



August 18, 2015

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

Regarding: Notice of Exempt Modification – Addition of 3 radio heads previously approved
Property Address: 99 Meadow Street, Hartford, CT (the “Property”)
Applicant: AT&T Mobility (“AT&T”)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 150 foot monopole tower (“tower”) location on the Property. AT&T’s facility consists of nine (9) wireless telecommunications antennas at 138 feet. The tower is controlled by American Towers, Inc. The Council approved the previous application on May 11, 2012, reference number EM-AT&T-064-120427. This application (attached) granted AT&T the use of 6 radio heads at this location. The approval expired one year from the issue date. During that time AT&T made the changes to the site per the approval but only installed three (3) of the six (6) radio heads that they received approval. AT&T would now like to install the additional three (3) radio heads that were originally approved under EM-AT&T-064-120427.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor, and the Town Planner for the City of Hartford. A copy of this letter is also being sent to American Towers, Inc., the owner of the structure that AT&T is located.

The planned modifications to AT&T’s facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T’s additional, previously approved 3 radio heads will be installed at 138 foot level of the 150 foot monopole.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety



standard. An RF emissions calculation (attached) for AT&T's modified facility was provided in the application which led to the May 11, 2012 Decision.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Crown Castle dated October 18, 2012).

For the foregoing reasons AT&T respectfully requests that the proposed addition of 3 radio heads previously approved be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

A handwritten signature in cursive script that reads "David P. Cooper".

David P. Cooper
Director of Site Acquisition
Empire Telecom

CC: Pedro E Segarra, Mayor for the City of Hartford
American Towers Inc.
Meadow Street Realty, LLC



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

May 11, 2012

John Lawrence
Real Estate Consultant
95 Ryan Drive, Suite #1
Raynham, MA 02767

RE: **EM-AT&T-064-120427** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 99 Meadow Street, Hartford, Connecticut.

Dear Mr. Lawrence:

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

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated April 23, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of



STATE OF CONNECTICUT
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April 27, 2012

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

RE: **EM-AT&T-064-120427** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 99 Meadow Street, Hartford, Connecticut.

Dear Mayor Segarra:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by May 11, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/cm

Enclosure: Notice of Intent

c: David B. Panagore, Chief Operating Officer, City of Hartford
Roger J. O'Brien, Director of Planning, City of Hartford



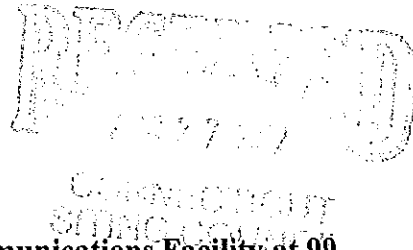
EM-AT&T-064-120427

**New Cingular Wireless
PCS, LLC**
500 Enterprise Drive
Rocky Hill, Connecticut 06067

John Lawrence
Real Estate Consultant
95 Ryan Drive, Suite #1
Raynham, MA 02767
Phone: (781) 715-5532
jlawrence@clinellc.com

April 23, 2012

Honorable Robert Stein, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051



Re: Notice of Exempt Modification – Existing Telecommunications Facility at 99 Meadow Street

Dear Chairman Stein and Members of the Council:

New Cingular Wireless PCS, LLC (“AT&T”) intends to modify the existing telecommunications antennas and associated equipment at an existing multicarrier telecommunications tower at 99 Meadow Street. AT&T operates under licenses issued by the Federal Communications Commission (“FCC”) to provide cellular and PCS mobile telephone service in Hartford County, which includes the area to be served by AT&T’s proposed installation.

In order to accommodate technological changes, implement 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. 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.

Please accept this letter as notification to the Council, 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 is being sent to the Mayor of Hartford, Pedro E. Segarra.

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.

Existing Facility

The Hartford facility is located at 99 Meadow Street, Hartford, CT

The facility is owned by American Tower.

The existing facility consists of a 150 foot monopole tower. AT&T currently operates wireless communications equipment at the facility and has six (6) antennas mounted at the tower centerline height of 138 feet.

Statutory Considerations

The changes to the tower facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed 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) because they will not result in any substantial adverse environmental effect.

1. The height of the overall structure will be unaffected.
2. The proposed changes will not affect the property boundaries. All new construction will take place inside the existing fenced compound.
3. The proposed additions will not increase the noise level at the existing facility by six decibels or more.
4. 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).

Respectfully yours,



John Lawrence
Real Estate Consultant

Enclosures:
Pedro E. Segarra, Mayor



**New Cingular Wireless
PCS, LLC**
500 Enterprise Drive
Rocky Hill, Connecticut 06067

John Lawrence
Real Estate Consultant
95 Ryan Drive, Suite #1
Raynham, MA 02767
Phone: (781) 715-5532
jlawrence@clinellc.com

April 24, 2012

Pedro E. Segarra, Mayor
City Hall
550 Main Street
Hartford, CT 06114

**Re: Notice of Exempt Modification – Existing Telecommunications Facility at 99
Meadow Street**

Dear Mayor Segarra,

New Cingular Wireless PCS, LLC (“AT&T”) intends to replace telecommunications antennas and associated equipment at an existing telecommunications tower, owned and operated by AT&T.

A Notice of Exempt Modification has been filed with the Connecticut Siting Council as required by Regulations of Connecticut State Agencies (“R.C.S.A.”) Section 16-50j-73. Please accept this letter as notification to the City of Hartford 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 attached letter fully sets forth the AT&T proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council’s procedures, please contact John Lawrence at (781) 715-5532 or Linda Roberts, Executive Director of the Connecticut Siting Council, at (860) 827-2935.

Sincerely,

John Lawrence
Real Estate Consultant

Enclosure

CC: Honorable Robert Stein, Chairmen of the Connecticut Siting Council

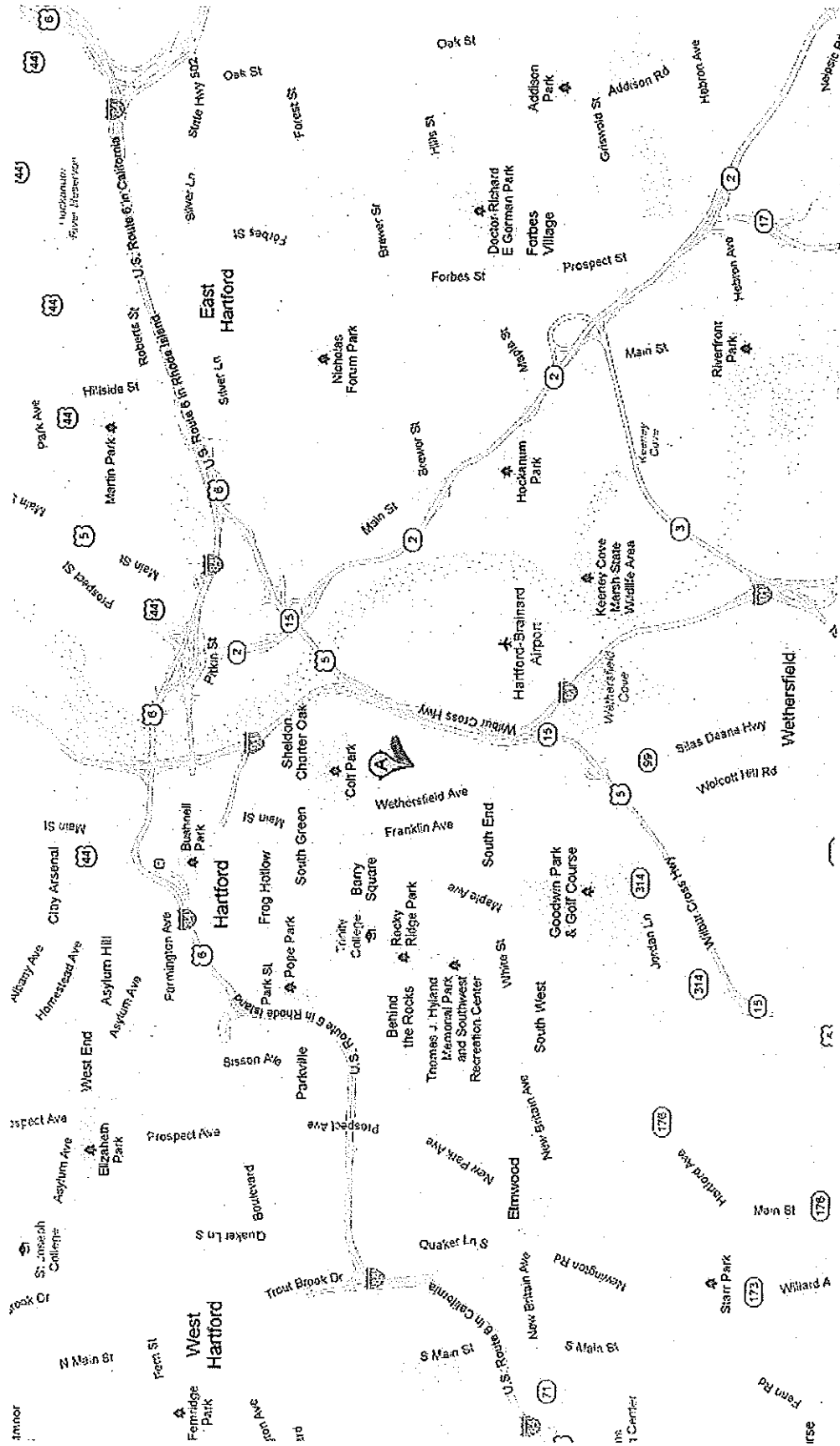


CT5127 – 99 Meadow Street, Hartford CT 06114

Aerial Location Map



Street Location Map



PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
 SITE ADDRESS: 99 MEADOW STREET
 HARTFORD, CT 06114
 LATITUDE: 41.7439 N 41° 44' 38.04" N
 LONGITUDE: 72.6683 W 72° 40' 5.88" W
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES
 CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT5127
SITE NAME: AWE - I-91 AND 5 SPLIT

DRAWING INDEX

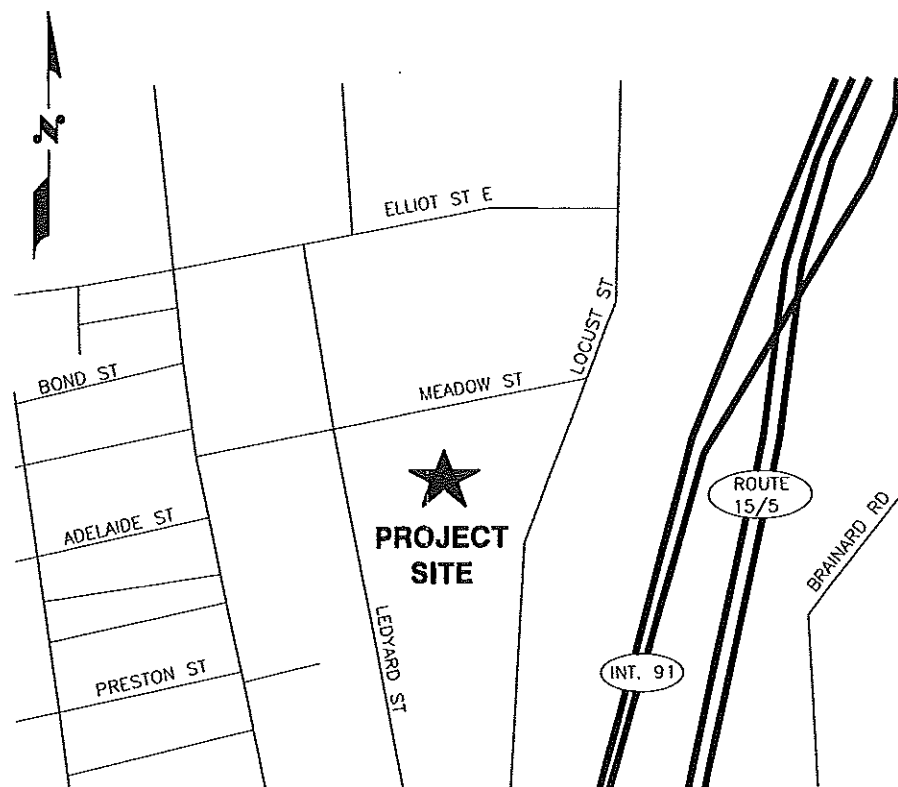
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VICINITY MAP

GENERAL NOTES

T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
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DIRECTIONS TO SITE:
 DEPART ENTERPRISE DR TOWARD CAPITOL BLVD 0.4 MI. TURN LEFT ONTO CAPITOL BLVD 0.2 MI. TURN LEFT ONTO WEST ST. 0.2 MI. TAKE RAMP LEFT FOR I-91 NORTH. 6.6 MI. AT EXIT 27, TAKE RAMP RIGHT FOR BRAINARD RD TOWARD BRAINARD AIRPORT / AIRPORT RD. 0.5 MI. TURN LEFT ONTO BRAINARD RD. 0.2 MI. TURN LEFT ONTO AIRPORT RD ON THE CORNER. 0.4 MI. TURN RIGHT ONTO LEDYARD ST BURGER KING ON THE CORNER. 0.4 MI. TURN RIGHT ONTO MEADOW ST. 0.1 MI. ARRIVE AT 99 MEADOW ST, HARTFORD, CT 06114. THE LAST INTERSECTION IS LEDYARD ST. IF YOU REACH LOCUST ST, YOU'VE GONE TOO FAR.



- 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.
- 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.
- 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
 1600 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 2-101
 N. ANDOVER, MA 01845
 TEL: (978) 557-5553
 FAX: (978) 335-5586

NEXLINK GLOBAL SERVICES
 a UniTek GLOBAL SERVICES company
 800 MARSHALL PHELPS ROAD UNIT# 2A
 WINDSOR, CT 06095

SITE NUMBER: CT5127
SITE NAME: AWE - I-91 AND 5 SPLIT
 99 MEADOW ST
 HARTFORD, CT 06114
 HARTFORD COUNTY

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

1		04/16/12	ISSUED FOR CONSTRUCTION	NB	DC	DPH		AT&T		
0		03/05/12	ISSUED FOR REVIEW	NB	DC	DPH		TITLE SHEET (LTE)		
NO.	DATE	REVISIONS		BY	CHK	APP	LICENSED PROFESSIONAL ENGINEER DANIEL P. HAMANN No. 24178 STATE OF CONNECTICUT	JOB NUMBER	DRAWING NUMBER	REV
								8127.00	T-1	1
SCALE:		AS SHOWN		DESIGNED BY:		HC	DRAWN BY:		NB	

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) LIGHTNING 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 - NEXLINK
 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 UMS 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
 LIGHTNING 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	REF	REFERENCE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REQ	REQUIRED	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING				

1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5595

a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT#: 2A
WINDSOR, CT 06095

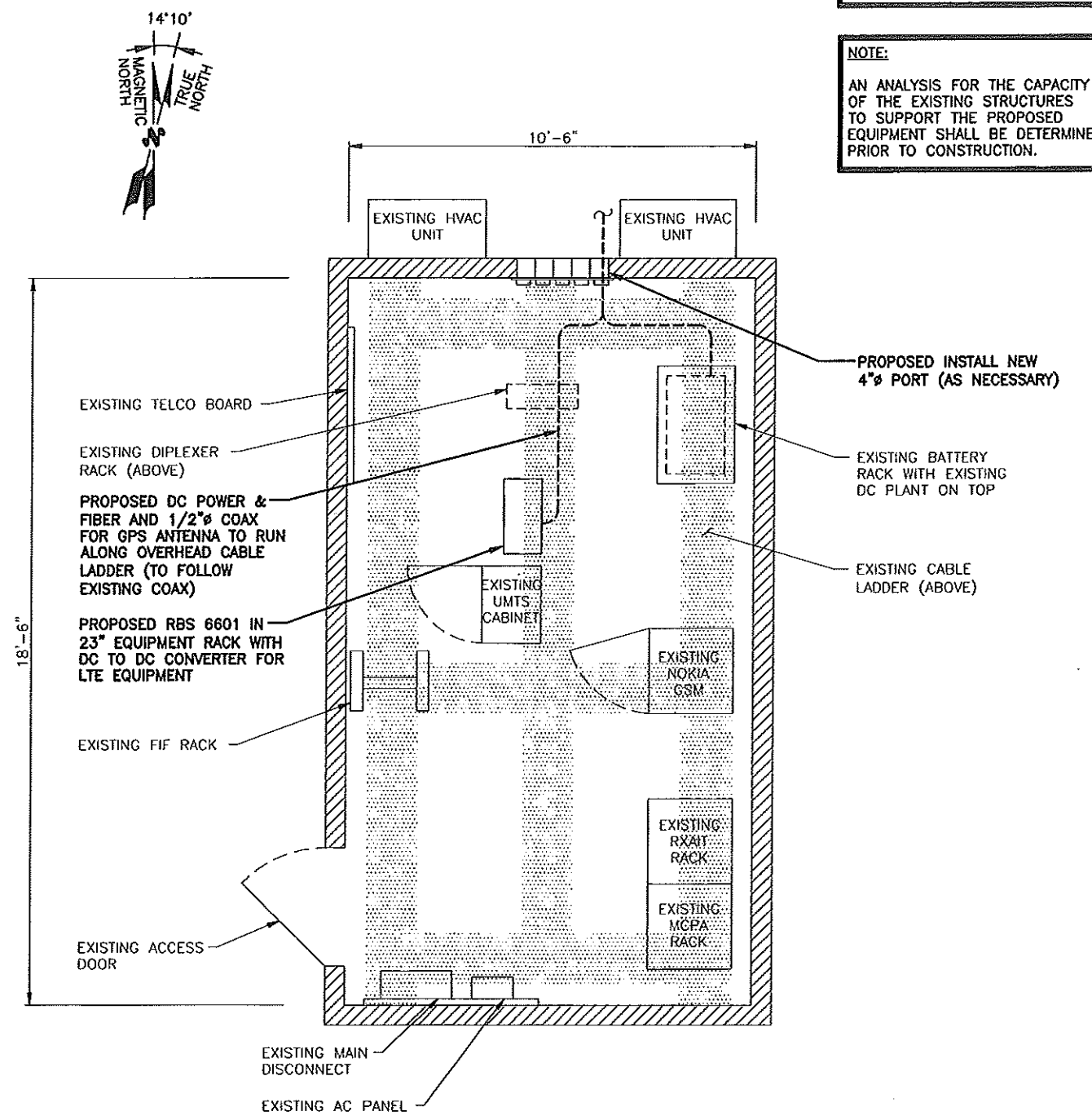
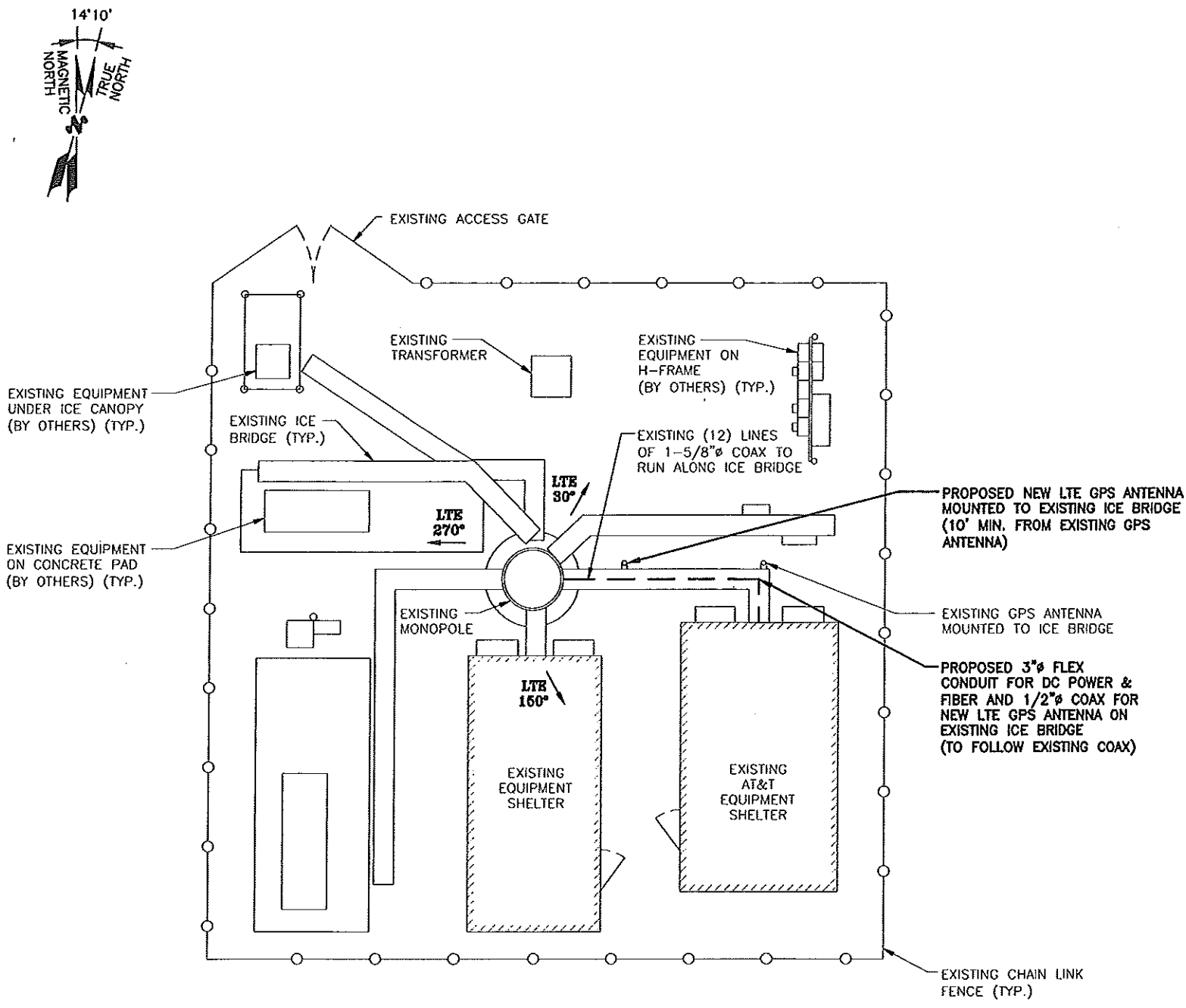
SITE NUMBER: CT5127
SITE NAME: AWE - I-91 AND 5 SPLIT
 99 MEADOW ST
 HARTFORD, CT 06114
 HARTFORD COUNTY

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

1 04/16/12 ISSUED FOR CONSTRUCTION		NB	DC	DPH		AT&T	
0 03/05/12 ISSUED FOR REVIEW		NB	DC	DPH		GENERAL NOTES (LTE)	
NO.	DATE	REVISIONS		BY	CHK	APP'D	
SCALE: AS SHOWN		DESIGNED BY: HC		DRAWN BY: NB		JOB NUMBER: 5127.00	DRAWING NUMBER: GN-1
							REV: 1

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

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



COMPOUND PLAN
SCALE: 3/16"=1'-0"

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

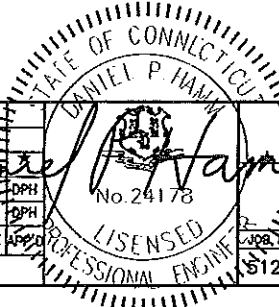
Hudson Design Group
1600 CROSBY STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5585

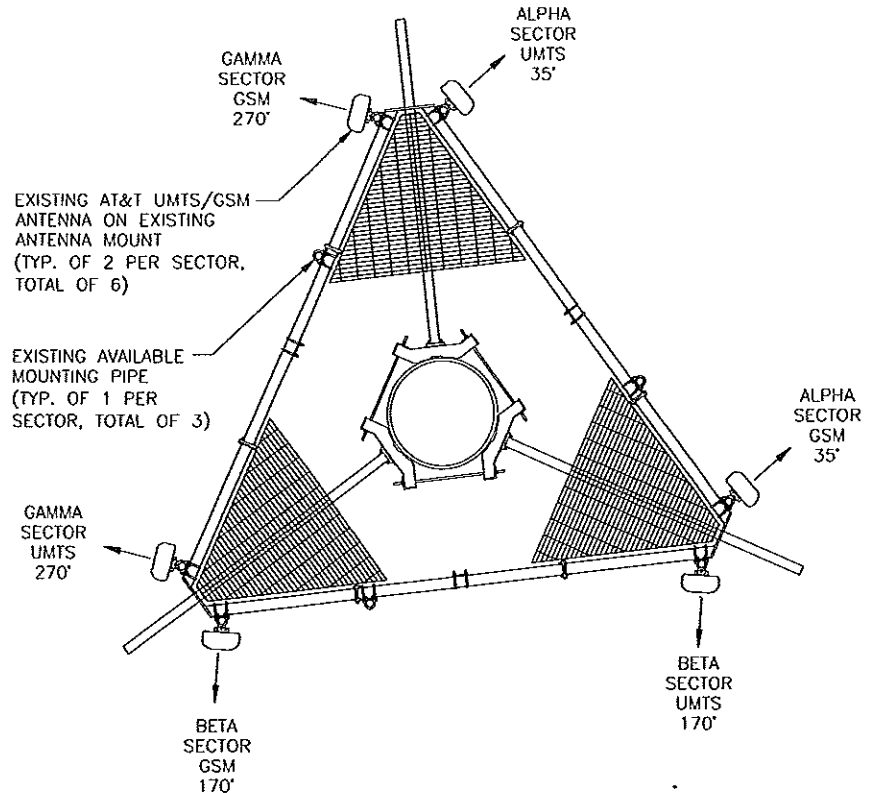
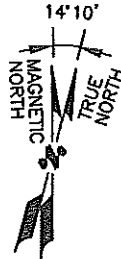
NEXLINK GLOBAL SERVICES
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

SITE NUMBER: CT5127
SITE NAME: AWE - I-91 AND 5 SPLIT
99 MEADOW ST
HARTFORD, CT 06114
HARTFORD COUNTY

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

										AT&T	
										COMPOUND & EQUIPMENT PLAN (LTE)	
NO.	DATE	REVISIONS	BY	CHK	APP'D					JOB NUMBER	DRAWING NUMBER
1	04/16/12	ISSUED FOR CONSTRUCTION	NB	DC	DPH					5127.00	A-1
0	03/05/12	ISSUED FOR REVIEW	NB	DC	DPH						
		SCALE: AS SHOWN	DESIGNED BY: HC	DRAWN BY: NB							

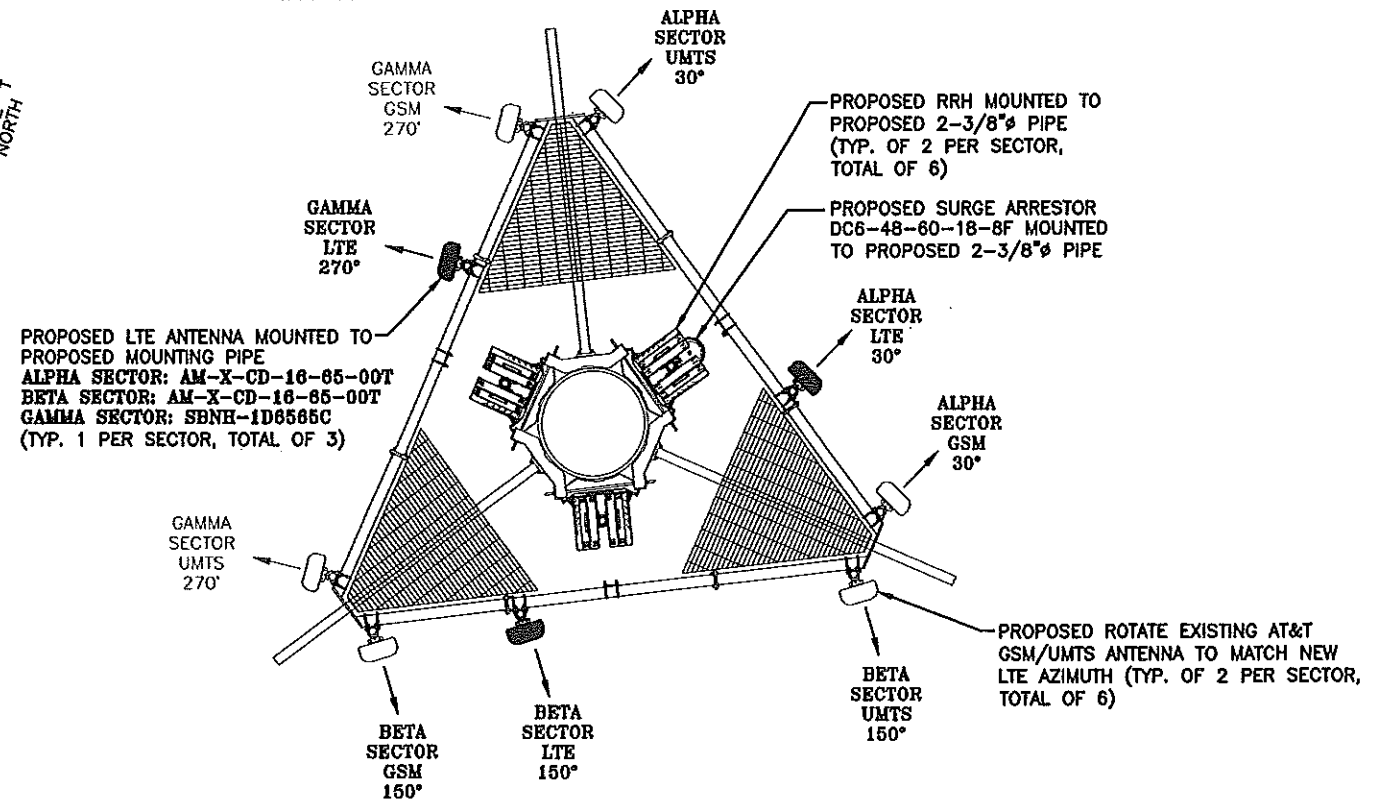
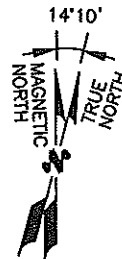




EXISTING GSM/UMTS ANTENNA PLAN
SCALE: N.T.S.

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

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

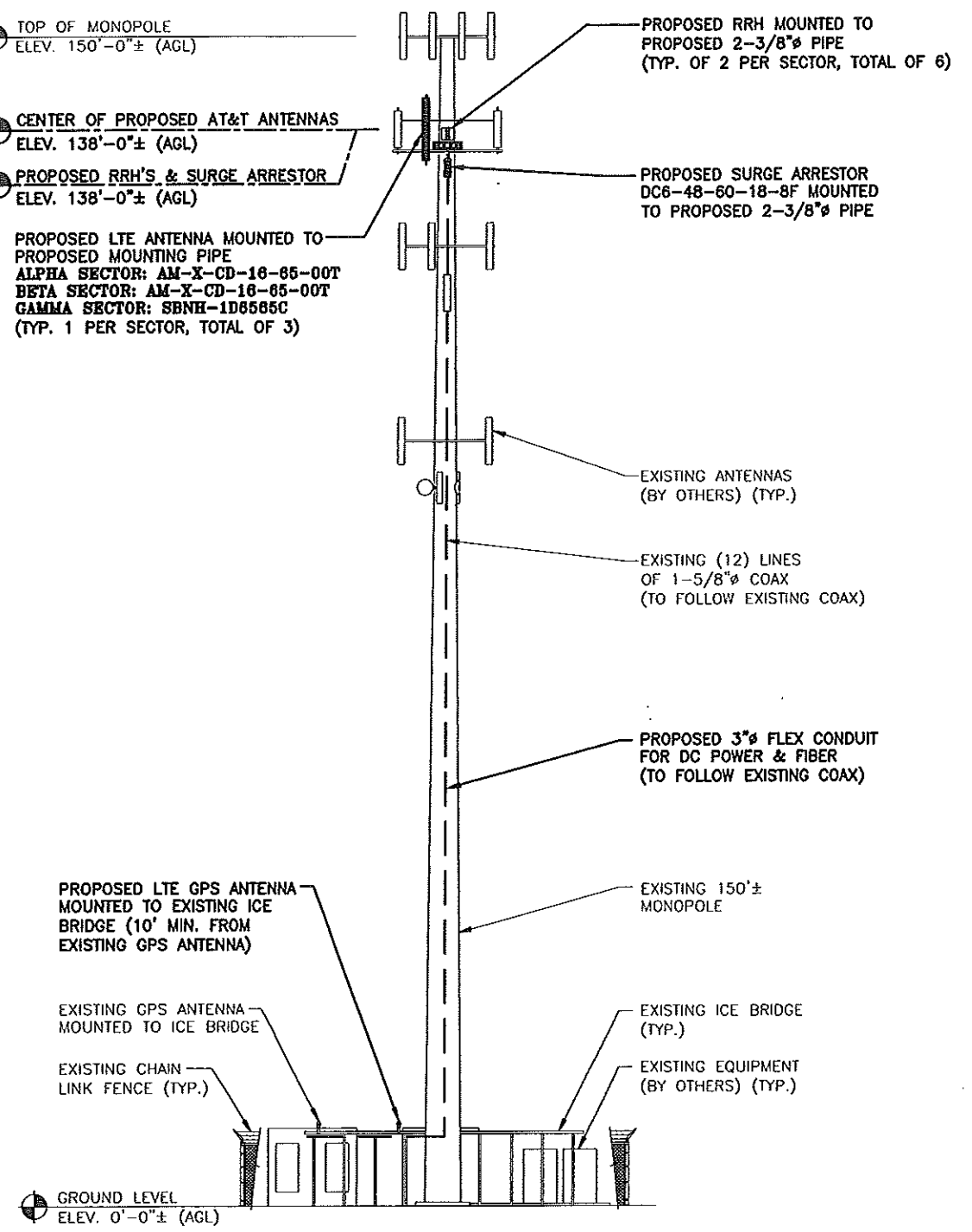


PROPOSED LTE ANTENNA PLAN
SCALE: N.T.S.

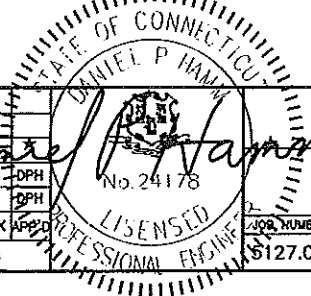
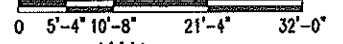
NOTES:
1. REFER TO RF CONFIG & SECTOR SCHEMATICS FOR QUANTITY REQUIRED PER SECTOR

- TOP OF MONOPOLE
ELEV. 150'-0"± (AGL)
- CENTER OF PROPOSED AT&T ANTENNAS
ELEV. 138'-0"± (AGL)
- PROPOSED RRH'S & SURGE ARRESTOR
ELEV. 138'-0"± (AGL)

PROPOSED LTE ANTENNA MOUNTED TO PROPOSED MOUNTING PIPE
ALPHA SECTOR: AM-X-CD-16-85-00T
BETA SECTOR: AM-X-CD-16-85-00T
GAMMA SECTOR: SBNH-1D6585C
(TYP. 1 PER SECTOR, TOTAL OF 3)



NORTH ELEVATION
SCALE: 3/32"=1'-0"



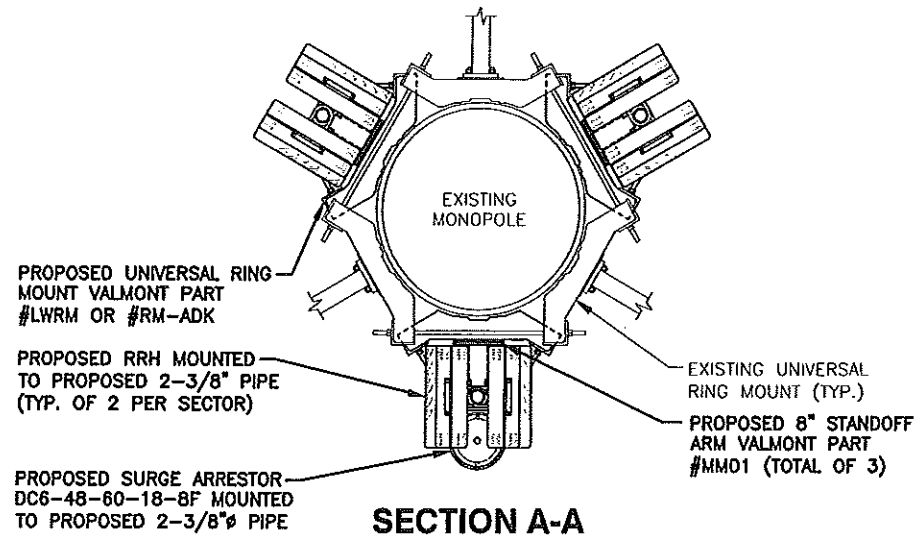
Hudson Design Group
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

NEXLINK GLOBAL SERVICES
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT#: 2A
WINDSOR, CT 06095

SITE NUMBER: CT5127
SITE NAME: AWE - I-91 AND 5 SPLIT
99 MEADOW ST
HARTFORD, CT 06114
HARTFORD COUNTY

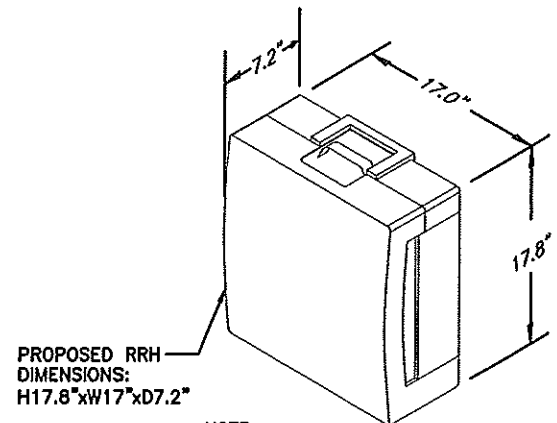
at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

				AT&T	
				ANTENNA LAYOUT & ELEVATION (LTE)	
NO.	DATE	REVISIONS	BY	CHK APP'D	REV
1	04/16/12	ISSUED FOR CONSTRUCTION	NB	DC-DPH	
0	03/05/12	ISSUED FOR REVIEW	NB	DC-DPH	
SCALE: AS SHOWN			DESIGNED BY: HC	DRAWN BY: NB	
				JOB NUMBER	DRAWING NUMBER
				\$127.00	A-2
					1



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

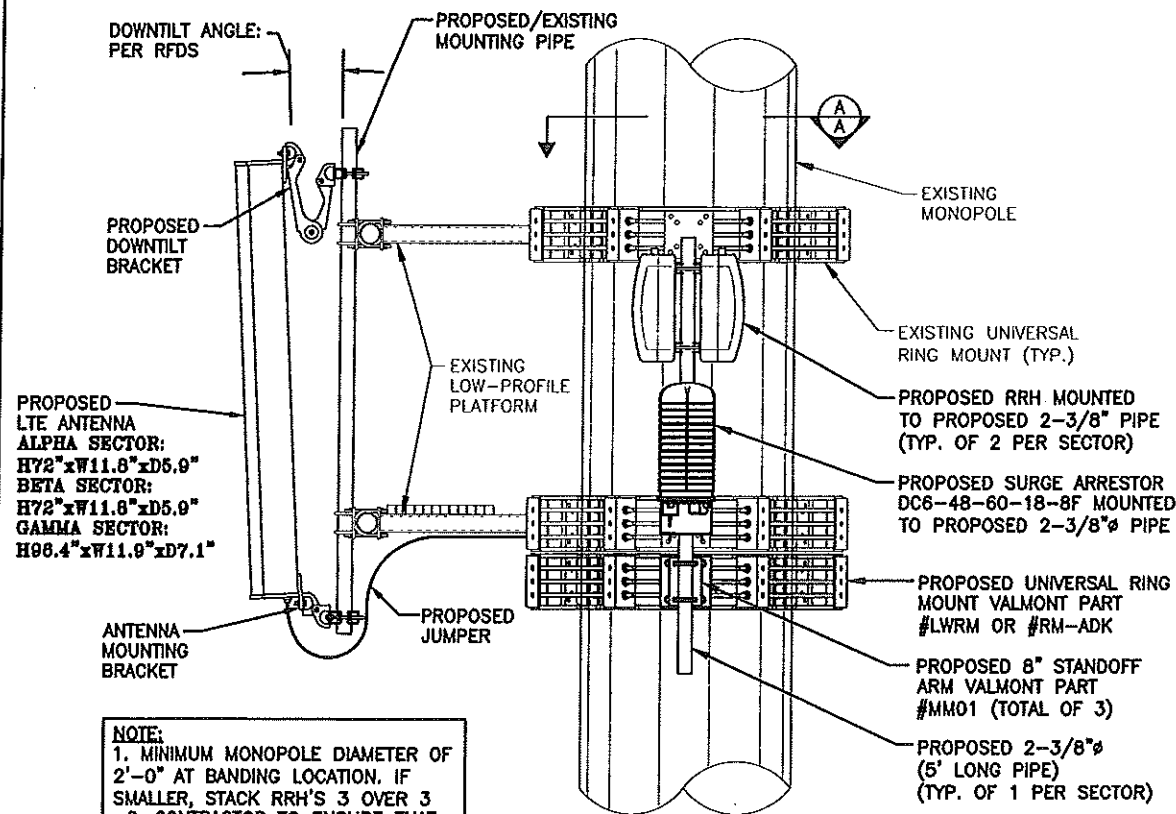
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



PROPOSED RRH DIMENSIONS: H17.8\"/>

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRH DETAIL
SCALE: N.T.S.

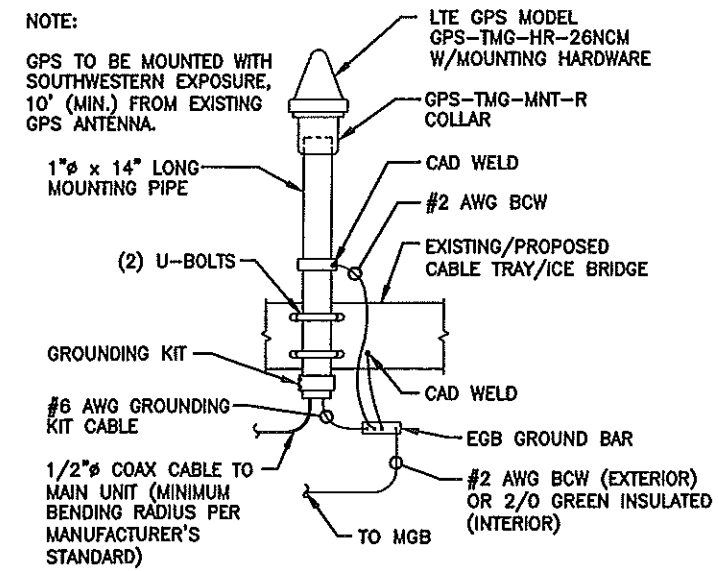


NOTE:
1. MINIMUM MONOPOLE DIAMETER OF 2'-0\"/>

PART #	VMI PART #	SIZE RANGE
LWRM	801068	12"-45"
RM-ADK	157286	36"-60" ADAPTER KIT

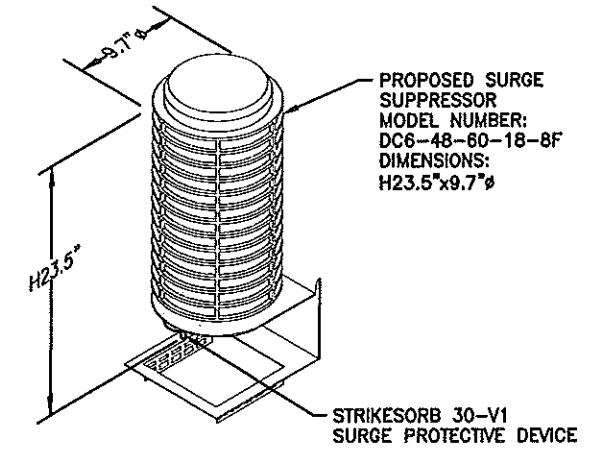
NOTES:
1. REFER TO RFDS & SECTOR SCHEMATICS FOR ANTENNA MODEL, TYPE & QUANTITY REQUIRED PER SECTOR

PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL
SCALE: N.T.S.



NOTE:
GPS TO BE MOUNTED WITH SOUTHWESTERN EXPOSURE, 10' (MIN.) FROM EXISTING GPS ANTENNA.

GPS MOUNTING DETAIL
SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL
SCALE: N.T.S.

Hudson Design Group, Inc.
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5585

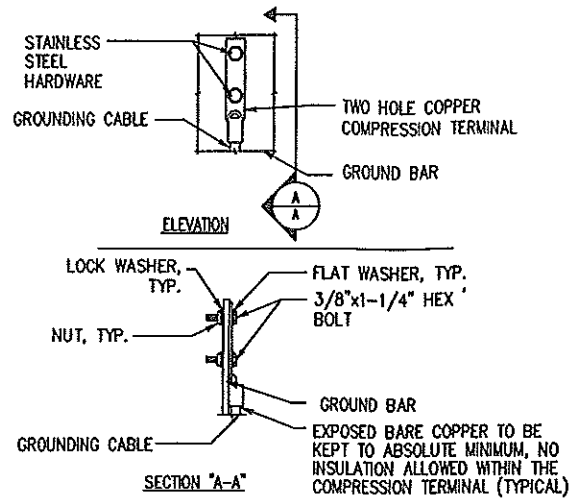
NEXLINK GLOBAL SERVICES
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800 MARSHALL PHELPS ROAD UNIT#: 2A
WINDSOR, CT 06095

SITE NUMBER: CT5127
SITE NAME: AWE - I-91 AND 5 SPLIT
99 MEADOW ST
HARTFORD, CT 06114
HARTFORD COUNTY

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

1 04/16/12 ISSUED FOR CONSTRUCTION		NB	DC	DPH	AT&T DETAILS (LTE)				
0 03/05/12 ISSUED FOR REVIEW		NB	DC	DPH					
NO.	DATE	REVISIONS		BY	CHK	APP	PRICE NUMBER	DRAWING NUMBER	REV
SCALE: AS SHOWN		DESIGNED BY: HC		DRAWN BY: NB		\$127.00		A-3	1

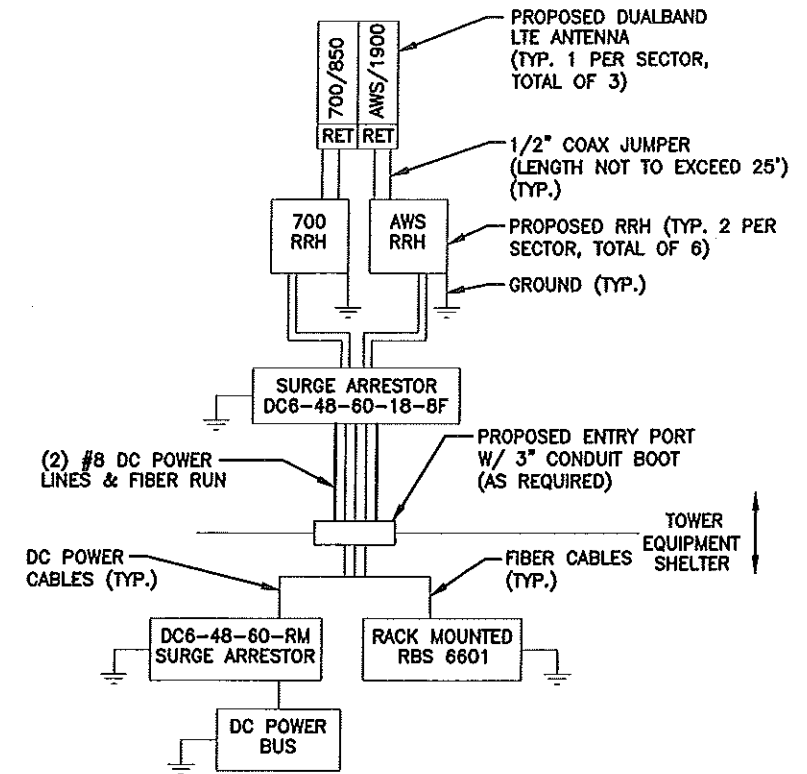
Professional Engineer Seal: DANIEL P. HANNA, No. 24178, LICENSED PROFESSIONAL ENGINEER, STATE OF CONNECTICUT



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

TYPICAL GROUND BAR CONNECTION DETAIL

2
—
N.T.S.

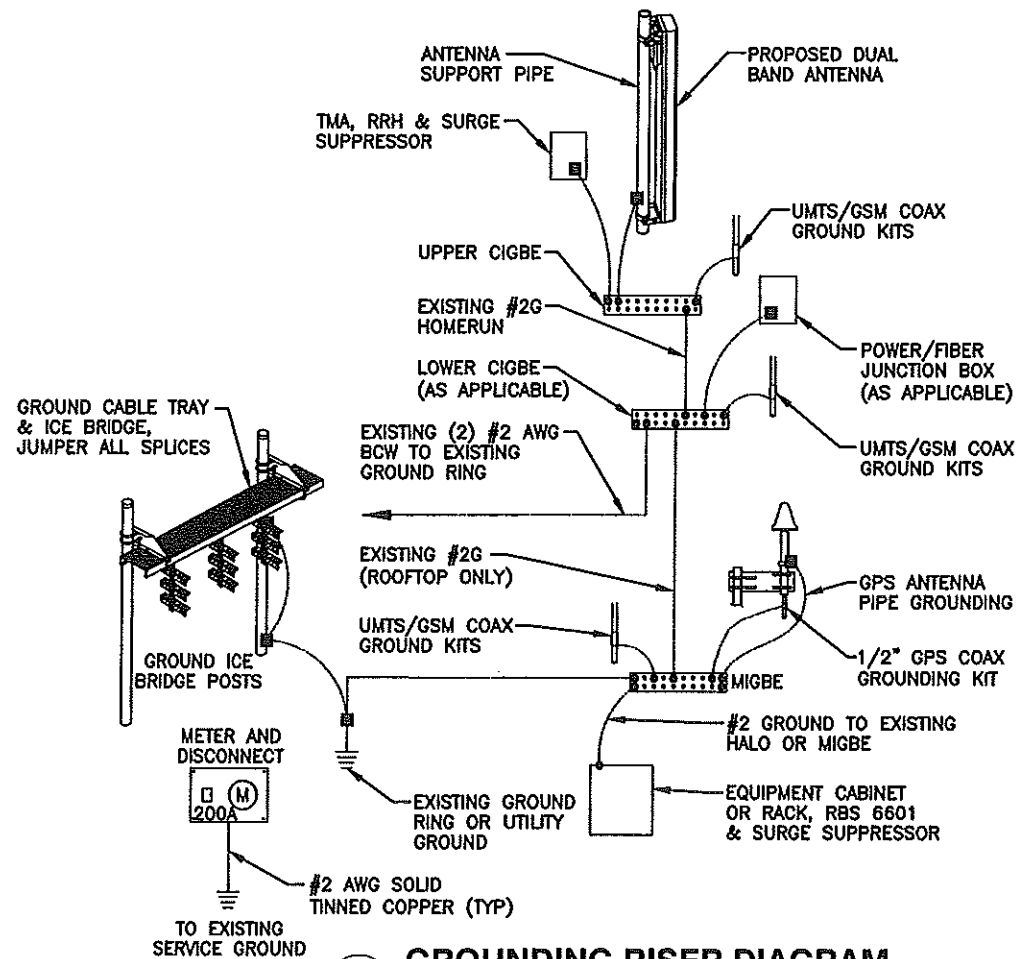


NOTES:

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

LTE PLUMBING DIAGRAM

4
—
N.T.S.



GROUNDING RISER DIAGRAM

1
—
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.

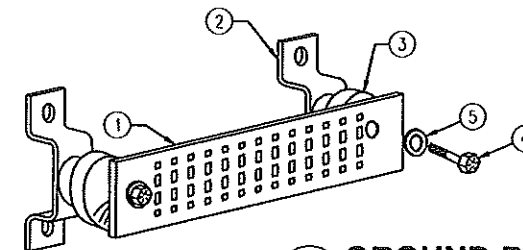
SECTION "P" - SURGE PRODUCERS

- 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)

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

3
—
N.T.S.



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 148 ft FWT Monopole
ATC Site Name : Petro Lock, CT
ATC Site Number : 302468
Proposed Carrier : AT&T Mobility
Carrier Site Name : AWE-I91 and 5 Split
Carrier Site Number : CT5127
County : Hartford
Eng. Number : 49243321
Date : April 20, 2012*
Usage : 73%
Portholes Required : No
Result : Pass

Submitted by:
Joseph R. Johnston
Project Engineer

American Tower Engineering Services
400 Regency Forest Drive
Cary, NC 27518
Phone: 919-468-0112



4/20/12

Introduction

The purpose of this report is to summarize results of the structural analysis performed on the 148 ft FWT Monopole located at 99 Meadow Street, Hartford, Connecticut, 06114, Hartford County (ATC Site No. 302468). The tower was originally designed and manufactured by FWT (Job No. 21719000, Rev.1, dated July 18, 2000).

Analysis

The tower was analyzed using Semaan Engineering Solutions, Inc., Software.

Basic Wind Speed: 80 mph (Fastest Mile)
 Radial Ice: 69 mph (Fastest Mile) w/ 1/2" ice
 Code: ANSI/TIA/EIA-222-F / 2003 IBC with 2005 CT Supplements and 2009 CT Amendments

Antenna Loads

The following antenna loads were used in the tower analysis.

Existing Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax (in)	Carrier
147.9	1	Flash Technology FTB 324-2	Flush	--	--
147.0	9	48" x 12" Panels	Platform w/ Handrails	(12) 1 5/8	Sprint Nextel
	3	72" x 12" Panels			
123.0	3	RFS APX16DWV-16DWVL-C	T-Arms	(18) 1 5/8	T-Mobile
	6	RFS APXV18-206516L-C			
	3	RFS ATMAA1412D-1A20			
	3	RFS ATMPP1412D-1CWA			
113.0	3	RFS APXV18-206517	Flush	(6) 1 5/8	Youghiogheny
98.0	9	Decibel DB844H90E-A	Low Profile Platform	(18) 1 1/4	Sprint Nextel
89.0	3	Argus LLPX310R	Side Arms	(6) 5/16 (3) 1/2 (1) 3" Conduit	Clearwire
	1	DragonWave A-ANT-11G-2.5-C			
	2	DragonWave A-ANT-18G-2-C			
	3	DragonWave Horizon Compact			
	3	NextNet BTS-2500			
76.0	2	Side Markers	Flush	--	--
20.0	1	Lucent KS-24019	Flush	(1) 1/2	Sprint Nextel

Proposed Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax (in)	Carrier
135.0	1	Andrew SBNH-1D6565C	Platform w/ Handrails	(12) 1 5/8 (1) 10 mm (2) 19.7 mm (1) 3" Conduit	AT&T Mobility
	6	Ericsson RRUS 11			
	2	KMW AM-X-CD-16-65-00T-RET			
	6	Powerwave 7750.00			
	6	Powerwave LGP21401			
	6	Powerwave LGP21903			
	1	Raycap DC6-48-60-18-8F			

Install proposed coax inside monopole.

Results

The maximum structure usage is: 73%

Additional exit and/or entry ports may be required to accommodate the running of the proposed lines to the proposed antennas. These additional ports **may not** be installed without installation drawings providing the location, size and welding requirements of each port.

To ensure compliance with all conditions of this structural analysis, port installation drawings shall be provided by American Tower's Engineering Department under a subsequent project.

Pole Reactions	Current Analysis Reactions
Moment (ft-kips)	2,874.2
Shear (kips)	27.7

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required. These calculations are located after the software output within this analysis.

Conclusion

Based on the analysis results, the structure meets the requirements per ANSI/TIA/EIA-222-F and 2003 IBC with 2005 CT Supplements and 2009 CT Amendments standards. The tower and foundation can support the existing and proposed antennas with the TX line distribution as described in this report.

If you have any questions or require additional information, please call 919-466-5030.

Standard Conditions

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

- Information supplied by the client regarding the structure itself, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

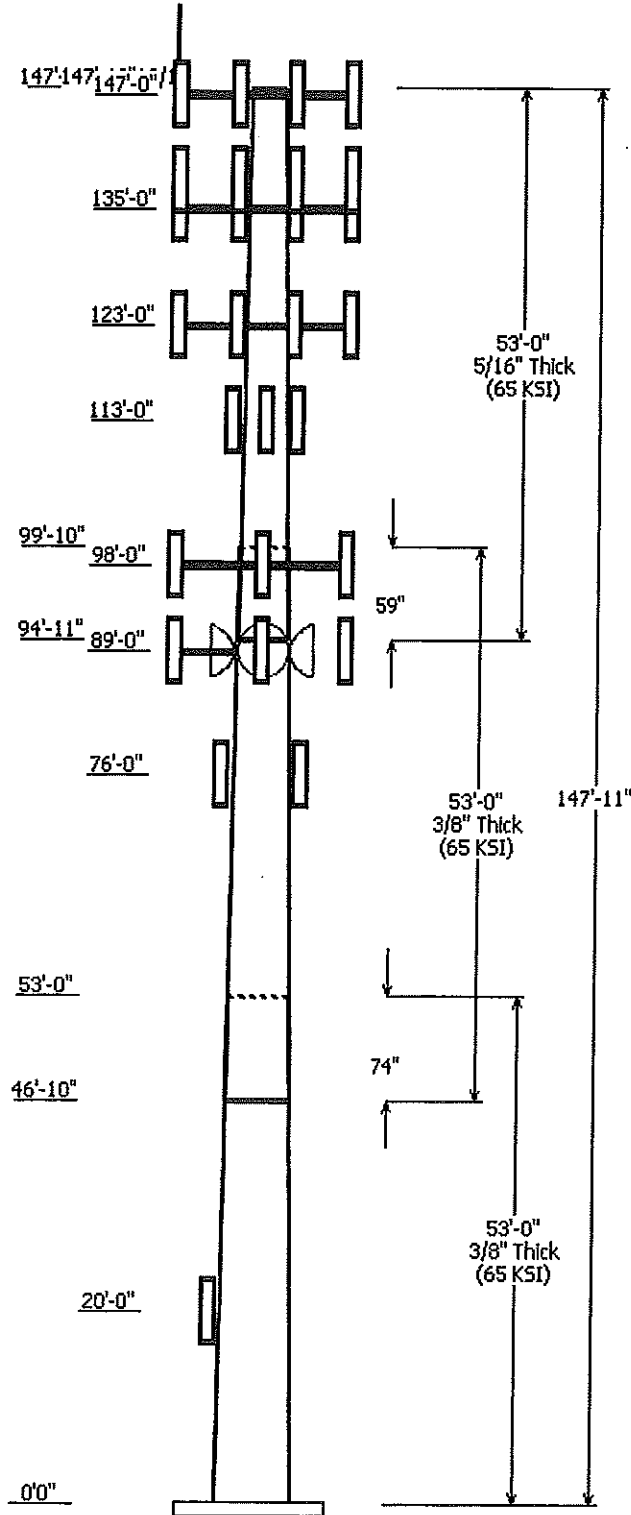
It is the responsibility of the client to ensure that the information provided to ATC Engineering Services and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/EIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Engineering Services is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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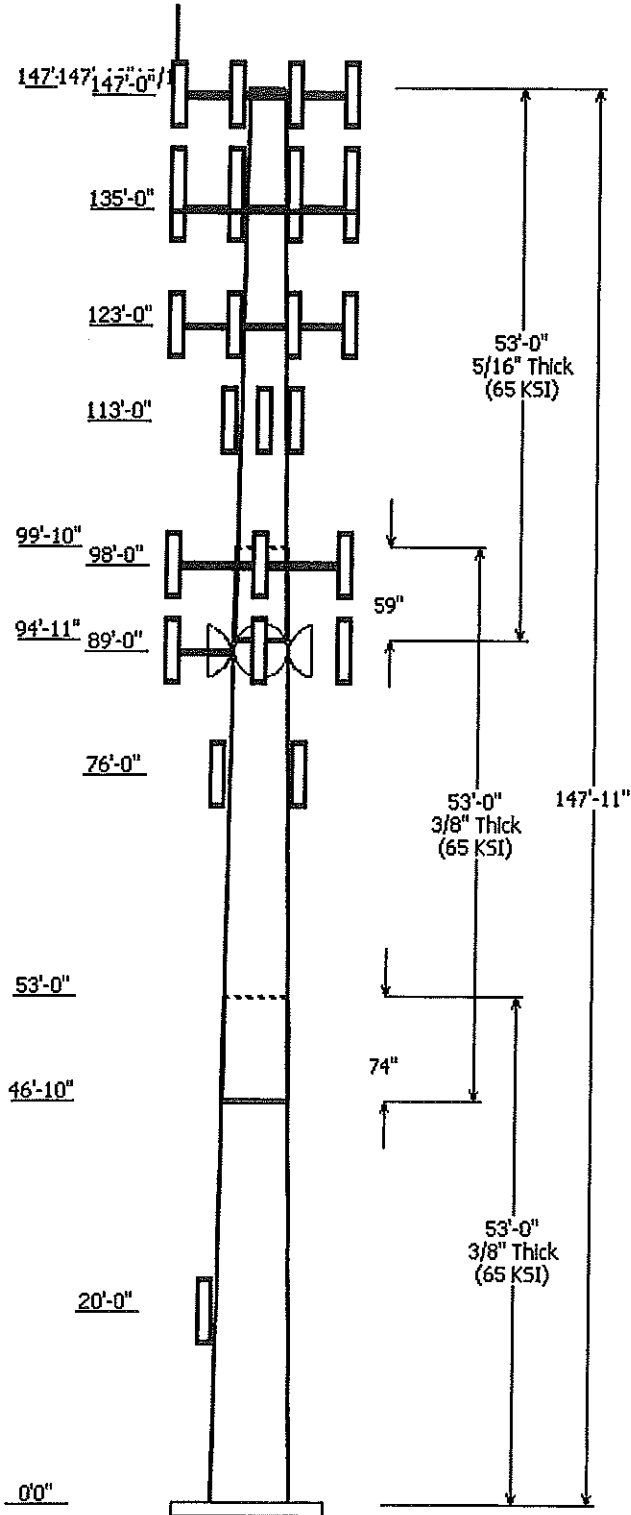
Job Information	
Pole : 302468	Code: TIA/EIA-222 Rev F
Description : 148' FWT Monopole	
Client : AT&T Mobilty	
Location : Petro Lock, CT	
Shape : 18 Sides	Base Elev (ft): 0.00
Height : 147.92 (ft)	Taper: 0.214568(In/ft)



Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Grade (ksi)
		Across Flats Top	Across Flats Bottom			
1	53.000	45.20	56.58	0.375	0.000	65
2	53.000	35.90	47.28	0.375 Slip Joint	74.000	65
3	53.000	26.21	37.58	0.313 Slip Joint	59.000	65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
147.900	149.610	1	Flash Technology FTB 324-2
147.000	147.000	1	Flat Platform w/ Handralls
147.000	147.000	9	48" x 12" Panels
147.000	147.000	3	72" x 12" Panels
135.000	136.000	1	Raycap DC6-48-60-18-8F
135.000	136.000	6	Ericsson RRUS 11
135.000	135.000	1	Andrew SBNH-1D6565C
135.000	135.000	2	KMW AM-X-CD-16-65-00T-RET
135.000	136.000	6	Powerwave LGP21903
135.000	136.000	6	Powerwave LGP21401
135.000	135.000	1	Flat Platform w/ Handralls
135.000	135.000	6	Powerwave 7750.00
123.000	123.000	6	RFS APXV18-206516L-C
123.000	123.000	3	RFS APX16DWV-16DWVL-C
123.000	123.000	3	Round T-Arms
123.000	123.000	3	RFS ATMAA1412D-1A20
123.000	123.000	3	RFS ATMPP1412D-1CWA
113.000	113.000	3	RFS APXV18-206517
98.000	98.000	9	Decibel DB844H90E-A
98.000	98.000	1	Round Low Profile Platform
89.000	89.000	1	DragonWave A-ANT-11G-2.5-C
89.000	89.000	1	Side Arms
89.000	89.000	3	NextNet BTS-2500
89.000	89.000	3	Argus LLPX310R
89.000	89.000	3	DragonWave Horizon Compact
89.000	89.000	2	DragonWave A-ANT-18G-2-C
76.000	76.000	2	Side Markers
20.000	20.000	1	Lucent KS-24019

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
5.000	20.000	1/2" Coax	Yes
5.000	89.000	1/2" Coax	Yes
5.000	89.000	3" Conduit	Yes
5.000	89.000	5/16" Coax	Yes
5.000	98.000	1 1/4" Coax	No
5.000	113.0	1 5/8" Coax	No
5.000	123.0	1 5/8" Coax	No
5.000	123.0	1 5/8" Coax	Yes
5.000	135.0	1 5/8" Coax	No
5.000	135.0	10 mm Cable	No
5.000	135.0	19.7 mm Cable	No
5.000	135.0	3" Conduit	No
5.000	147.0	1 5/8" Coax	No

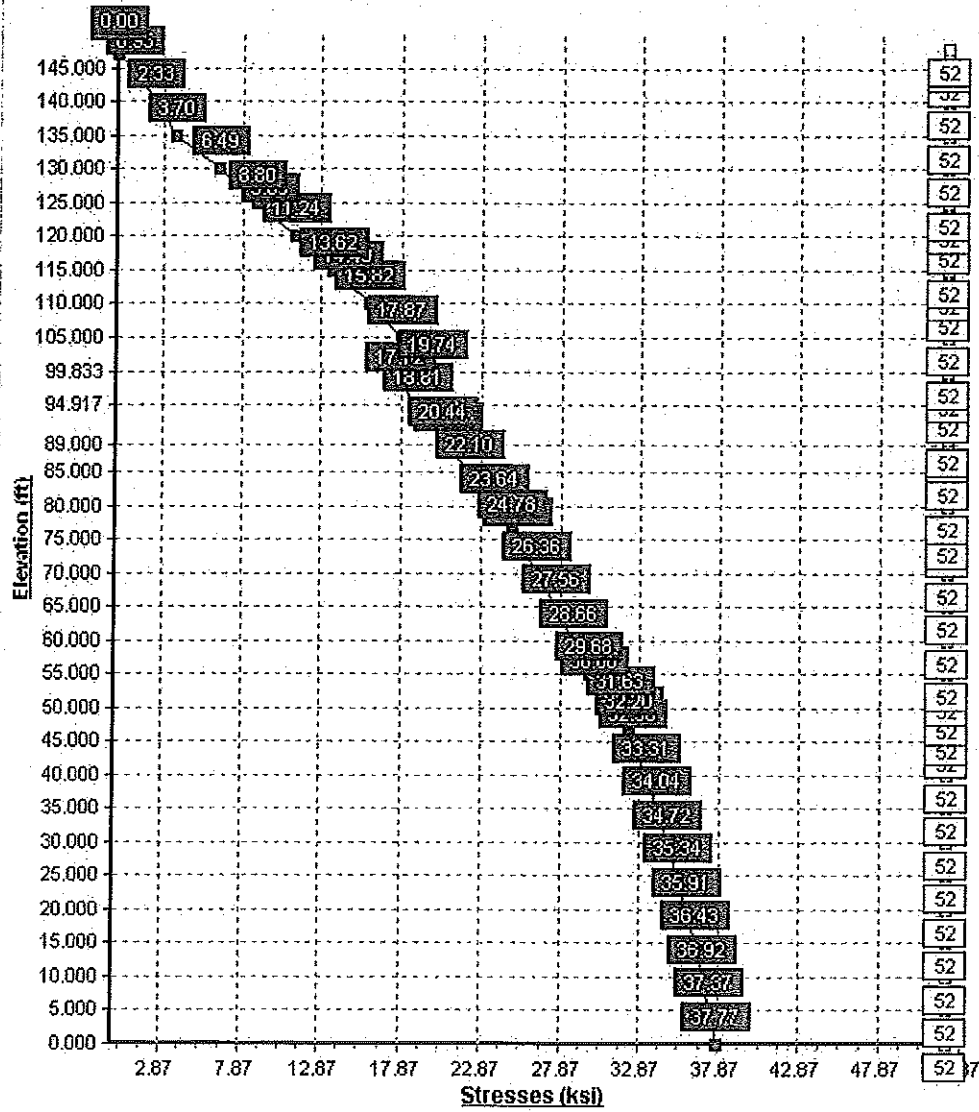


Load Cases	
No Ice	80.00 mph Wind with No Ice
Ice	69.28 mph Wind with Ice
Twist/Sway	50.00 mph Wind with No Ice

Reactions			
Load Case	Moment (Kip-ft)	Shear (Kips)	Axial (Kips)
No Ice	2874.15	27.74	42.57
Ice	2408.78	22.88	50.47
Twist/Sway	1123.20	10.84	42.60

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
Twist/Sway	89.00	9.782	1.017
Twist/Sway	89.00	9.782	1.017

Load Case : No Ice
Max Stress 72.7% at 0.0ft



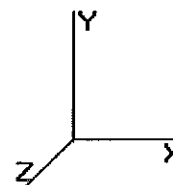
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

4/20/2012 10:53:24 AM
 Page: 1

Base Elev: 0.000 (ft)

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Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ks)	Joint Type	Joint Len (in)	Slip Weight (lb)	Bottom				Top				Taper (in/ft)				
							Dia (in)	Elev (ft)	Area (sqin)	Ix (In^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)		Area (sqin)	Ix (In^4)	W/t Ratio	D/t Ratio
1-18	53.000	0.3750	65		0.00	10,844	56.58	0.00	66.90	26698.9	24.84	150.88	45.20	53.00	53.36	13550.6	19.49	120.55	0.214568
2-18	53.000	0.3750	65	Slip	74.00	8,848	47.28	46.83	55.83	15518.7	20.47	126.08	35.90	99.83	42.29	6746.8	15.12	95.76	0.214568
3-18	53.000	0.3125	65	Slip	59.00	5,651	37.58	94.92	36.97	6490.6	19.45	120.28	26.21	147.92	25.69	2178.2	13.03	83.89	0.214568
Shaft Weight						25,342													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice CaAa (sf)	CaAa Factor	Weight (lb)	Ice CaAa (sf)	CaAa Factor	Distance From Face (ft)	Vert Ecc (ft)
147.90	Flash Technology FTB 324-2	1	28.00	3.700	1.00	72.30	4.010	1.00	0.000	1.710
147.00	48" x 12" Panels	9	30.00	5.600	0.67	63.00	6.190	0.67	0.000	0.000
147.00	72" x 12" Panels	3	40.00	8.400	0.67	87.00	9.230	0.67	0.000	0.000
147.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	2,450.00	48.400	1.00	0.000	0.000
135.00	Andrew SBNH-1D6565C	1	66.10	11.440	1.00	132.00	12.370	1.00	0.000	0.000
135.00	Ericsson RRUS 11	6	55.00	2.940	0.67	74.30	3.290	0.67	0.000	1.000
135.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	2,450.00	48.400	1.00	0.000	0.000
135.00	KMW AM-X-CD-16-65-00T-	2	48.50	8.020	0.79	95.00	9.080	0.79	0.000	0.000
135.00	Powerwave 7750.00	6	35.00	5.880	0.75	65.67	6.540	0.75	0.000	0.000
135.00	Powerwave LGP21401	6	14.10	1.290	0.50	21.26	1.530	0.50	0.000	1.000
135.00	Powerwave LGP21903	6	5.50	0.270	0.50	7.90	0.380	0.50	0.000	1.000
135.00	Raycap DC6-48-60-18-8F	1	20.00	1.260	1.00	35.10	1.460	1.00	0.000	1.000
123.00	RFS APX16DWV-16DWVL-C	3	39.60	6.700	0.65	69.38	7.350	0.65	0.000	0.000
123.00	RFS APXV18-206516L-C	6	18.70	3.570	0.78	38.66	4.070	0.80	0.000	0.000
123.00	RFS ATMAA1412D-1A20	3	13.00	1.170	0.50	20.60	1.390	0.50	0.000	0.000
123.00	RFS ATMP1412D-1CWA	3	12.00	1.170	0.50	19.50	1.400	0.50	0.000	0.000
123.00	Round T-Arms	3	250.00	9.700	0.67	314.00	12.100	0.67	0.000	0.000
113.00	RFS APXV18-206517	3	22.00	5.050	0.80	48.13	5.700	0.80	0.000	0.000
98.00	Decibel DB844H90E-A	9	10.00	3.970	0.86	36.30	4.530	0.86	0.000	0.000
98.00	Round Low Profile Platform	1	1500.00	21.700	1.00	1,700.00	27.200	1.00	0.000	0.000
89.00	Argus LLPX310R	3	28.60	4.830	0.72	64.50	5.360	0.72	0.000	0.000
89.00	DragonWave A-ANT-11G-2.5-	1	66.10	8.670	0.90	117.00	9.170	0.90	0.000	0.000
89.00	DragonWave A-ANT-18G-2-C	2	27.10	4.690	0.90	55.10	5.050	0.90	0.000	0.000
89.00	DragonWave Horizon	3	10.60	0.430	0.50	17.00	0.580	0.50	0.000	0.000
89.00	NextNet BTS-2500	3	35.00	2.120	0.50	48.30	2.430	0.50	0.000	0.000
89.00	Side Arms	1	580.00	8.500	1.00	680.00	10.500	1.00	0.000	0.000
76.00	Side Markers	2	20.00	0.800	1.00	31.90	0.940	1.00	0.000	0.000
20.00	Lucent KS-24019	1	7.00	1.000	1.00	15.00	1.300	1.00	0.000	0.000
Totals		90	8920.60			12,191.06			Number of Loadings :	28

Linear Appurtenance Properties

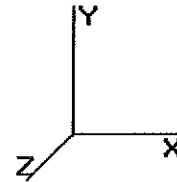
Elev From (ft)	Elev To (ft)	Description	No Ice Weight (lb/ft)	No Ice CaAa (sf/ft)	Ice Weight (lb/ft)	Ice CaAa (sf/ft)	Exposed To Wind
5.00	147.00	(12) 1 5/8" Coax	9.84	0.00	0.00	0.00	N
5.00	135.00	(12) 1 5/8" Coax	9.84	0.00	0.00	0.00	N
5.00	135.00	(1) 10 mm Cable	0.07	0.00	0.00	0.00	N
5.00	135.00	(2) 19.7 mm Cable	0.59	0.00	0.00	0.00	N
5.00	135.00	(1) 3" Conduit	7.58	0.00	0.00	0.00	N
5.00	123.00	(12) 1 5/8" Coax	14.76	0.00	0.00	0.00	N
5.00	123.00	(6) 1 5/8" Coax	4.92	0.20	9.46	0.25	Y
5.00	113.00	(6) 1 5/8" Coax	4.92	0.00	0.00	0.00	N

Pole : 302468
Location : Petro Lock, CT
Height : 147.9 (ft)
Base Dia : 66.58 (in)
Top Dia : 26.21 (in)
Shape : 18 Sides
Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev: 0.000 (ft)



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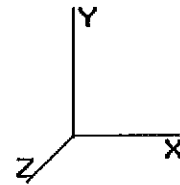
5.00	98.00	(18) 1 1/4" Coax	11.34	0.00	0.00	0.00	N
5.00	89.00	(3) 1/2" Coax	0.30	0.00	0.99	0.00	Y
5.00	89.00	(1) 3" Conduit	7.58	0.35	8.80	0.40	Y
5.00	89.00	(6) 5/16" Coax	0.24	0.00	1.80	0.00	Y
5.00	20.00	(1) 1/2" Coax	0.15	0.06	0.99	0.16	Y
Total Weight			8,340.23 (lb)		2,104.69 (lb)		

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.68 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Segment Properties (Max Len : 5 ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
0.00		0.3750	56.580	66.895	26,698.9	24.84	150.88	65	52	0.0
5.00		0.3750	55.507	65.618	25,199.0	24.34	148.02	65	52	1,127.3
10.00		0.3750	54.434	64.341	23,756.4	23.83	145.16	65	52	1,105.6
15.00		0.3750	53.361	63.065	22,369.9	23.33	142.30	65	52	1,083.8
20.00		0.3750	52.288	61.788	21,038.4	22.82	139.44	65	52	1,062.1
25.00		0.3750	51.216	60.511	19,760.8	22.32	136.57	65	52	1,040.4
30.00		0.3750	50.143	59.234	18,536.1	21.81	133.71	65	52	1,018.7
35.00		0.3750	49.070	57.957	17,363.0	21.31	130.85	65	52	996.9
40.00		0.3750	47.997	56.680	16,240.5	20.81	127.99	65	52	975.2
45.00		0.3750	46.924	55.403	15,167.4	20.30	125.13	65	52	953.5
46.83	Bot - Section 2	0.3750	46.531	54.935	14,786.1	20.12	124.08	65	52	344.2
50.00		0.3750	45.851	54.126	14,142.7	19.80	122.27	65	52	1,184.8
53.00	Top - Section 1	0.3750	45.958	54.253	14,242.1	19.85	122.55	65	52	1,106.4
55.00		0.3750	45.528	53.742	13,843.6	19.64	121.41	65	52	367.5
60.00		0.3750	44.456	52.465	12,880.1	19.14	118.55	65	52	903.5
65.00		0.3750	43.383	51.188	11,962.4	18.64	115.69	65	52	881.8
70.00		0.3750	42.310	49.911	11,089.3	18.13	112.83	65	52	860.0
75.00		0.3750	41.237	48.634	10,259.8	17.63	109.97	65	52	838.3
76.00		0.3750	41.023	48.379	10,099.0	17.53	109.39	65	52	165.1
80.00		0.3750	40.164	47.357	9,472.7	17.12	107.10	65	52	651.5
85.00		0.3750	39.091	46.081	8,726.9	16.62	104.24	65	52	794.9
89.00		0.3750	38.233	45.059	8,159.3	16.21	101.96	65	52	620.3
90.00		0.3750	38.019	44.804	8,021.4	16.11	101.38	65	52	152.9
94.92	Bot - Section 3	0.3750	36.964	43.548	7,365.7	15.62	98.57	65	52	739.1
95.00		0.3750	36.946	43.527	7,354.9	15.61	98.52	65	52	22.8
98.00		0.3750	36.302	42.761	6,973.3	15.31	96.81	65	52	814.4
99.83	Top - Section 2	0.3125	36.534	35.926	5,955.0	18.85	116.91	65	52	490.6
100.0		0.3125	36.498	35.890	5,937.4	18.83	116.79	65	52	20.4
105.0		0.3125	35.425	34.826	5,424.8	18.23	113.36	65	52	601.6
110.0		0.3125	34.352	33.762	4,942.6	17.62	109.93	65	52	583.5
113.0		0.3125	33.709	33.124	4,667.5	17.26	107.87	65	52	341.4
115.0		0.3125	33.279	32.698	4,489.8	17.01	106.49	65	52	224.0
120.0		0.3125	32.207	31.634	4,065.6	16.41	103.06	65	52	547.3
123.0		0.3125	31.563	30.995	3,824.4	16.05	101.00	65	52	319.7
125.0		0.3125	31.134	30.570	3,669.0	15.80	99.63	65	52	209.5
130.0		0.3125	30.061	29.506	3,299.0	15.20	96.19	65	52	511.1
135.0		0.3125	28.988	28.442	2,954.8	14.59	92.76	65	52	493.0
140.0		0.3125	27.915	27.377	2,635.4	13.99	89.33	65	52	474.8
145.0		0.3125	26.842	26.313	2,339.9	13.38	85.90	65	52	456.7
147.0		0.3125	26.413	25.888	2,228.2	13.14	84.52	65	52	177.6
147.9		0.3125	26.220	25.696	2,179.1	13.03	83.90	65	52	79.0
147.9		0.3125	26.216	25.693	2,178.2	13.03	83.89	65	52	1.5
										25,342.4

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

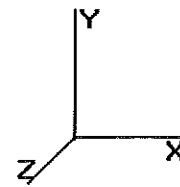
Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Shaft Segment Forces

Seg Top Elev (ft)	Description	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00 16.384	27.68 377.19	0.650	0.000	0.00	0.000	0.00	0.00	0.0	0.0	0.0
5.00		0.00	1.00 16.384	27.68 370.04	0.650	0.000	5.00	23.351	15.18	420.3	0.0	1,127.3	
10.00		0.00	1.00 16.384	27.68 362.89	0.650	0.000	5.00	22.904	14.89	412.2	0.0	1,105.6	
15.00		0.00	1.00 16.384	27.68 355.74	0.650	0.000	5.00	22.457	14.60	404.2	0.0	1,083.8	
20.00	Appertunance(s)	0.00	1.00 16.384	27.68 348.58	0.650	0.000	5.00	22.010	14.31	396.1	0.0	1,062.1	
25.00		0.00	1.00 16.384	27.68 341.43	0.650	0.000	5.00	21.563	14.02	388.1	0.0	1,040.4	
30.00		0.00	1.00 16.384	27.68 334.28	0.650	0.000	5.00	21.116	13.73	380.0	0.0	1,018.7	
35.00		0.00	1.01 16.662	28.15 329.89	0.650	0.000	5.00	20.669	13.44	378.3	0.0	996.9	
40.00		0.00	1.05 17.310	29.25 328.89	0.650	0.000	5.00	20.222	13.14	384.5	0.0	975.2	
45.00		0.00	1.09 17.902	30.25 327.00	0.650	0.000	5.00	19.775	12.85	388.9	0.0	953.5	
46.83	Bot - Section 2	0.00	1.10 18.108	30.60 326.11	0.650	0.000	1.83	7.139	4.64	142.0	0.0	344.2	
50.00		0.00	1.12 18.449	31.17 324.37	0.650	0.000	3.17	12.387	8.05	251.0	0.0	1,184.8	
53.00	Top - Section 1	0.00	1.14 18.759	31.70 322.48	0.650	0.000	3.00	11.570	7.52	238.4	0.0	1,106.4	
55.00		0.00	1.15 18.959	32.04 326.50	0.650	0.000	2.00	7.624	4.96	158.8	0.0	367.5	
60.00		0.00	1.18 19.436	32.84 322.79	0.650	0.000	5.00	18.747	12.19	400.2	0.0	903.5	
65.00		0.00	1.21 19.885	33.60 318.62	0.650	0.000	5.00	18.300	11.89	399.7	0.0	881.8	
70.00		0.00	1.24 20.311	34.32 314.05	0.650	0.000	5.00	17.853	11.60	398.3	0.0	860.0	
75.00		0.00	1.26 20.715	35.00 309.12	0.650	0.000	5.00	17.406	11.31	396.1	0.0	838.3	
76.00	Appertunance(s)	0.00	1.26 20.794	35.14 308.09	0.650	0.000	1.00	3.427	2.23	78.3	0.0	165.1	
80.00		0.00	1.28 21.101	35.66 303.87	0.650	0.000	4.00	13.531	8.80	313.6	0.0	651.5	
85.00		0.00	1.31 21.469	36.28 298.32	0.650	0.000	5.00	16.512	10.73	389.4	0.0	794.9	
89.00	Appertunance(s)	0.00	1.32 21.753	36.76 293.69	0.650	0.000	4.00	12.887	8.38	308.0	0.0	620.3	
90.00		0.00	1.33 21.823	36.88 292.51	0.650	0.000	1.00	3.177	2.07	76.2	0.0	152.9	
94.92	Bot - Section 3	0.00	1.35 22.157	37.44 286.57	0.650	0.000	4.92	15.361	9.98	373.9	0.0	739.1	
95.00		0.00	1.35 22.163	37.45 286.46	0.650	0.000	0.08	0.261	0.17	6.4	0.0	22.8	
98.00	Appertunance(s)	0.00	1.36 22.360	37.78 282.72	0.650	0.000	3.00	9.312	6.05	228.7	0.0	814.4	
99.83	Top - Section 2	0.00	1.37 22.479	37.99 280.40	0.650	0.000	1.83	5.612	3.65	138.6	0.0	490.6	
100.0		0.00	1.37 22.490	38.00 285.07	0.650	0.000	0.17	0.507	0.33	12.5	0.0	20.4	
105.0		0.00	1.39 22.806	38.54 278.63	0.650	0.000	5.00	14.984	9.74	375.4	0.0	601.6	
110.0		0.00	1.41 23.111	39.05 271.99	0.650	0.000	5.00	14.537	9.45	369.1	0.0	583.5	
113.0	Appertunance(s)	0.00	1.42 23.289	39.35 267.92	0.650	0.000	3.00	8.508	5.53	217.7	0.0	341.4	
115.0		0.00	1.42 23.406	39.55 265.17	0.650	0.000	2.00	5.582	3.63	143.5	0.0	224.0	
120.0		0.00	1.44 23.692	40.04 258.19	0.650	0.000	5.00	13.643	8.87	355.1	0.0	547.3	
123.0	Appertunance(s)	0.00	1.45 23.860	40.32 253.92	0.650	0.000	3.00	7.971	5.18	208.9	0.0	319.7	
125.0		0.00	1.46 23.970	40.51 251.05	0.650	0.000	2.00	5.225	3.40	137.6	0.0	209.5	
130.0		0.00	1.48 24.241	40.96 243.76	0.650	0.000	5.00	12.749	8.29	339.5	0.0	511.1	
135.0	Appertunance(s)	0.00	1.49 24.503	41.41 236.33	0.650	0.000	5.00	12.302	8.00	331.1	0.0	493.0	
140.0		0.00	1.51 24.759	41.84 228.77	0.650	0.000	5.00	11.855	7.71	322.4	0.0	474.8	
145.0		0.00	1.52 25.009	42.26 221.08	0.650	0.000	5.00	11.408	7.42	313.4	0.0	456.7	
147.0	Appertunance(s)	0.00	1.53 25.107	42.43 217.98	0.650	0.000	2.00	4.438	2.88	122.4	0.0	177.6	
147.9	Appertunance(s)	0.00	1.53 25.151	42.50 216.57	0.650	0.000	0.90	1.974	1.28	54.5	0.0	79.0	
147.9		0.00	1.53 25.152	42.50 216.54	0.650	0.000	0.02	0.037	0.02	1.0	0.0	1.5	
Totals:								147.92			11,154.4	0.0	25,342.4

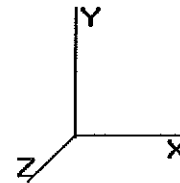
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (In/ft)

Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)

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Load Case: No Ice	80.00 mph Wind with No Ice	23 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

Discrete Appurtenance Segment Forces

Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
20.00	Lucent KS-24019	1	16.384	27.689	1.00	1.00	0.000	0.000	27.69	0.00	0.00	7.00
76.00	Side Markers	2	20.794	35.142	1.00	1.60	0.000	0.000	56.23	0.00	0.00	40.00
89.00	Argus LLPX310R	3	21.753	36.763	0.72	10.43	0.000	0.000	383.54	0.00	0.00	85.80
89.00	DragonWave A-ANT-	1	21.753	36.763	0.90	7.80	0.000	0.000	286.86	0.00	0.00	66.10
89.00	DragonWave A-ANT-	2	21.753	36.763	0.90	8.44	0.000	0.000	310.36	0.00	0.00	54.20
89.00	DragonWave Horizon	3	21.753	36.763	0.50	0.64	0.000	0.000	23.71	0.00	0.00	31.80
89.00	NextNet BTS-2500	3	21.753	36.763	0.50	3.18	0.000	0.000	116.91	0.00	0.00	105.00
89.00	Side Arms	1	21.753	36.763	1.00	8.50	0.000	0.000	312.49	0.00	0.00	560.00
98.00	Decibel DB844H90E-A	9	22.360	37.789	0.86	30.73	0.000	0.000	1,161.18	0.00	0.00	90.00
98.00	Round Low Profile PI	1	22.360	37.789	1.00	21.70	0.000	0.000	820.02	0.00	0.00	1,500.00
113.0	RFS APXV18-206517	3	23.289	39.359	0.80	12.12	0.000	0.000	477.03	0.00	0.00	66.00
123.0	RFS APX16DWV-	3	23.860	40.324	0.65	13.06	0.000	0.000	526.83	0.00	0.00	118.80
123.0	RFS APXV18-206516L-	6	23.860	40.324	0.78	16.71	0.000	0.000	673.71	0.00	0.00	112.20
123.0	RFS ATMAA1412D-	3	23.860	40.324	0.50	1.75	0.000	0.000	70.77	0.00	0.00	39.00
123.0	RFS ATMPP1412D-	3	23.860	40.324	0.50	1.75	0.000	0.000	70.77	0.00	0.00	36.00
123.0	Round T-Arms	3	23.860	40.324	0.67	19.50	0.000	0.000	786.18	0.00	0.00	750.00
135.0	Andrew SBNH-	1	24.503	41.411	1.00	11.44	0.000	0.000	473.74	0.00	0.00	66.10
135.0	Ericsson RRUS 11	6	24.555	41.498	0.67	11.82	0.000	1.000	490.46	0.00	490.46	330.00
135.0	Flat Platform w/ Han	1	24.503	41.411	1.00	42.40	0.000	0.000	1,755.81	0.00	0.00	2,000.00
135.0	KMW AM-X-CD-16-65-	2	24.503	41.411	0.79	12.67	0.000	0.000	524.74	0.00	0.00	97.00
135.0	Powerwave 7750.00	6	24.503	41.411	0.75	26.46	0.000	0.000	1,095.73	0.00	0.00	210.00
135.0	Powerwave LGP21401	6	24.555	41.498	0.50	3.87	0.000	1.000	160.60	0.00	160.60	84.60
135.0	Powerwave LGP21903	6	24.555	41.498	0.50	0.81	0.000	1.000	33.61	0.00	33.61	33.00
135.0	Raycap DC6-48-60-18-	1	24.555	41.498	1.00	1.26	0.000	1.000	52.29	0.00	52.29	20.00
147.0	48" x 12" Panels	9	25.107	42.431	0.67	33.77	0.000	0.000	1,432.80	0.00	0.00	270.00
147.0	72" x 12" Panels	3	25.107	42.431	0.67	16.88	0.000	0.000	716.40	0.00	0.00	120.00
147.0	Flat Platform w/ Han	1	25.107	42.431	1.00	42.40	0.000	0.000	1,799.05	0.00	0.00	2,000.00
147.9	Flash Technology FTB	1	25.233	42.644	1.00	3.70	0.000	1.710	157.78	0.00	269.81	28.00
									14,797.28			8,920.60

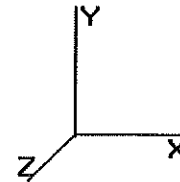
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Linear Appurtenance Segment Forces

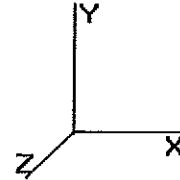
Seg Top Elev (ft)	Description	Exposed To Wind	Length (ft)	Weight (lb/ft)	CaAa (sf/ft)	qz (psf)	FX (lb)	Dead Load (lb)
10.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	16.384	27.69	24.60
10.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	16.384	0.00	1.50
10.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	16.384	48.46	37.90
10.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	16.384	0.00	1.20
10.00	(1) 1/2" Coax	Yes	5.00	0.15	0.06	16.384	8.72	0.75
15.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	16.384	27.69	24.60
15.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	16.384	0.00	1.50
15.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	16.384	48.46	37.90
15.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	16.384	0.00	1.20
15.00	(1) 1/2" Coax	Yes	5.00	0.15	0.06	16.384	8.72	0.75
20.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	16.384	27.69	24.60
20.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	16.384	0.00	1.50
20.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	16.384	48.46	37.90
20.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	16.384	0.00	1.20
20.00	(1) 1/2" Coax	Yes	5.00	0.15	0.06	16.384	8.72	0.75
25.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	16.384	27.69	24.60
25.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	16.384	0.00	1.50
25.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	16.384	48.46	37.90
25.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	16.384	0.00	1.20
30.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	16.384	27.69	24.60
30.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	16.384	0.00	1.50
30.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	16.384	48.46	37.90
30.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	16.384	0.00	1.20
35.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	16.662	28.16	24.60
35.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	16.662	0.00	1.50
35.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	16.662	49.28	37.90
35.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	16.662	0.00	1.20
40.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	17.310	29.25	24.60
40.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	17.310	0.00	1.50
40.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	17.310	51.19	37.90
40.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	17.310	0.00	1.20
45.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	17.902	30.25	24.60
45.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	17.902	0.00	1.50
45.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	17.902	52.95	37.90
45.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	17.902	0.00	1.20
46.83	(6) 1 5/8" Coax	Yes	1.83	4.92	0.20	18.108	11.22	9.02
46.83	(3) 1/2" Coax	Yes	1.83	0.30	0.00	18.108	0.00	0.55
46.83	(1) 3" Conduit	Yes	1.83	7.58	0.35	18.108	19.64	13.90
46.83	(6) 5/16" Coax	Yes	1.83	0.24	0.00	18.108	0.00	0.44
50.00	(6) 1 5/8" Coax	Yes	3.17	4.92	0.20	18.449	19.75	15.58
50.00	(3) 1/2" Coax	Yes	3.17	0.30	0.00	18.449	0.00	0.95
50.00	(1) 3" Conduit	Yes	3.17	7.58	0.35	18.449	34.56	24.00
50.00	(6) 5/16" Coax	Yes	3.17	0.24	0.00	18.449	0.00	0.76
53.00	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	18.759	19.02	14.76
53.00	(3) 1/2" Coax	Yes	3.00	0.30	0.00	18.759	0.00	0.90
53.00	(1) 3" Conduit	Yes	3.00	7.58	0.35	18.759	33.29	22.74
53.00	(6) 5/16" Coax	Yes	3.00	0.24	0.00	18.759	0.00	0.72
55.00	(6) 1 5/8" Coax	Yes	2.00	4.92	0.20	18.959	12.82	9.84
55.00	(3) 1/2" Coax	Yes	2.00	0.30	0.00	18.959	0.00	0.60
55.00	(1) 3" Conduit	Yes	2.00	7.58	0.35	18.959	22.43	15.16
55.00	(6) 5/16" Coax	Yes	2.00	0.24	0.00	18.959	0.00	0.48

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: No Ice	80.00 mph Wind with No Ice	23 iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

60.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	19.436	32.85	24.60
60.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	19.436	0.00	1.50
60.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	19.436	57.48	37.90
60.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	19.436	0.00	1.20
65.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	19.885	33.61	24.60
65.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	19.885	0.00	1.50
65.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	19.885	58.81	37.90
65.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	19.885	0.00	1.20
70.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	20.311	34.33	24.60
70.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	20.311	0.00	1.50
70.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	20.311	60.07	37.90
70.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	20.311	0.00	1.20
75.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	20.715	35.01	24.60
75.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	20.715	0.00	1.50
75.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	20.715	61.27	37.90
75.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	20.715	0.00	1.20
76.00	(6) 1 5/8" Coax	Yes	1.00	4.92	0.20	20.794	7.03	4.92
76.00	(3) 1/2" Coax	Yes	1.00	0.30	0.00	20.794	0.00	0.30
76.00	(1) 3" Conduit	Yes	1.00	7.58	0.35	20.794	12.30	7.58
76.00	(6) 5/16" Coax	Yes	1.00	0.24	0.00	20.794	0.00	0.24
80.00	(6) 1 5/8" Coax	Yes	4.00	4.92	0.20	21.101	28.53	19.68
80.00	(3) 1/2" Coax	Yes	4.00	0.30	0.00	21.101	0.00	1.20
80.00	(1) 3" Conduit	Yes	4.00	7.58	0.35	21.101	49.92	30.32
80.00	(6) 5/16" Coax	Yes	4.00	0.24	0.00	21.101	0.00	0.96
85.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	21.469	36.28	24.60
85.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	21.469	0.00	1.50
85.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	21.469	63.50	37.90
85.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	21.469	0.00	1.20
89.00	(6) 1 5/8" Coax	Yes	4.00	4.92	0.20	21.753	29.41	19.68
89.00	(3) 1/2" Coax	Yes	4.00	0.30	0.00	21.753	0.00	1.20
89.00	(1) 3" Conduit	Yes	4.00	7.58	0.35	21.753	51.47	30.32
89.00	(6) 5/16" Coax	Yes	4.00	0.24	0.00	21.753	0.00	0.96
90.00	(6) 1 5/8" Coax	Yes	1.00	4.92	0.20	21.823	7.38	4.92
94.92	(6) 1 5/8" Coax	Yes	4.92	4.92	0.20	22.157	36.82	24.19
95.00	(6) 1 5/8" Coax	Yes	0.08	4.92	0.20	22.163	0.62	0.41
98.00	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	22.360	22.67	14.76
99.83	(6) 1 5/8" Coax	Yes	1.83	4.92	0.20	22.479	13.93	9.02
100.0	(6) 1 5/8" Coax	Yes	0.17	4.92	0.20	22.490	1.27	0.82
105.0	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	22.806	38.54	24.60
110.0	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	23.111	39.06	24.60
113.0	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	23.289	23.62	14.76
115.0	(6) 1 5/8" Coax	Yes	2.00	4.92	0.20	23.406	15.82	9.84
120.0	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	23.692	40.04	24.60
123.0	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	23.860	24.19	14.76
Totals:							1,736.50	1,264.89

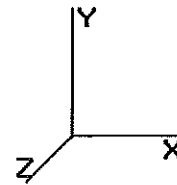
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev: 0.000 (ft)

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Applied Segment Forces Summary

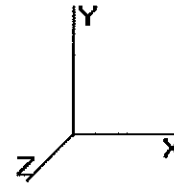
Seg Elev (ft)	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00	0.00	0.00	0.00	0.00
5.00	420.27	1,127.29	0.00	0.00
10.00	497.10	1,466.21	0.00	0.00
15.00	489.05	1,444.49	0.00	0.00
20.00	508.69	1,429.76	0.00	0.00
25.00	464.24	1,400.29	0.00	0.00
30.00	456.19	1,378.56	0.00	0.00
35.00	455.74	1,356.84	0.00	0.00
40.00	464.97	1,335.11	0.00	0.00
45.00	472.09	1,313.39	0.00	0.00
46.83	172.86	476.13	0.00	0.00
50.00	305.35	1,412.74	0.00	0.00
53.00	290.73	1,322.31	0.00	0.00
55.00	194.02	511.44	0.00	0.00
60.00	490.57	1,263.40	0.00	0.00
65.00	492.16	1,241.67	0.00	0.00
70.00	492.72	1,219.95	0.00	0.00
75.00	492.35	1,198.22	0.00	0.00
76.00	153.84	277.04	0.00	0.00
80.00	392.09	939.46	0.00	0.00
85.00	489.19	1,154.77	0.00	0.00
89.00	1,822.71	1,811.08	0.00	0.00
90.00	83.54	216.75	0.00	0.00
94.92	410.70	1,053.06	0.00	0.00
95.00	6.98	28.15	0.00	0.00
98.00	2,232.61	2,595.99	0.00	0.00
99.83	152.50	586.92	0.00	0.00
100.0	13.80	29.12	0.00	0.00
105.0	413.92	864.18	0.00	0.00
110.0	408.11	846.07	0.00	0.00
113.0	718.29	564.95	0.00	0.00
115.0	159.35	319.18	0.00	0.00
120.0	395.11	785.27	0.00	0.00
123.0	2,361.39	1,518.47	0.00	0.00
125.0	137.57	265.33	0.00	0.00
130.0	339.48	650.66	0.00	0.00
135.0	4,918.10	3,473.25	0.00	736.96
140.0	322.43	524.05	0.00	0.00
145.0	313.40	505.95	0.00	0.00
147.0	4,070.65	2,587.31	0.00	0.00
147.9	212.32	106.99	0.00	269.81
147.9	1.03	1.49	0.00	0.00
Totals:	27,688.20	42,603.25	0.00	1,006.77

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Slides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-27.745	-42.566	0.000	0.000	0.000	-2,874.150	0.000	0.000	0.000	0.000
5.00	-27.431	-41.368	0.000	0.000	0.000	-2,735.431	-0.081	0.000	0.081	-0.149
10.00	-27.033	-39.832	0.000	0.000	0.000	-2,598.278	-0.318	0.000	0.318	-0.300
15.00	-26.637	-38.320	0.000	0.000	0.000	-2,463.114	-0.714	0.000	0.714	-0.452
20.00	-26.213	-36.826	0.000	0.000	0.000	-2,329.934	-1.269	0.000	1.269	-0.604
25.00	-25.827	-35.362	0.000	0.000	0.000	-2,198.872	-1.984	0.000	1.984	-0.757
30.00	-25.442	-33.922	0.000	0.000	0.000	-2,069.741	-2.860	0.000	2.860	-0.911
35.00	-25.050	-32.506	0.000	0.000	0.000	-1,942.535	-3.897	0.000	3.897	-1.065
40.00	-24.642	-31.114	0.000	0.000	0.000	-1,817.286	-5.095	0.000	5.095	-1.219
45.00	-24.195	-29.768	0.000	0.000	0.000	-1,694.077	-6.454	0.000	6.454	-1.372
46.83	-24.051	-29.263	0.000	0.000	0.000	-1,649.721	-6.993	0.000	6.993	-1.430
50.00	-23.755	-27.819	0.000	0.000	0.000	-1,573.562	-7.975	0.000	7.975	-1.528
53.00	-23.464	-26.474	0.000	0.000	0.000	-1,502.298	-8.966	0.000	8.966	-1.621
55.00	-23.302	-25.926	0.000	0.000	0.000	-1,455.371	-9.658	0.000	9.658	-1.683
60.00	-22.834	-24.622	0.000	0.000	0.000	-1,338.862	-11.499	0.000	11.499	-1.827
65.00	-22.359	-23.342	0.000	0.000	0.000	-1,224.691	-13.488	0.000	13.488	-1.968
70.00	-21.876	-22.088	0.000	0.000	0.000	-1,112.900	-15.624	0.000	15.624	-2.107
75.00	-21.368	-20.880	0.000	0.000	0.000	-1,003.523	-17.904	0.000	17.904	-2.243
76.00	-21.227	-20.584	0.000	0.000	0.000	-982.155	-18.377	0.000	18.377	-2.270
80.00	-20.838	-19.619	0.000	0.000	0.000	-897.247	-20.325	0.000	20.325	-2.376
85.00	-20.336	-18.446	0.000	0.000	0.000	-793.061	-22.883	0.000	22.883	-2.503
89.00	-18.452	-16.699	0.000	0.000	0.000	-711.720	-25.022	0.000	25.022	-2.601
90.00	-18.379	-16.463	0.000	0.000	0.000	-693.268	-25.570	0.000	25.570	-2.626
94.92	-17.934	-15.413	0.000	0.000	0.000	-602.908	-28.334	0.000	28.334	-2.739
95.00	-17.935	-15.375	0.000	0.000	0.000	-601.414	-28.382	0.000	28.382	-2.741
98.00	-15.591	-12.875	0.000	0.000	0.000	-547.609	-30.125	0.000	30.125	-2.807
99.83	-15.415	-12.291	0.000	0.000	0.000	-519.025	-31.211	0.000	31.211	-2.847
100.0	-15.412	-12.246	0.000	0.000	0.000	-516.456	-31.311	0.000	31.311	-2.851
105.0	-14.977	-11.375	0.000	0.000	0.000	-439.395	-34.358	0.000	34.358	-2.965
110.0	-14.540	-10.531	0.000	0.000	0.000	-364.510	-37.521	0.000	37.521	-3.071
113.0	-13.801	-9.995	0.000	0.000	0.000	-320.891	-39.469	0.000	39.469	-3.130
115.0	-13.634	-9.670	0.000	0.000	0.000	-293.290	-40.788	0.000	40.788	-3.168
120.0	-13.205	-8.894	0.000	0.000	0.000	-225.120	-44.150	0.000	44.150	-3.250
123.0	-10.766	-7.506	0.000	0.000	0.000	-185.504	-46.206	0.000	46.206	-3.293
125.0	-10.618	-7.242	0.000	0.000	0.000	-163.973	-47.591	0.000	47.591	-3.319
130.0	-10.247	-6.604	0.000	0.000	0.000	-110.883	-51.095	0.000	51.095	-3.372
135.0	-5.133	-3.426	0.000	0.000	0.000	-58.914	-54.647	0.000	54.647	-3.409
140.0	-4.781	-2.920	0.000	0.000	0.000	-33.248	-58.228	0.000	58.228	-3.431
145.0	-4.438	-2.434	0.000	0.000	0.000	-9.343	-61.826	0.000	61.826	-3.442
147.0	-0.219	-0.095	0.000	0.000	0.000	-0.467	-63.268	0.000	63.268	-3.444
147.9	-0.001	-0.001	0.000	0.000	0.000	0.000	-63.917	0.000	63.917	-3.444
147.9	-0.001	0.000	0.000	0.000	0.000	0.000	-63.929	0.000	63.929	-3.444

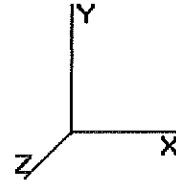
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev: 0.000 (ft)

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Stresses

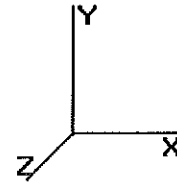
Seg Elev (ft)	Applied Stresses							Allowable Stress (Fb) (ksi)	Stress Ratio	
	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)			
0.00	0.64	0.84	0.00	0.00	0.00	37.11	37.77	52.0	0.0	0.727
5.00	0.63	0.84	0.00	0.00	0.00	36.71	37.37	52.0	0.0	0.719
10.00	0.62	0.85	0.00	0.00	0.00	36.27	36.92	52.0	0.0	0.710
15.00	0.61	0.85	0.00	0.00	0.00	35.80	36.43	52.0	0.0	0.701
20.00	0.60	0.86	0.00	0.00	0.00	35.28	35.91	52.0	0.0	0.691
25.00	0.58	0.86	0.00	0.00	0.00	34.72	35.34	52.0	0.0	0.680
30.00	0.57	0.87	0.00	0.00	0.00	34.11	34.72	52.0	0.0	0.668
35.00	0.56	0.87	0.00	0.00	0.00	33.45	34.04	52.0	0.0	0.655
40.00	0.55	0.88	0.00	0.00	0.00	32.72	33.31	52.0	0.0	0.641
45.00	0.54	0.88	0.00	0.00	0.00	31.93	32.50	52.0	0.0	0.625
46.83	0.53	0.88	0.00	0.00	0.00	31.63	32.20	52.0	0.0	0.619
50.00	0.51	0.88	0.00	0.00	0.00	31.08	31.63	52.0	0.0	0.609
53.00	0.49	0.87	0.00	0.00	0.00	29.54	30.06	52.0	0.0	0.578
55.00	0.48	0.87	0.00	0.00	0.00	29.16	29.68	52.0	0.0	0.571
60.00	0.47	0.88	0.00	0.00	0.00	28.15	28.66	52.0	0.0	0.551
65.00	0.46	0.88	0.00	0.00	0.00	27.06	27.56	52.0	0.0	0.530
70.00	0.44	0.88	0.00	0.00	0.00	25.87	26.36	52.0	0.0	0.507
75.00	0.43	0.89	0.00	0.00	0.00	24.57	25.05	52.0	0.0	0.482
76.00	0.43	0.88	0.00	0.00	0.00	24.31	24.78	52.0	0.0	0.477
80.00	0.41	0.89	0.00	0.00	0.00	23.18	23.64	52.0	0.0	0.455
85.00	0.40	0.89	0.00	0.00	0.00	21.64	22.10	52.0	0.0	0.425
89.00	0.37	0.83	0.00	0.00	0.00	20.32	20.74	52.0	0.0	0.399
90.00	0.37	0.83	0.00	0.00	0.00	20.02	20.44	52.0	0.0	0.393
94.92	0.35	0.83	0.00	0.00	0.00	18.43	18.84	52.0	0.0	0.362
95.00	0.35	0.83	0.00	0.00	0.00	18.41	18.81	52.0	0.0	0.362
98.00	0.30	0.73	0.00	0.00	0.00	17.37	17.72	52.0	0.0	0.341
99.83	0.34	0.86	0.00	0.00	0.00	19.40	19.80	52.0	0.0	0.381
100.00	0.34	0.87	0.00	0.00	0.00	19.34	19.74	52.0	0.0	0.380
105.00	0.33	0.87	0.00	0.00	0.00	17.48	17.87	52.0	0.0	0.344
110.00	0.31	0.87	0.00	0.00	0.00	15.44	15.82	52.0	0.0	0.304
113.00	0.30	0.84	0.00	0.00	0.00	14.12	14.49	52.0	0.0	0.279
115.00	0.30	0.84	0.00	0.00	0.00	13.24	13.62	52.0	0.0	0.262
120.00	0.28	0.84	0.00	0.00	0.00	10.87	11.24	52.0	0.0	0.216
123.00	0.24	0.70	0.00	0.00	0.00	9.33	9.65	52.0	0.0	0.186
125.00	0.24	0.70	0.00	0.00	0.00	8.48	8.80	52.0	0.0	0.169
130.00	0.22	0.70	0.00	0.00	0.00	6.16	6.49	52.0	0.0	0.125
135.00	0.12	0.36	0.00	0.00	0.00	3.52	3.70	52.0	0.0	0.071
140.00	0.11	0.35	0.00	0.00	0.00	2.15	2.33	52.0	0.0	0.045
145.00	0.09	0.34	0.00	0.00	0.00	0.65	0.95	52.0	0.0	0.018
147.00	0.00	0.02	0.00	0.00	0.00	0.03	0.05	52.0	0.0	0.001
147.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.0	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.0	0.000

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Ice	69.28 mph Wind with Ice	23 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

Shaft Segment Forces

Seg Top Elev (ft)	Description	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00 12.287	20.76 326.65	0.650	0.500	0.00	0.000	0.00	0.00	0.0	0.0	0.0
5.00		0.00	1.00 12.287	20.76 320.46	0.650	0.500	5.00	23.768	15.45	320.8	172.8	1,300.1	
10.00		0.00	1.00 12.287	20.76 314.26	0.650	0.500	5.00	23.321	15.16	314.8	169.5	1,275.1	
15.00		0.00	1.00 12.287	20.76 308.07	0.650	0.500	5.00	22.874	14.87	308.7	166.2	1,250.0	
20.00	Appertunance(s)	0.00	1.00 12.287	20.76 301.87	0.650	0.500	5.00	22.427	14.58	302.7	162.9	1,225.0	
25.00		0.00	1.00 12.287	20.76 295.68	0.650	0.500	5.00	21.980	14.29	296.7	159.6	1,200.0	
30.00		0.00	1.00 12.287	20.76 289.49	0.650	0.500	5.00	21.533	14.00	290.6	156.3	1,174.9	
35.00		0.00	1.01 12.486	21.11 285.68	0.650	0.500	5.00	21.086	13.71	289.4	153.0	1,149.9	
40.00		0.00	1.05 12.982	21.93 284.82	0.650	0.500	5.00	20.639	13.42	294.3	149.6	1,124.9	
45.00		0.00	1.09 13.426	22.69 283.18	0.650	0.500	5.00	20.192	13.12	297.8	146.3	1,099.8	
46.83	Bot - Section 2	0.00	1.10 13.580	22.95 282.41	0.650	0.500	1.83	7.292	4.74	108.8	53.2	397.4	
50.00		0.00	1.12 13.836	23.38 280.90	0.650	0.500	3.17	12.651	8.22	192.3	92.0	1,276.9	
53.00	Top - Section 1	0.00	1.14 14.068	23.77 279.27	0.650	0.500	3.00	11.820	7.68	182.7	86.0	1,192.4	
55.00		0.00	1.15 14.218	24.02 282.75	0.650	0.500	2.00	7.791	5.06	121.7	56.8	424.3	
60.00		0.00	1.18 14.576	24.63 279.54	0.650	0.500	5.00	19.163	12.46	306.8	138.7	1,042.2	
65.00		0.00	1.21 14.913	25.20 275.93	0.650	0.500	5.00	18.716	12.17	306.6	135.4	1,017.2	
70.00		0.00	1.24 15.232	25.74 271.97	0.650	0.500	5.00	18.269	11.88	305.7	132.1	992.1	
75.00		0.00	1.26 15.536	26.25 267.70	0.650	0.500	5.00	17.822	11.58	304.2	128.8	967.1	
76.00	Appertunance(s)	0.00	1.26 15.594	26.35 266.81	0.650	0.500	1.00	3.511	2.28	60.1	25.6	190.7	
80.00		0.00	1.28 15.825	26.74 263.15	0.650	0.500	4.00	13.864	9.01	241.0	100.4	751.9	
85.00		0.00	1.31 16.101	27.21 258.35	0.650	0.500	5.00	16.928	11.00	299.4	122.2	917.0	
89.00	Appertunance(s)	0.00	1.32 16.314	27.57 254.34	0.650	0.500	4.00	13.221	8.59	236.9	95.6	715.9	
90.00		0.00	1.33 16.366	27.65 253.32	0.650	0.500	1.00	3.260	2.12	58.6	23.8	176.7	
94.92	Bot - Section 3	0.00	1.35 16.617	28.08 248.16	0.650	0.500	4.92	15.771	10.25	287.9	113.7	852.8	
95.00		0.00	1.35 16.621	28.09 248.08	0.650	0.500	0.08	0.268	0.17	4.9	2.0	24.8	
98.00	Appertunance(s)	0.00	1.36 16.769	28.34 244.84	0.650	0.500	3.00	9.562	6.22	176.1	69.3	883.7	
99.83	Top - Section 2	0.00	1.37 16.858	28.49 242.83	0.650	0.500	1.83	5.764	3.75	106.8	41.9	532.5	
100.00		0.00	1.37 16.866	28.50 246.87	0.650	0.500	0.17	0.521	0.34	9.7	3.8	24.2	
105.00		0.00	1.39 17.103	28.90 241.29	0.650	0.500	5.00	15.401	10.01	289.3	110.9	712.4	
110.00		0.00	1.41 17.332	29.29 235.54	0.650	0.500	5.00	14.954	9.72	284.7	107.5	691.0	
113.00	Appertunance(s)	0.00	1.42 17.466	29.51 232.02	0.650	0.500	3.00	8.758	5.69	168.0	63.3	404.7	
115.00		0.00	1.42 17.554	29.66 229.64	0.650	0.500	2.00	5.749	3.74	110.9	41.7	266.7	
120.00		0.00	1.44 17.768	30.02 223.59	0.650	0.500	5.00	14.060	9.14	274.4	100.9	648.2	
123.00	Appertunance(s)	0.00	1.45 17.894	30.24 219.90	0.650	0.500	3.00	8.221	5.34	161.6	59.4	379.0	
125.00		0.00	1.46 17.977	30.38 217.41	0.650	0.500	2.00	5.391	3.50	106.5	39.0	248.5	
130.00		0.00	1.48 18.179	30.72 211.10	0.650	0.500	5.00	13.166	8.56	262.9	94.3	605.4	
135.00	Appertunance(s)	0.00	1.49 18.376	31.05 204.66	0.650	0.500	5.00	12.719	8.27	256.7	91.0	583.9	
140.00		0.00	1.51 18.568	31.38 198.11	0.650	0.500	5.00	12.272	7.98	250.3	87.7	562.5	
145.00		0.00	1.52 18.755	31.69 191.46	0.650	0.500	5.00	11.825	7.69	243.6	84.4	541.1	
147.00	Appertunance(s)	0.00	1.53 18.829	31.82 188.77	0.650	0.500	2.00	4.605	2.99	95.2	33.2	210.8	
147.90	Appertunance(s)	0.00	1.53 18.862	31.87 187.55	0.650	0.500	0.90	2.049	1.33	42.4	14.8	93.8	
147.90		0.00	1.53 18.863	31.87 187.53	0.650	0.500	0.02	0.039	0.03	0.8	0.3	1.8	
Totals:								147.92			8,573.5	3,786.0	29,128.4

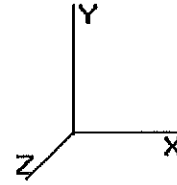
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
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Base Elev: 0.000 (ft)

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Load Case: Ice 69.28 mph Wind with Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

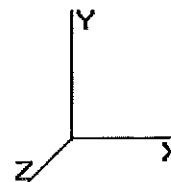
Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
20.00	Lucent KS-24019	1	12.287	20.766	1.00	1.30	0.000	0.000	27.00	0.00	0.00	15.00
76.00	Side Markers	2	15.594	26.355	1.00	1.88	0.000	0.000	49.55	0.00	0.00	63.80
89.00	Argus LLPX310R	3	16.314	27.571	0.72	11.58	0.000	0.000	319.20	0.00	0.00	163.50
89.00	DragonWave A-ANT-	1	16.314	27.571	0.90	8.25	0.000	0.000	227.54	0.00	0.00	117.00
89.00	DragonWave A-ANT-	2	16.314	27.571	0.90	9.09	0.000	0.000	250.62	0.00	0.00	110.20
89.00	DragonWave Horizon	3	16.314	27.571	0.50	0.87	0.000	0.000	23.99	0.00	0.00	51.00
89.00	NextNet BTS-2500	3	16.314	27.571	0.50	3.64	0.000	0.000	100.50	0.00	0.00	144.90
89.00	Side Arms	1	16.314	27.571	1.00	10.50	0.000	0.000	289.49	0.00	0.00	680.00
98.00	Decibel DB844H90E-A	9	16.769	28.340	0.86	35.06	0.000	0.000	993.67	0.00	0.00	326.70
98.00	Round Low Profile PI	1	16.769	28.340	1.00	27.20	0.000	0.000	770.85	0.00	0.00	1,700.00
113.0	RFS APXV18-206517	3	17.466	29.517	0.80	13.68	0.000	0.000	403.80	0.00	0.00	144.39
123.0	RFS APX16DWV-	3	17.894	30.241	0.65	14.33	0.000	0.000	433.43	0.00	0.00	208.14
123.0	RFS APXV18-206516L-	6	17.894	30.241	0.80	19.54	0.000	0.000	590.79	0.00	0.00	231.96
123.0	RFS ATMAA1412D-	3	17.894	30.241	0.50	2.09	0.000	0.000	63.05	0.00	0.00	61.80
123.0	RFS ATMPP1412D-	3	17.894	30.241	0.50	2.10	0.000	0.000	63.51	0.00	0.00	58.50
123.0	Round T-Arms	3	17.894	30.241	0.67	24.32	0.000	0.000	735.49	0.00	0.00	942.00
135.0	Andrew SBNH-	1	18.376	31.056	1.00	12.37	0.000	0.000	384.16	0.00	0.00	132.00
135.0	Ericsson RRUS 11	6	18.415	31.122	0.67	13.23	0.000	1.000	411.61	0.00	411.61	445.80
135.0	Flat Platform w/ Han	1	18.376	31.056	1.00	48.40	0.000	0.000	1,503.12	0.00	0.00	2,450.00
135.0	KMW AM-X-CD-16-65-	2	18.376	31.056	0.79	14.35	0.000	0.000	445.54	0.00	0.00	190.00
135.0	Powerwave 7750.00	6	18.376	31.056	0.75	29.43	0.000	0.000	913.98	0.00	0.00	394.02
135.0	Powerwave LGP21401	6	18.415	31.122	0.50	4.59	0.000	1.000	142.85	0.00	142.85	127.56
135.0	Powerwave LGP21903	6	18.415	31.122	0.50	1.14	0.000	1.000	35.48	0.00	35.48	47.40
135.0	Raycap DC6-48-60-18-	1	18.415	31.122	1.00	1.46	0.000	1.000	45.44	0.00	45.44	35.10
147.0	48" x 12" Panels	9	18.829	31.821	0.67	37.33	0.000	0.000	1,187.74	0.00	0.00	567.00
147.0	72" x 12" Panels	3	18.829	31.821	0.67	18.55	0.000	0.000	590.35	0.00	0.00	261.00
147.0	Flat Platform w/ Han	1	18.829	31.821	1.00	48.40	0.000	0.000	1,540.14	0.00	0.00	2,450.00
147.9	Flash Technology FTB	1	18.924	31.981	1.00	4.01	0.000	1.710	128.25	0.00	219.30	72.30
									12,671.13			12,191.06

Pole : 302468
 Location : Petro Lock, CT
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Base Elev : 0.000 (ft)



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Load Case: Ice	69.28 mph Wind with Ice	23 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

Linear Appurtenance Segment Forces

Seg Top Elev (ft)	Description	Exposed To Wind	Length (ft)	Weight (lb/ft)	CaAa (sf/ft)	qz (psf)	FX (lb)	Dead Load (lb)
10.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	12.287	25.96	47.30
10.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	12.287	0.00	4.95
10.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	12.287	41.53	44.00
10.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	12.287	0.00	9.00
10.00	(1) 1/2" Coax	Yes	5.00	0.99	0.16	12.287	16.61	4.95
15.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	12.287	25.96	47.30
15.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	12.287	0.00	4.95
15.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	12.287	41.53	44.00
15.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	12.287	0.00	9.00
15.00	(1) 1/2" Coax	Yes	5.00	0.99	0.16	12.287	16.61	4.95
20.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	12.287	25.96	47.30
20.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	12.287	0.00	4.95
20.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	12.287	41.53	44.00
20.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	12.287	0.00	9.00
20.00	(1) 1/2" Coax	Yes	5.00	0.99	0.16	12.287	16.61	4.95
25.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	12.287	25.96	47.30
25.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	12.287	0.00	4.95
25.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	12.287	41.53	44.00
25.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	12.287	0.00	9.00
30.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	12.287	25.96	47.30
30.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	12.287	0.00	4.95
30.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	12.287	41.53	44.00
30.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	12.287	0.00	9.00
35.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	12.496	26.40	47.30
35.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	12.496	0.00	4.95
35.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	12.496	42.24	44.00
35.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	12.496	0.00	9.00
40.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	12.982	27.42	47.30
40.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	12.982	0.00	4.95
40.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	12.982	43.88	44.00
40.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	12.982	0.00	9.00
45.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	13.426	28.36	47.30
45.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	13.426	0.00	4.95
45.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	13.426	45.38	44.00
45.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	13.426	0.00	9.00
46.83	(6) 1 5/8" Coax	Yes	1.83	9.46	0.25	13.580	10.52	17.34
46.83	(3) 1/2" Coax	Yes	1.83	0.99	0.00	13.580	0.00	1.82
46.83	(1) 3" Conduit	Yes	1.83	8.80	0.40	13.580	16.83	16.13
46.83	(6) 5/16" Coax	Yes	1.83	1.80	0.00	13.580	0.00	3.30
50.00	(6) 1 5/8" Coax	Yes	3.17	9.46	0.25	13.836	18.51	29.96
50.00	(3) 1/2" Coax	Yes	3.17	0.99	0.00	13.836	0.00	3.13
50.00	(1) 3" Conduit	Yes	3.17	8.80	0.40	13.836	29.62	27.87
50.00	(6) 5/16" Coax	Yes	3.17	1.80	0.00	13.836	0.00	5.70
53.00	(6) 1 5/8" Coax	Yes	3.00	9.46	0.25	14.068	17.83	28.38
53.00	(3) 1/2" Coax	Yes	3.00	0.99	0.00	14.068	0.00	2.97
53.00	(1) 3" Conduit	Yes	3.00	8.80	0.40	14.068	28.53	26.40
53.00	(6) 5/16" Coax	Yes	3.00	1.80	0.00	14.068	0.00	5.40
55.00	(6) 1 5/8" Coax	Yes	2.00	9.46	0.25	14.218	12.01	18.92
55.00	(3) 1/2" Coax	Yes	2.00	0.99	0.00	14.218	0.00	1.98
55.00	(1) 3" Conduit	Yes	2.00	8.80	0.40	14.218	19.22	17.60
55.00	(6) 5/16" Coax	Yes	2.00	1.80	0.00	14.218	0.00	3.60

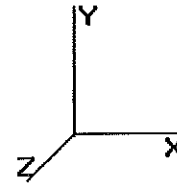
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)



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Load Case: Ice **69.28 mph Wind with Ice** **23 Iterations**

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

60.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	14.576	30.79	47.30
60.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	14.576	0.00	4.95
60.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	14.576	49.27	44.00
60.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	14.576	0.00	9.00
65.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	14.913	31.50	47.30
65.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	14.913	0.00	4.95
65.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	14.913	50.41	44.00
65.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	14.913	0.00	9.00
70.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	15.232	32.18	47.30
70.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	15.232	0.00	4.95
70.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	15.232	51.49	44.00
70.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	15.232	0.00	9.00
75.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	15.536	32.82	47.30
75.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	15.536	0.00	4.95
75.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	15.536	52.51	44.00
75.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	15.536	0.00	9.00
76.00	(6) 1 5/8" Coax	Yes	1.00	9.46	0.25	15.594	6.59	9.46
76.00	(3) 1/2" Coax	Yes	1.00	0.99	0.00	15.594	0.00	0.99
76.00	(1) 3" Conduit	Yes	1.00	8.80	0.40	15.594	10.54	8.80
76.00	(6) 5/16" Coax	Yes	1.00	1.80	0.00	15.594	0.00	1.80
80.00	(6) 1 5/8" Coax	Yes	4.00	9.46	0.25	15.825	26.74	37.84
80.00	(3) 1/2" Coax	Yes	4.00	0.99	0.00	15.825	0.00	3.96
80.00	(1) 3" Conduit	Yes	4.00	8.80	0.40	15.825	42.79	35.20
80.00	(6) 5/16" Coax	Yes	4.00	1.80	0.00	15.825	0.00	7.20
85.00	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	16.101	34.01	47.30
85.00	(3) 1/2" Coax	Yes	5.00	0.99	0.00	16.101	0.00	4.95
85.00	(1) 3" Conduit	Yes	5.00	8.80	0.40	16.101	54.42	44.00
85.00	(6) 5/16" Coax	Yes	5.00	1.80	0.00	16.101	0.00	9.00
89.00	(6) 1 5/8" Coax	Yes	4.00	9.46	0.25	16.314	27.57	37.84
89.00	(3) 1/2" Coax	Yes	4.00	0.99	0.00	16.314	0.00	3.96
89.00	(1) 3" Conduit	Yes	4.00	8.80	0.40	16.314	44.11	35.20
89.00	(6) 5/16" Coax	Yes	4.00	1.80	0.00	16.314	0.00	7.20
90.00	(6) 1 5/8" Coax	Yes	1.00	9.46	0.25	16.366	6.91	9.46
94.92	(6) 1 5/8" Coax	Yes	4.92	9.46	0.25	16.617	34.52	46.51
95.00	(6) 1 5/8" Coax	Yes	0.08	9.46	0.25	16.621	0.59	0.79
98.00	(6) 1 5/8" Coax	Yes	3.00	9.46	0.25	16.769	21.26	28.38
99.83	(6) 1 5/8" Coax	Yes	1.83	9.46	0.25	16.858	13.06	17.34
100.0	(6) 1 5/8" Coax	Yes	0.17	9.46	0.25	16.866	1.19	1.58
105.0	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	17.103	36.13	47.30
110.0	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	17.332	36.61	47.30
113.0	(6) 1 5/8" Coax	Yes	3.00	9.46	0.25	17.466	22.14	28.38
115.0	(6) 1 5/8" Coax	Yes	2.00	9.46	0.25	17.554	14.83	18.92
120.0	(6) 1 5/8" Coax	Yes	5.00	9.46	0.25	17.768	37.54	47.30
123.0	(6) 1 5/8" Coax	Yes	3.00	9.46	0.25	17.894	22.68	28.38
Totals:							1,579.23	2,104.69

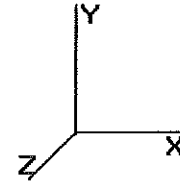
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev: 0.000 (ft)

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Load Case: Ice 69.28 mph Wind with Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Applied Segment Forces Summary

Seg Elev (ft)	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00	0.00	0.00	0.00	0.00
5.00	320.81	1,300.11	0.00	0.00
10.00	398.88	1,679.97	0.00	0.00
15.00	392.84	1,654.94	0.00	0.00
20.00	413.81	1,644.90	0.00	0.00
25.00	364.16	1,599.92	0.00	0.00
30.00	358.13	1,574.88	0.00	0.00
35.00	368.07	1,549.84	0.00	0.00
40.00	365.62	1,524.81	0.00	0.00
45.00	371.54	1,499.77	0.00	0.00
46.83	136.12	544.03	0.00	0.00
50.00	240.41	1,530.15	0.00	0.00
53.00	229.03	1,432.35	0.00	0.00
55.00	152.91	584.27	0.00	0.00
60.00	386.90	1,442.17	0.00	0.00
65.00	388.52	1,417.13	0.00	0.00
70.00	389.36	1,392.10	0.00	0.00
75.00	389.48	1,367.06	0.00	0.00
76.00	126.82	334.47	0.00	0.00
80.00	310.55	1,071.88	0.00	0.00
85.00	387.85	1,316.99	0.00	0.00
89.00	1,519.96	2,302.43	0.00	0.00
90.00	65.53	245.06	0.00	0.00
94.92	322.39	1,189.05	0.00	0.00
95.00	5.48	30.48	0.00	0.00
98.00	1,961.92	3,115.60	0.00	0.00
99.83	119.81	637.15	0.00	0.00
100.0	10.84	33.68	0.00	0.00
105.0	325.48	997.73	0.00	0.00
110.0	321.32	976.32	0.00	0.00
113.0	593.96	720.30	0.00	0.00
115.0	125.69	369.95	0.00	0.00
120.0	311.96	908.89	0.00	0.00
123.0	2,070.55	2,037.85	0.00	0.00
125.0	106.47	304.38	0.00	0.00
130.0	262.92	744.96	0.00	0.00
135.0	4,138.92	4,545.43	0.00	635.38
140.0	250.31	611.73	0.00	0.00
145.0	243.62	590.32	0.00	0.00
147.0	3,413.48	3,508.53	0.00	0.00
147.9	170.70	166.13	0.00	219.30
147.9	0.80	1.77	0.00	0.00
Totals:	22,823.89	50,499.48	0.00	854.68

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Slides
 Taper : 0.214568 (in/ft)

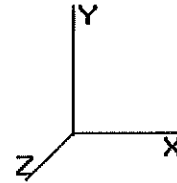
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Base Elev : 0.000 (ft)

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Load Case: Ice 69.28 mph Wind with Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-22.880	-50.474	0.000	0.000	0.000	-2,408.784	0.000	0.000	0.000	0.000
5.00	-22.666	-49.124	0.000	0.000	0.000	-2,294.387	-0.068	0.000	0.068	-0.125
10.00	-22.366	-47.396	0.000	0.000	0.000	-2,181.062	-0.267	0.000	0.267	-0.252
15.00	-22.066	-45.694	0.000	0.000	0.000	-2,069.234	-0.599	0.000	0.599	-0.379
20.00	-21.738	-44.004	0.000	0.000	0.000	-1,958.907	-1.065	0.000	1.065	-0.507
25.00	-21.454	-42.360	0.000	0.000	0.000	-1,850.218	-1.665	0.000	1.665	-0.636
30.00	-21.168	-40.742	0.000	0.000	0.000	-1,742.953	-2.401	0.000	2.401	-0.765
35.00	-20.877	-39.150	0.000	0.000	0.000	-1,637.114	-3.272	0.000	3.272	-0.895
40.00	-20.571	-37.585	0.000	0.000	0.000	-1,532.734	-4.279	0.000	4.279	-1.025
45.00	-20.226	-36.061	0.000	0.000	0.000	-1,429.883	-5.422	0.000	5.422	-1.154
46.83	-20.120	-35.497	0.000	0.000	0.000	-1,392.803	-5.875	0.000	5.875	-1.203
50.00	-19.894	-33.945	0.000	0.000	0.000	-1,329.091	-6.702	0.000	6.702	-1.286
53.00	-19.669	-32.496	0.000	0.000	0.000	-1,269.410	-7.535	0.000	7.535	-1.364
55.00	-19.551	-31.885	0.000	0.000	0.000	-1,230.073	-8.118	0.000	8.118	-1.417
60.00	-19.191	-30.413	0.000	0.000	0.000	-1,132.322	-9.668	0.000	9.668	-1.538
65.00	-18.823	-28.969	0.000	0.000	0.000	-1,036.370	-11.343	0.000	11.343	-1.658
70.00	-18.448	-27.551	0.000	0.000	0.000	-942.258	-13.143	0.000	13.143	-1.775
75.00	-18.046	-26.176	0.000	0.000	0.000	-850.020	-15.065	0.000	15.065	-1.890
76.00	-17.934	-25.828	0.000	0.000	0.000	-831.974	-15.463	0.000	15.463	-1.914
80.00	-17.630	-24.737	0.000	0.000	0.000	-760.239	-17.106	0.000	17.106	-2.003
85.00	-17.234	-23.406	0.000	0.000	0.000	-672.092	-19.262	0.000	19.262	-2.111
89.00	-15.647	-21.149	0.000	0.000	0.000	-603.158	-21.067	0.000	21.067	-2.194
90.00	-15.594	-20.890	0.000	0.000	0.000	-587.512	-21.529	0.000	21.529	-2.215
94.92	-15.241	-19.702	0.000	0.000	0.000	-510.843	-23.861	0.000	23.861	-2.311
95.00	-15.245	-19.664	0.000	0.000	0.000	-509.573	-23.901	0.000	23.901	-2.312
98.00	-13.170	-16.621	0.000	0.000	0.000	-463.840	-25.372	0.000	25.372	-2.369
99.83	-13.029	-15.985	0.000	0.000	0.000	-439.695	-26.289	0.000	26.289	-2.403
100.0	-13.031	-15.940	0.000	0.000	0.000	-437.524	-26.373	0.000	26.373	-2.406
105.0	-12.887	-14.937	0.000	0.000	0.000	-372.370	-28.945	0.000	28.945	-2.503
110.0	-12.340	-13.961	0.000	0.000	0.000	-308.934	-31.614	0.000	31.614	-2.592
113.0	-11.723	-13.260	0.000	0.000	0.000	-271.915	-33.259	0.000	33.259	-2.642
115.0	-11.592	-12.886	0.000	0.000	0.000	-248.470	-34.373	0.000	34.373	-2.674
120.0	-11.248	-11.983	0.000	0.000	0.000	-190.511	-37.211	0.000	37.211	-2.743
123.0	-9.087	-10.043	0.000	0.000	0.000	-156.767	-38.947	0.000	38.947	-2.780
125.0	-8.972	-9.738	0.000	0.000	0.000	-138.593	-40.116	0.000	40.116	-2.802
130.0	-8.678	-9.001	0.000	0.000	0.000	-93.736	-43.076	0.000	43.076	-2.847
135.0	-4.319	-4.667	0.000	0.000	0.000	-49.709	-46.075	0.000	46.075	-2.878
140.0	-4.040	-4.067	0.000	0.000	0.000	-28.112	-49.098	0.000	49.098	-2.897
145.0	-3.767	-3.490	0.000	0.000	0.000	-7.914	-52.137	0.000	52.137	-2.906
147.0	-0.180	-0.159	0.000	0.000	0.000	-0.381	-53.355	0.000	53.355	-2.907
147.9	-0.001	-0.002	0.000	0.000	0.000	0.000	-53.902	0.000	53.902	-2.907
147.9	-0.001	0.000	0.000	0.000	0.000	0.000	-53.913	0.000	53.913	-2.907

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (ln/ft)

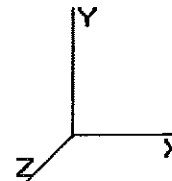
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Base Elev : 0.000 (ft)

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Load Case: Ice 69.28 mph Wind with Ice 23 Iteratlons

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses							Allowable Stress (Fb) (ksi)	Stress Ratio	
	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)			
0.00	0.75	0.69	0.00	0.00	0.00	31.10	31.88	52.0	0.0	0.614
5.00	0.75	0.70	0.00	0.00	0.00	30.79	31.56	52.0	0.0	0.607
10.00	0.74	0.70	0.00	0.00	0.00	30.45	31.21	52.0	0.0	0.600
15.00	0.72	0.71	0.00	0.00	0.00	30.07	30.82	52.0	0.0	0.593
20.00	0.71	0.71	0.00	0.00	0.00	29.66	30.40	52.0	0.0	0.585
25.00	0.70	0.71	0.00	0.00	0.00	29.22	29.94	52.0	0.0	0.576
30.00	0.69	0.72	0.00	0.00	0.00	28.73	29.44	52.0	0.0	0.566
35.00	0.68	0.73	0.00	0.00	0.00	28.19	28.89	52.0	0.0	0.556
40.00	0.66	0.73	0.00	0.00	0.00	27.60	28.29	52.0	0.0	0.544
45.00	0.65	0.74	0.00	0.00	0.00	26.95	27.63	52.0	0.0	0.532
46.83	0.65	0.74	0.00	0.00	0.00	26.70	27.38	52.0	0.0	0.527
50.00	0.63	0.74	0.00	0.00	0.00	26.25	26.91	52.0	0.0	0.518
53.00	0.60	0.73	0.00	0.00	0.00	24.96	25.59	52.0	0.0	0.492
55.00	0.59	0.73	0.00	0.00	0.00	24.65	25.27	52.0	0.0	0.486
60.00	0.58	0.74	0.00	0.00	0.00	23.81	24.42	52.0	0.0	0.470
65.00	0.57	0.74	0.00	0.00	0.00	22.90	23.50	52.0	0.0	0.452
70.00	0.55	0.74	0.00	0.00	0.00	21.90	22.49	52.0	0.0	0.433
75.00	0.54	0.75	0.00	0.00	0.00	20.82	21.39	52.0	0.0	0.412
76.00	0.53	0.75	0.00	0.00	0.00	20.59	21.16	52.0	0.0	0.407
80.00	0.52	0.75	0.00	0.00	0.00	19.64	20.20	52.0	0.0	0.389
85.00	0.51	0.75	0.00	0.00	0.00	18.34	18.90	52.0	0.0	0.364
89.00	0.47	0.70	0.00	0.00	0.00	17.22	17.73	52.0	0.0	0.341
90.00	0.47	0.70	0.00	0.00	0.00	16.97	17.47	52.0	0.0	0.336
94.92	0.45	0.71	0.00	0.00	0.00	15.62	16.12	52.0	0.0	0.310
95.00	0.45	0.71	0.00	0.00	0.00	15.60	16.09	52.0	0.0	0.310
98.00	0.39	0.62	0.00	0.00	0.00	14.71	15.14	52.0	0.0	0.291
99.83	0.44	0.73	0.00	0.00	0.00	16.43	16.93	52.0	0.0	0.326
100.00	0.44	0.73	0.00	0.00	0.00	16.39	16.88	52.0	0.0	0.325
105.00	0.43	0.73	0.00	0.00	0.00	14.82	15.30	52.0	0.0	0.294
110.00	0.41	0.74	0.00	0.00	0.00	13.08	13.56	52.0	0.0	0.261
113.00	0.40	0.71	0.00	0.00	0.00	11.96	12.43	52.0	0.0	0.239
115.00	0.39	0.71	0.00	0.00	0.00	11.22	11.68	52.0	0.0	0.225
120.00	0.38	0.72	0.00	0.00	0.00	9.19	9.65	52.0	0.0	0.186
123.00	0.32	0.59	0.00	0.00	0.00	7.88	8.27	52.0	0.0	0.159
125.00	0.32	0.59	0.00	0.00	0.00	7.17	7.55	52.0	0.0	0.145
130.00	0.31	0.59	0.00	0.00	0.00	5.20	5.60	52.0	0.0	0.108
135.00	0.16	0.31	0.00	0.00	0.00	2.97	3.18	52.0	0.0	0.061
140.00	0.15	0.30	0.00	0.00	0.00	1.81	2.03	52.0	0.0	0.039
145.00	0.13	0.29	0.00	0.00	0.00	0.55	0.85	52.0	0.0	0.016
147.00	0.01	0.01	0.00	0.00	0.00	0.03	0.04	52.0	0.0	0.001
147.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.0	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.0	0.000

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

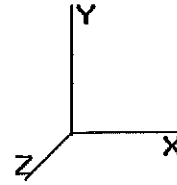
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Base Elev: 0.000 (ft)

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Load Case: Twist/Sway

50.00 mph Wind with No Ice

22 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Shaft Segment Forces

Seg Top Elev (ft)	Description	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)	
0.00		0.00	1.00	6.400	10.81	235.74	0.650	0.000	0.00	0.000	0.00	0.0	0.0	
5.00		0.00	1.00	6.400	10.81	231.27	0.650	0.000	5.00	23.351	15.18	164.2	0.0	1,127.3
10.00		0.00	1.00	6.400	10.81	226.80	0.650	0.000	5.00	22.904	14.89	161.0	0.0	1,105.6
15.00		0.00	1.00	6.400	10.81	222.33	0.650	0.000	5.00	22.457	14.60	157.9	0.0	1,083.8
20.00	Appertunance(s)	0.00	1.00	6.400	10.81	217.86	0.650	0.000	5.00	22.010	14.31	154.7	0.0	1,062.1
25.00		0.00	1.00	6.400	10.81	213.39	0.650	0.000	5.00	21.563	14.02	151.6	0.0	1,040.4
30.00		0.00	1.00	6.400	10.81	208.92	0.650	0.000	5.00	21.116	13.73	148.5	0.0	1,018.7
35.00		0.00	1.01	6.509	10.99	206.18	0.650	0.000	5.00	20.669	13.44	147.8	0.0	996.9
40.00		0.00	1.05	6.762	11.42	205.56	0.650	0.000	5.00	20.222	13.14	150.2	0.0	975.2
45.00		0.00	1.09	6.993	11.81	204.37	0.650	0.000	5.00	19.775	12.85	151.9	0.0	953.5
46.83	Bot - Section 2	0.00	1.10	7.073	11.95	203.82	0.650	0.000	1.83	7.139	4.64	55.5	0.0	344.2
50.00		0.00	1.12	7.207	12.17	202.73	0.650	0.000	3.17	12.387	8.05	98.1	0.0	1,184.8
53.00	Top - Section 1	0.00	1.14	7.328	12.38	201.55	0.650	0.000	3.00	11.570	7.52	93.1	0.0	1,106.4
55.00		0.00	1.15	7.406	12.51	204.06	0.650	0.000	2.00	7.624	4.96	62.0	0.0	367.5
60.00		0.00	1.18	7.592	12.83	201.74	0.650	0.000	5.00	18.747	12.19	156.3	0.0	903.5
65.00		0.00	1.21	7.768	13.12	199.14	0.650	0.000	5.00	18.300	11.89	156.1	0.0	881.8
70.00		0.00	1.24	7.934	13.40	196.28	0.650	0.000	5.00	17.853	11.60	155.6	0.0	860.0
75.00		0.00	1.26	8.092	13.67	193.20	0.650	0.000	5.00	17.406	11.31	154.7	0.0	838.3
76.00	Appertunance(s)	0.00	1.26	8.123	13.72	192.56	0.650	0.000	1.00	3.427	2.23	30.6	0.0	165.1
80.00		0.00	1.28	8.242	13.93	189.91	0.650	0.000	4.00	13.531	8.80	122.5	0.0	651.5
85.00		0.00	1.31	8.387	14.17	186.45	0.650	0.000	5.00	16.512	10.73	152.1	0.0	794.9
89.00	Appertunance(s)	0.00	1.32	8.497	14.36	183.56	0.650	0.000	4.00	12.887	8.38	120.3	0.0	620.3
90.00		0.00	1.33	8.525	14.40	182.82	0.650	0.000	1.00	3.177	2.07	29.8	0.0	152.9
94.92	Bot - Section 3	0.00	1.35	8.655	14.62	179.10	0.650	0.000	4.92	15.361	9.98	146.0	0.0	739.1
95.00		0.00	1.35	8.657	14.63	179.04	0.650	0.000	0.08	0.261	0.17	2.5	0.0	22.8
98.00	Appertunance(s)	0.00	1.36	8.735	14.76	176.70	0.650	0.000	3.00	9.312	6.05	89.3	0.0	814.4
99.83	Top - Section 2	0.00	1.37	8.781	14.84	175.25	0.650	0.000	1.83	5.612	3.65	54.1	0.0	490.6
100.00		0.00	1.37	8.785	14.84	178.17	0.650	0.000	0.17	0.507	0.33	4.9	0.0	20.4
105.00		0.00	1.39	8.908	15.05	174.14	0.650	0.000	5.00	14.984	9.74	146.6	0.0	601.6
110.00		0.00	1.41	9.028	15.25	169.99	0.650	0.000	5.00	14.537	9.45	144.2	0.0	583.5
113.00	Appertunance(s)	0.00	1.42	9.097	15.37	167.46	0.650	0.000	3.00	8.508	5.53	85.0	0.0	341.4
115.00		0.00	1.42	9.143	15.45	165.73	0.650	0.000	2.00	5.582	3.63	56.1	0.0	224.0
120.00		0.00	1.44	9.255	15.64	161.37	0.650	0.000	5.00	13.643	8.87	138.7	0.0	547.3
123.00	Appertunance(s)	0.00	1.45	9.320	15.75	158.70	0.650	0.000	3.00	7.971	5.18	81.6	0.0	319.7
125.00		0.00	1.46	9.363	15.82	156.90	0.650	0.000	2.00	5.225	3.40	53.7	0.0	209.5
130.00		0.00	1.48	9.469	16.00	152.35	0.650	0.000	5.00	12.749	8.29	132.6	0.0	511.1
135.00	Appertunance(s)	0.00	1.49	9.572	16.17	147.71	0.650	0.000	5.00	12.302	8.00	129.3	0.0	493.0
140.00		0.00	1.51	9.672	16.34	142.98	0.650	0.000	5.00	11.855	7.71	125.9	0.0	474.8
145.00		0.00	1.52	9.769	16.51	138.18	0.650	0.000	5.00	11.408	7.42	122.4	0.0	456.7
147.00	Appertunance(s)	0.00	1.53	9.807	16.57	136.23	0.650	0.000	2.00	4.438	2.88	47.8	0.0	177.6
147.90	Appertunance(s)	0.00	1.53	9.824	16.60	135.35	0.650	0.000	0.90	1.974	1.28	21.3	0.0	79.0
147.90		0.00	1.53	9.825	16.60	135.34	0.650	0.000	0.02	0.037	0.02	0.4	0.0	1.5
Totals:								147.92			4,357.2	0.0	25,342.4	

Pole : 302468
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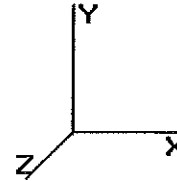
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Base Elev : 0.000 (ft)

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Load Case: Twist/Sway

50.00 mph Wind with No Ice

22 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
20.00	Lucent KS-24019	1	6.400	10.816	1.00	1.00	0.000	0.000	10.82	0.00	0.00	7.00
76.00	Side Markers	2	8.123	13.727	1.00	1.60	0.000	0.000	21.96	0.00	0.00	40.00
89.00	Argus LLPX310R	3	8.497	14.361	0.72	10.43	0.000	0.000	149.82	0.00	0.00	85.80
89.00	DragonWave A-ANT-	1	8.497	14.361	0.90	7.80	0.000	0.000	112.06	0.00	0.00	66.10
89.00	DragonWave A-ANT-	2	8.497	14.361	0.90	8.44	0.000	0.000	121.23	0.00	0.00	54.20
89.00	DragonWave Horizon	3	8.497	14.361	0.50	0.64	0.000	0.000	9.26	0.00	0.00	31.80
89.00	NextNet BTS-2500	3	8.497	14.361	0.50	3.18	0.000	0.000	45.67	0.00	0.00	105.00
89.00	Side Arms	1	8.497	14.361	1.00	8.50	0.000	0.000	122.07	0.00	0.00	560.00
98.00	Decibel DB844H90E-A	9	8.735	14.761	0.86	30.73	0.000	0.000	453.59	0.00	0.00	90.00
98.00	Round Low Profile PI	1	8.735	14.761	1.00	21.70	0.000	0.000	320.32	0.00	0.00	1,500.00
113.0	RFS APXV18-206517	3	9.097	15.374	0.80	12.12	0.000	0.000	186.34	0.00	0.00	66.00
123.0	RFS APX16DWV-	3	9.320	15.751	0.65	13.06	0.000	0.000	205.79	0.00	0.00	118.80
123.0	RFS APXV18-206516L-	6	9.320	15.751	0.78	16.71	0.000	0.000	263.17	0.00	0.00	112.20
123.0	RFS ATMAA1412D-	3	9.320	15.751	0.50	1.75	0.000	0.000	27.64	0.00	0.00	39.00
123.0	RFS ATMPP1412D-	3	9.320	15.751	0.50	1.75	0.000	0.000	27.64	0.00	0.00	36.00
123.0	Round T-Arms	3	9.320	15.751	0.67	19.50	0.000	0.000	307.10	0.00	0.00	750.00
135.0	Andrew SBNH-	1	9.572	16.176	1.00	11.44	0.000	0.000	185.05	0.00	0.00	66.10
135.0	Ericsson RRUS 11	6	9.592	16.210	0.67	11.82	0.000	1.000	191.58	0.00	191.58	330.00
135.0	Flat Platform w/ Han	1	9.572	16.176	1.00	42.40	0.000	0.000	685.86	0.00	0.00	2,000.00
135.0	KMW AM-X-CD-16-65-	2	9.572	16.176	0.79	12.67	0.000	0.000	204.98	0.00	0.00	97.00
135.0	Powerwave 7750.00	6	9.572	16.176	0.75	26.46	0.000	0.000	428.02	0.00	0.00	210.00
135.0	Powerwave LGP21401	6	9.592	16.210	0.50	3.87	0.000	1.000	62.73	0.00	62.73	84.60
135.0	Powerwave LGP21903	6	9.592	16.210	0.50	0.81	0.000	1.000	13.13	0.00	13.13	33.00
135.0	Raycap DC6-48-60-18-	1	9.592	16.210	1.00	1.26	0.000	1.000	20.42	0.00	20.42	20.00
147.0	48" x 12" Panels	9	9.807	16.574	0.67	33.77	0.000	0.000	559.69	0.00	0.00	270.00
147.0	72" x 12" Panels	3	9.807	16.574	0.67	16.88	0.000	0.000	279.84	0.00	0.00	120.00
147.0	Flat Platform w/ Han	1	9.807	16.574	1.00	42.40	0.000	0.000	702.75	0.00	0.00	2,000.00
147.9	Flash Technology FTB	1	9.857	16.658	1.00	3.70	0.000	1.710	61.63	0.00	105.40	28.00
									5,780.19			8,920.60

Pole : 302468
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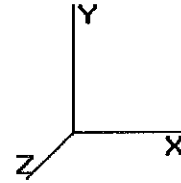
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Base Elev : 0.000 (ft)

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Load Case: Twist/Sway 60.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Linear Appurtenance Segment Forces

Seg Top Elev (ft)	Description	Exposed To Wind	Length (ft)	Weight (lb/ft)	CaAa (sf/ft)	qz (psf)	FX (lb)	Dead Load (lb)
10.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.400	10.82	24.60
10.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.400	0.00	1.50
10.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.400	18.93	37.90
10.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.400	0.00	1.20
10.00	(1) 1/2" Coax	Yes	5.00	0.15	0.06	6.400	3.41	0.75
15.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.400	10.82	24.60
15.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.400	0.00	1.50
15.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.400	18.93	37.90
15.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.400	0.00	1.20
15.00	(1) 1/2" Coax	Yes	5.00	0.15	0.06	6.400	3.41	0.75
20.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.400	10.82	24.60
20.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.400	0.00	1.50
20.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.400	18.93	37.90
20.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.400	0.00	1.20
20.00	(1) 1/2" Coax	Yes	5.00	0.15	0.06	6.400	3.41	0.75
25.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.400	10.82	24.60
25.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.400	0.00	1.50
25.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.400	18.93	37.90
25.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.400	0.00	1.20
30.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.400	10.82	24.60
30.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.400	0.00	1.50
30.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.400	18.93	37.90
30.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.400	0.00	1.20
35.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.509	11.00	24.60
35.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.509	0.00	1.50
35.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.509	19.25	37.90
35.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.509	0.00	1.20
40.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.762	11.43	24.60
40.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.762	0.00	1.50
40.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.762	20.00	37.90
40.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.762	0.00	1.20
45.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	6.993	11.82	24.60
45.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	6.993	0.00	1.50
45.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	6.993	20.68	37.90
45.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	6.993	0.00	1.20
46.83	(6) 1 5/8" Coax	Yes	1.83	4.92	0.20	7.073	4.38	9.02
46.83	(3) 1/2" Coax	Yes	1.83	0.30	0.00	7.073	0.00	0.55
46.83	(1) 3" Conduit	Yes	1.83	7.58	0.35	7.073	7.67	13.90
46.83	(6) 5/16" Coax	Yes	1.83	0.24	0.00	7.073	0.00	0.44
50.00	(6) 1 5/8" Coax	Yes	3.17	4.92	0.20	7.207	7.71	15.58
50.00	(3) 1/2" Coax	Yes	3.17	0.30	0.00	7.207	0.00	0.95
50.00	(1) 3" Conduit	Yes	3.17	7.58	0.35	7.207	13.50	24.00
50.00	(6) 5/16" Coax	Yes	3.17	0.24	0.00	7.207	0.00	0.76
53.00	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	7.328	7.43	14.76
53.00	(3) 1/2" Coax	Yes	3.00	0.30	0.00	7.328	0.00	0.90
53.00	(1) 3" Conduit	Yes	3.00	7.58	0.35	7.328	13.00	22.74
53.00	(6) 5/16" Coax	Yes	3.00	0.24	0.00	7.328	0.00	0.72
55.00	(6) 1 5/8" Coax	Yes	2.00	4.92	0.20	7.406	5.01	9.84
55.00	(3) 1/2" Coax	Yes	2.00	0.30	0.00	7.406	0.00	0.60
55.00	(1) 3" Conduit	Yes	2.00	7.58	0.35	7.406	8.76	15.16
55.00	(6) 5/16" Coax	Yes	2.00	0.24	0.00	7.406	0.00	0.48

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

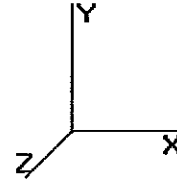
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Base Elev : 0.000 (ft)

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Load Case: Twist/Sway	50.00 mph Wind with No Ice	22 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

60.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	7.592	12.83	24.60
60.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	7.592	0.00	1.50
60.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	7.592	22.45	37.90
60.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	7.592	0.00	1.20
65.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	7.768	13.13	24.60
65.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	7.768	0.00	1.50
65.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	7.768	22.97	37.90
65.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	7.768	0.00	1.20
70.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	7.934	13.41	24.60
70.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	7.934	0.00	1.50
70.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	7.934	23.46	37.90
70.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	7.934	0.00	1.20
75.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	8.092	13.68	24.60
75.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	8.092	0.00	1.50
75.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	8.092	23.93	37.90
75.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	8.092	0.00	1.20
76.00	(6) 1 5/8" Coax	Yes	1.00	4.92	0.20	8.123	2.75	4.92
76.00	(3) 1/2" Coax	Yes	1.00	0.30	0.00	8.123	0.00	0.30
76.00	(1) 3" Conduit	Yes	1.00	7.58	0.35	8.123	4.80	7.58
76.00	(6) 5/16" Coax	Yes	1.00	0.24	0.00	8.123	0.00	0.24
80.00	(6) 1 5/8" Coax	Yes	4.00	4.92	0.20	8.242	11.14	19.68
80.00	(3) 1/2" Coax	Yes	4.00	0.30	0.00	8.242	0.00	1.20
80.00	(1) 3" Conduit	Yes	4.00	7.58	0.35	8.242	19.50	30.32
80.00	(6) 5/16" Coax	Yes	4.00	0.24	0.00	8.242	0.00	0.96
85.00	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	8.387	14.17	24.60
85.00	(3) 1/2" Coax	Yes	5.00	0.30	0.00	8.387	0.00	1.50
85.00	(1) 3" Conduit	Yes	5.00	7.58	0.35	8.387	24.80	37.90
85.00	(6) 5/16" Coax	Yes	5.00	0.24	0.00	8.387	0.00	1.20
89.00	(6) 1 5/8" Coax	Yes	4.00	4.92	0.20	8.497	11.49	19.68
89.00	(3) 1/2" Coax	Yes	4.00	0.30	0.00	8.497	0.00	1.20
89.00	(1) 3" Conduit	Yes	4.00	7.58	0.35	8.497	20.10	30.32
89.00	(6) 5/16" Coax	Yes	4.00	0.24	0.00	8.497	0.00	0.96
90.00	(6) 1 5/8" Coax	Yes	1.00	4.92	0.20	8.525	2.88	4.92
94.92	(6) 1 5/8" Coax	Yes	4.92	4.92	0.20	8.655	14.38	24.19
95.00	(6) 1 5/8" Coax	Yes	0.08	4.92	0.20	8.657	0.24	0.41
98.00	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	8.735	8.86	14.76
99.83	(6) 1 5/8" Coax	Yes	1.83	4.92	0.20	8.781	5.44	9.02
100.0	(6) 1 5/8" Coax	Yes	0.17	4.92	0.20	8.785	0.49	0.82
105.0	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	8.908	15.06	24.60
110.0	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	9.028	15.26	24.60
113.0	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	9.097	9.22	14.76
115.0	(6) 1 5/8" Coax	Yes	2.00	4.92	0.20	9.143	6.18	9.84
120.0	(6) 1 5/8" Coax	Yes	5.00	4.92	0.20	9.255	15.64	24.60
123.0	(6) 1 5/8" Coax	Yes	3.00	4.92	0.20	9.320	9.45	14.76
Totals:							678.32	1,264.89

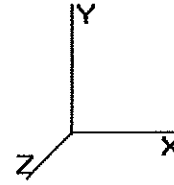
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

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Base Elev : 0.000 (ft)

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations
 Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Applied Segment Forces Summary

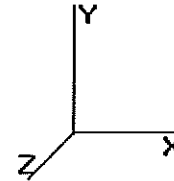
Seg Elev (ft)	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torston MY (lb-ft)	Moment MZ (lb-ft)
0.00	0.00	0.00	0.00	0.00
5.00	164.17	1,127.29	0.00	0.00
10.00	194.18	1,466.21	0.00	0.00
15.00	191.04	1,444.49	0.00	0.00
20.00	198.71	1,429.76	0.00	0.00
25.00	181.34	1,400.29	0.00	0.00
30.00	178.20	1,378.56	0.00	0.00
35.00	178.03	1,356.84	0.00	0.00
40.00	181.63	1,335.11	0.00	0.00
45.00	184.41	1,313.39	0.00	0.00
46.83	67.52	476.13	0.00	0.00
50.00	119.28	1,412.74	0.00	0.00
53.00	113.57	1,322.31	0.00	0.00
55.00	75.79	511.44	0.00	0.00
60.00	191.63	1,263.40	0.00	0.00
65.00	192.25	1,241.67	0.00	0.00
70.00	192.47	1,219.95	0.00	0.00
75.00	192.33	1,198.22	0.00	0.00
76.00	60.10	277.04	0.00	0.00
80.00	153.16	939.46	0.00	0.00
85.00	191.09	1,154.77	0.00	0.00
89.00	712.00	1,811.08	0.00	0.00
90.00	32.63	216.75	0.00	0.00
94.92	160.43	1,053.06	0.00	0.00
95.00	2.73	28.15	0.00	0.00
98.00	872.11	2,595.99	0.00	0.00
99.83	59.57	586.92	0.00	0.00
100.0	5.39	29.12	0.00	0.00
105.0	161.69	864.18	0.00	0.00
110.0	159.42	846.07	0.00	0.00
113.0	280.58	564.95	0.00	0.00
115.0	62.25	319.18	0.00	0.00
120.0	154.34	785.27	0.00	0.00
123.0	922.42	1,518.47	0.00	0.00
125.0	53.74	265.33	0.00	0.00
130.0	132.61	650.66	0.00	0.00
135.0	1,921.13	3,473.25	0.00	287.87
140.0	125.95	524.05	0.00	0.00
145.0	122.42	505.95	0.00	0.00
147.0	1,590.10	2,587.31	0.00	0.00
147.9	82.94	106.99	0.00	105.40
147.9	0.40	1.49	0.00	0.00
Totals:	10,815.70	42,603.25	0.00	393.27

Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-10.837	-42.588	0.000	0.000	0.000	-1,123.195	0.000	0.000	0.000	0.000
5.00	-10.714	-41.459	0.000	0.000	0.000	-1,069.012	-0.031	0.000	0.031	-0.058
10.00	-10.559	-39.983	0.000	0.000	0.000	-1,015.441	-0.124	0.000	0.124	-0.117
15.00	-10.404	-38.528	0.000	0.000	0.000	-962.646	-0.279	0.000	0.279	-0.176
20.00	-10.239	-37.088	0.000	0.000	0.000	-910.625	-0.496	0.000	0.496	-0.236
25.00	-10.089	-35.678	0.000	0.000	0.000	-859.430	-0.776	0.000	0.776	-0.296
30.00	-9.939	-34.290	0.000	0.000	0.000	-808.988	-1.118	0.000	1.118	-0.356
35.00	-9.786	-32.924	0.000	0.000	0.000	-759.295	-1.523	0.000	1.523	-0.416
40.00	-9.627	-31.581	0.000	0.000	0.000	-710.366	-1.991	0.000	1.991	-0.476
45.00	-9.453	-30.262	0.000	0.000	0.000	-662.231	-2.523	0.000	2.523	-0.536
46.83	-9.397	-29.782	0.000	0.000	0.000	-644.901	-2.733	0.000	2.733	-0.559
50.00	-9.282	-28.364	0.000	0.000	0.000	-615.146	-3.117	0.000	3.117	-0.597
53.00	-9.168	-27.038	0.000	0.000	0.000	-587.301	-3.504	0.000	3.504	-0.634
55.00	-9.105	-26.521	0.000	0.000	0.000	-568.966	-3.775	0.000	3.775	-0.658
60.00	-8.923	-25.252	0.000	0.000	0.000	-523.440	-4.494	0.000	4.494	-0.714
65.00	-8.738	-24.004	0.000	0.000	0.000	-478.825	-5.272	0.000	5.272	-0.769
70.00	-8.550	-22.779	0.000	0.000	0.000	-435.137	-6.107	0.000	6.107	-0.824
75.00	-8.352	-21.579	0.000	0.000	0.000	-392.389	-6.999	0.000	6.999	-0.877
76.00	-8.297	-21.299	0.000	0.000	0.000	-384.038	-7.184	0.000	7.184	-0.887
80.00	-8.145	-20.356	0.000	0.000	0.000	-350.850	-7.945	0.000	7.945	-0.929
85.00	-7.950	-19.199	0.000	0.000	0.000	-310.125	-8.945	0.000	8.945	-0.979
89.00	-7.213	-17.397	0.000	0.000	0.000	-278.327	-9.782	0.000	9.782	-1.017
90.00	-7.185	-17.178	0.000	0.000	0.000	-271.114	-9.996	0.000	9.996	-1.026
94.92	-7.012	-16.125	0.000	0.000	0.000	-235.788	-11.077	0.000	11.077	-1.071
95.00	-7.012	-16.095	0.000	0.000	0.000	-235.203	-11.096	0.000	11.096	-1.071
98.00	-6.096	-13.514	0.000	0.000	0.000	-214.167	-11.777	0.000	11.777	-1.097
99.83	-6.027	-12.927	0.000	0.000	0.000	-202.991	-12.202	0.000	12.202	-1.113
100.00	-6.027	-12.896	0.000	0.000	0.000	-201.987	-12.241	0.000	12.241	-1.115
105.00	-5.857	-12.031	0.000	0.000	0.000	-171.855	-13.433	0.000	13.433	-1.159
110.00	-5.686	-11.185	0.000	0.000	0.000	-142.571	-14.670	0.000	14.670	-1.201
113.00	-5.397	-10.624	0.000	0.000	0.000	-125.513	-15.432	0.000	15.432	-1.224
115.00	-5.332	-10.304	0.000	0.000	0.000	-114.719	-15.948	0.000	15.948	-1.238
120.00	-5.165	-9.521	0.000	0.000	0.000	-88.056	-17.262	0.000	17.262	-1.270
123.00	-4.211	-8.022	0.000	0.000	0.000	-72.562	-18.066	0.000	18.066	-1.287
125.00	-4.153	-7.757	0.000	0.000	0.000	-64.140	-18.608	0.000	18.608	-1.297
130.00	-4.008	-7.108	0.000	0.000	0.000	-43.373	-19.979	0.000	19.979	-1.318
135.00	-2.008	-3.680	0.000	0.000	0.000	-23.045	-21.368	0.000	21.368	-1.333
140.00	-1.870	-3.159	0.000	0.000	0.000	-13.006	-22.769	0.000	22.769	-1.341
145.00	-1.736	-2.656	0.000	0.000	0.000	-3.655	-24.176	0.000	24.176	-1.346
147.00	-0.086	-0.106	0.000	0.000	0.000	-0.183	-24.740	0.000	24.740	-1.346
147.90	0.000	-0.001	0.000	0.000	0.000	0.000	-24.994	0.000	24.994	-1.346
147.90	0.000	0.000	0.000	0.000	0.000	0.000	-24.999	0.000	24.999	-1.346

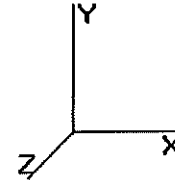
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 56.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev: 0.000 (ft)



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Load Case: Twist/Sway	50.00 mph Wind with No Ice	22 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

Calculated Stresses

Seg Elev (ft)	Applied Stresses							Combined (ksi)	Allowable Stress (Fb) (ksi)	Stress Ratio
	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)				
0.00	0.64	0.33	0.00	0.00	0.00	14.50	15.15	52.0	0.0	0.292
5.00	0.63	0.33	0.00	0.00	0.00	14.35	14.99	52.0	0.0	0.288
10.00	0.62	0.33	0.00	0.00	0.00	14.18	14.81	52.0	0.0	0.285
15.00	0.61	0.33	0.00	0.00	0.00	13.99	14.61	52.0	0.0	0.281
20.00	0.60	0.33	0.00	0.00	0.00	13.79	14.40	52.0	0.0	0.277
25.00	0.59	0.34	0.00	0.00	0.00	13.57	14.17	52.0	0.0	0.273
30.00	0.58	0.34	0.00	0.00	0.00	13.33	13.92	52.0	0.0	0.268
35.00	0.57	0.34	0.00	0.00	0.00	13.07	13.65	52.0	0.0	0.263
40.00	0.56	0.34	0.00	0.00	0.00	12.79	13.36	52.0	0.0	0.257
45.00	0.55	0.34	0.00	0.00	0.00	12.48	13.04	52.0	0.0	0.251
46.83	0.54	0.34	0.00	0.00	0.00	12.36	12.92	52.0	0.0	0.249
50.00	0.52	0.35	0.00	0.00	0.00	12.15	12.69	52.0	0.0	0.244
53.00	0.50	0.34	0.00	0.00	0.00	11.55	12.06	52.0	0.0	0.232
55.00	0.49	0.34	0.00	0.00	0.00	11.40	11.91	52.0	0.0	0.229
60.00	0.48	0.34	0.00	0.00	0.00	11.01	11.50	52.0	0.0	0.221
65.00	0.47	0.34	0.00	0.00	0.00	10.58	11.06	52.0	0.0	0.213
70.00	0.46	0.35	0.00	0.00	0.00	10.11	10.59	52.0	0.0	0.204
75.00	0.44	0.35	0.00	0.00	0.00	9.61	10.07	52.0	0.0	0.194
76.00	0.44	0.35	0.00	0.00	0.00	9.50	9.96	52.0	0.0	0.192
80.00	0.43	0.35	0.00	0.00	0.00	9.06	9.51	52.0	0.0	0.183
85.00	0.42	0.35	0.00	0.00	0.00	8.46	8.90	52.0	0.0	0.171
89.00	0.39	0.32	0.00	0.00	0.00	7.95	8.35	52.0	0.0	0.161
90.00	0.38	0.32	0.00	0.00	0.00	7.83	8.23	52.0	0.0	0.158
94.92	0.37	0.32	0.00	0.00	0.00	7.21	7.60	52.0	0.0	0.146
95.00	0.37	0.32	0.00	0.00	0.00	7.20	7.59	52.0	0.0	0.146
98.00	0.32	0.29	0.00	0.00	0.00	6.79	7.13	52.0	0.0	0.137
99.83	0.36	0.34	0.00	0.00	0.00	7.59	7.97	52.0	0.0	0.153
100.00	0.36	0.34	0.00	0.00	0.00	7.56	7.95	52.0	0.0	0.153
105.00	0.35	0.34	0.00	0.00	0.00	6.84	7.21	52.0	0.0	0.139
110.00	0.33	0.34	0.00	0.00	0.00	6.04	6.40	52.0	0.0	0.123
113.00	0.32	0.33	0.00	0.00	0.00	5.52	5.87	52.0	0.0	0.113
115.00	0.32	0.33	0.00	0.00	0.00	5.18	5.53	52.0	0.0	0.106
120.00	0.30	0.33	0.00	0.00	0.00	4.25	4.59	52.0	0.0	0.088
123.00	0.26	0.27	0.00	0.00	0.00	3.65	3.94	52.0	0.0	0.076
125.00	0.25	0.27	0.00	0.00	0.00	3.32	3.60	52.0	0.0	0.069
130.00	0.24	0.27	0.00	0.00	0.00	2.41	2.69	52.0	0.0	0.052
135.00	0.13	0.14	0.00	0.00	0.00	1.38	1.53	52.0	0.0	0.029
140.00	0.12	0.14	0.00	0.00	0.00	0.84	0.98	52.0	0.0	0.019
145.00	0.10	0.13	0.00	0.00	0.00	0.26	0.42	52.0	0.0	0.008
147.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	52.0	0.0	0.000
147.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.0	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.0	0.000

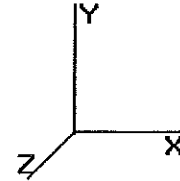
Pole : 302468
 Location : Petro Lock, CT
 Height : 147.9 (ft)
 Base Dia : 66.58 (in)
 Top Dia : 26.21 (in)
 Shape : 18 Sides
 Taper : 0.214568 (in/ft)

Code: TIA/EIA-222 Rev F

4/20/2012 10:53:26 AM

Page: 25

Base Elev : 0.000 (ft)



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Analysis Summary

Load Case	Reactions						Max Stresses			
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
No Ice	27.7	0.00	42.57	0.00	0.00	2874.15	37.77	52.0	0.00	0.727
Ice	22.9	0.00	50.47	0.00	0.00	2408.78	31.88	52.0	0.00	0.614
Twist/Sway	10.8	0.00	42.60	0.00	0.00	1123.20	15.15	52.0	0.00	0.292

Pole : 302468
Location : Petro Lock, CT
Height : 147.9 (ft)
Base Dia : 56.58 (in)
Top Dia : 26.21 (in)
Shape : 18 Sides
Taper : 0.214568 (In/ft)

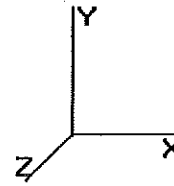
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Page: 26

Base Elev : 0.000 (ft)

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Base Summary

Reactions

Original Design			Analysis			Moment Design %
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	
2,489.00	36.10	23.90	2,874.15	50.47	27.74	115.47

Base Plate

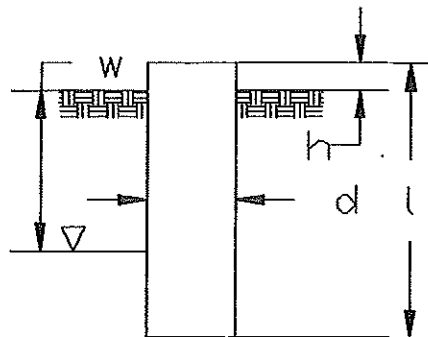
Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Moment (kip-in)	Allow Stress (ksi)	Applied Stress (ksi)	Stress Ratio
60.0	2.500	69.000	Round	0	0.00	11.224	449.48	60.00	38.45	0.64

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
63.00	16	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	140.02	195.00	0.72	133.71	195.00	0.69

Site Name: Petro Lock, CT
 Site Number: 302468
 Engineer: J. Johnston
 Engineering Number: 49243321
 Date: 04/20/12

Program Last 8/3/2011
 American Tower Corporation



Design Base Loads (Unfactored) - Analysis per TIA-222-F Standards

Analyze or Design a Foundation? Analyze
 Foundation Mapped: N
 Moment (M): 2874.2 k-ft
 Shear/Leg (V): 27.7 k
 Axial Load (P): 50.5 k
 Uplift/Leg (U): 0.0 k
 Tower Type (GT / SST / MP): MP

Diameter of Caisson (d): 7.0 ft
 Caisson Embedment (L-h): 34.0 ft
 Caisson Height Above Ground (h): 0.5 ft
 Depth Below Ground Surface to Water Table (w): 7.5 ft
 Unit Weight of Concrete: 150.0 pcf
 Unit Weight of Water: 62.4 pcf
 Tension Skin Friction/Compression Skin Friction: 1.00
 Pullout Angle: 30.0 degrees

Soil Mechanical Properties

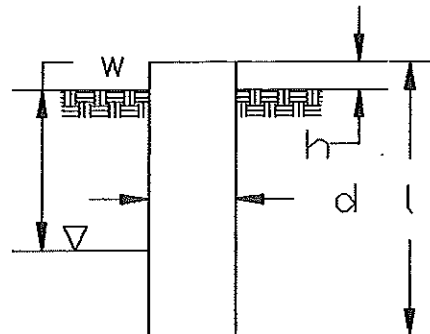
Depth (ft)		γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)	Allowable Skin Friction (psf)	Allowable Bearing Pressure (psf)
Top	Bottom					
0.0	2.0	110	0	0	0	0
2.0	7.0	110	0	25	0	0
7.0	10.0	110	0	20	0	0
10.0	14.0	110	0	20	0	0
14.0	17.0	110	0	20	0	0
17.0	26.0	110	0	25	0	0
26.0	30.0	110	0	20	0	0
30.0	35.0	110	0	20	0	20000

Required Embedment: 30.3 ft - OK, Caisson Embedment Satisfactory
 Volume of Concrete: 1327.7 ft³ = 49.2 yd³
 Weight of Concrete (Buoyancy Effect Considered): 135.5 k
 Average Soil Unit Weight: 61.4 pcf
 Skin Friction Resistance: 0.0 k
 Compressive Bearing Resistance: 769.7 k
 Pullout Weight (Minus Concrete Weight): 1292.2 k
 Allowable Uplift Capacity (U_{Allow}): 90.3 k
 Allowable Compressive Capacity (P_{Allow}): 769.7 k
 Compressive Design Load (P): 102.8 k
 U / U_{Allow} : 0.00 Result: OK
 P / P_{Allow} : 0.13 Result: OK
 Total Lateral Resistance: 1636.6 k
 Inflection Point (Below Ground Surface): 22.6 ft
 Design Overturning Moment At Inflection Point (M_D): 3515.7 k-ft
 Nominal Moment Capacity (M_{Allow}): 11169.3 k-ft
 M_{Allow} / M_D Factor of Safety: 3.18 Result: OK



Site Name: Petro Lock, CT
 Site Number: 302468
 Engineer: J. Johnston
 Engineering Number: 49243321
 Date: 04/20/12

Program Last 8/3/2011
 American Tower Corporation



Design Base Loads (Unfactored) - Analysis per TIA-222-F Standards

Analyze or Design a Foundation? Analyze
 Foundation Mapped: N
 Moment (M): 2874.2 k-ft
 Shear/Leg (V): 27.7 k
 Axial Load (P): 50.5 k
 Uplift/Leg (U): 0.0 k
 Tower Type (GT / SST / MP): MP

Diameter of Caisson (d): 7.0 ft
 Caisson Embedment (L-h): 34.0 ft
 Caisson Height Above Ground (h): 0.5 ft
 Depth Below Ground Surface to Water Table (w): 7.5 ft
 Unit Weight of Concrete: 150.0 pcf
 Unit Weight of Water: 62.4 pcf
 Tension Skin Friction/Compression Skin Friction: 1.00
 Pullout Angle: 30.0 degrees

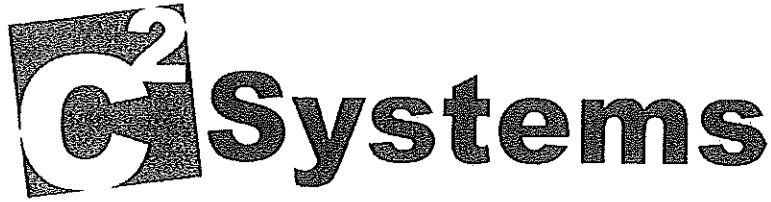
Soil Mechanical Properties

Depth (ft)		γ_{Soil}	Cohesion	ϕ	Allowable Skin	Allowable Bearing
Top	Bottom	(pcf)	(psf)	(degree)	Friction (psf)	Pressure (psf)
0.0	2.0	110	0	0	0	0
2.0	7.0	110	0	25	0	0
7.0	10.0	110	0	20	0	0
10.0	14.0	110	0	20	0	0
14.0	17.0	110	0	20	0	0
17.0	26.0	110	0	25	0	0
26.0	30.0	110	0	20	0	0
30.0	35.0	110	0	20	0	20000

Required Embedment: 30.3 ft - OK, Caisson Embedment Satisfactory
 Volume of Concrete: 1327.7 ft³ = 49.2 yd³
 Weight of Concrete (Buoyancy Effect Considered): 135.5 k
 Average Soil Unit Weight: 61.4 pcf
 Skin Friction Resistance: 0.0 k
 Compressive Bearing Resistance: 769.7 k
 Pullout Weight (Minus Concrete Weight): 1292.2 k
 Allowable Uplift Capacity (U_{Allow}): 90.3 k
 Allowable Compressive Capacity (P_{Allow}): 769.7 k
 Compressive Design Load (P): 102.8 k
 U / U_{Allow} : 0.00 Result: OK
 P / P_{Allow} : 0.13 Result: OK
 Total Lateral Resistance: 1636.6 k
 Inflection Point (Below Ground Surface): 22.6 ft
 Design Overturning Moment At Inflection Point (M_D): 3515.7 k-ft
 Nominal Moment Capacity (M_{Allow}): 11169.3 k-ft
 M_{Allow} / M_D Factor of Safety: 3.18 Result: OK

Calsson Strength Capacity

Concrete Compressive Strength (f'c):	3000 psi
Vertical Steel Rebar Size #:	11
Vertical Steel Rebar Area:	1.56 in ²
Design # of Vertical Steel Rebars:	21
Vertical Steel Rebar Yield Strength (Fy):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in ²
Design Horizontal Tie / Stirrup Spacing:	18.0 in
Horizontal Tie / Stirrup Steel Yield Strength (Fy):	40 ksi
Rebar Cage Diameter:	76.0 in
Strength Bending/Tension Reduction Factor (φb):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (φv):	0.75 ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor (φc):	0.65 ACI318-05 - 9.3.2.2
Wind Design Factor:	1.30 ACI318-05 - 9.2.1
Steel Elastic Modulus:	29000 ksi
Design Moment (Mu):	3761.9 k-ft
Nominal Moment Capacity (φbMn):	4963.4 k-ft - ACI318-05 - 10.2
Mu/φbMn:	0.76 Result: OK
Design Shear (Vu):	261.6 k
Nominal Shear Capacity (φvVn):	457.4 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
Vu/φvVn:	0.57 Result: OK
Design Tension (Tu):	0.0 k
Nominal Tension Capacity (φtTn):	1769.0 k - ACI318-05 - 10.2
Tu/φtTn:	0.00 Result: OK
Design Compression (Pu):	133.7 k
Nominal Compression Capacity (φpPn):	7304.9 k - ACI318-05 - 10.3.6.2
Pu/φpPn:	0.02 Result: OK
Mu/φbMn + Tu/φtTn:	0.76 Result: OK



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Calculated Radio Frequency Emissions



CT5127 (I-91 and 5 Split)

99 Meadow Street, Hartford, CT 06114

April 24, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole located at 99 Meadow Street in Hartford, CT. The coordinates of the tower are: 41° 44' 38.04" N, 72° 40' 5.88" W.

AT&T is proposing the following modifications:

- 1) Install three new panel antenna for LTE
- 2) Add 3 RRUs for LTE

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \frac{EIRP}{4\pi R^2} \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

$$R = \text{Radial Distance} = \sqrt{H^2 + V^2}$$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
Cingular UMTS	138	1935	1	500	0.0071	1.0000	0.71%
AT&T	138	1945	N/A	N/A	0.0150	1.0000	1.50%
T-Mobile GSM	123	1945	8	169	0.0321	1.0000	3.21%
T-Mobile UMTS	123	2100	2	740	0.0352	1.0000	3.52%
Pocket	113	2130	3	631	0.0533	1.0000	5.33%
Nextel	155	851	9	100	0.0135	0.5673	2.37%
Clearwire	89	2496	2	153	0.0139	1.0000	1.39%
Clearwire	89	11 GHz	1	211	0.0096	1.0000	0.96%
Sprint	98	1962.5	N/A	N/A	0.2511	1.0000	25.11%
AT&T UMTS	138	880	2	649	0.0025	0.5867	0.42%
AT&T UMTS	138	1900	2	1387	0.0052	1.0000	0.52%
AT&T LTE	138	734	1	1313	0.0025	0.4893	0.51%
AT&T GSM	138	880	1	324	0.0006	0.5867	0.10%
AT&T GSM	138	1900	4	832	0.0063	1.0000	0.63%
						Total	44.07%

Table 1: Carrier Information^{1,2}

¹ The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 1/10/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

² In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **44.07% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

April 24, 2012

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz, IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure³

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁴

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

³ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

⁴ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

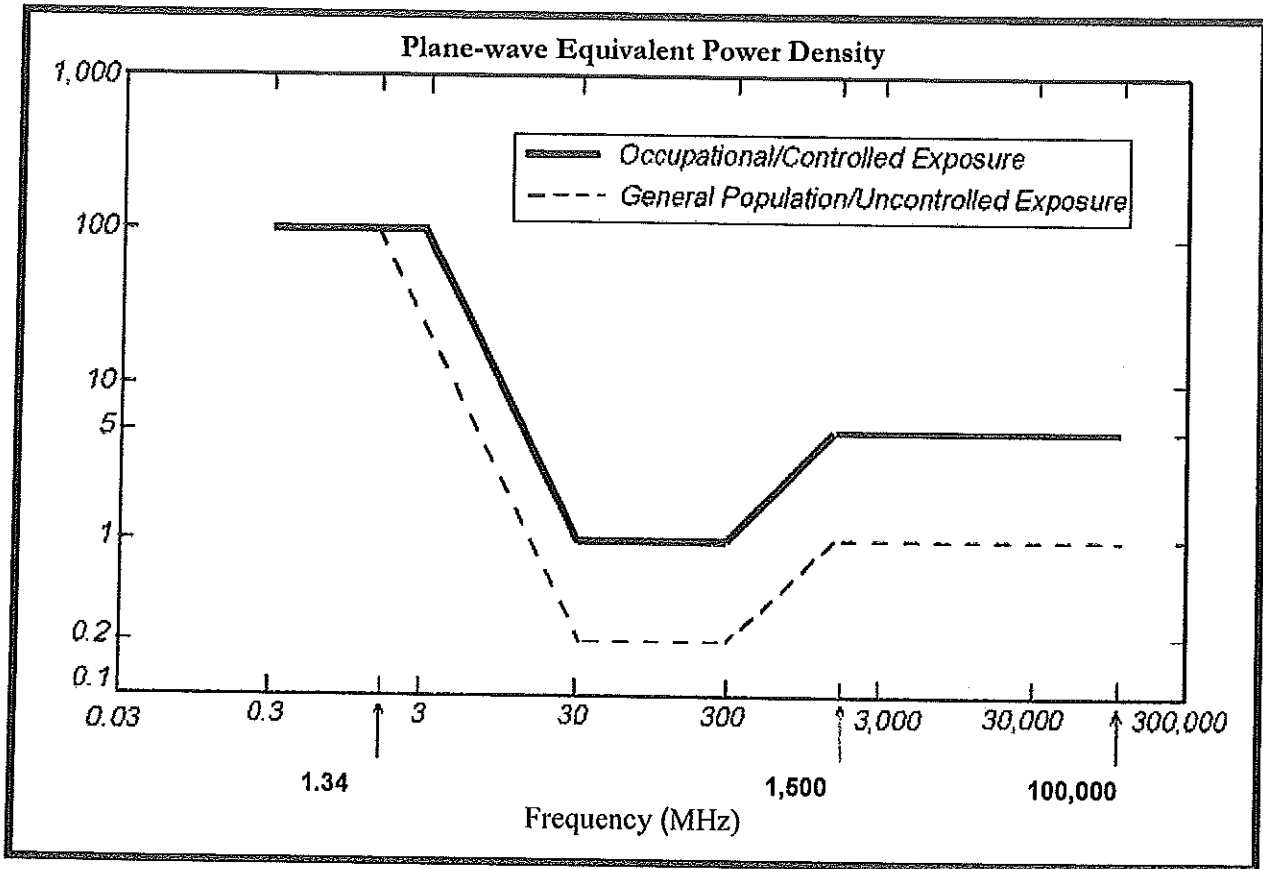
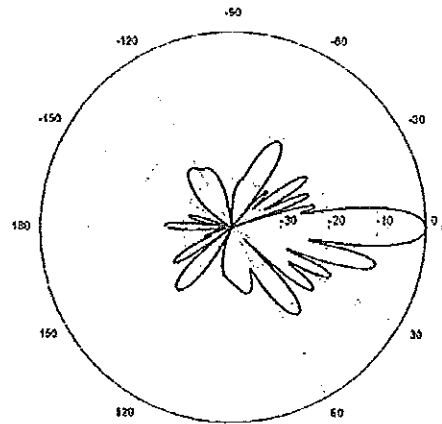
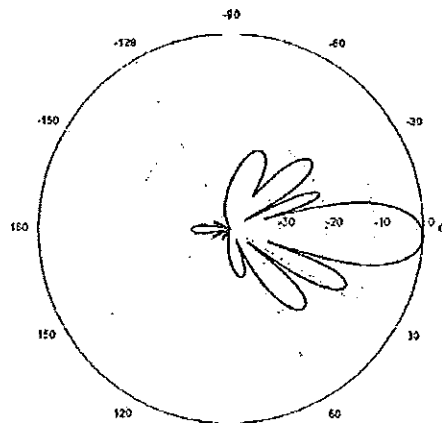
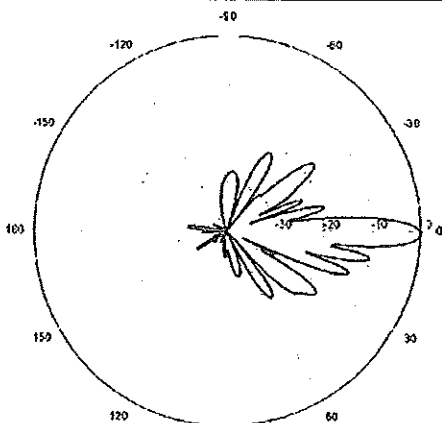


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

<p>700 MHz</p> <p>Manufacturer: Commscope Model #: SBNH-1D6565C Frequency Band: 698-806 MHz Gain: 13.6 dBd Vertical Beamwidth: 8.6° Horizontal Beamwidth: 71° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 96.42" x 11.85" x 7.1"</p>	
<p>850 MHz GSM</p> <p>Manufacturer: Powerwave Model #: 7750 Frequency Band: 824-960 MHz Gain: 12.1 dBd Vertical Beamwidth: 14.3° Horizontal Beamwidth: 69° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55"x11"x5"</p>	
<p>1900 MHz GSM</p> <p>Manufacturer: Powerwave Model #: 7750 Frequency Band: 1710-2170 MHz Gain: 15.4 dBd Vertical Beamwidth: 6.6° Horizontal Beamwidth: 63° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55"x11"x5"</p>	

Date: October 18, 2012

Eva Morales
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: Structural Analysis Report

Carrier Designation:

Sprint PCS Co-Locate – Interim Load

Carrier Site Number:

CT43XC805

Carrier Site Name:

CT43XC805

Crown Castle Designation:

Crown Castle BU Number:

806369

Crown Castle Site Name:

HRT 094 943225

Crown Castle JDE Job Number:

190485

Crown Castle Work Order Number:

541166

Crown Castle Application Number:

165644 Rev. 1

Engineering Firm Designation:

Crown Castle Project Number:

541166

Site Data:

439-455 HOMESTEAD AVE, HARTFORD, Hartford County, CT

Latitude 41° 47' 1.61", Longitude -72° 42' 13.66"

140 Foot - Monopole Tower

Dear Eva Morales,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 541166, in accordance with application 165644, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Jesse J. Fresch, EIT / AS

Respectfully submitted by:

Dmitriy V. Albul, P.E.
Engineer II

tnxTower Report - version 6.0.4.0



D. Albul 10/18/2012

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1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by VALMONT in August of 1999. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
102.0	104.0	1	powerwave technologies	P40-16-XLPP-RR-A w/ Mount Pipe	3	1-1/4	-
		2	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
100.0	100.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	-
		6	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Collar Mount [SO 102-3]			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
140.0	140.0	1	tower mounts	Platform Mount (LP 101-1)	12	7/8	1
		3	antel	BXA-70063/6CF w/ Mount Pipe			
	137.0	6	rfs celwave	FD9R6004/1C-3L	-	-	2
		3	antel	BXA-171063/8CFx2 w/ Mount Pipe			
		4	antel	LPA-80063/4CF w/ Mount Pipe			
		2	swedcom	SC-E 6014 rev2 w/ Mount Pipe			
126.0	128.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
	126.0	1	tower mounts	Platform Mount [LP 1001-1]	12	1-5/8	1
115.0	117.0	6	ericsson	RRUS-11	12	1-5/8	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note		
	116.0	1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	3/4			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe	1	3/8			
		6	powerwave technologies	7770.00 w/ Mount Pipe					
	12	powerwave technologies	LGP21401						
	1	raycap	DC6-48-60-18-8F						
	115.0	1	tower mounts	Platform Mount [LP 712-1]					
102.0	108.0	1	andrew	VHLP2-180	6	1-5/8	1		
		1	andrew	VHLP2.5-11					
		2	dragonwave	HORIZON COMPACT					
	104.0	3	argus technologies	LLPX310R-V1 w/ Mount Pipe				3	1/2
		6	decibel	950F40T4E-M w/ Mount Pipe				3	1/4
		3	samsung telecommunications	WIMAX DAP HEAD				3	5/16
102.0	1	tower mounts	Platform Mount [LP 602-1]						
94.0	94.0	3	kathrein	742 213 w/ Mount Pipe	6	1-5/8	1		
		1	tower mounts	Side Arm Mount [SO 102-3]					
74.0	80.0	1	antel	BCD-87010	1	7/8	1		
	74.0	1	tower mounts	Side Arm Mount [SO 701-1]					
40.0	41.0	1	lucent	KS24019-L112A	1	1/2	1		
	40.0	1	tower mounts	Side Arm Mount [SO 701-1]					

- Notes:
 1) Existing Equipment
 2) Reserved Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
137	137	12	swedcom	ALP 9212-N	-	-
124	124	6	rfs celwave	APN199015	-	-
114	114	9	allgon	7184.15	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tower Engineering Professionals	2294838	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Tower Engineering Professionals (Mapping)	2294380	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Tower Engineering Professionals (Mapping)	2294379	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Valmont Industries, Inc.	823121	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-17.03	1962.96	44.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-29.75	3294.14	65.0	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-47.52	4900.57	65.3	Pass
							Summary	
						Pole (L3)	65.3	Pass
						Rating =	65.3	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	69.9	Pass
1	Base Plate	0	32.6	Pass
1	Base Foundation	0	49.8	Pass

Structure Rating (max from all components) =	69.9%
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Notes:

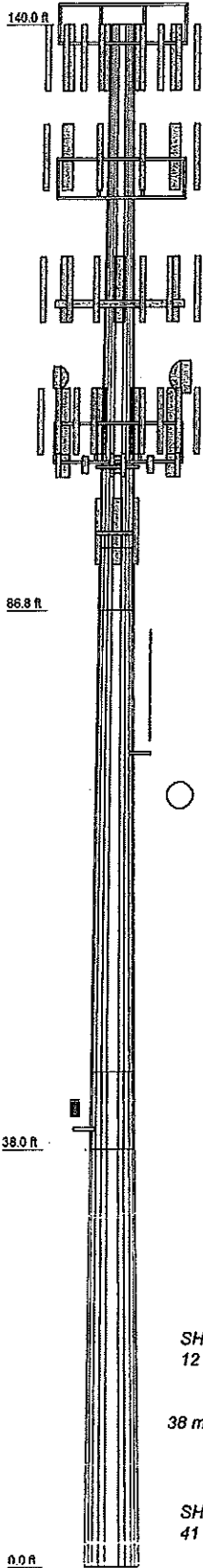
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	59'2-1/32"	54'8"	45'
Number of Slats	12	12	12
Thickness (in)	0.3125	0.4063	0.5000
Socket Length (ft)	5'8-1/32"	7'	48.0030
Top Dia (in)	26.2160	37.2117	59.0500
Bot Dia (in)	38.2230	50.9500	13.1
Grade	A572-85	10.5	29.5
Weight (K)	5.9	10.5	13.1



DESIGNED APPURTENANCE LOADING

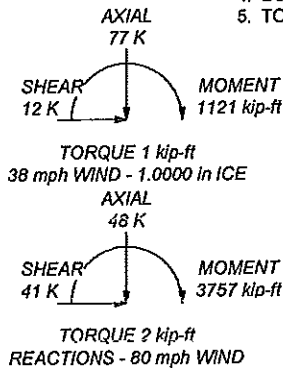
TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063/6CF w/ Mount Pipe	140	(2) RRUS-11	115
BXA-70063/6CF w/ Mount Pipe	140	(2) RRUS-11	115
BXA-70063/6CF w/ Mount Pipe	140	8'x2" Antenna Mount Pipe	115
(2) FD9R6004/1C-3L	140	8'x2" Antenna Mount Pipe	115
(2) FD9R6004/1C-3L	140	6'x2" Antenna Mount Pipe	115
(2) FD9R6004/1C-3L	140	Platform Mount (LP 712-1)	115
BXA-171063/8CF2 w/ Mount Pipe	140	APXVSP18-C-A20 w/ Mount Pipe	102
BXA-171063/8CF2 w/ Mount Pipe	140	IBC1900BB-1	102
BXA-171063/8CF2 w/ Mount Pipe	140	IBC1900HG-2A	102
(2) LPA-80063/4CF w/ Mount Pipe	140	P40-16-XLPP-RR-A w/ Mount Pipe	102
(2) LPA-80063/4CF w/ Mount Pipe	140	IBC1900BB-1	102
(2) SC-E 6014 rev2 w/ Mount Pipe	140	IBC1900HG-2A	102
Platform Mount (LP 101-1)	140	APXVSP18-C-A20 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	IBC1900BB-1	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	IBC1900HG-2A	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	(2) 950F40T4E-M w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	(2) 950F40T4E-M w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	(2) 950F40T4E-M w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	WIMAX DAP HEAD	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	WIMAX DAP HEAD	102
ATMAA1412D-1A20	126	WIMAX DAP HEAD	102
ATMAA1412D-1A20	126	HORIZON COMPACT	102
ATMAA1412D-1A20	126	HORIZON COMPACT	102
(2) 6' x 2" Mount Pipe	126	Platform Mount (LP 602-1)	102
(2) 6' x 2" Mount Pipe	126	VHLP2.5-11	102
(2) 6' x 2" Mount Pipe	126	VHLP2-180	102
(2) 6' x 2" Mount Pipe	126	800MHz 2X50W RRH W/FILTER	100
Platform Mount (LP 1001-1)	126	(2) PCS 1900MHz 4x45W-65MHz	100
(2) 7770.00 w/ Mount Pipe	115	800MHz 2X50W RRH W/FILTER	100
(2) 7770.00 w/ Mount Pipe	115	(2) PCS 1900MHz 4x45W-65MHz	100
(2) 7770.00 w/ Mount Pipe	115	Collar Mount (SO 102-3)	100
(4) LGP21401	115	800MHz 2X50W RRH W/FILTER	100
(4) LGP21401	115	(2) PCS 1900MHz 4x45W-65MHz	100
(4) LGP21401	115	742 213 w/ Mount Pipe	94
P65-17-XLH-RR w/ Mount Pipe	115	Side Arm Mount (SO 102-3)	94
AM-X-CD-16-65-00T-RET w/ Mount Pipe	115	742 213 w/ Mount Pipe	94
P65-17-XLH-RR w/ Mount Pipe	115	742 213 w/ Mount Pipe	94
DC8-48-60-18-BF	115	BCD-87010	74
(2) RRUS-11	115	Side Arm Mount (SO 701-1)	74
		KS24019-L112A	40
		Side Arm Mount (SO 701-1)	40

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 65.3%



Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 We Are Solutions Phone: (724) 416-2000 FAX: (724) 416-4425		Job: BU# 806369 Project: Client: Crown Castle Code: TIA/EIA-222-F Path:	Drawn by: Jesse Fresch Date: 10/16/12 Scale: NTS Dwg No. E-1
--	--	--	---

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 3) Tower is located in Hartford County, Connecticut.
- 4) Basic wind speed of 80 mph.
- 5) Nominal ice thickness of 1.0000 in.
- 6) Ice thickness is considered to increase with height.
- 7) Ice density of 56.00 pcf.
- 8) A wind speed of 38 mph is used in combination with ice.
- 9) Temperature drop of 50 °F.
- 10) Deflections calculated using a wind speed of 50 mph.
- 11) A non-linear (P-delta) analysis was used.
- 12) Pressures are calculated at each section.
- 13) Stress ratio used in pole design is 1.333.
- 14) Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> . Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members In FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="text-align: center;">POLES √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|--|

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140'-86'9-31/32"	53'2-1/32"	5'8-1/32"	12	26.2160	39.2230	0.3125	1.2500	A572-65 (65 ksi)
L2	86'9-31/32"-38'	54'6"	7'	12	37.2117	50.5600	0.4063	1.6250	A572-65 (65 ksi)
L3	38'-0'	45'		12	48.0330	59.0500	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	27.1408 40.6066	26.0654 39.1537	2232.3752 7566.4519	9.2735 13.9300	13.5799 20.3175	164.3883 372.4103	4523.3974 15331.683	12.8286 19.2703	6.1884 9.6743	19.803 30.958

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L2	39.9612	48.1461	8324.7399	13.1763	19.2756	431.8786	16868.1799	23.6960	8.8840	21.868
	52.3436	65.6074	21064.2222	17.9550	26.1901	804.2825	42681.8251	32.2900	12.4613	30.674
L3	51.5017	76.5282	22069.8048	17.0168	24.8811	887.0104	44719.4079	37.6648	11.5329	23.066
	61.1331	94.2655	41247.0150	20.9609	30.5879	1348.4749	83577.6350	46.3946	14.4854	28.971

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 140'-86'9-31/32"				1	1	1		
L2 86'9-31/32"-38'				1	1	1		
L3 38'-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter r in	Perimeter r in	Weight kif
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _r A _a ft ² /ft	Weight kif
HJ5-50A(7/8")	A	No	Inside Pole	140' - 0'	0.0000	0	12	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
* MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	A	No	CaAa (Out Of Face)	126' - 0'	0.0000	0	1	No Ice 0.16 1/2" Ice 0.26 1" Ice 0.36 2" Ice 0.56 4" Ice 0.96	0.00 0.00 0.01 0.03 0.00
FLC 158-50J(1-5/8")	A	No	Inside Pole	126' - 0'	0.0000	0	4	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
LCF158-50JA-A0(1 5/8")	A	No	Inside Pole	126' - 0'	0.0000	0	8	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
* LDF7-50A(1-5/8")	C	No	Inside Pole	115' - 0'	0.0000	0	12	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
FB-L98B-002-75000(3/8")	C	No	Inside Pole	115' - 0'	0.0000	0	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.00 0.00 0.00

Description	Face or Shield Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _A A _A ft ² /ft	Weight klf	
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	115' - 0'	0.0000	0	2	2" Ice	0.00	0.00
								4" Ice	0.00	0.00
								No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
4" Ice	0.00	0.00								
* FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	1	1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
ATCB-B01-005(5/16)	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	3	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
LDF1-50A(1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	3	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
2" Rigid Conduit	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.20	0.00
								1/2" Ice	0.30	0.00
								1" Ice	0.40	0.01
								2" Ice	0.60	0.01
								4" Ice	1.00	0.03
								No Ice	0.15	0.00
HB114-1-08U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	1	1/2" Ice	0.25	0.00
								1" Ice	0.35	0.00
								2" Ice	0.55	0.01
								4" Ice	0.95	0.03
								No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
HB114-1-08U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.03
								No Ice	0.00	0.00
LDF7-50A(1-5/8")	A	No	Inside Pole	102' - 0'	0.0000	0	6	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
								No Ice	0.00	0.00
* AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.0000	0	2	No Ice	0.20	0.00
								1/2" Ice	0.30	0.00
								1" Ice	0.40	0.00
								2" Ice	0.60	0.01
								4" Ice	1.00	0.03
								No Ice	0.00	0.00
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.0000	0	4	1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.03
								No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
* LDF5-50A(7/8")	B	No	CaAa (Out Of Face)	74' - 0'	0.0000	0	1	No Ice	0.11	0.00
								1/2" Ice	0.21	0.00
								1" Ice	0.31	0.00
								2" Ice	0.51	0.01
								4" Ice	0.91	0.03
								No Ice	0.00	0.00
* LDF4-50A(1/2")	C	No	Inside Pole	40' - 0'	0.0000	0	1	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00

Description	Face or Leg	Allow or Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _A A _A ft ² /ft	Weight klf
								2" Ice	0.00
								4" Ice	0.00
Thin Flat Bar Climbing Ladder	C	No	CaAa (Out Of Face)	115' - 105'	30.0000	0	1	No Ice	0.33
								1/2" Ice	0.44
								1" Ice	0.56
								2" Ice	0.78
								4" Ice	1.22

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	140'-86'9-31/32"	A	0.000	0.000	0.000	14.767	1.41
		B	0.000	0.000	0.000	2.881	0.03
		C	0.000	0.000	0.000	3.333	0.35
L2	86'9-31/32"-38'	A	0.000	0.000	0.000	34.989	1.88
		B	0.000	0.000	0.000	23.555	0.22
		C	0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	0.000	0.000	0.000	27.227	1.46
		B	0.000	0.000	0.000	19.418	0.17
		C	0.000	0.000	0.000	0.000	0.43

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	140'-86'9-31/32"	A	1.158	0.000	0.000	0.000	34.376	2.22
		B		0.000	0.000	0.000	6.201	0.23
		C		0.000	0.000	0.000	5.907	0.39
L2	86'9-31/32"-38'	A	1.079	0.000	0.000	0.000	80.230	4.15
		B		0.000	0.000	0.000	54.514	1.70
		C		0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	1.000	0.000	0.000	0.000	60.017	3.01
		B		0.000	0.000	0.000	44.011	1.23
		C		0.000	0.000	0.000	0.000	0.43

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	140'-86'9-31/32"	-0.0009	-0.3178	0.0212	-0.6329
L2	86'9-31/32"-38'	0.4765	-0.5374	0.8144	-0.9030
L3	38'-0'	0.5224	-0.5442	0.9154	-0.9129

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral	Vert						ft
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	7.98	5.70	0.04
								1/2" Ice	8.62	6.85	0.10
								Ice	9.23	7.71	0.17
								1" Ice	10.47	9.50	0.33
								2" Ice	13.08	13.26	0.80
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	7.98	5.70	0.04
								1/2" Ice	8.62	6.85	0.10
								Ice	9.23	7.71	0.17
								1" Ice	10.47	9.50	0.33
								2" Ice	13.08	13.26	0.80
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	7.98	5.70	0.04
								1/2" Ice	8.62	6.85	0.10
								Ice	9.23	7.71	0.17
								1" Ice	10.47	9.50	0.33
								2" Ice	13.08	13.26	0.80
(2) FD9R6004/1C-3L	A	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	0.37	0.08	0.00
								1/2" Ice	0.45	0.14	0.01
								Ice	0.54	0.20	0.01
								1" Ice	0.75	0.34	0.02
								2" Ice	1.28	0.74	0.06
(2) FD9R6004/1C-3L	B	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	0.37	0.08	0.00
								1/2" Ice	0.45	0.14	0.01
								Ice	0.54	0.20	0.01
								1" Ice	0.75	0.34	0.02
								2" Ice	1.28	0.74	0.06
(2) FD9R6004/1C-3L	C	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	0.37	0.08	0.00
								1/2" Ice	0.45	0.14	0.01
								Ice	0.54	0.20	0.01
								1" Ice	0.75	0.34	0.02
								2" Ice	1.28	0.74	0.06
BXA-171063/8CFx2 w/ Mount Pipe	A	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	3.14	3.51	0.03
								1/2" Ice	3.52	4.13	0.06
								Ice	3.92	4.76	0.10
								1" Ice	4.80	6.06	0.20
								2" Ice	6.71	9.09	0.49
BXA-171063/8CFx2 w/ Mount Pipe	B	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	3.14	3.51	0.03
								1/2" Ice	3.52	4.13	0.06
								Ice	3.92	4.76	0.10
								1" Ice	4.80	6.06	0.20
								2" Ice	6.71	9.09	0.49
BXA-171063/8CFx2 w/ Mount Pipe	C	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	3.14	3.51	0.03
								1/2" Ice	3.52	4.13	0.06
								Ice	3.92	4.76	0.10
								1" Ice	4.80	6.06	0.20
								2" Ice	6.71	9.09	0.49
(2) LPA-80063/4CF w/ Mount Pipe	A	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	7.25	7.26	0.04
								1/2" Ice	7.72	7.96	0.10
								Ice	8.20	8.67	0.18
								1" Ice	9.19	10.16	0.34
								2" Ice	11.32	13.39	0.80
(2) LPA-80063/4CF w/ Mount Pipe	B	From Leg	4.00	0'	-3'	0.0000	140'	No Ice	7.25	7.26	0.04
								1/2" Ice	7.72	7.96	0.10
								Ice	8.20	8.67	0.18
								1" Ice	9.19	10.16	0.34
								2" Ice	11.32	13.39	0.80

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz Lateral	Vert						
			ft	ft		ft	ft ²	ft ²	K	
(2) SC-E 6014 rev2 w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	140'	4" Ice			
							No Ice	3.78	4.40	0.03
							1/2" Ice	4.18	5.01	0.07
							1" Ice	4.59	5.64	0.11
							2" Ice	5.44	6.96	0.22
Platform Mount (LP 101-1)	C	None	4.00	0'	0.0000	140'	4" Ice			
							No Ice	36.21	36.21	1.50
							1/2" Ice	42.82	42.82	2.30
							1" Ice	49.43	49.43	3.10
							2" Ice	62.65	62.65	4.70
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	6.83	5.64	0.11
							1/2" Ice	7.35	6.48	0.17
							1" Ice	7.86	7.26	0.23
							2" Ice	8.93	8.86	0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	6.83	5.64	0.11
							1/2" Ice	7.35	6.48	0.17
							1" Ice	7.86	7.26	0.23
							2" Ice	8.93	8.86	0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	6.83	5.64	0.11
							1/2" Ice	7.35	6.48	0.17
							1" Ice	7.86	7.26	0.23
							2" Ice	8.93	8.86	0.38
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	6.83	5.64	0.11
							1/2" Ice	7.35	6.48	0.17
							1" Ice	7.86	7.26	0.23
							2" Ice	8.93	8.86	0.38
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	6.83	5.64	0.11
							1/2" Ice	7.35	6.48	0.17
							1" Ice	7.86	7.26	0.23
							2" Ice	8.93	8.86	0.38
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	6.83	5.64	0.11
							1/2" Ice	7.35	6.48	0.17
							1" Ice	7.86	7.26	0.23
							2" Ice	8.93	8.86	0.38
ATMAA1412D-1A20	A	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	0.47	1.17	0.01
							1/2" Ice	0.57	1.31	0.02
							1" Ice	0.69	1.47	0.03
							2" Ice	0.95	1.81	0.06
ATMAA1412D-1A20	B	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	0.47	1.17	0.01
							1/2" Ice	0.57	1.31	0.02
							1" Ice	0.69	1.47	0.03
							2" Ice	0.95	1.81	0.06
ATMAA1412D-1A20	C	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	0.47	1.17	0.01
							1/2" Ice	0.57	1.31	0.02
							1" Ice	0.69	1.47	0.03
							2" Ice	0.95	1.81	0.06

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz Lateral	Vert						ft
							ft ²	ft ²	K	
(2) 6' x 2" Mount Pipe	A	From Leg	4.00	0'	0.0000	126'	1" Ice	0.95	1.81	0.06
							2" Ice	1.57	2.58	0.14
							4" Ice			
							No Ice	1.43	1.43	0.02
							1/2" Ice	1.92	1.92	0.03
							Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
(2) 6' x 2" Mount Pipe	B	From Leg	4.00	0'	0.0000	126'	2" Ice	4.70	4.70	0.23
							4" Ice			
							No Ice	1.43	1.43	0.02
							1/2" Ice	1.92	1.92	0.03
							Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
(2) 6' x 2" Mount Pipe	C	From Leg	4.00	0'	0.0000	126'	4" Ice			
							No Ice	1.43	1.43	0.02
							1/2" Ice	1.92	1.92	0.03
							Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
							4" Ice			
Platform Mount [LP 1001-1]	C	None	0.0000	126'	No Ice	47.70	47.70	3.02		
					1/2" Ice	59.50	59.50	3.62		
					Ice	71.30	71.30	4.22		
					1" Ice	94.90	94.90	5.43		
					2" Ice	142.10	142.10	7.85		
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	115'	4" Ice			
							No Ice	6.12	4.25	0.06
							1/2" Ice	6.63	5.01	0.10
							Ice	7.13	5.71	0.16
							1" Ice	8.16	7.16	0.29
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	115'	2" Ice	10.36	10.41	0.66
							4" Ice			
							No Ice	6.12	4.25	0.06
							1/2" Ice	6.63	5.01	0.10
							Ice	7.13	5.71	0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	115'	1" Ice	8.16	7.16	0.29
							2" Ice	10.36	10.41	0.66
							4" Ice			
							No Ice	6.12	4.25	0.06
							1/2" Ice	6.63	5.01	0.10
(4) LGP21401	A	From Leg	4.00	0'	0.0000	115'	Ice	7.13	5.71	0.16
							1" Ice	8.16	7.16	0.29
							2" Ice	10.36	10.41	0.66
							4" Ice			
							No Ice	1.29	0.23	0.01
(4) LGP21401	B	From Leg	4.00	0'	0.0000	115'	1/2" Ice	1.45	0.31	0.02
							Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
							4" Ice			
(4) LGP21401	C	From Leg	4.00	0'	0.0000	115'	No Ice	1.29	0.23	0.01
							1/2" Ice	1.45	0.31	0.02
							Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
P65-17-XLH-RR w/ Mount	A	From Leg	4.00	0.0000	115'	4" Ice				
						No Ice	11.70	8.94	0.09	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
Pipe			0'			1/2"	12.42	10.45	0.17	
			2'			Ice	13.15	11.99	0.27	
						1" Ice	14.64	14.31	0.50	
						2" Ice	17.91	19.14	1.13	
						4" Ice				
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00		0.0000	115'	No Ice	8.50	6.30	0.07
			0'				1/2"	9.15	7.48	0.14
			2'				Ice	9.77	8.37	0.21
							1" Ice	11.03	10.18	0.38
							2" Ice	13.68	14.02	0.87
							4" Ice			
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00		0.0000	115'	No Ice	11.70	8.94	0.09
			0'				1/2"	12.42	10.45	0.17
			2'				Ice	13.15	11.99	0.27
							1" Ice	14.64	14.31	0.50
							2" Ice	17.91	19.14	1.13
							4" Ice			
DC6-48-60-18-8F	A	From Leg	4.00		0.0000	115'	No Ice	1.27	1.27	0.02
			0'				1/2"	1.46	1.46	0.04
			1'				Ice	1.66	1.66	0.05
							1" Ice	2.09	2.09	0.10
							2" Ice	3.10	3.10	0.21
							4" Ice			
(2) RRUS-11	A	From Leg	4.00		0.0000	115'	No Ice	3.25	1.37	0.05
			0'				1/2"	3.49	1.55	0.07
			2'				Ice	3.74	1.74	0.09
							1" Ice	4.27	2.14	0.15
							2" Ice	5.43	3.04	0.31
							4" Ice			
(2) RRUS-11	B	From Leg	4.00		0.0000	115'	No Ice	3.25	1.37	0.05
			0'				1/2"	3.49	1.55	0.07
			2'				Ice	3.74	1.74	0.09
							1" Ice	4.27	2.14	0.15
							2" Ice	5.43	3.04	0.31
							4" Ice			
(2) RRUS-11	C	From Leg	4.00		0.0000	115'	No Ice	3.25	1.37	0.05
			0'				1/2"	3.49	1.55	0.07
			2'				Ice	3.74	1.74	0.09
							1" Ice	4.27	2.14	0.15
							2" Ice	5.43	3.04	0.31
							4" Ice			
8'x2" Antenna Mount Pipe	A	From Leg	4.00		0.0000	115'	No Ice	1.90	1.90	0.03
			0'				1/2"	2.73	2.73	0.04
			0'				Ice	3.40	3.40	0.06
							1" Ice	4.40	4.40	0.12
							2" Ice	6.50	6.50	0.30
							4" Ice			
8'x2" Antenna Mount Pipe	B	From Leg	4.00		0.0000	115'	No Ice	1.90	1.90	0.03
			0'				1/2"	2.73	2.73	0.04
			0'				Ice	3.40	3.40	0.06
							1" Ice	4.40	4.40	0.12
							2" Ice	6.50	6.50	0.30
							4" Ice			
8'x2" Antenna Mount Pipe	C	From Leg	4.00		0.0000	115'	No Ice	1.90	1.90	0.03
			0'				1/2"	2.73	2.73	0.04
			0'				Ice	3.40	3.40	0.06
							1" Ice	4.40	4.40	0.12
							2" Ice	6.50	6.50	0.30
							4" Ice			
Platform Mount [LP 712-1]	C	None			0.0000	115'	No Ice	24.53	24.53	1.34
							1/2"	29.94	29.94	1.65
							Ice	35.35	35.35	1.96
							1" Ice	46.17	46.17	2.58
							2" Ice	67.81	67.81	3.82
							4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	102'	No Ice	8.50	6.95	0.08
							1/2" Ice	9.15	8.13	0.15
							Ice	9.77	9.02	0.22
							1" Ice	11.03	10.84	0.41
							2" Ice	13.68	14.85	0.91
IBC1900BB-1	A	From Leg	4.00	0'	0.0000	102'	No Ice	1.13	0.53	0.02
							1/2" Ice	1.27	0.65	0.03
							Ice	1.43	0.77	0.04
							1" Ice	1.76	1.04	0.06
							2" Ice	2.53	1.69	0.15
IBC1900HG-2A	A	From Leg	4.00	0'	0.0000	102'	No Ice	1.13	0.53	0.02
							1/2" Ice	1.27	0.65	0.03
							Ice	1.43	0.77	0.04
							1" Ice	1.76	1.04	0.06
							2" Ice	2.53	1.69	0.15
P40-16-XLPP-RR-A w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	102'	No Ice	10.74	4.83	0.07
							1/2" Ice	11.29	5.57	0.14
							Ice	11.85	6.27	0.21
							1" Ice	12.99	7.80	0.39
							2" Ice	15.39	11.11	0.86
IBC1900BB-1	B	From Leg	4.00	0'	0.0000	102'	No Ice	1.13	0.53	0.02
							1/2" Ice	1.27	0.65	0.03
							Ice	1.43	0.77	0.04
							1" Ice	1.76	1.04	0.06
							2" Ice	2.53	1.69	0.15
IBC1900HG-2A	B	From Leg	4.00	0'	0.0000	102'	No Ice	1.13	0.53	0.02
							1/2" Ice	1.27	0.65	0.03
							Ice	1.43	0.77	0.04
							1" Ice	1.76	1.04	0.06
							2" Ice	2.53	1.69	0.15
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	102'	No Ice	8.50	6.95	0.08
							1/2" Ice	9.15	8.13	0.15
							Ice	9.77	9.02	0.22
							1" Ice	11.03	10.84	0.41
							2" Ice	13.68	14.85	0.91
IBC1900BB-1	C	From Leg	4.00	0'	0.0000	102'	No Ice	1.13	0.53	0.02
							1/2" Ice	1.27	0.65	0.03
							Ice	1.43	0.77	0.04
							1" Ice	1.76	1.04	0.06
							2" Ice	2.53	1.69	0.15
IBC1900HG-2A	C	From Leg	4.00	0'	0.0000	102'	No Ice	1.13	0.53	0.02
							1/2" Ice	1.27	0.65	0.03
							Ice	1.43	0.77	0.04
							1" Ice	1.76	1.04	0.06
							2" Ice	2.53	1.69	0.15
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	102'	No Ice	5.07	2.98	0.05
							1/2" Ice	5.48	3.53	0.08
							Ice	5.91	4.09	0.13
							1" Ice	6.79	5.31	0.23
							2" Ice	8.70	8.13	0.54
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	102'	No Ice	5.07	2.98	0.05
							1/2" Ice	5.48	3.53	0.08
							Ice	5.91	4.09	0.13
							1" Ice	6.79	5.31	0.23
							2" Ice	8.70	8.13	0.54

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						Vert
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	102'	2" Ice	8.70	8.13	0.54
							4" Ice			
							No Ice	5.07	2.98	0.05
							1/2"	5.48	3.53	0.08
							Ice	5.91	4.09	0.13
							1" Ice	6.79	5.31	0.23
(2) 950F40T4E-M w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	102'	2" Ice	8.70	8.13	0.54
							4" Ice			
							No Ice	7.24	6.15	0.04
							1/2"	7.79	7.04	0.10
							Ice	8.33	7.86	0.17
							1" Ice	9.45	9.56	0.33
(2) 950F40T4E-M w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	102'	2" Ice	11.79	13.17	0.78
							4" Ice			
							No Ice	7.24	6.15	0.04
							1/2"	7.79	7.04	0.10
							Ice	8.33	7.86	0.17
							1" Ice	9.45	9.56	0.33
(2) 950F40T4E-M w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	102'	2" Ice	11.79	13.17	0.78
							4" Ice			
							No Ice	7.24	6.15	0.04
							1/2"	7.79	7.04	0.10
							Ice	8.33	7.86	0.17
							1" Ice	9.45	9.56	0.33
WIMAX DAP HEAD	A	From Leg	4.00	0'	0.0000	102'	2" Ice	3.51	2.14	0.20
							4" Ice			
							No Ice	1.80	0.78	0.03
							1/2"	1.99	0.92	0.04
							Ice	2.18	1.07	0.06
							1" Ice	2.59	1.39	0.09
WIMAX DAP HEAD	B	From Leg	4.00	0'	0.0000	102'	2" Ice	3.51	2.14	0.20
							4" Ice			
							No Ice	1.80	0.78	0.03
							1/2"	1.99	0.92	0.04
							Ice	2.18	1.07	0.06
							1" Ice	2.59	1.39	0.09
WIMAX DAP HEAD	C	From Leg	4.00	0'	0.0000	102'	2" Ice	3.51	2.14	0.20
							4" Ice			
							No Ice	1.80	0.78	0.03
							1/2"	1.99	0.92	0.04
							Ice	2.18	1.07	0.06
							1" Ice	2.59	1.39	0.09
HORIZON COMPACT	B	From Leg	4.00	0'	0.0000	102'	2" Ice	2.08	1.43	0.12
							4" Ice			
							No Ice	0.84	0.43	0.01
							1/2"	0.97	0.52	0.02
							Ice	1.10	0.63	0.03
							1" Ice	1.39	0.86	0.05
HORIZON COMPACT	C	From Leg	4.00	0'	0.0000	102'	2" Ice	2.08	1.43	0.12
							4" Ice			
							No Ice	0.84	0.43	0.01
							1/2"	0.97	0.52	0.02
							Ice	1.10	0.63	0.03
							1" Ice	1.39	0.86	0.05
Platform Mount [LP 602-1]	C	None			0.0000	102'	2" Ice	85.47	85.47	5.00
							4" Ice			
							No Ice	32.03	32.03	1.34
							1/2"	38.71	38.71	1.80
							Ice	45.39	45.39	2.26
							1" Ice	58.75	58.75	3.17
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00	0'	0.0000	100'	2" Ice	85.47	85.47	5.00
							4" Ice			
							No Ice	2.40	2.25	0.06
							1/2"	2.61	2.46	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft	C _{RA} A _A Front ft ²	C _{RA} A _A Side ft ²	Weight K	
			0'			Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00 0' 0'	0.0000	100'	No Ice	2.71	2.61	0.06
						1/2"	2.95	2.85	0.08
						Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00 0' 0'	0.0000	100'	No Ice	2.40	2.25	0.06
						1/2"	2.61	2.46	0.09
						Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00 0' 0'	0.0000	100'	No Ice	2.71	2.61	0.06
						1/2"	2.95	2.85	0.08
						Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00 0' 0'	0.0000	100'	No Ice	2.40	2.25	0.06
						1/2"	2.61	2.46	0.09
						Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
(2) PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00 0' 0'	0.0000	100'	No Ice	2.71	2.61	0.06
						1/2"	2.95	2.85	0.08
						Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
Collar Mount [SO 102-3]	C	None		0.0000	100'	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice	6.84	6.84	0.32
						4" Ice			
742 213 w/ Mount Pipe	A	From Leg	0.50 0' 0'	0.0000	94'	No Ice	5.37	4.62	0.05
						1/2"	5.95	6.00	0.09
						Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
742 213 w/ Mount Pipe	B	From Leg	0.50 0' 0'	0.0000	94'	No Ice	5.37	4.62	0.05
						1/2"	5.95	6.00	0.09
						Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
742 213 w/ Mount Pipe	C	From Leg	0.50 0' 0'	0.0000	94'	No Ice	5.37	4.62	0.05
						1/2"	5.95	6.00	0.09
						Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
Side Arm Mount [SO 102-3]	C	None		0.0000	94'	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice	6.84	6.84	0.32
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz Lateral	Vert					
			ft	ft		ft	ft ²	ft ²	K
* BCD-87010	B	From Leg	2.00	0.0000	74'	No Ice	2.90	2.90	0.03
			0'			1/2"	4.05	4.05	0.05
			6'			Ice	5.21	5.21	0.08
						1" Ice	7.01	7.01	0.16
						2" Ice	9.85	9.85	0.41
						4" Ice			
Side Arm Mount [SO 701-1]	B	From Leg	1.00	0.0000	74'	No Ice	0.85	1.67	0.07
			0'			1/2"	1.14	2.34	0.08
			0'			Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			
* KS24019-L112A	C	From Leg	2.00	0.0000	40'	No Ice	0.10	0.10	0.01
			0'			1/2"	0.18	0.18	0.01
			1'			Ice	0.26	0.26	0.01
						1" Ice	0.42	0.42	0.01
						2" Ice	0.74	0.74	0.02
						4" Ice			
Side Arm Mount [SO 701-1]	C	From Leg	1.00	0.0000	40'	No Ice	0.85	1.67	0.07
			0'			1/2"	1.14	2.34	0.08
			0'			Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz Lateral	Vert						
				ft	ft		ft	ft	ft ²	K	
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	4.00	-20.0000	102'	2.92	No Ice	6.68	0.03	
				0'				1/2" Ice	7.07	0.04	
				6'				1" Ice	7.46	0.05	
								2" Ice	8.23	0.07	
								4" Ice	9.78	0.11	
VHLP2-180	C	Paraboloid w/Shroud (HP)	From Leg	4.00	10.0000	102'	2.00	No Ice	3.14	0.03	
				0'				1/2" Ice	3.41	0.04	
				6'				1" Ice	3.67	0.06	
								2" Ice	4.21	0.09	
								4" Ice	5.28	0.16	

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice

Comb. No.	Description
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 86.8333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-34.41	-0.47	1.67
			Max. Mx	11	-17.03	659.22	1.97
			Max. My	2	-17.05	1.45	656.35
			Max. Vy	11	-26.06	659.22	1.97
			Max. Vx	8	25.80	-1.89	-656.01
			Max. Torque	6			1.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-53.33	-3.37	4.65
			Max. Mx	11	-29.75	2078.30	6.68
L2	86.8333 - 38	Pole	Max. My	2	-29.76	3.98	2064.16
			Max. Vy	11	-33.73	2078.30	6.68
			Max. Vx	8	33.49	-7.21	-2063.14
			Max. Torque	2			-1.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-77.18	-5.90	8.05
			Max. Mx	11	-47.52	3751.92	11.49
			Max. My	2	47.52	6.86	3727.83
			Max. Vy	11	-40.60	3751.92	11.49
			Max. Vx	8	40.37	-12.07	-3725.75
L3	38 - 0	Pole	Max. Torque	2			-1.55

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	77.18	-11.82	-0.02
	Max. H _x	11	47.54	40.58	0.09
	Max. H _z	2	47.54	0.07	40.34
	Max. M _x	2	3727.83	0.07	40.34
	Max. M _z	5	3749.47	-40.54	-0.07
	Max. Torsion	6	1.53	-35.18	-20.19
	Min. Vert	1	47.54	0.00	0.00
	Min. H _x	5	47.54	-40.54	-0.07
	Min. H _z	8	47.54	-0.10	-40.35
	Min. M _x	8	-3725.75	-0.10	-40.35
	Min. M _z	11	-3751.92	40.58	0.09
	Min. Torsion	2	-1.55	0.07	40.34

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	47.54	0.00	0.00	-1.50	-0.69	0.00
Dead+Wind 0 deg - No Ice	47.54	-0.07	-40.34	-3727.83	6.86	1.55
Dead+Wind 30 deg - No Ice	47.54	20.28	-34.88	-3221.97	-1875.83	1.08
Dead+Wind 60 deg - No Ice	47.54	35.11	-20.06	-1852.31	-3246.56	-0.08
Dead+Wind 90 deg - No Ice	47.54	40.54	0.07	6.18	-3749.47	-0.89
Dead+Wind 120 deg - No Ice	47.54	35.18	20.19	1863.88	-3254.44	-1.53
Dead+Wind 150 deg - No Ice	47.54	20.40	34.94	3225.96	-1889.13	-1.47
Dead+Wind 180 deg - No Ice	47.54	0.10	40.35	3725.75	-12.07	-1.49
Dead+Wind 210 deg - No Ice	47.54	-20.29	34.84	3215.05	1875.32	-0.97
Dead+Wind 240 deg - No Ice	47.54	35.13	20.05	1848.35	3248.32	0.05
Dead+Wind 270 deg - No Ice	47.54	-40.58	-0.09	-11.49	3751.92	0.83
Dead+Wind 300 deg - No Ice	47.54	-35.22	-20.22	-1870.22	3257.88	1.34
Dead+Wind 330 deg - No Ice	47.54	-20.47	-34.95	-3229.84	1895.13	1.23
Dead+Ice+Temp	77.18	0.00	-0.00	-8.05	-5.90	0.00
Dead+Wind 0 deg+Ice+Temp	77.18	-0.02	-11.77	-1117.14	-4.01	0.54
Dead+Wind 30 deg+Ice+Temp	77.18	5.91	-10.18	-966.82	-563.67	0.31
Dead+Wind 60 deg+Ice+Temp	77.18	10.24	-5.86	-559.42	-971.46	-0.10
Dead+Wind 90 deg+Ice+Temp	77.18	11.82	0.02	-6.14	-1121.09	-0.40
Dead+Wind 120 deg+Ice+Temp	77.18	10.26	5.89	546.89	-973.63	-0.61
Dead+Wind 150 deg+Ice+Temp	77.18	5.94	10.19	952.31	-567.25	-0.59
Dead+Wind 180 deg+Ice+Temp	77.18	0.03	11.77	1100.96	-9.02	-0.52
Dead+Wind 210 deg+Ice+Temp	77.18	-5.91	10.17	949.37	551.82	-0.28
Dead+Wind 240 deg+Ice+Temp	77.18	-10.24	5.85	542.74	960.19	0.09
Dead+Wind 270 deg+Ice+Temp	77.18	-11.83	-0.02	-10.89	1109.99	0.39
Dead+Wind 300 deg+Ice+Temp	77.18	-10.27	-5.90	-564.18	962.79	0.57
Dead+Wind 330 deg+Ice+Temp	77.18	-5.96	-10.20	-988.95	557.11	0.52
Dead+Wind 0 deg - Service	47.54	-0.03	-15.76	-1457.64	2.25	0.61
Dead+Wind 30 deg - Service	47.54	7.92	-13.62	-1259.97	-733.44	0.42
Dead+Wind 60 deg - Service	47.54	13.71	-7.84	-724.75	-1269.07	-0.03
Dead+Wind 90 deg - Service	47.54	15.84	0.03	1.48	-1465.60	-0.35
Dead+Wind 120 deg - Service	47.54	13.74	7.89	727.41	-1272.15	-0.60
Dead+Wind 150 deg - Service	47.54	7.97	13.65	1259.66	-738.64	-0.58
Dead+Wind 180 deg - Service	47.54	0.04	15.76	1454.96	-5.14	-0.59

Load Combination	Vertical	Shear _x	Shear _y	Overturning Moment, M _x	Overturning Moment, M _y	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Service						
Dead+Wind 210 deg - Service	47.54	-7.92	13.61	1255.39	732.38	-0.38
Dead+Wind 240 deg - Service	47.54	-13.72	7.83	721.34	1268.90	0.02
Dead+Wind 270 deg - Service	47.54	-15.85	-0.04	-5.42	1465.70	0.32
Dead+Wind 300 deg - Service	47.54	-13.76	-7.90	-731.76	1272.64	0.53
Dead+Wind 330 deg - Service	47.54	-7.99	-13.65	-1263.05	740.12	0.48

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-47.54	0.00	0.00	47.54	0.00	0.000%
2	-0.07	-47.54	-40.34	0.07	47.54	40.34	0.000%
3	20.28	-47.54	-34.88	-20.28	47.54	34.88	0.000%
4	35.11	-47.54	-20.06	-35.11	47.54	20.06	0.000%
5	40.54	-47.54	0.07	-40.54	47.54	-0.07	0.000%
6	35.18	-47.54	20.19	-35.18	47.54	-20.19	0.000%
7	20.40	-47.54	34.94	-20.40	47.54	-34.94	0.000%
8	0.10	-47.54	40.35	-0.10	47.54	-40.35	0.000%
9	-20.29	-47.54	34.84	20.29	47.54	-34.84	0.000%
10	-35.13	-47.54	20.05	35.13	47.54	-20.05	0.000%
11	-40.58	-47.54	-0.09	40.58	47.54	0.09	0.000%
12	-35.22	-47.54	-20.22	35.22	47.54	20.22	0.000%
13	-20.47	-47.54	-34.95	20.47	47.54	34.95	0.000%
14	0.00	-77.18	0.00	-0.00	77.18	0.00	0.000%
15	-0.02	-77.18	-11.77	0.02	77.18	11.77	0.000%
16	5.91	-77.18	-10.18	-5.91	77.18	10.18	0.000%
17	10.24	-77.18	-5.86	-10.24	77.18	5.86	0.000%
18	11.82	-77.18	0.02	-11.82	77.18	-0.02	0.000%
19	10.26	-77.18	5.89	-10.26	77.18	-5.89	0.000%
20	5.94	-77.18	10.19	-5.94	77.18	-10.19	0.000%
21	0.03	-77.18	11.77	-0.03	77.18	-11.77	0.000%
22	-5.91	-77.18	10.17	5.91	77.18	-10.17	0.000%
23	-10.24	-77.18	5.85	10.24	77.18	-5.85	0.000%
24	-11.83	-77.18	-0.02	11.83	77.18	0.02	0.000%
25	-10.27	-77.18	-5.90	10.27	77.18	5.90	0.000%
26	-5.96	-77.18	-10.20	5.96	77.18	10.20	0.000%
27	-0.03	-47.54	-15.76	0.03	47.54	15.76	0.000%
28	7.92	-47.54	-13.62	-7.92	47.54	13.62	0.000%
29	13.71	-47.54	-7.84	-13.71	47.54	7.84	0.000%
30	15.84	-47.54	0.03	-15.84	47.54	-0.03	0.000%
31	13.74	-47.54	7.89	-13.74	47.54	-7.89	0.000%
32	7.97	-47.54	13.65	-7.97	47.54	-13.65	0.000%
33	0.04	-47.54	15.76	-0.04	47.54	-15.76	0.000%
34	-7.92	-47.54	13.61	7.92	47.54	-13.61	0.000%
35	-13.72	-47.54	7.83	13.72	47.54	-7.83	0.000%
36	-15.85	-47.54	-0.04	15.85	47.54	0.04	0.000%
37	-13.76	-47.54	-7.90	13.76	47.54	7.90	0.000%
38	-7.99	-47.54	-13.65	7.99	47.54	13.65	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	0.00005811

3	Yes	5	0.00000001	0.00002567
4	Yes	5	0.00000001	0.00002507
5	Yes	4	0.00000001	0.00003911
6	Yes	4	0.00000001	0.00099340
7	Yes	5	0.00000001	0.00002604
8	Yes	4	0.00000001	0.00006718
9	Yes	4	0.00000001	0.00099445
10	Yes	5	0.00000001	0.00002494
11	Yes	4	0.00000001	0.00004599
12	Yes	5	0.00000001	0.00002603
13	Yes	5	0.00000001	0.00002496
14	Yes	4	0.00000001	0.00000601
15	Yes	4	0.00000001	0.00062339
16	Yes	4	0.00000001	0.00068143
17	Yes	4	0.00000001	0.00068167
18	Yes	4	0.00000001	0.00062498
19	Yes	4	0.00000001	0.00067592
20	Yes	4	0.00000001	0.00067495
21	Yes	4	0.00000001	0.00061387
22	Yes	4	0.00000001	0.00066525
23	Yes	4	0.00000001	0.00066744
24	Yes	4	0.00000001	0.00061925
25	Yes	4	0.00000001	0.00068024
26	Yes	4	0.00000001	0.00067895
27	Yes	4	0.00000001	0.00001766
28	Yes	4	0.00000001	0.00009723
29	Yes	4	0.00000001	0.00009310
30	Yes	4	0.00000001	0.00001498
31	Yes	4	0.00000001	0.00008859
32	Yes	4	0.00000001	0.00009926
33	Yes	4	0.00000001	0.00001800
34	Yes	4	0.00000001	0.00008917
35	Yes	4	0.00000001	0.00009191
36	Yes	4	0.00000001	0.00001515
37	Yes	4	0.00000001	0.00009940
38	Yes	4	0.00000001	0.00009089

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 88.8333	20.184	37	1.1750	0.0024
L2	92.5 - 38	9.221	37	0.9381	0.0008
L3	45 - 0	2.168	37	0.4340	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140'	BXA-70063/6CF w/ Mount Pipe	37	20.184	1.1750	0.0026	59778
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	37	16.760	1.1252	0.0020	21349
115'	(2) 7770.00 w/ Mount Pipe	37	14.141	1.0767	0.0015	11955
108'	VHLP2.5-11	37	12.634	1.0428	0.0012	9339
102'	APXSPP18-C-A20 w/ Mount Pipe	37	11.207	1.0069	0.0010	7864
100'	800MHz 2X50W RRH W/FILTER	37	10.776	0.9937	0.0010	7471
94'	742 213 w/ Mount Pipe	37	9.524	0.9500	0.0008	6519
74'	BCD-87010	37	5.856	0.7601	0.0005	5355
40'	KS24019-L112A	37	1.753	0.3806	0.0002	4885

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	51.612	12	3.0055	0.0062
L2	92.5 - 38	23.587	12	2.3998	0.0020
L3	45 - 0	5.546	12	1.1105	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140'	BXA-70083/6CF w/ Mount Pipe	12	51.612	3.0055	0.0068	23503
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	12	42.859	2.8783	0.0051	8393
115'	(2) 7770.00 w/ Mount Pipe	12	36.165	2.7592	0.0039	4699
108'	VHLP2.5-11	12	32.058	2.6676	0.0031	3670
102'	APXVSP18-C-A20 w/ Mount Pipe	12	28.664	2.5758	0.0026	3090
100'	800MHz 2X50W RRH W/FILTER	12	27.563	2.5421	0.0025	2935
94'	742 213 w/ Mount Pipe	12	24.362	2.4304	0.0021	2560
74'	BCD-87010	12	14.980	1.9445	0.0012	2099
40'	KS24019-L112A	12	4.484	0.9739	0.0006	1910

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _v ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P/P _a
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	53'2-1/32"	0'	0.0	39.000	37.7587	-17.03	1472.59	0.012
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	54'6"	0'	0.0	39.000	63.3646	-29.75	2471.22	0.012
L3	38 - 0 (3)	TP59.05x48.033x0.5	45'	0'	0.0	39.000	94.2655	-47.52	3676.35	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} /F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} /F _{by}
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	660.33	22.885	39.000	0.587	0.00	0.000	39.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	2081.0	33.295	39.000	0.854	0.00	0.000	39.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	3756.5 3	33.429	39.000	0.857	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_t ksi	Allow. F_t ksi	Ratio $\frac{f_t}{F_t}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	26.09	0.691	26.000	0.054	0.61	0.010	26.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	33.76	0.533	26.000	0.042	1.03	0.008	26.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	40.63	0.431	26.000	0.034	1.34	0.006	26.000	0.000

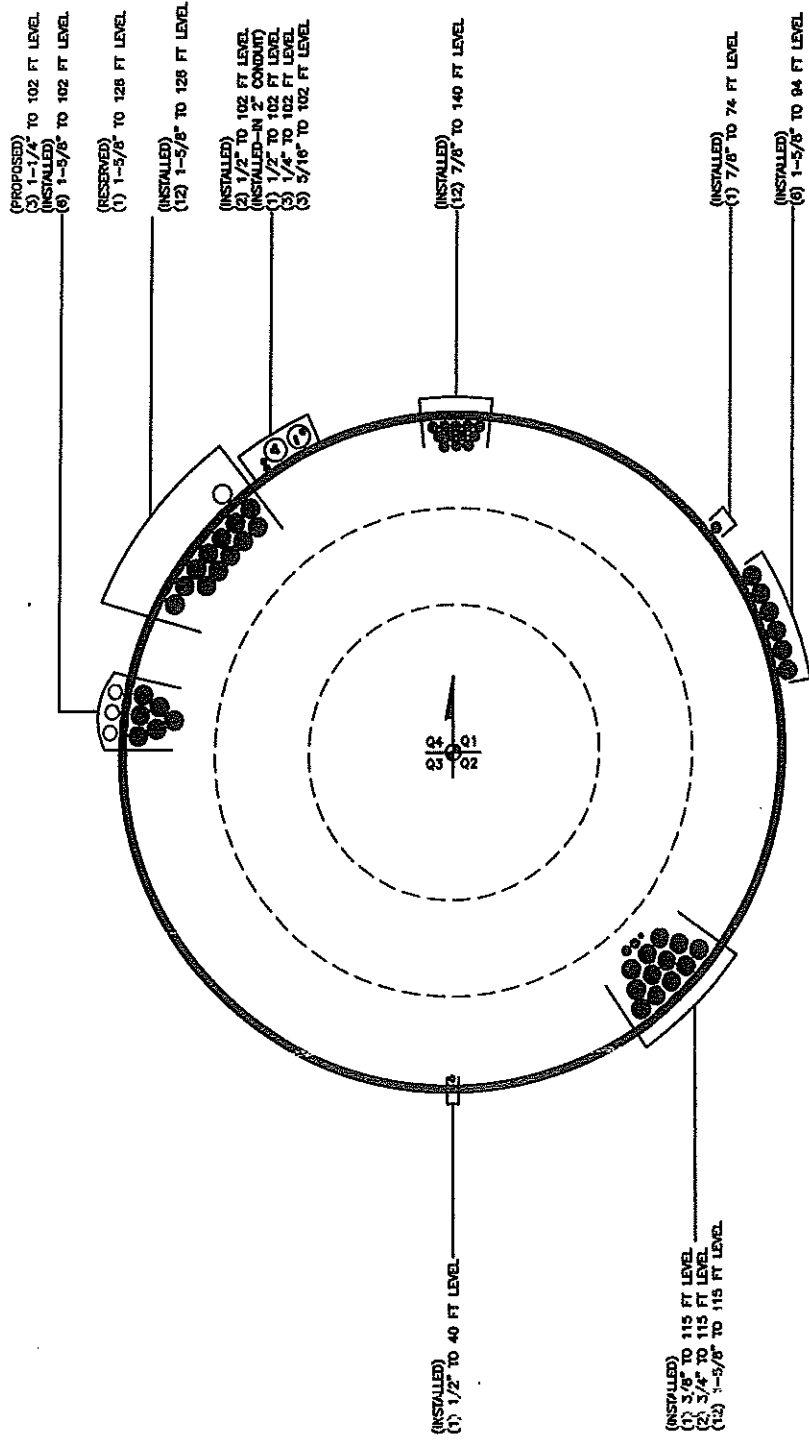
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_t	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_a	F_{bx}	F_{by}	F_v	F_t			
L1	140 - 86.8333 (1)	0.012	0.587	0.000	0.054	0.000	0.599	1.333	H1-3+VT ✓
L2	86.8333 - 38 (2)	0.012	0.854	0.000	0.042	0.000	0.868	1.333	H1-3+VT ✓
L3	38 - 0 (3)	0.013	0.857	0.000	0.034	0.000	0.870	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF* P_{allow} K	% Capacity	Pass Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-17.03	1962.96	44.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-29.75	3294.14	65.0	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-47.52	4900.57	65.3	Pass
Summary								
Pole (L3)							65.3	Pass
RATING =							65.3	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

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

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

Site Data

BU#: 806369
 Site Name: HRT 094 943225
 App #: 165644 rev1

Enter Load Factors Below:

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

Pier Properties

Concrete:

Pier Diameter = 7.5 ft
 Concrete Area = 6361.7 in²

Reinforcement:

Clear Cover to Tie = 3.00 in
 Horiz. Tie Bar Size = 3
 Vert. Cage Diameter = 6.83 ft
 Vert. Cage Diameter = 81.98 in
 Vertical Bar Size = 10
 Bar Diameter = 1.27 in
 Bar Area = 1.27 in²
 Number of Bars = 52
 As Total = 66.04 in²
 A s / Aconc, Rho: 0.0104 1.04%

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	4092.517	ft-kips (* Note)
Max. Service Shaft P:	48	kips
Max Axial Force Type:	Comp.	

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

Load Factor Shaft Factored Loads

Load Factor	Mu:	5320.272	ft-kips
1.30	Pu:	62.4	kips

Material Properties

Concrete Comp. strength, f _c =	3000	psi
Reinforcement yield strength, F _y =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code = 2002

Seismic Properties

Seismic Design Category = B
 Seismic Risk = Low

Solve
(Run)

<-- Press Upon Completing All Input

ACI 10.5, ACI 21.10.4, and IBC 1810.

Min As for Flexural, Tension Controlled, Shafts:

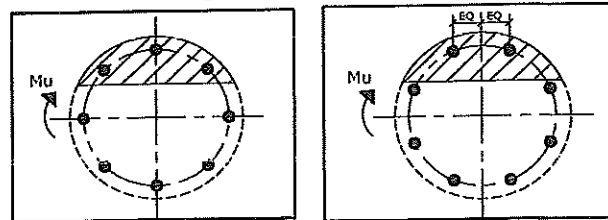
(3)*(Sqrt(f_c)/F_y: 0.0027
 200 / F_y: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho: 0.33% Flexural
 Provided Rho: 1.04% OK

Results:

Governing Orientation Case: 1



Case 1

Case 2

Dist. From Edge to Neutral Axis: 18.75 in

Extreme Steel Strain, ε_t: 0.0108

ε_t > 0.0050, Tension Controlled

Reduction Factor, φ: 0.900

Ref. Shaft Max Axial Capacities, φ Max(P _n or T _n):	
Max P _u = (φ=0.65) P _n	
P _n per ACI 318 (10-2)	10408.53 kips
at M _u =(φ=0.65)M _n =	6794.66 ft-kips
Max T _u , (φ=0.9) T _n =	3566.16 kips
at M _u =φ=(0.90)M _n =	0.00 ft-kips

Output Note: Negative P_u=Tension

For Axial Compression, φ P_n = P_u: 62.40 kips

Drilled Shaft Moment Capacity, φM_n: 10674.38 ft-kips

Drilled Shaft Superimposed M_u: 5320.27 ft-kips

(M_u/φM_n, Drilled Shaft Flexure CSR: 49.8%

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

TIA Rev F

Site Data

BU#: 806369
 Site Name: HRT 094 943225
 App #: 165644 rev1

Pole Manufacturer: Other

Reactions		
Moment:	3757	ft-kips
Axial:	48	kips
Shear:	41	kips

Anchor Rod Data

Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	65.05	in

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

Anchor Rod Results

Maximum Rod Tension: 136.2 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 69.9% Pass

Rigid
Service, ASD
Fty*ASIF

Plate Data

Diam:	71.05	in
Thick:	3	in
Grade:	60	ksi
Single-Rod B-eff:	9.49	in

Base Plate Results

Base Plate Stress: 19.6 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 32.6% Pass

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
27.29

Stiffener Data (Welding at both sides)

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

n/a

Stiffener Results

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

Pole Results

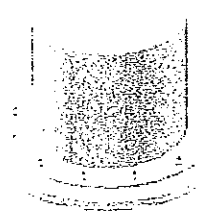
Pole Punching Shear Check: n/a

Pole Data

Diam:	59.05	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

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



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

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

Monopole Drilled Pier

Checks capacity of a single drilled shaft foundation for a monopole



BU#: 806369
 Site Name: HRT 094 943225
 App Number: 165644 rev1

ACI 318 Version: 2002

Design Reactions		
Shear, S:	41.00	kips
Moment, Mt:	3757.00	ft-kips
Tower Weight, Wt:	48.00	kips
Tower Height, H:	140	ft
Base Diameter, BD:	59.05	in

Design Checks			
	Capacity/Availability	Demand/Limits	Check
Minimum Req'd Dia. 1 (ft):	7.50	3.69	OK
Minimum Req'd Dia. 2 (ft):	7.50	6.42	OK
Bearing (ksf):	4.50	1.09	OK
Rebar Area (in ²):	66.04	21.21	OK
Pier moment capacity (k-ft):	10674.38	5320.27	OK
Rebar spacing (in):	3.80	2 < Bs < 18	OK
Development Length (in):	463.35	12.00	OK
Soil moment capacity (FOS):	6.37	2.00	OK

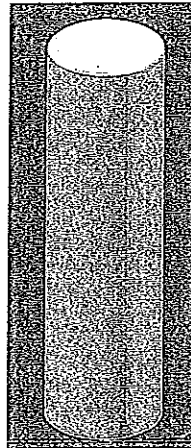
Foundation Dimensions		
Caisson Diameter, CD:	7.5	ft
Ext. Above Grade, E:	0.0	ft
Depth Below Grade, L:	47.0	ft
Neglected Depth, N:	5.0	ft
Rebar Size, Sp:	10	
Rebar Quantity, mp:	52	
Tie Size, tp:	3	

Assume 0.33% Minimum Steel?

Material Properties		
Rebar Tensile, Fy:	60	ksi
Concrete Strength, F'c:	3000	psi
Concrete Density, δ_c :	100.9	pcf
Clear Cover, cc:	3	in

Soil Properties		
Soil Unit Weight, γ :	61.1	pcf
Allowable Bearing, Bc:	4.500	ksf
Seismic Design Cat, z:	B	

Caisson Analysis		
Depth to Zero Shear:	8.1	ft
Max Factored Moment:	5320.27	ft-kips
Overturning FOS:	6.37	



Bearing: 24.1%

Steel: 49.8%

Soil: 31.4%

Depth	Shear	Moment
0 ft	41.1 kips	3758.2 ft-kips
4.7 ft	41.1 kips	3951.3 ft-kips
9.4 ft	-15.1 kips	4020.8 ft-kips

Equivalent Silty Soil Parameter Tool



Note:

This tool determines the equivalent soil parameters for silty soil (having both cohesion and angle of friction), according to the CCI Foundations ongoing discussions (2010), Criteria Item DS-7. The equivalent parameters results are to be input in the PLS-Caisson Software to account for the combined resistance of the granular and cohesive parameters simultaneously present in silty and similar soils

Site Data

BU#: 806369
 Site Name: HIRT 094 943225
 App #: 165644 rev1

Neglect Top Layer: Y N
 # of Layers:

Input the data in the "shaded" columns. If soil layer is submerged, then enter the saturated density (buoyant unit weight)

Layer	Layer Thickness (ft)	From (ft)	To (ft)	Unit Weight of Soil (pcf)	Cohesion (psf)	Internal Friction Angle (deg)	K _s	Depth to Mid-Layer (ft)	Overburden (psf)	Sand Resistance (ksf)	Clay Resistance (ksf)	P _r total (ksf)	Equivalent Parameters for PLS Caisson Input	
													Equivalent Cohesion (psf)	Equivalent K _s
1	2	0	2	105			0.000	1	105	0.000	0.00	0.000	0	0.00
2	3	2	5	100			0.000	3.5	360	0.000	0.00	0.000	0	0.00
3	5	5	10	100	500	30	3.000	7.5	760	6.840	4.00	10.840	1355	4.75
4	5	10	15	36	100	27	2.663	12.5	1100	8.788	0.80	9.588	1198	2.91
5	5	15	20	36	100	27	2.663	17.5	1280	10.226	0.80	11.026	1378	2.87
6	5	20	25	36	100	27	2.663	22.5	1460	11.664	0.80	12.464	1558	2.85
7	5	25	30	36	100	27	2.663	27.5	1640	13.102	0.80	13.902	1738	2.83
8	5	30	35	36	100	27	2.663	32.5	1820	14.540	0.80	15.340	1917	2.81

Calculation Notes:

- 1- Sand Resistance = 3 * K_p * Overburden → (Per equations used in PLS-Caisson Software)
- 2- Cohesion Resistance = 8 * C → (Per equations used in PLS-Caisson Software, Full 8CD approach)
- 3- Total Resistance = Sand Resistance + Cohesion Resistance
- 4- Equivalent K_p = Total / Overburden / 3
- 5- Equivalent C = Total / 8

Project Title: 806369

Project Notes:

Calculation Method: Full 8CD

***** I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
7.50	0.00	3.00	60.00

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft ³)	CU (psf)	KP	PHI (deg)
1	Clay	2.00	0.00	105.0			
2	Clay	3.00	2.00	100.0			
3	Clay	5.00	5.00	100.0	1355.0		
4	Clay	5.00	10.00	36.0	1198.0		
5	Clay	5.00	15.00	36.0	1378.0		
6	Clay	5.00	20.00	36.0	1558.0		
7	Clay	5.00	25.00	36.0	1738.0		
8	Clay	5.00	30.00	36.0	1917.0		
9	Clay	10.00	35.00	41.0	200.0		
10	Sand	2.00	45.00	41.0		3.255	32.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
3757.0	48.0	41.00	6.37

***** R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	End Bearing Pressure (psf)
47.000	311.459	1086.5

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft ³)	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	0.00	2.00	105.0			0.00	1.00
Clay	2.00	3.00	100.0			0.00	3.50
Clay	5.00	5.00	100.0	1355.0		406.50	7.50
Clay	10.00	5.00	36.0	1198.0		359.40	12.50
Clay	15.00	5.00	36.0	1378.0		413.40	17.50
Clay	20.00	5.00	36.0	1558.0		467.40	22.50
Clay	25.00	0.85	36.0	1738.0		88.64	25.43
Clay	25.85	4.15	36.0	1738.0		-432.76	27.93
Clay	30.00	5.00	36.0	1917.0		-575.10	32.50
Clay	35.00	10.00	41.0	200.0		-120.00	40.00
Sand	45.00	2.00	41.0		3.255	-345.83	46.01

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	261.6	23939.8	41.1	3758.2
4.70	261.6	25169.6	41.1	3951.3
9.40	-96.1	25612.3	-15.1	4020.8
14.10	-439.6	24342.0	-69.0	3821.3
18.80	-818.4	21404.2	-128.5	3360.2
23.50	-1244.8	16578.2	-195.4	2602.5
28.20	-1228.6	10215.6	-192.9	1603.7
32.90	-707.4	5638.0	-111.0	885.1
37.60	-434.6	3235.3	-68.2	507.9
42.30	-378.2	1325.3	-59.4	208.1
47.00	-321.8	-319.8	-50.5	-50.2

Date: October 18, 2012

Eva Morales
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: Structural Analysis Report

Carrier Designation: *Sprint PCS Co-Locate*
Carrier Site Number: CT43XC805
Carrier Site Name: CT43XC805

Crown Castle Designation: **Crown Castle BU Number:** 806369
Crown Castle Site Name: HRT 094 943225
Crown Castle JDE Job Number: 190485
Crown Castle Work Order Number: 541166
Crown Castle Application Number: 165644 Rev. 1

Engineering Firm Designation: **Crown Castle Project Number:** 541166

Site Data: **439-455 HOMESTEAD AVE, HARTFORD, Hartford County, CT**
Latitude 41° 47' 1.61", Longitude -72° 42' 13.66"
140 Foot - Monopole Tower

Dear Eva Morales,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 541166, in accordance with application 165644, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Jesse J. Fresch, EIT / AS

Respectfully submitted by:

Dmitry V. Albul, P.E.
Engineer II

tnxTower Report - version 6.0.4.0

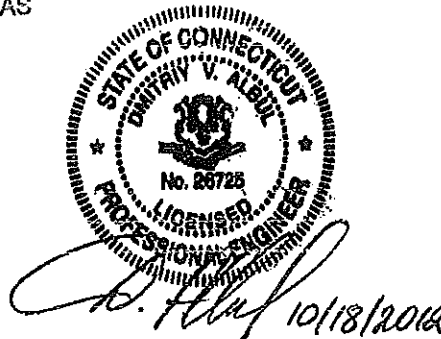


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1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by VALMONT in August of 1999. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (In)	Note
102.0	104.0	1	powerwave technologies	P40-16-XLPP-RR-A w/ Mount Pipe	3	1-1/4	-
		2	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
100.0	100.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	-
		6	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Collar Mount [SO 102-3]			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (In)	Note
140.0	140.0	1	tower mounts	Platform Mount (LP 101-1)	12	7/8	1
	137.0	3	antel	BXA-70063/6CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/1C-3L			
		3	antel	BXA-171063/8CFx2 w/ Mount Pipe	-	-	2
		4	antel	LPA-80063/4CF w/ Mount Pipe			
		2	swedcom	SC-E 6014 rev2 w/ Mount Pipe			
126.0	128.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
	126.0	1	tower mounts	Platform Mount [LP 1001-1]	12	1-5/8	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
115.0	117.0	6	ericsson	RRUS-11	12 2 1	1-5/8 3/4 3/8	1
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	116.0	6	powerwave technologies	7770.00 w/ Mount Pipe			
		12	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
	115.0	1	tower mounts	Platform Mount [LP 712-1]			
102.0	108.0	1	andrew	VHLP2-180	3 3 3	1/2 1/4 5/16	1
		1	andrew	VHLP2.5-11			
		2	dragonwave	HORIZON COMPACT			
	104.0	3	argus technologies	LLPX310R-V1 w/ Mount Pipe			
		3	samsung telecommunications	WIMAX DAP HEAD			
		6	decibel	950F40T4E-M w/ Mount Pipe			
	102.0	1	tower mounts	Platform Mount [LP 602-1]			
94.0	94.0	3	kathrein	742 213 w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Side Arm Mount [SO 102-3]			
74.0	80.0	1	antel	BCD-87010	1	7/8	1
	74.0	1	tower mounts	Side Arm Mount [SO 701-1]			
40.0	41.0	1	lucent	KS24019-L112A	1	1/2	1
	40.0	1	tower mounts	Side Arm Mount [SO 701-1]			

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment To Be Removed, Not Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
137	137	12	swedcom	ALP 9212-N	-	-
124	124	6	rfs celwave	APN199015	-	-
114	114	9	allgon	7184.15	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tower Engineering Professionals	2294838	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Tower Engineering Professionals (Mapping)	2294380	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Tower Engineering Professionals (Mapping)	2294379	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Valmont Industries, Inc.	823121	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P _{allow} (K)	% Capacity	Pass / Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-16.92	1962.96	43.8	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-29.38	3294.14	62.3	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-46.87	4900.57	62.7	Pass
							Summary	
						Pole (L3)	62.7	Pass
						Rating =	62.7	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	67.0	Pass
1	Base Plate	0	31.3	Pass
1	Base Foundation	0	47.8	Pass

Structure Rating (max from all components) =	67.0%
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Notes:

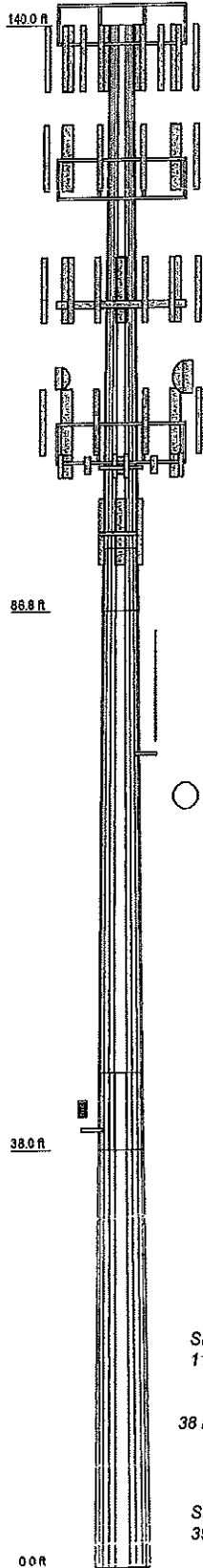
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	592-132"	548"	45'
Number of Sides	12	12	12
Thickness (in)	0.3125	0.4083	0.5000
Socket Length (ft)	58-1/2"	7'	48.0930
Top Dia (in)	26.2180	37.2117	48.0930
Bot Dia (in)	39.2230	50.9500	59.0500
Grade	A572-65	A572-65	A572-65
Weight (K)	5.9	10.5	13.1



DESIGNED APPURTENANCE LOADING

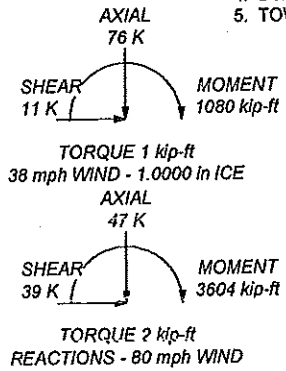
TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063/6CF w/ Mount Pipe	140	(2) RRUS-11	115
BXA-70063/6CF w/ Mount Pipe	140	(2) RRUS-11	115
BXA-70063/6CF w/ Mount Pipe	140	8x2" Antenna Mount Pipe	115
(2) FDSR6004/1C-3L	140	8x2" Antenna Mount Pipe	115
(2) FDSR6004/1C-3L	140	8x2" Antenna Mount Pipe	115
(2) FDSR6004/1C-3L	140	Platform Mount [LP 712-1]	115
BXA-171063/8CFx2 w/ Mount Pipe	140	APXVSP18-C-A20 w/ Mount Pipe	102
BXA-171063/8CFx2 w/ Mount Pipe	140	IBC1900BB-1	102
BXA-171063/8CFx2 w/ Mount Pipe	140	IBC1900HG-2A	102
(2) LPA-80063/4CF w/ Mount Pipe	140	P40-16-XLPP-RR-A w/ Mount Pipe	102
(2) LPA-80063/4CF w/ Mount Pipe	140	IBC1900BB-1	102
(2) SC-E 6014 rev2 w/ Mount Pipe	140	IBC1900HG-2A	102
Platform Mount [LP 101-1]	140	APXVSP18-C-A20 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	IBC1900BB-1	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	IBC1900HG-2A	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	WIMAX DAP HEAD	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	WIMAX DAP HEAD	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	WIMAX DAP HEAD	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	HORIZON COMPACT	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	HORIZON COMPACT	102
ATMAA1412D-1A20	126	Platform Mount [LP 602-1]	102
ATMAA1412D-1A20	126	5' x 2" Pipe Mount	102
ATMAA1412D-1A20	126	5' x 2" Pipe Mount	102
(2) 6' x 2" Mount Pipe	128	5' x 2" Pipe Mount	102
(2) 6' x 2" Mount Pipe	128	VHLP2.6-11	102
(2) 6' x 2" Mount Pipe	128	VHLP2-180	102
Platform Mount [LP 1001-1]	126	800MHz 2X60W RRH W/FILTER	100
(2) 7770.00 w/ Mount Pipe	115	(2) PCS 1900MHz 4x45W-65MHz	100
(2) 7770.00 w/ Mount Pipe	115	800MHz 2X60W RRH W/FILTER	100
(2) 7770.00 w/ Mount Pipe	115	(2) PCS 1900MHz 4x45W-65MHz	100
(4) LSP21401	115	Collar Mount [SO 102-3]	100
(4) LSP21401	115	800MHz 2X60W RRH W/FILTER	100
(4) LSP21401	115	(2) PCS 1900MHz 4x45W-65MHz	100
P65-17-XLH-RR w/ Mount Pipe	115	742 213 w/ Mount Pipe	94
AM-X-CD-16-65-00T-RET w/ Mount Pipe	115	Side Arm Mount [SO 102-3]	94
P65-17-XLH-RR w/ Mount Pipe	115	742 213 w/ Mount Pipe	94
DCS-48-60-18-8F	115	742 213 w/ Mount Pipe	94
(2) RRUS-11	115	BCD-87010	74
		Side Arm Mount [SO 701-1]	74
		KS24019-L112A	40
		Side Arm Mount [SO 701-1]	40

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

- Tower is located in Hartford County, Connecticut.
- Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
- Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
- Deflections are based upon a 50 mph wind.
- TOWER RATING: 62.7%



<p>Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416-2000 FAX: (724) 416-4425</p>	Job: BU# 806360	Project:	Client: Crown Castle	Drawn by: Jesse Fresch	App'd:
	Code: TIA/EIA-222-F	Date: 10/16/12	Scale: NTS		
	Path:				Dwg No. E-1
	<small>© 2012 Crown Castle. All rights reserved. Crown Castle, the Crown Castle logo, and TIA/EIA-222-F are trademarks of Crown Castle. All other trademarks are the property of their respective owners.</small>				

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 4) Tower is located in Hartford County, Connecticut.
- 5) Basic wind speed of 80 mph.
- 6) Nominal ice thickness of 1.0000 in.
- 7) Ice thickness is considered to increase with height.
- 8) Ice density of 56.00 pcf.
- 9) A wind speed of 38 mph is used in combination with ice.
- 10) Temperature drop of 50 °F.
- 11) Deflections calculated using a wind speed of 50 mph.
- 12) A non-linear (P-delta) analysis was used.
- 13) Pressures are calculated at each section.
- 14) Stress ratio used in pole design is 1.333.
- 15) Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140'-86"9-31/32"	53'2-1/32"	5'8-1/32"	12	26.2160	39.2230	0.3125	1.2500	A572-65 (65 ksi)
L2	86'9-31/32"-38'	54'6"	7'	12	37.2117	50.5600	0.4063	1.6250	A572-65 (65 ksi)
L3	38'-0"	45'		12	48.0330	59.0500	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	wA
L1	27.1408	26.0654	2232.3752	9.2735	13.5799	164.3883	4523.3974	12.8286	6.1884	19.803
	40.6066	39.1537	7566.4519	13.9300	20.3175	372.4103	15331.683	19.2703	9.6743	30.958

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L2	39.9612	48.1461	8324.7399	13.1763	19.2756	431.8786	16868.179	23.6960	8.8840	21.868
	52.3436	65.6074	21064.222	17.9550	26.1901	804.2825	42681.825	32.2900	12.4613	30.674
L3	51.5017	76.5282	22069.804	17.0168	24.8811	887.0104	44719.407	37.6648	11.5329	23.066
	61.1331	94.2655	41247.015	20.9609	30.5879	1348.4749	83577.635	46.3946	14.4854	28.971

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 140'-86'9-31/32"				1	1	1		
L2 86'9-31/32"-38'				1	1	1		
L3 38'-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	Number Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
				ft			in	r	r	k/f
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Face Offset	Lateral Offset	#	C _A A _A	Weight
				ft	in	(Frac FW)		ft ² /ft	k/f
HJ5-50A(7/8")	A	No	Inside Pole	140' - 0'	0.0000	0	12	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
MLE Hybrid 9Power/18Fiber RL 2(15/8)	A	No	CaAa (Out Of Face)	126' - 0'	0.0000	0	1	No Ice 0.16 1/2" Ice 0.26 1" Ice 0.36 2" Ice 0.56 4" Ice 0.96	0.00 0.00 0.01 0.03 0.03
FLC 158-50J(1-5/8")	A	No	Inside Pole	126' - 0'	0.0000	0	4	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
LCF158-50JA-A0(15/8")	A	No	Inside Pole	126' - 0'	0.0000	0	8	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
LDF7-50A(1-5/8")	C	No	Inside Pole	115' - 0'	0.0000	0	12	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.00 0.00 0.00 0.00 0.00
FB-L98B-002-75000(3/8")	C	No	Inside Pole	115' - 0'	0.0000	0	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.00 0.00 0.00

Description	Face or Shield Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C ₂ A _A ft ² /ft	Weight klb	
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	115' - 0'	0.0000	0	2	2" Ice	0.00	0.00
								4" Ice	0.00	0.00
								No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
4" Ice	0.00	0.00								
* FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	1	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
ATCB-B01-005(5/16)	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	3	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
LDF1-50A(1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	3	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
								No Ice	0.00	0.00
2" Rigid Conduit	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.20	0.00
								1/2" Ice	0.30	0.00
								1" Ice	0.40	0.01
								2" Ice	0.60	0.01
								4" Ice	1.00	0.03
								No Ice	0.15	0.00
HB114-1-08U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	1	No Ice	0.15	0.00
								1/2" Ice	0.25	0.00
								1" Ice	0.35	0.00
								2" Ice	0.55	0.01
								4" Ice	0.95	0.03
								No Ice	0.00	0.00
HB114-1-08U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.03
								No Ice	0.00	0.00
* AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.0000	0	2	No Ice	0.20	0.00
								1/2" Ice	0.30	0.00
								1" Ice	0.40	0.00
								2" Ice	0.60	0.01
								4" Ice	1.00	0.03
								No Ice	0.00	0.00
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.0000	0	4	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.03
								No Ice	0.00	0.00
* LDF5-50A(7/8")	B	No	CaAa (Out Of Face)	74' - 0'	0.0000	0	1	No Ice	0.11	0.00
								1/2" Ice	0.21	0.00
								1" Ice	0.31	0.00
								2" Ice	0.51	0.01
								4" Ice	0.91	0.03
								No Ice	0.00	0.00
* LDF4-50A(1/2")	C	No	Inside Pole	40' - 0'	0.0000	0	1	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
								No Ice	0.00	0.00
* Thin Flat Bar Climbing	C	No	CaAa (Out Of Face)	115' - 105'	30.0000	0	1	No Ice	0.33	0.00
								1/2" Ice	0.44	0.01

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _{AA} A ft ² /ft	Weight klf
Ladder							1" Ice	0.56	0.01
							2" Ice	0.78	0.01
							4" Ice	1.22	0.02

Feed Line/Linear Appurtenances Section Areas

Tower Section n	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
L1	140'-86'9-31/32"	A	0.000	0.000	0.000	14.767	1.34
		B	0.000	0.000	0.000	2.881	0.03
		C	0.000	0.000	0.000	3.333	0.35
L2	86'9-31/32"-38'	A	0.000	0.000	0.000	34.989	1.84
		B	0.000	0.000	0.000	23.555	0.22
		C	0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	0.000	0.000	0.000	27.227	1.27
		B	0.000	0.000	0.000	19.418	0.17
		C	0.000	0.000	0.000	0.000	0.43

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} A In Face ft ²	C _{AA} A Out Face ft ²	Weight K
L1	140'-86'9-31/32"	A	1.158	0.000	0.000	0.000	34.376	2.14
		B		0.000	0.000	0.000	6.201	0.23
		C		0.000	0.000	0.000	5.907	0.39
L2	86'9-31/32"-38'	A	1.079	0.000	0.000	0.000	80.230	3.91
		B		0.000	0.000	0.000	54.514	1.70
		C		0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	1.000	0.000	0.000	0.000	60.017	2.83
		B		0.000	0.000	0.000	44.011	1.23
		C		0.000	0.000	0.000	0.000	0.43

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	140'-86'9-31/32"	-0.0009	-0.3178	0.0212	-0.6329
L2	86'9-31/32"-38'	0.4765	-0.5374	0.8144	-0.9030
L3	38'-0'	0.5224	-0.5442	0.9154	-0.9129

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t	Placement ft	C _{AA} A Front ft ²	C _{AA} A Side ft ²	Weight K	
SXA-70063/GCF w/ Mount Pipe	A	From Leg	4.00 0'	0.0000	140'	No Ice 1/2"	7.98 8.62	5.70 6.85	0.04 0.10

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Vert						
			ft	ft		ft	ft ²	ft ²	K	
				-3'						
						Ice	9.23	7.71	0.17	
						1" Ice	10.47	9.50	0.33	
						2" Ice	13.08	13.26	0.80	
						4" Ice				
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00		0.0000	140'	No Ice	7.98	5.70	0.04
			0'				1/2"	8.62	6.85	0.10
			-3'				Ice	9.23	7.71	0.17
							1" Ice	10.47	9.50	0.33
							2" Ice	13.08	13.26	0.80
							4" Ice			
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00		0.0000	140'	No Ice	7.98	5.70	0.04
			0'				1/2"	8.62	6.85	0.10
			-3'				Ice	9.23	7.71	0.17
							1" Ice	10.47	9.50	0.33
							2" Ice	13.08	13.26	0.80
							4" Ice			
(2) FD9R6004/1C-3L	A	From Leg	4.00		0.0000	140'	No Ice	0.37	0.08	0.00
			0'				1/2"	0.45	0.14	0.01
			-3'				Ice	0.54	0.20	0.01
							1" Ice	0.75	0.34	0.02
							2" Ice	1.28	0.74	0.06
							4" Ice			
(2) FD9R6004/1C-3L	B	From Leg	4.00		0.0000	140'	No Ice	0.37	0.08	0.00
			0'				1/2"	0.45	0.14	0.01
			-3'				Ice	0.54	0.20	0.01
							1" Ice	0.75	0.34	0.02
							2" Ice	1.28	0.74	0.06
							4" Ice			
(2) FD9R6004/1C-3L	C	From Leg	4.00		0.0000	140'	No Ice	0.37	0.08	0.00
			0'				1/2"	0.45	0.14	0.01
			-3'				Ice	0.54	0.20	0.01
							1" Ice	0.75	0.34	0.02
							2" Ice	1.28	0.74	0.06
							4" Ice			
BXA-171063/8CFx2 w/ Mount Pipe	A	From Leg	4.00		0.0000	140'	No Ice	3.14	3.51	0.03
			0'				1/2"	3.52	4.13	0.06
			-3'				Ice	3.92	4.76	0.10
							1" Ice	4.80	6.06	0.20
							2" Ice	6.71	9.09	0.49
							4" Ice			
BXA-171063/8CFx2 w/ Mount Pipe	B	From Leg	4.00		0.0000	140'	No Ice	3.14	3.51	0.03
			0'				1/2"	3.52	4.13	0.06
			-3'				Ice	3.92	4.76	0.10
							1" Ice	4.80	6.06	0.20
							2" Ice	6.71	9.09	0.49
							4" Ice			
BXA-171063/8CFx2 w/ Mount Pipe	C	From Leg	4.00		0.0000	140'	No Ice	3.14	3.51	0.03
			0'				1/2"	3.52	4.13	0.06
			-3'				Ice	3.92	4.76	0.10
							1" Ice	4.80	6.06	0.20
							2" Ice	6.71	9.09	0.49
							4" Ice			
(2) LPA-80063/4CF w/ Mount Pipe	A	From Leg	4.00		0.0000	140'	No Ice	7.25	7.26	0.04
			0'				1/2"	7.72	7.96	0.10
			-3'				Ice	8.20	8.67	0.18
							1" Ice	9.19	10.16	0.34
							2" Ice	11.32	13.39	0.80
							4" Ice			
(2) LPA-80063/4CF w/ Mount Pipe	B	From Leg	4.00		0.0000	140'	No Ice	7.25	7.26	0.04
			0'				1/2"	7.72	7.96	0.10
			-3'				Ice	8.20	8.67	0.18
							1" Ice	9.19	10.16	0.34
							2" Ice	11.32	13.39	0.80
							4" Ice			
(2) SC-E 6014 rev2 w/	C	From Leg	4.00		0.0000	140'	No Ice	3.78	4.40	0.03

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
Mount Pipe			0'			1/2"	4.18	5.01	0.07	
			-3'			Ice	4.59	5.64	0.11	
						1" Ice	5.44	6.96	0.22	
						2" Ice	7.29	9.90	0.54	
						4" Ice				
Platform Mount (LP 101-1)	C	None			0.0000	140'	No Ice	36.21	36.21	1.50
							1/2"	42.82	42.82	2.30
							Ice	49.43	49.43	3.10
							1" Ice	62.65	62.65	4.70
							2" Ice	89.09	89.09	7.89
							4" Ice			
* ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00		0.0000	126'	No Ice	6.83	5.64	0.11
			0'				1/2"	7.35	6.48	0.17
			2'				Ice	7.86	7.26	0.23
							1" Ice	8.93	8.86	0.38
							2" Ice	11.18	12.29	0.81
		4" Ice								
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00		0.0000	126'	No Ice	6.83	5.64	0.11
			0'				1/2"	7.35	6.48	0.17
			2'				Ice	7.86	7.26	0.23
							1" Ice	8.93	8.86	0.38
							2" Ice	11.18	12.29	0.81
		4" Ice								
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00		0.0000	126'	No Ice	6.83	5.64	0.11
			0'				1/2"	7.35	6.48	0.17
			2'				Ice	7.86	7.26	0.23
							1" Ice	8.93	8.86	0.38
							2" Ice	11.18	12.29	0.81
		4" Ice								
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00		0.0000	126'	No Ice	6.83	5.64	0.11
			0'				1/2"	7.35	6.48	0.17
			2'				Ice	7.86	7.26	0.23
							1" Ice	8.93	8.86	0.38
							2" Ice	11.18	12.29	0.81
		4" Ice								
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00		0.0000	126'	No Ice	6.83	5.64	0.11
			0'				1/2"	7.35	6.48	0.17
			2'				Ice	7.86	7.26	0.23
							1" Ice	8.93	8.86	0.38
							2" Ice	11.18	12.29	0.81
		4" Ice								
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00		0.0000	126'	No Ice	6.83	5.64	0.11
			0'				1/2"	7.35	6.48	0.17
			2'				Ice	7.86	7.26	0.23
							1" Ice	8.93	8.86	0.38
							2" Ice	11.18	12.29	0.81
		4" Ice								
ATMAA1412D-1A20	A	From Leg	4.00		0.0000	126'	No Ice	0.47	1.17	0.01
			0'				1/2"	0.57	1.31	0.02
			2'				Ice	0.69	1.47	0.03
							1" Ice	0.95	1.81	0.06
							2" Ice	1.57	2.58	0.14
		4" Ice								
ATMAA1412D-1A20	B	From Leg	4.00		0.0000	126'	No Ice	0.47	1.17	0.01
			0'				1/2"	0.57	1.31	0.02
			2'				Ice	0.69	1.47	0.03
							1" Ice	0.95	1.81	0.06
							2" Ice	1.57	2.58	0.14
		4" Ice								
ATMAA1412D-1A20	C	From Leg	4.00		0.0000	126'	No Ice	0.47	1.17	0.01
			0'				1/2"	0.57	1.31	0.02
			2'				Ice	0.69	1.47	0.03
							1" Ice	0.95	1.81	0.06
							2" Ice	1.57	2.58	0.14
		4" Ice								

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Vert						
			Lateral	ft	°	ft	ft ²	ft ²	K	
(2) 6' x 2" Mount Pipe	A	From Leg	4.00	0'	0.0000	126'	4" Ice	1.43	1.43	0.02
							No Ice	1.92	1.92	0.03
							1/2" Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
(2) 6' x 2" Mount Pipe	B	From Leg	4.00	0'	0.0000	126'	4" Ice	1.43	1.43	0.02
							No Ice	1.92	1.92	0.03
							1/2" Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
(2) 6' x 2" Mount Pipe	C	From Leg	4.00	0'	0.0000	126'	4" Ice	1.43	1.43	0.02
							No Ice	1.92	1.92	0.03
							1/2" Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
Platform Mount [LP 1001-1]	C	None	0.0000	126'	4" Ice	47.70	47.70	3.02		
					No Ice	59.50	59.50	3.62		
					1/2" Ice	71.30	71.30	4.22		
					1" Ice	94.90	94.90	5.43		
					2" Ice	142.10	142.10	7.85		
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	115'	No Ice	6.12	4.25	0.06
							1/2" Ice	6.63	5.01	0.10
							Ice	7.13	5.71	0.16
							1" Ice	8.16	7.16	0.29
							2" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0'	0.0000	115'	No Ice	6.12	4.25	0.06
							1/2" Ice	6.63	5.01	0.10
							Ice	7.13	5.71	0.16
							1" Ice	8.16	7.16	0.29
							2" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0'	0.0000	115'	No Ice	6.12	4.25	0.06
							1/2" Ice	6.63	5.01	0.10
							Ice	7.13	5.71	0.16
							1" Ice	8.16	7.16	0.29
							2" Ice	10.36	10.41	0.66
(4) LGP21401	A	From Leg	4.00	0'	0.0000	115'	No Ice	1.29	0.23	0.01
							1/2" Ice	1.45	0.31	0.02
							Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
(4) LGP21401	B	From Leg	4.00	0'	0.0000	115'	No Ice	1.29	0.23	0.01
							1/2" Ice	1.45	0.31	0.02
							Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
(4) LGP21401	C	From Leg	4.00	0'	0.0000	115'	No Ice	1.29	0.23	0.01
							1/2" Ice	1.45	0.31	0.02
							Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00	0'	0.0000	115'	4" Ice	11.70	8.94	0.09
							No Ice	12.42	10.45	0.17
							Ice	13.15	11.99	0.27

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
						1" Ice	14.64	0.50
						2" Ice	17.91	1.13
						4" Ice		
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	115'	No Ice	8.50	0.07
						1/2" Ice	9.15	0.14
						Ice	9.77	0.21
						1" Ice	11.03	0.38
						2" Ice	13.68	0.87
						4" Ice		
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	115'	No Ice	11.70	0.09
						1/2" Ice	12.42	0.17
						Ice	13.15	0.27
						1" Ice	14.64	0.50
						2" Ice	17.91	1.13
						4" Ice		
DC6-48-60-18-8F	A	From Leg	4.00 0' 1'	0.0000	115'	No Ice	1.27	0.02
						1/2" Ice	1.46	0.04
						Ice	1.66	0.05
						1" Ice	2.09	0.10
						2" Ice	3.10	0.21
						4" Ice		
(2) RRUS-11	A	From Leg	4.00 0' 2'	0.0000	115'	No Ice	3.25	0.05
						1/2" Ice	3.49	0.07
						Ice	3.74	0.09
						1" Ice	4.27	0.15
						2" Ice	5.43	0.31
						4" Ice		
(2) RRUS-11	B	From Leg	4.00 0' 2'	0.0000	115'	No Ice	3.25	0.05
						1/2" Ice	3.49	0.07
						Ice	3.74	0.09
						1" Ice	4.27	0.15
						2" Ice	5.43	0.31
						4" Ice		
(2) RRUS-11	C	From Leg	4.00 0' 2'	0.0000	115'	No Ice	3.25	0.05
						1/2" Ice	3.49	0.07
						Ice	3.74	0.09
						1" Ice	4.27	0.15
						2" Ice	5.43	0.31
						4" Ice		
8'x2" Antenna Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	115'	No Ice	1.90	0.03
						1/2" Ice	2.73	0.04
						Ice	3.40	0.06
						1" Ice	4.40	0.12
						2" Ice	6.50	0.30
						4" Ice		
8'x2" Antenna Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	115'	No Ice	1.90	0.03
						1/2" Ice	2.73	0.04
						Ice	3.40	0.06
						1" Ice	4.40	0.12
						2" Ice	6.50	0.30
						4" Ice		
8'x2" Antenna Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	115'	No Ice	1.90	0.03
						1/2" Ice	2.73	0.04
						Ice	3.40	0.06
						1" Ice	4.40	0.12
						2" Ice	6.50	0.30
						4" Ice		
Platform Mount [LP 712-1]	C	None		0.0000	115'	No Ice	24.53	1.34
						1/2" Ice	29.94	1.65
						Ice	35.35	1.96
						1" Ice	46.17	2.58
						2" Ice	67.81	3.82
						4" Ice		
APXVSPP18-C-A20 w/	A	From Leg	4.00	0.0000	102'	No Ice	8.50	0.08

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A Front	C _A A _A Side	Weight
			Horz Lateral ft ft ft	Vert ft ft ft			ft ²	ft ²	K
Mount Pipe							1/2" 9.15	8.13	0.15
							Ice 9.77	9.02	0.22
							1" Ice 11.03	10.84	0.41
							2" Ice 13.68	14.85	0.91
							4" Ice		
IBC1900BB-1	A	From Leg	4.00	0.0000	102'		No Ice 1.13	0.53	0.02
							1/2" 1.27	0.65	0.03
							Ice 1.43	0.77	0.04
							1" Ice 1.76	1.04	0.06
							2" Ice 2.53	1.69	0.15
IBC1900HG-2A	A	From Leg	4.00	0.0000	102'		No Ice 1.13	0.53	0.02
							1/2" 1.27	0.65	0.03
							Ice 1.43	0.77	0.04
							1" Ice 1.76	1.04	0.06
							2" Ice 2.53	1.69	0.15
P40-16-XLPP-RR-A w/ Mount Pipe	B	From Leg	4.00	0.0000	102'		No Ice 10.74	4.83	0.07
							1/2" 11.29	5.57	0.14
							Ice 11.85	6.27	0.21
							1" Ice 12.99	7.80	0.39
							2" Ice 15.39	11.11	0.86
IBC1900BB-1	B	From Leg	4.00	0.0000	102'		No Ice 1.13	0.53	0.02
							1/2" 1.27	0.65	0.03
							Ice 1.43	0.77	0.04
							1" Ice 1.76	1.04	0.06
							2" Ice 2.53	1.69	0.15
IBC1900HG-2A	B	From Leg	4.00	0.0000	102'		No Ice 1.13	0.53	0.02
							1/2" 1.27	0.65	0.03
							Ice 1.43	0.77	0.04
							1" Ice 1.76	1.04	0.06
							2" Ice 2.53	1.69	0.15
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	102'		No Ice 8.50	6.95	0.08
							1/2" 9.15	8.13	0.15
							Ice 9.77	9.02	0.22
							1" Ice 11.03	10.84	0.41
							2" Ice 13.68	14.85	0.91
IBC1900BB-1	C	From Leg	4.00	0.0000	102'		No Ice 1.13	0.53	0.02
							1/2" 1.27	0.65	0.03
							Ice 1.43	0.77	0.04
							1" Ice 1.76	1.04	0.06
							2" Ice 2.53	1.69	0.15
IBC1900HG-2A	C	From Leg	4.00	0.0000	102'		No Ice 1.13	0.53	0.02
							1/2" 1.27	0.65	0.03
							Ice 1.43	0.77	0.04
							1" Ice 1.76	1.04	0.06
							2" Ice 2.53	1.69	0.15
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.00	0.0000	102'		No Ice 5.07	2.98	0.05
							1/2" 5.49	3.53	0.09
							Ice 5.91	4.09	0.13
							1" Ice 6.79	5.31	0.23
							2" Ice 8.70	8.13	0.54
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.00	0.0000	102'		No Ice 5.07	2.98	0.05
							1/2" 5.48	3.53	0.08
							Ice 5.91	4.09	0.13
							1" Ice 6.79	5.31	0.23
							2" Ice 8.70	8.13	0.54
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz Lateral	Vert					
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.00	0.0000	102'	No Ice	5.07	2.98	0.05
						1/2" Ice	5.48	3.53	0.08
						Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
WIMAX DAP HEAD	A	From Leg	4.00	0.0000	102'	No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	B	From Leg	4.00	0.0000	102'	No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	C	From Leg	4.00	0.0000	102'	No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
HORIZON COMPACT	B	From Leg	4.00	0.0000	102'	No Ice	0.84	0.43	0.01
						1/2" Ice	0.97	0.52	0.02
						Ice	1.10	0.63	0.03
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12
HORIZON COMPACT	C	From Leg	4.00	0.0000	102'	No Ice	0.84	0.43	0.01
						1/2" Ice	0.97	0.52	0.02
						Ice	1.10	0.63	0.03
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12
Platform Mount [LP 602-1]	C	None	0.0000	102'	No Ice	32.03	32.03	1.34	
					1/2" Ice	38.71	38.71	1.80	
					Ice	45.39	45.39	2.26	
					1" Ice	58.75	58.75	3.17	
					2" Ice	85.47	85.47	5.00	
5' x 2" Pipe Mount	A	From Leg	4.00	0.0000	102'	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
5' x 2" Pipe Mount	B	From Leg	4.00	0.0000	102'	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
5' x 2" Pipe Mount	C	From Leg	4.00	0.0000	102'	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
* 800MHz 2X50W RRH W/FILTER	A	From Leg	2.00	0.0000	100'	No Ice	2.40	2.25	0.06
						1/2" Ice	2.61	2.46	0.09
						Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			Horz Lateral ft	Vert ft					
						2" Ice	4.34	4.15	0.34
						4" Ice			
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00	0.0000	100'	No Ice	2.71	2.61	0.06
			0'			1/2"	2.95	2.85	0.08
			0'			Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00	0.0000	100'	No Ice	2.40	2.25	0.06
			0'			1/2"	2.61	2.46	0.09
			0'			Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00	0.0000	100'	No Ice	2.71	2.61	0.06
			0'			1/2"	2.95	2.85	0.08
			0'			Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00	0.0000	100'	No Ice	2.40	2.25	0.06
			0'			1/2"	2.61	2.46	0.09
			0'			Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
(2) PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00	0.0000	100'	No Ice	2.71	2.61	0.06
			0'			1/2"	2.95	2.85	0.08
			0'			Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
Collar Mount [SO 102-3]	C	None		0.0000	100'	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice	6.84	6.84	0.32
						4" Ice			
* 742 213 w/ Mount Pipe	A	From Leg	0.50	0.0000	94'	No Ice	5.37	4.62	0.05
			0'			1/2"	5.95	6.00	0.09
			0'			Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
742 213 w/ Mount Pipe	B	From Leg	0.50	0.0000	94'	No Ice	5.37	4.62	0.05
			0'			1/2"	5.95	6.00	0.09
			0'			Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
742 213 w/ Mount Pipe	C	From Leg	0.50	0.0000	94'	No Ice	5.37	4.62	0.05
			0'			1/2"	5.95	6.00	0.09
			0'			Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
Slide Arm Mount [SO 102-3]	C	None		0.0000	94'	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice	6.84	6.84	0.32
						4" Ice			
* BCD-87010	B	From Leg	2.00	0.0000	74'	No Ice	2.90	2.90	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
			0'			1/2"	4.05	4.05	0.05
			6'			Ice	5.21	5.21	0.08
						1" Ice	7.01	7.01	0.16
						2" Ice	9.85	9.85	0.41
						4" Ice			
Side Arm Mount [SO 701-1]	B	From Leg	1.00 0' 0'	0.0000	74'	No Ice	0.85	1.67	0.07
						1/2"	1.14	2.34	0.08
						Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			
* KS24019-L112A	C	From Leg	2.00 0' 1'	0.0000	40'	No Ice	0.10	0.10	0.01
						1/2"	0.18	0.18	0.01
						Ice	0.26	0.26	0.01
						1" Ice	0.42	0.42	0.01
						2" Ice	0.74	0.74	0.02
						4" Ice			
Side Arm Mount [SO 701-1]	C	From Leg	1.00 0' 0'	0.0000	40'	No Ice	0.85	1.67	0.07
						1/2"	1.14	2.34	0.08
						Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K	
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	4.00 0' 6'	-20.0000		102'	2.92	No Ice	6.68	0.03
									1/2" Ice	7.07	0.04
									1" Ice	7.46	0.05
									2" Ice	8.23	0.07
									4" Ice	9.78	0.11
VHLP2-180	C	Paraboloid w/Shroud (HP)	From Leg	4.00 0' 6'	10.0000		102'	2.00	No Ice	3.14	0.03
									1/2" Ice	3.41	0.04
									1" Ice	3.67	0.06
									2" Ice	4.21	0.09
									4" Ice	5.28	0.16

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice

Comb. No.	Description
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 86.8333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.35	-0.46	1.67
			Max. Mx	11	-16.92	641.94	1.97
			Max. My	2	-16.94	1.45	639.07
			Max. Vy	11	-24.60	641.94	1.97
			Max. Vx	8	24.34	-1.89	-638.73
			Max. Torque	6			1.37
L2	86.8333 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.05	-3.36	4.65
			Max. Mx	11	-29.38	1991.39	6.68
			Max. My	2	-29.39	3.97	1977.25
			Max. Vy	11	-32.27	1991.39	6.68
			Max. Vx	8	32.03	-7.21	-1976.23
			Max. Torque	2			-1.37
L3	38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-75.68	-5.90	8.05
			Max. Mx	11	-46.87	3599.83	11.49
			Max. My	2	-46.87	6.86	3575.75
			Max. Vy	11	-39.17	3599.83	11.49
			Max. Vx	8	38.94	-12.06	-3573.66
			Max. Torque	2			-1.55

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	75.68	-11.44	-0.02
	Max. H _x	11	46.89	39.15	0.09
	Max. H _z	2	46.89	0.07	38.91
	Max. M _x	2	3575.75	0.07	38.91
	Max. M _z	5	3597.39	-39.12	-0.07
	Max. Torsion	6	1.53	-33.94	-19.48
	Min. Vert	1	46.89	0.00	0.00
	Min. H _x	5	46.89	-39.12	-0.07
	Min. H _z	8	46.89	-0.10	-38.92
	Min. M _x	8	-3573.66	-0.10	-38.92
	Min. M _z	11	-3599.83	39.15	0.09
	Min. Torsion	2	-1.55	0.07	38.91

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	46.89	0.00	0.00	-1.50	-0.69	0.00
Dead+Wind 0 deg - No Ice	46.89	-0.07	-38.91	-3575.75	6.86	1.55
Dead+Wind 30 deg - No Ice	46.89	19.56	-33.64	-3090.27	-1799.78	1.08
Dead+Wind 60 deg - No Ice	46.89	33.87	-19.34	-1776.27	-3114.85	-0.08
Dead+Wind 90 deg - No Ice	46.89	39.12	0.07	6.18	-3597.39	-0.89
Dead+Wind 120 deg - No Ice	46.89	33.94	19.48	1787.84	-3122.73	-1.53
Dead+Wind 150 deg - No Ice	46.89	19.69	33.70	3094.25	-1813.09	-1.47
Dead+Wind 180 deg - No Ice	46.89	0.10	38.92	3573.66	-12.06	-1.49
Dead+Wind 210 deg - No Ice	46.89	-19.57	33.60	3083.34	1799.28	-0.97
Dead+Wind 240 deg - No Ice	46.89	-33.90	19.34	1772.31	3116.61	0.04
Dead+Wind 270 deg - No Ice	46.89	-39.15	-0.09	-11.49	3599.83	0.83
Dead+Wind 300 deg - No Ice	46.89	-33.98	-19.51	-1794.18	3126.17	1.34
Dead+Wind 330 deg - No Ice	46.89	-19.75	-33.71	-3096.13	1819.08	1.23
Dead+Ice+Temp	75.68	0.00	-0.00	-8.05	-5.90	0.00
Dead+Wind 0 deg+Ice+Temp	75.68	-0.02	-11.39	-1075.64	-4.01	0.54
Dead+Wind 30 deg+Ice+Temp	75.68	5.72	-9.85	-930.87	-542.91	0.31
Dead+Wind 60 deg+Ice+Temp	75.68	9.91	-5.67	-538.66	-935.51	-0.10
Dead+Wind 90 deg+Ice+Temp	75.68	11.44	0.02	-6.13	-1079.58	-0.40
Dead+Wind 120 deg+Ice+Temp	75.68	9.93	5.70	526.14	-937.68	-0.61
Dead+Wind 150 deg+Ice+Temp	75.68	5.76	9.87	916.37	-546.49	-0.59
Dead+Wind 180 deg+Ice+Temp	75.68	0.03	11.40	1059.46	-9.02	-0.52
Dead+Wind 210 deg+Ice+Temp	75.68	-5.72	9.84	913.44	531.07	-0.28
Dead+Wind 240 deg+Ice+Temp	75.68	-9.92	5.66	521.99	924.24	0.09
Dead+Wind 270 deg+Ice+Temp	75.68	-11.45	-0.02	-10.88	1068.49	0.39
Dead+Wind 300 deg+Ice+Temp	75.68	-9.94	-5.71	-543.42	926.85	0.57
Dead+Wind 330 deg+Ice+Temp	75.68	-5.77	-9.87	-933.00	536.36	0.52
Dead+Wind 0 deg - Service	46.89	-0.03	-15.20	-1398.17	2.25	0.61
Dead+Wind 30 deg - Service	46.89	7.64	-13.14	-1208.47	-703.70	0.42
Dead+Wind 60 deg - Service	46.89	13.23	-7.56	-695.02	-1217.57	-0.03
Dead+Wind 90 deg - Service	46.89	15.28	0.03	1.48	-1406.13	-0.35
Dead+Wind 120 deg - Service	46.89	13.26	7.61	697.68	-1220.65	-0.60
Dead+Wind 150 deg - Service	46.89	7.69	13.17	1208.16	-708.90	-0.58
Dead+Wind 180 deg - Service	46.89	0.04	15.20	1395.49	-5.14	-0.59

Load Combination	Vertical	Shear _x	Shear _y	Overturning Moment, M _x	Overturning Moment, M _y	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Service						
Dead+Wind 210 deg - Service	46.89	-7.65	13.13	1203.90	702.65	-0.38
Dead+Wind 240 deg - Service	46.89	-13.24	7.55	691.61	1217.41	0.02
Dead+Wind 270 deg - Service	46.89	-15.29	-0.04	-5.42	1406.23	0.32
Dead+Wind 300 deg - Service	46.89	-13.28	-7.62	-702.02	1221.14	0.53
Dead+Wind 330 deg - Service	46.89	-7.72	-13.17	-1211.55	710.39	0.48

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-46.89	0.00	0.00	46.89	0.00	0.000%
2	-0.07	-46.89	-38.91	0.07	46.89	38.91	0.000%
3	19.56	-46.89	-33.84	-19.56	46.89	33.64	0.000%
4	33.87	-46.89	-19.34	-33.87	46.89	19.34	0.000%
5	39.12	-46.89	0.07	-39.12	46.89	-0.07	0.000%
6	33.94	-46.89	19.48	-33.94	46.89	-19.48	0.000%
7	19.69	-46.89	33.70	-19.69	46.89	-33.70	0.000%
8	0.10	-46.89	38.92	-0.10	46.89	-38.92	0.000%
9	-19.57	-46.89	33.60	19.57	46.89	-33.60	0.000%
10	-33.90	-46.89	19.34	33.90	46.89	-19.34	0.000%
11	-39.15	-46.89	-0.09	39.15	46.89	0.09	0.000%
12	-33.98	-46.89	-19.51	33.98	46.89	19.51	0.000%
13	-19.75	-46.89	-33.71	19.75	46.89	33.71	0.000%
14	0.00	-75.68	0.00	-0.00	75.68	0.00	0.000%
15	-0.02	-75.68	-11.39	0.02	75.68	11.39	0.000%
16	5.72	-75.68	-9.85	-5.72	75.68	9.85	0.000%
17	9.91	-75.68	-5.67	-9.91	75.68	5.67	0.000%
18	11.44	-75.68	0.02	-11.44	75.68	-0.02	0.000%
19	9.93	-75.68	5.70	-9.93	75.68	-5.70	0.000%
20	5.76	-75.68	9.87	-5.76	75.68	-9.87	0.000%
21	0.03	-75.68	11.40	-0.03	75.68	-11.40	0.000%
22	-5.72	-75.68	9.84	5.72	75.68	-9.84	0.000%
23	-9.92	-75.68	5.66	9.92	75.68	-5.66	0.000%
24	-11.45	-75.68	-0.02	11.45	75.68	0.02	0.000%
25	-9.94	-75.68	-5.71	9.94	75.68	5.71	0.000%
26	-5.77	-75.68	-9.87	5.77	75.68	9.87	0.000%
27	-0.03	-46.89	-15.20	0.03	46.89	15.20	0.000%
28	7.64	-46.89	-13.14	-7.64	46.89	13.14	0.000%
29	13.23	-46.89	-7.56	-13.23	46.89	7.56	0.000%
30	15.28	-46.89	0.03	-15.28	46.89	-0.03	0.000%
31	13.26	-46.89	7.61	-13.26	46.89	-7.61	0.000%
32	7.69	-46.89	13.17	-7.69	46.89	-13.17	0.000%
33	0.04	-46.89	15.20	-0.04	46.89	-15.20	0.000%
34	-7.65	-46.89	13.13	7.65	46.89	-13.13	0.000%
35	-13.24	-46.89	7.55	13.24	46.89	-7.55	0.000%
36	-15.29	-46.89	-0.04	15.29	46.89	0.04	0.000%
37	-13.28	-46.89	-7.62	13.28	46.89	7.62	0.000%
38	-7.72	-46.89	-13.17	7.72	46.89	13.17	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	0.00005655

3	Yes	4	0.00000001	0.00093670
4	Yes	4	0.00000001	0.00091408
5	Yes	4	0.00000001	0.00003794
6	Yes	4	0.00000001	0.00089515
7	Yes	4	0.00000001	0.00095133
8	Yes	4	0.00000001	0.00006501
9	Yes	4	0.00000001	0.00089632
10	Yes	4	0.00000001	0.00090895
11	Yes	4	0.00000001	0.00004437
12	Yes	4	0.00000001	0.00095135
13	Yes	4	0.00000001	0.00091146
14	Yes	4	0.00000001	0.00000597
15	Yes	4	0.00000001	0.00059141
16	Yes	4	0.00000001	0.00064276
17	Yes	4	0.00000001	0.00064303
18	Yes	4	0.00000001	0.00059297
19	Yes	4	0.00000001	0.00063762
20	Yes	4	0.00000001	0.00063639
21	Yes	4	0.00000001	0.00058204
22	Yes	4	0.00000001	0.00062715
23	Yes	4	0.00000001	0.00062933
24	Yes	4	0.00000001	0.00058733
25	Yes	4	0.00000001	0.00064155
26	Yes	4	0.00000001	0.00064048
27	Yes	4	0.00000001	0.00001683
28	Yes	4	0.00000001	0.00008712
29	Yes	4	0.00000001	0.00008317
30	Yes	4	0.00000001	0.00001422
31	Yes	4	0.00000001	0.00007889
32	Yes	4	0.00000001	0.00008906
33	Yes	4	0.00000001	0.00001713
34	Yes	4	0.00000001	0.00007944
35	Yes	4	0.00000001	0.00008204
36	Yes	4	0.00000001	0.00001438
37	Yes	4	0.00000001	0.00008918
38	Yes	4	0.00000001	0.00008104

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	19.417	37	1.1357	0.0024
L2	92.5 - 38	8.843	37	0.9006	0.0008
L3	45 - 0	2.078	37	0.4160	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140'	BXA-70063/8CF w/ Mount Pipe	37	19.417	1.1357	0.0026	60919
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	37	16.111	1.0852	0.0020	21756
115'	(2) 7770.00 w/ Mount Pipe	37	13.584	1.0335	0.0015	12133
108'	VHLP2.5-11	37	12.034	1.0030	0.0012	9518
102'	APXVSP18-C-A20 w/ Mount Pipe	37	10.755	0.9678	0.0010	8015
100'	800MHz 2X50W RRH W/FILTER	37	10.340	0.9549	0.0010	7614
94'	742 213 w/ Mount Pipe	37	9.135	0.9123	0.0008	6645
74'	BCD-87010	37	5.611	0.7289	0.0005	5528
40'	KS24019-L112A	37	1.681	0.3649	0.0002	5113

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	49.655	12	2.9050	0.0062
L2	92.5 - 38	22.621	12	2.3042	0.0020
L3	45 - 0	5.318	12	1.0645	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140'	BXA-70063/6CF w/ Mount Pipe	12	49.655	2.9050	0.0068	23941
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	12	41.203	2.7760	0.0051	8550
115'	(2) 7770.00 w/ Mount Pipe	12	34.743	2.8567	0.0039	4786
108'	VHLP2.5-11	12	30.781	2.5660	0.0031	3739
102'	APXVSP18-C-A20 w/ Mount Pipe	12	27.510	2.4758	0.0026	3148
100'	800MHz 2X50W RRH W/FILTER	12	26.449	2.4428	0.0025	2990
94'	742 213 w/ Mount Pipe	12	23.367	2.3339	0.0021	2609
74'	BCD-87010	12	14.354	1.8648	0.0012	2166
40'	KS24019-L112A	12	4.301	0.9336	0.0006	1999

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P/P _a
L1	140 - 86.8333	TP39.223x26.216x0.3125	53'2-1/32"	0'	0.0	39.000	37.7587	-16.92	1472.59	0.011
L2	86.8333 - 38	TP50.56x37.2117x0.4063	54'6"	0'	0.0	39.000	63.3646	-29.38	2471.22	0.012
L3	38 - 0 (3)	TP59.05x48.033x0.5	45'	0'	0.0	39.000	94.2655	-46.87	3676.35	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} /F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} /F _{by}
L1	140 - 86.8333	TP39.223x26.216x0.3125	643.05	22.287	39.000	0.571	0.00	0.000	39.000	0.000
L2	86.8333 - 38	TP50.56x37.2117x0.4063	1994.0	31.904	39.000	0.818	0.00	0.000	39.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	3604.4	32.076	39.000	0.822	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	24.63	0.652	26.000	0.051	0.61	0.010	26.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	32.30	0.510	26.000	0.040	1.03	0.008	26.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	39.21	0.416	26.000	0.033	1.34	0.006	26.000	0.000

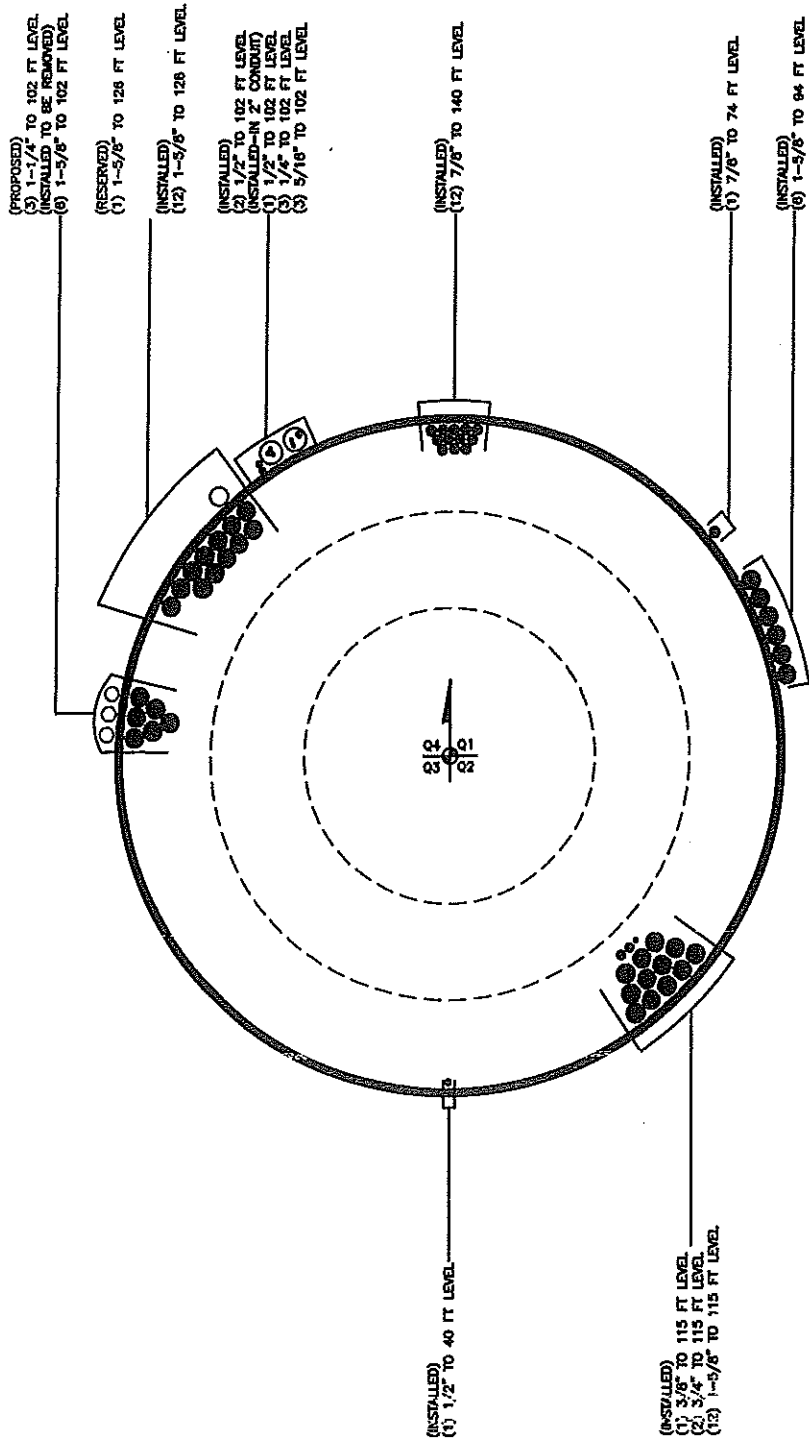
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P $\frac{P_a}{P_s}$	Ratio f_{bx} $\frac{F_{bx}}{F_{bx}}$	Ratio f_{by} $\frac{F_{by}}{F_{by}}$	Ratio f_v $\frac{F_v}{F_v}$	Ratio f_{vt} $\frac{F_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 86.8333 (1)	0.011	0.571	0.000	0.051	0.000	0.584	1.333	H1-3+VT ✓
L2	86.8333 - 38 (2)	0.012	0.818	0.000	0.040	0.000	0.830	1.333	H1-3+VT ✓
L3	38 - 0 (3)	0.013	0.822	0.000	0.033	0.000	0.835	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF* P_{allow} K	% Capacity	Pass Fail	
L1	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-16.92	1962.96	43.8	Pass	
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-29.38	3294.14	62.3	Pass	
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-46.87	4900.57	62.7	Pass	
							Summary		
							Pole (L3)	62.7	Pass
							RATING =	62.7	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

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

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

Site Data

BU#: 806369
 Site Name: HRT 094 943225
 App #: 165644 rev1

Enter Load Factors Below:

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

Pier Properties

Concrete:

Pier Diameter = 7.5 ft
 Concrete Area = 6361.7 in²

Reinforcement:

Clear Cover to Tie = 3.00 in
 Horiz. Tie Bar Size = 3
 Vert. Cage Diameter = 6.83 ft
 Vert. Cage Diameter = 81.98 in
 Vertical Bar Size = 10
 Bar Diameter = 1.27 in
 Bar Area = 1.27 in²
 Number of Bars = 52
 As Total = 66.04 in²
 A s/ Aconc, Rho: 0.0104 1.04%

ACI 10.5, ACI 21.10.4, and IBC 1810.

Min As for Flexural, Tension Controlled, Shafts:

(3)*(Sqrt(f'c)/Fy: 0.0027
 200 / Fy: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho: 0.33% Flexural
 Provided Rho: 1.04% OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = ($\phi=0.65$) Pn		
Pn per ACI 318 (10-2)	10408.53	kips
at Mu=($\phi=0.65$)Mn=	6794.66	ft-kips
Max Tu, ($\phi=0.9$) Tn =	3566.16	kips
at Mu= $\phi=(0.90)$ Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	3924.434	ft-kips (* Note)
Max. Service Shaft P:	47	kips
Max Axial Force Type:	Comp.	

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

Load Factor Shaft Factored Loads

1.30	Mu:	5101.764	ft-kips
1.30	Pu:	61.1	kips

Material Properties

Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code= 2002

Seismic Properties

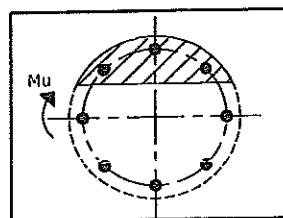
Seismic Design Category = B
 Seismic Risk = Low

Solve
(Run)

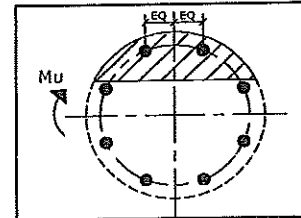
<-- Press Upon Completing All Input

Results:

Governing Orientation Case: 1



Case 1



Case 2

Dist. From Edge to Neutral Axis: 18.74 in

Extreme Steel Strain, ϵ_t : 0.0108

$\epsilon_t > 0.0050$, Tension Controlled

Reduction Factor, ϕ : 0.900

Output Note: Negative Pu=Tension

For Axial Compression, ϕ Pn = Pu: 61.10 kips
 Drilled Shaft Moment Capacity, ϕ Mn: 10671.42 ft-kips
 Drilled Shaft Superimposed Mu: 5101.76 ft-kips

(Mu/ ϕ Mn, Drilled Shaft Flexure CSR): 47.8%

Monopole Drilled Pier

Checks capacity of a single drilled shaft foundation for a monopole



BU#: 806369

Site Name: HRT 094 943226

App Number: 165644 rev1

ACI 318 Version: 2002

Design Reactions		
Shear, S:	39.00	kips
Moment, Mt:	3604.00	ft-kips
Tower Weight, Wt:	47.00	kips
Tower Height, H:	140	ft
Base Diameter, BD:	59.05	in

Foundation Dimensions		
Caisson Diameter, CD:	7.5	ft
Ext. Above Grade, E:	0.0	ft
Depth Below Grade, L:	47.0	ft
Neglected Depth, N:	5.0	ft
Rebar Size, Sp:	10	
Rebar Quantity, mp:	52	
Tie Size, tp:	3	

Material Properties		
Rebar Tensile, Fy:	60	ksi
Concrete Strength, F'c:	3000	psi
Concrete Density, δx:	100.9	pcf
Clear Cover, cc:	3	in

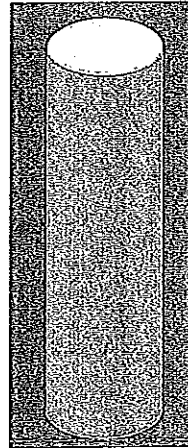
Soil Properties		
Soil Unit Weight, γ:	51.1	pcf
Allowable Bearing, Bc:	4.500	ksf
Seismic Design Cat, z:	B	

Caisson Analysis		
Depth to Zero Shear:	8.1	ft
Max Factored Moment:	5101.76	ft-kips
Overturning FOS:	6.65	

Depth	Shear	Moment
0 ft	39.1 kips	3607.4 ft-kips
4.7 ft	39.1 kips	3791 ft-kips
9.4 ft	-14.7 kips	3856.2 ft-kips

Design Checks			
	Capacity/Availability	Demand/Limits	Check
Minimum Req'd Dia. 1 (ft):	7.50	3.65	OK
Minimum Req'd Dia. 2 (ft):	7.50	6.42	OK
Bearing (ksf):	4.50	1.06	OK
Rebar Area (in ²):	66.04	21.21	OK
Pier moment capacity (k-ft):	10671.42	5101.76	OK
Rebar spacing (in):	3.80	2 < Bs < 18	OK
Development Length (in):	463.61	12.00	OK
Soil moment capacity (FOS):	6.65	2.00	OK

Assume 0.33% Minimum Steel?



Bearing: 23.6%

Steel: 47.8%

Soil: 30.1%

Equivalent Silty Soil Parameter Tool

Note:

This tool determines the equivalent soil parameters for silty soil (having both cohesion and angle of friction), according to the CCI Foundations ongoing discussions (2010), Criteria Item DS-7. The equivalent parameters results are to be input in the PLS-Caisson Software to account for the combined resistance of the granular and cohesive parameters simultaneously present in silty and similar soils



Site Data

BU#: 806369
 Site Name: HRT 094 943225
 App #: 165644 rev1

Neglect Top Layer: Y N
 # of Layers:

Input the data in the "shaded" columns. If soil layer is submerged, then enter the saturated density (buoyant unit weight)

Layer	Layer Thickness (ft)	From (ft)	To (ft)	Unit Weight of Soil (pcf)	Cohesion (psf)	Internal Friction Angle (deg)	K _s	Depth to Mid-Layer (ft)	Overburden (psf)	Sand Resistance (ksf)	Clay Resistance (ksf)	P _e total (ksf)	Equivalent Parameters for PLS Caisson Input	
													Equivalent Cohesion (psf)	Equivalent K _s
1	2	0	2	105			0.000	1	105	0.000	0.00	0.000	0	0.00
2	3	2	5	100			0.000	3.5	360	0.000	0.00	0.000	0	0.00
3	5	5	10	100	500	30	3.000	7.5	760	6.840	4.00	10.840	1355	4.75
4	5	10	15	36	100	27	2.663	12.5	1100	8.788	0.80	9.588	1198	2.91
5	5	15	20	36	100	27	2.663	17.5	1280	10.226	0.80	11.026	1378	2.87
6	5	20	25	36	100	27	2.663	22.5	1460	11.664	0.80	12.464	1558	2.85
7	5	25	30	36	100	27	2.663	27.5	1640	13.102	0.80	13.902	1738	2.83
8	5	30	35	36	100	27	2.663	32.5	1820	14.540	0.80	15.340	1917	2.81

Calculation Notes:

- 1- Sand Resistance = $3 * K_p * \text{Overburden}$ → (Per equations used in PLS-Caisson Software)
- 2- Cohesion Resistance = $8 * C$ → (Per equations used in PLS-Caisson Software, Full 8CD approach)
- 3- Total Resistance = Sand Resistance + Cohesion Resistance
- 4- Equivalent K_p = Total / Overburden / 3
- 5- Equivalent C = Total / 8

CAISSON Version 10.40 4:47:04 PM Tuesday, October 16, 2012

Crown Castle USA

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 *

Project Title: 806369
 Project Notes:

Calculation Method: Full 8CD

***** I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
7.50	0.00	3.00	60.00

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	2.00	0.00	105.0			
2	Clay	2.00	2.00	100.0			
3	Clay	2.00	4.00	100.0	1355.0		
4	Clay	5.00	10.00	36.0	1198.0		
5	Clay	5.00	15.00	36.0	1378.0		
6	Clay	5.00	20.00	36.0	1558.0		
7	Clay	5.00	25.00	36.0	1738.0		
8	Clay	5.00	30.00	36.0	1917.0		
9	Clay	10.00	35.00	41.0	200.0	3.255	32.00
10	Sand	2.00	45.00	41.0			

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
3604.0	47.0	39.00	6.65

***** R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	End Bearing Pressure (psf)
47.000	311.459	1063.9

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft^3)	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	0.00	2.00	105.0			0.00	1.00
Clay	2.00	3.00	100.0			0.00	3.50
Clay	5.00	5.00	100.0	1355.0		406.50	7.50
Clay	10.00	5.00	36.0	1198.0		359.40	12.50
Clay	15.00	5.00	36.0	1378.0		413.40	17.50
Clay	20.00	5.00	36.0	1558.0		467.40	22.50
Clay	25.00	5.00	36.0	1738.0		87.68	25.42
Clay	25.84	0.84	36.0	1738.0		-433.72	27.92
Clay	25.84	4.16	36.0	1917.0		-575.10	32.50
Clay	30.00	5.00	36.0	1917.0		-120.00	40.00
Clay	35.00	10.00	41.0	200.0	3.255	-345.83	46.01
Sand	45.00	2.00	41.0				

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	259.7	23989.3	39.1	3607.4
4.70	259.7	25210.0	39.1	3791.0
9.40	-98.0	25643.8	-14.7	3856.2
14.10	-441.5	24364.5	-66.4	3663.8
16.80	-820.3	21417.7	-123.4	3220.7
23.50	-1245.7	16582.7	-187.5	2493.6
28.20	-1228.6	10215.6	-184.8	1536.2
32.90	-707.4	5638.0	-106.4	847.8
37.60	-434.6	3235.5	-63.4	486.5
42.30	-378.2	1325.3	-56.9	199.3
47.00	-321.8	-319.8	-48.4	-48.1