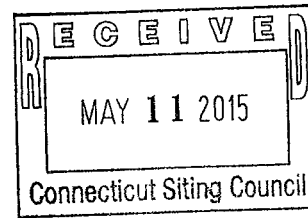


T-Mobile



Please Reply To:
Sam Simons
35 Griffin Road South
Bloomfield, CT 06002
203-482-5156
Sam.Simons@T-Mobile.com

May 5, 2015

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

Re: EM-T-Mobile-064-121214
T-Mobile Site ID CT11062B
92 Weston Street, Hartford 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 January 9, 2013. T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of November 7, 2013.

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

Sincerely,

Sam Simons

Samuel Simons, T-Mobile

cc: Mark Richard, T-Mobile



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

January 9, 2013

Alex Giannaras
HPC Development LLC
46 Mill Plain Road, 2nd Floor
Danbury, CT 06811

RE: **EM-T-MOBILE-064-121214** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 92 Weston Street, Hartford, Connecticut.

Dear Mr. Giannaras:

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:

- Any deviation from the proposed modification as specified in this notice and supporting materials with 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;
- Not more than 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 December 12, 2012. 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.

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,

Linda Roberts
Executive Director

LR/CDM/jb

c: The Honorable Pedro E. Segarra, Mayor, City of Hartford
Sandra Kee Borges, Acting Chief Operating Officer, City of Hartford
Crown Castle





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

December 26, 2012

The Honorable Pedro E. Segarra
Mayor
Hartford Municipal Building
550 Main Street
Hartford, CT 06103

RE: **EM-T-MOBILE-064-121214** -- T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 92 Weston Street, Hartford, Connecticut.

Dear Mayor Segarra:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by January 9, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/laf

c: Sandra Kee Borges, Acting Chief Operating Officer, City of Hartford



HPC Wireless Services
46 Mill Plain Rd.
Floor 2
Danbury, CT, 06811
P.: 203.797.1112

EM-T-MOBILE-064-121214

ORIGINAL
December 12, 2012

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

RECEIVED
DEC 14 2012
CONNECTICUT
SITING COUNCIL

Re: T-Mobile Northeast LLC – exempt modification
92 Weston Street, Hartford, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC (“T-Mobile”). T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Mayor of the City of Hartford.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at 92 Weston Street in the City of Hartford (coordinates 41°-47’-12.2” N, 72°-39’-44.24” W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to T-Mobile’s operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. T-Mobile will replace its six (6) existing panel antennas with new antennas at a center line of approximately 81’. T-Mobile will also remove three (3) of six (6) TMAs.

A hybrid cable will be run from the equipment to the antennas along the existing coaxial cable run. The proposed modifications will not extend the height of the approximately 110' structure.

2. There will be no changes to T-Mobile's ground equipment, and therefore no effect on the site boundaries.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.
4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by EBI Consulting, T-Mobile's operations at the site will result in a power density of approximately 1.853%; the combined site operations will result in a total power density of approximately 19.373%.

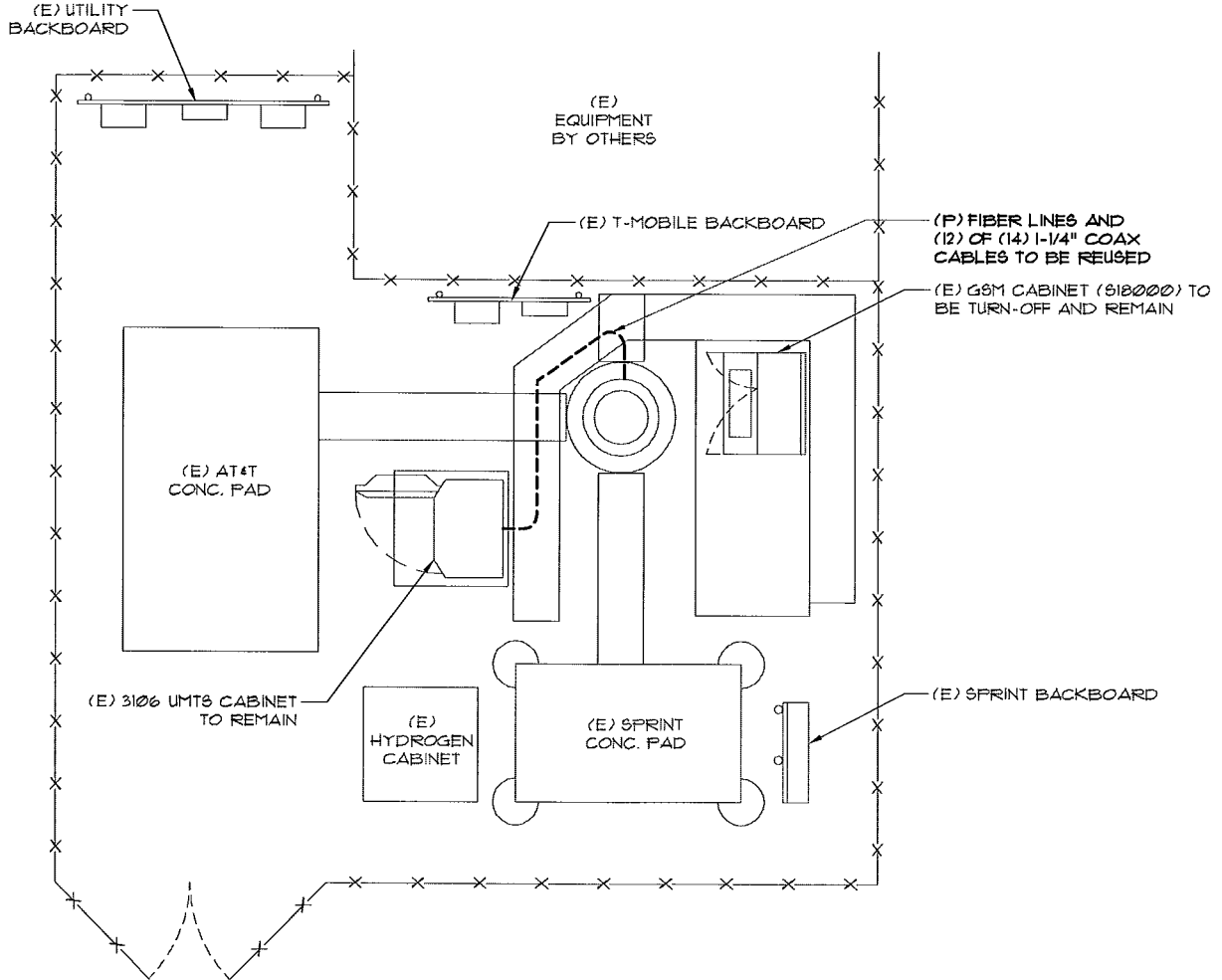
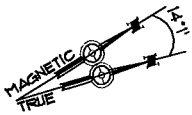
Please feel free to contact me by phone at (617) 281-0084 or by e-mail at agiannaras@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,


(JGB)

Alex Giannaras

cc: Honorable Pedro E. Segarra, Mayor, City of Hartford
Albermarle Weston Street LLC (underlying property owner)



SITE PLAN

SCALE: 1/8" = 1'-0"



ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

Configuration

2C

| SUBMITTALS | |
|------------|----------|
| LE REV A | 04.13.12 |
| LE REV 0 | 12.11.12 |
| | |
| | |
| | |
| | |
| | |

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

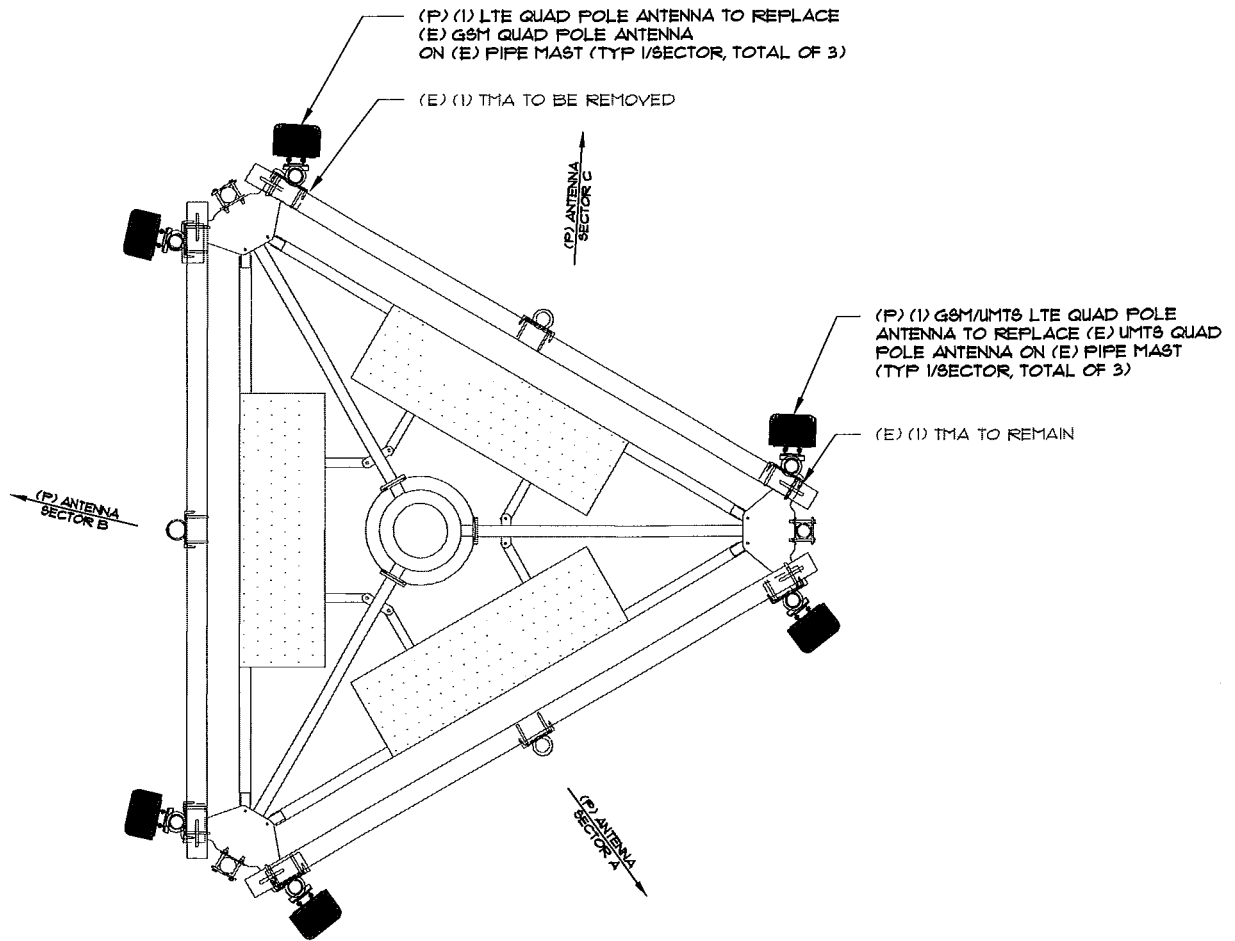
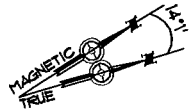
LEASE EXHIBIT
 SITE NUMBER:
 CT11082B
 SITE NAME:
 WINDSOR/I-91/X35
 SITE ADDRESS:
 92 WESTON STREET
 HARTFORD, CT 06106

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: GC

CHECKED BY: SM

PAGE 1 OF 3



ANTENNA ORIENTATION PLAN

SCALE: 1/4"=1'-0"

1
LE-2

Configuration

2C

| SUBMITTALS | |
|------------|----------|
| LE REV A | 04.13.12 |
| LE REV 0 | 12.11.12 |
| | |
| | |
| | |
| | |
| | |

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

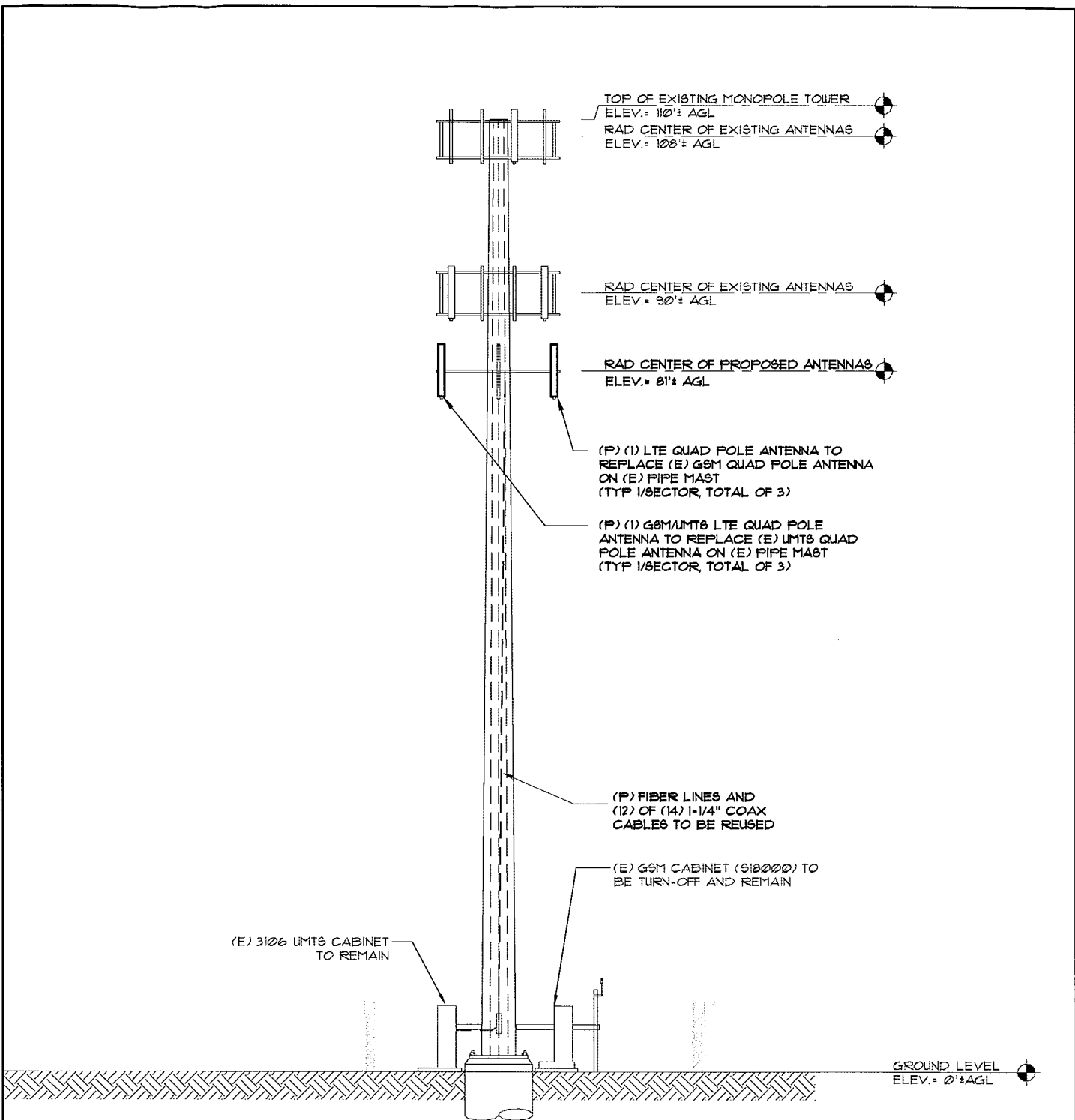
LEASE EXHIBIT
 SITE NUMBER:
 CT11062B
 SITE NAME:
 WINDSOR/I-91/X35
 SITE ADDRESS:
 92 WESTON STREET
 HARTFORD, CT 06106

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: GC

CHECKED BY: SM

PAGE 2 OF 3




ELEVATION

SCALE: 1/16" = 1'-0"



| |
|---------------|
| Configuration |
| 2C |

| SUBMITTALS | |
|------------|----------|
| LE REV A | 04.13.12 |
| LE REV 0 | 12.11.12 |
| | |
| | |
| | |
| | |
| | |


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

LEASE EXHIBIT
 SITE NUMBER:
 CT11062B
 SITE NAME:
 WINDSOR/I-91/X35
 SITE ADDRESS:
 92 WESTON STREET
 HARTFORD, CT 06106

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



PAUL J. FORD AND COMPANY
 STRUCTURAL ENGINEERS
 250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: **December 05, 2012**

Steve Tuttle
 Crown Castle USA Inc.
 8 Parkmeadow Drive
 Pittsford, NY 14534

Paul J Ford and Company
 250 E. Broad Street Suite 1500
 Columbus, OH 43215
 614.221.6679
 jfrybarger@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: *T-Mobile Co-Locate*
Carrier Site Number: CT11062B
Carrier Site Name: CT11062B

Crown Castle Designation:
Crown Castle BU Number: 876325
Crown Castle Site Name: WESTON SQUARE
Crown Castle JDE Job Number: 209305
Crown Castle Work Order Number: 556951
Crown Castle Application Number: 168149 Rev. 1

Engineering Firm Designation: Paul J Ford and Company Project Number: 37512-1239 R2

Site Data: 92 Weston Street, Hartford, Hartford County, CT
 Latitude 41° 47' 12.3", Longitude -72° 39' 44.42"
 110 Foot - Monopole Tower

Dear Steve Tuttle,

Paul J Ford and Company is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 507067, in accordance with application 168149, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
 Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 CT State Building Code based upon a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

We at Paul J Ford and Company appreciate the opportunity of providing our continuing professional services to you and Crown Castle USA Inc. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:


 Joshua Frybarger, E.I.T. *JSF*
 Structural Engineer

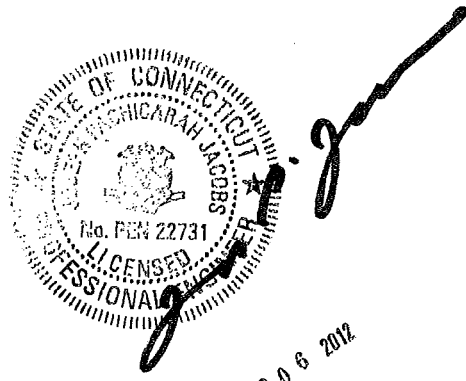


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 110 ft Monopole tower designed by ROHN in October of 1996. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) | Note |
|---------------------|----------------------------|--------------------|----------------------|---------------------------------------|----------------------|---------------------|------|
| 80.0 | 81.0 | 3 | ericsson | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 1 | 1 5/8 | - |
| | | 3 | ericsson | ERICSSON AIR 21 B4A B2P w/ Mount Pipe | | | |
| | | 3 | ericsson | KRY 112 144/1 | | | |

Table 2 - Existing and Reserved Antenna and Cable Information

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) | Note |
|---------------------|----------------------------|--------------------|-------------------------|--------------------------------------|----------------------|---------------------|------|
| 107.0 | 108.0 | 2 | andrew | UMWD-06517-XDH w/ Mount Pipe | 6 | 1 5/8 | 1 |
| | | 2 | decibel | DB950G40E-M w/ Mount Pipe | | | |
| | 107.0 | 1 | tower mounts | Sector Mount [SM 301-3] | | | |
| 91.0 | 91.0 | 6 | ericsson | RRUS-11 | 2 | 3/4 3/8 | 2 |
| | | 1 | tower mounts | Side Arm Mount [SO 102-3] | | | |
| 89.0 | 90.0 | 3 | kmw communications | AM-X-CD-16-65-00T-RET w/ Mount Pipe | 12 | 1 5/8 | 1 |
| | | 1 | raycap | DC6-48-60-18-8F | | | |
| | | 6 | powerwave | 7750.00 w/ Mount Pipe | | | |
| | | 6 | powerwave | LGP21401 | | | |
| | 6 | powerwave | LGP21903 | | | | |
| 89.0 | 1 | tower mounts | Sector Mount [SM 301-3] | | | | |
| 80.0 | 81.0 | 6 | andrew | E15S09P94 | 6 | 7/8 | 3 |
| | | 6 | rfs celwave | APX16DWV-16DWV-S-E-ACU w/ Mount Pipe | 4 | 1 1/4 | |
| | 80.0 | 1 | tower mounts | Platform Mount [LP 304-1] | 12 | 1 1/4 | |

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

| Document | Remarks | Reference | Source |
|--|------------------------------|------------------|---------------|
| 4-GEOTECHNICAL REPORTS | FDH, 07-11432G, 1/24/08 | 2192540 | CCISITES |
| 4-POST-MODIFICATION INSPECTION | B&T, 79760, 11/24/09 | 2561266 | CCISITES |
| 4-POST-MODIFICATION INSPECTION | TEP, 126558, 10/22/12 | 3355603 | CCISITES |
| 4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS | Rohn, 34730SW, 10/18/96 | 1615433 | CCISITES |
| 4-TOWER MANUFACTURER DRAWINGS | Rohn, 34730SW, 10/23/96 | 1615400 | CCISITES |
| 4-TOWER STRUCTURAL ANALYSIS REPORTS | PJF, 37512-1239 R1, 10/30/12 | 3361707 | CCISITES |

3.1) Analysis Method

tnxTower (version 6.0.3.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Monopole was reinforced in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

| Section No. | Elevation (ft) | Component Type | Size | Critical Element | P (K) | SF*P_allow (K) | % Capacity | Pass / Fail |
|-------------|----------------|----------------|------------------|------------------|--------|----------------|------------|-------------|
| L1 | 110 - 90 | Pole | P24x1/4 | 1 | -3.15 | 589.19 | 18.4 | Pass |
| L2 | 90 - 60 | Pole | P24x3/8 | 2 | -10.63 | 934.94 | 70.4 | Pass |
| L3 | 60 - 39.5 | Pole | P30x3/8 | 3 | -13.69 | 1166.57 | 83.9 | Pass |
| L4 | 39.5 - 30 | Pole | RPS 30" x 0.483" | 4 | -15.45 | 1359.81 | 79.4 | Pass |
| L5 | 30 - 8.25 | Pole | P30x1/2 | 5 | -20.01 | 1556.58 | 98.1 | Pass |
| L6 | 8.25 - 0 | Pole | RPS 30" x 0.801" | 6 | -22.36 | 2467.02 | 70.4 | Pass |
| | | | | | | | Summary | |
| | | | | | | Pole (L5) | 98.1 | Pass |
| | | | | | | Rating = | 98.1 | Pass |

Table 5 - Tower Component Stresses vs. Capacity

| Notes | Component | Elevation (ft) | % Capacity | Pass / Fail |
|-------|----------------------------------|----------------|------------|-------------|
| 1 | Flange | 90 | 9.2 | Pass |
| 1 | Flange | 60 | 69.2 | Pass |
| 1 | Flange | 30 | 78.6 | Pass |
| 1 | Anchor Rods | 0 | 84.8 | Pass |
| 1 | Base Plate | 0 | 68.2 | Pass |
| 1 | Base Foundation Steel | 0 | 89.1 | Pass |
| 1,2 | Base Foundation Soil Interaction | 0 | 21.5 | Pass |

| | |
|---|--------------|
| Structure Rating (max from all components) = | 98.1% |
|---|--------------|

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) According to the procedures prescribed and agreed to by the Crown Castle Engineering Foundation Committee in January 2010, the existing caisson foundation was analyzed using the methodology in the software 'PLS-Caisson' (Version 8.10, or newer, by Power Line Systems, Inc.). Per the methods in PLS-Caisson, the soil reactions of cohesive soils are calculated using 8CD independent of the depth of the soil layer. The depth of soil to be ignored at the top of the caisson is the greater of the geotechnical report's recommendation, the frost depth of the site or half of the caisson diameter.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- 1) Tower is located in Hartford County, Connecticut.
- 2) Basic wind speed of 80 mph.
- 3) Nominal ice thickness of 1.0000 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56 pcf.
- 6) A wind speed of 38 mph is used in combination with ice.
- 7) Deflections calculated using a wind speed of 50 mph.
- 8) A non-linear (P-delta) analysis was used.
- 9) Pressures are calculated at each section.
- 10) Stress ratio used in pole design is 1.333.
- 11) 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 | Retention 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 | | |

Pole Section Geometry

| Section | Elevation ft | Section Length ft | Pole Size | Pole Grade | Socket Length ft |
|---------|-----------------|-------------------------|------------------|--------------------------|---------------------|
| L1 | 110.00-90.00 | 20.00 | P24x1/4 | A53-B-42 (42 ksi) | |
| L2 | 90.00-60.00 | 30.00 | P24x3/8 | A53-B-42 (42 ksi) | |
| L3 | 60.00-39.50 | 20.50 | P30x3/8 | A53-B-42 (42 ksi) | |
| L4 | 39.50-30.00 | 9.50 | RPS 30" x 0.483" | Reinf 37.96 ksi (38 ksi) | |
| L5 | 30.00-8.25 | 21.75 | P30x1/2 | A53-B-42 (42 ksi) | |
| L6 | 8.25-0.00 | 8.25 | RPS 30" x 0.801" | Reinf 41.98 ksi (42 ksi) | |

Feed Line/Linear Appurtenances - Entered As Area

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | C _A A _A ft ² /ft | Weight plf |
|--------------------------|-------------------|-----------------|-------------------|-----------------|-----------------|--|---------------|
| LDF7-50A (1-5/8 FOAM) | A | No | Inside Pole | 107.00 - 0.00 | 6 | No Ice | 0.00 |
| | | | | | | 1/2" Ice | 0.00 |
| | | | | | | 1" Ice | 0.00 |
| | | | | | | 2" Ice | 0.00 |
| | | | | | | 4" Ice | 0.00 |

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | | C _A A _A ft ² /ft | Weight plf |
|---|-------------|--------------|--------------------|-----------------|--------------|----------|--|---------------|
| *** (3/4") | B | No | CaAa (Out Of Face) | 89.00 - 0.00 | 2 | No Ice | 0.00 | 0.88 |
| | | | | | | 1/2" Ice | 0.00 | 1.72 |
| | | | | | | 1" Ice | 0.00 | 3.18 |
| | | | | | | 2" Ice | 0.00 | 7.92 |
| | | | | | | 4" Ice | 0.00 | 24.73 |
| LDF2-50A (3/8 FOAM) | B | No | Inside Pole | 89.00 - 0.00 | 1 | No Ice | 0.00 | 0.08 |
| | | | | | | 1/2" Ice | 0.00 | 0.08 |
| | | | | | | 1" Ice | 0.00 | 0.08 |
| | | | | | | 2" Ice | 0.00 | 0.08 |
| | | | | | | 4" Ice | 0.00 | 0.08 |
| LDF7-50A (1-5/8 FOAM) | B | No | Inside Pole | 89.00 - 0.00 | 9 | No Ice | 0.00 | 0.82 |
| | | | | | | 1/2" Ice | 0.00 | 0.82 |
| | | | | | | 1" Ice | 0.00 | 0.82 |
| | | | | | | 2" Ice | 0.00 | 0.82 |
| | | | | | | 4" Ice | 0.00 | 0.82 |
| LDF7-50A (1-5/8 FOAM) | B | No | CaAa (Out Of Face) | 30.50 - 0.00 | 1 | No Ice | 0.20 | 0.82 |
| | | | | | | 1/2" Ice | 0.30 | 2.33 |
| | | | | | | 1" Ice | 0.40 | 4.46 |
| | | | | | | 2" Ice | 0.60 | 10.54 |
| | | | | | | 4" Ice | 1.00 | 30.04 |
| 1-5/8 FOAM | B | No | CaAa (Out Of Face) | 40.50 - 30.50 | 1 | No Ice | 0.00 | 0.82 |
| | | | | | | 1/2" Ice | 0.00 | 2.33 |
| | | | | | | 1" Ice | 0.00 | 4.46 |
| | | | | | | 2" Ice | 0.00 | 10.54 |
| | | | | | | 4" Ice | 0.00 | 30.04 |
| LDF7-50A (1-5/8 FOAM) | B | No | CaAa (Out Of Face) | 89.00 - 40.50 | 1 | No Ice | 0.20 | 0.82 |
| | | | | | | 1/2" Ice | 0.30 | 2.33 |
| | | | | | | 1" Ice | 0.40 | 4.46 |
| | | | | | | 2" Ice | 0.60 | 10.54 |
| | | | | | | 4" Ice | 1.00 | 30.04 |
| 1-5/8 FOAM | B | No | CaAa (Out Of Face) | 89.00 - 0.00 | 2 | No Ice | 0.00 | 0.82 |
| | | | | | | 1/2" Ice | 0.00 | 2.33 |
| | | | | | | 1" Ice | 0.00 | 4.46 |
| | | | | | | 2" Ice | 0.00 | 10.54 |
| | | | | | | 4" Ice | 0.00 | 30.04 |
| *** MLE Hybrid 9Power/18Fiber RL 2(1 5/8) | C | No | CaAa (Out Of Face) | 80.00 - 0.00 | 1 | No Ice | 0.16 | 1.07 |
| | | | | | | 1/2" Ice | 0.26 | 2.37 |
| | | | | | | 1" Ice | 0.36 | 4.28 |
| | | | | | | 2" Ice | 0.56 | 9.93 |
| | | | | | | 4" Ice | 0.96 | 28.56 |
| LDF6-50A (1-1/4 FOAM) | C | No | Inside Pole | 80.00 - 0.00 | 10 | No Ice | 0.00 | 0.66 |
| | | | | | | 1/2" Ice | 0.00 | 0.66 |
| | | | | | | 1" Ice | 0.00 | 0.66 |
| | | | | | | 2" Ice | 0.00 | 0.66 |
| | | | | | | 4" Ice | 0.00 | 0.66 |
| 1-1/4 FOAM | C | No | CaAa (Out Of Face) | 80.00 - 0.00 | 2 | No Ice | 0.00 | 0.66 |
| | | | | | | 1/2" Ice | 0.00 | 1.91 |
| | | | | | | 1" Ice | 0.00 | 3.78 |
| | | | | | | 2" Ice | 0.00 | 9.33 |
| | | | | | | 4" Ice | 0.00 | 27.78 |
| *** Aero MP3-03 | C | No | CaAa (Out Of Face) | 40.50 - 30.50 | 1 | No Ice | 0.26 | 0.00 |
| | | | | | | 1/2" Ice | 0.37 | 0.00 |
| | | | | | | 1" Ice | 0.48 | 0.00 |
| | | | | | | 2" Ice | 0.71 | 0.00 |
| | | | | | | 4" Ice | 1.15 | 0.00 |

Feed Line/Linear Appurtenances Section Areas

| Tower Sectio n | Tower Elevation ft | Face | A _R ft ² | A _F ft ² | C _A A _A In Face ft ² | C _A A _A Out Face ft ² | Weight K |
|-------------------|-----------------------|------|-----------------------------------|-----------------------------------|---|--|-------------|
| L1 | 110.00-90.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.08 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |

| Tower Section n | Tower Elevation ft | Face | A _R ft ² | A _F ft ² | C _A A _A In Face ft ² | C _A A _A Out Face ft ² | Weight K |
|-----------------|--------------------|------|--------------------------------|--------------------------------|---|--|----------|
| L2 | 90.00-60.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.15 |
| | | B | 0.000 | 0.000 | 0.000 | 5.742 | 0.34 |
| | | C | 0.000 | 0.000 | 0.000 | 3.250 | 0.18 |
| L3 | 60.00-39.50 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.10 |
| | | B | 0.000 | 0.000 | 0.000 | 3.861 | 0.24 |
| | | C | 0.000 | 0.000 | 0.000 | 3.594 | 0.18 |
| L4 | 39.50-30.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.05 |
| | | B | 0.000 | 0.000 | 0.000 | 0.099 | 0.11 |
| | | C | 0.000 | 0.000 | 0.000 | 3.906 | 0.09 |
| L5 | 30.00-8.25 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.11 |
| | | B | 0.000 | 0.000 | 0.000 | 4.306 | 0.25 |
| | | C | 0.000 | 0.000 | 0.000 | 3.534 | 0.20 |
| L6 | 8.25-0.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.04 |
| | | B | 0.000 | 0.000 | 0.000 | 1.634 | 0.10 |
| | | C | 0.000 | 0.000 | 0.000 | 1.341 | 0.07 |

Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower Section n | Tower Elevation ft | Face or Leg | Ice Thickness in | A _R ft ² | A _F ft ² | C _A A _A In Face ft ² | C _A A _A Out Face ft ² | Weight K |
|-----------------|--------------------|-------------|------------------|--------------------------------|--------------------------------|---|--|----------|
| L1 | 110.00-90.00 | A | 1.142 | 0.000 | 0.000 | 0.000 | 0.000 | 0.08 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| L2 | 90.00-60.00 | A | 1.104 | 0.000 | 0.000 | 0.000 | 0.000 | 0.15 |
| | | B | | 0.000 | 0.000 | 0.000 | 12.143 | 0.87 |
| | | C | | 0.000 | 0.000 | 0.000 | 7.664 | 0.40 |
| L3 | 60.00-39.50 | A | 1.050 | 0.000 | 0.000 | 0.000 | 0.000 | 0.10 |
| | | B | | 0.000 | 0.000 | 0.000 | 7.958 | 0.59 |
| | | C | | 0.000 | 0.000 | 0.000 | 8.134 | 0.40 |
| L4 | 39.50-30.00 | A | 1.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.05 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.200 | 0.26 |
| | | C | | 0.000 | 0.000 | 0.000 | 7.830 | 0.18 |
| L5 | 30.00-8.25 | A | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.11 |
| | | B | | 0.000 | 0.000 | 0.000 | 8.657 | 0.59 |
| | | C | | 0.000 | 0.000 | 0.000 | 7.884 | 0.40 |
| L6 | 8.25-0.00 | A | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.04 |
| | | B | | 0.000 | 0.000 | 0.000 | 3.284 | 0.22 |
| | | C | | 0.000 | 0.000 | 0.000 | 2.991 | 0.15 |

Feed Line Center of Pressure

| Section | Elevation ft | CP _x in | CP _z in | CP _x Ice in | CP _z Ice in |
|---------|--------------|--------------------|--------------------|------------------------|------------------------|
| L1 | 110.00-90.00 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| L2 | 90.00-60.00 | 0.0938 | 0.1955 | 0.1364 | 0.3482 |
| L3 | 60.00-39.50 | 0.0148 | 0.2381 | -0.0081 | 0.4254 |
| L4 | 39.50-30.00 | -0.4455 | 0.2706 | -0.7425 | 0.4511 |
| L5 | 30.00-8.25 | 0.0403 | 0.2363 | 0.0336 | 0.4161 |
| L6 | 8.25-0.00 | 0.0403 | 0.2363 | 0.0336 | 0.4161 |

Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment t | Placement ft | C _A A _A Front ft ² | C _A A _A Side ft ² | Weight K | |
|------------------------------|-------------|-------------|-------------------------------------|----------------------|--------------|---|--|----------|------|
| UMWD-06517-XDH w/ Mount Pipe | A | From Face | 4.00 | 0.0000 | 107.00 | No Ice | 6.22 | 5.66 | 0.05 |
| | | | 0.00 | | | 1/2" Ice | 6.83 | 6.94 | 0.09 |
| | | | 1.00 | | | 1" Ice | 7.41 | 8.05 | 0.15 |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustmen t ° | Placement ft | C _A A _A | C _A A _A | Weight K |
|--|-------------------|----------------|-----------------------------------|------------------------|--------------------------------|---------------------|-------------------------------|-------------------------------|-----------------|
| | | | Horz Lateral ft ft ft | Vert ft ft ft | | | Front ft ² | Side ft ² | |
| UMWD-06517-XDH w/ Mount Pipe | B | From Face | 4.00 | 0.0000 | 107.00 | 2" Ice | 8.58 | 10.02 | 0.30 |
| | | | | | | 4" Ice | 11.02 | 14.17 | 0.75 |
| | | | | | | No Ice | 6.22 | 5.66 | 0.05 |
| | | | | | | 1/2" Ice | 6.83 | 6.94 | 0.09 |
| | | | | | | 1" Ice | 7.41 | 8.05 | 0.15 |
| (2) DB950G40E-M w/ Mount Pipe | C | From Face | 4.00 | 0.0000 | 107.00 | 2" Ice | 8.58 | 10.02 | 0.30 |
| | | | | | | 4" Ice | 11.02 | 14.17 | 0.75 |
| | | | | | | No Ice | 6.65 | 6.15 | 0.04 |
| | | | | | | 1/2" Ice | 7.20 | 7.04 | 0.10 |
| | | | | | | 1" Ice | 7.74 | 7.86 | 0.16 |
| (2) 4'x2" Pipe Mount | A | From Face | 4.00 | 0.0000 | 107.00 | 2" Ice | 8.84 | 9.56 | 0.32 |
| | | | | | | 4" Ice | 11.16 | 13.17 | 0.76 |
| | | | | | | No Ice | 0.79 | 0.79 | 0.03 |
| | | | | | | 1/2" Ice | 1.03 | 1.03 | 0.03 |
| | | | | | | 1" Ice | 1.28 | 1.28 | 0.04 |
| (2) 4'x2" Pipe Mount | B | From Face | 4.00 | 0.0000 | 107.00 | 2" Ice | 1.81 | 1.81 | 0.07 |
| | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 |
| | | | | | | No Ice | 0.79 | 0.79 | 0.03 |
| | | | | | | 1/2" Ice | 1.03 | 1.03 | 0.03 |
| | | | | | | 1" Ice | 1.28 | 1.28 | 0.04 |
| 4'x2" Pipe Mount | C | From Face | 4.00 | 0.0000 | 107.00 | 2" Ice | 1.81 | 1.81 | 0.07 |
| | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 |
| | | | | | | No Ice | 0.79 | 0.79 | 0.03 |
| | | | | | | 1/2" Ice | 1.03 | 1.03 | 0.03 |
| | | | | | | 1" Ice | 1.28 | 1.28 | 0.04 |
| Sector Mount [SM 301-3] | C | None | | 0.0000 | 107.00 | 2" Ice | 1.81 | 1.81 | 0.07 |
| | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 |
| | | | | | | No Ice | 29.61 | 29.61 | 1.30 |
| | | | | | | 1/2" Ice | 39.80 | 39.80 | 1.84 |
| | | | | | | 1" Ice | 49.99 | 49.99 | 2.38 |
| *** (2) RRUS-11 | A | From Face | 4.00 | 0.0000 | 91.00 | 2" Ice | 70.37 | 70.37 | 3.46 |
| | | | | | | 4" Ice | 111.13 | 111.13 | 5.63 |
| | | | | | | No Ice | 3.25 | 1.37 | 0.05 |
| | | | | | | 1/2" Ice | 3.49 | 1.55 | 0.07 |
| | | | | | | 1" Ice | 3.74 | 1.74 | 0.09 |
| (2) RRUS-11 | B | From Face | 4.00 | 0.0000 | 91.00 | 2" Ice | 4.27 | 2.14 | 0.15 |
| | | | | | | 4" Ice | 5.43 | 3.04 | 0.31 |
| | | | | | | No Ice | 3.25 | 1.37 | 0.05 |
| | | | | | | 1/2" Ice | 3.49 | 1.55 | 0.07 |
| | | | | | | 1" Ice | 3.74 | 1.74 | 0.09 |
| (2) RRUS-11 | C | From Face | 4.00 | 0.0000 | 91.00 | 2" Ice | 4.27 | 2.14 | 0.15 |
| | | | | | | 4" Ice | 5.43 | 3.04 | 0.31 |
| | | | | | | No Ice | 3.25 | 1.37 | 0.05 |
| | | | | | | 1/2" Ice | 3.49 | 1.55 | 0.07 |
| | | | | | | 1" Ice | 3.74 | 1.74 | 0.09 |
| Side Arm Mount [SO 102-3] | C | None | | 0.0000 | 91.00 | 2" Ice | 4.92 | 4.92 | 0.20 |
| | | | | | | 4" Ice | 6.84 | 6.84 | 0.32 |
| | | | | | | No Ice | 3.00 | 3.00 | 0.08 |
| | | | | | | 1/2" Ice | 3.48 | 3.48 | 0.11 |
| | | | | | | 1" Ice | 3.96 | 3.96 | 0.14 |
| AM-X-CD-16-65-00T-RET w/ Mount Pipe | A | From Face | 4.00 | 0.0000 | 89.00 | 2" Ice | 4.92 | 4.92 | 0.20 |
| | | | | | | 4" Ice | 6.84 | 6.84 | 0.32 |
| | | | | | | No Ice | 8.50 | 6.30 | 0.07 |
| | | | | | | 1/2" Ice | 9.15 | 7.48 | 0.14 |
| | | | | | | 1" Ice | 9.77 | 8.37 | 0.21 |
| AM-X-CD-16-65-00T-RET w/ Mount Pipe | B | From Face | 4.00 | 0.0000 | 89.00 | 2" Ice | 11.03 | 10.18 | 0.38 |
| | | | | | | 4" Ice | 13.68 | 14.02 | 0.87 |
| | | | | | | No Ice | 8.50 | 6.30 | 0.07 |
| | | | | | | 1/2" Ice | 9.15 | 7.48 | 0.14 |
| | | | | | | 1" Ice | 9.77 | 8.37 | 0.21 |
| AM-X-CD-16-65-00T-RET w/ Mount Pipe | C | From Face | 4.00 | 0.0000 | 89.00 | 2" Ice | 11.03 | 10.18 | 0.38 |
| | | | | | | 4" Ice | 13.68 | 14.02 | 0.87 |
| | | | | | | No Ice | 8.50 | 6.30 | 0.07 |
| | | | | | | 1/2" Ice | 9.15 | 7.48 | 0.14 |
| | | | | | | 1" Ice | 9.77 | 8.37 | 0.21 |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustmen t | Placement ft | C _A A _A | C _A A _A | Weight K | |
|--|-------------|-------------|-----------------------------------|------------|------------------------|-----------------|-------------------------------|-------------------------------|-------------|------|
| | | | Horz Lateral ft ft ft | Vert ft | | | Front ft ² | Side ft ² | | |
| | | | | 0.00 | | | | | | |
| Sector Mount [SM 301-3] | C | None | | | 0.0000 | 89.00 | 1" Ice | 1.28 | 1.28 | 0.04 |
| | | | | | | | 2" Ice | 1.81 | 1.81 | 0.07 |
| | | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 |
| | | | | | | | No Ice | 29.61 | 29.61 | 1.30 |
| | | | | | | | 1/2" Ice | 39.80 | 39.80 | 1.84 |
| | | | | | | | 1" Ice | 49.99 | 49.99 | 2.38 |
| | | | | | | | 2" Ice | 70.37 | 70.37 | 3.46 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| *** | | | | | | | | | | |
| ERICSSON AIR 21 B2A B4P w/ Mount Pipe | A | From Face | 4.00 | 0.0000 | 80.00 | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| | | | | | | 1" Ice | 7.86 | 7.26 | 0.23 | |
| | | | | | | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| | | | | | | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| 1" Ice | 7.86 | 7.26 | 0.23 | | | | | | | |
| ERICSSON AIR 21 B2A B4P w/ Mount Pipe | B | From Face | 4.00 | 0.0000 | 80.00 | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| | | | | | | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| | | | | | | 1" Ice | 7.86 | 7.26 | 0.23 | |
| | | | | | | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| ERICSSON AIR 21 B2A B4P w/ Mount Pipe | C | From Face | 4.00 | 0.0000 | 80.00 | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| | | | | | | 1" Ice | 7.86 | 7.26 | 0.23 | |
| | | | | | | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| | | | | | | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| ERICSSON AIR 21 B4A B2P w/ Mount Pipe | A | From Face | 4.00 | 0.0000 | 80.00 | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| | | | | | | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| | | | | | | 1" Ice | 7.86 | 7.26 | 0.23 | |
| | | | | | | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| ERICSSON AIR 21 B4A B2P w/ Mount Pipe | B | From Face | 4.00 | 0.0000 | 80.00 | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| | | | | | | 1" Ice | 7.86 | 7.26 | 0.23 | |
| | | | | | | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| | | | | | | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| ERICSSON AIR 21 B4A B2P w/ Mount Pipe | C | From Face | 4.00 | 0.0000 | 80.00 | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| | | | | | | No Ice | 6.83 | 5.64 | 0.11 | |
| | | | | | | 1/2" Ice | 7.35 | 6.48 | 0.17 | |
| | | | | | | 1" Ice | 7.86 | 7.26 | 0.23 | |
| | | | | | | 2" Ice | 8.93 | 8.86 | 0.38 | |
| | | | | | | 4" Ice | 11.18 | 12.29 | 0.81 | |
| KRY 112 144/1 | A | From Face | 4.00 | 0.0000 | 80.00 | No Ice | 0.41 | 0.20 | 0.01 | |
| | | | | | | 1/2" Ice | 0.50 | 0.27 | 0.01 | |
| | | | | | | 1" Ice | 0.59 | 0.35 | 0.02 | |
| | | | | | | 2" Ice | 0.81 | 0.53 | 0.03 | |
| | | | | | | 4" Ice | 1.36 | 1.00 | 0.08 | |
| | | | | | | No Ice | 0.41 | 0.20 | 0.01 | |
| | | | | | | 1/2" Ice | 0.50 | 0.27 | 0.01 | |
| KRY 112 144/1 | B | From Face | 4.00 | 0.0000 | 80.00 | 1" Ice | 0.59 | 0.35 | 0.02 | |
| | | | | | | 2" Ice | 0.81 | 0.53 | 0.03 | |
| | | | | | | 4" Ice | 1.36 | 1.00 | 0.08 | |
| | | | | | | No Ice | 0.41 | 0.20 | 0.01 | |
| | | | | | | 1/2" Ice | 0.50 | 0.27 | 0.01 | |
| | | | | | | 1" Ice | 0.59 | 0.35 | 0.02 | |
| | | | | | | 2" Ice | 0.81 | 0.53 | 0.03 | |
| KRY 112 144/1 | C | From Face | 4.00 | 0.0000 | 80.00 | 4" Ice | 1.36 | 1.00 | 0.08 | |
| | | | | | | No Ice | 0.41 | 0.20 | 0.01 | |
| | | | | | | 1/2" Ice | 0.50 | 0.27 | 0.01 | |
| | | | | | | 1" Ice | 0.59 | 0.35 | 0.02 | |
| | | | | | | 2" Ice | 0.81 | 0.53 | 0.03 | |
| | | | | | | 4" Ice | 1.36 | 1.00 | 0.08 | |
| | | | | | | No Ice | 0.41 | 0.20 | 0.01 | |
| 4'x2" Pipe Mount | A | From Face | 4.00 | 0.0000 | 80.00 | 1/2" Ice | 1.03 | 1.03 | 0.03 | |
| | | | | | | 1" Ice | 1.28 | 1.28 | 0.04 | |
| | | | | | | 2" Ice | 1.81 | 1.81 | 0.07 | |
| | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 | |
| | | | | | | No Ice | 0.79 | 0.79 | 0.03 | |
| | | | | | | 1/2" Ice | 1.03 | 1.03 | 0.03 | |
| | | | | | | 1" Ice | 1.28 | 1.28 | 0.04 | |
| 4'x2" Pipe Mount | B | From Face | 4.00 | 0.0000 | 80.00 | 2" Ice | 1.81 | 1.81 | 0.07 | |
| | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 | |
| | | | | | | No Ice | 0.79 | 0.79 | 0.03 | |
| | | | | | | 1/2" Ice | 1.03 | 1.03 | 0.03 | |
| | | | | | | 1" Ice | 1.28 | 1.28 | 0.04 | |
| | | | | | | 2" Ice | 1.81 | 1.81 | 0.07 | |
| | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 | |
| 4'x2" Pipe Mount | C | From Face | 4.00 | 0.0000 | 80.00 | No Ice | 0.79 | 0.79 | 0.03 | |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustmen t | Placement ft | C _A A _A | C _A A _A | Weight K |
|--------------------------------------|-------------|-------------|----------|---------|------------------------|---------------------|-------------------------------|-------------------------------|-----------------|
| | | | Horz | Lateral | | | Front | Side | |
| | | | ft | ft | ° | | ft ² | ft ² | |
| | | | 0.00 | | | 1/2" Ice | 1.03 | 1.03 | 0.03 |
| | | | 0.00 | | | 1" Ice | 1.28 | 1.28 | 0.04 |
| | | | | | | 2" Ice | 1.81 | 1.81 | 0.07 |
| | | | | | | 4" Ice | 3.11 | 3.11 | 0.16 |
| Platform Mount [LP 304-1] | C | None | | | 0.0000 | No Ice | 16.50 | 16.50 | 1.35 |
| | | | | | | 1/2" Ice | 22.44 | 22.44 | 1.62 |
| | | | | | | 1" Ice | 27.42 | 27.42 | 1.90 |
| | | | | | | 2" Ice | 37.38 | 37.38 | 2.45 |
| | | | | | | 4" Ice | 57.30 | 57.30 | 3.55 |
| *** | | | | | | | | | |
| Bridge Stiffener (72" x 11" x 1.25") | C | None | | | 0.0000 | No Ice | 1.25 | 7.70 | 0.35 |
| | | | | | | 1/2" Ice | 1.93 | 8.24 | 0.38 |
| | | | | | | 1" Ice | 2.63 | 8.79 | 0.42 |
| | | | | | | 2" Ice | 3.66 | 9.92 | 0.51 |
| | | | | | | 4" Ice | 5.51 | 12.28 | 0.77 |

Tower Pressures - No Ice

$G_H = 1.690$

| Section Elevation ft | z ft | K _Z | q _z psf | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|-----------------------------------|---------|-----------------------------------|-----------------------------------|-------------------------------------|--------|---|--|
| L1 110.00-90.00 | 100.00 | 1.373 | 22 | 40.000 | A | 0.000 | 40.000 | 40.000 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 40.000 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 40.000 | | 100.00 | 0.000 | 0.000 |
| L2 90.00-60.00 | 75.00 | 1.264 | 21 | 60.000 | A | 0.000 | 60.000 | 60.000 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 60.000 | | 100.00 | 0.000 | 5.742 |
| | | | | | C | 0.000 | 60.000 | | 100.00 | 0.000 | 3.250 |
| L3 60.00-39.50 | 49.75 | 1.124 | 18 | 51.250 | A | 0.000 | 51.250 | 51.250 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 51.250 | | 100.00 | 0.000 | 3.861 |
| | | | | | C | 0.000 | 51.250 | | 100.00 | 0.000 | 3.594 |
| L4 39.50-30.00 | 34.75 | 1.015 | 17 | 23.750 | A | 0.000 | 23.750 | 23.750 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 23.750 | | 100.00 | 0.000 | 0.099 |
| | | | | | C | 0.000 | 23.750 | | 100.00 | 0.000 | 3.906 |
| L5 30.00-8.25 | 19.13 | 1 | 16 | 54.375 | A | 0.000 | 54.375 | 54.375 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 54.375 | | 100.00 | 0.000 | 4.306 |
| | | | | | C | 0.000 | 54.375 | | 100.00 | 0.000 | 3.534 |
| L6 8.25-0.00 | 4.13 | 1 | 16 | 20.625 | A | 0.000 | 20.625 | 20.625 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 20.625 | | 100.00 | 0.000 | 1.634 |
| | | | | | C | 0.000 | 20.625 | | 100.00 | 0.000 | 1.341 |

Tower Pressure - With Ice

$G_H = 1.690$

| Section Elevation ft | z ft | K _Z | q _z psf | t _z in | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|----------------------|-----------------------------------|---------|-----------------------------------|-----------------------------------|-------------------------------------|--------|---|--|
| L1 110.00-90.00 | 100.00 | 1.373 | 5 | 1.1423 | 43.808 | A | 0.000 | 43.808 | 43.808 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 43.808 | | 100.00 | 0.000 | 0.000 |
| | | | | | | C | 0.000 | 43.808 | | 100.00 | 0.000 | 0.000 |
| L2 90.00-60.00 | 75.00 | 1.264 | 5 | 1.1035 | 65.518 | A | 0.000 | 65.518 | 65.518 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 65.518 | | 100.00 | 0.000 | 12.143 |
| | | | | | | C | 0.000 | 65.518 | | 100.00 | 0.000 | 7.664 |
| L3 60.00-39.50 | 49.75 | 1.124 | 4 | 1.0505 | 54.839 | A | 0.000 | 54.839 | 54.839 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 54.839 | | 100.00 | 0.000 | 7.958 |
| | | | | | | C | 0.000 | 54.839 | | 100.00 | 0.000 | 8.134 |
| L4 39.50-30.00 | 34.75 | 1.015 | 4 | 1.0062 | 25.343 | A | 0.000 | 25.343 | 25.343 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 25.343 | | 100.00 | 0.000 | 0.200 |
| | | | | | | C | 0.000 | 25.343 | | 100.00 | 0.000 | 7.830 |
| L5 30.00-8.25 | 19.13 | 1 | 4 | 1.0000 | 58.000 | A | 0.000 | 58.000 | 58.000 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 58.000 | | 100.00 | 0.000 | 8.657 |

| Section Elevation ft | z ft | K _Z | q _z psf | t _z in | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|----------------------|-----------------------------------|---------|-----------------------------------|-----------------------------------|-------------------------------------|--------|---|--|
| L6 8.25-0.00 | 4.13 | 1 | 4 | 1.0000 | 22.000 | C | 0.000 | 58.000 | 22.000 | 100.00 | 0.000 | 7.884 |
| | | | | | | A | 0.000 | 22.000 | | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 22.000 | | 100.00 | 0.000 | 3.284 |
| | | | | | | C | 0.000 | 22.000 | | 100.00 | 0.000 | 2.991 |

Tower Pressure - Service

G_H = 1.690

| Section Elevation ft | z ft | K _Z | q _z psf | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|-----------------------------------|---------|-----------------------------------|-----------------------------------|-------------------------------------|--------|---|--|
| L1 110.00-90.00 | 100.00 | 1.373 | 9 | 40.000 | A | 0.000 | 40.000 | 40.000 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 40.000 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 40.000 | | 100.00 | 0.000 | 0.000 |
| L2 90.00-60.00 | 75.00 | 1.264 | 8 | 60.000 | A | 0.000 | 60.000 | 60.000 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 60.000 | | 100.00 | 0.000 | 5.742 |
| | | | | | C | 0.000 | 60.000 | | 100.00 | 0.000 | 3.250 |
| L3 60.00-39.50 | 49.75 | 1.124 | 7 | 51.250 | A | 0.000 | 51.250 | 51.250 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 51.250 | | 100.00 | 0.000 | 3.861 |
| | | | | | C | 0.000 | 51.250 | | 100.00 | 0.000 | 3.594 |
| L4 39.50-30.00 | 34.75 | 1.015 | 6 | 23.750 | A | 0.000 | 23.750 | 23.750 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 23.750 | | 100.00 | 0.000 | 0.099 |
| | | | | | C | 0.000 | 23.750 | | 100.00 | 0.000 | 3.906 |
| L5 30.00-8.25 | 19.13 | 1 | 6 | 54.375 | A | 0.000 | 54.375 | 54.375 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 54.375 | | 100.00 | 0.000 | 4.306 |
| | | | | | C | 0.000 | 54.375 | | 100.00 | 0.000 | 3.534 |
| L6 8.25-0.00 | 4.13 | 1 | 6 | 20.625 | A | 0.000 | 20.625 | 20.625 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 20.625 | | 100.00 | 0.000 | 1.634 |
| | | | | | C | 0.000 | 20.625 | | 100.00 | 0.000 | 1.341 |

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 60 deg - No Ice |
| 5 | Dead+Wind 90 deg - No Ice |
| 6 | Dead+Wind 120 deg - No Ice |
| 7 | Dead+Wind 150 deg - No Ice |
| 8 | Dead+Wind 180 deg - No Ice |
| 9 | Dead+Wind 210 deg - No Ice |
| 10 | Dead+Wind 240 deg - No Ice |
| 11 | Dead+Wind 270 deg - No Ice |
| 12 | Dead+Wind 300 deg - No Ice |
| 13 | Dead+Wind 330 deg - No Ice |
| 14 | Dead+Ice |
| 15 | Dead+Wind 0 deg+Ice |
| 16 | Dead+Wind 30 deg+Ice |
| 17 | Dead+Wind 60 deg+Ice |
| 18 | Dead+Wind 90 deg+Ice |
| 19 | Dead+Wind 120 deg+Ice |
| 20 | Dead+Wind 150 deg+Ice |
| 21 | Dead+Wind 180 deg+Ice |
| 22 | Dead+Wind 210 deg+Ice |
| 23 | Dead+Wind 240 deg+Ice |
| 24 | Dead+Wind 270 deg+Ice |
| 25 | Dead+Wind 300 deg+Ice |
| 26 | Dead+Wind 330 deg+Ice |
| 27 | Dead+Wind 0 deg - Service |
| 28 | Dead+Wind 30 deg - Service |
| 29 | Dead+Wind 60 deg - Service |
| 30 | Dead+Wind 90 deg - Service |
| 31 | Dead+Wind 120 deg - Service |

| Comb. No. | Description |
|-----------|-----------------------------|
| 32 | Dead+Wind 150 deg - Service |
| 33 | Dead+Wind 180 deg - Service |
| 34 | Dead+Wind 210 deg - Service |
| 35 | Dead+Wind 240 deg - Service |
| 36 | Dead+Wind 270 deg - Service |
| 37 | Dead+Wind 300 deg - Service |
| 38 | 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 |
|-------------|--------------|----------------|------------------|-----------------|---------|--------------------------|--------------------------|
| L1 | 110 - 90 | Pole | Max Tension | 21 | 0.00 | -0.00 | 0.00 |
| | | | Max. Compression | 14 | -6.31 | -0.00 | -0.77 |
| | | | Max. Mx | 11 | -3.15 | 51.10 | 0.06 |
| | | | Max. My | 8 | -3.15 | 0.00 | -51.42 |
| | | | Max. Vy | 11 | -3.95 | 51.10 | 0.06 |
| | | | Max. Vx | 8 | 3.97 | 0.00 | -51.42 |
| L2 | 90 - 60 | Pole | Max. Torque | 5 | | | -1.14 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 14 | -20.00 | -0.07 | -1.14 |
| | | | Max. Mx | 11 | -10.63 | 343.65 | -0.02 |
| | | | Max. My | 8 | -10.63 | 0.02 | -344.54 |
| | | | Max. Vy | 5 | 11.25 | -343.61 | -0.02 |
| L3 | 60 - 39.5 | Pole | Max. Vx | 8 | 11.27 | 0.02 | -344.54 |
| | | | Max. Torque | 5 | | | -1.14 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 14 | -24.33 | -0.26 | -1.58 |
| | | | Max. Mx | 5 | -13.69 | -585.96 | -0.12 |
| | | | Max. My | 8 | -13.69 | -0.02 | -587.31 |
| L4 | 39.5 - 30 | Pole | Max. Vy | 5 | 12.38 | -585.96 | -0.12 |
| | | | Max. Vx | 8 | 12.40 | -0.02 | -587.31 |
| | | | Max. Torque | 5 | | | -1.05 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 14 | -26.63 | -0.34 | -1.77 |
| | | | Max. Mx | 5 | -15.45 | -705.74 | -0.16 |
| L5 | 30 - 8.25 | Pole | Max. My | 8 | -15.45 | -0.04 | -707.28 |
| | | | Max. Vy | 5 | 12.84 | -705.74 | -0.16 |
| | | | Max. Vx | 8 | 12.86 | -0.04 | -707.28 |
| | | | Max. Torque | 5 | | | -1.06 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 14 | -32.40 | -0.53 | -2.20 |
| L6 | 8.25 - 0 | Pole | Max. Mx | 5 | -20.01 | -999.30 | -0.25 |
| | | | Max. My | 8 | -20.01 | -0.08 | -1001.28 |
| | | | Max. Vy | 5 | 13.90 | -999.30 | -0.25 |
| | | | Max. Vx | 8 | 13.92 | -0.08 | -1001.28 |
| | | | Max. Torque | 5 | | | -1.08 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 14 | -35.19 | -0.60 | -2.36 |
| | | | Max. Mx | 5 | -22.36 | -1115.22 | -0.29 |
| | | | Max. My | 8 | -22.36 | -0.10 | -1117.37 |
| | | | Max. Vy | 5 | 14.21 | -1115.22 | -0.29 |
| | | | Max. Vx | 8 | 14.23 | -0.10 | -1117.37 |
| | | | Max. Torque | 5 | | | -1.09 |

Maximum Reactions

| Location | Condition | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|----------|---------------------|-----------------|------------|-----------------|-----------------|
| Pole | Max. Vert | 21 | 35.19 | 0.00 | -4.31 |
| | Max. H _x | 11 | 22.36 | 14.20 | 0.00 |
| | Max. H _z | 2 | 22.36 | 0.00 | 14.22 |
| | Max. M _x | 2 | 1116.79 | 0.00 | 14.22 |
| | Max. M _z | 5 | 1115.22 | -14.20 | 0.00 |

| Location | Condition | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|----------|---------------------|-----------------|------------|-----------------|-----------------|
| | Max. Torsion | 11 | 1.09 | 14.20 | 0.00 |
| | Min. Vert | 1 | 22.36 | 0.00 | 0.00 |
| | Min. H _x | 5 | 22.36 | -14.20 | 0.00 |
| | Min. H _z | 8 | 22.36 | 0.00 | -14.22 |
| | Min. M _x | 8 | -1117.37 | 0.00 | -14.22 |
| | Min. M _z | 11 | -1115.02 | 14.20 | 0.00 |
| | Min. Torsion | 5 | -1.09 | -14.20 | 0.00 |

Tower Mast Reaction Summary

| Load Combination | Vertical K | Shear _x K | Shear _z K | Overturing Moment, M _x kip-ft | Overturing Moment, M _z kip-ft | Torque kip-ft |
|-----------------------------|------------|----------------------|----------------------|--|--|---------------|
| Dead Only | 22.36 | 0.00 | 0.00 | 0.28 | -0.10 | 0.00 |
| Dead+Wind 0 deg - No Ice | 22.36 | -0.00 | -14.22 | -1116.79 | -0.10 | -0.23 |
| Dead+Wind 30 deg - No Ice | 22.36 | 7.10 | -12.31 | -967.13 | -557.66 | 0.34 |
| Dead+Wind 60 deg - No Ice | 22.36 | 12.30 | -7.11 | -558.25 | -965.82 | 0.83 |
| Dead+Wind 90 deg - No Ice | 22.36 | 14.20 | 0.00 | 0.29 | -1115.22 | 1.09 |
| Dead+Wind 120 deg - No Ice | 22.36 | 12.30 | 7.11 | 558.83 | -965.82 | 1.06 |
| Dead+Wind 150 deg - No Ice | 22.36 | 7.10 | 12.31 | 967.71 | -557.66 | 0.75 |
| Dead+Wind 180 deg - No Ice | 22.36 | -0.00 | 14.22 | 1117.37 | -0.10 | 0.23 |
| Dead+Wind 210 deg - No Ice | 22.36 | -7.10 | 12.31 | 967.71 | 557.46 | -0.34 |
| Dead+Wind 240 deg - No Ice | 22.36 | -12.30 | 7.11 | 558.83 | 965.63 | -0.83 |
| Dead+Wind 270 deg - No Ice | 22.36 | -14.20 | 0.00 | 0.29 | 1115.02 | -1.09 |
| Dead+Wind 300 deg - No Ice | 22.36 | -12.30 | -7.11 | -558.26 | 965.62 | -1.06 |
| Dead+Wind 330 deg - No Ice | 22.36 | -7.10 | -12.31 | -967.13 | 557.46 | -0.74 |
| Dead+Ice | 35.19 | 0.00 | 0.00 | 2.36 | -0.60 | -0.00 |
| Dead+Wind 0 deg+Ice | 35.19 | 0.00 | -4.31 | -352.06 | -0.61 | -0.07 |
| Dead+Wind 30 deg+Ice | 35.19 | 2.16 | -3.74 | -304.57 | -177.70 | 0.09 |
| Dead+Wind 60 deg+Ice | 35.19 | 3.73 | -2.16 | -174.82 | -307.34 | 0.23 |
| Dead+Wind 90 deg+Ice | 35.19 | 4.31 | 0.00 | 2.44 | -354.79 | 0.30 |
| Dead+Wind 120 deg+Ice | 35.19 | 3.73 | 2.16 | 179.69 | -307.34 | 0.30 |
| Dead+Wind 150 deg+Ice | 35.19 | 2.16 | 3.74 | 309.45 | -177.70 | 0.21 |
| Dead+Wind 180 deg+Ice | 35.19 | 0.00 | 4.31 | 356.93 | -0.61 | 0.07 |
| Dead+Wind 210 deg+Ice | 35.19 | -2.16 | 3.74 | 309.45 | 176.48 | -0.09 |
| Dead+Wind 240 deg+Ice | 35.19 | -3.73 | 2.16 | 179.69 | 306.11 | -0.23 |
| Dead+Wind 270 deg+Ice | 35.19 | -4.31 | 0.00 | 2.44 | 353.56 | -0.30 |
| Dead+Wind 300 deg+Ice | 35.19 | -3.73 | -2.16 | -174.82 | 306.11 | -0.30 |
| Dead+Wind 330 deg+Ice | 35.19 | -2.16 | -3.74 | -304.57 | 176.48 | -0.21 |
| Dead+Wind 0 deg - Service | 22.36 | 0.00 | -5.55 | -436.31 | -0.10 | -0.09 |
| Dead+Wind 30 deg - Service | 22.36 | 2.77 | -4.81 | -377.82 | -218.01 | 0.13 |
| Dead+Wind 60 deg - Service | 22.36 | 4.80 | -2.78 | -218.01 | -377.54 | 0.32 |
| Dead+Wind 90 deg - Service | 22.36 | 5.55 | 0.00 | 0.29 | -435.93 | 0.43 |
| Dead+Wind 120 deg - Service | 22.36 | 4.80 | 2.78 | 218.59 | -377.54 | 0.42 |
| Dead+Wind 150 deg - Service | 22.36 | 2.77 | 4.81 | 378.40 | -218.01 | 0.29 |
| Dead+Wind 180 deg - Service | 22.36 | 0.00 | 5.55 | 436.89 | -0.10 | 0.09 |
| Dead+Wind 210 deg - Service | 22.36 | -2.77 | 4.81 | 378.40 | 217.82 | -0.13 |
| Dead+Wind 240 deg - Service | 22.36 | -4.80 | 2.78 | 218.59 | 377.34 | -0.32 |
| Dead+Wind 270 deg - Service | 22.36 | -5.55 | 0.00 | 0.29 | 435.73 | -0.43 |
| Dead+Wind 300 deg - Service | 22.36 | -4.80 | -2.78 | -218.01 | 377.34 | -0.41 |
| Dead+Wind 330 deg - Service | 22.36 | -2.77 | -4.81 | -377.82 | 217.82 | -0.29 |

Solution Summary

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|--------|--------|------------------|-------|--------|---------|
| | PX K | PY K | PZ K | PX K | PY K | PZ K | |
| 1 | 0.00 | -22.36 | 0.00 | 0.00 | 22.36 | 0.00 | 0.000% |
| 2 | 0.00 | -22.36 | -14.22 | 0.00 | 22.36 | 14.22 | 0.000% |
| 3 | 7.10 | -22.36 | -12.31 | -7.10 | 22.36 | 12.31 | 0.000% |
| 4 | 12.30 | -22.36 | -7.11 | -12.30 | 22.36 | 7.11 | 0.000% |
| 5 | 14.20 | -22.36 | 0.00 | -14.20 | 22.36 | 0.00 | 0.000% |
| 6 | 12.30 | -22.36 | 7.11 | -12.30 | 22.36 | -7.11 | 0.000% |
| 7 | 7.10 | -22.36 | 12.31 | -7.10 | 22.36 | -12.31 | 0.000% |
| 8 | 0.00 | -22.36 | 14.22 | 0.00 | 22.36 | -14.22 | 0.000% |

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|---------|---------|------------------|---------|---------|---------|
| | PX K | PY K | PZ K | PX K | PY K | PZ K | |
| 9 | -7.10 | -22.36 | 12.31 | 7.10 | 22.36 | -12.31 | 0.000% |
| 10 | -12.30 | -22.36 | 7.11 | 12.30 | 22.36 | -7.11 | 0.000% |
| 11 | -14.20 | -22.36 | 0.00 | 14.20 | 22.36 | 0.00 | 0.000% |
| 12 | -12.30 | -22.36 | -7.11 | 12.30 | 22.36 | 7.11 | 0.000% |
| 13 | -7.10 | -22.36 | -12.31 | 7.10 | 22.36 | 12.31 | 0.000% |
| 14 | 0.00 | -35.19 | 0.00 | 0.00 | 35.19 | -0.00 | 0.000% |
| 15 | 0.00 | -35.19 | -4.31 | 0.00 | 35.19 | 4.31 | 0.000% |
| 16 | 2.16 | -35.19 | -3.74 | -2.16 | 35.19 | 3.74 | 0.000% |
| 17 | 3.73 | -35.19 | -2.16 | -3.73 | 35.19 | 2.16 | 0.000% |
| 18 | 4.31 | -35.19 | 0.00 | -4.31 | 35.19 | -0.00 | 0.000% |
| 19 | 3.73 | -35.19 | 2.16 | -3.73 | 35.19 | -2.16 | 0.000% |
| 20 | 2.16 | -35.19 | 3.74 | -2.16 | 35.19 | -3.74 | 0.000% |
| 21 | 0.00 | -35.19 | 4.31 | 0.00 | 35.19 | -4.31 | 0.000% |
| 22 | -2.16 | -35.19 | 3.74 | 2.16 | 35.19 | -3.74 | 0.000% |
| 23 | -3.73 | -35.19 | 2.16 | 3.73 | 35.19 | -2.16 | 0.000% |
| 24 | -4.31 | -35.19 | 0.00 | 4.31 | 35.19 | -0.00 | 0.000% |
| 25 | -3.73 | -35.19 | -2.16 | 3.73 | 35.19 | 2.16 | 0.000% |
| 26 | -2.16 | -35.19 | -3.74 | 2.16 | 35.19 | 3.74 | 0.000% |
| 27 | 0.00 | -22.36 | -5.55 | 0.00 | 22.36 | 5.55 | 0.000% |
| 28 | 2.77 | -22.36 | -4.81 | -2.77 | 22.36 | 4.81 | 0.000% |
| 29 | 4.80 | -22.36 | -2.78 | -4.80 | 22.36 | 2.78 | 0.000% |
| 30 | 5.55 | -22.36 | 0.00 | -5.55 | 22.36 | -0.00 | 0.000% |
| 31 | 4.80 | -22.36 | 2.78 | -4.80 | 22.36 | -2.78 | 0.000% |
| 32 | 2.77 | -22.36 | 4.81 | -2.77 | 22.36 | -4.81 | 0.000% |
| 33 | 0.00 | -22.36 | 5.55 | 0.00 | 22.36 | -5.55 | 0.000% |
| 34 | -2.77 | -22.36 | 4.81 | 2.77 | 22.36 | -4.81 | 0.000% |
| 35 | -4.80 | -22.36 | 2.78 | 4.80 | 22.36 | -2.78 | 0.000% |
| 36 | -5.55 | -22.36 | 0.00 | 5.55 | 22.36 | -0.00 | 0.000% |
| 37 | -4.80 | -22.36 | -2.78 | 4.80 | 22.36 | 2.78 | 0.000% |
| 38 | -2.77 | -22.36 | -4.81 | 2.77 | 22.36 | 4.81 | 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 | 0.00039399 |
| 3 | Yes | 5 | 0.00000001 | 0.00049236 |
| 4 | Yes | 5 | 0.00000001 | 0.00045201 |
| 5 | Yes | 5 | 0.00000001 | 0.00007462 |
| 6 | Yes | 5 | 0.00000001 | 0.00051921 |
| 7 | Yes | 5 | 0.00000001 | 0.00045606 |
| 8 | Yes | 4 | 0.00000001 | 0.00039414 |
| 9 | Yes | 5 | 0.00000001 | 0.00046658 |
| 10 | Yes | 5 | 0.00000001 | 0.00051086 |
| 11 | Yes | 5 | 0.00000001 | 0.00007461 |
| 12 | Yes | 5 | 0.00000001 | 0.00044669 |
| 13 | Yes | 5 | 0.00000001 | 0.00050587 |
| 14 | Yes | 4 | 0.00000001 | 0.00000001 |
| 15 | Yes | 4 | 0.00000001 | 0.00023828 |
| 16 | Yes | 5 | 0.00000001 | 0.00009403 |
| 17 | Yes | 5 | 0.00000001 | 0.00008111 |
| 18 | Yes | 4 | 0.00000001 | 0.00049898 |
| 19 | Yes | 5 | 0.00000001 | 0.00010861 |
| 20 | Yes | 5 | 0.00000001 | 0.00008525 |
| 21 | Yes | 4 | 0.00000001 | 0.00024276 |
| 22 | Yes | 5 | 0.00000001 | 0.00008793 |
| 23 | Yes | 5 | 0.00000001 | 0.00010447 |
| 24 | Yes | 4 | 0.00000001 | 0.00049772 |
| 25 | Yes | 5 | 0.00000001 | 0.00007976 |
| 26 | Yes | 5 | 0.00000001 | 0.00009929 |
| 27 | Yes | 4 | 0.00000001 | 0.00010565 |
| 28 | Yes | 5 | 0.00000001 | 0.00004418 |
| 29 | Yes | 4 | 0.00000001 | 0.00095955 |
| 30 | Yes | 4 | 0.00000001 | 0.00039845 |
| 31 | Yes | 5 | 0.00000001 | 0.00005007 |
| 32 | Yes | 4 | 0.00000001 | 0.00097134 |

| | | | | |
|----|-----|---|------------|------------|
| 33 | Yes | 4 | 0.00000001 | 0.00010577 |
| 34 | Yes | 5 | 0.00000001 | 0.00003935 |
| 35 | Yes | 5 | 0.00000001 | 0.00004822 |
| 36 | Yes | 4 | 0.00000001 | 0.00039840 |
| 37 | Yes | 4 | 0.00000001 | 0.00094698 |
| 38 | Yes | 5 | 0.00000001 | 0.00004705 |

Maximum Tower Deflections - Service Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-----------------|------------------------|-----------------|-----------|------------|
| L1 | 110 - 90 | 19.071 | 33 | 1.3058 | 0.0063 |
| L2 | 90 - 60 | 13.644 | 33 | 1.2701 | 0.0042 |
| L3 | 60 - 39.5 | 6.401 | 33 | 0.9499 | 0.0019 |
| L4 | 39.5 - 30 | 2.865 | 33 | 0.6734 | 0.0011 |
| L5 | 30 - 8.25 | 1.660 | 33 | 0.5333 | 0.0008 |
| L6 | 8.25 - 0 | 0.109 | 33 | 0.1240 | 0.0002 |

Critical Deflections and Radius of Curvature - Service Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|-----------------|---------------------------------------|-----------------|------------------|-----------|------------|---------------------------|
| 107.00 | UMWD-06517-XDH w/ Mount Pipe | 33 | 18.249 | 1.3056 | 0.0060 | 58746 |
| 91.00 | (2) RRUS-11 | 33 | 13.911 | 1.2751 | 0.0043 | 15124 |
| 89.00 | AM-X-CD-16-65-00T-RET w/ Mount Pipe | 33 | 13.379 | 1.2645 | 0.0041 | 13107 |
| 80.00 | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 33 | 11.040 | 1.1930 | 0.0033 | 7366 |
| 30.00 | Bridge Stiffener (72" x 11" x 1.25") | 33 | 1.660 | 0.5333 | 0.0008 | 3639 |

Maximum Tower Deflections - Design Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-----------------|------------------------|-----------------|-----------|------------|
| L1 | 110 - 90 | 48.750 | 8 | 3.3389 | 0.0161 |
| L2 | 90 - 60 | 34.881 | 8 | 3.2475 | 0.0107 |
| L3 | 60 - 39.5 | 16.366 | 8 | 2.4288 | 0.0049 |
| L4 | 39.5 - 30 | 7.325 | 8 | 1.7221 | 0.0029 |
| L5 | 30 - 8.25 | 4.245 | 8 | 1.3638 | 0.0021 |
| L6 | 8.25 - 0 | 0.279 | 8 | 0.3172 | 0.0004 |

Critical Deflections and Radius of Curvature - Design Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|-----------------|---------------------------------------|-----------------|------------------|-----------|------------|---------------------------|
| 107.00 | UMWD-06517-XDH w/ Mount Pipe | 8 | 46.649 | 3.3385 | 0.0153 | 23129 |
| 91.00 | (2) RRUS-11 | 8 | 35.561 | 3.2605 | 0.0110 | 5953 |
| 89.00 | AM-X-CD-16-65-00T-RET w/ Mount Pipe | 8 | 34.202 | 3.2332 | 0.0105 | 5158 |
| 80.00 | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 8 | 28.224 | 3.0505 | 0.0084 | 2895 |
| 30.00 | Bridge Stiffener (72" x 11" x 1.25") | 8 | 4.245 | 1.3638 | 0.0021 | 1425 |

Compression Checks

Pole Design Data

| 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 $\frac{P}{P_a}$ |
|-------------|-----------------|------------------|---------|-------------|--------|--------------|----------------------|---------------|----------------------|--------------------------|
| L1 | 110 - 90 (1) | P24x1/4 | 20.00 | 0.00 | 0.0 | 23.696 | 18.6532 | -3.15 | 442.00 | 0.007 |
| L2 | 90 - 60 (2) | P24x3/8 | 30.00 | 0.00 | 0.0 | 25.200 | 27.8325 | -10.63 | 701.38 | 0.015 |
| L3 | 60 - 39.5 (3) | P30x3/8 | 20.50 | 0.00 | 0.0 | 25.075 | 34.9011 | -13.69 | 875.15 | 0.016 |
| L4 | 39.5 - 30 (4) | RPS 30" x 0.483" | 9.50 | 0.00 | 0.0 | 22.776 | 44.7888 | -15.45 | 1020.11 | 0.015 |
| L5 | 30 - 8.25 (5) | P30x1/2 | 21.75 | 0.00 | 0.0 | 25.200 | 46.3385 | -20.01 | 1167.73 | 0.017 |
| L6 | 8.25 - 0 (6) | RPS 30" x 0.801" | 8.25 | 0.00 | 0.0 | 25.188 | 73.4768 | -22.36 | 1850.73 | 0.012 |

Pole Bending Design Data

| Section No. | Elevation ft | Size | Actual M_x kip-ft | Actual f_{bx} ksi | Allow. F_{bx} ksi | Ratio $\frac{f_{bx}}{F_{bx}}$ | Actual M_y kip-ft | Actual f_{by} ksi | Allow. F_{by} ksi | Ratio $\frac{f_{by}}{F_{by}}$ |
|-------------|-----------------|------------------|---------------------------|---------------------------|---------------------------|----------------------------------|---------------------------|---------------------------|---------------------------|----------------------------------|
| L1 | 110 - 90 (1) | P24x1/4 | 51.42 | 5.630 | 23.696 | 0.238 | 0.00 | 0.000 | 23.696 | 0.000 |
| L2 | 90 - 60 (2) | P24x3/8 | 344.54 | 25.544 | 27.720 | 0.921 | 0.00 | 0.000 | 27.720 | 0.000 |
| L3 | 60 - 39.5 (3) | P30x3/8 | 587.32 | 27.606 | 25.075 | 1.101 | 0.00 | 0.000 | 25.075 | 0.000 |
| L4 | 39.5 - 30 (4) | RPS 30" x 0.483" | 707.28 | 26.093 | 25.054 | 1.041 | 0.00 | 0.000 | 25.054 | 0.000 |
| L5 | 30 - 8.25 (5) | P30x1/2 | 1001.28 | 35.745 | 27.720 | 1.289 | 0.00 | 0.000 | 27.720 | 0.000 |
| L6 | 8.25 - 0 (6) | RPS 30" x 0.801" | 1117.37 | 25.665 | 27.707 | 0.926 | 0.00 | 0.000 | 27.707 | 0.000 |

Pole Shear Design Data

| Section No. | Elevation ft | Size | Actual V K | Actual f_v ksi | Allow. F_v ksi | Ratio $\frac{f_v}{F_v}$ | Actual T kip-ft | Actual f_{vt} ksi | Allow. F_{vt} ksi | Ratio $\frac{f_{vt}}{F_{vt}}$ |
|-------------|-----------------|------------------|------------------|------------------------|------------------------|----------------------------|-----------------------|---------------------------|---------------------------|----------------------------------|
| L1 | 110 - 90 (1) | P24x1/4 | 3.97 | 0.426 | 16.800 | 0.025 | 0.00 | 0.000 | 11.901 | 0.000 |
| L2 | 90 - 60 (2) | P24x3/8 | 11.27 | 0.810 | 16.800 | 0.048 | 0.22 | 0.008 | 16.800 | 0.000 |
| L3 | 60 - 39.5 (3) | P30x3/8 | 12.40 | 0.710 | 16.800 | 0.042 | 0.22 | 0.005 | 15.644 | 0.000 |
| L4 | 39.5 - 30 (4) | RPS 30" x 0.483" | 12.86 | 0.574 | 15.184 | 0.038 | 0.24 | 0.004 | 15.184 | 0.000 |
| L5 | 30 - 8.25 (5) | P30x1/2 | 13.92 | 0.601 | 16.800 | 0.036 | 0.23 | 0.004 | 16.800 | 0.000 |
| L6 | 8.25 - 0 (6) | RPS 30" x 0.801" | 14.23 | 0.387 | 16.792 | 0.023 | 0.23 | 0.003 | 16.792 | 0.000 |

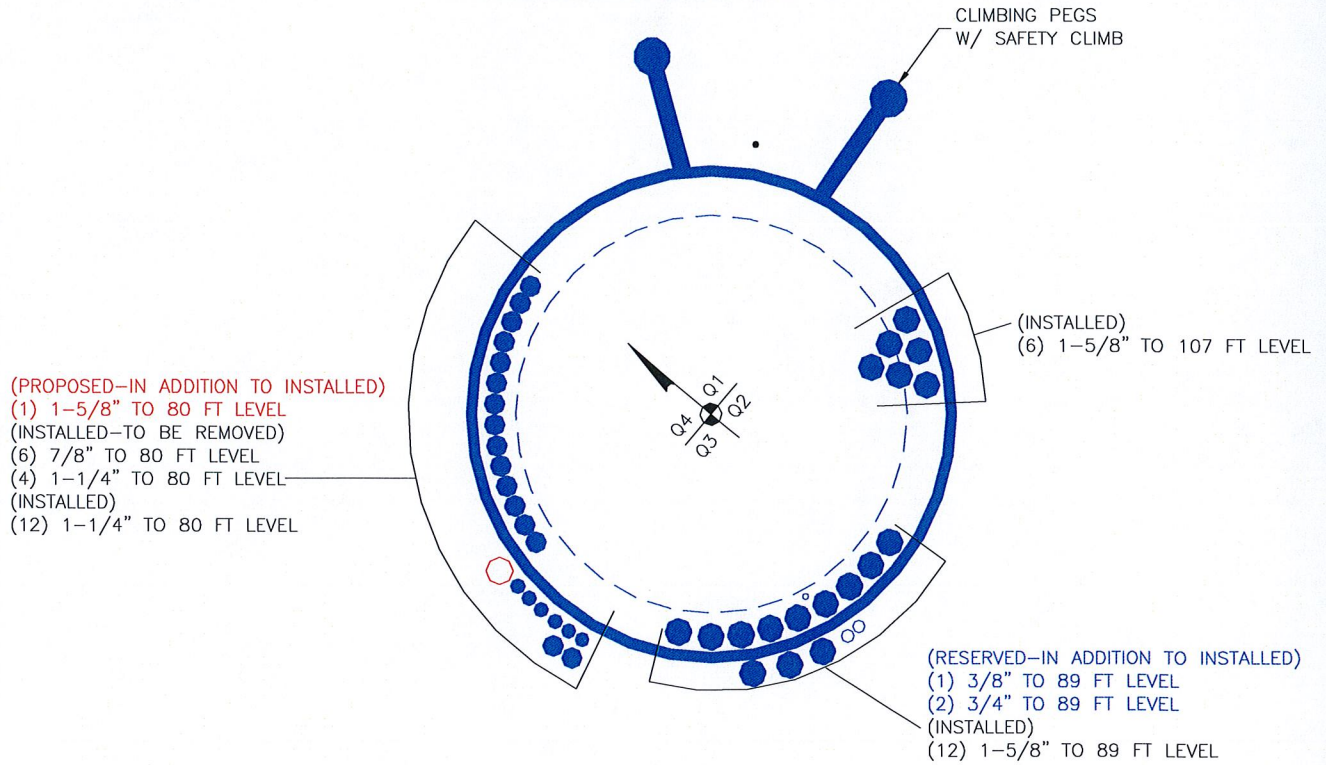
Pole Interaction Design Data

| Section No. | Elevation ft | Ratio P $\frac{P}{P_a}$ | Ratio f_{bx} $\frac{f_{bx}}{F_{bx}}$ | Ratio f_{by} $\frac{f_{by}}{F_{by}}$ | Ratio f_v $\frac{f_v}{F_v}$ | Ratio f_{vt} $\frac{f_{vt}}{F_{vt}}$ | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|-----------------|-------------------------------|--|--|-------------------------------------|--|--------------------------|---------------------------|-----------|
| L1 | 110 - 90 (1) | 0.007 | 0.238 | 0.000 | 0.025 | 0.000 | 0.245 ✓ | 1.333 | H1-3+VT ✓ |
| L2 | 90 - 60 (2) | 0.015 | 0.921 | 0.000 | 0.048 | 0.000 | 0.939 ✓ | 1.333 | H1-3+VT ✓ |
| L3 | 60 - 39.5 (3) | 0.016 | 1.101 | 0.000 | 0.042 | 0.000 | 1.118 ✓ | 1.333 | H1-3+VT ✓ |
| L4 | 39.5 - 30 (4) | 0.015 | 1.041 | 0.000 | 0.038 | 0.000 | 1.058 ✓ | 1.333 | H1-3+VT ✓ |
| L5 | 30 - 8.25 (5) | 0.017 | 1.289 | 0.000 | 0.036 | 0.000 | 1.308 ✓ | 1.333 | H1-3+VT ✓ |
| L6 | 8.25 - 0 (6) | 0.012 | 0.926 | 0.000 | 0.023 | 0.000 | 0.939 ✓ | 1.333 | H1-3+VT ✓ |

Section Capacity Table

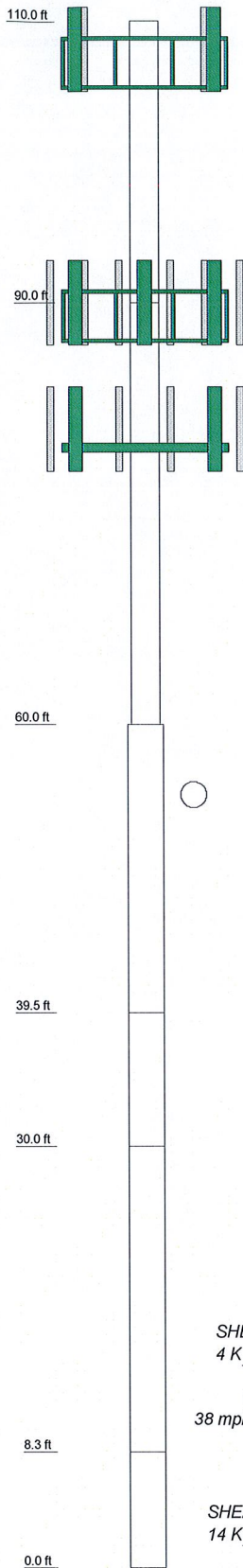
| Section No. | Elevation ft | Component Type | Size | Critical Element | P K | SF*P _{allow} K | % Capacity | Pass Fail | |
|-------------|--------------|----------------|------------------|------------------|--------|----------------------------|-----------------|--------------|-------------|
| L1 | 110 - 90 | Pole | P24x1/4 | 1 | -3.15 | 589.19 | 18.4 | Pass | |
| L2 | 90 - 60 | Pole | P24x3/8 | 2 | -10.63 | 934.94 | 70.4 | Pass | |
| L3 | 60 - 39.5 | Pole | P30x3/8 | 3 | -13.69 | 1166.57 | 83.9 | Pass | |
| L4 | 39.5 - 30 | Pole | RPS 30" x 0.483" | 4 | -15.45 | 1359.81 | 79.4 | Pass | |
| L5 | 30 - 8.25 | Pole | P30x1/2 | 5 | -20.01 | 1556.58 | 98.1 | Pass | |
| L6 | 8.25 - 0 | Pole | RPS 30" x 0.801" | 6 | -22.36 | 2467.02 | 70.4 | Pass | |
| | | | | | | | Summary | | |
| | | | | | | | Pole (L5) | 98.1 | Pass |
| | | | | | | | RATING = | 98.1 | Pass |

APPENDIX B BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

| | | | | | | | | | |
|-------------|------------------|--|--|--|--|--|--|--|--|
| Section | 1 | | | | | | | | |
| Size | P24x1/4 | | | | | | | | |
| Length (ft) | 20.00 | | | | | | | | |
| Grade | A53-B-42 | | | | | | | | |
| Weight (K) | 1.3 | | | | | | | | |
| Section | 2 | | | | | | | | |
| Size | P24x3/8 | | | | | | | | |
| Length (ft) | 30.00 | | | | | | | | |
| Grade | A53-B-42 | | | | | | | | |
| Weight (K) | 2.8 | | | | | | | | |
| Section | 3 | | | | | | | | |
| Size | P30x3/8 | | | | | | | | |
| Length (ft) | 20.50 | | | | | | | | |
| Grade | A53-B-42 | | | | | | | | |
| Weight (K) | 2.4 | | | | | | | | |
| Section | 4 | | | | | | | | |
| Size | RPS 30" x 0.483" | | | | | | | | |
| Length (ft) | 9.50 | | | | | | | | |
| Grade | Reinf 37.96 ksi | | | | | | | | |
| Weight (K) | 1.4 | | | | | | | | |
| Section | 5 | | | | | | | | |
| Size | P30x1/2 | | | | | | | | |
| Length (ft) | 21.75 | | | | | | | | |
| Grade | A53-B-42 | | | | | | | | |
| Weight (K) | 3.4 | | | | | | | | |
| Section | 6 | | | | | | | | |
| Size | RPS 30" x 0.801" | | | | | | | | |
| Length (ft) | 8.25 | | | | | | | | |
| Grade | Reinf 41.99 ksi | | | | | | | | |
| Weight (K) | 2.1 | | | | | | | | |
| Section | | | | | | | | | |
| Size | | | | | | | | | |
| Length (ft) | | | | | | | | | |
| Grade | | | | | | | | | |
| Weight (K) | 13.5 | | | | | | | | |



DESIGNED APPURTENANCE LOADING

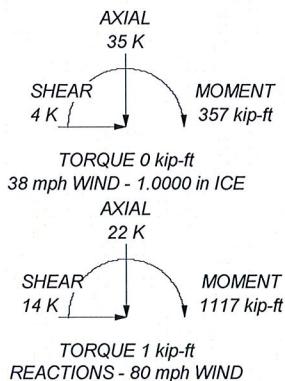
| TYPE | ELEVATION | TYPE | ELEVATION |
|-------------------------------------|-----------|---------------------------------------|-----------|
| UMWD-06517-XDH w/ Mount Pipe | 107 | (2) LGP21903 | 89 |
| UMWD-06517-XDH w/ Mount Pipe | 107 | 4'x2" Pipe Mount | 89 |
| (2) DB950G40E-M w/ Mount Pipe | 107 | 4'x2" Pipe Mount | 89 |
| (2) 4'x2" Pipe Mount | 107 | 4'x2" Pipe Mount | 89 |
| (2) 4'x2" Pipe Mount | 107 | Sector Mount [SM 301-3] | 89 |
| 4'x2" Pipe Mount | 107 | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 80 |
| Sector Mount [SM 301-3] | 107 | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 80 |
| (2) RRUS-11 | 91 | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 80 |
| (2) RRUS-11 | 91 | ERICSSON AIR 21 B4A B2P w/ Mount Pipe | 80 |
| Side Arm Mount [SO 102-3] | 91 | ERICSSON AIR 21 B4A B2P w/ Mount Pipe | 80 |
| AM-X-CD-16-65-00T-RET w/ Mount Pipe | 89 | ERICSSON AIR 21 B4A B2P w/ Mount Pipe | 80 |
| AM-X-CD-16-65-00T-RET w/ Mount Pipe | 89 | ERICSSON AIR 21 B4A B2P w/ Mount Pipe | 80 |
| AM-X-CD-16-65-00T-RET w/ Mount Pipe | 89 | ERICSSON AIR 21 B4A B2P w/ Mount Pipe | 80 |
| DC6-48-60-18-8F | 89 | KRY 112 144/1 | 80 |
| (2) 7750.00 w/ Mount Pipe | 89 | KRY 112 144/1 | 80 |
| (2) 7750.00 w/ Mount Pipe | 89 | 4'x2" Pipe Mount | 80 |
| (2) 7750.00 w/ Mount Pipe | 89 | 4'x2" Pipe Mount | 80 |
| (2) LGP21401 | 89 | 4'x2" Pipe Mount | 80 |
| (2) LGP21401 | 89 | Platform Mount [LP 304-1] | 80 |
| (2) LGP21401 | 89 | Platform Mount [LP 304-1] | 80 |
| (2) LGP21903 | 89 | Bridge Stiffener (72" x 11" x 1.25") | 30 |
| (2) LGP21903 | 89 | | |

MATERIAL STRENGTH

| GRADE | Fy | Fu | GRADE | Fy | Fu |
|-----------------|--------|--------|-----------------|--------|--------|
| A53-B-42 | 42 ksi | 63 ksi | Reinf 41.98 ksi | 42 ksi | 65 ksi |
| Reinf 37.96 ksi | 38 ksi | 65 ksi | | | |

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.1%



Paul J Ford and Company
 250 E. Broad Street Suite 1500
 Columbus, OH 43215
 Phone: 614.221.6679
 FAX: 614.448.4105

| | | | |
|--|-----------------------------------|--------------------|--|
| Job: 110' MP; Hartford, CT; Weston Square | | | |
| Project: PJF 37512-1239 (BU 876325) | | | |
| Client: Crown Castle | Drawn by: Joshua Frybarger | App'd: | |
| Code: TIA/EIA-222-F | Date: 12/06/12 | Scale: NTS | |
| Path: | | Dwg No. E-1 | |

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876325
 Site Name: *Weston Square*
 App #:

| Reactions | | |
|------------|-------|---------|
| Moment: | 51.42 | ft-kips |
| Axial: | 3.15 | kips |
| Shear: | 3.97 | kips |
| Elevation: | 90 | feet |

| | |
|--------------------|------|
| Pole Manufacturer: | Rohn |
|--------------------|------|

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

| Bolt Data | | |
|-----------------|------|-------------------------------|
| Qty: | 20 | |
| Diameter (in.): | 1 | Bolt Fu: 120 |
| Bolt Material: | A325 | Bolt Fy: 92 |
| N/A: | 0 | <-- Disregard Bolt Fty: 44.00 |
| N/A: | 0 | <-- Disregard |
| Circle (in.): | 28 | |

Flange Bolt Results

Bolt Tension Capacity, **B**: 46.08 kips
 Max Bolt directly applied T: 4.25 Kips
 Min. PL "tc" for **B** cap. **w/o** Pry: 1.748 in
 Min PL "treq" for actual **T w/** Pry: 0.405 in
 Min PL "t1" for actual **T w/o** Pry: 0.531 in
 T allowable with Prying: 41.52 kips
 Prying Force, Q: 0.00 kips
 Total Bolt Tension=T+Q: 4.25 kips
 Prying Bolt Stress Ratio=(T+Q)/(B): 9.2% **Pass**

| |
|-------------|
| Rigid |
| Service ASD |
| Fty*ASIF |

| Plate Data | | |
|-------------------|------|-----|
| Diam: | 32 | in |
| Thick, t: | 1.5 | in |
| Grade (Fy): | 36 | ksi |
| Strength, Fu: | 58 | ksi |
| Single-Rod B-eff: | 3.77 | in |

Exterior Flange Plate Results

Flexural Check: Rohn/Pirod, OK
 Compression Side Plate Stress: 36.0 ksi
 Allowable Plate Stress: Rohn/Pirod, OK
 Compression Plate Stress Ratio: **No Prying**
 Tension Side Stress Ratio, (treq/t)^2: 7.3% **Pass**

| |
|--------------------------|
| Rigid |
| Service ASD |
| 0.75*Fy*ASIF |
| Comp. Y.L. Length: 14.42 |

Stiffener Data (Welding at Both Sides)

| | | |
|-----------------|---|---------------|
| Config: | 0 | * |
| Weld Type: | 0 | |
| Groove Depth: | 0 | in ** |
| Groove Angle: | 0 | degrees |
| Fillet H. Weld: | 0 | <-- Disregard |
| Fillet V. Weld: | 0 | in |
| Width: | 0 | in |
| Height: | 0 | in |
| Thick: | 0 | in |
| Notch: | 0 | in |
| Grade: | 0 | ksi |
| Weld str.: | 0 | ksi |

n/a

Stiffener Results

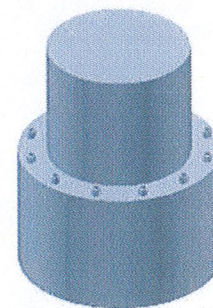
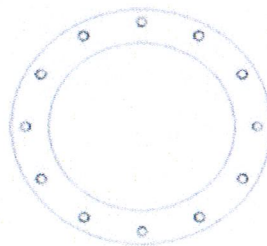
N/A for Rohn / Pirod
 Horizontal Weld: N/A
 Vertical Weld: N/A
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: N/A
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Data

| | | |
|--------------------|------|--------------|
| Diam: | 24 | in |
| Thick: | 0.25 | in |
| Grade: | 42 | ksi |
| # of Sides: | 0 | "0" IF Round |
| Fu | 63 | ksi |
| Reinf. Fillet Weld | 0 | "0" if None |

Stress Increase Factor

| | |
|-------|-----------|
| ASIF: | 1.3333333 |
|-------|-----------|



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876325
 Site Name: *Weston Square*
 App #:

| Reactions | | |
|------------|-------|---------|
| Moment: | 51.42 | ft-kips |
| Axial: | 3.15 | kips |
| Shear: | 3.97 | kips |
| Elevation: | 90 | feet |

| | |
|--------------------|------|
| Pole Manufacturer: | Rohn |
|--------------------|------|

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

| Bolt Data | | |
|-----------------|------|-------------------------------|
| Qty: | 20 | |
| Diameter (in.): | 1 | Bolt Fu: 120 |
| Bolt Material: | A325 | Bolt Fy: 92 |
| N/A: | 0 | <-- Disregard Bolt Fty: 44.00 |
| N/A: | 0 | <-- Disregard |
| Circle (in.): | 28 | |

Flange Bolt Results

Bolt Tension Capacity, B: 46.08 kips
 Max Bolt directly applied T: 4.25 Kips
 Min. PL "tc" for B cap. **w/o Pry**: 1.748 in
 Min PL "treq" for actual T **w/ Pry**: 0.405 in
 Min PL "t1" for actual T **w/o Pry**: 0.531 in
 T allowable with Prying: 41.52 kips
 Prying Force, Q: 0.00 kips
 Total Bolt Tension=T+Q: 4.25 kips
 Prying Bolt Stress Ratio=(T+Q)/(B): 9.2% **Pass**

| |
|--------------|
| Rigid |
| Service, ASD |
| Fty*ASIF |

| Plate Data | | |
|-------------------|------|-----|
| Diam: | 32 | in |
| Thick, t: | 1.5 | in |
| Grade (Fy): | 36 | ksi |
| Strength, Fu: | 58 | ksi |
| Single-Rod B-eff: | 3.77 | in |

Exterior Flange Plate Results

Flexural Check: Rohn/Pirod, OK
 Compression Side Plate Stress: Rohn/Pirod, OK
 Allowable Plate Stress: 36.0 ksi
 Compression Plate Stress Ratio: Rohn/Pirod, OK
No Prying
 Tension Side Stress Ratio, (treq/t)^2: 7.3% **Pass**

| |
|--------------------------|
| Rigid |
| Service ASD |
| 0.75*Fy*ASIF |
| Comp. Y.L. Length: 14.42 |

Stiffener Data (Welding at Both Sides)

| | | |
|-----------------|---|---------------|
| Config: | 0 | * |
| Weld Type: | 0 | |
| Groove Depth: | 0 | in ** |
| Groove Angle: | 0 | degrees |
| Fillet H. Weld: | 0 | <-- Disregard |
| Fillet V. Weld: | 0 | in |
| Width: | 0 | in |
| Height: | 0 | in |
| Thick: | 0 | in |
| Notch: | 0 | in |
| Grade: | 0 | ksi |
| Weld str.: | 0 | ksi |

n/a

Stiffener Results

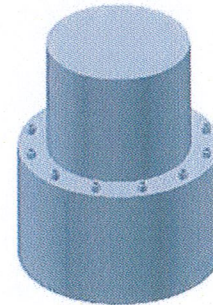
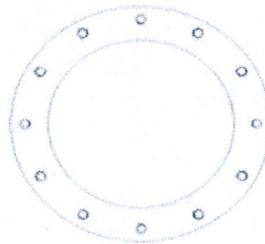
N/A for Rohn / Pirod
 Horizontal Weld: N/A
 Vertical Weld: N/A
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: N/A
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data

| | | |
|--------------------|-------|--------------|
| Diam: | 24 | in |
| Thick: | 0.375 | in |
| Grade: | 42 | ksi |
| # of Sides: | 0 | "0" IF Round |
| Fu | 63 | ksi |
| Reinf. Fillet Weld | 0 | "0" if None |



Stress Increase Factor

| | |
|-------|-----------|
| ASIF: | 1.3333333 |
|-------|-----------|

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876325
 Site Name: *Weston Square*
 App #:

| Reactions | | |
|------------|--------|---------|
| Moment: | 344.54 | ft-kips |
| Axial: | 10.63 | kips |
| Shear: | 11.27 | kips |
| Elevation: | 60 | feet |

Pole Manufacturer: **Rohn**

Bolt Data

| | | | |
|-----------------|------|---------------|-----------|
| Qty: | 12 | | |
| Diameter (in.): | 1.5 | Bolt Fu: | 105 |
| Bolt Material: | A325 | Bolt Fy: | 81 |
| N/A: | 0 | <-- Disregard | Bolt Fty: |
| N/A: | 0 | <-- Disregard | 44.00 |
| Circle (in.): | 35 | | |

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Flange Bolt Results

Bolt Tension Capacity, **B**: 103.67 kips
 Max Bolt directly applied T: 38.49 Kips
 Min. PL "tc" for **B** cap. **w/o** Pry: 3.614 in
 Min PL "treq" for actual **T w/** Pry: 1.664 in
 Min PL "t1" for actual **T w/o** Pry: 2.202 in
 T allowable with Prying: 55.60 kips
 Prying Force, Q: 8.54 kips
 Total Bolt Tension=T+Q: 47.03 kips
 Prying Bolt Stress Ratio=(T+Q)/(B): 45.4% **Pass**

| |
|-------------|
| Rigid |
| Service ASD |
| Fty*ASIF |

α > 1 case

Plate Data

| | | |
|-------------------|------|-----|
| Diam: | 41 | in |
| Thick, t: | 2 | in |
| Grade (Fy): | 36 | ksi |
| Strength, Fu: | 58 | ksi |
| Single-Rod B-eff: | 6.28 | in |

Exterior Flange Plate Results

Flexural Check: Rohn/Pirod, OK
 Compression Side Plate Stress: 36.0 ksi
 Allowable Plate Stress: Rohn/Pirod, OK
 Compression Plate Stress Ratio: 69.2% **Pass**

| |
|--------------------------|
| Rigid |
| Service ASD |
| 0.75*Fy*ASIF |
| Comp. Y.L. Length: 25.48 |

Prying Occurs, PL Check:

Tension Side Stress Ratio, (treq/t)^2: 69.2% **Pass**

Stiffener Data (Welding at Both Sides)

| | | |
|-----------------|---|---------------|
| Config: | 0 | * |
| Weld Type: | 0 | |
| Groove Depth: | 0 | in ** |
| Groove Angle: | 0 | degrees |
| Fillet H. Weld: | 0 | <-- Disregard |
| Fillet V. Weld: | 0 | in |
| Width: | 0 | in |
| Height: | 0 | in |
| Thick: | 0 | in |
| Notch: | 0 | in |
| Grade: | 0 | ksi |
| Weld str.: | 0 | ksi |

n/a

Stiffener Results

N/A for Rohn / Pirod
 Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: N/A
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

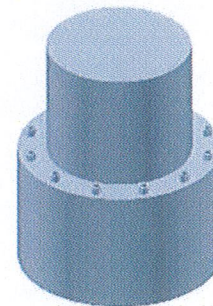
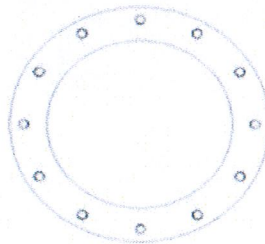
Pole Punching Shear Check: N/A

Pole Data

| | | |
|--------------------|-------|--------------|
| Diam: | 24 | in |
| Thick: | 0.375 | in |
| Grade: | 42 | ksi |
| # of Sides: | 0 | "0" IF Round |
| Fu | 63 | ksi |
| Reinf. Fillet Weld | 0 | "0" if None |

Stress Increase Factor

| | |
|-------|-----------|
| ASIF: | 1.3333333 |
|-------|-----------|



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: 876325
 Site Name: *Weston Square*
 App #:

| Reactions | | |
|------------|--------|---------|
| Moment: | 344.54 | ft-kips |
| Axial: | 10.63 | kips |
| Shear: | 11.27 | kips |
| Elevation: | 60 | feet |

| | |
|--------------------|------|
| Pole Manufacturer: | Rohn |
|--------------------|------|

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

| Bolt Data | | |
|-----------------|------|-------------------------------|
| Qty: | 12 | |
| Diameter (in.): | 1.5 | Bolt Fu: 105 |
| Bolt Material: | A325 | Bolt Fy: 81 |
| N/A: | 0 | <-- Disregard Bolt Fty: 44.00 |
| N/A: | 0 | <-- Disregard |
| Circle (in.): | 35 | |

Flange Bolt Results

Bolt Tension Capacity, **B**: 103.67 kips
 Max Bolt directly applied T: 38.49 Kips
 Min. PL "tc" for **B cap. w/o Pry**: 1.962 in
 Min PL "treq" for actual **T w/ Pry**: 0.891 in
 Min PL "t1" for actual **T w/o Pry**: 1.196 in
 T allowable w/o Prying: 103.67 kips
 Prying Force, Q: 0.00 kips
 Total Bolt Tension=T+Q: 38.49 kips
 Non-Prying Bolt Stress Ratio, T/B: 37.1% **Pass**

| |
|--------------|
| Rigid |
| Service, ASD |
| Fty*ASIF |

| Plate Data | | |
|-------------------|------|-----|
| Diam: | 41 | in |
| Thick, t: | 2 | in |
| Grade (Fy): | 36 | ksi |
| Strength, Fu: | 58 | ksi |
| Single-Rod B-eff: | 7.85 | in |

Exterior Flange Plate Results

Flexural Check: Rohn/Pirod, OK
 Compression Side Plate Stress: 36.0 ksi
 Allowable Plate Stress: Rohn/Pirod, OK
 Compression Plate Stress Ratio: **No Prying**
 Tension Side Stress Ratio, (treq/t)^2: 19.8% **Pass**

| |
|--------------------------|
| Rigid |
| Service ASD |
| 0.75*Fy*ASIF |
| Comp. Y.L. Length: 18.03 |

Stiffener Data (Welding at Both Sides)

| | | |
|-----------------|---|---------------|
| Config: | 0 | * |
| Weld Type: | 0 | |
| Groove Depth: | 0 | in ** |
| Groove Angle: | 0 | degrees |
| Fillet H. Weld: | 0 | <-- Disregard |
| Fillet V. Weld: | 0 | in |
| Width: | 0 | in |
| Height: | 0 | in |
| Thick: | 0 | in |
| Notch: | 0 | in |
| Grade: | 0 | ksi |
| Weld str.: | 0 | ksi |

n/a

Stiffener Results

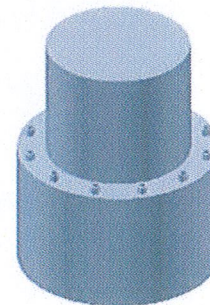
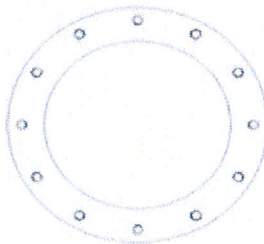
N/A for Rohn / Pirod
 Horizontal Weld: N/A
 Vertical Weld: N/A
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: N/A
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Data

| | | |
|--------------------|-------|--------------|
| Diam: | 30 | in |
| Thick: | 0.375 | in |
| Grade: | 42 | ksi |
| # of Sides: | 0 | "0" IF Round |
| Fu | 63 | ksi |
| Reinf. Fillet Weld | 0 | "0" if None |

Stress Increase Factor

| | |
|-------|-----------|
| ASIF: | 1.3333333 |
|-------|-----------|



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

v2.0, Effective Date: 1-12-12

Welded Bridge Stiffener Analysis per TIA/EIA-222-F & AISC 9th Ed. (Green)

General Parameters and Loading:

| | | |
|----------------------------|-----------------|------|
| Flange Elevation: | 30.00 | ft |
| TIA Reference Standard: | TIA/EIA-222-F | |
| AISC Manual: | 9th Ed. (Green) | |
| Method: | ASD | |
| ASD Stress Increase, ASIF: | 1.333333333 | |
| Moment, Mf: | 707.3 | k-ft |
| Axial, Pf: | 15.5 | kips |
| Shear, Vf: | 12.9 | kips |

Pole Parameters:

| | Upper Pole | Lower Pole | |
|----------------------|------------|------------|-----|
| Pole Diameter, Dp: | 30.00 | 30.00 | in |
| Pole Thickness, tp: | 0.3750 | 0.5000 | in |
| Pole Fy: | 42 | 42 | ksi |
| Pole Fu: | 63 | 63 | ksi |
| Flange Diameter, Df: | 41.00 | 41.00 | in |

Bridge Stiffener Parameters:

| | Stiffener Type 1 | Stiffener Type 2 | |
|--------------------------------|------------------|------------------|---------------------------------|
| Qty. Stiffeners: | 3 | 0 | |
| Upper Weld Length, L1: | 34.00 | 0.00 | in |
| Lower Weld Length, L2: | 32.25 | 0.00 | in |
| Weld Size, w: | 0.3750 | 0.0000 | in |
| Electrode: | E70 | E70 | |
| Effective Stiffener Width, Ws: | 5.00 | 0.00 | in |
| Stiffener Thickness, ts: | 1.25 | 0.00 | in |
| Notch, n: | 0.50 | 0.00 | in |
| Stiffener Fy: | 65 | 0 | ksi |
| Stiffener Fu: | 80 | 0 | ksi |
| Unbraced Length, L: | 5.50 | 0.00 | in |
| K: | 0.80 | 0.00 | |
| Stiffener Spacing: | Symmetric | Symmetric | |
| Start Angle, for Symmetric: | 0 | 0 | degrees |
| Stiffener Circle: | 47.00 | 41.00 | in = Df + 2 n + Ws |
| Upper Eccentricity, e1: | 8.50 | 5.50 | in = (Df - Dp) / 2 + n + Ws / 2 |
| Lower Eccentricity, e2: | 8.50 | 5.50 | in = (Df - Dp) / 2 + n + Ws / 2 |

Flange Bolt Parameters:

| | (1) Bolt Circle | | |
|-----------------------------|-----------------|-----------|---------|
| Number of Bolt Circles: | (1) Bolt Circle | | |
| Qty. Bolts: | 0 | 0 | |
| Bolt Diameter: | 1.50 | 0.00 | in |
| Bolt Circle: | 35.00 | 0.00 | in |
| Bolt Spacing: | Symmetric | Symmetric | |
| Start Angle, for Symmetric: | 0 | 0 | degrees |
| Bolt Area, Ag: | 0.0000 | 0.0000 | in |
| Max. Tension: | 0.00 | 0.00 | kips |
| Max. Net Tension: | 0.00 | 0.00 | kips |
| Max. Net Compression: | 0.00 | 0.00 | kips |
| Moment to Bolt Circle: | 0.00 | 0.00 | k-ft |
| Axial to Bolt Circle: | 0.00 | 0.00 | kips |
| Shear to Bolt Circle: | 0.00 | 0.00 | kips |
| Equivalent Bolt Circle: | 0.00 | 0.00 | in |

Weld Analysis per AISC Table XIX & pg. 4-72:

| Upper Pole | Stiffener Type 1 | Stiffener Type 2 | |
|----------------------|------------------|------------------|----------------------------|
| D: | 6 | 0 | Num. of Sixteenths in Weld |
| a: | 0.2500 | 0.0000 | = e1 / L1 |
| k: | 0 | 0 | |
| C: | 1.2600 | 0.0000 | Tabulated Coefficient |
| C1: | 1.0000 | 1.0000 | Coefficient for Electrode |
| ASIF: | 1.3333 | 1.3333 | |
| Stiffener Axial, Ps: | 246.0 | 0.0 | kips |
| Allowable Axial, Pa: | 342.7 | 0.0 | kips = ASIF C C1 D L |
| Ratio: | 71.8% | 0.0% | |
| Lower Pole | | | |
| D: | 6 | 0 | Num. of Sixteenths in Weld |
| a: | 0.2636 | 0.0000 | = e2 / L2 |
| k: | 0 | 0 | |
| C: | 1.2274 | 0.0000 | Tabulated Coefficient |
| C1: | 1.0000 | 1.0000 | Coefficient for Electrode |
| ASIF: | 1.3333 | 1.3333 | |
| Stiffener Axial, Ps: | 246.0 | 0.0 | kips |
| Allowable Axial, Pa: | 316.7 | 0.0 | kips = ASIF C C1 D L |
| Ratio: | 77.7% | 0.0% | |

Pole Analysis per AISC Sect. F4:

| Upper Pole | Stiffener Type 1 | Stiffener Type 2 | |
|-----------------------|------------------|------------------|---|
| Stiffener Axial, P: | 246.0 | 0.0 | kips |
| Effective Throat, te: | 0.2651 | 0.0000 | in = 0.707 w |
| Shear Stress, fv: | 3.6 | 0.0 | kips/in = P / (2 L1) |
| Section Modulus, S: | 385.3 | 0.0 | in ² = L ² / 3 |
| Bending Stress, fb: | 5.4 | 0.0 | kips/in = P e1 / S |
| Combined Stress, f: | 6.5 | 0.0 | kips/in = (fv ² + fb ²) ^{1/2} |
| ASIF: | 1.3333 | 0.0000 | |
| Allowable Stress, F: | 8.4 | 0.0 | kips/in = ASIF (0.4 Fy) tp |
| Ratio: | 77.7% | 0.0% | |
| Lower Pole | | | |
| Stiffener Axial, P: | 246.0 | 0.0 | kips |
| Effective Throat, te: | 0.2651 | 0.0000 | in = 0.707 w |
| Shear Stress, fv: | 3.8 | 0.0 | ksi = P / (2 L2) |
| Section Modulus, S: | 346.7 | 0.0 | in ² = L ² / 3 |
| Bending Stress, fb: | 6.0 | 0.0 | ksi = P e2 / S |
| Combined Stress, f: | 7.1 | 0.0 | kips/in = (fv ² + fb ²) ^{1/2} |
| ASIF: | 1.3333 | 0.0000 | |
| Allowable Stress, F: | 11.2 | 0.0 | kips/in = ASIF (0.4 Fy) tp |
| Ratio: | 63.7% | 0.0% | |

Stiffener 1 Analysis per AISC Sect. D1, E2, F1.2 & App. B

| | Stiffener Type 1 | |
|----------------------------|------------------|--|
| Gross Area, Ag: | 6.2500 | in ² |
| Net Area, An: | 6.2500 | in ² |
| Stiffener Axial, P: | 246.0 | kips |
| Stiffener Stress, f: | 39.4 | ksi = P / Ag |
| b: | 11.0000 | in = (Df - Dp) / 2 + n + Ws, Upper Pole |
| b / ts: | 8.8000 | in |
| Q, Where Qa = 1.0: | 1.0000 | |
| r: | 0.3608 | in ³ |
| KL / r: | 12.1936 | |
| ASIF: | 1.3333 | |
| Allowable Axial, Fa: | 50.10 | ksi = ASIF [1 - (K L / r) / 2 Cc ²] Fy / [5/3 + 3(K L / r) / 8 Cc - (K L / r) ³ / 8 Cc ³] |
| ASIF: | 1.3333 | |
| Allowable Bending, Fb: | 52.00 | ksi = ASIF 0.6 Fy |
| ASIF: | 1.3333 | |
| Allowable Net Tension, Ft: | 53.33 | ksi = ASIF 0.5 Fu |
| Ratio: | 78.6% | |

Stiffener 2 Analysis per AISC Sect. D1, E2, F1.2 & App. B

| | Stiffener Type 2 | |
|----------------------------|------------------|--|
| Gross Area, Ag: | 0.0000 | in ² |
| Net Area, An: | 0.0000 | in ² |
| Stiffener Axial, P: | 0.0 | kips |
| Stiffener Stress, f: | 0.0 | ksi = P / Ag |
| b: | 0.0000 | in = (Df - Dp) / 2 + n + Ws, Upper Pole |
| b / ts: | 0.0000 | in |
| Q, Where Qa = 1.0: | 0.0000 | |
| r: | 0.0000 | in ³ |
| KL / r: | 0.0000 | |
| ASIF: | 0.0000 | |
| Allowable Axial, Fa: | 0.00 | ksi = ASIF [1 - (K L / r) / 2 Cc ²] Fy / [5/3 + 3(K L / r) / 8 Cc - (K L / r) ³ / 8 Cc ³] |
| ASIF: | 0.0000 | |
| Allowable Bending, Fb: | 0.00 | ksi = ASIF 0.6 Fy |
| ASIF: | 0.0000 | |
| Allowable Net Tension, Ft: | 0.00 | ksi = ASIF 0.5 Fu |
| Ratio: | 0.0% | |

Analysis Summary:

Bridge Stiffener Type 1
 Weld Analysis Ratio: 77.7% PASS
 Pole Analysis Ratio: 77.7% PASS
 Stiffener Analysis Ratio: 78.6% PASS

Bridge Stiffener Type 2
 Weld Analysis Ratio: 0.0% PASS
 Pole Analysis Ratio: 0.0% PASS
 Stiffener Analysis Ratio: 0.0% PASS

Stiffened or Unstiffened, UngROUTED, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

| |
|---------------------------------|
| BU#: 876325 |
| Site Name: <i>Weston Square</i> |
| App #: |
| Pole Manufacturer: <i>Other</i> |

| Reactions | | |
|-----------|-------|---------|
| Moment: | 689.4 | ft-kips |
| Axial: | 15.9 | kips |
| Shear: | 10.1 | kips |

Reactions adjusted to account for additional anchors

Anchor Rod Data

| | | |
|----------------|-------|-----|
| Qty: | 12 | |
| Diam: | 1.5 | in |
| Rod Material: | Other | |
| Strength (Fu): | 125 | ksi |
| Yield (Fy): | 109 | ksi |
| Bolt Circle: | 35 | in |

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension: 77.5 Kips
 Allowable Tension: 97.2 Kips
 Anchor Rod Stress Ratio: 79.7% **Pass**

| |
|--------------|
| Rigid |
| Service, ASD |
| Fty*ASIF |

Plate Data

| | | |
|-------------------|------|-----|
| Diam: | 41 | in |
| Thick: | 2 | in |
| Grade: | 36 | ksi |
| Single-Rod B-eff: | 7.85 | in |

Base Plate Results

Base Plate Stress: 24.5 ksi
 Allowable Plate Stress: 36.0 ksi
 Base Plate Stress Ratio: 68.2% **Pass**

Flexural Check

| |
|--------------------|
| Rigid |
| Service ASD |
| 0.75*Fy*ASIF |
| Y.L. Length: 18.03 |

Stiffener Data (Welding at both sides)

| | | |
|-----------------|--------|---------------|
| Config: | 0 | * |
| Weld Type: | Fillet | |
| Groove Depth: | | <-- Disregard |
| Groove Angle: | | <-- Disregard |
| Fillet H. Weld: | 0.375 | in |
| Fillet V. Weld: | 0.375 | in |
| Width: | 5 | in |
| Height: | 10 | in |
| Thick: | 0.5 | in |
| Notch: | 0.75 | in |
| Grade: | 36 | ksi |
| Weld str.: | 70 | ksi |

n/a

Stiffener Results

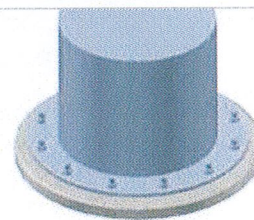
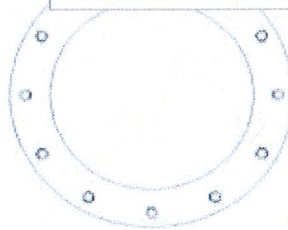
Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a

Additional Anchor Rods

Maximum Rod Tension: 151.7 Kips
 Allowable Tension: 179.0 Kips
 Anchor Rod Stress Ratio: 84.8% **PASS**



Pole Data

| | | |
|--------------------|-----|--------------|
| Diam: | 30 | in |
| Thick: | 0.5 | in |
| Grade: | 42 | ksi |
| # of Sides: | 0 | "0" IF Round |
| Fu | 63 | ksi |
| Reinf. Fillet Weld | 0 | "0" if None |

Stress Increase Factor

| | |
|-------|-------|
| ASIF: | 1.333 |
|-------|-------|

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
 250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708
 Phone 614-221-6679 • Fax 614-448-4105 • www.PJFweb.com

Date: 12/6/2012
 PJF Project: 37512-1239 R2
 Client Ref. # BU 876325
 Site Name: Weston Square
 Description: 110' MP
 Owner: Crown Castle
 Engineer: JJF

v4.0 - Effective 1-12-12

Asymmetric Anchor Rod Analysis

Moment = 1117 k-ft
 Axial = 22.0 kips
 Shear = 14.0 kips
 Anchor Qty = 15

TIA Ref. = F
 ASIF = 1.3333
 Max Ratio = 100.0%

Location = Base Plate
 η = N/A for BP, Rev. G Sect. 4.9.9
 Threads = N/A for FP, Rev. G

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

| Item | Nominal Anchor Dia, in | Anchor Spec | Fy, ksi | Fu, ksi | Location, degrees | Anchor Circle, in | Area Override, in ² | Area, in ² | Max Net Compression, kips | Max Net Tension, kips | Load for Capacity Calc, kips | Capacity Override, kips | Capacity, kips | Capacity Ratio |
|------|------------------------|-------------------|---------|---------|-------------------|-------------------|--------------------------------|-----------------------|---------------------------|-----------------------|------------------------------|-------------------------|----------------|----------------|
| 1 | 1.500 | A354 Gr BC | 109 | 125 | 0.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 2 | 1.500 | A354 Gr BC | 109 | 125 | 30.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 3 | 1.500 | A354 Gr BC | 109 | 125 | 60.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 4 | 1.500 | A354 Gr BC | 109 | 125 | 90.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 5 | 1.500 | A354 Gr BC | 109 | 125 | 120.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 6 | 1.500 | A354 Gr BC | 109 | 125 | 150.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 7 | 1.500 | A354 Gr BC | 109 | 125 | 180.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 8 | 1.500 | A354 Gr BC | 109 | 125 | 210.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 9 | 1.500 | A354 Gr BC | 109 | 125 | 240.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 10 | 1.500 | A354 Gr BC | 109 | 125 | 270.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 11 | 1.500 | A354 Gr BC | 109 | 125 | 300.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 12 | 1.500 | A354 Gr BC | 109 | 125 | 330.0 | 35.00 | 0.00 | 1.77 | 80.12 | 77.47 | 77.47 | 0.00 | 97.19 | 79.7% |
| 13 | 1.750 | Dywidag (150 ksi) | 127.7 | 150 | 15.0 | 44.50 | 0.00 | 2.71 | 155.77 | 151.70 | 151.70 | 0.00 | 178.99 | 84.8% |
| 14 | 1.750 | Dywidag (150 ksi) | 127.7 | 150 | 135.0 | 44.50 | 0.00 | 2.71 | 155.77 | 151.70 | 151.70 | 0.00 | 178.99 | 84.8% |
| 15 | 1.750 | Dywidag (150 ksi) | 127.7 | 150 | 255.0 | 44.50 | 0.00 | 2.71 | 155.77 | 151.70 | 151.70 | 0.00 | 178.99 | 84.8% |

29.34

DRILLED PIER SOIL AND STEEL ANALYSIS - TIA/EIA-222-F

Unfactored Base Reactions from RISAs

| | Comp. (+) | Tension (-) | |
|-----------------|-----------|-------------|---------------|
| Moment, M = | 1117.0 | | k-ft |
| Shear, V = | 14.0 | | kips |
| Axial Load, P = | 22.0 | | kips |
| OTM = | 1124.0 | 0.0 | k-ft @ Ground |

Safety Factors / Load Factors / ϕ Factors

| | |
|---------------------------|---------------|
| Tower Type = | Monopole DP |
| ACI Code = | ACI 318-02 |
| Seismic Design Category = | D |
| Reference Standard = | TIA/EIA-222-F |
| Use 1.3 Load Factor? | Yes |
| Load Factor = | 1.30 |

Drilled Pier Parameters

| | | |
|------------------------|-------|-------|
| Diameter = | 5 | ft |
| Height Above Grade = | 0.5 | ft |
| Depth Below Grade = | 37 | ft |
| fc' = | 3000 | ksi |
| ϵ_c = | 0.003 | in/in |
| Mat Ftdn. Cap Width = | | ft |
| Mat Ftdn. Cap Length = | | ft |
| Depth Below Grade = | | ft |

| | Safety Factor | ϕ Factor |
|------------------------------|---------------|---------------|
| Soil Lateral Resistance = | 2.00 | 0.75 |
| Skin Friction = | 2.00 | 0.75 |
| End Bearing = | 2.00 | 0.75 |
| Concrete Wt. Resist Uplift = | 1.25 | |

Load Combinations Checked per TIA/EIA-222-F

- Ult. Skin Friction/2.00 + Ult. End Bearing/2.00 + Effective Soil Wt. - Buoyant Conc. Wt. \geq Compression
- Ult. Skin Friction/2.00 + Buoyant Conc. Wt./1.25 \geq Uplift
- Ult. Skin Friction/1.50 + Buoyant Conc. Wt./1.50 \geq Uplift

Steel Parameters

| | | |
|----------------------------|-------|-----|
| Number of Bars = | 16 | |
| Rebar Size = | #9 | |
| Rebar Fy = | 60 | ksi |
| Rebar MOE = | 29000 | ksi |
| Tie Size = | #4 | |
| Side Clear Cover to Ties = | 3 | in |

Soil Parameters

| | | |
|--|--------|----|
| Water Table Depth = | 15.00 | ft |
| Depth to Ignore Soil = | 3.33 | ft |
| Depth to Full Cohesion = | 0 | ft |
| Full Cohesion Starts at? | Ground | |
| Above Full Cohesion Lateral Resistance = 4(Cohesion)(Dia)(H) | | |
| Below Full Cohesion Lateral Resistance = 8(Cohesion)(Dia)(H) | | |

Direct Embed Pole Shaft Parameters

| | | |
|---------------------------|--|-----|
| Dia @ Grade = | | in |
| Dia @ Depth Below Grade = | | in |
| Number of Sides = | | |
| Thickness = | | in |
| Fy = | | ksi |
| Backfill Condition = | | |

Maximum Capacity Ratios

| | |
|-----------------------|--------|
| Maximum Soil Ratio = | 100.0% |
| Maximum Steel Ratio = | 100.0% |

Define Soil Layers

Note: Cohesion = Undrained Shear Strength = Unconfined Compressive Strength / 2

| Layer | Thickness ft | Unit Weight pcf | Cohesion psf | Friction Angle degrees | Soil Type | Ultimate End Bearing psf | Comp. Ult. Skin Friction psf | Tension Ult. Skin Friction psf | Depth ft |
|-------|--------------|-----------------|--------------|------------------------|-----------|--------------------------|------------------------------|--------------------------------|----------|
| 1 | 2 | 120 | 1000 | | Clay | | | | 2 |
| 2 | 4 | 110 | | 30 | Sand | | | | 6 |
| 3 | 7 | 110 | 750 | | Clay | | | | 13 |
| 4 | 2 | 105 | | 30 | Sand | | | | 15 |
| 5 | 13 | 115 | | 32 | Sand | | | | 28 |
| 6 | 5 | 100 | 750 | | Clay | | | | 33 |
| 7 | 7 | 120 | 1500 | | Clay | 12000 | | | 40 |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |

Soil Results: Overturning

| | | |
|------------------------|---------|----------------|
| Depth to COR = | 22.58 | ft, from Grade |
| Bending Moment, M = | 1440.16 | k-ft, from COR |
| Resisting Moment, Ma = | 6689.65 | k-ft, from COR |

MOMENT RATIO = 21.5% OK

| | | |
|-----------------------|-------|------|
| Shear, V = | 14.00 | kips |
| Resisting Shear, Va = | 65.03 | kips |

SHEAR RATIO = 21.5% OK

Soil Results: Uplift

| | | |
|-----------------------------|-------|------|
| Uplift, T = | 0.00 | kips |
| Allowable Uplift Cap., Ta = | 66.79 | kips |

UPLIFT RATIO = 0.0% OK

Soil Results: Compression

| | | |
|----------------------------|-------|------|
| Compression, C = | 22.00 | kips |
| Allowable Comp. Cap., Ca = | 88.55 | kips |

COMPRESSION RATIO = 24.8% OK

Steel Results (ACI 318-02):

| | | |
|-------------------------------|------------|-------------------------|
| Minimum Steel Area = | 244.86 | sq in |
| Actual Steel Area = | 16.00 | sq in |
| Steel Area Reduction Factor = | 0.75 | |
| Allowable Min Axial, Pa = | -498.46 | kips, Where Ma = 0 k-ft |
| Allowable Max Axial, Pa = | 2872030.06 | kips, Where Ma = 0 k-ft |

| | | |
|------------------------|---------|----------------------------|
| Axial Load, P = | 41.88 | kips @ 6.25 ft Below Grade |
| Moment, M = | 1201.33 | k-ft @ 6.25 ft Below Grade |
| Allowable Moment, Ma = | 1348.27 | k-ft |

MOMENT RATIO = 89.1% OK

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

| | |
|---------------------------------|--|
| BU#: 876325 | |
| Site Name: <i>Weston Square</i> | |
| App #: | |

Enter Load Factors Below:

| | | |
|------------|-----|--------------------|
| For M (WL) | 1.3 | <---- Enter Factor |
| For P (DL) | 1.3 | <---- Enter Factor |

Pier Properties

| | |
|-----------------------|------------------------|
| Concrete: | |
| Pier Diameter = | 5.0 ft |
| Concrete Area = | 2827.4 in ² |
| Reinforcement: | |
| Clear Cover to Tie = | 3.00 in |
| Horiz. Tie Bar Size = | 4 |
| Vert. Cage Diameter = | 4.32 ft |
| Vert. Cage Diameter = | 51.87 in |
| Vertical Bar Size = | 9 |
| Bar Diameter = | 1.13 in |
| Bar Area = | 1 in ² |
| Number of Bars = | 16 |
| As Total = | 16 in ² |
| A s/ Aconc, Rho: | 0.0057 0.57% |

ACI 10.5 , ACI 21.10.4, and IBC 1810.

Min As for Flexural, Tension Controlled, Shafts:

$$(3) * (\sqrt{f'c}) / F_y = 0.0866$$

$$200 / F_y = 0.0033$$

Minimum Rho Check:

| | | |
|------------------------|-------|-----------|
| Actual Req'd Min. Rho: | 0.33% | Flexural |
| Provided Rho: | 0.57% | OK |

| | | |
|--|-------|---------|
| <u>Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):</u> | | |
| Max Pu = ($\phi=0.65$) Pn, | | |
| Pn per ACI 318 (10-2) | ##### | kips |
| at Mu=($\phi=0.65$)Mn= | ##### | ft-kips |
| | | |
| Max Tu, ($\phi=0.9$) Tn = | 864 | kips |
| at Mu= $\phi=(0.90)$ Mn= | 0.00 | ft-kips |

Maximum Shaft Superimposed Forces

| | | |
|-----------------------|---------|------------------|
| TIA Revision: | F | |
| Max. Service Shaft M: | 1201.33 | ft-kips (* Note) |
| Max. Service Shaft P: | 41.88 | kips |
| Max Axial Force Type: | Comp. | |

(* Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

| Load Factor | Shaft Factored Loads | |
|-------------|----------------------|------------------|
| 1.30 | Mu: | 1561.729 ft-kips |
| 1.30 | Pu: | 54.444 kips |

Material Properties

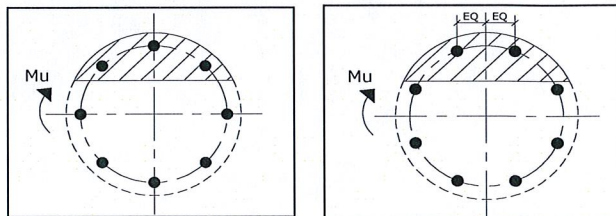
| | | |
|--|---------|-----|
| Concrete Comp. strength, f_c = | 3000000 | psi |
| Reinforcement yield strength, F_y = | 60 | ksi |
| Reinforcing Modulus of Elasticity, E = | 29000 | ksi |
| Reinforcement yield strain = | 0.00207 | |
| Limiting compressive strain = | 0.003 | |
| ACI 318 Code | | |
| Select Analysis ACI Code= | 2002 | |
| Seismic Properties | | |
| Seismic Design Category = | D | |
| Seismic Risk = | High | |

Solve
(Run)

<-- Press Upon Completing All Input

Results:

Governing Orientation Case: 1



Case 1

Case 2

Dist. From Edge to Neutral Axis: 0.18 in

Extreme Steel Strain, ϵ_t : 0.9492

$\epsilon_t > 0.0050$, Tension Controlled

Reduction Factor, ϕ : 0.900

Output Note: Negative Pu=Tension

| | | |
|---|---------|---------|
| For Axial Compression, ϕ Pn = Pu: | 54.44 | kips |
| Drilled Shaft Moment Capacity, ϕ Mn: | 2290.85 | ft-kips |
| Drilled Shaft Superimposed Mu: | 1561.73 | ft-kips |

| | |
|---|--------------|
| (Mu/ϕMn, Drilled Shaft Flexure CSR): | 68.2% |
|---|--------------|

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

T-Mobile Existing Facility

Site ID: CT11062B

Weston Square
92 Weston Street
Hartford, CT 06106

December 07, 2012

December 07, 2012

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

Re: Emissions Values for Site: **CT11062B - Weston Square**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 92 Weston Street, Hartford, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the cellular band is $567 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 92 Weston Street, Hartford, 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 **81 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 | CT110628 - Weston Square |
| Site Address | 92 Weston Street, Hartford, CT 06106 |
| Site Type | Monopole |

| 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 (dBi) | Antenna Height (ft) | Antenna analysis height | Cable Size | Cable Loss (dB) | Additional Loss | ERP | Power Density Value | Power Density Percentage |
|--|--------------|---------------|----------|----------------|------------|-------------------------------|--------------------|-----------------|---|---------------------|-------------------------|------------|-----------------|-----------------|-----------|---------------------|--------------------------|
| Sector 1 | | | | | | | | | | | | | | | | | |
| 1a | Ericsson | AIR21 B4A/B2P | Active | AWS - 2100 MHz | LTE | 60 | 2 | 120 | -3.95 | 81 | 75 | None | 0 | 0 | 48.326044 | 3.088622 | 0.308866% |
| 1b | Ericsson | AIR21 B4A/B2P | Not Used | - | - | 0 | 0 | 0 | -3.95 | 81 | 75 | None | 0 | 0 | 0 | 0 | 0.00000% |
| 2a | Ericsson | AIR21 B2A/B4P | Active | PCS - 1950 MHz | GSM / UMTS | 30 | 2 | 60 | -3.95 | 81 | 75 | 1-5/8" | 0 | 0 | 24.163022 | 1.544311 | 0.15443% |
| 2B | Ericsson | AIR21 B2A/B4P | Passive | AWS - 2100 MHz | UMTS | 30 | 2 | 60 | -3.95 | 81 | 75 | 1-5/8" | 0 | 0 | 24.163022 | 1.544311 | 0.15443% |
| Sector total Power Density Value: 0.618% | | | | | | | | | | | | | | | | | |
| Sector 2 | | | | | | | | | | | | | | | | | |
| 1a | Ericsson | AIR21 B4A/B2P | Active | AWS - 2100 MHz | LTE | 60 | 2 | 120 | -3.95 | 81 | 75 | None | 0 | 0 | 48.326044 | 3.088622 | 0.308866% |
| 1b | Ericsson | AIR21 B4A/B2P | Not Used | - | - | 0 | 0 | 0 | -3.95 | 81 | 75 | None | 0 | 0 | 0 | 0 | 0.00000% |
| 2a | Ericsson | AIR21 B2A/B4P | Active | PCS - 1950 MHz | GSM / UMTS | 30 | 2 | 60 | -3.95 | 81 | 75 | 1-5/8" | 0 | 0 | 24.163022 | 1.544311 | 0.15443% |
| 2B | Ericsson | AIR21 B2A/B4P | Passive | AWS - 2100 MHz | UMTS | 30 | 2 | 60 | -3.95 | 81 | 75 | 1-5/8" | 0 | 0 | 24.163022 | 1.544311 | 0.15443% |
| Sector total Power Density Value: 0.618% | | | | | | | | | | | | | | | | | |
| Sector 3 | | | | | | | | | | | | | | | | | |
| 1a | Ericsson | AIR21 B4A/B2P | Active | AWS - 2100 MHz | LTE | 60 | 2 | 120 | -3.95 | 81 | 75 | None | 0 | 0 | 48.326044 | 3.088622 | 0.308866% |
| 1b | Ericsson | AIR21 B4A/B2P | Not Used | - | - | 0 | 0 | 0 | -3.95 | 81 | 75 | None | 0 | 0 | 0 | 0 | 0.00000% |
| 2a | Ericsson | AIR21 B2A/B4P | Active | PCS - 1950 MHz | GSM / UMTS | 30 | 2 | 60 | -3.95 | 81 | 75 | 1-5/8" | 0 | 0 | 24.163022 | 1.544311 | 0.15443% |
| 2B | Ericsson | AIR21 B2A/B4P | Passive | AWS - 2100 MHz | UMTS | 30 | 2 | 60 | -3.95 | 81 | 75 | 1-5/8" | 0 | 0 | 24.163022 | 1.544311 | 0.15443% |
| Sector total Power Density Value: 0.618% | | | | | | | | | | | | | | | | | |

| Site Composite MPE % | |
|-------------------------|----------------|
| Carrier | MPE % |
| Sprint | 11.570% |
| AT&T | 5.950% |
| Total Site MPE % | 19.373% |

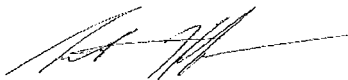
Summary

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 **1.853% (0.618% 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 **19.373%** 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

EBI Consulting
21 B Street
Burlington, MA 01803