EM-CING-158-110620

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 463-5511
Fax: (860) 513-7190

Douglas L. Culp
Real Estate Consultant

HAND DELIVERED

June 20, 2011

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

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing tele-communications facility located at 880 Post Road East, Westport CT (owner Connecticut State Police).

Dear Ms. Roberts:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a new high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

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

1. The height of the overall structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments.

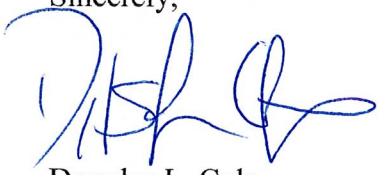
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. Radio frequency power density may increase due to use of one or more GSM channel for UMTS transmissions. Moreover, LTE will utilize additional radio frequencies newly-licensed by the FCC for cellular mobile communications. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, New Cingular Wireless respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 463-5511 with questions concerning this matter. Thank you for your consideration.

Sincerely,



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Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

880 Post Road East Westport, CT
Site Number 2147
Exempt Mod

Tower Owner/Manager: State of Connecticut State Police

Equipment configuration: SSLT

Current and/or approved: Two PowerWave antennas @ 134 ft
Four PowerWave TMA's @ 134 ft
Four runs 1 1/4 inch coax @ 134 ft
Equipment Shelter

Planned Modifications: Remove existing PowerWave Antenna's and TMA's @ 134 ft
Retain all Coax Cabling
Install eight runs of 1 ¼ inch Coax
Install nine PowerWave P65-16 antennas or equivalent @ 134 ft
Install six PowerWave Twin BP TMA's @ 134 ft
Install six remote radio heads and surge arrestor @ 134 ft
Install one fiber and two DC power cables to 134 ft

Power Density:

Worst-case calculations for existing wireless operations at the site, using standard parameters for other carriers, indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the Tower, approximately of 34.1% of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 36.2 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users							19.22
AT&T UMTS	134	1900 Band	1	500	0.0100	1.0000	1.00
AT&T UMTS	134	800 Band	1	500	0.0100	0.5867	1.71
AT&T GSM	134	800Band	7	296	0.0415	0.5867	7.07
AT&T GSM	134	1900 Band	6	427	0.0513	1.0000	5.13
Total							**34.1%**

* Data for other users are from Siting Council records.

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users							19.22
AT&T UMTS	134	800 Band	1	500	0.0100	0.5867	1.71
AT&T UMTS	134	1900 Band	1	500	0.0100	1.0000	1.00
AT&T GSM	134	1900 Band	6	427	0.0513	1.0000	5.13
AT&T GSM	134	880 - 894	7	296	0.0415	0.5867	7.07
AT&T LTE	134	740 - 746	1	500	0.0100	0.4933	2.03
Total							**36.2%**

* Data for other users are from Siting Council records.

Structural information:

The attached structural analysis demonstrates that the SSLT and foundation have adequate structural capacity to accommodate the proposed modifications. (URS Corporation dated 6-20-11).

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS:	RTE 1 SHERWOOD ISLAND WESTPORT, CT 06880
LATITUDE:	41.137378° N 41° 8' 14.56" N
LONGITUDE:	-73.334803° W -73° 20' 5.29" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
NOC#	866-915-5600

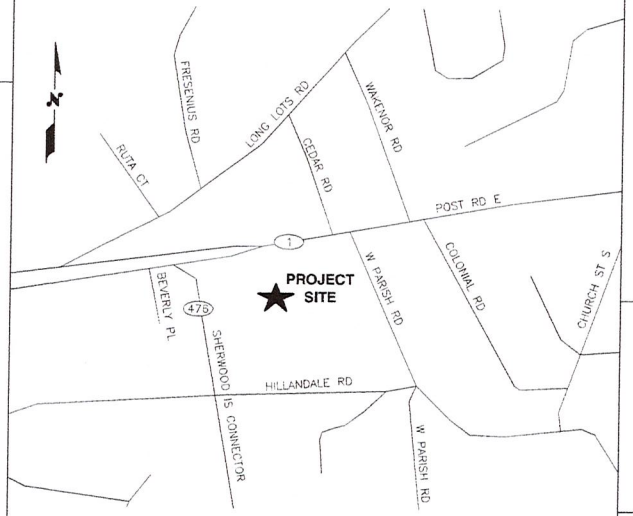
at&t

SITE NUMBER: CT2147
SITE NAME: WESTPORT - SP TOWER

DRAWING INDEX

VICINITY MAP

DIRECTION TO SITE:
START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI TURN LEFT ONTO CAPITOL BLVD. 0.3 MI TURN LEFT ONTO WEST ST. 0.3 MI MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 29.1 MI MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS LODGE TURNPIKE VIA THE EXIT ON THE LEFT TOWARD N.Y. CITY. 24.5 MI TAKE EXIT 19 TOWARD US-1/SOUTHPORT. 0.2 MI STAY STRAIGHT TO GO ONTO PEASE AVE. 0.1 MI TURN SLIGHT RIGHT ONTO POST RD E/US-1 S. 2.4 MI TURN LEFT ONTO SHERWOOD ISLAND CONNECTOR.



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS

BEFORE YOU DIG

CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

Hudson Design Group, LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2147
SITE NAME: WESTBROOK
SP TOWER
RTE 1 SHERWOOD ISLAND
WESTPORT, CT 06880
FAIRFIELD COUNTY

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

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SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

DANIEL P. HAMM No. 21713 LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET (LTE)

JOB NUMBER	DRAWING NUMBER	REV
2147.01	T-1	2

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR - SAI
   SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER - AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE		
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED	TYP	TYPICAL

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2147
SITE NAME: WESTBROOK SP TOWER
RTE 1 SHERWOOD ISLAND
WESTPORT, CT 06880
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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1	03/09/11	ISSUED FOR CONSTRUCTION	DB	DC	DPH
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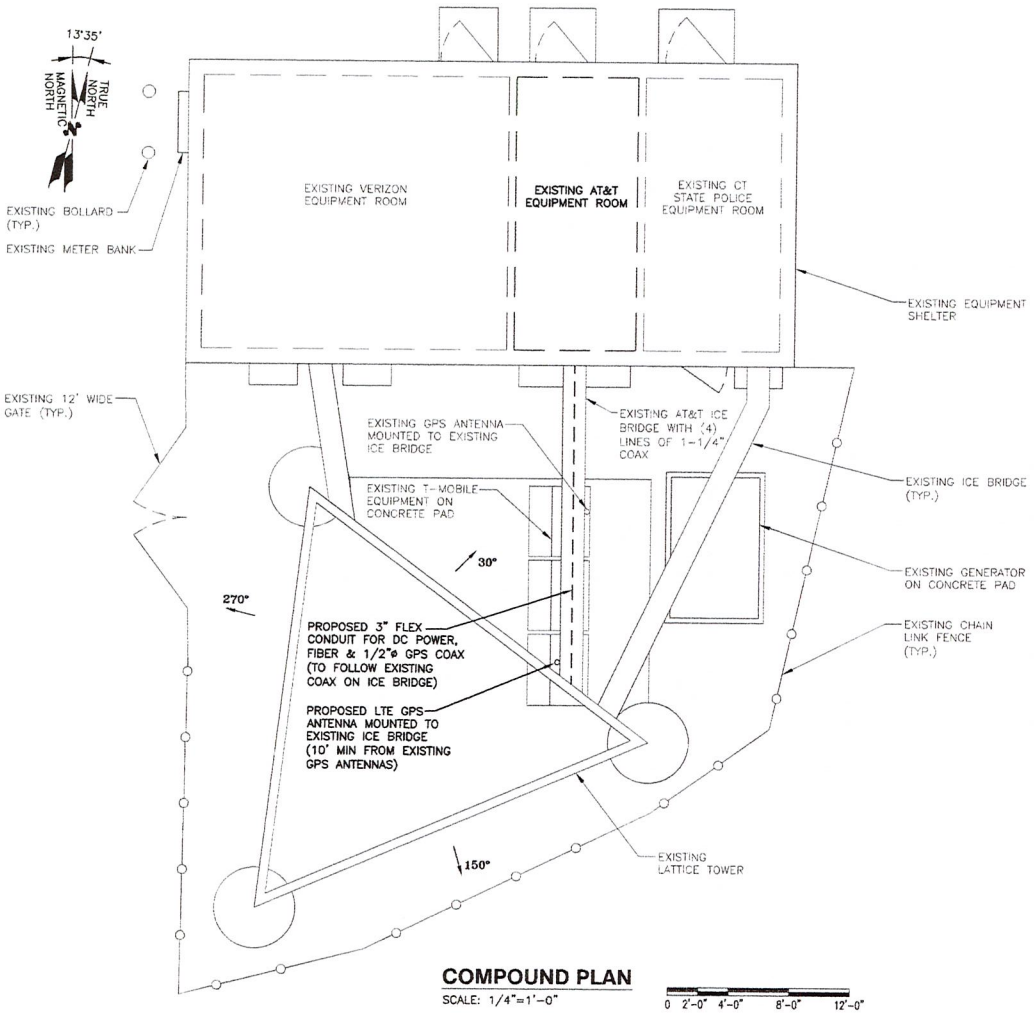
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

AT&T

GENERAL NOTES (LTE)

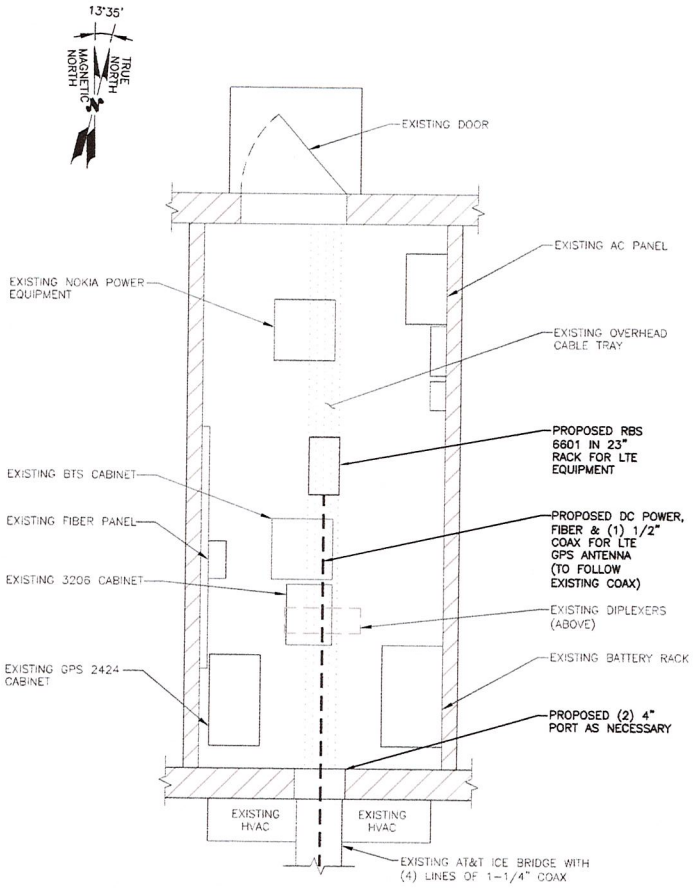
JOB NUMBER	DRAWING NUMBER	REV
2147.01	GN-1	2



COMPOUND PLAN

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

0 2'-0" 4'-0" 8'-0" 12'-0"



EQUIPMENT PLAN

SCALE: 1/2"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

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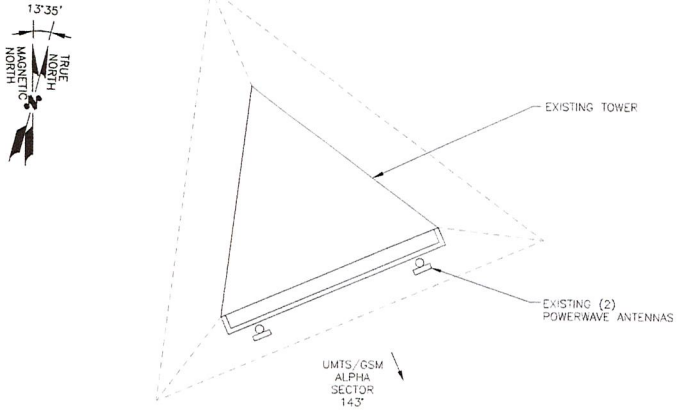
STATE OF CONNECTION — DONALD C. PUGLISH — LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
2147.01	A-1	2



EXISTING GSM/UMTS ANTENNA PLAN

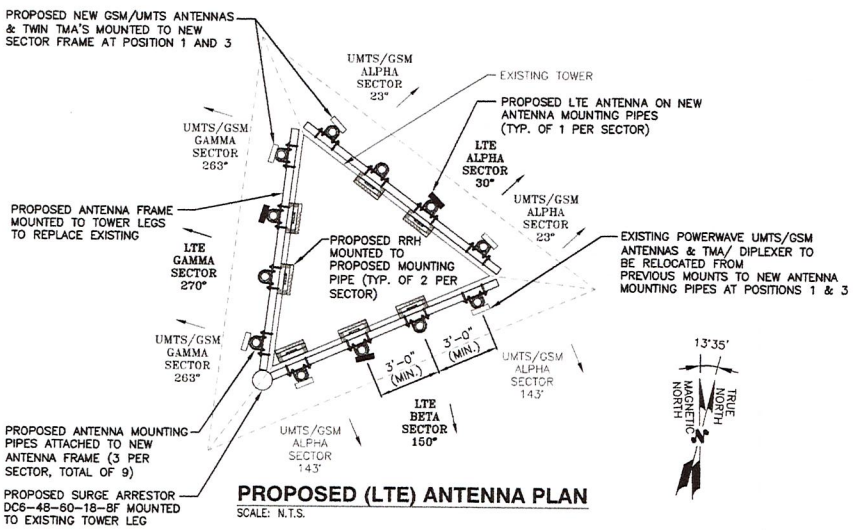
SCALE: N.T.S.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

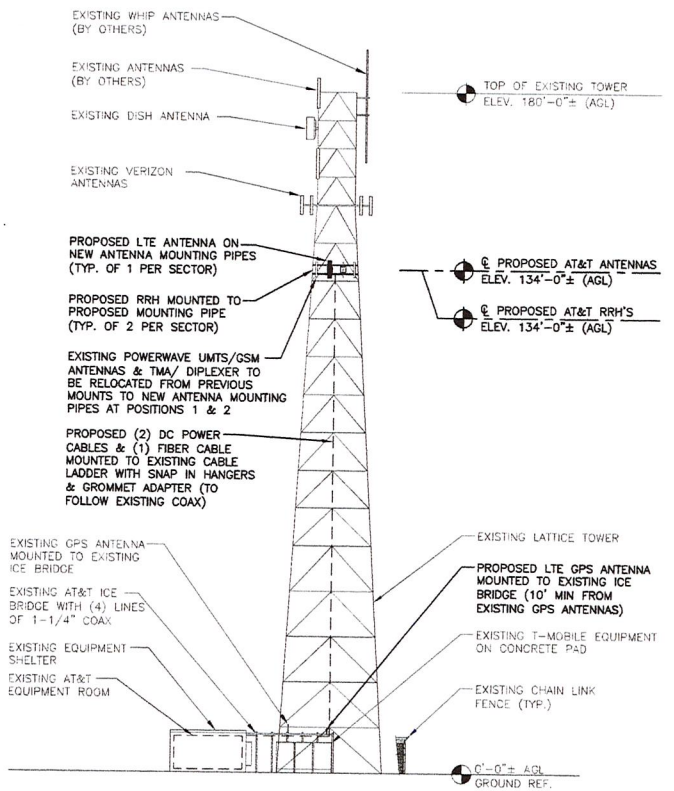
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



PROPOSED (LTE) ANTENNA PLAN

SCALE: N.T.S.



WEST ELEVATION

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

0 8'-0" 16'-0" 32'-0" 48'-0"

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STATE OF CONNECTICUT — DANIEL P. HAMM — 25719 — LICENSED PROFESSIONAL ENGINEER

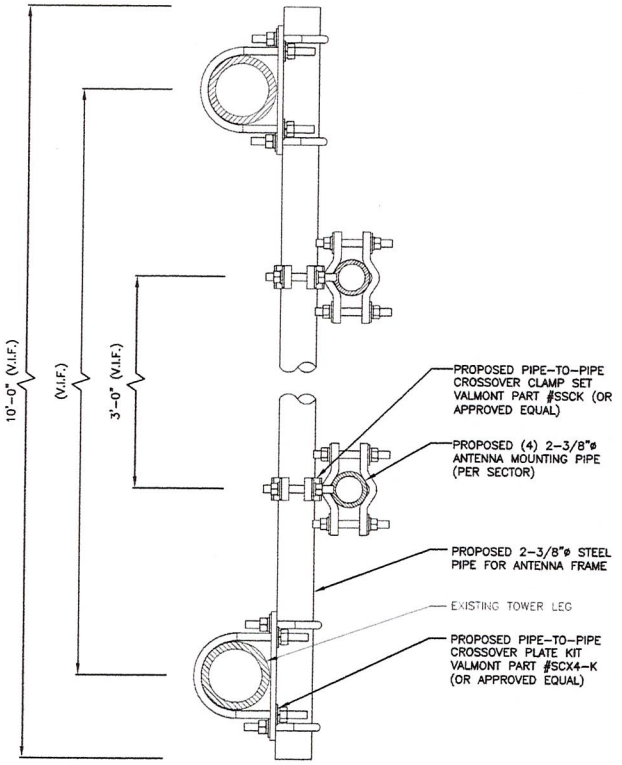
AT&T

ANTENNA LAYOUT AND ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
2147.01	A-2	2

NOTE:

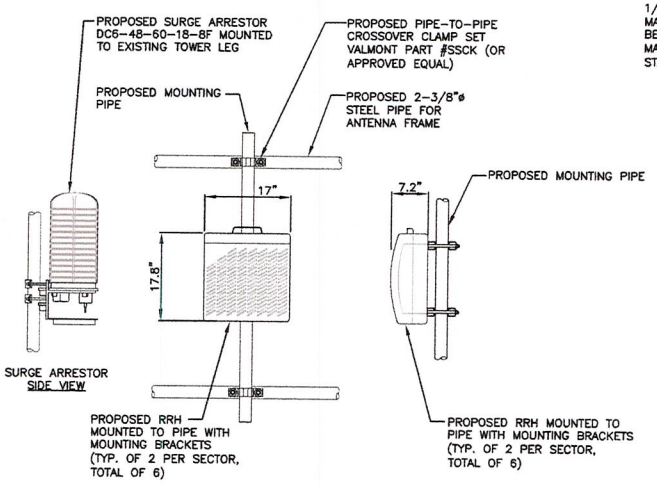
1. ANTENNA & MOUNTING DETAILS SHALL CONFORM TO REFERENCED STRUCTURAL CALCULATIONS & TOWER MANUFACTURER'S RECOMMENDATIONS.
FOR ANTENNA & COAX MOUNTING DETAIL AND REQUIRED TOWER & FOUNDATION MODIFICATIONS REFER TO STRUCTURAL ANALYSIS REPORT.



PROPOSED ANTENNA FRAME DETAIL

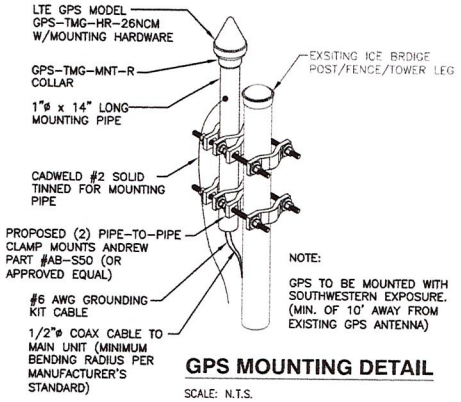
SCALE: 3"=1'-0"

0 0'-2" 0'-4" 0'-8" 1'-0"



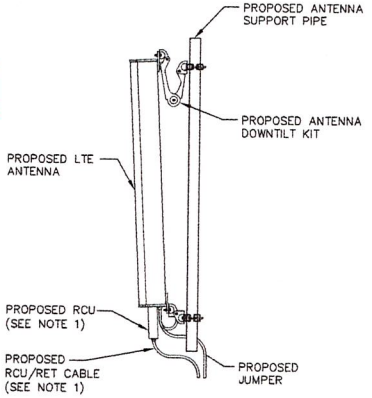
PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL

SCALE: N.T.S.



GPS MOUNTING DETAIL

SCALE: N.T.S.



NOTES:

1. REFER TO RF CONFIG & SECTOR SCHEMATICS FOR MODEL, TYPE & QUANTITY REQUIRED PER SECTOR

PROPOSED LTE ANTENNA DETAIL

SCALE: N.T.S.

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2147
SITE NAME: WESTBROOK SP TOWER
RTE 1 SHERWOOD ISLAND
WESTPORT, CT 06880
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	04/18/11	CONSTRUCTION REVISED	DC	DPH	
1	03/09/11	ISSUED FOR CONSTRUCTION	NB	DC	DPH
0	02/15/11	ISSUED FOR REVIEW	DB	DC	DPH

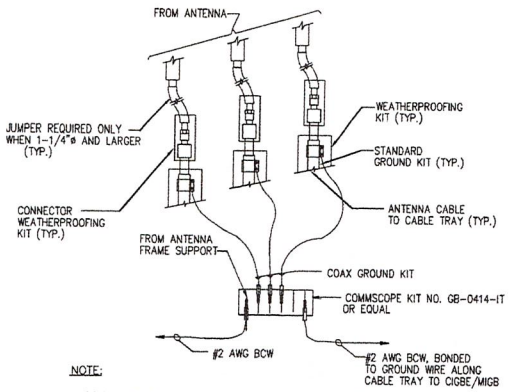
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

STATE OF CONNECTICUT — DONALD P. HAMM — No. 21703 — LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
2147.01	A-3	2

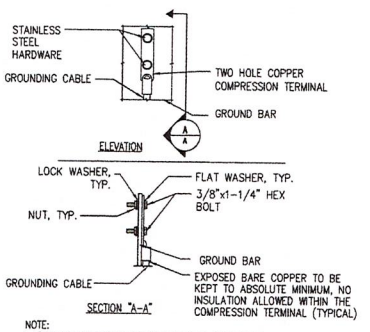


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

1 — N.T.S.

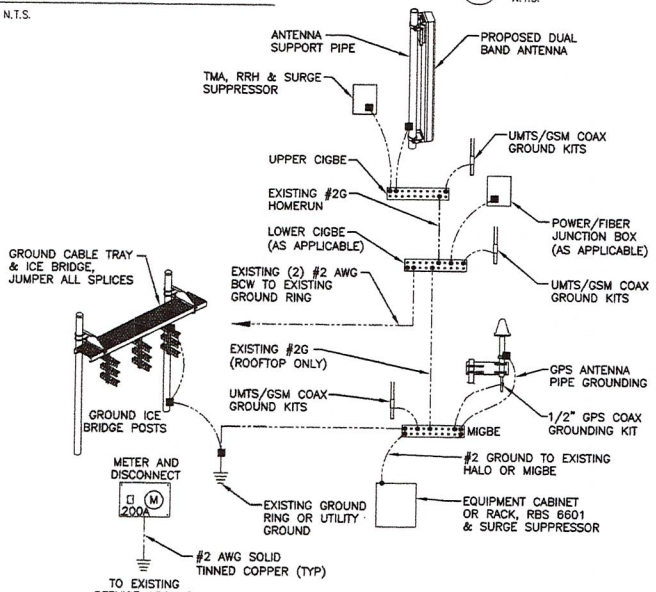


NOTE:

1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

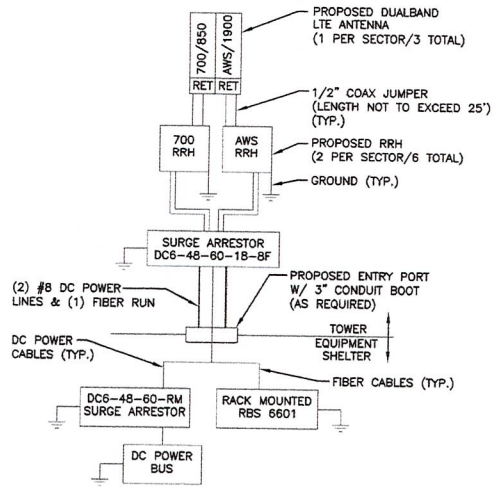
TYPICAL GROUND BAR CONNECTION DETAIL

2 — N.T.S.



GROUNDING RISER DIAGRAM

4 — N.T.S.



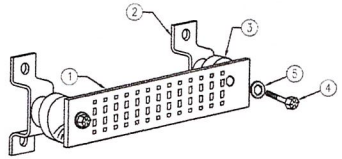
NOTES:

1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

PLUMBING DIAGRAM

3 — N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2	———	WALL MTG. BRKT.
3	2	———	INSULATORS
4	4	———	5/8"-11x1" H.H.C.S.
5	4	———	5/8 LOCKWASHER



GROUND BAR - DETAIL

5 — N.T.S.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
–48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2147
SITE NAME: WESTBROOK SP TOWER
RTE 1 SHERWOOD ISLAND
WESTPORT, CT 06880
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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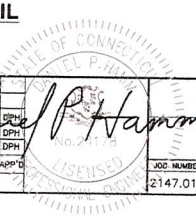
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB



AT&T
PLUMBING DIAGRAM & DETAILS (LTE)

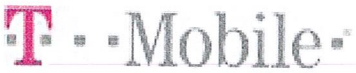
JOB NUMBER	DRAWING NUMBER	REV
2147.01	G-1	2

DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND ITS FOUNDATION FOR PROPOSED REARRANGEMENT OF COAXIAL CABLE AND PROPOSED ANTENNA ARRANGEMENTS

Site Name: Connecticut State Police Tower
Site Address: 880 Post Road East
Westport, Connecticut

prepared for

Verizon Wireless
99 East River Drive
East Hartford, Connecticut 06108



35 Griffin Rd
Bloomfield, CT 06002

AT&T Mobility

500 Enterprise
Drive, Suite 3A
Rocky Hill, CT 06067

prepared by

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

36922241.00000
VZ5-083

May 19, 2011

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the 180' self-supporting lattice tower located at 880 Post Road East in Westport, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code, the TIA/EIA-222-F standard and additional requirements of the Connecticut State Police for wind velocity of 90 mph concurrent with ½" ice design wind load. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Analysis Methodology and Loading Condition Section of this report. The proposed Verizon Wireless, AT&T, and T-Mobile modification is as follows:

Antenna and Mount	Carrier	Antenna Center Elevation
Remove (3) DB948F85E-M antenna (2) DB844H90-XY antenna (12) 1-5/8" coaxial cables (1) EW-65 coaxial cable	**Verizon Wireless (existing)**	**@ 155'**
Install: (1) P65-15-XL-2 antenna (2) LNX-6512DS-T4M antenna (4) DB844G65ZAXY antenna (6) MG D3-800T0 antenna (12) Diplexers (18) LDF7-50A cable (1) EW-65 coaxial cable	**Verizon Wireless (proposed)**	**@ 155'**
Remove (1) Powerwave 7770 antenna (2) LDF6-50A cable	**AT&T (existing)**	**@ 133'**
Install: (9) Powerwave P65-16-XLH-RR antenna (6) Ericsson RRU diplexer (6) Powerwave TT19-08BP111 TMA (1) Raycap Surge Suppressor (12) LDF7-50A cable (1) 3/8" Fiber (2) 5/8" DC Cables	**AT&T (proposed)**	**@ 133'**
Install: (3) RFS APX16DWV-16DWVS antenna (3) TMA (6) LDF7-50A cable	**T-Mobile (proposed)**	**@ 125'**

Note: Verizon - Two existing DB844H90-XY to remain.

The results of the analysis indicate that the tower structure has sufficient capacity to support the proposed loading conditions once the coaxial cables have been relocated as indicated in Section 6. **The tower and its foundation are considered structurally adequate for the proposed antenna loading with the wind load classification specified above once the proposed modifications have been performed.**

The tower deflection (sway) is 0.55 degrees, and the tower rotation (twist) is 0.15 degrees with a wind velocity of 90 mph concurrent with 0.5" ice. **The tower deflection and rotation are within the Connecticut State Police specification of 0.75 degrees for deflection (sway) and rotation (twist).**

1. EXECUTIVE SUMMARY *(continued)*

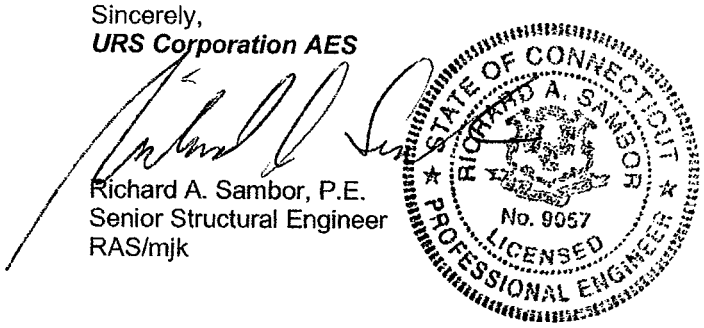
This analysis is based on:

1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.
2) Original tower report prepared by Rohn Industries, Inc., engineering file 26263DL and drawing C910693 dated February 1, 1991.
3) Soil investigation and foundation capacity report prepared by Dr. Clarence Welti, P.E., P.C., dated October 10, 2002.
4) Antenna inventory provided by Connecticut State Police via email dated March 21, 2011.
5) Proposed antenna inventory provided by Verizon Wireless via RFDS sheet dated April 1, 2010.
6) Proposed antenna inventory provided by AT&T via RFDS sheet dated March 5, 2010.
7) Proposed antenna inventory provided by T-Mobile via RFDS sheet dated November 7, 2008.
8) Antenna and mount configuration as specified on the following page of this report.

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. 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 AES



Richard A. Sambor, P.E.
Senior Structural Engineer
RAS/mjk

2. INTRODUCTION

The subject tower is located at 880 Post Road East in Westport, Connecticut. The structure is a 180' self-supporting lattice tower manufactured by Rohn Industries Incorporated. The inventory is summarized in the table below:

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(1) Yagi Antenna	CSP (existing)	Standoff	@ 180'	(1) LDF5-50A
(1) Celwave PA6-65 dish	CSP (reserved)	Dish Standoff	@ 177'	(1) EW-63
(1) Celwave PA6-85 dish	CSP (existing)	Dish Standoff	@ 177'	(1) EW-63
(1) Decibel PD-1142 whip	CSP (reserved)	Leg Mount	@ 175'	(1) LDF5-50A
(2) Scala AP11-850 antenna	CSP (existing)	Leg Mount	@ 175'	(2) LDF7-50A
(1) Andrew PAR6-105 dish	Verizon (existing)	Dish Standoff	@ 170'	(1) EW-65
(1) Andrew P6F-9 dish	CSP (existing)	Leg Mount	@ 169'	(1) EW-63
(1) Yagi Antenna	CSP (existing)	Leg Mount	@ 167'	(1) LDF5-50A
(1) Scala AP11-850 antenna	CSP (existing)	Leg Mount	@ 175'	(1) LDF7-50A
(2) Scala OGT9-806 inverted whips	CSP (existing)	Standoff	@ 160'	(2) LDF7-50A
(1) Decibel DB222 dipole	CSP (existing)	Standoff	@ 160'	(1) LDF5-50A
(1) Decibel DB536 whip	CSP (existing)	Standoff	@ 160'	(1) LDF4-50A
(2) Decibel DB844H90-XY	Verizon (existing)	(3) 15' T-Frames	@ 155'	----
(1) P65-15-XL-2 (2) LNX-6512DS-T4M (4) DB844G65ZAXY (6) MG D3-800T0 (12) Diplexers	**Verizon (proposed)**	***Included in Above***	**@ 155'**	**(18) LDF7-50A**
(1) Amphenol BCD806-09 inverted whip	CSP (existing)	Standoff	@ 150'	(1) LDF7-50A
(9) Powerwave P65-16-XLH-RR antenna (6) Ericsson RRU diplexer (6) Powerwave TMA (1) Raycap Surge Suppressor	**AT&T (proposed)**	**(3) 15' T-Frames**	**@ 133'**	**(12) LDF7-50A (1) 3/8" Fiber (2) 5/8" DC Cables**
(3) RFS APX16PV-16PVL antenna (6) TMAs	T-Mobile (existing)	(3) T-Frames	@ 125'	(12) LDF7-50A
(3) RFS APX16DWV-16DWVS antennas (3) TMAs	**T-Mobile (proposed)**	***Included in Above***	**@ 125'**	**(6) LDF7-50A**
(2) GPS Antenna	Unknown (existing)	Leg Mount	@ 60'	(1) LDF4-50A

2. INTRODUCTION *(continued)*

This structural analysis of the communications tower was performed by URS Corporation, AES (URS) for Verizon Wireless, AT&T, and T-Mobile. The purpose of this analysis was to analyze the existing tower for its existing and proposed antenna loads. This analysis was conducted to evaluate twist (rotation), sway (deflection) and stress on the tower, and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the 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 RISA Tower 5.3.1.0. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 90 mph (fastest mile) Wind Load + Tower Dead Load
Load Condition 2 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

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

The combined axial and bending stresses on the 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 with the modifications to the coaxial cable locations as indicated in Section 6, are below the allowable stresses for the tower structure. The foundation reactions were below the allowable values in the foundation capacity report. The anchor bolts under the proposed loading were found to be within the allowable limits. The tower deflection does not exceed the Connecticut State Police specification of 0.75 degrees for deflection (sway) and rotation (twist).

Tower Base Reactions:

Description	Original	Revised Reactions (Geotech 10/10/2002)	Current	Stress (% capacity)	Pass/ Fail
Pier Compression (kips)	319.9	374	327	87.4	Pass
Pier Uplift (kips)	276.7	324	278	85.8	Pass
Overall Overturning (kip-ft)	7010.3	---	7300	---	---
Overall Shear (kips)	61.5	---	66	---	---
Shear per Leg (kips)	41.0	48	40	83.3	Pass

Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Controlling Component/ Elevation	Stress (% capacity)	Pass/ Fail	Comments:
Tower Leg (T12)	ROHN 8 EHS / 20'-30'	84.3	Pass	
Diagonal (T6)	ROHN 2.5 EH / 100'-120'	89.9	Pass	
Horizontal (T11)	ROHN 2.5 STD / 30'-40'	64.3	Pass	
Top Girt (T12)	ROHN 2.5 STD / 20'-30'	73.2	Pass	
Redund Horz 1 Bracing (T13)	ROHN 1.5 STD / 0'-20'	29.0	Pass	
Redund Diag 1 Bracing (T13)	ROHN 1.5 STD / 0'-20'	81.4	Pass	
Redund Hip 1 Bracing (T13)	ROHN 2.5 STD / 0'-20'	0.1	Pass	
Inner Bracing (T5)	L2x2x1/8 / 120'-126.667'	5.6	Pass	
Anchor Bolts	1" Dia. / Tension	53.0	Pass	Min area per ASCE @ 55%

Tower Twist & Sway at Top:

Description	Current	Total Allowable
Tower Twist (degrees)	0.1451	
Tower Sway (degrees)	0.5544	
Total Deflection (degrees)	0.6995	0.75

5. CONCLUSIONS

The results of the analysis indicate that the tower superstructure steel stresses are within the allowable limits. Also, the loading to the tower foundation is less than the design reactions utilized in the *Evaluation of Existing Foundation for Increased Design Loads*, prepared by Dr. Clarence Welti, P.E., P.C, signed and sealed October 10, 2002. **Therefore, the overall tower structure and its foundation are deemed structurally adequate for the proposed antenna loading and rearrangement of coaxial cables for the wind load classification specified above. See Section 6 for proposed coaxial cable locations.**

The tower deflection (sway) is 0.55 degrees, and the tower twist is 0.15 degrees with a wind velocity of 90 mph concurrent with 0.5" ice. **The tower deflection and twist are within the Connecticut State Police specification of 0.75 degrees for deflection (sway) and twist.**

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.

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.

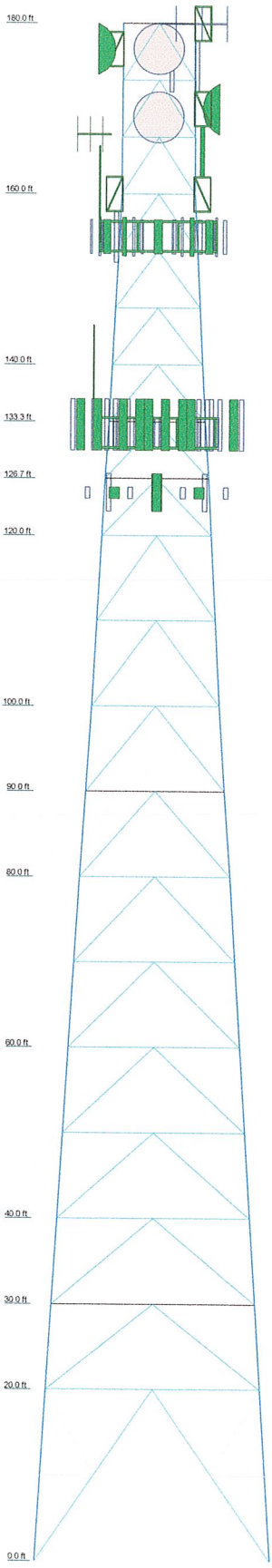
After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

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

6.) DRAWINGS AND DATA

RISA TOWER INPUT / OUPUT SUMMARY

Section	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EH			ROHN 6 EHS		ROHN 6 EH		ROHN 6 EHS		ROHN 5 EH		ROHN 4 STD	ROHN 3 STD
Leg Grade						A572-50							
Diagonals			P3.5x.226			ROHN 3 STD		ROHN 2.5 EH		ROHN 2 EH		ROHN 2 STD	
Diagonal Grade						A572-50							
Top Girts	N.A.	ROHN 2.5 STD		N.A.		ROHN 2 STD	N.A.	N.A.		ROHN 2 STD		N.A.	ROHN 1.5 STD
Horizontals	P3.5x.226	N.A.		ROHN 2.5 STD		N.A.		ROHN 2 STD		N.A.	ROHN 2 STD	ROHN 1.5 STD	
Red. Horizontals	ROHN 1.5 STD					N.A.							
Red. Diagonals	ROHN 1.5 STD					N.A.							
Red. Hips	ROHN 2.5 STD					N.A.							
Inner Bracing	ROHN 2 STD		L3 1/2x3 1/2x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16				L2x2x1/8		
Face Width (ft)	27.677	26.177	22.677	20.177	17.677	16.3586	15.042	12.792	12.0977	11.4033	10.708	8.625	6.542
# Panels @ (ft)	1 @ 20		10 @ 10									9 @ 6.66667	
Weight (K)	6.2	2.5	2.4	4.7	4.1	1.7	1.7	2.8	0.9	0.9	0.8	1.6	1.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
3' Yagi (CSP)	180	P65-15-XL-2 (Verizon)	155
Standoff (CSP)	180	BCD-80609 (CSP)	150
Standoff (CSP)	180	P65-16-XLH-RR (ATI)	133
Valmont Single Dish Standoff (1) (CSP)	177	P65-16-XLH-RR (ATI)	133
Valmont Single Dish Standoff (1) (CSP)	177	P65-16-XLH-RR (ATI)	133
PA6-65AC (CSP)	177	TT19-08BP111-001 TMA (ATI)	133
PA6-65AC (CSP)	177	TT19-08BP111-001 TMA (ATI)	133
AP11-650 (CSP)	175	TT19-08BP111-001 TMA (ATI)	133
PD1142 (CSP)	175	Raycap DC6-48-60-18-8F DC Power Surge Protection (ATI)	133
AP11-650 (CSP)	175		
Valmont Single Dish Standoff (1) (Verizon)	170	P65-16-XLH-RR (ATI)	133
PAR6-105 (Verizon)	170	P65-16-XLH-RR (ATI)	133
P6F-9 (CSP)	169	P65-16-XLH-RR (ATI)	133
3' Yagi (CSP)	167	(2) RRU (ATI)	133
AP11-650 (CSP)	165	(2) RRU (ATI)	133
Standoff (CSP)	160	(2) RRU (ATI)	133
OGT9-806 (CSP)	160	P65-16-XLH-RR (ATI)	133
OGT9-806 (CSP)	160	P65-16-XLH-RR (ATI)	133
DB536 (CSP)	160	P65-16-XLH-RR (ATI)	133
DB222 (CSP)	160	TT19-08BP111-001 TMA (ATI)	133
Standoff (CSP)	160	TT19-08BP111-001 TMA (ATI)	133
Standoff (CSP)	160	TT19-08BP111-001 TMA (ATI)	133
Standoff (CSP)	160	(2) CM1007-DBPXBC Diplexer (ATI)	133
Standoff (CSP)	160	(2) CM1007-DBPXBC Diplexer (ATI)	133
LNX-6512DS-T4M (Verizon)	155	(2) CM1007-DBPXBC Diplexer (ATI)	133
LNX-6512DS-T4M (Verizon)	155	Pirod 15' T-Frame Sector Mount (1) (ATI)	132
DB844H90-XY w/Mount Pipe (Verizon)	155	Pirod 15' T-Frame Sector Mount (1) (ATI)	132
DB844G65ZAXY w/Mount Pipe (Verizon)	155	Pirod 15' T-Frame Sector Mount (1) (ATI)	132
DB844H90-XY w/Mount Pipe (Verizon)	155	APX16PV-16PVL-C w/ mount (T-Mobile)	125
DB844G65ZAXY w/Mount Pipe (Verizon)	155	TMA (T-Mobile)	125
DB844G65ZAXY w/Mount Pipe (Verizon)	155	TMA (T-Mobile)	125
Rymsa MG D3-800Tx (Verizon)	155	(2) TMA (T-Mobile)	125
Rymsa MG D3-800Tx (Verizon)	155	(2) TMA (T-Mobile)	125
Rymsa MG D3-800Tx (Verizon)	155	TMA (T-Mobile)	125
(4) Diplexer (Verizon)	155	(2) TMA (T-Mobile)	125
(4) Diplexer (Verizon)	155	APX16PV-16PVL-C w/ mount (T-Mobile)	125
(4) Diplexer (Verizon)	155	APX16PV-16PVL-C w/ mount (T-Mobile)	126
Rymsa MG D3-800Tx (Verizon)	155	APX16DWW-16DWW-S-E-ACU w/ Mount (T-Mobile)	125
Rymsa MG D3-800Tx (Verizon)	155	APX16DWW-16DWW-S-E-ACU w/ Mount (T-Mobile)	125
Rymsa MG D3-800Tx (Verizon)	155	APX16DWW-16DWW-S-E-ACU w/ Mount (T-Mobile)	125
Pirod 15' T-Frame Sector Mount (1) (Verizon)	155	(2) GPS (GPS)	60
Pirod 15' T-Frame Sector Mount (1) (Verizon)	155		
Pirod 15' T-Frame Sector Mount (1) (Verizon)	155		

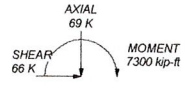
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

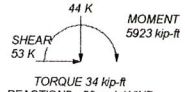
TOWER DESIGN NOTES

1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 90 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 89.9%

MAX. CORNER REACTIONS AT BASE:
DOWN: 327 K
UPLIFT: -278 K
SHEAR: 40 K



TORQUE 50 kip-ft
90 mph WIND - 0.5000 in ICE



TORQUE 34 kip-ft
REACTIONS - 90 mph WIND

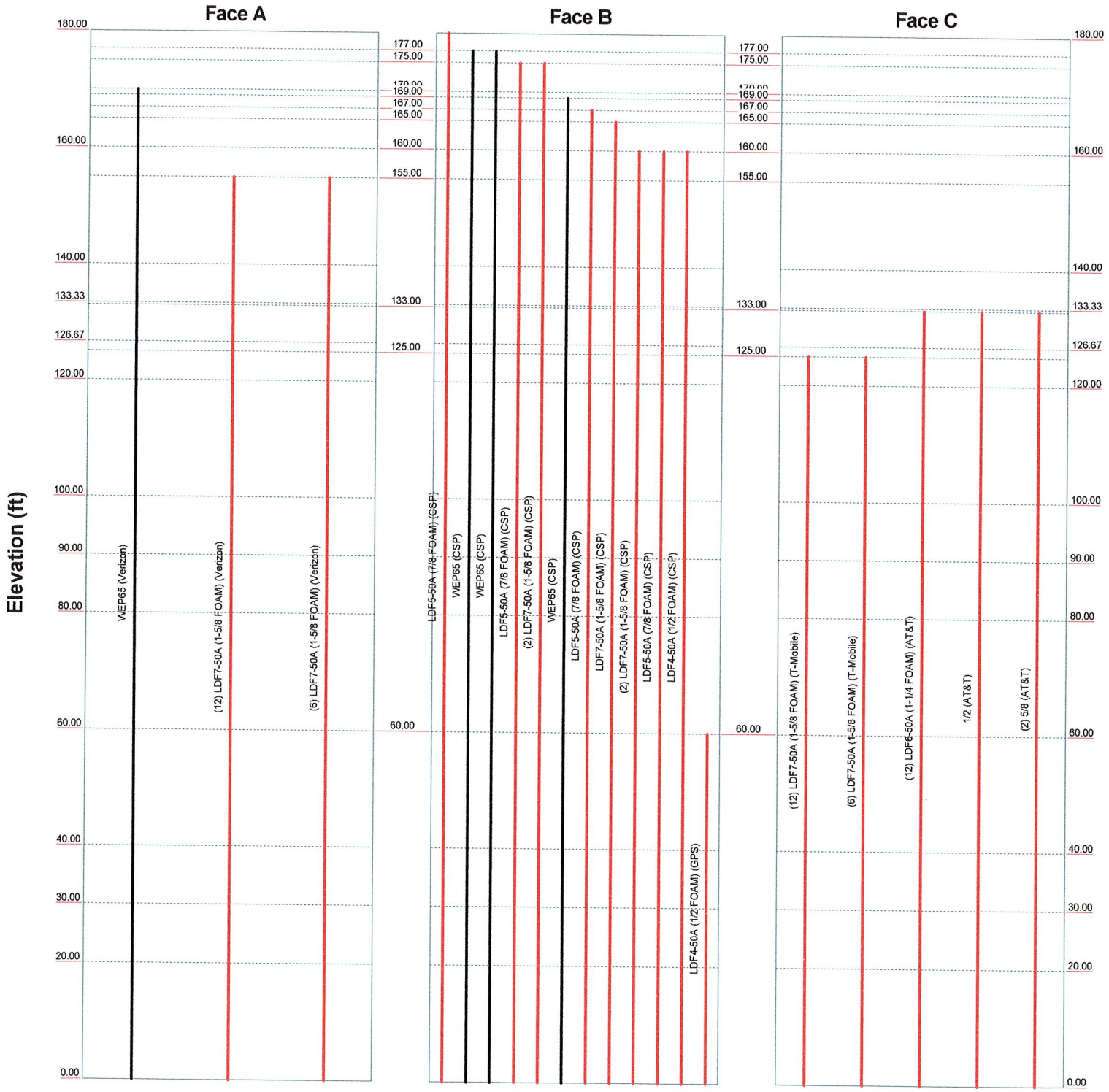
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: (860) 529-8882
FAX: (860) 529-3991

Job:	*180' CSP Lattice Tower*
Project:	*Westport, Connecticut*
Client: Verizon	Drawn by: Matthew Kapinos / Appd:
Code: TIA/EIA-222-F	Date: 05/19/11 / Scale: NTS
Path:	Dwg No. E-1

RISA TOWER FEEDLINE DISTRIBUTION

Feedline Distribution Chart
0' - 180'

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



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

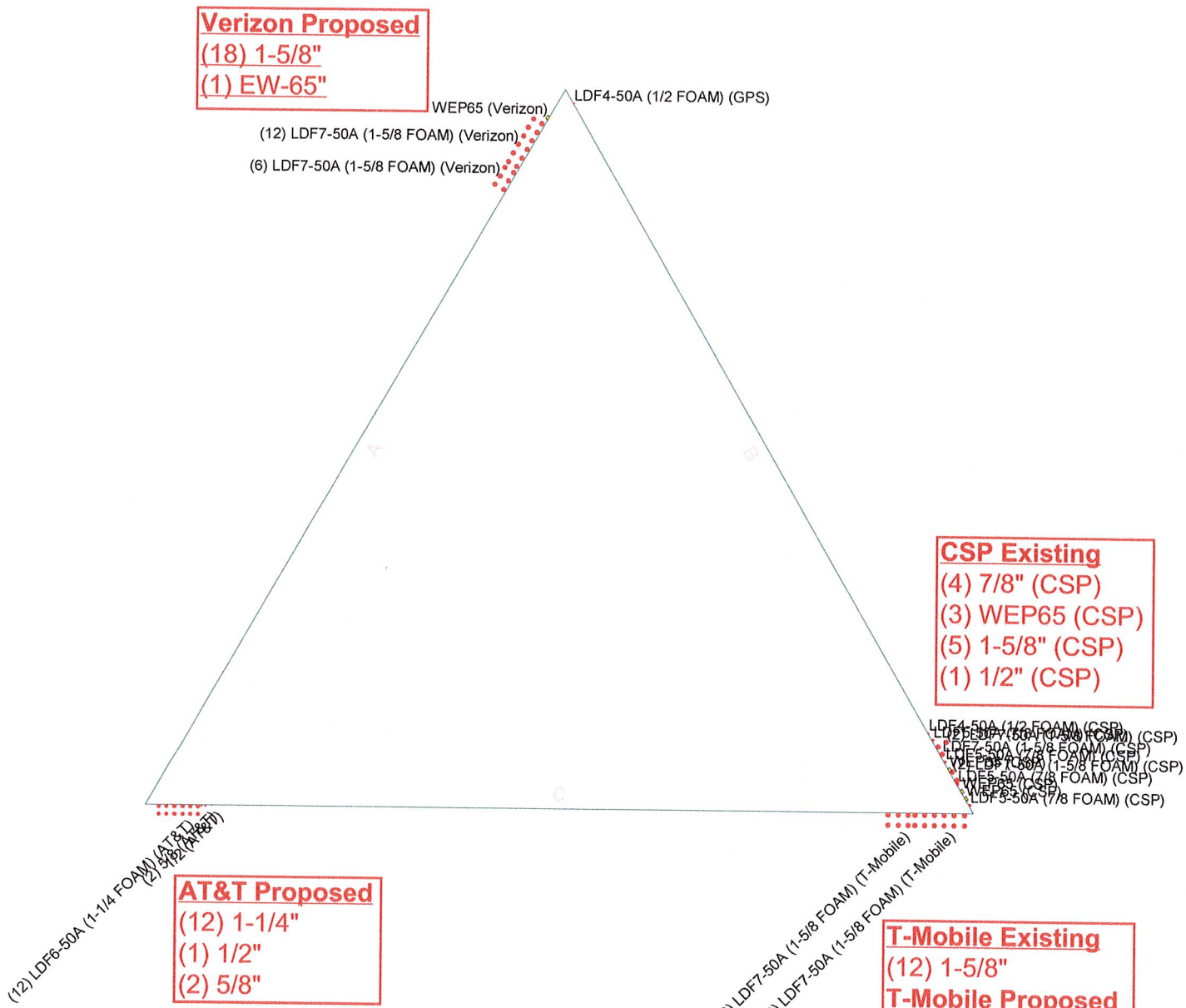
Job: ***180' CSP Lattice Tower***			
Project: ***Westport, Connecticut***			
Client: Verizon	Drawn by: Matthew Kapinos	App'd:	
Code: TIA/EIA-222-F	Date: 05/19/11	Scale: NTS	
Path: P:\08\Without Reinforcement (with T-Mobile and AT&T)\ER Files\180 Self-Supported Lattice Tower.eri		Dwg No. E-7	

RISA TOWER FEEDLINE PLAN

FINAL CONDITION

Feedline Plan

Round Flat App In Face App Out Face

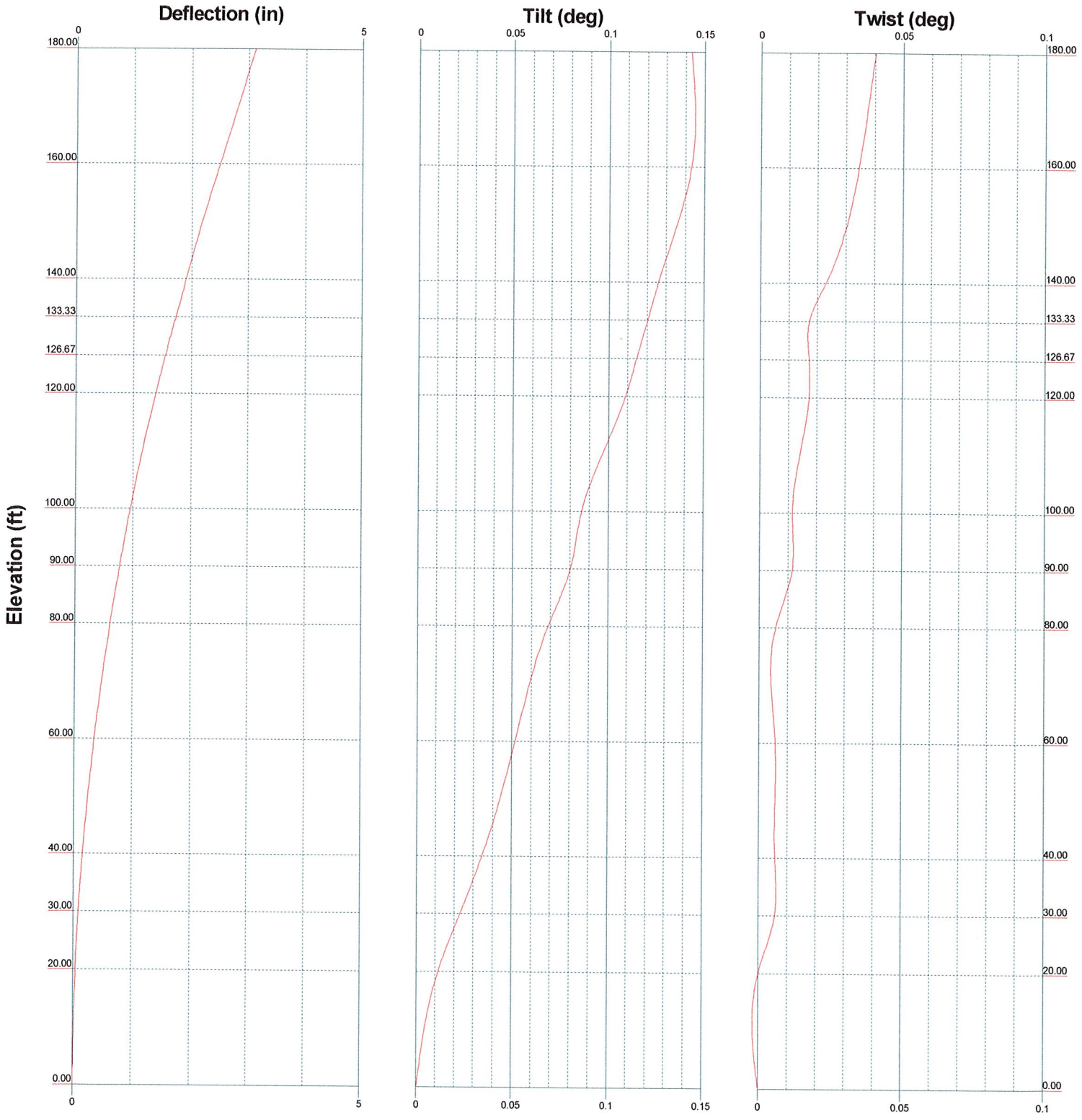


URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: (860) 529-8882 FAX: (860) 529-3991	Job: ***180' CSP Lattice Tower***		
	Project: ***Westport, Connecticut***		
	Client: Verizon	Drawn by: Matthew Kapinos	App'd:
	Code: TIA/EIA-222-F	Date: 05/19/11	Scale: NTS
	Path: P:\05\Without Reinforcement (with T-Mobile and AT&T)\ER Files\180' Self-Supported Lattice Tower.ep		Dwg No. E-7

RISA TOWER DEFLECTION, TILT, AND TWIST

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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

Job: ***180' CSP Lattice Tower***			
Project: ***Westport, Connecticut***			
Client: Verizon	Drawn by: Matthew Kapinos	App'd:	
Code: TIA/EIA-222-F	Date: 05/19/11	Scale: NTS	
Path: P:\06\Without Reinforcement (with T-Mobile and AT&T)\ER Rev\180' Self-Supported Lattice Tower.eri		Dwg No. E-5	

DETAILED OUTPUT

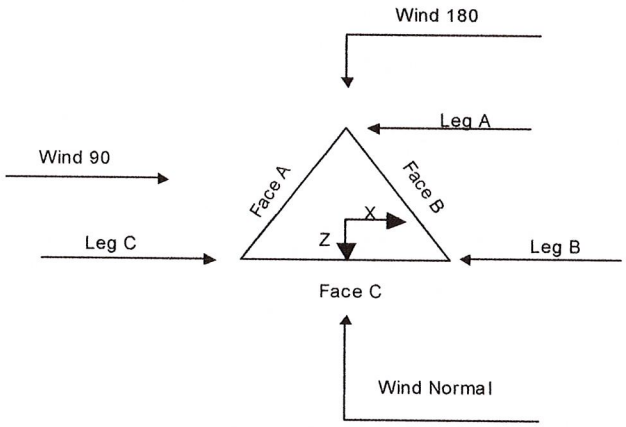
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 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 8.54 ft at the top and 27.68 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 90 mph is used in combination with ice.
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, feedline supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-160.00			8.54	1	20.00
T2	160.00-140.00			8.63	1	20.00
T3	140.00-133.33			10.71	1	6.67
T4	133.33-126.67			11.40	1	6.67
T5	126.67-120.00			12.10	1	6.67
T6	120.00-100.00			12.79	1	20.00
T7	100.00-90.00			15.04	1	10.00
T8	90.00-80.00			16.36	1	10.00
T9	80.00-60.00			17.68	1	20.00
T10	60.00-40.00			20.18	1	20.00
T11	40.00-30.00			22.68	1	10.00
T12	30.00-20.00			23.93	1	10.00
T13	20.00-0.00			25.18	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180.00-160.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T2	160.00-140.00	6.67	K Brace Down	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T3	140.00-133.33	6.67	K Brace Down	No	Yes	0.0000	0.0000
T4	133.33-126.67	6.67	K Brace Down	No	Yes	0.0000	0.0000
T5	126.67-120.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T6	120.00-100.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T7	100.00-90.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T8	90.00-80.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T9	80.00-60.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T10	60.00-40.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T11	40.00-30.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T12	30.00-20.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T13	20.00-0.00	20.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-160.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 160.00-140.00	Pipe	ROHN 4 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 140.00-133.33	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T4 133.33-126.67	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T5 126.67-120.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T6 120.00-100.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)
T7 100.00-90.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T8 90.00-80.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T9 80.00-60.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T10 60.00-40.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T11 40.00-30.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T12 30.00-20.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T13 20.00-0.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T4 133.33-126.67	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T5 126.67-120.00	Pipe	ROHN 2 STD	A572-50	Solid Round		A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T8 90.00-80.00	Pipe	ROHN 2 STD	(50 ksi) A572-50 (50 ksi)	Single Angle		(36 ksi) A36 (36 ksi)
T12 30.00-20.00	Pipe	ROHN 2.5 STD	(50 ksi) A572-50 (50 ksi)	Single Angle		(36 ksi) 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
T1 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 140.00-133.33	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 133.33-126.67	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 126.67-120.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 120.00-100.00	None	Single Angle		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T7 100.00-90.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T8 90.00-80.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T9 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T10 60.00-40.00	None	Single Angle		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T11 40.00-30.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T12 30.00-20.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T13 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-160.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 160.00-140.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T3 140.00-133.33	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 133.33-126.67	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 126.67-120.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T6 120.00-100.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 100.00-90.00	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 90.00-80.00	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T9 80.00-60.00	Solid Round		A36 (36 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T10 60.00-40.00	Single Angle		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T11 40.00-30.00	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T12 30.00-20.00	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T13 20.00-0.00	Solid Round		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T13 20.00-0.00	A572-50 (50 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	0.8
		Diagonal (1)	Pipe	ROHN 1.5 STD	0.8
		Hip (1)	Pipe	ROHN 2.5 STD	0.8

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 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 140.00-133.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 133.33-126.67	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 126.67-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
T8 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T11 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T12 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T13 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1 180.00-160.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 160.00-140.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 140.00-133.33	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 133.33-126.67	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 126.67-120.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 120.00-100.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 100.00-90.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 90.00-80.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 80.00-60.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T10 60.00-40.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T11 40.00-30.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T12 30.00-20.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T13 20.00-0.00	Yes	Yes	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 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-133.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 133.33-126.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 126.67-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 180.00-160.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 160.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 140.00-133.33	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 133.33-126.67	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 126.67-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 120.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 100.00-90.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 90.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 60.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T11 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T12 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T13 20.00-0.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8 FOAM) (CSP)	B	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.49	1	1	1.0900	1.0900		0.33
WEP65 (CSP)	B	Yes	Af (CfAe)	177.00 - 0.00	0.0000	0.48	1	1	1.5836	1.5836	5.1284	0.53
WEP65 (CSP)	B	Yes	Af (CfAe)	177.00 - 0.00	0.0000	0.47	1	1	1.5836	1.5836	5.1284	0.53
LDF5-50A (7/8 FOAM) (CSP)	B	Yes	Ar (CfAe)	175.00 - 0.00	0.0000	0.46	1	1	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM) (CSP)	B	Yes	Ar (CfAe)	175.00 - 0.00	0.0000	0.45	2	2	1.9800	1.9800		0.82
WEP65 (Verizon)	A	Yes	Af (CfAe)	170.00 - 0.00	0.0000	0.46	1	1	1.5836	1.5836	5.1284	0.53
WEP65 (CSP)	B	Yes	Af (CfAe)	169.00 - 0.00	0.0000	0.44	1	1	1.5836	1.5836	5.1284	0.53
LDF5-50A (7/8 FOAM) (CSP)	B	Yes	Ar (CfAe)	167.00 - 0.00	0.0000	0.43	1	1	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM) (CSP)	B	Yes	Ar (CfAe)	165.00 - 0.00	0.0000	0.42	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP)	B	Yes	Ar (CfAe)	160.00 - 0.00	0.0000	0.41	2	1	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM) (CSP)	B	Yes	Ar (CfAe)	160.00 - 0.00	0.0000	0.4	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM) (CSP)	B	Yes	Ar (CfAe)	160.00 - 0.00	0.0000	0.39	1	1	0.6300	0.6300		0.15
LDF7-50A (1-5/8 FOAM) (Verizon)	A	Yes	Ar (CfAe)	155.00 - 0.00	0.0000	0.42	12	6	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (T-Mobile)	C	Yes	Ar (CfAe)	125.00 - 0.00	0.0000	-0.46	12	6	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (T-Mobile)	C	Yes	Ar (CfAe)	125.00 - 0.00	0.0000	-0.41	6	3	1.9800	1.9800		0.82

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF4-50A (1/2 FOAM) (GPS)	B	Yes	Ar (CfAe)	60.00 - 0.00	0.0000	-0.48	1	1	0.6300	0.6300		0.15
LDF6-50A (1-1/4 FOAM) (AT&T)	C	Yes	Ar (CfAe)	133.00 - 0.00	0.0000	0.46	12	6	1.5500	1.5500		0.66
LDF7-50A (1-5/8 FOAM) (Verizon)	A	Yes	Ar (CfAe)	155.00 - 0.00	0.0000	0.37	6	3	1.9800	1.9800		0.82
1/2 (AT&T)	C	Yes	Ar (CfAe)	133.00 - 0.00	0.0000	0.42	1	1	0.5800	0.5800		0.25
5/8 (AT&T)	C	Yes	Ar (CfAe)	133.00 - 0.00	0.0000	0.43	2	2	0.8800	0.8800		0.40

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	180.00-160.00	A	0.000	1.320	0.000	0.000	0.01
		B	9.590	5.674	0.000	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	22.275	2.639	0.000	0.000	0.23
		B	21.517	7.918	0.000	0.000	0.14
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-133.33	A	9.900	0.880	0.000	0.000	0.10
		B	7.172	2.639	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
T4	133.33-126.67	A	9.900	0.880	0.000	0.000	0.10
		B	7.172	2.639	0.000	0.000	0.05
		C	6.143	0.000	0.000	0.000	0.06
T5	126.67-120.00	A	9.900	0.880	0.000	0.000	0.10
		B	7.172	2.639	0.000	0.000	0.05
		C	13.892	0.000	0.000	0.000	0.13
T6	120.00-100.00	A	29.700	2.639	0.000	0.000	0.31
		B	21.517	7.918	0.000	0.000	0.14
		C	49.100	0.000	0.000	0.000	0.47
T7	100.00-90.00	A	14.850	1.320	0.000	0.000	0.15
		B	10.758	3.959	0.000	0.000	0.07
		C	24.550	0.000	0.000	0.000	0.24
T8	90.00-80.00	A	14.850	1.320	0.000	0.000	0.15
		B	10.758	3.959	0.000	0.000	0.07
		C	24.550	0.000	0.000	0.000	0.24
T9	80.00-60.00	A	29.700	2.639	0.000	0.000	0.31
		B	21.517	7.918	0.000	0.000	0.14
		C	49.100	0.000	0.000	0.000	0.47
T10	60.00-40.00	A	29.700	2.639	0.000	0.000	0.31
		B	22.567	7.918	0.000	0.000	0.15
		C	49.100	0.000	0.000	0.000	0.47
T11	40.00-30.00	A	14.850	1.320	0.000	0.000	0.15
		B	11.283	3.959	0.000	0.000	0.07
		C	24.550	0.000	0.000	0.000	0.24
T12	30.00-20.00	A	14.850	1.320	0.000	0.000	0.15
		B	11.283	3.959	0.000	0.000	0.07
		C	24.550	0.000	0.000	0.000	0.24
T13	20.00-0.00	A	29.700	2.639	0.000	0.000	0.31

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
		B	22.567	7.918	0.000	0.000	0.15
		C	49.100	0.000	0.000	0.000	0.47

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	180.00-160.00	A	0.500	0.000	1.875	0.000	0.000	0.02
		B		16.007	8.063	0.000	0.000	0.22
		C		0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.500	33.525	3.750	0.000	0.000	0.67
		B		36.517	11.251	0.000	0.000	0.47
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-133.33	A	0.500	14.900	1.250	0.000	0.000	0.29
		B		12.172	3.750	0.000	0.000	0.16
		C		0.000	0.000	0.000	0.000	0.00
T4	133.33-126.67	A	0.500	14.900	1.250	0.000	0.000	0.29
		B		12.172	3.750	0.000	0.000	0.16
		C		9.901	0.929	0.000	0.000	0.17
T5	126.67-120.00	A	0.500	14.900	1.250	0.000	0.000	0.29
		B		12.172	3.750	0.000	0.000	0.16
		C		21.597	0.978	0.000	0.000	0.39
T6	120.00-100.00	A	0.500	44.700	3.750	0.000	0.000	0.88
		B		36.517	11.251	0.000	0.000	0.47
		C		75.967	2.933	0.000	0.000	1.37
T7	100.00-90.00	A	0.500	22.350	1.875	0.000	0.000	0.44
		B		18.258	5.626	0.000	0.000	0.23
		C		37.983	1.467	0.000	0.000	0.69
T8	90.00-80.00	A	0.500	22.350	1.875	0.000	0.000	0.44
		B		18.258	5.626	0.000	0.000	0.23
		C		37.983	1.467	0.000	0.000	0.69
T9	80.00-60.00	A	0.500	44.700	3.750	0.000	0.000	0.88
		B		36.517	11.251	0.000	0.000	0.47
		C		75.967	2.933	0.000	0.000	1.37
T10	60.00-40.00	A	0.500	44.700	3.750	0.000	0.000	0.88
		B		39.233	11.251	0.000	0.000	0.48
		C		75.967	2.933	0.000	0.000	1.37
T11	40.00-30.00	A	0.500	22.350	1.875	0.000	0.000	0.44
		B		19.617	5.626	0.000	0.000	0.24
		C		37.983	1.467	0.000	0.000	0.69
T12	30.00-20.00	A	0.500	22.350	1.875	0.000	0.000	0.44
		B		19.617	5.626	0.000	0.000	0.24
		C		37.983	1.467	0.000	0.000	0.69
T13	20.00-0.00	A	0.500	44.700	3.750	0.000	0.000	0.88
		B		39.233	11.251	0.000	0.000	0.48
		C		75.967	2.933	0.000	0.000	1.37

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	180.00-160.00	A	0.104	0.246	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		B	1.199	2.883	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	160.00-140.00	A	1.826	4.034	0.000	0.000
		B	2.157	5.271	0.000	0.000
		C	0.000	0.000	0.000	0.000
T3	140.00-133.33	A	0.812	1.749	0.000	0.000
		B	0.739	1.764	0.000	0.000
		C	0.000	0.000	0.000	0.000
T4	133.33-126.67	A	0.796	1.714	0.000	0.000
		B	0.725	1.729	0.000	0.000
		C	0.454	1.137	0.000	0.000
T5	126.67-120.00	A	0.782	1.684	0.000	0.000
		B	0.712	1.699	0.000	0.000
		C	1.008	2.328	0.000	0.000
T6	120.00-100.00	A	1.962	4.078	0.000	0.000
		B	1.786	4.114	0.000	0.000
		C	2.979	6.566	0.000	0.000
T7	100.00-90.00	A	1.064	2.139	0.000	0.000
		B	0.969	2.158	0.000	0.000
		C	1.616	3.445	0.000	0.000
T8	90.00-80.00	A	1.032	2.076	0.000	0.000
		B	0.939	2.094	0.000	0.000
		C	1.567	3.342	0.000	0.000
T9	80.00-60.00	A	2.124	4.212	0.000	0.000
		B	1.934	4.249	0.000	0.000
		C	3.226	6.782	0.000	0.000
T10	60.00-40.00	A	2.230	4.340	0.000	0.000
		B	2.102	4.618	0.000	0.000
		C	3.386	6.987	0.000	0.000
T11	40.00-30.00	A	1.090	2.122	0.000	0.000
		B	1.027	2.258	0.000	0.000
		C	1.655	3.416	0.000	0.000
T12	30.00-20.00	A	1.076	2.095	0.000	0.000
		B	1.014	2.229	0.000	0.000
		C	1.633	3.373	0.000	0.000
T13	20.00-0.00	A	2.260	4.605	0.000	0.000
		B	2.130	4.900	0.000	0.000
		C	3.431	7.413	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	180.00-160.00	7.8489	3.2992	8.4866	3.6623
T2	160.00-140.00	9.7528	-4.7977	10.9643	-4.5148
T3	140.00-133.33	9.1128	-7.2333	10.5173	-7.2298
T4	133.33-126.67	2.6299	-2.8240	3.1642	-2.2789
T5	126.67-120.00	8.9358	2.2473	9.6308	2.9500
T6	120.00-100.00	11.7184	3.9303	12.8405	4.8546
T7	100.00-90.00	12.5500	4.1651	13.8936	5.1996
T8	90.00-80.00	13.4556	4.4372	14.8998	5.5463
T9	80.00-60.00	13.3441	4.3666	15.1680	5.6058
T10	60.00-40.00	14.2976	4.1293	16.3302	5.0157
T11	40.00-30.00	15.2732	4.3873	17.4545	5.3356
T12	30.00-20.00	15.8995	4.5529	18.1771	5.5411

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T13	20.00-0.00	17.3049	4.9347	19.6314	5.9516

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert (ft / ft / ft)	Azimuth Adjustment (°)	Placement (ft)		C_AA_A Front (ft^2)	C_AA_A Side (ft^2)	Weight (K)
3' Yagi (CSP)	A	From Leg	1.50 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	2.08 3.79	2.08 3.79	0.03 0.05
Standoff (CSP)	A	From Leg	1.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	0.52 0.79	0.52 0.79	0.02 0.02
Standoff (CSP)	B	From Leg	1.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	0.52 0.79	0.52 0.79	0.02 0.02
Valmont Single Dish Standoff (1) (CSP)	C	From Leg	1.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice	2.64 3.69	2.64 3.69	0.04 0.05
Valmont Single Dish Standoff (1) (CSP)	A	From Leg	1.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice	2.64 3.69	2.64 3.69	0.04 0.05
PD1142 (CSP)	C	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	1.35 3.16	1.35 3.16	0.03 0.04
AP11-850 (CSP)	B	From Face	1.00 3.00 0.00	0.0000	175.00	No Ice 1/2" Ice	4.96 5.36	2.25 2.57	0.01 0.04
AP11-850 (CSP)	B	From Face	1.00 -3.00 0.00	0.0000	175.00	No Ice 1/2" Ice	4.96 5.36	2.25 2.57	0.01 0.04
Valmont Single Dish Standoff (1) (Verizon)	B	From Leg	1.00 0.00 0.00	0.0000	170.00	No Ice 1/2" Ice	2.64 3.69	2.64 3.69	0.04 0.05
3' Yagi (CSP)	C	From Leg	1.50 0.00 0.00	0.0000	167.00	No Ice 1/2" Ice	2.08 3.79	2.08 3.79	0.03 0.05
AP11-850 (CSP)	B	From Leg	1.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	4.96 5.36	2.25 2.57	0.01 0.04
Standoff (CSP)	A	From Leg	1.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.52 0.79	0.52 0.79	0.02 0.02
Standoff (CSP)	A	From Leg	1.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.52 0.79	0.52 0.79	0.02 0.02
Standoff (CSP)	B	From Leg	1.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.52 0.79	0.52 0.79	0.02 0.02
Standoff (CSP)	B	From Leg	1.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.52 0.79	0.52 0.79	0.02 0.02

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
Standoff (CSP)	C	From Leg	1.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.52 0.79	0.52 0.79	0.02 0.02
OGT9-806 (CSP)	A	From Leg	3.00 3.00 -11.00	0.0000	160.00	No Ice 1/2" Ice	2.15 3.25	2.15 3.25	0.02 0.03
OGT9-806 (CSP)	A	From Leg	3.00 -3.00 -11.00	0.0000	160.00	No Ice 1/2" Ice	2.15 3.25	2.15 3.25	0.02 0.03
DB536 (CSP)	C	From Leg	3.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	2.83 3.99	2.83 3.99	0.02 0.04
DB222 (CSP)	B	From Leg	3.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	1.60 2.88	1.60 2.88	0.02 0.02
Pirod 15' T-Frame Sector Mount (1) (Verizon)	A	From Face	1.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
Pirod 15' T-Frame Sector Mount (1) (Verizon)	B	From Face	1.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
Pirod 15' T-Frame Sector Mount (1) (Verizon)	C	From Face	1.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
P65-15-XL-2 (Verizon)	A	From Face	3.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	8.54 9.13	5.99 6.89	0.07 0.13
LNX-6512DS-T4M (Verizon)	B	From Face	3.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	5.61 6.01	3.35 3.71	0.03 0.06
LNX-6512DS-T4M (Verizon)	C	From Face	3.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	5.61 6.01	3.35 3.71	0.03 0.06
DB844H90-XY w/Mount Pipe (Verizon)	A	From Face	3.00 -6.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	0.04 0.08
DB844G65ZAXY w/Mount Pipe (Verizon)	B	From Face	3.00 -6.00 0.00	0.0000	155.00	No Ice 1/2" Ice	5.38 6.07	5.40 6.49	0.04 0.09
DB844G65ZAXY w/Mount Pipe (Verizon)	C	From Face	3.00 -6.00 0.00	0.0000	155.00	No Ice 1/2" Ice	5.38 6.07	5.40 6.49	0.04 0.09
DB844H90-XY w/Mount Pipe (Verizon)	A	From Face	3.00 6.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	0.04 0.08
DB844G65ZAXY w/Mount Pipe (Verizon)	B	From Face	3.00 6.00 0.00	0.0000	155.00	No Ice 1/2" Ice	5.38 6.07	5.40 6.49	0.04 0.09
DB844G65ZAXY w/Mount Pipe (Verizon)	C	From Face	3.00 6.00 0.00	0.0000	155.00	No Ice 1/2" Ice	5.38 6.07	5.40 6.49	0.04 0.09
Rymsa MG D3-800Tx (Verizon)	A	From Face	3.00 4.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.57 3.94	3.43 4.07	0.03 0.06
Rymsa MG D3-800Tx (Verizon)	B	From Face	3.00 4.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.57 3.94	3.43 4.07	0.03 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Rymsa MG D3-800Tx (Verizon)	C	From Face	3.00 4.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.57 3.94	3.43 4.07	0.03 0.06
(4) Diplexer (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	0.52 0.62	0.14 0.20	0.02 0.02
(4) Diplexer (Verizon)	B	From Leg	3.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	0.52 0.62	0.14 0.20	0.02 0.02
(4) Diplexer (Verizon)	C	From Leg	3.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	0.52 0.62	0.14 0.20	0.02 0.02
BCD-80609 (CSP)	C	From Leg	3.00 0.00 -11.00	0.0000	150.00	No Ice 1/2" Ice	3.33 4.63	3.33 4.63	0.04 0.07
Pirod 15' T-Frame Sector Mount (1) (AT&T)	A	From Face	1.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
Pirod 15' T-Frame Sector Mount (1) (AT&T)	B	From Face	1.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
Pirod 15' T-Frame Sector Mount (1) (AT&T)	C	From Face	1.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
APX16DWV-16DWV-S-E-A CU w/ Mount (T-Mobile)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	6.70 7.13	3.27 3.86	0.07 0.12
APX16DWV-16DWV-S-E-A CU w/ Mount (T-Mobile)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	6.70 7.13	3.27 3.86	0.07 0.12
APX16DWV-16DWV-S-E-A CU w/ Mount (T-Mobile)	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	6.70 7.13	3.27 3.86	0.07 0.12
TMA (T-Mobile)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.18 2.38	0.37 0.49	0.02 0.03
TMA (T-Mobile)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.18 2.38	0.37 0.49	0.02 0.03
TMA (T-Mobile)	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.18 2.38	0.37 0.49	0.02 0.03
(2) TMA (T-Mobile)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.18 2.38	0.37 0.49	0.02 0.03
(2) TMA (T-Mobile)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.18 2.38	0.37 0.49	0.02 0.03
(2) TMA (T-Mobile)	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.18 2.38	0.37 0.49	0.02 0.03
APX16PV-16PVL-C w/ mount (T-Mobile)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	6.65 7.08	2.90 3.48	0.05 0.10
APX16PV-16PVL-C w/ mount (T-Mobile)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	6.65 7.08	2.90 3.48	0.05 0.10

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
APX16PV-16PVL-C w/ mount (T-Mobile)	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	6.65 7.08	2.90 3.48	0.05 0.10
(2) GPS (GPS)	C	From Face	1.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.44 0.62	0.44 0.62	0.00 0.00
P65-16-XLH-RR (AT&T)	A	From Face	3.00 -4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
P65-16-XLH-RR (AT&T)	B	From Face	3.00 -4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
P65-16-XLH-RR (AT&T)	C	From Face	3.00 -4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
TT19-08BP111-001 TMA (AT&T)	A	From Face	3.00 -4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	0.02 0.02
TT19-08BP111-001 TMA (AT&T)	B	From Face	3.00 -4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	0.02 0.02
TT19-08BP111-001 TMA (AT&T)	C	From Face	3.00 -4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	0.02 0.02
Raycap DC6-48-60-18-8F DC Power Surge Protection (AT&T)	C	From Face	3.00 -5.00 0.00	0.0000	133.00	No Ice 1/2" Ice	1.27 1.46	1.27 1.46	0.05 0.07
P65-16-XLH-RR (AT&T)	A	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
P65-16-XLH-RR (AT&T)	B	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
P65-16-XLH-RR (AT&T)	C	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
(2) RRU (AT&T)	A	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice	3.79 4.16	1.02 1.23	0.06 0.08
(2) RRU (AT&T)	B	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice	3.79 4.16	1.02 1.23	0.06 0.08
(2) RRU (AT&T)	C	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice	3.79 4.16	1.02 1.23	0.06 0.08
P65-16-XLH-RR (AT&T)	A	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
P65-16-XLH-RR (AT&T)	B	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
P65-16-XLH-RR (AT&T)	C	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.06 0.11
TT19-08BP111-001 TMA (AT&T)	A	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	0.02 0.02

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
TT19-08BP111-001 TMA (AT&T)	B	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	0.02 0.02
TT19-08BP111-001 TMA (AT&T)	C	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	0.02 0.02
(2) CM1007-DBPXBC Diplexer (AT&T)	A	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.43 0.52	0.16 0.21	0.01 0.01
(2) CM1007-DBPXBC Diplexer (AT&T)	B	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.43 0.52	0.16 0.21	0.01 0.01
(2) CM1007-DBPXBC Diplexer (AT&T)	C	From Face	3.00 4.00 0.00	0.0000	133.00	No Ice 1/2" Ice	0.43 0.52	0.16 0.21	0.01 0.01
Rymsa MG D3-800Tx (Verizon)	A	From Face	3.00 -4.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.57 3.94	3.43 4.07	0.03 0.06
Rymsa MG D3-800Tx (Verizon)	B	From Face	3.00 -4.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.57 3.94	3.43 4.07	0.03 0.06
Rymsa MG D3-800Tx (Verizon)	C	From Face	3.00 -4.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.57 3.94	3.43 4.07	0.03 0.06

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
PA6-65AC (CSP)	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		177.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP)	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		177.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PAR6-105 (Verizon)	B	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		170.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.14 0.29
P6F-9 (CSP)	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		169.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.14 0.29

Tower Pressures - No Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.597	33	177.503	A	1.320	24.595	11.667	45.02	0.000	0.000
180.00-160.00					B	5.674	33.090		30.10	0.000	0.000
					C	0.000	24.699		47.24	0.000	0.000
T2	150.00	1.541	32	200.850	A	2.639	49.274	15.027	28.95	0.000	0.000
160.00-140.00					B	7.918	48.185		26.79	0.000	0.000
					C	0.000	28.825		52.13	0.000	0.000
T3	136.67	1.501	31	76.803	A	0.880	20.657	6.192	28.75	0.000	0.000
140.00-133.33					B	2.639	18.003		30.00	0.000	0.000
					C	0.000	11.570		53.52	0.000	0.000
T4	130.00	1.48	31	81.431	A	0.880	20.889	6.192	28.45	0.000	0.000
133.33-126.67					B	2.639	18.233		29.67	0.000	0.000
					C	0.000	17.475		35.44	0.000	0.000
T5	123.33	1.457	30	86.060	A	0.880	21.138	6.192	28.12	0.000	0.000
126.67-120.00					B	2.639	18.481		29.32	0.000	0.000
					C	0.000	24.904		24.86	0.000	0.000
T6	110.00	1.411	29	289.399	A	2.639	66.339	22.130	32.08	0.000	0.000
120.00-100.00					B	7.918	58.332		33.40	0.000	0.000
					C	0.000	84.722		26.12	0.000	0.000
T7	95.00	1.353	28	162.540	A	1.320	35.012	11.074	30.48	0.000	0.000
100.00-90.00					B	3.959	31.016		31.66	0.000	0.000
					C	0.000	44.161		25.08	0.000	0.000
T8 90.00-80.00	85.00	1.31	27	175.715	A	1.320	35.566	11.074	30.02	0.000	0.000
					B	3.959	31.567		31.17	0.000	0.000
					C	0.000	44.731		24.76	0.000	0.000
T9 80.00-60.00	70.00	1.24	26	392.943	A	2.639	80.588	28.825	34.63	0.000	0.000
					B	7.918	72.596		35.80	0.000	0.000
					C	0.000	98.887		29.15	0.000	0.000
T10	50.00	1.126	23	442.943	A	2.639	85.125	28.825	32.84	0.000	0.000
60.00-40.00					B	7.918	78.120		33.50	0.000	0.000
					C	0.000	103.369		27.89	0.000	0.000
T11	35.00	1.017	21	240.222	A	1.320	43.519	14.412	32.14	0.000	0.000
40.00-30.00					B	3.959	40.015		32.77	0.000	0.000
					C	0.000	52.654		27.37	0.000	0.000
T12	25.00	1	21	252.722	A	1.320	44.162	14.412	31.69	0.000	0.000
30.00-20.00					B	3.959	40.657		32.30	0.000	0.000
					C	0.000	53.304		27.04	0.000	0.000
T13 20.00-0.00	10.00	1	21	542.943	A	2.639	87.017	28.825	32.15	0.000	0.000
					B	7.918	80.013		32.78	0.000	0.000
					C	0.000	105.246		27.39	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.597	33	0.5000	179.170	A	1.875	33.688	15.000	42.18	0.000	0.000
180.00-160.00						B	8.063	47.057		27.21	0.000	0.000
						C	0.000	33.933		44.20	0.000	0.000
T2	150.00	1.541	32	0.5000	202.519	A	3.750	67.914	18.366	25.63	0.000	0.000
160.00-140.00						B	11.251	69.668		22.70	0.000	0.000
						C	0.000	38.423		47.80	0.000	0.000
T3	136.67	1.501	31	0.5000	77.359	A	1.250	28.098	7.305	24.89	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
140.00-133.33						B	3.750	25.355		25.10	0.000	0.000
						C	0.000	14.947		48.88	0.000	0.000
T4	130.00	1.48	31	0.5000	81.988	A	1.250	28.439	7.305	24.61	0.000	0.000
133.33-126.67						B	3.750	25.696		24.81	0.000	0.000
						C	0.929	24.017		29.28	0.000	0.000
T5	123.33	1.457	30	0.5000	86.617	A	1.250	28.803	7.305	24.31	0.000	0.000
126.67-120.00						B	3.750	26.060		24.51	0.000	0.000
						C	0.978	34.857		20.39	0.000	0.000
T6	110.00	1.411	29	0.5000	291.068	A	3.750	88.665	25.470	27.56	0.000	0.000
120.00-100.00						B	11.251	80.446		27.78	0.000	0.000
						C	2.933	117.444		21.16	0.000	0.000
T7 100.00-90.00	95.00	1.353	28	0.5000	163.375	A	1.875	46.398	12.745	26.40	0.000	0.000
						B	5.626	42.287		26.60	0.000	0.000
						C	1.467	60.726		20.49	0.000	0.000
T8 90.00-80.00	85.00	1.31	27	0.5000	176.550	A	1.875	47.166	12.745	25.99	0.000	0.000
						B	5.626	43.056		26.18	0.000	0.000
						C	1.467	61.533		20.23	0.000	0.000
T9 80.00-60.00	70.00	1.24	26	0.5000	394.613	A	3.750	104.280	32.167	29.78	0.000	0.000
						B	11.251	96.059		29.98	0.000	0.000
						C	2.933	132.977		23.67	0.000	0.000
T10 60.00-40.00	50.00	1.126	23	0.5000	444.613	A	3.750	109.507	32.167	28.40	0.000	0.000
						B	11.251	103.762		27.97	0.000	0.000
						C	2.933	138.127		22.80	0.000	0.000
T11 40.00-30.00	35.00	1.017	21	0.5000	241.056	A	1.875	56.009	16.083	27.79	0.000	0.000
						B	5.626	53.140		27.37	0.000	0.000
						C	1.467	70.348		22.40	0.000	0.000
T12 30.00-20.00	25.00	1	21	0.5000	253.556	A	1.875	56.851	16.083	27.39	0.000	0.000
						B	5.626	53.983		26.98	0.000	0.000
						C	1.467	71.207		22.13	0.000	0.000
T13 20.00-0.00	10.00	1	21	0.5000	544.613	A	3.750	112.312	32.167	27.72	0.000	0.000
						B	11.251	106.549		27.31	0.000	0.000
						C	2.933	140.769		22.38	0.000	0.000

Tower Pressure - Service

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.597	10	177.503	A	1.320	24.595	11.667	45.02	0.000	0.000
180.00-160.00					B	5.674	33.090		30.10	0.000	0.000
					C	0.000	24.699		47.24	0.000	0.000
T2	150.00	1.541	10	200.850	A	2.639	49.274	15.027	28.95	0.000	0.000
160.00-140.00					B	7.918	48.185		26.79	0.000	0.000
					C	0.000	28.825		52.13	0.000	0.000
T3	136.67	1.501	10	76.803	A	0.880	20.657	6.192	28.75	0.000	0.000
140.00-133.33					B	2.639	18.003		30.00	0.000	0.000
					C	0.000	11.570		53.52	0.000	0.000
T4	130.00	1.48	9	81.431	A	0.880	20.889	6.192	28.45	0.000	0.000
133.33-126.67					B	2.639	18.233		29.67	0.000	0.000
					C	0.000	17.475		35.44	0.000	0.000
T5	123.33	1.457	9	86.060	A	0.880	21.138	6.192	28.12	0.000	0.000
126.67-120.00					B	2.639	18.481		29.32	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	24.904		24.86	0.000	0.000
T6 120.00-100.00	110.00	1.411	9	289.399	A	2.639	66.339	22.130	32.08	0.000	0.000
					B	7.918	58.332		33.40	0.000	0.000
					C	0.000	84.722		26.12	0.000	0.000
T7 100.00-90.00	95.00	1.353	9	162.540	A	1.320	35.012	11.074	30.48	0.000	0.000
					B	3.959	31.016		31.66	0.000	0.000
					C	0.000	44.161		25.08	0.000	0.000
T8 90.00-80.00	85.00	1.31	8	175.715	A	1.320	35.566	11.074	30.02	0.000	0.000
					B	3.959	31.567		31.17	0.000	0.000
					C	0.000	44.731		24.76	0.000	0.000
T9 80.00-60.00	70.00	1.24	8	392.943	A	2.639	80.588	28.825	34.63	0.000	0.000
					B	7.918	72.596		35.80	0.000	0.000
					C	0.000	98.887		29.15	0.000	0.000
T10 60.00-40.00	50.00	1.126	7	442.943	A	2.639	85.125	28.825	32.84	0.000	0.000
					B	7.918	78.120		33.50	0.000	0.000
					C	0.000	103.369		27.89	0.000	0.000
T11 40.00-30.00	35.00	1.017	7	240.222	A	1.320	43.519	14.412	32.14	0.000	0.000
					B	3.959	40.015		32.77	0.000	0.000
					C	0.000	52.654		27.37	0.000	0.000
T12 30.00-20.00	25.00	1	6	252.722	A	1.320	44.162	14.412	31.69	0.000	0.000
					B	3.959	40.657		32.30	0.000	0.000
					C	0.000	53.304		27.04	0.000	0.000
T13 20.00-0.00	10.00	1	6	542.943	A	2.639	87.017	28.825	32.15	0.000	0.000
					B	7.918	80.013		32.78	0.000	0.000
					C	0.000	105.246		27.39	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.07	1.25	A	0.146	2.786	0.581	1	1	15.606	2.39	119.28	B
			B	0.218	2.536	0.594	1	1	25.341			
			C	0.139	2.812	0.58	1	1	14.322			
T2 160.00-140.00	0.38	1.50	A	0.258	2.412	0.604	1	1	32.405	3.14	157.17	B
			B	0.279	2.352	0.61	1	1	37.301			
			C	0.144	2.796	0.581	1	1	16.733			
T3 140.00-133.33	0.15	0.83	A	0.28	2.349	0.61	1	1	13.483	1.13	169.08	B
			B	0.269	2.382	0.607	1	1	13.564			
			C	0.151	2.769	0.582	1	1	6.729			
T4 133.33-126.67	0.21	0.84	A	0.267	2.387	0.606	1	1	13.548	1.13	170.21	B
			B	0.256	2.419	0.604	1	1	13.643			
			C	0.215	2.548	0.593	1	1	10.371			
T5 126.67-120.00	0.28	0.86	A	0.256	2.42	0.603	1	1	13.634	1.20	180.23	C
			B	0.245	2.451	0.601	1	1	13.741			
			C	0.289	2.325	0.613	1	1	15.259			
T6 120.00-100.00	0.92	2.93	A	0.238	2.473	0.599	1	1	42.375	3.95	197.35	C
			B	0.229	2.502	0.597	1	1	42.726			
			C	0.293	2.315	0.614	1	1	51.995			
T7 100.00-90.00	0.46	1.68	A	0.224	2.519	0.595	1	1	22.169	2.00	200.29	C
			B	0.215	2.546	0.594	1	1	22.371			
			C	0.272	2.374	0.608	1	1	26.834			
T8 90.00-80.00	0.46	1.72	A	0.21	2.563	0.592	1	1	22.391	1.99	199.14	C
			B	0.202	2.589	0.591	1	1	22.610			
			C	0.255	2.424	0.603	1	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	1	1	50.419	4.17	208.72	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
80.00-60.00			B	0.205	2.58	0.591	1	1	50.852			
			C	0.252	2.433	0.602	1	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	1	1	52.865	4.02	201.21	C
60.00-40.00			B	0.194	2.615	0.589	1	1	53.949			
			C	0.233	2.488	0.598	1	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	1	1	26.899	1.87	187.43	C
40.00-30.00			B	0.183	2.654	0.587	1	1	27.451			
			C	0.219	2.533	0.595	1	1	31.303			
T12	0.46	2.50	A	0.18	2.664	0.587	1	1	27.221	1.88	187.97	C
30.00-20.00			B	0.177	2.676	0.586	1	1	27.780			
			C	0.211	2.56	0.593	1	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	1	1	53.449	3.77	188.56	C
20.00-0.00			B	0.162	2.728	0.583	1	1	54.596			
			C	0.194	2.617	0.589	1	1	62.007			
Sum Weight:	6.64	30.51						OTM	2764.27 kip-ft	32.66		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	1.25	A	0.146	2.786	0.581	0.825	1	15.375	2.29	114.61	B
180.00-160.00			B	0.218	2.536	0.594	0.825	1	24.348			
			C	0.139	2.812	0.58	0.825	1	14.322			
T2	0.38	1.50	A	0.258	2.412	0.604	0.825	1	31.943	3.03	151.33	B
160.00-140.00			B	0.279	2.352	0.61	0.825	1	35.915			
			C	0.144	2.796	0.581	0.825	1	16.733			
T3	0.15	0.83	A	0.28	2.349	0.61	0.825	1	13.329	1.09	163.85	A
140.00-133.33			B	0.269	2.382	0.607	0.825	1	13.102			
			C	0.151	2.769	0.582	0.825	1	6.729			
T4	0.21	0.84	A	0.267	2.387	0.606	0.825	1	13.394	1.10	164.88	A
133.33-126.67			B	0.256	2.419	0.604	0.825	1	13.181			
			C	0.215	2.548	0.593	0.825	1	10.371			
T5	0.28	0.86	A	0.256	2.42	0.603	0.825	1	13.480	1.20	180.23	C
126.67-120.00			B	0.245	2.451	0.601	0.825	1	13.279			
			C	0.289	2.325	0.613	0.825	1	15.259			
T6	0.92	2.93	A	0.238	2.473	0.599	0.825	1	41.913	3.95	197.35	C
120.00-100.00			B	0.229	2.502	0.597	0.825	1	41.340			
			C	0.293	2.315	0.614	0.825	1	51.995			
T7	0.46	1.68	A	0.224	2.519	0.595	0.825	1	21.938	2.00	200.29	C
100.00-90.00			B	0.215	2.546	0.594	0.825	1	21.678			
			C	0.272	2.374	0.608	0.825	1	26.834			
T8	0.46	1.72	A	0.21	2.563	0.592	0.825	1	22.160	1.99	199.14	C
90.00-80.00			B	0.202	2.589	0.591	0.825	1	21.917			
			C	0.255	2.424	0.603	0.825	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	0.825	1	49.957	4.17	208.72	C
80.00-60.00			B	0.205	2.58	0.591	0.825	1	49.466			
			C	0.252	2.433	0.602	0.825	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	0.825	1	52.403	4.02	201.21	C
60.00-40.00			B	0.194	2.615	0.589	0.825	1	52.564			
			C	0.233	2.488	0.598	0.825	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	0.825	1	26.668	1.87	187.43	C
40.00-30.00			B	0.183	2.654	0.587	0.825	1	26.758			
			C	0.219	2.533	0.595	0.825	1	31.303			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T12	0.46	2.50	A	0.18	2.664	0.587	0.825	1	26.990	1.88	187.97	C
30.00-20.00			B	0.177	2.676	0.586	0.825	1	27.087			
			C	0.211	2.56	0.593	0.825	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	0.825	1	52.987	3.77	188.56	C
20.00-0.00			B	0.162	2.728	0.583	0.825	1	53.210			
			C	0.194	2.617	0.589	0.825	1	62.007			
Sum Weight:	6.64	30.51						OTM	2721.48 kip-ft	32.38		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	1.25	A	0.146	2.786	0.581	0.8	1	15.342	2.28	113.94	B
180.00-160.00			B	0.218	2.536	0.594	0.8	1	24.206			
			C	0.139	2.812	0.58	0.8	1	14.322			
T2	0.38	1.50	A	0.258	2.412	0.604	0.8	1	31.877	3.01	150.50	B
160.00-140.00			B	0.279	2.352	0.61	0.8	1	35.717			
			C	0.144	2.796	0.581	0.8	1	16.733			
T3	0.15	0.83	A	0.28	2.349	0.61	0.8	1	13.307	1.09	163.58	A
140.00-133.33			B	0.269	2.382	0.607	0.8	1	13.036			
			C	0.151	2.769	0.582	0.8	1	6.729			
T4	0.21	0.84	A	0.267	2.387	0.606	0.8	1	13.372	1.10	164.61	A
133.33-126.67			B	0.256	2.419	0.604	0.8	1	13.115			
			C	0.215	2.548	0.593	0.8	1	10.371			
T5	0.28	0.86	A	0.256	2.42	0.603	0.8	1	13.458	1.20	180.23	C
126.67-120.00			B	0.245	2.451	0.601	0.8	1	13.213			
			C	0.289	2.325	0.613	0.8	1	15.259			
T6	0.92	2.93	A	0.238	2.473	0.599	0.8	1	41.847	3.95	197.35	C
120.00-100.00			B	0.229	2.502	0.597	0.8	1	41.143			
			C	0.293	2.315	0.614	0.8	1	51.995			
T7	0.46	1.68	A	0.224	2.519	0.595	0.8	1	21.905	2.00	200.29	C
100.00-90.00			B	0.215	2.546	0.594	0.8	1	21.579			
			C	0.272	2.374	0.608	0.8	1	26.834			
T8	0.46	1.72	A	0.21	2.563	0.592	0.8	1	22.127	1.99	199.14	C
90.00-80.00			B	0.202	2.589	0.591	0.8	1	21.818			
			C	0.255	2.424	0.603	0.8	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	0.8	1	49.891	4.17	208.72	C
80.00-60.00			B	0.205	2.58	0.591	0.8	1	49.268			
			C	0.252	2.433	0.602	0.8	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	0.8	1	52.337	4.02	201.21	C
60.00-40.00			B	0.194	2.615	0.589	0.8	1	52.366			
			C	0.233	2.488	0.598	0.8	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	0.8	1	26.635	1.87	187.43	C
40.00-30.00			B	0.183	2.654	0.587	0.8	1	26.659			
			C	0.219	2.533	0.595	0.8	1	31.303			
T12	0.46	2.50	A	0.18	2.664	0.587	0.8	1	26.957	1.88	187.97	C
30.00-20.00			B	0.177	2.676	0.586	0.8	1	26.988			
			C	0.211	2.56	0.593	0.8	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	0.8	1	52.921	3.77	188.56	C
20.00-0.00			B	0.162	2.728	0.583	0.8	1	53.012			
			C	0.194	2.617	0.589	0.8	1	62.007			
Sum Weight:	6.64	30.51						OTM	2716.22	32.34		

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
									kip-ft			

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	1.25	A	0.146	2.786	0.581	0.85	1	15.408	2.31	115.28	B
180.00-160.00			B	0.218	2.536	0.594	0.85	1	24.490			
			C	0.139	2.812	0.58	0.85	1	14.322			
T2	0.38	1.50	A	0.258	2.412	0.604	0.85	1	32.009	3.04	152.16	B
160.00-140.00			B	0.279	2.352	0.61	0.85	1	36.113			
			C	0.144	2.796	0.581	0.85	1	16.733			
T3	0.15	0.83	A	0.28	2.349	0.61	0.85	1	13.351	1.09	164.15	B
140.00-133.33			B	0.269	2.382	0.607	0.85	1	13.168			
			C	0.151	2.769	0.582	0.85	1	6.729			
T4	0.21	0.84	A	0.267	2.387	0.606	0.85	1	13.416	1.10	165.27	B
133.33-126.67			B	0.256	2.419	0.604	0.85	1	13.247			
			C	0.215	2.548	0.593	0.85	1	10.371			
T5	0.28	0.86	A	0.256	2.42	0.603	0.85	1	13.502	1.20	180.23	C
126.67-120.00			B	0.245	2.451	0.601	0.85	1	13.345			
			C	0.289	2.325	0.613	0.85	1	15.259			
T6	0.92	2.93	A	0.238	2.473	0.599	0.85	1	41.979	3.95	197.35	C
120.00-100.00			B	0.229	2.502	0.597	0.85	1	41.538			
			C	0.293	2.315	0.614	0.85	1	51.995			
T7	0.46	1.68	A	0.224	2.519	0.595	0.85	1	21.971	2.00	200.29	C
100.00-90.00			B	0.215	2.546	0.594	0.85	1	21.777			
			C	0.272	2.374	0.608	0.85	1	26.834			
T8	0.46	1.72	A	0.21	2.563	0.592	0.85	1	22.193	1.99	199.14	C
90.00-80.00			B	0.202	2.589	0.591	0.85	1	22.016			
			C	0.255	2.424	0.603	0.85	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	0.85	1	50.023	4.17	208.72	C
80.00-60.00			B	0.205	2.58	0.591	0.85	1	49.664			
			C	0.252	2.433	0.602	0.85	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	0.85	1	52.469	4.02	201.21	C
60.00-40.00			B	0.194	2.615	0.589	0.85	1	52.762			
			C	0.233	2.488	0.598	0.85	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	0.85	1	26.701	1.87	187.43	C
40.00-30.00			B	0.183	2.654	0.587	0.85	1	26.857			
			C	0.219	2.533	0.595	0.85	1	31.303			
T12	0.46	2.50	A	0.18	2.664	0.587	0.85	1	27.023	1.88	187.97	C
30.00-20.00			B	0.177	2.676	0.586	0.85	1	27.186			
			C	0.211	2.56	0.593	0.85	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	0.85	1	53.053	3.77	188.56	C
20.00-0.00			B	0.162	2.728	0.583	0.85	1	53.408			
			C	0.194	2.617	0.589	0.85	1	62.007			
Sum Weight:	6.64	30.51						OTM	2726.86 kip-ft	32.41		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	1.84	A	0.198	2.601	0.59	1	1	21.754	3.14	156.98	B
180.00-160.00			B	0.308	2.276	0.618	1	1	37.158			
			C	0.189	2.632	0.588	1	1	19.963			
T2	1.14	2.15	A	0.354	2.163	0.634	1	1	46.798	4.19	209.46	B
160.00-140.00			B	0.4	2.065	0.651	1	1	56.634			
			C	0.19	2.631	0.588	1	1	22.606			
T3	0.45	1.08	A	0.379	2.106	0.643	1	1	19.328	1.48	221.48	B
140.00-133.33			B	0.376	2.113	0.642	1	1	20.033			
			C	0.193	2.619	0.589	1	1	8.804			
T4	0.62	1.10	A	0.362	2.144	0.637	1	1	19.362	1.49	222.83	B
133.33-126.67			B	0.359	2.151	0.636	1	1	20.087			
			C	0.304	2.285	0.617	1	1	15.753			
T5	0.84	1.13	A	0.347	2.179	0.631	1	1	19.436	1.65	247.31	C
126.67-120.00			B	0.344	2.185	0.63	1	1	20.179			
			C	0.414	2.037	0.657	1	1	23.889			
T6	2.72	3.73	A	0.318	2.25	0.621	1	1	58.848	5.35	267.63	C
120.00-100.00			B	0.315	2.257	0.621	1	1	61.177			
			C	0.414	2.038	0.657	1	1	80.121			
T7	1.36	2.13	A	0.295	2.308	0.615	1	1	30.388	2.68	268.30	C
100.00-90.00			B	0.293	2.314	0.614	1	1	31.584			
			C	0.381	2.104	0.644	1	1	40.568			
T8	1.36	2.19	A	0.278	2.357	0.609	1	1	30.616	2.66	266.16	C
90.00-80.00			B	0.276	2.363	0.609	1	1	31.837			
			C	0.357	2.156	0.635	1	1	40.537			
T9	2.72	5.22	A	0.274	2.368	0.608	1	1	67.176	5.46	273.10	C
80.00-60.00			B	0.272	2.373	0.608	1	1	69.628			
			C	0.344	2.185	0.63	1	1	86.775			
T10	2.73	5.98	A	0.255	2.423	0.603	1	1	69.794	5.23	261.46	C
60.00-40.00			B	0.259	2.412	0.604	1	1	73.937			
			C	0.317	2.251	0.621	1	1	88.756			
T11	1.37	3.11	A	0.24	2.467	0.599	1	1	35.448	2.43	243.44	C
40.00-30.00			B	0.244	2.456	0.6	1	1	37.526			
			C	0.298	2.302	0.615	1	1	44.750			
T12	1.37	3.19	A	0.232	2.494	0.597	1	1	35.836	2.44	244.13	C
30.00-20.00			B	0.235	2.483	0.598	1	1	37.918			
			C	0.287	2.332	0.612	1	1	45.038			
T13	2.73	6.38	A	0.213	2.553	0.593	1	1	70.369	4.91	245.56	C
20.00-0.00			B	0.216	2.542	0.594	1	1	74.527			
			C	0.264	2.397	0.606	1	1	88.170			
Sum Weight:	19.63	39.23						OTM	3669.44 kip-ft	43.12		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	1.84	A	0.198	2.601	0.59	0.825	1	21.426	3.02	151.02	B
180.00-160.00			B	0.308	2.276	0.618	0.825	1	35.746			
			C	0.189	2.632	0.588	0.825	1	19.963			
T2	1.14	2.15	A	0.354	2.163	0.634	0.825	1	46.142	4.04	202.18	B
160.00-140.00			B	0.4	2.065	0.651	0.825	1	54.666			
			C	0.19	2.631	0.588	0.825	1	22.606			
T3	0.45	1.08	A	0.379	2.106	0.643	0.825	1	19.110	1.43	214.23	B
140.00-133.33			B	0.376	2.113	0.642	0.825	1	19.377			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.193	2.619	0.589	0.825	1	8.804			
T4	0.62	1.10	A	0.362	2.144	0.637	0.825	1	19.143	1.44	215.55	B
133.33-126.67			B	0.359	2.151	0.636	0.825	1	19.431			
			C	0.304	2.285	0.617	0.825	1	15.590			
T5	0.84	1.13	A	0.347	2.179	0.631	0.825	1	19.217	1.64	245.54	C
126.67-120.00			B	0.344	2.185	0.63	0.825	1	19.523			
			C	0.414	2.037	0.657	0.825	1	23.718			
T6	2.72	3.73	A	0.318	2.25	0.621	0.825	1	58.191	5.32	265.92	C
120.00-100.00			B	0.315	2.257	0.621	0.825	1	59.208			
			C	0.414	2.038	0.657	0.825	1	79.607			
T7	1.36	2.13	A	0.295	2.308	0.615	0.825	1	30.060	2.67	266.60	C
100.00-90.00			B	0.293	2.314	0.614	0.825	1	30.600			
			C	0.381	2.104	0.644	0.825	1	40.312			
T8	1.36	2.19	A	0.278	2.357	0.609	0.825	1	30.288	2.64	264.47	C
90.00-80.00			B	0.276	2.363	0.609	0.825	1	30.853			
			C	0.357	2.156	0.635	0.825	1	40.280			
T9	2.72	5.22	A	0.274	2.368	0.608	0.825	1	66.519	5.43	271.48	C
80.00-60.00			B	0.272	2.373	0.608	0.825	1	67.659			
			C	0.344	2.185	0.63	0.825	1	86.261			
T10	2.73	5.98	A	0.255	2.423	0.603	0.825	1	69.137	5.20	259.95	C
60.00-40.00			B	0.259	2.412	0.604	0.825	1	71.968			
			C	0.317	2.251	0.621	0.825	1	88.243			
T11	1.37	3.11	A	0.24	2.467	0.599	0.825	1	35.119	2.42	242.04	C
40.00-30.00			B	0.244	2.456	0.6	0.825	1	36.541			
			C	0.298	2.302	0.615	0.825	1	44.493			
T12	1.37	3.19	A	0.232	2.494	0.597	0.825	1	35.508	2.43	242.74	C
30.00-20.00			B	0.235	2.483	0.598	0.825	1	36.933			
			C	0.287	2.332	0.612	0.825	1	44.781			
T13	2.73	6.38	A	0.213	2.553	0.593	0.825	1	69.713	4.88	244.13	C
20.00-0.00			B	0.216	2.542	0.594	0.825	1	72.558			
			C	0.264	2.397	0.606	0.825	1	87.657			
Sum Weight:	19.63	39.23						OTM	3601.23 kip-ft	42.55		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	1.84	A	0.198	2.601	0.59	0.8	1	21.379	3.00	150.17	B
180.00-160.00			B	0.308	2.276	0.618	0.8	1	35.545			
			C	0.189	2.632	0.588	0.8	1	19.963			
T2	1.14	2.15	A	0.354	2.163	0.634	0.8	1	46.048	4.02	201.14	B
160.00-140.00			B	0.4	2.065	0.651	0.8	1	54.384			
			C	0.19	2.631	0.588	0.8	1	22.606			
T3	0.45	1.08	A	0.379	2.106	0.643	0.8	1	19.078	1.42	213.19	B
140.00-133.33			B	0.376	2.113	0.642	0.8	1	19.283			
			C	0.193	2.619	0.589	0.8	1	8.804			
T4	0.62	1.10	A	0.362	2.144	0.637	0.8	1	19.112	1.43	214.51	B
133.33-126.67			B	0.359	2.151	0.636	0.8	1	19.337			
			C	0.304	2.285	0.617	0.8	1	15.567			
T5	0.84	1.13	A	0.347	2.179	0.631	0.8	1	19.186	1.64	245.29	C
126.67-120.00			B	0.344	2.185	0.63	0.8	1	19.429			
			C	0.414	2.037	0.657	0.8	1	23.693			
T6	2.72	3.73	A	0.318	2.25	0.621	0.8	1	58.098	5.31	265.67	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
120.00-100.00			B	0.315	2.257	0.621	0.8	1	58.927			
			C	0.414	2.038	0.657	0.8	1	79.534			
T7	1.36	2.13	A	0.295	2.308	0.615	0.8	1	30.013	2.66	266.36	C
100.00-90.00			B	0.293	2.314	0.614	0.8	1	30.459			
			C	0.381	2.104	0.644	0.8	1	40.275			
T8	1.36	2.19	A	0.278	2.357	0.609	0.8	1	30.241	2.64	264.23	C
90.00-80.00			B	0.276	2.363	0.609	0.8	1	30.712			
			C	0.357	2.156	0.635	0.8	1	40.243			
T9	2.72	5.22	A	0.274	2.368	0.608	0.8	1	66.425	5.43	271.25	C
80.00-60.00			B	0.272	2.373	0.608	0.8	1	67.378			
			C	0.344	2.185	0.63	0.8	1	86.188			
T10	2.73	5.98	A	0.255	2.423	0.603	0.8	1	69.043	5.19	259.73	C
60.00-40.00			B	0.259	2.412	0.604	0.8	1	71.686			
			C	0.317	2.251	0.621	0.8	1	88.170			
T11	1.37	3.11	A	0.24	2.467	0.599	0.8	1	35.073	2.42	241.84	C
40.00-30.00			B	0.244	2.456	0.6	0.8	1	36.401			
			C	0.298	2.302	0.615	0.8	1	44.456			
T12	1.37	3.19	A	0.232	2.494	0.597	0.8	1	35.461	2.43	242.54	C
30.00-20.00			B	0.235	2.483	0.598	0.8	1	36.793			
			C	0.287	2.332	0.612	0.8	1	44.744			
T13	2.73	6.38	A	0.213	2.553	0.593	0.8	1	69.619	4.88	243.93	C
20.00-0.00			B	0.216	2.542	0.594	0.8	1	72.277			
			C	0.264	2.397	0.606	0.8	1	87.584			
Sum Weight:	19.63	39.23						OTM	3591.49 kip-ft	42.47		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	1.84	A	0.198	2.601	0.59	0.85	1	21.473	3.04	151.87	B
180.00-160.00			B	0.308	2.276	0.618	0.85	1	35.948			
			C	0.189	2.632	0.588	0.85	1	19.963			
T2	1.14	2.15	A	0.354	2.163	0.634	0.85	1	46.236	4.06	203.22	B
160.00-140.00			B	0.4	2.065	0.651	0.85	1	54.947			
			C	0.19	2.631	0.588	0.85	1	22.606			
T3	0.45	1.08	A	0.379	2.106	0.643	0.85	1	19.141	1.44	215.26	B
140.00-133.33			B	0.376	2.113	0.642	0.85	1	19.471			
			C	0.193	2.619	0.589	0.85	1	8.804			
T4	0.62	1.10	A	0.362	2.144	0.637	0.85	1	19.174	1.44	216.59	B
133.33-126.67			B	0.359	2.151	0.636	0.85	1	19.525			
			C	0.304	2.285	0.617	0.85	1	15.614			
T5	0.84	1.13	A	0.347	2.179	0.631	0.85	1	19.249	1.64	245.80	C
126.67-120.00			B	0.344	2.185	0.63	0.85	1	19.617			
			C	0.414	2.037	0.657	0.85	1	23.742			
T6	2.72	3.73	A	0.318	2.25	0.621	0.85	1	58.285	5.32	266.16	C
120.00-100.00			B	0.315	2.257	0.621	0.85	1	59.489			
			C	0.414	2.038	0.657	0.85	1	79.681			
T7	1.36	2.13	A	0.295	2.308	0.615	0.85	1	30.106	2.67	266.85	C
100.00-90.00			B	0.293	2.314	0.614	0.85	1	30.740			
			C	0.381	2.104	0.644	0.85	1	40.348			
T8	1.36	2.19	A	0.278	2.357	0.609	0.85	1	30.335	2.65	264.71	C
90.00-80.00			B	0.276	2.363	0.609	0.85	1	30.993			
			C	0.357	2.156	0.635	0.85	1	40.317			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T9	2.72	5.22	A	0.274	2.368	0.608	0.85	1	66.613	5.43	271.71	C
80.00-60.00			B	0.272	2.373	0.608	0.85	1	67.940			
			C	0.344	2.185	0.63	0.85	1	86.335			
T10	2.73	5.98	A	0.255	2.423	0.603	0.85	1	69.231	5.20	260.16	C
60.00-40.00			B	0.259	2.412	0.604	0.85	1	72.249			
			C	0.317	2.251	0.621	0.85	1	88.316			
T11	1.37	3.11	A	0.24	2.467	0.599	0.85	1	35.166	2.42	242.24	C
40.00-30.00			B	0.244	2.456	0.6	0.85	1	36.682			
			C	0.298	2.302	0.615	0.85	1	44.530			
T12	1.37	3.19	A	0.232	2.494	0.597	0.85	1	35.554	2.43	242.94	C
30.00-20.00			B	0.235	2.483	0.598	0.85	1	37.074			
			C	0.287	2.332	0.612	0.85	1	44.818			
T13	2.73	6.38	A	0.213	2.553	0.593	0.85	1	69.807	4.89	244.34	C
20.00-0.00			B	0.216	2.542	0.594	0.85	1	72.839			
			C	0.264	2.397	0.606	0.85	1	87.730			
Sum Weight:	19.63	39.23						OTM	3610.98 kip-ft	42.63		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	1.25	A	0.146	2.786	0.581	1	1	15.606	0.74	36.82	B
180.00-160.00			B	0.218	2.536	0.594	1	1	25.341			
			C	0.139	2.812	0.58	1	1	14.322			
T2	0.38	1.50	A	0.258	2.412	0.604	1	1	32.405	0.97	48.51	B
160.00-140.00			B	0.279	2.352	0.61	1	1	37.301			
			C	0.144	2.796	0.581	1	1	16.733			
T3	0.15	0.83	A	0.28	2.349	0.61	1	1	13.483	0.35	52.19	B
140.00-133.33			B	0.269	2.382	0.607	1	1	13.564			
			C	0.151	2.769	0.582	1	1	6.729			
T4	0.21	0.84	A	0.267	2.387	0.606	1	1	13.548	0.35	52.53	B
133.33-126.67			B	0.256	2.419	0.604	1	1	13.643			
			C	0.215	2.548	0.593	1	1	10.371			
T5	0.28	0.86	A	0.256	2.42	0.603	1	1	13.634	0.37	55.63	C
126.67-120.00			B	0.245	2.451	0.601	1	1	13.741			
			C	0.289	2.325	0.613	1	1	15.259			
T6	0.92	2.93	A	0.238	2.473	0.599	1	1	42.375	1.22	60.91	C
120.00-100.00			B	0.229	2.502	0.597	1	1	42.726			
			C	0.293	2.315	0.614	1	1	51.995			
T7	0.46	1.68	A	0.224	2.519	0.595	1	1	22.169	0.62	61.82	C
100.00-90.00			B	0.215	2.546	0.594	1	1	22.371			
			C	0.272	2.374	0.608	1	1	26.834			
T8	0.46	1.72	A	0.21	2.563	0.592	1	1	22.391	0.61	61.46	C
90.00-80.00			B	0.202	2.589	0.591	1	1	22.610			
			C	0.255	2.424	0.603	1	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	1	1	50.419	1.29	64.42	C
80.00-60.00			B	0.205	2.58	0.591	1	1	50.852			
			C	0.252	2.433	0.602	1	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	1	1	52.865	1.24	62.10	C
60.00-40.00			B	0.194	2.615	0.589	1	1	53.949			
			C	0.233	2.488	0.598	1	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	1	1	26.899	0.58	57.85	C
40.00-30.00			B	0.183	2.654	0.587	1	1	27.451			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.219	2.533	0.595	1	1	31.303			
T12	0.46	2.50	A	0.18	2.664	0.587	1	1	27.221	0.58	58.02	C
30.00-20.00			B	0.177	2.676	0.586	1	1	27.780			
			C	0.211	2.56	0.593	1	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	1	1	53.449	1.16	58.20	C
20.00-0.00			B	0.162	2.728	0.583	1	1	54.596			
			C	0.194	2.617	0.589	1	1	62.007			
Sum Weight:	6.64	30.51						OTM	853.17 kip-ft	10.08		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	1.25	A	0.146	2.786	0.581	0.825	1	15.375	0.71	35.37	B
180.00-160.00			B	0.218	2.536	0.594	0.825	1	24.348			
			C	0.139	2.812	0.58	0.825	1	14.322			
T2	0.38	1.50	A	0.258	2.412	0.604	0.825	1	31.943	0.93	46.71	B
160.00-140.00			B	0.279	2.352	0.61	0.825	1	35.915			
			C	0.144	2.796	0.581	0.825	1	16.733			
T3	0.15	0.83	A	0.28	2.349	0.61	0.825	1	13.329	0.34	50.57	A
140.00-133.33			B	0.269	2.382	0.607	0.825	1	13.102			
			C	0.151	2.769	0.582	0.825	1	6.729			
T4	0.21	0.84	A	0.267	2.387	0.606	0.825	1	13.394	0.34	50.89	A
133.33-126.67			B	0.256	2.419	0.604	0.825	1	13.181			
			C	0.215	2.548	0.593	0.825	1	10.371			
T5	0.28	0.86	A	0.256	2.42	0.603	0.825	1	13.480	0.37	55.63	C
126.67-120.00			B	0.245	2.451	0.601	0.825	1	13.279			
			C	0.289	2.325	0.613	0.825	1	15.259			
T6	0.92	2.93	A	0.238	2.473	0.599	0.825	1	41.913	1.22	60.91	C
120.00-100.00			B	0.229	2.502	0.597	0.825	1	41.340			
			C	0.293	2.315	0.614	0.825	1	51.995			
T7	0.46	1.68	A	0.224	2.519	0.595	0.825	1	21.938	0.62	61.82	C
100.00-90.00			B	0.215	2.546	0.594	0.825	1	21.678			
			C	0.272	2.374	0.608	0.825	1	26.834			
T8	0.46	1.72	A	0.21	2.563	0.592	0.825	1	22.160	0.61	61.46	C
90.00-80.00			B	0.202	2.589	0.591	0.825	1	21.917			
			C	0.255	2.424	0.603	0.825	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	0.825	1	49.957	1.29	64.42	C
80.00-60.00			B	0.205	2.58	0.591	0.825	1	49.466			
			C	0.252	2.433	0.602	0.825	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	0.825	1	52.403	1.24	62.10	C
60.00-40.00			B	0.194	2.615	0.589	0.825	1	52.564			
			C	0.233	2.488	0.598	0.825	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	0.825	1	26.668	0.58	57.85	C
40.00-30.00			B	0.183	2.654	0.587	0.825	1	26.758			
			C	0.219	2.533	0.595	0.825	1	31.303			
T12	0.46	2.50	A	0.18	2.664	0.587	0.825	1	26.990	0.58	58.02	C
30.00-20.00			B	0.177	2.676	0.586	0.825	1	27.087			
			C	0.211	2.56	0.593	0.825	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	0.825	1	52.987	1.16	58.20	C
20.00-0.00			B	0.162	2.728	0.583	0.825	1	53.210			
			C	0.194	2.617	0.589	0.825	1	62.007			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
Sum Weight:	6.64	30.51						OTM	839.96 kip-ft	9.99		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	1.25	A	0.146	2.786	0.581	0.8	1	15.342	0.70	35.17	B
180.00-160.00			B	0.218	2.536	0.594	0.8	1	24.206			
			C	0.139	2.812	0.58	0.8	1	14.322			
T2	0.38	1.50	A	0.258	2.412	0.604	0.8	1	31.877	0.93	46.45	B
160.00-140.00			B	0.279	2.352	0.61	0.8	1	35.717			
			C	0.144	2.796	0.581	0.8	1	16.733			
T3	0.15	0.83	A	0.28	2.349	0.61	0.8	1	13.307	0.34	50.49	A
140.00-133.33			B	0.269	2.382	0.607	0.8	1	13.036			
			C	0.151	2.769	0.582	0.8	1	6.729			
T4	0.21	0.84	A	0.267	2.387	0.606	0.8	1	13.372	0.34	50.81	A
133.33-126.67			B	0.256	2.419	0.604	0.8	1	13.115			
			C	0.215	2.548	0.593	0.8	1	10.371			
T5	0.28	0.86	A	0.256	2.42	0.603	0.8	1	13.458	0.37	55.63	C
126.67-120.00			B	0.245	2.451	0.601	0.8	1	13.213			
			C	0.289	2.325	0.613	0.8	1	15.259			
T6	0.92	2.93	A	0.238	2.473	0.599	0.8	1	41.847	1.22	60.91	C
120.00-100.00			B	0.229	2.502	0.597	0.8	1	41.143			
			C	0.293	2.315	0.614	0.8	1	51.995			
T7	0.46	1.68	A	0.224	2.519	0.595	0.8	1	21.905	0.62	61.82	C
100.00-90.00			B	0.215	2.546	0.594	0.8	1	21.579			
			C	0.272	2.374	0.608	0.8	1	26.834			
T8	0.46	1.72	A	0.21	2.563	0.592	0.8	1	22.127	0.61	61.46	C
90.00-80.00			B	0.202	2.589	0.591	0.8	1	21.818			
			C	0.255	2.424	0.603	0.8	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	0.8	1	49.891	1.29	64.42	C
80.00-60.00			B	0.205	2.58	0.591	0.8	1	49.268			
			C	0.252	2.433	0.602	0.8	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	0.8	1	52.337	1.24	62.10	C
60.00-40.00			B	0.194	2.615	0.589	0.8	1	52.366			
			C	0.233	2.488	0.598	0.8	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	0.8	1	26.635	0.58	57.85	C
40.00-30.00			B	0.183	2.654	0.587	0.8	1	26.659			
			C	0.219	2.533	0.595	0.8	1	31.303			
T12	0.46	2.50	A	0.18	2.664	0.587	0.8	1	26.957	0.58	58.02	C
30.00-20.00			B	0.177	2.676	0.586	0.8	1	26.988			
			C	0.211	2.56	0.593	0.8	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	0.8	1	52.921	1.16	58.20	C
20.00-0.00			B	0.162	2.728	0.583	0.8	1	53.012			
			C	0.194	2.617	0.589	0.8	1	62.007			
Sum Weight:	6.64	30.51						OTM	838.34 kip-ft	9.98		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	1.25	A	0.146	2.786	0.581	0.85	1	15.408	0.71	35.58	B
180.00-160.00			B	0.218	2.536	0.594	0.85	1	24.490			
			C	0.139	2.812	0.58	0.85	1	14.322			
T2	0.38	1.50	A	0.258	2.412	0.604	0.85	1	32.009	0.94	46.96	B
160.00-140.00			B	0.279	2.352	0.61	0.85	1	36.113			
			C	0.144	2.796	0.581	0.85	1	16.733			
T3	0.15	0.83	A	0.28	2.349	0.61	0.85	1	13.351	0.34	50.66	B
140.00-133.33			B	0.269	2.382	0.607	0.85	1	13.168			
			C	0.151	2.769	0.582	0.85	1	6.729			
T4	0.21	0.84	A	0.267	2.387	0.606	0.85	1	13.416	0.34	51.01	B
133.33-126.67			B	0.256	2.419	0.604	0.85	1	13.247			
			C	0.215	2.548	0.593	0.85	1	10.371			
T5	0.28	0.86	A	0.256	2.42	0.603	0.85	1	13.502	0.37	55.63	C
126.67-120.00			B	0.245	2.451	0.601	0.85	1	13.345			
			C	0.289	2.325	0.613	0.85	1	15.259			
T6	0.92	2.93	A	0.238	2.473	0.599	0.85	1	41.979	1.22	60.91	C
120.00-100.00			B	0.229	2.502	0.597	0.85	1	41.538			
			C	0.293	2.315	0.614	0.85	1	51.995			
T7	0.46	1.68	A	0.224	2.519	0.595	0.85	1	21.971	0.62	61.82	C
100.00-90.00			B	0.215	2.546	0.594	0.85	1	21.777			
			C	0.272	2.374	0.608	0.85	1	26.834			
T8	0.46	1.72	A	0.21	2.563	0.592	0.85	1	22.193	0.61	61.46	C
90.00-80.00			B	0.202	2.589	0.591	0.85	1	22.016			
			C	0.255	2.424	0.603	0.85	1	26.975			
T9	0.92	4.10	A	0.212	2.557	0.593	0.85	1	50.023	1.29	64.42	C
80.00-60.00			B	0.205	2.58	0.591	0.85	1	49.664			
			C	0.252	2.433	0.602	0.85	1	59.560			
T10	0.93	4.70	A	0.198	2.602	0.59	0.85	1	52.469	1.24	62.10	C
60.00-40.00			B	0.194	2.615	0.589	0.85	1	52.762			
			C	0.233	2.488	0.598	0.85	1	61.792			
T11	0.46	2.44	A	0.187	2.641	0.588	0.85	1	26.701	0.58	57.85	C
40.00-30.00			B	0.183	2.654	0.587	0.85	1	26.857			
			C	0.219	2.533	0.595	0.85	1	31.303			
T12	0.46	2.50	A	0.18	2.664	0.587	0.85	1	27.023	0.58	58.02	C
30.00-20.00			B	0.177	2.676	0.586	0.85	1	27.186			
			C	0.211	2.56	0.593	0.85	1	31.593			
T13	0.93	5.17	A	0.165	2.717	0.584	0.85	1	53.053	1.16	58.20	C
20.00-0.00			B	0.162	2.728	0.583	0.85	1	53.408			
			C	0.194	2.617	0.589	0.85	1	62.007			
Sum Weight:	6.64	30.51						OTM	841.62 kip-ft	10.00		

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	14.03					
Bracing Weight	16.48					
Total Member Self-Weight	30.51			0.57	-13.02	
Total Weight	43.50			0.57	-13.02	
Wind 0 deg - No Ice		0.00	-53.11	-5901.00	-13.02	33.89
Wind 30 deg - No Ice		26.43	-45.78	-5077.94	-2945.10	27.51
Wind 45 deg - No Ice		37.36	-37.36	-4142.21	-4155.80	21.43

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
Wind 60 deg - No Ice		45.72	-26.40	-2926.19	-5082.32	13.91
Wind 90 deg - No Ice		52.86	0.00	0.57	-5877.18	-3.39
Wind 120 deg - No Ice		45.99	26.56	2951.35	-5123.93	-19.92
Wind 135 deg - No Ice		37.36	37.36	4143.35	-4155.80	-26.22
Wind 150 deg - No Ice		26.43	45.78	5079.08	-2945.10	-30.90
Wind 180 deg - No Ice		0.00	52.80	5854.09	-13.02	-33.67
Wind 210 deg - No Ice		-26.43	45.78	5079.08	2919.05	-27.51
Wind 225 deg - No Ice		-37.36	37.36	4143.35	4129.76	-21.43
Wind 240 deg - No Ice		-45.99	26.56	2951.35	5097.88	-13.97
Wind 270 deg - No Ice		-52.86	0.00	0.57	5851.13	3.39
Wind 300 deg - No Ice		-45.72	-26.40	-2926.19	5056.27	19.77
Wind 315 deg - No Ice		-37.36	-37.36	-4142.21	4129.76	26.22
Wind 330 deg - No Ice		-26.43	-45.78	-5077.94	2919.05	30.90
Member Ice	8.71					
Total Weight Ice	68.61			3.73	-40.22	
Wind 0 deg - Ice		0.00	-66.49	-7240.27	-40.22	49.46
Wind 30 deg - Ice		33.00	-57.16	-6219.13	-3632.99	43.22
Wind 45 deg - Ice		46.62	-46.62	-5070.32	-5114.27	35.70
Wind 60 deg - Ice		57.02	-32.92	-3579.30	-6246.20	25.77
Wind 90 deg - Ice		66.00	0.00	3.73	-7225.75	1.55
Wind 120 deg - Ice		57.58	33.24	3625.72	-6313.71	-23.37
Wind 135 deg - Ice		46.62	46.62	5077.77	-5114.27	-33.51
Wind 150 deg - Ice		33.00	57.16	6226.58	-3632.99	-41.67
Wind 180 deg - Ice		0.00	65.84	7169.77	-40.22	-48.86
Wind 210 deg - Ice		-33.00	57.16	6226.58	3552.54	-43.22
Wind 225 deg - Ice		-46.62	46.62	5077.77	5033.82	-35.70
Wind 240 deg - Ice		-57.58	33.24	3625.72	6233.26	-26.10
Wind 270 deg - Ice		-66.00	0.00	3.73	7145.31	-1.55
Wind 300 deg - Ice		-57.02	-32.92	-3579.30	6165.75	23.09
Wind 315 deg - Ice		-46.62	-46.62	-5070.32	5033.82	33.51
Wind 330 deg - Ice		-33.00	-57.16	-6219.13	3552.54	41.67
Total Weight	43.50			0.57	-13.02	
Wind 0 deg - Service		0.00	-16.39	-1822.02	0.09	10.46
Wind 30 deg - Service		8.16	-14.13	-1567.98	-904.87	8.49
Wind 45 deg - Service		11.53	-11.53	-1279.18	-1278.54	6.61
Wind 60 deg - Service		14.11	-8.15	-903.87	-1564.51	4.29
Wind 90 deg - Service		16.32	0.00	-0.54	-1809.83	-1.05
Wind 120 deg - Service		14.20	8.20	910.19	-1577.35	-6.15
Wind 135 deg - Service		11.53	11.53	1278.09	-1278.54	-8.09
Wind 150 deg - Service		8.16	14.13	1566.90	-904.87	-9.54
Wind 180 deg - Service		0.00	16.30	1806.10	0.09	-10.39
Wind 210 deg - Service		-8.16	14.13	1566.90	905.05	-8.49
Wind 225 deg - Service		-11.53	11.53	1278.09	1278.73	-6.61
Wind 240 deg - Service		-14.20	8.20	910.19	1577.53	-4.31
Wind 270 deg - Service		-16.32	0.00	-0.54	1810.02	1.05
Wind 300 deg - Service		-14.11	-8.15	-903.87	1564.69	6.10
Wind 315 deg - Service		-11.53	-11.53	-1279.18	1278.73	8.09
Wind 330 deg - Service		-8.16	-14.13	-1567.98	905.05	9.54

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice

Comb. No.	Description
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
19	Dead+Wind 0 deg+Ice
20	Dead+Wind 30 deg+Ice
21	Dead+Wind 45 deg+Ice
22	Dead+Wind 60 deg+Ice
23	Dead+Wind 90 deg+Ice
24	Dead+Wind 120 deg+Ice
25	Dead+Wind 135 deg+Ice
26	Dead+Wind 150 deg+Ice
27	Dead+Wind 180 deg+Ice
28	Dead+Wind 210 deg+Ice
29	Dead+Wind 225 deg+Ice
30	Dead+Wind 240 deg+Ice
31	Dead+Wind 270 deg+Ice
32	Dead+Wind 300 deg+Ice
33	Dead+Wind 315 deg+Ice
34	Dead+Wind 330 deg+Ice
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 160	Leg	Max Tension	22	8.62	-0.57	-0.17
			Max. Compression	19	-10.65	0.41	0.08
			Max. Mx	19	-0.48	-1.81	0.06
			Max. My	19	-0.39	-0.85	-2.60
			Max. Vy	19	-1.15	1.69	0.06
			Max. Vx	31	1.36	-0.00	-1.99

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	26	7.91	0.00	0.00
			Max. Compression	26	-8.00	0.00	0.00
			Max. Mx	20	7.15	0.02	0.00
			Max. My	24	0.54	0.00	0.00
			Max. Vy	20	0.01	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Horizontal	Max Tension	33	4.47	-0.01	0.00
			Max. Compression	25	-4.41	-0.01	-0.00
			Max. Mx	22	-0.06	-0.02	-0.01
			Max. My	27	-0.78	-0.02	-0.01
			Max. Vy	22	-0.01	-0.02	-0.01
			Max. Vx	27	0.00	-0.02	-0.01
		Top Girt	Max Tension	21	1.22	-0.01	0.00
			Max. Compression	30	-1.23	-0.01	-0.00
			Max. Mx	32	-0.47	-0.01	-0.00
			Max. My	19	0.11	-0.01	0.00
			Max. Vy	32	-0.01	-0.01	-0.00
			Max. Vx	19	-0.00	-0.01	0.00
		Inner Bracing	Max Tension	25	0.08	0.00	0.00
			Max. Compression	25	-0.08	0.00	0.00
			Max. Mx	18	-0.00	-0.01	0.00
			Max. My	19	0.06	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T2	160 - 140	Leg	Max Tension	22	40.17	-0.47	0.02
			Max. Compression	19	-46.98	0.47	-0.06
			Max. Mx	27	16.44	1.57	0.01
			Max. My	31	-2.78	-0.04	1.59
			Max. Vy	27	1.82	-1.38	0.01
			Max. Vx	23	-1.80	-0.04	1.32
		Diagonal	Max Tension	26	10.89	0.00	0.00
			Max. Compression	26	-10.99	0.00	0.00
			Max. Mx	20	9.52	0.03	0.00
			Max. My	24	1.26	0.00	0.00
			Max. Vy	20	-0.01	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Horizontal	Max Tension	33	6.75	-0.01	0.00
			Max. Compression	25	-6.80	-0.02	-0.00
			Max. Mx	22	0.38	-0.03	-0.01
			Max. My	27	-1.46	-0.02	-0.01
			Max. Vy	22	-0.02	-0.03	-0.01
			Max. Vx	27	0.00	-0.02	-0.01
		Inner Bracing	Max Tension	25	0.12	0.00	0.00
			Max. Compression	25	-0.12	0.00	0.00
			Max. Mx	18	-0.00	-0.01	0.00
			Max. My	24	0.10	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T3	140 - 133.333	Leg	Max Tension	22	52.41	-0.47	0.02
			Max. Compression	19	-60.29	0.75	-0.01
			Max. Mx	27	51.34	-0.79	0.01
			Max. My	23	-4.21	-0.02	0.66
			Max. Vy	27	0.29	-0.79	0.01
			Max. Vx	23	-0.28	-0.02	0.66
		Diagonal	Max Tension	26	10.04	0.00	0.00
			Max. Compression	26	-10.19	0.00	0.00
			Max. Mx	20	9.23	0.04	0.00
			Max. My	19	0.41	0.00	-0.00
			Max. Vy	20	-0.02	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	26	6.55	-0.02	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-6.55	-0.02	-0.00
			Max. Mx	22	0.20	-0.04	-0.02
			Max. My	27	-0.54	-0.04	-0.02
			Max. Vy	22	-0.02	-0.04	-0.02
			Max. Vx	27	0.00	-0.04	-0.02
		Inner Bracing	Max Tension	26	0.11	0.00	0.00
			Max. Compression	26	-0.11	0.00	0.00
			Max. Mx	18	-0.00	-0.01	0.00
			Max. My	24	0.11	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T4	133.333 - 126.667	Leg	Max Tension	22	63.91	-0.78	0.00
			Max. Compression	19	-74.25	0.93	-0.01
			Max. Mx	22	62.72	-0.98	-0.01
			Max. My	20	-5.38	-0.02	-1.03
			Max. Vy	32	-2.11	-0.78	-0.02
			Max. Vx	20	-2.04	-0.02	-0.65
		Diagonal	Max Tension	26	12.62	0.00	0.00
			Max. Compression	26	-12.78	0.00	0.00
			Max. Mx	20	11.75	0.05	0.00
			Max. My	19	0.44	0.00	-0.00
			Max. Vy	20	-0.02	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Top Girt	Max Tension	33	8.62	-0.02	0.01
			Max. Compression	25	-8.66	-0.03	-0.01
			Max. Mx	22	-0.88	-0.04	-0.02
			Max. My	27	-1.61	-0.04	-0.02
			Max. Vy	22	-0.02	-0.04	-0.02
			Max. Vx	30	-0.00	-0.01	0.02
		Inner Bracing	Max Tension	25	0.15	0.00	0.00
			Max. Compression	25	-0.15	0.00	0.00
			Max. Mx	18	0.00	-0.01	0.00
			Max. My	24	0.14	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T5	126.667 - 120	Leg	Max Tension	22	77.25	-0.98	-0.01
			Max. Compression	19	-90.34	1.28	-0.07
			Max. Mx	32	76.33	-1.29	-0.04
			Max. My	20	-6.33	-0.02	-1.31
			Max. Vy	32	-0.79	-0.98	-0.00
			Max. Vx	28	0.81	-0.03	1.02
		Diagonal	Max Tension	26	13.40	0.00	0.00
			Max. Compression	26	-13.58	0.00	0.00
			Max. Mx	26	13.40	0.05	0.00
			Max. My	19	0.43	0.00	-0.00
			Max. Vy	26	0.02	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Top Girt	Max Tension	26	9.32	-0.03	-0.00
			Max. Compression	26	-9.32	-0.03	-0.00
			Max. Mx	22	-0.34	-0.04	-0.02
			Max. My	27	-1.05	-0.04	-0.02
			Max. Vy	22	-0.02	-0.04	-0.02
			Max. Vx	27	0.00	-0.04	-0.02
		Inner Bracing	Max Tension	26	0.16	0.00	0.00
			Max. Compression	26	-0.16	0.00	0.00
			Max. Mx	18	-0.00	-0.02	0.00
			Max. My	24	0.15	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T6	120 - 100	Leg	Max Tension	22	113.37	-1.21	-0.08

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	24	-130.55	1.25	0.02
			Max. Mx	32	91.52	-1.29	-0.04
			Max. My	20	-7.29	-0.03	-1.35
			Max. Vy	32	-0.46	-1.29	-0.04
			Max. Vx	20	-0.51	-0.03	-1.35
		Diagonal	Max Tension	26	16.73	0.00	0.00
			Max. Compression	26	-16.97	0.00	0.00
			Max. Mx	26	16.19	0.12	0.00
			Max. My	19	0.66	0.00	-0.00
			Max. Vy	26	-0.04	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	26	9.73	-0.04	-0.00
			Max. Compression	26	-9.82	-0.04	-0.00
			Max. Mx	22	-0.31	-0.06	-0.02
			Max. My	27	-1.04	-0.06	-0.02
			Max. Vy	22	-0.03	-0.06	-0.02
			Max. Vx	27	0.00	-0.06	-0.02
		Inner Bracing	Max Tension	26	0.17	0.00	0.00
			Max. Compression	26	-0.17	0.00	0.00
			Max. Mx	18	-0.00	-0.03	0.00
			Max. My	24	0.15	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T7	100 - 90	Leg	Max Tension	22	133.43	-1.27	-0.07
			Max. Compression	24	-153.20	1.20	0.01
			Max. Mx	32	132.38	-1.28	-0.03
			Max. My	20	-9.85	-0.03	-1.31
			Max. Vy	32	-0.47	-1.28	-0.03
			Max. Vx	20	0.51	-0.03	-1.31
		Diagonal	Max Tension	34	14.49	0.00	0.00
			Max. Compression	34	-14.79	0.00	0.00
			Max. Mx	26	14.48	0.13	0.00
			Max. My	19	0.81	0.00	-0.00
			Max. Vy	26	-0.04	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	34	9.13	-0.04	-0.00
			Max. Compression	34	-9.33	-0.04	-0.00
			Max. Mx	22	-0.91	-0.06	-0.02
			Max. My	30	0.99	-0.02	0.02
			Max. Vy	22	-0.03	-0.06	-0.02
			Max. Vx	30	-0.00	-0.02	0.02
		Inner Bracing	Max Tension	34	0.16	0.00	0.00
			Max. Compression	34	-0.16	0.00	0.00
			Max. Mx	18	0.00	-0.04	0.00
			Max. My	24	0.15	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T8	90 - 80	Leg	Max Tension	22	150.41	-1.24	-0.07
			Max. Compression	24	-172.79	1.41	0.03
			Max. Mx	32	148.72	-1.46	-0.04
			Max. My	20	-11.17	-0.03	-1.58
			Max. Vy	32	0.48	-1.46	-0.04
			Max. Vx	28	-0.53	-0.03	1.58
		Diagonal	Max Tension	34	14.13	0.00	0.00
			Max. Compression	34	-14.46	0.00	0.00
			Max. Mx	26	14.11	0.15	0.00
			Max. My	19	0.84	0.00	-0.00
			Max. Vy	26	-0.04	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Top Girt	Max Tension	34	9.38	-0.05	-0.00
			Max. Compression	34	-9.47	-0.05	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	22	-0.49	-0.07	-0.01
			Max. My	30	0.51	-0.03	0.02
			Max. Vy	22	-0.03	-0.07	-0.01
			Max. Vx	30	-0.00	-0.03	0.02
		Inner Bracing	Max Tension	34	0.16	0.00	0.00
			Max. Compression	34	-0.16	0.00	0.00
			Max. Mx	18	-0.01	-0.05	0.00
			Max. My	24	0.15	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T9	80 - 60	Leg	Max Tension	22	182.05	-1.78	-0.05
			Max. Compression	24	-210.03	1.89	0.03
			Max. Mx	32	179.91	-1.92	-0.04
			Max. My	20	-14.01	-0.03	-1.99
			Max. Vy	32	0.50	-1.78	-0.01
			Max. Vx	28	-0.53	-0.03	1.98
		Diagonal	Max Tension	34	14.47	0.00	0.00
			Max. Compression	34	-14.87	0.00	0.00
			Max. Mx	26	14.39	0.18	0.00
			Max. My	19	0.86	0.00	-0.00
			Max. Vy	26	-0.05	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	34	10.35	-0.09	-0.00
			Max. Compression	34	-10.37	-0.09	-0.00
			Max. Mx	22	-0.63	-0.13	-0.02
			Max. My	32	0.39	-0.12	-0.02
			Max. Vy	22	-0.05	-0.13	-0.02
			Max. Vx	27	0.00	-0.12	-0.02
		Inner Bracing	Max Tension	34	0.18	0.00	0.00
			Max. Compression	34	-0.18	0.00	0.00
			Max. Mx	18	-0.01	-0.07	0.00
			Max. My	24	0.16	0.00	-0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T10	60 - 40	Leg	Max Tension	22	211.92	-1.74	-0.05
			Max. Compression	24	-245.93	1.51	0.02
			Max. Mx	32	195.40	-1.92	-0.04
			Max. My	20	-14.92	-0.03	-1.99
			Max. Vy	32	-0.48	-1.92	-0.04
			Max. Vx	28	0.52	-0.03	1.98
		Diagonal	Max Tension	34	14.47	0.00	0.00
			Max. Compression	34	-15.05	0.00	0.00
			Max. Mx	26	14.40	0.26	0.00
			Max. My	19	0.87	0.00	-0.00
			Max. Vy	26	-0.07	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	34	11.05	-0.12	-0.00
			Max. Compression	34	-10.99	-0.12	-0.00
			Max. Mx	22	-0.66	-0.15	-0.02
			Max. My	30	0.39	-0.07	0.02
			Max. Vy	22	-0.06	-0.15	-0.02
			Max. Vx	30	-0.00	-0.07	0.02
		Inner Bracing	Max Tension	34	0.19	0.00	0.00
			Max. Compression	34	-0.19	0.00	0.00
			Max. Mx	18	-0.01	-0.13	0.00
			Max. My	24	0.16	0.00	-0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T11	40 - 30	Leg	Max Tension	22	226.10	-1.60	-0.05
			Max. Compression	24	-263.26	2.54	-0.02
			Max. Mx	24	-263.26	2.54	-0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	20	-18.07	-0.05	-1.86
			Max. Vy	30	-0.50	2.53	0.01
			Max. Vx	20	-0.52	-0.05	-1.86
		Diagonal	Max Tension	34	14.48	0.00	0.00
			Max. Compression	34	-15.12	0.00	0.00
			Max. Mx	26	14.41	0.28	0.00
			Max. My	19	0.88	0.00	-0.00
			Max. Vy	26	-0.07	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	34	11.34	-0.13	-0.00
			Max. Compression	34	-11.27	-0.13	-0.00
			Max. Mx	22	-0.81	-0.16	-0.02
			Max. My	30	0.38	-0.10	0.02
			Max. Vy	22	-0.06	-0.16	-0.02
			Max. Vx	30	-0.00	-0.10	0.02
		Inner Bracing	Max Tension	34	0.20	0.00	0.00
			Max. Compression	34	-0.20	0.00	0.00
			Max. Mx	18	-0.01	-0.14	0.00
			Max. My	24	0.17	0.00	-0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T12	30 - 20	Leg	Max Tension	22	239.78	-2.30	-0.02
			Max. Compression	24	-280.11	-1.90	0.12
			Max. Mx	24	-279.50	2.54	-0.02
			Max. My	20	-20.24	-0.52	-4.61
			Max. Vy	19	0.83	2.54	0.01
			Max. Vx	20	0.79	-0.52	-4.61
		Diagonal	Max Tension	34	14.52	0.00	0.00
			Max. Compression	34	-15.20	0.00	0.00
			Max. Mx	26	14.45	0.30	0.00
			Max. My	19	0.84	0.00	-0.00
			Max. Vy	26	-0.07	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Top Girt	Max Tension	34	11.68	-0.14	-0.00
			Max. Compression	34	-11.49	-0.14	-0.00
			Max. Mx	22	-0.18	-0.17	-0.02
			Max. My	32	0.81	-0.17	-0.02
			Max. Vy	22	-0.06	-0.17	-0.02
			Max. Vx	19	-0.00	-0.11	0.02
		Inner Bracing	Max Tension	34	0.20	0.00	0.00
			Max. Compression	34	-0.20	0.00	0.00
			Max. Mx	18	-0.01	-0.16	0.00
			Max. My	24	0.17	0.00	-0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T13	20 - 0	Leg	Max Tension	22	250.32	0.68	-0.15
			Max. Compression	24	-296.02	0.00	0.00
			Max. Mx	24	-295.42	8.19	-0.17
			Max. My	20	-21.52	-0.52	-4.61
			Max. Vy	24	-1.39	8.19	-0.17
			Max. Vx	20	-1.14	-0.52	-4.61
		Diagonal	Max Tension	34	22.69	-0.23	0.04
			Max. Compression	34	-23.27	0.00	0.00
			Max. Mx	33	12.81	-0.30	-0.07
			Max. My	26	-22.00	0.03	-0.16
			Max. Vy	33	0.07	-0.30	-0.07
			Max. Vx	26	-0.01	0.00	0.00
		Horizontal	Max Tension	34	12.26	-0.25	-0.00
			Max. Compression	34	-12.57	-0.25	-0.00
			Max. Mx	22	-0.59	-0.39	-0.04
			Max. My	30	0.88	-0.12	0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	22	0.11	-0.39	-0.04
			Max. Vx	30	-0.00	-0.12	0.04
		Redund Horz 1 Bracing	Max Tension	24	5.14	0.00	0.00
			Max. Compression	24	-5.14	0.00	0.00
			Max. Mx	18	0.40	0.02	0.00
			Max. Vy	18	-0.01	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	24	4.69	0.00	0.00
			Max. Compression	24	-4.69	0.00	0.00
			Max. Mx	19	4.66	0.03	0.00
			Max. My	26	1.44	0.00	0.00
			Max. Vy	19	-0.01	0.00	0.00
			Max. Vx	26	0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-0.04	0.00	0.00
			Max. Mx	18	-0.01	0.04	0.00
			Max. Vy	18	-0.02	0.00	0.00
		Inner Bracing	Max Tension	34	0.22	0.00	0.00
			Max. Compression	34	-0.22	0.00	0.00
			Max. Mx	18	0.00	0.11	0.00
			Max. My	24	0.19	0.00	0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	30	324.53	35.06	-19.61
	Max. H_x	30	324.53	35.06	-19.61
	Max. H_z	21	-268.47	-30.06	18.27
	Min. Vert	22	-278.29	-31.82	17.76
	Min. H_x	22	-278.29	-31.82	17.76
	Min. H_z	29	311.45	33.04	-19.89
Leg B	Max. Vert	24	327.44	-34.59	-20.53
	Max. H_x	32	-275.37	31.27	18.61
	Max. H_z	33	-265.55	29.30	19.51
	Min. Vert	32	-275.37	31.27	18.61
	Min. H_x	24	327.44	-34.59	-20.53
	Min. H_z	25	314.36	-32.36	-21.16
Leg A	Max. Vert	19	325.75	1.04	40.19
	Max. H_x	31	22.72	5.79	1.89
	Max. H_z	19	325.75	1.04	40.19
	Min. Vert	27	-277.06	-1.02	-36.42
	Min. H_x	23	22.72	-5.73	1.89
	Min. H_z	27	-277.06	-1.02	-36.42

Tower Mast Reaction Summary

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 Only	43.50	0.00	0.00	0.57	-13.02	0.00
Dead+Wind 0 deg - No Ice	43.50	0.00	-53.11	-5911.04	-13.10	33.91
Dead+Wind 30 deg - No Ice	43.50	26.43	-45.78	-5086.56	-2950.13	27.54
Dead+Wind 45 deg - No Ice	43.50	37.36	-37.36	-4149.25	-4162.87	21.46
Dead+Wind 60 deg - No Ice	43.50	45.72	-26.40	-2931.17	-5090.95	13.92
Dead+Wind 90 deg - No Ice	43.50	52.86	0.00	0.53	-5887.17	-3.42
Dead+Wind 120 deg - No Ice	43.50	45.99	26.55	2956.32	-5132.68	-19.95
Dead+Wind 135 deg - No Ice	43.50	37.36	37.36	4150.34	-4162.91	-26.25
Dead+Wind 150 deg - No Ice	43.50	26.43	45.78	5087.68	-2950.17	-30.92
Dead+Wind 180 deg - No Ice	43.50	-0.00	52.80	5864.04	-13.10	-33.70
Dead+Wind 210 deg - No Ice	43.50	-26.43	45.78	5087.73	2923.99	-27.54
Dead+Wind 225 deg - No Ice	43.50	-37.36	37.36	4150.40	4136.77	-21.46
Dead+Wind 240 deg - No Ice	43.50	-45.99	26.56	2956.37	5106.57	-13.98
Dead+Wind 270 deg - No Ice	43.50	-52.86	0.00	0.52	5861.09	3.42
Dead+Wind 300 deg - No Ice	43.50	-45.72	-26.40	-2931.23	5064.84	19.80
Dead+Wind 315 deg - No Ice	43.50	-37.36	-37.36	-4149.31	4136.73	26.25
Dead+Wind 330 deg - No Ice	43.50	-26.43	-45.78	-5086.61	2923.96	30.92
Dead+Ice	68.61	0.00	0.00	3.71	-40.20	-0.00
Dead+Wind 0 deg+Ice	68.61	0.00	-66.48	-7259.82	-40.42	49.57
Dead+Wind 30 deg+Ice	68.61	33.00	-57.16	-6235.88	-3642.82	43.36
Dead+Wind 45 deg+Ice	68.61	46.61	-46.62	-5083.98	-5128.06	35.81
Dead+Wind 60 deg+Ice	68.61	57.02	-32.92	-3588.95	-6263.02	25.83
Dead+Wind 90 deg+Ice	68.61	66.00	0.00	3.68	-7245.21	1.49
Dead+Wind 120 deg+Ice	68.61	57.58	33.24	3635.41	-6330.75	-23.46
Dead+Wind 135 deg+Ice	68.61	46.62	46.61	5091.38	-5128.10	-33.58
Dead+Wind 150 deg+Ice	68.61	33.00	57.16	6243.30	-3642.86	-41.74
Dead+Wind 180 deg+Ice	68.61	-0.00	65.84	7189.09	-40.42	-48.97
Dead+Wind 210 deg+Ice	68.61	-33.00	57.16	6243.39	3562.08	-43.36
Dead+Wind 225 deg+Ice	68.61	-46.62	46.62	5091.48	5047.38	-35.81
Dead+Wind 240 deg+Ice	68.61	-57.58	33.24	3635.50	6250.08	-26.16
Dead+Wind 270 deg+Ice	68.61	-66.00	0.00	3.67	7164.59	-1.49
Dead+Wind 300 deg+Ice	68.61	-57.02	-32.92	-3589.05	6182.35	23.18
Dead+Wind 315 deg+Ice	68.61	-46.62	-46.61	-5084.09	5047.34	33.58
Dead+Wind 330 deg+Ice	68.61	-33.00	-57.16	-6235.97	3562.05	41.74
Dead+Wind 0 deg - Service	43.50	0.00	-16.39	-1824.02	-13.05	10.47
Dead+Wind 30 deg - Service	43.50	8.16	-14.13	-1569.58	-919.52	8.50
Dead+Wind 45 deg - Service	43.50	11.53	-11.53	-1280.26	-1293.84	6.62
Dead+Wind 60 deg - Service	43.50	14.11	-8.15	-904.28	-1580.30	4.29
Dead+Wind 90 deg - Service	43.50	16.32	0.00	0.57	-1826.06	-1.05
Dead+Wind 120 deg - Service	43.50	14.20	8.20	912.86	-1593.18	-6.16
Dead+Wind 135 deg - Service	43.50	11.53	11.53	1281.39	-1293.87	-8.10
Dead+Wind 150 deg - Service	43.50	8.16	14.13	1570.68	-919.55	-9.55
Dead+Wind 180 deg - Service	43.50	0.00	16.30	1810.28	-13.07	-10.40
Dead+Wind 210 deg - Service	43.50	-8.16	14.13	1570.68	893.51	-8.50
Dead+Wind 225 deg - Service	43.50	-11.53	11.53	1281.39	1267.78	-6.62
Dead+Wind 240 deg - Service	43.50	-14.20	8.20	912.86	1567.10	-4.31
Dead+Wind 270 deg - Service	43.50	-16.32	0.00	0.57	1799.97	1.05
Dead+Wind 300 deg - Service	43.50	-14.11	-8.15	-904.31	1554.21	6.11
Dead+Wind 315 deg - Service	43.50	-11.53	-11.53	-1280.30	1267.74	8.10
Dead+Wind 330 deg - Service	43.50	-8.16	-14.13	-1569.56	893.46	9.55

Solution Summary

Load Comb.	Sum of Applied Forces PX	PY	PZ	Sum of Reactions PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-43.50	0.00	0.00	43.50	0.00	0.000%
2	0.00	-43.50	-53.11	-0.00	43.50	53.11	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
3	26.43	-43.50	-45.78	-26.43	43.50	45.78	0.000%
4	37.36	-43.50	-37.36	-37.36	43.50	37.36	0.000%
5	45.72	-43.50	-26.40	-45.72	43.50	26.40	0.000%
6	52.86	-43.50	0.00	-52.86	43.50	-0.00	0.001%
7	45.99	-43.50	26.56	-45.99	43.50	-26.55	0.000%
8	37.36	-43.50	37.36	-37.36	43.50	-37.36	0.001%
9	26.43	-43.50	45.78	-26.43	43.50	-45.78	0.001%
10	0.00	-43.50	52.80	0.00	43.50	-52.80	0.000%
11	-26.43	-43.50	45.78	26.43	43.50	-45.78	0.000%
12	-37.36	-43.50	37.36	37.36	43.50	-37.36	0.000%
13	-45.99	-43.50	26.56	45.99	43.50	-26.56	0.000%
14	-52.86	-43.50	0.00	52.86	43.50	-0.00	0.001%
15	-45.72	-43.50	-26.40	45.72	43.50	26.40	0.000%
16	-37.36	-43.50	-37.36	37.36	43.50	37.36	0.000%
17	-26.43	-43.50	-45.78	26.43	43.50	45.78	0.001%
18	0.00	-68.61	0.00	0.00	68.61	0.00	0.000%
19	0.00	-68.61	-66.49	-0.00	68.61	66.48	0.001%
20	33.00	-68.61	-57.16	-33.00	68.61	57.16	0.001%
21	46.62	-68.61	-46.62	-46.61	68.61	46.62	0.001%
22	57.02	-68.61	-32.92	-57.02	68.61	32.92	0.001%
23	66.00	-68.61	0.00	-66.00	68.61	-0.00	0.001%
24	57.58	-68.61	33.24	-57.58	68.61	-33.24	0.001%
25	46.62	-68.61	46.62	-46.62	68.61	-46.61	0.002%
26	33.00	-68.61	57.16	-33.00	68.61	-57.16	0.002%
27	0.00	-68.61	65.84	0.00	68.61	-65.84	0.001%
28	-33.00	-68.61	57.16	33.00	68.61	-57.16	0.001%
29	-46.62	-68.61	46.62	46.62	68.61	-46.62	0.001%
30	-57.58	-68.61	33.24	57.58	68.61	-33.24	0.001%
31	-66.00	-68.61	0.00	66.00	68.61	-0.00	0.001%
32	-57.02	-68.61	-32.92	57.02	68.61	32.92	0.001%
33	-46.62	-68.61	-46.62	46.62	68.61	46.61	0.001%
34	-33.00	-68.61	-57.16	33.00	68.61	57.16	0.002%
35	0.00	-43.50	-16.39	-0.00	43.50	16.39	0.000%
36	8.16	-43.50	-14.13	-8.16	43.50	14.13	0.000%
37	11.53	-43.50	-11.53	-11.53	43.50	11.53	0.000%
38	14.11	-43.50	-8.15	-14.11	43.50	8.15	0.000%
39	16.32	-43.50	0.00	-16.32	43.50	-0.00	0.000%
40	14.20	-43.50	8.20	-14.20	43.50	-8.20	0.000%
41	11.53	-43.50	11.53	-11.53	43.50	-11.53	0.000%
42	8.16	-43.50	14.13	-8.16	43.50	-14.13	0.000%
43	0.00	-43.50	16.30	-0.00	43.50	-16.30	0.000%
44	-8.16	-43.50	14.13	8.16	43.50	-14.13	0.000%
45	-11.53	-43.50	11.53	11.53	43.50	-11.53	0.000%
46	-14.20	-43.50	8.20	14.20	43.50	-8.20	0.000%
47	-16.32	-43.50	0.00	16.32	43.50	-0.00	0.000%
48	-14.11	-43.50	-8.15	14.11	43.50	8.15	0.000%
49	-11.53	-43.50	-11.53	11.53	43.50	11.53	0.000%
50	-8.16	-43.50	-14.13	8.16	43.50	14.13	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000162
3	Yes	4	0.00000001	0.00000174

4	Yes	4	0.00000001	0.00000174
5	Yes	4	0.00000001	0.00000181
6	Yes	4	0.00000001	0.00000236
7	Yes	4	0.00000001	0.00000143
8	Yes	4	0.00000001	0.00000265
9	Yes	4	0.00000001	0.00000347
10	Yes	4	0.00000001	0.00000203
11	Yes	4	0.00000001	0.00000175
12	Yes	4	0.00000001	0.00000145
13	Yes	4	0.00000001	0.00000136
14	Yes	4	0.00000001	0.00000238
15	Yes	4	0.00000001	0.00000187
16	Yes	4	0.00000001	0.00000292
17	Yes	4	0.00000001	0.00000347
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000340
20	Yes	4	0.00000001	0.00000318
21	Yes	4	0.00000001	0.00000333
22	Yes	4	0.00000001	0.00000392
23	Yes	4	0.00017758	0.00000504
24	Yes	4	0.00000001	0.00000277
25	Yes	4	0.00018613	0.00000531
26	Yes	4	0.00023345	0.00000718
27	Yes	4	0.00000001	0.00000441
28	Yes	4	0.00000001	0.00000320
29	Yes	4	0.00000001	0.00000260
30	Yes	4	0.00000001	0.00000280
31	Yes	4	0.00018307	0.00000510
32	Yes	4	0.00000001	0.00000396
33	Yes	4	0.00016676	0.00000606
34	Yes	4	0.00023640	0.00000720
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	180 - 160	3.119	40	0.1445	0.0415
T2	160 - 140	2.497	40	0.1405	0.0336
T3	140 - 133.333	1.903	40	0.1237	0.0212
T4	133.333 - 126.667	1.725	40	0.1190	0.0189
T5	126.667 - 120	1.550	40	0.1138	0.0168
T6	120 - 100	1.382	40	0.1078	0.0152
T7	100 - 90	0.951	40	0.0874	0.0114

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T8	90 - 80	0.769	40	0.0780	0.0097
T9	80 - 60	0.607	40	0.0683	0.0082
T10	60 - 40	0.341	40	0.0508	0.0059
T11	40 - 30	0.152	40	0.0325	0.0039
T12	30 - 20	0.086	46	0.0232	0.0029
T13	20 - 0	0.039	46	0.0139	0.0020

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	3' Yagi	40	3.119	0.1445	0.0415	Inf
177.00	PA6-65AC	40	3.025	0.1445	0.0406	Inf
175.00	PD1142	40	2.963	0.1444	0.0400	Inf
170.00	PAR6-105	40	2.807	0.1440	0.0383	850674
169.00	P6F-9	40	2.776	0.1438	0.0379	773343
167.00	3' Yagi	40	2.714	0.1434	0.0371	654364
165.00	AP11-850	40	2.652	0.1428	0.0362	567120
160.00	Standoff	40	2.497	0.1405	0.0336	301775
155.00	Pirod 15' T-Frame Sector Mount (1)	40	2.343	0.1369	0.0304	114524
150.00	BCD-80609	40	2.191	0.1325	0.0269	66029
133.00	P65-16-XLH-RR	40	1.716	0.1188	0.0188	275133
132.00	Pirod 15' T-Frame Sector Mount (1)	40	1.690	0.1181	0.0185	277493
125.00	APX16DWV-16DWV-S-E-ACU w/ Mount	40	1.507	0.1124	0.0164	58926
60.00	(2) GPS	40	0.341	0.0508	0.0059	60655

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	12.171	24	0.5544	0.1451
T2	160 - 140	9.781	24	0.5405	0.1208
T3	140 - 133.333	7.483	24	0.4800	0.0830
T4	133.333 - 126.667	6.791	24	0.4627	0.0757
T5	126.667 - 120	6.110	24	0.4429	0.0689
T6	120 - 100	5.455	24	0.4198	0.0626
T7	100 - 90	3.771	24	0.3417	0.0495
T8	90 - 80	3.053	24	0.3057	0.0437
T9	80 - 60	2.415	24	0.2680	0.0379
T10	60 - 40	1.362	24	0.1999	0.0277
T11	40 - 30	0.614	24	0.1283	0.0186
T12	30 - 20	0.350	30	0.0918	0.0139
T13	20 - 0	0.162	30	0.0551	0.0094

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	3' Yagi	24	12.171	0.5544	0.1451	604379
177.00	PA6-65AC	24	11.812	0.5544	0.1422	604379
175.00	PD1142	24	11.573	0.5542	0.1402	604379
170.00	PAR6-105	24	10.976	0.5527	0.1346	302190
169.00	P6F-9	24	10.856	0.5521	0.1334	274718
167.00	3' Yagi	24	10.617	0.5506	0.1307	232454
165.00	AP11-850	24	10.378	0.5486	0.1278	201460
160.00	Standoff	24	9.781	0.5405	0.1208	102013
155.00	Pirod 15' T-Frame Sector Mount (1)	24	9.186	0.5279	0.1113	34819
150.00	BCD-80609	24	8.600	0.5121	0.1005	18488
133.00	P65-16-XLH-RR	24	6.756	0.4618	0.0754	77336
132.00	Pirod 15' T-Frame Sector Mount (1)	24	6.654	0.4590	0.0744	77212
125.00	APX16DWV-16DWV-S-E-ACU w/ Mount	24	5.942	0.4374	0.0672	15500
60.00	(2) GPS	24	1.362	0.1999	0.0277	15520

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 3 STD	20.00	6.67	68.8 K=1.00	21.168	2.2285	-10.65	47.17	0.226 ✓
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1 K=1.00	23.861	3.1741	-46.98	75.74	0.620 ✓
T3	140 - 133.333	ROHN 5 EH	6.68	6.68	43.6 K=1.00	25.320	6.1120	-60.29	154.75	0.390 ✓
T4	133.333 - 126.667	ROHN 5 EH	6.68	6.68	43.6 K=1.00	25.320	6.1120	-74.25	154.75	0.480 ✓
T5	126.667 - 120	ROHN 5 EH	6.68	6.68	43.6 K=1.00	25.320	6.1120	-90.34	154.75	0.584 ✓
T6	120 - 100	ROHN 6 EHS	20.04	10.02	54.0 K=1.00	23.709	6.7133	-130.55	159.16	0.820 ✓
T7	100 - 90	ROHN 6 EH	10.03	10.03	54.8 K=1.00	23.580	8.4049	-153.20	198.19	0.773 ✓
T8	90 - 80	ROHN 6 EH	10.03	10.03	54.8 K=1.00	23.580	8.4049	-172.79	198.19	0.872 ✓
T9	80 - 60	ROHN 8 EHS	20.05	10.03	41.2 K=1.00	25.662	9.7193	-210.03	249.41	0.842 ✓
T10	60 - 40	ROHN 8 EHS	20.05	10.03	41.2 K=1.00	25.662	9.7193	-245.93	249.41	0.986 ✓
T11	40 - 30	ROHN 8 EHS	10.03	10.03	41.2 K=1.00	25.662	9.7193	-263.26	249.41	1.056 ✓
T12	30 - 20	ROHN 8 EHS	10.03	10.03	41.2 K=1.00	25.662	9.7193	-280.11	249.41	1.123 ✓
T13	20 - 0	ROHN 8 EH	20.05	10.03	41.8 K=1.00	25.576	12.7627	-296.02	326.43	0.907 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7.94	7.67	117.0 K=1.00	10.918	1.0745	-8.00	11.73	0.682 ✓
T2	160 - 140	ROHN 2 STD	8.34	8.04	122.6 K=1.00	9.938	1.0745	-10.99	10.68	1.029 ✓
T3	140 - 133.333	ROHN 2 EH	8.77	8.42	131.8 K=1.00	8.598	1.4773	-10.19	12.70	0.802 ✓
T4	133.333 - 126.667	ROHN 2 EH	9.00	8.66	135.6 K=1.00	8.126	1.4773	-12.78	12.00	1.065 ✓
T5	126.667 - 120	ROHN 2 EH	9.24	8.91	139.4 K=1.00	7.681	1.4773	-13.58	11.35	1.197 ✓
T6	120 - 100	ROHN 2.5 EH	12.52	12.06	156.6 K=1.00	6.090	2.2535	-16.46	13.72	1.199 ✓
T7	100 - 90	ROHN 3 STD	12.92	12.49	128.8 K=1.00	9.001	2.2285	-14.79	20.06	0.737 ✓
T8	90 - 80	ROHN 3 STD	13.35	12.93	133.4 K=1.00	8.392	2.2285	-14.46	18.70	0.773 ✓
T9	80 - 60	ROHN 3 STD	14.21	13.70	141.3 K=1.00	7.477	2.2285	-14.87	16.66	0.892 ✓
T10	60 - 40	P3.5x.226	15.12	14.64	131.5 K=1.00	8.641	2.6795	-15.05	23.15	0.650 ✓
T11	40 - 30	P3.5x.226	15.60	15.13	135.8 K=1.00	8.096	2.6795	-15.12	21.69	0.697 ✓
T12	30 - 20	P3.5x.226	16.08	15.62	140.2 K=1.00	7.592	2.6795	-15.20	20.34	0.747 ✓
T13	20 - 0	P3.5x.226	24.33	12.17	109.2 K=1.00	12.519	2.6795	-23.27	33.55	0.694 ✓

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8.60	4.15	80.0 K=1.00	19.004	0.7995	-4.41	15.19	0.290 ✓
T2	160 - 140	ROHN 1.5 STD	10.01	4.82	92.9 K=1.00	16.309	0.7995	-6.37	13.04	0.489 ✓
T3	140 - 133.333	ROHN 2 STD	10.71	5.17	78.8 K=1.00	19.257	1.0745	-6.55	20.69	0.317 ✓
T6	120 - 100	ROHN 2 STD	13.92	6.68	101.9 K=1.00	14.269	1.0745	-9.82	15.33	0.640 ✓
T7	100 - 90	ROHN 2 STD	15.04	7.24	110.5 K=1.00	12.241	1.0745	-9.33	13.15	0.709 ✓
T9	80 - 60	ROHN 2.5 STD	18.93	9.10	115.3 K=1.00	11.230	1.7040	-10.37	19.14	0.542 ✓
T10	60 - 40	ROHN 2.5 STD	21.43	10.35	131.1	8.682	1.7040	-10.99	14.80	0.743 ✓

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 $\frac{P}{P_a}$
T13	20 - 0	ROHN 2.5 STD	6.29	6.29	63.8 K=0.80	22.062	1.7040	-0.04	37.59	0.001 ✓

Inner Bracing 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	180 - 160	L2x2x1/8	4.30	4.30	129.8 K=1.00	8.869	0.4844	-0.08	4.30	0.018 ✓
T2	160 - 140	L2x2x1/8	5.01	5.01	151.1 K=1.00	6.537	0.4844	-0.11	3.17	0.035 ✓
T3	140 - 133.333	L2x2x1/8	5.35	5.35	161.6 K=1.00	5.716	0.4844	-0.11	2.77	0.041 ✓
T4	133.333 - 126.667	L2x2x1/8	5.70	5.70	172.1 K=1.00	5.041	0.4844	-0.15	2.44	0.061 ✓
T5	126.667 - 120	L2x2x1/8	6.05	6.05	182.6 K=1.00	4.479	0.4844	-0.16	2.17	0.074 ✓
T6	120 - 100	L2 1/2x2 1/2x3/16	6.96	6.96	168.7 K=1.00	5.248	0.9020	-0.17	4.73	0.036 ✓
T7	100 - 90	L2 1/2x2 1/2x3/16	7.52	7.52	182.3 K=1.00	4.492	0.9020	-0.16	4.05	0.040 ✓
T8	90 - 80	L2 1/2x2 1/2x3/16	8.18	8.18	198.3 K=1.00	3.798	0.9020	-0.16	3.43	0.048 ✓
T9	80 - 60	L3x3x3/16	9.46	9.46	190.5 K=1.00	4.113	1.0900	-0.18	4.48	0.040 ✓
T10	60 - 40	L3 1/2x3 1/2x1/4	10.71	10.71	185.2 K=1.00	4.352	1.6900	-0.19	7.35	0.026 ✓
T11	40 - 30	L3 1/2x3 1/2x1/4	11.34	11.34	196.1 K=1.00	3.885	1.6900	-0.20	6.57	0.030 ✓
T12	30 - 20	L3 1/2x3 1/2x1/4	11.96	11.96	206.9 K=1.00	3.490	1.6900	-0.20	5.90	0.034 ✓
T13	20 - 0	ROHN 2 STD	12.59	12.59	191.9 K=1.00	4.054	1.0745	-0.22	4.36	0.050 ✓

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	180 - 160	ROHN 3 STD	20.00	6.67	68.8	30.000	2.2285	8.62	66.85	0.129 ✓
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1	30.000	3.1741	40.17	95.22	0.422 ✓
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1	30.000	3.1741	40.17	95.22	0.422

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 $\frac{P}{P_a}$
T3	140 - 133.333	ROHN 5 EH	6.68	6.68	43.6	30.000	6.1120	52.41	183.36	0.286 ✓
T4	133.333 - 126.667	ROHN 5 EH	6.68	6.68	43.6	30.000	6.1120	63.91	183.36	0.349 ✓
T5	126.667 - 120	ROHN 5 EH	6.68	6.68	43.6	30.000	6.1120	77.25	183.36	0.421 ✓
T6	120 - 100	ROHN 6 EHS	20.04	10.02	54.0	30.000	6.7133	113.38	201.40	0.563 ✓
T7	100 - 90	ROHN 6 EH	10.03	10.03	54.8	30.000	8.4049	133.43	252.15	0.529 ✓
T8	90 - 80	ROHN 6 EH	10.03	10.03	54.8	30.000	8.4049	150.41	252.15	0.597 ✓
T9	80 - 60	ROHN 8 EHS	20.05	10.03	41.2	30.000	9.7193	182.05	291.58	0.624 ✓
T10	60 - 40	ROHN 8 EHS	20.05	10.03	41.2	30.000	9.7193	211.92	291.58	0.727 ✓
T11	40 - 30	ROHN 8 EHS	10.03	10.03	41.2	30.000	9.7193	226.10	291.58	0.775 ✓
T12	30 - 20	ROHN 8 EHS	10.03	10.03	41.2	30.000	9.7193	239.78	291.58	0.822 ✓
T13	20 - 0	ROHN 8 EH	20.05	10.03	41.8	30.000	12.7627	250.32	382.88	0.654 ✓

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	180 - 160	ROHN 2 STD	7.94	7.67	117.0	30.000	1.0745	7.91	32.24	0.245 ✓
T2	160 - 140	ROHN 2 STD	8.34	8.04	122.6	30.000	1.0745	10.89	32.24	0.338 ✓
T3	140 - 133.333	ROHN 2 EH	8.77	8.42	131.8	30.000	1.4773	10.04	44.32	0.227 ✓
T4	133.333 - 126.667	ROHN 2 EH	9.00	8.66	135.6	30.000	1.4773	12.62	44.32	0.285 ✓
T5	126.667 - 120	ROHN 2 EH	9.24	8.91	139.4	30.000	1.4773	13.40	44.32	0.302 ✓
T6	120 - 100	ROHN 2.5 EH	12.19	11.73	152.3	30.000	2.2535	16.73	67.61	0.247 ✓
T7	100 - 90	ROHN 3 STD	12.92	12.49	128.8	30.000	2.2285	14.49	66.85	0.217 ✓
T8	90 - 80	ROHN 3 STD	13.35	12.93	133.4	30.000	2.2285	14.13	66.85	0.211 ✓
T9	80 - 60	ROHN 3 STD	13.77	13.27	136.8	30.000	2.2285	14.47	66.85	0.216 ✓
T10	60 - 40	P3.5x.226	14.66	14.18	127.3	30.000	2.6795	14.47	80.39	0.180 ✓
T11	40 - 30	P3.5x.226	15.60	15.13	135.8	30.000	2.6795	14.48	80.39	0.180 ✓

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 $\frac{P}{P_a}$
T12	30 - 20	P3.5x.226	16.08	15.62	140.2	30.000	2.6795	14.52	80.39	0.181 ✓
T13	20 - 0	P3.5x.226	24.33	12.17	109.2	30.000	2.6795	22.69	80.39	0.282 ✓

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8.60	4.15	80.0	30.000	0.7995	4.47	23.98	0.186 ✓
T2	160 - 140	ROHN 1.5 STD	9.32	4.47	86.2	30.000	0.7995	6.75	23.98	0.282 ✓
T3	140 - 133.333	ROHN 2 STD	10.71	5.17	78.8	30.000	1.0745	6.55	32.24	0.203 ✓
T6	120 - 100	ROHN 2 STD	13.92	6.68	101.9	30.000	1.0745	9.73	32.24	0.302 ✓
T7	100 - 90	ROHN 2 STD	15.04	7.24	110.5	30.000	1.0745	9.13	32.24	0.283 ✓
T9	80 - 60	ROHN 2.5 STD	18.93	9.10	115.3	30.000	1.7040	10.35	51.12	0.203 ✓
T10	60 - 40	ROHN 2.5 STD	21.43	10.35	131.1	30.000	1.7040	11.05	51.12	0.216 ✓
T11	40 - 30	ROHN 2.5 STD	22.68	10.98	139.1	30.000	1.7040	11.34	51.12	0.222 ✓
T13	20 - 0	P3.5x.226	25.18	12.23	109.8	30.000	2.6795	12.26	80.39	0.152 ✓

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	180 - 160	ROHN 1.5 STD	8.54	4.13	79.5	30.000	0.7995	1.22	23.98	0.051 ✓
T4	133.333 - 126.667	ROHN 2 STD	11.40	5.47	83.4	30.000	1.0745	8.62	32.24	0.267 ✓
T5	126.667 - 120	ROHN 2 STD	12.10	5.82	88.7	30.000	1.0745	9.32	32.24	0.289 ✓
T8	90 - 80	ROHN 2 STD	16.36	7.90	120.5	30.000	1.0745	9.38	32.24	0.291 ✓
T12	30 - 20	ROHN 2.5 STD	23.93	11.60	147.0	30.000	1.7040	11.68	51.12	0.228 ✓

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 $\frac{P}{P_a}$
T13	20 - 0	ROHN 1.5 STD	6.29	5.93	114.4	30.000	0.7995	5.14	23.98	0.214 ✔

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 $\frac{P}{P_a}$
T13	20 - 0	ROHN 1.5 STD	11.50	10.77	207.6	30.000	0.7995	4.69	23.98	0.196 ✔

Inner Bracing 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	180 - 160	L2x2x1/8	4.30	4.30	82.4	21.600	0.4844	0.08	10.46	0.007 ✔
T2	160 - 140	L2x2x1/8	4.66	4.66	89.3	21.600	0.4844	0.12	10.46	0.011 ✔
T3	140 - 133.333	L2x2x1/8	5.35	5.35	102.6	21.600	0.4844	0.11	10.46	0.011 ✔
T4	133.333 - 126.667	L2x2x1/8	5.70	5.70	109.3	21.600	0.4844	0.15	10.46	0.014 ✔
T5	126.667 - 120	L2x2x1/8	6.05	6.05	115.9	21.600	0.4844	0.16	10.46	0.015 ✔
T6	120 - 100	L2 1/2x2 1/2x3/16	6.96	6.96	107.3	21.600	0.9020	0.17	19.48	0.009 ✔
T7	100 - 90	L2 1/2x2 1/2x3/16	7.52	7.52	116.0	21.600	0.9020	0.16	19.48	0.008 ✔
T8	90 - 80	L2 1/2x2 1/2x3/16	8.18	8.18	126.2	21.600	0.9020	0.16	19.48	0.008 ✔
T9	80 - 60	L3x3x3/16	9.46	9.46	120.9	21.600	1.0900	0.18	23.54	0.008 ✔
T10	60 - 40	L3 1/2x3 1/2x1/4	10.71	10.71	117.9	30.000	1.6900	0.19	50.70	0.004 ✔
T11	40 - 30	L3 1/2x3 1/2x1/4	11.34	11.34	124.8	30.000	1.6900	0.20	50.70	0.004 ✔
T12	30 - 20	L3 1/2x3 1/2x1/4	11.96	11.96	131.7	30.000	1.6900	0.20	50.70	0.004 ✔
T13	20 - 0	ROHN 2 STD	12.59	12.59	191.9	30.000	1.0745	0.22	32.24	0.007 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 3 STD	3	-10.65	62.88	16.9	Pass
		Diagonal	ROHN 2 STD	11	-8.00	15.64	51.2	Pass
		Horizontal	ROHN 1.5 STD	10	-4.41	20.25	21.8	Pass
		Top Girt	ROHN 1.5 STD	6	-1.23	20.37	6.0	Pass
		Inner Bracing	L2x2x1/8	16	-0.08	5.73	1.3	Pass
T2	160 - 140	Leg	ROHN 4 STD	42	-46.98	100.96	46.5	Pass
		Diagonal	ROHN 2 STD	59	-10.99	14.23	77.2	Pass
		Horizontal	ROHN 1.5 STD	46	-6.37	17.38	36.6	Pass
		Inner Bracing	L2x2x1/8	52	-0.11	4.22	2.6	Pass
T3	140 - 133.333	Leg	ROHN 5 EH	81	-60.29	206.29	29.2	Pass
		Diagonal	ROHN 2 EH	86	-10.19	16.93	60.2	Pass
		Horizontal	ROHN 2 STD	85	-6.55	27.58	23.8	Pass
		Inner Bracing	L2x2x1/8	91	-0.11	3.69	3.1	Pass
T4	133.333 - 126.667	Leg	ROHN 5 EH	96	-74.25	206.29	36.0	Pass
		Diagonal	ROHN 2 EH	102	-12.78	16.00	79.9	Pass
		Top Girt	ROHN 2 STD	98	-8.66	26.25	33.0	Pass
		Inner Bracing	L2x2x1/8	106	-0.15	3.26	4.6	Pass
T5	126.667 - 120	Leg	ROHN 5 EH	111	-90.34	206.29	43.8	Pass
		Diagonal	ROHN 2 EH	117	-13.58	15.13	89.8	Pass
		Top Girt	ROHN 2 STD	113	-9.32	24.67	37.8	Pass
		Inner Bracing	L2x2x1/8	121	-0.16	2.89	5.6	Pass
T6	120 - 100	Leg	ROHN 6 EHS	125	-130.55	212.17	61.5	Pass
		Diagonal	ROHN 2.5 EH	131	-16.46	18.30	89.9	Pass
		Horizontal	ROHN 2 STD	130	-9.82	20.44	48.0	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	136	-0.17	6.31	2.7	Pass
T7	100 - 90	Leg	ROHN 6 EH	152	-153.20	264.19	58.0	Pass
		Diagonal	ROHN 3 STD	159	-14.79	26.74	55.3	Pass
		Horizontal	ROHN 2 STD	157	-9.33	17.53	53.2	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	164	-0.16	5.40	3.0	Pass
T8	90 - 80	Leg	ROHN 6 EH	167	-172.79	264.19	65.4	Pass
		Diagonal	ROHN 3 STD	175	-14.46	24.93	58.0	Pass
		Top Girt	ROHN 2 STD	170	-9.47	14.73	64.3	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	178	-0.16	4.57	3.6	Pass
T9	80 - 60	Leg	ROHN 8 EHS	182	-210.03	332.47	63.2	Pass
		Diagonal	ROHN 3 STD	189	-14.87	22.21	66.9	Pass
		Horizontal	ROHN 2.5 STD	187	-10.37	25.51	40.7	Pass
		Inner Bracing	L3x3x3/16	194	-0.18	5.98	3.0	Pass
T10	60 - 40	Leg	ROHN 8 EHS	209	-245.93	332.47	74.0	Pass
		Diagonal	P3.5x.226	216	-15.05	30.86	48.8	Pass
		Horizontal	ROHN 2.5 STD	214	-10.99	19.72	55.7	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	220	-0.19	9.80	1.9	Pass
T11	40 - 30	Leg	ROHN 8 EHS	236	-263.26	332.47	79.2	Pass
		Diagonal	P3.5x.226	243	-15.12	28.92	52.3	Pass
		Horizontal	ROHN 2.5 STD	241	-11.27	17.54	64.3	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	248	-0.20	8.75	2.2	Pass
T12	30 - 20	Leg	ROHN 8 EHS	251	-280.11	332.47	84.3	Pass
		Diagonal	P3.5x.226	259	-15.20	27.12	56.1	Pass
		Top Girt	ROHN 2.5 STD	254	-11.49	15.70	73.2	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	262	-0.20	7.86	2.5	Pass
T13	20 - 0	Leg	ROHN 8 EH	266	-296.02	435.13	68.0	Pass
		Diagonal	P3.5x.226	279	-23.27	44.72	52.0	Pass
		Horizontal	P3.5x.226	275	-12.57	44.25	28.4	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	273	-5.14	17.70	29.0	Pass
		Redund Diag 1	ROHN 1.5 STD	274	-4.69	5.77	81.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
		Bracing						
		Redund Hip 1 Bracing	ROHN 2.5 STD	282	-0.04	50.11	0.1	Pass
		Inner Bracing	ROHN 2 STD	292	-0.22	5.81	3.8	Pass
							Summary	
							Leg (T12)	84.3 Pass
							Diagonal (T6)	89.9 Pass
							Horizontal (T11)	64.3 Pass
							Top Girt (T12)	73.2 Pass
							Redund Horz 1 Bracing (T13)	29.0 Pass
							Redund Diag 1 Bracing (T13)	81.4 Pass
							Redund Hip 1 Bracing (T13)	0.1 Pass
							Inner Bracing (T5)	5.6 Pass
							RATING =	**89.9** **Pass**

ANCHOR BOLT EVALUATION

URS

Job	180' Rohn SSMW Tower - Westport, CT	Project No.	VZ5-083	Page	of
Description	Anchor Bolt Analysis	Computed by	MJK	Sheet 1	of 3
		Checked by		Date 05/19/11	
				Date	

ANCHOR BOLT ANALYSIS

Input Data

Max Pier Reactions:

Uplift:	Uplift := 278·kips	*user input*
Shear:	Shear := 40·kips	*user input*
Compression:	Compression := 327·kips	*user input*

Anchor Bolt Data:

Use ASTM A354 Gr. BC

Number of Anchor Bolts = N	N := 10	*user input*	
Bolt Ultimate Strength:	F_u := 125·ksi	*user input*	
Bolt Yield Strength:	Fy := 109·ksi	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	
Thickness of Anchor Bolts	D := 1.0in	*user input*	
Threads per Inch:	n := 8	*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):

$$F_{net.area} := 1.333 \cdot \left(0.60 \cdot A_n \cdot Fy \right) \qquad F_{net.area} = 52.8 \cdot kips$$

Note: 1.333 increase allowed per TIA/EIA

Applied Tension:

$$MaxTension := \frac{Uplift}{N} \qquad MaxTension = 27.8 \cdot kips$$

Check Stresses:

$$\frac{MaxTension}{F_{net.area}} = 0.53$$

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

Condition1 = "OK"

URS

Job	180' Rohn SSMW Tower - Westport, CT	Project No.	VZ5-083	Page	of
Description	Anchor Bolt Analysis	Computed by	MJK	Sheet 3	of 3
		Checked by		Date 05/19/11	
				Date	

Check Anchor Bolt Area:

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

Required Area:

$$A_{s1} := \frac{Uplift}{Fy} + \frac{Shear}{\mu \cdot 0.85 \cdot Fy} \qquad A_{s1} = 3.3 \cdot in^2$$

$$A_{s2} := \left| \frac{Shear - (0.3 \cdot Compression)}{\mu \cdot 0.85 \cdot Fy} \right| \qquad A_{s2} = 1.1 \cdot in^2$$

Provided Area:

$$A_{sprovided} := A_n \cdot N \qquad A_{sprovided} = 6.1 \cdot in^2$$

$$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s1}}{A_{sprovided}} = 0.55$$

Condition2 = "OK"

$$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s2}}{A_{sprovided}} = 0.19$$

Condition3 = "OK"

FOUNDATION ANALYSIS
(PERFORMED BY DR. CLARENCE WELTI, P.E., P.C.)

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

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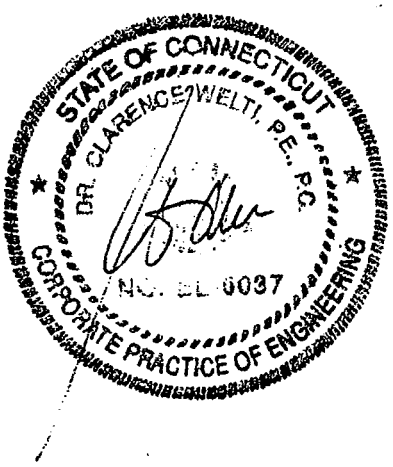


October 10, 2002

Mr. Mohsen Sahirad
URS Corporation
500 Enterprise Drive; Suite 3B
Rocky Hill, CT 06067

Re: Telecommunications Tower; 880 Post Road; Westport, CT ; Evaluation of Existing Foundation for Increased Design Loads

Dear Mohsen:

1.0 Herewith are boring data pertaining to the above. Two borings were drilled to a maximum depth of 12 feet. One boring was drilled 10 feet into bedrock and the second boring was drilled to the top of bedrock. The two borings are shown on the attached photo. Boring B-1 was about 11 feet from the tower leg and boring B-2 was about 15 feet from the tower leg. Considering that the rock outcrops at the third leg, the two borings define rock sufficiently to permit a reasonable interpolation of rock at the actual leg foundations. The former police station site is undergoing environmental remediation. *The borings were drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

2.0 The purpose of this study is to assess the capability of tower legs to receive the proposed revised loadings. The load summary, including initial and revised design loadings is as follows:

Loading Type	Original Reaction	Revised Reactions
Uplift	276.7 kips	324 kips
Download	319.9 kips	374 kips
Shear	41.0 kips	48 kips

3.0 The initial boring data (1990 data from Test Craig Laboratories) indicated bedrock over the entire site. It is understood that there is information indicating that two of the legs were placed in earth instead of rock. The recent boring tends to belie this. The analyses for uplift (which is the only critical item on the above reaction schedule) have been done for both earth and rock. The reference for both analyses is FHWA-1F-025 Publication "Drilled Shafts: Construction Procedures and Design Methods".

3.0.1 The tower legs were each placed on 4.5 feet diameter shafts installed 27 feet deep into either earth or rock. The design uplift was and is based on an effective length of 21 feet.

3.1 Regarding the shaft in earth analysis there were no deep blow counts in the borings, since rock was encountered within 2 feet of grade. It is however reasonable to assume the N value (blows per 12" on split spoon) will be about 60 in the till overlying rock. Using the procedure indicated on the attached calculations the ultimate uplift capacity would be 831 kips. Design capacity would be ½ of this value or 415 kips. In reviewing the reference you cited (Foundation Engineering by Das, 4th edition) a similar ultimate load capacity can also be found if one assumes an angle of internal friction of about 40° (which would be typical for N = 60) and a δ/ϕ ratio of 1.0 (relative density of soil ≥ 85+%).

3.2 Regarding the shaft in rock the friction is defined in the attached calculations. The ultimate uplift of the shaft placed the Straits Schist rock formation would be about 10 kips/sf. With a factor of safety of 3 (using 3 kips/sf) the allowable loading would be 888 kips.

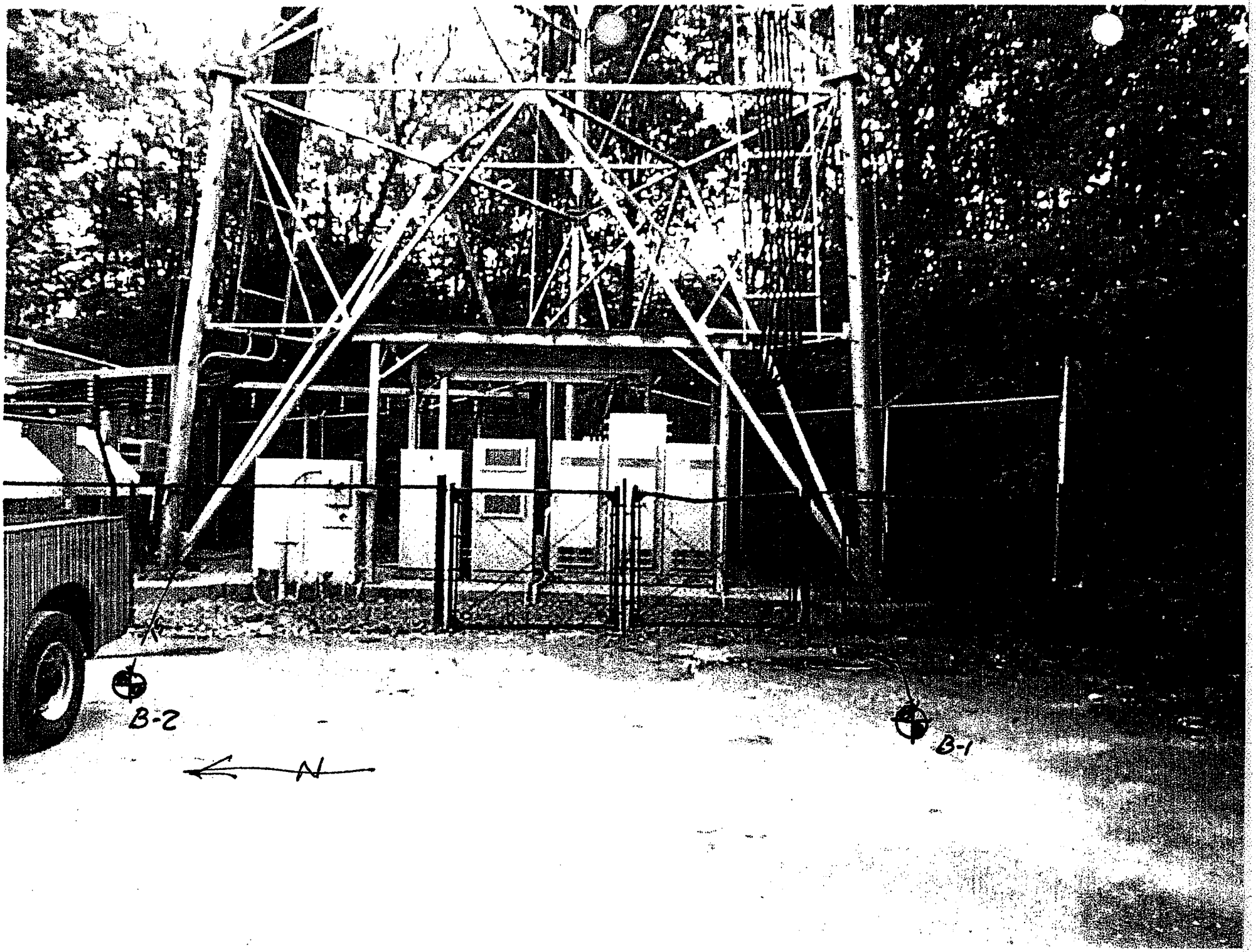
4.0 In summary it is believed that the shafts are in rock. The rock is a Schist with steep foliation and may have been drilled with only moderate effort. If the actual shaft are in earth there would have to have been a deep depression between the rock outcrop (which was cut down about 5 feet at the east leg) and the boring locations west of the two west legs, which indicated rock at 2 feet below grade similar to the original borings on the site. If there was a depression in the rock, the soil would be glacial till similar to what is being excavated to the northwest of the site at the old State Police Station. The analyses included herewith indicate that with either rock or till overburden the shafts have adequate capacity for the revised loading.

If you have any questions, please call me.

Very truly yours.

Clarence Welti, PhD, P. E.
Pres. Dr. Clarence Welti, P. E., P.C.

A:\urstoweranalysis9/04/02


B-2
B-1
N

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
URS CORPORATION

PROJECT NAME
CELL TOWER SITE
LOCATION
880 POST ROAD
WESTPORT, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	NX
SIZE I.D.	3.75"		1.5"	2.0"
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-1**

GROUND WATER OBSERVATIONS
AT 2.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 10/7/02
FINISH DATE 10/7/02

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	4-13-20-60	0.00'-1.50'		ASPHALT .10 BR. FINE-CRS. SAND AND FINE GRAVEL - FILL .80 GRAY ROCK FRAGMENTS, LITTLE SILT AND FINE SAND 1.5 GRAY ROCK FRAGMENTS 2.0 CORED ROCK - RUN #1 2.0' - 7.0' RECOVERED 50" RUN #2 7.0' - 12.0' RECOVERED 60"	
5						
10						
15					BOTTOM OF BORING @ 12.0' 12.0 NOTE: BORING WAS DRILLED 11.0' WEST OF TOWER LEG	
20						
25						
30						
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: BROMLEY
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-1**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
URS CORPORATION

PROJECT NAME
CELL TOWER SITE

LOCATION
880 POST ROAD
WESTPORT, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.5"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-2

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 10/7/02
FINISH DATE 10/7/02

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	1-8-12-60	0.00'-1.50'		DARK BR. FINE-CRS. SAND, SOME FINE-MED. GRAVEL, TRACE SILT - FILL	1.0
					BR./GRAY ROCK FRAGMENTS, SILT AND FINE SAND	1.5
					GRAY ROCK FRAGMENTS	2.0
					AUGER REFUSAL @ 2.0'	
					NOTE: BORING WAS DRILLED 15'WEST OF TOWER LEG	
5						
10						
15						
20						
25						
30						
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: BROMLEY
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-2**

DR. CLARENCE WELTI, PE, PC
P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033 • (860) 633-4623

CLIENT URS
PROJECT Communication Tower Mesa Point
SUBJECT Assessment of Capacity
BY CW DATE 10/ /02 SHEET NO.

Reference: Drilled Shafts Construction Procedures & Design Methods PUBLICATION NO FHWA-IF-99-025

Material: "Intermediate Geo-material" N > 50 B/12"
(IGM)

(1) $f_{max_R} = \sigma_{vi} K_{oi} \tan \phi_i'$

σ_{vi} = vertical effective stress at mid-layer ≈ 1.0 ksf

K_{oi} = design value of earth pressure coefficient at rest

ϕ_i = design value of angle of internal friction for IGM

(2) $\phi_i' = \tan^{-1}\left[\frac{N_{60}(\text{layer } i)}{12.3 + 20.3\left(\frac{\sigma_{vi}}{p_a}\right)}\right]^{0.34}$ $\quad p_a$ 2 ksf ≈ 14.7 psi

$N_{60}(\text{layer } 6) = 60$

$= \tan^{-1}\left\{\left[\frac{60}{12.3 + 20.3 \times 0.5}\right]^{.34}\right\} = \tan^{-1}(1.96)^{.34} = 51.5°$

(3) $K_{oi} = (1 - \sin\phi_i')\left[\frac{0.2 p_a N_{60}(\text{layer } i)}{\sigma_{vi}}\right]^{\sin\phi}$

$= (1 - .78)\left[\frac{.2 \times 2 \times 60}{1.0}\right]^{.78} = 1.65$

$f_R = (\text{from (1)}) = 3.73 \text{ ksf} \times 0.75 = 2.8$ ksf

$21' \times 4.5' \times \pi \times 2.8 = 831$ KIPS ULTIMATE SIDE CAPACITY

FOR SHAFT IN ROCK

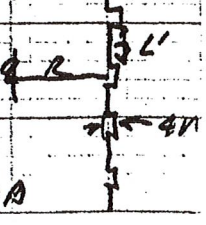
$f_{max} = 0.8\left[\frac{4R}{R}\left(\frac{L'}{L}\right)\right]^{0.45} q_u$

f_{max}: 5.37 TSF = 10.78 ksf

q_u: 5200 psi × 333 TSF

$L = 21'$

$4R = 05'$ $L' = 0.2'$



$21' \times \pi \times 4.5 = 296$ SF

Assume 1/3 for $f_{all} = 3$ ksf. $Q = 888$ KIPS

P65-16-XLH-RR ⋮ Dual Broadband Antennas

POLARIZATION: Dual linear ±45°
FREQUENCY (MHz): 698-894, 1710-2170
HORIZONTAL BEAM WIDTH (°): 65, 65
GAIN (dBi/dBd): 15.5/13.4 17.5/15.4
TILT: 1-12, 0-8
LENGTH: 72"

ELECTRICAL SPECIFICATIONS*

Frequency range (MHz)	698-894		1710-2170		
Frequency band (MHz)	698-806	806-894	1710-1880	1850-1990	1900-2170
Gain (dBi/dBd)	14.8/12.7	15.5/13.4	16.9/14.8	17.2/15.1	17.5/15.4
Polarization	Dual Linear +/- 45			Dual Linear +/- 45	
Nominal Impedance (Ω)	50			50	
VSWR	< 1.5:1			< 1.5:1	
Horizontal beam width, -3 dB (°)	66	65	60	63	63
Vertical beam width, -3 dB (°)	14.7	12.5	6.8	6.4	5.7
Electrical down tilt (°)	1 to 12			0 to 8	
Side lobe suppression, vertical 1st upper (dB)	> 16	>16	> 16		
	>16	>16			
Isolation between inputs (dB)	> 30	> 30	> 30	> 30	
Inter band Isolation (dB)	> 40			> 40	
Tracking, horizontal plane ±60° (dB)	< 2		< 2	< 2	< 2
First null fill (dB)			>-20	>-20	>-20
Vertical beam squint (°)	< 0.8	< 0.8	< 0.5	< 0.5	< 0.5
Front to back ratio (dB) 180°±30° copolar	>24	>24	> 30	>30	>28
Front to back ratio (dB) 180°±30° total power					
Cross polar discrimination (XPD) 0° (dB)	> 15	> 15	> 15	> 15	> 15
Cross polar discrimination (XPD) ±60° (dB)	> 10	> 10	> 10	> 10	> 10
Far field coupling					
IM3, 2xTx@43dBm (dBc)	<-153			<-153	
IM7, 2xTx@43dBm (dBc)					
Power handling, average per input (W)	500			250	
Power handling, average total (W)	1000			500	

MECHANICAL SPECIFICATIONS*

Connector	4 X 7/16 DIN Female, IP67
Connector position	Bottom
Dimensions, HxWxD, mm (ft)	72" x 12" x 6" (1829 x 305 x 152)
Mounting	Pre-mounted Tilt Brackets
Weight, with brackets, kg (lbs)	29 (64)
Weight, without brackets, kg (lbs)	24 (53)
Wind load, frontal/lateral/rear side 42 m/s Cd=1.6 (N)	1380
Maximum operational wind speed, m/s (mph)	100 (45)
Survival wind speed, m/s (mph)	150 (67)
Lightning protection	DC Ground
Operating Temperature	-40C to +60C
Radome material	PVC, IP55
Packet size, HxWxD, mm (ft)	87" x 16" x 10" (2225 x 400 x 225)
Radome colour	Light Grey
Shipping weight, kg (lbs)	34 (75)
RET	iRET AISGv1.1, MET and AISGv2.0
Brackets	7256.00, 7454.00A

*All specifications subject to change without notice. Please contact your Powerwave representative for complete performance data.

ANTENNA PATTERNS*

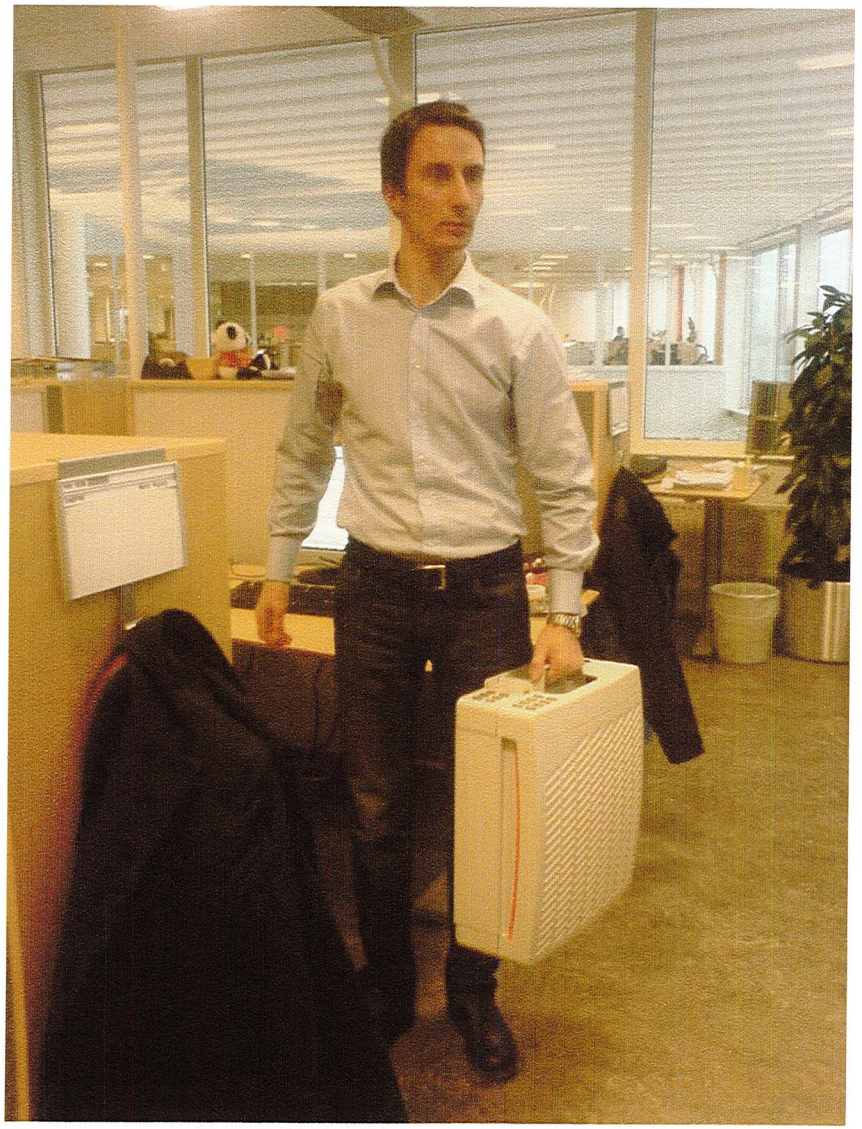
For detailed patterns visit http://www.powerwave.com/rpa/.

RRUS 11 – Dual PA RRU.

Technical Data

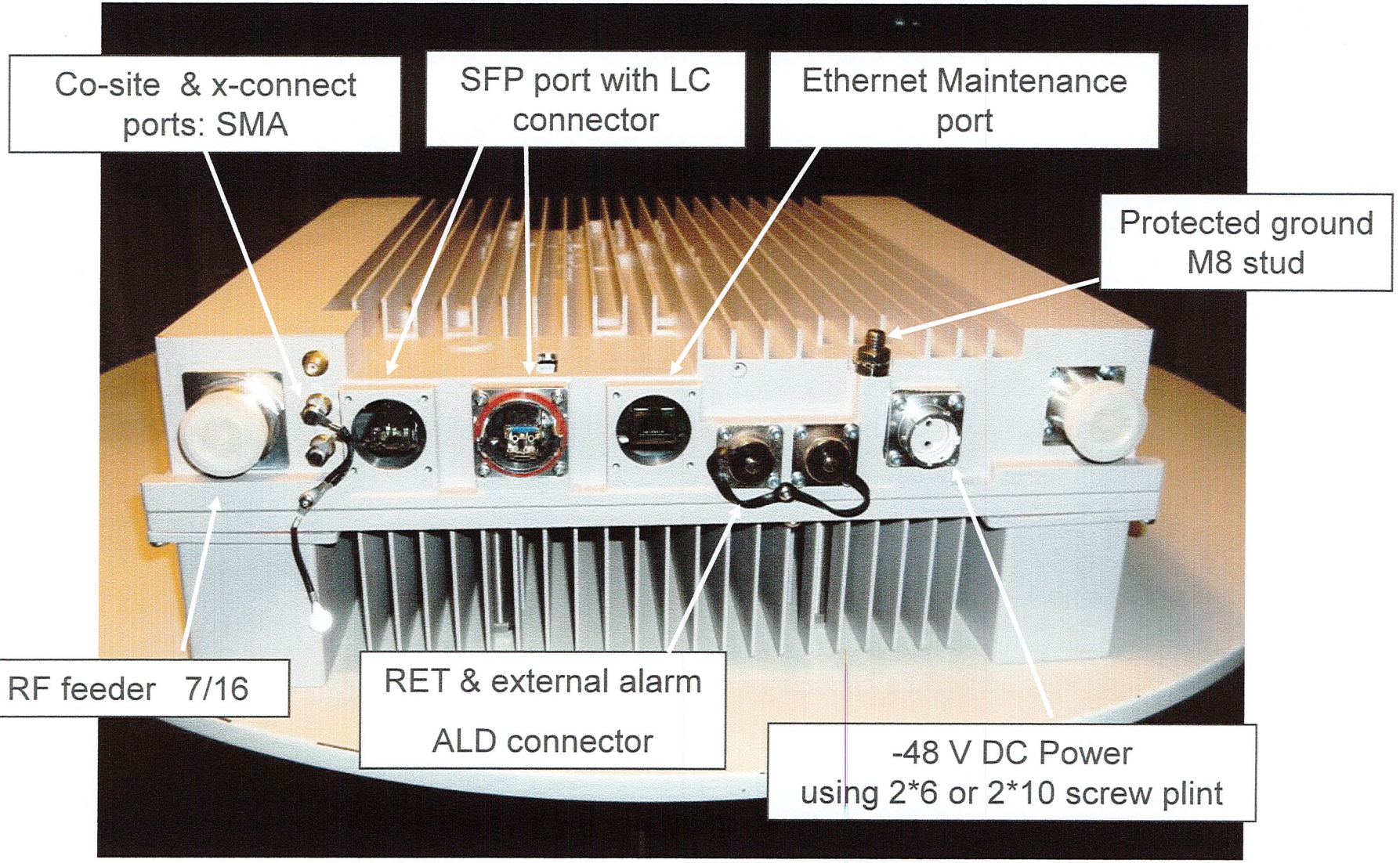
RBS6000

- Multi standard
- RF: 2x30 Watts
- Carrier BW: 1.4 – 20 MHz
- Alarms: 2
- Dimensions (with sunshield):
  - Width: 17.0 in
  - Height: 17.8 in
  - Depth: 7.2 in
  - Weight: 55 lbs (Band 12)
  - Weight: 50 lbs (Band 4)
- Temperature: -40 to +131 F
- Cooling: Self convection
- Power: -48 VDC
- Rec. fuse size 20 Amp
  - Rec. DC cable:
    - 6 mm^2 up to 60 meters
    - 10 mm^2 over 60 meters
    - Shielded
- Power Cons: 200 Watts typ.



RRUS-11 I/F

RBS6000



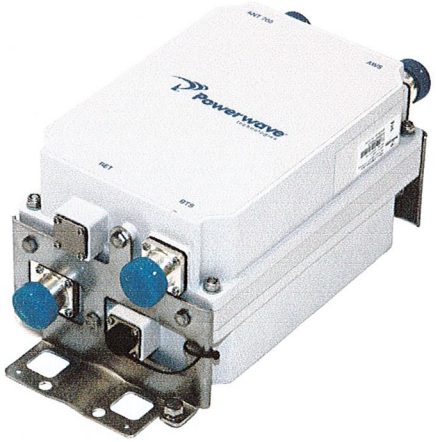
TT19-08BP111-001 | TMA Twin 1900 with 850 Bypass 12 dB AISG 1.1

ELECTRICAL SPECIFICATIONS	
UL Frequency Range (MHz)	1850-1910 with 824-894 bypass
UL Rejection	>77 dB
UL Gain(dB)	12
UL Return Loss	>18
UL Noise Figure	<1.7 dB, Typical
UL Output 3rd Order Intercept Point(dBm)	>+23
UL Bypass Loss(dB)	2.5, Typical
UL Max Input Power (dBm)	+14 dBm
DL Frequency Range (MHz)	1930-1990 with 824-894 bypass
DL Return Loss	>18
DL Insertion Loss (dB)	850 MHz, <0.3; 1900 MHz, <0.5
Intermodulation	@ 2 x +43 dBm TX carriers, in receive band, <160 dBc, reffered to antenna port
Input Voltage (V)	AISG Mode: 10-30; Current alarm mode: 8 -17
Alarm Functionality	AISG compatible or in case of no AISG command received, current alarm mode 170-190 mA
Power Consumption	<1.1W @12V
Power Handling, RMS	850: >57 dBm; 1900: >55 dBm
AISG Compatibility	AISG 1.1 fully upgreadable to AISG 2.0 (AISG version only dependent on loaded SW version) TT19-08BP112-001 has AISG 2.0 loaded from factory

MECHANICAL SPECIFICATIONS	
Dimension HxWxD mm(ft)	250x169x137 mm (9.9"x6.7"x5.4")
Weight(lbs)	<16
Colors	Off white (NCS 1502-R)
RF Connectors	DIN 7/16 female, long neck
Mounting Kit	Mounting kit for pole and wall is included

ENVIRONMENTAL SPECIFICATIONS	
Temperature Range	-40° C to +65° C (-40° F to +149° F)
Operational	ETS 300 019-1-4
Transportation	ETS 300 019-1-2
Storage	ETS 300 019-1-1
Lightning Protection	3 kA 10/350 µs; 20 kA (Shield)
Housing	Aluminum
MTBF	>1 million hours per TMA
Ingress Protection	IP65 and IP68

APPROVAL AND TESTS	
Safety	EN60950
EMC	3GPP: TS 25.113



*All specifications subject to change without notice. Contact your Powerwave representative for complete performance data.

POWER

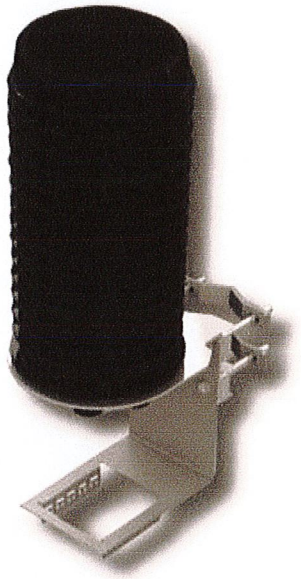
DC6-48-60-18-8F

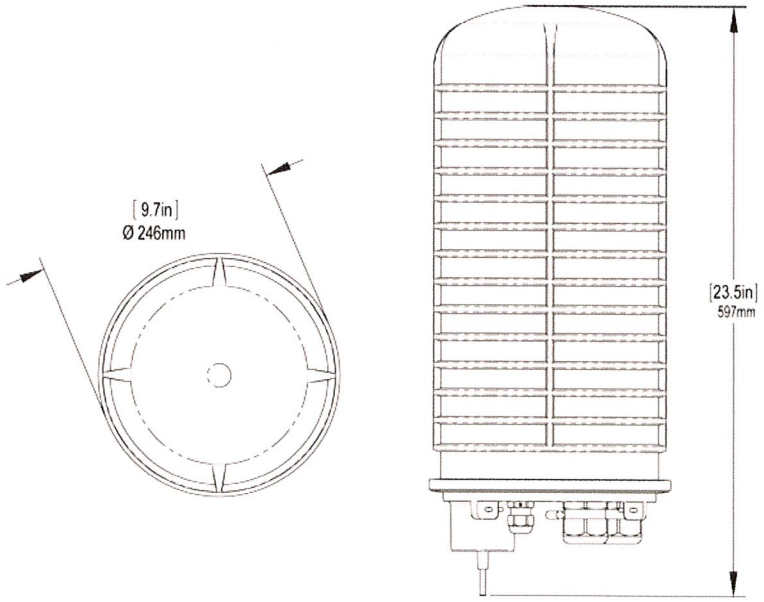
DC Surge Suppression Solution

The DC6-48-60-18 is a dual chambered, DC surge suppression system for use in multi-circuit, Distributed Antenna Systems. The system will protect up to 6 Remote Radio Heads from voltage surges and lightning, and connect up to 18 fiber pairs. The system is enclosed in a NEMA 4 rated, waterproof enclosure.

FEATURES

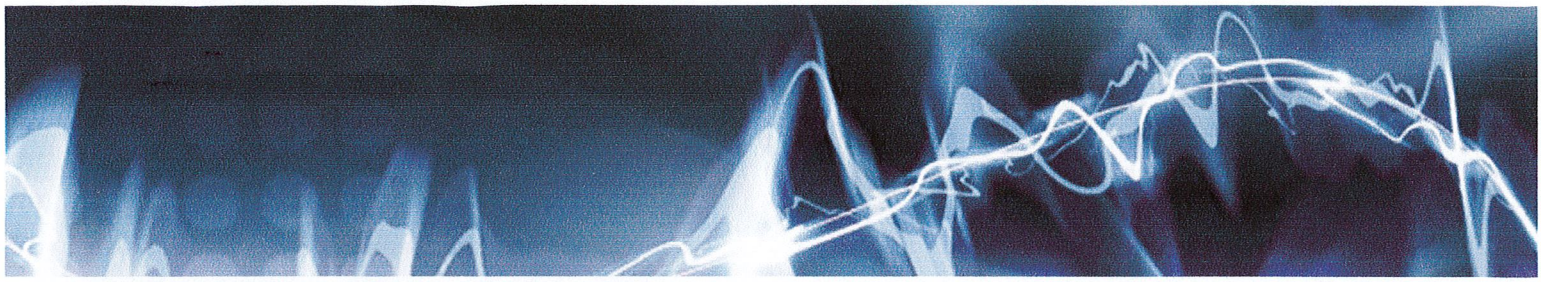
- Protects up to 6 Remote Radio Heads, each with its own protection circuit.
- Flexible design allows for installation at the top of a tower for Remote Radio Head protection.
- Includes fiber connections for up to 18 pairs of fiber.
- LED indicators on individual circuits provide visual indication of suppressor status.
- Form 'C' relays allow for remote monitoring of the suppressor status.
- Patented Strikesorb technology provides over 60 kA of surge current capacity per circuit.
- Strikesorb suppression modules are fully recognized to UL 1449-3rd Edition Safety Standard, meeting all intermediate and high current fault requirements to facilitate use in OEM applications.
- Raycap recommends that DC protection system be installed within 2 meters or 6 feet of the radio.
- Dome design is lightweight and aerodynamic providing maximum flexibility for installation on top of towers.





Raycap

Phone 208.777.1166 Toll Free 800.890.2569 Fax 208.777.4466 www.raycapsurgeprotection.com



DC6-48-60-18-8F

DC Power Surge Protection

Electrical Specifications	
Model Number	DC6-48-60-18-8F
Nominal Operating Voltage	48 VDC
Nominal Discharge Current (I_n)	20 kA 8/20 µs
Maximum Discharge Current (I_{max}) per NEMA LS-1	60 kA 8/20 µs
Maximum Continuous Operating Voltage (U_c)	75 VDC
Voltage Protection Rating	400 V

Mechanical Specifications	
Suppression Connection Method	Compression lug, #2-#14 AWG Copper, #2-#12 Aluminum
Fiber Connection Method	LC-LC Single mode duplex
Environmental Rating	IP 68, 7m 72hrs
Operating Temperature	-40° C to + 80° C
Storage Temperature	-70° C to + 80° C
Cold Temperature Cycling	IEC 61300-2-22e -30° C to + 60° C 200 hrs @ 5 psi
Resistance to Aggressive Materials	CEI IEC 61073-2 including acids and bases
UV Protection	ISO 4892-2 Method A Xenon-Arc 2160 hrs
Weight	20 lbs without Mounting Bracket

STANDARDS

Strikesorb modules are compliant to the following Surge Protection Device (SPD) Standards:

- ANSI/UL 1449 – 3rd Edition
- IEEE C62.41
- NEMA LS-1, IEC 61643-1:2005 2nd Edition:2005
- IEC 61643-12
- EN 61643-11:2002 (including A11:2007)

GS-07F-0435V

Certified to ISO 9001:2000

TÜV Rheinland of North America

Raycap, Inc. 806 W. Clearwater Loop • Post Falls • Idaho • 83854 • USA
Phone 208.777.1166 • Toll Free 800.890.2569 • Fax 208.777.4466 • www.raycapsurgeprotection.com

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 463-5511
Fax: (860) 513-7190

Douglas L. Culp
Real Estate Consultant

June 20, 2011

Honorable Gordon F. Joseloff
1st Selectman, Town of Westport
Westport Town Hall
110 Myrtle Ave., Room 310
Westport, CT 06880

Re: Telecommunications Facility – 880 Post Road East Westport, CT

Dear Selectman Joseloff:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures; please call me at (860) 463-5511 or Ms. Linda Roberts, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Douglas L. Culp
Real Estate Consultant

Enclosure