(Municipal)			0.00			1/2" Ice	7.66	7.66	0.17
			0.00						
2.5" x 20'6" Whip	A	From Face	6.00	0.0000	144.00	No Ice	5.14	5.14	0.15
(Municipal)			9.00			1/2" Ice	7.24	7.24	0.19
			0.00						
2" Dia 15' Omni	B	From Face	6.00	0.0000	141.00	No Ice	3.20	3.20	0.04
(Municipal)			-5.00			1/2" Ice	4.83	4.83	0.06
			0.00						
1.5" x 10' Omni	B	From Face	6.00	0.0000	139.00	No Ice	1.50	1.50	0.06
(Municipal)			5.00			1/2" Ice	2.52	2.52	0.07
			0.00						
SC420-HF1LDF	A	From Face	6.00	0.0000	158.50	No Ice	2.14	2.14	0.02
(Municipal)			0.00			1/2" Ice	3.02	3.02	0.03
			0.00						
APXV18-206517S-C w/	A	From Leg	1.00	0.0000	159.50	No Ice	5.08	4.46	0.05
mounting hardware			0.00			1/2" Ice	5.53	5.39	0.09
			0.00						
APXV18-206517S-C w/	B	From Leg	1.00	0.0000	159.50	No Ice	5.08	4.46	0.05
mounting hardware			0.00			1/2" Ice	5.53	5.39	0.09
			0.00						
APXV18-206517S-C w/	C	From Leg	1.00	0.0000	159.50	No Ice	5.08	4.46	0.05
mounting hardware			0.00			1/2" Ice	5.53	5.39	0.09
			0.00						
9 Arm Halo Mount	C	None		0.0000	168.00	No Ice	62.60	62.60	3.60
(Municipal)						1/2" Ice	80.40	80.40	4.80
SU-RA-HP-2.4 Antenna	B	From Face	3.00	0.0000	168.00	No Ice	0.80	0.37	0.00
(Municipal)			2.50			1/2" Ice	0.93	0.47	0.01
			0.00						
950G65VTZE-M	B	From Face	6.00	0.0000	168.00	No Ice	3.99	2.78	0.01
(Sprint)			1.25			1/2" Ice	4.37	3.15	0.03
			0.00						
950G65VTZE-M	B	From Leg	2.50	0.0000	168.00	No Ice	3.99	2.78	0.01
(Sprint)			0.00			1/2" Ice	4.37	3.15	0.03
			0.00						
950G65VTZE-M	C	From Face	6.00	0.0000	168.00	No Ice	3.99	2.78	0.01
(Sprint)			-1.25			1/2" Ice	4.37	3.15	0.03
			0.00						
950G65VTZE-M	C	From Face	6.00	0.0000	168.00	No Ice	3.99	2.78	0.01

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
(Sprint)			1.25 0.00			1/2" Ice	4.37	3.15	0.03
950G65VTZE-M (Sprint)	C	From Leg	2.50 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	3.99 4.37	2.78 3.15	0.01 0.03
950G65VTZE-M (Sprint)	A	From Face	6.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	3.99 4.37	2.78 3.15	0.01 0.03
101-90-08-0-01 (Municipal)	A	From Leg	2.50 2.00 0.00	0.0000	183.00	No Ice 1/2" Ice	3.33 4.31	3.33 4.31	0.04 0.06
3" Dia 20' Omni (Municipal)	B	From Face	9.00 0.00 0.00	0.0000	178.00	No Ice 1/2" Ice	6.00 8.03	6.00 8.03	0.06 0.10
2.5" x 20'6" Whip (Municipal)	C	From Face	0.00 0.00 0.00	0.0000	178.00	No Ice 1/2" Ice	5.14 7.24	5.14 7.24	0.15 0.19
2.5" x 14' Omni (Municipal)	C	From Face	0.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	3.50 4.93	3.50 4.93	0.03 0.06
2.5" x 14' Omni (Municipal)	C	From Face	0.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	3.50 4.93	3.50 4.93	0.03 0.06
15' Mount Pipe (Municipal)	A	From Leg	2.50 2.00 0.00	0.0000	179.75	No Ice 1/2" Ice	4.50 6.03	4.50 6.03	0.09 0.12
2.5" x 14' Omni (Municipal)	C	From Face	0.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	3.50 4.93	3.50 4.93	0.03 0.06
1.5" x 12' Omni (Municipal)	A	From Face	2.50 4.00 0.00	0.0000	174.00	No Ice 1/2" Ice	1.50 2.52	1.50 2.52	0.06 0.07
AIR B2A/B4P (T-Mobile)	A	From Leg	4.00 3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
AIR B2A/B4P (T-Mobile)	B	From Leg	4.00 3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
AIR B2A/B4P (T-Mobile)	C	From Leg	4.00 3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
AIR B2A/B4P (T-Mobile)	A	From Leg	4.00 -3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
AIR B2A/B4P (T-Mobile)	B	From Leg	4.00 -3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
AIR B2A/B4P (T-Mobile)	C	From Leg	4.00 -3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
Twin PCS TMA (T-Mobile)	A	From Leg	4.00 3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	0.77 0.96	0.36 0.52	0.01 0.02
Twin PCS TMA (T-Mobile)	B	From Leg	4.00 3.00 0.00	0.0000	125.50	No Ice 1/2" Ice	0.77 0.96	0.36 0.52	0.01 0.02
Twin PCS TMA	C	From Leg	4.00	0.0000	125.50	No Ice	0.77	0.36	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(T-Mobile)			3.00 0.00			1/2" Ice	0.96	0.52	0.02
Argus LLPX310R (Clearwire)	A	From Face	6.00 7.00 0.00	0.0000	134.00	No Ice 1/2" Ice	4.86 5.22	3.46 3.80	0.03 0.06
Argus LLPX310R (Clearwire)	B	From Face	6.00 0.00 0.00	0.0000	134.00	No Ice 1/2" Ice	4.86 5.22	3.46 3.80	0.03 0.06
Argus LLPX310R (Clearwire)	C	From Face	6.00 7.00 0.00	0.0000	134.00	No Ice 1/2" Ice	4.86 5.22	3.46 3.80	0.03 0.06
REMOTE RADIO HEAD (RRH) (Clearwire)	A	From Face	6.00 7.00 0.00	0.0000	134.00	No Ice 1/2" Ice	1.82 2.00	0.83 0.97	0.03 0.04
REMOTE RADIO HEAD (RRH) (Clearwire)	B	From Face	6.00 0.00 0.00	0.0000	134.00	No Ice 1/2" Ice	1.82 2.00	0.83 0.97	0.03 0.04
REMOTE RADIO HEAD (RRH) (Clearwire)	C	From Face	6.00 7.00 0.00	0.0000	134.00	No Ice 1/2" Ice	1.82 2.00	0.83 0.97	0.03 0.04
7770.00 (AT&T)	A	From Leg	4.00 6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.03 10.61	5.60 6.15	0.02 0.07
7770.00 (AT&T)	A	From Leg	4.00 -6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.03 10.61	5.60 6.15	0.02 0.07
7770.00 (AT&T)	B	From Leg	4.00 6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.03 10.61	5.60 6.15	0.02 0.07
7770.00 (AT&T)	B	From Leg	4.00 -6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.03 10.61	5.60 6.15	0.02 0.07
7770.00 (AT&T)	C	From Leg	4.00 6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.03 10.61	5.60 6.15	0.02 0.07
7770.00 (AT&T)	C	From Leg	4.00 -6.00 0.00	0.0000	115.00	No Ice 1/2" Ice	10.03 10.61	5.60 6.15	0.02 0.07
AM-X-CD-16-65-00T-RET (6') (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.10
AM-X-CD-16-65-00T-RET (6') (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.10
AM-X-CD-16-65-00T-RET (6') (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.10
(2) REMOTE RADIO HEAD (RRH) (AT&T)	A	From Leg	0.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.82 2.00	0.83 0.97	0.03 0.04
(2) REMOTE RADIO HEAD (RRH) (AT&T)	B	From Leg	0.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.82 2.00	0.83 0.97	0.03 0.04
(2) REMOTE RADIO HEAD (RRH) (AT&T)	C	From Leg	0.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.82 2.00	0.83 0.97	0.03 0.04
Surge Suppressor	C	From Leg	0.00	0.0000	115.00	No Ice	0.80	0.80	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(AT&T)			0.00 0.00			1/2" Ice	0.94	0.94	0.04
Camera	A	From Leg	0.00 0.00 0.00	0.0000	30.00	No Ice 1/2" Ice	0.50 0.60	0.50 0.60	0.01 0.02
(2) Diplexer (Verizon)	A	From Leg	4.00 6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	0.23 0.30	0.17 0.24	0.01 0.01
(2) Diplexer (Verizon)	B	From Leg	4.00 6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	0.23 0.30	0.17 0.24	0.01 0.01
(2) Diplexer (Verizon)	C	From Leg	4.00 6.00 0.00	0.0000	101.00	No Ice 1/2" Ice	0.23 0.30	0.17 0.24	0.01 0.01
PTP49600 (CPD)	C	From Leg	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	2.04 2.24	0.53 0.65	0.01 0.02
BXA-70063-6CF (Verizon)	B	From Leg	4.00 -4.00 0.00	0.0000	101.00	No Ice 1/2" Ice	7.73 8.27	4.16 4.60	0.02 0.06

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
3' Dish	A	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		83.00	3.00	No Ice 1/2" Ice	7.07 7.47	0.23 0.27
VHLP2.5-180 (Clearwire)	A	Paraboloid w/o Radome	From Face	6.00 0.00 0.00	0.0000		134.00	2.50	No Ice 1/2" Ice	4.90 5.24	0.07 0.10
VHLP2.5-180 (Clearwire)	A	Paraboloid w/o Radome	From Face	6.00 -7.00 0.00	0.0000		134.00	2.50	No Ice 1/2" Ice	4.90 5.24	0.07 0.10
VHLP2.5-180 (Clearwire)	B	Paraboloid w/o Radome	From Face	6.00 -7.00 0.00	0.0000		134.00	2.50	No Ice 1/2" Ice	4.90 5.24	0.07 0.10
VHLP2-180 (Clearwire)	C	Paraboloid w/o Radome	From Face	6.00 0.00 0.00	0.0000		134.00	2.00	No Ice 1/2" Ice	3.14 3.41	0.03 0.04
HPD2-4.7	C	Paraboloid w/Radome	From Face	2.00 0.00 0.00	0.0000		168.00	2.00	No Ice 1/2" Ice	3.14 3.41	0.03 0.04

Truss-Leg Properties

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in^2	in^2	K	K	in	in	in^2
Pirod 105244	1026.8606	1727.9786	0.56	0.21	7.1310	11.9999	3.6816
Pirod 105216	1998.0891	3357.4497	0.51	0.43	6.9378	11.6578	3.6816
Pirod 105217	2130.7479	3520.4599	0.62	0.44	7.3984	12.2238	5.3014
Pirod 105217	2130.7479	3520.4599	0.62	0.44	7.3984	12.2238	5.3014
Pirod 105217 reinf w/ 1" dia bar	2291.5652	3727.7657	0.79	0.46	7.9568	12.9436	7.6570
Pirod 105218	2263.4687	3690.8612	0.75	0.46	7.8593	12.8155	7.2158
Pirod 105219	2441.8688	3942.2854	0.94	0.49	8.4787	13.6885	9.4248
Pirod 105219 reinf w /1" dia bar	2571.0468	4121.6676	1.11	0.50	8.9272	14.3113	11.7803
Pirod 105220	2578.8005	4132.5504	1.12	0.50	8.9542	14.3491	11.9282

Tower Pressures - No Ice

$G_H = 1.125$

Section Elevation	z	K_z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T1	160.00	1.57	29	102.917	A	0.000	55.220	5.833	10.56	0.000	0.000
170.00-150.00					B	0.000	57.641		10.12	0.000	0.000
					C	0.000	16.568		35.21	0.000	0.000
T2	145.00	1.526	28	66.055	A	5.292	39.999	11.905	26.29	0.000	0.000
150.00-140.00					B	4.373	46.399		23.45	0.000	0.000
					C	5.476	13.755		61.91	0.000	0.000
T3	130.00	1.48	27	162.111	A	10.178	84.086	23.165	24.57	0.000	0.000
140.00-120.00					B	7.886	113.251		19.12	0.000	0.000
					C	9.931	39.645		46.72	0.000	0.000
T4	110.00	1.411	26	202.528	A	13.676	111.924	24.703	19.67	0.000	0.000
120.00-100.00					B	11.023	136.503		16.74	0.000	0.000
					C	11.118	111.486		20.15	0.000	0.000
T5	95.00	1.353	25	116.264	A	6.447	75.686	12.351	15.04	0.000	0.000
100.00-90.00					B	5.399	68.252		16.77	0.000	0.000
					C	5.321	77.145		14.98	0.000	0.000
T6 90.00-80.00	85.00	1.31	24	126.517	A	6.849	79.452	13.283	15.39	0.000	0.000
					B	5.844	72.017		17.06	0.000	0.000
					C	5.769	78.077		15.84	0.000	0.000
T7 80.00-60.00	70.00	1.24	23	282.945	A	14.936	162.912	26.241	14.75	0.000	0.000
					B	13.019	148.042		16.29	0.000	0.000
					C	12.876	155.829		15.55	0.000	0.000
T8 60.00-40.00	50.00	1.126	21	323.362	A	19.403	164.980	28.309	15.35	0.000	0.000
					B	17.274	150.110		16.91	0.000	0.000
					C	17.115	157.897		16.18	0.000	0.000
T9 40.00-20.00	30.00	1	18	363.756	A	21.437	167.927	29.807	15.74	0.000	0.000
					B	19.382	153.058		17.29	0.000	0.000
					C	19.229	159.395		16.69	0.000	0.000
T10 20.00-0.00	10.00	1	18	403.780	A	26.964	120.618	29.897	20.26	0.000	0.000
					B	25.476	110.952		21.91	0.000	0.000
					C	25.366	114.129		21.43	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.125$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	160.00	1.57	22	0.5000	104.583	A	3.517	82.085	9.167	10.71	0.000	0.000
170.00-150.00						B	0.000	86.959		10.54	0.000	0.000
						C	3.517	27.757		29.31	0.000	0.000
T2	145.00	1.526	21	0.5000	66.890	A	6.957	60.205	20.033	29.83	0.000	0.000
150.00-140.00						B	3.816	70.331		27.02	0.000	0.000
						C	7.234	23.901		64.34	0.000	0.000
T3	130.00	1.48	21	0.5000	163.780	A	13.549	128.973	38.924	27.31	0.000	0.000
140.00-120.00						B	21.845	160.279		21.37	0.000	0.000
						C	13.171	62.064		51.74	0.000	0.000
T4	110.00	1.411	20	0.5000	204.197	A	17.047	159.662	40.814	23.10	0.000	0.000
120.00-100.00						B	31.343	183.640		18.98	0.000	0.000
						C	22.881	143.927		24.47	0.000	0.000
T5 100.00-90.00	95.00	1.353	19	0.5000	117.098	A	8.148	100.430	20.407	18.79	0.000	0.000
						B	15.784	91.858		18.96	0.000	0.000
						C	12.961	94.104		19.06	0.000	0.000
T6 90.00-80.00	85.00	1.31	18	0.5000	127.351	A	12.553	103.434	21.609	18.63	0.000	0.000
						B	20.263	94.886		18.77	0.000	0.000
						C	13.441	95.465		19.84	0.000	0.000
T7 80.00-60.00	70.00	1.24	17	0.5000	284.614	A	31.681	210.187	42.789	17.69	0.000	0.000
						B	47.268	193.146		17.80	0.000	0.000
						C	28.294	190.974		19.51	0.000	0.000
T8 60.00-40.00	50.00	1.126	16	0.5000	325.031	A	36.137	213.668	45.704	18.30	0.000	0.000
						B	51.351	196.681		18.43	0.000	0.000
						C	32.368	194.510		20.14	0.000	0.000
T9 40.00-20.00	30.00	1	14	0.5000	365.425	A	38.175	219.580	47.784	18.54	0.000	0.000
						B	53.519	202.630		18.65	0.000	0.000
						C	34.539	197.210		20.62	0.000	0.000
T10 20.00-0.00	10.00	1	14	0.5000	405.448	A	37.834	164.450	47.910	23.68	0.000	0.000
						B	47.543	153.450		23.84	0.000	0.000
						C	35.201	147.815		26.18	0.000	0.000

Tower Pressure - Service

$G_H = 1.125$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	160.00	1.57	10	102.917	A	0.000	55.220	5.833	10.56	0.000	0.000
170.00-150.00					B	0.000	57.641		10.12	0.000	0.000
					C	0.000	16.568		35.21	0.000	0.000
T2	145.00	1.526	10	66.055	A	5.292	39.999	11.905	26.29	0.000	0.000
150.00-140.00					B	4.373	46.399		23.45	0.000	0.000
					C	5.476	13.755		61.91	0.000	0.000
T3	130.00	1.48	9	162.111	A	10.178	84.086	23.165	24.57	0.000	0.000
140.00-120.00					B	7.886	113.251		19.12	0.000	0.000
					C	9.931	39.645		46.72	0.000	0.000
T4	110.00	1.411	9	202.528	A	13.676	111.924	24.703	19.67	0.000	0.000
120.00-100.00					B	11.023	136.503		16.74	0.000	0.000
					C	11.118	111.486		20.15	0.000	0.000
T5	95.00	1.353	9	116.264	A	6.447	75.686	12.351	15.04	0.000	0.000
100.00-90.00					B	5.399	68.252		16.77	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	5.321	77.145		14.98	0.000	0.000
T6 90.00-80.00	85.00	1.31	8	126.517	A	6.849	79.452	13.283	15.39	0.000	0.000
					B	5.844	72.017		17.06	0.000	0.000
					C	5.769	78.077		15.84	0.000	0.000
T7 80.00-60.00	70.00	1.24	8	282.945	A	14.936	162.912	26.241	14.75	0.000	0.000
					B	13.019	148.042		16.29	0.000	0.000
					C	12.876	155.829		15.55	0.000	0.000
T8 60.00-40.00	50.00	1.126	7	323.362	A	19.403	164.980	28.309	15.35	0.000	0.000
					B	17.274	150.110		16.91	0.000	0.000
					C	17.115	157.897		16.18	0.000	0.000
T9 40.00-20.00	30.00	1	6	363.756	A	21.437	167.927	29.807	15.74	0.000	0.000
					B	19.382	153.058		17.29	0.000	0.000
					C	19.229	159.395		16.69	0.000	0.000
T10 20.00-0.00	10.00	1	6	403.780	A	26.964	120.618	29.897	20.26	0.000	0.000
					B	25.476	110.952		21.91	0.000	0.000
					C	25.366	114.129		21.43	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	1	1	39.582	2.52	126.03	B
170.00-150.00			B	0.56	1.834	0.73	1	1	42.077			
			C	0.161	2.732	0.583	1	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	1	1	37.681	2.56	255.52	B
150.00-140.00			B	0.769	1.796	0.871	1	1	44.800			
			C	0.291	2.32	0.613	1	1	13.910			
T3	0.67	2.09	A	0.581	1.817	0.742	1	1	72.608	5.76	287.81	B
140.00-120.00			B	0.747	1.786	0.855	1	1	104.690			
			C	0.306	2.281	0.618	1	1	34.420			
T4	1.23	2.60	A	0.62	1.793	0.766	1	1	99.426	6.57	328.54	B
120.00-100.00			B	0.728	1.78	0.841	1	1	125.768			
			C	0.605	1.801	0.757	1	1	95.502			
T5	0.78	1.48	A	0.706	1.777	0.825	1	1	68.852	3.45	345.45	C
100.00-90.00			B	0.633	1.787	0.775	1	1	58.271			
			C	0.709	1.777	0.827	1	1	69.088			
T6	0.78	1.76	A	0.682	1.776	0.807	1	1	70.992	3.44	343.70	A
90.00-80.00			B	0.615	1.795	0.763	1	1	60.804			
			C	0.663	1.778	0.794	1	1	67.762			
T7	1.58	3.75	A	0.629	1.789	0.771	1	1	140.621	6.49	324.40	A
80.00-60.00			B	0.569	1.826	0.735	1	1	121.867			
			C	0.596	1.806	0.751	1	1	129.952			
T8	1.58	4.45	A	0.57	1.825	0.736	1	1	140.799	6.02	301.05	A
60.00-40.00			B	0.518	1.878	0.707	1	1	123.349			
			C	0.541	1.852	0.719	1	1	130.705			
T9	1.59	5.11	A	0.521	1.875	0.708	1	1	140.366	5.47	273.71	A
40.00-20.00			B	0.474	1.936	0.685	1	1	124.166			
			C	0.491	1.912	0.693	1	1	129.686			
T10	1.04	5.58	A	0.365	2.136	0.638	1	1	103.933	4.62	230.95	A
20.00-0.00			B	0.338	2.2	0.628	1	1	95.179			
			C	0.345	2.182	0.631	1	1	97.366			
Sum Weight:	9.84	29.10						OTM	3830.83 kip-ft	46.90		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	0.825	1	39.582	2.52	126.03	B
170.00-150.00			B	0.56	1.834	0.73	0.825	1	42.077			
			C	0.161	2.732	0.583	0.825	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	0.825	1	36.755	2.51	251.15	B
150.00-140.00			B	0.769	1.796	0.871	0.825	1	44.035			
			C	0.291	2.32	0.613	0.825	1	12.952			
T3	0.67	2.09	A	0.581	1.817	0.742	0.825	1	70.826	5.68	284.02	B
140.00-120.00			B	0.747	1.786	0.855	0.825	1	103.310			
			C	0.306	2.281	0.618	0.825	1	32.682			
T4	1.23	2.60	A	0.62	1.793	0.766	0.825	1	97.032	6.47	323.50	B
120.00-100.00			B	0.728	1.78	0.841	0.825	1	123.839			
			C	0.605	1.801	0.757	0.825	1	93.557			
T5	0.78	1.48	A	0.706	1.777	0.825	0.825	1	67.724	3.41	340.79	C
100.00-90.00			B	0.633	1.787	0.775	0.825	1	57.326			
			C	0.709	1.777	0.827	0.825	1	68.157			
T6	0.78	1.76	A	0.682	1.776	0.807	0.825	1	69.793	3.38	337.90	A
90.00-80.00			B	0.615	1.795	0.763	0.825	1	59.781			
			C	0.663	1.778	0.794	0.825	1	66.752			
T7	1.58	3.75	A	0.629	1.789	0.771	0.825	1	138.007	6.37	318.37	A
80.00-60.00			B	0.569	1.826	0.735	0.825	1	119.589			
			C	0.596	1.806	0.751	0.825	1	127.699			
T8	1.58	4.45	A	0.57	1.825	0.736	0.825	1	137.403	5.88	293.79	A
60.00-40.00			B	0.518	1.878	0.707	0.825	1	120.326			
			C	0.541	1.852	0.719	0.825	1	127.710			
T9	1.59	5.11	A	0.521	1.875	0.708	0.825	1	136.614	5.33	266.39	A
40.00-20.00			B	0.474	1.936	0.685	0.825	1	120.775			
			C	0.491	1.912	0.693	0.825	1	126.321			
T10	1.04	5.58	A	0.365	2.136	0.638	0.825	1	99.215	4.41	220.47	A
20.00-0.00			B	0.338	2.2	0.628	0.825	1	90.721			
			C	0.345	2.182	0.631	0.825	1	92.927			
Sum Weight:	9.84	29.10						OTM	3772.01 kip-ft	45.95		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	0.8	1	39.582	2.52	126.03	B
170.00-150.00			B	0.56	1.834	0.73	0.8	1	42.077			
			C	0.161	2.732	0.583	0.8	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	0.8	1	36.623	2.51	250.53	B
150.00-140.00			B	0.769	1.796	0.871	0.8	1	43.926			
			C	0.291	2.32	0.613	0.8	1	12.815			
T3	0.67	2.09	A	0.581	1.817	0.742	0.8	1	70.572	5.67	283.48	B
140.00-120.00			B	0.747	1.786	0.855	0.8	1	103.113			
			C	0.306	2.281	0.618	0.8	1	32.434			
T4	1.23	2.60	A	0.62	1.793	0.766	0.8	1	96.690	6.46	322.78	B
120.00-100.00			B	0.728	1.78	0.841	0.8	1	123.563			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.605	1.801	0.757	0.8	1	93.279			
T5	0.78	1.48	A	0.706	1.777	0.825	0.8	1	67.563	3.40	340.13	C
100.00-90.00			B	0.633	1.787	0.775	0.8	1	57.191			
			C	0.709	1.777	0.827	0.8	1	68.024			
T6	0.78	1.76	A	0.682	1.776	0.807	0.8	1	69.622	3.37	337.07	A
90.00-80.00			B	0.615	1.795	0.763	0.8	1	59.635			
			C	0.663	1.778	0.794	0.8	1	66.608			
T7	1.58	3.75	A	0.629	1.789	0.771	0.8	1	137.634	6.35	317.51	A
80.00-60.00			B	0.569	1.826	0.735	0.8	1	119.263			
			C	0.596	1.806	0.751	0.8	1	127.377			
T8	1.58	4.45	A	0.57	1.825	0.736	0.8	1	136.918	5.85	292.75	A
60.00-40.00			B	0.518	1.878	0.707	0.8	1	119.894			
			C	0.541	1.852	0.719	0.8	1	127.282			
T9	1.59	5.11	A	0.521	1.875	0.708	0.8	1	136.078	5.31	265.35	A
40.00-20.00			B	0.474	1.936	0.685	0.8	1	120.290			
			C	0.491	1.912	0.693	0.8	1	125.840			
T10	1.04	5.58	A	0.365	2.136	0.638	0.8	1	98.541	4.38	218.97	A
20.00-0.00			B	0.338	2.2	0.628	0.8	1	90.084			
			C	0.345	2.182	0.631	0.8	1	92.293			
Sum Weight:	9.84	29.10						OTM	3763.60 kip-ft	45.81		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	0.85	1	39.582	2.52	126.03	B
170.00-150.00			B	0.56	1.834	0.73	0.85	1	42.077			
			C	0.161	2.732	0.583	0.85	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	0.85	1	36.887	2.52	251.78	B
150.00-140.00			B	0.769	1.796	0.871	0.85	1	44.144			
			C	0.291	2.32	0.613	0.85	1	13.089			
T3	0.67	2.09	A	0.581	1.817	0.742	0.85	1	71.081	5.69	284.56	B
140.00-120.00			B	0.747	1.786	0.855	0.85	1	103.507			
			C	0.306	2.281	0.618	0.85	1	32.930			
T4	1.23	2.60	A	0.62	1.793	0.766	0.85	1	97.374	6.48	324.22	B
120.00-100.00			B	0.728	1.78	0.841	0.85	1	124.114			
			C	0.605	1.801	0.757	0.85	1	93.835			
T5	0.78	1.48	A	0.706	1.777	0.825	0.85	1	67.885	3.41	341.46	C
100.00-90.00			B	0.633	1.787	0.775	0.85	1	57.461			
			C	0.709	1.777	0.827	0.85	1	68.290			
T6	0.78	1.76	A	0.682	1.776	0.807	0.85	1	69.964	3.39	338.73	A
90.00-80.00			B	0.615	1.795	0.763	0.85	1	59.927			
			C	0.663	1.778	0.794	0.85	1	66.896			
T7	1.58	3.75	A	0.629	1.789	0.771	0.85	1	138.381	6.38	319.23	A
80.00-60.00			B	0.569	1.826	0.735	0.85	1	119.914			
			C	0.596	1.806	0.751	0.85	1	128.021			
T8	1.58	4.45	A	0.57	1.825	0.736	0.85	1	137.888	5.90	294.82	A
60.00-40.00			B	0.518	1.878	0.707	0.85	1	120.758			
			C	0.541	1.852	0.719	0.85	1	128.138			
T9	1.59	5.11	A	0.521	1.875	0.708	0.85	1	137.150	5.35	267.44	A
40.00-20.00			B	0.474	1.936	0.685	0.85	1	121.259			
			C	0.491	1.912	0.693	0.85	1	126.801			
T10	1.04	5.58	A	0.365	2.136	0.638	0.85	1	99.889	4.44	221.97	A

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
20.00-0.00			B	0.338	2.2	0.628	0.85	1	91.358			
			C	0.345	2.182	0.631	0.85	1	93.561			
Sum Weight:	9.84	29.10						OTM	3780.41 kip-ft	46.08		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.91	1.49	A	0.819	1.831	0.912	1	1	78.351	3.62	181.06	B
170.00-150.00			B	0.831	1.843	0.923	1	1	80.228			
			C	0.299	2.299	0.616	1	1	20.604			
T2	0.65	1.64	A	1	2.1	1	1	1	67.162	3.19*	318.60	B
150.00-140.00			B	1	2.1	1	1	1	74.147			
			C	0.465	1.949	0.68	1	1	23.498			
T3	1.82	3.77	A	0.87	1.885	0.956	1	1	136.874	7.56*	378.07	B
140.00-120.00			B	1	2.1	1	1	1	182.124			
			C	0.459	1.958	0.678	1	1	55.227			
T4	3.26	4.44	A	0.865	1.879	0.952	1	1	169.035	8.99*	449.40	B
120.00-100.00			B	1	2.1	1	1	1	214.983			
			C	0.817	1.829	0.91	1	1	153.901			
T5	2.03	2.39	A	0.927	1.965	1	1	1	108.578	4.50	450.34	A
100.00-90.00			B	0.919	1.953	1	1	1	107.642			
			C	0.914	1.945	0.996	1	1	106.720			
T6	2.07	2.70	A	0.911	1.94	0.993	1	1	115.266	4.57	457.11	A
90.00-80.00			B	0.904	1.93	0.987	1	1	113.910			
			C	0.855	1.867	0.943	1	1	103.462			
T7	4.22	5.66	A	0.85	1.861	0.938	1	1	228.901	8.24	412.03	A
80.00-60.00			B	0.845	1.856	0.934	1	1	227.647			
			C	0.77	1.797	0.873	1	1	194.956			
T8	4.22	6.58	A	0.769	1.796	0.871	1	1	222.294	7.01	350.73	A
60.00-40.00			B	0.763	1.793	0.867	1	1	221.870			
			C	0.698	1.776	0.818	1	1	191.573			
T9	4.25	7.34	A	0.705	1.776	0.824	1	1	219.051	6.09	304.53	B
40.00-20.00			B	0.701	1.776	0.821	1	1	219.794			
			C	0.634	1.787	0.775	1	1	187.400			
T10	2.78	7.98	A	0.499	1.901	0.697	1	1	152.448	4.59	229.30	B
20.00-0.00			B	0.496	1.906	0.695	1	1	154.242			
			C	0.451	1.971	0.674	1	1	134.816			
Sum Weight:	26.20	44.01			*$2A_g$ limit			OTM	4985.53 kip-ft	58.36		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.91	1.49	A	0.819	1.831	0.912	0.825	1	77.736	3.62	181.06	B

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
170.00-150.00			B	0.831	1.843	0.923	0.825	1	80.228			
			C	0.299	2.299	0.616	0.825	1	19.988			
T2	0.65	1.64	A	1	2.1	1	0.825	1	65.945	3.19*	318.60	B
150.00-140.00			B	1	2.1	1	0.825	1	73.479			
			C	0.465	1.949	0.68	0.825	1	22.232			
T3	1.82	3.77	A	0.87	1.885	0.956	0.825	1	134.503	7.56*	378.07	B
140.00-120.00			B	1	2.1	1	0.825	1	178.301			
			C	0.459	1.958	0.678	0.825	1	52.922			
T4	3.26	4.44	A	0.865	1.879	0.952	0.825	1	166.051	8.99*	449.40	B
120.00-100.00			B	1	2.1	1	0.825	1	209.498			
			C	0.817	1.829	0.91	0.825	1	149.897			
T5	2.03	2.39	A	0.927	1.965	1	0.825	1	107.152	4.44	444.43	A
100.00-90.00			B	0.919	1.953	1	0.825	1	104.880			
			C	0.914	1.945	0.996	0.825	1	104.452			
T6	2.07	2.70	A	0.911	1.94	0.993	0.825	1	113.069	4.48	448.40	A
90.00-80.00			B	0.904	1.93	0.987	0.825	1	110.364			
			C	0.855	1.867	0.943	0.825	1	101.109			
T7	4.22	5.66	A	0.85	1.861	0.938	0.825	1	223.357	8.04	402.05	A
80.00-60.00			B	0.845	1.856	0.934	0.825	1	219.375			
			C	0.77	1.797	0.873	0.825	1	190.004			
T8	4.22	6.58	A	0.769	1.796	0.871	0.825	1	215.970	6.82	340.75	A
60.00-40.00			B	0.763	1.793	0.867	0.825	1	212.884			
			C	0.698	1.776	0.818	0.825	1	185.908			
T9	4.25	7.34	A	0.705	1.776	0.824	0.825	1	212.371	5.89	294.31	A
40.00-20.00			B	0.701	1.776	0.821	0.825	1	210.429			
			C	0.634	1.787	0.775	0.825	1	181.356			
T10	2.78	7.98	A	0.499	1.901	0.697	0.825	1	145.827	4.34	216.93	B
20.00-0.00			B	0.496	1.906	0.695	0.825	1	145.922			
			C	0.451	1.971	0.674	0.825	1	128.656			
Sum Weight:	26.20	44.01			*2A_g limit			OTM	4939.95 kip-ft	57.37		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.91	1.49	A	0.819	1.831	0.912	0.8	1	77.648	3.62	181.06	B
170.00-150.00			B	0.831	1.843	0.923	0.8	1	80.228			
			C	0.299	2.299	0.616	0.8	1	19.901			
T2	0.65	1.64	A	1	2.1	1	0.8	1	65.771	3.19*	318.60	B
150.00-140.00			B	1	2.1	1	0.8	1	73.384			
			C	0.465	1.949	0.68	0.8	1	22.051			
T3	1.82	3.77	A	0.87	1.885	0.956	0.8	1	134.164	7.56*	378.07	B
140.00-120.00			B	1	2.1	1	0.8	1	177.755			
			C	0.459	1.958	0.678	0.8	1	52.593			
T4	3.26	4.44	A	0.865	1.879	0.952	0.8	1	165.625	8.99*	449.40	B
120.00-100.00			B	1	2.1	1	0.8	1	208.714			
			C	0.817	1.829	0.91	0.8	1	149.325			
T5	2.03	2.39	A	0.927	1.965	1	0.8	1	106.949	4.44	443.58	A
100.00-90.00			B	0.919	1.953	1	0.8	1	104.485			
			C	0.914	1.945	0.996	0.8	1	104.128			
T6	2.07	2.70	A	0.911	1.94	0.993	0.8	1	112.755	4.47	447.15	A
90.00-80.00			B	0.904	1.93	0.987	0.8	1	109.858			
			C	0.855	1.867	0.943	0.8	1	100.773			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T7	4.22	5.66	A	0.85	1.861	0.938	0.8	1	222.565	8.01	400.63	A
80.00-60.00			B	0.845	1.856	0.934	0.8	1	218.193			
			C	0.77	1.797	0.873	0.8	1	189.297			
T8	4.22	6.58	A	0.769	1.796	0.871	0.8	1	215.067	6.79	339.33	A
60.00-40.00			B	0.763	1.793	0.867	0.8	1	211.600			
			C	0.698	1.776	0.818	0.8	1	185.099			
T9	4.25	7.34	A	0.705	1.776	0.824	0.8	1	211.416	5.86	292.98	A
40.00-20.00			B	0.701	1.776	0.821	0.8	1	209.091			
			C	0.634	1.787	0.775	0.8	1	180.493			
T10	2.78	7.98	A	0.499	1.901	0.697	0.8	1	144.881	4.30	215.16	B
20.00-0.00			B	0.496	1.906	0.695	0.8	1	144.733			
			C	0.451	1.971	0.674	0.8	1	127.775			
Sum Weight:	26.20	44.01			*2A_g limit			OTM	4933.52 kip-ft	57.23		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.91	1.49	A	0.819	1.831	0.912	0.85	1	77.824	3.62	181.06	B
170.00-150.00			B	0.831	1.843	0.923	0.85	1	80.228			
			C	0.299	2.299	0.616	0.85	1	20.076			
T2	0.65	1.64	A	1	2.1	1	0.85	1	66.119	3.19*	318.60	B
150.00-140.00			B	1	2.1	1	0.85	1	73.575			
			C	0.465	1.949	0.68	0.85	1	22.413			
T3	1.82	3.77	A	0.87	1.885	0.956	0.85	1	134.842	7.56*	378.07	B
140.00-120.00			B	1	2.1	1	0.85	1	178.847			
			C	0.459	1.958	0.678	0.85	1	53.252			
T4	3.26	4.44	A	0.865	1.879	0.952	0.85	1	166.478	8.99*	449.40	B
120.00-100.00			B	1	2.1	1	0.85	1	210.281			
			C	0.817	1.829	0.91	0.85	1	150.469			
T5	2.03	2.39	A	0.927	1.965	1	0.85	1	107.356	4.45	445.27	A
100.00-90.00			B	0.919	1.953	1	0.85	1	105.274			
			C	0.914	1.945	0.996	0.85	1	104.776			
T6	2.07	2.70	A	0.911	1.94	0.993	0.85	1	113.383	4.50	449.64	A
90.00-80.00			B	0.904	1.93	0.987	0.85	1	110.871			
			C	0.855	1.867	0.943	0.85	1	101.445			
T7	4.22	5.66	A	0.85	1.861	0.938	0.85	1	224.149	8.07	403.48	A
80.00-60.00			B	0.845	1.856	0.934	0.85	1	220.557			
			C	0.77	1.797	0.873	0.85	1	190.712			
T8	4.22	6.58	A	0.769	1.796	0.871	0.85	1	216.874	6.84	342.18	A
60.00-40.00			B	0.763	1.793	0.867	0.85	1	214.168			
			C	0.698	1.776	0.818	0.85	1	186.717			
T9	4.25	7.34	A	0.705	1.776	0.824	0.85	1	213.325	5.91	295.63	A
40.00-20.00			B	0.701	1.776	0.821	0.85	1	211.767			
			C	0.634	1.787	0.775	0.85	1	182.219			
T10	2.78	7.98	A	0.499	1.901	0.697	0.85	1	146.773	4.37	218.69	B
20.00-0.00			B	0.496	1.906	0.695	0.85	1	147.111			
			C	0.451	1.971	0.674	0.85	1	129.536			
Sum Weight:	26.20	44.01			*2A_g limit			OTM	4946.38 kip-ft	57.51		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	1	1	39.582	0.87	43.61	B
170.00-150.00			B	0.56	1.834	0.73	1	1	42.077			
			C	0.161	2.732	0.583	1	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	1	1	37.681	0.88	88.41	B
150.00-140.00			B	0.769	1.796	0.871	1	1	44.800			
			C	0.291	2.32	0.613	1	1	13.910			
T3	0.67	2.09	A	0.581	1.817	0.742	1	1	72.608	1.99	99.59	B
140.00-120.00			B	0.747	1.786	0.855	1	1	104.690			
			C	0.306	2.281	0.618	1	1	34.420			
T4	1.23	2.60	A	0.62	1.793	0.766	1	1	99.426	2.27	113.68	B
120.00-100.00			B	0.728	1.78	0.841	1	1	125.768			
			C	0.605	1.801	0.757	1	1	95.502			
T5	0.78	1.48	A	0.706	1.777	0.825	1	1	68.852	1.20	119.53	C
100.00-90.00			B	0.633	1.787	0.775	1	1	58.271			
			C	0.709	1.777	0.827	1	1	69.088			
T6	0.78	1.76	A	0.682	1.776	0.807	1	1	70.992	1.19	118.93	A
90.00-80.00			B	0.615	1.795	0.763	1	1	60.804			
			C	0.663	1.778	0.794	1	1	67.762			
T7	1.58	3.75	A	0.629	1.789	0.771	1	1	140.621	2.24	112.25	A
80.00-60.00			B	0.569	1.826	0.735	1	1	121.867			
			C	0.596	1.806	0.751	1	1	129.952			
T8	1.58	4.45	A	0.57	1.825	0.736	1	1	140.799	2.08	104.17	A
60.00-40.00			B	0.518	1.878	0.707	1	1	123.349			
			C	0.541	1.852	0.719	1	1	130.705			
T9	1.59	5.11	A	0.521	1.875	0.708	1	1	140.366	1.89	94.71	A
40.00-20.00			B	0.474	1.936	0.685	1	1	124.166			
			C	0.491	1.912	0.693	1	1	129.686			
T10	1.04	5.58	A	0.365	2.136	0.638	1	1	103.933	1.60	79.91	A
20.00-0.00			B	0.338	2.2	0.628	1	1	95.179			
			C	0.345	2.182	0.631	1	1	97.366			
Sum Weight:	9.84	29.10						OTM	1325.55 kip-ft	16.23		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	0.825	1	39.582	0.87	43.61	B
170.00-150.00			B	0.56	1.834	0.73	0.825	1	42.077			
			C	0.161	2.732	0.583	0.825	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	0.825	1	36.755	0.87	86.90	B
150.00-140.00			B	0.769	1.796	0.871	0.825	1	44.035			
			C	0.291	2.32	0.613	0.825	1	12.952			
T3	0.67	2.09	A	0.581	1.817	0.742	0.825	1	70.826	1.97	98.28	B
140.00-120.00			B	0.747	1.786	0.855	0.825	1	103.310			
			C	0.306	2.281	0.618	0.825	1	32.682			
T4	1.23	2.60	A	0.62	1.793	0.766	0.825	1	97.032	2.24	111.94	B
120.00-100.00			B	0.728	1.78	0.841	0.825	1	123.839			
			C	0.605	1.801	0.757	0.825	1	93.557			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T5	0.78	1.48	A	0.706	1.777	0.825	0.825	1	67.724	1.18	117.92	C
100.00-90.00			B	0.633	1.787	0.775	0.825	1	57.326			
			C	0.709	1.777	0.827	0.825	1	68.157			
T6	0.78	1.76	A	0.682	1.776	0.807	0.825	1	69.793	1.17	116.92	A
90.00-80.00			B	0.615	1.795	0.763	0.825	1	59.781			
			C	0.663	1.778	0.794	0.825	1	66.752			
T7	1.58	3.75	A	0.629	1.789	0.771	0.825	1	138.007	2.20	110.16	A
80.00-60.00			B	0.569	1.826	0.735	0.825	1	119.589			
			C	0.596	1.806	0.751	0.825	1	127.699			
T8	1.58	4.45	A	0.57	1.825	0.736	0.825	1	137.403	2.03	101.66	A
60.00-40.00			B	0.518	1.878	0.707	0.825	1	120.326			
			C	0.541	1.852	0.719	0.825	1	127.710			
T9	1.59	5.11	A	0.521	1.875	0.708	0.825	1	136.614	1.84	92.18	A
40.00-20.00			B	0.474	1.936	0.685	0.825	1	120.775			
			C	0.491	1.912	0.693	0.825	1	126.321			
T10	1.04	5.58	A	0.365	2.136	0.638	0.825	1	99.215	1.53	76.29	A
20.00-0.00			B	0.338	2.2	0.628	0.825	1	90.721			
			C	0.345	2.182	0.631	0.825	1	92.927			
Sum Weight:	9.84	29.10						OTM	1305.19 kip-ft	15.90		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	0.8	1	39.582	0.87	43.61	B
170.00-150.00			B	0.56	1.834	0.73	0.8	1	42.077			
			C	0.161	2.732	0.583	0.8	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	0.8	1	36.623	0.87	86.69	B
150.00-140.00			B	0.769	1.796	0.871	0.8	1	43.926			
			C	0.291	2.32	0.613	0.8	1	12.815			
T3	0.67	2.09	A	0.581	1.817	0.742	0.8	1	70.572	1.96	98.09	B
140.00-120.00			B	0.747	1.786	0.855	0.8	1	103.113			
			C	0.306	2.281	0.618	0.8	1	32.434			
T4	1.23	2.60	A	0.62	1.793	0.766	0.8	1	96.690	2.23	111.69	B
120.00-100.00			B	0.728	1.78	0.841	0.8	1	123.563			
			C	0.605	1.801	0.757	0.8	1	93.279			
T5	0.78	1.48	A	0.706	1.777	0.825	0.8	1	67.563	1.18	117.69	C
100.00-90.00			B	0.633	1.787	0.775	0.8	1	57.191			
			C	0.709	1.777	0.827	0.8	1	68.024			
T6	0.78	1.76	A	0.682	1.776	0.807	0.8	1	69.622	1.17	116.63	A
90.00-80.00			B	0.615	1.795	0.763	0.8	1	59.635			
			C	0.663	1.778	0.794	0.8	1	66.608			
T7	1.58	3.75	A	0.629	1.789	0.771	0.8	1	137.634	2.20	109.87	A
80.00-60.00			B	0.569	1.826	0.735	0.8	1	119.263			
			C	0.596	1.806	0.751	0.8	1	127.377			
T8	1.58	4.45	A	0.57	1.825	0.736	0.8	1	136.918	2.03	101.30	A
60.00-40.00			B	0.518	1.878	0.707	0.8	1	119.894			
			C	0.541	1.852	0.719	0.8	1	127.282			
T9	1.59	5.11	A	0.521	1.875	0.708	0.8	1	136.078	1.84	91.82	A
40.00-20.00			B	0.474	1.936	0.685	0.8	1	120.290			
			C	0.491	1.912	0.693	0.8	1	125.840			
T10	1.04	5.58	A	0.365	2.136	0.638	0.8	1	98.541	1.52	75.77	A
20.00-0.00			B	0.338	2.2	0.628	0.8	1	90.084			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
Sum Weight:	9.84	29.10	C	0.345	2.182	0.631	0.8	1 OTM	92.293 1302.29 kip-ft	15.85		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.35	1.16	A	0.537	1.857	0.717	0.85	1	39.582	0.87	43.61	B
170.00-150.00			B	0.56	1.834	0.73	0.85	1	42.077			
			C	0.161	2.732	0.583	0.85	1	9.663			
T2	0.25	1.12	A	0.686	1.776	0.81	0.85	1	36.887	0.87	87.12	B
150.00-140.00			B	0.769	1.796	0.871	0.85	1	44.144			
			C	0.291	2.32	0.613	0.85	1	13.089			
T3	0.67	2.09	A	0.581	1.817	0.742	0.85	1	71.081	1.97	98.46	B
140.00-120.00			B	0.747	1.786	0.855	0.85	1	103.507			
			C	0.306	2.281	0.618	0.85	1	32.930			
T4	1.23	2.60	A	0.62	1.793	0.766	0.85	1	97.374	2.24	112.19	B
120.00-100.00			B	0.728	1.78	0.841	0.85	1	124.114			
			C	0.605	1.801	0.757	0.85	1	93.835			
T5	0.78	1.48	A	0.706	1.777	0.825	0.85	1	67.885	1.18	118.15	C
100.00-90.00			B	0.633	1.787	0.775	0.85	1	57.461			
			C	0.709	1.777	0.827	0.85	1	68.290			
T6	0.78	1.76	A	0.682	1.776	0.807	0.85	1	69.964	1.17	117.21	A
90.00-80.00			B	0.615	1.795	0.763	0.85	1	59.927			
			C	0.663	1.778	0.794	0.85	1	66.896			
T7	1.58	3.75	A	0.629	1.789	0.771	0.85	1	138.381	2.21	110.46	A
80.00-60.00			B	0.569	1.826	0.735	0.85	1	119.914			
			C	0.596	1.806	0.751	0.85	1	128.021			
T8	1.58	4.45	A	0.57	1.825	0.736	0.85	1	137.888	2.04	102.01	A
60.00-40.00			B	0.518	1.878	0.707	0.85	1	120.758			
			C	0.541	1.852	0.719	0.85	1	128.138			
T9	1.59	5.11	A	0.521	1.875	0.708	0.85	1	137.150	1.85	92.54	A
40.00-20.00			B	0.474	1.936	0.685	0.85	1	121.259			
			C	0.491	1.912	0.693	0.85	1	126.801			
T10	1.04	5.58	A	0.365	2.136	0.638	0.85	1	99.889	1.54	76.80	A
20.00-0.00			B	0.338	2.2	0.628	0.85	1	91.358			
			C	0.345	2.182	0.631	0.85	1	93.561			
Sum Weight:	9.84	29.10						OTM	1308.10 kip-ft	15.95		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	18.66					
Bracing Weight	10.44					

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Total Member Self-Weight	29.10			-1.50	0.32	
Total Weight	50.58			-1.50	0.32	
Wind 0 deg - No Ice		-0.03	-61.98	-5843.25	2.45	-0.86
Wind 30 deg - No Ice		30.49	-52.92	-5012.45	-2885.66	-4.61
Wind 45 deg - No Ice		43.29	-43.01	-4074.01	-4109.80	-5.45
Wind 60 deg - No Ice		52.95	-30.26	-2866.52	-5032.80	-5.80
Wind 90 deg - No Ice		61.20	0.23	26.68	-5799.90	-6.40
Wind 120 deg - No Ice		53.75	31.27	2943.19	-5072.19	-5.37
Wind 135 deg - No Ice		43.30	43.29	4094.11	-4110.68	-4.20
Wind 150 deg - No Ice		30.77	53.05	5015.54	-2922.84	-2.34
Wind 180 deg - No Ice		0.21	61.12	5796.48	-25.04	3.09
Wind 210 deg - No Ice		-30.58	52.97	5007.47	2901.63	4.84
Wind 225 deg - No Ice		-43.17	43.19	4083.69	4097.07	6.06
Wind 240 deg - No Ice		-53.64	31.17	2933.00	5059.45	7.59
Wind 270 deg - No Ice		-61.13	0.09	11.85	5791.04	8.63
Wind 300 deg - No Ice		-52.86	-30.45	-2887.59	5019.21	7.48
Wind 315 deg - No Ice		-43.23	-43.14	-4088.77	4099.35	5.94
Wind 330 deg - No Ice		-30.55	-52.99	-5019.77	2890.46	3.15
Member Ice	14.91					
Total Weight Ice	86.68			-3.47	-2.22	
Wind 0 deg - Ice		-0.02	-72.70	-6903.74	-0.83	6.49
Wind 30 deg - Ice		35.85	-62.18	-5942.00	-3425.28	-1.88
Wind 45 deg - Ice		50.81	-50.58	-4837.48	-4866.28	-5.48
Wind 60 deg - Ice		62.15	-35.64	-3410.20	-5959.03	-8.61
Wind 90 deg - Ice		71.87	0.18	18.78	-6870.50	-13.82
Wind 120 deg - Ice		63.02	36.57	3465.20	-5988.68	-15.48
Wind 135 deg - Ice		50.81	50.80	4848.20	-4866.61	-14.52
Wind 150 deg - Ice		36.07	62.27	5939.32	-3454.65	-12.37
Wind 180 deg - Ice		0.16	71.73	6863.41	-22.23	-4.61
Wind 210 deg - Ice		-35.92	62.21	5933.17	3433.25	2.07
Wind 225 deg - Ice		-50.71	50.72	4840.30	4851.20	5.98
Wind 240 deg - Ice		-62.93	36.49	3457.60	5973.85	10.08
Wind 270 deg - Ice		-71.81	0.07	7.54	6858.45	15.61
Wind 300 deg - Ice		-62.07	-35.78	-3426.53	5942.86	17.04
Wind 315 deg - Ice		-50.76	-50.68	-4848.86	4852.49	15.91
Wind 330 deg - Ice		-35.89	-62.23	-5947.54	3423.62	13.02
Total Weight	50.58			-1.50	0.32	
Wind 0 deg - Service		-0.01	-21.45	-2026.78	1.98	-0.30
Wind 30 deg - Service		10.55	-18.31	-1739.31	-997.37	-1.59
Wind 45 deg - Service		14.98	-14.88	-1414.59	-1420.95	-1.89
Wind 60 deg - Service		18.32	-10.47	-996.77	-1740.32	-2.01
Wind 90 deg - Service		21.18	0.08	4.34	-2005.76	-2.22
Wind 120 deg - Service		18.60	10.82	1013.51	-1753.96	-1.86
Wind 135 deg - Service		14.98	14.98	1411.75	-1421.25	-1.45
Wind 150 deg - Service		10.65	18.36	1730.59	-1010.24	-0.81
Wind 180 deg - Service		0.07	21.15	2000.81	-7.54	1.07
Wind 210 deg - Service		-10.58	18.33	1727.80	1005.15	1.68
Wind 225 deg - Service		-14.94	14.94	1408.15	1418.80	2.10
Wind 240 deg - Service		-18.56	10.78	1009.99	1751.80	2.63
Wind 270 deg - Service		-21.15	0.03	-0.79	2004.95	2.99
Wind 300 deg - Service		-18.29	-10.54	-1004.06	1737.88	2.59
Wind 315 deg - Service		-14.96	-14.93	-1419.69	1419.59	2.06
Wind 330 deg - Service		-10.57	-18.34	-1741.84	1001.29	1.09

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp
22	Dead+Wind 60 deg+Ice+Temp
23	Dead+Wind 90 deg+Ice+Temp
24	Dead+Wind 120 deg+Ice+Temp
25	Dead+Wind 135 deg+Ice+Temp
26	Dead+Wind 150 deg+Ice+Temp
27	Dead+Wind 180 deg+Ice+Temp
28	Dead+Wind 210 deg+Ice+Temp
29	Dead+Wind 225 deg+Ice+Temp
30	Dead+Wind 240 deg+Ice+Temp
31	Dead+Wind 270 deg+Ice+Temp
32	Dead+Wind 300 deg+Ice+Temp
33	Dead+Wind 315 deg+Ice+Temp
34	Dead+Wind 330 deg+Ice+Temp
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	170 - 150	Leg	Max Tension	22	25.56	-0.03	0.04
			Max. Compression	19	-31.04	0.02	0.40
			Max. Mx	30	-30.09	0.33	-0.22

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	19	-31.04	0.02	0.40
			Max. Vy	30	-3.42	0.33	-0.22
			Max. Vx	19	-4.04	0.02	0.40
		Diagonal	Max Tension	34	3.29	0.00	0.00
			Max. Compression	34	-3.34	0.00	0.00
			Max. Mx	19	2.70	-0.00	0.00
			Max. My	34	-2.10	-0.00	0.00
			Max. Vy	19	0.01	-0.00	0.00
			Max. Vx	34	-0.00	-0.00	0.00
		Top Girt	Max Tension	5	0.09	0.00	0.00
			Max. Compression	2	-0.12	0.00	0.00
			Max. Mx	18	-0.02	0.01	0.00
			Max. My	31	0.01	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Bottom Girt	Max Tension	22	0.13	0.00	0.00
			Max. Compression	19	-0.13	0.00	0.00
			Max. Mx	18	-0.01	0.01	0.00
			Max. My	31	-0.01	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
T2	150 - 140	Leg	Max Tension	22	30.51	-0.37	0.03
			Max. Compression	19	-36.70	2.55	0.24
			Max. Mx	22	29.95	-3.01	0.24
			Max. My	31	-4.08	-0.22	-3.41
			Max. Vy	27	0.59	-2.97	-0.28
			Max. Vx	30	0.77	-1.58	-3.07
		Diagonal	Max Tension	32	5.06	0.00	0.00
			Max. Compression	24	-5.58	0.00	0.00
			Max. Mx	22	3.84	0.04	0.00
			Max. My	33	-4.49	-0.01	-0.02
			Max. Vy	22	0.02	0.04	0.00
			Max. Vx	33	0.00	0.00	0.00
		Top Girt	Max Tension	22	0.34	0.00	0.00
			Max. Compression	19	-0.28	0.00	0.00
			Max. Mx	18	0.03	-0.02	0.00
			Max. My	31	0.03	0.00	0.00
			Max. Vy	18	-0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T3	140 - 120	Leg	Max Tension	32	64.50	-3.27	-0.21
			Max. Compression	19	-77.72	2.82	-0.05
			Max. Mx	32	63.44	-3.59	-0.12
			Max. My	23	-8.44	-0.35	5.25
			Max. Vy	27	0.65	-3.22	-0.10
			Max. Vx	31	0.74	0.06	-3.28
		Diagonal	Max Tension	28	8.84	0.00	0.00
			Max. Compression	29	-9.29	0.00	0.00
			Max. Mx	19	6.10	0.10	0.00
			Max. My	22	-6.21	-0.02	0.02
			Max. Vy	19	-0.03	0.10	0.00
			Max. Vx	22	-0.00	0.00	0.00
T4	120 - 100	Leg	Max Tension	22	111.38	-4.70	-0.01
			Max. Compression	19	-130.88	3.84	-0.05
			Max. Mx	19	-102.89	5.62	-0.02
			Max. My	31	-11.15	-0.46	-7.65
			Max. Vy	32	0.90	-4.72	-0.23
			Max. Vx	31	1.56	-0.46	-7.65
		Diagonal	Max Tension	33	11.45	0.00	0.00
			Max. Compression	25	-12.20	0.00	0.00
			Max. Mx	19	7.48	0.09	-0.01
			Max. My	33	-10.93	-0.02	-0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	22	0.03	0.09	0.00
			Max. Vx	33	0.01	0.00	0.00
		Mid Girt	Max Tension	22	3.11	0.00	0.00
			Max. Compression	19	-2.44	0.00	0.00
			Max. Mx	18	0.37	-0.07	0.00
			Max. My	31	0.29	0.00	0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
T5	100 - 90	Leg	Max Tension	22	139.07	-4.72	0.11
			Max. Compression	19	-162.12	4.24	-0.01
			Max. Mx	22	139.07	-4.72	0.11
			Max. My	31	-12.32	-0.46	-7.65
			Max. Vy	32	-0.23	-4.72	-0.23
			Max. Vx	31	-0.55	-0.46	-7.65
		Diagonal	Max Tension	26	13.29	0.00	0.00
			Max. Compression	26	-13.63	0.00	0.00
			Max. Mx	19	10.67	0.17	0.01
			Max. My	31	-6.60	0.04	-0.02
			Max. Vy	19	-0.05	0.17	-0.01
			Max. Vx	31	-0.00	0.00	0.00
T6	90 - 80	Leg	Max Tension	22	167.83	-4.02	-0.04
			Max. Compression	19	-194.29	5.91	-0.03
			Max. Mx	24	-193.56	5.91	0.09
			Max. My	23	-14.21	0.07	4.18
			Max. Vy	27	0.44	-5.76	0.05
			Max. Vx	28	-0.29	0.09	4.08
		Diagonal	Max Tension	26	13.22	0.00	0.00
			Max. Compression	26	-13.49	0.00	0.00
			Max. Mx	19	10.74	0.14	-0.01
			Max. My	24	-0.75	0.09	0.01
			Max. Vy	19	-0.04	0.14	-0.01
			Max. Vx	24	0.00	0.00	0.00
T7	80 - 60	Leg	Max Tension	22	221.06	-4.65	-0.02
			Max. Compression	19	-254.10	5.42	-0.01
			Max. Mx	24	-222.99	5.91	0.09
			Max. My	20	-15.19	-0.22	-6.28
			Max. Vy	19	0.28	5.91	-0.03
			Max. Vx	20	0.35	-0.22	-6.28
		Diagonal	Max Tension	26	13.99	0.00	0.00
			Max. Compression	26	-14.51	0.00	0.00
			Max. Mx	19	11.10	0.18	-0.01
			Max. My	33	-13.53	-0.01	-0.03
			Max. Vy	19	-0.06	0.18	-0.01
			Max. Vx	33	0.00	0.00	0.00
T8	60 - 40	Leg	Max Tension	22	271.13	-5.33	-0.02
			Max. Compression	24	-312.33	4.41	0.00
			Max. Mx	22	270.40	-6.12	-0.02
			Max. My	23	-20.30	-0.86	5.75
			Max. Vy	19	0.21	5.58	-0.00
			Max. Vx	23	-0.19	0.12	5.32
		Diagonal	Max Tension	26	14.33	0.00	0.00
			Max. Compression	26	-14.70	0.00	0.00
			Max. Mx	24	11.07	0.21	0.01
			Max. My	32	-12.43	0.04	-0.02
			Max. Vy	22	0.06	0.20	0.01
			Max. Vx	32	0.00	0.00	0.00
T9	40 - 20	Leg	Max Tension	22	316.54	-2.94	-0.03
			Max. Compression	24	-368.47	0.89	0.05
			Max. Mx	22	315.72	-12.42	0.01
			Max. My	23	-20.99	-0.86	5.75
			Max. Vy	32	1.06	-12.41	-0.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	23	0.18	2.61	5.24
		Diagonal	Max Tension	26	15.56	0.00	0.00
			Max. Compression	26	-15.17	0.00	0.00
			Max. Mx	24	11.32	0.20	0.01
			Max. My	33	-13.16	0.05	-0.02
			Max. Vy	22	0.07	0.19	0.01
			Max. Vx	33	0.00	0.00	0.00
T10	20 - 0	Leg	Max Tension	22	355.85	2.81	-0.04
			Max. Compression	24	-421.07	-0.00	-0.00
			Max. Mx	24	-391.70	13.80	0.00
			Max. My	26	-29.68	8.24	-10.67
			Max. Vy	22	-1.63	-12.42	0.01
			Max. Vx	23	1.16	8.24	10.66
		Diagonal	Max Tension	33	19.21	0.00	0.00
			Max. Compression	26	-17.25	0.00	0.00
			Max. Mx	22	8.46	0.32	0.02
			Max. My	33	-16.98	0.11	-0.04
			Max. Vy	22	0.09	0.32	0.02
			Max. Vx	33	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	30	429.92	34.58	-20.31
	Max. H_x	30	429.92	34.58	-20.31
	Max. H_z	21	-356.51	-40.56	24.71
	Min. Vert	22	-370.03	-42.27	24.69
	Min. H_x	22	-370.03	-42.27	24.69
	Min. H_z	30	429.92	34.58	-20.31
Leg B	Max. Vert	24	430.88	-34.57	-20.49
	Max. H_x	32	-369.69	42.14	24.91
	Max. H_z	33	-356.14	40.41	24.97
	Min. Vert	32	-369.69	42.14	24.91
	Min. H_x	24	430.88	-34.57	-20.49
	Min. H_z	24	430.88	-34.57	-20.49
Leg A	Max. Vert	19	430.01	0.19	40.09
	Max. H_x	31	28.47	4.02	-4.62
	Max. H_z	19	430.01	0.19	40.09
	Min. Vert	27	-369.88	-0.14	-48.99
	Min. H_x	23	27.81	-3.96	-4.69
	Min. H_z	27	-369.88	-0.14	-48.99

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	50.58	0.00	0.00	-1.50	0.32	0.00
Dead+Wind 0 deg - No Ice	50.58	-0.03	-61.98	-5867.22	2.46	-0.86
Dead+Wind 30 deg - No Ice	50.58	30.49	-52.92	-5033.09	-2897.50	-4.62
Dead+Wind 45 deg - No Ice	50.58	43.29	-43.01	-4090.82	-4126.72	-5.48

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
Dead+Wind 60 deg - No Ice	50.58	52.95	-30.26	-2878.38	-5053.52	-5.86
Dead+Wind 90 deg - No Ice	50.58	61.20	0.23	26.71	-5823.74	-6.48
Dead+Wind 120 deg - No Ice	50.58	53.75	31.27	2955.14	-5093.00	-5.43
Dead+Wind 135 deg - No Ice	50.58	43.30	43.29	4110.84	-4127.59	-4.23
Dead+Wind 150 deg - No Ice	50.58	30.77	53.05	5036.07	-2934.86	-2.35
Dead+Wind 180 deg - No Ice	50.58	0.21	61.12	5820.29	-25.12	3.09
Dead+Wind 210 deg - No Ice	50.58	-30.58	52.97	5027.97	2913.60	4.86
Dead+Wind 225 deg - No Ice	50.58	-43.17	43.19	4100.37	4113.95	6.09
Dead+Wind 240 deg - No Ice	50.58	-53.64	31.17	2944.91	5080.22	7.64
Dead+Wind 270 deg - No Ice	50.58	-61.13	0.09	11.81	5814.85	8.71
Dead+Wind 300 deg - No Ice	50.58	-52.86	-30.45	-2899.53	5039.86	7.54
Dead+Wind 315 deg - No Ice	50.58	-43.23	-43.14	-4105.64	4116.21	5.97
Dead+Wind 330 deg - No Ice	50.58	-30.55	-52.99	-5040.42	2902.32	3.16
Dead+Ice+Temp	86.68	0.00	0.00	-3.51	-2.22	-0.00
Dead+Wind 0 deg+Ice+Temp	86.68	-0.02	-72.70	-6947.53	-0.87	6.51
Dead+Wind 30 deg+Ice+Temp	86.68	35.85	-62.18	-5979.83	-3447.06	-1.88
Dead+Wind 45 deg+Ice+Temp	86.68	50.81	-50.58	-4868.34	-4897.25	-5.53
Dead+Wind 60 deg+Ice+Temp	86.68	62.15	-35.64	-3432.03	-5996.96	-8.70
Dead+Wind 90 deg+Ice+Temp	86.68	71.87	0.18	18.71	-6914.17	-13.96
Dead+Wind 120 deg+Ice+Temp	86.68	63.02	36.57	3486.93	-6026.65	-15.59
Dead+Wind 135 deg+Ice+Temp	86.68	50.81	50.80	4878.81	-4897.58	-14.60
Dead+Wind 150 deg+Ice+Temp	86.68	36.07	62.27	5976.89	-3476.64	-12.42
Dead+Wind 180 deg+Ice+Temp	86.68	0.16	71.73	6906.97	-22.39	-4.63
Dead+Wind 210 deg+Ice+Temp	86.68	-35.92	62.21	5970.73	3455.08	2.08
Dead+Wind 225 deg+Ice+Temp	86.68	-50.71	50.72	4870.89	4882.05	6.02
Dead+Wind 240 deg+Ice+Temp	86.68	-62.93	36.49	3479.30	6011.70	10.17
Dead+Wind 270 deg+Ice+Temp	86.68	-71.81	0.07	7.39	6902.02	15.75
Dead+Wind 300 deg+Ice+Temp	86.68	-62.07	-35.78	-3448.48	5980.63	17.15
Dead+Wind 315 deg+Ice+Temp	86.68	-50.76	-50.68	-4879.81	4883.30	15.99
Dead+Wind 330 deg+Ice+Temp	86.68	-35.89	-62.23	-5985.42	3445.33	13.07
Dead+Wind 0 deg - Service	50.58	-0.01	-21.45	-2031.24	1.06	-0.30
Dead+Wind 30 deg - Service	50.58	10.55	-18.31	-1742.60	-1002.42	-1.61
Dead+Wind 45 deg - Service	50.58	14.98	-14.88	-1416.54	-1427.75	-1.90
Dead+Wind 60 deg - Service	50.58	18.32	-10.47	-997.00	-1748.45	-2.03
Dead+Wind 90 deg - Service	50.58	21.18	0.08	8.24	-2014.98	-2.23
Dead+Wind 120 deg - Service	50.58	18.60	10.82	1021.57	-1762.12	-1.88
Dead+Wind 135 deg - Service	50.58	14.98	14.98	1421.47	-1428.06	-1.47
Dead+Wind 150 deg - Service	50.58	10.65	18.36	1741.62	-1015.34	-0.83
Dead+Wind 180 deg - Service	50.58	0.07	21.15	2012.97	-8.49	1.07
Dead+Wind 210 deg - Service	50.58	-10.58	18.33	1738.82	1008.40	1.70
Dead+Wind 225 deg - Service	50.58	-14.94	14.94	1417.85	1423.75	2.12
Dead+Wind 240 deg - Service	50.58	-18.56	10.78	1018.03	1758.12	2.65
Dead+Wind 270 deg - Service	50.58	-21.15	0.03	3.09	2012.32	3.00
Dead+Wind 300 deg - Service	50.58	-18.29	-10.54	-1004.32	1744.15	2.61
Dead+Wind 315 deg - Service	50.58	-14.96	-14.93	-1421.67	1424.54	2.07
Dead+Wind 330 deg - Service	50.58	-10.57	-18.34	-1745.14	1004.50	1.11

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	0.00	-50.58	0.00	0.00	50.58	0.00	0.000%
2	-0.03	-50.58	-61.98	0.03	50.58	61.98	0.000%
3	30.49	-50.58	-52.92	-30.49	50.58	52.92	0.000%
4	43.29	-50.58	-43.01	-43.29	50.58	43.01	0.000%
5	52.95	-50.58	-30.26	-52.95	50.58	30.26	0.000%
6	61.20	-50.58	0.23	-61.20	50.58	-0.23	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
7	53.75	-50.58	31.27	-53.75	50.58	-31.27	0.000%
8	43.30	-50.58	43.29	-43.30	50.58	-43.29	0.000%
9	30.77	-50.58	53.05	-30.77	50.58	-53.05	0.000%
10	0.21	-50.58	61.12	-0.21	50.58	-61.12	0.000%
11	-30.58	-50.58	52.97	30.58	50.58	-52.97	0.000%
12	-43.17	-50.58	43.19	43.17	50.58	-43.19	0.000%
13	-53.64	-50.58	31.17	53.64	50.58	-31.17	0.000%
14	-61.13	-50.58	0.09	61.13	50.58	-0.09	0.000%
15	-52.86	-50.58	-30.45	52.86	50.58	30.45	0.000%
16	-43.23	-50.58	-43.14	43.23	50.58	43.14	0.000%
17	-30.55	-50.58	-52.99	30.55	50.58	52.99	0.000%
18	0.00	-86.68	0.00	0.00	86.68	-0.00	0.000%
19	-0.02	-86.68	-72.70	0.02	86.68	72.70	0.000%
20	35.85	-86.68	-62.18	-35.85	86.68	62.18	0.000%
21	50.81	-86.68	-50.58	-50.81	86.68	50.58	0.000%
22	62.15	-86.68	-35.64	-62.15	86.68	35.64	0.000%
23	71.87	-86.68	0.18	-71.87	86.68	-0.18	0.000%
24	63.02	-86.68	36.57	-63.02	86.68	-36.57	0.000%
25	50.81	-86.68	50.80	-50.81	86.68	-50.80	0.000%
26	36.07	-86.68	62.27	-36.07	86.68	-62.27	0.000%
27	0.16	-86.68	71.73	-0.16	86.68	-71.73	0.000%
28	-35.92	-86.68	62.21	35.92	86.68	-62.21	0.000%
29	-50.71	-86.68	50.72	50.71	86.68	-50.72	0.000%
30	-62.93	-86.68	36.49	62.93	86.68	-36.49	0.000%
31	-71.81	-86.68	0.07	71.81	86.68	-0.07	0.000%
32	-62.07	-86.68	-35.78	62.07	86.68	35.78	0.000%
33	-50.76	-86.68	-50.68	50.76	86.68	50.68	0.000%
34	-35.89	-86.68	-62.23	35.89	86.68	62.23	0.000%
35	-0.01	-50.58	-21.45	0.01	50.58	21.45	0.000%
36	10.55	-50.58	-18.31	-10.55	50.58	18.31	0.000%
37	14.98	-50.58	-14.88	-14.98	50.58	14.88	0.000%
38	18.32	-50.58	-10.47	-18.32	50.58	10.47	0.000%
39	21.18	-50.58	0.08	-21.18	50.58	-0.08	0.000%
40	18.60	-50.58	10.82	-18.60	50.58	-10.82	0.000%
41	14.98	-50.58	14.98	-14.98	50.58	-14.98	0.000%
42	10.65	-50.58	18.36	-10.65	50.58	-18.36	0.000%
43	0.07	-50.58	21.15	-0.07	50.58	-21.15	0.000%
44	-10.58	-50.58	18.33	10.58	50.58	-18.33	0.000%
45	-14.94	-50.58	14.94	14.94	50.58	-14.94	0.000%
46	-18.56	-50.58	10.78	18.56	50.58	-10.78	0.000%
47	-21.15	-50.58	0.03	21.15	50.58	-0.03	0.000%
48	-18.29	-50.58	-10.54	18.29	50.58	10.54	0.000%
49	-14.96	-50.58	-14.93	14.96	50.58	14.93	0.000%
50	-10.57	-50.58	-18.34	10.57	50.58	18.34	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001

8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000082
20	Yes	4	0.00000001	0.00000123
21	Yes	4	0.00000001	0.00000122
22	Yes	4	0.00000001	0.00000122
23	Yes	4	0.00000001	0.00000135
24	Yes	4	0.00000001	0.00000103
25	Yes	4	0.00000001	0.00000109
26	Yes	4	0.00000001	0.00000121
27	Yes	4	0.00000001	0.00000118
28	Yes	4	0.00000001	0.00000123
29	Yes	4	0.00000001	0.00000108
30	Yes	4	0.00000001	0.00000102
31	Yes	4	0.00000001	0.00000137
32	Yes	4	0.00000001	0.00000124
33	Yes	4	0.00000001	0.00000121
34	Yes	4	0.00000001	0.00000121
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
T1	170 - 150	6.185	35	0.3327	0.0457
T2	150 - 140	4.804	35	0.3078	0.0387
T3	140 - 120	4.163	35	0.2904	0.0326
T4	120 - 100	3.011	35	0.2423	0.0182
T5	100 - 90	2.040	35	0.1978	0.0088
T6	90 - 80	1.640	40	0.1707	0.0068
T7	80 - 60	1.288	40	0.1504	0.0053
T8	60 - 40	0.726	40	0.1032	0.0033
T9	40 - 20	0.341	40	0.0646	0.0018
T10	20 - 0	0.101	40	0.0326	0.0008

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
183.00	101-90-08-0-01	35	6.185	0.3327	0.0457	111246
179.75	15' Mount Pipe	35	6.185	0.3327	0.0457	111246
178.00	3" Dia 20' Omni	35	6.185	0.3327	0.0457	111246
175.00	2.5" x 14' Omni	35	6.185	0.3327	0.0457	111246
174.00	1.5" x 12' Omni	35	6.185	0.3327	0.0457	111246
168.00	HPD2-4.7	35	6.044	0.3304	0.0451	111246
159.50	APXV18-206517S-C w/ mounting hardware	35	5.449	0.3205	0.0426	52974
158.50	SC420-HF1LDF	35	5.380	0.3193	0.0422	48368
144.00	3" Dia 20' Omni	35	4.414	0.2980	0.0352	27707
141.00	2" Dia 15' Omni	35	4.225	0.2924	0.0333	27611
139.00	1.5" x 10' Omni	35	4.101	0.2883	0.0319	27604
138.50	9' Whip	35	4.071	0.2872	0.0316	27616
134.00	VHLP2.5-180	35	3.799	0.2768	0.0283	27843
125.50	PiROD 10' Lightweight T-Frame	35	3.310	0.2556	0.0220	28352
115.00	(2) TMA (shielded)	35	2.749	0.2314	0.0152	25608
101.00	SC-E 6014 rev2	35	2.083	0.2004	0.0091	20036
87.00	3"x2"x22" Panel	40	1.529	0.1641	0.0063	25446
84.50	TMA	40	1.440	0.1592	0.0059	25458
83.50	3' Stand-off	40	1.406	0.1573	0.0058	25445
83.00	3' Dish	40	1.389	0.1563	0.0057	25439
82.50	TMA	40	1.372	0.1554	0.0056	25433
80.00	3"x2"x22" Panel	40	1.288	0.1504	0.0053	25413
30.00	Camera	40	0.202	0.0484	0.0013	31653
24.00	PC9013N	40	0.136	0.0389	0.0010	28738

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 150	20.773	19	1.0955	0.1698
T2	150 - 140	16.217	19	1.0214	0.1413
T3	140 - 120	14.085	19	0.9678	0.1175
T4	120 - 100	10.229	24	0.8158	0.0687
T5	100 - 90	6.961	24	0.6697	0.0371
T6	90 - 80	5.601	24	0.5794	0.0301
T7	80 - 60	4.404	24	0.5114	0.0245
T8	60 - 40	2.484	24	0.3525	0.0163
T9	40 - 20	1.166	24	0.2211	0.0097
T10	20 - 0	0.344	24	0.1114	0.0042

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
183.00	101-90-08-0-01	19	20.773	1.0955	0.1698	38539
179.75	15' Mount Pipe	19	20.773	1.0955	0.1698	38539
178.00	3" Dia 20' Omni	19	20.773	1.0955	0.1698	38539
175.00	2.5" x 14' Omni	19	20.773	1.0955	0.1698	38539
174.00	1.5" x 12' Omni	19	20.773	1.0955	0.1698	38539
168.00	HPD2-4.7	19	20.310	1.0889	0.1665	38539
159.50	APXV18-206517S-C w/ mounting hardware	19	18.350	1.0595	0.1568	18352
158.50	SC420-HF1LDF	19	18.122	1.0558	0.1555	16756
144.00	3" Dia 20' Omni	19	14.922	0.9916	0.1276	9097
141.00	2" Dia 15' Omni	19	14.292	0.9742	0.1200	8888
139.00	1.5" x 10' Omni	19	13.879	0.9613	0.1149	8818
138.50	9' Whip	19	13.777	0.9579	0.1136	8810
134.00	VHLP2.5-180	19	12.870	0.9252	0.1021	8827
125.50	PiROD 10' Lightweight T-Frame	19	11.233	0.8582	0.0812	8894
115.00	(2) TMA (shielded)	24	9.351	0.7805	0.0585	7885
101.00	SC-E 6014 rev2	24	7.107	0.6783	0.0381	6000
87.00	3"x2"x22" Panel	24	5.225	0.5573	0.0283	7651
84.50	TMA	24	4.923	0.5407	0.0269	7622
83.50	3' Stand-off	24	4.805	0.5343	0.0264	7605
83.00	3' Dish	24	4.747	0.5311	0.0261	7597
82.50	TMA	24	4.689	0.5279	0.0258	7589
80.00	3"x2"x22" Panel	24	4.404	0.5114	0.0245	7557
30.00	Camera	24	0.690	0.1655	0.0068	9217
24.00	PC9013N	24	0.465	0.1331	0.0052	8356

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	170	Diagonal	A325N	0.6250	1	3.34	6.44	0.519 ✓	1.333	Bolt Shear
T2	150	Leg	A325N	1.0000	6	5.09	34.56	0.147 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	5.06	9.52	0.532 ✓	1.333	Member Bearing
		Top Girt	A325N	1.0000	1	0.34	9.52	0.036 ✓	1.333	Member Bearing
T3	140	Leg	A325N	1.0000	6	7.64	34.56	0.221 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	8.84	9.52	0.929 ✓	1.333	Member Bearing
T4	120	Leg	A325N	1.0000	6	14.43	34.56	0.418 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	11.45	9.52	1.203 ✓	1.333	Member Bearing
		Mid Girt	A325N	1.0000	1	3.11	9.52	0.327 ✓	1.333	Member Bearing
T5	100	Leg	A325N	1.0000	6	23.18	34.56	0.671 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	13.29	15.86	0.838 ✓	1.333	Member Bearing
T6	90	Leg	A325N	1.0000	6	27.97	34.56	0.809 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	13.22	15.86	0.834 ✓	1.333	Member Bearing
T7	80	Leg	A325N	1.0000	6	32.40	34.56	0.938 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	14.51	16.49	0.879 ✓	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T8	60	Leg	A325N	1.2500	6	41.18	54.00	0.763 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	14.33	20.39	0.703 ✔	1.333	Member Bearing
T9	40	Leg	A325N	1.2500	6	49.26	54.00	0.912 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	15.56	20.39	0.763 ✔	1.333	Member Bearing
T10	20	Diagonal	A325N	1.2500	1	19.21	20.39	0.942 ✔	1.333	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	170 - 150	1 3/4	20.00	2.49	68.3 K=1.00	21.253	2.4053	-31.04	51.12	0.607 ✔
T2	150 - 140	Pirod 105244	10.02	10.02	45.4 K=1.00	25.051	3.6816	-36.70	92.23	0.398 ✔
T3	140 - 120	Pirod 105216	20.03	10.02	45.4 K=1.00	25.051	3.6816	-77.72	92.23	0.843 ✔
T4	120 - 100	Pirod 105217	20.03	10.02	37.8 K=1.00	26.132	5.3014	-130.88	138.54	0.945 ✔
T5	100 - 90	Pirod 105217	10.02	10.02	37.8 K=1.00	26.132	5.3014	-162.12	138.54	1.170 ✔
T6	90 - 80	Pirod 105217 reinf w/ 1" dia bar	10.02	10.02	31.5 K=1.00	26.968	7.6570	-194.29	206.49	0.941 ✔
T7	80 - 60	Pirod 105218	20.03	10.02	32.4 K=1.00	26.848	7.2158	-254.10	193.73	1.312 ✔
T8	60 - 40	Pirod 105219	20.03	10.02	28.4 K=1.00	27.351	9.4248	-312.33	257.78	1.212 ✔
T9	40 - 20	Pirod 105219 reinf w /1" dia bar	20.03	10.02	25.4 K=1.00	27.705	11.7803	-368.47	326.37	1.129 ✔
T10	20 - 0	Pirod 105220	20.03	10.02	25.2 K=1.00	27.723	11.9282	-421.07	330.69	1.273 ✔

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T2	150 - 140	0.5	1.48	121.0	10.193	0.1963	0.83	2.24	0.372 ✔
T3	140 - 120	0.5	1.48	121.0	10.133	0.1963	0.74	2.23	0.334

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T4	120 - 100	0.5	1.47	120.0	10.279	0.1963	1.57	2.26	0.693 ✔
T5	100 - 90	0.5	1.47	120.0	10.279	0.1963	0.55	2.26	0.243 ✔
T6	90 - 80	0.5	1.46	118.8	10.452	0.1963	0.44	2.30	0.191 ✔
T7	80 - 60	0.5	1.46	119.0	10.423	0.1963	0.35	2.29	0.152 ✔
T8	60 - 40	0.625	1.45	94.4	13.671	0.3068	0.22	4.69	0.046 ✔
T9	40 - 20	0.625	1.44	93.7	16.133	0.3068	1.06	5.54	0.192 ✔
T10	20 - 0	0.625	1.43	93.6	13.766	0.3068	1.64	4.73	0.347 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	170 - 150	7/8	5.59	2.71	111.6 K=0.75	12.001	0.6013	-3.34	7.22	0.463 ✔
T2	150 - 140	L2 1/2x2 1/2x3/16	11.42	5.00	121.3 K=1.00	10.097	0.9020	-5.58	9.11	0.613 ✔
T3	140 - 120	L3x3x3/16	12.50	5.65	115.3 K=1.01	10.840	1.0900	-9.29	11.82	0.786 ✔
T4	120 - 100	L3x3x3/16	13.80	6.35	127.8 K=1.00	9.141	1.0900	-12.20	9.96	1.224 ✔
T5	100 - 90	L3x3x5/16	14.50	6.72	136.9 K=1.00	7.969	1.7800	-13.63	14.19	0.961 ✔
T6	90 - 80	L3x3x5/16	15.24	7.10	144.7 K=1.00	7.132	1.7800	-13.49	12.69	1.063 ✔
T7	80 - 60	L3x3x3/8	16.80	7.90	161.6 K=1.00	5.721	2.1100	-14.51	12.07	1.202 ✔
T8	60 - 40	L3 1/2x3 1/2x5/16	18.45	8.70	151.3 K=1.00	6.527	2.0900	-14.70	13.64	1.078 ✔
T9	40 - 20	L3 1/2x3 1/2x5/16	19.30	9.14	158.9 K=1.00	5.916	2.0900	-15.17	12.36	1.227 ✔
T10	20 - 0	L4x4x5/16	21.03	10.01	151.8 K=1.00	6.477	2.4000	-17.25	15.54	1.110 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	170 - 150	7/8	5.00	4.85	186.4 K=0.70	4.298	0.6013	-0.12	2.58	0.048 ✔
T2	150 - 140	L3x3x3/16	5.00	4.48	105.1 K=1.17	12.131	1.0900	-0.28	13.22	0.021 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	170 - 150	7/8	5.00	4.85	186.4 K=0.70	4.298	0.6013	-0.13	2.58	0.051 ✔

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T4	120 - 100	L3x3x3/16	9.00	7.63	153.5 K=1.00	6.336	1.0900	-2.44	6.91	0.353 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	170 - 150	1 3/4	20.00	2.49	68.3	30.000	2.4053	25.56	72.16	0.354 ✔
T2	150 - 140	Pirod 105244	10.02	10.02	45.4	30.000	3.6816	30.51	110.45	0.276 ✔
T3	140 - 120	Pirod 105216	20.03	10.02	45.4	30.000	3.6816	64.50	110.45	0.584 ✔
T4	120 - 100	Pirod 105217	20.03	10.02	37.8	30.000	5.3014	111.38	159.04	0.700 ✔
T5	100 - 90	Pirod 105217	10.02	10.02	37.8	30.000	5.3014	139.07	159.04	0.874 ✔
T6	90 - 80	Pirod 105217 reinf w/ 1" dia bar	10.02	10.02	31.5	30.000	7.6570	167.83	229.71	0.731 ✔
T7	80 - 60	Pirod 105218	20.03	10.02	32.4	30.000	7.2158	221.06	216.47	1.021 ✔
T8	60 - 40	Pirod 105219	20.03	10.02	28.4	30.000	9.4248	271.13	282.74	0.959

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	40 - 20	Pirod 105219 reinf w /1" dia bar	20.03	10.02	25.4	30.000	11.7803	316.55	353.41	0.896
T10	20 - 0	Pirod 105220	20.03	10.02	25.2	30.000	11.9282	355.85	357.85	0.994

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T2	150 - 140	0.5	1.48	121.0	10.193	0.1963	0.83	2.24	0.372
T3	140 - 120	0.5	1.48	121.0	10.133	0.1963	0.74	2.23	0.334
T4	120 - 100	0.5	1.47	120.0	10.279	0.1963	1.57	2.26	0.693
T5	100 - 90	0.5	1.47	120.0	10.279	0.1963	0.55	2.26	0.243
T6	90 - 80	0.5	1.46	118.8	10.452	0.1963	0.44	2.30	0.191
T7	80 - 60	0.5	1.46	119.0	10.423	0.1963	0.35	2.29	0.152
T8	60 - 40	0.625	1.45	94.4	13.671	0.3068	0.22	4.69	0.046
T9	40 - 20	0.625	1.44	93.7	16.133	0.3068	1.06	5.54	0.192
T10	20 - 0	0.625	1.43	93.6	13.766	0.3068	1.64	4.73	0.347

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	170 - 150	7/8	5.59	2.71	148.7	30.000	0.6013	3.29	18.04	0.182
T2	150 - 140	L2 1/2x2 1/2x3/16	11.42	5.00	80.1	21.600	0.9020	5.06	19.48	0.260
T3	140 - 120	L3x3x3/16	12.50	5.65	74.6	21.600	1.0900	8.84	23.54	0.375
T4	120 - 100	L3x3x3/16	13.80	6.35	83.5	21.600	1.0900	11.45	23.54	0.486
T5	100 - 90	L3x3x5/16	14.50	6.72	89.9	21.600	1.7800	13.29	38.45	0.346
T6	90 - 80	L3x3x5/16	15.24	7.10	94.9	21.600	1.7800	13.22	38.45	0.344

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	80 - 60	L3x3x3/8	16.80	7.90	106.3	21.600	2.1100	13.99	45.58	0.307 ✔
T8	60 - 40	L3 1/2x3 1/2x5/16	18.45	8.70	99.2	21.600	2.0900	14.33	45.14	0.317 ✔
T9	40 - 20	L3 1/2x3 1/2x5/16	20.16	9.56	108.8	21.600	2.0900	15.56	45.14	0.345 ✔
T10	20 - 0	L4x4x5/16	21.92	10.45	103.3	21.600	2.4000	19.21	51.84	0.371 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	170 - 150	7/8	5.00	4.85	266.3	30.000	0.6013	0.09	18.04	0.005 ✔
T2	150 - 140	L3x3x3/16	5.00	4.48	62.0	21.600	1.0900	0.34	23.54	0.014 ✔

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	170 - 150	7/8	5.00	4.85	266.3	30.000	0.6013	0.13	18.04	0.007 ✔

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T4	120 - 100	L3x3x3/16	9.00	7.63	102.2	21.600	1.0900	3.11	23.54	0.132 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	170 - 150	Leg	1 3/4	3	-31.04	68.14	45.6	Pass
T2	150 - 140	Leg	Pirod 105244	60	-36.70	122.94	29.9	Pass
T3	140 - 120	Leg	Pirod 105216	72	-77.72	122.94	63.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T4	120 - 100	Leg	Pirod 105217	87	-130.88	184.67	70.9	Pass
T5	100 - 90	Leg	Pirod 105217	105	-162.12	184.67	87.8	Pass
T6	90 - 80	Leg	Pirod 105217 reinf w/ 1" dia bar	114	-194.29	275.26	70.6	Pass
T7	80 - 60	Leg	Pirod 105218	123	-254.10	258.24	98.4	Pass
T8	60 - 40	Leg	Pirod 105219	137	-312.33	343.62	90.9	Pass
T9	40 - 20	Leg	Pirod 105219 reinf w /1" dia bar	152	-368.47	435.06	84.7	Pass
T10	20 - 0	Leg	Pirod 105220	167	-421.07	440.81	95.5	Pass
T1	170 - 150	Diagonal	7/8	13	-3.34	9.62	34.8	Pass
T2	150 - 140	Diagonal	L2 1/2x2 1/2x3/16	66	-5.58	12.14	46.0	Pass
T3	140 - 120	Diagonal	L3x3x3/16	78	-9.29	15.75	59.0	Pass
T4	120 - 100	Diagonal	L3x3x3/16	93	-12.20	13.28	91.8	Pass
T5	100 - 90	Diagonal	L3x3x5/16	108	-13.63	18.91	72.1	Pass
T6	90 - 80	Diagonal	L3x3x5/16	117	-13.49	16.92	79.7	Pass
T7	80 - 60	Diagonal	L3x3x3/8	126	-14.51	16.09	90.1	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x5/16	141	-14.70	18.18	80.9	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x5/16	162	-15.17	16.48	92.1	Pass
T10	20 - 0	Diagonal	L4x4x5/16	177	-17.25	20.72	83.3	Pass
T1	170 - 150	Top Girt	7/8	4	-0.12	3.45	3.6	Pass
T2	150 - 140	Top Girt	L3x3x3/16	61	-0.28	17.63	1.6	Pass
T1	170 - 150	Bottom Girt	7/8	7	-0.13	3.45	3.8	Pass
T4	120 - 100	Mid Girt	L3x3x3/16	88	-2.44	9.21	26.5	Pass
							Summary	
						Leg (T7)	98.4	Pass
						Diagonal (T9)	92.1	Pass
						Top Girt (T1)	3.6	Pass
						Bottom Girt (T1)	3.8	Pass
						Mid Girt (T4)	26.5	Pass
						Bolt Checks	90.3	Pass
						RATING =	**98.4**	**Pass**

ANCHOR BOLT EVALUATION

ANCHOR BOLT ANALYSIS

Input Data

Max Pier Reactions:

Uplift:	Uplift := 370·kips	*user input*	
Shear:	Shear := 49·kips	*user input*	
Compression:	Compression := 431·kips	*user input*	

Anchor Bolt Data:

Use ASTM A687 Grade

Number of Anchor Bolts = N	N := 6	*user input*	
Bolt Ultimate Strength:	F_u := 150·ksi	*user input*	
Bolt Yield Strength:	Fy := 105·ksi	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	
Thickness of Anchor Bolts	D := 1.25in	*user input*	
Threads per Inch:	n := 7	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-97)

Anchor Bolt Area:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4} \cdot D^2 \qquad A_g = 1.227 \cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 \qquad A_n = 0.969 \cdot in^2$$

Check Tensile Forces:

Maximum Tensile Force (Gross Area):

$$AllowableTension := 1.33 \cdot (0.33 \cdot A_g \cdot F_u) \qquad AllowableTension = 80.8 \cdot kips$$

Note: 1.33 increase allowed per TIA/EIA

Maximum Tensile Force (Net Area):

$$F_{net.area} := 1.33 \cdot (0.60 \cdot A_n \cdot Fy) \qquad F_{net.area} = 81.2 \cdot kips$$

Note: 1.33 increase allowed per TIA/EIA

Applied Tension:

$$MaxTension := \frac{Uplift}{N} \qquad MaxTension = 61.7 \cdot kips$$

Check Stresses:

$$\frac{MaxTension}{F_{net.area}} = 0.76$$

$$Condition1 := if\left(\frac{MaxTension}{F_{net.area}} \le 1.00, "OK", "Overstressed" \right)$$

Condition1 = "OK"

Check Anchor Bolt Area:

Based on the ASCE 10-97 Design of Latticed Stell Transmission Structures

Required Area:

$$A_{s1} := \frac{Uplift}{Fy} + \frac{Shear}{\mu \cdot 0.85 \cdot Fy} \qquad A_{s1} = 4.5 \cdot in^2$$

$$A_{s2} := \left| \frac{Shear - (0.3 \cdot Compression)}{\mu \cdot 0.85 \cdot Fy} \right| \qquad A_{s2} = 1.6 \cdot in^2$$

Provided Area:

$$A_{sprovided} := A_n \cdot N \qquad A_{sprovided} = 5.8 \cdot in^2$$

$$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed"\right) \qquad \frac{A_{s1}}{A_{sprovided}} = 0.78$$

Condition2 = "OK"

$$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed"\right) \qquad \frac{A_{s2}}{A_{sprovided}} = 0.28$$

Condition3 = "OK"

FOUNDATION ANALYSIS

Input Data

Maximum Pier Reactions:

Compression: $C_t := 431\,kips$ *user input*

Uplift: $U_t := 370\,kips$ *user input*

Material Properties:

Unit Weight of Concrete: $\gamma c := 150\,pcf$ *user input*

Unit Weight of Water: $\gamma w := 62.4\,pcf$ *user input*

Unit Weight of Soil: $\gamma s := 100\,pcf$ *user input*

Allowable Soil Bearing Capacity (Allowable Bearing Pressure at Depth 41'): $q_s := 6\,ksf$ *user input*

Water Table Below Grade: $Wd := 41\,ft$ *user input*

Average Allowable Shear: $fl := 859\,psf$ *user input*

Depth Neglected for Skin Friction at Top: $Depthunbond := 4\,ft$ *user input*

Foundation Dimensions:

Drilled Caisson Length: $C_{Length} := 41.5\,ft$ *user input*

Diameter of Pier: $d_p := 5.5ft$ *user input*

Extension of Pier Above Grade: $L_{pag} := 0.5ft$ *user input*

Additional Concrete $Conc_{addl} := 5ft \cdot \left(13ft \cdot 13ft - \frac{\pi \cdot d_p^{\,2}}{4} \right)$

$Conc_{addl} = 726.2\,ft^3$

Foundation reinforcement per drawings by Tectonic, dated May 5, 2004

Loading:

$$TotalDownLoad := C_t + \pi \cdot \frac{d_p^{\,2}}{4} \cdot \left[L_{pag}\,\gamma c + \left[\gamma c \cdot \left(C_{Length} - L_{pag} \right) \right] \right]$$

$TotalDownLoad = 578.9\,kips$

$$PierWeight := \pi \cdot \frac{d_p^{\,2}}{4} \cdot \left[\left(Wd + L_{pag} \right) \cdot \gamma c + \left(C_{Length} - Wd - L_{pag} \right) \cdot (\gamma c - \gamma w) \right] + Conc_{addl}\,\gamma c$$

$PierWeight = 256.8\,kips$

$SoilShear := \pi\, d_p \cdot \left[fl \cdot \left(C_{Length} - Depthunbond \right) \right]$

$SoilShear = 556.6\,kips$

Compression Capacity:

$$TotalDownLoadCapacity := SoilShear + q_s \cdot \left(\pi \cdot \frac{d_p^{\,2}}{4} \right)$$

$TotalDownLoadCapacity = 699.1 \cdot kips$

$CheckDownLoadCapacity := if(TotalDownLoad < TotalDownLoadCapacity, "Okay", "No Good")$

$CheckDownLoadCapacity = "Okay"$

Tension Capacity:

$TotalUpLiftCapacity := SoilShear + PierWeight$

$TotalUpLiftCapacity = 813.4 \cdot kips$

$CheckUpLiftCapacity := if(U_t < TotalUpLiftCapacity, "Okay", "No Good")$

$CheckUpLiftCapacity = "Okay"$

$$SafetyFactor_{provided} := \frac{TotalUpLiftCapacity}{U_t}$$

$SafetyFactor_{provided} = 2.20$

Check Cone Failure:

$$ConeFailureCapacity := \frac{\left[\left(C_{Length} - L_{pag}\right) \cdot \tan(30deg) \cdot 2 + d_p\right]^2 \cdot \pi}{4} \cdot \frac{C_{Length} - L_{pag}}{3} \cdot \gamma_s$$

$ConeFailureCapacity = 2997.25 \cdot kips$

$CheckConeFailureCapacity := if(U_t < ConeFailureCapacity, "Okay", "No Good")$

$CheckConeFailureCapacity = "Okay"$

$$ConeSafetyFactor_{provided} := \frac{ConeFailureCapacity}{U_t}$$

$ConeSafetyFactor_{provided} = 8.10$

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11059A

Rocky Hill / I-91 / X23
179 Shunpike Road
Cromwell, CT 06416

July 18, 2013

EBI Project Number: 62138137

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

EBI Consulting
environmental | engineering | due diligence

July 18 2013

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

Re: Emissions Values for Site: **CT11059A - Rocky Hill / I-91 / X23**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 179 Shunpike Road, Cromwell, CT, 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 (μW/cm2). The number of μW/cm2 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 public 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 public 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 (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS band is 1000 μW/cm2. 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 179 Shunpike Road, Cromwell, CT, 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, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

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

1) 2 GSM channels (1935.000 MHz—to 1945.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
4) 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.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

7) The antenna mounting height centerline of the proposed antennas is **125 feet** above ground level (AGL)
8) 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.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11059A - Rocky Hill / I-91 / X23
Site Addresss	179 Shunpike Road, Cromwell, CT 06416
Site Type	Self Support Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	125	119	None	0	0	48.326044	1.226855	0.12269%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	125	119	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	125	119	1-5/8"	0	0	24.163022	0.613428	0.06134%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	125	119	1-5/8"	0	0	24.163022	0.613428	0.06134%
														Sector total Power Density Value:		0.245%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	125	119	None	0	0	48.326044	1.226855	0.12269%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	125	119	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	125	119	1-5/8"	0	0	24.163022	0.613428	0.06134%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	125	119	1-5/8"	0	0	24.163022	0.613428	0.06134%
														Sector total Power Density Value:		0.245%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	125	119	None	0	0	48.326044	1.226855	0.12269%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	125	119	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	125	119	1-5/8"	0	0	24.163022	0.613428	0.06134%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	125	119	1-5/8"	0	0	24.163022	0.613428	0.06134%
														Sector total Power Density Value:		0.245%	

Site Composite MPE %

Carrier	MPE %
T-Mobile	0.736%
AT&T	24.310%
MetroPCS	4.750%
Cromwell Police	2.130%
Cromwell Fire	5.820%
Clearwire	1.040%
Sprint	4.910%
Verizon Wireless	38.620%
Total Site MPE %	**82.316%**

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.736% (0.245% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **82.316%** of the allowable FCC established general public 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.

Scott Heffernan
RF Engineering Director

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