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

September 7, 2012

Jennifer Young Gaudet
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-CING-033-120824** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at Christian Hill Road (100 Berlin Road), Cromwell, Connecticut.

Dear Ms. Gaudet:

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 less 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 August 22, 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,

LRoberts

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Mertie Terry, First Selectman, Town of Cromwell
Frederic Curtin, Zoning Enforcement Officer, Town of Cromwell
Kenneth Baldwin, Robinson & Cole

'C Wireless Services
ʼill Plain Rd.
2
ıry, CT, 06811
ˀ.797.1112

EM-CING-033-120824

HPC WIRELESS SERVICES

ORIGINAL

August 22, 2012

RECEIVED
AUG 24 2012
CONNECTICUT
SITING COUNCIL

VIA OVERNIGHT COURIER

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

Re: New Cingular Wireless PCS, LLC – Exempt Modification
Christian Hill Road (100 Berlin Road), Cromwell, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"). AT&T 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 Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), 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 First Selectman of the Town of Cromwell.

AT&T plans to modify the existing wireless communications facility controlled by Cellco Partnership d/b/a Verizon Wireless and located off of Christian Hill Road (a/k/a 100 Berlin Road), Cromwell (coordinates 41°-36'-20.5" N, 72°-42'-04.93" 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 AT&T'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. AT&T will add three (3) LTE panel antennas to the existing platform at a center line of approximately 98'. Six (6) RRUS (remote radio units) and a surge arrestor will be stack mounted to existing pipes behind the LTE antennas. AT&T will also place a DC power and fiber run from the equipment to the antennas along the existing coaxial cable

run. These changes will not extend the height of the approximately 111' structure including antennas.

2. AT&T will stack two cabinets on a proposed 4' x 4' concrete pad adjacent to the existing AT&T equipment pad, and will mount a new GPS antenna to the existing steel canopy. These changes will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six (6) 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 C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately 3.35%; the combined site operations will result in a total power density of approximately 66.89%.

Please feel free to contact me by phone at (860) 798-7454 or by e-mail at jgaudet@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

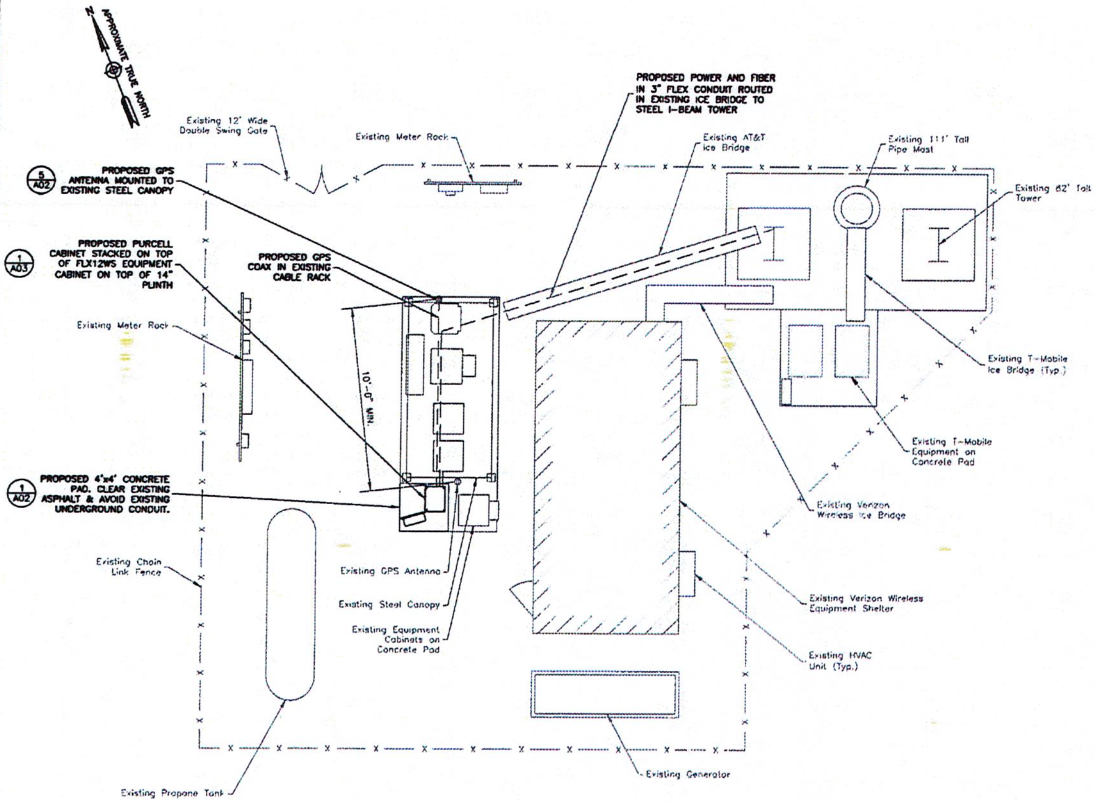
Respectfully yours,

Jennifer Young Gaudet

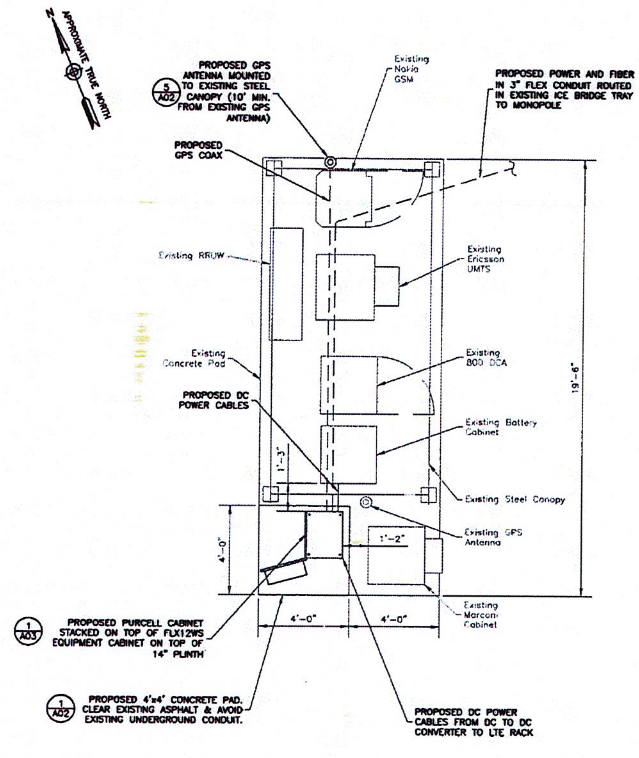
Jennifer Young Gaudet

Attachments

cc: Honorable Mertie Terry, First Selectman, Town of Cromwell
Shaner SPE Associates, LLP (underlying property owner)



SITE PLAN
SCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"
0' 5' 10'



EQUIPMENT LAYOUT DETAIL
SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"
0' 2' 4' 6'

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. MOUNT ALL ANTENNAS, [illegible], SURGE ARRESTORS, RRU'S, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS BY CENTEK ENGINEERING [illegible]
3. NOT [illegible] SHOWN FOR CLARITY.

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
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CROMWELL SOUTH
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100 CHRISTIAN HILL ROAD
CROMWELL, CT 06416

at&t
500 ENTERPRISE DRIVE,
SUITE 3A
ROCKY HILL, CT 06067

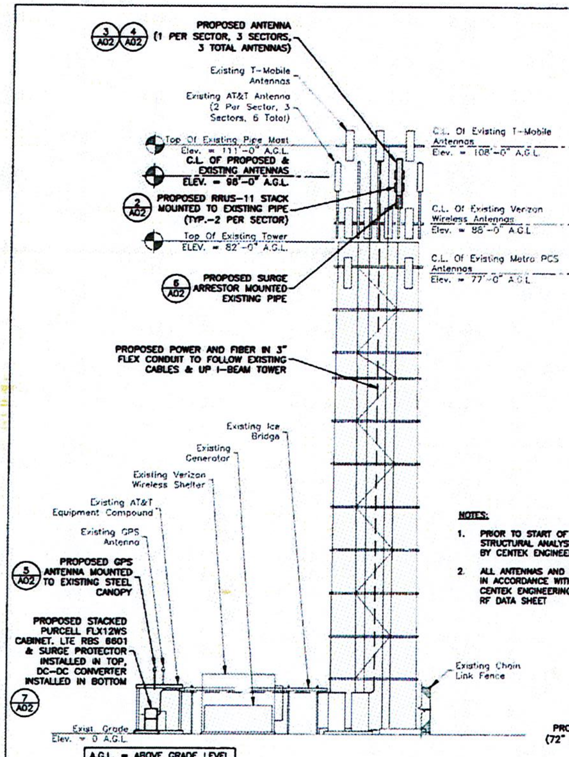
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/17/12	ISSUED FOR CONSTRUCTION	BSH	CHN	CHN
0	03/05/12	PRELIMINARY SUBMISSION	JRF	GMN	GHN

SCALE: AS SHOWN | DESIGNED BY: GMN | DRAWN BY: JRF

STATE OF CONNECTICUT PATRICK BARRY 28959 LICENSED PROFESSIONAL ENGINEER
8-17-12

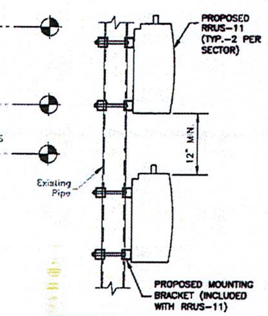
SITE PLAN & EQUIPMENT LAYOUT

DEWBERRY NO.	DRAWING NUMBER	REV
50048347/50048389	A01	0



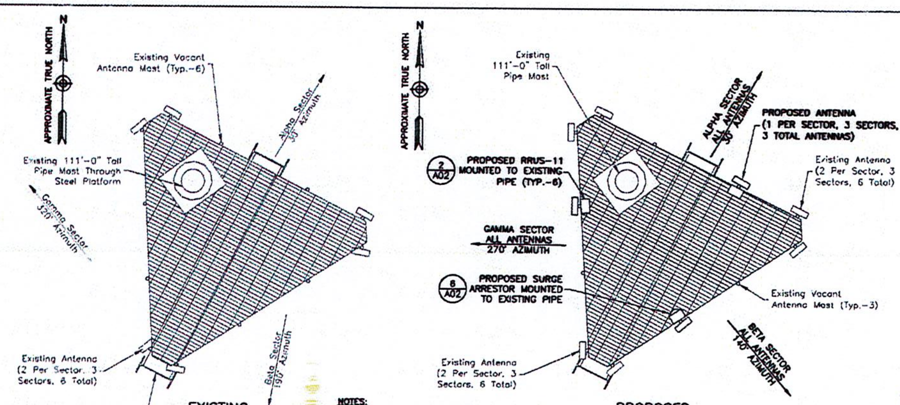
ELEVATION LOOKING WEST

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"
0' 10' 20'



RRUS-11 MOUNTING DETAIL (2)

SCALE: N.T.S.



NOTES:

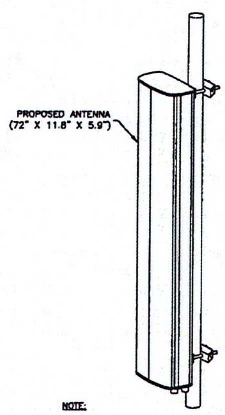
1. AZIMUTHS BASED ON TRUE NORTH.

PLATFORM ANTENNA ORIENTATION (3)

SCALE: N.T.S.

NOTES:

1. PRIOR TO START OF ANY WORK, A PASSING STRUCTURAL ANALYSIS SHALL BE PROVIDED BY CENTEK ENGINEERING.
2. ALL ANTENNAS AND COAX SHALL BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS BY CENTEK ENGINEERING DATED 06/14/12 AND FINAL RF DATA SHEET

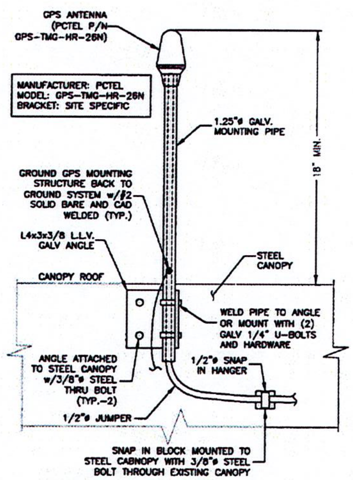


NOTE:

1. PLEASE SEE RFDS FOR SPECIFIC ANTENNA MODEL.

ISOMETRIC ANTENNA DETAIL (4)

SCALE: N.T.S.

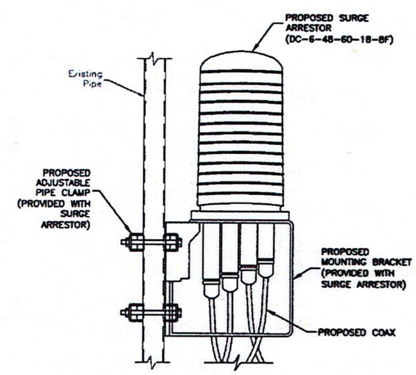


GPS ANTENNA NOTES:

1. GROUND ANTENNAS AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND AT&T STANDARDS.
2. FIELD LOCATE GPS ANTENNA A MINIMUM OF 10 FEET HORIZONTALLY FROM EXISTING GPS ANTENNA WITH AT&T CM APPROVAL.

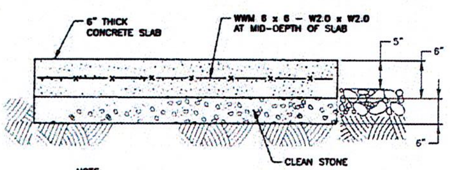
GPS ANTENNA (5)

SCALE: N.T.S.



SURGE ARRESTOR MOUNTING DETAIL (6)

SCALE: N.T.S.



NOTE:

1. TOTAL AREA OF CONCRETE PAD IS 4'x4'=16 SQ. FT.

CONCRETE PAD DETAIL (1)

SCALE: N.T.S.

STATE OF CONNECTICUT PATRICK P. BARRY LICENSED 28959 PROFESSIONAL ENGINEER

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SITE NO. CT5144
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at&t
500 ENTERPRISE DRIVE, SUITE 3A
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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0	03/05/12	PRELIMINARY SUBMISSION	JRF	CMN	GHN

SCALE: AS SHOWN | DESIGNED BY: GMN | DRAWN BY: JRF

ELEVATION & CONSTRUCTION DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50048347/50048389	A02	0

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

82' Sign Structure w/ 111' Pipe Mast

Proposed AT&T Mobility
Antenna Upgrade

AT&T Mobility Site Ref: CT5144

Verizon Site Ref: Cromwell SW

100 Berlin Road
Cromwell, CT

Centek Project No. 12044.CO2

Date: June 14, 2012

Prepared for:

AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

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Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna installation proposed by AT&T Mobility on the existing 82-ft sign structure located in Cromwell, Connecticut.

The host structure is a 82-ft sign structure with a 111-ft pipe mast. The existing structure geometry, member sizes and foundation system were obtained from a previous structural design report prepared by Centek (Formally Natcomm) job no. 10001.CO7 dated December 3, 2009. Antenna and appurtenance information were obtained from the aforementioned Centek structural analysis report, visual verification from grade by Centek personnel on April 26, 2012 and a RF data sheet.

The structure is made up of two (2) W24x68 vertical steel legs, one (1) HSS18x0.5 steel pipe mast, L5x5x5/16 horizontal and diagonal steel bracing and WT6x15 steel bracing.

AT&T proposes the installation of three (3) panel antennas, six (6) RRU's and one (1) Surge Arrestor mounted to the existing pipe masts on the Verizon Wireless low profile platform. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing structure was designed to support several communication antennas. The existing, proposed and future loads considered in this analysis consist of the following:

- T-MOBILE: (Existing)
  Antennas: Six (6) RFS APX16DWV-16DWVS-E-A20 panel antennas and nine (9) Andrew OneBase Twin Dual Duplex TMA's on a low profile platform mounted on a 111-ft pipe mast with a RAD center elevation of 108-ft AGL.
  Coax Cables: Eighteen (18) 1-5/8" Ø coax cables, nine (9) within existing 111-ft pipe mast and nine (9) on the exterior of the pipe mast.
- VERIZON: (Existing To Remain)
  Antennas: Four (4) Decibel DB846F65ZAXY, two (2) Antel LPA-80080/6CF, three (3) Antel BXA-70063-6CF, and six (6) Decibel 948F85T2E-M_2 panel antennas with a RAD center elevation of 88-ft AGL.
  Coax Cables: Eighteen (18) 1-5/8" Ø coax cables run on the exterior of the existing sign structure.
- MetroPCS (Existing)
  Antennas: Three (3) RFS APXV18-206517S-C panel antennas mounted to the steel flanges (legs) of the existing sign structure with a RAD center elevation of 77-ft AGL.
  Coax Cable: Six (6) 1-5/8" Ø coaxial cables vertically supported on the existing legs of the sign structure.

- T-MOBILE (Existing/Reserved)
  Antennas: One (1) VIC-100 GPS antenna on a side arm mounted to the leg of the sign structure with a RAD center elevation of 50-ft AGL.
  Coax Cables: One (1) 1/2" Ø coax cable run on the exterior of the existing sign structure.
- AT&T: (Existing)
  Antennas: Six (6) Powerwave 7770.00 panel antennas and twelve (12) Powerwave LPG21401 TMA's mounted on pipe mounts to the existing Verizon Wireless low profile platform with a RAD center elevation of 98-ft AGL.
  Coax Cables: Twelve (12) 1-5/8" Ø coax cables run on the exterior of existing sign structure.
- **AT&T (PROPOSED):**
  Antennas: Three (3) KMW AM-X-CD-16-65-00T panel antennas, six (6) Ericsson RRUS-11 and one (1) Raycap DC6-48-60-18-8F surge arrestor mounted on pipe mounts to the existing Verizon Wireless low profile platform with a RAD center elevation of 98-ft AGL.
  Coax Cables: One (1) fiber cable and two (2) dc control cables running on the exterior of existing sign structure.

Primary Assumptions Used in the Analysis

- The structure's theoretical capacity not including any assessment of the condition of the tower.
- The structure carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Structure is properly installed and maintained.
- Structure is in plumb condition.
- Structure loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original structure design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All structure members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled RISATower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (fastest mile) with no ice and a 75% reduction of wind force with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix K of the CSBC[1] and the wind speed data available in the TIA/EIA-222-F-96 Standard. The higher of the two wind speeds is utilized in preparation on the tower analysis.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice on the tower structure and its components.

Basic Wind Speed:	Middlesex; v = 85 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Cromwell; v = 100 mph (3 second gust) equivalent to v = 80 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA-222-F and Appendix K wind speeds are equal.	
Load Cases:	<u>Load Case 1</u>; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	<u>Load Case 2</u>; 74 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 74 mph wind speed velocity represents 75% of the wind pressure generated by the 85 mph wind speed.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	<u>Load Case 3</u>; Seismic – not checked	*[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type*

[1] The 2005 Connecticut State Building Code as amended by the 2009 CT State Supplement. (CSBC)

Structure Capacity

Member stresses were calculated utilizing the structural analysis software RISA-3D. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

Calculated stresses were found to be within allowable limits. In Load Case 6, per RISA-3D "Steel Code Checks", this structure was found to be at **98.3%** of its total capacity.

Tower Section	Location	Stress Ratio (percentage of capacity)	Result
Leg 2	1.25'	98.3%	**PASS**

Foundation and Anchors

The existing foundation consists of an 55-ft long (approx) x 8.5-ft wide x 3-ft deep reinforced concrete strip footing with concrete column pedestals. The sub-grade conditions used in the analysis of the existing foundation were based on normal soil values as permitted by EIA/TIA-222-F Section 7.1.3. The base of the sign structure is connected to the foundation by means of (20) 1"∅, (assumed ASTM A-615-75) anchor bolts embedded into the existing concrete foundation. The base of the communications pipe structure is connected to the foundation by means of (10) 1.75"∅, ASTM A615-75 anchor bolts embedded into the existing concrete foundation.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The foundation was found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2	Proposed Loading	Result
Reinf. Conc. Pad w/ Pedestals	OTM	2.0	3.7	**PASS**

Note: OTM denotes Overturning Moment

- The structure anchor bolts, base plate and flange plates were found to be within allowable limits.

Structure Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts (Mast)	Tension	56.7%	**PASS**
Base Plate (Mast)	Bending	42.8%	**PASS**
Flange Bolts	Tension	70.0%	**PASS**
Flange Plate	Bending	60.6%	**PASS**
Anchor Bolts (Leg)	Tension	52.3%	**PASS**
Base Plate (Leg)	Bending	95.0%	**PASS**

Conclusion

This analysis shows that the subject structure **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by AT&T Mobility. If the existing conditions are different than the information in this report, Centek Engineering must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principal ~ Structural Engineer

STATE OF CONNECTICUT
CARLO F. CENTORE
No.16694
LICENSED
PROFESSIONAL ENGINEER

Prepared by:

Timothy J. Lynn, EIT
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features:

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids
- Versatile general truss generator
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking
- Saved selections to quickly recall desired selections
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets
- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files
- Export DXF, SDNF and ProSteel 3D files

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis
- Physical member modeling that does not require members to be broken up at intermediate joints
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress and design
- Automatic Top of Member offset modeling
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms

- Enforced joint displacements
- 1-Way members, for tension only bracing, slipping, etc.
- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape
- Inactive members, plates, and diaphragms allows you to quickly remove parts of structures from consideration
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary "true to scale" rendering, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamic scrolling stops right where you want
- Plot & print virtually everything with color coding & labeling
- Rotate, zoom, pan, scroll and snap views
- Saved views to quickly restore frequent or desired views
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete, hot rolled steel, cold formed steel and wood
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000,EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location
- Saved solutions quickly restore analysis and design results.

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA/EIA

Wind Speeds

Basic Wind Speed, V $V := 85$ mph

Basic Wind Speed with Ice, V_i $V_i := 74$ mph (per TIA/EIA-222-F Section 2.3.16)

Heights above ground level, z

Leg Member Section 1 = $z_1 := 10$ ft

Leg Member Section 2 = $z_2 := 30$ ft

Leg Member Section 3 = $z_3 := 50$ ft

Leg Member Section 4 = $z_4 := 70$ ft

Bracing Members = $z_{Br} := 40$ ft

Exposure Coefficients, kz

(per TIA/EIA-222-F Section 2.3.3)

Leg Member Section 1 = $Kz_1 := \left(\frac{z_1}{33}\right)^{\frac{2}{7}} = 0.711$

Leg Member Section 2 = $Kz_2 := \left(\frac{z_2}{33}\right)^{\frac{2}{7}} = 0.973$

Leg Member Section 3 = $Kz_3 := \left(\frac{z_3}{33}\right)^{\frac{2}{7}} = 1.126$

Leg Member Section 4 = $Kz_4 := \left(\frac{z_4}{33}\right)^{\frac{2}{7}} = 1.24$

Bracing Members = $Kz_{Br} := \left(\frac{z_{Br}}{33}\right)^{\frac{2}{7}} = 1.057$

Velocity Pressure without ice, qz

(per TIA/EIA-222-F Section 2.3.3)

Leg Member Section 1 = $qz_1 := 0.00256 \cdot Kz_1 \cdot V^2 = 13.15$

Leg Member Section 2 = $qz_2 := 0.00256 \cdot Kz_2 \cdot V^2 = 17.999$

Leg Member Section 3 = $qz_3 := 0.00256 \cdot Kz_3 \cdot V^2 = 20.827$

Leg Member Section 4 = $qz_4 := 0.00256 \cdot Kz_4 \cdot V^2 = 22.929$

Bracing Members = $qz_{Br} := 0.00256 \cdot Kz_{Br} \cdot V^2 = 19.541$

Velocity Pressure with ice, qzICE (per TIA/EIA-222-F Section 2.3.3)

Leg Member Section 1 = $qzICE_1 := 0.00256 \cdot Kz_1 \cdot V_i^2 = 9.967$

Leg Member Section 2 = $qzICE_2 := 0.00256 \cdot Kz_2 \cdot V_i^2 = 13.642$

Leg Member Section 3 = $qzICE_3 := 0.00256 \cdot Kz_3 \cdot V_i^2 = 15.786$

Leg Member Section 4 = $qzICE_4 := 0.00256 \cdot Kz_4 \cdot V_i^2 = 17.379$

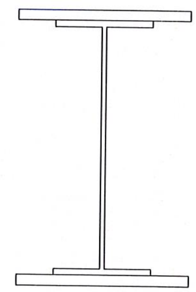
Bracing Members = $qzICE_{Br} := 0.00256 \cdot Kz_{Br} \cdot V_i^2 = 14.811$

TIA/EIA Common Factors:

Gust Response Factor =	$G_H := 1.69$		(per TIA/EIA-222-F Section 2.3.4)
Gust Response Factor Multiplier =	$m := 1.25$		(per TIA/EIA-222-F Section 2.3.4.4)
Radial Ice Thickness =	$Ir := 0.50$	in	(per TIA/EIA-222-F Section 2.3.1)
Radial Ice Density =	$Id := 56.00$	pcf	

Development of Wind & Ice Load on W24x68 w/ Plate (per TIA/EIA-222-F-1996 Criteria)

W24x68 w/ Plate Data:



Shape = Flat

Depth = $d := 25.75$ in

Length = $L := 20$ ft

Flange Width = $b_f := 16$ in

Flange Thickness = $t_f := 2.585$ in

Web Thickness = $t_w := .415$ in

Member Cross Sectional Area = $A_{member} := 52.1$ in^2

Gravity Loads (without ice)

Weight of the Member = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{member} := 2(t_f + 2\cdot Ir)\cdot(b_f + 2\cdot Ir) + (d - 2t_f - 2Ir)(t_w + 2\cdot Ir) - A_{member} = 97.5$

Weight of Ice on Member = $W_{ICE\_member} := Id\cdot\frac{Ai_{member}}{144} = 38$ plf **BLC 3**

Wind Perpendicular to Flange:

Member Aspect Ratio = $Ar_{member} := \frac{12L}{b_f} = 15.0$

Member Force Coefficient = $Ca_{member} = 1.67$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Flange Projected Surface Area = $A_{member} := \frac{b_f}{12} = 1.333$ ft

Section 1 Flange Wind Force = $qz_1\cdot G_H\cdot Ca_{member}\cdot A_{member} = 49$ plf **BLC 7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Flange Projected Surface Area w/ Ice = $AICE_{member} := \frac{(b_f + 2\cdot Ir)}{12} = 1.417$ ft

Section 1 Flange Wind Force w/ Ice = $qzICE_1\cdot G_H\cdot Ca_{member}\cdot AICE_{member} = 40$ plf **BLC 6**

Wind Perpendicular to Web

Member Aspect Ratio = $Ar_{member} := \frac{12L}{d} = 9.3$

Member Force Coefficient = $Ca_{member} = 1.48$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Web Projected Surface Area = $A_{member} := \frac{d}{12} = 2.146$ ft

Section 1 Web Wind Force = $qz_1 \cdot G_H \cdot Ca_{member} \cdot A_{member} = 70$ plf **BLC 5**

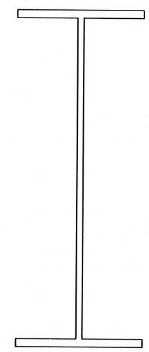
Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Web Projected Surface Area w/ Ice = $AICE_{member} := \frac{(d + 2 \cdot Ir)}{12} = 2.229$ ft

Section 1 Web Wind Force w/ Ice = $qzICE_1 \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 55$ plf **BLC 4**

Development of Wind & Ice Load on W24x68 (per TIA/EIA-222-F-1996 Criteria)

W24x68 Data:



Shape =	Flat	
Depth =	$d := 23.75$	in
Length =	$L := 20$	ft
Flange Width =	$b_f := 9$	in
Flange Thickness =	$t_f := .585$	in
Web Thickness =	$t_w := .415$	in
Member Cross Sectional Area =	$A_{member} := 20.1$	in^2

Gravity Loads (without ice)

Weight of the Member =	Self Weight	**(Computed internally by Risa-3D)**	plf	**BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{member} := 2(t_f + 2 \cdot Ir) \cdot (b_f + 2 \cdot Ir) + (d - 2t_f - 2Ir)(t_w + 2 \cdot Ir) - A_{member} = 42.1$

Weight of Ice on Member = $W_{ICE\_member} := Id \cdot \frac{Ai_{member}}{144} = 16$ plf **BLC 3**

Wind Perpendicular to Flange:

Member Aspect Ratio = $Ar_{member} := \frac{12L}{b_f} = 26.7$

Member Force Coefficient = $Ca_{member} = 2$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Flange Projected Surface Area = $A_{member} := \frac{b_f}{12} = 0.75$ ft

Section 2 Flange Wind Force =	$qz_2 \cdot G_H \cdot Ca_{member} \cdot A_{member} = 46$	plf	**BLC 7**
Section 3 Flange Wind Force =	$qz_3 \cdot G_H \cdot Ca_{member} \cdot A_{member} = 53$	plf	**BLC 7**
Section 4 Flange Wind Force =	$qz_4 \cdot G_H \cdot Ca_{member} \cdot A_{member} = 58$	plf	**BLC 7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Flange Projected Surface Area w/ Ice = $AICE_{member} := \frac{(b_f + 2 \cdot Ir)}{12} = 0.833$ ft

Section 2 Flange Wind Force w/ Ice =	$qzICE_2 \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 38$	plf	**BLC 6**
Section 3 Flange Wind Force w/ Ice =	$qzICE_3 \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 44$	plf	**BLC 6**
Section 4 Flange Wind Force w/ Ice =	$qzICE_4 \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 49$	plf	**BLC 6**

Wind Perpendicular to Web

Member Aspect Ratio = $Ar_{member} := \frac{12L}{d} = 10.1$

Member Force Coefficient = $Ca_{member} = 1.5$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Web Projected Surface Area = $A_{member} := \frac{d}{12} = 1.979$ ft

Section 2 Web Wind Force =	$qz_2 \cdot G_H \cdot Ca_{member} \cdot A_{member} = 91$	plf	**BLC 5**
Section 3 Web Wind Force =	$qz_3 \cdot G_H \cdot Ca_{member} \cdot A_{member} = 105$	plf	**BLC 5**
Section 4 Web Wind Force =	$qz_4 \cdot G_H \cdot Ca_{member} \cdot A_{member} = 115$	plf	**BLC 5**

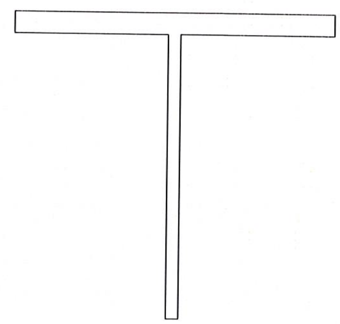
Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Web Projected Surface Area w/ Ice = $AICE_{member} := \frac{(d + 2 \cdot Ir)}{12} = 2.063$ ft

Section 2 Web Wind Force w/ Ice =	$qzICE_2 \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 71$	plf	**BLC 4**
Section 3 Web Wind Force w/ Ice =	$qzICE_3 \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 83$	plf	**BLC 4**
Section 4 Web Wind Force w/ Ice =	$qzICE_4 \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 91$	plf	**BLC 4**

Development of Wind & Ice Load on WT 6x15 (per TIA/EIA-222-F-1996 Criteria)

WT 6x15 Data:



Shape = Flat

Depth = $d := 6.17$ in

Length = $L := 10$ ft

Flange Width = $b_f := 6.52$ in

Flange Thickness = $t_f := 0.44$ in

Web Thickness = $t_w := 0.26$ in

Member Cross Sectional Area = $A_{member} := 4.4$ in^2

Member Aspect Ratio = $Ar_{member} := \frac{12L}{b_f} = 18.4$

Member Force Coefficient = $Ca_{member} = 1.78$ (per TIA/EIA-222-F Table 3)

Gravity Loads (without ice)

Weight of the Member = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{member} := \left[\left(t_f + 2 \cdot Ir\right) \cdot \left(b_f + 2 \cdot Ir\right) + \left(d - t_f\right)\left(t_w + 2 \cdot Ir\right) - A_{member}\right] = 13.6$

Weight of Ice on Member = $W_{ICE\_member} := Id \cdot \frac{Ai_{member}}{144} = 5$ plf **BLC 3**

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area = $A_{member} := \frac{b_f}{12} = 0.543$ ft

Total Member Wind Force = $qz_{Br} \cdot G_H \cdot Ca_{member} \cdot A_{member} = 32$ plf **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area w/ Ice = $AICE_{member} := \frac{\left(b_f + 2 \cdot Ir\right)}{12} = 0.627$ ft

Total Member Wind Force w/ Ice = $qzICE_{Br} \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 28$ plf **BLC 4,6**

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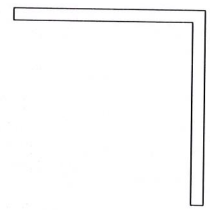
Subject:	Wind Loading on Structural Members
Location:	Cromwell, CT
Rev. 0: 6/12/12	Prepared by: T.J.L. Checked by: C.F.C. Job No. 12044.CO2

Development of Wind & Ice Load on L5x5x5/16

(per TIA/EIA-222-F-1996 Criteria)

L5x5x5/16 Data:



Shape = Flat

Length = $L := 32$ ft

Width = $b := 5$ in

Thickness = $t := 0.3125$ in

Member Cross Sectional Area = $A_{member} := 3.03$ in^2

Member Aspect Ratio = $Ar_{member} := \frac{12L}{b} = 76.8$

Member Force Coefficient = $Ca_{member} = 2$ (per TIA/EIA-222-F Table 3)

Gravity Loads (without ice)

Weight of the Member = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{member} := (b - t)(t + 2 \cdot Ir) + (b + 2 \cdot Ir)(t + 2 \cdot Ir) - A_{member} = 11$

Weight of Ice on Member = $W_{ICE\_member} := Id \cdot \frac{Ai_{member}}{144} = 4$ plf **BLC 3**

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area = $A_{member} := \frac{b}{12} = 0.417$ ft

Total Member Wind Force = $qz_{Br} \cdot G_H \cdot Ca_{member} \cdot A_{member} = 28$ plf **BLC 7**

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area w/ Ice = $AICE_{member} := \frac{(b + 2 \cdot Ir)}{12} = 0.5$ ft

Total Member Wind Force w/ Ice = $qzICE_{Br} \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 25$ plf **BLC 6**

CENTEK engineering Centered on Solutions™ 63-2 North Branford Road Branford, CT 06405 www.centekeng.com P: (203) 488-0580 F: (203) 488-8587	Subject: Location: Rev. 0: 6/12/12	Wind Loading on Structural Members Cromwell, CT Prepared by: T.J.L. Checked by: C.F.C. Job No. 12044.CO2

Development of Wind & Ice Load on L3.5x3.5x5/16 (per TIA/EIA-222-F-1996 Criteria)

L3.5x3.5x5/16 Data:

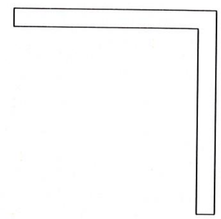
Shape = Flat

Length = $L := 20$ ft

Width = $b := 3.5$ in

Thickness = $t := 0.3125$ in

Member Cross Sectional Area = $A_{member} := 2.09$ in^2



Member Aspect Ratio = $Ar_{member} := \frac{12L}{b} = 68.6$

Member Force Coefficient = $Ca_{member} = 2$ (per TIA/EIA-222-F Table 3)

Gravity Loads (without ice)

Weight of the Member = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{member} := [(b - t)(t + 2 \cdot Ir) + (b + 2 \cdot Ir)(t + 2 \cdot Ir)] - A_{member} = 8$

Weight of Ice on Member = $W_{ICE\_member} := Id \cdot \frac{Ai_{member}}{144} = 3$ plf **BLC 3**

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area = $A_{member} := \frac{b}{12} = 0.292$ ft

Total Member Wind Force = $qz_{Br} \cdot G_H \cdot Ca_{member} \cdot A_{member} = 19$ plf **BLC 7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area w/ Ice = $AICE_{member} := \frac{(b + 2 \cdot Ir)}{12} = 0.375$ ft

Total Member Wind Force w/ Ice = $qzICE_{Br} \cdot G_H \cdot Ca_{member} \cdot AICE_{member} = 19$ plf **BLC 6**

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA/EIA

Wind Speeds

Basic Wind Speed, V — $V := 85$ mph

Basic Wind Speed with Ice, V_i — $V_i := 74$ mph (per TIA/EIA-222-F Section 2.3.16)

Heights above ground level, z

Mast 1 = $z_{mast1} := 15$ ft

Mast 2 = $z_{mast2} := 45$ ft

Mast 3 = $z_{mast3} := 75$ ft

Mast 4 = $z_{mast4} := 100$ ft

Verizon = $z_{vz} := 88$ ft

AT&T = $z_{att} := 98$ ft

T-Mobile = $z_{t\_mb} := 108$ ft

MetroPCS = $z_{metro} := 77$ ft

GPS = $z_{gps} := 50$ ft

Exposure Coefficients, kz

(per TIA/EIA-222-F Section 2.3.3)

Mast 1 = $Kz_{mast1} := \left(\frac{z_{mast1}}{33}\right)^{\frac{2}{7}} = 0.798$

Mast 2 = $Kz_{mast2} := \left(\frac{z_{mast2}}{33}\right)^{\frac{2}{7}} = 1.093$

Mast 3 = $Kz_{mast3} := \left(\frac{z_{mast3}}{33}\right)^{\frac{2}{7}} = 1.264$

Mast 4 = $Kz_{mast4} := \left(\frac{z_{mast4}}{33}\right)^{\frac{2}{7}} = 1.373$

Verizon = $Kz_{vz} := \left(\frac{z_{vz}}{33}\right)^{\frac{2}{7}} = 1.323$

AT&T = $Kz_{att} := \left(\frac{z_{att}}{33}\right)^{\frac{2}{7}} = 1.365$

T-Mobile = $Kz_{t\_mb} := \left(\frac{z_{t\_mb}}{33}\right)^{\frac{2}{7}} = 1.403$

MetroPCS = $Kz_{metro} := \left(\frac{z_{metro}}{33}\right)^{\frac{2}{7}} = 1.274$

GPS = $Kz_{gps} := \left(\frac{z_{gps}}{33}\right)^{\frac{2}{7}} = 1.126$

Velocity Pressure without ice, qz (per TIA/EIA-222-F Section 2.3.3)

Mast 1 = $qz_{mast1} := 0.00256 \cdot Kz_{mast1} \cdot V^2 = 14.765$

Mast 2 = $qz_{mast2} := 0.00256 \cdot Kz_{mast2} \cdot V^2 = 20.21$

Mast 3 = $qz_{mast3} := 0.00256 \cdot Kz_{mast3} \cdot V^2 = 23.386$

Mast 4 = $qz_{mast4} := 0.00256 \cdot Kz_{mast4} \cdot V^2 = 25.389$

Verizon = $qz_{vz} := 0.00256 \cdot Kz_{vz} \cdot V^2 = 24.478$

AT&T = $qz_{att} := 0.00256 \cdot Kz_{att} \cdot V^2 = 25.243$

T-Mobile = $qz_{t\_mb} := 0.00256 \cdot Kz_{t\_mb} \cdot V^2 = 25.953$

MetroPCS = $qz_{metro} := 0.00256 \cdot Kz_{metro} \cdot V^2 = 23.562$

GPS = $qz_{gps} := 0.00256 \cdot Kz_{gps} \cdot V^2 = 20.827$

Velocity Pressure with ice, qzICE (per TIA/EIA-222-F Section 2.3.3)

Mast 1 = $qzICE_{mast1} := 0.00256 \cdot Kz_{mast1} \cdot V_i^2 = 11.191$

Mast 2 = $qzICE_{mast2} := 0.00256 \cdot Kz_{mast2} \cdot V_i^2 = 15.318$

Mast 3 = $qzICE_{mast3} := 0.00256 \cdot Kz_{mast3} \cdot V_i^2 = 17.725$

Mast 4 = $qzICE_{mast4} := 0.00256 \cdot Kz_{mast4} \cdot V_i^2 = 19.243$

Verizon = $qzICE_{vz} := 0.00256 \cdot Kz_{vz} \cdot V_i^2 = 18.553$

AT&T = $qzICE_{att} := 0.00256 \cdot Kz_{att} \cdot V_i^2 = 19.132$

T-Mobile = $qzICE_{t\_mb} := 0.00256 \cdot Kz_{t\_mb} \cdot V_i^2 = 19.671$

MetroPCS = $qzICE_{metro} := 0.00256 \cdot Kz_{metro} \cdot V_i^2 = 17.858$

GPS = $qzICE_{gps} := 0.00256 \cdot Kz_{gps} \cdot V_i^2 = 15.786$

TIA/EIA Common Factors:

Gust Response Factor =	$G_H := 1.69$		(per TIA/EIA-222-F Section 2.3.4)
Gust Response Factor Multiplier =	$m := 1.25$		(per TIA/EIA-222-F Section 2.3.4.4)
Radial Ice Thickness =	$Ir := 0.50$	in	(per TIA/EIA-222-F Section 2.3.1)
Radial Ice Density =	$Id := 56.00$	pcf	

Development of Wind & Ice Load on PCS Mast

(per TIA/EIA-222-F-1996 Criteria)

PCS Mast Data:

Mast Shape =	Round		
Mast Diameter =	$D_{mast} := 18$	in	(HSS18x0.5)
Mast Length =	$L_{mast} := 111$	ft	
Mast Thickness =	$t_{mast} := .465$	in	
Velocity Coefficient =	$C := \left(\sqrt{Kz_{mast1}}\right)\cdot V\cdot\frac{D_{mast}}{12} = 113.918$		
Structure Force Coefficient =	$C_{Fmast} = 0.59$		(per TIA/EIA-222-F Table 1 for round pole)

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Mast Projected Surface Area =	$A_{mast} := \frac{D_{mast}}{12} = 1.5$	sf/ft	
Total Mast Wind Force =	$qz_{mast1}\cdot G_H\cdot C_{Fmast}\cdot A_{mast} = 22$	plf	BLC 5,7
Total Mast Wind Force =	$qz_{mast2}\cdot G_H\cdot C_{Fmast}\cdot A_{mast} = 30$	plf	BLC 5,7
Total Mast Wind Force =	$qz_{mast3}\cdot G_H\cdot C_{Fmast}\cdot A_{mast} = 35$	plf	BLC 5,7
Total Mast Wind Force =	$qz_{mast4}\cdot G_H\cdot C_{Fmast}\cdot A_{mast} = 38$	plf	BLC 5,7

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{\left(D_{mast} + 2\cdot Ir\right)}{12} = 1.583$	sf/ft	
Total Mast Wind Force w/ Ice =	$qzICE_{mast1}\cdot G_H\cdot C_{Fmast}\cdot AICE_{mast} = 18$	plf	BLC 4,6
Total Mast Wind Force w/ Ice =	$qzICE_{mast2}\cdot G_H\cdot C_{Fmast}\cdot AICE_{mast} = 24$	plf	BLC 4,6
Total Mast Wind Force w/ Ice =	$qzICE_{mast3}\cdot G_H\cdot C_{Fmast}\cdot AICE_{mast} = 28$	plf	BLC 4,6
Total Mast Wind Force w/ Ice =	$qzICE_{mast4}\cdot G_H\cdot C_{Fmast}\cdot AICE_{mast} = 30$	plf	BLC 4,6

Gravity Loads (without ice)

Weight of the mast =	Self Weight	**(Computed internally by Risa-3D)**	plf	BLC 1

Gravity Loads (ice only)

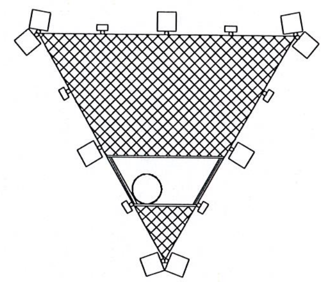
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + Ir\cdot 2\right)^2 - D_{mast}^{\ 2}\right] = 29.1$	sq in	
Weight of Ice on Mast =	$W_{ICEmast} := Id\cdot\frac{Ai_{mast}}{144} = 11$	plf	BLC 3

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = Antel BXA-70063/6CF (Verizon)

Antenna Shape = Flat



Antenna Height = $L_{ant} := 71.0$ in

Antenna Width = $W_{ant} := 11.2$ in

Antenna Thickness = $T_{ant} := 4.5$ in

Antenna Weight = $WT_{ant} := 17.0$ lbs

Number of Antennas = $N_{ant} := 3$

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.3$

Antenna Force Coefficient = $Ca_{ant} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.5$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 16.6$ sf

Total Antenna Wind Force = $F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 959$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 6.1$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 18.3$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 803$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 51$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3578$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1253$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 41$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 122$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = Antel LPA-80080/6CF (Verizon)

Antenna Shape = Flat

Antenna Height = $L_{ant} := 70.9$ in

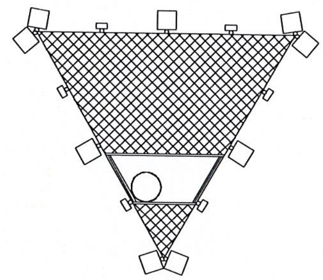
Antenna Width = $W_{ant} := 13.2$ in

Antenna Thickness = $T_{ant} := 5.5$ in

Antenna Weight = $WT_{ant} := 21.0$ lbs

Number of Antennas = $N_{ant} := 2$

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 5.4$



Antenna Force Coefficient = $Ca_{ant} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6.5$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 13$ sf

Total Antenna Wind Force = $F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 753$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 7.1$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 14.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 622$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 42$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5147$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1489$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 48$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 97$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = Decibel DB846F65ZAXY (Verizon)

Antenna Shape = Flat

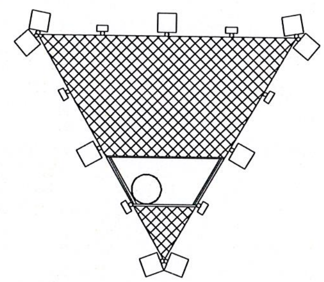
Antenna Height = $L_{ant} := 72$ in

Antenna Width = $W_{ant} := 10$ in

Antenna Thickness = $T_{ant} := 8.5$ in

Antenna Weight = $WT_{ant} := 21$ lbs

Number of Antennas = $N_{ant} := 4$



Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 7.2$

Antenna Force Coefficient = $Ca_{ant} = 1.41$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 20$ sf

Total Antenna Wind Force = $F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1164$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.6$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 22.3$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 984$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 84$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6120$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1509$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 49$ lbs

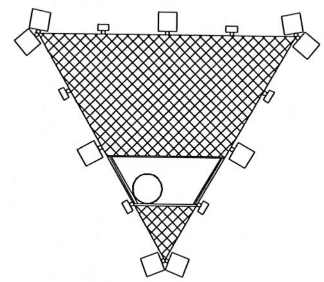
Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 196$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = Decibel DB948F85T2E-M (Verizon)

Antenna Shape = Flat



Antenna Height = $L_{ant} := 48$ in

Antenna Width = $W_{ant} := 7$ in

Antenna Thickness = $T_{ant} := 3.5$ in

Antenna Weight = $WT_{ant} := 8.5$ lbs

Number of Antennas = $N_{ant} := 6$

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.9$

Antenna Force Coefficient = $Ca_{ant} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 2.3$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 14$ sf

Total Antenna Wind Force = $F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 811$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 2.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.3$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 717$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 51$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1176$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 588$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 19$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 114$ lbs **BLC 3**

Development of Wind & Ice Load on Platform (per TIA/EIA-222-F-1996 Criteria)

Platform Data:

Platform Model = 13' Platform w/ Handrails (Verizon)

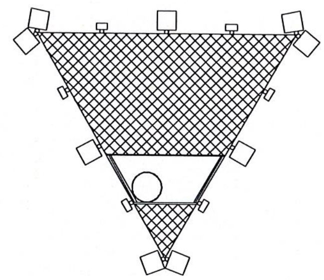
Platform Shape = Flat

(Force Coefficient Value Included in Area) Platform Area = $CaA_{plt} := 31.3$ sq ft

(Force Coefficient Value Included in Area) Platform Area w/ Ice = $CaA_{ICEplt} := 40.2$ sq ft

Platform Weight = $WT_{plt} := 1822$ lbs

Platform Weight w/ Ice = $WT_{ICEplt} := 2452$ lbs



Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force = $F_{plt} := qz_{vz} \cdot G_H \cdot CaA_{plt} = 1295$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force w/ Ice = $Fi_{plt} := qzICE_{vz} \cdot G_H \cdot CaA_{ICEplt} = 1260$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of Platform = $WT_{plt} = 1822$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $WT_{ICEplt} - WT_{plt} = 630$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model =	Powerwave 7770	(AT&T)	
Antenna Shape =	Flat		
Antenna Height =	$L_{ant} := 55$	in	
Antenna Width =	$W_{ant} := 11$	in	
Antenna Thickness =	$T_{ant} := 5$	in	
Antenna Weight =	$WT_{ant} := 35$	lbs	
Number of Antennas =	$N_{ant} := 6$		
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 5.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 25.2$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1506$	lbs	**BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.7$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 28$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1267$	lbs	**BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 210$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3025$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1007$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 196$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model =	KMW AM-X-Cd-16-65-00T	(AT&T)	
Antenna Shape =	Flat		
Antenna Height =	$L_{ant} := 72$	in	
Antenna Width =	$W_{ant} := 11.8$	in	
Antenna Thickness =	$T_{ant} := 5.9$	in	
Antenna Weight =	$WT_{ant} := 49$	lbs	
Number of Antennas =	$N_{ant} := 3$		
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.1$		
Antenna Force Coefficient =	$Ca_{ant} = 1.4$	(per TIA/EIA-222-F-1996 Table 3)	

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.9$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 17.7$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1057$	lbs	**BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant}+1) \cdot (W_{ant}+1)}{144} = 6.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 19.5$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 881$	lbs	**BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 147$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5013$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant}+1)(W_{ant}+1) \cdot (T_{ant}+1) - V_{ant} = 1435$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 46$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 139$	lbs	**BLC 3**

Development of Wind & Ice Load on TMA's (per TIA/EIA-222-F-1996 Criteria)

TMA Data:

TMA Model = Powerwave LGP214 (AT&T)

TMA Shape = Flat

TMA Height = $L_{TMA} := 14.4$ in

TMA Width = $W_{TMA} := 9.2$ in

TMA Thickness = $T_{TMA} := 2.6$ in

TMA Weight = $WT_{TMA} := 14.1$ lbs

Number of TMA's = $N_{TMA} := 12$

TMA Aspect Ratio = $Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1.6$

TMA Force Coefficient = $Ca_{TMA} = 1.4$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 11$ sf

Total TMA Wind Force = $F_{TMA} := qz_{att} \cdot G_H \cdot Ca_{TMA} \cdot A_{TMA} = 659$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (W_{TMA} + 1)}{144} = 1.1$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 13.1$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := qzICE_{att} \cdot G_H \cdot Ca_{TMA} \cdot A_{ICETMA} = 593$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All TMA's = $WT_{TMA} \cdot N_{TMA} = 169$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 344$ cu in

Volume of Ice on Each TMA = $V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 221$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 7$ lbs

Weight of Ice on All TMA's $W_{ICETMA} \cdot N_{TMA} = 86$ lbs **BLC 3**

Development of Wind & Ice Load on RRU's

(per TIA/EIA-222-F-1996 Criteria)

RRU Data:

RRU Model =	Ericsson RRUS-11	(AT&T)	
RRU Shape =	Flat		
RRU Height =	$L_{RRU} := 17.8$	in	
RRU Width =	$W_{RRU} := 17.3$	in	
RRU Thickness =	$T_{RRU} := 7.2$	in	
RRU Weight =	$WT_{RRU} := 50$	lbs	
Number of RRU's =	$N_{RRU} := 6$		
RRU Aspect Ratio =	$Ar_{RRU} := \frac{L_{RRU}}{W_{RRU}} = 1$		
RRU Force Coefficient =	$Ca_{RRU} = 1.4$	(per TIA/EIA-222-F Table 3)	

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on RRU's

Surface Area for One RRU =	$SA_{RRU} := \frac{L_{RRU} \cdot W_{RRU}}{144} = 2.1$	sf	
RRU Projected Surface Area =	$A_{RRU} := SA_{RRU} \cdot N_{RRU} = 12.8$	sf	
Total RRU Wind Force =	$F_{RRU} := qz_{att} \cdot G_H \cdot Ca_{RRU} \cdot A_{RRU} = 766$	lbs	**BLC 5,7**

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on RRU's

Surface Area for One RRU w/ Ice =	$SA_{ICERRU} := \frac{(L_{RRU} + 1) \cdot (W_{RRU} + 1)}{144} = 2.4$	sf	
RRU Projected Surface Area w/ Ice =	$A_{ICERRU} := SA_{ICERRU} \cdot N_{RRU} = 14.3$	sf	
Total RRU Wind Force w/ Ice =	$Fi_{RRU} := qzICE_{att} \cdot G_H \cdot Ca_{RRU} \cdot A_{ICERRU} = 649$	lbs	**BLC 4,6**

Gravity Load (without ice)

Weight of All RRU's =	$WT_{RRU} \cdot N_{RRU} = 300$	lbs	**BLC 2**

Gravity Load (ice only)

Volume of Each RRU =	$V_{RRU} := L_{RRU} \cdot W_{RRU} \cdot T_{RRU} = 2 \times 10^3$	cu in	
Volume of Ice on Each RRU =	$V_{ice} := (L_{RRU} + 1)(W_{RRU} + 1)(T_{RRU} + 1) - V_{RRU} = 604$	cu in	
Weight of Ice on Each RRU =	$W_{ICERRU} := \frac{V_{ice}}{1728} \cdot Id = 20$	lbs	
Weight of Ice on All RRU's	$W_{ICERRU} \cdot N_{RRU} = 117$	lbs	**BLC 3**

Development of Wind & Ice Load on Surge Arrestor

(per TIA/EIA-222-F-1996 Criteria)

Surge Arrestor Data:

Surge Arrestor Model = DC6-48-60-18-8F (AT&T)

Surge Arrestor Shape = Flat

Surge Arrestor Height = $L_{SA} := 23.5$ in

Surge Arrestor Width = $W_{SA} := 9.7$ in

Surge Arrestor Thickness = $T_{SA} := 9.7$ in

Surge Arrestor Weight = $WT_{SA} := 20$ lbs

Number of Surge Arrestor = $N_{SA} := 1$

Surge Arrestor Aspect Ratio = $Ar_{SA} := \frac{L_{SA}}{W_{SA}} = 2.4$

Surge Arrestor Force Coefficient = $Ca_{SA} = 1.4$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Surge Arrestor

Surface Area for One Surge Arrestor = $SA_{SA} := \frac{L_{SA} \cdot W_{SA}}{144} = 1.6$ sf

Surge Arrestor Projected Surface Area = $A_{SA} := SA_{SA} \cdot N_{SA} = 1.6$ sf

Total Surge Arrestor Wind Force = $F_{SA} := qz_{att} \cdot G_H \cdot Ca_{SA} \cdot A_{SA} = 95$ lbs **BLC 5,7**

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Surge Arrestor

Surface Area for One Surge Arrestor w/ Ice = $SA_{ICESA} := \frac{(L_{SA} + 1) \cdot (W_{SA} + 1)}{144} = 1.8$ sf

Surge Arrestor Projected Surface Area w/ Ice = $A_{ICESA} := SA_{ICESA} \cdot N_{SA} = 1.8$ sf

Total Surge Arrestor Wind Force w/ Ice = $Fi_{SA} := qzICE_{att} \cdot G_H \cdot Ca_{SA} \cdot A_{ICESA} = 82$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of Surge Arrestor = $WT_{SA} \cdot N_{SA} = 20$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Surge Arrestor = $V_{SA} := L_{SA} \cdot W_{SA} \cdot T_{SA} = 2 \times 10^3$ cu in

Volume of Ice on Each Surge Arrestor = $V_{ice} := (L_{SA} + 1)(W_{SA} + 1)(T_{SA} + 1) - V_{SA} = 594$ cu in

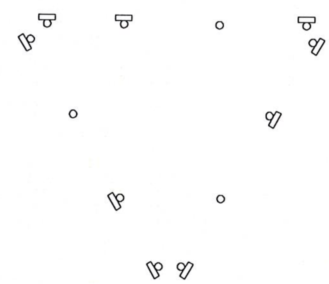
Weight of Ice on Each Surge Arrestor = $W_{ICESA} := \frac{V_{ice}}{1728} \cdot Id = 19$ lbs

Weight of Ice on All Surge Arrestor = $W_{ICESA} \cdot N_{SA} = 19$ lbs **BLC 3**

Development of Wind & Ice Load on Antenna Mounts

(per TIA/EIA-222-F-1996 Criteria)

Mount Data:



Mount Type: 4" Φ Pipes (AT&T)

Mount Shape = Round

Pipe Mount Length = $L_{mnt} := 120$ in

Exposed Pipe Mount Length = $L_{exp.mnt} := 65$ (Antennas shield top 55" of pipe)

4 inch Pipe Mount Linear Weight = $W_{mnt} := 10.8$ plf

Pipe Mount Outside Diameter = $D_{mnt} := 4.5$ in

Number of Mounting Pipes = $N_{mnt} := 12$

Mount Aspect Ratio = $Ar_{mnt} := \frac{L_{mnt}}{D_{mnt}} = 27$

Mount Force Factor = $Ca_{mnt} = 1.2$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Surface Area for One Mount = $SA_{mnt} := \frac{D_{mnt} \cdot L_{exp.mnt}}{144} = 2.031$ sf

Mount Projected Surface Area = $A_{mnt} := SA_{mnt} \cdot N_{mnt} = 24.375$ sf

Total Mount Wind Force = $F_{mnt} := qz_{att} \cdot G_H \cdot Ca_{mnt} \cdot A_{mnt} = 1248$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Surface Area for One Mount w/ Ice = $SA_{ICEmnt} := \frac{(D_{mnt} + 2 \cdot Ir) \cdot L_{exp.mnt}}{144} = 2.483$ sf

Mount Projected Surface Area w/ Ice = $A_{ICEmnt} := SA_{ICEmnt} \cdot N_{mnt} = 29.792$ sf

Total Mount Wind Force = $Fi_{mnt} := qzICE_{att} \cdot G_H \cdot Ca_{mnt} \cdot A_{ICEmnt} = 1156$ lbs **BLC 4,6**

Gravity Loads (without ice) (per TIA/EIA-222-F-1996)

Weight Each Pipe Mount = $WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 108$ lbs

Weight of All Mounts = $WT_{mnt} \cdot N_{mnt} = 1296$ lbs **BLC 2**

Gravity Loads (ice only) (per TIA/EIA-222-F-1996)

Volume of Each Pipe = $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 1909$ cu in

Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[(D_{mnt} + 1)^2\right] \cdot (L_{mnt} + 1)\right] - V_{mnt} = 966$ cu in

Weight of Ice each mount (incl, hardware) = $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 31$ lbs

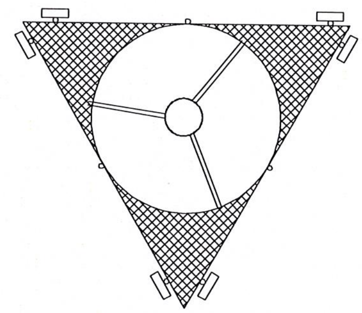
Weight of Ice on All Mounts = $W_{ICEmnt} \cdot N_{mnt} + 5 = 381$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = RFS APX 16DWV-16DWVS-E-A20 (T-Mobile)

Antenna Shape = Flat



Antenna Height = $L_{ant} := 55.9$ in

Antenna Width = $W_{ant} := 13$ in

Antenna Thickness = $T_{ant} := 3.15$ in

Antenna Weight = $WT_{ant} := 40.7$ lbs

Number of Antennas = $N_{ant} := 6$

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$

Antenna Force Coefficient = $Ca_{ant} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 30.3$ sf

Total Antenna Wind Force = $F_{ant} := qz_{t\_mb} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1859$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant}+1) \cdot (W_{ant}+1)}{144} = 5.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 33.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{t\_mb} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1545$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 244$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant}+1)(W_{ant}+1) \cdot (T_{ant}+1) - V_{ant} = 1017$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$ lbs

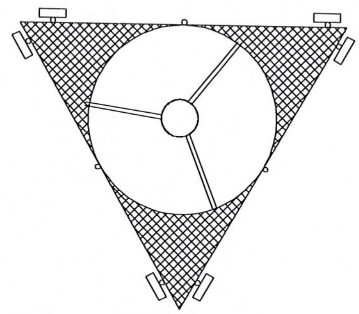
Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 198$ lbs **BLC 3**

Development of Wind & Ice Load on TMA's (per TIA/EIA-222-F-1996 Criteria)

TMA Data:

TMA Model = Andrew OneBase PCS Twin Dual Duplex TMA (T-Mobile)

TMA Shape = Flat



TMA Height = $L_{TMA} := 10.2$ in

TMA Width = $W_{TMA} := 6.7$ in

TMA Thickness = $T_{TMA} := 3.7$ in

TMA Weight = $WT_{TMA} := 14.6$ lbs

Number of TMA's = $N_{TMA} := 9$

TMA Aspect Ratio = $Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1.5$

TMA Force Coefficient = $Ca_{TMA} = 1.4$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.5$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 4.3$ sf

Total TMA Wind Force = $F_{TMA} := qz_{t\_mb} \cdot G_H \cdot Ca_{TMA} \cdot A_{TMA} = 262$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on TMA's

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{(L_{TMA} + 1) \cdot (W_{TMA} + 1)}{144} = 0.6$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 5.4$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := qzICE_{t\_mb} \cdot G_H \cdot Ca_{TMA} \cdot A_{ICETMA} = 251$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All TMA's = $WT_{TMA} \cdot N_{TMA} = 131$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 253$ cu in

Volume of Ice on Each TMA = $V_{ice} := (L_{TMA} + 1)(W_{TMA} + 1)(T_{TMA} + 1) - V_{TMA} = 152$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 5$ lbs

Weight of Ice on All TMA's $W_{ICETMA} \cdot N_{TMA} = 44$ lbs **BLC 3**

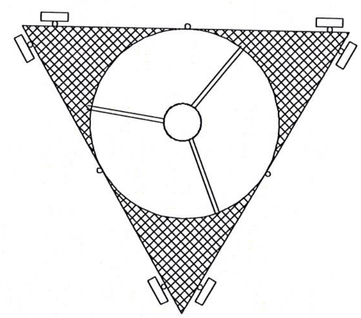
CENTEK engineering Centered on Solutions 63-2 North Branford Road Branford, CT 06405 www.centekeng.com P: (203) 488-0580 F: (203) 488-8587	Subject:	Wind Loading on Antennas and Mounts
	Location:	Cromwell, CT
	Rev. 0: 6/12/12	Prepared by: T.J.L. Checked by: C.F.C. Job No. 12044.CO2

Development of Wind & Ice Load on Platform (per TIA/EIA-222-F-1996 Criteria)

Platform Data:

Platform Model = 13' Low Profile Platform (T-Mobile)

Platform Shape = Flat



(Force Coefficient Value Included in Area) Platform Area = $CaA_{plt} := 15.7$ sq ft

(Force Coefficient Value Included in Area) Platform Area w/ Ice = $CaA_{ICEplt} := 20.1$ sq ft

Platform Weight = $WT_{plt} := 1300$ lbs

Platform Weight w/ Ice = $WT_{ICEplt} := 1765$ lbs

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force = $F_{plt} := qz_{t\_mb} \cdot G_H \cdot CaA_{plt} = 689$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force w/ Ice = $Fi_{plt} := qzICE_{t\_mb} \cdot G_H \cdot CaA_{ICEplt} = 668$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of Platform = $WT_{plt} = 1300$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $WT_{ICEplt} - WT_{plt} = 465$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = GPS VIC-100 (T-Mobile)

Antenna Shape = Flat

Antenna Height = $L_{ant} := 3.9$ in

Antenna Width = $W_{ant} := 3.5$ in

Antenna Thickness = $T_{ant} := 3.5$ in

Antenna Weight = $WT_{ant} := 8$ lbs

Number of Antennas = $N_{ant} := 1$

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.1$

Antenna Force Coefficient = $Ca_{ant} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 0.1$ sf

Total Antenna Wind Force = $F_{ant} := qz_{gps} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 5$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.2$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{gps} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 6$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 8$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 48$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 51$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 2$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = RFS APXV18-206517-S-C (MetroPCS)

Antenna Shape = Flat

Antenna Height = $L_{ant} := 72.0$ in

Antenna Width = $W_{ant} := 6.8$ in

Antenna Thickness = $T_{ant} := 3.15$ in

Antenna Weight = $WT_{ant} := 32.5$ lbs

Number of Antennas = $N_{ant} := 3$

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 10.6$

Antenna Force Coefficient = $Ca_{ant} = 1.52$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.4$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 10.2$ sf

Total Antenna Wind Force = $F_{ant} := qz_{metro} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 617$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure on Antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 11.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{metro} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 544$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 98$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1542$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 821$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 27$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 80$ lbs **BLC 3**

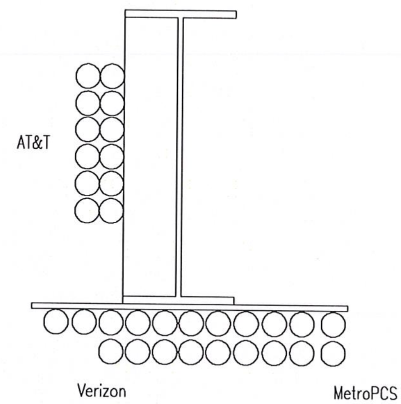
Development of Wind & Ice Load on Coax Cables

(per TIA/EIA-222-F-1996 Criteria)

Coax Cable Data:

Coax Type: Use HELIAX 1-5/8"

Shape: Round



Coax Outside Diameter = $D_{coax} := 1.98$ in

Coax Cable Length = $L_{coax} := 110$ ft

Weight of Coax per foot = $WT_{coax} := 1.04$ plf

Total Number of Coax = $N_{coax} := 32$

Number of Projected Coax = $NP_{coax} := 5$

Coax aspect ratio = $Ar_{coax} := L_{coax} \cdot \frac{12}{D_{coax}} = 667$

Coax Cable Force Factor = $Ca_{coax} = 1.2$ TIA/EIA-222-F Table 3

Wind Load (without ice)

per TIA/EIA-222-F Section 2.3.2

Surface Area for One Coax = $SA_{coax} := \frac{D_{coax}}{12} = 0.17$ sf/ft

Coax Projected Surface Area = $A_{coax} := SA_{coax} \cdot NP_{coax} = 0.825$ sf/ft

Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{mast2} \cdot G_H \cdot A_{coax} = 34$ plf **BLC 5,7**

Wind Load (wiith ice)

per TIA/EIA-222-F Section 2.3.2

Coax Projected Surface Area w/ Ice = $A_{ICEcoax} := \frac{D_{coax}}{12} \cdot NP_{coax} + 2 \cdot \frac{Ir}{12} = 0.908$ sf/ft

Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{mast2} \cdot G_H \cdot A_{ICEcoax} = 28$ plf **BLC 4,6**

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} \cdot N_{coax} = 33$ plf **BLC 2**

Gravity Loads (ice only)

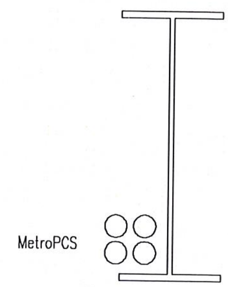
Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}{}^2\right] = 3.9$ si

Ice Weight per Linear Foot = $WTi_{coax} := Id \cdot \frac{Ai_{coax}}{144} = 2$ plf

Ice Weight All Coax per foot = $WTi_{coax} \cdot N_{coax} = 48$ plf **BLC 3**

Development of Wind & Ice Load on Coax Cables (per TIA/EIA-222-F-1996 Criteria)

Coax Cable Data:



Coax Type: Use HELIAX 1-5/8"

Shape: Round

Coax Outside Diameter = $D_{coax} := 1.98$ in

Coax Cable Length = $L_{coax} := 110$ ft

Weight of Coax per foot = $WT_{coax} := 1.04$ plf

Total Number of Coax = $N_{coax} := 4$

Number of Projected Coax = $NP_{coax} := 0$

Coax aspect ratio = $Ar_{coax} := L_{coax} \cdot \frac{12}{D_{coax}} = 667$

Coax Cable Force Factor = $Ca_{coax} = 1.2$ TIA/EIA-222-F Table 3

Wind Load (without ice) per TIA/EIA-222-F Section 2.3.2

Surface Area for One Coax = $SA_{coax} := \frac{D_{coax}}{12} = 0.17$ sf/ft

Coax Projected Surface Area = $A_{coax} := SA_{coax} \cdot NP_{coax} = 0$ sf/ft

Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{mast2} \cdot G_H \cdot A_{coax} = 0$ plf **BLC 5,7**

Wind Load (wiith ice) per TIA/EIA-222-F Section 2.3.2

Coax Projected Surface Area w/ Ice = $A_{ICEcoax} := \frac{D_{coax}}{12} \cdot NP_{coax} = 0$ sf/ft

Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{mast2} \cdot G_H \cdot A_{ICEcoax} = 0$ plf **BLC 4,6**

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} \cdot N_{coax} = 4$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 3.9$ si

Ice Weight per Linear Foot = $WTi_{coax} := Id \cdot \frac{Ai_{coax}}{144} = 2$ plf

Ice Weight All Coax per foot = $WTi_{coax} \cdot N_{coax} = 6$ plf **BLC 3**

Development of Wind & Ice Load on Coax Cables (per TIA/EIA-222-F-1996 Criteria)

Coax Cable Data:

Coax Type: Use HELIAX 1-5/8"

Shape: Round

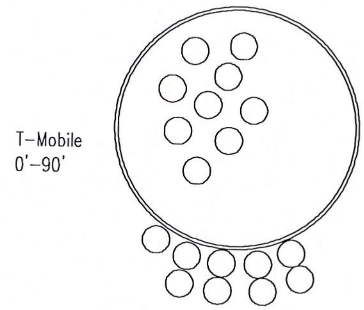
Coax Outside Diameter = $D_{coax} := 1.98$ in

Coax Cable Length = $L_{coax} := 110$ ft

Weight of Coax per foot = $WT_{coax} := 1.04$ plf

Total Number of Coax = $N_{coax} := 18$

Number of Projected Coax = $NP_{coax} := 2$



Coax aspect ratio = $Ar_{coax} := L_{coax} \cdot \frac{12}{D_{coax}} = 667$

Coax Cable Force Factor = $Ca_{coax} = 1.2$ TIA/EIA-222-F Table 3

Wind Load per (without ice) per TIA/EIA-222-F Section 2.3.2

Surface Area for One Coax = $SA_{coax} := \frac{D_{coax}}{12} = 0.17$ sf/ft

Coax Projected Surface Area = $A_{coax} := SA_{coax} \cdot NP_{coax} = 0.33$ sf/ft

Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{mast3} \cdot G_H \cdot A_{coax} = 16$ plf **BLC 5,7**

Wind Load per (with ice) per TIA/EIA-222-F Section 2.3.2

Coax Projected Surface Area w/ Ice = $A_{ICEcoax} := \frac{D_{coax}}{12} \cdot NP_{coax} + 2 \cdot \frac{Ir}{12} = 0.413$ sf/ft

Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{mast3} \cdot G_H \cdot A_{ICEcoax} = 15$ plf **BLC 4,6**

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} \cdot N_{coax} = 19$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^{\ 2}\right] = 3.9$ si

Ice Weight per Linear Foot = $WTi_{coax} := Id \cdot \frac{Ai_{coax}}{144} = 2$ plf

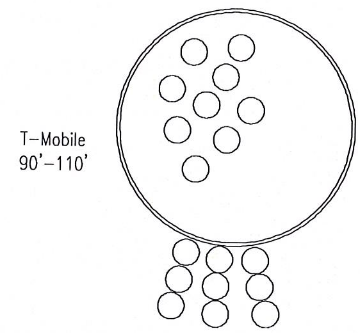
Ice Weight All Coax per foot = $WTi_{coax} \cdot \frac{N_{coax}}{2} = 14$ plf **BLC 3**

Development of Wind & Ice Load on Coax Cables (per TIA/EIA-222-F-1996 Criteria)

Coax Cable Data:

Coax Type: Use HELIAX 1-5/8"

Shape: Round



Coax Outside Diameter = $D_{coax} := 1.98$ in

Coax Cable Length = $L_{coax} := 110$ ft

Weight of Coax per foot = $WT_{coax} := 1.04$ plf

Total Number of Coax = $N_{coax} := 18$

Number of Projected Coax = $NP_{coax} := 3$

Coax aspect ratio = $Ar_{coax} := L_{coax} \cdot \frac{12}{D_{coax}} = 667$

Coax Cable Force Factor = $Ca_{coax} = 1.2$ TIA/EIA-222-F Table 3

Wind Load per (without ice) per TIA/EIA-222-F Section 2.3.2

Surface Area for One Coax = $SA_{coax} := \frac{D_{coax}}{12} = 0.17$ sf/ft

Coax Projected Surface Area = $A_{coax} := SA_{coax} \cdot NP_{coax} = 0.495$ sf/ft

Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{mast3} \cdot G_H \cdot A_{coax} = 23$ plf **BLC 5,7**

Wind Load per (with ice) per TIA/EIA-222-F Section 2.3.2

Coax Projected Surface Area w/ Ice = $A_{ICEcoax} := \frac{D_{coax}}{12} \cdot NP_{coax} + 2 \cdot \frac{Ir}{12} = 0.578$ sf/ft

Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qzICE_{mast3} \cdot G_H \cdot A_{ICEcoax} = 21$ plf **BLC 4,6**

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} \cdot N_{coax} = 19$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^{\,2}\right] = 3.9$ si

Ice Weight per Linear Foot = $WTi_{coax} := Id \cdot \frac{Ai_{coax}}{144} = 2$ plf

Ice Weight All Coax per foot = $WTi_{coax} \cdot \frac{N_{coax}}{2} = 14$ plf **BLC 3**

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation	Yes
Include Warping	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y
Global Member Orientation Plane	XZ

Hot Rolled Steel Code	AISC 9th: ASD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05/08: ASD
Aluminum Code	AA ADM1-05: ASD

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections	Yes
Bad Framing Warnings	No
Unused Force Warnings	Yes

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
Ca	.36
Cv	.54
Nv	1
SD1	1
SDS	1
S1	1
Occupancy Code	4
Seismic Zone	3
Use Group	I
Use Gravity Self Wt in Diaphragm Mass	Yes
Use Deck Self Wt in Diaphragm Mass	Yes
Use Lateral Self Wt in Diaphragm Mass	Yes
Seismic Detailing Code	None
Om X	1
Om Z	1
Rho X	1
Rho Z	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-...	Cm-...	Cb	y sw...	z sw...	Function
1	CROSS...	L5x5x5/16	15.207	Segment	Segment										Lateral
2	CROSS...	L5x5x5/16	15.207	Segment	Segment										Lateral
3	CROSS...	L5x5x5/16	15.207	Segment	Segment										Lateral
4	CROSS...	L5x5x5/16	15.207	Segment	Segment										Lateral
5	CROSS...	L3.5x3.5...	18.916	Segment	Segment										Lateral
6	CROSS...	L3.5x3.5...	18.916	Segment	Segment										Lateral
7	CROSS...	L5x5x5/16	33.126												Lateral
8	CROSS...	L5x5x5/16	33.126												Lateral
9	HORZ1	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
10	HORZ2	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
11	HORZ3	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
12	HORZ4	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
13	HORZ5	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
14	HORZ6	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
15	HORZ7	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
16	HORZ8	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
17	HORZ9	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
18	HORZ10	L5x5x5/16	13.509	Segment	Segment	12	20								Lateral
19	HORZ11	Tube8x4...	13.5	1	1	1	1								Lateral
20	LEG1	W24x68	60	Segment	Segment	20	14								Lateral
21	LEG2	W24x68	60	Segment	Segment	20	14								Lateral
22	LEG_W...	W24x68...	20.5	Segment	Segment	20.5									Lateral
23	LEG_W...	W24x68...	20.5	Segment	Segment	20.5									Lateral
24	WT1	WT6x15	10.091												Lateral
25	WT2	WT6x15	10.091												Lateral
26	WT3	WT6x15	10.091												Lateral
27	WT4	WT6x15	10.091												Lateral
28	WT5	WT6x15	10.091												Lateral
29	WT6	WT6x15	10.091												Lateral
30	WT7	WT6x15	10.091												Lateral
31	WT8	WT6x15	10.091												Lateral
32	WT9	WT6x15	10.091												Lateral
33	WT10	WT6x15	10.091												Lateral
34	WT11	WT6x15	10.091												Lateral
35	WT12	WT6x15	10.091												Lateral
36	WT13	WT6x15	10.091												Lateral
37	WT14	WT6x15	10.091												Lateral
38	WT15	WT6x15	10.091												Lateral
39	WT16	WT6x15	10.091												Lateral
40	WT17	WT6x15	10.091												Lateral
41	WT18	WT6x15	10.091												Lateral
42	WT19	WT6x15	10.091												Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-...	Cm-...	Cb	y sw...	z sw...	Function
43	WT20	WT6x15	10.091												Lateral
44	Mast1	HSS18x...	29	Segment	Segment										Lateral
45	Mast2	HSS18x...	27.5	Segment	Segment										Lateral
46	Mast3	HSS18x...	27.5	Segment	Segment										Lateral
47	Mast4	HSS18x...	27	Segment	Segment										Lateral
48	Horz 12	Tube8x4...	13.5	1	1	1	1								Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W24x68	W24X68	Beam	Wide Flange	A992	Typical	20.1	70.4	1830	1.87
2	L5x5x5/16	L5X5X5	Beam	Wide Flange	A36 Gr.36	Typical	3.03	7.42	7.42	.108
3	L3.5x3.5x5/16	L3.5X3.5X5	Beam	Wide Flange	A36 Gr.36	Typical	2.09	2.45	2.45	.073
4	Tube8x4x5/16	TU8X4X5	Beam	Wide Flange	A500 Gr.46	Typical	6.86	18.1	53.9	45.2
5	HSS18x0.5	HSS18X0.5	Beam	Wide Flange	A500 Gr.42	Typical	25.6	985	985	1970
6	WT6x15	WT6X15	Beam	W_Tee	A572 Gr.50	Typical	4.4	10.2	13.5	.228
7	W24x68 w/ pl	new	Beam	Wide Flange	A992	Typical	52.1	753.067	6733.167	10

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	CROSSDIAG1	5	10			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
2	CROSSDIAG2	9	6			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
3	CROSSDIAG3	9	12			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
4	CROSSDIAG4	11	10			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
5	CROSSDIAG5	13	18			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
6	CROSSDIAG6	17	14			L3.5x3.5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
7	CROSSDIAG7	19	TOPLEG2			L3.5x3.5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
8	CROSSDIAG8	TOPLEG1	20			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
9	HORZ1	3	6			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
10	HORZ2	5	4			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
11	HORZ3	11	14			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
12	HORZ4	13	12			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
13	HORZ5	17	20			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
14	HORZ6	19	18			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
15	HORZ7	23	26			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
16	HORZ8	25	24			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
17	HORZ9	29	32			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
18	HORZ10	31	30			L5x5x5/16	Beam	Wide Flange	A36 Gr.36	Typical
19	HORZ11	TOPLEG1	TOPLEG2			Tube8x4x5/16	Beam	Wide Flange	A500 Gr.46	Typical
20	LEG1	TOPPLT1	TOPLEG1		90	W24x68	Beam	Wide Flange	A992	Typical
21	LEG2	TOPPLT2	TOPLEG2		90	W24x68	Beam	Wide Flange	A992	Typical
22	LEG_W_PLT1	BOTLEG1	TOPPLT1		90	W24x68 w/ pl	Beam	Wide Flange	A992	Typical
23	LEG_W_PLT2	BOTLEG2	TOPPLT2		90	W24x68 w/ pl	Beam	Wide Flange	A992	Typical
24	WT1	1	MC1		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
25	WT2	MC1	2		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
26	WT3	MC1	7		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
27	WT4	MC1	8		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
28	WT5	MC2	7		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
29	WT6	MC2	8		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
30	WT7	MC2	15		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
31	WT8	MC2	16		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
32	WT9	16	MC3		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
33	WT10	15	MC3		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
34	WT11	21	MC3		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
35	WT12	MC3	22		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
36	WT13	21	MC4		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
37	WT14	22	MC4		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
38	WT15	MC4	27		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
39	WT16	MC4	28		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
40	WT17	MC5	27		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
41	WT18	MC5	28		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
42	WT19	MC5	33		90	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
43	WT20	MC5	34		270	WT6x15	Beam	W_Tee	A572 Gr.50	Typical
44	Mast1	BOTMAST	FC1			HSS18x0.5	Beam	Wide Flange	A500 Gr.42	Typical
45	Mast2	FC1	FC2			HSS18x0.5	Beam	Wide Flange	A500 Gr.42	Typical
46	Mast3	FC2	FC3			HSS18x0.5	Beam	Wide Flange	A500 Gr.42	Typical
47	Mast4	FC3	TOPMAST			HSS18x0.5	Beam	Wide Flange	A500 Gr.42	Typical
48	Horz 12	TOPLEG1	TOPLEG2			Tube8x4x5/16	Beam	Wide Flange	A500 Gr.46	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	1	0	12	0	0	
2	2	13.5	12	0	0	
3	3	0	23	0	0	
4	4	13.5	23	0	0	
5	5	0	23.5	0	0	
6	6	13.5	23.5	0	0	
7	7	0	25.75	0	0	
8	8	13.5	25.75	0	0	
9	9	0	30.5	0	0	
10	10	13.5	30.5	0	0	
11	11	0	37.5	0	0	
12	12	13.5	37.5	0	0	
13	13	0	38	0	0	
14	14	13.5	38	0	0	
15	15	0	39.5	0	0	
16	16	13.5	39.5	0	0	
17	17	0	51.25	0	0	
18	18	13.5	51.25	0	0	
19	19	0	51.75	0	0	
20	20	13.5	51.75	0	0	
21	21	0	53.25	0	0	
22	22	13.5	53.25	0	0	
23	23	0	55.25	0	0	
24	24	13.5	55.25	0	0	
25	25	0	55.75	0	0	
26	26	13.5	55.75	0	0	
27	27	0	67	0	0	
28	28	13.5	67	0	0	
29	29	0	75.5	0	0	
30	30	13.5	75.5	0	0	
31	31	0	76	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
32	32	13.5	76	0	0	
33	33	0	80.75	0	0	
34	34	13.5	80.75	0	0	
35	35	6.75	23.25	0	0	
36	36	6.75	27	0	0	
37	37	6.75	34	0	0	
38	38	6.75	37.75	0	0	
39	39	6.75	44.625	0	0	
40	40	6.75	51.5	0	0	
41	41	6.75	55.5	0	0	
42	43	6.75	75.75	0	0	
43	BOTLEG1	0	1.5	0	0	
44	BOTLEG2	13.5	1.5	0	0	
45	BOTMAST	6.75	0	3	0	
46	MC1	6.75	18.875	3	0	
47	MC2	6.75	32.625	3	0	
48	MC3	6.75	46.375	3	0	
49	MC4	6.75	60.125	3	0	
50	MC5	6.75	73.875	3	0	
51	TOPLEG1	0	82	0	0	
52	TOPLEG2	13.5	82	0	0	
53	TOPMAST	6.75	111	3	0	
54	TOPPLT1	0	22	0	0	
55	TOPPLT2	13.5	22	0	0	
56	T_MOBILE	6.75	108	3	0	
57	METRO	0	77	0	0	
58	METRO2	13.5	77	0	0	
59	FC1	6.75	29	3	0	
60	FC2	6.75	56.5	3	0	
61	FC3	6.75	84	3	0	
62	GPS	0	50	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	BOTLEG1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	BOTMAST	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
3	BOTLEG2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
4	TOPLEG1							
5	TOPLEG2							
6	FC3							
7	FC2							
8	FC1							

Joint Loads and Enforced Displacements (BLC 2 : Weight of Equipment)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	TOPLEG1	L	Y	-.026
2	TOPLEG2	L	Y	-.026
3	TOPLEG1	L	Y	-.021
4	TOPLEG2	L	Y	-.021
5	TOPLEG1	L	Y	-.042

Joint Loads and Enforced Displacements (BLC 2 : Weight of Equipment) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
6	TOPLEG2	L	Y	-.042
7	TOPLEG1	L	Y	-.026
8	TOPLEG2	L	Y	-.026
9	TOPLEG1	L	Y	-.911
10	TOPLEG2	L	Y	-.911
11	TOPLEG1	L	Y	-.105
12	TOPLEG2	L	Y	-.105
13	TOPLEG1	L	Y	-.074
14	TOPLEG2	L	Y	-.074
15	TOPLEG1	L	Y	-.085
16	TOPLEG2	L	Y	-.085
17	TOPLEG1	L	Y	-.15
18	TOPLEG2	L	Y	-.15
19	TOPLEG1	L	Y	-.01
20	TOPLEG2	L	Y	-.01
21	TOPLEG1	L	Y	-.648
22	TOPLEG2	L	Y	-.648
23	T_MOBILE	L	Y	-.244
24	T_MOBILE	L	Y	-.131
25	T_MOBILE	L	Y	-1.3
26	GPS	L	Y	-.008
27	METRO2	L	Y	-.033
28	METRO	L	Y	-.066

Joint Loads and Enforced Displacements (BLC 3 : Weight of Ice)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	TOPLEG1	L	Y	-.061
2	TOPLEG2	L	Y	-.061
3	TOPLEG1	L	Y	-.049
4	TOPLEG2	L	Y	-.049
5	TOPLEG1	L	Y	-.098
6	TOPLEG2	L	Y	-.098
7	TOPLEG1	L	Y	-.057
8	TOPLEG2	L	Y	-.057
9	TOPLEG1	L	Y	-.315
10	TOPLEG2	L	Y	-.315
11	TOPLEG1	L	Y	-.098
12	TOPLEG2	L	Y	-.098
13	TOPLEG1	L	Y	-.07
14	TOPLEG2	L	Y	-.07
15	TOPLEG1	L	Y	-.043
16	TOPLEG2	L	Y	-.043
17	TOPLEG1	L	Y	-.059
18	TOPLEG2	L	Y	-.059
19	TOPLEG1	L	Y	-.01
20	TOPLEG2	L	Y	-.01
21	TOPLEG1	L	Y	-.191
22	TOPLEG2	L	Y	-.191
23	T_MOBILE	L	Y	-.198
24	T_MOBILE	L	Y	-.044
25	T_MOBILE	L	Y	-.465
26	GPS	L	Y	-.002

Joint Loads and Enforced Displacements (BLC 3 : Weight of Ice) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
27	METRO2	L	Y	-.027
28	METRO	L	Y	-.053

Joint Loads and Enforced Displacements (BLC 4 : TIA/EIA Wind with Ice (+X))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	TOPLEG1	L	X	.402
2	TOPLEG2	L	X	.402
3	TOPLEG1	L	X	.311
4	TOPLEG2	L	X	.311
5	TOPLEG1	L	X	.492
6	TOPLEG2	L	X	.492
7	TOPLEG1	L	X	.359
8	TOPLEG2	L	X	.359
9	TOPLEG1	L	X	.63
10	TOPLEG2	L	X	.63
11	TOPLEG1	L	X	.634
12	TOPLEG2	L	X	.634
13	TOPLEG1	L	X	.441
14	TOPLEG2	L	X	.441
15	TOPLEG1	L	X	.297
16	TOPLEG2	L	X	.297
17	TOPLEG1	L	X	.325
18	TOPLEG2	L	X	.325
19	TOPLEG1	L	X	.041
20	TOPLEG2	L	X	.041
21	TOPLEG1	L	X	.578
22	TOPLEG2	L	X	.578
23	T_MOBILE	L	X	1.545
24	T_MOBILE	L	X	.251
25	T_MOBILE	L	X	.668
26	GPS	L	X	.006
27	METRO2	L	X	.181
28	METRO	L	X	.363
29	TOPLEG1	L	Y	5.14
30	TOPLEG2	L	Y	-5.14

Joint Loads and Enforced Displacements (BLC 5 : TIA/EIA Wind (+X))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	TOPLEG1	L	X	.48
2	TOPLEG2	L	X	.48
3	TOPLEG1	L	X	.377
4	TOPLEG2	L	X	.377
5	TOPLEG1	L	X	.582
6	TOPLEG2	L	X	.582
7	TOPLEG1	L	X	.406
8	TOPLEG2	L	X	.406
9	TOPLEG1	L	X	.648
10	TOPLEG2	L	X	.648
11	TOPLEG1	L	X	.753
12	TOPLEG2	L	X	.753
13	TOPLEG1	L	X	.529
14	TOPLEG2	L	X	.529

Joint Loads and Enforced Displacements (BLC 5 : TIA/EIA Wind (+X)) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
15	TOPLEG1	L	X	.33
16	TOPLEG2	L	X	.33
17	TOPLEG1	L	X	.383
18	TOPLEG2	L	X	.383
19	TOPLEG1	L	X	.048
20	TOPLEG2	L	X	.048
21	TOPLEG1	L	X	.624
22	TOPLEG2	L	X	.624
23	T_MOBILE	L	X	1.859
24	T_MOBILE	L	X	.262
25	T_MOBILE	L	X	.689
26	GPS	L	X	.005
27	METRO2	L	X	.206
28	METRO	L	X	.411
29	TOPLEG1	L	Y	5.92
30	TOPLEG2	L	Y	-5.92

Joint Loads and Enforced Displacements (BLC 6 : TIA/EIA Wind with Ice(+Z))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	TOPLEG1	L	Z	.402
2	TOPLEG2	L	Z	.402
3	TOPLEG1	L	Z	.311
4	TOPLEG2	L	Z	.311
5	TOPLEG1	L	Z	.492
6	TOPLEG2	L	Z	.492
7	TOPLEG1	L	Z	.359
8	TOPLEG2	L	Z	.359
9	TOPLEG1	L	Z	.63
10	TOPLEG2	L	Z	.63
11	TOPLEG1	L	Z	.634
12	TOPLEG2	L	Z	.634
13	TOPLEG1	L	Z	.441
14	TOPLEG2	L	Z	.441
15	TOPLEG1	L	Z	.297
16	TOPLEG2	L	Z	.297
17	TOPLEG1	L	Z	.325
18	TOPLEG2	L	Z	.325
19	TOPLEG1	L	Z	.041
20	TOPLEG2	L	Z	.041
21	TOPLEG1	L	Z	.578
22	TOPLEG2	L	Z	.578
23	T_MOBILE	L	Z	1.545
24	T_MOBILE	L	Z	.251
25	T_MOBILE	L	Z	.668
26	GPS	L	Z	.006
27	METRO2	L	Z	.181
28	METRO	L	Z	.363
29	TOPLEG1	L	Mx	34.71
30	TOPLEG2	L	Mx	34.71

Joint Loads and Enforced Displacements (BLC 7 : TIA/EIA Wind (+Z))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...

Joint Loads and Enforced Displacements (BLC 7 : TIA/EIA Wind (+Z)) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	TOPLEG1	L	Z	.48
2	TOPLEG2	L	Z	.48
3	TOPLEG1	L	Z	.377
4	TOPLEG2	L	Z	.377
5	TOPLEG1	L	Z	.582
6	TOPLEG2	L	Z	.582
7	TOPLEG1	L	Z	.406
8	TOPLEG2	L	Z	.406
9	TOPLEG1	L	Z	.648
10	TOPLEG2	L	Z	.648
11	TOPLEG1	L	Z	.753
12	TOPLEG2	L	Z	.753
13	TOPLEG1	L	Z	.529
14	TOPLEG2	L	Z	.529
15	TOPLEG1	L	Z	.33
16	TOPLEG2	L	Z	.33
17	TOPLEG1	L	Z	.383
18	TOPLEG2	L	Z	.383
19	TOPLEG1	L	Z	.048
20	TOPLEG2	L	Z	.048
21	TOPLEG1	L	Z	.624
22	TOPLEG2	L	Z	.624
23	T_MOBILE	L	Z	1.859
24	T_MOBILE	L	Z	.262
25	T_MOBILE	L	Z	.689
26	GPS	L	Z	.005
27	METRO2	L	Z	.206
28	METRO	L	Z	.411
29	TOPLEG1	L	Mx	39.97
30	TOPLEG2	L	Mx	39.97

Member Point Loads

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
	No Data to Print ...		

Member Distributed Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	LEG_W_PLT1	Y	-.004	-.004	0	0
2	LEG1	Y	-.004	-.004	0	0
3	LEG_W_PLT2	Y	-.033	-.033	0	0
4	LEG2	Y	-.033	-.033	0	0
5	Mast1	Y	-.019	-.019	0	0
6	Mast2	Y	-.019	-.019	0	0
7	Mast3	Y	-.019	-.019	0	0
8	Mast4	Y	-.019	-.019	0	0

Member Distributed Loads (BLC 3 : Weight of Ice)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	CROSSDIAG1	Y	-.004	-.004	0	0

Member Distributed Loads (BLC 3 : Weight of Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
2	CROSSDIAG2	Y	-.004	-.004	0	0
3	CROSSDIAG3	Y	-.004	-.004	0	0
4	CROSSDIAG4	Y	-.004	-.004	0	0
5	CROSSDIAG5	Y	-.003	-.003	0	0
6	CROSSDIAG6	Y	-.003	-.003	0	0
7	CROSSDIAG7	Y	-.004	-.004	0	0
8	CROSSDIAG8	Y	-.004	-.004	0	0
9	HORZ1	Y	-.004	-.004	0	0
10	HORZ2	Y	-.004	-.004	0	0
11	HORZ3	Y	-.004	-.004	0	0
12	HORZ4	Y	-.004	-.004	0	0
13	HORZ5	Y	-.004	-.004	0	0
14	HORZ6	Y	-.004	-.004	0	0
15	HORZ7	Y	-.004	-.004	0	0
16	HORZ8	Y	-.004	-.004	0	0
17	HORZ9	Y	-.004	-.004	0	0
18	HORZ10	Y	-.004	-.004	0	0
19	HORZ11	Y	-.004	-.004	0	0
20	LEG1	Y	-.016	-.016	0	0
21	LEG2	Y	-.016	-.016	0	0
22	LEG_W_PLT1	Y	-.006	-.006	0	0
23	LEG1	Y	-.006	-.006	0	0
24	LEG_W_PLT2	Y	-.048	-.048	0	0
25	LEG2	Y	-.048	-.048	0	0
26	LEG_W_PLT1	Y	-.038	-.038	0	0
27	LEG_W_PLT2	Y	-.038	-.038	0	0
28	Mast4	Y	-.011	-.011	0	0
29	Mast1	Y	-.011	-.011	0	0
30	Mast2	Y	-.011	-.011	0	0
31	Mast3	Y	-.011	-.011	0	0
32	WT1	Y	-.005	-.005	0	0
33	WT2	Y	-.005	-.005	0	0
34	WT3	Y	-.005	-.005	0	0
35	WT4	Y	-.005	-.005	0	0
36	WT5	Y	-.005	-.005	0	0
37	WT6	Y	-.005	-.005	0	0
38	WT7	Y	-.005	-.005	0	0
39	WT8	Y	-.005	-.005	0	0
40	WT9	Y	-.005	-.005	0	0
41	WT10	Y	-.005	-.005	0	0
42	WT11	Y	-.005	-.005	0	0
43	WT12	Y	-.005	-.005	0	0
44	WT13	Y	-.005	-.005	0	0
45	WT14	Y	-.005	-.005	0	0
46	WT15	Y	-.005	-.005	0	0
47	WT16	Y	-.005	-.005	0	0
48	WT17	Y	-.005	-.005	0	0
49	WT18	Y	-.005	-.005	0	0
50	WT19	Y	-.005	-.005	0	0
51	WT20	Y	-.005	-.005	0	0
52	Mast1	Y	-.014	-.014	0	0
53	Mast2	Y	-.014	-.014	0	0
54	Mast3	Y	-.014	-.014	0	0

Member Distributed Loads (BLC 3 : Weight of Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
55	Mast4	Y	-.014	-.014	0	0

Member Distributed Loads (BLC 4 : TIA/EIA Wind with Ice (+X))

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	LEG1	X	.071	.071	0	20
2	LEG1	X	.083	.083	20	40
3	LEG1	X	.091	.091	40	60
4	LEG2	X	.013	.013	0	0
5	LEG_W_PLT1	X	.055	.055	0	0
6	Mast1	X	.018	.018	0	0
7	Mast1	X	.015	.015	0	0
8	Mast2	X	.024	.024	0	0
9	Mast2	X	.015	.015	0	0
10	Mast3	X	.028	.028	0	0
11	Mast3	X	.015	.015	0	0
12	Mast4	X	.03	.03	0	0
13	Mast4	X	.021	.021	0	0
14	WT1	X	.028	.028	0	0
15	WT2	X	.028	.028	0	0
16	WT3	X	.028	.028	0	0
17	WT4	X	.028	.028	0	0
18	WT5	X	.028	.028	0	0
19	WT6	X	.028	.028	0	0
20	WT7	X	.028	.028	0	0
21	WT8	X	.028	.028	0	0
22	WT9	X	.028	.028	0	0
23	WT10	X	.028	.028	0	0
24	WT11	X	.028	.028	0	0
25	WT12	X	.028	.028	0	0
26	WT13	X	.028	.028	0	0
27	WT14	X	.028	.028	0	0
28	WT15	X	.028	.028	0	0
29	WT16	X	.028	.028	0	0
30	WT17	X	.028	.028	0	0
31	WT18	X	.028	.028	0	0
32	WT19	X	.028	.028	0	0
33	WT20	X	.028	.028	0	0

Member Distributed Loads (BLC 5 : TIA/EIA Wind (+X))

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	LEG1	X	.115	.115	40	60
2	LEG1	X	.105	.105	20	40
3	LEG1	X	.091	.091	0	20
4	LEG2	X	.014	.014	0	0
5	LEG_W_PLT1	X	.07	.07	0	0
6	Mast1	X	.022	.022	0	0
7	Mast1	X	.016	.016	0	0
8	Mast2	X	.03	.03	0	0
9	Mast2	X	.016	.016	0	0
10	Mast3	X	.035	.035	0	0
11	Mast3	X	.016	.016	0	0
12	Mast4	X	.038	.038	0	0

Member Distributed Loads (BLC 5 : TIA/EIA Wind (+X)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
13	Mast4	X	.023	.023	0	0
14	WT1	X	.032	.032	0	0
15	WT2	X	.032	.032	0	0
16	WT3	X	.032	.032	0	0
17	WT4	X	.032	.032	0	0
18	WT5	X	.032	.032	0	0
19	WT6	X	.032	.032	0	0
20	WT7	X	.032	.032	0	0
21	WT8	X	.032	.032	0	0
22	WT9	X	.032	.032	0	0
23	WT10	X	.032	.032	0	0
24	WT11	X	.032	.032	0	0
25	WT12	X	.032	.032	0	0
26	WT13	X	.032	.032	0	0
27	WT14	X	.032	.032	0	0
28	WT15	X	.032	.032	0	0
29	WT16	X	.032	.032	0	0
30	WT17	X	.032	.032	0	0
31	WT18	X	.032	.032	0	0
32	WT19	X	.032	.032	0	0
33	WT20	X	.032	.032	0	0

Member Distributed Loads (BLC 6 : TIA/EIA Wind with Ice(+Z))

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	CROSSDIAG1	Z	.025	.025	0	0
2	CROSSDIAG2	Z	.025	.025	0	0
3	CROSSDIAG3	Z	.025	.025	0	0
4	CROSSDIAG4	Z	.025	.025	0	0
5	CROSSDIAG5	Z	.019	.019	0	0
6	CROSSDIAG6	Z	.019	.019	0	0
7	CROSSDIAG7	Z	.025	.025	0	0
8	CROSSDIAG8	Z	.025	.025	0	0
9	HORZ1	Z	.025	.025	0	0
10	HORZ2	Z	.025	.025	0	0
11	HORZ3	Z	.025	.025	0	0
12	HORZ4	Z	.025	.025	0	0
13	HORZ5	Z	.025	.025	0	0
14	HORZ6	Z	.025	.025	0	0
15	HORZ7	Z	.025	.025	0	0
16	HORZ8	Z	.025	.025	0	0
17	HORZ9	Z	.025	.025	0	0
18	HORZ10	Z	.025	.025	0	0
19	HORZ11	Z	.025	.025	0	0
20	LEG1	Z	.038	.038	0	20
21	LEG1	Z	.044	.044	20	40
22	LEG1	Z	.049	.049	40	60
23	LEG2	Z	.038	.038	0	20
24	LEG2	Z	.044	.044	20	40
25	LEG2	Z	.049	.049	40	60
26	LEG2	Z	.028	.028	0	0
27	LEG_W_PLT1	Z	.04	.04	0	0
28	LEG_W_PLT2	Z	.04	.04	0	0

Member Distributed Loads (BLC 6 : TIA/EIA Wind with Ice(+Z)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
29	Mast1	Z	.018	.018	0	0
30	Mast1	Z	.015	.015	0	0
31	Mast2	Z	.024	.024	0	0
32	Mast2	Z	.015	.015	0	0
33	Mast3	Z	.028	.028	0	0
34	Mast3	Z	.015	.015	0	0
35	Mast4	Z	.03	.03	0	0
36	Mast4	Z	.021	.021	0	0
37	WT1	Z	.028	.028	0	0
38	WT2	Z	.028	.028	0	0
39	WT3	Z	.028	.028	0	0
40	WT4	Z	.028	.028	0	0
41	WT5	Z	.028	.028	0	0
42	WT6	Z	.028	.028	0	0
43	WT7	Z	.028	.028	0	0
44	WT8	Z	.028	.028	0	0
45	WT9	Z	.028	.028	0	0
46	WT10	Z	.028	.028	0	0
47	WT11	Z	.028	.028	0	0
48	WT12	Z	.028	.028	0	0
49	WT13	Z	.028	.028	0	0
50	WT14	Z	.028	.028	0	0
51	WT15	Z	.028	.028	0	0
52	WT16	Z	.028	.028	0	0
53	WT17	Z	.028	.028	0	0
54	WT18	Z	.028	.028	0	0
55	WT19	Z	.028	.028	0	0
56	WT20	Z	.028	.028	0	0

Member Distributed Loads (BLC 7 : TIA/EIA Wind (+Z))

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	CROSSDIAG1	Z	.028	.028	0	0
2	CROSSDIAG2	Z	.028	.028	0	0
3	CROSSDIAG3	Z	.028	.028	0	0
4	CROSSDIAG4	Z	.028	.028	0	0
5	CROSSDIAG5	Z	.019	.019	0	0
6	CROSSDIAG6	Z	.019	.019	0	0
7	CROSSDIAG7	Z	.028	.028	0	0
8	CROSSDIAG8	Z	.028	.028	0	0
9	HORZ1	Z	.028	.028	0	0
10	HORZ2	Z	.028	.028	0	0
11	HORZ3	Z	.028	.028	0	0
12	HORZ4	Z	.028	.028	0	0
13	HORZ5	Z	.028	.028	0	0
14	HORZ6	Z	.028	.028	0	0
15	HORZ7	Z	.028	.028	0	0
16	HORZ8	Z	.028	.028	0	0
17	HORZ9	Z	.028	.028	0	0
18	HORZ10	Z	.028	.028	0	0
19	HORZ11	Z	.028	.028	0	0
20	LEG1	Z	.046	.046	0	20
21	LEG1	Z	.053	.053	20	40

Member Distributed Loads (BLC 7 : TIA/EIA Wind (+Z)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
22	LEG1	Z	.058	.058	40	60
23	LEG2	Z	.046	.046	0	20
24	LEG2	Z	.053	.053	20	40
25	LEG2	Z	.058	.058	40	60
26	LEG2	Z	.034	.034	0	0
27	LEG_W_PLT1	Z	.049	.049	0	0
28	LEG_W_PLT2	Z	.049	.049	0	0
29	Mast1	Z	.022	.022	0	0
30	Mast1	Z	.016	.016	0	0
31	Mast2	Z	.03	.03	0	0
32	Mast2	Z	.016	.016	0	0
33	Mast3	Z	.035	.035	0	0
34	Mast3	Z	.016	.016	0	0
35	Mast4	Z	.038	.038	0	0
36	Mast4	Z	.023	.023	0	0
37	WT1	Z	.032	.032	0	0
38	WT2	Z	.032	.032	0	0
39	WT3	Z	.032	.032	0	0
40	WT4	Z	.032	.032	0	0
41	WT5	Z	.032	.032	0	0
42	WT6	Z	.032	.032	0	0
43	WT7	Z	.032	.032	0	0
44	WT8	Z	.032	.032	0	0
45	WT9	Z	.032	.032	0	0
46	WT10	Z	.032	.032	0	0
47	WT11	Z	.032	.032	0	0
48	WT12	Z	.032	.032	0	0
49	WT13	Z	.032	.032	0	0
50	WT14	Z	.032	.032	0	0
51	WT15	Z	.032	.032	0	0
52	WT16	Z	.032	.032	0	0
53	WT17	Z	.032	.032	0	0
54	WT18	Z	.032	.032	0	0
55	WT19	Z	.032	.032	0	0
56	WT20	Z	.032	.032	0	0

Basic Load Cases

	BLC Description	Category	X Grav...	Y Grav...	Z Gravity	Joint	Point	Distrib...	Area(M...	Surfac...
1	Self Weight	None		-1						
2	Weight of Equipment	None				28		8		
3	Weight of Ice	None				28		55		
4	TIA/EIA Wind with Ice (+X)	None				30		33		
5	TIA/EIA Wind (+X)	None				30		33		
6	TIA/EIA Wind with Ice(+Z)	None				30		56		
7	TIA/EIA Wind (+Z)	None				30		56		

Load Combinations

	Description	So...	PDelta	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	TIA/EIA Wind + Ice in +X Dir...	Yes			1	1	2	1	3	1	4	1								
2	TIA/EIA Wind in +X Direction	Yes			1	1	2	1	5	1										

Load Combinations (Continued)

	Description	So...	PDelta	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
3	TIA/EIA Wind + Ice in +Z Dir...	Yes			1	1	2	1	3	1	6	1								
4	TIA/EIA Wind in +Z Direction	Yes			1	1	2	1	7	1										
5	TIA/EIA Wind + Ice in -Z' Dir...	Yes			1	1	2	1	3	1	6	-1								
6	TIA/EIA Wind in -Z' Direction	Yes			1	1	2	1	7	-1										
7	Self Weight				1	1														

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
1	CROSSDIAG1	1	max	2.184	4	.098	3	.204	6	.001	6	0	1	0	1
2			min	-8.053	2	-.041	6	-.205	4	-.001	4	0	1	0	1
3		2	max	2.166	4	.059	4	.098	6	.001	6	.249	6	.564	6
4			min	-8.071	2	-.076	6	-.099	4	-.001	4	-.202	4	-.614	4
5		3	max	2.303	4	.14	5	.009	6	.002	6	.117	6	1.047	6
6			min	-8.228	2	-.044	4	-.04	2	-.002	4	-.211	3	-.952	4
7		4	max	2.285	4	.097	6	.099	4	.002	6	.193	6	.62	6
8			min	-8.246	2	-.079	4	-.098	6	-.002	4	-.15	4	-.666	4
9		5	max	2.267	4	.062	6	.205	4	.002	6	0	1	0	1
10			min	-8.264	2	-.114	3	-.204	6	-.002	4	0	1	0	1
11	CROSSDIAG2	1	max	8.528	2	.123	4	.221	6	.001	4	0	1	0	1
12			min	-5.13	6	-.072	6	-.221	4	-.001	2	0	1	0	1
13		2	max	8.546	2	.088	4	.115	6	.001	4	.211	6	.693	6
14			min	-5.112	6	-.107	6	-.114	4	-.001	2	-.167	4	-.734	4
15		3	max	8.762	2	.053	4	.009	6	.001	4	.155	6	1.194	6
16			min	-5.094	6	-.148	5	-.034	1	-.001	6	-.244	4	-1.089	4
17		4	max	8.78	2	.086	6	.114	4	.001	4	.267	6	.637	6
18			min	-4.593	6	-.069	4	-.115	6	-.001	6	-.218	4	-.683	4
19		5	max	8.798	2	.051	6	.221	4	.001	4	0	1	0	1
20			min	-4.575	6	-.105	3	-.221	6	-.001	6	0	1	0	1
21	CROSSDIAG3	1	max	1.583	6	.089	3	.203	6	0	6	0	1	0	1
22			min	-13.36	2	-.03	6	-.205	4	0	4	0	1	0	1
23		2	max	1.565	6	.05	4	.097	6	0	6	.277	6	.531	6
24			min	-13.378	2	-.065	6	-.098	4	0	4	-.228	4	-.588	4
25		3	max	1.547	6	.127	5	.01	6	.001	6	.173	6	.965	6
26			min	-13.535	2	-.031	4	-.039	2	-.001	4	-.263	4	-.884	4
27		4	max	1.084	6	.083	6	.098	4	.001	6	.228	6	.579	6
28			min	-13.553	2	-.066	4	-.097	6	-.001	4	-.184	4	-.632	4
29		5	max	1.066	6	.048	6	.205	4	.001	6	0	1	0	1
30			min	-13.571	2	-.103	3	-.203	6	-.001	4	0	1	0	1
31	CROSSDIAG4	1	max	13.432	2	.111	3	.222	6	0	4	0	1	0	1
32			min	-3.074	6	-.059	6	-.221	4	-.001	2	0	1	0	1
33		2	max	13.45	2	.075	4	.116	6	0	4	.249	6	.66	6
34			min	-3.056	6	-.094	6	-.114	4	-.001	2	-.201	4	-.7	4
35		3	max	13.664	2	.041	4	.01	6	0	4	.215	6	1.128	6
36			min	-3.038	6	-.136	5	-.033	1	-.001	2	-.297	4	-1.021	4
37		4	max	13.682	2	.076	6	.114	4	0	4	.298	6	.612	6
38			min	-2.586	6	-.059	4	-.116	6	0	6	-.245	4	-.656	4
39		5	max	13.7	2	.041	6	.221	4	0	4	0	1	0	1
40			min	-2.568	6	-.097	3	-.222	6	0	6	0	1	0	1
41	CROSSDIAG5	1	max	8.082	6	.09	3	.177	5	0	2	0	1	0	1
42			min	-13.146	2	-.045	6	-.178	3	0	4	0	1	0	1
43		2	max	8.058	6	.058	4	.087	5	0	2	.258	5	.627	6

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
44			min	-13.169	2	-.072	5	-.088	3	0	4	-.21	4	-.687	3
45		3	max	8.034	6	.109	5	.004	6	0	6	.117	6	1.079	5
46			min	-13.234	2	-.037	4	-.051	1	0	4	-.217	3	-.99	4
47		4	max	7.81	6	.075	5	.088	3	0	6	.248	5	.638	6
48			min	-13.257	2	-.061	4	-.087	5	0	4	-.2	4	-.695	3
49		5	max	7.786	6	.048	6	.178	3	0	6	0	1	0	1
50			min	-13.281	2	-.092	3	-.177	5	0	4	0	1	0	1
51	CROSSDIAG6	1	max	14.645	2	.095	3	.184	6	0	4	0	1	0	1
52			min	-3.481	4	-.052	6	-.182	4	0	2	0	1	0	1
53		2	max	14.668	2	.063	4	.094	6	0	4	.256	5	.679	6
54			min	-3.458	4	-.078	5	-.092	4	0	2	-.206	4	-.716	3
55		3	max	14.772	2	.039	4	.004	6	0	4	.138	6	1.145	5
56			min	-3.506	4	-.112	5	-.034	1	0	6	-.227	3	-1.041	4
57		4	max	14.796	2	.075	5	.092	4	0	4	.266	5	.668	6
58			min	-3.482	4	-.06	4	-.094	6	0	6	-.217	4	-.708	3
59		5	max	14.819	2	.049	6	.182	4	0	4	0	1	0	1
60			min	-3.459	4	-.092	3	-.184	6	0	6	0	1	0	1
61	CROSSDIAG7	1	max	0	5	.097	1	0	2	.002	2	0	1	0	1
62			min	-26.806	2	0	5	-.464	4	0	4	0	1	0	1
63		2	max	0	5	.048	1	0	2	.002	2	.424	1	0	5
64			min	-26.884	2	0	5	-.232	4	0	4	-1.731	4	-2.342	4
65		3	max	0	5	0	1	0	1	.002	2	.566	1	0	5
66			min	-26.962	2	0	1	0	1	0	4	-2.308	4	-3.123	4
67		4	max	0	5	0	5	.232	4	.002	2	.424	1	0	5
68			min	-27.04	2	-.048	3	0	1	0	4	-1.731	4	-2.342	4
69		5	max	0	5	0	5	.464	4	.002	2	0	1	0	1
70			min	-27.118	2	-.097	3	0	1	0	4	0	1	0	1
71	CROSSDIAG8	1	max	0	1	.097	3	0	1	0	4	0	1	0	1
72			min	-4.778	4	0	1	-.464	4	0	1	0	1	0	1
73		2	max	0	1	.048	3	0	1	0	4	0	1	0	1
74			min	-4.7	4	0	1	-.232	4	0	1	-1.731	4	-2.342	4
75		3	max	0	1	0	1	0	1	0	4	0	1	0	1
76			min	-4.622	4	0	1	0	1	0	1	-2.308	4	-3.123	4
77		4	max	0	1	0	1	.232	4	0	4	0	1	0	1
78			min	-4.544	4	-.048	3	0	1	0	1	-1.731	4	-2.342	4
79		5	max	0	1	0	1	.464	4	0	4	0	1	0	1
80			min	-4.466	4	-.097	3	0	1	0	1	0	1	0	1
81	HORZ1	1	max	5.193	4	.125	3	.188	6	0	6	0	1	0	1
82			min	-3.952	6	-.032	6	-.188	4	-.001	2	0	1	0	1
83		2	max	5.191	4	.082	4	.093	6	0	6	.225	5	.455	6
84			min	-3.953	6	-.067	6	-.094	4	-.001	2	-.098	4	-.575	4
85		3	max	7.852	4	.106	5	0	6	0	6	.133	5	.783	6
86			min	-9.562	6	-.05	4	-.004	2	-.001	2	-.053	4	-.854	4
87		4	max	7.851	4	.07	6	.094	4	0	6	.221	5	.463	6
88			min	-9.563	6	-.085	4	-.094	6	-.001	2	-.093	4	-.582	4
89		5	max	7.85	4	.035	6	.189	4	0	6	0	1	0	1
90			min	-9.565	6	-.127	3	-.189	6	-.001	2	0	1	0	1
91	HORZ2	1	max	7.977	4	.128	3	.19	6	0	6	0	1	0	1
92			min	-9.629	6	-.036	6	-.19	4	-.001	2	0	1	0	1
93		2	max	7.978	4	.086	4	.096	6	0	6	.222	5	.469	6
94			min	-9.627	6	-.071	6	-.096	4	-.001	2	-.095	4	-.588	4
95		3	max	7.98	4	.051	4	.001	6	0	6	.136	5	.795	6
96			min	-9.626	6	-.107	5	-.004	2	-.001	2	-.056	4	-.866	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
97		4	max	5.319	4	.068	6	.095	4	0	6	.226	5	.461	6
98			min	-4.017	6	-.083	4	-.095	6	-.001	2	-.099	4	-.581	4
99		5	max	5.32	4	.033	6	.19	4	0	6	0	1	0	1
100			min	-4.016	6	-.126	3	-.19	6	-.001	2	0	1	0	1
101	HORZ3	1	max	1.916	3	.127	3	.188	6	0	6	0	1	0	1
102			min	-1.493	2	-.034	6	-.188	4	-.001	2	0	1	0	1
103		2	max	1.915	3	.085	4	.093	6	0	6	.222	5	.458	6
104			min	-1.495	2	-.069	6	-.093	4	-.001	2	-.093	4	-.58	4
105		3	max	4.588	4	.107	5	0	6	0	6	.127	5	.787	6
106			min	-6.207	6	-.052	4	-.004	2	-.001	2	-.043	4	-.863	4
107		4	max	4.586	4	.071	6	.094	4	0	6	.219	5	.465	6
108			min	-6.209	6	-.087	4	-.094	6	-.001	2	-.089	4	-.586	4
109		5	max	4.585	4	.036	6	.189	4	0	6	0	1	0	1
110			min	-6.21	6	-.129	3	-.188	6	-.001	2	0	1	0	1
111	HORZ4	1	max	5.314	4	.129	3	.191	6	0	6	0	1	0	1
112			min	-6.888	6	-.037	6	-.19	4	-.001	2	0	1	0	1
113		2	max	5.316	4	.088	4	.096	6	0	6	.221	5	.472	6
114			min	-6.887	6	-.072	6	-.096	4	-.001	2	-.091	4	-.592	4
115		3	max	5.317	4	.053	4	.001	6	0	6	.131	5	.802	6
116			min	-6.886	6	-.108	5	-.004	2	-.001	2	-.046	4	-.875	4
117		4	max	2.728	2	.07	6	.095	4	0	6	.224	5	.466	6
118			min	-1.209	6	-.085	4	-.095	6	-.001	2	-.094	4	-.586	4
119		5	max	2.73	2	.035	6	.19	4	0	6	0	1	0	1
120			min	-1.207	6	-.128	3	-.19	6	-.001	2	0	1	0	1
121	HORZ5	1	max	2.218	4	.085	3	.187	6	0	6	0	1	0	1
122			min	-1.38	2	.014	6	-.188	4	-.002	2	0	1	0	1
123		2	max	2.216	4	.037	3	.093	6	0	6	.326	6	.343	6
124			min	-1.382	2	-.021	6	-.094	4	-.002	2	-.206	4	-.467	4
125		3	max	2.399	4	.065	5	.005	2	0	6	.343	6	.555	6
126			min	-2.91	1	-.04	1	0	4	-.002	2	-.27	4	-.634	4
127		4	max	2.398	4	.023	6	.094	4	0	6	.324	6	.349	6
128			min	-2.911	1	-.039	4	-.093	6	-.002	2	-.204	4	-.472	4
129		5	max	2.397	4	-.012	6	.189	4	0	6	0	1	0	1
130			min	-2.913	1	-.087	3	-.188	6	-.002	2	0	1	0	1
131	HORZ6	1	max	6.548	2	.087	3	.191	6	0	6	0	1	0	1
132			min	-4.778	6	.011	6	-.19	4	-.002	2	0	1	0	1
133		2	max	6.549	2	.039	4	.096	6	0	6	.326	6	.359	6
134			min	-4.777	6	-.024	6	-.095	4	-.002	2	-.205	4	-.477	4
135		3	max	7.96	2	.034	1	.005	2	0	6	.349	6	.576	6
136			min	-4.776	6	-.067	5	0	4	-.002	2	-.273	4	-.644	4
137		4	max	7.961	2	.023	6	.095	4	0	6	.329	6	.354	6
138			min	-1.673	6	-.038	4	-.096	6	-.002	2	-.208	4	-.471	4
139		5	max	7.963	2	-.012	6	.189	4	0	6	0	1	0	1
140			min	-1.672	6	-.086	3	-.19	6	-.002	2	0	1	0	1
141	HORZ7	1	max	3.869	6	.101	3	.187	6	0	6	0	1	0	1
142			min	-2.034	2	-.007	6	-.188	4	-.002	2	0	1	0	1
143		2	max	3.868	6	.055	4	.093	6	0	6	.277	6	.392	6
144			min	-2.035	2	-.042	6	-.094	4	-.002	2	-.163	4	-.511	4
145		3	max	3.867	6	.083	5	.001	6	0	6	.245	6	.648	6
146			min	-3.587	2	-.021	4	-.006	2	-.002	2	-.184	4	-.717	4
147		4	max	-.335	6	.043	6	.094	4	0	6	.275	6	.395	6
148			min	-3.588	2	-.056	4	-.093	6	-.002	2	-.162	4	-.513	4
149		5	max	-.336	6	.008	6	.189	4	0	6	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
150			min	-3.589	2	-.102	3	-.188	6	-.002	2	0	1	0	1
151	HORZ8	1	max	3.25	2	.102	3	.191	6	0	6	0	1	0	1
152			min	-2.002	5	-.01	6	-.19	4	-.002	2	0	1	0	1
153		2	max	3.251	2	.057	4	.096	6	0	6	.278	6	.407	6
154			min	-2.001	5	-.044	6	-.095	4	-.002	2	-.163	4	-.518	4
155		3	max	4.803	2	.022	4	.002	6	0	6	.251	6	.672	6
156			min	-1.005	4	-.084	5	-.006	2	-.002	2	-.186	4	-.727	4
157		4	max	4.804	2	.043	6	.095	4	0	6	.28	6	.404	6
158			min	-1.004	4	-.056	4	-.096	6	-.002	2	-.164	4	-.515	4
159		5	max	4.805	2	.009	6	.19	4	0	6	0	1	0	1
160			min	-1.003	4	-.102	3	-.191	6	-.002	2	0	1	0	1
161	HORZ9	1	max	3.516	6	.071	3	.187	6	0	6	0	1	0	1
162			min	-1.567	4	.028	6	-.189	4	-.002	2	0	1	0	1
163		2	max	3.515	6	.023	3	.093	6	0	6	.361	6	.309	6
164			min	-1.568	4	-.007	6	-.094	4	-.002	2	-.246	4	-.43	4
165		3	max	3.514	6	.051	5	.002	6	0	6	.412	6	.476	6
166			min	-2.801	1	.014	4	-.006	2	-.002	2	-.35	4	-.551	4
167		4	max	1.223	6	.007	6	.094	4	0	6	.36	6	.309	6
168			min	-2.803	1	-.023	3	-.093	6	-.002	2	-.246	4	-.43	4
169		5	max	1.221	6	-.028	6	.189	4	0	6	0	1	0	1
170			min	-2.805	1	-.071	3	-.188	6	-.002	2	0	1	0	1
171	HORZ10	1	max	1.647	2	.072	3	.191	6	0	6	0	1	0	1
172			min	-2.316	3	.026	6	-.189	4	-.002	2	0	1	0	1
173		2	max	1.649	2	.023	3	.096	6	0	6	.364	6	.322	6
174			min	-2.314	3	-.009	6	-.095	4	-.002	2	-.247	4	-.432	4
175		3	max	3.199	2	-.013	4	.002	6	0	6	.419	6	.501	6
176			min	-2.312	3	-.053	5	-.006	2	-.002	2	-.351	4	-.555	4
177		4	max	3.2	2	.009	6	.095	4	0	6	.364	6	.321	6
178			min	-1.476	4	-.023	3	-.096	6	-.002	2	-.247	4	-.432	4
179		5	max	3.201	2	-.026	6	.189	4	0	6	0	1	0	1
180			min	-1.475	4	-.072	3	-.191	6	-.002	2	0	1	0	1
181	HORZ11	1	max	7.056	6	.212	5	.19	6	.235	6	.22	4	2.712	6
182			min	-5.758	4	.115	2	-.19	4	-.834	2	-.224	6	-1.779	4
183		2	max	7.056	6	.12	5	.096	6	.235	6	.259	6	2.196	6
184			min	-5.758	4	.036	2	-.095	4	-.834	2	-.261	4	-2.27	4
185		3	max	7.056	6	.035	6	.001	6	.235	6	.423	6	1.945	6
186			min	-5.758	4	-.044	1	-.005	2	-.834	2	-.423	4	-2.495	4
187		4	max	7.056	6	-.044	6	.094	4	.235	6	.268	6	1.961	6
188			min	-5.758	4	-.137	1	-.093	6	-.834	2	-.266	4	-2.454	4
189		5	max	7.056	6	-.123	6	.188	4	.235	6	.211	4	2.243	6
190			min	-5.758	4	-.229	1	-.188	6	-.834	2	-.206	6	-2.147	4
191	LEG1	1	max	239.396	6	14.873	6	3.384	4	.029	2	10.029	4	223.807	6
192			min	-220.247	4	-14.98	4	-3.407	6	-.002	4	-12.873	2	-226.951	4
193		2	max	196.213	6	6.26	6	1.488	2	.031	2	4.178	4	94.407	6
194			min	-181.062	4	-6.217	4	-.174	6	-.006	6	-3.805	6	-97.626	4
195		3	max	142.008	6	1.283	6	1.143	6	.034	2	2.019	4	47.684	6
196			min	-125.031	4	-1.157	4	-3.339	2	-.011	6	-3.437	6	-52.603	4
197		4	max	92.416	6	1.046	2	.514	6	.056	2	2.488	2	39.119	6
198			min	-78.583	4	-.289	4	-1.007	2	-.022	6	-.717	6	-41.084	4
199		5	max	7.267	3	5.815	6	14.111	6	.067	2	5.424	6	40.439	6
200			min	-3.421	2	-5.814	4	-13.399	4	-.023	6	-3.559	4	-40.022	4
201	LEG2	1	max	240.947	6	16.487	6	3.881	6	.029	2	11.448	6	233.174	6
202			min	-218.449	4	-16.621	4	-3.803	4	-.014	6	-13.311	2	-234.943	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
203		2	max	198.128	6	6.034	6	1.167	2	.03	2	3.095	6	98.386	6
204			min	-180.362	4	-6.299	4	-.083	6	-.01	6	-3.301	4	-96.67	4
205		3	max	145.444	6	.865	6	1.618	6	.034	2	2.967	2	55.023	6
206			min	-128.056	4	-1.081	4	-3.728	2	-.008	6	-1.604	4	-49.932	4
207		4	max	92.816	6	.417	6	.386	4	.057	2	2.3	2	38.921	6
208			min	-79.106	4	-.774	2	-.69	2	-.01	6	-.263	4	-36.617	4
209		5	max	33.21	2	5.81	6	14.349	4	.067	2	4.294	4	39.501	6
210			min	2.514	6	-5.811	4	-14.111	6	-.014	6	-4.486	6	-39.917	4
211	LEG_W_PLT1	1	max	251.939	6	19.857	6	5.184	6	.028	2	113.593	2	580.793	6
212			min	-224.997	4	-19.874	4	-14.733	2	-.004	4	-29.889	6	-585.176	4
213		2	max	251.01	6	19.606	6	5.184	6	.028	2	39.008	2	479.667	6
214			min	-225.926	4	-19.622	4	-14.374	2	-.004	4	-3.32	6	-483.967	4
215		3	max	250.081	6	19.355	6	5.184	6	.028	2	23.249	6	379.828	6
216			min	-226.855	4	-19.371	4	-14.015	2	-.004	4	-33.739	2	-384.046	4
217		4	max	240.326	6	15.124	6	3.384	4	.029	2	7.935	6	300.676	6
218			min	-219.318	4	-15.231	4	-3.407	6	-.002	4	-26.235	2	-304.368	4
219		5	max	239.396	6	14.873	6	3.384	4	.029	2	10.029	4	223.807	6
220			min	-220.247	4	-14.98	4	-3.407	6	-.002	4	-12.873	2	-226.951	4
221	LEG_W_PLT2	1	max	254.614	6	21.703	6	5.038	4	.028	2	112.453	2	625.675	6
222			min	-223.067	4	-21.717	4	-14.276	2	-.016	6	-26.475	4	-628.929	4
223		2	max	253.536	6	21.452	6	5.038	4	.028	2	39.287	2	515.092	6
224			min	-224.145	4	-21.465	4	-14.276	2	-.016	6	-.653	4	-518.275	4
225		3	max	252.458	6	21.2	6	5.038	4	.028	2	25.169	4	405.796	6
226			min	-225.223	4	-21.214	4	-14.276	2	-.016	6	-33.878	2	-408.908	4
227		4	max	242.025	6	16.738	6	3.881	6	.029	2	7.889	4	318.315	6
228			min	-217.371	4	-16.872	4	-3.803	4	-.014	6	-25.681	2	-320.77	4
229		5	max	240.947	6	16.487	6	3.881	6	.029	2	11.448	6	233.174	6
230			min	-218.449	4	-16.621	4	-3.803	4	-.014	6	-13.311	2	-234.943	4
231	WT1	1	max	12.943	6	.148	4	.162	1	.003	6	0	1	0	1
232			min	-23.861	2	-.148	6	.011	6	-.003	4	0	1	0	1
233		2	max	12.893	6	.074	4	.081	1	.003	6	.306	1	.279	6
234			min	-23.832	2	-.074	6	.005	6	-.003	4	.02	6	-.279	4
235		3	max	12.844	6	0	1	0	1	.003	6	.408	1	.372	6
236			min	-23.804	2	0	1	0	1	-.003	4	.027	6	-.372	4
237		4	max	12.794	6	.074	6	-.005	6	.003	6	.306	1	.279	6
238			min	-23.776	2	-.074	4	-.081	1	-.003	4	.02	6	-.279	4
239		5	max	12.744	6	.148	6	-.011	6	.003	6	0	1	0	1
240			min	-23.748	2	-.148	4	-.162	1	-.003	4	0	1	0	1
241	WT2	1	max	24.55	2	.148	4	.113	3	.003	4	0	1	0	1
242			min	-13.221	4	-.148	6	-.045	2	-.003	6	0	1	0	1
243		2	max	24.63	2	.074	4	.056	3	.003	4	.214	3	.279	6
244			min	-13.219	4	-.074	6	-.023	2	-.003	6	-.086	2	-.279	4
245		3	max	24.709	2	0	1	0	1	.003	4	.285	3	.372	6
246			min	-13.217	4	0	1	0	1	-.003	6	-.114	2	-.372	4
247		4	max	24.789	2	.074	6	.023	2	.003	4	.214	3	.279	6
248			min	-13.216	4	-.074	4	-.056	3	-.003	6	-.086	2	-.279	4
249		5	max	24.869	2	.148	6	.045	2	.003	4	0	1	0	1
250			min	-13.214	4	-.148	4	-.113	3	-.003	6	0	1	0	1
251	WT3	1	max	28.635	2	.148	4	.045	2	.001	4	0	1	0	1
252			min	-17.927	6	-.148	6	-.113	5	-.001	6	0	1	0	1
253		2	max	28.555	2	.074	4	.023	2	.001	4	.086	2	.279	6
254			min	-17.929	6	-.074	6	-.056	5	-.001	6	-.214	5	-.279	4
255		3	max	28.475	2	0	1	0	1	.001	4	.114	2	.372	6

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
256			min	-17.931	6	0	1	0	1	-.001	6	-.285	5	-.372	4
257		4	max	28.395	2	.074	6	.056	5	.001	4	.086	2	.279	6
258			min	-17.932	6	-.074	4	-.023	2	-.001	6	-.214	5	-.279	4
259		5	max	28.316	2	.148	6	.113	5	.001	4	0	1	0	1
260			min	-17.934	6	-.148	4	-.045	2	-.001	6	0	1	0	1
261	WT4	1	max	18.11	4	.148	4	.162	1	.001	6	0	1	0	1
262			min	-29.348	2	-.148	6	.011	4	-.001	4	0	1	0	1
263		2	max	18.06	4	.074	4	.081	1	.001	6	.306	1	.279	6
264			min	-29.319	2	-.074	6	.005	4	-.001	4	.02	4	-.279	4
265		3	max	18.01	4	0	1	0	1	.001	6	.408	1	.372	6
266			min	-29.291	2	0	1	0	1	-.001	4	.027	4	-.372	4
267		4	max	17.96	4	.074	6	-.005	4	.001	6	.306	1	.279	6
268			min	-29.263	2	-.074	4	-.081	1	-.001	4	.02	4	-.279	4
269		5	max	17.911	4	.148	6	-.011	4	.001	6	0	1	0	1
270			min	-29.235	2	-.148	4	-.162	1	-.001	4	0	1	0	1
271	WT5	1	max	40.008	6	.148	4	-.011	6	.003	6	0	1	0	1
272			min	-40.091	4	-.148	6	-.162	1	-.003	4	0	1	0	1
273		2	max	40.057	6	.074	4	-.005	6	.003	6	-.02	6	.279	6
274			min	-40.089	4	-.074	6	-.081	1	-.003	4	-.306	1	-.279	4
275		3	max	40.107	6	0	1	0	1	.003	6	-.027	6	.372	6
276			min	-40.087	4	0	1	0	1	-.003	4	-.408	1	-.372	4
277		4	max	40.157	6	.074	6	.081	1	.003	6	-.02	6	.279	6
278			min	-40.086	4	-.074	4	.005	6	-.003	4	-.306	1	-.279	4
279		5	max	40.207	6	.148	6	.162	1	.003	6	0	1	0	1
280			min	-40.084	4	-.148	4	.011	6	-.003	4	0	1	0	1
281	WT6	1	max	45.101	6	.148	4	.113	3	.002	4	0	1	0	1
282			min	-44.164	4	-.148	6	-.045	2	-.002	2	0	1	0	1
283		2	max	45.151	6	.074	4	.056	3	.002	4	.214	3	.279	6
284			min	-44.162	4	-.074	6	-.023	2	-.002	2	-.086	2	-.279	4
285		3	max	45.201	6	0	1	0	1	.002	4	.285	3	.372	6
286			min	-44.16	4	0	1	0	1	-.002	2	-.114	2	-.372	4
287		4	max	45.25	6	.074	6	.023	2	.002	4	.214	3	.279	6
288			min	-44.159	4	-.074	4	-.056	3	-.002	2	-.086	2	-.279	4
289		5	max	45.3	6	.148	6	.045	2	.002	4	0	1	0	1
290			min	-44.157	4	-.148	4	-.113	3	-.002	2	0	1	0	1
291	WT7	1	max	31.909	4	.148	4	.045	2	.002	4	0	1	0	1
292			min	-31.637	6	-.148	6	-.113	5	-.003	6	0	1	0	1
293		2	max	31.859	4	.074	4	.023	2	.002	4	.086	2	.279	6
294			min	-31.639	6	-.074	6	-.056	5	-.003	6	-.214	5	-.279	4
295		3	max	31.81	4	0	1	0	1	.002	4	.114	2	.372	6
296			min	-31.641	6	0	1	0	1	-.003	6	-.285	5	-.372	4
297		4	max	31.76	4	.074	6	.056	5	.002	4	.086	2	.279	6
298			min	-31.642	6	-.074	4	-.023	2	-.003	6	-.214	5	-.279	4
299		5	max	31.71	4	.148	6	.113	5	.002	4	0	1	0	1
300			min	-31.644	6	-.148	4	-.045	2	-.003	6	0	1	0	1
301	WT8	1	max	35.964	4	.148	4	.162	1	.002	2	0	1	0	1
302			min	-36.67	6	-.148	6	.011	4	-.002	4	0	1	0	1
303		2	max	35.915	4	.074	4	.081	1	.002	2	.306	1	.279	6
304			min	-36.671	6	-.074	6	.005	4	-.002	4	.02	4	-.279	4
305		3	max	35.865	4	0	1	0	1	.002	2	.408	1	.372	6
306			min	-36.673	6	0	1	0	1	-.002	4	.027	4	-.372	4
307		4	max	35.815	4	.074	6	-.005	4	.002	2	.306	1	.279	6
308			min	-36.675	6	-.074	4	-.081	1	-.002	4	.02	4	-.279	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
309		5	max	35.765	4	.148	6	-.011	4	.002	2	0	1	0	1
310			min	-36.676	6	-.148	4	-.162	1	-.002	4	0	1	0	1
311	WT9	1	max	42.802	6	.148	4	.045	2	0	3	0	1	0	1
312			min	-42.053	4	-.148	6	-.113	3	-.005	2	0	1	0	1
313		2	max	42.752	6	.074	4	.023	2	0	3	.086	2	.279	6
314			min	-42.055	4	-.074	6	-.056	3	-.005	2	-.214	3	-.279	4
315		3	max	42.702	6	0	1	0	1	0	3	.114	2	.372	6
316			min	-42.057	4	0	1	0	1	-.005	2	-.285	3	-.372	4
317		4	max	42.652	6	.074	6	.056	3	0	3	.086	2	.279	6
318			min	-42.058	4	-.074	4	-.023	2	-.005	2	-.214	3	-.279	4
319		5	max	42.603	6	.148	6	.113	3	0	3	0	1	0	1
320			min	-42.06	4	-.148	4	-.045	2	-.005	2	0	1	0	1
321	WT10	1	max	38.759	6	.148	4	.162	1	.003	6	0	1	0	1
322			min	-39.111	4	-.148	6	.011	6	-.005	2	0	1	0	1
323		2	max	38.709	6	.074	4	.081	1	.003	6	.306	1	.279	6
324			min	-39.113	4	-.074	6	.005	6	-.005	2	.02	6	-.279	4
325		3	max	38.66	6	0	1	0	1	.003	6	.408	1	.372	6
326			min	-39.115	4	0	1	0	1	-.005	2	.027	6	-.372	4
327		4	max	38.61	6	.074	6	-.005	6	.003	6	.306	1	.279	6
328			min	-39.116	4	-.074	4	-.081	1	-.005	2	.02	6	-.279	4
329		5	max	38.56	6	.148	6	-.011	6	.003	6	0	1	0	1
330			min	-39.118	4	-.148	4	-.162	1	-.005	2	0	1	0	1
331	WT11	1	max	36.081	4	.148	4	.113	5	.005	2	0	1	0	1
332			min	-35.85	6	-.148	6	-.045	2	-.002	6	0	1	0	1
333		2	max	36.131	4	.074	4	.056	5	.005	2	.214	5	.279	6
334			min	-35.849	6	-.074	6	-.023	2	-.002	6	-.086	2	-.279	4
335		3	max	36.181	4	0	1	0	1	.005	2	.285	5	.372	6
336			min	-35.847	6	0	1	0	1	-.002	6	-.114	2	-.372	4
337		4	max	36.23	4	.074	6	.023	2	.005	2	.214	5	.279	6
338			min	-35.845	6	-.074	4	-.056	5	-.002	6	-.086	2	-.279	4
339		5	max	36.28	4	.148	6	.045	2	.005	2	0	1	0	1
340			min	-35.844	6	-.148	4	-.113	5	-.002	6	0	1	0	1
341	WT12	1	max	39.294	4	.148	4	.162	1	.004	2	0	1	0	1
342			min	-39.996	6	-.148	6	.011	4	0	4	0	1	0	1
343		2	max	39.244	4	.074	4	.081	1	.004	2	.306	1	.279	6
344			min	-39.998	6	-.074	6	.005	4	0	4	.02	4	-.279	4
345		3	max	39.194	4	0	1	0	1	.004	2	.408	1	.372	6
346			min	-40	6	0	1	0	1	0	4	.027	4	-.372	4
347		4	max	39.144	4	.074	6	-.005	4	.004	2	.306	1	.279	6
348			min	-40.002	6	-.074	4	-.081	1	0	4	.02	4	-.279	4
349		5	max	39.095	4	.148	6	-.011	4	.004	2	0	1	0	1
350			min	-40.003	6	-.148	4	-.162	1	0	4	0	1	0	1
351	WT13	1	max	34.935	6	.148	4	.162	1	.003	6	0	1	0	1
352			min	-33.98	4	-.148	6	.011	6	-.01	2	0	1	0	1
353		2	max	34.886	6	.074	4	.081	1	.003	6	.306	1	.279	6
354			min	-33.982	4	-.074	6	.005	6	-.01	2	.02	6	-.279	4
355		3	max	34.836	6	0	1	0	1	.003	6	.408	1	.372	6
356			min	-33.984	4	0	1	0	1	-.01	2	.027	6	-.372	4
357		4	max	34.786	6	.074	6	-.005	6	.003	6	.306	1	.279	6
358			min	-33.985	4	-.074	4	-.081	1	-.01	2	.02	6	-.279	4
359		5	max	34.736	6	.148	6	-.011	6	.003	6	0	1	0	1
360			min	-33.987	4	-.148	4	-.162	1	-.01	2	0	1	0	1
361	WT14	1	max	34.775	6	.148	4	.045	2	.003	6	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
362			min	-35.339	4	-.148	6	-.113	3	-.01	2	0	1	0	1
363		2	max	34.725	6	.074	4	.023	2	.003	6	.086	2	.279	6
364			min	-35.341	4	-.074	6	-.056	3	-.01	2	-.214	3	-.279	4
365		3	max	34.675	6	0	1	0	1	.003	6	.114	2	.372	6
366			min	-35.343	4	0	1	0	1	-.01	2	-.285	3	-.372	4
367		4	max	34.625	6	.074	6	.056	3	.003	6	.086	2	.279	6
368			min	-35.344	4	-.074	4	-.023	2	-.01	2	-.214	3	-.279	4
369		5	max	34.576	6	.148	6	.113	3	.003	6	0	1	0	1
370			min	-35.346	4	-.148	4	-.045	2	-.01	2	0	1	0	1
371	WT15	1	max	51.784	4	.148	4	.045	2	.008	2	0	1	0	1
372			min	-52.389	6	-.148	6	-.113	5	-.004	6	0	1	0	1
373		2	max	51.734	4	.074	4	.023	2	.008	2	.086	2	.279	6
374			min	-52.391	6	-.074	6	-.056	5	-.004	6	-.214	5	-.279	4
375		3	max	51.684	4	0	1	0	1	.008	2	.114	2	.372	6
376			min	-52.393	6	0	1	0	1	-.004	6	-.285	5	-.372	4
377		4	max	51.634	4	.074	6	.056	5	.008	2	.086	2	.279	6
378			min	-52.395	6	-.074	4	-.023	2	-.004	6	-.214	5	-.279	4
379		5	max	51.585	4	.148	6	.113	5	.008	2	0	1	0	1
380			min	-52.396	6	-.148	4	-.045	2	-.004	6	0	1	0	1
381	WT16	1	max	53.124	4	.148	4	.162	1	.008	2	0	1	0	1
382			min	-52.228	6	-.148	6	.011	4	0	6	0	1	0	1
383		2	max	53.074	4	.074	4	.081	1	.008	2	.306	1	.279	6
384			min	-52.23	6	-.074	6	.005	4	0	6	.02	4	-.279	4
385		3	max	53.024	4	0	1	0	1	.008	2	.408	1	.372	6
386			min	-52.232	6	0	1	0	1	0	6	.027	4	-.372	4
387		4	max	52.975	4	.074	6	-.005	4	.008	2	.306	1	.279	6
388			min	-52.234	6	-.074	4	-.081	1	0	6	.02	4	-.279	4
389		5	max	52.925	4	.148	6	-.011	4	.008	2	0	1	0	1
390			min	-52.235	6	-.148	4	-.162	1	0	6	0	1	0	1
391	WT17	1	max	51.349	6	.148	4	-.011	6	.008	6	0	1	0	1
392			min	-50.922	4	-.148	6	-.162	1	-.011	2	0	1	0	1
393		2	max	51.399	6	.074	4	-.005	6	.008	6	-.02	6	.279	6
394			min	-50.92	4	-.074	6	-.081	1	-.011	2	-.306	1	-.279	4
395		3	max	51.449	6	0	1	0	1	.008	6	-.027	6	.372	6
396			min	-50.918	4	0	1	0	1	-.011	2	-.408	1	-.372	4
397		4	max	51.499	6	.074	6	.081	1	.008	6	-.02	6	.279	6
398			min	-50.917	4	-.074	4	.005	6	-.011	2	-.306	1	-.279	4
399		5	max	51.548	6	.148	6	.162	1	.008	6	0	1	0	1
400			min	-50.915	4	-.148	4	.011	6	-.011	2	0	1	0	1
401	WT18	1	max	51.607	6	.148	4	.113	3	.003	4	0	1	0	1
402			min	-52.42	4	-.148	6	-.045	2	-.011	2	0	1	0	1
403		2	max	51.657	6	.074	4	.056	3	.003	4	.214	3	.279	6
404			min	-52.419	4	-.074	6	-.023	2	-.011	2	-.086	2	-.279	4
405		3	max	51.707	6	0	1	0	1	.003	4	.285	3	.372	6
406			min	-52.417	4	0	1	0	1	-.011	2	-.114	2	-.372	4
407		4	max	51.756	6	.074	6	.023	2	.003	4	.214	3	.279	6
408			min	-52.415	4	-.074	4	-.056	3	-.011	2	-.086	2	-.279	4
409		5	max	51.806	6	.148	6	.045	2	.003	4	0	1	0	1
410			min	-52.413	4	-.148	4	-.113	3	-.011	2	0	1	0	1
411	WT19	1	max	25.129	4	.148	4	.045	2	.015	2	0	1	0	1
412			min	-25.614	6	-.148	6	-.113	5	-.001	6	0	1	0	1
413		2	max	25.08	4	.074	4	.023	2	.015	2	.086	2	.279	6
414			min	-25.616	6	-.074	6	-.056	5	-.001	6	-.214	5	-.279	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
415		3	max	25.03	4	0	1	0	1	.015	2	.114	2	.372	6
416			min	-25.618	6	0	1	0	1	-.001	6	-.285	5	-.372	4
417		4	max	24.98	4	.074	6	.056	5	.015	2	.086	2	.279	6
418			min	-25.62	6	-.074	4	-.023	2	-.001	6	-.214	5	-.279	4
419		5	max	24.93	4	.148	6	.113	5	.015	2	0	1	0	1
420			min	-25.621	6	-.148	4	-.045	2	-.001	6	0	1	0	1
421	WT20	1	max	26.621	4	.148	4	.162	1	.015	2	0	1	0	1
422			min	-25.847	6	-.148	6	.011	4	-.006	6	0	1	0	1
423		2	max	26.572	4	.074	4	.081	1	.015	2	.306	1	.279	6
424			min	-25.849	6	-.074	6	.005	4	-.006	6	.02	4	-.279	4
425		3	max	26.522	4	0	1	0	1	.015	2	.408	1	.372	6
426			min	-25.851	6	0	1	0	1	-.006	6	.027	4	-.372	4
427		4	max	26.472	4	.074	6	-.005	4	.015	2	.306	1	.279	6
428			min	-25.853	6	-.074	4	-.081	1	-.006	6	.02	4	-.279	4
429		5	max	26.422	4	.148	6	-.011	4	.015	2	0	1	0	1
430			min	-25.854	6	-.148	4	-.162	1	-.006	6	0	1	0	1
431	Mast1	1	max	490.899	4	5.113	2	2.833	6	.082	2	91.112	4	60.159	2
432			min	-463.717	6	-.047	6	-2.803	4	-.022	6	-90.556	6	-.323	6
433		2	max	490.13	4	4.837	2	2.558	6	.082	2	71.788	4	24.089	2
434			min	-464.487	6	-.047	6	-2.528	4	-.022	6	-71.013	6	.008	4
435		3	max	489.361	4	4.562	2	2.282	6	.082	2	54.46	4	.354	6
436			min	-465.256	6	-.047	6	-2.252	4	-.022	6	-53.469	6	-9.983	2
437		4	max	446.608	4	.016	6	1.543	4	.079	2	49.252	4	.511	6
438			min	-423.399	6	-2.549	2	-1.636	6	-.022	6	-48.395	6	-22.408	2
439		5	max	445.839	4	.016	6	1.819	4	.079	2	61.44	4	.392	6
440			min	-424.169	6	-2.824	2	-1.911	6	-.022	6	-61.251	6	-2.93	2
441	Mast2	1	max	445.839	4	.016	6	1.819	4	.079	2	61.44	4	.392	6
442			min	-424.169	6	-2.824	2	-1.911	6	-.022	6	-61.251	6	-2.93	2
443		2	max	341.303	4	.057	6	2.179	6	.073	2	61.118	4	7.438	2
444			min	-320.538	6	-.031	4	-2.146	4	-.02	6	-61.157	6	-.036	4
445		3	max	340.573	4	.057	6	1.863	6	.073	2	47.449	4	8.674	2
446			min	-321.267	6	-.338	2	-1.83	4	-.02	6	-47.263	6	-.248	6
447		4	max	232.886	4	2.849	2	2.54	6	.06	2	32.452	4	.698	2
448			min	-215.193	6	-.017	6	-2.591	4	-.016	6	-32.313	6	-.401	6
449		5	max	232.157	4	2.533	2	2.224	6	.06	2	15.724	4	.129	3
450			min	-215.922	6	-.017	6	-2.275	4	-.016	6	-15.935	6	-17.805	2
451	Mast3	1	max	232.157	4	2.533	2	2.224	6	.06	2	15.724	4	.129	3
452			min	-215.922	6	-.017	6	-2.275	4	-.016	6	-15.935	6	-17.805	2
453		2	max	112.555	4	.006	3	9.24	4	.036	2	37.572	4	11.256	2
454			min	-98.315	6	-11.747	2	-9.211	6	-.01	6	-37.875	6	-.173	6
455		3	max	111.826	4	.006	3	9.591	4	.036	2	102.304	4	93.224	2
456			min	-99.044	6	-12.098	2	-9.562	6	-.01	6	-102.409	6	-.06	6
457		4	max	6.823	3	4.808	2	4.808	6	0	1	121.522	4	121.522	2
458			min	5.27	2	0	3	-4.808	4	0	1	-121.522	6	0	3
459		5	max	5.922	3	4.457	2	4.457	6	0	1	89.675	4	89.675	2
460			min	4.54	2	0	3	-4.457	4	0	1	-89.675	6	0	3
461	Mast4	1	max	5.922	3	4.457	2	4.457	6	0	1	89.675	4	89.675	2
462			min	4.54	6	0	3	-4.457	4	0	1	-89.675	6	0	3
463		2	max	5.037	3	4.045	2	4.045	6	0	1	60.979	4	60.979	2
464			min	3.824	6	0	3	-4.045	4	0	1	-60.979	6	0	3
465		3	max	4.152	3	3.634	2	3.634	6	0	1	35.064	4	35.064	2
466			min	3.107	6	0	3	-3.634	4	0	1	-35.064	6	0	3
467		4	max	3.267	3	3.222	2	3.222	6	0	1	11.927	4	11.927	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
468			min	2.391	6	0	3	-3.222	4	0	1	-11.927	6	0	3
469		5	max	0	1	0	1	0	1	0	1	0	1	0	1
470			min	0	1	0	1	0	1	0	1	0	1	0	1
471	Horz 12	1	max	7.056	6	.192	6	.001	6	.235	6	.201	6	2.712	6
472			min	-5.758	4	.113	1	-.005	2	-.834	2	-.206	4	-1.779	4
473		2	max	7.056	6	.114	6	.001	6	.235	6	.206	6	2.196	6
474			min	-5.758	4	.034	1	-.005	2	-.834	2	-.208	4	-2.27	4
475		3	max	7.056	6	.035	6	.001	6	.235	6	.21	6	1.945	6
476			min	-5.758	4	-.044	1	-.005	2	-.834	2	-.21	4	-2.495	4
477		4	max	7.056	6	-.044	6	.001	6	.235	6	.215	6	1.961	6
478			min	-5.758	4	-.123	1	-.005	2	-.834	2	-.212	4	-2.454	4
479		5	max	7.056	6	-.123	6	.001	6	.235	6	.22	6	2.243	6
480			min	-5.758	4	-.202	1	-.005	2	-.834	2	-.215	4	-2.147	4

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	CROSSDIAG1	1	max	.721	4	.075	3	.157	6	0	1	0	1	0	1	0	1
2			min	-2.658	2	-.032	6	-.157	4	0	1	0	1	0	1	0	1
3		2	max	.715	4	.046	4	.075	6	2.131	4	1.957	6	1.708	6	1.561	4
4			min	-2.664	2	-.058	6	-.076	4	-1.957	6	-2.131	4	-1.385	4	-1.924	6
5		3	max	.76	4	.107	5	.007	6	3.303	4	3.634	6	.806	6	1.636	3
6			min	-2.715	2	-.034	4	-.031	2	-3.634	6	-3.303	4	-1.452	3	-.909	6
7		4	max	.754	4	.074	6	.076	4	2.31	4	2.151	6	1.323	6	1.16	4
8			min	-2.721	2	-.06	4	-.075	6	-2.151	6	-2.31	4	-1.03	4	-1.491	6
9		5	max	.748	4	.048	6	.157	4	0	1	0	1	0	1	0	1
10			min	-2.727	2	-.087	3	-.157	6	0	1	0	1	0	1	0	1
11	CROSSDIAG2	1	max	2.814	2	.094	4	.17	6	0	1	0	1	0	1	0	1
12			min	-1.693	6	-.055	6	-.17	4	0	1	0	1	0	1	0	1
13		2	max	2.82	2	.068	4	.088	6	2.548	4	2.405	6	1.452	6	1.292	4
14			min	-1.687	6	-.082	6	-.088	4	-2.405	6	-2.548	4	-1.147	4	-1.636	6
15		3	max	2.892	2	.041	4	.007	6	3.778	4	4.142	6	1.062	6	1.892	4
16			min	-1.681	6	-.113	5	-.026	1	-4.142	6	-3.778	4	-1.679	4	-1.197	6
17		4	max	2.898	2	.066	6	.088	4	2.368	4	2.211	6	1.835	6	1.692	4
18			min	-1.516	6	-.053	4	-.088	6	-2.211	6	-2.368	4	-1.501	4	-2.068	6
19		5	max	2.904	2	.039	6	.17	4	0	1	0	1	0	1	0	1
20			min	-1.51	6	-.081	3	-.17	6	0	1	0	1	0	1	0	1
21	CROSSDIAG3	1	max	.523	6	.069	3	.156	6	0	1	0	1	0	1	0	1
22			min	-4.409	2	-.023	6	-.157	4	0	1	0	1	0	1	0	1
23		2	max	.517	6	.038	4	.074	6	2.039	4	1.841	6	1.9	6	1.764	4
24			min	-4.415	2	-.05	6	-.076	4	-1.841	6	-2.039	4	-1.566	4	-2.141	6
25		3	max	.511	6	.097	5	.007	6	3.067	4	3.349	6	1.191	6	2.037	4
26			min	-4.467	2	-.024	4	-.03	2	-3.349	6	-3.067	4	-1.808	4	-1.343	6
27		4	max	.358	6	.063	6	.076	4	2.192	4	2.009	6	1.569	6	1.423	4
28			min	-4.473	2	-.051	4	-.074	6	-2.008	6	-2.192	4	-1.263	4	-1.768	6
29		5	max	.352	6	.037	6	.157	4	0	1	0	1	0	1	0	1
30			min	-4.479	2	-.079	3	-.156	6	0	1	0	1	0	1	0	1
31	CROSSDIAG4	1	max	4.433	2	.085	3	.171	6	0	1	0	1	0	1	0	1
32			min	-1.015	6	-.045	6	-.17	4	0	1	0	1	0	1	0	1
33		2	max	4.439	2	.058	4	.089	6	2.43	4	2.291	6	1.714	6	1.557	4
34			min	-1.009	6	-.072	6	-.088	4	-2.291	6	-2.43	4	-1.382	4	-1.931	6
35		3	max	4.509	2	.031	4	.007	6	3.542	4	3.915	6	1.48	6	2.303	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
36			min	-1.003	6	-.104	5	-.026	1	-3.915	6	-3.542	4	-2.044	4	-1.668	6
37		4	max	4.515	2	.058	6	.088	4	2.276	4	2.124	6	2.045	6	1.897	4
38			min	-.853	6	-.045	4	-.089	6	-2.124	6	-2.276	4	-1.684	4	-2.304	6
39		5	max	4.521	2	.032	6	.17	4	0	1	0	1	0	1	0	1
40			min	-.848	6	-.075	3	-.171	6	0	1	0	1	0	1	0	1
41	CROSSDIAG5	1	max	3.867	6	.098	3	.194	5	0	1	0	1	0	1	0	1
42			min	-6.29	2	-.049	6	-.195	3	0	1	0	1	0	1	0	1
43		2	max	3.855	6	.063	4	.095	5	4.991	3	4.554	6	3.68	5	3.552	4
44			min	-6.301	2	-.079	5	-.096	3	-4.554	6	-4.991	3	-3.005	4	-4.351	5
45		3	max	3.844	6	.119	5	.004	6	7.195	4	7.843	5	1.67	6	3.664	3
46			min	-6.332	2	-.04	4	-.056	1	-7.843	5	-7.195	4	-3.099	3	-1.974	6
47		4	max	3.737	6	.082	5	.096	3	5.053	3	4.634	6	3.54	5	3.377	4
48			min	-6.343	2	-.066	4	-.095	5	-4.634	6	-5.053	3	-2.856	4	-4.185	5
49		5	max	3.726	6	.052	6	.195	3	0	1	0	1	0	1	0	1
50			min	-6.355	2	-.101	3	-.194	5	0	1	0	1	0	1	0	1
51	CROSSDIAG6	1	max	7.007	2	.104	3	.201	6	0	1	0	1	0	1	0	1
52			min	-1.666	4	-.057	6	-.2	4	0	1	0	1	0	1	0	1
53		2	max	7.018	2	.07	4	.103	6	5.204	3	4.932	6	3.663	5	3.487	4
54			min	-1.654	4	-.086	5	-.101	4	-4.932	6	-5.204	3	-2.95	4	-4.331	5
55		3	max	7.068	2	.043	4	.004	6	7.564	4	8.32	5	1.97	6	3.832	3
56			min	-1.677	4	-.123	5	-.037	1	-8.32	5	-7.564	4	-3.241	3	-2.329	6
57		4	max	7.079	2	.083	5	.101	4	5.141	3	4.852	6	3.802	5	3.657	4
58			min	-1.666	4	-.066	4	-.103	6	-4.852	6	-5.141	3	-3.094	4	-4.494	5
59		5	max	7.091	2	.054	6	.2	4	0	1	0	1	0	1	0	1
60			min	-1.655	4	-.101	3	-.201	6	0	1	0	1	0	1	0	1
61	CROSSDIAG7	1	max	0	5	.074	1	0	1	0	1	0	1	0	1	0	1
62			min	-8.847	2	0	5	-.356	4	0	1	0	1	0	1	0	1
63		2	max	0	5	.037	1	0	1	8.127	4	0	5	2.915	1	13.404	4
64			min	-8.873	2	0	5	-.178	4	0	5	-8.127	4	-11.895	4	-3.285	1
65		3	max	0	5	0	1	0	1	10.836	4	0	5	3.887	1	17.872	4
66			min	-8.898	2	0	1	0	1	0	5	-10.836	4	-15.861	4	-4.38	1
67		4	max	0	5	0	5	.178	4	8.127	4	0	5	2.915	1	13.404	4
68			min	-8.924	2	-.037	3	0	1	0	5	-8.127	4	-11.895	4	-3.285	1
69		5	max	0	5	0	5	.356	4	0	1	0	1	0	1	0	1
70			min	-8.95	2	-.074	3	0	1	0	1	0	1	0	1	0	1
71	CROSSDIAG8	1	max	0	1	.074	3	0	1	0	1	0	1	0	1	0	1
72			min	-1.577	4	0	1	-.356	4	0	1	0	1	0	1	0	1
73		2	max	0	1	.037	3	0	1	8.127	4	0	1	0	1	13.404	4
74			min	-1.551	4	0	1	-.178	4	0	1	-8.127	4	-11.895	4	0	1
75		3	max	0	1	0	1	0	1	10.836	4	0	1	0	1	17.872	4
76			min	-1.525	4	0	1	0	1	0	1	-10.836	4	-15.861	4	0	1
77		4	max	0	1	0	1	.178	4	8.127	4	0	1	0	1	13.404	4
78			min	-1.5	4	-.037	3	0	1	0	1	-8.127	4	-11.895	4	0	1
79		5	max	0	1	0	1	.356	4	0	1	0	1	0	1	0	1
80			min	-1.474	4	-.074	3	0	1	0	1	0	1	0	1	0	1
81	HORZ1	1	max	1.714	4	.096	3	.144	6	0	1	0	1	0	1	0	1
82			min	-1.304	6	-.025	6	-.144	4	0	1	0	1	0	1	0	1
83		2	max	1.713	4	.063	4	.072	6	1.994	4	1.579	6	1.546	5	.758	4
84			min	-1.305	6	-.052	6	-.072	4	-1.579	6	-1.994	4	-.673	4	-1.742	5
85		3	max	2.591	4	.082	5	0	6	2.964	4	2.717	6	.914	5	.411	4
86			min	-3.156	6	-.038	4	-.003	2	-2.717	6	-2.964	4	-.365	4	-1.03	5
87		4	max	2.591	4	.054	6	.072	4	2.018	4	1.606	6	1.516	5	.723	4
88			min	-3.156	6	-.065	4	-.072	6	-1.606	6	-2.018	4	-.642	4	-1.709	5

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
89		5	max	2.591	4	.027	6	.145	4	0	1	0	1	0	1	0	1
90			min	-3.157	6	-.097	3	-.145	6	0	1	0	1	0	1	0	1
91	HORZ2	1	max	2.633	4	.098	3	.146	6	0	1	0	1	0	1	0	1
92			min	-3.178	6	-.028	6	-.146	4	0	1	0	1	0	1	0	1
93		2	max	2.633	4	.066	4	.073	6	2.038	4	1.627	6	1.525	5	.734	4
94			min	-3.177	6	-.054	6	-.073	4	-1.627	6	-2.038	4	-.652	4	-1.719	5
95		3	max	2.634	4	.039	4	0	6	3.005	4	2.759	6	.932	5	.434	4
96			min	-3.177	6	-.082	5	-.003	2	-2.759	6	-3.005	4	-.385	4	-1.05	5
97		4	max	1.755	4	.052	6	.073	4	2.014	4	1.6	6	1.555	5	.77	4
98			min	-1.326	6	-.064	4	-.073	6	-1.6	6	-2.014	4	-.683	4	-1.752	5
99		5	max	1.756	4	.026	6	.146	4	0	1	0	1	0	1	0	1
100			min	-1.325	6	-.096	3	-.146	6	0	1	0	1	0	1	0	1
101	HORZ3	1	max	.632	3	.097	3	.144	6	0	1	0	1	0	1	0	1
102			min	-.493	2	-.026	6	-.144	4	0	1	0	1	0	1	0	1
103		2	max	.632	3	.065	4	.072	6	2.011	4	1.588	6	1.526	5	.717	4
104			min	-.493	2	-.053	6	-.072	4	-1.588	6	-2.011	4	-.636	4	-1.72	5
105		3	max	1.514	4	.082	5	0	6	2.994	4	2.729	6	.875	5	.329	4
106			min	-2.049	6	-.04	4	-.003	2	-2.729	6	-2.994	4	-.292	4	-.986	5
107		4	max	1.514	4	.054	6	.072	4	2.033	4	1.612	6	1.505	5	.692	4
108			min	-2.049	6	-.066	4	-.072	6	-1.612	6	-2.033	4	-.614	4	-1.696	5
109		5	max	1.513	4	.028	6	.145	4	0	1	0	1	0	1	0	1
110			min	-2.049	6	-.099	3	-.145	6	0	1	0	1	0	1	0	1
111	HORZ4	1	max	1.754	4	.099	3	.146	6	0	1	0	1	0	1	0	1
112			min	-2.273	6	-.029	6	-.146	4	0	1	0	1	0	1	0	1
113		2	max	1.754	4	.067	4	.074	6	2.054	4	1.639	6	1.516	5	.704	4
114			min	-2.273	6	-.055	6	-.073	4	-1.639	6	-2.054	4	-.624	4	-1.709	5
115		3	max	1.755	4	.04	4	.001	6	3.035	4	2.783	6	.898	5	.353	4
116			min	-2.273	6	-.083	5	-.003	2	-2.783	6	-3.035	4	-.313	4	-1.012	5
117		4	max	.9	2	.054	6	.073	4	2.032	4	1.615	6	1.538	5	.729	4
118			min	-.399	6	-.066	4	-.073	6	-1.615	6	-2.032	4	-.647	4	-1.733	5
119		5	max	.901	2	.027	6	.146	4	0	1	0	1	0	1	0	1
120			min	-.398	6	-.098	3	-.146	6	0	1	0	1	0	1	0	1
121	HORZ5	1	max	.732	4	.066	3	.144	6	0	1	0	1	0	1	0	1
122			min	-.456	2	.011	6	-.145	4	0	1	0	1	0	1	0	1
123		2	max	.731	4	.028	3	.071	6	1.619	4	1.191	6	2.241	6	1.599	4
124			min	-.456	2	-.016	6	-.072	4	-1.191	6	-1.619	4	-1.419	4	-2.525	6
125		3	max	.792	4	.05	5	.004	2	2.201	4	1.924	6	2.359	6	2.092	4
126			min	-.96	1	-.031	1	0	4	-1.924	6	-2.201	4	-1.857	4	-2.658	6
127		4	max	.791	4	.017	6	.072	4	1.636	4	1.21	6	2.224	6	1.581	4
128			min	-.961	1	-.03	4	-.072	6	-1.21	6	-1.636	4	-1.403	4	-2.506	6
129		5	max	.791	4	-.009	6	.145	4	0	1	0	1	0	1	0	1
130			min	-.961	1	-.067	3	-.144	6	0	1	0	1	0	1	0	1
131	HORZ6	1	max	2.161	2	.067	3	.147	6	0	1	0	1	0	1	0	1
132			min	-1.577	6	.008	6	-.146	4	0	1	0	1	0	1	0	1
133		2	max	2.161	2	.03	4	.074	6	1.653	4	1.246	6	2.243	6	1.591	4
134			min	-1.577	6	-.019	6	-.073	4	-1.246	6	-1.653	4	-1.412	4	-2.527	6
135		3	max	2.627	2	.026	1	.004	2	2.235	4	1.997	6	2.396	6	2.112	4
136			min	-1.576	6	-.051	5	0	4	-1.997	6	-2.235	4	-1.874	4	-2.7	6
137		4	max	2.627	2	.017	6	.073	4	1.636	4	1.228	6	2.26	6	1.609	4
138			min	-.552	6	-.029	4	-.073	6	-1.228	6	-1.636	4	-1.428	4	-2.546	6
139		5	max	2.628	2	-.009	6	.146	4	0	1	0	1	0	1	0	1
140			min	-.552	6	-.066	3	-.146	6	0	1	0	1	0	1	0	1
141	HORZ7	1	max	1.277	6	.078	3	.144	6	0	1	0	1	0	1	0	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
142			min	-.671	2	-.005	6	-.145	4	0	1	0	1	0	1	0	1
143		2	max	1.277	6	.043	4	.071	6	1.772	4	1.362	6	1.902	6	1.264	4
144			min	-.672	2	-.032	6	-.072	4	-1.362	6	-1.772	4	-1.122	4	-2.143	6
145		3	max	1.276	6	.063	5	.001	6	2.489	4	2.248	6	1.682	6	1.423	4
146			min	-1.184	2	-.016	4	-.004	2	-2.248	6	-2.489	4	-1.263	4	-1.895	6
147		4	max	-.111	6	.033	6	.072	4	1.78	4	1.372	6	1.893	6	1.255	4
148			min	-1.184	2	-.043	4	-.072	6	-1.372	6	-1.78	4	-1.114	4	-2.133	6
149		5	max	-.111	6	.006	6	.145	4	0	1	0	1	0	1	0	1
150			min	-1.185	2	-.078	3	-.144	6	0	1	0	1	0	1	0	1
151	HORZ8	1	max	1.072	2	.079	3	.147	6	0	1	0	1	0	1	0	1
152			min	-.661	5	-.007	6	-.146	4	0	1	0	1	0	1	0	1
153		2	max	1.073	2	.044	4	.074	6	1.796	4	1.413	6	1.914	6	1.264	4
154			min	-.66	5	-.034	6	-.073	4	-1.413	6	-1.796	4	-1.122	4	-2.156	6
155		3	max	1.585	2	.017	4	.001	6	2.521	4	2.33	6	1.723	6	1.441	4
156			min	-.332	4	-.065	5	-.004	2	-2.33	6	-2.521	4	-1.278	4	-1.942	6
157		4	max	1.585	2	.033	6	.073	4	1.788	4	1.403	6	1.923	6	1.273	4
158			min	-.331	4	-.043	4	-.074	6	-1.403	6	-1.788	4	-1.13	4	-2.167	6
159		5	max	1.586	2	.007	6	.146	4	0	1	0	1	0	1	0	1
160			min	-.331	4	-.078	3	-.146	6	0	1	0	1	0	1	0	1
161	HORZ9	1	max	1.16	6	.055	3	.144	6	0	1	0	1	0	1	0	1
162			min	-.517	4	.022	6	-.145	4	0	1	0	1	0	1	0	1
163		2	max	1.16	6	.018	3	.071	6	1.493	4	1.072	6	2.478	6	1.907	4
164			min	-.517	4	-.005	6	-.072	4	-1.072	6	-1.493	4	-1.693	4	-2.792	6
165		3	max	1.16	6	.039	5	.001	6	1.913	4	1.651	6	2.833	6	2.711	4
166			min	-.924	1	.011	4	-.005	2	-1.651	6	-1.913	4	-2.405	4	-3.192	6
167		4	max	.403	6	.005	6	.072	4	1.492	4	1.073	6	2.477	6	1.908	4
168			min	-.925	1	-.018	3	-.071	6	-1.073	6	-1.492	4	-1.693	4	-2.791	6
169		5	max	.403	6	-.022	6	.145	4	0	1	0	1	0	1	0	1
170			min	-.926	1	-.055	3	-.144	6	0	1	0	1	0	1	0	1
171	HORZ10	1	max	.544	2	.055	3	.147	6	0	1	0	1	0	1	0	1
172			min	-.764	3	.02	6	-.145	4	0	1	0	1	0	1	0	1
173		2	max	.544	2	.018	3	.074	6	1.498	4	1.117	6	2.499	6	1.911	4
174			min	-.764	3	-.007	6	-.073	4	-1.117	6	-1.498	4	-1.696	4	-2.816	6
175		3	max	1.056	2	-.01	4	.001	6	1.924	4	1.738	6	2.877	6	2.716	4
176			min	-.763	3	-.041	5	-.005	2	-1.738	6	-1.924	4	-2.411	4	-3.242	6
177		4	max	1.056	2	.007	6	.073	4	1.498	4	1.115	6	2.5	6	1.91	4
178			min	-.487	4	-.018	3	-.074	6	-1.115	6	-1.498	4	-1.695	4	-2.817	6
179		5	max	1.056	2	-.02	6	.145	4	0	1	0	1	0	1	0	1
180			min	-.487	4	-.055	3	-.146	6	0	1	0	1	0	1	0	1
181	HORZ11	1	max	1.029	6	.042	5	.076	6	1.585	4	2.415	6	.291	4	.297	6
182			min	-.839	4	.023	2	-.076	4	-2.415	6	-1.585	4	-.297	6	-.291	4
183		2	max	1.029	6	.024	5	.038	6	2.022	4	1.955	6	.343	6	.346	4
184			min	-.839	4	.007	2	-.038	4	-1.955	6	-2.022	4	-.346	4	-.343	6
185		3	max	1.029	6	.007	6	0	6	2.222	4	1.733	6	.561	6	.561	4
186			min	-.839	4	-.009	1	-.002	2	-1.733	6	-2.222	4	-.561	4	-.561	6
187		4	max	1.029	6	-.009	6	.038	4	2.185	4	1.746	6	.356	6	.352	4
188			min	-.839	4	-.027	1	-.037	6	-1.746	6	-2.185	4	-.352	4	-.356	6
189		5	max	1.029	6	-.025	6	.075	4	1.912	4	1.997	6	.279	4	.273	6
190			min	-.839	4	-.046	1	-.075	6	-1.997	6	-1.912	4	-.273	6	-.279	4
191	LEG1	1	max	11.91	6	1.51	6	.323	4	17.658	4	17.413	6	7.662	4	9.836	2
192			min	-10.958	4	-1.521	4	-.325	6	-17.413	6	-17.658	4	-9.836	2	-7.662	4
193		2	max	9.762	6	.636	6	.142	2	7.596	4	7.345	6	3.192	4	2.907	6
194			min	-9.008	4	-.631	4	-.017	6	-7.345	6	-7.596	4	-2.907	6	-3.192	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
195		3	max	7.065	6	.13	6	.109	6	4.093	4	3.71	6	1.542	4	2.626	6
196			min	-6.22	4	-.117	4	-.318	2	-3.71	6	-4.093	4	-2.626	6	-1.542	4
197		4	max	4.598	6	.106	2	.049	6	3.196	4	3.044	6	1.901	2	.548	6
198			min	-3.91	4	-.029	4	-.096	2	-3.044	6	-3.196	4	-.548	6	-1.901	2
199		5	max	.362	3	.591	6	1.345	6	3.114	4	3.146	6	4.144	6	2.719	4
200			min	-.17	2	-.59	4	-1.277	4	-3.146	6	-3.114	4	-2.719	4	-4.144	6
201	LEG2	1	max	11.987	6	1.674	6	.37	6	18.279	4	18.142	6	8.747	6	10.17	2
202			min	-10.868	4	-1.688	4	-.363	4	-18.142	6	-18.279	4	-10.17	2	-8.747	6
203		2	max	9.857	6	.613	6	.111	2	7.521	4	7.655	6	2.365	6	2.522	4
204			min	-8.973	4	-.64	4	-.008	6	-7.655	6	-7.521	4	-2.522	4	-2.365	6
205		3	max	7.236	6	.088	6	.154	6	3.885	4	4.281	6	2.267	2	1.226	4
206			min	-6.371	4	-.11	4	-.355	2	-4.281	6	-3.885	4	-1.226	4	-2.267	2
207		4	max	4.618	6	.042	6	.037	4	2.849	4	3.028	6	1.757	2	.201	4
208			min	-3.936	4	-.079	2	-.066	2	-3.028	6	-2.849	4	-.201	4	-1.757	2
209		5	max	1.652	2	.59	6	1.368	4	3.106	4	3.073	6	3.281	4	3.427	6
210			min	.125	6	-.59	4	-1.345	6	-3.073	6	-3.106	4	-3.427	6	-3.281	4
211	LEG_W_PLT1	1	max	4.836	6	2.019	6	.492	6	12.359	4	12.266	6	8.145	2	2.143	6
212			min	-4.319	4	-2.021	4	-1.399	2	-12.266	6	-12.359	4	-2.143	6	-8.145	2
213		2	max	4.818	6	1.993	6	.492	6	10.221	4	10.13	6	2.797	2	.238	6
214			min	-4.336	4	-1.995	4	-1.365	2	-10.13	6	-10.221	4	-.238	6	-2.797	2
215		3	max	4.8	6	1.968	6	.492	6	8.111	4	8.022	6	1.667	6	2.419	2
216			min	-4.354	4	-1.97	4	-1.331	2	-8.022	6	-8.111	4	-2.419	2	-1.667	6
217		4	max	4.613	6	1.538	6	.321	4	6.428	4	6.35	6	.569	6	1.881	2
218			min	-4.21	4	-1.549	4	-.324	6	-6.35	6	-6.428	4	-1.881	2	-.569	6
219		5	max	4.595	6	1.512	6	.321	4	4.793	4	4.727	6	.719	4	.923	2
220			min	-4.227	4	-1.523	4	-.324	6	-4.727	6	-4.793	4	-.923	2	-.719	4
221	LEG_W_PLT2	1	max	4.887	6	2.207	6	.478	4	13.283	4	13.214	6	8.064	2	1.898	4
222			min	-4.282	4	-2.208	4	-1.356	2	-13.214	6	-13.283	4	-1.898	4	-8.064	2
223		2	max	4.866	6	2.181	6	.478	4	10.946	4	10.878	6	2.817	2	.047	4
224			min	-4.302	4	-2.182	4	-1.356	2	-10.878	6	-10.946	4	-.047	4	-2.817	2
225		3	max	4.846	6	2.155	6	.478	4	8.636	4	8.57	6	1.805	4	2.429	2
226			min	-4.323	4	-2.157	4	-1.356	2	-8.57	6	-8.636	4	-2.429	2	-1.805	4
227		4	max	4.645	6	1.702	6	.369	6	6.774	4	6.723	6	.566	4	1.841	2
228			min	-4.172	4	-1.715	4	-.361	4	-6.723	6	-6.774	4	-1.841	2	-.566	4
229		5	max	4.625	6	1.676	6	.369	6	4.962	4	4.924	6	.821	6	.954	2
230			min	-4.193	4	-1.69	4	-.361	4	-4.924	6	-4.962	4	-.954	2	-.821	6
231	WT1	1	max	2.942	6	.11	4	.068	1	0	1	0	1	0	1	0	1
232			min	-5.423	2	-.11	6	.004	6	0	1	0	1	0	1	0	1
233		2	max	2.93	6	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	6
234			min	-5.416	2	-.055	6	.002	6	-.315	6	-1.216	4	.077	6	-1.174	1
235		3	max	2.919	6	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	6
236			min	-5.41	2	0	1	0	1	-.42	6	-1.621	4	.103	6	-1.565	1
237		4	max	2.908	6	.055	6	-.002	6	.315	4	1.216	6	1.174	1	-.077	6
238			min	-5.404	2	-.055	4	-.034	1	-.315	6	-1.216	4	.077	6	-1.174	1
239		5	max	2.896	6	.11	6	-.004	6	0	1	0	1	0	1	0	1
240			min	-5.397	2	-.11	4	-.068	1	0	1	0	1	0	1	0	1
241	WT2	1	max	5.58	2	.11	4	.047	3	0	1	0	1	0	1	0	1
242			min	-3.005	4	-.11	6	-.019	2	0	1	0	1	0	1	0	1
243		2	max	5.598	2	.055	4	.024	3	.315	4	1.216	6	.819	3	.328	2
244			min	-3.004	4	-.055	6	-.009	2	-.315	6	-1.216	4	-.328	2	-.819	3
245		3	max	5.616	2	0	1	0	1	.42	4	1.621	6	1.092	3	.438	2
246			min	-3.004	4	0	1	0	1	-.42	6	-1.621	4	-.438	2	-1.092	3
247		4	max	5.634	2	.055	6	.009	2	.315	4	1.216	6	.819	3	.328	2

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
248			min	-3.004	4	-.055	4	-.024	3	-.315	6	-1.216	4	-.328	2	-.819	3
249		5	max	5.652	2	.11	6	.019	2	0	1	0	1	0	1	0	1
250			min	-3.003	4	-.11	4	-.047	3	0	1	0	1	0	1	0	1
251	WT3	1	max	6.508	2	.11	4	.019	2	0	1	0	1	0	1	0	1
252			min	-4.074	6	-.11	6	-.047	5	0	1	0	1	0	1	0	1
253		2	max	6.49	2	.055	4	.009	2	.315	4	1.216	6	.328	2	.819	5
254			min	-4.075	6	-.055	6	-.024	5	-.315	6	-1.216	4	-.819	5	-.328	2
255		3	max	6.472	2	0	1	0	1	.42	4	1.621	6	.438	2	1.092	5
256			min	-4.075	6	0	1	0	1	-.42	6	-1.621	4	-1.092	5	-.438	2
257		4	max	6.453	2	.055	6	.024	5	.315	4	1.216	6	.328	2	.819	5
258			min	-4.076	6	-.055	4	-.009	2	-.315	6	-1.216	4	-.819	5	-.328	2
259		5	max	6.435	2	.11	6	.047	5	0	1	0	1	0	1	0	1
260			min	-4.076	6	-.11	4	-.019	2	0	1	0	1	0	1	0	1
261	WT4	1	max	4.116	4	.11	4	.068	1	0	1	0	1	0	1	0	1
262			min	-6.67	2	-.11	6	.004	4	0	1	0	1	0	1	0	1
263		2	max	4.105	4	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	4
264			min	-6.664	2	-.055	6	.002	4	-.315	6	-1.216	4	.077	4	-1.174	1
265		3	max	4.093	4	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	4
266			min	-6.657	2	0	1	0	1	-.42	6	-1.621	4	.103	4	-1.565	1
267		4	max	4.082	4	.055	6	-.002	4	.315	4	1.216	6	1.174	1	-.077	4
268			min	-6.651	2	-.055	4	-.034	1	-.315	6	-1.216	4	.077	4	-1.174	1
269		5	max	4.071	4	.11	6	-.004	4	0	1	0	1	0	1	0	1
270			min	-6.644	2	-.11	4	-.068	1	0	1	0	1	0	1	0	1
271	WT5	1	max	9.093	6	.11	4	-.004	6	0	1	0	1	0	1	0	1
272			min	-9.112	4	-.11	6	-.068	1	0	1	0	1	0	1	0	1
273		2	max	9.104	6	.055	4	-.002	6	.315	4	1.216	6	-.077	6	1.174	1
274			min	-9.111	4	-.055	6	-.034	1	-.315	6	-1.216	4	-1.174	1	.077	6
275		3	max	9.115	6	0	1	0	1	.42	4	1.621	6	-.103	6	1.565	1
276			min	-9.111	4	0	1	0	1	-.42	6	-1.621	4	-1.565	1	.103	6
277		4	max	9.127	6	.055	6	.034	1	.315	4	1.216	6	-.077	6	1.174	1
278			min	-9.11	4	-.055	4	.002	6	-.315	6	-1.216	4	-1.174	1	.077	6
279		5	max	9.138	6	.11	6	.068	1	0	1	0	1	0	1	0	1
280			min	-9.11	4	-.11	4	.004	6	0	1	0	1	0	1	0	1
281	WT6	1	max	10.25	6	.11	4	.047	3	0	1	0	1	0	1	0	1
282			min	-10.037	4	-.11	6	-.019	2	0	1	0	1	0	1	0	1
283		2	max	10.262	6	.055	4	.024	3	.315	4	1.216	6	.819	3	.328	2
284			min	-10.037	4	-.055	6	-.009	2	-.315	6	-1.216	4	-.328	2	-.819	3
285		3	max	10.273	6	0	1	0	1	.42	4	1.621	6	1.092	3	.438	2
286			min	-10.036	4	0	1	0	1	-.42	6	-1.621	4	-.438	2	-1.092	3
287		4	max	10.284	6	.055	6	.009	2	.315	4	1.216	6	.819	3	.328	2
288			min	-10.036	4	-.055	4	-.024	3	-.315	6	-1.216	4	-.328	2	-.819	3
289		5	max	10.295	6	.11	6	.019	2	0	1	0	1	0	1	0	1
290			min	-10.036	4	-.11	4	-.047	3	0	1	0	1	0	1	0	1
291	WT7	1	max	7.252	4	.11	4	.019	2	0	1	0	1	0	1	0	1
292			min	-7.19	6	-.11	6	-.047	5	0	1	0	1	0	1	0	1
293		2	max	7.241	4	.055	4	.009	2	.315	4	1.216	6	.328	2	.819	5
294			min	-7.191	6	-.055	6	-.024	5	-.315	6	-1.216	4	-.819	5	-.328	2
295		3	max	7.229	4	0	1	0	1	.42	4	1.621	6	.438	2	1.092	5
296			min	-7.191	6	0	1	0	1	-.42	6	-1.621	4	-1.092	5	-.438	2
297		4	max	7.218	4	.055	6	.024	5	.315	4	1.216	6	.328	2	.819	5
298			min	-7.191	6	-.055	4	-.009	2	-.315	6	-1.216	4	-.819	5	-.328	2
299		5	max	7.207	4	.11	6	.047	5	0	1	0	1	0	1	0	1
300			min	-7.192	6	-.11	4	-.019	2	0	1	0	1	0	1	0	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
301	WT8	1	max	8.174	4	.11	4	.068	1	0	1	0	1	0	1	0	1
302			min	-8.334	6	-.11	6	.004	4	0	1	0	1	0	1	0	1
303		2	max	8.162	4	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	4
304			min	-8.334	6	-.055	6	.002	4	-.315	6	-1.216	4	.077	4	-1.174	1
305		3	max	8.151	4	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	4
306			min	-8.335	6	0	1	0	1	-.42	6	-1.621	4	.103	4	-1.565	1
307		4	max	8.14	4	.055	6	-.002	4	.315	4	1.216	6	1.174	1	-.077	4
308			min	-8.335	6	-.055	4	-.034	1	-.315	6	-1.216	4	.077	4	-1.174	1
309		5	max	8.129	4	.11	6	-.004	4	0	1	0	1	0	1	0	1
310			min	-8.336	6	-.11	4	-.068	1	0	1	0	1	0	1	0	1
311	WT9	1	max	9.728	6	.11	4	.019	2	0	1	0	1	0	1	0	1
312			min	-9.558	4	-.11	6	-.047	3	0	1	0	1	0	1	0	1
313		2	max	9.716	6	.055	4	.009	2	.315	4	1.216	6	.328	2	.819	3
314			min	-9.558	4	-.055	6	-.024	3	-.315	6	-1.216	4	-.819	3	-.328	2
315		3	max	9.705	6	0	1	0	1	.42	4	1.621	6	.438	2	1.092	3
316			min	-9.558	4	0	1	0	1	-.42	6	-1.621	4	-1.092	3	-.438	2
317		4	max	9.694	6	.055	6	.024	3	.315	4	1.216	6	.328	2	.819	3
318			min	-9.559	4	-.055	4	-.009	2	-.315	6	-1.216	4	-.819	3	-.328	2
319		5	max	9.682	6	.11	6	.047	3	0	1	0	1	0	1	0	1
320			min	-9.559	4	-.11	4	-.019	2	0	1	0	1	0	1	0	1
321	WT10	1	max	8.809	6	.11	4	.068	1	0	1	0	1	0	1	0	1
322			min	-8.889	4	-.11	6	.004	6	0	1	0	1	0	1	0	1
323		2	max	8.798	6	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	6
324			min	-8.889	4	-.055	6	.002	6	-.315	6	-1.216	4	.077	6	-1.174	1
325		3	max	8.786	6	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	6
326			min	-8.89	4	0	1	0	1	-.42	6	-1.621	4	.103	6	-1.565	1
327		4	max	8.775	6	.055	6	-.002	6	.315	4	1.216	6	1.174	1	-.077	6
328			min	-8.89	4	-.055	4	-.034	1	-.315	6	-1.216	4	.077	6	-1.174	1
329		5	max	8.764	6	.11	6	-.004	6	0	1	0	1	0	1	0	1
330			min	-8.891	4	-.11	4	-.068	1	0	1	0	1	0	1	0	1
331	WT11	1	max	8.2	4	.11	4	.047	5	0	1	0	1	0	1	0	1
332			min	-8.148	6	-.11	6	-.019	2	0	1	0	1	0	1	0	1
333		2	max	8.212	4	.055	4	.024	5	.315	4	1.216	6	.819	5	.328	2
334			min	-8.147	6	-.055	6	-.009	2	-.315	6	-1.216	4	-.328	2	-.819	5
335		3	max	8.223	4	0	1	0	1	.42	4	1.621	6	1.092	5	.438	2
336			min	-8.147	6	0	1	0	1	-.42	6	-1.621	4	-.438	2	-1.092	5
337		4	max	8.234	4	.055	6	.009	2	.315	4	1.216	6	.819	5	.328	2
338			min	-8.147	6	-.055	4	-.024	5	-.315	6	-1.216	4	-.328	2	-.819	5
339		5	max	8.245	4	.11	6	.019	2	0	1	0	1	0	1	0	1
340			min	-8.146	6	-.11	4	-.047	5	0	1	0	1	0	1	0	1
341	WT12	1	max	8.93	4	.11	4	.068	1	0	1	0	1	0	1	0	1
342			min	-9.09	6	-.11	6	.004	4	0	1	0	1	0	1	0	1
343		2	max	8.919	4	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	4
344			min	-9.09	6	-.055	6	.002	4	-.315	6	-1.216	4	.077	4	-1.174	1
345		3	max	8.908	4	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	4
346			min	-9.091	6	0	1	0	1	-.42	6	-1.621	4	.103	4	-1.565	1
347		4	max	8.896	4	.055	6	-.002	4	.315	4	1.216	6	1.174	1	-.077	4
348			min	-9.091	6	-.055	4	-.034	1	-.315	6	-1.216	4	.077	4	-1.174	1
349		5	max	8.885	4	.11	6	-.004	4	0	1	0	1	0	1	0	1
350			min	-9.092	6	-.11	4	-.068	1	0	1	0	1	0	1	0	1
351	WT13	1	max	7.94	6	.11	4	.068	1	0	1	0	1	0	1	0	1
352			min	-7.723	4	-.11	6	.004	6	0	1	0	1	0	1	0	1
353		2	max	7.929	6	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	6

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
354			min	-7.723	4	-.055	6	.002	6	-.315	6	-1.216	4	.077	6	-1.174	1
355		3	max	7.917	6	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	6
356			min	-7.724	4	0	1	0	1	-.42	6	-1.621	4	.103	6	-1.565	1
357		4	max	7.906	6	.055	6	-.002	6	.315	4	1.216	6	1.174	1	-.077	6
358			min	-7.724	4	-.055	4	-.034	1	-.315	6	-1.216	4	.077	6	-1.174	1
359		5	max	7.895	6	.11	6	-.004	6	0	1	0	1	0	1	0	1
360			min	-7.724	4	-.11	4	-.068	1	0	1	0	1	0	1	0	1
361	WT14	1	max	7.903	6	.11	4	.019	2	0	1	0	1	0	1	0	1
362			min	-8.032	4	-.11	6	-.047	3	0	1	0	1	0	1	0	1
363		2	max	7.892	6	.055	4	.009	2	.315	4	1.216	6	.328	2	.819	3
364			min	-8.032	4	-.055	6	-.024	3	-.315	6	-1.216	4	-.819	3	-.328	2
365		3	max	7.881	6	0	1	0	1	.42	4	1.621	6	.438	2	1.092	3
366			min	-8.032	4	0	1	0	1	-.42	6	-1.621	4	-1.092	3	-.438	2
367		4	max	7.869	6	.055	6	.024	3	.315	4	1.216	6	.328	2	.819	3
368			min	-8.033	4	-.055	4	-.009	2	-.315	6	-1.216	4	-.819	3	-.328	2
369		5	max	7.858	6	.11	6	.047	3	0	1	0	1	0	1	0	1
370			min	-8.033	4	-.11	4	-.019	2	0	1	0	1	0	1	0	1
371	WT15	1	max	11.769	4	.11	4	.019	2	0	1	0	1	0	1	0	1
372			min	-11.907	6	-.11	6	-.047	5	0	1	0	1	0	1	0	1
373		2	max	11.758	4	.055	4	.009	2	.315	4	1.216	6	.328	2	.819	5
374			min	-11.907	6	-.055	6	-.024	5	-.315	6	-1.216	4	-.819	5	-.328	2
375		3	max	11.746	4	0	1	0	1	.42	4	1.621	6	.438	2	1.092	5
376			min	-11.907	6	0	1	0	1	-.42	6	-1.621	4	-1.092	5	-.438	2
377		4	max	11.735	4	.055	6	.024	5	.315	4	1.216	6	.328	2	.819	5
378			min	-11.908	6	-.055	4	-.009	2	-.315	6	-1.216	4	-.819	5	-.328	2
379		5	max	11.724	4	.11	6	.047	5	0	1	0	1	0	1	0	1
380			min	-11.908	6	-.11	4	-.019	2	0	1	0	1	0	1	0	1
381	WT16	1	max	12.074	4	.11	4	.068	1	0	1	0	1	0	1	0	1
382			min	-11.87	6	-.11	6	.004	4	0	1	0	1	0	1	0	1
383		2	max	12.062	4	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	4
384			min	-11.871	6	-.055	6	.002	4	-.315	6	-1.216	4	.077	4	-1.174	1
385		3	max	12.051	4	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	4
386			min	-11.871	6	0	1	0	1	-.42	6	-1.621	4	.103	4	-1.565	1
387		4	max	12.04	4	.055	6	-.002	4	.315	4	1.216	6	1.174	1	-.077	4
388			min	-11.871	6	-.055	4	-.034	1	-.315	6	-1.216	4	.077	4	-1.174	1
389		5	max	12.028	4	.11	6	-.004	4	0	1	0	1	0	1	0	1
390			min	-11.872	6	-.11	4	-.068	1	0	1	0	1	0	1	0	1
391	WT17	1	max	11.67	6	.11	4	-.004	6	0	1	0	1	0	1	0	1
392			min	-11.573	4	-.11	6	-.068	1	0	1	0	1	0	1	0	1
393		2	max	11.682	6	.055	4	-.002	6	.315	4	1.216	6	-.077	6	1.174	1
394			min	-11.573	4	-.055	6	-.034	1	-.315	6	-1.216	4	-1.174	1	.077	6
395		3	max	11.693	6	0	1	0	1	.42	4	1.621	6	-.103	6	1.565	1
396			min	-11.572	4	0	1	0	1	-.42	6	-1.621	4	-1.565	1	.103	6
397		4	max	11.704	6	.055	6	.034	1	.315	4	1.216	6	-.077	6	1.174	1
398			min	-11.572	4	-.055	4	.002	6	-.315	6	-1.216	4	-1.174	1	.077	6
399		5	max	11.716	6	.11	6	.068	1	0	1	0	1	0	1	0	1
400			min	-11.572	4	-.11	4	.004	6	0	1	0	1	0	1	0	1
401	WT18	1	max	11.729	6	.11	4	.047	3	0	1	0	1	0	1	0	1
402			min	-11.914	4	-.11	6	-.019	2	0	1	0	1	0	1	0	1
403		2	max	11.74	6	.055	4	.024	3	.315	4	1.216	6	.819	3	.328	2
404			min	-11.913	4	-.055	6	-.009	2	-.315	6	-1.216	4	-.328	2	-.819	3
405		3	max	11.752	6	0	1	0	1	.42	4	1.621	6	1.092	3	.438	2
406			min	-11.913	4	0	1	0	1	-.42	6	-1.621	4	-.438	2	-1.092	3

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
407		4	max	11.763	6	.055	6	.009	2	.315	4	1.216	6	.819	3	.328	2
408			min	-11.913	4	-.055	4	-.024	3	-.315	6	-1.216	4	-.328	2	-.819	3
409		5	max	11.774	6	.11	6	.019	2	0	1	0	1	0	1	0	1
410			min	-11.912	4	-.11	4	-.047	3	0	1	0	1	0	1	0	1
411	WT19	1	max	5.711	4	.11	4	.019	2	0	1	0	1	0	1	0	1
412			min	-5.821	6	-.11	6	-.047	5	0	1	0	1	0	1	0	1
413		2	max	5.7	4	.055	4	.009	2	.315	4	1.216	6	.328	2	.819	5
414			min	-5.822	6	-.055	6	-.024	5	-.315	6	-1.216	4	-.819	5	-.328	2
415		3	max	5.689	4	0	1	0	1	.42	4	1.621	6	.438	2	1.092	5
416			min	-5.822	6	0	1	0	1	-.42	6	-1.621	4	-1.092	5	-.438	2
417		4	max	5.677	4	.055	6	.024	5	.315	4	1.216	6	.328	2	.819	5
418			min	-5.823	6	-.055	4	-.009	2	-.315	6	-1.216	4	-.819	5	-.328	2
419		5	max	5.666	4	.11	6	.047	5	0	1	0	1	0	1	0	1
420			min	-5.823	6	-.11	4	-.019	2	0	1	0	1	0	1	0	1
421	WT20	1	max	6.05	4	.11	4	.068	1	0	1	0	1	0	1	0	1
422			min	-5.874	6	-.11	6	.004	4	0	1	0	1	0	1	0	1
423		2	max	6.039	4	.055	4	.034	1	.315	4	1.216	6	1.174	1	-.077	4
424			min	-5.875	6	-.055	6	.002	4	-.315	6	-1.216	4	.077	4	-1.174	1
425		3	max	6.028	4	0	1	0	1	.42	4	1.621	6	1.565	1	-.103	4
426			min	-5.875	6	0	1	0	1	-.42	6	-1.621	4	.103	4	-1.565	1
427		4	max	6.016	4	.055	6	-.002	4	.315	4	1.216	6	1.174	1	-.077	4
428			min	-5.876	6	-.055	4	-.034	1	-.315	6	-1.216	4	.077	4	-1.174	1
429		5	max	6.005	4	.11	6	-.004	4	0	1	0	1	0	1	0	1
430			min	-5.876	6	-.11	4	-.068	1	0	1	0	1	0	1	0	1
431	Mast1	1	max	19.176	4	.399	2	.221	6	.035	6	6.596	2	9.99	4	9.929	6
432			min	-18.114	6	-.004	6	-.219	4	-6.596	2	-.035	6	-9.929	6	-9.99	4
433		2	max	19.146	4	.378	2	.2	6	0	4	2.641	2	7.871	4	7.786	6
434			min	-18.144	6	-.004	6	-.197	4	-2.641	2	0	4	-7.786	6	-7.871	4
435		3	max	19.116	4	.356	2	.178	6	1.095	2	.039	6	5.971	4	5.863	6
436			min	-18.174	6	-.004	6	-.176	4	-.039	6	-1.095	2	-5.863	6	-5.971	4
437		4	max	17.446	4	.001	6	.121	4	2.457	2	.056	6	5.4	4	5.306	6
438			min	-16.539	6	-.199	2	-.128	6	-.056	6	-2.457	2	-5.306	6	-5.4	4
439		5	max	17.416	4	.001	6	.142	4	.321	2	.043	6	6.737	4	6.716	6
440			min	-16.569	6	-.221	2	-.149	6	-.043	6	-.321	2	-6.716	6	-6.737	4
441	Mast2	1	max	17.416	4	.001	6	.142	4	.321	2	.043	6	6.737	4	6.716	6
442			min	-16.569	6	-.221	2	-.149	6	-.043	6	-.321	2	-6.716	6	-6.737	4
443		2	max	13.332	4	.004	6	.17	6	.004	4	.816	2	6.701	4	6.706	6
444			min	-12.521	6	-.002	4	-.168	4	-.816	2	-.004	4	-6.706	6	-6.701	4
445		3	max	13.304	4	.004	6	.146	6	.027	6	.951	2	5.202	4	5.182	6
446			min	-12.55	6	-.026	2	-.143	4	-.951	2	-.027	6	-5.182	6	-5.202	4
447		4	max	9.097	4	.223	2	.198	6	.044	6	.076	2	3.558	4	3.543	6
448			min	-8.406	6	-.001	6	-.202	4	-.076	2	-.044	6	-3.543	6	-3.558	4
449		5	max	9.069	4	.198	2	.174	6	1.952	2	.014	3	1.724	4	1.747	6
450			min	-8.434	6	-.001	6	-.178	4	-.014	3	-1.952	2	-1.747	6	-1.724	4
451	Mast3	1	max	9.069	4	.198	2	.174	6	1.952	2	.014	3	1.724	4	1.747	6
452			min	-8.434	6	-.001	6	-.178	4	-.014	3	-1.952	2	-1.747	6	-1.724	4
453		2	max	4.397	4	0	3	.722	4	.019	6	1.234	2	4.12	4	4.153	6
454			min	-3.84	6	-.918	2	-.72	6	-1.234	2	-.019	6	-4.153	6	-4.12	4
455		3	max	4.368	4	0	3	.749	4	.007	6	10.221	2	11.217	4	11.229	6
456			min	-3.869	6	-.945	2	-.747	6	-10.221	2	-.007	6	-11.229	6	-11.217	4
457		4	max	.267	3	.376	2	.376	6	0	3	13.324	2	13.324	4	13.324	6
458			min	.206	2	0	3	-.376	4	-13.324	2	0	3	-13.324	6	-13.324	4
459		5	max	.231	3	.348	2	.348	6	0	3	9.832	2	9.832	4	9.832	6

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
460			min	.177	2	0	3	-.348	4	-9.832	2	0	3	-9.832	6	-9.832	4
461	Mast4	1	max	.231	3	.348	2	.348	6	0	3	9.832	2	9.832	4	9.832	6
462			min	.177	6	0	3	-.348	4	-9.832	2	0	3	-9.832	6	-9.832	4
463		2	max	.197	3	.316	2	.316	6	0	3	6.686	2	6.686	4	6.686	6
464			min	.149	6	0	3	-.316	4	-6.686	2	0	3	-6.686	6	-6.686	4
465		3	max	.162	3	.284	2	.284	6	0	3	3.845	2	3.845	4	3.845	6
466			min	.121	6	0	3	-.284	4	-3.845	2	0	3	-3.845	6	-3.845	4
467		4	max	.128	3	.252	2	.252	6	0	3	1.308	2	1.308	4	1.308	6
468			min	.093	6	0	3	-.252	4	-1.308	2	0	3	-1.308	6	-1.308	4
469		5	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
470			min	0	1	0	1	0	1	0	1	0	1	0	1	0	1
471	Horz 12	1	max	1.029	6	.038	6	0	6	1.585	4	2.415	6	.267	6	.273	4
472			min	-.839	4	.023	1	-.002	2	-2.415	6	-1.585	4	-.273	4	-.267	6
473		2	max	1.029	6	.023	6	0	6	2.022	4	1.955	6	.273	6	.276	4
474			min	-.839	4	.007	1	-.002	2	-1.955	6	-2.022	4	-.276	4	-.273	6
475		3	max	1.029	6	.007	6	0	6	2.222	4	1.733	6	.279	6	.279	4
476			min	-.839	4	-.009	1	-.002	2	-1.733	6	-2.222	4	-.279	4	-.279	6
477		4	max	1.029	6	-.009	6	0	6	2.185	4	1.746	6	.285	6	.282	4
478			min	-.839	4	-.025	1	-.002	2	-1.746	6	-2.185	4	-.282	4	-.285	6
479		5	max	1.029	6	-.025	6	0	6	1.912	4	1.997	6	.291	6	.285	4
480			min	-.839	4	-.04	1	-.002	2	-1.997	6	-1.912	4	-.285	4	-.291	6

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	BOTLEG1	max	5.184	6	251.939	6	19.857	6	580.793	6	.028	2	113.593	2
2		min	-14.733	2	-224.997	4	-19.874	4	-585.176	4	-.004	4	-29.889	6
3	BOTMAST	max	.047	6	490.899	4	2.833	6	90.556	6	.082	2	60.159	2
4		min	-5.113	2	-463.717	6	-2.803	4	-91.112	4	-.022	6	-.323	6
5	BOTLEG2	max	5.038	4	254.614	6	21.703	6	625.675	6	.028	2	112.453	2
6		min	-14.276	2	-223.067	4	-21.717	4	-628.929	4	-.016	6	-26.475	4
7	Totals:	max	0	4	58.551	5	44.393	6						
8		min	-34.122	2	42.835	2	-44.393	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	1	max	.289	2	.019	4	.261	4	3.73e-3	4	3.45e-5	4	1.85e-4	6
2		min	-.057	6	-.021	6	-.259	6	-3.697e-3	6	-2.263e-4	2	-2.599e-3	2
3	2	max	.288	2	.019	4	.28	4	3.994e-3	4	1.26e-4	6	1.719e-6	3
4		min	-.044	4	-.021	6	-.278	6	-3.97e-3	6	-2.229e-4	2	-2.596e-3	2
5	3	max	.486	2	.041	4	.937	4	6.558e-3	4	6.272e-5	4	4.819e-4	6
6		min	-.024	6	-.045	6	-.929	6	-6.489e-3	6	-6.052e-4	2	-5.421e-4	4
7	4	max	.486	2	.04	4	1.002	4	6.961e-3	4	3.069e-4	6	4.651e-4	4
8		min	-.015	6	-.045	6	-.996	6	-6.913e-3	6	-5.958e-4	2	-4.27e-4	6
9	5	max	.486	2	.043	4	.978	4	6.841e-3	4	6.847e-5	4	9.332e-4	6
10		min	-.028	6	-.047	6	-.969	6	-6.768e-3	6	-6.83e-4	2	-9.993e-4	4
11	6	max	.485	2	.043	4	1.046	4	7.251e-3	4	3.44e-4	6	9.95e-4	4
12		min	-.011	6	-.048	6	-1.039	6	-7.202e-3	6	-6.723e-4	2	-9.664e-4	6
13	7	max	.472	2	.053	4	1.183	4	7.992e-3	4	8.675e-5	4	8.909e-4	6
14		min	-.065	6	-.059	6	-1.171	6	-7.901e-3	6	-1.033e-3	2	-9.009e-4	4
15	8	max	.47	2	.053	4	1.262	4	8.426e-3	4	5.033e-4	6	9.2e-4	4

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
16		min	-.029	4	-.059	6	-1.254	6	-8.368e-3	6	-1.017e-3	2	-9.375e-4	6
17	9	max	.541	2	.071	4	1.701	4	9.998e-3	4	1.901e-4	6	9.253e-4	4
18		min	-.038	6	-.078	6	-1.684	6	-9.871e-3	6	-1.821e-3	2	-1.406e-3	2
19	10	max	.541	2	.07	4	1.806	4	1.045e-2	4	7.832e-4	6	1.071e-3	6
20		min	-.008	6	-.078	6	-1.794	6	-1.038e-2	6	-1.792e-3	2	-1.458e-3	2
21	11	max	.623	2	.097	4	2.645	4	1.221e-2	4	4.295e-4	6	7.498e-4	6
22		min	-.029	6	-.106	6	-2.615	6	-1.203e-2	6	-2.966e-3	2	-1.277e-3	2
23	12	max	.624	2	.096	4	2.787	4	1.265e-2	4	1.154e-3	6	6.287e-4	4
24		min	-.026	6	-.107	6	-2.77	6	-1.26e-2	6	-2.916e-3	2	-1.173e-3	2
25	13	max	.632	2	.099	4	2.719	4	1.234e-2	4	4.475e-4	6	8.596e-4	6
26		min	-.034	6	-.108	6	-2.688	6	-1.215e-2	6	-3.046e-3	2	-1.353e-3	2
27	14	max	.631	2	.098	4	2.864	4	1.278e-2	4	1.179e-3	6	7.286e-4	4
28		min	-.022	6	-.109	6	-2.847	6	-1.273e-2	6	-2.995e-3	2	-1.222e-3	2
29	15	max	.656	2	.105	4	2.945	4	1.27e-2	4	5.029e-4	6	7.739e-4	6
30		min	-.05	6	-.114	6	-2.91	6	-1.249e-2	6	-3.285e-3	2	-1.283e-3	2
31	16	max	.653	2	.104	4	3.098	4	1.313e-2	4	1.251e-3	6	6.791e-4	4
32		min	-.009	6	-.115	6	-3.08	6	-1.309e-2	6	-3.229e-3	2	-1.115e-3	2
33	17	max	.836	2	.136	4	4.903	4	1.487e-2	4	1.172e-3	6	2.019e-4	4
34		min	-.042	6	-.148	6	-4.831	6	-1.453e-2	6	-5.471e-3	2	-2.281e-3	2
35	18	max	.832	2	.134	4	5.113	4	1.523e-2	4	1.756e-3	6	7.375e-4	6
36		min	-.035	6	-.149	6	-5.096	6	-1.531e-2	6	-5.374e-3	2	-2.23e-3	2
37	19	max	.851	2	.137	4	4.993	4	1.494e-2	4	1.201e-3	6	1.38e-4	4
38		min	-.041	6	-.15	6	-4.918	6	-1.46e-2	6	-5.563e-3	2	-2.423e-3	2
39	20	max	.846	2	.136	4	5.204	4	1.53e-2	4	1.777e-3	6	7.212e-4	6
40		min	-.04	6	-.151	6	-5.188	6	-1.538e-2	6	-5.465e-3	2	-2.376e-3	2
41	21	max	.896	2	.141	4	5.264	4	1.515e-2	4	1.288e-3	6	3.269e-4	6
42		min	-.045	6	-.154	6	-5.183	6	-1.479e-2	6	-5.829e-3	2	-2.38e-3	2
43	22	max	.891	2	.14	4	5.482	4	1.55e-2	4	1.839e-3	6	4.367e-4	6
44		min	-.051	6	-.155	6	-5.467	6	-1.56e-2	6	-5.736e-3	2	-2.493e-3	2
45	23	max	.948	2	.144	4	5.631	4	1.542e-2	4	1.44e-3	6	3.535e-4	6
46		min	-.054	6	-.158	6	-5.541	6	-1.503e-2	6	-6.284e-3	2	-2.069e-3	2
47	24	max	.947	2	.143	4	5.857	4	1.575e-2	4	1.939e-3	6	1.605e-4	6
48		min	-.057	6	-.159	6	-5.846	6	-1.589e-2	6	-6.198e-3	2	-2.12e-3	2
49	25	max	.961	2	.145	4	5.724	4	1.549e-2	4	1.478e-3	6	3.14e-4	6
50		min	-.056	6	-.159	6	-5.632	6	-1.509e-2	6	-6.399e-3	2	-2.041e-3	2
51	26	max	.959	2	.144	4	5.952	4	1.581e-2	4	1.964e-3	6	1.571e-4	6
52		min	-.058	6	-.16	6	-5.941	6	-1.595e-2	6	-6.313e-3	2	-2.026e-3	2
53	27	max	1.217	2	.163	4	7.908	4	1.683e-2	4	2.332e-3	6	3.567e-4	6
54		min	-.09	6	-.18	6	-7.755	6	-1.634e-2	6	-8.961e-3	2	-2.088e-3	2
55	28	max	1.206	2	.162	4	8.172	4	1.702e-2	4	2.524e-3	6	1.113e-4	4
56		min	-.071	6	-.182	6	-8.189	6	-1.727e-2	6	-8.912e-3	2	-2.157e-3	2
57	29	max	1.44	2	.164	4	9.672	4	1.777e-2	4	3.324e-3	6	6.676e-4	4
58		min	-.104	6	-.184	6	-9.467	6	-1.725e-2	6	-1.149e-2	2	-1.844e-3	2
59	30	max	1.44	2	.163	4	9.951	4	1.789e-2	4	2.953e-3	6	8.92e-4	6
60		min	-.103	6	-.185	6	-9.996	6	-1.817e-2	6	-1.146e-2	2	-1.878e-3	2
61	31	max	1.451	2	.165	4	9.779	4	1.783e-2	4	3.383e-3	6	7.725e-4	4
62		min	-.1	6	-.184	6	-9.571	6	-1.731e-2	6	-1.163e-2	2	-1.786e-3	2
63	32	max	1.45	2	.163	4	10.059	4	1.794e-2	4	2.978e-3	6	9.782e-4	6
64		min	-.108	6	-.186	6	-10.105	6	-1.823e-2	6	-1.161e-2	2	-1.793e-3	2
65	33	max	1.538	2	.166	4	10.81	4	1.84e-2	4	3.937e-3	6	1.061e-3	6
66		min	-.088	6	-.186	6	-10.573	6	-1.788e-2	6	-1.304e-2	2	-1.316e-3	2
67	34	max	1.537	2	.164	4	11.096	4	1.85e-2	4	3.217e-3	6	1.06e-3	4
68		min	-.136	6	-.188	6	-11.159	6	-1.879e-2	6	-1.304e-2	2	-1.27e-3	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
69	35	max	.486	2	.013	4	1.072	4	6.852e-3	4	4.222e-4	6	-2.178e-6	4
70		min	-.02	6	-.064	5	-1.089	6	-6.783e-3	6	-1.733e-3	2	-3.199e-4	2
71	36	max	.509	2	.051	4	1.537	4	8.58e-3	4	5.552e-4	6	6.62e-6	6
72		min	-.021	6	-.057	6	-1.525	6	-8.478e-3	6	-2.285e-3	2	-4.763e-4	2
73	37	max	.579	2	.097	4	2.401	4	1.125e-2	4	8.204e-4	6	8.868e-6	6
74		min	-.025	6	-.107	6	-2.383	6	-1.112e-2	6	-3.317e-3	2	-6.853e-4	2
75	38	max	.627	2	.066	4	2.834	4	1.243e-2	4	9.714e-4	6	-4.32e-6	6
76		min	-.028	6	-.119	6	-2.835	6	-1.231e-2	6	-3.873e-3	2	-6.928e-4	2
77	39	max	.724	2	.118	4	4.673	4	1.382e-2	4	1.309e-3	6	2.97e-5	6
78		min	-.033	6	-.13	6	-4.639	6	-1.368e-2	6	-5.067e-3	2	-1.043e-3	2
79	40	max	.841	2	.166	4	5.169	4	1.502e-2	4	1.652e-3	6	-6.168e-6	6
80		min	-.04	6	-.222	6	-5.15	6	-1.489e-2	6	-6.285e-3	2	-9.361e-4	2
81	41	max	.954	2	.151	4	5.893	4	1.559e-2	4	1.896e-3	6	-6.304e-6	4
82		min	-.056	6	-.205	6	-5.866	6	-1.546e-2	6	-7.136e-3	2	-9.797e-4	2
83	43	max	1.445	2	.216	4	9.995	4	1.786e-2	4	3.282e-3	6	-7.108e-6	4
84		min	-.104	6	-.277	6	-9.938	6	-1.773e-2	6	-1.2e-2	2	-1.137e-3	2
85	BOTLEG1	max	0	2	0	4	0	4	0	4	0	4	0	6
86		min	0	6	0	6	0	6	0	6	0	2	0	2
87	BOTLEG2	max	0	2	0	4	0	4	0	4	0	6	0	4
88		min	0	4	0	6	0	6	0	6	0	2	0	2
89	BOTMAST	max	0	2	0	6	0	4	0	4	0	6	0	6
90		min	0	6	0	4	0	6	0	6	0	2	0	2
91	MC1	max	.321	2	.142	6	.808	4	6.367e-3	4	2.725e-6	6	6.639e-6	4
92		min	0	6	-.149	4	-.8	6	-6.287e-3	6	-1.016e-5	2	-1.348e-3	2
93	MC2	max	.439	2	.236	6	2.154	4	1.025e-2	4	4.668e-6	6	2.544e-5	4
94		min	-.002	4	-.249	4	-2.129	6	-1.014e-2	6	-1.728e-5	2	-5.432e-4	2
95	MC3	max	.572	2	.307	6	4.183	4	1.399e-2	4	6.458e-6	6	2.011e-5	4
96		min	-.007	4	-.324	4	-4.139	6	-1.387e-2	6	-2.387e-5	2	-1.11e-3	2
97	MC4	max	.742	2	.355	6	6.662	4	1.564e-2	4	7.929e-6	6	7.949e-6	4
98		min	-.009	4	-.376	4	-6.598	6	-1.552e-2	6	-2.927e-5	2	-4.889e-4	2
99	MC5	max	.966	2	.377	6	9.519	4	2.062e-2	4	8.816e-6	6	5.887e-6	4
100		min	-.01	4	-.401	4	-9.437	6	-2.051e-2	6	-3.253e-5	2	-4.272e-3	2
101	TOPLEG1	max	1.557	2	.165	4	11.088	4	1.855e-2	4	4.088e-3	6	1.361e-3	6
102		min	-.11	6	-.186	6	-10.843	6	-1.803e-2	6	-1.348e-2	2	-1.411e-3	4
103	TOPLEG2	max	1.555	2	.164	4	11.376	4	1.865e-2	4	3.309e-3	6	1.472e-3	4
104		min	-.116	6	-.188	6	-11.443	6	-1.893e-2	6	-1.348e-2	2	-1.279e-3	6
105	TOPMAST	max	6.301	2	.375	6	22.136	4	3.148e-2	4	8.816e-6	6	5.887e-6	4
106		min	-.012	4	-.403	4	-22.008	6	-3.138e-2	6	-3.253e-5	2	-1.513e-2	2
107	TOPPLT1	max	.481	2	.036	4	.86	4	5.962e-3	4	5.116e-5	4	2.846e-4	4
108		min	-.023	6	-.04	6	-.853	6	-5.902e-3	6	-4.499e-4	2	-9.08e-4	2
109	TOPPLT2	max	.481	2	.036	4	.92	4	6.346e-3	4	2.327e-4	6	5.173e-4	6
110		min	-.014	6	-.04	6	-.915	6	-6.303e-3	6	-4.43e-4	2	-9.23e-4	2
111	T_MOBILE	max	5.756	2	.375	6	21.002	4	3.148e-2	4	8.816e-6	6	5.887e-6	4
112		min	-.012	4	-.403	4	-20.879	6	-3.137e-2	6	-3.253e-5	2	-1.513e-2	2
113	METRO	max	1.472	2	.165	4	9.994	4	1.794e-2	4	3.499e-3	6	8.444e-4	4
114		min	-.092	6	-.185	6	-9.779	6	-1.742e-2	6	-1.193e-2	2	-1.676e-3	2
115	METRO2	max	1.471	2	.164	4	10.275	4	1.805e-2	4	3.028e-3	6	1.004e-3	6
116		min	-.121	6	-.186	6	-10.325	6	-1.834e-2	6	-1.191e-2	2	-1.668e-3	2
117	FC1	max	.417	2	.211	6	1.735	4	9.066e-3	4	4.156e-6	6	2.228e-5	4
118		min	-.001	4	-.223	4	-1.715	6	-8.953e-3	6	-1.54e-5	2	-5.013e-4	2
119	FC2	max	.711	2	.343	6	5.985	4	1.542e-2	4	7.541e-6	6	9.598e-6	4
120		min	-.008	4	-.362	4	-5.926	6	-1.53e-2	6	-2.784e-5	2	-8.961e-4	2
121	FC3	max	1.864	2	.376	6	12.403	4	2.639e-2	4	8.816e-6	6	5.887e-6	4

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
122		min	-.01	4	-.402	4	-12.309	6	-2.629e-2	6	-3.253e-5	2	-1.005e-2	2
123	GPS	max	.806	2	.132	4	4.681	4	1.468e-2	4	1.101e-3	6	3.189e-4	4
124		min	-.044	6	-.145	6	-4.614	6	-1.436e-2	6	-5.238e-3	2	-1.818e-3	2

Envelope AISC ASD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Sh...	Loc[ft]	.....		Fa...	Ft [ksi]	Fb y-y [ksi]	Fb.........	...			AS...
1	CROSS...	L5X5X5	.095	15.2...	2	.011	15.207	z	4	17...	28.793	- Code check based o...					
2	CROSS...	L5X5X5	.165	15.2...	2	.011	15.207	z	4	17...	28.793	- Code check based o...					H2...
3	CROSS...	L5X5X5	.156	15.2...	2	.011	15.207	z	4	17...	28.793	- Code check based o...					H1...
4	CROSS...	L5X5X5	.257	15.2...	2	.010	15.207	z	4	17...	28.793	- Code check based o...					H2...
5	CROSS...	L3.5X3....	.526	0	6	.012	18.916	z	4	7....	28.793	- Code check based o...					H1...
6	CROSS...	L3.5X3....	.964	18.9...	2	.012	18.916	z	4	7....	28.793	- Code check based o...					H1...
7	CROSS...	L5X5X5	.311	33.1...	2	.019	0	z	4	1....	28.793	- Code check based o...					H1...
8	CROSS...	L5X5X5	.055	0	4	.020	0	z	4	1....	28.793	- Code check based o...					H2...
9	HORZ1	L5X5X5	.137	6.755	4	.008	13.509	z	6	18...	28.793	- Code check based o...					H2...
10	HORZ2	L5X5X5	.139	6.755	4	.008	13.509	z	6	18...	28.793	- Code check based o...					H1...
11	HORZ3	L5X5X5	.080	6.755	4	.008	13.509	z	6	18...	28.793	- Code check based o...					H1...
12	HORZ4	L5X5X5	.093	6.755	4	.008	13.509	z	6	18...	28.793	- Code check based o...					H1...
13	HORZ5	L5X5X5	.042	6.755	4	.009	13.509	z	6	18...	28.793	- Code check based o...					H1...
14	HORZ6	L5X5X5	.139	13.5...	2	.009	13.509	z	6	18...	28.793	- Code check based o...					H1...
15	HORZ7	L5X5X5	.067	0	6	.009	13.509	z	6	18...	28.793	- Code check based o...					H1...
16	HORZ8	L5X5X5	.084	13.5...	2	.009	13.509	z	6	18...	28.793	- Code check based o...					H1...
17	HORZ9	L5X5X5	.061	0	6	.009	13.509	z	6	18...	28.793	- Code check based o...					H1...
18	HORZ10	L5X5X5	.056	13.5...	2	.009	13.509	z	6	18...	28.793	- Code check based o...					H1...
19	HORZ11	TU8X4X5	.095	0	6	.025	13.5	y	2	36...	36.791	40.47	40...	...	...	...	H1...
20	LEG1	W24X68	.930	.625	6	.060	0	y	4	39...	39.99	49.987	36...	...	...	...	H1...
21	LEG2	W24X68	.983	1.25	6	.068	0	y	4	39...	39.99	49.987	36...	...	...	...	H1...
22	LEG_W_...	new	.473	0	6	.080	0	y	4	35...	39.99	49.987	39...	...	...	...	H1...
23	LEG_W_...	new	.495	0	6	.087	0	y	4	35...	39.99	49.987	39...	...	...	...	H1...
24	WT1	WT6X15	.207	5.045	6	.007	0	y	4	19...	39.99	28.322	28...	1	1	1	H1...
25	WT2	WT6X15	.315	5.256	2	.006	10.091	y	4	19...	39.99	28.322	28...	1	1	1	H1...
26	WT3	WT6X15	.362	4.835	2	.005	0	y	6	19...	39.99	28.322	28...	1	1	1	H1...
27	WT4	WT6X15	.230	4.94	4	.005	10.091	y	4	19...	39.99	28.322	28...	1	1	1	H1...
28	WT5	WT6X15	.540	5.045	6	.007	0	y	6	19...	39.99	28.322	28...	1	1	1	H1...
29	WT6	WT6X15	.602	5.045	6	.006	10.091	y	4	19...	39.99	28.322	28...	1	1	1	H1...
30	WT7	WT6X15	.393	4.94	4	.007	0	y	6	19...	39.99	28.322	28...	1	1	1	H1...
31	WT8	WT6X15	.441	4.94	4	.006	10.091	y	4	19...	39.99	28.322	28...	1	1	1	H1...
32	WT9	WT6X15	.572	5.045	6	.006	0	y	2	19...	39.99	28.322	28...	1	1	1	H1...
33	WT10	WT6X15	.523	5.045	6	.007	10.091	z	2	19...	39.99	28.322	28...	1	1	1	H1...
34	WT11	WT6X15	.445	5.151	4	.006	10.091	y	6	19...	39.99	28.322	28...	1	1	1	H1...
35	WT12	WT6X15	.480	4.94	4	.006	0	z	2	19...	39.99	28.322	28...	1	1	1	H1...
36	WT13	WT6X15	.476	5.045	6	.011	0	z	2	19...	39.99	28.322	28...	1	1	1	H1...
37	WT14	WT6X15	.474	5.045	6	.010	10.091	y	2	19...	39.99	28.322	28...	1	1	1	H1...
38	WT15	WT6X15	.629	4.94	4	.009	10.091	y	2	19...	39.99	28.322	28...	1	1	1	H1...
39	WT16	WT6X15	.644	4.94	4	.009	0	z	2	19...	39.99	28.322	28...	1	1	1	H1...
40	WT17	WT6X15	.678	5.045	6	.012	0	z	2	19...	39.99	28.322	28...	1	1	1	H1...
41	WT18	WT6X15	.682	5.045	6	.012	0	y	2	19...	39.99	28.322	28...	1	1	1	H1...
42	WT19	WT6X15	.313	4.94	4	.015	10.091	y	2	19...	39.99	28.322	28...	1	1	1	H1...
43	WT20	WT6X15	.331	4.94	4	.016	0	z	2	19...	39.99	28.322	28...	1	1	1	H1...
44	Mast1	HSS18...	.841	0	4	.018	0		2	29...	33.592	36.951	36...	1	...	...	H1...
45	Mast2	HSS18...	.720	3.438	4	.011	17.474		2	33...	33.592	36.951	36...	...	...	...	H1...

Envelope AISC ASD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Sh...	Loc[ft]	...	...	Fa...	Ft [ksi]	Fb y-y [ksi]	Fb...	...	...	...	AS...
46	Mast3	HSS18...	.532	17.1...	4	.043	17.188		2	31...	33.592	36.951	36...	...	...	...	H1...
47	Mast4	HSS18...	.271	0	4	.016	0		4	28...	33.592	36.951	36...	...	...	.6	H1...
48	Horz 12	TU8X4X5	.094	0	6	.025	13.5	y	2	36...	36.791	40.47	40...	...	...	...	H1...

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTLEG1	-12.496	-107.492	-1.22	50.805	.025	96.599
2	1	BOTMAST	-4.365	17.251	-.028	-.807	.071	51.363
3	1	BOTLEG2	-12.221	148.792	1.248	-55.139	.024	96.218
4	1	Totals:	-29.081	58.551	0			
5	1	COG (ft):	X: 8.586	Y: 50.83	Z: .971			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTLEG1	-14.733	-132.304	-1.401	60.429	.028	113.593
2	2	BOTMAST	-5.113	13.309	-.038	-.846	.082	60.159
3	2	BOTLEG2	-14.276	161.83	1.439	-64.606	.028	112.453
4	2	Totals:	-34.122	42.835	0			
5	2	COG (ft):	X: 8.977	Y: 50.421	Z: 1.048			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	BOTLEG1	-4.309	-189.314	-17.256	-509.209	-.004	24.686
2	3	BOTMAST	-.028	431.842	-2.431	-79.189	.009	.234
3	3	BOTLEG2	4.337	-183.977	-18.758	-544.836	.01	-22.793
4	3	Totals:	0	58.551	-38.445			
5	3	COG (ft):	X: 7.401	Y: 50.83	Z: .971			

Joint Reactions

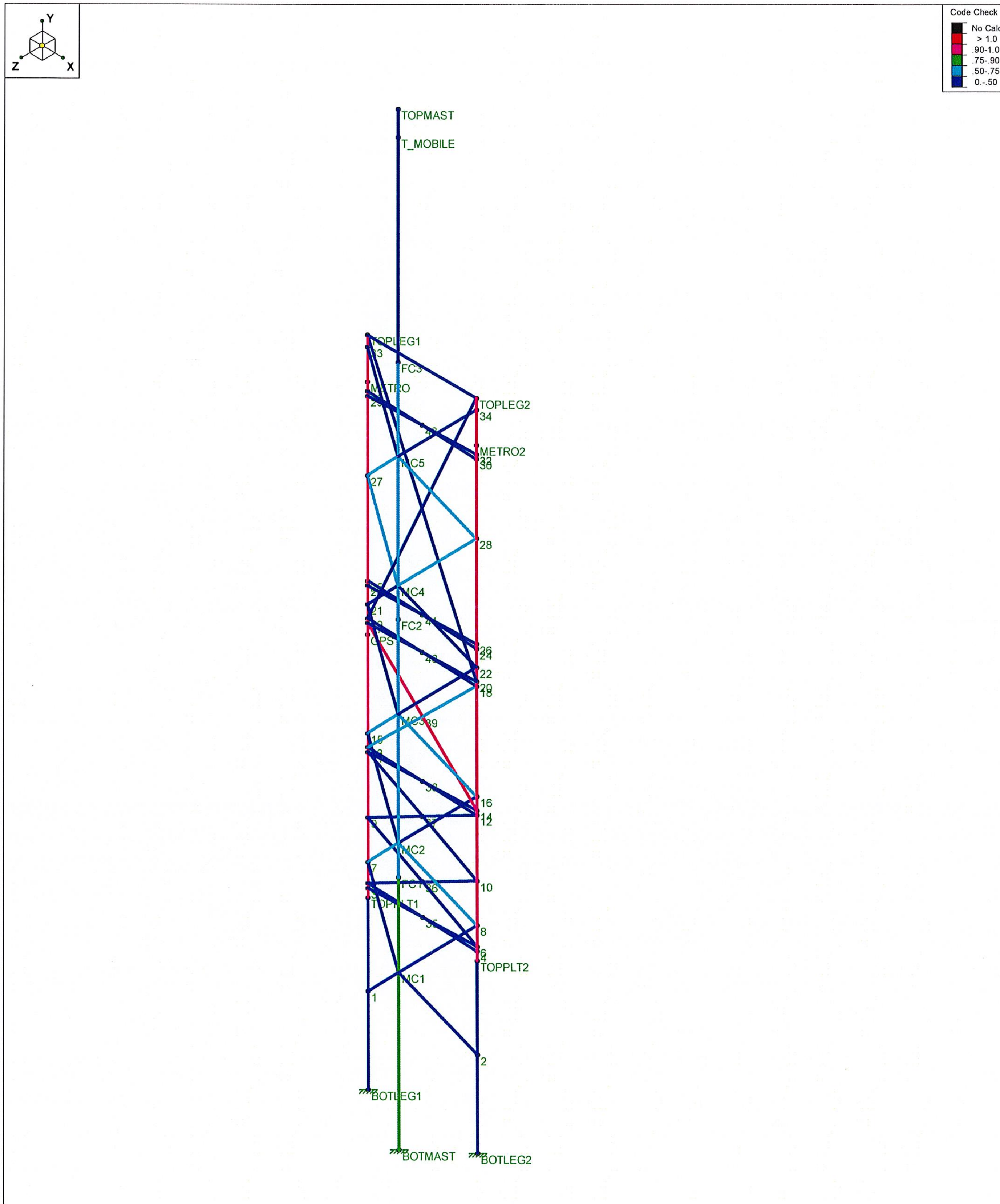
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	BOTLEG1	-5.003	-224.997	-19.874	-585.176	-.004	28.719
2	4	BOTMAST	-.035	490.899	-2.803	-91.112	.011	.265
3	4	BOTLEG2	5.038	-223.067	-21.717	-628.929	.012	-26.475
4	4	Totals:	0	42.835	-44.393			
5	4	COG (ft):	X: 7.111	Y: 50.421	Z: 1.048			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	BOTLEG1	4.532	224.749	17.241	504.697	0	-26.041
2	5	BOTMAST	.039	-396.89	2.457	78.458	-.018	-.242
3	5	BOTLEG2	-4.571	230.693	18.746	541.269	-.013	24.219
4	5	Totals:	0	58.551	38.445			
5	5	COG (ft):	X: 7.401	Y: 50.83	Z: .971			

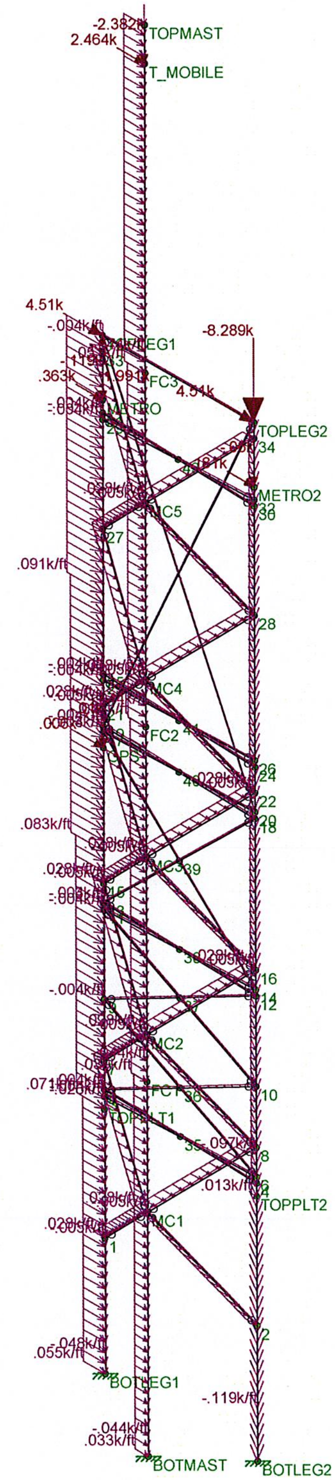
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	BOTLEG1	5.184	251.939	19.857	580.793	0	-29.889
2	6	BOTMAST	.047	-463.717	2.833	90.556	-.022	-.323
3	6	BOTLEG2	-5.231	254.614	21.703	625.675	-.016	27.567
4	6	Totals:	0	42.835	44.393			
5	6	COG (ft):	X: 7.111	Y: 50.421	Z: 1.048			



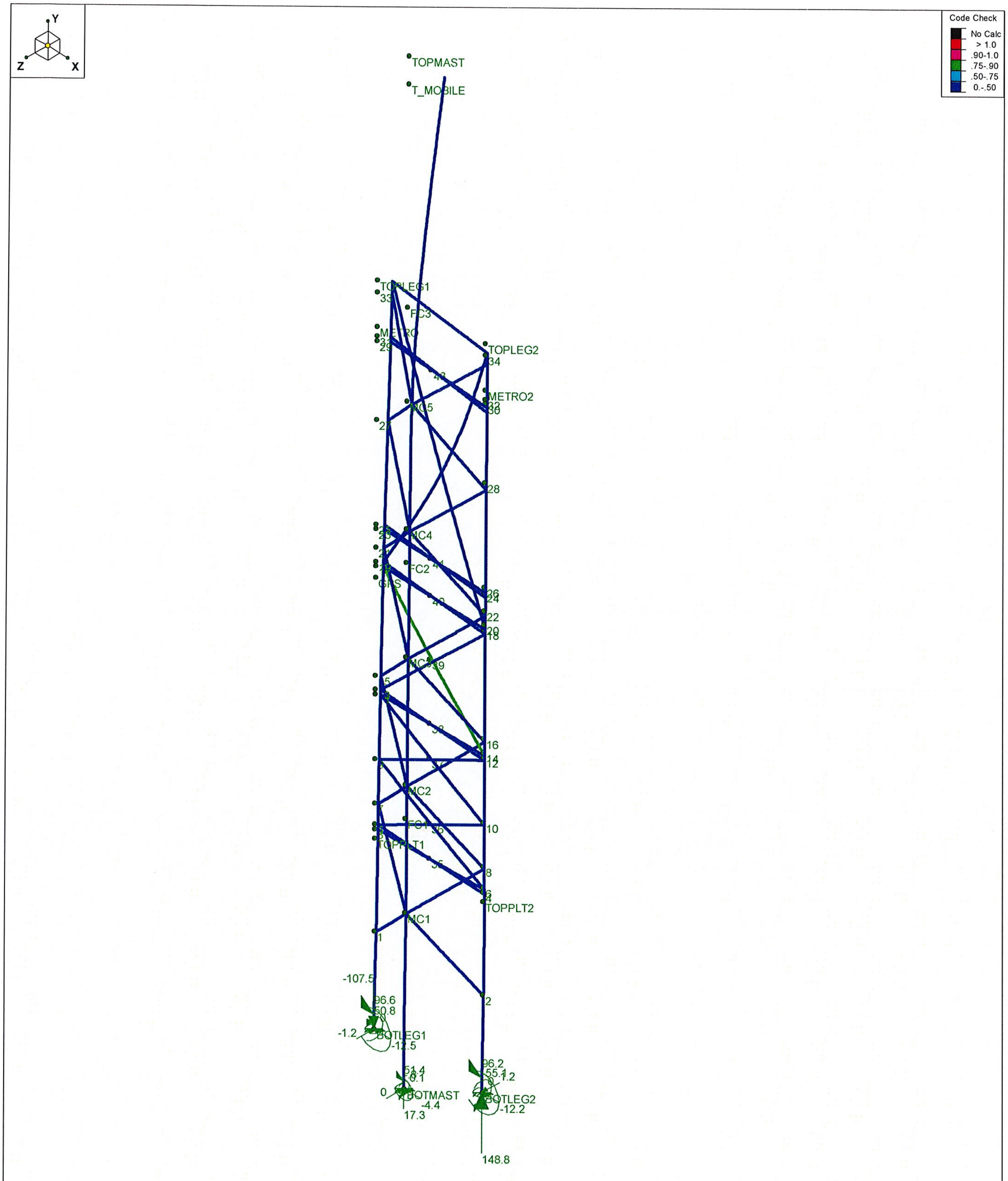
Solution: Envelope

Centek Engineering		
TJL/CFC	82' Sign Structure with 111' Pipe Mast	June 14, 2012 at 5:28 PM
12044.CO2	Unity Check	82' Sign Structure.r3d



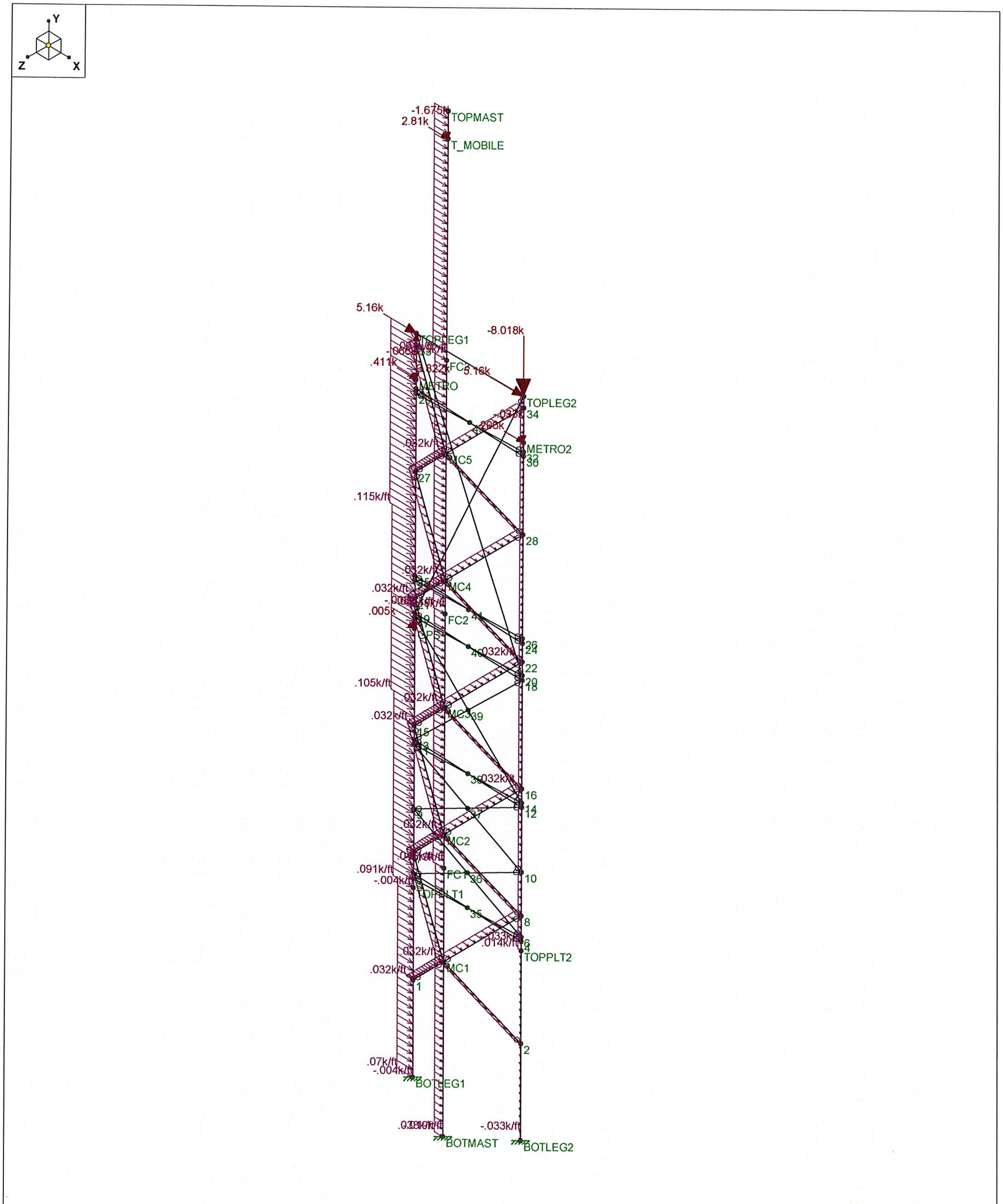
Loads: LC 1, TIA/EIA Wind + Ice in +X Direction

Centek Engineering		
TJL/CFC	82' Sign Structure with 111' Pipe Mast	June 14, 2012 at 5:29 PM
12044.CO2	LC # 1 Loads	82' Sign Structure.r3d



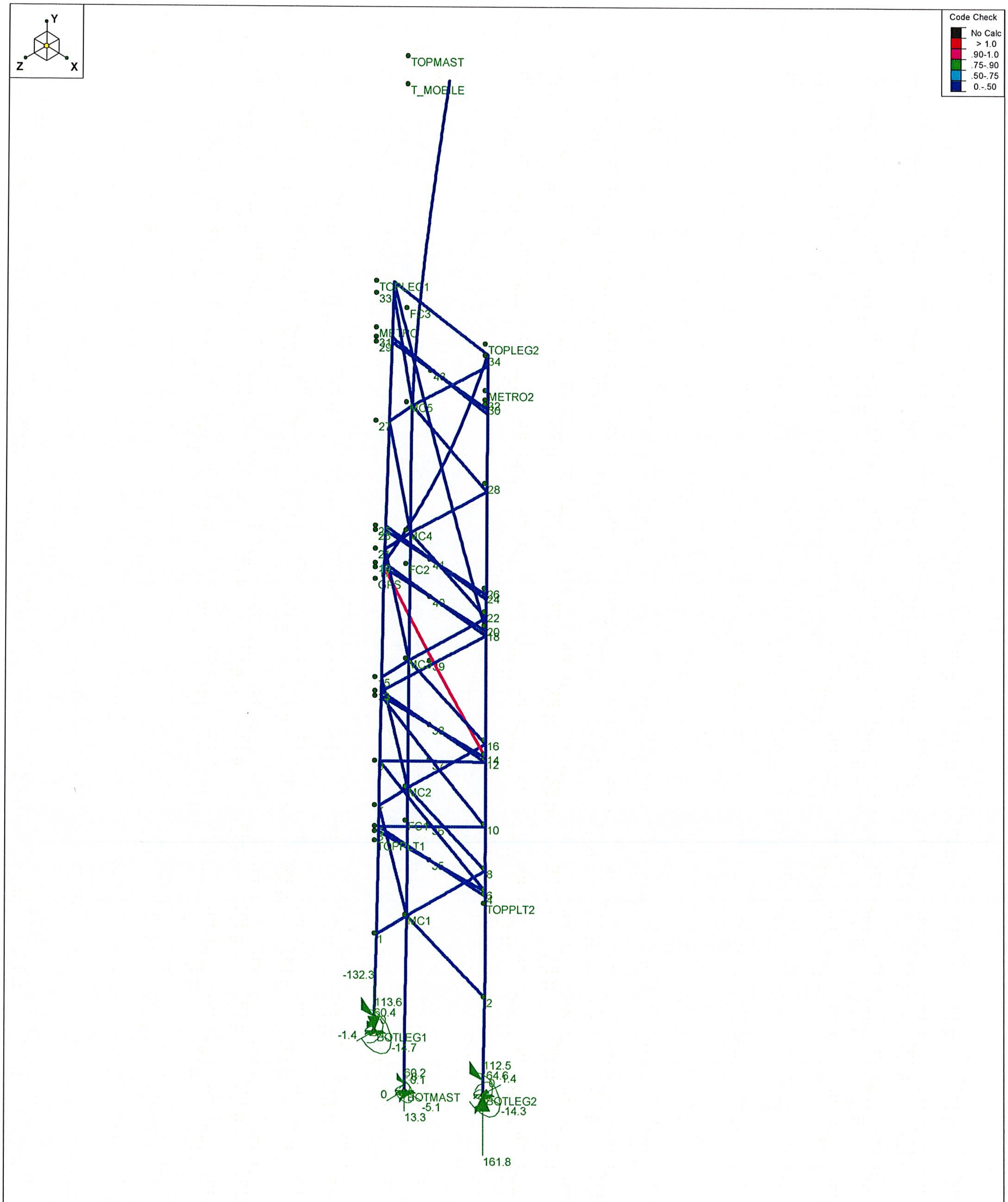
Results for LC 1, TIA/EIA Wind + Ice in +X Direction
Z-moment Reaction units are k and k-ft

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:32 PM
12044.CO2	LC # 1 Reactions and Deflected Shape	82' Sign Structure.r3d



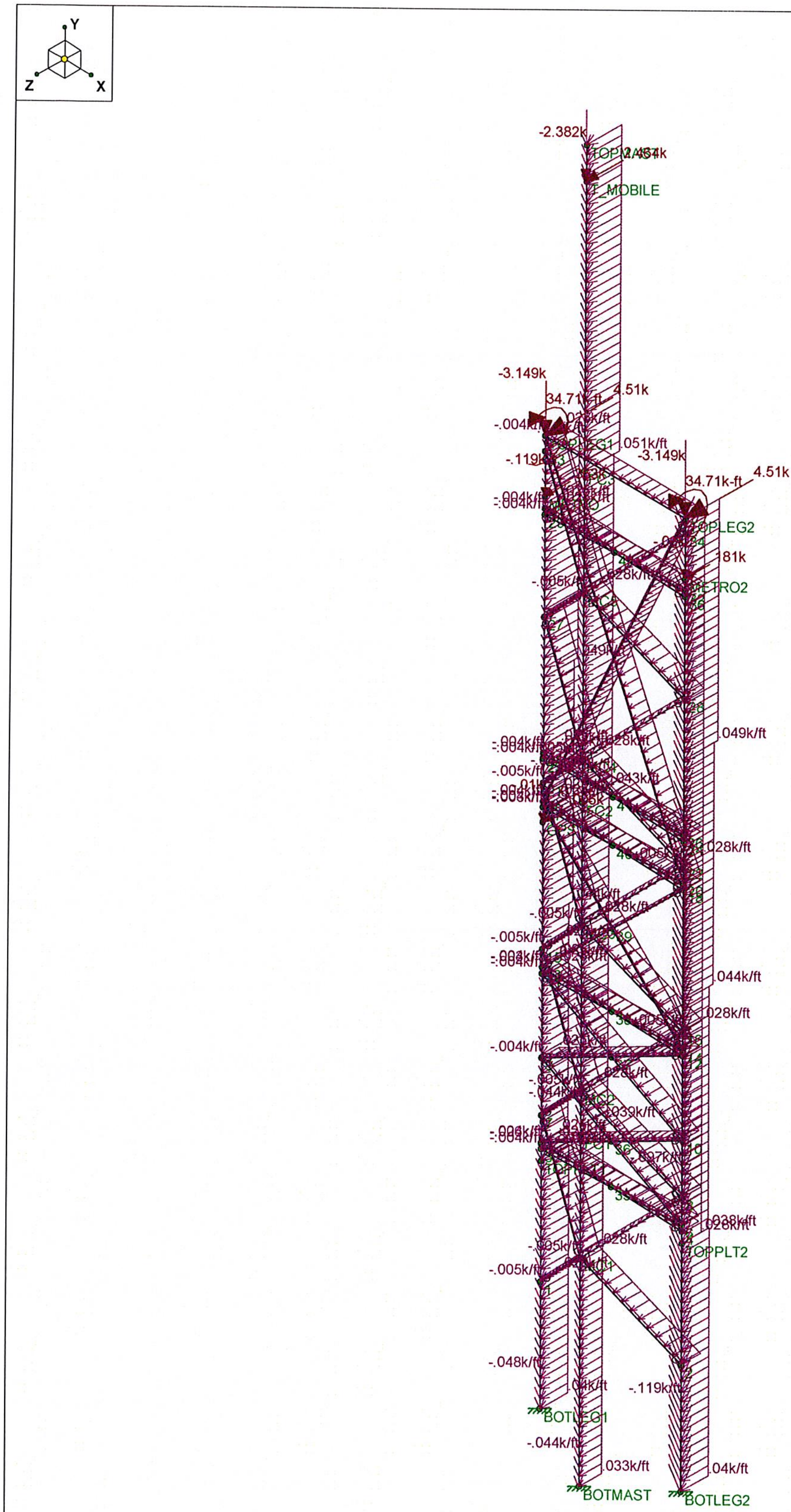
Loads: LC 2, TIA/EIA Wind in +X Direction

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:29 PM
12044.CO2	LC # 2 Loads	82' Sign Structure.r3d



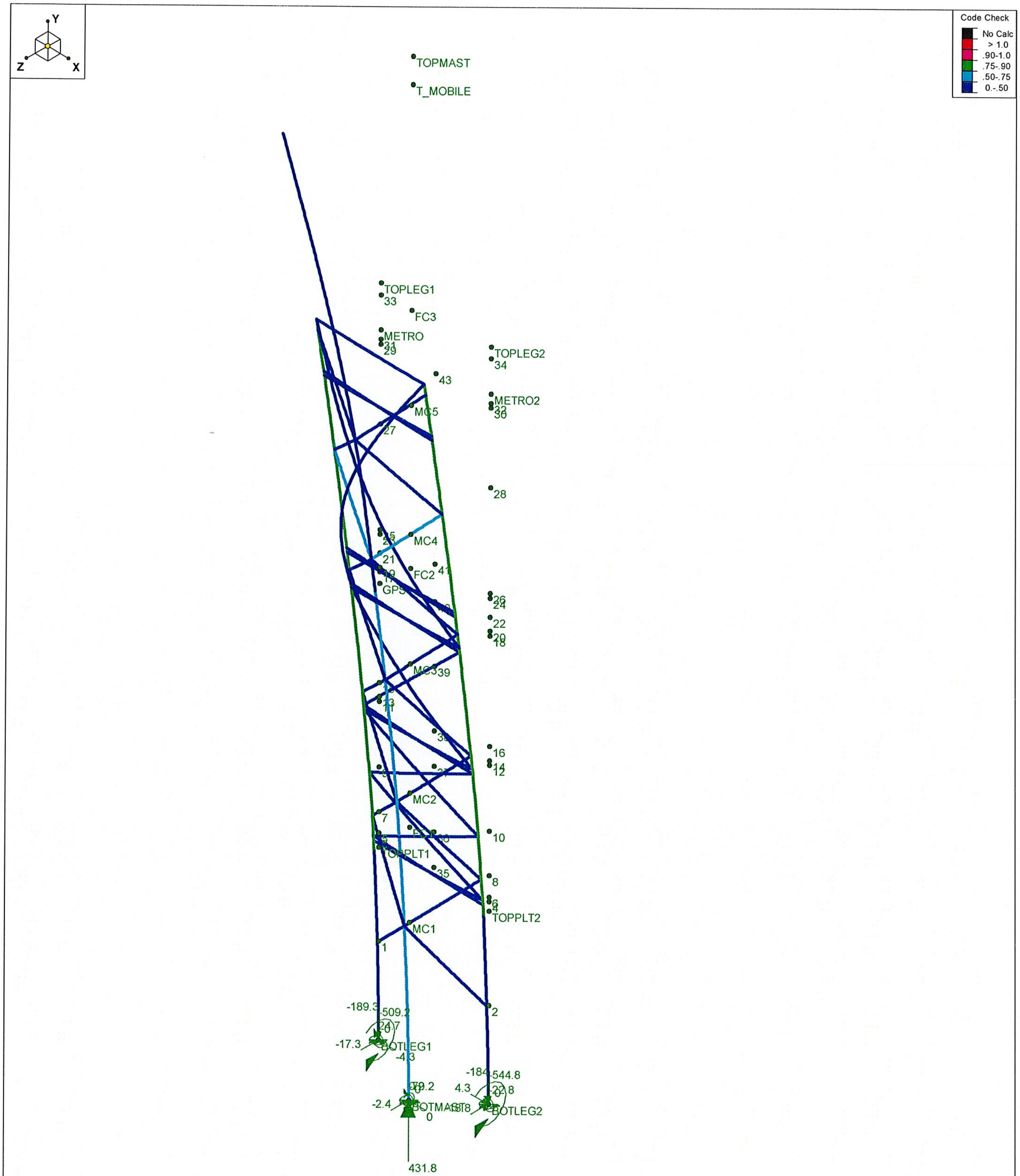
Results for LC 2, TIA/EIA Wind in +X Direction
Z-moment Reaction units are k and k-ft

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:32 PM
12044.CO2	LC # 2 Reactions and Deflected Shape	82' Sign Structure.r3d



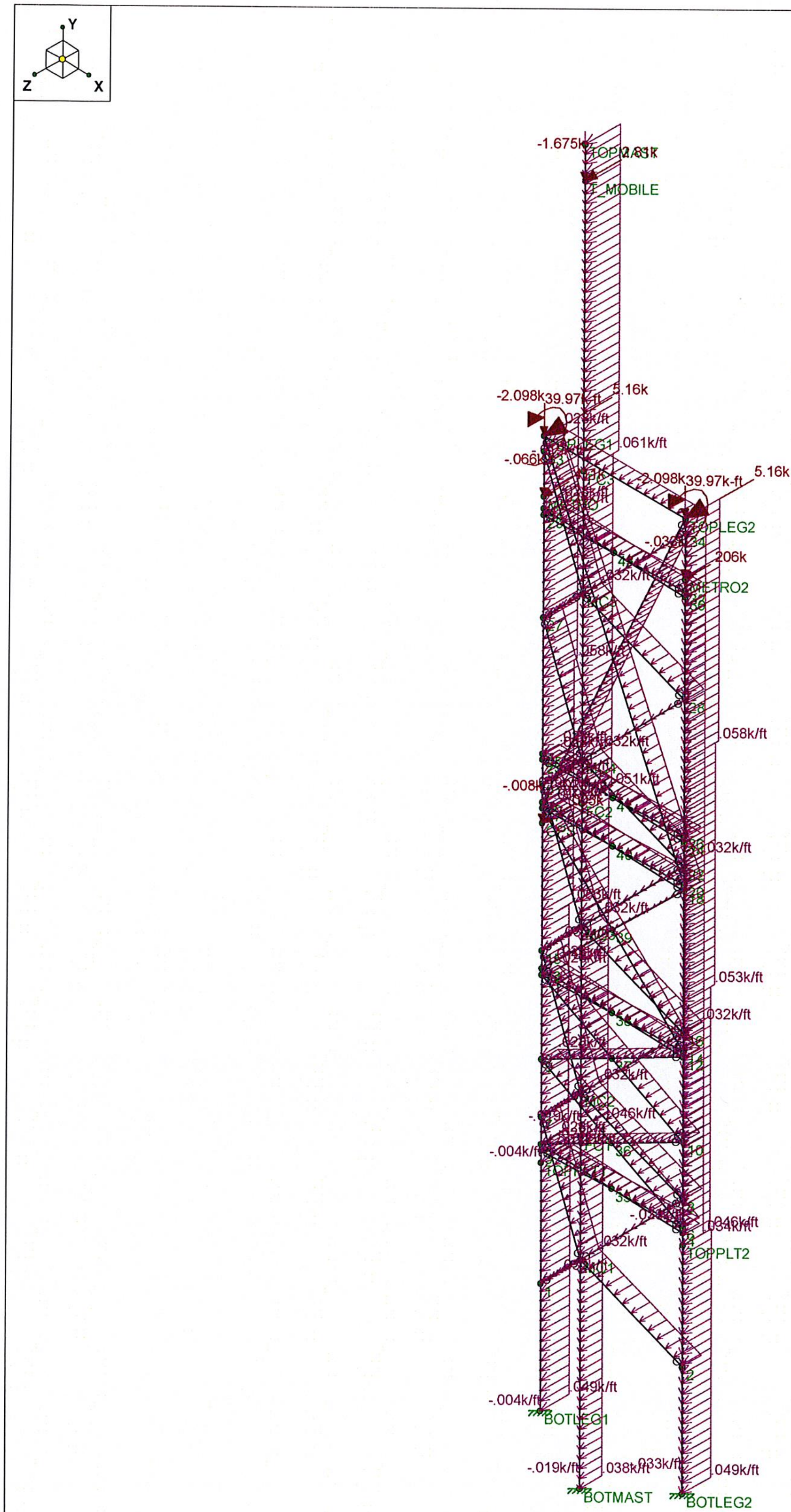
Loads: LC 3, TIA/EIA Wind + Ice in +Z Direction

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:29 PM
12044.CO2	LC # 3 Loads	82' Sign Structure.r3d



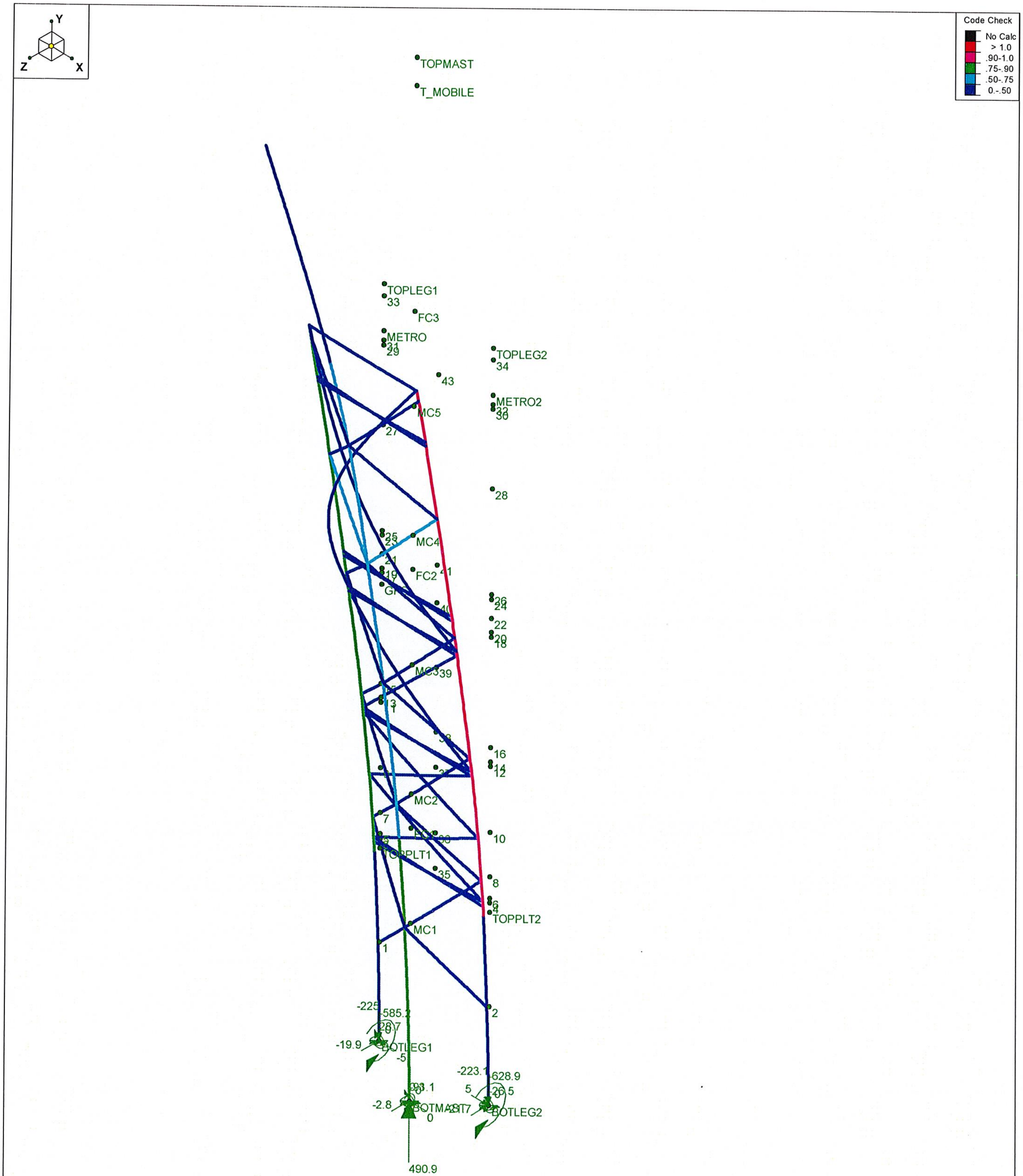
Results for LC 3, TIA/EIA Wind + Ice in +Z Direction
Z-moment Reaction units are k and k-ft

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC	LC # 3 Reactions and Deflected Shape	June 14, 2012 at 5:33 PM
12044.CO2		82' Sign Structure.r3d



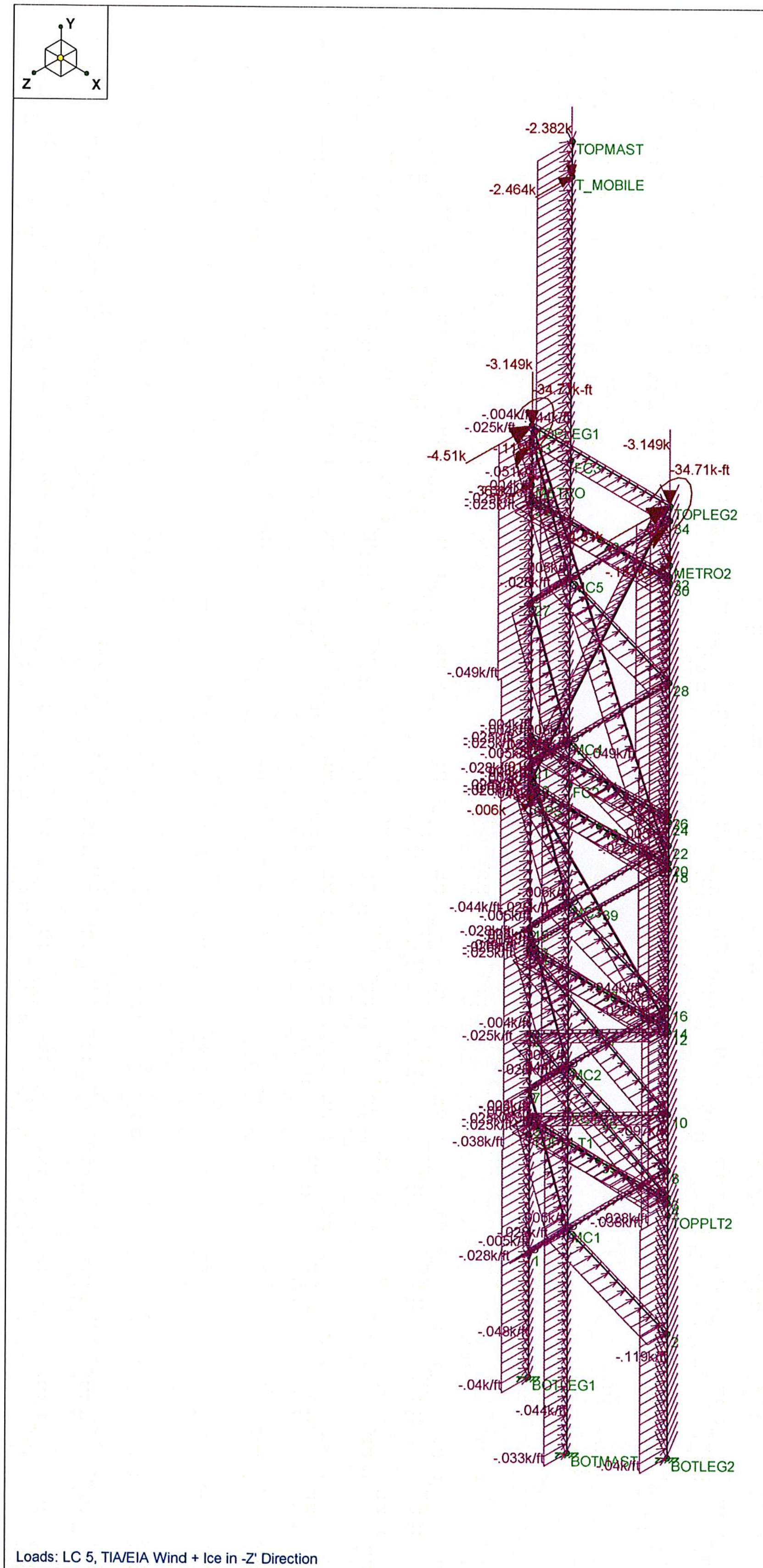
Loads: LC 4, TIA/EIA Wind in +Z Direction

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:30 PM
12044.CO2	LC # 4 Loads	82' Sign Structure.r3d



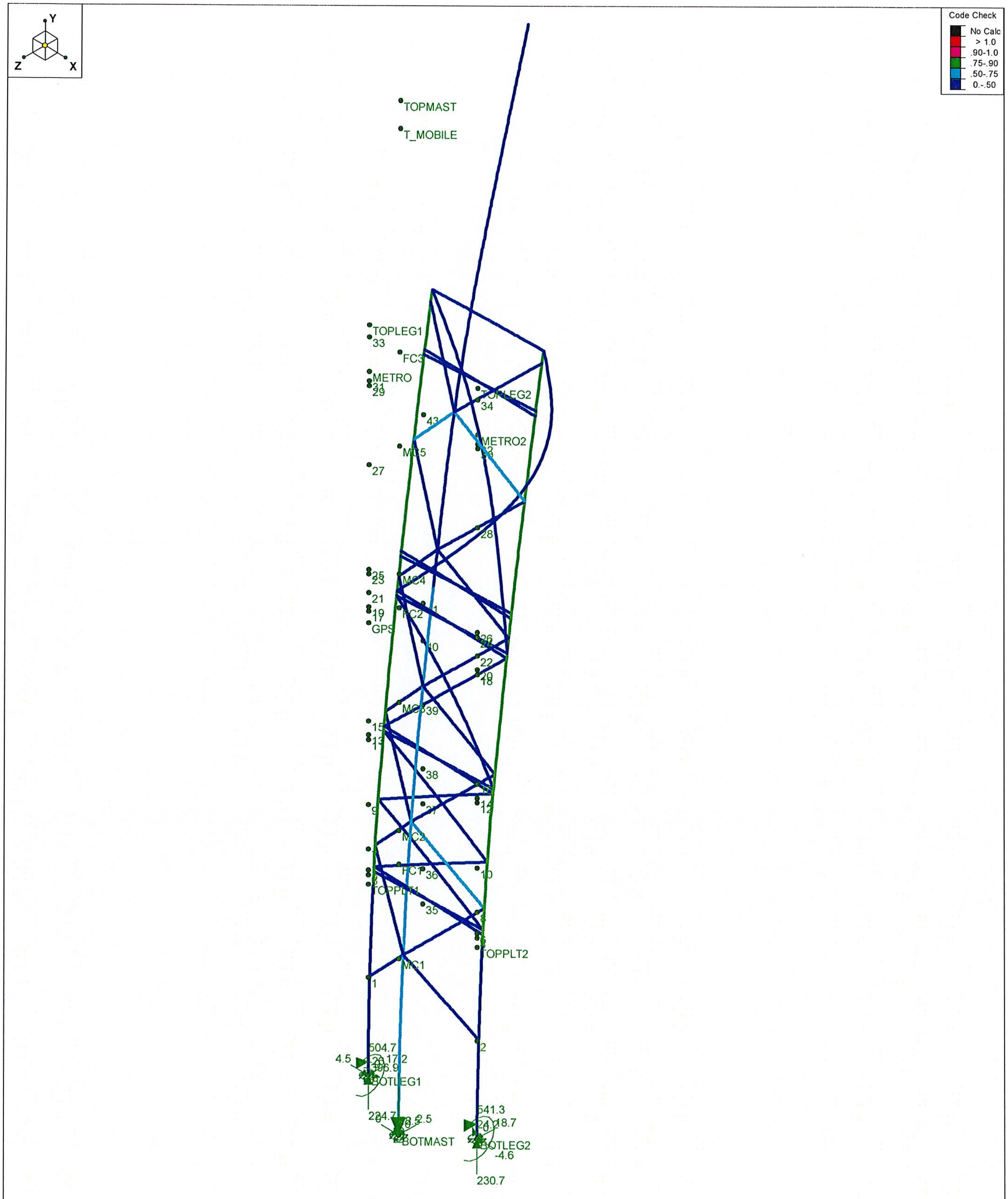
Results for LC 4, TIA/EIA Wind in +Z Direction
Z-moment Reaction units are k and k-ft

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC	LC # 4 Reactions and Deflected Shape	June 14, 2012 at 5:34 PM
12044.CO2		82' Sign Structure.r3d



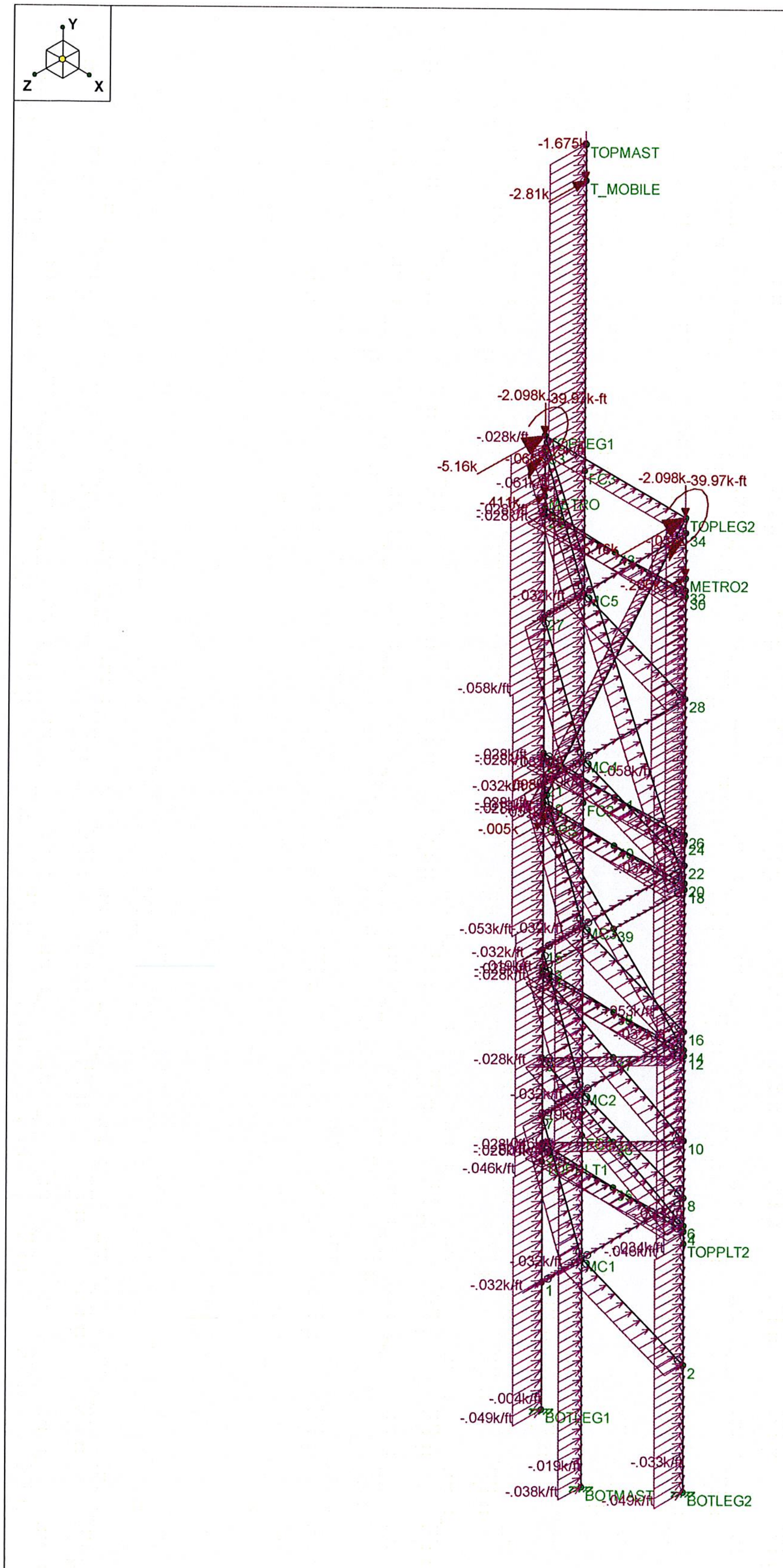
Loads: LC 5, TIA/EIA Wind + Ice in -Z' Direction

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:30 PM
12044.CO2	LC # 5 Loads	82' Sign Structure.r3d



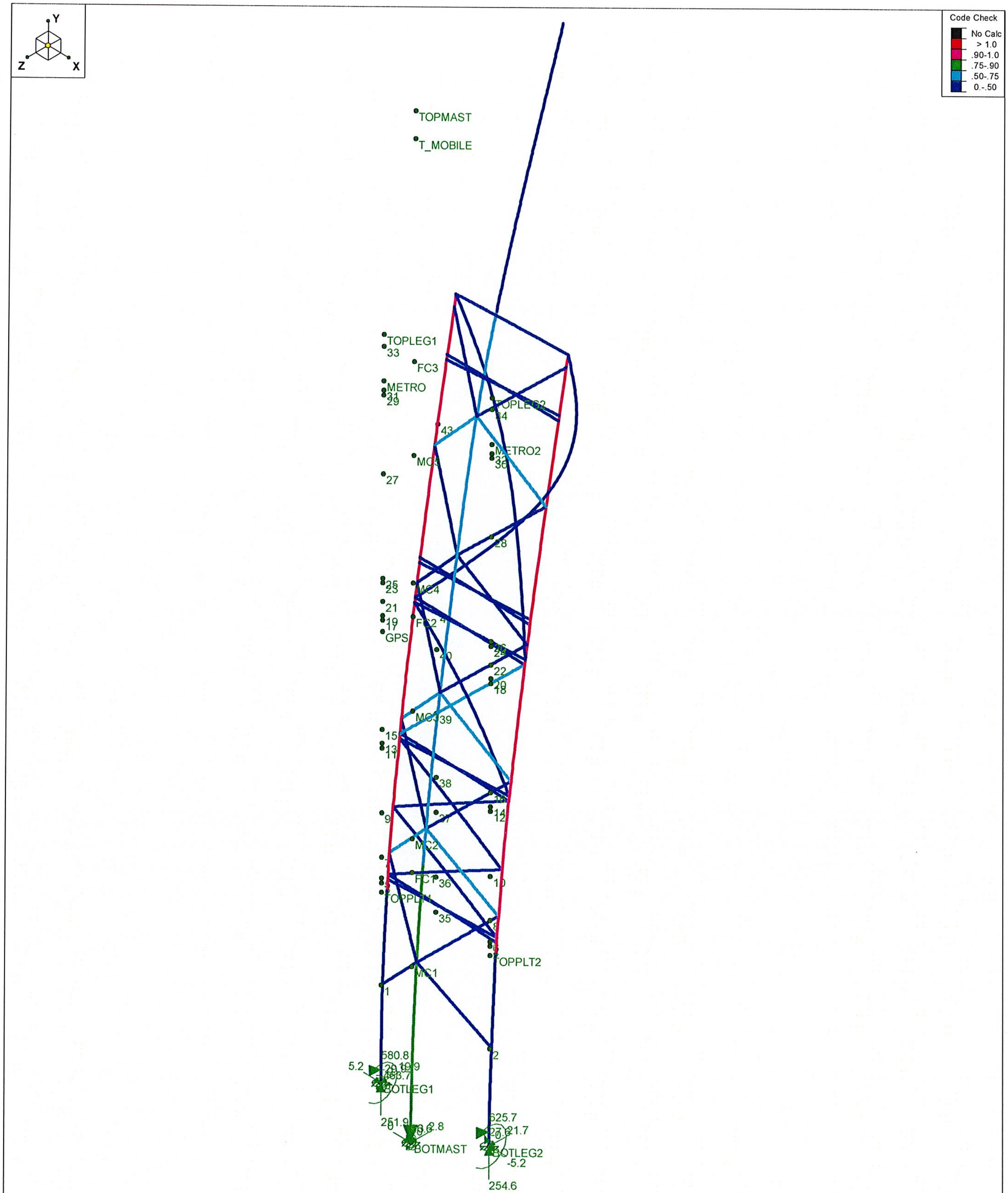
Results for LC 5, TIA/EIA Wind + Ice in -Z' Direction
Z-moment Reaction units are k and k-ft

Centek Engineering		
TJL/CFC	82' Sign Structure with 111' Pipe Mast	June 14, 2012 at 5:35 PM
12044.CO2	LC # 5 Reactions and Deflected Shape	82' Sign Structure.r3d



Loads: LC 6, TIA/EIA Wind in -Z' Direction

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:31 PM
12044.CO2	LC # 6 Loads	82' Sign Structure.r3d

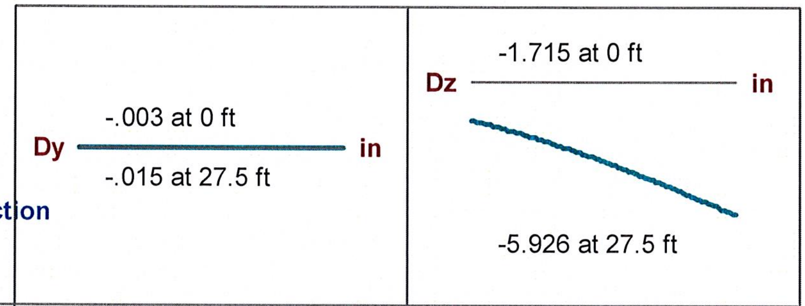


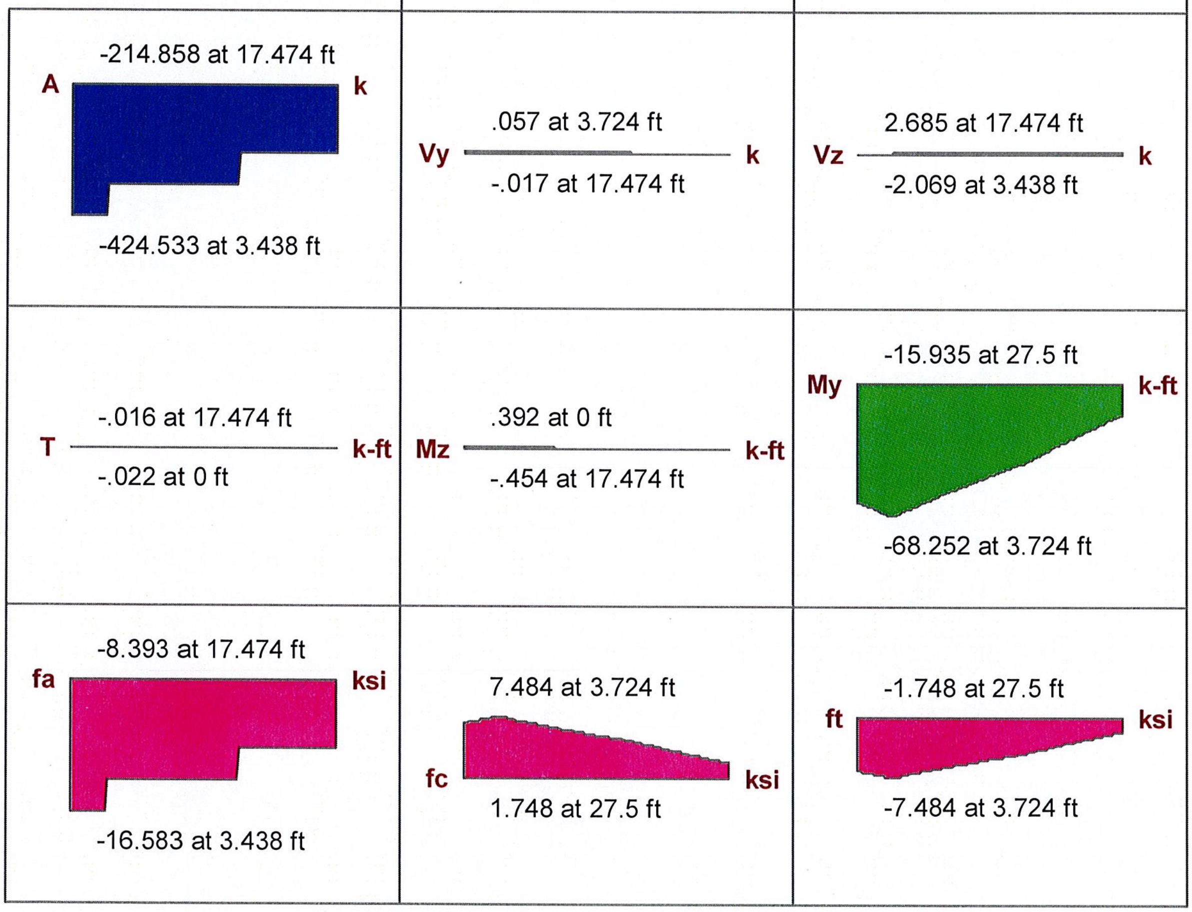
Results for LC 6, TIA/EIA Wind in -Z' Direction
Z-moment Reaction units are k and k-ft

Centek Engineering	82' Sign Structure with 111' Pipe Mast	
TJL/CFC		June 14, 2012 at 5:36 PM
12044.CO2	LC # 6 Reactions and Deflected Shape	82' Sign Structure.r3d

Beam: ***Mast2***

Shape: **HSS18X0.5**
Material: **A500 Gr.42**
Length: **27.5 ft**
I Joint: **FC1**
J Joint: **FC2**
LC 6: TIA/EIA Wind in -Z' Direction
Code Check: **0.696 (bending)**
Report Based On 97 Sections





AISC 9th: ASD Code Check

Max Bending Check	**0.696**	Max Shear Check	**0.009 (s)**
Location	**3.438 ft**	Location	**17.474 ft**
Equation	**H2-1**	Max Defl Ratio	**L/78**

Compact
Allowables Increase: **1.333**

Fy	**42 ksi**		y-y	z-z
Fa	**33.084 ksi**	Cm	**.85**	**.942**
Ft	**33.592 ksi**	Lb	**3.625 ft**	**3.625 ft**
Fby	**36.951 ksi**	KL/r	**7.013**	**7.013**
Fbz	**36.951 ksi**	Sway	**No**	**No**
Fvy	**22.394 ksi**			
Fvz	**22.394 ksi**	L Comp Flange	**27.5 ft**	
Cb	**1**	Torque Length	**NC**	

Anchor Bolt and Base Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment = $OM := 91 \cdot ft \cdot kips$ (Input From Risa-3D LC #6)

Shear Force = $Shear := 3 \cdot kips$ (Input From Risa-3D LC #6)

Axial Force = $Axial := -464 \cdot kips$ (Input From Risa-3D LC #6)

Anchor Bolt Data:

Use ASTM A615 Grade 75

Number of Anchor Bolts = $N := 10$

Diameter of Bolt Circle = $D_{bc} := 24 \cdot in$

Bolt "Column" Distance = $l := 3 \cdot in$

Bolt Ultimate Strenght = $F_u := 100 \cdot ksi$

Bolt Yeild Strenght = $F_y := 75 \cdot ksi$

Bolt Modulus = $E := 29000 \cdot ksi$

Diameter of Anchor Bolts = $D := 1.75 \cdot in$

Threads per Inch = $n := 5$

Base Plate Data:

Use ASTM A572 Mod 50

Plate Yield Strength = $Fy_{bp} := 50 \cdot ksi$

Base Plate Thickness = $t_{bp} := 2.0 \cdot in$

Base Plate Diameter = $D_{bp} := 30 \cdot in$

Outer Pole Diameter = $D_{pole} := 18 \cdot in$

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 12 \cdot in$

Distance to Bolts = $i := 1..N$

$$d_i := \left| \begin{array}{l} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N}\right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{array} \right.$$

$d_1 = 7.05 \cdot in$	$d_6 = -7.05 \cdot in$
$d_2 = 11.41 \cdot in$	$d_7 = -11.41 \cdot in$
$d_3 = 11.41 \cdot in$	$d_8 = -11.41 \cdot in$
$d_4 = 7.05 \cdot in$	$d_9 = -7.05 \cdot in$
$d_5 = 0.00 \cdot in$	$d_{10} = -0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 9 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := \text{if}\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$	$MA_6 = 0.00 \cdot in$
$MA_2 = 2.41 \cdot in$	$MA_7 = 0.00 \cdot in$
$MA_3 = 2.41 \cdot in$	$MA_8 = 0.00 \cdot in$
$MA_4 = 0.00 \cdot in$	$MA_9 = 0.00 \cdot in$
$MA_5 = 0.00 \cdot in$	$MA_{10} = 0.00 \cdot in$

Effective Width of Baseplate for Bending = $W_{eff} := .9 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 21.6 \cdot in$

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i (d_i)^2 = 720 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 2.405 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 1.899 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 1.555 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.389 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^{\ 3}}{32} = 0.369 \cdot in^3$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 64.6 \cdot kips$

Allowable Tensile Force = $T_{ALL.Gross} := 1.333 \cdot (0.33 \cdot A_g \cdot F_u) = 105.8 \cdot kips$ (1.333 increase allowed per TIA/EIA)

$T_{ALL.Net} := 1.333 \cdot (0.60 \cdot A_n \cdot F_y) = 113.939 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} = 56.7 \cdot \%$ Bolts are "upset bolts". Use net area per AISC

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL.Net}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Condition1 = "OK"

Check Anchor Bolt Bending Stress:

Maximum Bending Moment = $M_x := \left(\frac{Shear}{N}\right) \cdot l = 0.075 \cdot ft \cdot kips$

Maximum Bending Stress = $f_{bx} := \frac{M_x}{S_x} = 2.4 \cdot ksi$

Allowable Bending Stress = $F_{bx} := 1.333 \cdot 0.6 \cdot F_y = 60 \cdot ksi$ (1.333 increase allowed per TIA/EIA)

Check Combined Stress Requirement:

Per ASCE Manual 72: "If the clearance between the base plate and concrete does not exceed two times the bolt diameter a bending stress analysis of the bolts is NOT normally required.

$$l := \begin{cases} l & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 0 \cdot in$$

$$f_{bx} := \begin{cases} f_{bx} & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 0 \cdot ksi$$

Check Anchor Bolt Compression/Combined Stress:

Maximum Compressive Force = $C_{Max} := OM \cdot \frac{R_{bc}}{I_p} + \frac{Axial}{N} = -28.2 \cdot kips$

Maximum Compressive Stress = $f_a := \frac{C_{Max}}{A_n} = -14.8 \cdot ksi$

$K := 0.65$

$$C_c := \sqrt{\frac{2 \cdot \pi^2 \cdot E}{F_y}} = 87.364$$

$$F_a := \begin{cases} \dfrac{\left[1 - \dfrac{\left(\frac{K \cdot l}{r}\right)^2}{2 \cdot C_c^2}\right] \cdot F_y}{\dfrac{5}{3} + \dfrac{3 \cdot \left(\frac{K \cdot l}{r}\right)}{8 \cdot C_c} - \dfrac{\left(\frac{K \cdot l}{r}\right)^3}{8 \cdot C_c^3}} & \text{if } \frac{K \cdot l}{r} \le C_c \\ \dfrac{12 \cdot \pi^2 \cdot E}{23 \cdot \left(\frac{K \cdot l}{r}\right)^2} & \text{if } \frac{K \cdot l}{r} > C_c \end{cases} = 45 \cdot ksi$$

Allowable Compressive Stress = $F_a := 1.333 \cdot F_a = 60 \cdot ksi$ (1.333 increase allowed per TIA/EIA)

Combined Stress % of Capacity = $\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}}\right) = -24.8 \cdot \%$

Condition 2 = $Condition2 := if\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} \le 1.00, "OK", "Overstressed"\right)$

Condition2 = "OK"

Base Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{|Axial|}{N}$

$C_1 = 57.1 \cdot kips$	$C_6 = 35.7 \cdot kips$
$C_2 = 63.7 \cdot kips$	$C_7 = 29.1 \cdot kips$
$C_3 = 63.7 \cdot kips$	$C_8 = 29.1 \cdot kips$
$C_4 = 57.1 \cdot kips$	$C_9 = 35.7 \cdot kips$
$C_5 = 46.4 \cdot kips$	$C_{10} = 46.4 \cdot kips$

Maximum Bending Stress in Plate = $f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(W_{eff} \cdot t_{bp}^2\right)} = 21.3 \cdot ksi$

Allowable Bending Stress in Plate = $F_{bp} := 1.33 \cdot 0.75 \cdot Fy_{bp} = 49.9 \cdot ksi$

Plate Bending Stresse % of Capacity = $\frac{f_{bp}}{F_{bp}} = 42.8 \cdot \%$

Condition3 = $Condition3 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$

Condition3 = "Ok"

Flange Bolt and Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	$OM := 68 \cdot ft \cdot kips$	(Input From Risa-3D LC #6)
Shear Force =	$Shear := 3 \cdot kips$	(Input From Risa-3D LC #6)
Axial Force =	$Axial := -425 \cdot kips$	(Input From Risa-3D LC #6)

Flange Bolt Data:

Use ASTM A325

Number of Flange Bolts =	$N := 20$
Diameter of Bolt Circle =	$D_{bc} := 21.0 \cdot in$
Bolt "Column" Distance =	$l := .125 \cdot in$
Bolt Ultimate Strenght =	$F_u := 120 \cdot ksi$
Bolt Yield Strenght =	$F_y := 92 \cdot ksi$
Bolt Modulus =	$E := 29000 \cdot ksi$
Diameter of Flange Bolts =	$D := 1.00 \cdot in$
Threads per Inch =	$n := 8$

Plate Data:

Use ASTM A572 Mod 50

Plate Yield Strength =	$Fy_{bp} := 50 \cdot ksi$
Plate Thickness =	$t_{bp} := 1.25 \cdot in$
Plate Diameter =	$D_{bp} := 24.00 \cdot in$
Outer Pole Diameter =	$D_{pole} := 18.00 \cdot in$

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 10.5 \cdot in$

Distance to Bolts = $i := 1..N$

$$d_i := \begin{vmatrix} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N}\right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{vmatrix}$$

$d_1 = 3.24 \cdot in$	$d_6 = 9.99 \cdot in$
$d_2 = 6.17 \cdot in$	$d_7 = 8.49 \cdot in$
$d_3 = 8.49 \cdot in$	$d_8 = 6.17 \cdot in$
$d_4 = 9.99 \cdot in$	$d_9 = 3.24 \cdot in$
$d_5 = 10.50 \cdot in$	$d_{10} = 0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 9 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$	$MA_6 = 0.99 \cdot in$
$MA_2 = 0.00 \cdot in$	$MA_7 = 0.00 \cdot in$
$MA_3 = 0.00 \cdot in$	$MA_8 = 0.00 \cdot in$
$MA_4 = 0.99 \cdot in$	$MA_9 = 0.00 \cdot in$
$MA_5 = 1.50 \cdot in$	$MA_{10} = 0.00 \cdot in$

Effective Width of plate for Bending = $W_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 12.7 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i (d_i)^2 = 1102.5 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^{\ 3}}{32} = 0.066 \cdot in^3$

Check Flange Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 29 \cdot kips$

Allowable Tensile Force = $T_{ALL.Gross} := 1.333 \cdot (0.33 \cdot A_g \cdot F_u) = 41.5 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Gross}} = 0.7$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL.Gross}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Condition1 = "OK"

Check Flange Bolt Bending Stress:

Maximum Bending Moment = $M_x := \left(\frac{Shear}{N}\right) \cdot l = 1.562 \times 10^{-3} \cdot ft \cdot kips$

Maximum Bending Stress = $f_{bx} := \frac{M_x}{S_x} = 0.3 \cdot ksi$

Allowable Bending Stress = $F_{bx} := 1.333 \cdot 0.6 \cdot F_y = 73.6 \cdot ksi$ (1.333 increase allowed per TIA/EIA)

Check Combined Stress Requirement:

Per ASCE Manual 72: "If the clearance between the base plate and concrete does not exceed two times the bolt diameter a bending stress analysis of the bolts is NOT normally required.

$$l := \begin{cases} l & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 0 \cdot in$$

$$f_{bx} := \begin{cases} f_{bx} & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 0 \cdot ksi$$

Check Flange Bolt Compression/Combined Stress:

Maximum Compressive Force = $C_{Max} := OM \cdot \frac{R_{bc}}{I_p} + \frac{Axial}{N} = -13.5 \cdot kips$

Maximum Compressive Stress = $f_a := \frac{C_{Max}}{A_n} = -22.3 \cdot ksi$

$K := 0.65$

$$C_c := \sqrt{\frac{2 \cdot \pi^2 \cdot E}{F_y}} = 78.881$$

$$F_a := \begin{cases} \dfrac{\left[1 - \dfrac{\left(\frac{K \cdot l}{r}\right)^2}{2 \cdot C_c^{\,2}}\right] \cdot F_y}{\dfrac{5}{3} + \dfrac{3 \cdot \left(\frac{K \cdot l}{r}\right)}{8 \cdot C_c} - \dfrac{\left(\frac{K \cdot l}{r}\right)^3}{8 \cdot C_c^{\,3}}} & \text{if } \frac{K \cdot l}{r} \le C_c \\ \dfrac{12 \cdot \pi^2 \cdot E}{23 \cdot \left(\frac{K \cdot l}{r}\right)^2} & \text{if } \frac{K \cdot l}{r} > C_c \end{cases} = 55.2 \cdot ksi$$

Allowable Compressive Stress = $F_a := 1.333 \cdot F_a = 73.6 \cdot ksi$ (1.333 increase allowed per TIA/EIA)

Combined Stress % of Capacity = $\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}}\right) = -0.302$

Condition 2 = $Condition2 := if\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Condition2 = "OK"

Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{|Axial|}{N}$

$C_1 = 23.7 \cdot kips$ $C_6 = 28.6 \cdot kips$

$C_2 = 25.8 \cdot kips$ $C_7 = 27.5 \cdot kips$

$C_3 = 27.5 \cdot kips$ $C_8 = 25.8 \cdot kips$

$C_4 = 28.6 \cdot kips$ $C_9 = 23.7 \cdot kips$

$C_5 = 29.0 \cdot kips$ $C_{10} = 21.3 \cdot kips$

Maximum Bending Stress in Plate = $f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(W_{eff} t_{bp}^2\right)} = 30.2 \cdot ksi$

Allowable Bending Stress in Plate = $F_{bp} := 1.33 \cdot 0.75 \cdot Fy_{bp} = 49.9 \cdot ksi$

Plate Bending Stresse % of Capacity = $\frac{f_{bp}}{F_{bp}} = 0.606$

Condition3 = Condition3 := if$\left(\frac{f_{bp}}{F_{bp}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$

Condition3 = "Ok"

Anchor Bolt and Base Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	$OM := 630 \cdot ft \cdot kips$	(Input From Risa-3D LC # 4)
Shear Force =	$Shear := 22 \cdot kips$	(Input From Risa-3D LC # 4)
Axial Force =	$Axial := -224 \cdot kips$	(Input From Risa-3D LC # 4)

Anchor Bolt Data:

Use ASTM A36

Number of Anchor Bolts =	$N := 20$	(User Input)
Bolt Ultimate Strenght =	$F_u := 58 \cdot ksi$	(User Input)
Bolt Yeild Strenght =	$F_y := 36 \cdot ksi$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Anchor Bolts =	$D_b := 1.5 \cdot in$	(User Input)
Threads per Inch =	$n_b := 6$	(User Input)

Base Plate Data:

Use ASTM 36

Plate Yield Strength =	$Fy_{bp} := 36 \cdot ksi$	(User Input)
Base Plate Thickness =	$t_{bp} := 1.5 \cdot in$	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

$d_1 := 17.125in$ (User Input)

$d_2 := 11.25in$ (User Input)

$d_3 := 4.9375in$ (User Input)

Number of Bolts at Distance:

$N_1 := 12$

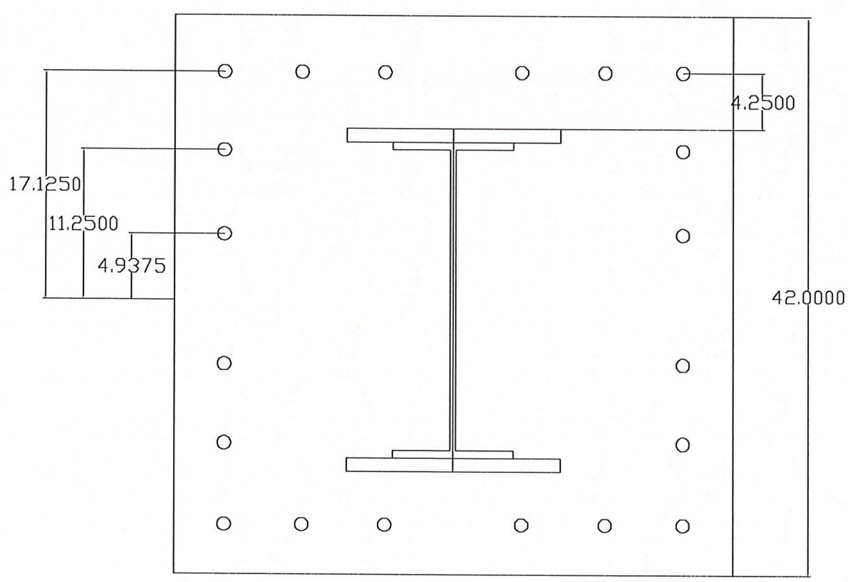
$N_2 := 4$

$N_3 := 4$

Critical Distances For Bending in Plate:

$ma_1 := 4.25in$ (User Input)

Effective Width of Baseplate for Bending = $B_{eff} := 42in$ (User Input)



ANCHOR BOLT AND PLATE GEOMETRY

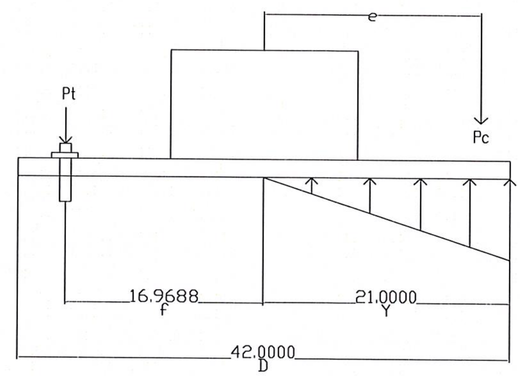
Base Plate Analysis:

Length of Base Plate = $D := 42in$

Width of Base Plate = $B := 42in$

Length of Stress Distribution = $Y := 21in$

Distance from NA to Bolts in Tension = $f := 17in$



Modular Ratio = $n := \frac{E_s}{57 \cdot \sqrt{E_c}} = 9.29$

Area of Steel in Tension Zone = $A_s := 7.5 \cdot in^2$

$K_1 := \frac{6n \cdot A_s}{B} = 0.829 ft$

Eccentricity = $e := \frac{\left(K_1 \cdot f^2 + K_1 \cdot \frac{D}{2} \cdot f - K_1 \cdot f \cdot Y + \frac{3}{2} \cdot D \cdot Y^2 - Y^3\right)}{\left(3 \cdot Y^2 + K_1 \cdot Y - K_1 \cdot \frac{D}{2} - K_1 \cdot f\right)} = 18.546 \cdot in$

Compression Force = $P_c := \frac{OM}{e} = 408 \cdot kips$

Uplift Force = $P_t := -P_c \cdot \left[\frac{\left(\frac{D}{2} - \frac{Y}{3} - e\right)}{\left(\frac{D}{2} - \frac{Y}{3} + f\right)}\right] = 60 \cdot kips$

Bearing Force on Grout = $\sigma_c := 2 \cdot \frac{\left(P_c + P_t\right)}{Y \cdot B} = 1060 psi$

Total Uplift Force = $F := P_t - 6 \cdot \frac{Axial}{N} = 127 \cdot kips$

Applied Bending Stress in Plate = $f_{bp} := \frac{6 \cdot \left(F \cdot ma_1\right)}{B_{eff} \cdot t_{bp}^2} = 34.26 \cdot ksi$

Allowable Bending Stress in Plate = $F_{bp} := 1.33 \cdot 0.75 \cdot Fy_{bp} = 35.9 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 0.95$

Check Plate Bending Stress $Plate\_Bending\_Stress := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$

Plate_Bending_Stress = "Ok"

Allowable Bearing Capacity of Grout = $\sigma_{all} := 3000 \cdot psi$

Bearing Percent of Capacity = $\frac{\sigma_c}{\sigma_{all}} = 0.35$

$Grout\_Bearing\_Capicity := if\left(\sigma_{all} > \sigma_c, "OK", "NG"\right)$

Grout_Bearing_Capicity = "OK"

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Polar Moment of Inertia = $I_p := \left[(d_1)^2 \cdot N_1 + (d_2)^2 \cdot N_2 + (d_3)^2 \cdot N_3\right] = 4123 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D_b^{\ 2} = 1.767 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D_b - \frac{0.9743 \cdot in}{n_b}\right)^2 = 1.405 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 1.338 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.334 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^{\ 3}}{32} = 0.235 \cdot in^3$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := \frac{P_t}{6} - \frac{Axial}{N} = 21.2 \cdot kips$

Allowable Tensile Force (Gross Area) = $T_{ALL.Gross} := 1.333 \cdot (0.33 \cdot A_g \cdot F_u) = 45.1 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Allowable Tensile Force (Net Area) = $T_{ALL.Net} := 1.333 \cdot (0.60 \cdot A_n \cdot F_y) = 40.5 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} \cdot 100 = 52.3$

Condition1 = $Bolt\_Tension := if\left(\frac{T_{Max}}{T_{ALL.Net}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Bolt_Tension = "OK"

Note Shear stress is negligible

Foundation Check

Base Reactions:

$OM_1 := 585 \cdot kip \cdot ft$

$Axial_1 := -225 \cdot kips$

$Shear_1 := 20 \cdot kips$

$OM_2 := 629 \cdot kip \cdot ft$

$Axial_2 := -223 \cdot kips$

$Shear_2 := 22 \cdot kips$

$OM_m := 91 \cdot kip \cdot ft$

$Axial_m := 491 \cdot kips$

$Shear_m := 3 \cdot kips$

Foundation Data:

$D1 := 1.29 \cdot ft$

$D2 := 2 \cdot ft$

$D3 := 3 \cdot ft$

$D4 := 3 \cdot ft$

$D_{tot} := 7.17 \cdot ft$

$W1 := 6 \cdot ft$

$W2 := 21.5 \cdot ft$

$W3 := 26.5 \cdot ft$

$W4 := 55 \cdot ft$

$L1 := 6 \cdot ft$

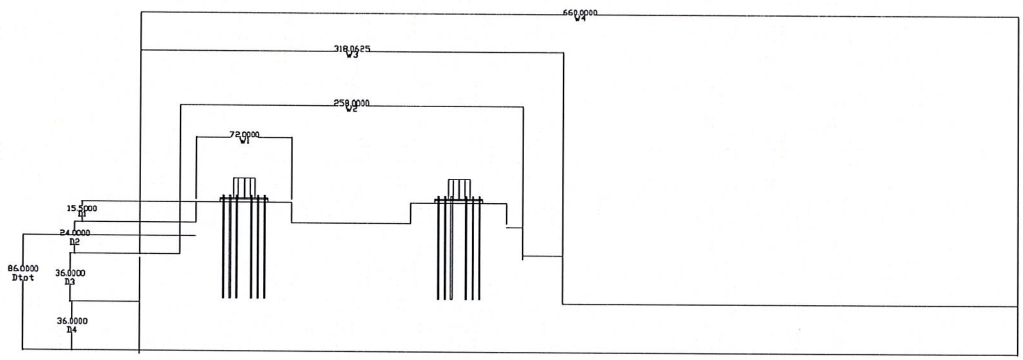
$L2 := 11 \cdot ft$

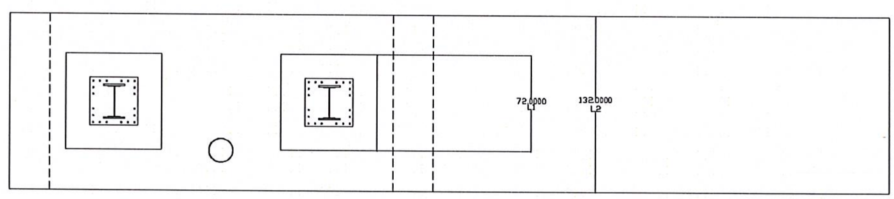
Material Data;

$\gamma_{conc} := 150 \cdot pcf$

$\gamma_{soil} := 100 \cdot pcf$

$\Phi_s := 30 \cdot deg$





Volume of Concrete = $V_c := (D1 \cdot W1 \cdot L1) + (D2 \cdot W2 + D3 \cdot W3 + D4 \cdot W4) \cdot L2 = 3209 \cdot ft^3$

Volume of Soil Above Footing = $V_{s1} := [(D2 - 10 \cdot in) \cdot (W3 - W2) + [(D2 - 10 \cdot in) + D3] \cdot (W4 - W3)] \cdot L2 = 1370 \cdot ft^3$

Volume of Soil Wedge at Back Face = $V_{s2} := D_{tot}^{\ 2} \cdot W4 \cdot \tan(\Phi_s) = 1632 \cdot ft^3$

Volume of Soil Wedge at Back Face Corners = $V_{s3} := 2 \cdot \left[\left(D_{tot}\right)^3 \cdot \frac{\tan(\Phi_s)}{3} \right] = 142 \cdot ft^3$

Weight of Concrete = $W_c := V_c \cdot \gamma_{conc} = 481 \cdot kips$

Weight of Soil Above Footing = $W_{s1} := V_{s1} \cdot \gamma_{soil} = 137 \cdot kips$

Weight of Soil Wedge at Back Face = $W_{s2} := V_{s2} \cdot \gamma_{soil} = 163 \cdot kips$

Weight of Soil Wedge at Back Face Corners = $W_{s3} := V_{s3} \cdot \gamma_{soil} = 14 \cdot kips$

$$M_r := \left(W_c + W_{s1} + Axial_1 + Axial_2 + Axial_m\right)\cdot\frac{L2}{2} + \left(W_{s2} + W_{s3}\right)\left(L2 + \frac{D_{tot}\cdot\tan\left(\Phi_s\right)}{2}\right) = 5957\cdot kip\cdot ft$$

$$M_{ot} := OM_1 + OM_2 + OM_m + \left(Shear_1 + Shear_2 + Shear_m\right)\cdot D_{tot} = 1628\cdot kip\cdot ft$$

$$FS := \frac{M_r}{M_{ot}} = 3.7$$

$$Condition1 := if\left(\frac{M_r}{M_{ot}} > 2, \text{"OK"}, \text{"Overstressed"}\right)$$

Condition1 = "OK"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT5144	DATE:	3/15/2012 10:03	RF DESIGN ENG:	Evan Thibodeau	RF PERF ENG:	TB
ISSUE:	Preliminary	Approved? (Y/N)	Y	RF DESIGN PHONE:	(603) 320-8556	RF PERF PHONE:	TB
REVISION:	V01	RF MANAGER:	Walter Saddig	RF DESIGN EMAIL:	et2267@att.com	RF PERF EMAIL:	TB
INITIATIVE / PROJECT:	LTE Wave 3 Prelim					TRIDENT:	
						GSM FREQUENCY:	Dual I
						UMTS FREQUENCY:	Dual I
						LTE FREQUENCY:	70
						I-PLAN JOB # 1:	NER-RCTE
						I-PLAN JOB # 2:	
						I-PLAN JOB # 3:	
						I-PLAN JOB # 4:	

Section 2 - LOCATION INFORMATION

USID:	14490	FA LOCATION CODE:	10070987	LOCATION NAME:	CROMWELLSOUTH	ORACLE PRJT # 1:	20513
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CT	ORACLE PRJT # 2:	
ADDRESS:.	100 CHRISTIAN HILL ROAD	CITY:	CROMWELL	STATE:	CT	ORACLE PRJT # 3:	
ZIP CODE:	06416	COUNTY:	MIDDLESEX	MSA/RSA:	32	ORACLE PRJT # 4:	
LATITUDE (D-M-S):	41° 36' 20.16"	LONGITUDE (D-M-S):	72° 42' 6.84"	LAT (DEC. DEG.):	41.6056	SEARCH RING NAME:	N/
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	TBD					SEARCH RING ID:	N/
						BTA:	18
						LONG (DEC. DEG.):	-72.7
						BORDER CELL WITH CONTOUR COORD:	TB
						AM STUDY REQ'D (Y/N):	TB
						FREQ COORD:	TB

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED:	TBD	CGSA LOSS:	TBD	PCS REDUCED - UPS ZIP:	TBD
CGSA - MINOR FILING NEEDED:	TBD	CGSA EXT AGMT NEEDED:	TBD	PCS POPS REDUCED:	TBD
CGSA - MAJOR FILING NEEDED:	TBD	CGSA SCORECARD UPDATED:	TBD		

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	TBD	GROUND ELEVATION (ft):	72'	STRUCTURE TYPE:	BILLBOARD	MKT LOCATION 850 MHZ CALL SIGN(S):	TE
ADDTIONAL REGULATORY?:	TBD	HEIGHT OVERALL (ft):	TBD	FCC ASR NUMBER:	TBD	MKT LOCATION 1900 MHZ CALL SIGN(S):	TE
SUB-LEASE RIGHTS?:	TBD	STRUCTURE HEIGHT (ft):	TBD			MKT LOCATION 700 MHZ CALL SIGN(S):	TE
LIGHTING TYPE:	TBD					MKT LOCATION AWS MHZ CALL SIGN(S):	TE

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
ALPHA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
BETA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
GAMMA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
DELTA								
EPSILON								
PSI								

Section 6 - RBS GENERAL INFORMATION

4-DIGIT SITE ID:	5144	COW OR TOY?:	NO	CELLULAR NETWORK:	GOLD	DISASTER PRIORITY:	
CELL SITE TYPE:	SECTORIZED	SITE TYPE:	MACRO	OPS DISTRICT:	CT-SOUTH	OPS ZONE:	
BTS LOCATION ID:	TBD	ORIGINATING CO:	ATT	RF DISTRICT:	MIDDLETOWN	RF ZONE:	

Section 7 - RBS SPECIFIC INFORMATION

	GSM RBSs	UMTS 1ST CARRIER RBSs	UMTS 2ND CARRIER RBSs	UMTS 3RD CARRIER RBSs	UMTS 4TH CARRIER RBSs	UMTS 5TH CARRIER RBSs
MSC	MCT01	TBD	TBD	N/A	N/A	
BSC/RNC	BCT08	MDTWCTNICR0R03	MDTWCTNICR0R03	MDTWCTNICR0R03	N/A	
LAC	05008	5994	5994	5994	N/A	
RAC	TBD	255	255	255	N/A	
EQUIPMENT VENDOR	NOKIA	ERICSSON	ERICSSON	ERICSSON	N/A	
EQUIPMENT TYPE	TBD	RBS3206	TBD	1900 RRUW OBIF	N/A	
LOCATION	TBD	TBD	TBD	TBD	N/A	
CABINET LOCATION	TBD	TBD	TBD	TBD	N/A	

Section 8 - RBS INDIVIDUAL INFORMATION

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS	UMTS 5TH 850 RBS	UMTS 5TH 1900 RBS
CELL ID/BCF	N/A	184P5144	CTV5144	N/A	N/A	CTU5144	N/A	CTU5144	CTU5144	N/A		
CTS COMMON ID	N/A	184P5144	CTU5144	N/A	N/A	CTU5144	N/A	CTV5144	CTV5144	N/A		

Section 9 - SOFT SECTOR ID

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS	UMTS 5TH 850 RBS	UMTS 5TH 1900 RBS
ALPHA (OR OMNI)	N/A	184P51441	184P51443	N/A	CTV51441	CTU51447	N/A	CTU51444	CTV5144A	N/A		
BETA	N/A	184P51442	184P51443	N/A	CTV51442	CTU51448	N/A	CTU51445	CTV5144B	N/A		
GAMMA	N/A	184P51443	184P51443	N/A	CTV51443	CTU51449	N/A	CTU51446	CTV5144C	N/A		
DELTA												
EPSILON												
PSI												

Section 10 - CID/SAC

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS	UMTS 5TH 850 RBS	UMTS 5TH 1900 RBS
ALPHA (OR OMNI)	N/A	51441	51441	N/A	N/A	51447	N/A	51444	5144A	N/A		
BETA	N/A	51442	51442	N/A	N/A	51448	N/A	51445	5144B	N/A		
GAMMA	N/A	51443	51443	N/A	N/A	51449	N/A	51446	5144C	N/A		
DELTA												
EPSILON												
PSI												

Section 11 - CURRENT RADIO COUNTS (Existing)

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS	UMTS 5TH 850 RBS	UMTS 5TH 1900 RBS
ALPHA (OR OMNI)	N/A	2	1	N/A	N/A	1	N/A	1	N/A	N/A		
BETA	N/A	4	1	N/A	N/A	1	N/A	1	N/A	N/A		
GAMMA	N/A	3	1	N/A	N/A	1	N/A	1	N/A	N/A		
DELTA												
EPSILON												
PSI												

Section 12 - CURRENT BASE BAND CONFIGURATION (Existing)

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet	UMTS 4th Cabinet
# T1s	TBD	TBD	TBD	TBD		
LINK PROFILE	TBD	TBD	TBD	TBD		
RF Combining						
Fiber or Ethernet?	TBD	TBD	TBD	TBD		
Tx Board Model						
Tx Board QTY						
RAX/ECU Board Model						
RAX/ECU Board QTY						
BBU Board Model						
BBU Board QTY						
RRU - Type(Qty-Model)						
Fiber Jumper						
DC Cable						
DC/Fiber Dem. Box						
Bundled Fiber Cable						
Bundled DC Cable						

Section 13 - NEW/PROPOSED RADIO COUNTS

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS	UMTS 5TH 850 RBS	UMTS 5TH 1900 RBS
ALPHA (OR OMNI)	N/A	2	1	N/A	N/A	1	N/A	1	1	N/A		
BETA	N/A	4	1	N/A	N/A	1	N/A	1	1	N/A		
GAMMA	N/A	3	1	N/A	N/A	1	N/A	1	1	N/A		
DELTA												
EPSILON												
PSI												

Section 14 - NEW/PROPOSED BASE BAND CONFIGURATION

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet	UMTS 4th Cabinet
# T1s						
LINK PROFILE						
RF Combining						
Fiber or Ethernet?						
Tx Board Model						
Tx Board QTY						
RAX/ECU Board Model						
RAX/ECU Board QTY						
BBU Board Model						
BBU Board QTY						
RRU - Type(Qty-Model)						
Fiber Jumper						
DC Cable						
DC/Fiber Dem. Box						
Bundled Fiber Cable						
Bundled DC Cable						

Section 15A - CURRENT SECTOR/CELL INFORMATION - ALPHA (OR OMNI)

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx					TxRx-TxRx	TxRx-TxRx		
TECHNOLOGY	UMTS / 850	UMTS / 1900					GSM / 850	GSM / 1900		
RRH LOCATION (Top/Bottom/None)	N/A	N/A					N/A	N/A		
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew		
Feeder Length (feet)	110 '	110 '					110 '	110 '		
ANTENNA ATOLL										
ANTENNA MAKE - MODEL	7770						7770			
ANTENNA VENDOR	Powerwave						Powerwave			
ANTENNA SIZE (H x W x D)	55.0 x 11.0 x 5.0						55.0 x 11.0 x 5.0			
ANTENNA WEIGHT	35						35			
ANTENNA GAIN	13.5 dBi	16.5 dBi					13.5 dBi	16.5 dBi		
AZIMUTH	30 °						30 °			
RADIATION CENTER (feet)	98 '						98 '			
ANTENNA TIP HEIGHT	100 '						100 '			
ELECTRICAL TILT (700/850/1900/AWS)	2 °	2 °					2 °	2 °		
MECHANICAL DOWNTILT	0 °						0 °			
FEEDER AMOUNT	2						2			
Antenna RET Motor (QTY/MODEL)	1 / Powerwave / 7020 (DB)						1 / Powerwave / 7020 (DB)			
Antenna RET Splitter (QTY/MODEL)										
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)										
Antenna RET Surge Arrestor (QTY/MODEL)										
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site							Powerwave / 7070			
DC BLOCK (QTY/MODEL)	N/A						N/A			
TMA/LNA (TYPE/MODEL)	2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)						2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860			
PDU FOR TMAS (QTY/MODEL) usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)			
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A			
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901						0 + 2 / Powerwave / LGP 21901			
HYBRID COMBINER (QTY/MODEL)	N/A						N/A			
DUPLEXER (QTY/MODEL)	N/A						N/A			
FILTER (QTY/MODEL)	N/A						N/A			
RXAIT KIT MODULE?	No RxAIT	No RxAIT					No RxAIT	No RxAIT		
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A / No LLC	N/A / No LLC					N/A / No LLC	N/A / No LLC		
SCPA/MCPA MODULE?	N/A	N/A					N/A	N/A		
Additional Component1	Powerwave						Powerwave			
Additional Component2	N/A						N/A			
Additional Component3	Daisy chain to ANT4						Home run to BTS from ANT4			
MAGNETIC DECLINATION	-14 °						-14 °			
HATCHPLATE POWER (Watts)	TBD	TBD					TBD	TBD		
ERP (Watts)	TBD	TBD					TBD	TBD		
Local Market Note1										
Local Market Note2										
Local Market Note3										

Section 15B - CURRENT SECTOR/CELL INFORMATION - BETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx					TxRx-TxRx	TxRx-TxRx		
TECHNOLOGY	UMTS / 850	UMTS / 1900					GSM / 850	GSM / 1900		
RRH LOCATION (Top/Bottom/None)	N/A	N/A					N/A	N/A		
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew		
Feeder Length (feet)	110 '	110 '					110 '	110 '		
ANTENNA ATOLL										
ANTENNA MAKE - MODEL	7770						7770			
ANTENNA VENDOR	Powerwave						Powerwave			
ANTENNA SIZE (H x W x D)	55.0 x 11.0 x 5.0						55.0 x 11.0 x 5.0			
ANTENNA WEIGHT	35						35			
ANTENNA GAIN	13.5 dBi	16.5 dBi					13.5 dBi	16.5 dBi		
AZIMUTH	190 °						190 °			
RADIATION CENTER (feet)	98 '						98 '			
ANTENNA TIP HEIGHT	100 '						100 '			
ELECTRICAL TILT (700/850/1900/AWS)	8 °	4 °					8 °	4 °		
MECHANICAL DOWNTILT	0 °						0 °			
FEEDER AMOUNT	2						2			
Antenna RET Motor (QTY/MODEL)	1 / Powerwave / 7020 (DB)						1 / Powerwave / 7020 (DB)			
Antenna RET Splitter (QTY/MODEL)										
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)										
Antenna RET Surge Arrestor (QTY/MODEL)										
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site							Powerwave / 7070			
DC BLOCK (QTY/MODEL)	N/A						N/A			
TMA/LNA (TYPE/MODEL)	2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)						2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860			
PDU FOR TMAS (QTY/MODEL) usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)			
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A			
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901						0 + 2 / Powerwave / LGP 21901			
HYBRID COMBINER (QTY/MODEL)	N/A						N/A			
DUPLEXER (QTY/MODEL)	N/A						N/A			
FILTER (QTY/MODEL)	N/A						N/A			
RXAIT KIT MODULE?	No RxAIT	No RxAIT					No RxAIT	No RxAIT		
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A / No LLC	N/A / No LLC					N/A / No LLC	N/A / No LLC		
SCPA/MCPA MODULE?	N/A	N/A					N/A	N/A		
Additional Component1	Powerwave						Powerwave			
Additional Component2	N/A						N/A			
Additional Component3	Daisy chain to ANT4						Home run to BTS from ANT4			
MAGNETIC DECLINATION	-14 °						-14 °			
HATCHPLATE POWER (Watts)	TBD	TBD					TBD	TBD		
ERP (Watts)	TBD	TBD					TBD	TBD		
Local Market Note1										
Local Market Note2										
Local Market Note3										

Section 15C - CURRENT SECTOR/CELL INFORMATION - GAMMA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx					TxRx-TxRx	TxRx-TxRx		
TECHNOLOGY	UMTS / 850	UMTS / 1900					GSM / 850	GSM / 1900		
RRH LOCATION (Top/Bottom/None)	N/A	N/A					N/A	N/A		
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew		
Feeder Length (feet)	110 '	110 '					110 '	110 '		
ANTENNA ATOLL										
ANTENNA MAKE - MODEL	7770						7770			
ANTENNA VENDOR	Powerwave						Powerwave			
ANTENNA SIZE (H x W x D)	55.0 x 11.0 x 5.0						55.0 x 11.0 x 5.0			
ANTENNA WEIGHT	35						35			
ANTENNA GAIN	13.5 dBi	16.5 dBi					13.5 dBi	16.5 dBi		
AZIMUTH	320 °						320 °			
RADIATION CENTER (feet)	98 '						98 '			
ANTENNA TIP HEIGHT	100 '						100 '			
ELECTRICAL TILT (700/850/1900/AWS)	2 °	2 °					2 °	2 °		
MECHANICAL DOWNTILT	0 °						0 °			
FEEDER AMOUNT	2						2			
Antenna RET Motor (QTY/MODEL)	1 / Powerwave / 7020 (DB)						1 / Powerwave / 7020 (DB)			
Antenna RET Splitter (QTY/MODEL)										
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)										
Antenna RET Surge Arrestor (QTY/MODEL)										
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site							Powerwave / 7070			
DC BLOCK (QTY/MODEL)	N/A						N/A			
TMA/LNA (TYPE/MODEL)	2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)						2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860			
PDU FOR TMAS (QTY/MODEL) usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)			
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A			
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901						0 + 2 / Powerwave / LGP 21901			
HYBRID COMBINER (QTY/MODEL)	N/A						N/A			
DUPLEXER (QTY/MODEL)	N/A						N/A			
FILTER (QTY/MODEL)	N/A						N/A			
RXAIT KIT MODULE?	No RxAIT	No RxAIT					No RxAIT	No RxAIT		
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A / No LLC	N/A / No LLC					N/A / No LLC	N/A / No LLC		
SCPA/MCPA MODULE?	N/A	N/A					N/A	N/A		
Additional Component1	Powerwave						Powerwave			
Additional Component2	N/A						N/A			
Additional Component3	Daisy chain to ANT4						Home run to BTS from ANT4			
MAGNETIC DECLINATION	-14 °						-14 °			
HATCHPLATE POWER (Watts)	TBD	TBD					TBD	TBD		
ERP (Watts)	TBD	TBD					TBD	TBD		
Local Market Note1										
Local Market Note2										
Local Market Note3										

Section 15D - CURRENT SECTOR/CELL INFORMATION - DELTA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)
TX/RX?					
TECHNOLOGY					
RRH LOCATION (Top/Bottom/None)					
FEEDERS TYPE					
Feeder Length (feet)					
ANTENNA ATOLL					
ANTENNA MAKE - MODEL					
ANTENNA VENDOR					
ANTENNA SIZE (H x W x D)					
ANTENNA WEIGHT					
ANTENNA GAIN					
AZIMUTH					
RADIATION CENTER (feet)					
ANTENNA TIP HEIGHT					
ELECTRICAL TILT (700/850/1900/AWS)					
MECHANICAL DOWNTILT					
FEEDER AMOUNT					
Antenna RET Motor (QTY/MODEL)					
Antenna RET Splitter (QTY/MODEL)					
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)					
Antenna RET Surge Arrestor (QTY/MODEL)					
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site					
DC BLOCK (QTY/MODEL)					
TMA/LNA (TYPE/MODEL)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)					
PDU FOR TMAS (QTY/MODEL) usually per site					
SURGE ARRESTOR (QTY/MODEL)					
DIPLEXER (QTY/MODEL)					
HYBRID COMBINER (QTY/MODEL)					
DUPLEXER (QTY/MODEL)					
FILTER (QTY/MODEL)					
RXAIT KIT MODULE?					
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)					
SCPA/MCPA MODULE?					
Additional Component1					
Additional Component2					
Additional Component3					
MAGNETIC DECLINATION					
HATCHPLATE POWER (Watts)					
ERP (Watts)					
Local Market Note1					
Local Market Note2					
Local Market Note3					

Section 15E - CURRENT SECTOR/CELL INFORMATION - EPSILON

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)
TX/RX?					
TECHNOLOGY					
RRH LOCATION (Top/Bottom/None)					
FEEDERS TYPE					
Feeder Length (feet)					
ANTENNA ATOLL					
ANTENNA MAKE - MODEL					
ANTENNA VENDOR					
ANTENNA SIZE (H x W x D)					
ANTENNA WEIGHT					
ANTENNA GAIN					
AZIMUTH					
RADIATION CENTER (feet)					
ANTENNA TIP HEIGHT					
ELECTRICAL TILT (700/850/1900/AWS)					
MECHANICAL DOWNTILT					
FEEDER AMOUNT					
Antenna RET Motor (QTY/MODEL)					
Antenna RET Splitter (QTY/MODEL)					
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)					
Antenna RET Surge Arrestor (QTY/MODEL)					
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site					
DC BLOCK (QTY/MODEL)					
TMA/LNA (TYPE/MODEL)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)					
PDU FOR TMAS (QTY/MODEL) usually per site					
SURGE ARRESTOR (QTY/MODEL)					
DIPLEXER (QTY/MODEL)					
HYBRID COMBINER (QTY/MODEL)					
DUPLEXER (QTY/MODEL)					
FILTER (QTY/MODEL)					
RXAIT KIT MODULE?					
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)					
SCPA/MCPA MODULE?					
Additional Component1					
Additional Component2					
Additional Component3					
MAGNETIC DECLINATION					
HATCHPLATE POWER (Watts)					
ERP (Watts)					
Local Market Note1					
Local Market Note2					
Local Market Note3					

Section 15F - CURRENT SECTOR/CELL INFORMATION - ZETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)
TX/RX?					
TECHNOLOGY					
RRH LOCATION (Top/Bottom/None)					
FEEDERS TYPE					
Feeder Length (feet)					
ANTENNA ATOLL					
ANTENNA MAKE - MODEL					
ANTENNA VENDOR					
ANTENNA SIZE (H x W x D)					
ANTENNA WEIGHT					
ANTENNA GAIN					
AZIMUTH					
RADIATION CENTER (feet)					
ANTENNA TIP HEIGHT					
ELECTRICAL TILT (700/850/1900/AWS)					
MECHANICAL DOWNTILT					
FEEDER AMOUNT					
Antenna RET Motor (QTY/MODEL)					
Antenna RET Splitter (QTY/MODEL)					
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)					
Antenna RET Surge Arrestor (QTY/MODEL)					
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site					
DC BLOCK (QTY/MODEL)					
TMA/LNA (TYPE/MODEL)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)					
PDU FOR TMAS (QTY/MODEL) usually per site					
SURGE ARRESTOR (QTY/MODEL)					
DIPLEXER (QTY/MODEL)					
HYBRID COMBINER (QTY/MODEL)					
DUPLEXER (QTY/MODEL)					
FILTER (QTY/MODEL)					
RXAIT KIT MODULE?					
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)					
SCPA/MCPA MODULE?					
Additional Component1					
Additional Component2					
Additional Component3					
MAGNETIC DECLINATION					
HATCHPLATE POWER (Watts)					
ERP (Watts)					
Local Market Note1					
Local Market Note2					
Local Market Note3					

Section 16A - NEW/PROPOSED SECTOR/CELL INFORMATION - ALPHA (OR OMNI)

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx			TxRx-Rx	N/A	TxRx-TxRx	TxRx-TxRx		
TECHNOLOGY	UMTS / 850	UMTS / 1900			LTE / 700	N/A	GSM / 850	GSM / 1900		
RRH LOCATION (Top/Bottom/None)	N/A	N/A			TOP	TOP	N/A	N/A		
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew		
Feeder Length (feet)	110 '	110 '					110 '	110 '		
ANTENNA ATOLL										
ANTENNA MAKE - MODEL	7770				AM-X-CD-16-65-00T-RET		7770			
ANTENNA VENDOR	Powerwave				KMW		Powerwave			
ANTENNA SIZE (H x W x D)	55.0 x 11.0 x 5.0				72.0 x 11.8 x 5.9		55.0 x 11.0 x 5.0			
ANTENNA WEIGHT	35				48.5		35			
ANTENNA GAIN	13.5 dBi	16.5 dBi					13.5 dBi	16.5 dBi		
AZIMUTH	30 °				30 °		30 °			
RADIATION CENTER (feet)	98 '				98 '		98 '			
ANTENNA TIP HEIGHT	100 '				101 '		100 '			
ELECTRICAL TILT (700/850/1900/AWS)	2 °	2 °			TBD	TBD	2 °	2 °		
MECHANICAL DOWNTILT	0 °				0 °		0 °			
FEEDER AMOUNT	2				1 Optic Fiber & 2 DC cables		2			
Antenna RET Motor (QTY/MODEL)	1 / Powerwave / 7020 (DB)				N/A / KMW / Built-in RET Equipment		1 / Powerwave / 7020 (DB)			
Antenna RET Splitter (QTY/MODEL)										
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)										
Antenna RET Surge Arrestor (QTY/MODEL)										
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site							Powerwave / 7070			
DC BLOCK (QTY/MODEL)	N/A						N/A			
TMA/LNA (TYPE/MODEL)	2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)				TBD / 2 Ericsson RRU		2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860			
PDU FOR TMAS (QTY/MODEL) usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)			
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A			
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901						0 + 2 / Powerwave / LGP 21901			
HYBRID COMBINER (QTY/MODEL)	N/A						N/A			
DUPLEXER (QTY/MODEL)	N/A						N/A			
FILTER (QTY/MODEL)	N/A						N/A			
RXAIT KIT MODULE?	No RxAIT	No RxAIT					No RxAIT	No RxAIT		
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A / No LLC	N/A / No LLC					N/A / No LLC	N/A / No LLC		
SCPA/MCPA MODULE?	N/A	N/A					N/A	N/A		
Additional Component1	Powerwave						Powerwave			
Additional Component2	N/A						N/A			
Additional Component3	Daisy chain to ANT4				RET connected to RRU for control		Home run to BTS from ANT4			
MAGNETIC DECLINATION	-14 °				-14 °		-14 °			
HATCHPLATE POWER (Watts)	TBD	TBD					TBD	TBD		
ERP (Watts)	TBD	TBD					TBD	TBD		
Local Market Note1	RRUW's on exisitng OBIF, jumpers and RX (									
Local Market Note2										
Local Market Note3										

Section 16B - NEW/PROPOSED SECTOR/CELL INFORMATION - BETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx			TxRx-Rx	N/A	TxRx-TxRx	TxRx-TxRx		
TECHNOLOGY	UMTS / 850	UMTS / 1900			LTE / 700	N/A	GSM / 850	GSM / 1900		
RRH LOCATION (Top/Bottom/None)	N/A	N/A			TOP	TOP	N/A	N/A		
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew		
Feeder Length (feet)	110 '	110 '					110 '	110 '		
ANTENNA ATOLL										
ANTENNA MAKE - MODEL	7770				AM-X-CD-16-65-00T-RET		7770			
ANTENNA VENDOR	Powerwave				KMW		Powerwave			
ANTENNA SIZE (H x W x D)	55.0 x 11.0 x 5.0				72.0 x 11.8 x 5.9		55.0 x 11.0 x 5.0			
ANTENNA WEIGHT	35				48.5		35			
ANTENNA GAIN	13.5 dBi	16.5 dBi					13.5 dBi	16.5 dBi		
AZIMUTH	140 °				140 °		140 °			
RADIATION CENTER (feet)	98 '				98 '		98 '			
ANTENNA TIP HEIGHT	100 '				101 '		100 '			
ELECTRICAL TILT (700/850/1900/AWS)	8 °	4 °			TBD	TBD	8 °	4 °		
MECHANICAL DOWNTILT	0 °				0 °		0 °			
FEEDER AMOUNT	2				1 Optic Fiber & 2 DC cables		2			
Antenna RET Motor (QTY/MODEL)	1 / Powerwave / 7020 (DB)				N/A / KMW / Built-in RET Equipment		1 / Powerwave / 7020 (DB)			
Antenna RET Splitter (QTY/MODEL)										
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)										
Antenna RET Surge Arrestor (QTY/MODEL)										
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site							Powerwave / 7070			
DC BLOCK (QTY/MODEL)	N/A						N/A			
TMA/LNA (TYPE/MODEL)	2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)				TBD / 2 Ericsson RRU		2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860			
PDU FOR TMAS (QTY/MODEL) usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)			
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A			
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901						0 + 2 / Powerwave / LGP 21901			
HYBRID COMBINER (QTY/MODEL)	N/A						N/A			
DUPLEXER (QTY/MODEL)	N/A						N/A			
FILTER (QTY/MODEL)	N/A						N/A			
RXAIT KIT MODULE?	No RxAIT	No RxAIT					No RxAIT	No RxAIT		
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A / No LLC	N/A / No LLC					N/A / No LLC	N/A / No LLC		
SCPA/MCPA MODULE?	N/A	N/A					N/A	N/A		
Additional Component1	Powerwave						Powerwave			
Additional Component2	N/A						N/A			
Additional Component3	Daisy chain to ANT4				RET connected to RRU for control		Home run to BTS from ANT4			
MAGNETIC DECLINATION	-14 °				-14 °		-14 °			
HATCHPLATE POWER (Watts)	TBD	TBD					TBD	TBD		
ERP (Watts)	TBD	TBD					TBD	TBD		
Local Market Note1	RRUW's on exisitng OBIF, jumpers and RX (									
Local Market Note2										
Local Market Note3										

Section 16C - NEW/PROPOSED SECTOR/CELL INFORMATION - GAMMA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx			TxRx-Rx	N/A	TxRx-TxRx	TxRx-TxRx		
TECHNOLOGY	UMTS / 850	UMTS / 1900			LTE / 700	N/A	GSM / 850	GSM / 1900		
RRH LOCATION (Top/Bottom/None)	N/A	N/A			TOP	TOP	N/A	N/A		
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew		
Feeder Length (feet)	110 '	110 '					110 '	110 '		
ANTENNA ATOLL										
ANTENNA MAKE - MODEL	7770				AM-X-CD-16-65-00T-RET		7770			
ANTENNA VENDOR	Powerwave				KMW		Powerwave			
ANTENNA SIZE (H x W x D)	55.0 x 11.0 x 5.0				72.0 x 11.8 x 5.9		55.0 x 11.0 x 5.0			
ANTENNA WEIGHT	35				48.5		35			
ANTENNA GAIN	13.5 dBi	16.5 dBi					13.5 dBi	16.5 dBi		
AZIMUTH	270 °				270 °		270 °			
RADIATION CENTER (feet)	98 '				98 '		98 '			
ANTENNA TIP HEIGHT	100 '				101 '		100 '			
ELECTRICAL TILT (700/850/1900/AWS)	2 °	2 °			TBD	TBD	2 °	2 °		
MECHANICAL DOWNTILT	0 °				0 °		0 °			
FEEDER AMOUNT	2				1 Optic Fiber & 2 DC cables		2			
Antenna RET Motor (QTY/MODEL)	1 / Powerwave / 7020 (DB)				N/A / KMW / Built-in RET Equipment		1 / Powerwave / 7020 (DB)			
Antenna RET Splitter (QTY/MODEL)										
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)										
Antenna RET Surge Arrestor (QTY/MODEL)										
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site							Powerwave / 7070			
DC BLOCK (QTY/MODEL)	N/A						N/A			
TMA/LNA (TYPE/MODEL)	2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)				TBD / 2 Ericsson RRU		2 / Powerwave / LGP 21401 (Dual Band - 850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860			
PDU FOR TMAS (QTY/MODEL) usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)			
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A			
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901						0 + 2 / Powerwave / LGP 21901			
HYBRID COMBINER (QTY/MODEL)	N/A						N/A			
DUPLEXER (QTY/MODEL)	N/A						N/A			
FILTER (QTY/MODEL)	N/A						N/A			
RXAIT KIT MODULE?	No RxAIT	No RxAIT					No RxAIT	No RxAIT		
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A / No LLC	N/A / No LLC					N/A / No LLC	N/A / No LLC		
SCPA/MCPA MODULE?	N/A	N/A					N/A	N/A		
Additional Component1	Powerwave						Powerwave			
Additional Component2	N/A						N/A			
Additional Component3	Daisy chain to ANT4				RET connected to RRU for control		Home run to BTS from ANT4			
MAGNETIC DECLINATION	-14 °				-14 °		-14 °			
HATCHPLATE POWER (Watts)	TBD	TBD					TBD	TBD		
ERP (Watts)	TBD	TBD					TBD	TBD		
Local Market Note1	RRUW's on exisitng OBIF, jumpers and RX (									
Local Market Note2										
Local Market Note3										

Section 16D - NEW/PROPOSED SECTOR/CELL INFORMATION - DELTA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)
TX/RX?					
TECHNOLOGY					
RRH LOCATION (Top/Bottom/None)					
FEEDERS TYPE					
Feeder Length (feet)					
ANTENNA ATOLL					
ANTENNA MAKE - MODEL					
ANTENNA VENDOR					
ANTENNA SIZE (H x W x D)					
ANTENNA WEIGHT					
ANTENNA GAIN					
AZIMUTH					
RADIATION CENTER (feet)					
ANTENNA TIP HEIGHT					
ELECTRICAL TILT (700/850/1900/AWS)					
MECHANICAL DOWNTILT					
FEEDER AMOUNT					
Antenna RET Motor (QTY/MODEL)					
Antenna RET Splitter (QTY/MODEL)					
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)					
Antenna RET Surge Arrestor (QTY/MODEL)					
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site					
DC BLOCK (QTY/MODEL)					
TMA/LNA (TYPE/MODEL)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)					
PDU FOR TMAS (QTY/MODEL) usually per site					
SURGE ARRESTOR (QTY/MODEL)					
DIPLEXER (QTY/MODEL)					
HYBRID COMBINER (QTY/MODEL)					
DUPLEXER (QTY/MODEL)					
FILTER (QTY/MODEL)					
RXAIT KIT MODULE?					
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)					
SCPA/MCPA MODULE?					
Additional Component1					
Additional Component2					
Additional Component3					
MAGNETIC DECLINATION					
HATCHPLATE POWER (Watts)					
ERP (Watts)					
Local Market Note1					
Local Market Note2					
Local Market Note3					

Section 16E - NEW/PROPOSED SECTOR/CELL INFORMATION - EPSILON

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)
TX/RX?					
TECHNOLOGY					
RRH LOCATION (Top/Bottom/None)					
FEEDERS TYPE					
Feeder Length (feet)					
ANTENNA ATOLL					
ANTENNA MAKE - MODEL					
ANTENNA VENDOR					
ANTENNA SIZE (H x W x D)					
ANTENNA WEIGHT					
ANTENNA GAIN					
AZIMUTH					
RADIATION CENTER (feet)					
ANTENNA TIP HEIGHT					
ELECTRICAL TILT (700/850/1900/AWS)					
MECHANICAL DOWNTILT					
FEEDER AMOUNT					
Antenna RET Motor (QTY/MODEL)					
Antenna RET Splitter (QTY/MODEL)					
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)					
Antenna RET Surge Arrestor (QTY/MODEL)					
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site					
DC BLOCK (QTY/MODEL)					
TMA/LNA (TYPE/MODEL)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)					
PDU FOR TMAS (QTY/MODEL) usually per site					
SURGE ARRESTOR (QTY/MODEL)					
DIPLEXER (QTY/MODEL)					
HYBRID COMBINER (QTY/MODEL)					
DUPLEXER (QTY/MODEL)					
FILTER (QTY/MODEL)					
RXAIT KIT MODULE?					
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)					
SCPA/MCPA MODULE?					
Additional Component1					
Additional Component2					
Additional Component3					
MAGNETIC DECLINATION					
HATCHPLATE POWER (Watts)					
ERP (Watts)					
Local Market Note1					
Local Market Note2					
Local Market Note3					

Section 16F - NEW/PROPOSED SECTOR/CELL INFORMATION - ZETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	ANTENNA 5 GSM, UMTS (850 / 1900) or LTE (700 / AWS)
TX/RX?					
TECHNOLOGY					
RRH LOCATION (Top/Bottom/None)					
FEEDERS TYPE					
Feeder Length (feet)					
ANTENNA ATOLL					
ANTENNA MAKE - MODEL					
ANTENNA VENDOR					
ANTENNA SIZE (H x W x D)					
ANTENNA WEIGHT					
ANTENNA GAIN					
AZIMUTH					
RADIATION CENTER (feet)					
ANTENNA TIP HEIGHT					
ELECTRICAL TILT (700/850/1900/AWS)					
MECHANICAL DOWNTILT					
FEEDER AMOUNT					
Antenna RET Motor (QTY/MODEL)					
Antenna RET Splitter (QTY/MODEL)					
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)					
Antenna RET Surge Arrestor (QTY/MODEL)					
Antenna RET CONTROL UNIT (QTY/MODEL) usually per site					
DC BLOCK (QTY/MODEL)					
TMA/LNA (TYPE/MODEL)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)					
PDU FOR TMAS (QTY/MODEL) usually per site					
SURGE ARRESTOR (QTY/MODEL)					
DIPLEXER (QTY/MODEL)					
HYBRID COMBINER (QTY/MODEL)					
DUPLEXER (QTY/MODEL)					
FILTER (QTY/MODEL)					
RXAIT KIT MODULE?					
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)					
SCPA/MCPA MODULE?					
Additional Component1					
Additional Component2					
Additional Component3					
MAGNETIC DECLINATION					
HATCHPLATE POWER (Watts)					
ERP (Watts)					
Local Market Note1					
Local Market Note2					
Local Market Note3					

AM-X-CD-16-65-00T-RET(6' 65° Dual Broadband Antenna)

Dual Band Electrical DownTilt Antenna

698 ~ 894MHz, X-pol., H65° / V12°

1710 ~ 2170MHz, X-pol., H65° / V6.0°

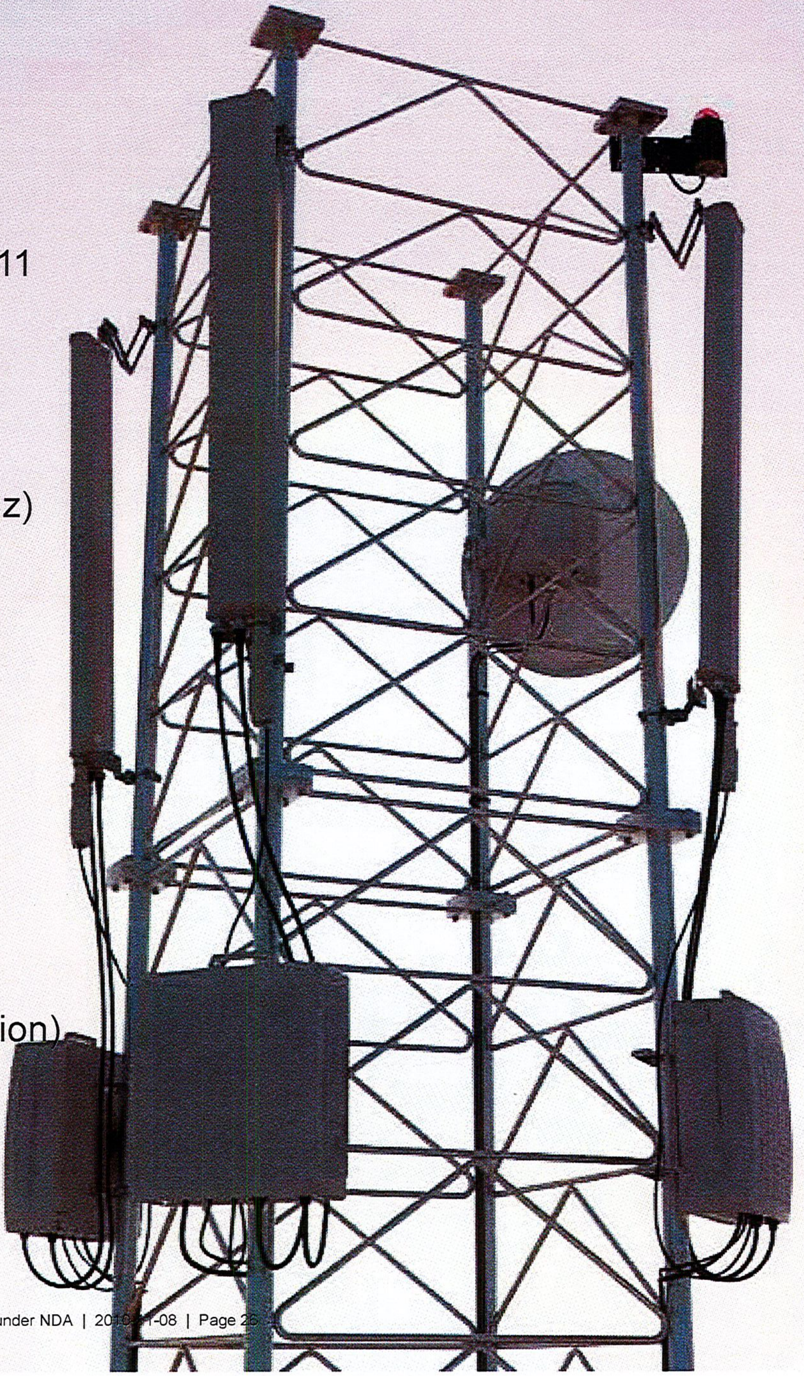
Electrical Specification

Frequency Range	698~894MHz	1710~2170MHz
Impedance	50Ω	
Polarization	Dual, Slant ±45°	
Gain	15.5dBi / 13.35dBd @ 698-806MHz 16.0dBi / 13.85dBd @ 824-894MHz	17.3dBi / 15.15dBd @ 1710-1755MHz 17.4dBi / 15.25dBd @ 1850-1900MHz 17.1dBi / 14.95dBd @ 2110-2155MHz
Beamwidth – Horizontal	65° @ 698-806MHz 63° @ 824-894MHz	65° @ 1710-1755MHz 67° @ 1850-1900MHz 69° @ 2110-2155MHz
Beamwidth – Vertical	12.3° @ 698-806MHz 11.5° @ 824-894MHz	6.5° @ 1710-1755MHz 6.0° @ 1850-1900MHz 5.7° @ 2110-2155MHz
VSWR	≤1.5:1	
Front-to-Back Ratio	≥27 dB	
Electrical Downtilt Range	2° ~ 16°	0° ~ 10°
Isolation Between Ports	≥30 dB	
Isolation Between Ports of Different Frequency Elements	≥35 dB	
Cross Pole Discrimination	10.0 dB @ ±60° 15.0 dBi @ 0°	
First Upper Side Lobe Suppression	16dB	
Side Lobe Suppression	> 16 dB @ 0-6° Tilt > 18 dB @ 7-12° Tilt (Up to 10° from Boresight)	> 16 dB @ 0-6° Tilt > 18 dB @ 7-10° Tilt (Up to 10° from Boresight)
Passive Intermodulation	≤ -150 dBc @ 2x20w	
Input Maximum CW Power	500 W	300 W
Environmental Compliance	IP65 for Radome IP67 for Connectors	
RET Motor Configuration	Field Replaceable RET Electronic Control Module / RET Motor is internal to antenna & not field replaceable	
Compliant with AISG 1.1 and 2.0	AISG 1.1 and 2.0	

Mechanical Specification

Dimension (W×D×H)	11.8×5.9×72 inches (300×150×1829mm)
Weight (Without clamp)	48.5 lbs (22.0 kg)
Connector	4 x 7/16 DIN(F), Long Neck
Max Wind Speed	150 mph
Wind Load (@150 mph)	1891 N

RRUS 11



Frequency (AT&T)
- ✓ Band 12 (Lower 700 MHz)
- ✓ Band 4 (AWS, 17/2100 MHz) — 2Q2011

RF Characteristics
- ✓ Output power: 2x30 Watts
- ✓ 2x2 MIMO Capable
- ✓ IBW of 20 MHz
- ✓ Rx Sens.: Better than -105 dBm (5 MHz)

RET/TMA Support
- ✓ AISG 2.0 Compatible
- ✓ Via RET Port and Centre Conductor
- ✓ Cascading
- ✓ 30 VDC Bias

Environmental
- ✓ Self Convection
- ✓ Temperature -40 to 131 F

Power
- ✓ Input voltage: -48 VDC or AC (exemption)
- ✓ Fuse size: 13 – 32 A
  - Recommended: 25 A
- ✓ Power Consumption:
  - Typical 200 Watts
  - Max 310 Watts
  - Excl. RET and TMA load

RRUS 11 Mechanics

Wall and pole mounting brackets
- Reused from RRUW and RRU22
- Vertical Mount Only

Clearing distances:
- Above >= 16 in.
- Below >= 12 in.
- Side >= 0 mm

DC connector
- Bayonet
- Screw terminals in connector plug
- Supported outer cable diameter: 6-18 mm

CPRI connector
- LCD with proprietary cover
- Separate cover available from 1Q2011

Size & Weight
- Band 4: 44 lbs
- Band 12: 50 lbs
- 17.8″ x 17.3″ x 7.2″ incl. sun shield

ERICSSON

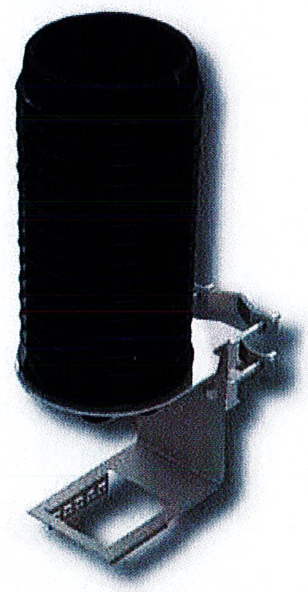
DC6-48-60-18-8F

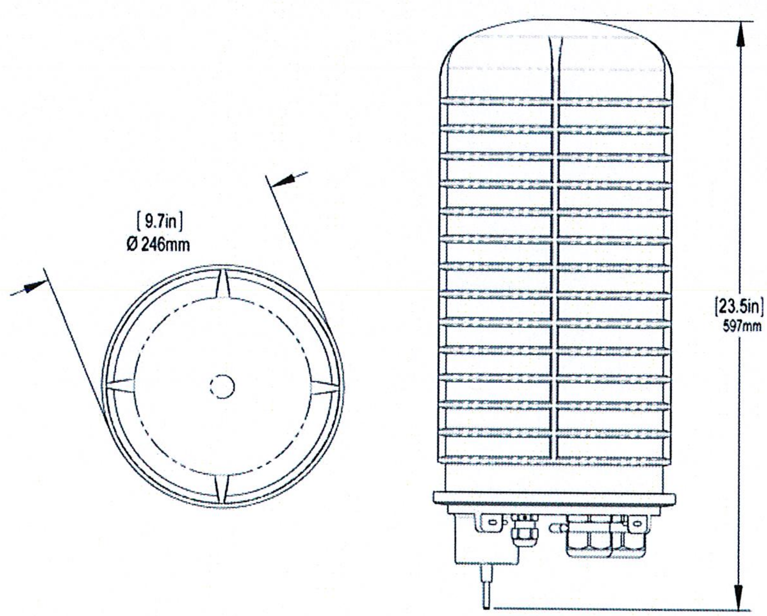
DC Surge Suppression Solution

The DC6-48-60-18 is a dual chambered, DC surge suppression system for use in multi-circuit, Distributed Antenna Systems. The system will protect up to 6 Remote Radio Heads from voltage surges and lightning, and connect up to 18 fiber pairs. The system is enclosed in a NEMA 4 rated, waterproof enclosure.

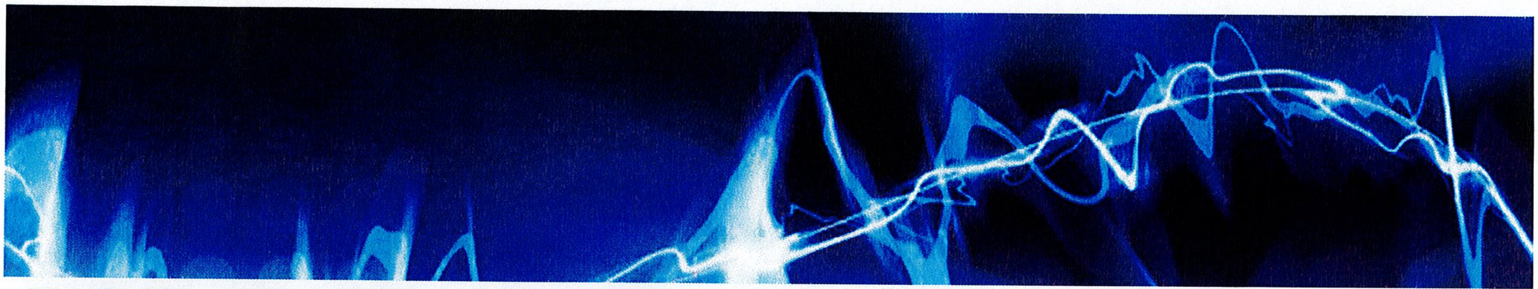
FEATURES

- Protects up to 6 Remote Radio Heads, each with its own protection circuit.
- Flexible design allows for installation at the top of a tower for Remote Radio Head protection.
- Includes fiber connections for up to 18 pairs of fiber.
- LED indicators on individual circuits provide visual indication of suppressor status.
- Form 'C' relays allow for remote monitoring of the suppressor status.
- Patented Strikesorb technology provides over 60 kA of surge current capacity per circuit.
- Strikesorb suppression modules are fully recognized to UL 1449-3rd Edition Safety Standard, meeting all intermediate and high current fault requirements to facilitate use in OEM applications.
- Raycap recommends that DC protection system be installed within 2 meters or 6 feet of the radio.
- Dome design is lightweight and aerodynamic providing maximum flexibility for installation on top of towers.





Raycap



DC6-48-60-18-8F

DC Power Surge Protection

Electrical Specifications	
Model Number	DC6-48-60-18-8F
Nominal Operating Voltage	48 VDC
Nominal Discharge Current (I_n)	20 kA 8/20 µs
Maximum Discharge Current (I_{max}) per NEMA LS-1	60 kA 8/20 µs
Maximum Continuous Operating Voltage (U_c)	75 VDC
Voltage Protection Rating	400 V

Mechanical Specifications	
Suppression Connection Method	Compression lug, #2-#14 AWG Copper, #2-#12 Aluminum
Fiber Connection Method	LC-LC Single mode duplex
Environmental Rating	IP 68, 7m 72hrs
Operating Temperature	-40° C to + 80° C
Storage Temperature	-70° C to + 80° C
Cold Temperature Cycling	IEC 61300-2-22e -30° C to + 60° C 200 hrs @ 5 psi
Resistance to Aggressive Materials	CEI IEC 61073-2 including acids and bases
UV Protection	ISO 4892-2 Method A Xenon-Arc 2160 hrs
Weight	20 lbs without Mounting Bracket

STANDARDS

Strikesorb modules are compliant to the following Surge Protection Device (SPD) Standards:

- ANSI/UL 1449 – 3rd Edition
- IEEE C62.41
- NEMA LS-1, IEC 61643-1:2005 2nd Edition:2005
- IEC 61643-12
- EN 61643-11:2002 (including A11:2007)

GSA GS-07F-0435V

ANAB Accredited — Certified to ISO 9001:2000

TÜV — TUV Rheinland of North America

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Calculated Radio Frequency Emissions

CT5144 – Cromwell

100 Berlin Road, Cromwell, CT 06416

(a.k.a. Christian Hill Road)

July 30, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the sign structure with pipe mast located at 100 Berlin Road in Cromwell, CT. The coordinates of the tower are 41° 36' 20.5" N, 72° 42' 5.2" W.

AT&T is proposing the following modifications:

1) Install three 700 MHz LTE antennas (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Cingular UMTS	*102*	*1935*	*1*	*500*	*0.0173*	*1.0000*	*1.73%*
Cingular 800	*102*	*880*	*20*	*250*	*0.1728*	*0.5867*	*29.45%*
Cingular 1900	*102*	*1900*	*3*	*427*	*0.0443*	*1.0000*	*4.43%*
Pocket	77	2130	3	631	0.1148	1.0000	11.48%
T-Mobile GSM	108	1945	8	191	0.0471	1.0000	4.71%
T-Mobile UMTS	108	2100	2	764	0.0471	1.0000	4.71%
Verizon	88	869	9	427	0.1784	0.5793	30.80%
Verizon	88	1970	3	270	0.0376	1.0000	3.76%
Verizon	88	757	1	878	0.0408	0.5047	8.08%
AT&T UMTS	98	880	2	565	0.0042	0.5867	0.72%
AT&T UMTS	98	1900	2	875	0.0066	1.0000	0.66%
AT&T LTE	98	734	1	1313	0.0049	0.4893	1.00%
AT&T GSM	98	880	1	283	0.0011	0.5867	0.18%
AT&T GSM	98	1900	4	525	0.0079	1.0000	0.79%
						Total	**66.89%**

Table 1: Carrier Information[1 2 3]

[1] The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/27/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[2] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

[3] Antenna height listed for AT&T is in reference to the CENTEK Engineering, Inc. Structural Analysis Report dated July 14, 2012.

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5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **66.89% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Daniel L. Goulet
C Squared Systems, LLC

July 30, 2012
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f^2)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f^2)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[4] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[5] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

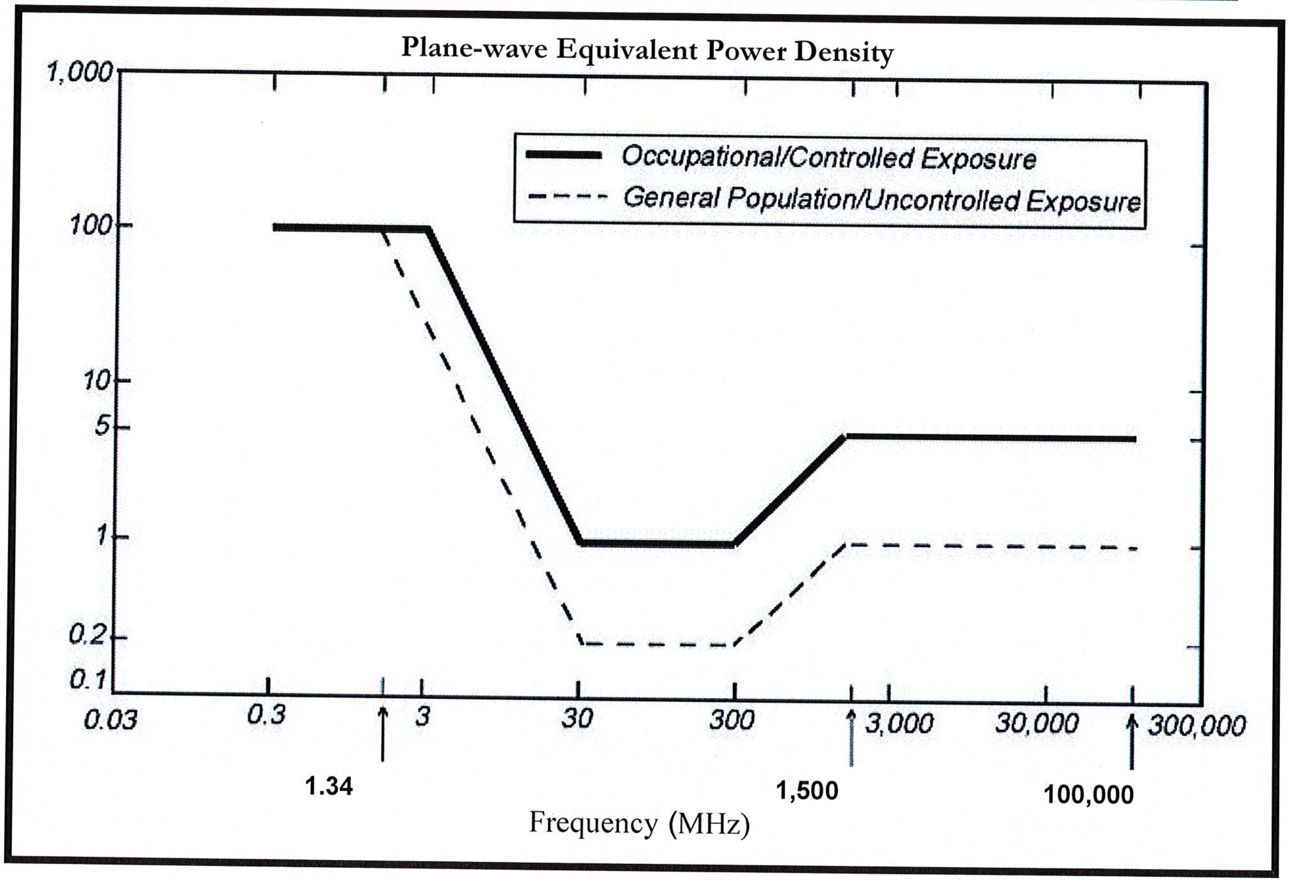
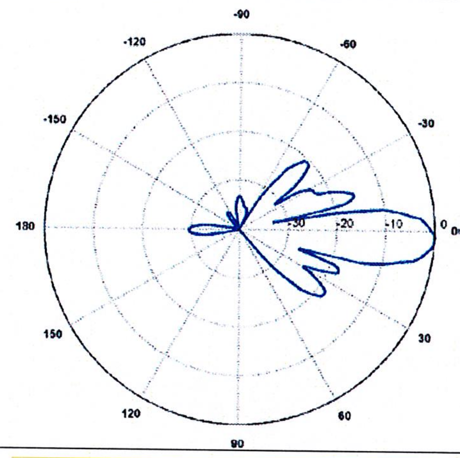


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

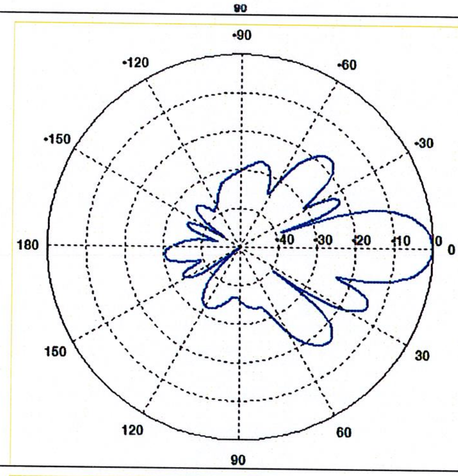
700 MHz

Manufacturer:	KMW Communications
Model #:	AM-X-CD-16-65-00T-RET
Frequency Band:	698-806 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	12.3°
Horizontal Beamwidth:	65°
Polarization:	Dual Slant ± 45°
Size L x W x D:	72.0" x 11.8" x 5.9"



850 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	82°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.0" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	1850-1990 MHz
Gain:	13.6 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.0" x 11.0" x 5.0"