Robinson+Cole

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Also admitted in Massachusetts

January 12, 2015

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

Re: **Request of Cellco Partnership d/b/a Verizon Wireless for an Order to Approve the Shared Use of the Existing Long Ridge Fire Company Tower at 366 Old Long Ridge Road, Stamford, Connecticut**

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by Cellco of an existing telecommunications tower at 366 Old Long Ridge Road in Stamford, Connecticut (the "Property"). The existing 152-foot tower and the Property are owned by the Long Ridge Fire Company ("LRFC"). Cellco requests that the Council find that the proposed shared use of the LRFC tower satisfies the criteria of C.G.S § 16-50aa and issue an order approving the proposed shared use.

Background

The LRFC owns and operates a 152-foot self-supporting lattice tower adjacent to its station house at the Property. The existing tower is shared by numerous entities, emergency service providers and four (4) commercial wireless service providers including AT&T, T-Mobile, Sprint and Air Touch. Equipment associated with each of the tower sharing entities is located either on the ground near the base of the tower or inside the LRFC building.

Cellco is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. Cellco and the LRFC have agreed to the proposed shared use of the existing tower pursuant to mutually acceptable terms and conditions. The LRFC has authorized Cellco to apply for all necessary permits and approvals that may be required to share the existing tower. (*See* Owner's authorization letters included in Attachment 1).

Cellco proposes to install twelve (12) antennas and six (6) remote radio heads (RRHs) at a height of 98 feet above ground level on the LRFC tower. Equipment associated with Cellco's antennas will be located inside a newly constructed 12-foot x 14-foot equipment room located in modified space in the basement of the LRFC building. Two air conditioning condensing units would be installed at grade to the north of the LRFC building. Cellco will share the existing LRFC's back-up generator. Included in Attachment 2 is a set of project plans showing the location of all proposed site improvements.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." Cellco respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing LRFC tower is structurally capable of supporting Cellco's proposed improvements. The proposed shared use of this tower is, therefore, technically feasible. A Detailed Structural Analysis and Evaluation Report verifying the structural integrity of the tower, and its ability to support Cellco's antennas, RRHs and related equipment is included in Attachment 3.[1]

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the shared use of an existing tower such as the LRFC tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In

[1] Please note that the October 31, 2014 Detailed Structural Analysis and Evaluation Report includes "proposed" facility modifications by Sprint and AT&T, in addition to Cellco. This tower share filing seeks approval, only for Cellco's antennas, RRHs and related equipment. AT&T and Sprint will seek separate antenna modification approvals in the future.

addition, § 16-50x(a) directs the Council to "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility. The proposed shared use of the LRFC tower would have a minimal environmental effect, for the following reasons:

1. The proposed installation of twelve (12) antennas and six (6) remote radio heads at the 98-foot level on the existing 152-foot tower would have an insignificant incremental visual impact on the area around the existing tower. (*See* Tower Elevation on Plan Sheet C-1 in Attachment 2). Cellco's equipment would be located in a newly constructed equipment room in the basement of the LRFC building. Cellco will share the existing LRFC generator on site. Cellco's shared use of this tower would therefore, not cause any significant change or alteration in the physical or environmental characteristics of the Property.

2. Noise associated with Cellco's air conditioning condensing units located adjacent to and north of the LRFC building was evaluated for compliance with State and/or local noise standards. According to the Noise Evaluation Report included in Attachment 4, noise from its air conditioning condensing units will not exceed State and/or local noise limits. As mentioned, Cellco will not install a new generator at the LRFC site, but will share the existing LRFC generator.

3. Operation of Cellco's antennas, in addition to all existing antennas on the LRFC tower would not exceed the RF emissions standards adopted by the Federal Communications Commission ("FCC"). Included in Attachment 5 of this filing is a Calculated Radio Frequency Emissions Report from C-Squared Systems, LLC confirming that, with the addition of Cellco's proposed antennas, the facility will operate well within (52.36%) the FCC's radio frequency emissions safety standards.

4. Under ordinary operating conditions, Cellco's proposed wireless facility would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the LRFC facility other than periodic (monthly) maintenance visits to the cell site.

The proposed shared use of the LRFC tower would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. Economic Feasibility. As previously mentioned, Cellco has entered into agreements with the LRFC for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible. (*See* Attachment 1).

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Cellco's full array of twelve (12) antennas, six (6) RRHs and associated equipment. Cellco is not aware of any public safety concerns relative to the proposed sharing of the LRFC tower. In fact, the provision of new and improved wireless service through shared use of the existing tower is expected to enhance the safety and welfare of area residents and members of the general public traveling throughout northern portions of Stamford.

Conclusion

For the reasons discussed above, the proposed shared use of the existing LRFC tower at 366 Old Long Ridge Road satisfies the criteria stated in C.G.S. § 16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Robinson+Cole

Thank you for your consideration of this matter.

Very truly yours,

Kenneth C. Baldwin

Enclosures
Copy to:
Mayor David Martin, City of Stamford
Stuart Teitelbaum, Chief, Long Ridge Fire Company
Sandy M. Carter

ATTACHMENT 1

OFFICE OF THE CHIEF
STUART H. TEITELBAUM

LONG RIDGE FIRE COMPANY, INC.

January 6, 2015

Sandy Carter
Verizon Wireless
99 East River Drive
East Hartford, CT 06108

RE: Cellco Partnership d/b/a Verizon Wireless
Wireless Telecommunications Facility
366 Old Long Ridge Road,
Stamford, CT

Dear Ms. Carter:

The Long Ridge Fire Co., the owner of the above-referenced property, hereby authorizes Cellco Partnership d/b/a Verizon Wireless and/or its agents to apply for and obtain all necessary permits and approvals from the CT Siting Council and all appropriate City of Stamford boards, commissions and agencies for its proposed wireless telecommunications facility.

Please contact us should you have any questions.

Sincerely

STUART TEITELBAUM - CHIEF
The Long Ridge Fire Co.

366 OLD LONG RIDE ROAD STAMFORD, CT 06903
PHONE: 203.322.5200 FAX: 203.329.7130

ATTACHMENT 2

CELLCO PARTNERSHIP

d.b.a. verizon wireless

WIRELESS COMMUNICATIONS FACILITY

STAMFORD NW

366 OLD LONG RIDGE ROAD
STAMFORD, CONNECTICUT 06903

SITE DIRECTIONS

FROM: 99 EAST RIVER DRIVE, EAST HARTFORD, CONNECTICUT **TO:** 366 OLD LONG RIDGE ROAD, STAMFORD, CONNECTICUT

1. Take ramp left for I-84E toward Norwich	137 FT
2. At Exit 55, Take ramp Right for CT-2 East Toward Norwich / New London	0.2 MI
3. At Exit 5D, Take ramp Right for CT-3 South Toward Wethersfield / Glastonbury	3.5 MI
4. Take ramp Left for I-91 South Toward New Haven	2.6 MI
5. At Exit 17, Take ramp Right for CT-15 South Toward E. Main St / W. Cross Parkway	14.0 MI
6. At Exit 34, Take Ramp Right and follow signs for CT-104	55.0 MI
7. Turn Right onto CT-104 / Long Ridge Road	0.3 MI
8. Turn Right onto Erskine Road and then Immediately turn Left onot Old Long Ridge Road	3.8 MI

GENERAL NOTES

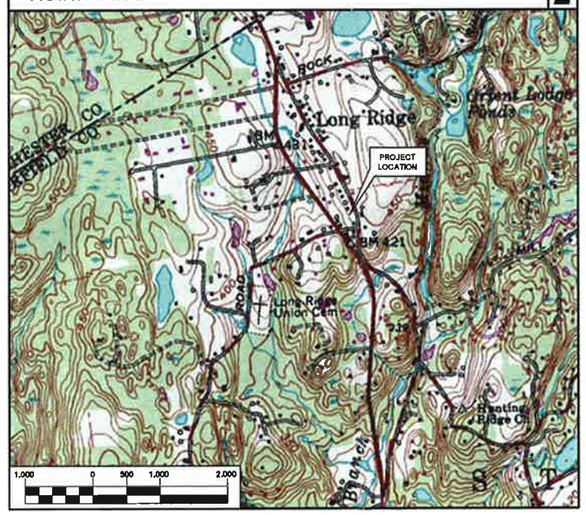
1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY CELLCO PARTNERSHIP.

GENERAL NOTES

1. THE PROPOSED SCOPE OF WORK INCLUDES THE INSTALLATION OF A 14'-0"x12'-0"± EQUIPMENT ROOM IN THE BASEMENT OF AN EXISTING BUILDING.
2. A TOTAL OF TWELVE (12) DIRECTIONAL PANEL ANTENNAS ARE PROPOSED TO BE MOUNTED ON AN EXISTING 150'± TALL LATTICE TOWER AT A CENTERLINE ELEVATION OF 98'± AGL.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

SITE NAME:	STAMFORD NW
SITE ADDRESS:	366 OLD LONG RIDGE ROAD STAMFORD, CT
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 99 EAST RIVER DRIVE EAST HARTFORD, CT 06108
CONTACT PERSON	SANDY CARTER CELLCO PARTNERSHIP (860) 803-8219
TOWER COORDINATES:	LATITUDE: 41°-09'-11.18" LONGITUDE: 73°-35'-35.16" GROUND ELEVATION: 422' ± M.S.L.

COORDINATES AND GROUND ELEVATION REFERENCED FROM RF DATA SHEET STAMFORD NW, CT DATED 5/15/2014 PROVIDED BY VERIZON WIRELESS.

SITE INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET – GENERAL NOTES AND PROJECT SUMMARY	A
C-1	COMPOUND PLAN, ANTENNA SECTOR PLAN AND ELEVATION	A

CELLCO PARTNERSHIP
DBA
verizon wireless

A&E FIRM
UBS CORPORATION
500 ENTERPRISE DRIVE
SUITE 3B
ROCKY HILL, CONNECTICUT
1-(860)-529-8882

A&E SEAL

PROJECT NO: 36922268

JOB NO: VZ5-110

DRAWN BY: KAP

CHECKED BY: MJE

ISSUED FOR

A	12/09/14	REVIEW

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO VERIZON WIRELESS IS STRICTLY PROHIBITED.

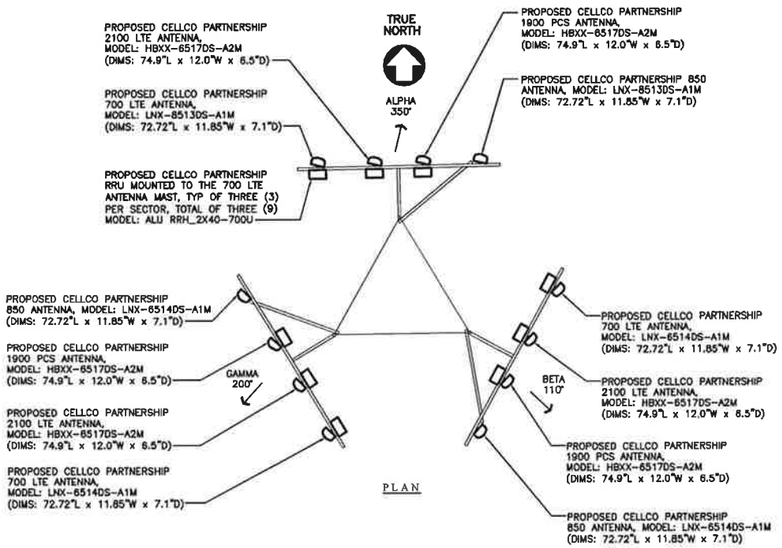
STAMFORD NW

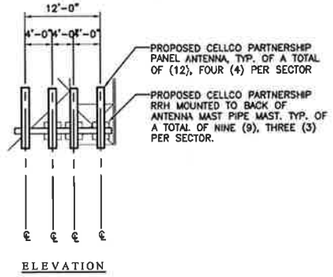
366 OLD LONG RIDGE ROAD
STAMFORD, CONNECTICUT
06903

SCALE:

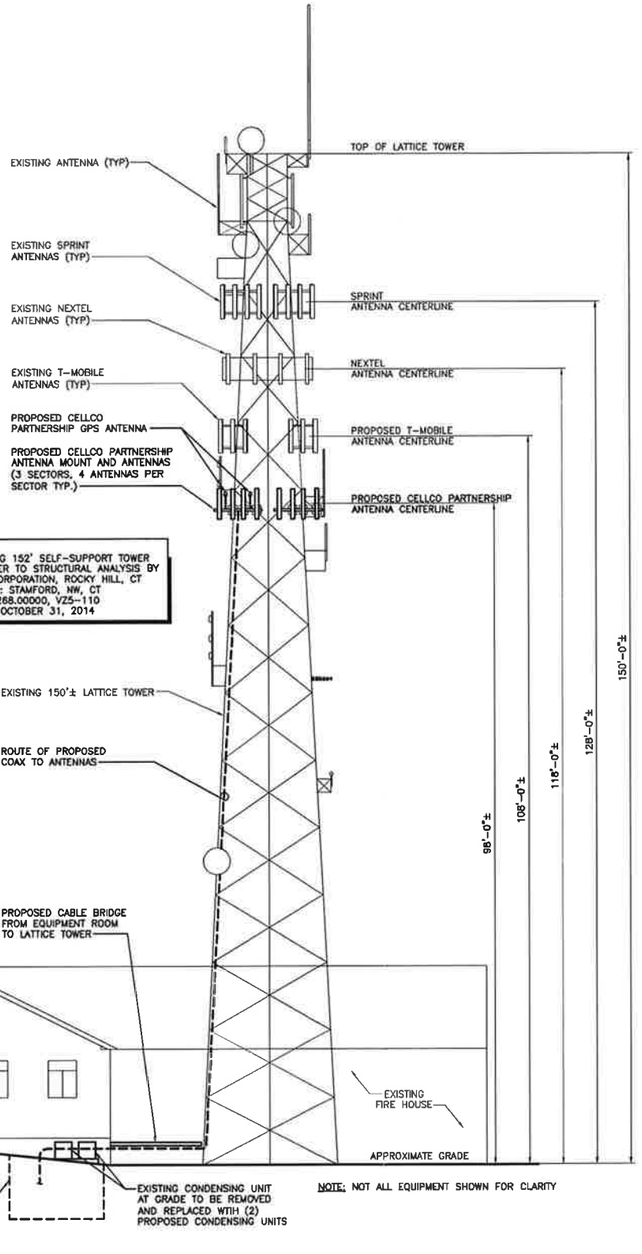
TITLE SHEET - GENERAL NOTES AND PROJECT SUMMARY

T-1

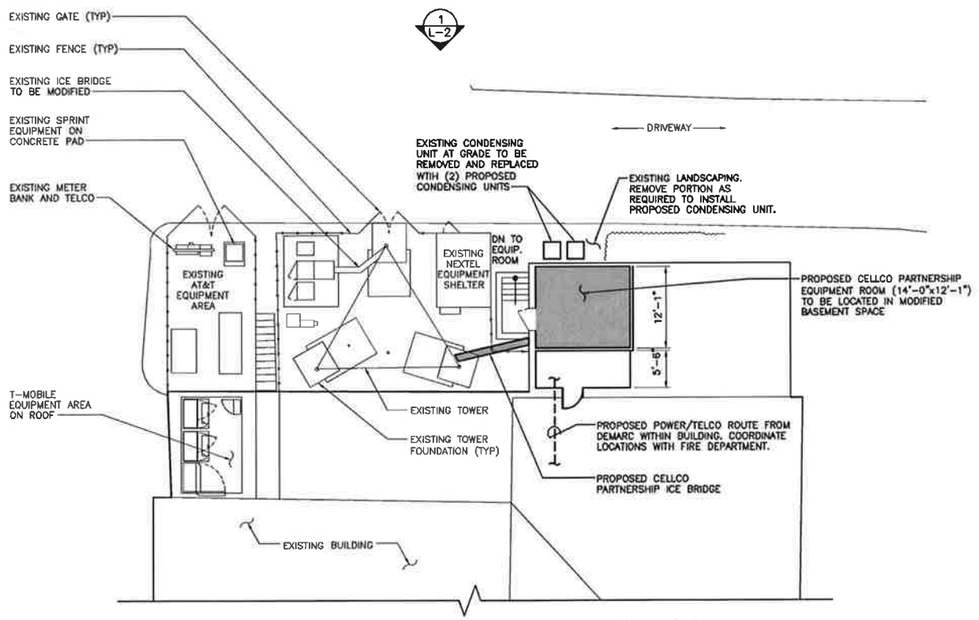




3 / C-1 **ANTENNA SECTOR PLAN**
NOT TO SCALE



NOTE:
EXISTING 152' SELF-SUPPORT TOWER - REFER TO STRUCTURAL ANALYSIS BY URS CORPORATION, ROCKY HILL, CT SITE ID: STAMFORD, NW, CT 36922268.00000, VZ5-110 DATED OCTOBER 31, 2014



1 / C-1 **EQUIPMENT / COMPOUND PLAN**
SCALE: 1" = 10'-0"

2 / C-1 **SOUTH ELEVATION**
SCALE: 1" = 10'-0"

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

CELLCO PARTNERSHIP
DBA
verizon wireless

A&E FIRM
URS CORPORATION
500 ENTERPRISE DRIVE
SUITE 3B
ROCKY HILL, CONNECTICUT
1-(860)-529-8882

A&E SEAL

PROJECT NO:	36922268
JOB NO:	VZ5-110
DRAWN BY:	KAP
CHECKED BY:	MJE

ISSUED FOR

A	12/09/14	REVIEW

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO VERIZON WIRELESS IS STRICTLY PROHIBITED.

STAMFORD NW

366 OLD LONG RIDGE ROAD
STAMFORD, CONNECTICUT
06903

SCALE: AS SHOWN

COMPOUND PLAN, ANTENNA SECTOR PLAN AND ELEVATION

C-1

ATTACHMENT 3

DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF AN EXISTING 152' SELF SUPPORTING LATTICE TOWER FOR PROPOSED ANTENNA ARRANGEMENTS

Site I.D: (Verizon) Stamford NW
(AT&T) CT5047
(Sprint) CT03XC328

Address: 366 Old Long Ridge Road
Stamford, CT

prepared for

verizonwireless

Verizon Wireless
99 East River Drive
East Hartford, Connecticut 06108

at&t

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT. 06067

Sprint

1 International Blvd.
Suite 800
Mahwah, NJ. 07495

prepared by

URS

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

(Sprint) 36928702.00000
(Verizon) 36922268.00000
(AT&T) 36922483.00000

October 31, 2014

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1. EXECUTIVE SUMMARY
2. INTRODUCTION
3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS
4. FINDINGS AND EVALUATION
5. CONCLUSIONS
6. DRAWINGS AND DATA

- TOWER AND FOUNDATION REINFORCED DRAWINGS
  - (FROM URS CORPORATION MODIFICATION DESIGN/PASSING ANALYSIS DATED 6/13/2013)
- TNX TOWER INPUT / OUTPUT SUMMARY
- TNX TOWER FEEDLINE DISTRIBUTION CHART
- TNX TOWER FEEDLINE PLAN
- TNX TOWER DETAILED OUTPUT
- ANCHOR BOLT EVALUATION
- FOUNDATION EVALUATION

1. EXECUTIVE SUMMARY

This report summarizes the structural re-analysis of the modified existing 152' self-supporting lattice tower located at 366 Old Long Ridge Road, in Stamford, CT. The analysis was conducted in accordance with the 2005 Connecticut State Building Code and the TIA/EIA-222-F standard for a basic wind velocity of 85 mph (fastest mile) and 74 mph (fastest mile) concurrent with 0.50" ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report.

The proposed antenna modifications are as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
Remove: **(12) Decibel DB844H90E-XY Panel Antennas** **(3) T-Frame Mounts** **(12) 1 1/4 Coaxial Cable**	**Nextel (Existing)**	**118'**
(6) Amphenol LPA-80063-4CF Panel Antennas **(3) Amphenol BXA-171063-8BF-EDIN-2 Panel Antennas** **(3) Amphenol BXA 171063-12CF-EDIN-2 Panel Antennas** **(3) Amphenol BXA-70063-6CF-2 Panel Antennas** **(18) 1 5/8" Coaxial Cables**	**Verizon (Previously Proposed)**	**98'**
Install **(3) RFS APXVSPP18-C-A20 Panel Antennas** **(3) 800 MHz RRH Units** **(3) 1900 MHz RRH Units** **(3) Hybriflex Cables**	**Sprint (Previously Proposed)**	**128'**
(3) RFS APXV9TM14 Panel Antennas **(3) RRH Units** **(1) Fiber Optic Cable** **(27) 8' Jumper Cables**	**Sprint (Proposed)**	**128'**
(2) Decibel LNX-8513DS-A1M Panel Antennas (Alpha Sector) **(4) Decibel LNX-6514DS-A1M Panel Antenans (Beta and Gamma Sector)** **(6) RRH Units** **(6) HBXX-6517DS-A2M Panel Antennas** **(1) Raycap DB-T1-6Z-8AB-0Z Distribution Box**	**Verizon (Proposed)**	**98'**

The results of the analysis indicate that the proposed modified tower structure and the proposed modified foundation components are in compliance with the proposed loadings. The proposed modified tower structure and proposed modified foundation components are considered structurally adequate with the wind classification specified above and all the existing and proposed antenna loading.

1. EXECUTIVE SUMMARY - *continued*

The analysis results presented herewith are based upon the previous tower modification proposed by URS Corporations' tower modification analysis report, project 36922268, signed and sealed on June 13, 2013. No installation of proposed antennas, mounts, cables of accessories shall occur prior to the completion of the tower and foundation modifications specified in the June 13, 2013 report. A copy of the reinforced drawings are included with this report.

This analysis is based on:

1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
2) Original tower geometry, structural member sizes and foundation information obtained from manufacturer's design documents prepared by ROHN Industries, Engineering File No. 24269DB, dated May 16, 1989.
3) Subsurface Investigation Report from Goldberg-Zoino & Associates Inc., dated December 14, 1988.
4) Completion of subsequent tower reinforcements:
   - Drawings SS-1 'Tower Foundation Reinforcement, Elevation, Sections and Details' and drawing SS-2 'Foundation Plan, Section and Notes' prepared by Tectonic Engineering Consultants P.C; on behalf of AT&T Wireless, PCS, LLC; dated April 23, 2002.
   - Drawing S-1 'Structural Details' prepared by Diversified Technology Consultants (dtc), on behalf of Nextel Communications, dated June 11, 2002.
   - Tower reinforcement drawings sheets 1 thru 5, entitled '2007 Modifications Tower Rework For a 153' ROHN SSV Tower' Long Ridge, CT., prepared by Vertical Structures on behalf of Motorola, dated May 24, 2007.
   - Tower inventory and mapping report prepared by CSB Communications, Inc., on behalf of Verizon Wireless/URS Corporation, dated July 20, 2008.
5) Geotechnical report from Dr. Clarence Welti, P.E., Geotechnical Engineering, dated December 12, 2012.
6) Modification design/passing analysis performed by URS for Sprint, Verizon, and AT&T, dated June 13, 2013.
7) Verizon RFDS, dated May 5, 2014
8) Sprint flat file for proposed antenna inventory, obtained via e-mail dated July 11, 2014.
9) Antenna and mount configuration as specified within Section 2 and 6 of this report.
10) Coax cable orientation as specified in section 6 of this report.

1. EXECUTIVE SUMMARY - *continued*

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

If you should have any questions, please call.

Sincerely,

URS Corporation

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

RAS/mcd

cc: ICA – URS
CF/Book

2. INTRODUCTION

The subject tower is located at 366 Old Long Ridge Road, in Stamford, CT. The structure is an existing 152' self supporting three-legged steel tapered lattice tower designed and manufactured by ROHN.

The inventory is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Antenna Centerline Elevation***	***Cable***
(1) 20' 4-Bay Dipole	(existing)	12' Pipe Mount	162'	(1) 7/8"
(1) Decibel DB563K Directional Omni with 22"x22"x6" Filter Box	(existing)	3' Stand-off	156.70'	(2) 1-5/8"
(1) 4' HP Dish with Radome	(existing)	4" Dish Mount	152'	(1) 7/8" Elliptical
(1) 30"x3" Omni Whip with 20"x6"x8" Filter Box	(existing)	3' Stand-off	151.25'	(2) 1-1/4"
(1) 12'x3" Decibel Omni Whip	(existing)	4' Stand-off	144'	(1) 7/8"
(3) Powerwave 7770 panel antennas and (6) Powerwave LGP21401 TMA's	AT&T (existing)	Pipe Leg Mount	143'	(6) 1 5/8"
(3) Powerwave P65-16-XLH-RR Antennas (6) Erricson RRUS-11 RRU's (1) Raycap DC6-48-60-0-1B Surge Arrestor	**AT&T (Proposed)**	**(3) Valmont CWT01 Mounts**	**145'**	**3" Flex Conduit (3) 1 5/8"**
(1) Decibel DB563K Directional Omni	(existing)	3' Stand-off	141.70'	(1) 1-1/4"
(1) 4' HP Dish with Radome	(existing)	4" Dish Mount	140'	(1) 7/8" Elliptical
(1) 6'x3" Decibel Omni Whip	(existing)	3' Stand-off	138'	(2) 1-5/8"
(1) 2' HP Dish with Radome	(existing)	4" Dish Mount	136.5'	(1) 7/8" Elliptical
(1) Decibel DB495 Corner Reflector	(existing)	Leg Mount	135'	(1) 1/2"
(1) 8'x2" Decibel Omni Whip	(existing)	off Boom Gate listed above	133'	(1) 7/8"
(3) RFS APXV9TM14 Pane Antennas (3) RRH Units	**Sprint (Proposed)**	*See Below Mount*	**128'**	**(1) Fiber Optic Cable (27) 8' Jumper Cables**
(3) RFS APXVSPP18-C-A20 (3) 800 MHz RRH's (3) 1900 MHz RRH's	**Sprint (Previously Proposed)**	(3) 11' Boom Gates	**128'**	**(3) Hybriflex Cables**
(1) Decibel DB254 Corner Reflector	(existing)	Leg Mount	122'	(1) 1/2"
(3) RFS APX16DWV-S-E-ACU Panel Antennas (3) TMAs	T-Mobile (existing)	Leg Mount	108'	(12) 1-5/8" (2 rows of 6)
(1) 10'x2" Decibel Omni Whip	(existing)	3' Stand-off	101'	(1) 7/8"
(1) 8' 4-Bay Dipole	(existing)	3' Stand-off	101'	(1) 7/8"
(1) 8' 4-Bay Dipole	(existing)	3' Stand-off	101'	(1) 7/8"
(1) 20'x3" Omni Whip	(existing)	3' Stand-off	101'	(1) 7/8"

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(2) Decibel LNX-8513DS-A1M Panel Antennas (Alpha Sector) (4) Decibel LNX-6514DS-A1M Panel Antenans (Beta and Gamma Sector) (6) RRH Units (6) HBXX-6517DS-A2M Panel Antennas (1) Raycap DB-T1-6Z-8AB-0Z Distribution Box	**Verizon (Proposed)**	*See Below Mount*	**98'**	**(1) 1 5/8" Hybrid Cable**
(3) ALU RRH's (1) Raycap DB-T1-6Z-8AB-0Z Distribution Box	**Verizon (Previously Proposed)**	**(3) 13' T-frames**	**98'**	**(1) 1 5/8" Hybrid Cable**
(1) 4'x3" Omni Whip	(existing)	3' Stand-off	79'	(1) 1-1/4"
(1) 8' 2-Bay Dipole	(existing)	3' Stand-off	78'	(1) 7/8"
(1) 3' Kathrein Yagi with Radome	(existing)	same as listed above	72'	(1) 1/2"
(1) GPS antenna	Sprint (existing)	2' Stand-off	58'	(1) 1/2"
(1) 1.2M Dish	(existing)	4' Stand-off	45'	(1) 1/4"

Notes:

1) Omni-whip antenna centerline elevations based on antenna size and respective mount height.
2) Refer to Section 6 Tower Feed Line Plan for coaxial cable locations.

This structural re-analysis of the communications tower modification design was performed by URS Corporation (URS) for Verizon and Sprint. The purpose of this analysis was to investigate the structural integrity of the modified tower and reinforced foundation with its existing and proposed antenna loads. The analysis was conducted to evaluate stress on the modified tower and the effect of forces to the modified foundation of the tower resulting from existing and proposed antenna arrangements.

The analysis results presented herewith are based upon previous tower modification proposed by URS Corporations' tower modification analysis report, project 36922268, signed and sealed on June 13, 2013.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the 2005 Connecticut State Building Code, TIA/EIA-222-F - Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, and the American Institute of Steel Construction (AISC) Manual of Steel Construction – Allowable Stress Design (ASD).

The analysis was conducted using TNX Tower 6.1.3.1. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Basic Wind Speed:

- Fairfield County; v = **85**mph (fastest mile) [Section 16 of TIA/EIA-222-F-1996]
- Stamford; v = 105mph (3 second gust) equivalent to 85mph (fastest mile) [Appendix K, 2005 Connecticut State Building Code Supplement]

Loading Cases:

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

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

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

4. FINDINGS AND EVALUATION

Stresses on the modified tower structure were evaluated to compare with the allowable stress in accordance with AISC. The results of the analysis indicate that the calculated stresses under the proposed loading are **BELOW** the allowable stresses (see tables below). The modified tower foundation has sufficient capacity to resist the proposed uplift forces. The tower anchor bolts were found to be within the allowable limits.

TABLE 1: Tower Base Reactions:
For detailed proposed tower reactions, see drawing no. E-1 in section 6 of this report.

Base Reactions	Proposed Reactions
Axial Load (kips)	31
Shear per Leg (kips)	25
Total Shear (kips)	43
Uplift per Leg (kips)	187
Comp.per Leg (kips)	218
O.T. Moment (ft-kips)	3743

TABLE 2: Tower Component Stress vs. Capacity Summary:

Component/ (Section No.)	Existing Component Size	Controlling Component/Elevation	Stress (% capacity)	Pass/Fail
Tower Leg (T15)	ROHN 5 X-STR w/ (3) 1.5"x0.5" Bars	Compression / 15'-20'	91.3 %	**Pass**
Diagonal (T15)	L3 1/2x3 1/2x1/4	Compression / 15'-20'	96.1 %	**Pass**
Horizontal (T16)	L2 7/8x2 7/8x1/4	Compression/10'-15'	76.6 %	**Pass**
Secondary Horizontal (T13)	L3x3x3/16	Compression/30'-40'	87.5 %	**Pass**
Top Girt (T1)	L2x2x1/8	Compression/140'-152'	10.0 %	**Pass**
Red. Horiz. Bracing (T15)	L2x2x1/4	Compression/15'-20'	34.5 %	**Pass**
Red. Diag. Bracing (T15)	L2x2x1/4	Compression/15'-20'	26.6 %	**Pass**
Bolt Checks				
Diagonal (T10)	0.500" dia A325X	Bolt Shear / 60'-67'	96.1 %	**Pass**
Anchor Bolts	(4) 1" dia A193 GR-7, A320 GR L7	Min Area per ASCE 10-97	95 %	**Pass**

TABLE 3: Foundation Summary

Foundation	Component	(% capacity/FOS)	Pass/Fail	Comments:
Drilled Concrete Caisson with Concrete Block Reinforcement & Grouted Rock Anchor	Uplift	92.3 % / 2.17	**Pass**	Min. F.O.S of 2.0 req'd per IBC 2003 Section 3108.4.2

5. CONCLUSIONS AND RECOMMENDATIONS

The results of the analysis indicate that the proposed modified tower structure and the proposed modified foundation components are in compliance with the proposed loadings. The proposed modified tower structure and proposed modified foundation components are considered structurally adequate with the wind classification specified above and all the existing and proposed antenna loading.

The analysis results presented herewith are based upon the previous tower modification proposed by URS Corporations' tower modification analysis report, project 36922268, signed and sealed on June 13, 2013. No installation of proposed antennas, mounts, cables of accessories shall occur prior to the completion of the tower and foundation modifications specified in the June 13, 2013 report. A copy of the reinforced drawings are included with this report.

Limitations/Assumptions:

This report is based on the following:

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

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

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

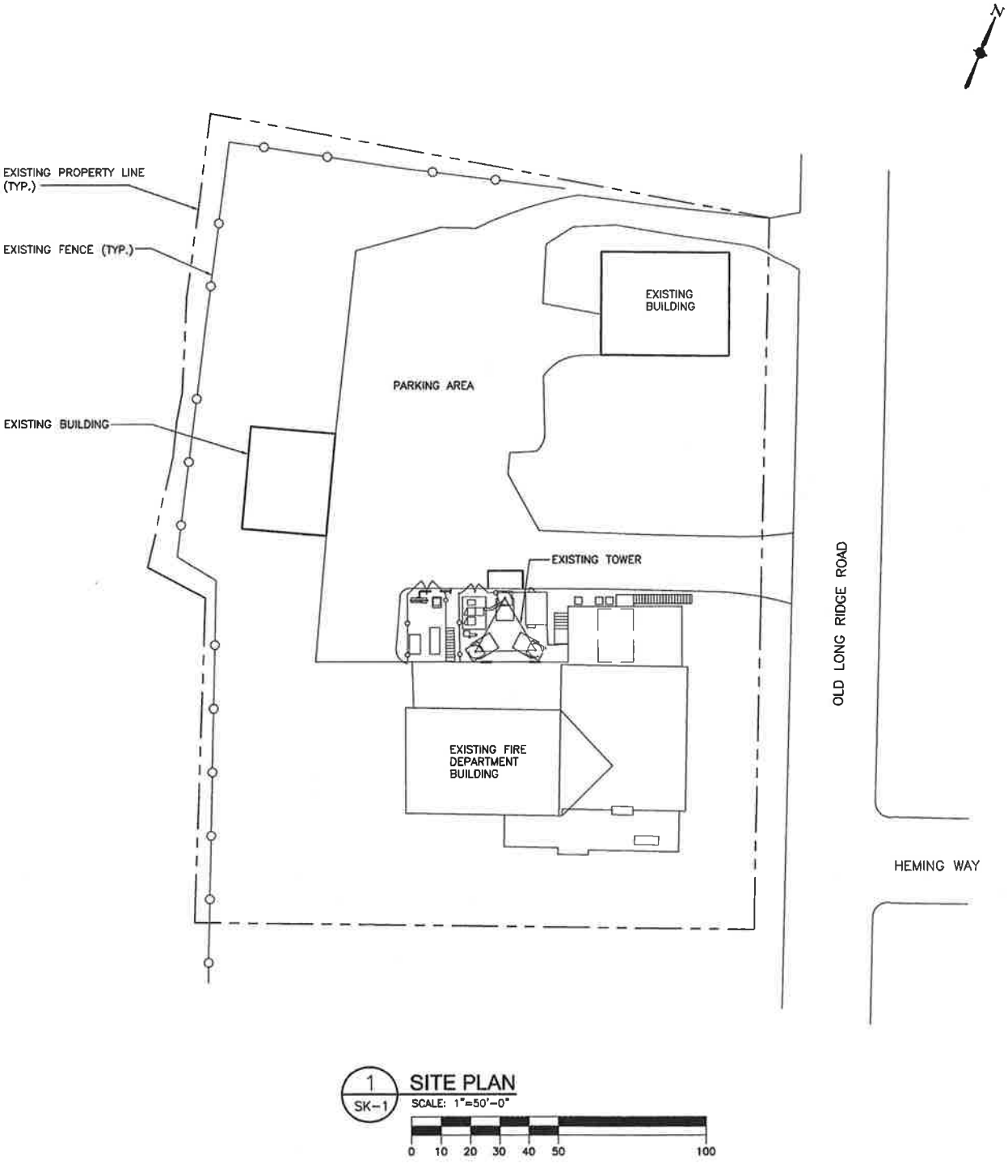
URS hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of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

Ongoing and Periodic Inspection and Maintenance:

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

6. DRAWINGS AND DATA

TOWER AND FOUNDATION REINFORCEMENT DRAWINGS



1 / SK-1 SITE PLAN

SCALE: 1"=50'-0"

0 10 20 30 40 50 100

PROJECT NO.	36922268
Designed by:	MCD
Drawn by:	MCD
Checked by:	KB
Approved by:	ICA

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

SITE PLAN

STAMFORD FIRE DEPARTMENT TOWER

SITE ADDRESS: 366 OLD LONG RIDGE ROAD
STAMFORD, CT

REV.	DATE:	DESCRIPTION
2	10/31/14	RE-ISSUE/NO CHANGE
1	7/16/14	RE-ISSUE/NO CHANGE

Scale: AS NOTED | Date: 06/13/13
Job No. VZ5-110 | File No.

Dwg. No. SK-1

Dwg. 1 of 6

STRUCTURAL NOTES

SOIL

1. SOIL BEARING CAPACITY OF 5,000 PSF USED FOR FOUNDATION DESIGN. GENERAL CONTRACTOR RESPONSIBLE FOR VERIFYING BEARING CAPACITIES.
2. ALL SURFACES MUST BE FREE OF STANDING WATER PRIOR TO PLACING
3. COMPACTED GRAVEL FILL PER CONNECTICUT DOT STANDARD SPEC. SECTION M.02.01 AND ASTM D1557.
4. CONTACT THE ENGINEER IF GROUND WATER IS IN ENCOUNTERED AND DEWATERING IS REQUIRED.

CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318 AND THE SPECIFICATION CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. CONCRETE SHALL BE AIR ENTRAINED TO (4% TO 6%) AND SLUMP OF 3" TO 5".
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.

   CONCRETE EXPOSED TO EARTH OR WEATHER:

   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF .....1 1/2 IN.

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:

   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS .....1 1/2 IN.

5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING
7. COLD WEATHER CONCRETE PLACING SHALL BE IN ACCORDANCE WITH ACI-306.
8. NO FOOTING SHALL BE PLACED ON FROZEN GROUND. UNCURED CONCRETE SHALL BE PROTECTED AGAINST FROST.
9. APPLY NON-SLIP BROOM FINISH IMMEDIATELY AFTER TROWEL FINISHING.

FOUNDATION NOTES

1. A SOIL BEARING CAPACITY OF 5000 PSF WAS USED FOR THE FOUNDATION DESIGN. THE GENERAL CONTRACTOR IS TO CONFIRM THE EXISTING SOIL BEARING PRESSURE.
2. ALL FOOTINGS SHALL BEAR ON EXISTING UNDISTURBED ORGANIC FREE SOIL. ALL UNSUITABLE SOIL SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND REPLACED WITH COMPACTED GRAVEL PLACED IN 8" LAYERS AND COMPACTED TO 95% OF MODIFIED OPTIMUM DENISTY.
3. ALL FOOTINGS TO BE A MINIMUM OF 3'-6" BELOW FINISH GRADE UNLESS OTHERWISE NOTED. EXCEPT WHERE ROCK OR LEDGE OCCURS, PIN FOUNDATION TO ROCK.
4. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE, THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE.

STRUCTURAL STEEL MATERIAL:

STRUCTURAL STEEL BEAMS, CHANNELS, PLATES & ANGLES..... ASTM A572 GRADE 50
PIPE COLUMN..... ASTM A53 GRADE B
STUB COLUMNS FY=46 KSI ..... ASTM A500
BOLTS ..... ASTM A325-N
STRUCTURAL STEEL SHALL CONFORM TO ALL REQUIREMENTS OF THE 1999 AISC-LRFD SPECIFICATION, AS REFERENCED IN THE CODE.

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

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

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

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

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

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

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

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

CONNECTIONS / FIELD ASSEMBLY:

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

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

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

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

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

INSPECTIONS:

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

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

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

FOUNDATION WORK / REPLACEMENT OF TOWER MEMBERS AND BOLTS

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

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

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

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

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

PROJECT NO.	36922268
Designed by:	MCD
Drawn by:	MCD
Checked by:	KB
Approved by:	ICA

URS CORPORATION AES
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ROCKY HILL, CONNECTICUT
860-529-8882

GENERAL NOTES

STAMFORD FIRE DEPARTMENT TOWER
SITE ADDRESS: 366 OLD LONG RIDGE ROAD
STAMFORD, CT

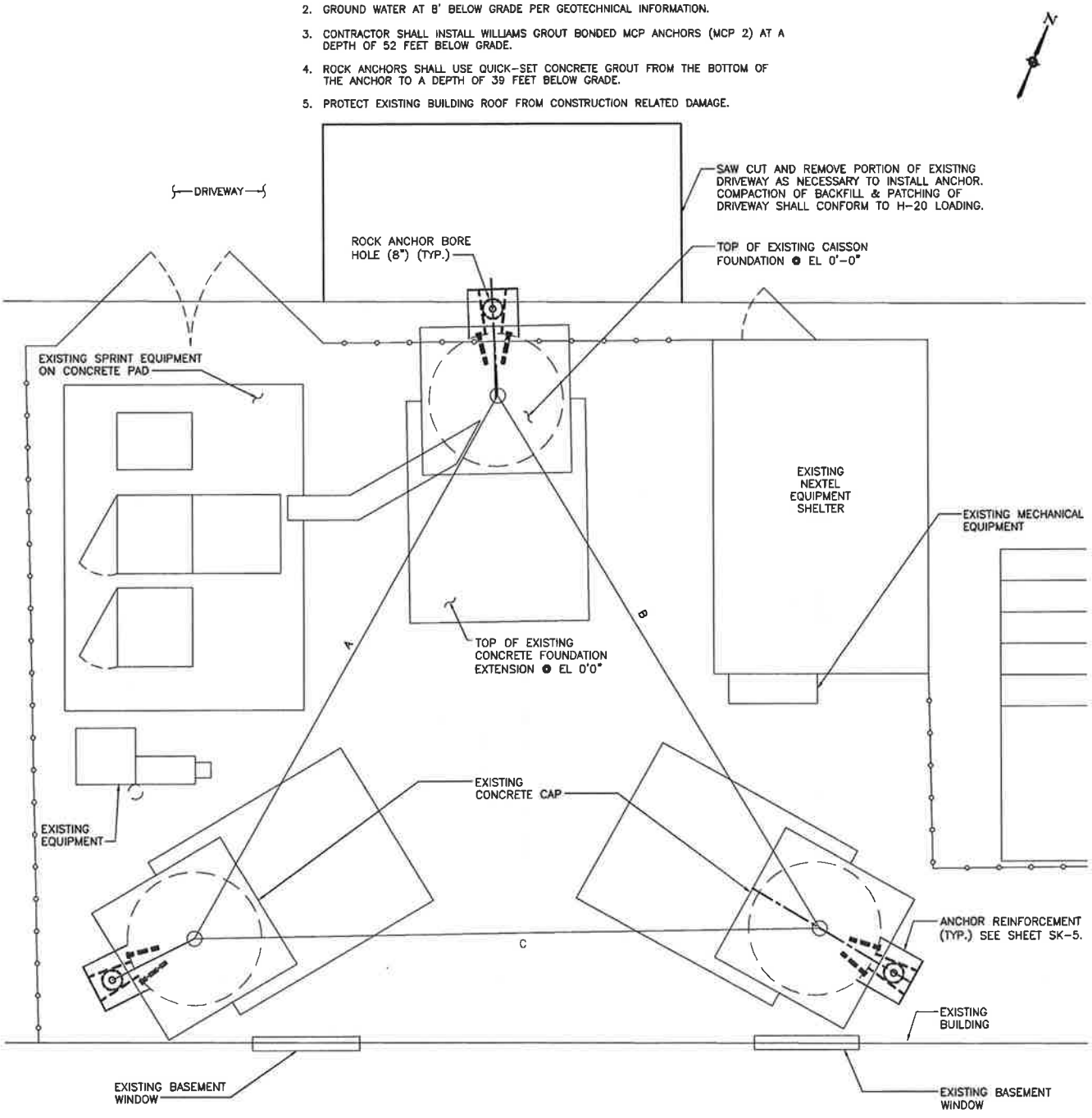
REV.	DATE:	DESCRIPTION
2	10/31/14	RE-ISSUE/NO CHANGE
1	7/16/14	RE-ISSUE/NO CHANGE

Scale: AS NOTED | Date: 06/13/13
Job No. VZ5-110 | File No.

Dwg. No. SK-2

NOTES

1. PRIOR TO EXCAVATION, CONFIRM THAT NO CONDUITS, PIPES, LINES OR ANY OTHER OBJECTS ARE LOCATED WITHIN AREA TO BE EXCAVATED.
2. GROUND WATER AT 8' BELOW GRADE PER GEOTECHNICAL INFORMATION.
3. CONTRACTOR SHALL INSTALL WILLIAMS GROUT BONDED MCP ANCHORS (MCP 2) AT A DEPTH OF 52 FEET BELOW GRADE.
4. ROCK ANCHORS SHALL USE QUICK-SET CONCRETE GROUT FROM THE BOTTOM OF THE ANCHOR TO A DEPTH OF 39 FEET BELOW GRADE.
5. PROTECT EXISTING BUILDING ROOF FROM CONSTRUCTION RELATED DAMAGE.



1 / SK-3 TOWER PLAN

SCALE: 1"=5'-0"

0 1 2 3 4 5 10

PROJECT NO.	36922268
Designed by:	MCD
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TOWER PLAN

STAMFORD FIRE DEPARTMENT TOWER

SITE ADDRESS: 366 OLD LONG RIDGE ROAD
STAMFORD, CT

REV.	DATE:	DESCRIPTION
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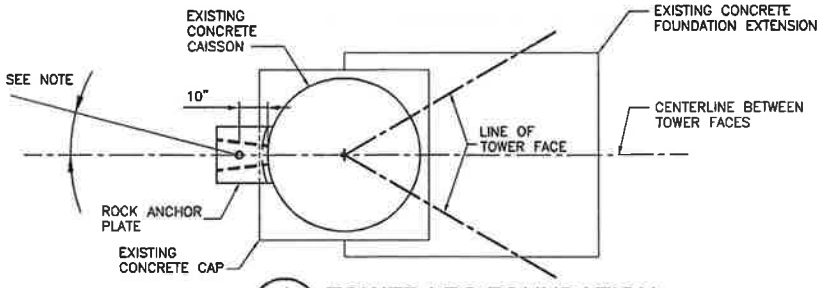
Scale: AS NOTED | Date: 06/13/13
Job No. VZ5-110 | File No.

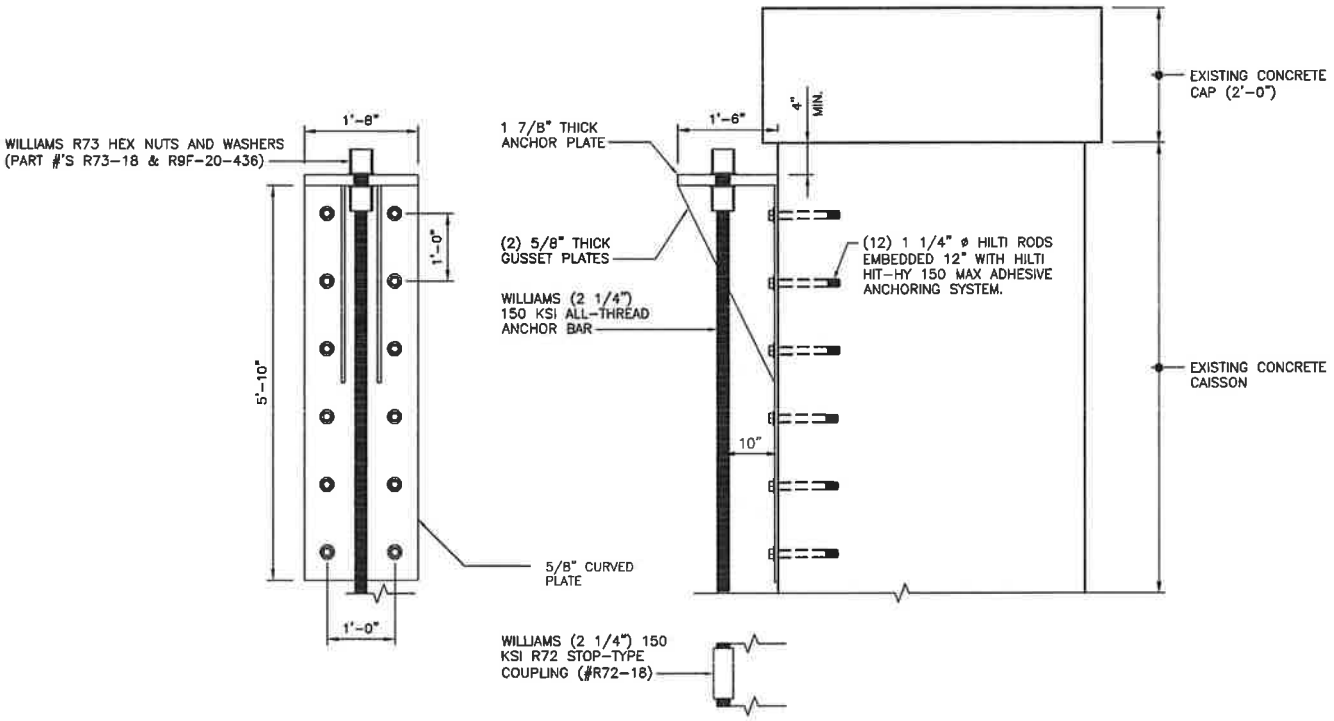
Dwg. No. SK-3

Dwg. 3 of 6



1 / SK-4 TOWER LEG FOUNDATION
N.T.S.

NOTE:
INSTALL ANCHOR ASSEMBLY ON THE SOUTH WEST CAISSON ROTATED 4° CLOCKWISE FROM THE CENTERLINE BETWEEN TOWER FACES. OTHER CAISSON ANCHOR ASSEMBLIES WILL NOT NEED THIS ADJUSTMENT.



2 / SK-4 ANCHOR ASSEMBLY
N.T.S.

3 / SK-4 REINFORCED TOWER FOUNDATION
N.T.S.

ANCHOR NOTES:

CONTRACTOR SHALL USE QUIKCRETE QUICK-SETTING CEMENT (PRODUCT # 1240) FOR DEPTHS OF 39 FEET BELOW GRADE TO A MINIMUM DEPTH OF 52 FEET BELOW GRADE.

GROUT/BOND STRESS SHALL BE VERIFIED FOR TYPE OF ROCK ENCOUNTERED BEFORE INSTALLATION OF ANCHOR AND INJECTION OF GROUT CEMENT MATERIAL.

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TOWER FOUNDATION DETAILS

STAMFORD FIRE DEPARTMENT TOWER
SITE ADDRESS: 366 OLD LONG RIDGE ROAD
STAMFORD, CT

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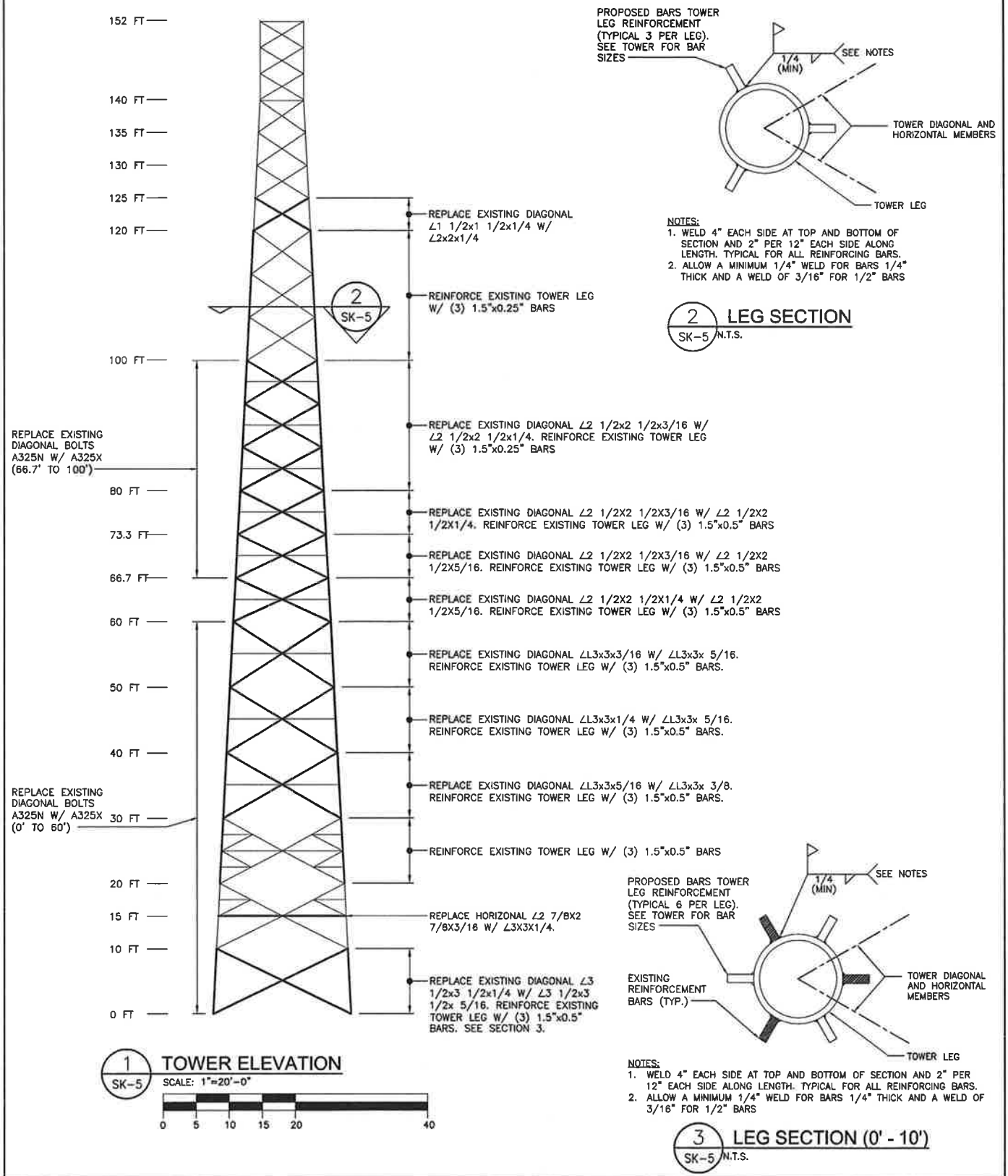
2	10/31/14	RE-ISSUE/NO CHANGE
1	7/16/14	RE-ISSUE/NO CHANGE

Scale: AS NOTED | Date: 06/13/13
Job No. VZ5-110 | File No.

Dwg. No. SK-4

SEE STRUCTURAL NOTES SK-1



1 SK-5 TOWER ELEVATION
SCALE: 1"=20'-0"

NOTES:
1. WELD 4" EACH SIDE AT TOP AND BOTTOM OF SECTION AND 2" PER 12" EACH SIDE ALONG LENGTH. TYPICAL FOR ALL REINFORCING BARS.
2. ALLOW A MINIMUM 1/4" WELD FOR BARS 1/4" THICK AND A WELD OF 3/16" FOR 1/2" BARS

2 SK-5 LEG SECTION
N.T.S.

NOTES:
1. WELD 4" EACH SIDE AT TOP AND BOTTOM OF SECTION AND 2" PER 12" EACH SIDE ALONG LENGTH. TYPICAL FOR ALL REINFORCING BARS.
2. ALLOW A MINIMUM 1/4" WELD FOR BARS 1/4" THICK AND A WELD OF 3/16" FOR 1/2" BARS

3 SK-5 LEG SECTION (0' - 10')
N.T.S.

PROJECT NO.	36922268
Designed by:	MCD
Drawn by:	MCD
Checked by:	KB
Approved by:	ICA

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TOWER ELEVATION

STAMFORD FIRE DEPARTMENT TOWER
SITE ADDRESS: 366 OLD LONG RIDGE ROAD
STAMFORD, CT

REV.	DATE:	DESCRIPTION
2	10/31/14	RE-ISSUE/NO CHANGE
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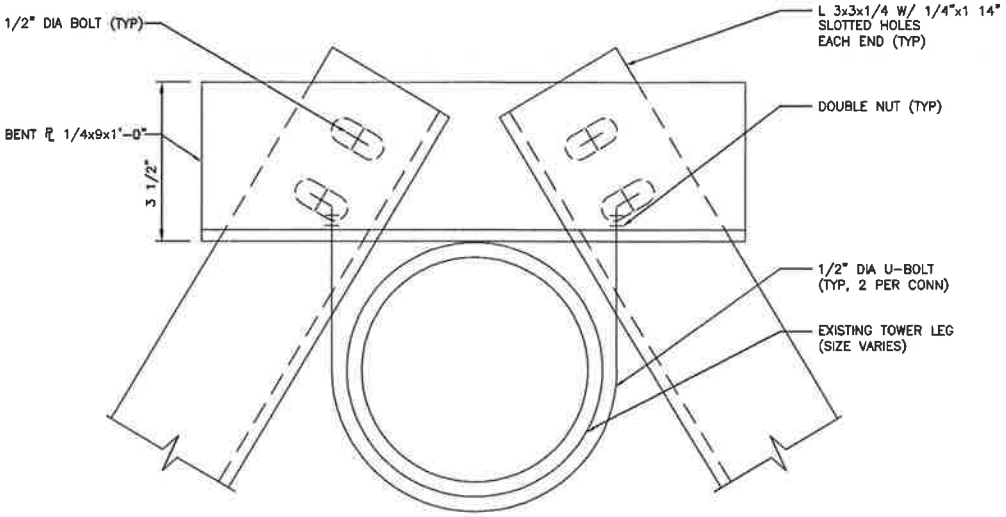
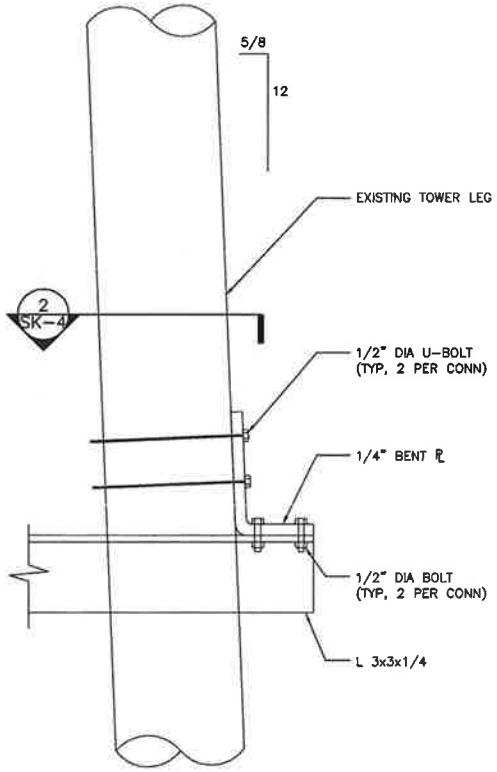
Scale: AS NOTED | Date: 06/13/13
Job No. VZ5-110 | File No.

Dwg. No. SK-5



2 SK-6 **TOWER LEG SECTION**
SCALE: 3"=1'-0"



1 SK-6 **TOWER LEG DETAIL**
SCALE: 3"=1'-0"

PROJECT NO.	36922268
Designed by:	MCD
Drawn by:	MCD
Checked by:	KB
Approved by:	ICA

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ROCKY HILL, CONNECTICUT
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ATTACHMENT DETAILS

STAMFORD FIRE DEPARTMENT TOWER
SITE ADDRESS: 366 OLD LONG RIDGE ROAD
STAMFORD, CT

REV.	DATE:	DESCRIPTION
2	10/31/14	RE-ISSUE/NO CHANGE
1	7/16/14	RE-ISSUE/NO CHANGE

Scale: AS NOTED | Date: 06/13/13
Job No. VZ5-110 | File No.

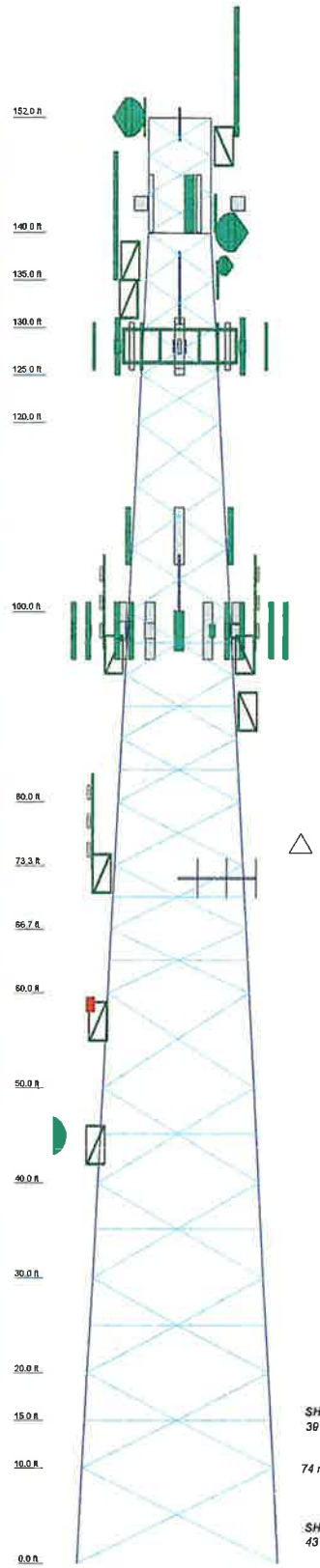
Dwg. No. SK-6

Dwg. 6 of 6

TNX TOWER INPUT / OUTPUT SUMMARY

Section	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	B		A			Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars			Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars							ROHN 2.5 STD
Leg Grade	A572-50																
Diagonals	L3 1/2x3 1/2x1/4		L3 1/2x3 1/2x1/4		L3x3x5/16		L3x3x5/16		L2 1/2x2 1/2x5/16		L2 1/2x2 1/2x1/4		D	C	L1 1/2x1 1/2x3/16		L1 1/2x1 1/2x1/8
Diagonal Grade	A36																
Top Girts																	L2x2x1/8
Horizontals	N.A.		E	N.A.	L3x3x3/16				N.A.								
Sec. Horizontals			N.A.			L3x3x3/16		N.A.		L3x3x3/16		N.A.		N.A.			
Red. Horizontals		N.A.		L2x2x1/4													
Red. Diagonals		N.A.		L2x2x1/4													
Face Width (ft)	20.7813		19.7813		19.2604		18.7708		17.8979		15.6378		14.6979		13.3021		12.8042
# Panels @ (ft)	1 @ 10					4 @ 5				3 @ 10				9 @ 6.66667			
Weight (K)	17.6		23		19		6.8		3.9		1.7		1.4		1.8		2.1

Section	T25	T24	T23	T22	T21	T20	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9
Legs																	
Leg Grade																	
Diagonals								L2x2x1/4									
Diagonal Grade																	
Top Girts																	
Horizontals								N.A.									
Sec. Horizontals								L3x3x3/16									
Red. Horizontals								N.A.									
Red. Diagonals								N.A.									
Face Width (ft)	6.9268		6.5825		7.0625		7.5525		8.0625		8.5625						
# Panels @ (ft)	3 @ 3.94444		3 @ 4.83333				3 @ 5										
Weight (K)	4.3		3.2		3.2		3.2		6.2								



MAX. CORNER REACTIONS AT BASE:
DOWN: 218 K
SHEAR: 25 K

UPLIFT: -187 K
SHEAR: 22 K

AXIAL 51 K
SHEAR 39 K *MOMENT 3509 kip-ft*

TORQUE 19 kip-ft
74 mph WIND - 0.500 in ICE

AXIAL 31 K
SHEAR 43 K *MOMENT 3743 kip-ft*

TORQUE 20 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20' 4-Bay Dipole (Unknown)	162	(2) DB980H90E-M (Sprint)	128
DB563K-CR (Unknown)	156.701	DB254-A (Unknown)	122
4'x4" Pipe Mount (Unknown)	152	APX16DWV-16DWV-S-E-ACU w/ Mount (T-Mobile)	106
4' w/Radome (Unknown)	152	TMA (T-Mobile)	106
DB930XHE-YP (Unknown)	151.25	APX16DWV-16DWV-S-E-ACU w/ Mount (T-Mobile)	106
Filter Box 22"x22"x8" (Unknown)	149	TMA (T-Mobile)	106
3' Sidearm (Unknown)	149	APX16DWV-16DWV-S-E-ACU w/ Mount (T-Mobile)	106
Filter Box 20"x6"x8" (Unknown)	148.5	TMA (T-Mobile)	106
3' Sidearm (Unknown)	148.5	RRH (Verizon)	96
12'x2 1/2" STD Pipe Mount (Unknown)	146	RRH (Verizon)	96
12' x 3" Dia Omni (Unknown)	144	RRH (Verizon)	96
4'x3" Pipe Mount (ATI)	143	LNX-6513DS-VTM (Verizon - LTE)	96
4'x3" Pipe Mount (ATI)	143	LNX-6514DS-T4M (Verizon - LTE)	96
7770 (ATI)	143	LNX-6514DS-T4M (Verizon - LTE)	96
7770 (ATI)	143	LNX-6514DS-T4M (Verizon - LTE)	96
(2) LPG 21401 TMA (ATI)	143	RH_2x40-700 (Verizon - LTE)	96
(2) LPG 21401 TMA (ATI)	143	RH_2x40-700 (Verizon - LTE)	96
(2) LPG 21401 TMA (ATI)	143	RH_2x40-700 (Verizon - LTE)	96
P65-16-XLH-RR (ATI)	143	LNX-6513DS-VTM (Verizon - 850MHz)	96
P65-16-XLH-RR (ATI)	143	LNX-6514DS-T4M (Verizon - 850MHz)	96
P65-16-XLH-RR (ATI)	143	LNX-6514DS-T4M (Verizon - 850MHz)	96
(2) RRUS-11 (ATT)	143	HBXX-6517DS-VTM (Verizon - PCS)	96
(2) RRUS-11 (ATT)	143	HBXX-6517DS-VTM (Verizon - PCS)	96
(2) RRUS-11 (ATT)	143	HBXX-6517DS-VTM (Verizon - PCS)	96
4'x3" Pipe Mount (ATI)	143	Panasonic RRH 1900MHZ (Verizon - PCS)	96
4'x3" Pipe Mount (ATI)	143	Panasonic RRH 1900MHZ (Verizon - PCS)	96
4'x3" Pipe Mount (ATI)	143	Panasonic RRH 1900MHZ (Verizon - PCS)	96
4'x3" Pipe Mount (ATI)	143	HBXX-6517DS-VTM (Verizon - AWS)	96
4'x4" Pipe Mount (Unknown)	142	HBXX-6517DS-VTM (Verizon - AWS)	96
DB563K-CR (Unknown)	141.701	HBXX-6517DS-VTM (Verizon - AWS)	96
4' w/Radome (Unknown)	140	RH_2X40-AWS (Verizon - AWS)	96
6' x 3" Dia Omni (Unknown)	138	RH_2X40-AWS (Verizon - AWS)	96
4' Side Mount Standoff (1) (Unknown)	137	RH_2X40-AWS (Verizon - AWS)	96
2' w/Radome (Unknown)	136.5	DB-T1-6Z-8AB-0Z (Verizon)	96
4'x4" Pipe Mount (Unknown)	135	3' Sidearm (Vacant)	95.5
DB48S-A (Unknown)	135	3' Sidearm (Unknown)	95.5
3' Sidearm (Unknown)	133.5	3' Sidearm (Unknown)	95.5
4' Side Mount Standoff (1) (Unknown)	133	3' Sidearm (Unknown)	94.5
2" Dia 8' Omni (Unknown)	133	3' Sidearm (Unknown)	89.5
APXV9TM14-120 (Sprint)	128	4' x 3" DIA Omni (Unknown)	78
APXV9TM14-120 (Sprint)	128	8' 2-Bay Dipole (Unknown)	78
APXV9TM14-120 (Sprint)	128	3' Sidearm (Unknown)	72.5
800 MHz Filter (Sprint)	128	3' Sidearm (Unknown)	72.5
800 MHz Filter (Sprint)	128	Scala Yagi w/ Radome (Unknown)	72
800 MHz Filter (Sprint)	128	GPS (Sprint)	68
RRH (Sprint)	128	2' Sidearm (Sprint)	57
RRH (Sprint)	128	1.2M (Unknown)	46
RRH (Sprint)	128	4'x4" Stand-off (Unknown)	44
APXV9PP18-C-A20 w/ Mounting Pipe (Sprint)	128		
APXV9PP18-C-A20 w/ Mounting Pipe (Sprint)	128		
APXV9PP18-C-A20 w/ Mounting Pipe (Sprint)	128		
(3) 11' Boom Gate w/3 - 2 3/8" Pipe (Tapered) (Sprint)	128		
RRH (Sprint)	128		
RRH (Sprint)	128		
RRH (Sprint)	128		
(2) DB980H90E-M (Sprint)	128		
(2) DB980H90E-M (Sprint)	128		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	D	L1 3/4x1 3/4x3/16
B	Rohn 5 STD w/ (6) 1.5"x0.5" Bars	E	L2.875x2.875x0.25
C	L1 1/2x1 1/2x1/4		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 96.1%

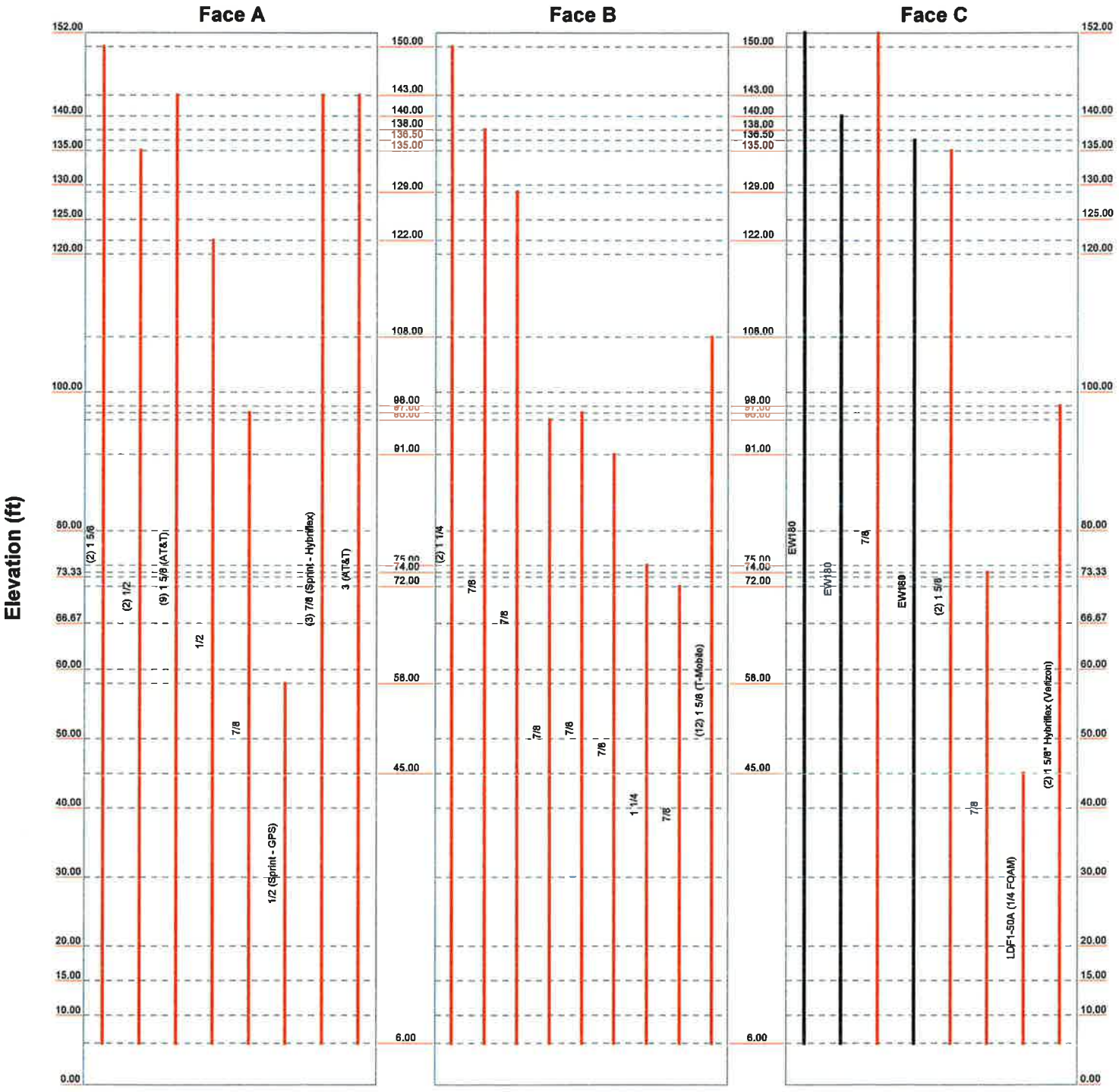
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job: 152' ROHN SSV Tower
Project: 366 Old Long Ridge Road, Stamford, CT
Client: Verizion, Sprint and AT&T / S.A. Evaluation
Drawn by: MCD
Appd:
Code: TIA/EIA-222-F
Date: 10/31/14
Scale: NTS
Path:
Dwg No. E-1

TNX TOWER FEEDLINE DISTRIBUTION CHART

Feed Line Distribution Chart
0' - 152'

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

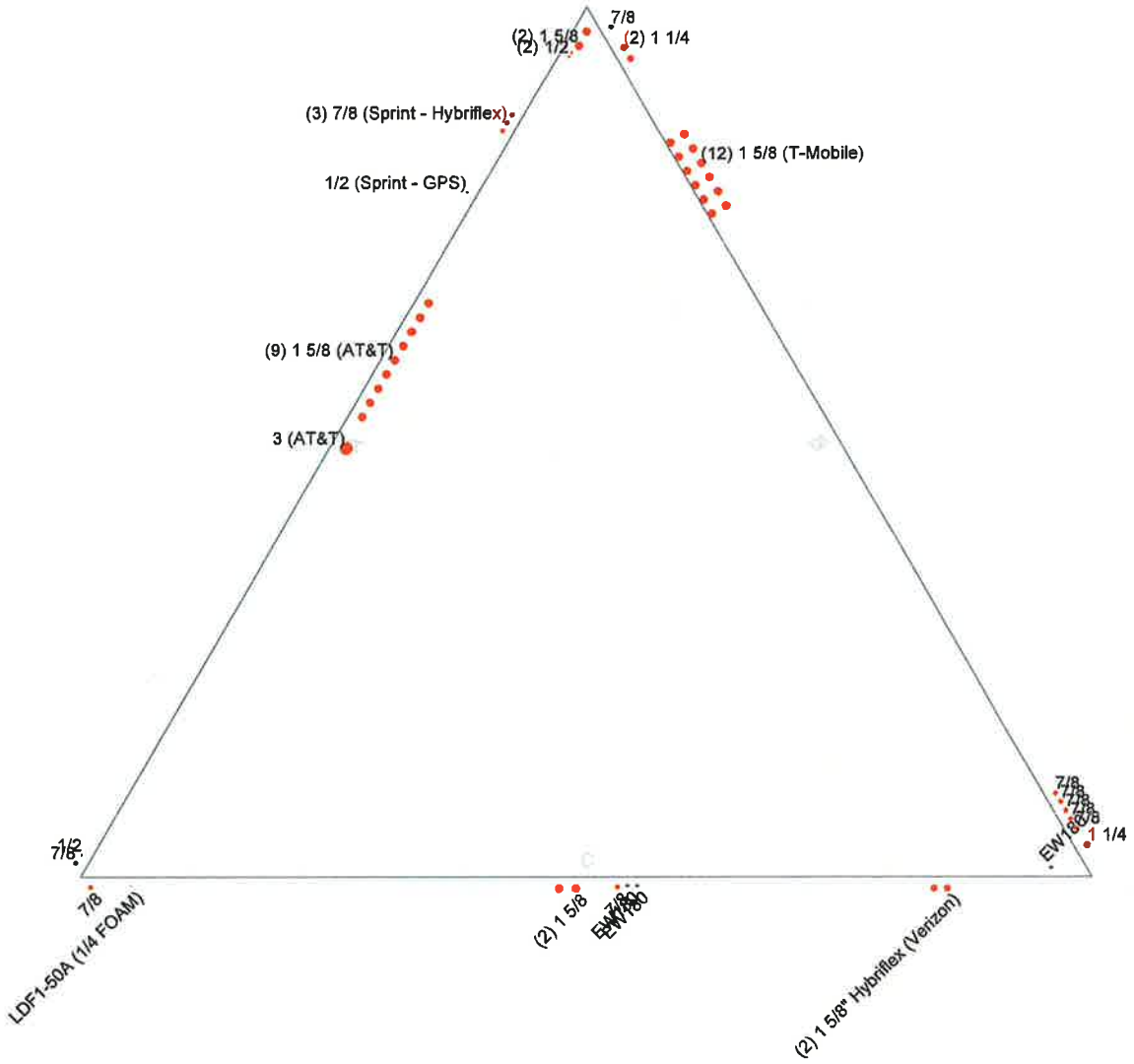


URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Job: ***152' ROHN SSV Tower***		
	Project: ***366 Old Long Ridge Road, Stamford, CT***		
	Client: Verizon, Sprint and AT&T / S.A. Evaluation	Drawn by: MCD	App'd:
	Code: TIA/EIA-222-F	Date: 10/31/14	Scale: NTS
	Path:		Dwg No. E-7

TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round Flat App In Face App Out Face



URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Job: 152' ROHN SSV Tower		
	Project: 366 Old Long Ridge Road, Stamford, CT		
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Drawn by: MCD	App'd:
	Code: TIA/EIA-222-F	Date: 10/31/14	Scale: NTS
	Path:		Dwg No. E-7

TNX TOWER DETAILED OUTPUT

tnxTower	Job	Page
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	152' ROHN SSV Tower	1 of 55
	Project 366 Old Long Ridge Road, Stamford, CT	Date 09:11:12 10/31/14
	Client Verizion, Sprint and AT&T / S.A. Evaluation	Designed by MCD

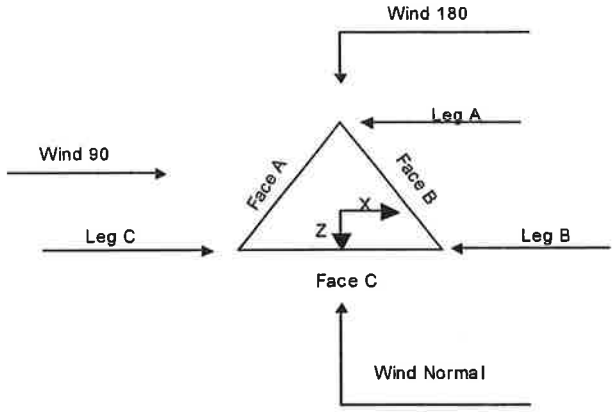
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 152.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.52 ft at the top and 20.78 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.500 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
Use Code Safety Factors - Guys	Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination	Use TIA-222-G Tension Splice Capacity Exemption	



Triangular Tower

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	152.00-140.00			6.52	1	12.00
T2	140.00-135.00			6.56	1	5.00
T3	135.00-130.00			7.06	1	5.00
T4	130.00-125.00			7.56	1	5.00
T5	125.00-120.00			8.06	1	5.00
T6	120.00-100.00			8.56	1	20.00
T7	100.00-80.00			10.56	1	20.00
T8	80.00-73.33			12.60	1	6.67
T9	73.33-66.67			13.30	1	6.67
T10	66.67-60.00			14.00	1	6.67
T11	60.00-50.00			14.70	1	10.00
T12	50.00-40.00			15.70	1	10.00
T13	40.00-30.00			16.70	1	10.00
T14	30.00-20.00			17.70	1	10.00
T15	20.00-15.00			18.77	1	5.00
T16	15.00-10.00			19.26	1	5.00
T17	10.00-0.00			19.78	1	10.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	152.00-140.00	3.94	X Brace	No	Yes	1.000	1.000
T2	140.00-135.00	4.83	X Brace	No	Yes	1.000	1.000
T3	135.00-130.00	5.00	X Brace	No	No	0.000	0.000
T4	130.00-125.00	5.00	X Brace	No	No	0.000	0.000
T5	125.00-120.00	5.00	X Brace	No	No	0.000	0.000
T6	120.00-100.00	6.67	X Brace	No	No	0.000	0.000
T7	100.00-80.00	6.67	X Brace	No	Yes	0.000	0.000
T8	80.00-73.33	6.67	X Brace	No	No	0.000	0.000
T9	73.33-66.67	6.67	X Brace	No	Yes	0.000	0.000
T10	66.67-60.00	6.67	X Brace	No	Yes	0.000	0.000
T11	60.00-50.00	10.00	X Brace	No	No	0.000	0.000
T12	50.00-40.00	10.00	X Brace	No	Yes	0.000	0.000
T13	40.00-30.00	10.00	X Brace	No	Yes	0.000	0.000
T14	30.00-20.00	5.00	Double K1	No	Yes	0.000	0.000
T15	20.00-15.00	5.00	K1 Up	No	Yes	0.000	0.000
T16	15.00-10.00	5.00	K Brace Down	No	Yes	0.000	0.000
T17	10.00-0.00	10.00	X Brace	No	No	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 152.00-140.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 140.00-135.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 135.00-130.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 130.00-125.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)
T5 125.00-120.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T6 120.00-100.00	Arbitrary Shape	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T7 100.00-80.00	Arbitrary Shape	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 80.00-73.33	Arbitrary Shape	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 73.33-66.67	Arbitrary Shape	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T10 66.67-60.00	Arbitrary Shape	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T11 60.00-50.00	Arbitrary Shape	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T12 50.00-40.00	Arbitrary Shape	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T13 40.00-30.00	Arbitrary Shape	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)
T14 30.00-20.00	Arbitrary Shape	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T15 20.00-15.00	Arbitrary Shape	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T16 15.00-10.00	Arbitrary Shape	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T17 10.00-0.00	Arbitrary Shape	Rohn 5 STD w/ (6) 1.5"x0.5"	A572-50	Single Angle	L3 1/2x3 1/2x5/16	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
		Bars	(50 ksi)			(36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 152.00-140.00	Single Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 140.00-135.00	Single Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T14 30.00-20.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T15 20.00-15.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L2.875x2.875x0.25	A36 (36 ksi)
T16 15.00-10.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L2.875x2.875x0.25	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T7 100.00-80.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 73.33-66.67	Single Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T10 66.67-60.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T12 50.00-40.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T13 40.00-30.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T14	A36	Horizontal (1)	Equal Angle	L2x2x1/4	1
30.00-20.00	(36 ksi)	Diagonal (1)	Equal Angle	L2x2x1/4	1
T15	A36	Horizontal (1)	Equal Angle	L2x2x1/4	1
20.00-15.00	(36 ksi)	Diagonal (1)	Equal Angle	L2x2x1/4	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1	0.00	0.000	A36	1	1	1	36.000	36.000
152.00-140.00			(36 ksi)					
T2	0.00	0.000	A36	1	1	1	36.000	36.000
140.00-135.00			(36 ksi)					
T3	0.00	0.000	A36	1	1	1	36.000	36.000
135.00-130.00			(36 ksi)					
T4	0.00	0.000	A36	1	1	1	36.000	36.000
130.00-125.00			(36 ksi)					
T5	0.00	0.000	A36	1	1	1	36.000	36.000
125.00-120.00			(36 ksi)					
T6	0.00	0.000	A36	1	1	1	36.000	36.000
120.00-100.00			(36 ksi)					
T7	0.00	0.000	A36	1	1	1	36.000	36.000
100.00-80.00			(36 ksi)					
T8 80.00-73.33	0.00	0.000	A36	1	1	1	36.000	36.000
			(36 ksi)					
T9 73.33-66.67	0.00	0.000	A36	1	1	1	36.000	36.000
			(36 ksi)					
T10	0.00	0.000	A36	1	1	1	36.000	36.000
66.67-60.00			(36 ksi)					
T11	0.00	0.000	A36	1	1	1	36.000	36.000
60.00-50.00			(36 ksi)					
T12	0.00	0.000	A36	1	1	1	36.000	36.000
50.00-40.00			(36 ksi)					
T13	0.00	0.000	A36	1	1	1	36.000	36.000
40.00-30.00			(36 ksi)					
T14	0.00	0.000	A36	1	1	1	36.000	36.000
30.00-20.00			(36 ksi)					
T15	0.00	0.000	A36	1	1	1	36.000	36.000
20.00-15.00			(36 ksi)					
T16	0.00	0.000	A36	1	1	1	36.000	36.000
15.00-10.00			(36 ksi)					
T17 10.00-0.00	0.00	0.000	A36	1	1	1	36.000	36.000
			(36 ksi)					

Tower Section Geometry *(cont'd)*

K Factors[1]

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
152.00-140.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
140.00-135.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
135.00-130.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
130.00-125.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T5	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
125.00-120.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80.00-73.33				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
73.33-66.67				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
66.67-60.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T11	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60.00-50.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T12	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50.00-40.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T13	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
40.00-30.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T14	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30.00-20.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T15	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20.00-15.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T16	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15.00-10.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T17	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10.00-0.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
152.00-140.00														
T2	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
140.00-135.00														
T3	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
135.00-130.00														
T4	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
130.00-125.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T5 125.00-120.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 120.00-100.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 100.00-80.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 80.00-73.33	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 73.33-66.67	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 66.67-60.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 60.00-50.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 50.00-40.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 40.00-30.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 30.00-20.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 20.00-15.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T16 15.00-10.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T17 10.00-0.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 152.00-140.00	Flange	0.000 A325N	0	0.500 A325N	1	0.500 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 140.00-135.00	Flange	0.625 A325N	4	0.500 A325N	1	0.500 A325N	1	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T3 135.00-130.00	Flange	0.625 A325N	0	0.500 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T4 130.00-125.00	Flange	0.625 A325N	0	0.500 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T5 125.00-120.00	Flange	0.625 A325N	0	0.500 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T6 120.00-100.00	Flange	0.625 A325N	4	0.500 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T7 100.00-80.00	Flange	0.750 A325N	4	0.500 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.500 A325N	2
T8 80.00-73.33	Flange	0.875 A325N	4	0.500 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T9 73.33-66.67	Flange	0.875 A325N	0	0.500 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.500 A325N	2
T10 66.67-60.00	Flange	0.875 A325N	0	0.500 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.500 A325N	2

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T11 60.00-50.00	Flange	0.875 A325N	4	0.625 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T12 50.00-40.00	Flange	0.875 A325N	0	0.625 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.500 A325N	2
T13 40.00-30.00	Flange	1.000 A325N	4	0.625 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.500 A325N	2
T14 30.00-20.00	Flange	1.000 A325N	0	0.625 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.500 A325N	2	0.625 A325N	0
T15 20.00-15.00	Flange	1.000 A325N	4	0.625 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T16 15.00-10.00	Flange	1.000 A325N	0	0.625 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1	0.625 A325N	0
T17 10.00-0.00	Flange	1.000 A325N	0	0.625 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
1 1/4	B	Yes	Ar (CfAe)	150.00 - 6.00	2.000	-0.44	2	2	1.550	1.550		0.001
1 5/8	A	Yes	Ar (CfAe)	150.00 - 6.00	-2.000	0.47	2	2	1.980	1.980		0.001
1/2	A	Yes	Ar (CfAe)	135.00 - 6.00	-2.000	0.45	2	2	0.580	0.580		0.000
EW180	C	Yes	Af (CfAe)	152.00 - 6.00	2.000	-0.04	1	1	0.590	0.590	2.006	0.000
EW180	C	Yes	Af (CfAe)	140.00 - 6.00	2.000	-0.05	1	1	0.590	0.590	2.006	0.000
1 5/8 (AT&T)	A	Yes	Ar (CfAe)	143.00 - 6.00	-2.000	0.1	9	9	1.980	1.980		0.001
7/8	C	Yes	Ar (CfAe)	152.00 - 6.00	2.000	-0.03	1	1	1.110	1.110		0.001
EW180	C	Yes	Af (CfAe)	136.50 - 6.00	-2.000	-0.46	1	1	0.590	0.590	2.006	0.000
1 5/8	C	Yes	Ar (CfAe)	135.00 - 6.00	2.000	0.02	2	2	1.980	1.980		0.001
7/8	B	Yes	Ar (CfAe)	138.00 - 6.00	2.000	0.41	1	1	1.110	1.110		0.001
1/2	A	Yes	Ar (CfAe)	122.00 - 6.00	2.000	-0.48	1	1	0.580	0.580		0.000
7/8	B	Yes	Ar (CfAe)	129.00 - 6.00	2.000	0.42	1	1	1.110	1.110		0.001
7/8	B	Yes	Ar (CfAe)	96.00 - 6.00	2.000	0.43	1	1	1.110	1.110		0.001
7/8	A	Yes	Ar (CfAe)	97.00 - 6.00	2.000	-0.49	1	1	1.110	1.110		0.001
7/8	B	Yes	Ar (CfAe)	97.00 - 6.00	2.000	0.44	1	1	1.110	1.110		0.001
7/8	B	Yes	Ar (CfAe)	91.00 - 6.00	2.000	0.45	1	1	1.110	1.110		0.001
1 1/4	B	Yes	Ar (CfAe)	75.00 - 6.00	2.000	0.47	1	1	1.550	1.550		0.001
7/8	B	Yes	Ar (CfAe)	72.00 - 6.00	2.000	-0.47	1	1	1.110	1.110		0.001
7/8	C	Yes	Ar (CfAe)	74.00 - 6.00	2.000	0.49	1	1	1.110	1.110		0.001
1/2 (Sprint - GPS)	A	Yes	Ar (CfAe)	58.00 - 6.00	2.000	0.28	1	1	0.580	0.580		0.000
LDF1-50A (1/4 FOAM)	C	Yes	Ar (CfAe)	45.00 - 6.00	2.000	0.45	1	1	0.350	0.350		0.000
1 5/8 (T-Mobile)	B	Yes	Ar (CfAe)	108.00 - 6.00	0.000	-0.3	12	6	1.980	1.980		0.001
7/8 (Sprint - Hybriflex)	A	Yes	Ar (CfAe)	143.00 - 6.00	2.000	0.36	3	3	1.110	1.110		0.001
1 5/8" Hybriflex (Verizon)	C	Yes	Ar (CfAe)	98.00 - 6.00	2.000	-0.35	2	2	1.625	1.625		0.000
3 (AT&T)	A	Yes	Ar (CfAe)	143.00 - 6.00	-2.000	0	1	1	3.010	3.010		0.002

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	152.00-140.00	A	9.340	0.000	0.000	0.000	0.059
		B	2.583	0.000	0.000	0.000	0.013
		C	1.110	0.590	0.000	0.000	0.008
T2	140.00-135.00	A	11.717	0.000	0.000	0.000	0.074
		B	1.569	0.000	0.000	0.000	0.008
		C	0.463	0.565	0.000	0.000	0.004
T3	135.00-130.00	A	12.200	0.000	0.000	0.000	0.077
		B	1.754	0.000	0.000	0.000	0.009
		C	2.112	0.737	0.000	0.000	0.015
T4	130.00-125.00	A	12.200	0.000	0.000	0.000	0.077
		B	2.124	0.000	0.000	0.000	0.011
		C	2.112	0.737	0.000	0.000	0.015
T5	125.00-120.00	A	12.297	0.000	0.000	0.000	0.077
		B	2.217	0.000	0.000	0.000	0.012
		C	2.112	0.737	0.000	0.000	0.015
T6	120.00-100.00	A	49.767	0.000	0.000	0.000	0.312
		B	16.787	0.000	0.000	0.000	0.148
		C	8.450	2.949	0.000	0.000	0.061
T7	100.00-80.00	A	51.339	0.000	0.000	0.000	0.321
		B	32.737	0.000	0.000	0.000	0.321
		C	13.325	2.949	0.000	0.000	0.069
T8	80.00-73.33	A	17.206	0.000	0.000	0.000	0.108
		B	11.621	0.000	0.000	0.000	0.111
		C	4.684	0.983	0.000	0.000	0.024
T9	73.33-66.67	A	17.206	0.000	0.000	0.000	0.108
		B	12.760	0.000	0.000	0.000	0.117
		C	5.239	0.983	0.000	0.000	0.027
T10	66.67-60.00	A	17.206	0.000	0.000	0.000	0.108
		B	12.883	0.000	0.000	0.000	0.118
		C	5.239	0.983	0.000	0.000	0.027
T11	60.00-50.00	A	26.195	0.000	0.000	0.000	0.163
		B	19.325	0.000	0.000	0.000	0.177
		C	7.858	1.475	0.000	0.000	0.040
T12	50.00-40.00	A	26.292	0.000	0.000	0.000	0.164
		B	19.325	0.000	0.000	0.000	0.177
		C	8.004	1.475	0.000	0.000	0.041
T13	40.00-30.00	A	26.292	0.000	0.000	0.000	0.164
		B	19.325	0.000	0.000	0.000	0.177
		C	8.150	1.475	0.000	0.000	0.041
T14	30.00-20.00	A	26.292	0.000	0.000	0.000	0.164
		B	19.325	0.000	0.000	0.000	0.177
		C	8.150	1.475	0.000	0.000	0.041
T15	20.00-15.00	A	13.146	0.000	0.000	0.000	0.082
		B	9.662	0.000	0.000	0.000	0.088
		C	4.075	0.737	0.000	0.000	0.020
T16	15.00-10.00	A	13.146	0.000	0.000	0.000	0.082
		B	9.662	0.000	0.000	0.000	0.088
		C	4.075	0.737	0.000	0.000	0.020
T17	10.00-0.00	A	10.517	0.000	0.000	0.000	0.066
		B	7.730	0.000	0.000	0.000	0.071
		C	3.260	0.590	0.000	0.000	0.016

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	152.00-140.00	A	0.500	14.257	0.000	0.000	0.000	0.146
		B		4.250	0.000	0.000	0.000	0.038
		C		2.110	1.257	0.000	0.000	0.029
T2	140.00-135.00	A	0.500	17.967	0.000	0.000	0.000	0.183
		B		2.652	0.000	0.000	0.000	0.024
		C		0.879	1.204	0.000	0.000	0.018
T3	135.00-130.00	A	0.500	18.625	0.483	0.000	0.000	0.192
		B		3.004	0.000	0.000	0.000	0.027
		C		3.363	1.571	0.000	0.000	0.047
T4	130.00-125.00	A	0.500	18.625	0.483	0.000	0.000	0.192
		B		3.708	0.000	0.000	0.000	0.033
		C		3.363	1.571	0.000	0.000	0.047
T5	125.00-120.00	A	0.500	18.888	0.483	0.000	0.000	0.194
		B		3.883	0.000	0.000	0.000	0.034
		C		3.363	1.571	0.000	0.000	0.047
T6	120.00-100.00	A	0.500	77.133	1.933	0.000	0.000	0.786
		B		27.453	0.000	0.000	0.000	0.383
		C		13.450	6.283	0.000	0.000	0.187
T7	100.00-80.00	A	0.500	80.123	1.933	0.000	0.000	0.811
		B		53.070	0.000	0.000	0.000	0.818
		C		21.325	6.283	0.000	0.000	0.242
T8	80.00-73.33	A	0.500	26.883	0.644	0.000	0.000	0.272
		B		18.982	0.000	0.000	0.000	0.284
		C		7.517	2.094	0.000	0.000	0.084
T9	73.33-66.67	A	0.500	26.883	0.644	0.000	0.000	0.272
		B		20.982	0.000	0.000	0.000	0.302
		C		8.572	2.094	0.000	0.000	0.093
T10	66.67-60.00	A	0.500	26.883	0.644	0.000	0.000	0.272
		B		21.217	0.000	0.000	0.000	0.304
		C		8.572	2.094	0.000	0.000	0.093
T11	60.00-50.00	A	0.500	41.378	0.967	0.000	0.000	0.415
		B		31.825	0.000	0.000	0.000	0.455
		C		12.858	3.141	0.000	0.000	0.139
T12	50.00-40.00	A	0.500	41.642	0.967	0.000	0.000	0.417
		B		31.825	0.000	0.000	0.000	0.455
		C		13.421	3.141	0.000	0.000	0.142
T13	40.00-30.00	A	0.500	41.642	0.967	0.000	0.000	0.417
		B		31.825	0.000	0.000	0.000	0.455
		C		13.983	3.141	0.000	0.000	0.145
T14	30.00-20.00	A	0.500	41.642	0.967	0.000	0.000	0.417
		B		31.825	0.000	0.000	0.000	0.455
		C		13.983	3.141	0.000	0.000	0.145
T15	20.00-15.00	A	0.500	20.821	0.483	0.000	0.000	0.209
		B		15.913	0.000	0.000	0.000	0.228
		C		6.992	1.571	0.000	0.000	0.072
T16	15.00-10.00	A	0.500	20.821	0.483	0.000	0.000	0.209
		B		15.913	0.000	0.000	0.000	0.228
		C		6.992	1.571	0.000	0.000	0.072
T17	10.00-0.00	A	0.500	16.657	0.387	0.000	0.000	0.167
		B		12.730	0.000	0.000	0.000	0.182
		C		5.593	1.257	0.000	0.000	0.058

Feed Line Shielding

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
T1	152.00-140.00	A	0.000	0.793	0.811	1.238
		B	0.000	0.236	0.224	0.369
		C	0.000	0.206	0.148	0.321
T2	140.00-135.00	A	0.000	1.034	1.109	1.700
		B	0.000	0.153	0.148	0.251
		C	0.000	0.138	0.097	0.227
T3	135.00-130.00	A	0.000	0.772	0.739	1.157
		B	0.000	0.121	0.106	0.182
		C	0.000	0.216	0.173	0.324
T4	130.00-125.00	A	0.000	0.756	0.724	1.134
		B	0.000	0.147	0.126	0.220
		C	0.000	0.212	0.169	0.318
T5	125.00-120.00	A	0.000	0.754	0.837	1.319
		B	0.000	0.151	0.151	0.264
		C	0.000	0.208	0.194	0.364
T6	120.00-100.00	A	0.000	2.413	3.037	4.826
		B	0.000	0.838	1.025	1.676
		C	0.000	0.653	0.696	1.306
T7	100.00-80.00	A	0.000	3.394	5.630	8.999
		B	0.000	2.195	3.590	5.820
		C	0.000	1.211	1.785	3.210
T8	80.00-73.33	A	0.000	0.774	1.209	1.935
		B	0.000	0.534	0.817	1.334
		C	0.000	0.286	0.398	0.715
T9	73.33-66.67	A	0.000	1.110	1.842	2.947
		B	0.000	0.846	1.366	2.246
		C	0.000	0.452	0.666	1.201
T10	66.67-60.00	A	0.000	1.103	1.831	2.929
		B	0.000	0.850	1.371	2.258
		C	0.000	0.450	0.662	1.194
T11	60.00-50.00	A	0.000	0.845	1.568	2.534
		B	0.000	0.635	1.157	1.905
		C	0.000	0.336	0.559	1.007
T12	50.00-40.00	A	0.000	1.190	2.202	3.569
		B	0.000	0.889	1.619	2.666
		C	0.000	0.486	0.794	1.457
T13	40.00-30.00	A	0.000	1.177	2.178	3.530
		B	0.000	0.879	1.601	2.636
		C	0.000	0.496	0.797	1.488
T14	30.00-20.00	A	0.000	2.685	4.033	6.536
		B	0.000	2.006	2.964	4.882
		C	0.000	1.132	1.476	2.755
T15	20.00-15.00	A	0.000	1.155	1.798	2.914
		B	0.000	0.863	1.322	2.177
		C	0.000	0.487	0.658	1.228
T16	15.00-10.00	A	0.000	0.753	1.489	2.413
		B	0.000	0.562	1.095	1.803
		C	0.000	0.317	0.545	1.017
T17	10.00-0.00	A	0.000	0.317	0.684	1.108
		B	0.000	0.237	0.503	0.828
		C	0.000	0.133	0.250	0.467

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	152.00-140.00	-1.101	-6.241	-0.973	-5.832
T2	140.00-135.00	-3.379	-9.047	-3.052	-8.815
T3	135.00-130.00	-3.456	-9.082	-2.968	-8.516
T4	130.00-125.00	-3.148	-9.310	-2.520	-8.646
T5	125.00-120.00	-3.235	-9.245	-2.708	-8.590
T6	120.00-100.00	-2.597	-10.865	-2.466	-10.925
T7	100.00-80.00	0.137	-10.339	0.590	-10.127
T8	80.00-73.33	0.739	-11.978	1.443	-11.700
T9	73.33-66.67	0.726	-10.392	1.261	-10.094
T10	66.67-60.00	0.722	-10.873	1.275	-10.603
T11	60.00-50.00	0.762	-13.519	1.416	-13.740
T12	50.00-40.00	0.557	-12.696	0.983	-12.805
T13	40.00-30.00	0.443	-13.199	0.718	-13.187
T14	30.00-20.00	0.349	-11.422	0.548	-10.958
T15	20.00-15.00	0.349	-12.225	0.575	-11.909
T16	15.00-10.00	0.329	-12.032	0.575	-12.094
T17	10.00-0.00	0.203	-7.736	0.402	-8.519

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft / ft / ft	°	ft		ft^2	ft^2	K
20' 4-Bay Dipole	C	From Face	0.50	0.0000	162.00	No Ice	3.15	3.15	0.032
(Unknown)			0.000			1/2" Ice	5.67	5.67	0.042
			0.000						
DB563K-CR	B	From Leg	3.00	0.0000	156.70	No Ice	19.01	19.01	0.050
(Unknown)			0.000			1/2" Ice	19.99	19.99	泛
			0.000						
4'x4" Pipe Mount	C	From Leg	0.50	0.0000	152.00	No Ice	1.32	1.32	0.044
(Unknown)			0.000			1/2" Ice	1.58	1.58	0.057
			0.000						
DB803KHE-YP	A	From Leg	3.00	0.0000	151.25	No Ice	0.55	0.55	0.006
(Unknown)			0.000			1/2" Ice	0.76	0.76	0.011
			0.000						
3' Sidearm	B	From Leg	1.50	0.0000	149.00	No Ice	3.43	3.43	0.089
(Unknown)			0.000			1/2" Ice	4.34	4.34	0.122
			0.000						
Filter Box 22"x22"x6"	B	From Leg	1.50	0.0000	149.00	No Ice	4.71	1.28	0.025
(Unknown)			0.000			1/2" Ice	5.00	1.47	0.051
			0.000						
3' Sidearm	A	From Leg	1.50	0.0000	148.50	No Ice	5.90	5.90	0.130
(Unknown)			0.000			1/2" Ice	6.60	6.60	0.146
			0.000						
Filter Box 20"x6"x8"	A	From Leg	1.50	0.0000	148.50	No Ice	1.17	1.56	0.020
(Unknown)			0.000			1/2" Ice	1.34	1.74	0.032
			0.000						
12'x2 1/2" STD Pipe Mount	C	From Face	0.00	0.0000	146.00	No Ice	3.45	3.45	0.069
(Unknown)			0.000			1/2" Ice	4.68	4.68	0.095
			0.000						
12' x 3" Dia Omni	C	From Leg	4.00	0.0000	144.00	No Ice	3.60	3.60	0.035
(Unknown)			0.000			1/2" Ice	4.83	4.83	0.061

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000						
4'x3" Pipe Mount (AT&T)	A	From Leg	0.50 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	1.11 1.36	1.11 1.36	0.030 0.041
4'x3" Pipe Mount (AT&T)	B	From Leg	0.50 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	1.11 1.36	1.11 1.36	0.030 0.041
4'x3" Pipe Mount (AT&T)	C	From Leg	0.50 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	1.11 1.36	1.11 1.36	0.030 0.041
7770 (AT&T)	A	From Leg	1.00 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	0.035 0.068
7770 (AT&T)	B	From Leg	1.00 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	0.035 0.068
7770 (AT&T)	C	From Leg	1.00 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	0.035 0.068
(2) LPG 21401 TMA (AT&T)	A	From Leg	0.50 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	0.95 1.09	0.37 0.48	0.018 0.023
(2) LPG 21401 TMA (AT&T)	B	From Leg	0.50 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	0.95 1.09	0.37 0.48	0.018 0.023
(2) LPG 21401 TMA (AT&T)	C	From Leg	0.50 0.000 0.000	0.0000	143.00	No Ice 1/2" Ice	0.95 1.09	0.37 0.48	0.018 0.023
P65-16-XLH-RR (ATT)	A	From Face	1.00 -1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.050 0.097
P65-16-XLH-RR (ATT)	B	From Face	1.00 -1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.050 0.097
P65-16-XLH-RR (ATT)	C	From Face	1.00 -1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.050 0.097
(2) RRUS-11 (ATT)	A	From Leg	1.00 1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	2.94 3.17	1.25 1.41	0.055 0.074
(2) RRUS-11 (ATT)	A	From Leg	1.00 1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	2.94 3.17	1.25 1.41	0.055 0.074
(2) RRUS-11 (ATT)	A	From Leg	1.00 1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	2.94 3.17	1.25 1.41	0.055 0.074
4'x3" Pipe Mount (AT&T)	A	From Leg	0.08 1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	1.11 1.36	1.11 1.36	0.030 0.041
4'x3" Pipe Mount (AT&T)	B	From Leg	1.00 1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	1.11 1.36	1.11 1.36	0.030 0.041
4'x3" Pipe Mount (AT&T)	C	From Leg	1.00 1.000 0.000	0.0000	143.00	No Ice 1/2" Ice	1.11 1.36	1.11 1.36	0.030 0.041
4'x4" Pipe Mount (Unknown)	B	From Leg	0.50 0.000	0.0000	142.00	No Ice 1/2" Ice	1.32 1.58	1.32 1.58	0.044 0.057

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000						
DB563K-CR	C	From Leg	4.00	0.0000	141.70	No Ice	19.01	19.01	0.050
(Unknown)			0.000			1/2" Ice	19.99	19.99	0.163
			0.000						
6' x 3" Dia Omni	A	From Leg	3.00	0.0000	138.00	No Ice	1.77	1.77	0.020
(Unknown)			0.000			1/2" Ice	2.13	2.13	0.033
			0.000						
4' Side Mount Standoff (1)	C	From Leg	2.00	0.0000	137.00	No Ice	2.72	2.72	0.050
(Unknown)			0.000			1/2" Ice	4.91	4.91	0.089
			0.000						
4'x4" Pipe Mount	B	From Leg	0.50	0.0000	135.00	No Ice	1.32	1.32	0.044
(Unknown)			0.000			1/2" Ice	1.58	1.58	0.057
			0.000						
DB495-A	C	From Leg	0.00	0.0000	135.00	No Ice	2.35	2.35	0.010
(Unknown)			0.000			1/2" Ice	4.23	4.23	0.013
			0.000						
3' Sidearm	A	From Leg	1.50	0.0000	133.50	No Ice	5.90	5.90	0.130
(Unknown)			0.000			1/2" Ice	6.60	6.60	0.146
			0.000						
4' Side Mount Standoff (1)	C	From Leg	2.00	0.0000	133.00	No Ice	2.72	2.72	0.050
(Unknown)			0.000			1/2" Ice	4.91	4.91	0.089
			0.000						
2" Dia 8' Omni	A	From Leg	4.50	0.0000	133.00	No Ice	2.00	2.00	0.005
(Unknown)			0.000			1/2" Ice	3.03	3.03	0.018
			0.000						
(2) DB980H90E-M	A	From Leg	3.00	0.0000	128.00	No Ice	3.80	2.19	0.009
(Sprint)			0.000			1/2" Ice	4.18	2.56	0.029
			0.000						
(2) DB980H90E-M	B	From Leg	3.00	0.0000	128.00	No Ice	3.80	2.19	0.009
(Sprint)			0.000			1/2" Ice	4.18	2.56	0.029
			0.000						
(2) DB980H90E-M	C	From Leg	3.00	0.0000	128.00	No Ice	3.80	2.19	0.009
(Sprint)			0.000			1/2" Ice	4.18	2.56	0.029
			0.000						
APXV9TM14-120	A	From Leg	3.00	0.0000	128.00	No Ice	6.90	3.61	0.067
(Sprint)			0.000			1/2" Ice	7.35	3.97	0.106
			0.000						
APXV9TM14-120	B	From Leg	3.00	0.0000	128.00	No Ice	6.90	3.61	0.067
(Sprint)			0.000			1/2" Ice	7.35	3.97	0.106
			0.000						
APXV9TM14-120	C	From Leg	3.00	0.0000	128.00	No Ice	6.90	3.61	0.067
(Sprint)			0.000			1/2" Ice	7.35	3.97	0.106
			0.000						
800 MHz Filter	A	From Leg	3.00	0.0000	128.00	No Ice	0.52	0.38	0.005
(Sprint)			0.000			1/2" Ice	0.65	0.50	0.009
			0.000						
800 MHz Filter	B	From Leg	3.00	0.0000	128.00	No Ice	0.52	0.38	0.005
(Sprint)			0.000			1/2" Ice	0.65	0.50	0.009
			0.000						
800 MHz Filter	C	From Leg	3.00	0.0000	128.00	No Ice	0.52	0.38	0.005
(Sprint)			0.000			1/2" Ice	0.65	0.50	0.009
			0.000						
RRH	A	From Leg	3.00	0.0000	128.00	No Ice	2.25	1.23	0.050
(Sprint)			0.000			1/2" Ice	2.45	1.39	0.067
			0.000						
RRH	B	From Leg	3.00	0.0000	128.00	No Ice	2.25	1.23	0.050
(Sprint)			0.000			1/2" Ice	2.45	1.39	0.067

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000						
RRH	C	From Leg	3.00	0.0000	128.00	No Ice	2.25	1.23	0.050
(Sprint)			0.000			1/2" Ice	2.45	1.39	0.067
			0.000						
DB254-A	C	From Leg	0.00	0.0000	122.00	No Ice	1.10	1.10	0.010
(Unknown)			0.000			1/2" Ice	1.98	1.98	0.013
			0.000						
APX16DWV-16DWV-S-E-A	A	From Leg	0.50	0.0000	108.00	No Ice	6.70	3.27	0.073
CU w/ Mount			0.000			1/2" Ice	7.13	3.86	0.122
(T-Mobile)			0.000						
TMA	A	From Leg	0.25	0.0000	108.00	No Ice	1.06	0.45	0.020
(T-Mobile)			0.000			1/2" Ice	1.21	0.57	0.027
			0.000						
APX16DWV-16DWV-S-E-A	B	From Leg	0.50	0.0000	108.00	No Ice	6.70	3.27	0.073
CU w/ Mount			0.000			1/2" Ice	7.13	3.86	0.122
(T-Mobile)			0.000						
TMA	B	From Leg	0.25	0.0000	108.00	No Ice	1.06	0.45	0.020
(T-Mobile)			0.000			1/2" Ice	1.21	0.57	0.027
			0.000						
APX16DWV-16DWV-S-E-A	C	From Leg	0.50	0.0000	108.00	No Ice	6.70	3.27	0.073
CU w/ Mount			0.000			1/2" Ice	7.13	3.86	0.122
(T-Mobile)			0.000						
TMA	C	From Leg	0.25	0.0000	108.00	No Ice	1.06	0.45	0.020
(T-Mobile)			0.000			1/2" Ice	1.21	0.57	0.027
			0.000						
2" Dia 10' Omni	A	From Leg	3.00	0.0000	101.00	No Ice	2.00	2.00	0.025
(Unknown)			0.000			1/2" Ice	3.02	3.02	0.041
			0.000						
8' 4-Bay Dipole	B	From Leg	3.00	0.0000	101.00	No Ice	1.50	1.50	0.025
(Unknown)			0.000			1/2" Ice	2.70	2.70	0.033
			0.000						
8' 4-Bay Dipole	C	From Leg	3.00	0.0000	101.00	No Ice	1.50	1.50	0.025
(Unknown)			0.000			1/2" Ice	2.70	2.70	0.033
			0.000						
20' x 3" Dia Omni	B	From Leg	3.00	0.0000	101.00	No Ice	6.00	6.00	0.050
(Unknown)			0.000			1/2" Ice	8.03	8.03	0.093
			0.000						
Valmont 13' Lightweight	A	From Leg	1.25	0.0000	98.00	No Ice	10.60	10.60	0.255
T-Frame			0.000			1/2" Ice	16.80	16.80	0.359
(Verizon)			0.000						
Valmont 13' Lightweight	B	From Leg	1.25	0.0000	98.00	No Ice	10.60	10.60	0.255
T-Frame			0.000			1/2" Ice	16.80	16.80	0.359
(Verizon)			0.000						
Valmont 13' Lightweight	C	From Leg	1.25	0.0000	98.00	No Ice	10.60	10.60	0.255
T-Frame			0.000			1/2" Ice	16.80	16.80	0.359
(Verizon)			0.000						
RRH	A	From Leg	1.25	0.0000	98.00	No Ice	2.25	1.23	0.050
(Verizon)			6.000			1/2" Ice	2.45	1.39	0.067
			0.000						
RRH	B	From Leg	1.25	0.0000	98.00	No Ice	2.25	1.23	0.050
(Verizon)			6.000			1/2" Ice	2.45	1.39	0.067
			0.000						
RRH	C	From Leg	1.25	0.0000	98.00	No Ice	2.25	1.23	0.050
(Verizon)			6.000			1/2" Ice	2.45	1.39	0.067
			0.000						
DB-T1-6Z-8AB-0Z	A	None		0.0000	98.00	No Ice	5.35	2.40	0.044
(Verizon)						1/2" Ice	5.75	2.72	0.073

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
3' Sidearm (Vacant)	A	From Leg	1.50 0.000 0.000	0.0000	95.50	No Ice 1/2" Ice	3.58 5.01	3.58 5.01	0.124 0.167
3' Sidearm (Unknown)	B	From Leg	1.50 0.000 0.000	0.0000	95.50	No Ice 1/2" Ice	3.58 5.01	3.58 5.01	0.124 0.167
3' Sidearm (Unknown)	C	From Leg	1.50 0.000 0.000	0.0000	95.50	No Ice 1/2" Ice	3.58 5.01	3.58 5.01	0.124 0.167
3' Sidearm (Unknown)	A	From Leg	1.50 0.000 0.000	0.0000	94.50	No Ice 1/2" Ice	3.58 5.01	3.58 5.01	0.124 0.167
3' Sidearm (Unknown)	B	From Leg	1.50 0.000 0.000	0.0000	89.50	No Ice 1/2" Ice	3.58 5.01	3.58 5.01	0.124 0.167
4' x 3" DIA Omni (Unknown)	A	From Leg	3.00 0.000 0.000	0.0000	79.00	No Ice 1/2" Ice	1.00 1.25	1.00 1.25	0.015 0.024
8' 2-Bay Dipole (Unknown)	C	From Leg	3.00 0.000 0.000	0.0000	78.00	No Ice 1/2" Ice	1.60 2.88	1.60 2.88	0.018 0.023
3' Sidearm (Unknown)	A	From Leg	1.50 0.000 0.000	0.0000	72.50	No Ice 1/2" Ice	3.58 5.01	3.58 5.01	0.124 0.167
3' Sidearm (Unknown)	C	From Leg	1.50 0.000 0.000	0.0000	72.50	No Ice 1/2" Ice	3.58 5.01	3.58 5.01	0.124 0.167
Scala Yagi w/ Radome (Unknown)	A	From Leg	3.00 0.000 0.000	0.0000	72.00	No Ice 1/2" Ice	2.78 5.00	2.78 5.00	0.016 0.021
GPS (Sprint)	C	From Leg	2.00 0.000 0.000	0.0000	58.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.010 0.015
2' Sidearm (Sprint)	C	From Leg	1.00 0.000 0.000	0.0000	57.00	No Ice 1/2" Ice	2.09 3.20	2.09 3.20	0.069 0.092
4'x4" Stand-off (Unknown)	C	From Leg	0.50 0.000 0.000	0.0000	44.00	No Ice 1/2" Ice	0.47 0.93	0.47 0.93	0.061 0.066
APXVSPP18-C-A20 w/ Mounting Pipe (Sprint)	A	From Leg	3.00 0.000 0.000	0.0000	128.00	No Ice 1/2" Ice	5.93 6.39	4.61 4.99	0.026 0.066
APXVSPP18-C-A20 w/ Mounting Pipe (Sprint)	B	From Leg	3.00 0.000 0.000	0.0000	128.00	No Ice 1/2" Ice	5.93 6.39	4.61 4.99	0.026 0.066
APXVSPP18-C-A20 w/ Mounting Pipe (Sprint)	C	From Leg	3.00 0.000 0.000	0.0000	128.00	No Ice 1/2" Ice	5.93 6.39	4.61 4.99	0.026 0.066
(3) 11' Boom Gate w/3 - 2 3/8" Pipe (Tapered) (Sprint)	A	None		0.0000	128.00	No Ice 1/2" Ice	35.30 46.40	35.30 46.40	1.750 2.400
RRH (Sprint)	A	From Leg	3.00 0.000 0.000	0.0000	128.00	No Ice 1/2" Ice	2.25 2.45	1.23 1.39	0.050 0.067
RRH (Sprint)	B	From Leg	3.00 0.000 0.000	0.0000	128.00	No Ice 1/2" Ice	2.25 2.45	1.23 1.39	0.050 0.067

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRH (Sprint)	C	From Leg	3.00 0.000 0.000	0.0000	128.00	No Ice 1/2" Ice	2.25 2.45	1.23 1.39	0.050 0.067
LNX-8513DS-VTM (Verizon - LTE)	A	From Leg	3.00 6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.38 8.93	5.41 5.86	0.039 0.090
LNX-6514DS-T4M (Verizon - LTE)	B	From Leg	3.00 6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.38 8.93	5.41 5.86	0.038 0.089
LNX-6514DS-T4M (Verizon - LTE)	C	From Leg	3.00 6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.38 8.93	5.41 5.86	0.038 0.089
RH_2x40-700 (Verizon - LTE)	A	From Leg	3.00 6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.12 2.32	1.77 1.97	0.060 0.077
RH_2x40-700 (Verizon - LTE)	B	From Leg	3.00 6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.12 2.32	1.77 1.97	0.060 0.077
RH_2x40-700 (Verizon - LTE)	C	From Leg	3.00 6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.12 2.32	1.77 1.97	0.060 0.077
LNX-8513DS-VTM (Verizon - 850MHz)	A	From Leg	3.00 3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.38 8.93	5.41 5.86	0.039 0.090
LNX-6514DS-T4M (Verizon - 850MHz)	B	From Leg	3.00 3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.38 8.93	5.41 5.86	0.038 0.089
LNX-6514DS-T4M (Verizon - 850MHz)	C	From Leg	3.00 3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.38 8.93	5.41 5.86	0.038 0.089
HBXX-6517DS-VTM (Verizon - PCS)	A	From Leg	3.00 -3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	0.043 0.093
HBXX-6517DS-VTM (Verizon - PCS)	B	From Leg	3.00 -3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	0.043 0.093
HBXX-6517DS-VTM (Verizon - PCS)	C	From Leg	3.00 -3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	0.043 0.093
Panasonic RRH 1900MHZ (Verizon - PCS)	A	From Leg	3.00 -3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.49 2.71	3.06 3.30	0.090 0.117
Panasonic RRH 1900MHZ (Verizon - PCS)	B	From Leg	3.00 -3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.49 2.71	3.06 3.30	0.090 0.117
Panasonic RRH 1900MHZ (Verizon - PCS)	C	From Leg	3.00 -3.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.49 2.71	3.06 3.30	0.090 0.117
HBXX-6517DS-VTM (Verizon - AWS)	A	From Leg	3.00 -6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	0.043 0.093
HBXX-6517DS-VTM (Verizon - AWS)	B	From Leg	3.00 -6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	0.043 0.093
HBXX-6517DS-VTM (Verizon - AWS)	C	From Leg	3.00 -6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	0.043 0.093

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RH_2X40-AWS (Verizon - AWS)	A	From Leg	3.00 -6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.52 2.75	1.59 1.80	0.044 0.061
RH_2X40-AWS (Verizon - AWS)	B	From Leg	3.00 -6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.52 2.75	1.59 1.80	0.044 0.061
RH_2X40-AWS (Verizon - AWS)	C	From Leg	3.00 -6.000 0.000	0.0000	98.00	No Ice 1/2" Ice	2.52 2.75	1.59 1.80	0.044 0.061
DB-T1-6Z-8AB-0Z (Verizon)	A	None		0.0000	98.00	No Ice 1/2" Ice	5.35 5.75	2.40 2.72	0.044 0.073

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
4' w/Radome (Unknown)	C	Paraboloid w/Radome	From Leg	0.50 0.000 0.000	Worst		152.00	4.00	No Ice 1/2" Ice	12.57 13.10	0.140 0.282
4' w/Radome (Unknown)	B	Paraboloid w/Radome	From Leg	0.50 0.000 0.000	Worst		140.00	4.00	No Ice 1/2" Ice	12.57 13.10	0.140 0.282
2' w/Radome (Unknown)	B	Paraboloid w/Radome	From Leg	0.50 0.000 0.000	Worst		136.50	2.00	No Ice 1/2" Ice	3.14 3.41	0.070 0.282
1.2M (Unknown)	C	Paraboloid w/o Radome	From Leg	4.00 0.000 0.000	Worst		45.00	4.00	No Ice 1/2" Ice	12.17 13.09	0.165 0.232

Tower Pressures - No Ice

$G_H = 1.132$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 152.00-140.00	146.00	1.529	0.028	80.875	A B C	5.798 6.385 7.052	14.090 7.333 5.860	4.750	23.88 34.62 36.79	0.000 0.000 0.000	0.000 0.000 0.000
T2 140.00-135.00	137.50	1.503	0.028	35.262	A B C	1.961 2.922 3.538	14.116 3.969 2.862	2.400	14.93 34.83 37.49	0.000 0.000 0.000	0.000 0.000 0.000
T3	132.50	1.488	0.028	37.762	A	1.403	14.600	2.400	15.00	0.000	0.000

tnxTower	Job: 152' ROHN SSV Tower	Page: 19 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
135.00-130.00					B	2.036	4.154		38.77	0.000	0.000
					C	2.707	4.512		33.24	0.000	0.000
T4	127.50	1.471	0.027	40.262	A	1.524	14.600	2.400	14.88	0.000	0.000
130.00-125.00					B	2.122	4.524		36.11	0.000	0.000
					C	2.816	4.512		32.75	0.000	0.000
T5	122.50	1.455	0.027	42.762	A	1.911	14.696	2.400	14.45	0.000	0.000
125.00-120.00					B	2.597	4.616		33.27	0.000	0.000
					C	3.291	4.512		30.75	0.000	0.000
T6	110.00	1.411	0.026	199.956	A	25.555	49.767	17.420	23.13	0.000	0.000
120.00-100.00					B	27.568	16.787		39.27	0.000	0.000
					C	30.846	8.450		44.33	0.000	0.000
T7	90.00	1.332	0.025	240.373	A	36.228	51.339	17.421	19.89	0.000	0.000
100.00-80.00					B	38.269	32.737		24.53	0.000	0.000
					C	43.023	13.325		30.92	0.000	0.000
T8 80.00-73.33	76.67	1.272	0.024	89.625	A	11.189	17.206	6.544	23.05	0.000	0.000
					B	11.581	11.621		28.21	0.000	0.000
					C	12.983	4.684		37.04	0.000	0.000
T9 73.33-66.67	70.00	1.24	0.023	94.278	A	14.094	17.206	6.544	20.91	0.000	0.000
					B	14.570	12.760		23.95	0.000	0.000
					C	16.253	5.239		30.45	0.000	0.000
T10	63.33	1.205	0.022	98.930	A	14.544	17.206	6.544	20.61	0.000	0.000
66.67-60.00					B	15.004	12.883		23.47	0.000	0.000
					C	16.696	5.239		29.84	0.000	0.000
T11	55.00	1.157	0.021	157.607	A	18.476	26.195	11.261	25.21	0.000	0.000
60.00-50.00					B	18.887	19.325		29.47	0.000	0.000
					C	20.960	7.858		39.08	0.000	0.000
T12	45.00	1.093	0.020	167.607	A	22.153	26.292	11.261	23.24	0.000	0.000
50.00-40.00					B	22.736	19.325		26.77	0.000	0.000
					C	25.035	8.004		34.08	0.000	0.000
T13	35.00	1.017	0.019	177.607	A	22.861	26.292	11.261	22.91	0.000	0.000
40.00-30.00					B	23.438	19.325		26.33	0.000	0.000
					C	25.716	8.150		33.25	0.000	0.000
T14	25.00	1	0.018	187.973	A	27.833	26.292	11.264	20.81	0.000	0.000
30.00-20.00					B	28.901	19.325		23.36	0.000	0.000
					C	31.864	8.150		28.15	0.000	0.000
T15	17.50	1	0.018	98.650	A	7.444	19.539	6.394	23.69	0.000	0.000
20.00-15.00					B	7.921	16.056		26.67	0.000	0.000
					C	9.321	10.469		32.31	0.000	0.000
T16	12.50	1	0.018	101.177	A	9.229	19.541	6.395	22.23	0.000	0.000
15.00-10.00					B	9.624	16.057		24.90	0.000	0.000
					C	10.911	10.470		29.91	0.000	0.000
T17 10.00-0.00	5.00	1	0.018	209.955	A	26.383	10.517	14.290	38.73	0.000	0.000
					B	26.564	7.730		41.67	0.000	0.000
					C	27.406	3.260		46.60	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.132$

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	146.00	1.529	0.021	0.500	81.875	A	5.371	24.445	6.750	22.64	0.000	0.000
152.00-140.00						B	6.240	14.995		31.79	0.000	0.000
						C	7.545	12.885		33.04	0.000	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		ksf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T2	137.50	1.503	0.021	0.500	35.679	A	1.370	22.039	3.235	13.82	0.000	0.000
140.00-135.00						B	2.819	7.605		31.03	0.000	0.000
						C	4.047	5.846		32.69	0.000	0.000
T3	132.50	1.488	0.021	0.500	38.179	A	1.468	22.516	3.235	13.49	0.000	0.000
135.00-130.00						B	1.960	7.546		34.03	0.000	0.000
						C	3.389	7.809		28.88	0.000	0.000
T4	127.50	1.471	0.020	0.500	40.679	A	1.597	22.602	3.235	13.37	0.000	0.000
130.00-125.00						B	2.028	8.294		31.34	0.000	0.000
						C	3.501	7.884		28.41	0.000	0.000
T5	122.50	1.455	0.020	0.500	43.179	A	1.913	22.940	3.235	13.01	0.000	0.000
125.00-120.00						B	2.484	8.537		29.35	0.000	0.000
						C	3.955	7.959		27.15	0.000	0.000
T6	110.00	1.411	0.020	0.500	201.625	A	27.926	80.307	19.646	18.15	0.000	0.000
120.00-100.00						B	29.143	32.202		32.02	0.000	0.000
						C	35.795	18.383		36.26	0.000	0.000
T7 100.00-80.00	90.00	1.332	0.018	0.500	242.042	A	37.019	85.946	19.647	15.98	0.000	0.000
						B	38.265	60.093		19.97	0.000	0.000
						C	47.157	29.332		25.69	0.000	0.000
T8 80.00-73.33	76.67	1.272	0.018	0.500	90.181	A	11.850	28.451	7.286	18.08	0.000	0.000
						B	11.806	20.790		22.35	0.000	0.000
						C	14.520	9.573		30.24	0.000	0.000
T9 73.33-66.67	70.00	1.24	0.017	0.500	94.834	A	14.375	29.311	7.286	16.68	0.000	0.000
						B	14.432	23.674		19.12	0.000	0.000
						C	17.571	11.657		24.93	0.000	0.000
T10 66.67-60.00	63.33	1.205	0.017	0.500	99.487	A	14.832	29.482	7.286	16.44	0.000	0.000
						B	14.859	24.068		18.72	0.000	0.000
						C	18.017	11.824		24.42	0.000	0.000
T11 60.00-50.00	55.00	1.157	0.016	0.500	158.442	A	19.589	43.461	12.374	19.63	0.000	0.000
						B	19.252	34.118		23.19	0.000	0.000
						C	23.290	15.450		31.94	0.000	0.000
T12 50.00-40.00	45.00	1.093	0.015	0.500	168.442	A	22.865	44.817	12.374	18.28	0.000	0.000
						B	22.802	35.301		21.30	0.000	0.000
						C	27.152	17.300		27.84	0.000	0.000
T13 40.00-30.00	35.00	1.017	0.014	0.500	178.442	A	23.589	45.058	12.374	18.03	0.000	0.000
						B	23.516	35.539		20.95	0.000	0.000
						C	27.806	18.080		26.97	0.000	0.000
T14 30.00-20.00	25.00	1	0.014	0.500	188.807	A	27.410	46.841	12.377	16.67	0.000	0.000
						B	28.097	37.704		18.81	0.000	0.000
						C	33.366	20.736		22.88	0.000	0.000
T15 20.00-15.00	17.50	1	0.014	0.500	99.068	A	6.812	30.225	7.228	19.52	0.000	0.000
						B	7.066	25.609		22.12	0.000	0.000
						C	9.585	17.065		27.12	0.000	0.000
T16 15.00-10.00	12.50	1	0.014	0.500	101.594	A	8.788	30.637	7.230	18.34	0.000	0.000
						B	8.916	25.919		20.75	0.000	0.000
						C	11.272	17.244		25.35	0.000	0.000
T17 10.00-0.00	5.00	1	0.014	0.500	210.789	A	27.458	19.990	15.403	32.46	0.000	0.000
						B	27.352	16.144		35.41	0.000	0.000
						C	28.969	9.110		40.45	0.000	0.000

Tower Pressure - Service

$G_H = 1.132$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	146.00	1.529	0.010	80.875	A	5.798	14.090	4.750	23.88	0.000	0.000
152.00-140.00					B	6.385	7.333		34.62	0.000	0.000
					C	7.052	5.860		36.79	0.000	0.000
T2	137.50	1.503	0.010	35.262	A	1.961	14.116	2.400	14.93	0.000	0.000
140.00-135.00					B	2.922	3.969		34.83	0.000	0.000
					C	3.538	2.862		37.49	0.000	0.000
T3	132.50	1.488	0.010	37.762	A	1.403	14.600	2.400	15.00	0.000	0.000
135.00-130.00					B	2.036	4.154		38.77	0.000	0.000
					C	2.707	4.512		33.24	0.000	0.000
T4	127.50	1.471	0.009	40.262	A	1.524	14.600	2.400	14.88	0.000	0.000
130.00-125.00					B	2.122	4.524		36.11	0.000	0.000
					C	2.816	4.512		32.75	0.000	0.000
T5	122.50	1.455	0.009	42.762	A	1.911	14.696	2.400	14.45	0.000	0.000
125.00-120.00					B	2.597	4.616		33.27	0.000	0.000
					C	3.291	4.512		30.75	0.000	0.000
T6	110.00	1.411	0.009	199.956	A	25.555	49.767	17.420	23.13	0.000	0.000
120.00-100.00					B	27.568	16.787		39.27	0.000	0.000
					C	30.846	8.450		44.33	0.000	0.000
T7	90.00	1.332	0.009	240.373	A	36.228	51.339	17.421	19.89	0.000	0.000
100.00-80.00					B	38.269	32.737		24.53	0.000	0.000
					C	43.023	13.325		30.92	0.000	0.000
T8 80.00-73.33	76.67	1.272	0.008	89.625	A	11.189	17.206	6.544	23.05	0.000	0.000
					B	11.581	11.621		28.21	0.000	0.000
					C	12.983	4.684		37.04	0.000	0.000
T9 73.33-66.67	70.00	1.24	0.008	94.278	A	14.094	17.206	6.544	20.91	0.000	0.000
					B	14.570	12.760		23.95	0.000	0.000
					C	16.253	5.239		30.45	0.000	0.000
T10	63.33	1.205	0.008	98.930	A	14.544	17.206	6.544	20.61	0.000	0.000
66.67-60.00					B	15.004	12.883		23.47	0.000	0.000
					C	16.696	5.239		29.84	0.000	0.000
T11	55.00	1.157	0.007	157.607	A	18.476	26.195	11.261	25.21	0.000	0.000
60.00-50.00					B	18.887	19.325		29.47	0.000	0.000
					C	20.960	7.858		39.08	0.000	0.000
T12	45.00	1.093	0.007	167.607	A	22.153	26.292	11.261	23.24	0.000	0.000
50.00-40.00					B	22.736	19.325		26.77	0.000	0.000
					C	25.035	8.004		34.08	0.000	0.000
T13	35.00	1.017	0.007	177.607	A	22.861	26.292	11.261	22.91	0.000	0.000
40.00-30.00					B	23.438	19.325		26.33	0.000	0.000
					C	25.716	8.150		33.25	0.000	0.000
T14	25.00	1	0.006	187.973	A	27.833	26.292	11.264	20.81	0.000	0.000
30.00-20.00					B	28.901	19.325		23.36	0.000	0.000
					C	31.864	8.150		28.15	0.000	0.000
T15	17.50	1	0.006	98.650	A	7.444	19.539	6.394	23.69	0.000	0.000
20.00-15.00					B	7.921	16.056		26.67	0.000	0.000
					C	9.321	10.469		32.31	0.000	0.000
T16	12.50	1	0.006	101.177	A	9.229	19.541	6.395	22.23	0.000	0.000
15.00-10.00					B	9.624	16.057		24.90	0.000	0.000
					C	10.911	10.470		29.91	0.000	0.000
T17 10.00-0.00	5.00	1	0.006	209.955	A	26.383	10.517	14.290	38.73	0.000	0.000
					B	26.564	7.730		41.67	0.000	0.000
					C	27.406	3.260		46.60	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 22 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	1	1	14.264	1.119	0.093	A
152.00-140.00			B	0.17	2.701	0.585	1	1	10.673			
			C	0.16	2.736	0.583	1	1	10.468			
T2	0.087	0.211	A	0.456	1.964	0.676	1	1	11.505	0.711	0.142	A
140.00-135.00			B	0.195	2.611	0.589	1	1	5.261			
			C	0.182	2.659	0.587	1	1	5.218			
T3	0.101	0.184	A	0.424	2.019	0.662	1	1	11.063	0.696	0.139	A
135.00-130.00			B	0.164	2.721	0.584	1	1	4.461			
			C	0.191	2.626	0.589	1	1	5.363			
T4	0.104	0.219	A	0.4	2.063	0.652	1	1	11.040	0.702	0.140	A
130.00-125.00			B	0.165	2.717	0.584	1	1	4.763			
			C	0.182	2.657	0.587	1	1	5.464			
T5	0.105	0.212	A	0.388	2.087	0.647	1	1	11.419	0.726	0.145	A
125.00-120.00			B	0.169	2.704	0.585	1	1	5.296			
			C	0.182	2.656	0.587	1	1	5.940			
T6	0.521	1.382	A	0.377	2.112	0.642	1	1	57.523	3.589	0.179	A
120.00-100.00			B	0.222	2.525	0.595	1	1	37.557			
			C	0.197	2.608	0.59	1	1	35.829			
T7	0.711	2.073	A	0.364	2.139	0.638	1	1	68.967	4.115	0.206	A
100.00-80.00			B	0.295	2.308	0.615	1	1	58.385			
			C	0.234	2.485	0.598	1	1	50.992			
T8	0.242	0.721	A	0.317	2.252	0.621	1	1	21.877	1.313	0.197	A
80.00-73.33			B	0.259	2.411	0.604	1	1	18.603			
			C	0.197	2.606	0.59	1	1	15.746			
T9	0.252	0.972	A	0.332	2.214	0.626	1	1	24.868	1.430	0.214	A
73.33-66.67			B	0.29	2.323	0.613	1	1	22.390			
			C	0.228	2.505	0.597	1	1	19.378			
T10	0.252	0.998	A	0.321	2.242	0.623	1	1	25.255	1.429	0.214	A
66.67-60.00			B	0.282	2.345	0.611	1	1	22.870			
			C	0.222	2.525	0.595	1	1	19.813			
T11	0.381	1.354	A	0.283	2.341	0.611	1	1	34.480	1.956	0.196	A
60.00-50.00			B	0.242	2.46	0.6	1	1	30.481			
			C	0.183	2.654	0.587	1	1	25.573			
T12	0.381	1.565	A	0.289	2.326	0.613	1	1	38.259	2.036	0.204	A
50.00-40.00			B	0.251	2.435	0.602	1	1	34.372			
			C	0.197	2.606	0.59	1	1	29.756			
T13	0.382	1.741	A	0.277	2.36	0.609	1	1	38.874	1.954	0.195	A
40.00-30.00			B	0.241	2.465	0.6	1	1	35.025			
			C	0.191	2.627	0.589	1	1	30.513			
T14	0.382	2.026	A	0.288	2.329	0.612	1	1	43.931	2.143	0.214	A
30.00-20.00			B	0.257	2.418	0.604	1	1	40.565			
			C	0.213	2.554	0.593	1	1	36.698			
T15	0.191	0.907	A	0.274	2.369	0.608	1	1	19.327	0.959	0.192	A
20.00-15.00			B	0.243	2.459	0.6	1	1	17.556			
			C	0.201	2.594	0.591	1	1	15.503			
T16	0.191	0.995	A	0.284	2.338	0.611	1	1	21.173	1.037	0.207	A
15.00-10.00			B	0.254	2.426	0.603	1	1	19.304			
			C	0.211	2.559	0.593	1	1	17.117			
T17	0.153	1.983	A	0.176	2.679	0.586	1	1	32.543	1.826	0.183	A
10.00-0.00			B	0.163	2.723	0.584	1	1	31.075			
			C	0.146	2.786	0.581	1	1	29.300			
Sum Weight:	4.516	17.879						OTM	1948.377 kip-ft	27.742		

Tower Forces - No Ice - Wind 45 To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 23 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	0.825	1	13.249	1.040	0.087	A
152.00-140.00			B	0.17	2.701	0.585	0.825	1	9.555			
			C	0.16	2.736	0.583	0.825	1	9.234			
T2	0.087	0.211	A	0.456	1.964	0.676	0.825	1	11.161	0.690	0.138	A
140.00-135.00			B	0.195	2.611	0.589	0.825	1	4.750			
			C	0.182	2.659	0.587	0.825	1	4.599			
T3	0.101	0.184	A	0.424	2.019	0.662	0.825	1	10.817	0.680	0.136	A
135.00-130.00			B	0.164	2.721	0.584	0.825	1	4.104			
			C	0.191	2.626	0.589	0.825	1	4.889			
T4	0.104	0.219	A	0.4	2.063	0.652	0.825	1	10.773	0.685	0.137	A
130.00-125.00			B	0.165	2.717	0.584	0.825	1	4.392			
			C	0.182	2.657	0.587	0.825	1	4.972			
T5	0.105	0.212	A	0.388	2.087	0.647	0.825	1	11.084	0.705	0.141	A
125.00-120.00			B	0.169	2.704	0.585	0.825	1	4.841			
			C	0.182	2.656	0.587	0.825	1	5.364			
T6	0.521	1.382	A	0.377	2.112	0.642	0.825	1	53.051	3.310	0.166	A
120.00-100.00			B	0.222	2.525	0.595	0.825	1	32.733			
			C	0.197	2.608	0.59	0.825	1	30.431			
T7	0.711	2.073	A	0.364	2.139	0.638	0.825	1	62.627	3.737	0.187	A
100.00-80.00			B	0.295	2.308	0.615	0.825	1	51.688			
			C	0.234	2.485	0.598	0.825	1	43.463			
T8	0.242	0.721	A	0.317	2.252	0.621	0.825	1	19.919	1.195	0.179	A
80.00-73.33			B	0.259	2.411	0.604	0.825	1	16.576			
			C	0.197	2.606	0.59	0.825	1	13.474			
T9	0.252	0.972	A	0.332	2.214	0.626	0.825	1	22.402	1.288	0.193	A
73.33-66.67			B	0.29	2.323	0.613	0.825	1	19.840			
			C	0.228	2.505	0.597	0.825	1	16.534			
T10	0.252	0.998	A	0.321	2.242	0.623	0.825	1	22.710	1.285	0.193	A
66.67-60.00			B	0.282	2.345	0.611	0.825	1	20.244			
			C	0.222	2.525	0.595	0.825	1	16.892			
T11	0.381	1.354	A	0.283	2.341	0.611	0.825	1	31.247	1.773	0.177	A
60.00-50.00			B	0.242	2.46	0.6	0.825	1	27.176			
			C	0.183	2.654	0.587	0.825	1	21.905			
T12	0.381	1.565	A	0.289	2.326	0.613	0.825	1	34.382	1.830	0.183	A
50.00-40.00			B	0.251	2.435	0.602	0.825	1	30.393			
			C	0.197	2.606	0.59	0.825	1	25.375			
T13	0.382	1.741	A	0.277	2.36	0.609	0.825	1	34.874	1.753	0.175	A
40.00-30.00			B	0.241	2.465	0.6	0.825	1	30.923			
			C	0.191	2.627	0.589	0.825	1	26.013			
T14	0.382	2.026	A	0.288	2.329	0.612	0.825	1	39.060	1.905	0.190	A
30.00-20.00			B	0.257	2.418	0.604	0.825	1	35.508			
			C	0.213	2.554	0.593	0.825	1	31.122			
T15	0.191	0.907	A	0.274	2.369	0.608	0.825	1	18.024	0.894	0.179	A
20.00-15.00			B	0.243	2.459	0.6	0.825	1	16.170			
			C	0.201	2.594	0.591	0.825	1	13.872			
T16	0.191	0.995	A	0.284	2.338	0.611	0.825	1	19.558	0.958	0.192	A
15.00-10.00			B	0.254	2.426	0.603	0.825	1	17.620			
			C	0.211	2.559	0.593	0.825	1	15.208			
T17	0.153	1.983	A	0.176	2.679	0.586	0.825	1	27.926	1.567	0.157	A
10.00-0.00			B	0.163	2.723	0.584	0.825	1	26.427			
			C	0.146	2.786	0.581	0.825	1	24.504			
Sum Weight:	4.516	17.879						OTM	1798.454 kip-ft	25.295		

Tower Forces - No Ice - Wind 60 To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 24 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	0.8	1	13.104	1.028	0.086	A
152.00-140.00			B	0.17	2.701	0.585	0.8	1	9.396			
			C	0.16	2.736	0.583	0.8	1	9.058			
T2	0.087	0.211	A	0.456	1.964	0.676	0.8	1	11.112	0.687	0.137	A
140.00-135.00			B	0.195	2.611	0.589	0.8	1	4.677			
			C	0.182	2.659	0.587	0.8	1	4.510			
T3	0.101	0.184	A	0.424	2.019	0.662	0.8	1	10.782	0.678	0.136	A
135.00-130.00			B	0.164	2.721	0.584	0.8	1	4.054			
			C	0.191	2.626	0.589	0.8	1	4.822			
T4	0.104	0.219	A	0.4	2.063	0.652	0.8	1	10.735	0.683	0.137	A
130.00-125.00			B	0.165	2.717	0.584	0.8	1	4.339			
			C	0.182	2.657	0.587	0.8	1	4.901			
T5	0.105	0.212	A	0.388	2.087	0.647	0.8	1	11.036	0.702	0.140	A
125.00-120.00			B	0.169	2.704	0.585	0.8	1	4.776			
			C	0.182	2.656	0.587	0.8	1	5.282			
T6	0.521	1.382	A	0.377	2.112	0.642	0.8	1	52.412	3.270	0.164	A
120.00-100.00			B	0.222	2.525	0.595	0.8	1	32.044			
			C	0.197	2.608	0.59	0.8	1	29.660			
T7	0.711	2.073	A	0.364	2.139	0.638	0.8	1	61.721	3.683	0.184	A
100.00-80.00			B	0.295	2.308	0.615	0.8	1	50.732			
			C	0.234	2.485	0.598	0.8	1	42.387			
T8	0.242	0.721	A	0.317	2.252	0.621	0.8	1	19.639	1.179	0.177	A
80.00-73.33			B	0.259	2.411	0.604	0.8	1	16.286			
			C	0.197	2.606	0.59	0.8	1	13.149			
T9	0.252	0.972	A	0.332	2.214	0.626	0.8	1	22.049	1.268	0.190	A
73.33-66.67			B	0.29	2.323	0.613	0.8	1	19.476			
			C	0.228	2.505	0.597	0.8	1	16.127			
T10	0.252	0.998	A	0.321	2.242	0.623	0.8	1	22.346	1.264	0.190	A
66.67-60.00			B	0.282	2.345	0.611	0.8	1	19.869			
			C	0.222	2.525	0.595	0.8	1	16.474			
T11	0.381	1.354	A	0.283	2.341	0.611	0.8	1	30.785	1.747	0.175	A
60.00-50.00			B	0.242	2.46	0.6	0.8	1	26.704			
			C	0.183	2.654	0.587	0.8	1	21.381			
T12	0.381	1.565	A	0.289	2.326	0.613	0.8	1	33.828	1.800	0.180	A
50.00-40.00			B	0.251	2.435	0.602	0.8	1	29.825			
			C	0.197	2.606	0.59	0.8	1	24.749			
T13	0.382	1.741	A	0.277	2.36	0.609	0.8	1	34.302	1.724	0.172	A
40.00-30.00			B	0.241	2.465	0.6	0.8	1	30.337			
			C	0.191	2.627	0.589	0.8	1	25.370			
T14	0.382	2.026	A	0.288	2.329	0.612	0.8	1	38.364	1.871	0.187	A
30.00-20.00			B	0.257	2.418	0.604	0.8	1	34.785			
			C	0.213	2.554	0.593	0.8	1	30.325			
T15	0.191	0.907	A	0.274	2.369	0.608	0.8	1	17.838	0.885	0.177	A
20.00-15.00			B	0.243	2.459	0.6	0.8	1	15.972			
			C	0.201	2.594	0.591	0.8	1	13.639			
T16	0.191	0.995	A	0.284	2.338	0.611	0.8	1	19.327	0.947	0.189	A
15.00-10.00			B	0.254	2.426	0.603	0.8	1	17.379			
			C	0.211	2.559	0.593	0.8	1	14.935			
T17	0.153	1.983	A	0.176	2.679	0.586	0.8	1	27.267	1.530	0.153	A
10.00-0.00			B	0.163	2.723	0.584	0.8	1	25.763			
			C	0.146	2.786	0.581	0.8	1	23.819			
Sum Weight:	4.516	17.879						OTM	1777.037 kip-ft	24.946		

Tower Forces - No Ice - Wind 90 To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 25 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	0.85	1	13.394	1.051	0.088	A
152.00-140.00			B	0.17	2.701	0.585	0.85	1	9.715			
			C	0.16	2.736	0.583	0.85	1	9.410			
T2	0.087	0.211	A	0.456	1.964	0.676	0.85	1	11.210	0.693	0.139	A
140.00-135.00			B	0.195	2.611	0.589	0.85	1	4.823			
			C	0.182	2.659	0.587	0.85	1	4.687			
T3	0.101	0.184	A	0.424	2.019	0.662	0.85	1	10.852	0.683	0.137	A
135.00-130.00			B	0.164	2.721	0.584	0.85	1	4.155			
			C	0.191	2.626	0.589	0.85	1	4.957			
T4	0.104	0.219	A	0.4	2.063	0.652	0.85	1	10.811	0.687	0.137	A
130.00-125.00			B	0.165	2.717	0.584	0.85	1	4.445			
			C	0.182	2.657	0.587	0.85	1	5.042			
T5	0.105	0.212	A	0.388	2.087	0.647	0.85	1	11.132	0.708	0.142	A
125.00-120.00			B	0.169	2.704	0.585	0.85	1	4.906			
			C	0.182	2.656	0.587	0.85	1	5.446			
T6	0.521	1.382	A	0.377	2.112	0.642	0.85	1	53.690	3.350	0.168	A
120.00-100.00			B	0.222	2.525	0.595	0.85	1	33.422			
			C	0.197	2.608	0.59	0.85	1	31.202			
T7	0.711	2.073	A	0.364	2.139	0.638	0.85	1	63.532	3.791	0.190	A
100.00-80.00			B	0.295	2.308	0.615	0.85	1	52.645			
			C	0.234	2.485	0.598	0.85	1	44.538			
T8	0.242	0.721	A	0.317	2.252	0.621	0.85	1	20.198	1.212	0.182	A
80.00-73.33			B	0.259	2.411	0.604	0.85	1	16.865			
			C	0.197	2.606	0.59	0.85	1	13.798			
T9	0.252	0.972	A	0.332	2.214	0.626	0.85	1	22.754	1.308	0.196	A
73.33-66.67			B	0.29	2.323	0.613	0.85	1	20.204			
			C	0.228	2.505	0.597	0.85	1	16.940			
T10	0.252	0.998	A	0.321	2.242	0.623	0.85	1	23.073	1.305	0.196	A
66.67-60.00			B	0.282	2.345	0.611	0.85	1	20.619			
			C	0.222	2.525	0.595	0.85	1	17.309			
T11	0.381	1.354	A	0.283	2.341	0.611	0.85	1	31.709	1.799	0.180	A
60.00-50.00			B	0.242	2.46	0.6	0.85	1	27.648			
			C	0.183	2.654	0.587	0.85	1	22.429			
T12	0.381	1.565	A	0.289	2.326	0.613	0.85	1	34.936	1.859	0.186	A
50.00-40.00			B	0.251	2.435	0.602	0.85	1	30.962			
			C	0.197	2.606	0.59	0.85	1	26.001			
T13	0.382	1.741	A	0.277	2.36	0.609	0.85	1	35.445	1.781	0.178	A
40.00-30.00			B	0.241	2.465	0.6	0.85	1	31.509			
			C	0.191	2.627	0.589	0.85	1	26.656			
T14	0.382	2.026	A	0.288	2.329	0.612	0.85	1	39.756	1.939	0.194	A
30.00-20.00			B	0.257	2.418	0.604	0.85	1	36.230			
			C	0.213	2.554	0.593	0.85	1	31.918			
T15	0.191	0.907	A	0.274	2.369	0.608	0.85	1	18.211	0.903	0.181	A
20.00-15.00			B	0.243	2.459	0.6	0.85	1	16.368			
			C	0.201	2.594	0.591	0.85	1	14.105			
T16	0.191	0.995	A	0.284	2.338	0.611	0.85	1	19.789	0.969	0.194	A
15.00-10.00			B	0.254	2.426	0.603	0.85	1	17.861			
			C	0.211	2.559	0.593	0.85	1	15.480			
T17	0.153	1.983	A	0.176	2.679	0.586	0.85	1	28.586	1.604	0.160	A
10.00-0.00			B	0.163	2.723	0.584	0.85	1	27.091			
			C	0.146	2.786	0.581	0.85	1	25.189			
Sum Weight:	4.516	17.879						OTM	1819.872 kip-ft	25.645		

Tower Forces - With Ice - Wind Normal To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 26 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
T1	0.213	0.649	A	0.364	2.139	0.638	1	1	20.958	1.077	0.090	A
152.00-140.00			B	0.259	2.41	0.604	1	1	15.302			
			C	0.25	2.439	0.602	1	1	15.298			
T2	0.225	0.358	A	0.656	1.78	0.79	1	1	18.770	0.789	0.158	A
140.00-135.00			B	0.292	2.317	0.614	1	1	7.485			
			C	0.277	2.358	0.609	1	1	7.609			
T3	0.265	0.298	A	0.628	1.789	0.771	1	1	18.834	0.787	0.157	A
135.00-130.00			B	0.249	2.441	0.602	1	1	6.500			
			C	0.293	2.314	0.614	1	1	8.183			
T4	0.271	0.336	A	0.595	1.807	0.75	1	1	18.559	0.775	0.155	A
130.00-125.00			B	0.254	2.426	0.603	1	1	7.028			
			C	0.28	2.351	0.61	1	1	8.310			
T5	0.275	0.344	A	0.576	1.821	0.739	1	1	18.864	0.785	0.157	A
125.00-120.00			B	0.255	2.422	0.603	1	1	7.634			
			C	0.276	2.362	0.609	1	1	8.800			
T6	1.355	2.086	A	0.537	1.857	0.717	1	1	85.503	3.518	0.176	A
120.00-100.00			B	0.304	2.285	0.617	1	1	49.018			
			C	0.269	2.383	0.607	1	1	46.950			
T7	1.871	3.212	A	0.508	1.89	0.702	1	1	97.322	3.848	0.192	A
100.00-80.00			B	0.406	2.052	0.654	1	1	77.579			
			C	0.316	2.254	0.621	1	1	65.370			
T8	0.639	1.038	A	0.447	1.979	0.672	1	1	30.965	1.225	0.184	A
80.00-73.33			B	0.361	2.145	0.637	1	1	25.042			
			C	0.267	2.387	0.606	1	1	20.325			
T9	0.666	1.409	A	0.461	1.956	0.678	1	1	34.255	1.305	0.196	A
73.33-66.67			B	0.402	2.06	0.652	1	1	29.875			
			C	0.308	2.274	0.618	1	1	24.780			
T10	0.668	1.450	A	0.445	1.981	0.671	1	1	34.620	1.298	0.195	A
66.67-60.00			B	0.391	2.082	0.648	1	1	30.457			
			C	0.3	2.296	0.616	1	1	25.299			
T11	1.010	1.856	A	0.398	2.068	0.651	1	1	47.872	1.800	0.180	A
60.00-50.00			B	0.337	2.203	0.628	1	1	40.673			
			C	0.245	2.454	0.6	1	1	32.568			
T12	1.014	2.213	A	0.402	2.06	0.652	1	1	52.101	1.843	0.184	A
50.00-40.00			B	0.345	2.183	0.631	1	1	45.066			
			C	0.264	2.396	0.606	1	1	37.627			
T13	1.017	2.411	A	0.385	2.095	0.645	1	1	52.673	1.763	0.176	A
40.00-30.00			B	0.331	2.217	0.626	1	1	45.758			
			C	0.257	2.416	0.604	1	1	38.721			
T14	1.017	2.946	A	0.393	2.077	0.649	1	1	57.804	1.886	0.189	A
30.00-20.00			B	0.349	2.175	0.632	1	1	51.924			
			C	0.287	2.332	0.612	1	1	46.054			
T15	0.509	1.349	A	0.374	2.118	0.641	1	1	26.194	0.872	0.174	A
20.00-15.00			B	0.33	2.22	0.625	1	1	23.084			
			C	0.269	2.382	0.607	1	1	19.941			
T16	0.509	1.476	A	0.388	2.088	0.647	1	1	28.605	0.938	0.188	A
15.00-10.00			B	0.343	2.188	0.63	1	1	25.244			
			C	0.281	2.349	0.61	1	1	21.794			
T17	0.407	2.705	A	0.225	2.514	0.596	1	1	39.369	1.555	0.155	A
10.00-0.00			B	0.206	2.575	0.592	1	1	36.905			
			C	0.181	2.662	0.587	1	1	34.314			
Sum Weight:	11.932	26.137						OTM	1891.316 kip-ft	26.063		

Tower Forces - With Ice - Wind 45 To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 27 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.213	0.649	A	0.364	2.139	0.638	0.825	1	20.018	1.029	0.086	A
152.00-140.00			B	0.259	2.41	0.604	0.825	1	14.210			
			C	0.25	2.439	0.602	0.825	1	13.978			
T2	0.225	0.358	A	0.656	1.78	0.79	0.825	1	18.530	0.779	0.156	A
140.00-135.00			B	0.292	2.317	0.614	0.825	1	6.992			
			C	0.277	2.358	0.609	0.825	1	6.901			
T3	0.265	0.298	A	0.628	1.789	0.771	0.825	1	18.578	0.777	0.155	A
135.00-130.00			B	0.249	2.441	0.602	0.825	1	6.157			
			C	0.293	2.314	0.614	0.825	1	7.590			
T4	0.271	0.336	A	0.595	1.807	0.75	0.825	1	18.280	0.764	0.153	A
130.00-125.00			B	0.254	2.426	0.603	0.825	1	6.673			
			C	0.28	2.351	0.61	0.825	1	7.697			
T5	0.275	0.344	A	0.576	1.821	0.739	0.825	1	18.529	0.771	0.154	A
125.00-120.00			B	0.255	2.422	0.603	0.825	1	7.199			
			C	0.276	2.362	0.609	0.825	1	8.108			
T6	1.355	2.086	A	0.537	1.857	0.717	0.825	1	80.615	3.317	0.166	A
120.00-100.00			B	0.304	2.285	0.617	0.825	1	43.918			
			C	0.269	2.383	0.607	0.825	1	40.686			
T7	1.871	3.212	A	0.508	1.89	0.702	0.825	1	90.843	3.592	0.180	A
100.00-80.00			B	0.406	2.052	0.654	0.825	1	70.882			
			C	0.316	2.254	0.621	0.825	1	57.118			
T8	0.639	1.038	A	0.447	1.979	0.672	0.825	1	28.891	1.143	0.171	A
80.00-73.33			B	0.361	2.145	0.637	0.825	1	22.975			
			C	0.267	2.387	0.606	0.825	1	17.784			
T9	0.666	1.409	A	0.461	1.956	0.678	0.825	1	31.739	1.209	0.181	A
73.33-66.67			B	0.402	2.06	0.652	0.825	1	27.349			
			C	0.308	2.274	0.618	0.825	1	21.705			
T10	0.668	1.450	A	0.445	1.981	0.671	0.825	1	32.024	1.201	0.180	A
66.67-60.00			B	0.391	2.082	0.648	0.825	1	27.857			
			C	0.3	2.296	0.616	0.825	1	22.146			
T11	1.010	1.856	A	0.398	2.068	0.651	0.825	1	44.443	1.671	0.167	A
60.00-50.00			B	0.337	2.203	0.628	0.825	1	37.304			
			C	0.245	2.454	0.6	0.825	1	28.492			
T12	1.014	2.213	A	0.402	2.06	0.652	0.825	1	48.100	1.701	0.170	A
50.00-40.00			B	0.345	2.183	0.631	0.825	1	41.076			
			C	0.264	2.396	0.606	0.825	1	32.876			
T13	1.017	2.411	A	0.385	2.095	0.645	0.825	1	48.545	1.625	0.162	A
40.00-30.00			B	0.331	2.217	0.626	0.825	1	41.643			
			C	0.257	2.416	0.604	0.825	1	33.855			
T14	1.017	2.946	A	0.393	2.077	0.649	0.825	1	53.007	1.730	0.173	A
30.00-20.00			B	0.349	2.175	0.632	0.825	1	47.007			
			C	0.287	2.332	0.612	0.825	1	40.215			
T15	0.509	1.349	A	0.374	2.118	0.641	0.825	1	25.002	0.832	0.166	A
20.00-15.00			B	0.33	2.22	0.625	0.825	1	21.847			
			C	0.269	2.382	0.607	0.825	1	18.264			
T16	0.509	1.476	A	0.388	2.088	0.647	0.825	1	27.067	0.888	0.178	A
15.00-10.00			B	0.343	2.188	0.63	0.825	1	23.684			
			C	0.281	2.349	0.61	0.825	1	19.821			
T17	0.407	2.705	A	0.225	2.514	0.596	0.825	1	34.564	1.365	0.137	A
10.00-0.00			B	0.206	2.575	0.592	0.825	1	32.118			
			C	0.181	2.662	0.587	0.825	1	29.244			
Sum Weight:	11.932	26.137						OTM	1789.451 kip-ft	24.391		

Tower Forces - With Ice - Wind 60 To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 28 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.213	0.649	A	0.364	2.139	0.638	0.8	1	19.884	1.022	0.085	A
152.00-140.00			B	0.259	2.41	0.604	0.8	1	14.054			
			C	0.25	2.439	0.602	0.8	1	13.790			
T2	0.225	0.358	A	0.656	1.78	0.79	0.8	1	18.496	0.777	0.155	A
140.00-135.00			B	0.292	2.317	0.614	0.8	1	6.922			
			C	0.277	2.358	0.609	0.8	1	6.799			
T3	0.265	0.298	A	0.628	1.789	0.771	0.8	1	18.541	0.775	0.155	A
135.00-130.00			B	0.249	2.441	0.602	0.8	1	6.108			
			C	0.293	2.314	0.614	0.8	1	7.505			
T4	0.271	0.336	A	0.595	1.807	0.75	0.8	1	18.240	0.762	0.152	A
130.00-125.00			B	0.254	2.426	0.603	0.8	1	6.622			
			C	0.28	2.351	0.61	0.8	1	7.610			
T5	0.275	0.344	A	0.576	1.821	0.739	0.8	1	18.482	0.769	0.154	A
125.00-120.00			B	0.255	2.422	0.603	0.8	1	7.137			
			C	0.276	2.362	0.609	0.8	1	8.009			
T6	1.355	2.086	A	0.537	1.857	0.717	0.8	1	79.917	3.288	0.164	A
120.00-100.00			B	0.304	2.285	0.617	0.8	1	43.189			
			C	0.269	2.383	0.607	0.8	1	39.791			
T7	1.871	3.212	A	0.508	1.89	0.702	0.8	1	89.918	3.555	0.178	A
100.00-80.00			B	0.406	2.052	0.654	0.8	1	69.926			
			C	0.316	2.254	0.621	0.8	1	55.939			
T8	0.639	1.038	A	0.447	1.979	0.672	0.8	1	28.595	1.131	0.170	A
80.00-73.33			B	0.361	2.145	0.637	0.8	1	22.680			
			C	0.267	2.387	0.606	0.8	1	17.421			
T9	0.666	1.409	A	0.461	1.956	0.678	0.8	1	31.380	1.195	0.179	A
73.33-66.67			B	0.402	2.06	0.652	0.8	1	26.989			
			C	0.308	2.274	0.618	0.8	1	21.266			
T10	0.668	1.450	A	0.445	1.981	0.671	0.8	1	31.653	1.187	0.178	A
66.67-60.00			B	0.391	2.082	0.648	0.8	1	27.485			
			C	0.3	2.296	0.616	0.8	1	21.696			
T11	1.010	1.856	A	0.398	2.068	0.651	0.8	1	43.954	1.652	0.165	A
60.00-50.00			B	0.337	2.203	0.628	0.8	1	36.823			
			C	0.245	2.454	0.6	0.8	1	27.910			
T12	1.014	2.213	A	0.402	2.06	0.652	0.8	1	47.528	1.681	0.168	A
50.00-40.00			B	0.345	2.183	0.631	0.8	1	40.505			
			C	0.264	2.396	0.606	0.8	1	32.197			
T13	1.017	2.411	A	0.385	2.095	0.645	0.8	1	47.955	1.605	0.160	A
40.00-30.00			B	0.331	2.217	0.626	0.8	1	41.055			
			C	0.257	2.416	0.604	0.8	1	33.160			
T14	1.017	2.946	A	0.393	2.077	0.649	0.8	1	52.322	1.707	0.171	A
30.00-20.00			B	0.349	2.175	0.632	0.8	1	46.305			
			C	0.287	2.332	0.612	0.8	1	39.381			
T15	0.509	1.349	A	0.374	2.118	0.641	0.8	1	24.832	0.826	0.165	A
20.00-15.00			B	0.33	2.22	0.625	0.8	1	21.671			
			C	0.269	2.382	0.607	0.8	1	18.024			
T16	0.509	1.476	A	0.388	2.088	0.647	0.8	1	26.847	0.881	0.176	A
15.00-10.00			B	0.343	2.188	0.63	0.8	1	23.461			
			C	0.281	2.349	0.61	0.8	1	19.539			
T17	0.407	2.705	A	0.225	2.514	0.596	0.8	1	33.878	1.338	0.134	A
10.00-0.00			B	0.206	2.575	0.592	0.8	1	31.434			
			C	0.181	2.662	0.587	0.8	1	28.520			
Sum Weight:	11.932	26.137						OTM	1774.899 kip-ft	24.152		

Tower Forces - With Ice - Wind 90 To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 29 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.213	0.649	A	0.364	2.139	0.638	0.85	1	20.152	1.036	0.086	A
152.00-140.00			B	0.259	2.41	0.604	0.85	1	14.366			
			C	0.25	2.439	0.602	0.85	1	14.167			
T2	0.225	0.358	A	0.656	1.78	0.79	0.85	1	18.565	0.780	0.156	A
140.00-135.00			B	0.292	2.317	0.614	0.85	1	7.063			
			C	0.277	2.358	0.609	0.85	1	7.002			
T3	0.265	0.298	A	0.628	1.789	0.771	0.85	1	18.614	0.778	0.156	A
135.00-130.00			B	0.249	2.441	0.602	0.85	1	6.206			
			C	0.293	2.314	0.614	0.85	1	7.675			
T4	0.271	0.336	A	0.595	1.807	0.75	0.85	1	18.320	0.765	0.153	A
130.00-125.00			B	0.254	2.426	0.603	0.85	1	6.724			
			C	0.28	2.351	0.61	0.85	1	7.785			
T5	0.275	0.344	A	0.576	1.821	0.739	0.85	1	18.577	0.773	0.155	A
125.00-120.00			B	0.255	2.422	0.603	0.85	1	7.261			
			C	0.276	2.362	0.609	0.85	1	8.207			
T6	1.355	2.086	A	0.537	1.857	0.717	0.85	1	81.314	3.345	0.167	A
120.00-100.00			B	0.304	2.285	0.617	0.85	1	44.647			
			C	0.269	2.383	0.607	0.85	1	41.581			
T7	1.871	3.212	A	0.508	1.89	0.702	0.85	1	91.769	3.629	0.181	A
100.00-80.00			B	0.406	2.052	0.654	0.85	1	71.839			
			C	0.316	2.254	0.621	0.85	1	58.297			
T8	0.639	1.038	A	0.447	1.979	0.672	0.85	1	29.187	1.154	0.173	A
80.00-73.33			B	0.361	2.145	0.637	0.85	1	23.271			
			C	0.267	2.387	0.606	0.85	1	18.147			
T9	0.666	1.409	A	0.461	1.956	0.678	0.85	1	32.098	1.223	0.183	A
73.33-66.67			B	0.402	2.06	0.652	0.85	1	27.710			
			C	0.308	2.274	0.618	0.85	1	22.144			
T10	0.668	1.450	A	0.445	1.981	0.671	0.85	1	32.395	1.215	0.182	A
66.67-60.00			B	0.391	2.082	0.648	0.85	1	28.228			
			C	0.3	2.296	0.616	0.85	1	22.597			
T11	1.010	1.856	A	0.398	2.068	0.651	0.85	1	44.933	1.689	0.169	A
60.00-50.00			B	0.337	2.203	0.628	0.85	1	37.785			
			C	0.245	2.454	0.6	0.85	1	29.074			
T12	1.014	2.213	A	0.402	2.06	0.652	0.85	1	48.671	1.721	0.172	A
50.00-40.00			B	0.345	2.183	0.631	0.85	1	41.646			
			C	0.264	2.396	0.606	0.85	1	33.555			
T13	1.017	2.411	A	0.385	2.095	0.645	0.85	1	49.135	1.644	0.164	A
40.00-30.00			B	0.331	2.217	0.626	0.85	1	42.231			
			C	0.257	2.416	0.604	0.85	1	34.550			
T14	1.017	2.946	A	0.393	2.077	0.649	0.85	1	53.692	1.752	0.175	A
30.00-20.00			B	0.349	2.175	0.632	0.85	1	47.709			
			C	0.287	2.332	0.612	0.85	1	41.049			
T15	0.509	1.349	A	0.374	2.118	0.641	0.85	1	25.173	0.838	0.168	A
20.00-15.00			B	0.33	2.22	0.625	0.85	1	22.024			
			C	0.269	2.382	0.607	0.85	1	18.504			
T16	0.509	1.476	A	0.388	2.088	0.647	0.85	1	27.286	0.895	0.179	A
15.00-10.00			B	0.343	2.188	0.63	0.85	1	23.907			
			C	0.281	2.349	0.61	0.85	1	20.103			
T17	0.407	2.705	A	0.225	2.514	0.596	0.85	1	35.250	1.392	0.139	A
10.00-0.00			B	0.206	2.575	0.592	0.85	1	32.802			
			C	0.181	2.662	0.587	0.85	1	29.968			
Sum Weight:	11.932	26.137						OTM	1804.003 kip-ft	24.630		

Tower Forces - Service - Wind Normal To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 30 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	1	1	14.264	0.387	0.032	A
152.00-140.00			B	0.17	2.701	0.585	1	1	10.673			
			C	0.16	2.736	0.583	1	1	10.468			
T2	0.087	0.211	A	0.456	1.964	0.676	1	1	11.505	0.246	0.049	A
140.00-135.00			B	0.195	2.611	0.589	1	1	5.261			
			C	0.182	2.659	0.587	1	1	5.218			
T3	0.101	0.184	A	0.424	2.019	0.662	1	1	11.063	0.241	0.048	A
135.00-130.00			B	0.164	2.721	0.584	1	1	4.461			
			C	0.191	2.626	0.589	1	1	5.363			
T4	0.104	0.219	A	0.4	2.063	0.652	1	1	11.040	0.243	0.049	A
130.00-125.00			B	0.165	2.717	0.584	1	1	4.763			
			C	0.182	2.657	0.587	1	1	5.464			
T5	0.105	0.212	A	0.388	2.087	0.647	1	1	11.419	0.251	0.050	A
125.00-120.00			B	0.169	2.704	0.585	1	1	5.296			
			C	0.182	2.656	0.587	1	1	5.940			
T6	0.521	1.382	A	0.377	2.112	0.642	1	1	57.523	1.242	0.062	A
120.00-100.00			B	0.222	2.525	0.595	1	1	37.557			
			C	0.197	2.608	0.59	1	1	35.829			
T7	0.711	2.073	A	0.364	2.139	0.638	1	1	68.967	1.424	0.071	A
100.00-80.00			B	0.295	2.308	0.615	1	1	58.385			
			C	0.234	2.485	0.598	1	1	50.992			
T8	0.242	0.721	A	0.317	2.252	0.621	1	1	21.877	0.454	0.068	A
80.00-73.33			B	0.259	2.411	0.604	1	1	18.603			
			C	0.197	2.606	0.59	1	1	15.746			
T9	0.252	0.972	A	0.332	2.214	0.626	1	1	24.868	0.495	0.074	A
73.33-66.67			B	0.29	2.323	0.613	1	1	22.390			
			C	0.228	2.505	0.597	1	1	19.378			
T10	0.252	0.998	A	0.321	2.242	0.623	1	1	25.255	0.494	0.074	A
66.67-60.00			B	0.282	2.345	0.611	1	1	22.870			
			C	0.222	2.525	0.595	1	1	19.813			
T11	0.381	1.354	A	0.283	2.341	0.611	1	1	34.480	0.677	0.068	A
60.00-50.00			B	0.242	2.46	0.6	1	1	30.481			
			C	0.183	2.654	0.587	1	1	25.573			
T12	0.381	1.565	A	0.289	2.326	0.613	1	1	38.259	0.705	0.070	A
50.00-40.00			B	0.251	2.435	0.602	1	1	34.372			
			C	0.197	2.606	0.59	1	1	29.756			
T13	0.382	1.741	A	0.277	2.36	0.609	1	1	38.874	0.676	0.068	A
40.00-30.00			B	0.241	2.465	0.6	1	1	35.025			
			C	0.191	2.627	0.589	1	1	30.513			
T14	0.382	2.026	A	0.288	2.329	0.612	1	1	43.931	0.741	0.074	A
30.00-20.00			B	0.257	2.418	0.604	1	1	40.565			
			C	0.213	2.554	0.593	1	1	36.698			
T15	0.191	0.907	A	0.274	2.369	0.608	1	1	19.327	0.332	0.066	A
20.00-15.00			B	0.243	2.459	0.6	1	1	17.556			
			C	0.201	2.594	0.591	1	1	15.503			
T16	0.191	0.995	A	0.284	2.338	0.611	1	1	21.173	0.359	0.072	A
15.00-10.00			B	0.254	2.426	0.603	1	1	19.304			
			C	0.211	2.559	0.593	1	1	17.117			
T17	0.153	1.983	A	0.176	2.679	0.586	1	1	32.543	0.632	0.063	A
10.00-0.00			B	0.163	2.723	0.584	1	1	31.075			
			C	0.146	2.786	0.581	1	1	29.300			
Sum Weight:	4.516	17.879						OTM	674.179 kip-ft	9.599		

Tower Forces - Service - Wind 45 To Face

tnxTower	Job: 152' ROHN SSV Tower	Page: 31 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	0.825	1	13.249	0.360	0.030	A
152.00-140.00			B	0.17	2.701	0.585	0.825	1	9.555			
			C	0.16	2.736	0.583	0.825	1	9.234			
T2	0.087	0.211	A	0.456	1.964	0.676	0.825	1	11.161	0.239	0.048	A
140.00-135.00			B	0.195	2.611	0.589	0.825	1	4.750			
			C	0.182	2.659	0.587	0.825	1	4.599			
T3	0.101	0.184	A	0.424	2.019	0.662	0.825	1	10.817	0.235	0.047	A
135.00-130.00			B	0.164	2.721	0.584	0.825	1	4.104			
			C	0.191	2.626	0.589	0.825	1	4.889			
T4	0.104	0.219	A	0.4	2.063	0.652	0.825	1	10.773	0.237	0.047	A
130.00-125.00			B	0.165	2.717	0.584	0.825	1	4.392			
			C	0.182	2.657	0.587	0.825	1	4.972			
T5	0.105	0.212	A	0.388	2.087	0.647	0.825	1	11.084	0.244	0.049	A
125.00-120.00			B	0.169	2.704	0.585	0.825	1	4.841			
			C	0.182	2.656	0.587	0.825	1	5.364			
T6	0.521	1.382	A	0.377	2.112	0.642	0.825	1	53.051	1.145	0.057	A
120.00-100.00			B	0.222	2.525	0.595	0.825	1	32.733			
			C	0.197	2.608	0.59	0.825	1	30.431			
T7	0.711	2.073	A	0.364	2.139	0.638	0.825	1	62.627	1.293	0.065	A
100.00-80.00			B	0.295	2.308	0.615	0.825	1	51.688			
			C	0.234	2.485	0.598	0.825	1	43.463			
T8	0.242	0.721	A	0.317	2.252	0.621	0.825	1	19.919	0.414	0.062	A
80.00-73.33			B	0.259	2.411	0.604	0.825	1	16.576			
			C	0.197	2.606	0.59	0.825	1	13.474			
T9	0.252	0.972	A	0.332	2.214	0.626	0.825	1	22.402	0.446	0.067	A
73.33-66.67			B	0.29	2.323	0.613	0.825	1	19.840			
			C	0.228	2.505	0.597	0.825	1	16.534			
T10	0.252	0.998	A	0.321	2.242	0.623	0.825	1	22.710	0.445	0.067	A
66.67-60.00			B	0.282	2.345	0.611	0.825	1	20.244			
			C	0.222	2.525	0.595	0.825	1	16.892			
T11	0.381	1.354	A	0.283	2.341	0.611	0.825	1	31.247	0.613	0.061	A
60.00-50.00			B	0.242	2.46	0.6	0.825	1	27.176			
			C	0.183	2.654	0.587	0.825	1	21.905			
T12	0.381	1.565	A	0.289	2.326	0.613	0.825	1	34.382	0.633	0.063	A
50.00-40.00			B	0.251	2.435	0.602	0.825	1	30.393			
			C	0.197	2.606	0.59	0.825	1	25.375			
T13	0.382	1.741	A	0.277	2.36	0.609	0.825	1	34.874	0.606	0.061	A
40.00-30.00			B	0.241	2.465	0.6	0.825	1	30.923			
			C	0.191	2.627	0.589	0.825	1	26.013			
T14	0.382	2.026	A	0.288	2.329	0.612	0.825	1	39.060	0.659	0.066	A
30.00-20.00			B	0.257	2.418	0.604	0.825	1	35.508			
			C	0.213	2.554	0.593	0.825	1	31.122			
T15	0.191	0.907	A	0.274	2.369	0.608	0.825	1	18.024	0.309	0.062	A
20.00-15.00			B	0.243	2.459	0.6	0.825	1	16.170			
			C	0.201	2.594	0.591	0.825	1	13.872			
T16	0.191	0.995	A	0.284	2.338	0.611	0.825	1	19.558	0.331	0.066	A
15.00-10.00			B	0.254	2.426	0.603	0.825	1	17.620			
			C	0.211	2.559	0.593	0.825	1	15.208			
T17	0.153	1.983	A	0.176	2.679	0.586	0.825	1	27.926	0.542	0.054	A
10.00-0.00			B	0.163	2.723	0.584	0.825	1	26.427			
			C	0.146	2.786	0.581	0.825	1	24.504			
Sum Weight:	4.516	17.879						OTM	622.303 kip-ft	8.753		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	0.8	1	13.104	0.356	0.030	A
152.00-140.00			B	0.17	2.701	0.585	0.8	1	9.396			
			C	0.16	2.736	0.583	0.8	1	9.058			
T2	0.087	0.211	A	0.456	1.964	0.676	0.8	1	11.112	0.238	0.048	A
140.00-135.00			B	0.195	2.611	0.589	0.8	1	4.677			
			C	0.182	2.659	0.587	0.8	1	4.510			
T3	0.101	0.184	A	0.424	2.019	0.662	0.8	1	10.782	0.235	0.047	A
135.00-130.00			B	0.164	2.721	0.584	0.8	1	4.054			
			C	0.191	2.626	0.589	0.8	1	4.822			
T4	0.104	0.219	A	0.4	2.063	0.652	0.8	1	10.735	0.236	0.047	A
130.00-125.00			B	0.165	2.717	0.584	0.8	1	4.339			
			C	0.182	2.657	0.587	0.8	1	4.901			
T5	0.105	0.212	A	0.388	2.087	0.647	0.8	1	11.036	0.243	0.049	A
125.00-120.00			B	0.169	2.704	0.585	0.8	1	4.776			
			C	0.182	2.656	0.587	0.8	1	5.282			
T6	0.521	1.382	A	0.377	2.112	0.642	0.8	1	52.412	1.132	0.057	A
120.00-100.00			B	0.222	2.525	0.595	0.8	1	32.044			
			C	0.197	2.608	0.59	0.8	1	29.660			
T7	0.711	2.073	A	0.364	2.139	0.638	0.8	1	61.721	1.274	0.064	A
100.00-80.00			B	0.295	2.308	0.615	0.8	1	50.732			
			C	0.234	2.485	0.598	0.8	1	42.387			
T8	0.242	0.721	A	0.317	2.252	0.621	0.8	1	19.639	0.408	0.061	A
80.00-73.33			B	0.259	2.411	0.604	0.8	1	16.286			
			C	0.197	2.606	0.59	0.8	1	13.149			
T9	0.252	0.972	A	0.332	2.214	0.626	0.8	1	22.049	0.439	0.066	A
73.33-66.67			B	0.29	2.323	0.613	0.8	1	19.476			
			C	0.228	2.505	0.597	0.8	1	16.127			
T10	0.252	0.998	A	0.321	2.242	0.623	0.8	1	22.346	0.437	0.066	A
66.67-60.00			B	0.282	2.345	0.611	0.8	1	19.869			
			C	0.222	2.525	0.595	0.8	1	16.474			
T11	0.381	1.354	A	0.283	2.341	0.611	0.8	1	30.785	0.604	0.060	A
60.00-50.00			B	0.242	2.46	0.6	0.8	1	26.704			
			C	0.183	2.654	0.587	0.8	1	21.381			
T12	0.381	1.565	A	0.289	2.326	0.613	0.8	1	33.828	0.623	0.062	A
50.00-40.00			B	0.251	2.435	0.602	0.8	1	29.825			
			C	0.197	2.606	0.59	0.8	1	24.749			
T13	0.382	1.741	A	0.277	2.36	0.609	0.8	1	34.302	0.597	0.060	A
40.00-30.00			B	0.241	2.465	0.6	0.8	1	30.337			
			C	0.191	2.627	0.589	0.8	1	25.370			
T14	0.382	2.026	A	0.288	2.329	0.612	0.8	1	38.364	0.647	0.065	A
30.00-20.00			B	0.257	2.418	0.604	0.8	1	34.785			
			C	0.213	2.554	0.593	0.8	1	30.325			
T15	0.191	0.907	A	0.274	2.369	0.608	0.8	1	17.838	0.306	0.061	A
20.00-15.00			B	0.243	2.459	0.6	0.8	1	15.972			
			C	0.201	2.594	0.591	0.8	1	13.639			
T16	0.191	0.995	A	0.284	2.338	0.611	0.8	1	19.327	0.328	0.066	A
15.00-10.00			B	0.254	2.426	0.603	0.8	1	17.379			
			C	0.211	2.559	0.593	0.8	1	14.935			
T17	0.153	1.983	A	0.176	2.679	0.586	0.8	1	27.267	0.529	0.053	A
10.00-0.00			B	0.163	2.723	0.584	0.8	1	25.763			
			C	0.146	2.786	0.581	0.8	1	23.819			
Sum Weight:	4.516	17.879						OTM	614.892 kip-ft	8.632		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
T1	0.081	0.335	A	0.246	2.45	0.601	0.85	1	13.394	0.364	0.030	A
152.00-140.00			B	0.17	2.701	0.585	0.85	1	9.715			
			C	0.16	2.736	0.583	0.85	1	9.410			
T2	0.087	0.211	A	0.456	1.964	0.676	0.85	1	11.210	0.240	0.048	A
140.00-135.00			B	0.195	2.611	0.589	0.85	1	4.823			
			C	0.182	2.659	0.587	0.85	1	4.687			
T3	0.101	0.184	A	0.424	2.019	0.662	0.85	1	10.852	0.236	0.047	A
135.00-130.00			B	0.164	2.721	0.584	0.85	1	4.155			
			C	0.191	2.626	0.589	0.85	1	4.957			
T4	0.104	0.219	A	0.4	2.063	0.652	0.85	1	10.811	0.238	0.048	A
130.00-125.00			B	0.165	2.717	0.584	0.85	1	4.445			
			C	0.182	2.657	0.587	0.85	1	5.042			
T5	0.105	0.212	A	0.388	2.087	0.647	0.85	1	11.132	0.245	0.049	A
125.00-120.00			B	0.169	2.704	0.585	0.85	1	4.906			
			C	0.182	2.656	0.587	0.85	1	5.446			
T6	0.521	1.382	A	0.377	2.112	0.642	0.85	1	53.690	1.159	0.058	A
120.00-100.00			B	0.222	2.525	0.595	0.85	1	33.422			
			C	0.197	2.608	0.59	0.85	1	31.202			
T7	0.711	2.073	A	0.364	2.139	0.638	0.85	1	63.532	1.312	0.066	A
100.00-80.00			B	0.295	2.308	0.615	0.85	1	52.645			
			C	0.234	2.485	0.598	0.85	1	44.538			
T8	0.242	0.721	A	0.317	2.252	0.621	0.85	1	20.198	0.419	0.063	A
80.00-73.33			B	0.259	2.411	0.604	0.85	1	16.865			
			C	0.197	2.606	0.59	0.85	1	13.798			
T9	0.252	0.972	A	0.332	2.214	0.626	0.85	1	22.754	0.453	0.068	A
73.33-66.67			B	0.29	2.323	0.613	0.85	1	20.204			
			C	0.228	2.505	0.597	0.85	1	16.940			
T10	0.252	0.998	A	0.321	2.242	0.623	0.85	1	23.073	0.452	0.068	A
66.67-60.00			B	0.282	2.345	0.611	0.85	1	20.619			
			C	0.222	2.525	0.595	0.85	1	17.309			
T11	0.381	1.354	A	0.283	2.341	0.611	0.85	1	31.709	0.622	0.062	A
60.00-50.00			B	0.242	2.46	0.6	0.85	1	27.648			
			C	0.183	2.654	0.587	0.85	1	22.429			
T12	0.381	1.565	A	0.289	2.326	0.613	0.85	1	34.936	0.643	0.064	A
50.00-40.00			B	0.251	2.435	0.602	0.85	1	30.962			
			C	0.197	2.606	0.59	0.85	1	26.001			
T13	0.382	1.741	A	0.277	2.36	0.609	0.85	1	35.445	0.616	0.062	A
40.00-30.00			B	0.241	2.465	0.6	0.85	1	31.509			
			C	0.191	2.627	0.589	0.85	1	26.656			
T14	0.382	2.026	A	0.288	2.329	0.612	0.85	1	39.756	0.671	0.067	A
30.00-20.00			B	0.257	2.418	0.604	0.85	1	36.230			
			C	0.213	2.554	0.593	0.85	1	31.918			
T15	0.191	0.907	A	0.274	2.369	0.608	0.85	1	18.211	0.313	0.063	A
20.00-15.00			B	0.243	2.459	0.6	0.85	1	16.368			
			C	0.201	2.594	0.591	0.85	1	14.105			
T16	0.191	0.995	A	0.284	2.338	0.611	0.85	1	19.789	0.335	0.067	A
15.00-10.00			B	0.254	2.426	0.603	0.85	1	17.861			
			C	0.211	2.559	0.593	0.85	1	15.480			
T17	0.153	1.983	A	0.176	2.679	0.586	0.85	1	28.586	0.555	0.055	A
10.00-0.00			B	0.163	2.723	0.584	0.85	1	27.091			
			C	0.146	2.786	0.581	0.85	1	25.189			
Sum Weight:	4.516	17.879						OTM	629.713 kip-ft	8.874		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	7.490					
Bracing Weight	10.389					
Total Member Self-Weight	17.879			-14.393	2.631	
Total Weight	30.630			-14.393	2.631	
Wind 0 deg - No Ice		-0.048	-42.668	-3735.236	9.745	-6.872
Wind 30 deg - No Ice		20.116	-35.112	-3121.892	-1769.246	-14.293
Wind 45 deg - No Ice		28.226	-28.408	-2534.385	-2491.720	-16.436
Wind 60 deg - No Ice		34.285	-19.895	-1782.984	-3036.368	-17.342
Wind 90 deg - No Ice		40.315	0.048	-7.279	-3553.445	-16.706
Wind 120 deg - No Ice		36.754	21.376	1852.189	-3191.867	-12.688
Wind 135 deg - No Ice		28.294	28.475	2515.659	-2501.780	-6.739
Wind 150 deg - No Ice		20.199	35.160	3100.220	-1781.568	-2.413
Wind 180 deg - No Ice		0.048	39.873	3535.110	-4.483	6.854
Wind 210 deg - No Ice		-20.116	35.112	3093.106	1774.507	14.293
Wind 225 deg - No Ice		-28.226	28.408	2505.598	2496.981	16.436
Wind 240 deg - No Ice		-36.706	21.293	1839.867	3190.014	19.561
Wind 270 deg - No Ice		-40.315	-0.048	-21.507	3558.706	16.706
Wind 300 deg - No Ice		-34.333	-19.978	-1795.306	3048.743	10.488
Wind 315 deg - No Ice		-28.294	-28.475	-2544.446	2507.041	6.739
Wind 330 deg - No Ice		-20.199	-35.160	-3129.006	1786.829	2.413
Member Ice	8.258					
Total Weight Ice	50.785			-32.365	1.104	
Wind 0 deg - Ice		-0.037	-39.400	-3497.333	6.601	-6.030
Wind 30 deg - Ice		18.851	-32.862	-2954.751	-1668.830	-13.569
Wind 45 deg - Ice		26.510	-26.651	-2406.551	-2353.095	-15.900
Wind 60 deg - Ice		32.275	-18.712	-1701.880	-2871.598	-17.067
Wind 90 deg - Ice		37.767	0.037	-26.868	-3348.285	-16.634
Wind 120 deg - Ice		33.967	19.732	1704.879	-2977.916	-12.519
Wind 135 deg - Ice		26.562	26.704	2349.594	-2360.869	-7.316
Wind 150 deg - Ice		18.915	32.898	2895.518	-1678.351	-3.065
Wind 180 deg - Ice		0.037	37.489	3316.184	-4.393	6.076
Wind 210 deg - Ice		-18.851	32.862	2890.020	1671.038	13.569
Wind 225 deg - Ice		-26.510	26.651	2341.820	2355.302	15.900
Wind 240 deg - Ice		-33.930	19.668	1695.358	2974.627	18.549
Wind 270 deg - Ice		-37.767	-0.037	-37.863	3350.493	16.634
Wind 300 deg - Ice		-32.312	-18.776	-1711.401	2879.303	10.991
Wind 315 deg - Ice		-26.562	-26.704	-2414.325	2363.077	7.316
Wind 330 deg - Ice		-18.915	-32.898	-2960.248	1680.559	3.065
Total Weight	30.630			-14.393	2.631	
Wind 0 deg - Service		-0.017	-14.764	-1287.672	5.017	-2.378
Wind 30 deg - Service		6.961	-12.150	-1075.442	-610.551	-4.946
Wind 45 deg - Service		9.767	-9.830	-872.152	-860.542	-5.687
Wind 60 deg - Service		11.863	-6.884	-612.152	-1049.001	-6.001
Wind 90 deg - Service		13.950	0.017	2.279	-1227.921	-5.781
Wind 120 deg - Service		12.718	7.396	645.693	-1102.807	-4.390
Wind 135 deg - Service		9.790	9.853	875.268	-864.023	-2.332
Wind 150 deg - Service		6.989	12.166	1077.538	-614.815	-0.835
Wind 180 deg - Service		0.017	13.797	1228.019	0.094	2.372
Wind 210 deg - Service		-6.961	12.150	1075.076	615.661	4.946
Wind 225 deg - Service		-9.767	9.830	871.786	865.652	5.687
Wind 240 deg - Service		-12.701	7.368	641.430	1105.456	6.768
Wind 270 deg - Service		-13.950	-0.017	-2.645	1233.031	5.781
Wind 300 deg - Service		-11.880	-6.913	-616.416	1056.573	3.629
Wind 315 deg - Service		-9.790	-9.853	-875.634	869.133	2.332
Wind 330 deg - Service		-6.989	-12.166	-1077.904	619.925	0.835

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	152 - 140	Leg	Max Tension	15	5.545	-0.129	0.082
			Max. Compression	2	-7.005	0.380	0.130
			Max. Mx	2	-7.005	0.380	0.130
			Max. My	17	-0.575	-0.005	-0.501
			Max. Vy	2	-2.884	0.380	0.130
			Max. Vx	8	1.087	-0.077	-0.403
		Diagonal	Max Tension	6	1.913	0.000	0.000
			Max. Compression	14	-1.933	0.000	0.000
			Max. Mx	26	1.463	0.006	0.000
			Max. My	11	-0.352	0.001	0.002
			Max. Vy	26	-0.006	0.006	0.000
			Max. Vx	11	-0.000	0.001	0.002
		Top Girt	Max Tension	2	0.287	0.000	0.000
			Max. Compression	10	-0.284	0.000	0.000
			Max. Mx	18	0.005	-0.019	0.000
			Max. My	33	0.057	0.000	0.000
			Max. Vy	18	0.012	0.000	0.000
			Max. Vx	33	-0.000	0.000	0.000
T2	140 - 135	Leg	Max Tension	10	10.097	0.259	0.008
			Max. Compression	2	-12.198	-0.031	-0.005
			Max. Mx	2	-7.155	0.598	0.130
			Max. My	9	-0.615	0.019	-0.516
			Max. Vy	2	-2.894	-0.031	-0.005
			Max. Vx	8	1.200	0.003	0.063
		Diagonal	Max Tension	14	2.772	0.000	0.000
			Max. Compression	14	-2.784	0.000	0.000
			Max. Mx	23	0.671	0.008	-0.001
			Max. My	6	-2.774	0.002	-0.003
			Max. Vy	23	0.008	0.008	-0.001
			Max. Vx	23	0.001	0.000	0.000
		Top Girt	Max Tension	7	0.143	0.000	0.000
			Max. Compression	15	-0.157	0.000	0.000
			Max. Mx	18	-0.024	-0.019	0.000
			Max. My	21	0.056	0.000	0.001
			Max. Vy	18	0.012	0.000	0.000
			Max. Vx	21	-0.000	0.000	0.000
T3	135 - 130	Leg	Max Tension	10	12.167	0.024	0.005
			Max. Compression	2	-14.574	0.472	0.024
			Max. Mx	10	11.963	-0.508	-0.025
			Max. My	14	-1.334	-0.017	-0.508
			Max. Vy	10	0.166	-0.508	-0.025
			Max. Vx	14	0.201	-0.017	-0.508
		Diagonal	Max Tension	14	2.597	0.000	0.000
			Max. Compression	14	-2.604	0.000	0.000
			Max. Mx	24	1.585	0.010	-0.001
			Max. My	24	-0.163	0.008	-0.002
			Max. Vy	21	0.008	0.009	-0.001
			Max. Vx	24	0.001	0.000	0.000
T4	130 - 125	Leg	Max Tension	15	17.123	-0.503	-0.024
			Max. Compression	2	-20.775	0.345	0.001
			Max. Mx	15	17.123	0.821	-0.024
			Max. My	11	-1.257	-0.013	-0.811
			Max. Vy	10	-0.671	-0.508	-0.025
			Max. Vx	14	-0.667	-0.017	-0.508
		Diagonal	Max Tension	14	3.414	0.000	0.000
			Max. Compression	14	-3.469	0.000	0.000
			Max. Mx	33	2.660	0.012	-0.001
			Max. My	32	-2.632	0.007	0.003
			Max. Vy	33	0.010	0.012	-0.001
			Max. Vx	32	-0.001	0.000	0.000
T5	125 - 120	Leg	Max Tension	10	23.076	-0.385	-0.002

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-27.848	-0.042	0.015
			Max. Mx	5	22.766	-0.385	0.007
			Max. My	6	-2.011	-0.019	0.363
			Max. Vy	10	-0.111	-0.385	-0.002
			Max. Vx	6	0.107	-0.019	0.363
		Diagonal	Max Tension	14	3.932	0.000	0.000
			Max. Compression	14	-3.935	0.000	0.000
			Max. Mx	33	2.660	0.017	-0.001
			Max. My	27	-3.339	0.008	-0.003
			Max. Vy	33	0.012	0.017	-0.001
			Max. Vx	27	0.001	0.000	0.000
T6	120 - 100	Leg	Max Tension	10	46.748	0.036	0.004
			Max. Compression	2	-53.532	0.944	-0.016
			Max. Mx	10	46.618	-0.972	0.019
			Max. My	6	-2.789	-0.020	0.975
			Max. Vy	32	0.292	-0.926	-0.035
			Max. Vx	11	-0.313	-0.014	0.945
		Diagonal	Max Tension	11	4.462	0.000	0.000
			Max. Compression	11	-4.536	0.000	0.000
			Max. Mx	19	3.416	0.030	0.003
			Max. My	28	-4.280	0.011	-0.006
			Max. Vy	33	0.018	0.028	0.003
			Max. Vx	28	0.002	0.000	0.000
T7	100 - 80	Leg	Max Tension	10	76.079	0.259	0.023
			Max. Compression	2	-87.770	0.064	0.012
			Max. Mx	5	54.689	1.218	0.017
			Max. My	6	-3.624	0.017	-1.423
			Max. Vy	10	-1.106	-0.972	0.019
			Max. Vx	6	1.218	-0.020	0.975
		Diagonal	Max Tension	11	6.785	0.000	0.000
			Max. Compression	11	-6.811	0.000	0.000
			Max. Mx	19	5.060	0.066	0.004
			Max. My	28	-5.854	0.012	-0.008
			Max. Vy	19	-0.029	0.066	0.004
			Max. Vx	21	-0.002	0.000	0.000
		Secondary Horizontal	Max Tension	2	1.522	0.000	0.000
			Max. Compression	2	-1.522	0.000	0.000
			Max. Mx	18	0.146	-0.121	0.000
			Max. My	30	1.443	0.000	0.004
			Max. Vy	18	0.039	0.000	0.000
			Max. Vx	30	-0.001	0.000	0.000
T8	80 - 73.3333	Leg	Max Tension	10	86.443	-0.116	-0.008
			Max. Compression	2	-99.398	0.188	0.009
			Max. Mx	27	76.882	-0.409	-0.011
			Max. My	6	-5.103	-0.023	0.538
			Max. Vy	27	0.115	-0.409	-0.011
			Max. Vx	6	-0.110	-0.023	0.538
		Diagonal	Max Tension	11	6.675	0.000	0.000
			Max. Compression	11	-6.732	0.000	0.000
			Max. Mx	32	5.099	0.050	-0.006
			Max. My	22	-5.464	0.025	0.008
			Max. Vy	32	0.028	0.050	-0.006
			Max. Vx	22	-0.002	0.000	0.000
T9	73.3333 - 66.6667	Leg	Max Tension	10	95.924	-0.224	-0.009
			Max. Compression	2	-110.240	-0.242	0.005
			Max. Mx	2	-110.112	0.552	-0.004
			Max. My	6	-5.234	-0.023	0.538
			Max. Vy	2	0.255	0.552	-0.004
			Max. Vx	23	0.373	-0.225	0.523

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	11	6.939	0.000	0.000
			Max. Compression	11	-7.054	0.000	0.000
			Max. Mx	19	5.075	0.077	0.007
			Max. My	30	-0.059	0.062	-0.009
			Max. Vy	33	0.035	0.074	0.007
			Max. Vx	30	-0.002	0.000	0.000
		Secondary Horizontal	Max Tension	2	1.912	0.000	0.000
			Max. Compression	2	-1.912	0.000	0.000
			Max. Mx	18	0.174	-0.149	0.000
			Max. My	30	1.813	0.000	0.005
			Max. Vy	18	0.044	0.000	0.000
			Max. Vx	30	-0.001	0.000	0.000
T10	66.6667 - 60	Leg	Max Tension	10	105.395	0.089	-0.004
			Max. Compression	2	-121.355	0.250	-0.026
			Max. Mx	19	-118.532	0.789	-0.001
			Max. My	14	-6.757	-0.020	-0.596
			Max. Vy	2	-0.314	0.712	-0.005
			Max. Vx	14	0.272	-0.020	-0.596
		Diagonal	Max Tension	11	7.028	0.000	0.000
			Max. Compression	11	-7.058	0.000	0.000
			Max. Mx	33	4.537	0.065	-0.007
			Max. My	21	-6.198	0.029	0.013
			Max. Vy	33	0.035	0.065	-0.007
			Max. Vx	21	-0.003	0.000	0.000
		Secondary Horizontal	Max Tension	2	2.105	0.000	0.000
			Max. Compression	2	-2.105	0.000	0.000
			Max. Mx	18	0.195	-0.165	0.000
			Max. My	30	2.005	0.000	0.005
			Max. Vy	18	0.046	0.000	0.000
			Max. Vx	30	-0.001	0.000	0.000
T11	60 - 50	Leg	Max Tension	10	116.922	-0.289	0.017
			Max. Compression	2	-134.577	0.166	0.171
			Max. Mx	27	105.701	-0.666	0.011
			Max. My	17	-5.419	-0.048	0.990
			Max. Vy	27	-0.171	-0.666	0.011
			Max. Vx	13	0.138	-0.158	-0.777
		Diagonal	Max Tension	11	8.016	0.000	0.000
			Max. Compression	28	-8.309	0.000	0.000
			Max. Mx	32	5.504	0.130	-0.012
			Max. My	22	-7.102	0.072	0.018
			Max. Vy	32	0.048	0.130	-0.012
			Max. Vx	22	-0.003	0.000	0.000
T12	50 - 40	Leg	Max Tension	10	130.548	-0.286	-0.138
			Max. Compression	2	-150.413	-0.224	0.163
			Max. Mx	19	-146.969	1.150	-0.292
			Max. My	17	-6.253	-0.057	1.597
			Max. Vy	19	0.555	1.150	-0.292
			Max. Vx	17	-0.554	-0.057	1.597
		Diagonal	Max Tension	28	8.408	0.000	0.000
			Max. Compression	11	-8.427	0.000	0.000
			Max. Mx	19	6.752	0.108	0.011
			Max. My	30	0.364	0.085	-0.014
			Max. Vy	32	0.047	0.106	0.011
			Max. Vx	30	-0.003	0.000	0.000
		Secondary Horizontal	Max Tension	2	2.608	0.000	0.000
			Max. Compression	2	-2.608	0.000	0.000
			Max. Mx	18	0.237	-0.210	0.000
			Max. My	30	2.498	0.000	0.006

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	18	-0.052	0.000	0.000
			Max. Vx	30	-0.001	0.000	0.000
T13	40 - 30	Leg	Max Tension	15	143.822	-0.044	0.079
			Max. Compression	2	-165.964	-1.839	-0.084
			Max. Mx	32	131.304	2.142	-0.072
			Max. My	17	-6.615	-0.057	1.597
			Max. Vy	2	0.634	1.254	0.070
			Max. Vx	14	-0.527	-0.053	-1.412
		Diagonal	Max Tension	11	8.680	0.000	0.000
			Max. Compression	28	-9.133	0.000	0.000
			Max. Mx	32	5.980	0.180	-0.015
			Max. My	21	-8.525	0.102	0.022
			Max. Vy	32	0.061	0.180	-0.015
			Max. Vx	21	-0.004	0.000	0.000
		Secondary Horizontal	Max Tension	2	2.878	0.000	0.000
			Max. Compression	2	-2.878	0.000	0.000
			Max. Mx	18	0.239	-0.237	0.000
			Max. My	30	2.734	0.000	0.007
			Max. Vy	18	0.055	0.000	0.000
			Max. Vx	30	-0.002	0.000	0.000
T14	30 - 20	Leg	Max Tension	15	156.005	1.344	-0.080
			Max. Compression	2	-180.723	1.854	-0.033
			Max. Mx	19	-176.461	-5.689	0.006
			Max. My	14	-9.092	-0.172	-1.305
			Max. Vy	19	3.127	2.121	-0.029
			Max. Vx	14	0.598	-0.237	-0.996
		Diagonal	Max Tension	4	8.882	0.048	-0.003
			Max. Compression	13	-9.440	0.000	0.000
			Max. Mx	19	7.300	0.128	-0.005
			Max. My	28	-8.388	-0.004	-0.008
			Max. Vy	19	-0.045	0.128	-0.005
			Max. Vx	28	-0.002	0.000	0.000
		Horizontal	Max Tension	2	3.135	0.000	0.000
			Max. Compression	2	-3.135	0.040	0.027
			Max. Mx	32	1.635	0.048	0.034
			Max. My	22	1.626	0.046	0.036
			Max. Vy	32	0.035	0.048	0.034
			Max. Vx	31	-0.005	0.000	0.000
		Redund Horz 1 Bracing	Max Tension	2	3.135	0.000	0.000
			Max. Compression	2	-3.135	0.000	0.000
			Max. Mx	33	2.329	-0.013	0.000
			Max. My	31	2.571	0.000	0.000
			Max. Vy	33	0.012	0.000	0.000
			Max. Vx	31	-0.000	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	2	1.828	0.000	0.000
			Max. Compression	2	-1.828	0.000	0.000
			Max. Mx	34	0.901	-0.016	0.000
			Max. My	30	0.499	0.000	0.001
			Max. Vy	34	0.012	0.000	0.000
			Max. Vx	30	-0.000	0.000	0.000
T15	20 - 15	Leg	Max Tension	15	168.059	2.957	-0.022
			Max. Compression	2	-195.137	4.227	0.035
			Max. Mx	19	-188.339	-5.689	0.005
			Max. My	14	-10.001	-0.237	-0.996
			Max. Vy	19	-3.854	3.935	0.031
			Max. Vx	6	0.575	0.146	0.779
		Diagonal	Max Tension	11	8.708	0.152	0.003
			Max. Compression	28	-9.424	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	13	6.633	0.160	0.003
			Max. My	21	-8.017	-0.102	0.007
			Max. Vy	19	-0.050	0.154	-0.005
			Max. Vx	27	0.002	0.000	0.000
		Redund Horz 1 Bracing	Max Tension	2	3.384	0.000	0.000
			Max. Compression	2	-3.384	0.000	0.000
			Max. Mx	29	-0.506	-0.015	0.000
			Max. My	20	2.936	0.000	0.000
			Max. Vy	29	0.012	0.000	0.000
			Max. Vx	20	-0.000	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	2	1.965	0.000	0.000
			Max. Compression	2	-1.965	0.000	0.000
			Max. Mx	20	0.826	-0.018	0.000
			Max. My	30	0.016	0.000	0.001
			Max. Vy	20	0.013	0.000	0.000
			Max. Vx	30	-0.000	0.000	0.000
T16	15 - 10	Leg	Max Tension	15	168.952	-0.655	0.027
			Max. Compression	2	-196.759	0.040	0.004
			Max. Mx	30	-186.456	1.985	-0.041
			Max. My	14	-10.497	-0.113	-1.856
			Max. Vy	32	-0.643	-1.306	0.028
			Max. Vx	14	0.540	-0.113	-1.856
		Diagonal	Max Tension	11	8.275	0.000	0.000
			Max. Compression	28	-9.482	0.000	0.000
			Max. Mx	19	5.271	-0.121	0.000
			Max. My	30	-0.575	0.000	0.004
			Max. Vy	19	0.044	0.000	0.000
			Max. Vx	30	-0.002	0.000	0.000
		Horizontal	Max Tension	2	3.413	0.000	0.000
			Max. Compression	2	-3.413	0.051	0.032
			Max. Mx	19	-0.770	0.116	0.071
			Max. My	29	-3.054	0.112	0.087
			Max. Vy	19	-0.047	0.116	0.071
			Max. Vx	29	0.010	0.000	0.000
T17	10 - 0	Leg	Max Tension	15	180.992	-0.231	-0.047
			Max. Compression	2	-211.031	0.000	-0.000
			Max. Mx	30	-202.207	1.985	-0.041
			Max. My	14	-10.879	-0.113	-1.856
			Max. Vy	30	0.271	1.985	-0.041
			Max. Vx	14	-0.304	-0.113	-1.856
		Diagonal	Max Tension	28	10.258	0.000	0.000
			Max. Compression	11	-9.358	0.000	0.000
			Max. Mx	17	3.929	0.156	-0.016
			Max. My	29	6.521	0.121	-0.021
			Max. Vy	34	0.063	0.111	0.019
			Max. Vx	29	-0.003	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	13	215.279	21.636	-13.133
	Max. H_x	13	215.279	21.636	-13.133
	Max. H_z	21	-163.779	-19.060	12.430

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Vert	5	-185.864	-19.035	11.544
	Min. H_x	22	-169.171	-19.968	12.056
	Min. H_z	13	215.279	21.636	-13.133
Leg B	Max. Vert	7	215.712	-21.772	-12.993
	Max. H_x	32	-169.809	20.089	11.933
	Max. H_z	33	-164.478	19.219	12.247
	Min. Vert	15	-186.804	19.179	11.410
	Min. H_x	7	215.712	-21.772	-12.993
	Min. H_z	7	215.712	-21.772	-12.993
Leg A	Max. Vert	2	218.213	-0.189	25.467
	Max. H_x	14	11.406	3.954	0.791
	Max. H_z	2	218.213	-0.189	25.467
	Min. Vert	10	-186.646	0.188	-22.387
	Min. H_x	6	10.613	-3.959	0.730
	Min. H_z	27	-167.966	0.168	-23.392

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	30.630	0.000	-0.000	-14.394	2.631	0.000
Dead+Wind 0 deg - No Ice	30.629	-0.048	-42.660	-3743.452	9.781	-6.877
Dead+Wind 30 deg - No Ice	30.629	20.112	-35.105	-3128.806	-1773.047	-14.334
Dead+Wind 45 deg - No Ice	30.629	28.220	-28.402	-2539.989	-2497.105	-16.488
Dead+Wind 60 deg - No Ice	30.629	34.277	-19.890	-1786.910	-3042.977	-17.405
Dead+Wind 90 deg - No Ice	30.629	40.307	0.048	-7.257	-3561.245	-16.768
Dead+Wind 120 deg - No Ice	30.629	36.747	21.372	1856.245	-3198.881	-12.753
Dead+Wind 135 deg - No Ice	30.629	28.288	28.469	2521.197	-2507.357	-6.795
Dead+Wind 150 deg - No Ice	30.629	20.195	35.152	3107.005	-1785.538	-2.448
Dead+Wind 180 deg - No Ice	30.629	0.048	39.864	3542.838	-4.487	6.860
Dead+Wind 210 deg - No Ice	30.629	-20.113	35.105	3099.859	1778.471	14.336
Dead+Wind 225 deg - No Ice	30.629	-28.221	28.402	2511.094	2502.550	16.500
Dead+Wind 240 deg - No Ice	30.629	-36.699	21.289	1843.877	3197.023	19.631
Dead+Wind 270 deg - No Ice	30.629	-40.307	-0.047	-21.525	3566.513	16.768
Dead+Wind 300 deg - No Ice	30.629	-34.325	-19.973	-1799.256	3055.383	10.547
Dead+Wind 315 deg - No Ice	30.629	-28.287	-28.469	-2550.066	2512.473	6.786
Dead+Wind 330 deg - No Ice	30.630	-20.194	-35.153	-3135.925	1790.684	2.455
Dead+Ice+Temp	50.785	0.000	0.000	-32.460	1.105	-0.000
Dead+Wind 0 deg+Ice+Temp	50.785	-0.037	-39.387	-3509.339	6.667	-6.025
Dead+Wind 30 deg+Ice+Temp	50.785	18.844	-32.850	-2964.957	-1674.485	-13.624
Dead+Wind 45 deg+Ice+Temp	50.785	26.500	-26.642	-2414.856	-2361.101	-15.982
Dead+Wind 60 deg+Ice+Temp	50.785	32.263	-18.705	-1707.740	-2881.416	-17.175
Dead+Wind 90 deg+Ice+Temp	50.785	37.753	0.038	-26.921	-3359.786	-16.767
Dead+Wind 120 deg+Ice+Temp	50.785	33.955	19.725	1710.666	-2988.176	-12.640
Dead+Wind 135 deg+Ice+Temp	50.785	26.553	26.694	2357.688	-2369.060	-7.409
Dead+Wind 150 deg+Ice+Temp	50.785	18.909	32.887	2905.455	-1684.177	-3.131
Dead+Wind 180 deg+Ice+Temp	50.785	0.037	37.475	3327.565	-4.405	6.071
Dead+Wind 210 deg+Ice+Temp	50.785	-18.845	32.850	2899.922	1676.842	13.626
Dead+Wind 225 deg+Ice+Temp	50.785	-26.501	26.642	2349.866	2363.471	15.986
Dead+Wind 240 deg+Ice+Temp	50.785	-33.919	19.661	1701.064	2984.885	18.667
Dead+Wind 270 deg+Ice+Temp	50.785	-37.753	-0.036	-37.966	3361.991	16.767
Dead+Wind 300 deg+Ice+Temp	50.785	-32.300	-18.769	-1717.295	2889.146	11.105
Dead+Wind 315 deg+Ice+Temp	50.785	-26.552	-26.694	-2422.654	2371.124	7.404
Dead+Wind 330 deg+Ice+Temp	50.785	-18.908	-32.887	-2970.470	1686.269	3.132
Dead+Wind 0 deg - Service	30.630	-0.017	-14.761	-1304.747	5.103	-2.380
Dead+Wind 30 deg - Service	30.630	6.959	-12.147	-1092.070	-611.813	-4.958

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 45 deg - Service	30.630	9.765	-9.827	-888.330	-862.357	-5.705
Dead+Wind 60 deg - Service	30.630	11.861	-6.883	-627.753	-1051.239	-6.024
Dead+Wind 90 deg - Service	30.630	13.947	0.017	-11.956	-1230.555	-5.806
Dead+Wind 120 deg - Service	30.630	12.715	7.395	632.867	-1105.153	-4.412
Dead+Wind 135 deg - Service	30.630	9.788	9.851	862.960	-865.868	-2.349
Dead+Wind 150 deg - Service	30.630	6.988	12.164	1065.672	-616.106	-0.844
Dead+Wind 180 deg - Service	30.630	0.017	13.794	1216.489	0.167	2.375
Dead+Wind 210 deg - Service	30.630	-6.959	12.147	1063.202	617.101	4.958
Dead+Wind 225 deg - Service	30.629	-9.765	9.827	859.468	867.648	5.710
Dead+Wind 240 deg - Service	30.630	-12.699	7.366	628.590	1107.954	6.792
Dead+Wind 270 deg - Service	30.630	-13.947	-0.016	-16.893	1235.823	5.806
Dead+Wind 300 deg - Service	30.630	-11.877	-6.911	-632.027	1058.976	3.650
Dead+Wind 315 deg - Service	30.630	-9.788	-9.851	-891.820	871.118	2.347
Dead+Wind 330 deg - Service	30.630	-6.988	-12.163	-1094.537	621.358	0.844

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-30.630	0.000	-0.000	30.630	0.000	0.000%
2	-0.048	-30.630	-42.668	0.048	30.629	42.660	0.015%
3	20.116	-30.630	-35.112	-20.112	30.629	35.105	0.017%
4	28.226	-30.630	-28.408	-28.220	30.629	28.402	0.017%
5	34.285	-30.630	-19.895	-34.277	30.629	19.890	0.018%
6	40.315	-30.630	0.048	-40.307	30.629	-0.048	0.017%
7	36.754	-30.630	21.376	-36.747	30.629	-21.372	0.015%
8	28.294	-30.630	28.475	-28.288	30.629	-28.469	0.016%
9	20.199	-30.630	35.160	-20.195	30.629	-35.152	0.017%
10	0.048	-30.630	39.873	-0.048	30.629	-39.864	0.018%
11	-20.116	-30.630	35.112	20.113	30.629	-35.105	0.017%
12	-28.226	-30.630	28.408	28.221	30.629	-28.402	0.016%
13	-36.706	-30.630	21.293	36.699	30.629	-21.289	0.015%
14	-40.315	-30.630	-0.048	40.307	30.629	0.047	0.017%
15	-34.333	-30.630	-19.978	34.325	30.629	19.973	0.018%
16	-28.294	-30.630	-28.475	28.287	30.629	28.469	0.017%
17	-20.199	-30.630	-35.160	20.194	30.630	35.153	0.017%
18	0.000	-50.785	0.000	-0.000	50.785	-0.000	0.000%
19	-0.037	-50.785	-39.400	0.037	50.785	39.387	0.021%
20	18.851	-50.785	-32.862	-18.844	50.785	32.850	0.021%
21	26.510	-50.785	-26.651	-26.500	50.785	26.642	0.022%
22	32.275	-50.785	-18.712	-32.263	50.785	18.705	0.022%
23	37.767	-50.785	0.037	-37.753	50.785	-0.038	0.021%
24	33.967	-50.785	19.732	-33.955	50.785	-19.725	0.020%
25	26.562	-50.785	26.704	-26.553	50.785	-26.694	0.020%
26	18.915	-50.785	32.898	-18.909	50.785	-32.887	0.021%
27	0.037	-50.785	37.489	-0.037	50.785	-37.475	0.022%
28	-18.851	-50.785	32.862	18.845	50.785	-32.850	0.021%
29	-26.510	-50.785	26.651	26.501	50.785	-26.642	0.020%
30	-33.930	-50.785	19.668	33.919	50.785	-19.661	0.020%
31	-37.767	-50.785	-0.037	37.753	50.785	0.036	0.021%
32	-32.312	-50.785	-18.776	32.300	50.785	18.769	0.022%
33	-26.562	-50.785	-26.704	26.552	50.785	26.694	0.022%
34	-18.915	-50.785	-32.898	18.908	50.785	32.887	0.021%
35	-0.017	-30.630	-14.764	0.017	30.630	14.761	0.009%
36	6.961	-30.630	-12.150	-6.959	30.630	12.147	0.009%
37	9.767	-30.630	-9.830	-9.765	30.630	9.827	0.009%
38	11.863	-30.630	-6.884	-11.861	30.630	6.883	0.009%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
39	13.950	-30.630	0.017	-13.947	30.630	-0.017	0.009%
40	12.718	-30.630	7.396	-12.715	30.630	-7.395	0.009%
41	9.790	-30.630	9.853	-9.788	30.630	-9.851	0.009%
42	6.989	-30.630	12.166	-6.988	30.630	-12.164	0.009%
43	0.017	-30.630	13.797	-0.017	30.630	-13.794	0.009%
44	-6.961	-30.630	12.150	6.959	30.630	-12.147	0.009%
45	-9.767	-30.630	9.830	9.765	30.629	-9.827	0.008%
46	-12.701	-30.630	7.368	12.699	30.630	-7.366	0.009%
47	-13.950	-30.630	-0.017	13.947	30.630	0.016	0.009%
48	-11.880	-30.630	-6.913	11.877	30.630	6.911	0.009%
49	-9.790	-30.630	-9.853	9.788	30.630	9.851	0.009%
50	-6.989	-30.630	-12.166	6.988	30.630	12.163	0.009%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00017779	0.00035806
3	Yes	4	0.00019167	0.00038543
4	Yes	4	0.00020082	0.00040319
5	Yes	4	0.00020467	0.00041067
6	Yes	4	0.00019222	0.00038603
7	Yes	4	0.00017795	0.00035795
8	Yes	4	0.00018259	0.00036807
9	Yes	4	0.00019202	0.00038658
10	Yes	4	0.00020472	0.00041174
11	Yes	4	0.00019222	0.00038637
12	Yes	4	0.00018273	0.00036759
13	Yes	4	0.00017807	0.00035745
14	Yes	4	0.00019243	0.00038624
15	Yes	4	0.00020467	0.00041116
16	Yes	4	0.00020077	0.00040369
17	Yes	4	0.00019168	0.00038590
18	Yes	4	0.00000001	0.00006286
19	Yes	4	0.00032323	0.00062149
20	Yes	4	0.00033729	0.00064645
21	Yes	4	0.00034607	0.00066301
22	Yes	4	0.00034969	0.00067014
23	Yes	4	0.00033716	0.00064716
24	Yes	4	0.00032377	0.00062148
25	Yes	4	0.00032811	0.00063066
26	Yes	4	0.00033683	0.00064757
27	Yes	4	0.00034929	0.00067140
28	Yes	4	0.00033769	0.00064714
29	Yes	4	0.00032884	0.00062987
30	Yes	4	0.00032422	0.00062058
31	Yes	4	0.00033731	0.00064700
32	Yes	4	0.00034936	0.00067048
33	Yes	4	0.00034542	0.00066336
34	Yes	4	0.00033637	0.00064673
35	Yes	4	0.00000001	0.00037003
36	Yes	4	0.00000001	0.00037930
37	Yes	4	0.00000001	0.00038538
38	Yes	4	0.00000001	0.00038800
39	Yes	4	0.00000001	0.00037924

40	Yes	4	0.00000001	0.00036938
41	Yes	4	0.00000001	0.00037297
42	Yes	4	0.00000001	0.00037905
43	Yes	4	0.00000001	0.00038773
44	Yes	4	0.00000001	0.00037857
45	Yes	4	0.00000001	0.00037228
46	Yes	4	0.00000001	0.00036869
47	Yes	4	0.00000001	0.00037881
48	Yes	4	0.00000001	0.00038780
49	Yes	4	0.00000001	0.00038530
50	Yes	4	0.00000001	0.00037934

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	152 - 140	4.126	35	0.2317	0.0060
T2	140 - 135	3.536	35	0.2263	0.0065
T3	135 - 130	3.293	35	0.2222	0.0083
T4	130 - 125	3.057	35	0.2161	0.0096
T5	125 - 120	2.827	35	0.2079	0.0101
T6	120 - 100	2.604	35	0.1974	0.0103
T7	100 - 80	1.808	35	0.1679	0.0093
T8	80 - 73.3333	1.152	35	0.1259	0.0078
T9	73.3333 - 66.6667	0.971	35	0.1154	0.0071
T10	66.6667 - 60	0.807	35	0.1041	0.0064
T11	60 - 50	0.657	35	0.0923	0.0056
T12	50 - 40	0.465	35	0.0774	0.0047
T13	40 - 30	0.305	35	0.0619	0.0037
T14	30 - 20	0.179	35	0.0456	0.0029
T15	20 - 15	0.086	35	0.0290	0.0019
T16	15 - 10	0.048	35	0.0205	0.0014
T17	10 - 0	0.024	35	0.0117	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
162.00	20' 4-Bay Dipole	35	4.126	0.2317	0.0060	Inf
156.70	DB563K-CR	35	4.126	0.2317	0.0060	Inf
152.00	4' w/Radome	35	4.126	0.2317	0.0060	Inf
151.25	DB803KHE-YP	35	4.089	0.2315	0.0056	Inf
149.00	3' Sidearm	35	3.978	0.2307	0.0052	Inf
148.50	3' Sidearm	35	3.954	0.2305	0.0052	Inf
146.00	12'x2 1/2" STD Pipe Mount	35	3.831	0.2295	0.0052	955497
144.00	12' x 3" Dia Omni	35	3.732	0.2286	0.0055	697020
143.00	4'x3" Pipe Mount	35	3.683	0.2281	0.0059	530838
142.00	4'x4" Pipe Mount	35	3.634	0.2276	0.0062	356652
141.70	DB563K-CR	35	3.619	0.2274	0.0063	311902
140.00	4' w/Radome	35	3.536	0.2263	0.0065	142324
138.00	6' x 3" Dia Omni	35	3.438	0.2249	0.0068	65457
137.00	4' Side Mount Standoff (1)	35	3.389	0.2241	0.0072	50908
136.50	2' w/Radome	35	3.365	0.2237	0.0075	46343
135.00	4'x4" Pipe Mount	35	3.293	0.2222	0.0083	39431

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
133.50	3' Sidearm	35	3.221	0.2206	0.0089	39868
133.00	4' Side Mount Standoff (1)	35	3.197	0.2200	0.0090	41124
128.00	(2) DB980H90E-M	35	2.964	0.2131	0.0099	52797
122.00	DB254-A	35	2.692	0.2016	0.0102	32891
108.00	APX16DWV-16DWV-S-E-ACU w/ Mount	35	2.109	0.1795	0.0100	34034
101.00	2" Dia 10' Omni	35	1.845	0.1696	0.0094	37733
98.00	Valmont 13' Lightweight T-Frame	35	1.736	0.1642	0.0092	37065
95.50	3' Sidearm	35	1.648	0.1592	0.0090	35316
94.50	3' Sidearm	35	1.613	0.1570	0.0089	34570
89.50	3' Sidearm	35	1.445	0.1459	0.0086	31261
79.00	4' x 3" DIA Omni	35	1.124	0.1242	0.0077	26897
78.00	8' 2-Bay Dipole	35	1.096	0.1226	0.0076	26929
72.50	3' Sidearm	35	0.949	0.1140	0.0070	30388
72.00	Scala Yagi w/ Radome	35	0.937	0.1132	0.0070	31252
58.00	GPS	35	0.615	0.0890	0.0054	28642
57.00	2' Sidearm	35	0.595	0.0875	0.0053	29354
45.00	1.2M	35	0.381	0.0698	0.0042	38643
44.00	4'x4" Stand-off	35	0.365	0.0683	0.0041	38260

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	152 - 140	11.812	2	0.6618	0.0173
T2	140 - 135	10.128	2	0.6464	0.0250
T3	135 - 130	9.433	2	0.6349	0.0294
T4	130 - 125	8.759	2	0.6176	0.0319
T5	125 - 120	8.101	2	0.5945	0.0322
T6	120 - 100	7.463	2	0.5647	0.0320
T7	100 - 80	5.185	2	0.4805	0.0275
T8	80 - 73.3333	3.307	2	0.3606	0.0226
T9	73.3333 - 66.6667	2.786	2	0.3303	0.0206
T10	66.6667 - 60	2.317	2	0.2982	0.0185
T11	60 - 50	1.886	2	0.2643	0.0162
T12	50 - 40	1.335	2	0.2218	0.0135
T13	40 - 30	0.877	2	0.1773	0.0108
T14	30 - 20	0.514	2	0.1307	0.0083
T15	20 - 15	0.247	2	0.0832	0.0055
T16	15 - 10	0.139	2	0.0586	0.0040
T17	10 - 0	0.070	2	0.0336	0.0025

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
162.00	20' 4-Bay Dipole	2	11.812	0.6618	0.0173	334351
156.70	DB563K-CR	2	11.812	0.6618	0.0173	334351
152.00	4' w/Radome	2	11.812	0.6618	0.0173	334351
151.25	DB803KHE-YP	2	11.707	0.6611	0.0163	334351

tnxTower	Job: 152' ROHN SSV Tower	Page: 46 of 55
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project: 366 Old Long Ridge Road, Stamford, CT	Date: 09:11:12 10/31/14
	Client: Verizion, Sprint and AT&T / S.A. Evaluation	Designed by: MCD

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	3' Sidearm	2	11.391	0.6587	0.0149	334351
148.50	3' Sidearm	2	11.321	0.6582	0.0150	334351
146.00	12'x2 1/2" STD Pipe Mount	2	10.970	0.6554	0.0183	278627
144.00	12' x 3" Dia Omni	2	10.689	0.6528	0.0204	205320
143.00	4'x3" Pipe Mount	2	10.549	0.6513	0.0214	164904
142.00	4'x4" Pipe Mount	2	10.409	0.6498	0.0228	120792
141.70	DB563K-CR	2	10.367	0.6493	0.0232	108499
140.00	4' w/Radome	2	10.128	0.6464	0.0250	50750
138.00	6' x 3" Dia Omni	2	9.849	0.6424	0.0265	23525
137.00	4' Side Mount Standoff (1)	2	9.709	0.6401	0.0272	18174
136.50	2' w/Radome	2	9.640	0.6389	0.0278	16509
135.00	4'x4" Pipe Mount	2	9.433	0.6349	0.0294	13997
133.50	3' Sidearm	2	9.229	0.6303	0.0305	14147
133.00	4' Side Mount Standoff (1)	2	9.161	0.6286	0.0308	14598
128.00	(2) DB980H90E-M	2	8.494	0.6093	0.0322	18887
122.00	DB254-A	2	7.715	0.5767	0.0321	11581
108.00	APX16DWV-16DWV-S-E-ACU w/ Mount	2	6.047	0.5135	0.0297	11931
101.00	2" Dia 10' Omni	2	5.290	0.4854	0.0278	13259
98.00	Valmont 13' Lightweight T-Frame	2	4.979	0.4700	0.0270	13020
95.50	3' Sidearm	2	4.726	0.4556	0.0264	12394
94.50	3' Sidearm	2	4.627	0.4495	0.0261	12126
89.50	3' Sidearm	2	4.145	0.4175	0.0249	10945
79.00	4' x 3" DIA Omni	2	3.225	0.3556	0.0224	9406
78.00	8' 2-Bay Dipole	2	3.145	0.3509	0.0221	9424
72.50	3' Sidearm	2	2.725	0.3266	0.0204	10660
72.00	Scala Yagi w/ Radome	2	2.689	0.3243	0.0202	10959
58.00	GPS	2	1.767	0.2551	0.0156	10024
57.00	2' Sidearm	2	1.709	0.2508	0.0153	10276
45.00	1.2M	2	1.095	0.2001	0.0121	13466
44.00	4'x4" Stand-off	2	1.049	0.1956	0.0119	13319

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	152	Diagonal	A325N	0.500	1	1.913	2.719	0.704 ✔	1.333	Member Bearing
		Top Girt	A325N	0.500	1	0.287	2.719	0.106 ✔	1.333	Member Bearing
T2	140	Leg	A325N	0.625	4	1.421	13.435	0.106 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.500	1	2.772	4.078	0.680 ✔	1.333	Member Bearing
		Top Girt	A325N	0.500	1	0.143	2.719	0.053 ✔	1.333	Member Bearing
T3	135	Diagonal	A325N	0.500	1	2.597	4.078	0.637 ✔	1.333	Member Bearing
T4	130	Diagonal	A325N	0.500	1	3.469	4.123	0.841 ✔	1.333	Bolt Shear
T5	125	Diagonal	A325N	0.500	1	3.932	4.078	0.964 ✔	1.333	Member Bearing
T6	120	Leg	A325N	0.625	4	7.631	13.499	0.565 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.500	1	4.536	4.123	1.100 ✔	1.333	Bolt Shear
T7	100	Leg	A325N	0.750	4	13.847	19.430	0.713 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.500	1	6.785	5.438	1.248 ✔	1.333	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Secondary Horizontal	A325N	0.500	2	0.761	4.123	0.185 ✔	1.333	Bolt Shear
T8	80	Leg	A325N	0.875	4	21.611	26.458	0.817 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.500	1	6.675	5.438	1.228 ✔	1.333	Member Bearing
T9	73.3333	Diagonal	A325X	0.500	1	7.054	5.890	1.198 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.500	2	0.956	4.123	0.232 ✔	1.333	Bolt Shear
T10	66.6667	Diagonal	A325X	0.500	1	7.058	5.890	1.198 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.500	2	1.052	4.123	0.255 ✔	1.333	Bolt Shear
T11	60	Leg	A325N	0.875	4	29.230	26.458	1.105 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.625	1	8.016	8.496	0.944 ✔	1.333	Member Bearing
T12	50	Diagonal	A325X	0.625	1	8.408	8.496	0.990 ✔	1.333	Member Bearing
		Secondary Horizontal	A325N	0.500	2	1.304	4.123	0.316 ✔	1.333	Bolt Shear
T13	40	Leg	A325N	1.000	4	35.956	34.557	1.040 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.625	1	9.133	9.204	0.992 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.500	2	1.439	4.123	0.349 ✔	1.333	Bolt Shear
T14	30	Diagonal	A325X	0.625	1	8.882	8.496	1.045 ✔	1.333	Member Bearing
		Horizontal	A325N	0.500	2	1.567	4.123	0.380 ✔	1.333	Bolt Shear
T15	20	Leg	A325N	1.000	4	42.015	34.530	1.217 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.625	1	8.708	6.797	1.281 ✔	1.333	Member Bearing
T16	15	Diagonal	A325X	0.625	1	8.275	6.797	1.218 ✔	1.333	Member Bearing
		Horizontal	A325N	0.625	1	3.413	6.443	0.530 ✔	1.333	Bolt Shear
T17	10	Diagonal	A325X	0.625	1	10.258	8.496	1.207 ✔	1.333	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	152 - 140	ROHN 2 STD	12.00	3.94	60.1 K=1.00	22.695	1.075	-7.005	24.386	0.287 ✔
T2	140 - 135	ROHN 2.5 STD	5.01	4.84	61.3 K=1.00	22.491	1.704	-12.198	38.325	0.318 ✔
T3	135 - 130	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	22.122	1.704	-14.574	37.698	0.387 ✔
T4	130 - 125	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	22.122	1.704	-20.775	37.698	0.551 ✔
T5	125 - 120	ROHN 2.5 STD	5.01	5.01	63.4	22.122	1.704	-27.848	37.698	0.739

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T6	120 - 100	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	20.03	6.68	67.8 K=1.00	21.334	3.413	-53.532	72.823	0.735
T7	100 - 80	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	20.03	3.44	35.0 K=1.00	26.516	3.413	-87.770	90.509	0.970
T8	80 - 73.3333	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	6.68	6.68	55.1 K=1.00	23.542	5.275	-99.398	124.180	0.800
T9	73.3333 - 66.6667	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	6.68	3.42	28.2 K=1.00	27.368	5.275	-110.240	144.363	0.764
T10	66.6667 - 60	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	6.68	3.42	28.2 K=1.00	27.372	5.275	-121.355	144.385	0.840
T11	60 - 50	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	10.02	69.4 K=1.00	21.056	6.640	-134.577	139.821	0.962
T12	50 - 40	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	5.16	35.7 K=1.00	26.414	6.640	-150.413	175.395	0.858
T13	40 - 30	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	5.15	35.7 K=1.00	26.422	6.640	-165.964	175.450	0.946
T14	30 - 20	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	2.50	17.3 K=1.00	28.573	6.640	-180.723	189.733	0.953
T15	20 - 15	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	5.01	2.50	14.2 K=1.00	28.881	6.555	-195.137	189.312	1.031
T16	15 - 10	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	5.01	5.01	28.4 K=1.00	27.353	6.555	-196.759	179.298	1.097
T17	10 - 0	Rohn 5 STD w/ (6) 1.5"x0.5" Bars	10.02	10.02	56.9 K=1.00	23.237	9.761	-211.031	226.818	0.930

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	152 - 140	L1 1/2x1 1/2x1/8	7.65	3.61	146.2 K=1.00	6.982	0.359	-1.933	2.509	0.770
T2	140 - 135	L1 1/2x1 1/2x3/16	8.35	4.07	166.7 K=1.00	5.376	0.527	-2.784	2.835	0.982
T3	135 - 130	L1 1/2x1 1/2x3/16	8.86	4.33	177.2 K=1.00	4.755	0.527	-2.604	2.508	1.039
T4	130 - 125	L1 1/2x1 1/2x1/4	9.28	4.54	186.6 K=1.00	4.289	0.688	-3.469	2.949	1.176
T5	125 - 120	L1 3/4x1 3/4x3/16	9.70	4.75	166.1 K=1.00	5.415	0.621	-3.935	3.364	1.170
T6	120 - 100	L2x2x1/4	12.21	5.94	182.3 K=1.00	4.492	0.938	-4.536	4.213	1.077
T7	100 - 80	L2 1/2x2 1/2x1/4	13.96	6.82	166.7 K=1.00	5.372	1.190	-6.719	6.392	1.051
T8	80 - 73.3333	L2 1/2x2 1/2x1/4	14.57	7.10	173.6 K=1.00	4.958	1.190	-6.732	5.900	1.141
T9	73.3333 - 66.6667	L2 1/2x2 1/2x5/16	15.19	7.41	181.9 K=1.00	4.511	1.460	-7.054	6.586	1.071
T10	66.6667 - 60	L2 1/2x2 1/2x5/16	15.82	7.73	189.7	4.150	1.460	-7.058	6.059	1.165

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
					K=1.00					✓
T11	60 - 50	L3x3x5/16	18.20	8.94	182.2 K=1.00	4.501	1.780	-8.309	8.011	1.037 ✓
T12	50 - 40	L3x3x5/16	19.04	9.36	190.8 K=1.00	4.104	1.780	-8.427	7.305	1.154 ✓
T13	40 - 30	L3x3x3/8	19.90	9.79	200.2 K=1.00	3.726	2.110	-9.133	7.863	1.162 ✓
		KL/R > 200 (C) - 177								
T14	30 - 20	L3x3x5/16	10.64	10.08	131.2 K=1.00	8.681	1.780	-9.440	15.452	0.611 ✓
T15	20 - 15	L3 1/2x3 1/2x1/4	10.64	10.08	115.5 K=1.04	10.922	1.690	-9.424	18.459	0.511 ✓
T16	15 - 10	L3 1/2x3 1/2x1/4	11.08	10.49	181.3 K=1.00	4.542	1.690	-9.482	7.676	1.235 ✓
T17	10 - 0	L3 1/2x3 1/2x5/16	22.61	11.11	193.2 K=1.00	4.000	2.090	-9.358	8.360	1.119 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T14	30 - 20	L3x3x3/16	18.23	17.34	182.5 K=0.82	4.485	1.090	-3.135	4.888	0.641 ✓
T16	15 - 10	L2.875x2.875x0.25	19.26	18.38	247.8 K=1.00	2.432	1.375	-3.413	3.343	1.021 ✓
		KL/R > 200 (C) - 233								

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	100 - 80	L3x3x3/16	12.25	11.49	191.9 K=0.83	4.054	1.090	-1.522	4.419	0.344 ✓
T9	73.3333 - 66.6667	L3x3x3/16	13.64	12.82	210.2 K=0.81	3.379	1.090	-1.912	3.683	0.519 ✓
T10	66.6667 - 60	L3x3x3/16	14.34	13.52	219.7 K=0.81	3.093	1.090	-2.105	3.371	0.624 ✓
T12	50 - 40	L3x3x3/16	16.18	15.29	243.6 K=0.79	2.518	1.090	-2.608	2.744	0.951 ✓
T13	40 - 30	L3x3x3/16	17.18	16.29	256.9 K=0.78	2.263	1.090	-2.878	2.467	1.167 ✓
		KL/R > 250 (C) - 179								

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	152 - 140	L2x2x1/8	6.52	6.11	184.6 K=1.00	4.383	0.484	-0.284	2.123	0.134 ✔
T2	140 - 135	L2x2x1/8	6.57	6.12	184.8 K=1.00	4.372	0.484	-0.157	2.117	0.074 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T14	30 - 20	L2x2x1/4	4.56	4.28	131.3 K=1.00	8.665	0.938	-3.135	8.127	0.386 ✔
T15	20 - 15	L2x2x1/4	4.82	4.50	138.0 K=1.00	7.843	0.938	-3.384	7.357	0.460 ✔

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T14	30 - 20	L2x2x1/4	5.32	4.99	153.3 K=1.00	6.355	0.938	-1.828	5.961	0.307 ✔
T15	20 - 15	L2x2x1/4	5.53	5.18	158.9 K=1.00	5.915	0.938	-1.965	5.549	0.354 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	152 - 140	ROHN 2 STD	12.00	3.94	60.1	30.000	1.075	5.545	32.236	0.172 ✔
T2	140 - 135	ROHN 2.5 STD	5.01	4.84	61.3	30.000	1.704	10.097	51.121	0.198 ✔
T3	135 - 130	ROHN 2.5 STD	5.01	5.01	63.4	30.000	1.704	12.167	51.121	0.238 ✔
T4	130 - 125	ROHN 2.5 STD	5.01	5.01	63.4	30.000	1.704	17.123	51.121	0.335 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T5	125 - 120	ROHN 2.5 STD	5.01	5.01	63.4	30.000	1.704	23.076	51.121	0.451 ✓
T6	120 - 100	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	20.03	6.68	67.8	30.000	3.413	46.748	102.402	0.457 ✓
T7	100 - 80	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	20.03	3.44	35.0	30.000	3.413	76.079	102.402	0.743 ✓
T8	80 - 73.3333	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	6.68	6.68	55.1	30.000	5.275	86.443	158.247	0.546 ✓
T9	73.3333 - 66.6667	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	6.68	3.42	28.2	30.000	5.275	95.924	158.247	0.606 ✓
T10	66.6667 - 60	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	6.68	3.42	28.2	30.000	5.275	105.395	158.247	0.666 ✓
T11	60 - 50	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	10.02	69.4	30.000	6.640	116.922	199.209	0.587 ✓
T12	50 - 40	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	5.16	35.7	30.000	6.640	130.548	199.209	0.655 ✓
T13	40 - 30	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	5.15	35.7	30.000	6.640	143.822	199.209	0.722 ✓
T14	30 - 20	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	10.02	2.50	17.3	30.000	6.640	156.005	199.209	0.783 ✓
T15	20 - 15	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	5.01	2.50	14.2	30.000	6.555	168.059	196.650	0.855 ✓
T16	15 - 10	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	5.01	5.01	28.4	30.000	6.555	168.952	196.650	0.859 ✓
T17	10 - 0	Rohn 5 STD w/ (6) 1.5"x0.5" Bars	10.02	10.02	56.9	30.000	9.761	180.992	292.833	0.618 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	152 - 140	L1 1/2x1 1/2x1/8	7.65	3.61	95.8	29.000	0.211	1.913	6.117	0.313 ✓
T2	140 - 135	L1 1/2x1 1/2x3/16	8.35	4.07	109.8	29.000	0.308	2.772	8.921	0.311 ✓
T3	135 - 130	L1 1/2x1 1/2x3/16	8.86	4.33	116.6	29.000	0.308	2.597	8.921	0.291 ✓
T4	130 - 125	L1 1/2x1 1/2x1/4	9.28	4.54	124.2	29.000	0.398	3.414	11.555	0.295 ✓
T5	125 - 120	L1 3/4x1 3/4x3/16	9.70	4.75	108.5	29.000	0.378	3.932	10.960	0.359 ✓
T6	120 - 100	L2x2x1/4	12.21	5.94	119.1	29.000	0.586	4.462	17.003	0.262 ✓
T7	100 - 80	L2 1/2x2 1/2x1/4	13.37	6.53	103.5	29.000	0.775	6.785	22.484	0.302 ✓
T8	80 - 73.3333	L2 1/2x2 1/2x1/4	14.57	7.10	112.4	29.000	0.775	6.675	22.484	0.297 ✓
T9	73.3333 - 66.6667	L2 1/2x2 1/2x5/16	15.19	7.41	118.6	29.000	0.949	6.939	27.507	0.252 ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	66.6667 - 60	L2 1/2x2 1/2x5/16	15.82	7.73	123.5	29.000	0.949	7.028	27.507	0.255 ✔
T11	60 - 50	L3x3x5/16	18.20	8.94	117.9	29.000	1.159	8.016	33.617	0.238 ✔
T12	50 - 40	L3x3x5/16	19.04	9.36	123.4	29.000	1.159	8.408	33.617	0.250 ✔
T13	40 - 30	L3x3x3/8	19.90	9.79	130.3	29.000	1.372	8.680	39.775	0.218 ✔
T14	30 - 20	L3x3x5/16	10.64	10.08	134.3	29.000	1.159	8.882	33.617	0.264 ✔
T15	20 - 15	L3 1/2x3 1/2x1/4	10.64	10.08	113.6	29.000	1.127	8.708	32.679	0.266 ✔
T16	15 - 10	L3 1/2x3 1/2x1/4	11.08	10.49	118.1	29.000	1.127	8.275	32.679	0.253 ✔
T17	10 - 0	L3 1/2x3 1/2x5/16	22.61	11.11	124.8	29.000	1.392	10.258	40.360	0.254 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T14	30 - 20	L3x3x3/16	18.23	17.34	225.8	29.000	0.730	3.135	21.159	0.148 ✔
T16	15 - 10	L2.875x2.875x0.25	19.26	18.38	251.1	29.000	0.891	3.413	25.828	0.132 ✔

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	100 - 80	L3x3x3/16	12.25	11.49	151.1	29.000	0.730	1.522	21.159	0.072 ✔
T9	73.3333 - 66.6667	L3x3x3/16	13.64	12.82	168.1	29.000	0.730	1.912	21.159	0.090 ✔
T10	66.6667 - 60	L3x3x3/16	14.34	13.52	177.0	29.000	0.730	2.105	21.159	0.099 ✔
T12	50 - 40	L3x3x3/16	16.18	15.29	199.6	29.000	0.730	2.608	21.159	0.123 ✔
T13	40 - 30	L3x3x3/16	17.18	16.29	212.4	29.000	0.730	2.878	21.159	0.136 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	152 - 140	L2x2x1/8	6.52	6.11	121.2	29.000	0.305	0.287	8.836	0.032 ✓
T2	140 - 135	L2x2x1/8	6.57	6.12	121.3	29.000	0.305	0.143	8.836	0.016 ✓

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T14	30 - 20	L2x2x1/4	4.56	4.28	84.3	21.600	0.938	3.135	20.261	0.155 ✓
T15	20 - 15	L2x2x1/4	4.82	4.50	88.6	21.600	0.938	3.384	20.261	0.167 ✓

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T14	30 - 20	L2x2x1/4	5.32	4.99	98.4	21.600	0.938	1.828	20.261	0.090 ✓
T15	20 - 15	L2x2x1/4	5.53	5.18	102.0	21.600	0.938	1.965	20.261	0.097 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	152 - 140	Leg	ROHN 2 STD	3	-7.005	32.507	21.6	Pass
T2	140 - 135	Leg	ROHN 2.5 STD	27	-12.198	51.088	23.9	Pass
T3	135 - 130	Leg	ROHN 2.5 STD	39	-14.574	50.251	29.0	Pass
T4	130 - 125	Leg	ROHN 2.5 STD	48	-20.775	50.251	41.3	Pass
T5	125 - 120	Leg	ROHN 2.5 STD	57	-27.848	50.251	55.4	Pass
T6	120 - 100	Leg	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	66	-53.532	97.073	55.1	Pass
T7	100 - 80	Leg	Rohn 2.5 X-Str w/ (3) 1.5"x0.25" Bars	87	-87.770	120.648	72.7	Pass
T8	80 - 73.3333	Leg	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	117	-99.398	165.532	60.0 61.3 (b)	Pass
T9	73.3333 - 66.6667	Leg	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	126	-110.240	192.436	57.3	Pass
T10	66.6667 - 60	Leg	Rohn 3 X-Str w/ (3) 1.5"x0.5" Bars	138	-121.355	192.465	63.1	Pass
T11	60 - 50	Leg	Rohn 4 X-Str w/ (3) 1.5"x0.5"	150	-134.577	186.381	72.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
			Bars				82.9 (b)	
T12	50 - 40	Leg	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	159	-150.413	233.802	64.3	Pass
T13	40 - 30	Leg	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	171	-165.964	233.875	71.0	Pass
							78.1 (b)	
T14	30 - 20	Leg	Rohn 4 X-Str w/ (3) 1.5"x0.5" Bars	183	-180.723	252.914	71.5	Pass
T15	20 - 15	Leg	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	225	-195.137	252.353	77.3	Pass
							91.3 (b)	
T16	15 - 10	Leg	Rohn 5 STD w/ (3) 1.5"x0.5" Bars	249	-196.759	239.004	82.3	Pass
T17	10 - 0	Leg	Rohn 5 STD w/ (6) 1.5"x0.5" Bars	258	-211.031	302.348	69.8	Pass
T1	152 - 140	Diagonal	L1 1/2x1 1/2x1/8	7	-1.933	3.345	57.8	Pass
T2	140 - 135	Diagonal	L1 1/2x1 1/2x3/16	31	-2.784	3.779	73.7	Pass
T3	135 - 130	Diagonal	L1 1/2x1 1/2x3/16	40	-2.604	3.343	77.9	Pass
T4	130 - 125	Diagonal	L1 1/2x1 1/2x1/4	49	-3.469	3.931	88.2	Pass
T5	125 - 120	Diagonal	L1 3/4x1 3/4x3/16	58	-3.935	4.484	87.8	Pass
T6	120 - 100	Diagonal	L2x2x1/4	72	-4.536	5.616	80.8	Pass
							82.5 (b)	
T7	100 - 80	Diagonal	L2 1/2x2 1/2x1/4	90	-6.719	8.521	78.9	Pass
							93.6 (b)	
T8	80 - 73.3333	Diagonal	L2 1/2x2 1/2x1/4	123	-6.732	7.864	85.6	Pass
							92.1 (b)	
T9	73.3333 - 66.6667	Diagonal	L2 1/2x2 1/2x5/16	132	-7.054	8.780	80.3	Pass
							89.8 (b)	
T10	66.6667 - 60	Diagonal	L2 1/2x2 1/2x5/16	144	-7.058	8.077	87.4	Pass
							89.9 (b)	
T11	60 - 50	Diagonal	L3x3x5/16	156	-8.309	10.679	77.8	Pass
T12	50 - 40	Diagonal	L3x3x5/16	165	-8.427	9.738	86.5	Pass
T13	40 - 30	Diagonal	L3x3x3/8	177	-9.133	10.481	87.1	Pass
T14	30 - 20	Diagonal	L3x3x5/16	202	-9.440	20.597	45.8	Pass
							78.4 (b)	
T15	20 - 15	Diagonal	L3 1/2x3 1/2x1/4	241	-9.424	24.606	38.3	Pass
							96.1 (b)	
T16	15 - 10	Diagonal	L3 1/2x3 1/2x1/4	255	-9.482	10.232	92.7	Pass
T17	10 - 0	Diagonal	L3 1/2x3 1/2x5/16	264	-9.358	11.143	84.0	Pass
							90.6 (b)	
T14	30 - 20	Horizontal	L3x3x3/16	191	-3.135	6.516	48.1	Pass
T16	15 - 10	Horizontal	L2.875x2.875x0.25	233	-3.413	4.457	76.6	Pass
T7	100 - 80	Secondary Horizontal	L3x3x3/16	95	-1.522	5.891	25.8	Pass
T9	73.3333 - 66.6667	Secondary Horizontal	L3x3x3/16	134	-1.912	4.909	38.9	Pass
T10	66.6667 - 60	Secondary Horizontal	L3x3x3/16	146	-2.105	4.494	46.8	Pass
T12	50 - 40	Secondary Horizontal	L3x3x3/16	168	-2.608	3.658	71.3	Pass
T13	40 - 30	Secondary Horizontal	L3x3x3/16	179	-2.878	3.288	87.5	Pass
T1	152 - 140	Top Girt	L2x2x1/8	4	-0.284	2.830	10.0	Pass
T2	140 - 135	Top Girt	L2x2x1/8	30	-0.157	2.823	5.6	Pass
T14	30 - 20	Redund Horz 1 Bracing	L2x2x1/4	215	-3.135	10.834	28.9	Pass
T15	20 - 15	Redund Horz 1 Bracing	L2x2x1/4	242	-3.384	9.807	34.5	Pass
T14	30 - 20	Redund Diag 1 Bracing	L2x2x1/4	219	-1.828	7.946	23.0	Pass
T15	20 - 15	Redund Diag 1 Bracing	L2x2x1/4	243	-1.965	7.396	26.6	Pass
							Summary	
						Leg (T15)	91.3	Pass
						Diagonal (T15)	96.1	Pass
						Horizontal	76.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
						(T16) Secondary Horizontal (T13)	87.5	Pass
						Top Girt (T1)	10.0	Pass
						Redund Horz 1 Bracing (T15)	34.5	Pass
						Redund Diag 1 Bracing (T15)	26.6	Pass
						Bolt Checks	96.1	Pass
						RATING =	**96.1**	**Pass**

ANCHOR BOLT EVALUATION

URS

Job	152' ROHN SSV LatticeTower, Stamford, CT	Project No.	VZW,AT&T & Sprint	Page / Sheet	1 of 3
Description	Anchor Bolt Analysis	Computed by	MCD	Date	10/31/14
		Checked by		Date	

ANCHOR BOLT ANALYSIS

Input Data

Max Corner Reactions:

Uplift:	Uplift := 187·kips	*user input*
Shear:	Shear := 25·kips	*user input*
Compression:	Compression := 218·kips	*user input*

Anchor Bolt Data:

Use ASTM A-193 GR B7/ASTM A-320 GR L7

Number of Anchor Bolts = N	N := 4	*user input*	
Bolt Ultimate Strength:	F_u := 125·ksi	*user input*	
Bolt Yield Strength:	Fy := 105·ksi	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	
Thickness of Anchor Bolts	D := 1.0in	*user input*	
Threads per Inch:	n := 8.0	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-97)

Anchor Bolt Area:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4}\cdot D^2 \qquad A_g = 0.785\cdot in^2$$

Net Area of Bolt:

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

Check Tensile Forces:

Maximum Tensile Force (Gross Area):

$$AllowableTension := 1.333\cdot\left(0.33\cdot A_g\cdot F_u\right) \qquad AllowableTension = 43.2\cdot kips$$

Note: 1.333 increase allowed per TIA/EIA

Maximum Tensile Force (Net Area):

$$F_{net.area} := 1.333\cdot\left(0.60\cdot A_n\cdot Fy\right) \qquad F_{net.area} = 50.9\cdot kips$$

Note: 1.333 increase allowed per TIA/EIA

Applied Tension:

$$MaxTension := \frac{Uplift}{N} \qquad MaxTension = 46.8\cdot kips$$

Check Stresses:

$$\frac{MaxTension}{F_{net.area}} = 0.92$$

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

Condition1 = "OK"

Check Anchor Bolt Area:

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

Required Area:

$$A_{s1} := \frac{Uplift}{Fy} + \frac{Shear}{\mu \cdot 0.85 \cdot Fy} \qquad A_{s1} = 2.3 \cdot in^2$$

$$A_{s2} := \left| \frac{Shear - (0.3 \cdot Compression)}{\mu \cdot 0.85 \cdot Fy} \right| \qquad A_{s2} = 0.8 \cdot in^2$$

Provided Area:

$$A_{sprovided} := A_n \cdot N \qquad A_{sprovided} = 2.4 \cdot in^2$$

$$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s1}}{A_{sprovided}} = 0.95$$

Condition2 = "OK"

$$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s2}}{A_{sprovided}} = 0.34$$

Condition3 = "OK"

FOUNDATION EVALUATION

FOUNDATION ANALYSIS

Input Data

Maximum Pier Reactions:

Compression: $C_t := 218 \cdot kips$ *user input*

Uplift: $U_t := 187 \cdot kips$ *user input*

Foundation Dimensions:

Drilled Caisson Length: $C_{Length} := 21.0 \cdot ft$ *user input*

Diameter of Pier: $d_p := 4.5ft$ *user input*

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

Conc Pad Length: $Pad_{Length} := 5.0ft$ *user input*

Conc Pad Width: $Pad_{Width} := 6ft$ *user input*

Conc Pad Depth: $Pad_{Depth} := 5.0ft$ *user input*

Note: Above concrete pad dimensions based on foundation reinforcement design by Tectonic Engineering P.C; for AT&T Wireless, dated 04/23/02.

Material Properties:

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

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

Unit Weight of Soil: $\gamma s := 120pcf$ *user input*

Allowable Soil Bearing Capacity (Allowable Bearing Pressure at Depth 21') $q_s := 10 \cdot ksf$ *user input*

Water Table Below Grade: $Wd := 8 \cdot ft$ *user input*

Average Allowable Shear: $fl := 410 \cdot psf$ *user input*

Depth Neglected for Skin Friction at Top: $Depthunbond := 0.5 \cdot ft$ *user input*

Assumed Allowable Soil Bearing Capacity For Conc Pad: $q_u := 5ksf$ *user input*

Loading:

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

$TotalDownLoad = 268.1 \cdot kips$

$PadWeight := Pad_{Length} \cdot Pad_{Width} \cdot Pad_{Depth} \cdot \gamma c$ $PadWeight = 22.5 \cdot kips$

$$PierWeight := \pi \cdot \frac{d_p^2}{4} \cdot \left[\left(Wd + L_{pag}\right) \cdot \gamma c + \left(C_{Length} - Wd - L_{pag}\right) \cdot (\gamma c - \gamma w)\right]$$ $PierWeight = 37.7 \cdot kips$

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

$SoilShear = 115.9 \cdot kips$

Compression Capacity:

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

$TotalDownLoadCapacity = 425.0 \cdot kips$

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

$CheckDownLoadCapacity = "Okay"$

Tension Capacity:

$TotalUpLiftCapacity := SoilShear + PierWeight + PadWeight$

$TotalUpLiftCapacity = 176.1 \cdot kips$

Required Safety Factor: $Fs_{reqd} := 2.0$

$$CheckUpLiftCapacity := if\left[\left(\frac{TotalUpLiftCapacity}{U_t} \right) \geq 2.0, "Okay", "No Good" \right]$$

$CheckUpLiftCapacity = "No Good"$

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

$SafetyFactor_{provided} = 0.94$

$AdditionalUplift := 2 \cdot U_t - TotalUpLiftCapacity$

$AdditionalUplift = 197.9 \cdot kip$

Include the use of (1) Rock Anchor (Williams Form Engineering Corp.) with 150ksi All-Threaded Anchor Bar (2 1/4" diameter) and Concrete Grouting at each caisson anchor. (See following support calculations)

Check Cone Failure:

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

$ConeFailureCapacity = 511.12 \cdot kips$

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

$CheckConeFailureCapacity = "Okay"$

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

$ConeSafetyFactor_{provided} = 2.73$

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Description MOD Foundation Design | Computed by MCD | Date 7/2014 | Sheet ____ of ____
Checked by | Date | Reference

- Consider factored uplift for applications not involving allowable stress design:

202 K.IP x 1.4 = 283 K.IP

- Determine Anchor rod:
  - Page 18 (Williams Form Engineering Corp.)

Use 2 1/4"
(Yield) $P_n = F_y \times A_s = 128\ ksi \times 4.08\ in^2 \times 0.9 = 470\ K.IP$ (OK)
(Rupture) $P_n = F_u \times A_e = 150\ ksi \times (4.08\ in^2 - (0.2 \times 4.08\ in^2)) \times 0.75 = 367.2\ K.IP$ (OK)

Check 1 3/4"
(Yield) $P_n = F_y A_s = 128 \times 2.60\ in^2 \times 0.9 = 299.52\ K.IP$ (OK)
(Rupture) $P_n = F_u A_e = 150\ ksi \times (2.60\ in^2 - (0.2 \times 2.60\ in^2)) \times 0.75 = 234\ K.IP$ (NG)

- Determine Anchor Length:
  - Page 10 & 11 (Williams Form Engineering Corp.) "Free Stress Length"

U = 613 K.IP → 613 K.IP x 0.5 = 306.5 K.IP > 283 K.IP (OK)
F.S. = 0.5

V x Y (See attached spread sheet)
Note: "5" will be ignored for conservative design

297 K.IP > 283 K.IP (OK) ∴ "Free-Stress Length" = 39 ft below grade

"Rock Anchor Length"

$L_b = \frac{P}{\pi (D)(T_w)}$

T_w = 300 PSI (Assumed soil/rock conditions of Shist & Gneiss are similar to Dolomitic Limestone (PSII - Williams))

$L_b = \frac{283\ K.IP \times 1000\ lb/K.IP}{\pi (4\ in)(75\ PSI)} = 12.5\ ft$ (min) bond Length

39 ft + 12.5 ft = 51.5 ft below grade (Min).

1/3	Pi	Area	Ht	U. WT	H2O Wt.	lb/kip	Kips	
0.333333	3.141593	161.6581	8	120	0	1000	162.5164	
0.333333	3.141593	89.7058	5.5	120	62.4	1000	29.7601	
0.333333	3.141593	94.1803	7.5	130	62.4	1000	50.00307	
0.333333	3.141593	28.5788	3	140	62.4	1000	6.967157	
0.333333	3.141593	36.0844	5	160	62.4	1000	18.4403	
0.333333	3.141593	28.8675	10	160	62.4	1000	29.50446	(rock embedment)
			39				297.1915	288.26 CAPACITY NEEDED

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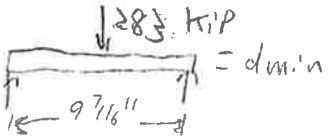
Reference

- consider Anchor bolts attached to caisson:
  See Attached calculations spreasheet using Hilti 1¼" Diameter HAS-E Super Rod (Reference Pages 154-162; Section 4.2.1)

  * Use 12 bolts spaced 12" apart

  Design capacity ≈ 77%

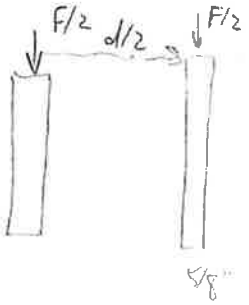
- consider Anchor plate thickness:
  Steel = 50 ksi



$$f = \frac{M}{S} \rightarrow S = \frac{M}{f} = \frac{b \cdot d^2}{3} \Rightarrow d_{min} = \sqrt{\frac{3 \times \frac{PL}{4}}{f \cdot b}}$$

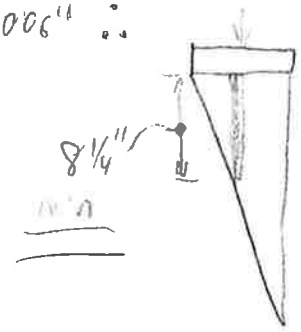
$$= \sqrt{\frac{3 \times \left(\frac{(283\ kip)(9\ 7/16)}{4}\right)}{50\ ksi \times 9\ 7/16"}} = 2.06\ in \approx 2\ 1/16\ (t)$$

- Consider min material for gusset plate supports:



$$d_{min} = \sqrt{\frac{3 \times F \times d}{f\ b}} = \sqrt{\frac{3 \times \left(\frac{283\ kip}{2}\right)(9\ 7/16/2)}{50\ ksi \times 5/8}}$$

$$= 8.006" \therefore$$



- Consider connection plate thickness

F = 283 kip
e = 10 in
M = 2830 kip·in

$$f_{steel} = \frac{M}{S}$$

$$f_{steel} = \frac{M}{\frac{bd^2}{3}} \rightarrow b = \frac{3 \times M}{d^2 \times f_{steel}} = \frac{(3)(283.0\ kip \cdot in)}{\left(\frac{50}{2}\ in\right)^2 \times 50\ ksi}$$

$$b = \frac{0.139\ in}{0.75} = 0.185\ in < 5/8"\ (ok)$$

Vert Force	202	kip
Eccentricity	10	in
Moment	2020	in*kip

Number of Rows	6
Number of Columns	2
Number of Bolts	12
Bolt Spacing	12 in

Row Number	1	2	3	4	5	6
Number of Bolts	2	2	2	2	2	2
Dist from Center	30	18	6	-6	-18	-30
A * d^2	1800	648	72	72	648	1800

I	5040	in^2
S	168	in

Shear per Bolt	16.83333	kip
Tension per Bolt	12.0	kip

Use	Hilti HVA Capsule Achesive Anchoring System Hilti HAS Rod

Diameter	1.25	in
Embedment	18	in
Spacing	12	in

For 3000 ksi concrete (4.2.1, p. 154)

Allow Tension	33728	lb
Allow Shear	85627.5	lb

Reduction Factors (4.2.1, p. 162)

Spacing for Tension	0.75
Spacing for Shear	0.75
Edge Distance Shear	1

Concrete Capacity

Tension	25.3	kip
Shear	64.2	kip

For 1.25" Diameter HAS-E Super Rod

Allow Tension	50.62	kip
Allow Shear	26.08	kip

Governing Capacities

Tension	25.3	kip
Shear	26.1	kip

Applied Forces

Tension	12.0	kip
Shear	16.8	kip

Percent Capacity

Tension	48%
Shear	65%

Interaction

per Hilti 4.1.8.3	77.2%

ATTACHMENT 4

HMB

HMB Acoustics LLC 3 Cherry Tree Lane, Avon, CT 06001 860-677-5955

Noise Evaluation Report

Verizon Wireless
Wireless Communications Facility
Stamford NW
366 Old Long Ridge Road
Stamford, CT

January 8, 2015

Prepared For:
Doug Drost
Project Engineer Wireless
Centek Engineering, Inc.
63-2 North Branford Road
Branford, CT 06405

Prepared By:
Allan Smardin
HMB Acoustics LLC
3 Cherry Tree Lane
Avon, CT 06001

Introduction

Cellco Partnership (d/b/a Verizon Wireless) has proposed a wireless communications facility utilizing 2 condensing units at grade. These units will be located at 366 Old Long Ridge Road, Stamford, CT. The noise evaluation report and the City of Stamford Noise Control Ordinance use a dBA scale. This scale is used because it closely approximates the response characteristic of the human ear to loudness, and is the scale most commonly used in the measurement of community noise.

Noise Regulations

The City of Stamford has enacted regulations which limit the amount of noise which may be transferred from one property to another. In pertinent part, the Regulations provide as follows:

Daytime hours are between 8a.m. and 8 p.m., Monday through Saturday, and the hours of 10 a.m. through 8 p.m. Sundays and federal and state holidays.

Nighttime hours are between 8 p.m. and 8 a.m., Sunday evening through Saturday morning except Saturday night shall mean the hours between 8 p.m. Saturday and 10 a.m. and federal and state holidays.

(Sec. 164-3 Definitions).

Noise Level Standards

The noise Emitters and the noise Receptors are in a residential noise zone. It shall be unlawful for any person to emit or cause to be emitted any noise beyond the property lines of his / her premises in excess of the following noise levels.

Zone in Which Noise Emitter is located	Allowable Levels Daytime Hours (dBA)	Allowable Levels Nighttime Hours (dBA)
Residential (Sec. 164-5 Noise Levels).	55	45

Noise Evaluation Results

	Projected Noise Levels (dBA)
Property Line	2 Condensing Units
North	38
South	40
East	45
West	33

The noise levels take into account the effect of acoustical shielding provided by other structures on the property.

Based on the projected noise levels from the 2 condensing units to each property line, I found that the noise levels meet the conditions for compliance as set forth in the noise regulations.

Note: With one condenser running, the condenser noise level will be reduced by 3 dBA.

ATTACHMENT 5

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
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Calculated Radio Frequency Emissions Report

verizonwireless

Stamford NW CT

366 Old Long Ridge Road, Stamford, CT 06903

December 17, 2014

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Verizon Wireless antennas on the lattice tower located at 366 Old Long Ridge Road in Stamford, CT. The coordinates of the tower are 41° 09' 11.29" N, 73° 35' 33.69" W.

Verizon Wireless is proposing the following:

1) Install three 751MHz LTE antennas (one per sector);
2) Install three 875MHz CDMA/EVDO antennas (one per sector);
3) Install three 1900MHz LTE antennas (one per sector);
4) Install three 2100MHz 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:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \times OffBeamLoss$$

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 patterns

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final site configuration.

4. Calculation Results

Table 1 below outlines the power density information for the site. Due to the directional nature of Verizon Wireless' proposed panel antennas, the majority of the RF power will be 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 patterns of Verizon Wireless' proposed panel antennas. The calculated results shown in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antenna.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Nextel	119	851	9	100	0.0229	0.5673	4.03%
AT&T GSM	143	880	1	283	0.0050	0.5867	0.85%
AT&T GSM	143	1900	4	525	0.0369	1.0000	3.69%
AT&T UMTS	143	880	2	565	0.0199	0.5867	3.39%
AT&T UMTS	143	1900	2	875	0.0308	1.0000	3.08%
AT&T LTE	143	734	1	1117	0.0191	0.4893	3.90%
T-Mobile	108	1945	8	99	0.0244	1.0000	2.44%
T-Mobile	108	2100	2	791	0.0488	1.0000	4.88%
Sprint CDMA/LTE	128	1900	4	693	0.0608	1.0000	6.08%
Sprint CDMA/LTE	128	850	1	390	0.0086	0.5667	1.51%
EMCC	104	450	12	85	0.0339	0.3000	9.55%
City of Stamford	138	860	10	479	0.0904	0.5733	
City of Stamford	130	10616	1	53	0.0011	1.0000	
City of Stamford	144	150	1	690	0.0120	0.2000	
AirTouch	144	900	5	3500	0.3035	0.6000	
SkyTel	104	900	3	1000	0.0997	0.6000	
Fire Dept.	132	150	1	1288	0.0266	0.2000	
Gardella Trans.	63	150	1	172	0.0156	0.2000	
Hoffman Fuel	115	450	2	235	0.0128	0.3000	
Pronet	133	450	1	586	0.0119	0.3000	
Verizon LTE	**98**	**751**	**1**	**1833**	**0.0069**	**0.5007**	**1.37%**
Verizon LTE	**98**	**1900**	**1**	**6014**	**0.0225**	**1.0000**	**2.25%**
Verizon LTE	**98**	**2100**	**1**	**6154**	**0.0230**	**1.0000**	**2.30%**
Verizon CDMA/EVDO	**98**	**875**	**9**	**526**	**0.0177**	**0.5833**	**3.04%**
						Total	**52.36%**

Table 1: Carrier Information[1] [2]

[1] Antennas heights for Verizon are based on the Verizon Wireless Antenna Recommendation, dated 12/15/2014.

[2] 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.

5. Conclusion

The above analysis verifies that emissions from the final site configuration will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. The highest expected percent of Maximum Permissible Exposure at the base of the tower is **52.36% of the FCC Uncontrolled/General Population limit.**

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/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Daniel L. Goulet
C Squared Systems, LLC

December 17, 2014
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[3]

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[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)
0.3-1.34	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)

[3] 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.

[4] 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.

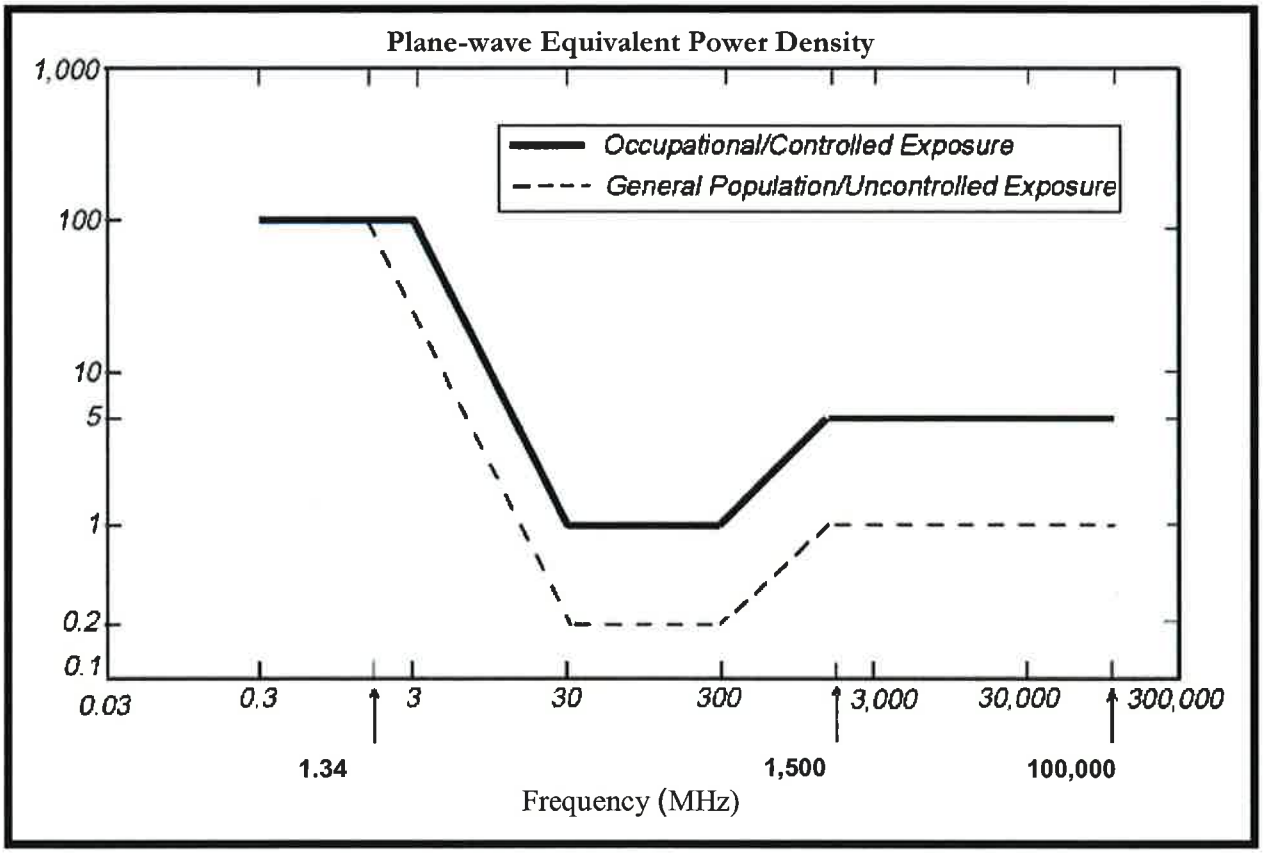
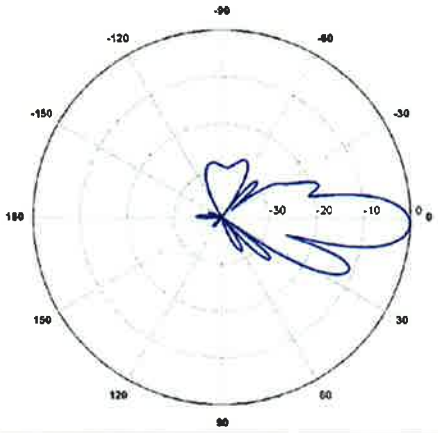


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Wireless' Antenna Model Data Sheets and Electrical Patterns

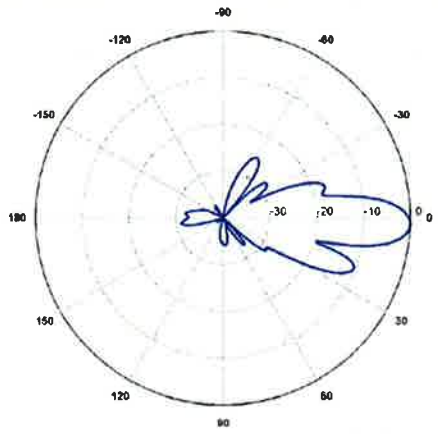
751 MHz

Manufacturer:	Commscope
Model #:	LNX-6514DS-A1M_2
Frequency Band:	698-806 MHz
Gain:	13.6 dBd
Vertical Beamwidth:	12.5°
Horizontal Beamwidth:	65°
Polarization:	±45°
Size L x W x D:	72.7" x 11.9" x 7.1"



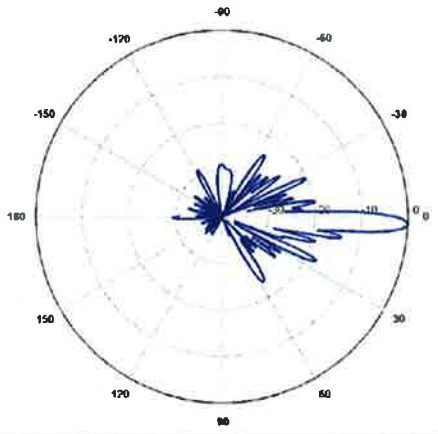
875 MHz

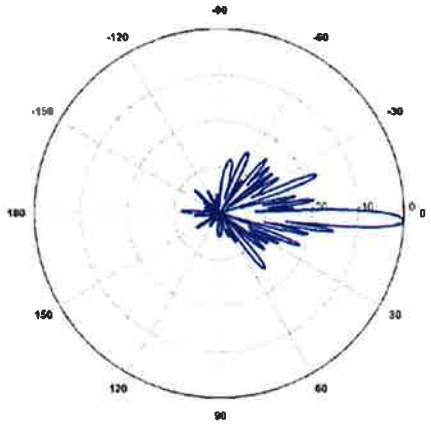
Manufacturer:	Commscope
Model #:	LNX-6514DS-A1M_2
Frequency Band:	806-896 MHz
Gain:	14.2 dBd
Vertical Beamwidth:	11.2°
Horizontal Beamwidth:	65°
Polarization:	±45°
Size L x W x D:	72.7" x 11.9" x 7.1"



1900 MHz

Manufacturer:	Commscope
Model #:	HBXX-6517DS-A2M_2
Frequency Band:	1850-1990 MHz
Gain:	17.0 dBd
Vertical Beamwidth:	4.7°
Horizontal Beamwidth:	66°
Polarization:	±45°
Size L x W x D:	74.9" x 12.0" x 6.5"



2100 MHz

Manufacturer:	Commscope
Model #:	HBXX-6517DS-A2M_2
Frequency Band:	1920-2180 MHz
Gain:	17.1 dBd
Vertical Beamwidth:	4.4°
Horizontal Beamwidth:	65°
Polarization:	±45°
Size L x W x D:	74.9" x 12.0" x 6.5"