



QC Development

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860-670-9068

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January 18, 2016

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2199
782 Old Clinton Road, Westbrook, CT 06498
N 41-17-26
W 72-28-08

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 98-foot level of the existing 160-foot Monopole at 782 Old Clinton Road, Westbrook, CT. The structure is owned by Crown Castle and the property is owned by Catherine A. Wade. AT&T now intends to install three (3) additional Ericsson remote radio units (RRUS-12 B2). The new radio units would be installed immediately below the existing antennas at the 96-foot level of the tower.

This facility was approved by the Town of Westbrook Zoning Commission on May 26, 1998 and AT&T's shared use was approved by the Connecticut Siting Council in Petition No. 511, July 11, 2001. The original Special Permit approval included the condition that the tower not exceed 160' in height. No changes are proposed to the overall height of the tower, so therefore this modification complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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 Noel Bishop, First Selectman for the Town of Westbrook, and to the Westbrook Department of Land Use, as

well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'MR', with a long horizontal line extending to the right.

Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Noel Bishop - elected official (via e-mail)
Lisa De Maria – local Planning & Zoning (via e-mail)
Crown Castle - structure owner (via e-mail)
Catherine A. Wade – property owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							7.08%
AT&T GSM	6	296	100	0.0723	880	0.5867	1.23%
AT&T GSM	6	427	100	0.1043	1900	1.0000	1.04%
AT&T UMTS	1	500	100	0.0203	880	0.5867	0.35%
AT&T UMTS	1	500	100	0.0203	1900	1.0000	0.20%
AT&T LTE	1	500	100	0.0203	740	0.4933	0.41%
Site Total							10.32%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							7.08%
AT&T GSM	6	139	100	0.0339	850	0.5667	0.60%
AT&T GSM	6	615	100	0.1502	1900	1.0000	1.50%
AT&T UMTS	1	267	100	0.0109	850	0.5667	0.19%
AT&T UMTS	1	406	100	0.0165	1900	1.0000	0.17%
AT&T LTE	1	793	100	0.0323	740	0.4933	0.65%
AT&T LTE	1	1734	100	0.0706	1900	1.0000	0.71%
Site Total							10.90%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Note: Proposed Loading may also include corrections to certain Existing Loading values

PROJECT INFORMATION

SCOPE OF WORK: TELECOMMUNICATIONS FACILITY UPGRADE (LTE BWE 2017 UPGRADE):

SITE ADDRESS: 782 OLD CLINTON ROAD
WESTBROOK, CT 06498

LATITUDE: 41.290256° N 41° 17' 24.92" N

LONGITUDE: 72.469780° W 72° 28' 11.20" W

TYPE OF SITE: MONOPOLE / INDOOR EQUIPMENT

TOWER HEIGHT: 160'±

RAD CENTER: 98'±

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT2199

SITE NAME: WESTBROOK- OLD CLINTON ROAD

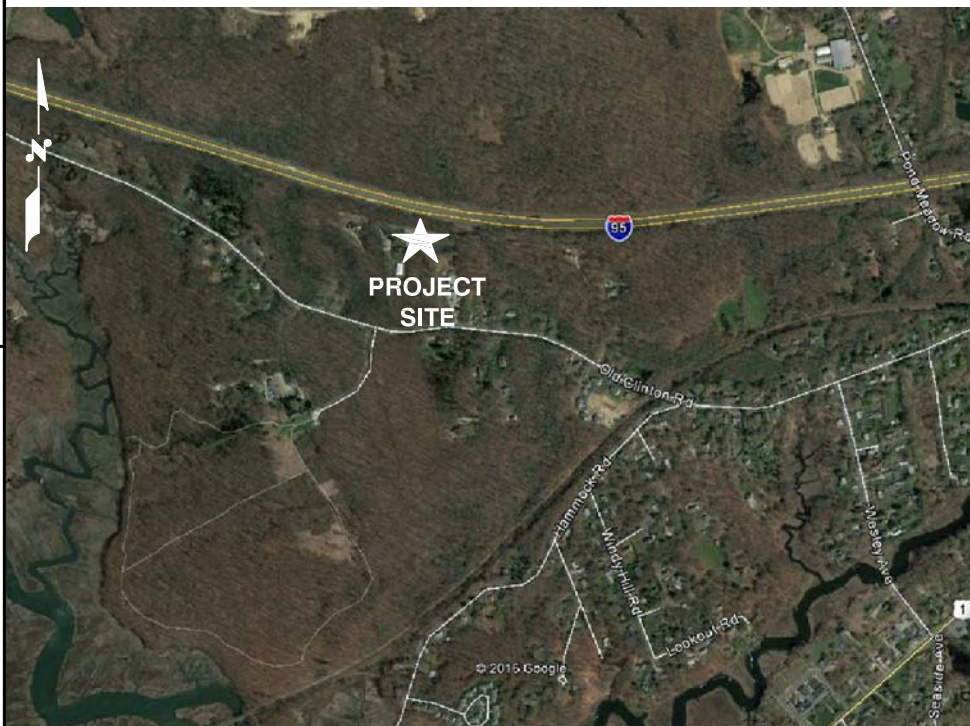
PROJECT: LTE BWE 2017 UPGRADE

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
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RF-1	RF-PLUMBING DIAGRAM	1
G-1	GROUNDING DETAILS	1

VICINITY MAP

DIRECTIONS TO SITE:
START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. MERGE ONTO CT-9 S VIA EXIT 22S ON THE LEFT TOWARD MIDDLETOWN/OLD SAYBROOK. MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS LODGE TURNPIKE TOWARD NEW HAVEN/N.Y. CITY. TAKE THE CT-145/HORSE HILL RD EXIT, EXIT 64, TOWARD CLINTON. TURN LEFT ONTO CT-145/HORSE HILL RD. TURN LEFT ONTO OLD CLINTON RD. 782 OLD CLINTON RD IS ON THE LEFT.



GENERAL NOTES

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

CROWN CASTLE SITE NAME: POND MEADOW ROAD STABLE
CROWN CASTLE SITE #: 876339

72 HOURS

CALL BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

Daniel P. Hamm
No. 24178
LICENSED PROFESSIONAL ENGINEER

Hudson Design Group
1600 OSGOOD STREET
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27 NORTHWESTERN DR.
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MIDDLESEX COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/11/17	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	12/20/16	ISSUED FOR REVIEW	AN	AT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AN

SITE NUMBER	DRAWING NUMBER	REV
CT2199	T-1	1

AT&T
TITLE SHEET
(LTE BWE)

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 GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR – SAI
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH LTE SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T 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: IBC 2012 WITH 2016 CT BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
 LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

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

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

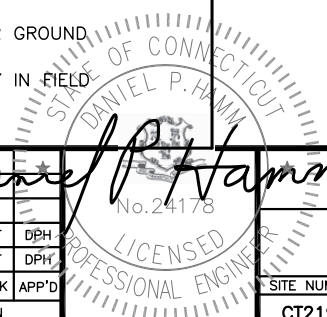
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

EQUIPMENT 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	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		



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 N. ANDOVER, MA 01845
 TEL: (978) 557-5553
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 27 NORTHWESTERN DR.
 SALEM, NH 03079

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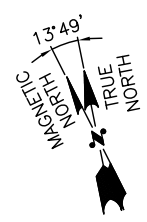
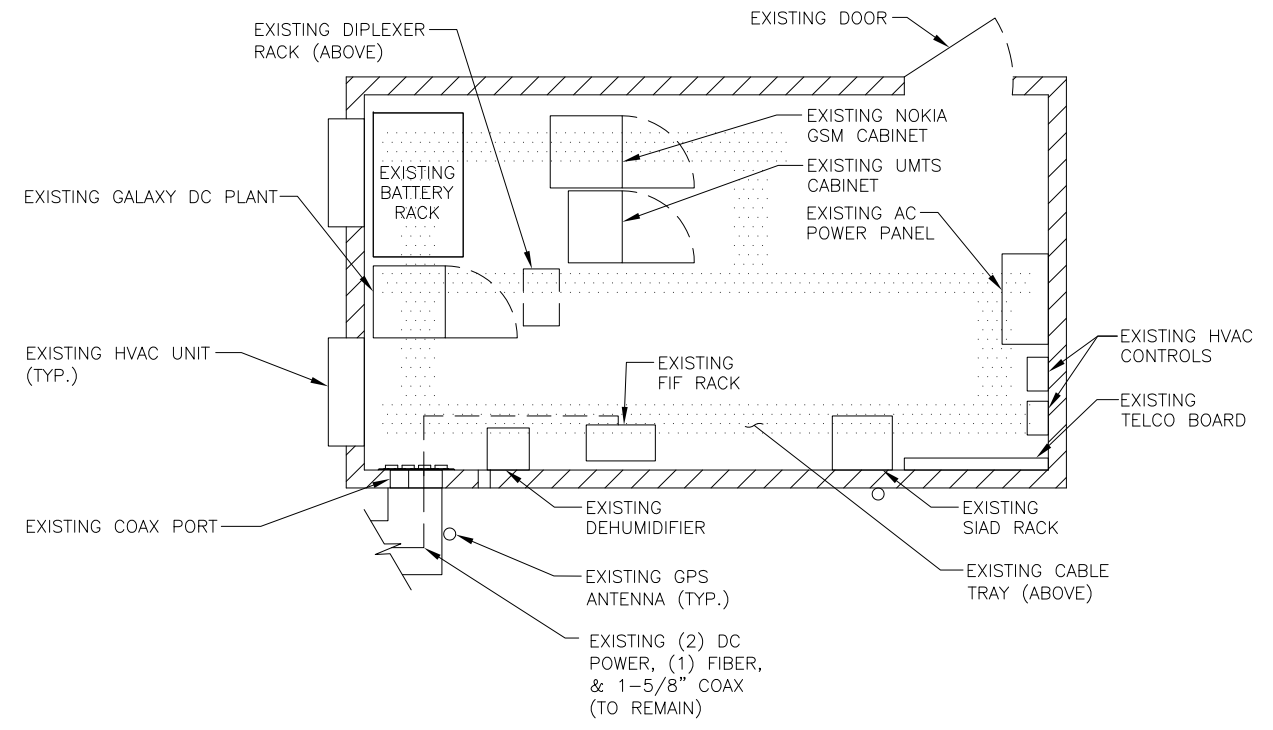
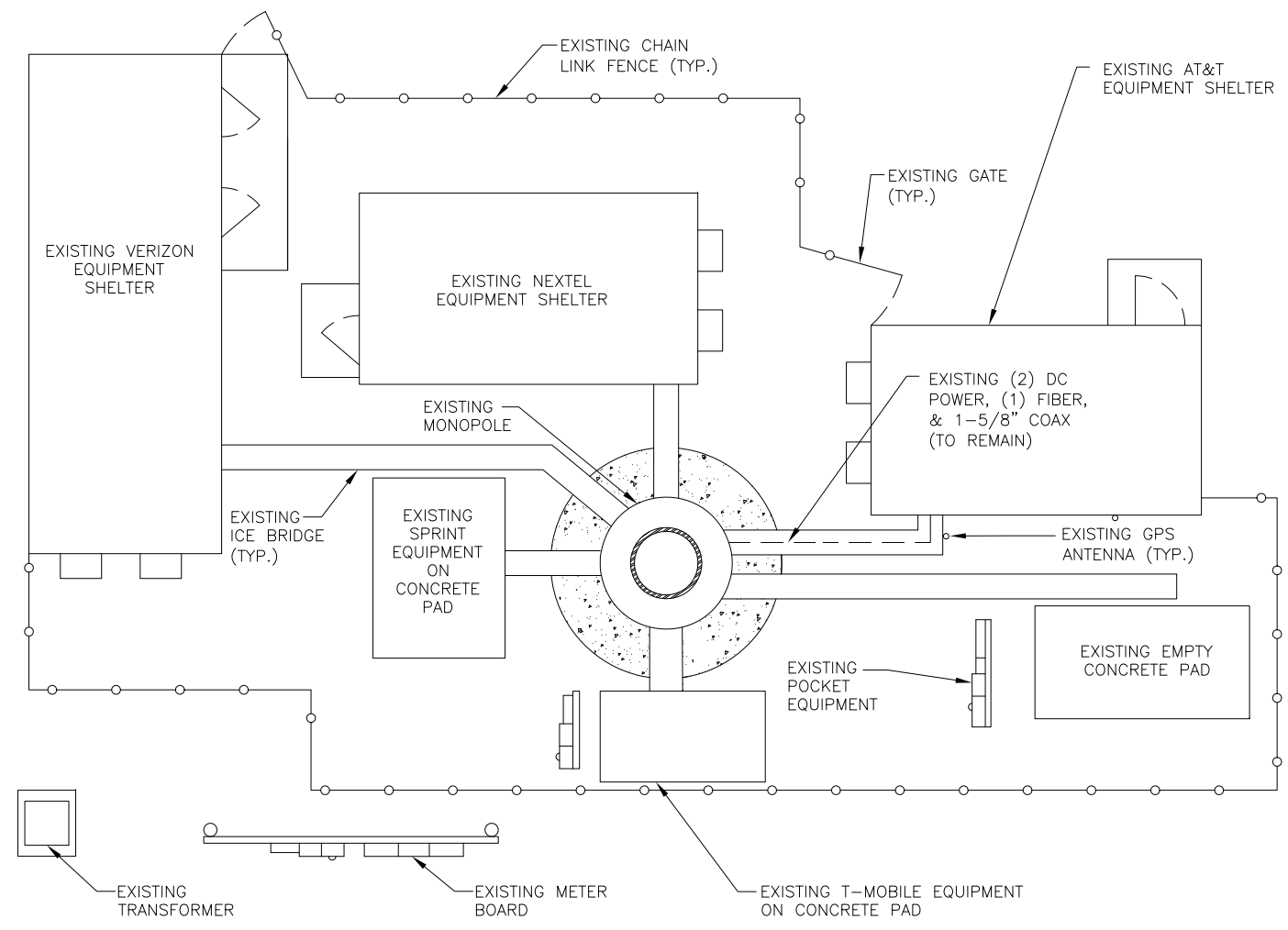
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AT&T
GENERAL NOTES (LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
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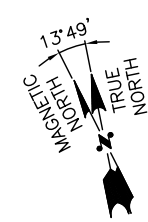
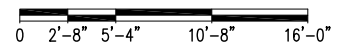
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.



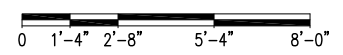
COMPOUND PLAN
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

1
A-1



EQUIPMENT PLAN
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

2
A-1



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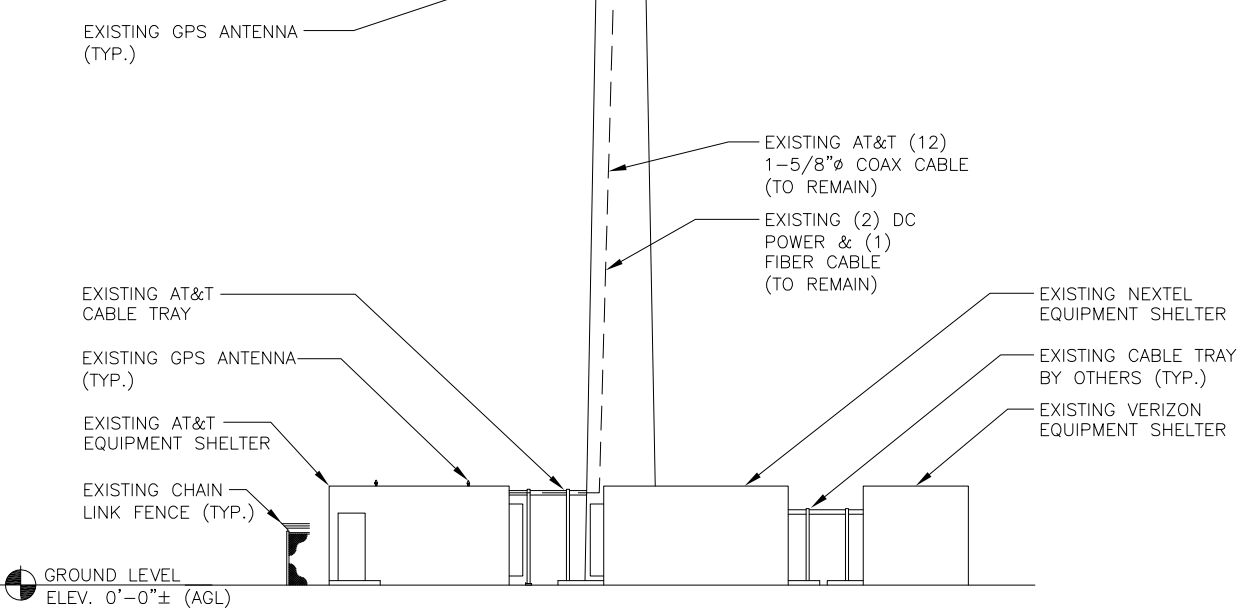
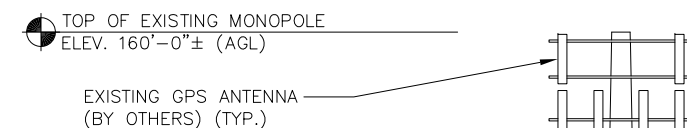
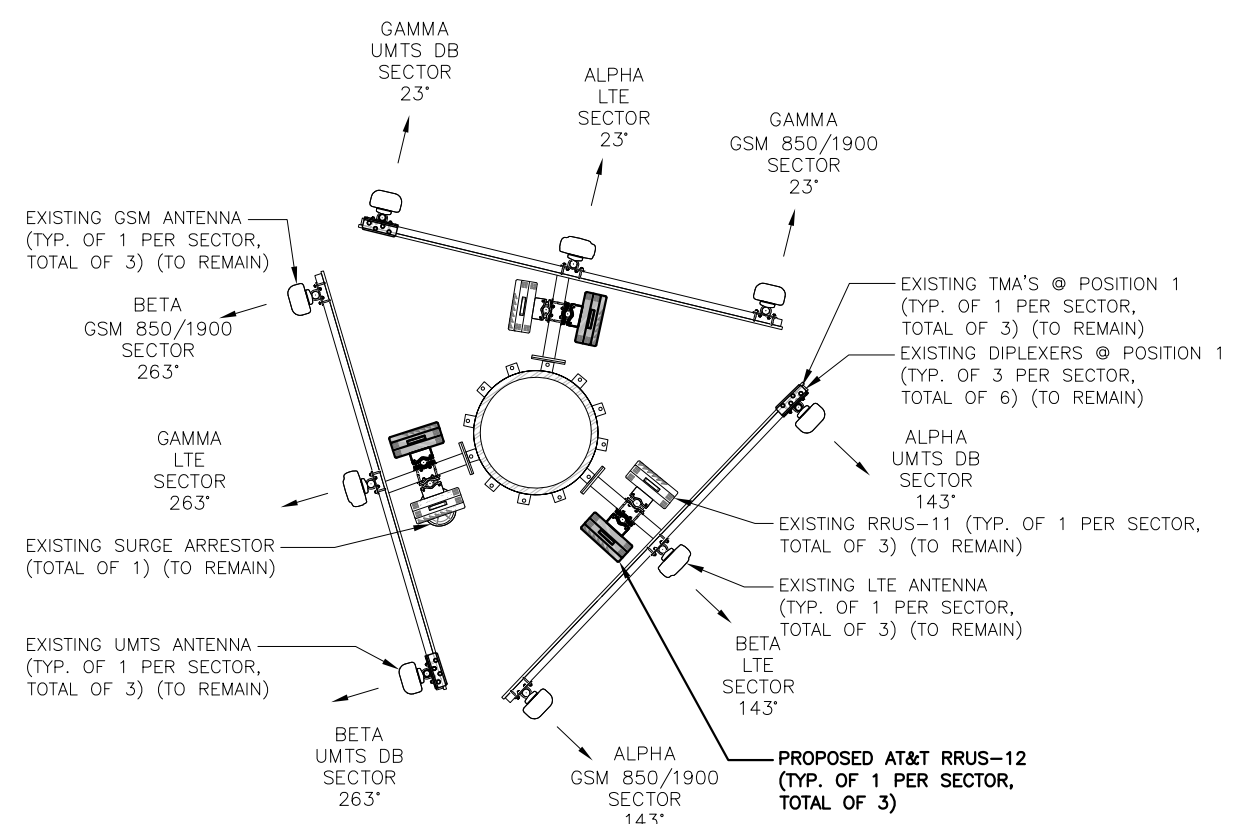
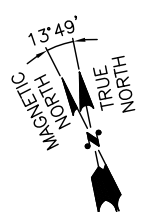
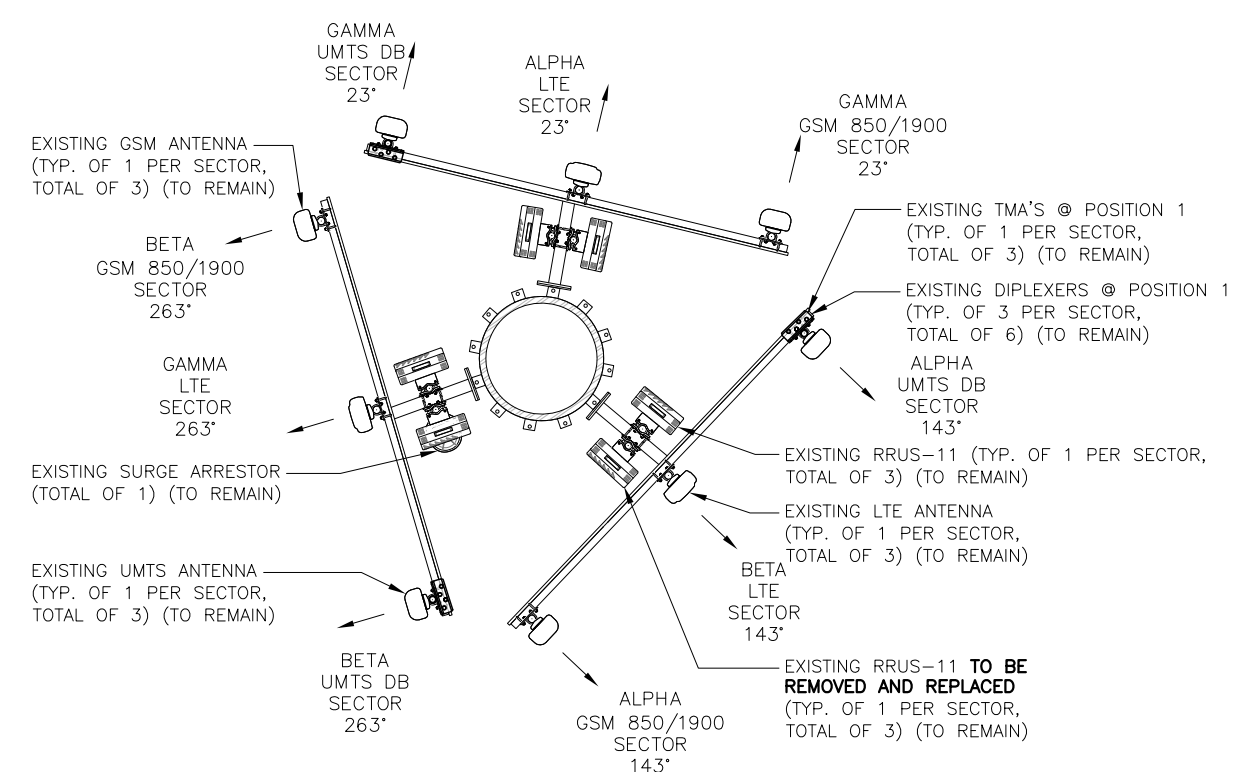
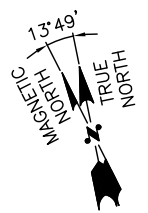
SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AN

Daniel P. Hamm
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS (LTE BWE)

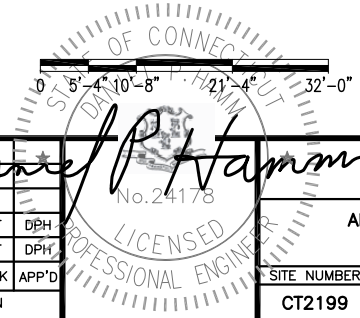
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ELEVATION 3
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
A-2



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CCI SITE ID: 876339
782 OLD CLINTON ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/11/17	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	12/20/16	ISSUED FOR REVIEW	AN	AT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AN

AT&T

ANTENNA LAYOUTS & ELEVATION (LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2199	A-2	1

EXISTING ANTENNA SCHEDULE

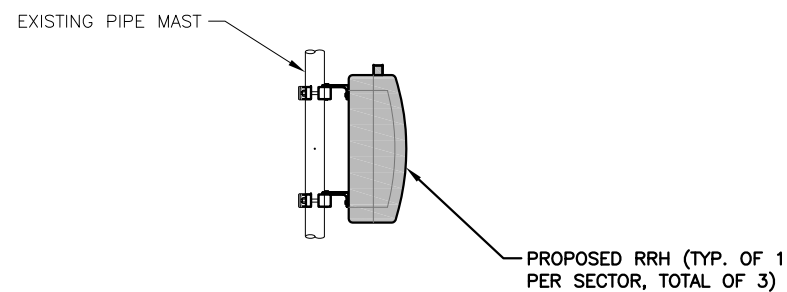
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	POWERWAVE	7770	55X11X5
	KMW POWERWAVE	AM-X-CD-14-65-00T-RET 7770	48X11.8X5.9 55X11X5
BETA:	POWERWAVE	7770	55X11X5
	KMW POWERWAVE	AM-X-CD-14-65-00T-RET 7770	48X11.8X5.9 55X11X5
GAMMA:	POWERWAVE	7770	55X11X5
	KMW POWERWAVE	AM-X-CD-14-65-00T-RET 7770	48X11.8X5.9 55X11X5

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

NOTE:

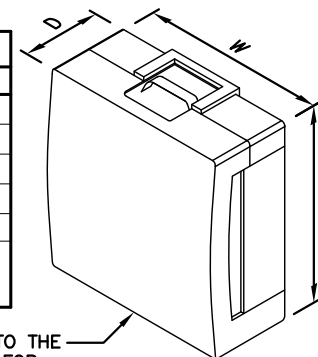
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



PROPOSED RRH MOUNTING DETAIL 1
SCALE: N.T.S. A-3

RRU CHART				
QUANTITY	MODEL	L	W	D
3 (E)	RRUS-11	19.7"	17.0"	7.2"
3 (P)	RRUS-12	20.4"	18.5"	7.5"
-	RRUS-32	27.2"	12.1"	7.0"
-	RRUS-E2	20.4"	18.5"	7.5"
-	LTE-A2	16.4"	15.2"	3.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

RRU DETAIL 2
SCALE: N.T.S. A-3

Hudson Design Group
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2199
SITE NAME: WESTBROOK- OLD CLINTON ROAD
CCI SITE ID: 876339
782 OLD CLINTON ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

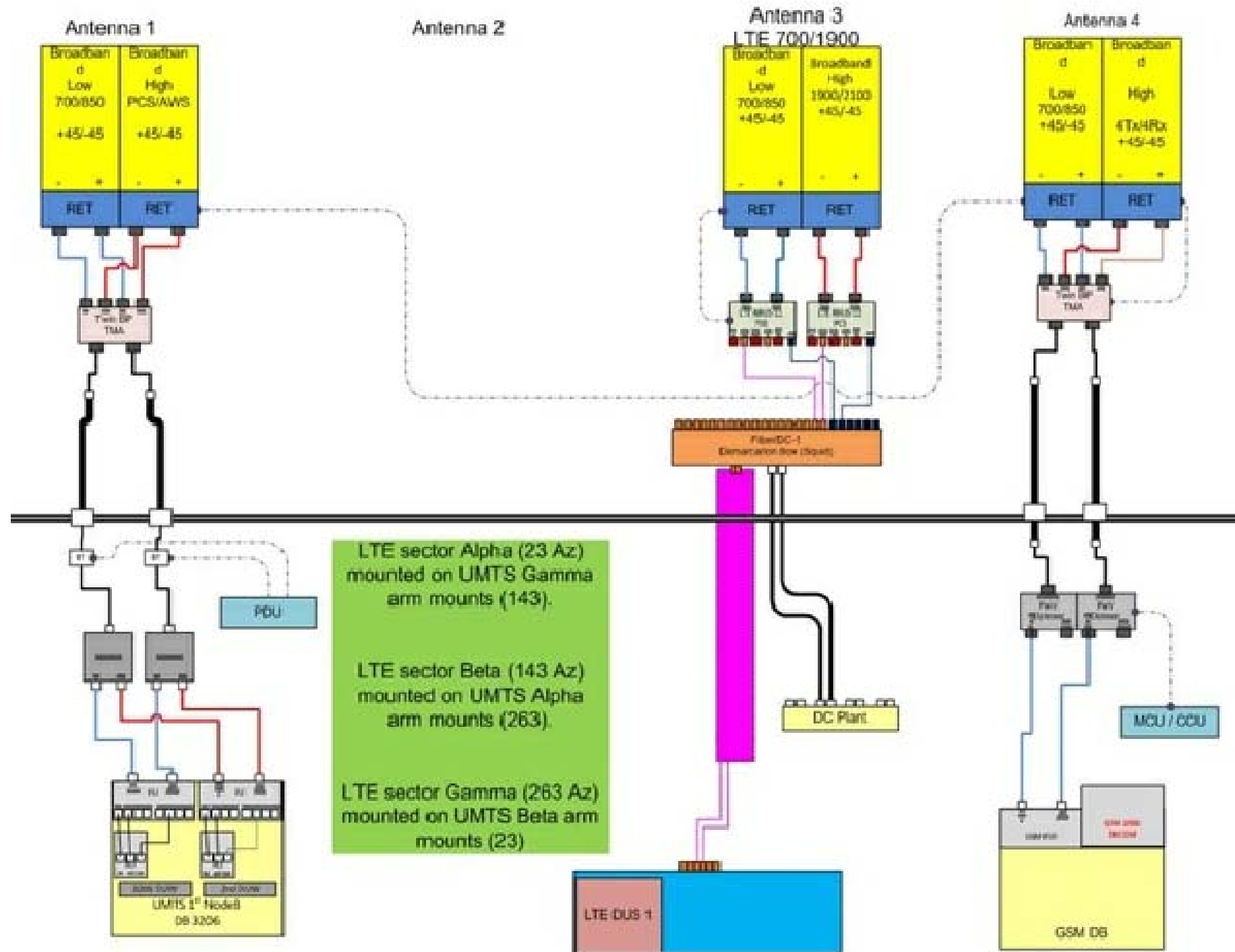
at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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A	12/20/16	ISSUED FOR REVIEW	AN	AT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AN

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T	
DETAILS (LTE BWE)	
SITE NUMBER	DRAWING NUMBER
CT2199	A-3
REV	1

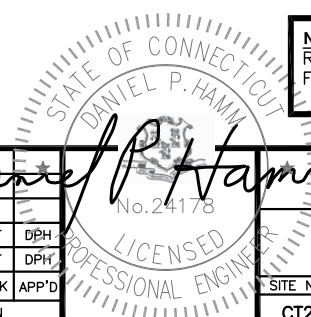


RF PLUMBING DIAGRAM
SCALE: N.T.S.

1
RF-1

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

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



Daniel P. Hamm

Hudson Design Group, Inc.
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
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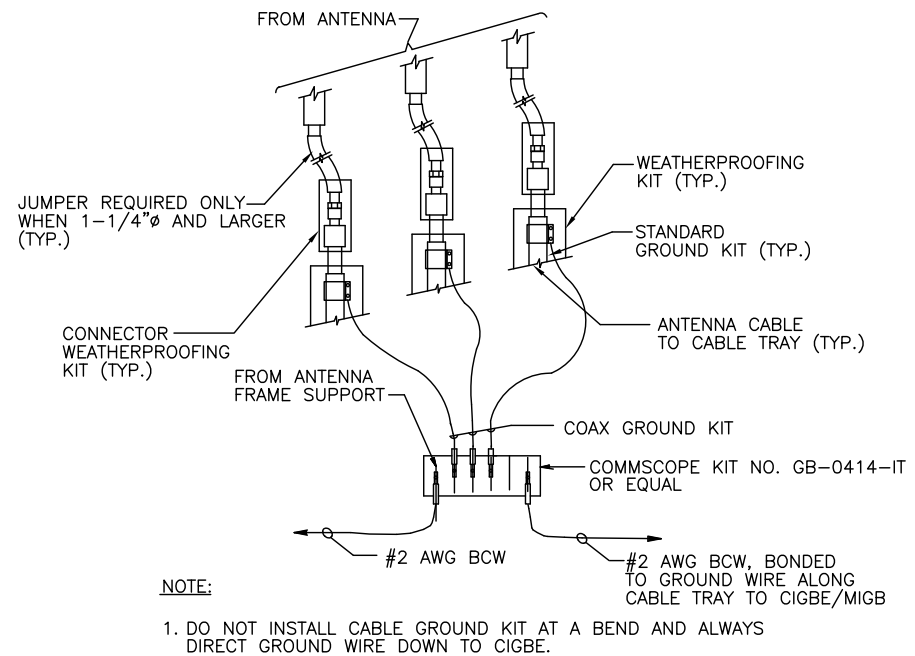
SITE NUMBER: CT2199
SITE NAME: WESTBROOK- OLD CLINTON ROAD
CCI SITE ID: 876339
782 OLD CLINTON ROAD
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SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AN

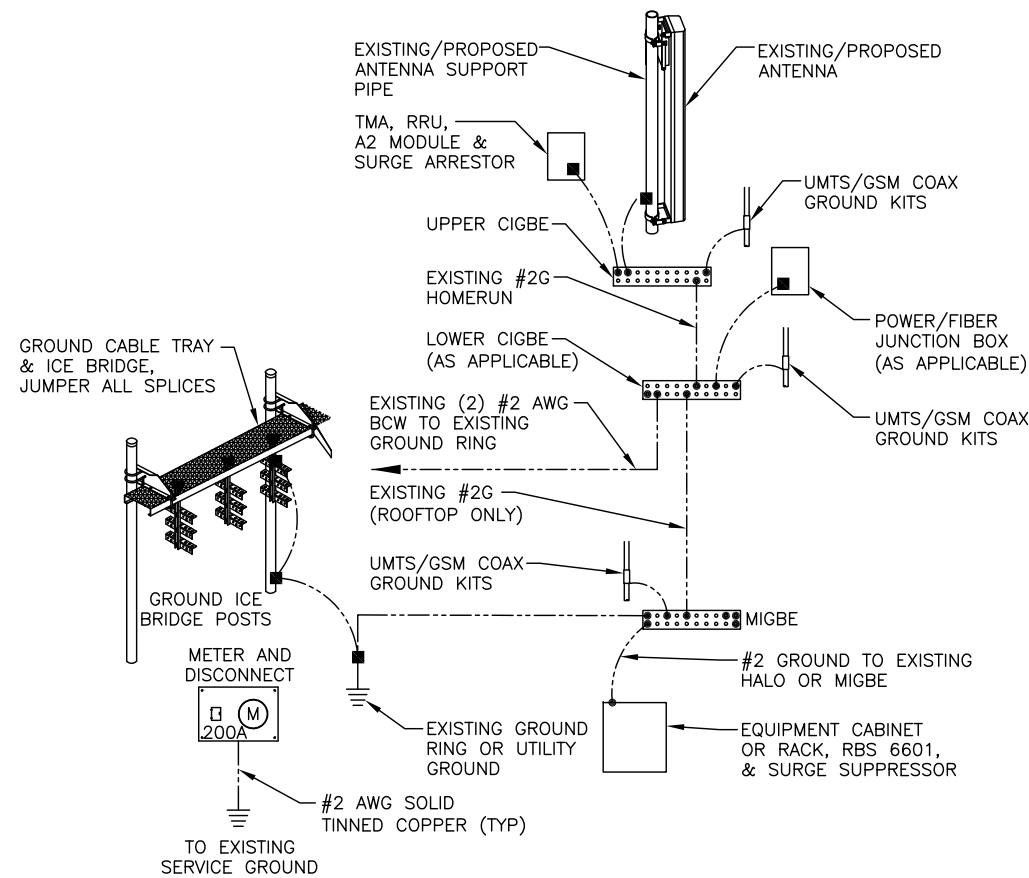
AT&T		
RF PLUMBING DIAGRAM (LTE BWE)		
SITE NUMBER	DRAWING NUMBER	REV
CT2199	RF-1	1



GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

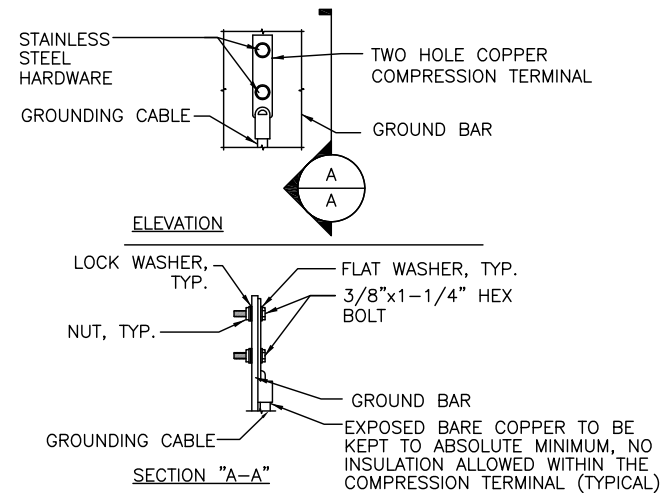
1
G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2
G-1



NOTE:

- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
- CADWELDED DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3
G-1

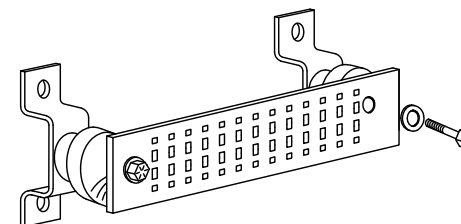
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

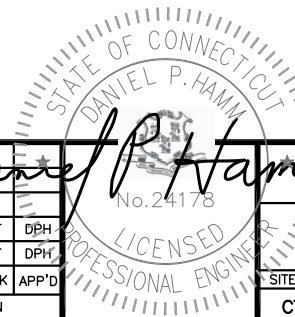
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL

SCALE: N.T.S

4
G-1



1600 OSGOOD STREET
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SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AN

AT&T		
GROUNDING DETAILS (LTE BWE)		
SITE NUMBER	DRAWING NUMBER	REV
CT2199	G-1	1



Date: December 27, 2016

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704.405.6607

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
rferrante@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: AT&T Mobility Co-Locate
Carrier Site Number: CT2199
Carrier Site Name: Westbrook Old Clinton Road

Crown Castle Designation: **Crown Castle BU Number:** 876339
Crown Castle Site Name: POND MEADOW RD. STABLE
Crown Castle JDE Job Number: 413236
Crown Castle Work Order Number: 1341010
Crown Castle Application Number: 372419 Rev. 0

Engineering Firm Designation: Paul J Ford and Company Project Number: 37516-2880.004.7805

Site Data: 782 Old Clinton Road, WESTBROOK, Middlesex County, CT
Latitude 41° 17' 25.7", Longitude -72° 28' 7.9"
160 Foot - Monopole Tower

Dear Charles McGuirt,

Paul J Ford and Company is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 984547, in accordance with application 372419, revision 0.

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:

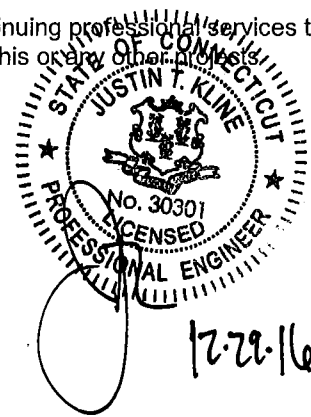
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

We at Paul J Ford and Company 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.

Respectfully submitted by:

Ryan Ferrante, EI
Structural Designer



Date: **December 27, 2016**

Charles McGuirt
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704.405.6607

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rferrante@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT2199
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Latitude 41° 17' 25.7", Longitude -72° 28' 7.9"
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LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

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

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7) APPENDIX C

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1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by VALMONT in July of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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
96.0	96.0	3	ericsson	RRUS 12 B2	-	-	-

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
159.0	160.0	1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe	3	1-1/4	1
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
155.0	159.0	1	tower mounts	Platform Mount [LP 602-1]	-	-	1
	156.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
	155.0	1	tower mounts	Side Arm Mount [SO 102-3]			
142.0	145.0	3	commscope	LNx-6515DS-VTM w/ Mount Pipe	13	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	3	ericsson	RRUS 11 B12				
142.0	1	tower mounts	Platform Mount [LP 602-1]				
130.0	130.0	3	rfs celwave	APXV18-206517S-ACU w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			

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	118.0	3	alcatel lucent	B13 RRH 4X30	2	1-5/8	2
		3	alcatel lucent	B66A RRH4X45			
		3	alcatel lucent	RRH2X60-PCS			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
	4	antel	LPA-80063-4CF-EDIN-5 w/ Mount Pipe	12	1-5/8	1	
	2	antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe				
116.0	1	tower mounts	Platform Mount [LP 303-1]				
96.0	103.0	1	gps	GPS_A			
	98.0	1	ericsson	RRUS-11	-	-	1
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		3	ericsson	RRUS-11			
	96.0	2	ericsson	RRUS-11	1 1 2 12	3/8 1/2 3/4 1-5/8	1
		6	powerwave technologies	TT19-08BP111-001			
		1	raycap	DC6-48-60-18-8F			
1		tower mounts	T-Arm Mount [TA 602-3]				
87.0	88.0	1	lucent	KS24019-L112A	1	1/2	1
	87.0	1	tower mounts	Side Arm Mount [SO 701-1]			

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment to be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
GEOTECHNICAL REPORTS	FDH, 10-12295E G1, 01/10/2011	1532966	CCISITES
TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Semaan, 17818, 07/06/1998	1533020	CCISITES
TOWER MANUFACTURER DRAWINGS	Valmont, 17618-98, 07/14/1998	1531985	CCISITES
POST-MODIFICATION INSPECTION	TEP, 111347, 07/18/2011	2923975	CCISITES
POST-MODIFICATION INSPECTION	TEP, 131001.876339, 08/23/2013	4023333	CCISITES
POST-MODIFICATION INSPECTION	TEP, 128324, 1/11/2013	3366474	CCISITES
TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 31002-0028, 5/8/2002	3682464	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	160 - 117.33	Pole	TP30.46x22.35x0.2188	1	-8.05	1268.11	47.4	Pass
L2	117.33 - 94	Pole	TP34.455x29.1348x0.2813	2	-17.55	2001.25	69.1	Pass
L3	94 - 82.5	Pole	TP36.64x34.455x0.3821	3	-18.97	2342.22	67.2	Pass
L4	82.5 - 72.75	Pole	TP37.9423x34.8309x0.375	4	-23.73	3187.04	64.6	Pass
L5	72.75 - 56	Pole	TP41.1383x37.9423x0.4482	5	-28.77	3349.64	76.2	Pass
L6	56 - 40.583	Pole	TP44.08x41.1383x0.6042	6	-32.34	3750.89	75.4	Pass
L7	40.583 - 31.5	Pole	TP45.0389x41.6472x0.6915	7	-41.54	4288.66	77.7	Pass
L8	31.5 - 28.75	Pole	TP45.5593x45.0389x0.7353	8	-42.92	4609.63	74.1	Pass
L9	28.75 - 11	Pole	TP48.9183x45.5593x0.6172	9	-50.98	4732.20	82.1	Pass
L10	11 - 8.5	Pole	TP49.3914x48.9183x0.698	10	-52.28	5388.94	73.5	Pass
L11	8.5 - 0	Pole	TP51x49.3914x0.5706	11	-56.13	5005.51	83.3	Pass
							Summary	
						Pole (L11)	83.3	Pass
						Rating =	83.3	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	56.5	Pass
1	Base Plate	0	35.5	Pass
1	Base Foundation Structural Steel	0	76.3	Pass
1	Base Foundation Soil Interaction	0	74.0	Pass

Structure Rating (max from all components) =	83.3%
---	--------------

Notes:

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

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- 1) Tower is located in Middlesex County, Connecticut.
- 2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- 3) Basic wind speed of 105 mph.
- 4) Structure Class II.
- 5) Exposure Category B.
- 6) Topographic Category 1.
- 7) Crest Height 0.00 ft.
- 8) Nominal ice thickness of 0.7500 in.
- 9) Ice thickness is considered to increase with height.
- 10) Ice density of 56.00 pcf.
- 11) A wind speed of 50 mph is used in combination with ice.
- 12) Temperature drop of 50 °F.
- 13) Deflections calculated using a wind speed of 60 mph.
- 14) A non-linear (P-delta) analysis was used.
- 15) Pressures are calculated at each section.
- 16) Stress ratio used in pole design is 1.
- 17) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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) SR Members Have Cut Ends SR Members Are Concentric	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 Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line 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 Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

Tapered Pole Section Geometry

Section	Elevation <small>ft</small>	Section Length <small>ft</small>	Splice Length <small>ft</small>	Number of Sides	Top Diameter <small>in</small>	Bottom Diameter <small>in</small>	Wall Thickness <small>in</small>	Bend Radius <small>in</small>	Pole Grade
L1	160.00-117.33	42.67	4.67	12	22.3500	30.4600	0.2188	0.8752	A572-65 (65 ksi)
L2	117.33-94.00	28.00	0.00	12	29.1348	34.4550	0.2813	1.1252	A572-65 (65 ksi)
L3	94.00-82.50	11.50	5.50	12	34.4550	36.6400	0.3821	1.5282	Reinf 47.68 ksi (48 ksi)
L4	82.50-72.75	15.25	0.00	12	34.8309	37.9423	0.3750	1.5000	A572-65 (65 ksi)
L5	72.75-56.00	16.75	0.00	12	37.9423	41.1383	0.4482	1.7928	Reinf 50.30 ksi (50 ksi)
L6	56.00-40.58	15.42	6.42	12	41.1383	44.0800	0.6042	2.4167	Reinf 40.24 ksi (40 ksi)
L7	40.58-31.50	15.50	0.00	12	41.6472	45.0389	0.6915	2.7660	Reinf 38.30 ksi (38 ksi)

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
L8	31.50-28.75	2.75	0.00	12	45.0389	45.5593	0.7353	2.9414	Reinf 38.30 ksi (38 ksi)
L9	28.75-11.00	17.75	0.00	12	45.5593	48.9183	0.6172	2.4689	Reinf 43.47 ksi (43 ksi)
L10	11.00-8.50	2.50	0.00	12	48.9183	49.3914	0.6980	2.7921	Reinf 43.42 ksi (43 ksi)
L11	8.50-0.00	8.50		12	49.3914	51.0000	0.5706	2.2824	Reinf 47.64 ksi (48 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	23.1384	15.5922	974.7742	7.9230	11.5773	84.1970	1975.1568	7.6740	5.4034	24.696
	31.5345	21.3060	2487.0596	10.8263	15.7783	157.6255	5039.4571	10.4862	7.5769	34.629
L2	31.0812	26.1351	2777.2007	10.3296	15.0918	184.0202	5627.3615	12.8629	7.0542	25.077
	35.6704	30.9540	4614.0938	12.2342	17.8477	258.5263	9349.4050	15.2346	8.4800	30.146
L3	35.6704	41.9165	6211.4084	12.1981	17.8477	348.0234	12585.9975	20.6300	8.2100	21.489
	37.9325	44.6046	7484.6546	12.9803	18.9795	394.3543	15165.9394	21.9530	8.7956	23.022
L4	37.2213	41.6055	6304.6843	12.3352	18.0424	349.4371	12774.9996	20.4770	8.3297	22.212
	39.2808	45.3625	8171.5301	13.4491	19.6541	415.7668	16557.7354	22.3261	9.1635	24.436
L5	39.2808	54.1116	9709.6331	13.4229	19.6541	494.0254	19674.3492	26.6321	8.9674	20.008
	42.5895	58.7242	12410.2607	14.5671	21.3097	582.3774	25146.5529	28.9022	9.8239	21.919
L6	42.5895	78.8576	16537.5579	14.5112	21.3097	776.0594	33509.5759	38.8113	9.4059	15.568
	45.6350	84.5805	20405.7007	15.5643	22.8334	893.6761	41347.4819	41.6279	10.1942	16.873
L7	44.5701	91.1920	19524.1495	14.6622	21.5733	905.0159	39561.2202	44.8819	9.3083	13.461
	46.6277	98.7438	24787.4205	15.8764	23.3301	1062.4639	50226.0341	48.5987	10.2172	14.776
L8	46.6277	104.9016	26281.1710	15.8607	23.3301	1126.4906	53252.7776	51.6294	10.0997	13.735
	47.1664	106.1339	27218.2436	16.0470	23.5997	1153.3297	55151.5408	52.2359	10.2392	13.924
L9	47.1664	89.3215	23027.5367	16.0893	23.5997	975.7552	46660.0325	43.9613	10.5557	17.102
	50.6440	95.9975	28586.4294	17.2918	25.3397	1128.1284	57923.8561	47.2470	11.4559	18.56
L10	50.6440	108.3827	32166.6352	17.2629	25.3397	1269.4168	65178.3238	53.3427	11.2394	16.102
	51.1338	109.4461	33122.7570	17.4322	25.5848	1294.6281	67115.6856	53.8660	11.3662	16.283
L11	51.1338	89.6985	27288.6460	17.4779	25.5848	1066.5974	55294.1951	44.1469	11.7077	20.519
	52.7991	92.6539	30075.8312	18.0537	26.4180	1138.4598	60941.7881	45.6015	12.1388	21.274

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A ft ² /ft	Weight plf
HB114-1-08U4-M5J(1-1/4")	C	No	Inside Pole	159.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08

MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	C	No	Inside Pole	142.00 - 0.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
LDF7-50A(1-5/8")	C	No	Inside Pole	142.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82

AVA7-50(1-5/8)	C	No	Inside Pole	130.00 - 0.00	6	No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70

LDF7-50A(1-5/8")	C	No	Inside Pole	116.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	116.00 - 0.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30

LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	96.00 - 0.00	2	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						ft ² /ft	plf	
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	96.00 - 0.00	10	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	96.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
FB-L98-002-XXX(3/8)	C	No	CaAa (Out Of Face)	96.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.61
						1" Ice	0.00	1.77
WR-VG86ST-BRD(3/4")	C	No	CaAa (Out Of Face)	96.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	1.38
						1" Ice	0.00	2.78
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	96.00 - 0.00	1	No Ice	0.00	0.72
						1/2" Ice	0.00	2.48
						1" Ice	0.00	4.84
2" (Nominal) Conduit	C	No	Inside Pole	96.00 - 0.00	1	No Ice	0.00	0.72
						1/2" Ice	0.00	0.72
						1" Ice	0.00	0.72

LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	87.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14

1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	58.25 - 0.00	1	No Ice	0.21	0.00
						1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	74.00 - 44.00	1	No Ice	0.13	0.00
						1/2" Ice	0.24	0.00
						1" Ice	0.35	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	13.00 - 0.00	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	42.25 - 27.25	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	96.00 - 86.00	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
			ft ²	ft ²	ft ²	ft ²	K
L1	160.00-117.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.46
L2	117.33-94.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.125	0.73
L3	94.00-82.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.887	0.50
L4	82.50-72.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.017	0.43
L5	72.75-56.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	9.196	0.73
L6	56.00-40.58	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.095	0.67
L7	40.58-31.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	7.003	0.40
L8	31.50-28.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L9	28.75-11.00	C	0.000	0.000	0.000	2.120	0.12
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L10	11.00-8.50	C	0.000	0.000	0.000	11.310	0.77
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L11	8.50-0.00	C	0.000	0.000	0.000	1.928	0.11
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.553	0.37

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	160.00-117.33	A	1.730	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.46
L2	117.33-94.00	A	1.685	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.279	0.98
L3	94.00-82.50	A	1.655	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.442	1.90
L4	82.50-72.75	A	1.634	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.931	1.64
L5	72.75-56.00	A	1.603	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	26.708	2.73
L6	56.00-40.58	A	1.558	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	30.771	2.44
L7	40.58-31.50	A	1.513	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	18.952	1.44
L8	31.50-28.75	A	1.486	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.572	0.42
L9	28.75-11.00	A	1.425	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	28.158	2.57
L10	11.00-8.50	A	1.328	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.731	0.34
L11	8.50-0.00	A	1.221	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.320	1.05

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	160.00-117.33	0.0000	0.0000	0.0000	0.0000
L2	117.33-94.00	-0.0632	0.0365	-0.1624	0.0938
L3	94.00-82.50	-0.5493	0.3171	-1.1501	0.6640
L4	82.50-72.75	-0.4582	0.2646	-0.9794	0.5655
L5	72.75-56.00	-0.5944	0.3432	-1.2965	0.7485
L6	56.00-40.58	-0.7550	0.4359	-1.5512	0.8956
L7	40.58-31.50	-0.8042	0.4643	-1.6187	0.9346
L8	31.50-28.75	-0.8080	0.4665	-1.6072	0.9279
L9	28.75-11.00	-0.6916	0.3993	-1.3755	0.7941
L10	11.00-8.50	-0.8186	0.4726	-1.5846	0.9149
L11	8.50-0.00	-0.8212	0.4741	-1.5456	0.8924

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.00	159.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			1.00			1" Ice	9.35	9.02	0.23
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.00	159.00	No Ice	8.26	7.47	0.09
			0.00			1/2" Ice	8.82	8.66	0.16
			1.00			1" Ice	9.35	9.56	0.24
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.00	159.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			1.00			1" Ice	9.35	9.02	0.23
Platform Mount [LP 602-1]	C	None		0.00	159.00	No Ice	32.03	32.03	1.34
						1/2" Ice	38.71	38.71	1.80
						1" Ice	45.39	45.39	2.26
(2) 5'x2 1/2" Pipe Mount	A	From Leg	4.00	0.00	159.00	No Ice	1.33	1.33	0.03
			0.00			1/2" Ice	1.63	1.63	0.04
			0.00			1" Ice	1.95	1.95	0.05
(2) 5'x2 1/2" Pipe Mount	B	From Leg	4.00	0.00	159.00	No Ice	1.33	1.33	0.03
			0.00			1/2" Ice	1.63	1.63	0.04
			0.00			1" Ice	1.95	1.95	0.05
(2) 5'x2 1/2" Pipe Mount	C	From Leg	4.00	0.00	159.00	No Ice	1.33	1.33	0.03
			0.00			1/2" Ice	1.63	1.63	0.04
			0.00			1" Ice	1.95	1.95	0.05

PCS 1900MHz 4x45W- 65MHz	A	From Leg	2.00	0.00	155.00	No Ice	2.32	2.24	0.06
			0.00			1/2" Ice	2.53	2.44	0.08
			1.00			1" Ice	2.74	2.65	0.11
PCS 1900MHz 4x45W- 65MHz	B	From Leg	2.00	0.00	155.00	No Ice	2.32	2.24	0.06
			0.00			1/2" Ice	2.53	2.44	0.08
			1.00			1" Ice	2.74	2.65	0.11
PCS 1900MHz 4x45W- 65MHz	C	From Leg	2.00	0.00	155.00	No Ice	2.32	2.24	0.06
			0.00			1/2" Ice	2.53	2.44	0.08
			1.00			1" Ice	2.74	2.65	0.11
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00	0.00	155.00	No Ice	2.06	1.93	0.06
			0.00			1/2" Ice	2.24	2.11	0.09
			-1.00			1" Ice	2.43	2.29	0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00	0.00	155.00	No Ice	2.06	1.93	0.06
			0.00			1/2" Ice	2.24	2.11	0.09
			-1.00			1" Ice	2.43	2.29	0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00	0.00	155.00	No Ice	2.06	1.93	0.06
			0.00			1/2" Ice	2.24	2.11	0.09
			-1.00			1" Ice	2.43	2.29	0.11
Side Arm Mount [SO 102- 3]	C	None		0.00	155.00	No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14

ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.00	142.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			3.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.00	142.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			3.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.00	142.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			3.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.00	142.00	No Ice	6.32	5.63	0.11
			0.00			1/2" Ice	6.76	6.42	0.17
			3.00			1" Ice	7.20	7.12	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0.00	142.00	No Ice	6.32	5.63	0.11
			0.00			1/2" Ice	6.76	6.42	0.17
			3.00			1" Ice	7.20	7.12	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00	0.00	142.00	No Ice	6.32	5.63	0.11
			0.00			1/2" Ice	6.76	6.42	0.17
			3.00			1" Ice	7.20	7.12	0.23

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						Vert
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00		0.00	142.00	No Ice	11.68	9.84	0.08
			0.00				1/2" Ice	12.40	11.37	0.17
			3.00				1" Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00		0.00	142.00	No Ice	11.68	9.84	0.08
			0.00				1/2" Ice	12.40	11.37	0.17
			3.00				1" Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00		0.00	142.00	No Ice	11.68	9.84	0.08
			0.00				1/2" Ice	12.40	11.37	0.17
			3.00				1" Ice	13.14	12.91	0.27
KRY 112 144/1	A	From Leg	4.00		0.00	142.00	No Ice	0.35	0.17	0.01
			0.00				1/2" Ice	0.43	0.23	0.01
			3.00				1" Ice	0.51	0.30	0.02
KRY 112 144/1	B	From Leg	4.00		0.00	142.00	No Ice	0.35	0.17	0.01
			0.00				1/2" Ice	0.43	0.23	0.01
			3.00				1" Ice	0.51	0.30	0.02
KRY 112 144/1	C	From Leg	4.00		0.00	142.00	No Ice	0.35	0.17	0.01
			0.00				1/2" Ice	0.43	0.23	0.01
			3.00				1" Ice	0.51	0.30	0.02
RRUS 11 B12	A	From Leg	4.00		0.00	142.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			3.00				1" Ice	3.26	1.48	0.10
RRUS 11 B12	B	From Leg	4.00		0.00	142.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			3.00				1" Ice	3.26	1.48	0.10
RRUS 11 B12	C	From Leg	4.00		0.00	142.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			3.00				1" Ice	3.26	1.48	0.10
Platform Mount [LP 602-1]	C	None			0.00	142.00	No Ice	32.03	32.03	1.34
							1/2" Ice	38.71	38.71	1.80
							1" Ice	45.39	45.39	2.26

APXV18-206517S-ACU w/ Mount Pipe	A	From Leg	1.00		0.00	130.00	No Ice	5.40	4.70	0.05
			0.00				1/2" Ice	5.96	5.86	0.10
			0.00				1" Ice	6.48	6.73	0.15
APXV18-206517S-ACU w/ Mount Pipe	B	From Leg	1.00		0.00	130.00	No Ice	5.40	4.70	0.05
			0.00				1/2" Ice	5.96	5.86	0.10
			0.00				1" Ice	6.48	6.73	0.15
APXV18-206517S-ACU w/ Mount Pipe	C	From Leg	1.00		0.00	130.00	No Ice	5.40	4.70	0.05
			0.00				1/2" Ice	5.96	5.86	0.10
			0.00				1" Ice	6.48	6.73	0.15
Pipe Mount [PM 601-3]	C	None			0.00	130.00	No Ice	4.39	4.39	0.20
							1/2" Ice	5.48	5.48	0.24
							1" Ice	6.57	6.57	0.28

(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00		0.00	116.00	No Ice	2.86	6.57	0.03
			0.00				1/2" Ice	3.22	7.19	0.08
			2.00				1" Ice	3.59	7.84	0.13
(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	B	From Leg	4.00		0.00	116.00	No Ice	6.38	6.56	0.04
			0.00				1/2" Ice	6.78	7.19	0.10
			2.00				1" Ice	7.19	7.84	0.18
(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	C	From Leg	4.00		0.00	116.00	No Ice	6.38	6.56	0.04
			0.00				1/2" Ice	6.78	7.19	0.10
			2.00				1" Ice	7.19	7.84	0.18
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00		0.00	116.00	No Ice	8.40	7.07	0.07
			0.00				1/2" Ice	8.96	8.26	0.14
			2.00				1" Ice	9.49	9.18	0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00		0.00	116.00	No Ice	8.40	7.07	0.07
			0.00				1/2" Ice	8.96	8.26	0.14
			2.00				1" Ice	9.49	9.18	0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00		0.00	116.00	No Ice	8.40	7.07	0.07
			0.00				1/2" Ice	8.96	8.26	0.14
			2.00				1" Ice	9.49	9.18	0.21
RRH2X60-PCS	A	From Leg	4.00		0.00	116.00	No Ice	2.20	1.72	0.06
			0.00				1/2" Ice	2.39	1.90	0.08
			2.00				1" Ice	2.59	2.09	0.10

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
RRH2X60-PCS	B	From Leg	4.00		0.00	116.00	No Ice	2.20	1.72	0.06
			0.00				1/2" Ice	2.39	1.90	0.08
			2.00				1" Ice	2.59	2.09	0.10
RRH2X60-PCS	C	From Leg	4.00		0.00	116.00	No Ice	2.20	1.72	0.06
			0.00				1/2" Ice	2.39	1.90	0.08
			2.00				1" Ice	2.59	2.09	0.10
B66A RRH4X45	A	From Leg	4.00		0.00	116.00	No Ice	2.58	1.63	0.07
			0.00				1/2" Ice	2.79	1.81	0.09
			2.00				1" Ice	3.01	2.00	0.11
B66A RRH4X45	B	From Leg	4.00		0.00	116.00	No Ice	2.58	1.63	0.07
			0.00				1/2" Ice	2.79	1.81	0.09
			2.00				1" Ice	3.01	2.00	0.11
B66A RRH4X45	C	From Leg	4.00		0.00	116.00	No Ice	2.58	1.63	0.07
			0.00				1/2" Ice	2.79	1.81	0.09
			2.00				1" Ice	3.01	2.00	0.11
B13 RRH 4X30	A	From Leg	4.00		0.00	116.00	No Ice	2.06	1.32	0.06
			0.00				1/2" Ice	2.24	1.48	0.07
			2.00				1" Ice	2.43	1.64	0.09
B13 RRH 4X30	B	From Leg	4.00		0.00	116.00	No Ice	2.06	1.32	0.06
			0.00				1/2" Ice	2.24	1.48	0.07
			2.00				1" Ice	2.43	1.64	0.09
B13 RRH 4X30	C	From Leg	4.00		0.00	116.00	No Ice	2.06	1.32	0.06
			0.00				1/2" Ice	2.24	1.48	0.07
			2.00				1" Ice	2.43	1.64	0.09
DB-T1-6Z-8AB-0Z	A	From Leg	4.00		0.00	116.00	No Ice	4.80	2.00	0.04
			0.00				1/2" Ice	5.07	2.19	0.08
			2.00				1" Ice	5.35	2.39	0.12
DB-T1-6Z-8AB-0Z	B	From Leg	4.00		0.00	116.00	No Ice	4.80	2.00	0.04
			0.00				1/2" Ice	5.07	2.19	0.08
			2.00				1" Ice	5.35	2.39	0.12
Platform Mount [LP 303-1]	C	None			0.00	116.00	No Ice	14.66	14.66	1.25
							1/2" Ice	18.87	18.87	1.48
							1" Ice	23.08	23.08	1.71

(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00		0.00	96.00	No Ice	5.83	4.71	0.09
			0.00				1/2" Ice	6.27	5.51	0.14
			2.00				1" Ice	6.70	6.21	0.21
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00		0.00	96.00	No Ice	5.83	4.71	0.09
			0.00				1/2" Ice	6.27	5.51	0.14
			2.00				1" Ice	6.70	6.21	0.21
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00		0.00	96.00	No Ice	5.83	4.71	0.09
			0.00				1/2" Ice	6.27	5.51	0.14
			2.00				1" Ice	6.70	6.21	0.21
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Leg	4.00		0.00	96.00	No Ice	5.23	4.02	0.05
			0.00				1/2" Ice	5.62	4.63	0.10
			2.00				1" Ice	6.01	5.26	0.15
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Leg	4.00		0.00	96.00	No Ice	5.23	4.02	0.05
			0.00				1/2" Ice	5.62	4.63	0.10
			2.00				1" Ice	6.01	5.26	0.15
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Leg	4.00		0.00	96.00	No Ice	5.23	4.02	0.05
			0.00				1/2" Ice	5.62	4.63	0.10
			2.00				1" Ice	6.01	5.26	0.15
GPS_A	C	From Leg	4.00		0.00	96.00	No Ice	0.26	0.26	0.00
			0.00				1/2" Ice	0.32	0.32	0.00
			7.00				1" Ice	0.39	0.39	0.01
(2) TT19-08BP111-001	A	From Leg	4.00		0.00	96.00	No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
(2) TT19-08BP111-001	B	From Leg	4.00		0.00	96.00	No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
(2) TT19-08BP111-001	C	From Leg	4.00		0.00	96.00	No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
RRUS-11	A	From Leg	4.00		0.00	96.00	No Ice	2.79	1.19	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
RRUS-11	B	From Leg	0.00	0.00	96.00	1/2" Ice	1.34	0.07
			2.00			1" Ice	1.50	0.09
			4.00			No Ice	1.19	0.05
RRUS-11	C	From Leg	0.00	0.00	96.00	1/2" Ice	1.34	0.07
			0.00			1" Ice	1.50	0.09
			4.00			No Ice	1.19	0.05
DC6-48-60-18-8F	A	From Leg	0.00	0.00	96.00	1/2" Ice	1.34	0.07
			0.00			1" Ice	1.50	0.09
			4.00			No Ice	0.92	0.02
RRUS 12 B2	A	From Leg	0.00	0.00	96.00	1/2" Ice	1.46	0.04
			0.00			1" Ice	1.64	0.06
			4.00			No Ice	1.28	0.05
RRUS 12 B2	B	From Leg	0.00	0.00	96.00	1/2" Ice	1.43	0.07
			0.00			1" Ice	1.60	0.10
			4.00			No Ice	1.28	0.05
RRUS 12 B2	C	From Leg	0.00	0.00	96.00	1/2" Ice	1.43	0.07
			0.00			1" Ice	1.60	0.10
			4.00			No Ice	1.28	0.05
T-Arm Mount [TA 602-3]	C	None	0.00	0.00	96.00	1/2" Ice	11.59	0.77
			0.00			1" Ice	1.60	0.10
			0.00			No Ice	11.59	0.77
**** KS24019-L112A	A	From Leg	2.00	30.00	87.00	1/2" Ice	15.44	0.99
			0.00			1" Ice	1.60	0.10
			1.00			No Ice	11.59	0.77
Side Arm Mount [SO 701-1]	A	None	0.00	0.00	87.00	1/2" Ice	15.44	0.99
			0.00			1" Ice	1.60	0.10
			0.00			No Ice	11.59	0.77
						1/2" Ice	15.44	0.99
						1" Ice	19.29	1.21
						No Ice	0.14	0.01
						1/2" Ice	0.20	0.01
						1" Ice	0.26	0.01
						No Ice	0.85	0.07
						1/2" Ice	1.14	0.08
						1" Ice	1.43	0.09

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 160.00-117.33	137.81	1.083	29.01	97.204	A	0.000	97.204	97.204	100.00	0.000	0.000
					B	0.000	97.204		100.00	0.000	0.000
					C	0.000	97.204		100.00	0.000	0.000
L2 117.33-94.00	105.40	1.003	26.90	64.888	A	0.000	64.888	64.888	100.00	0.000	0.000
					B	0.000	64.888		100.00	0.000	0.000
					C	0.000	64.888		100.00	0.000	1.125
L3 94.00-82.50	88.19	0.953	25.56	35.268	A	0.000	35.268	35.268	100.00	0.000	0.000
					B	0.000	35.268		100.00	0.000	0.000
					C	0.000	35.268		100.00	0.000	5.887
L4 82.50-72.75	77.58	0.919	24.64	31.079	A	0.000	31.079	31.079	100.00	0.000	0.000
					B	0.000	31.079		100.00	0.000	0.000
					C	0.000	31.079		100.00	0.000	4.017
L5 72.75-56.00	64.26	0.871	23.35	57.139	A	0.000	57.139	57.139	100.00	0.000	0.000
					B	0.000	57.139		100.00	0.000	0.000
					C	0.000	57.139		100.00	0.000	9.196
L6 56.00-40.58	48.20	0.802	21.51	56.673	A	0.000	56.673	56.673	100.00	0.000	0.000
					B	0.000	56.673		100.00	0.000	0.000
					C	0.000	56.673		100.00	0.000	11.095
L7 40.58-31.50	36.01	0.738	19.79	34.515	A	0.000	34.515	34.515	100.00	0.000	0.000
					B	0.000	34.515		100.00	0.000	0.000
					C	0.000	34.515		100.00	0.000	7.003
L8 31.50-28.75	30.12	0.701	18.81	10.747	A	0.000	10.747	10.747	100.00	0.000	0.000
					B	0.000	10.747		100.00	0.000	0.000
					C	0.000	10.747		100.00	0.000	2.120

Section Elevation ft	z ft	K_z	q_z psf	A_G ft ²	Face A B C	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L9 28.75-11.00	19.77	0.7	18.77	72.339	A	0.000	72.339	72.339	100.00	0.000	0.000
					B	0.000	72.339		100.00	0.000	0.000
					C	0.000	72.339		100.00	0.000	11.310
L10 11.00-8.50	9.75	0.7	18.77	10.602	A	0.000	10.602	10.602	100.00	0.000	0.000
					B	0.000	10.602		100.00	0.000	0.000
					C	0.000	10.602		100.00	0.000	1.928
L11 8.50-0.00	4.23	0.7	18.77	36.810	A	0.000	36.810	36.810	100.00	0.000	0.000
					B	0.000	36.810		100.00	0.000	0.000
					C	0.000	36.810		100.00	0.000	6.553

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft ²	Face A B C	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 160.00-117.33	137.81	1.083	6.58	1.7305	109.511	A	0.000	109.511	109.511	100.00	0.000	0.000
						B	0.000	109.511		100.00	0.000	0.000
						C	0.000	109.511		100.00	0.000	0.000
L2 117.33-94.00	105.40	1.003	6.10	1.6847	71.617	A	0.000	71.617	71.617	100.00	0.000	0.000
						B	0.000	71.617		100.00	0.000	0.000
						C	0.000	71.617		100.00	0.000	3.279
L3 94.00-82.50	88.19	0.953	5.80	1.6549	38.440	A	0.000	38.440	38.440	100.00	0.000	0.000
						B	0.000	38.440		100.00	0.000	0.000
						C	0.000	38.440		100.00	0.000	16.442
L4 82.50-72.75	77.58	0.919	5.59	1.6339	33.768	A	0.000	33.768	33.768	100.00	0.000	0.000
						B	0.000	33.768		100.00	0.000	0.000
						C	0.000	33.768		100.00	0.000	10.931
L5 72.75-56.00	64.26	0.871	5.30	1.6034	61.615	A	0.000	61.615	61.615	100.00	0.000	0.000
						B	0.000	61.615		100.00	0.000	0.000
						C	0.000	61.615		100.00	0.000	26.708
L6 56.00-40.58	48.20	0.802	4.88	1.5579	60.676	A	0.000	60.676	60.676	100.00	0.000	0.000
						B	0.000	60.676		100.00	0.000	0.000
						C	0.000	60.676		100.00	0.000	30.771
L7 40.58-31.50	36.01	0.738	4.49	1.5131	36.873	A	0.000	36.873	36.873	100.00	0.000	0.000
						B	0.000	36.873		100.00	0.000	0.000
						C	0.000	36.873		100.00	0.000	18.952
L8 31.50-28.75	30.12	0.701	4.26	1.4864	11.428	A	0.000	11.428	11.428	100.00	0.000	0.000
						B	0.000	11.428		100.00	0.000	0.000
						C	0.000	11.428		100.00	0.000	5.572
L9 28.75-11.00	19.77	0.7	4.26	1.4251	76.555	A	0.000	76.555	76.555	100.00	0.000	0.000
						B	0.000	76.555		100.00	0.000	0.000
						C	0.000	76.555		100.00	0.000	28.158
L10 11.00-8.50	9.75	0.7	4.26	1.3278	11.155	A	0.000	11.155	11.155	100.00	0.000	0.000
						B	0.000	11.155		100.00	0.000	0.000
						C	0.000	11.155		100.00	0.000	4.731
L11 8.50-0.00	4.23	0.7	4.26	1.2214	38.540	A	0.000	38.540	38.540	100.00	0.000	0.000
						B	0.000	38.540		100.00	0.000	0.000
						C	0.000	38.540		100.00	0.000	15.320

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z psf	A_G ft ²	Face A B C	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 160.00-117.33	137.81	1.083	8.47	97.204	A	0.000	97.204	97.204	100.00	0.000	0.000
					B	0.000	97.204		100.00	0.000	0.000
					C	0.000	97.204		100.00	0.000	0.000

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L2 117.33- 94.00	105.40	1.003	7.86	64.888	A	0.000	64.888	64.888	100.00	0.000	0.000
					B	0.000	64.888	100.00	0.000	0.000	
					C	0.000	64.888	100.00	0.000	1.125	
L3 94.00- 82.50	88.19	0.953	7.47	35.268	A	0.000	35.268	35.268	100.00	0.000	0.000
					B	0.000	35.268	100.00	0.000	0.000	
					C	0.000	35.268	100.00	0.000	5.887	
L4 82.50- 72.75	77.58	0.919	7.20	31.079	A	0.000	31.079	31.079	100.00	0.000	0.000
					B	0.000	31.079	100.00	0.000	0.000	
					C	0.000	31.079	100.00	0.000	4.017	
L5 72.75- 56.00	64.26	0.871	6.82	57.139	A	0.000	57.139	57.139	100.00	0.000	0.000
					B	0.000	57.139	100.00	0.000	0.000	
					C	0.000	57.139	100.00	0.000	9.196	
L6 56.00- 40.58	48.20	0.802	6.28	56.673	A	0.000	56.673	56.673	100.00	0.000	0.000
					B	0.000	56.673	100.00	0.000	0.000	
					C	0.000	56.673	100.00	0.000	11.095	
L7 40.58- 31.50	36.01	0.738	5.78	34.515	A	0.000	34.515	34.515	100.00	0.000	0.000
					B	0.000	34.515	100.00	0.000	0.000	
					C	0.000	34.515	100.00	0.000	7.003	
L8 31.50- 28.75	30.12	0.701	5.49	10.747	A	0.000	10.747	10.747	100.00	0.000	0.000
					B	0.000	10.747	100.00	0.000	0.000	
					C	0.000	10.747	100.00	0.000	2.120	
L9 28.75- 11.00	19.77	0.7	5.48	72.339	A	0.000	72.339	72.339	100.00	0.000	0.000
					B	0.000	72.339	100.00	0.000	0.000	
					C	0.000	72.339	100.00	0.000	11.310	
L10 11.00- 8.50	9.75	0.7	5.48	10.602	A	0.000	10.602	10.602	100.00	0.000	0.000
					B	0.000	10.602	100.00	0.000	0.000	
					C	0.000	10.602	100.00	0.000	1.928	
L11 8.50-0.00	4.23	0.7	5.48	36.810	A	0.000	36.810	36.810	100.00	0.000	0.000
					B	0.000	36.810	100.00	0.000	0.000	
					C	0.000	36.810	100.00	0.000	6.553	

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 117.33	Pole	Max Tension	20	0.00	-0.00	0.00
			Max. Compression	26	-20.18	0.01	-0.10
			Max. Mx	8	-8.05	-353.75	0.38
			Max. My	14	-8.06	0.37	-354.17
			Max. Vy	20	-14.63	353.65	-0.44
			Max. Vx	14	14.64	0.37	-354.17
			Max. Torque	17			0.12
L2	117.33 - 94	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.74	-0.28	-0.28
			Max. Mx	8	-17.55	-948.68	-0.41
			Max. My	2	-17.57	0.27	944.05
			Max. Vy	20	-26.59	948.23	0.49
			Max. Vx	14	26.38	-0.62	-943.91
			Max. Torque	12			0.48
L3	94 - 82.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.29	0.81	-0.91
			Max. Mx	8	-18.97	-1111.14	-0.70
			Max. My	2	-18.99	0.61	1105.29
			Max. Vy	20	-27.63	1110.91	0.65
			Max. Vx	14	27.42	-0.74	-1105.28
			Max. Torque	12			0.45
L4	82.5 - 72.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.44	3.70	-2.53
			Max. Mx	20	-23.73	1554.08	1.08
			Max. My	14	-23.75	-1.03	-1545.07
			Max. Vy	20	-30.25	1554.08	1.08
			Max. Vx	14	30.04	-1.03	-1545.07
			Max. Torque	3			0.22
L5	72.75 - 56	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.55	7.03	-4.46
			Max. Mx	20	-28.77	2084.19	1.51
			Max. My	14	-28.79	-1.31	-2071.50
			Max. Vy	20	-33.05	2084.19	1.51
			Max. Vx	14	32.84	-1.31	-2071.50
			Max. Torque	25			0.84
L6	56 - 40.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.79	8.89	-5.53
			Max. Mx	20	-32.34	2389.07	1.73
			Max. My	14	-32.36	-1.45	-2374.40
			Max. Vy	20	-34.69	2389.07	1.73
			Max. Vx	14	34.48	-1.45	-2374.40
			Max. Torque	25			1.26
L7	40.583 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L8	31.5 - 28.75	Pole	Max. Compression	26	-77.47	12.13	-7.40
			Max. Mx	20	-41.54	2950.27	2.11
			Max. My	14	-41.55	-1.68	-2932.20
			Max. Vy	20	-37.59	2950.27	2.11
			Max. Vx	14	37.37	-1.68	-2932.20
			Max. Torque	25			2.03
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.33	12.67	-7.72
			Max. Mx	20	-42.92	3054.28	2.17
			Max. My	14	-42.93	-1.72	-3035.60
L9	28.75 - 11	Pole	Max. Vy	20	-38.04	3054.28	2.17
			Max. Vx	14	37.83	-1.72	-3035.60
			Max. Torque	25			2.16
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.31	16.15	-9.72
			Max. Mx	20	-50.98	3752.08	2.58
			Max. My	14	-50.98	-1.94	-3729.51
			Max. Vy	20	-40.58	3752.08	2.58
			Max. Vx	14	40.37	-1.94	-3729.51
			Max. Torque	25			2.89
L10	11 - 8.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.99	16.62	-9.99
			Max. Mx	20	-52.28	3854.04	2.64
			Max. My	14	-52.28	-1.97	-3830.93
			Max. Vy	20	-40.98	3854.04	2.64
			Max. Vx	14	40.77	-1.97	-3830.93
			Max. Torque	25			3.02
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.96	18.07	-10.83
			Max. Mx	20	-56.13	4207.94	2.82
L11	8.5 - 0	Pole	Max. My	14	-56.13	-2.06	-4182.99
			Max. Vy	20	-42.28	4207.94	2.82
			Max. Vx	14	42.07	-2.06	-4182.99
			Max. Torque	25			3.48

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	96.96	-0.00	0.00
	Max. H _x	21	42.11	42.26	0.04
	Max. H _z	2	56.14	0.04	42.05
	Max. M _x	2	4180.72	0.04	42.05
	Max. M _z	8	4204.14	-42.26	-0.04
	Max. Torsion	25	3.48	21.16	36.44
	Min. Vert	21	42.11	42.26	0.04
	Min. H _x	9	42.11	-42.26	-0.04
	Min. H _z	14	56.14	-0.04	-42.05
	Min. M _x	14	-4182.99	-0.04	-42.05
	Min. M _z	20	-4207.94	42.26	0.04
	Min. Torsion	13	-3.46	-21.16	-36.44

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	46.79	-0.00	0.00	0.93	1.55	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	56.14	-0.04	-42.05	-4180.72	5.85	-3.04
0.9 Dead+1.6 Wind 0 deg - No Ice	42.11	-0.04	-42.05	-4146.57	5.34	-3.04
1.2 Dead+1.6 Wind 30 deg - No Ice	56.14	21.10	-36.40	-3618.71	-2098.07	-1.79
0.9 Dead+1.6 Wind 30 deg - No Ice	42.11	21.10	-36.40	-3589.36	-2081.36	-1.79
1.2 Dead+1.6 Wind 60 deg - No Ice	56.14	36.58	-21.00	-2086.49	-3639.29	-0.06
0.9 Dead+1.6 Wind 60 deg - No Ice	42.11	36.58	-21.00	-2069.68	-3609.96	-0.06

Load Combination	Vertical	Shear _x	Shear _z	Overtuning Moment, M _x	Overtuning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 90 deg - No Ice	56.14	42.26	0.04	5.09	-4204.14	1.68
0.9 Dead+1.6 Wind 90 deg - No Ice	42.11	42.26	0.04	4.77	-4170.42	1.68
1.2 Dead+1.6 Wind 120 deg - No Ice	56.14	36.62	21.06	2095.60	-3643.24	2.96
0.9 Dead+1.6 Wind 120 deg - No Ice	42.11	36.62	21.06	2078.17	-3613.88	2.96
1.2 Dead+1.6 Wind 150 deg - No Ice	56.14	21.16	36.44	3624.92	-2104.92	3.46
0.9 Dead+1.6 Wind 150 deg - No Ice	42.11	21.16	36.44	3594.97	-2088.16	3.46
1.2 Dead+1.6 Wind 180 deg - No Ice	56.14	0.04	42.05	4182.99	-2.06	3.03
0.9 Dead+1.6 Wind 180 deg - No Ice	42.11	0.04	42.05	4148.26	-2.51	3.03
1.2 Dead+1.6 Wind 210 deg - No Ice	56.14	-21.10	36.40	3620.98	2101.87	1.80
0.9 Dead+1.6 Wind 210 deg - No Ice	42.11	-21.10	36.40	3591.05	2084.19	1.80
1.2 Dead+1.6 Wind 240 deg - No Ice	56.14	-36.58	21.00	2088.76	3643.08	0.08
0.9 Dead+1.6 Wind 240 deg - No Ice	42.11	-36.58	21.00	2071.37	3612.79	0.08
1.2 Dead+1.6 Wind 270 deg - No Ice	56.14	-42.26	-0.04	-2.82	4207.94	-1.67
0.9 Dead+1.6 Wind 270 deg - No Ice	42.11	-42.26	-0.04	-3.08	4173.25	-1.67
1.2 Dead+1.6 Wind 300 deg - No Ice	56.14	-36.62	-21.06	-2093.33	3647.03	-2.97
0.9 Dead+1.6 Wind 300 deg - No Ice	42.11	-36.62	-21.06	-2076.48	3616.71	-2.97
1.2 Dead+1.6 Wind 330 deg - No Ice	56.14	-21.16	-36.44	-3622.66	2108.71	-3.48
0.9 Dead+1.6 Wind 330 deg - No Ice	42.11	-21.16	-36.44	-3593.28	2090.99	-3.48
1.2 Dead+1.0 Ice+1.0 Temp	96.96	0.00	-0.00	10.83	18.07	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	96.96	-0.01	-8.94	-947.29	19.17	-1.22
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	96.96	4.48	-7.74	-818.48	-462.43	-0.72
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	96.96	7.77	-4.46	-467.42	-815.20	-0.04
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	96.96	8.98	0.01	11.84	-944.64	0.66
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	96.96	7.78	4.48	490.86	-816.05	1.18
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	96.96	4.50	7.75	841.31	-463.90	1.38
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	96.96	0.01	8.94	969.27	17.46	1.22
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	96.96	-4.48	7.74	840.46	499.06	0.72
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	96.96	-7.77	4.46	489.39	851.83	0.04
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	96.96	-8.98	-0.01	10.14	981.27	-0.66
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	96.96	-7.78	-4.48	-468.89	852.68	-1.18
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	96.96	-4.50	-7.75	-819.33	500.53	-1.38
Dead+Wind 0 deg - Service	46.79	-0.01	-7.68	-759.28	2.30	0.08
Dead+Wind 30 deg - Service	46.79	3.85	-6.65	-657.07	-380.15	0.04
Dead+Wind 60 deg - Service	46.79	6.68	-3.83	-378.55	-660.32	-0.01
Dead+Wind 90 deg - Service	46.79	7.72	0.01	1.66	-763.13	-0.06
Dead+Wind 120 deg - Service	46.79	6.69	3.85	381.68	-661.04	-0.09
Dead+Wind 150 deg - Service	46.79	3.86	6.65	659.68	-381.40	-0.10
Dead+Wind 180 deg - Service	46.79	0.01	7.68	761.17	0.86	-0.08
Dead+Wind 210 deg - Service	46.79	-3.85	6.65	658.96	383.31	-0.04
Dead+Wind 240 deg - Service	46.79	-6.68	3.83	380.43	663.47	0.01
Dead+Wind 270 deg - Service	46.79	-7.72	-0.01	0.22	766.29	0.06
Dead+Wind 300 deg - Service	46.79	-6.69	-3.85	-379.79	664.19	0.09
Dead+Wind 330 deg - Service	46.79	-3.86	-6.65	-657.79	384.55	0.10

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	-46.79	0.00	0.00	46.79	-0.00	0.000%
2	-0.04	-56.14	-42.06	0.04	56.14	42.05	0.003%
3	-0.04	-42.11	-42.06	0.04	42.11	42.05	0.007%
4	21.10	-56.14	-36.40	-21.10	56.14	36.40	0.000%
5	21.10	-42.11	-36.40	-21.10	42.11	36.40	0.000%
6	36.58	-56.14	-21.00	-36.58	56.14	21.00	0.000%
7	36.58	-42.11	-21.00	-36.58	42.11	21.00	0.000%
8	42.26	-56.14	0.04	-42.26	56.14	-0.04	0.008%
9	42.26	-42.11	0.04	-42.26	42.11	-0.04	0.007%
10	36.62	-56.14	21.06	-36.62	56.14	-21.06	0.000%
11	36.62	-42.11	21.06	-36.62	42.11	-21.06	0.000%
12	21.16	-56.14	36.44	-21.16	56.14	-36.44	0.000%
13	21.16	-42.11	36.44	-21.16	42.11	-36.44	0.000%
14	0.04	-56.14	42.06	-0.04	56.14	-42.05	0.003%
15	0.04	-42.11	42.06	-0.04	42.11	-42.05	0.007%
16	-21.10	-56.14	36.40	21.10	56.14	-36.40	0.000%
17	-21.10	-42.11	36.40	21.10	42.11	-36.40	0.000%
18	-36.58	-56.14	21.00	36.58	56.14	-21.00	0.000%
19	-36.58	-42.11	21.00	36.58	42.11	-21.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
20	-42.26	-56.14	-0.04	42.26	56.14	0.04	0.008%
21	-42.26	-42.11	-0.04	42.26	42.11	0.04	0.007%
22	-36.62	-56.14	-21.06	36.62	56.14	21.06	0.000%
23	-36.62	-42.11	-21.06	36.62	42.11	21.06	0.000%
24	-21.16	-56.14	-36.44	21.16	56.14	36.44	0.000%
25	-21.16	-42.11	-36.44	21.16	42.11	36.44	0.000%
26	0.00	-96.96	0.00	-0.00	96.96	0.00	0.001%
27	-0.01	-96.96	-8.94	0.01	96.96	8.94	0.000%
28	4.48	-96.96	-7.74	-4.48	96.96	7.74	0.000%
29	7.77	-96.96	-4.46	-7.77	96.96	4.46	0.000%
30	8.98	-96.96	0.01	-8.98	96.96	-0.01	0.000%
31	7.78	-96.96	4.48	-7.78	96.96	-4.48	0.000%
32	4.50	-96.96	7.75	-4.50	96.96	-7.75	0.000%
33	0.01	-96.96	8.94	-0.01	96.96	-8.94	0.000%
34	-4.48	-96.96	7.74	4.48	96.96	-7.74	0.000%
35	-7.77	-96.96	4.46	7.77	96.96	-4.46	0.000%
36	-8.98	-96.96	-0.01	8.98	96.96	0.01	0.000%
37	-7.78	-96.96	-4.48	7.78	96.96	4.48	0.000%
38	-4.50	-96.96	-7.75	4.50	96.96	7.75	0.000%
39	-0.01	-46.79	-7.68	0.01	46.79	7.68	0.002%
40	3.85	-46.79	-6.65	-3.85	46.79	6.65	0.002%
41	6.68	-46.79	-3.83	-6.68	46.79	3.83	0.002%
42	7.72	-46.79	0.01	-7.72	46.79	-0.01	0.002%
43	6.69	-46.79	3.85	-6.69	46.79	-3.85	0.002%
44	3.86	-46.79	6.65	-3.86	46.79	-6.65	0.002%
45	0.01	-46.79	7.68	-0.01	46.79	-7.68	0.002%
46	-3.85	-46.79	6.65	3.85	46.79	-6.65	0.002%
47	-6.68	-46.79	3.83	6.68	46.79	-3.83	0.002%
48	-7.72	-46.79	-0.01	7.72	46.79	0.01	0.002%
49	-6.69	-46.79	-3.85	6.69	46.79	3.85	0.002%
50	-3.86	-46.79	-6.65	3.86	46.79	6.65	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	14	0.00004352	0.00007685
3	Yes	13	0.00007401	0.00014784
4	Yes	18	0.00000001	0.00006338
5	Yes	17	0.00000001	0.00012073
6	Yes	18	0.00000001	0.00006389
7	Yes	17	0.00000001	0.00012169
8	Yes	13	0.00010721	0.00012176
9	Yes	13	0.00007397	0.00010833
10	Yes	18	0.00000001	0.00006488
11	Yes	17	0.00000001	0.00012356
12	Yes	18	0.00000001	0.00006334
13	Yes	17	0.00000001	0.00012058
14	Yes	14	0.00004352	0.00006945
15	Yes	13	0.00007401	0.00013609
16	Yes	18	0.00000001	0.00006436
17	Yes	17	0.00000001	0.00012260
18	Yes	18	0.00000001	0.00006393
19	Yes	17	0.00000001	0.00012170
20	Yes	13	0.00010720	0.00011006
21	Yes	13	0.00007396	0.00009995
22	Yes	18	0.00000001	0.00006351
23	Yes	17	0.00000001	0.00012087
24	Yes	18	0.00000001	0.00006497
25	Yes	17	0.00000001	0.00012378
26	Yes	9	0.00000001	0.00005453
27	Yes	16	0.00000001	0.00008128
28	Yes	16	0.00000001	0.00008878
29	Yes	16	0.00000001	0.00008899
30	Yes	16	0.00000001	0.00008128
31	Yes	16	0.00000001	0.00009052
32	Yes	16	0.00000001	0.00009030

33	Yes	16	0.00000001	0.00008265
34	Yes	16	0.00000001	0.00009222
35	Yes	16	0.00000001	0.00009230
36	Yes	16	0.00000001	0.00008327
37	Yes	16	0.00000001	0.00009112
38	Yes	16	0.00000001	0.00009104
39	Yes	13	0.00000001	0.00002377
40	Yes	13	0.00000001	0.00003586
41	Yes	13	0.00000001	0.00003541
42	Yes	13	0.00000001	0.00002383
43	Yes	13	0.00000001	0.00003400
44	Yes	13	0.00000001	0.00003722
45	Yes	13	0.00000001	0.00002382
46	Yes	13	0.00000001	0.00003464
47	Yes	13	0.00000001	0.00003537
48	Yes	13	0.00000001	0.00002389
49	Yes	13	0.00000001	0.00003727
50	Yes	13	0.00000001	0.00003376

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 117.33	18.751	48	1.03	0.00
L2	122 - 94	10.878	48	0.89	0.00
L3	94 - 82.5	6.241	48	0.66	0.00
L4	88 - 72.75	5.442	48	0.61	0.00
L5	72.75 - 56	3.648	48	0.49	0.00
L6	56 - 40.583	2.166	48	0.35	0.00
L7	47 - 31.5	1.561	48	0.29	0.00
L8	31.5 - 28.75	0.722	48	0.21	0.00
L9	28.75 - 11	0.603	48	0.20	0.00
L10	11 - 8.5	0.091	48	0.08	0.00
L11	8.5 - 0	0.055	48	0.06	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	APXVSP18-C-A20 w/ Mount Pipe	48	18.534	1.03	0.00	63548
155.00	PCS 1900MHz 4x45W-65MHz	48	17.670	1.02	0.00	63548
142.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	48	14.895	0.99	0.00	17652
130.00	APXV18-206517S-ACU w/ Mount Pipe	48	12.433	0.94	0.00	10591
116.00	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	48	9.770	0.85	0.00	7537
96.00	(2) 7770.00 w/ Mount Pipe	48	6.523	0.68	0.00	5757
87.00	KS24019-L112A	48	5.313	0.60	0.00	9088

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 117.33	103.089	20	5.70	0.00
L2	122 - 94	59.802	20	4.90	0.00
L3	94 - 82.5	34.304	20	3.63	0.00
L4	88 - 72.75	29.909	20	3.36	0.00
L5	72.75 - 56	20.047	20	2.71	0.00
L6	56 - 40.583	11.903	20	1.93	0.00
L7	47 - 31.5	8.577	20	1.60	0.00
L8	31.5 - 28.75	3.965	20	1.18	0.00
L9	28.75 - 11	3.312	20	1.09	0.00
L10	11 - 8.5	0.502	20	0.42	0.00
L11	8.5 - 0	0.302	20	0.34	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	APXVSPP18-C-A20 w/ Mount Pipe	20	101.900	5.68	0.00	11752
155.00	PCS 1900MHz 4x45W-65MHz	20	97.149	5.63	0.00	11752
142.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	20	81.890	5.43	0.00	3262
130.00	APXV18-206517S-ACU w/ Mount Pipe	20	68.353	5.15	0.00	1955
116.00	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	20	53.711	4.66	0.00	1388
96.00	(2) 7770.00 w/ Mount Pipe	20	35.853	3.73	0.00	1055
87.00	KS24019-L112A	20	29.205	3.32	0.00	1661

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	160 - 117.33 (1)	TP30.46x22.35x0.2188	42.67	0.00	0.0	20.6807	-8.05	1268.11	0.006
L2	117.33 - 94 (2)	TP34.455x29.1348x0.2813	28.00	0.00	0.0	30.9540	-17.55	2001.25	0.009
L3	94 - 82.5 (3)	TP36.64x34.455x0.3821	11.50	0.00	0.0	43.3190	-18.97	2342.22	0.008
L4	82.5 - 72.75 (4)	TP37.9423x34.8309x0.375	15.25	0.00	0.0	45.3625	-23.73	3187.04	0.007
L5	72.75 - 56 (5)	TP41.1383x37.9423x0.4482	16.75	0.00	0.0	58.7242	-28.77	3349.64	0.009
L6	56 - 40.583 (6)	TP44.08x41.1383x0.6042	15.42	0.00	0.0	82.1984	-32.34	3750.89	0.009
L7	40.583 - 31.5 (7)	TP45.0389x41.6472x0.6915	15.50	0.00	0.0	98.7438	-41.54	4288.66	0.010
L8	31.5 - 28.75 (8)	TP45.5593x45.0389x0.7353	2.75	0.00	0.0	106.1340	-42.92	4609.63	0.009
L9	28.75 - 11 (9)	TP48.9183x45.5593x0.6172	17.75	0.00	0.0	95.9975	-50.98	4732.20	0.011
L10	11 - 8.5 (10)	TP49.3914x48.9183x0.698	2.50	0.00	0.0	109.4460	-52.28	5388.94	0.010
L11	8.5 - 0 (11)	TP51x49.3914x0.5706	8.50	0.00	0.0	92.6539	-56.13	5005.51	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{rx} kip-ft	Ratio M _{ux} / φM _{rx}	M _{uy} kip-ft	φM _{ry} kip-ft	Ratio M _{uy} / φM _{ry}
L1	160 - 117.33 (1)	TP30.46x22.35x0.2188	354.42	758.70	0.467	0.00	758.70	0.000
L2	117.33 - 94 (2)	TP34.455x29.1348x0.2813	948.67	1392.87	0.681	0.00	1392.87	0.000
L3	94 - 82.5 (3)	TP36.64x34.455x0.3821	1111.13	1675.40	0.663	0.00	1675.40	0.000
L4	82.5 - 72.75 (4)	TP37.9423x34.8309x0.375	1554.08	2434.22	0.638	0.00	2434.22	0.000
L5	72.75 - 56 (5)	TP41.1383x37.9423x0.4482	2084.19	2768.24	0.753	0.00	2768.24	0.000
L6	56 - 40.583 (6)	TP44.08x41.1383x0.6042	2389.07	3208.37	0.745	0.00	3208.37	0.000
L7	40.583 - 31.5 (7)	TP45.0389x41.6472x0.6915	2950.28	3845.43	0.767	0.00	3845.43	0.000
L8	31.5 - 28.75 (8)	TP45.5593x45.0389x0.7353	3054.28	4174.30	0.732	0.00	4174.30	0.000
L9	28.75 - 11 (9)	TP48.9183x45.5593x0.6172	3752.08	4634.26	0.810	0.00	4634.26	0.000
L10	11 - 8.5 (10)	TP49.3914x48.9183x0.698	3854.04	5312.11	0.726	0.00	5312.11	0.000
L11	8.5 - 0 (11)	TP51x49.3914x0.5706	4207.93	5125.32	0.821	0.00	5125.32	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	φV _n K	Ratio V _u / φV _n	Actual T _u kip-ft	φT _n kip-ft	Ratio T _u / φT _n
L1	160 - 117.33 (1)	TP30.46x22.35x0.2188	14.65	634.06	0.023	0.12	1538.40	0.000
L2	117.33 - 94 (2)	TP34.455x29.1348x0.2813	26.59	1000.63	0.027	0.26	2824.29	0.000
L3	94 - 82.5 (3)	TP36.64x34.455x0.3821	27.63	1171.11	0.024	0.18	3397.18	0.000
L4	82.5 - 72.75 (4)	TP37.9423x34.8309x0.375	30.25	1593.52	0.019	0.04	4935.83	0.000
L5	72.75 - 56 (5)	TP41.1383x37.9423x0.4482	33.05	1674.82	0.020	0.35	5613.13	0.000
L6	56 - 40.583 (6)	TP44.08x41.1383x0.6042	34.69	1875.45	0.018	0.56	6505.57	0.000
L7	40.583 - 31.5 (7)	TP45.0389x41.6472x0.6915	37.59	2144.33	0.018	0.95	7797.32	0.000
L8	31.5 - 28.75 (8)	TP45.5593x45.0389x0.7353	38.04	2304.81	0.017	1.01	8464.17	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L9	28.75 - 11 (9)	TP48.9183x45.5593x0.6172	40.58	2366.10	0.017	1.38	9396.83	0.000
L10	11 - 8.5 (10)	TP49.3914x48.9183x0.698	40.98	2694.47	0.015	1.44	10771.25	0.000
L11	8.5 - 0 (11)	TP51x49.3914x0.5706	42.28	2502.76	0.017	1.67	10392.58	0.000

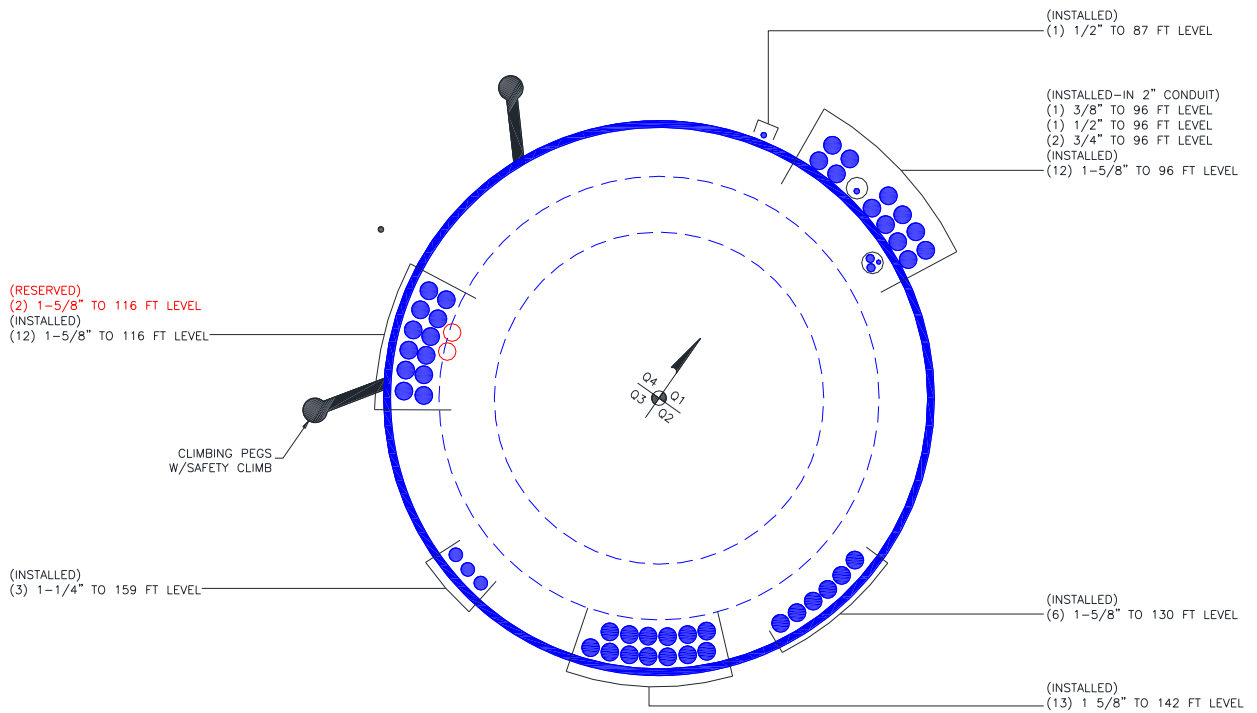
Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 117.33 (1)	0.006	0.467	0.000	0.023	0.000	0.474 ✓	1.000	4.8.2 ✓
L2	117.33 - 94 (2)	0.009	0.681	0.000	0.027	0.000	0.691 ✓	1.000	4.8.2 ✓
L3	94 - 82.5 (3)	0.008	0.663	0.000	0.024	0.000	0.672 ✓	1.000	4.8.2 ✓
L4	82.5 - 72.75 (4)	0.007	0.638	0.000	0.019	0.000	0.646 ✓	1.000	4.8.2 ✓
L5	72.75 - 56 (5)	0.009	0.753	0.000	0.020	0.000	0.762 ✓	1.000	4.8.2 ✓
L6	56 - 40.583 (6)	0.009	0.745	0.000	0.018	0.000	0.754 ✓	1.000	4.8.2 ✓
L7	40.583 - 31.5 (7)	0.010	0.767	0.000	0.018	0.000	0.777 ✓	1.000	4.8.2 ✓
L8	31.5 - 28.75 (8)	0.009	0.732	0.000	0.017	0.000	0.741 ✓	1.000	4.8.2 ✓
L9	28.75 - 11 (9)	0.011	0.810	0.000	0.017	0.000	0.821 ✓	1.000	4.8.2 ✓
L10	11 - 8.5 (10)	0.010	0.726	0.000	0.015	0.000	0.735 ✓	1.000	4.8.2 ✓
L11	8.5 - 0 (11)	0.011	0.821	0.000	0.017	0.000	0.833 ✓	1.000	4.8.2 ✓

Section Capacity Table

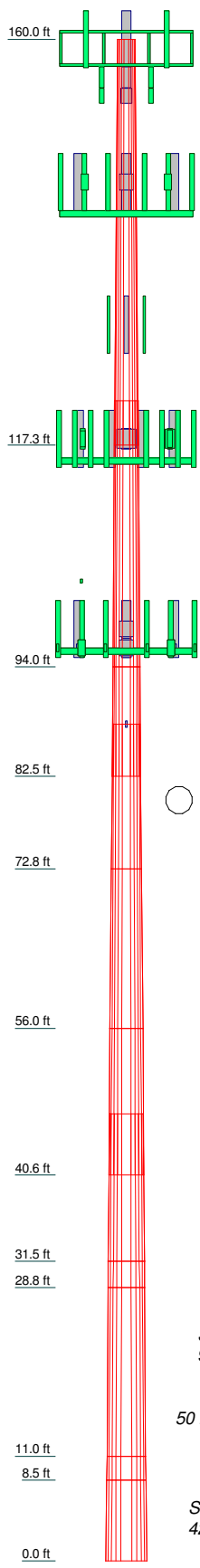
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 117.33	Pole	TP30.46x22.35x0.2188	1	-8.05	1268.11	47.4	Pass
L2	117.33 - 94	Pole	TP34.455x29.1348x0.2813	2	-17.55	2001.25	69.1	Pass
L3	94 - 82.5	Pole	TP36.64x34.455x0.3821	3	-18.97	2342.22	67.2	Pass
L4	82.5 - 72.75	Pole	TP37.9423x34.8309x0.375	4	-23.73	3187.04	64.6	Pass
L5	72.75 - 56	Pole	TP41.1383x37.9423x0.4482	5	-28.77	3349.64	76.2	Pass
L6	56 - 40.583	Pole	TP44.08x41.1383x0.6042	6	-32.34	3750.89	75.4	Pass
L7	40.583 - 31.5	Pole	TP45.0389x41.6472x0.6915	7	-41.54	4288.66	77.7	Pass
L8	31.5 - 28.75	Pole	TP45.5593x45.0389x0.7353	8	-42.92	4609.63	74.1	Pass
L9	28.75 - 11	Pole	TP48.9183x45.5593x0.6172	9	-50.98	4732.20	82.1	Pass
L10	11 - 8.5	Pole	TP49.3914x48.9183x0.698	10	-52.28	5388.94	73.5	Pass
L11	8.5 - 0	Pole	TP51x49.3914x0.5706	11	-56.13	5005.51	83.3	Pass
Summary								
Pole (L11)							83.3	Pass
RATING =							83.3	Pass

APPENDIX B BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	42.67	12	0.2188	4.67	22.3500	30.4600	A572-65	2.7
2	28.00	12	0.2813	29.1348	34.4550	34.4550	A572-65	2.7
3	11.50	12	0.3821	5.50	34.4550	36.6400	Reinf 47.68 ksi	1.7
4	15.25	12	0.3750	34.8309	37.9423	37.9423	Reinf 47.68 ksi	2.3
5	16.75	12	0.4482	37.9423	41.1383	41.1383	A572-65	3.2
6	15.42	12	0.6042	6.42	41.1383	44.0800	Reinf 50.30 ksi	4.3
7	15.50	12	0.6915	41.6472	45.0389	45.0389	Reinf 40.24 ksi	5.0
8	2.75	12	0.7353	45.0389	45.5593	45.5593	Reinf 38.30 ksi	1.0
9	17.75	12	0.6172	45.5593	48.9183	48.9183	Reinf 43.47 ksi	5.6
10	2.50	12	0.6980	48.9183	49.3914	49.3914	Reinf 43.47 ksi	0.9
11	8.50	12	0.5706	49.3914	51.0000	51.0000	Reinf 43.47 ksi	2.6
				32.0				



DESIGNED APPURTENANCE LOADING

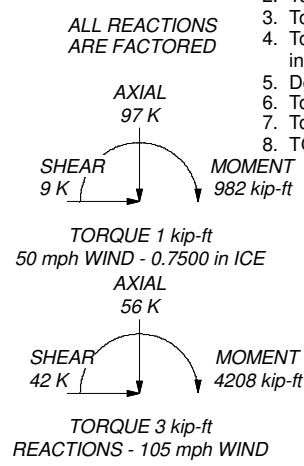
TYPE	ELEVATION	TYPE	ELEVATION
APXVSP18-C-A20 w/ Mount Pipe	159	(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	116
APXV9ERR18-C-A20 w/ Mount Pipe	159	(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	116
APXVSP18-C-A20 w/ Mount Pipe	159	(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	116
Platform Mount [LP 602-1]	159	(2) SBNHH-1D65B w/ Mount Pipe	116
(2) 5x2 1/2" Pipe Mount	159	(2) SBNHH-1D65B w/ Mount Pipe	116
(2) 5x2 1/2" Pipe Mount	159	(2) SBNHH-1D65B w/ Mount Pipe	116
(2) 5x2 1/2" Pipe Mount	159	(2) SBNHH-1D65B w/ Mount Pipe	116
PCS 1900MHz 4x45W-65MHz	155	RRH2X60-PCS	116
PCS 1900MHz 4x45W-65MHz	155	RRH2X60-PCS	116
PCS 1900MHz 4x45W-65MHz	155	RRH2X60-PCS	116
800MHz 2X50W RRH W/FILTER	155	B66A RRH4X45	116
800MHz 2X50W RRH W/FILTER	155	B66A RRH4X45	116
800MHz 2X50W RRH W/FILTER	155	B66A RRH4X45	116
800MHz 2X50W RRH W/FILTER	155	B66A RRH4X45	116
Side Arm Mount [SO 102-3]	155	B13 RRH 4X30	116
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	B13 RRH 4X30	116
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	B13 RRH 4X30	116
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	DB-T1-6Z-8AB-0Z	116
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	DB-T1-6Z-8AB-0Z	116
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	Platform Mount [LP 303-1]	116
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	(2) 7770.00 w/ Mount Pipe	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	(2) 7770.00 w/ Mount Pipe	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	(2) 7770.00 w/ Mount Pipe	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	(2) 7770.00 w/ Mount Pipe	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
LNX-6515DS-VTM w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
LNX-6515DS-VTM w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
LNX-6515DS-VTM w/ Mount Pipe	142	GPS A	96
KRY 112 144/1	142	(2) TT19-08BP111-001	96
KRY 112 144/1	142	(2) TT19-08BP111-001	96
KRY 112 144/1	142	(2) TT19-08BP111-001	96
RRUS 11 B12	142	RRUS-11	96
RRUS 11 B12	142	RRUS-11	96
RRUS 11 B12	142	RRUS-11	96
Platform Mount [LP 602-1]	142	RRUS-11	96
APXV18-206517S-ACU w/ Mount Pipe	130	DC6-48-60-18-8F	96
APXV18-206517S-ACU w/ Mount Pipe	130	RRUS 12 B2	96
APXV18-206517S-ACU w/ Mount Pipe	130	RRUS 12 B2	96
APXV18-206517S-ACU w/ Mount Pipe	130	RRUS 12 B2	96
Pipe Mount [PM 601-3]	130	RRUS 12 B2	96
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	116	T-Arm Mount [TA 602-3]	96
		KS24019-L112A	87
		Side Arm Mount [SO 701-1]	87

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 38.30 ksi	38 ksi	48 ksi
Reinf 47.68 ksi	48 ksi	60 ksi	Reinf 43.47 ksi	43 ksi	55 ksi
Reinf 50.30 ksi	50 ksi	63 ksi	Reinf 43.42 ksi	43 ksi	55 ksi
Reinf 40.24 ksi	40 ksi	51 ksi	Reinf 47.64 ksi	48 ksi	60 ksi

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 83.3%



<p>Paul J Ford and Company 250 E. Broad Street Suite 600 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105</p>	<p>Job: 160-Ft Monopole / Pond Meadow</p>	
	<p>Project: 37516-2880.004 / BU# 876339</p>	<p>Client: Crown Castle Drawn by: Ryan Ferrante App'd:</p>
<p>Code: TIA-222-G Date: 12/27/16 Scale: NTS</p>	<p>Path: _____ Dwg No. E-1</p>	

v4.4 - Effective 7-12-13

Asymmetric Anchor Rod Analysis

Moment = 4208 k-ft
 Axial = 56.0 kips
 Shear = 42.0 kips
 Anchor Qty = 25

TIA Ref. = G
 ASIF = N/A
 Max Ratio = 105.0%

Location = Base Plate
 η = 0.50 for BP, Rev. G Sect. 4.9.9
 Threads = N/A for FP, Rev. G

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

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in ²	Area, in ²	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
2	2.250	#18J A615 Gr 75	75	100	22.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
3	2.250	#18J A615 Gr 75	75	100	45.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
4	2.250	#18J A615 Gr 75	75	100	67.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
5	2.250	#18J A615 Gr 75	75	100	90.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
6	2.250	#18J A615 Gr 75	75	100	112.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
7	2.250	#18J A615 Gr 75	75	100	135.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
8	2.250	#18J A615 Gr 75	75	100	157.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
9	2.250	#18J A615 Gr 75	75	100	180.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
10	2.250	#18J A615 Gr 75	75	100	202.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
11	2.250	#18J A615 Gr 75	75	100	225.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
12	2.250	#18J A615 Gr 75	75	100	247.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
13	2.250	#18J A615 Gr 75	75	100	270.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
14	2.250	#18J A615 Gr 75	75	100	292.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
15	2.250	#18J A615 Gr 75	75	100	315.0	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
16	2.250	#18J A615 Gr 75	75	100	337.5	59.30	0.00	3.98	143.23	138.26	146.95	0.00	260.00	56.5%
17	2.000	A193 Gr B7	105	125	15.0	65.80	0.00	3.14	125.23	121.31	128.17	0.00	250.00	51.3%
18	2.000	A193 Gr B7	105	125	45.0	65.80	0.00	3.14	125.23	121.31	128.17	0.00	250.00	51.3%
19	2.000	A193 Gr B7	105	125	135.0	65.80	0.00	3.14	125.23	121.31	128.17	0.00	250.00	51.3%
20	2.000	A193 Gr B7	105	125	165.0	65.80	0.00	3.14	125.23	121.31	128.17	0.00	250.00	51.3%
21	2.000	A193 Gr B7	105	125	255.0	65.80	0.00	3.14	125.23	121.31	128.17	0.00	250.00	51.3%
22	2.000	A193 Gr B7	105	125	285.0	65.80	0.00	3.14	125.23	121.31	128.17	0.00	250.00	51.3%
23	1.750	F1554 Gr 105	105	125	105.0	67.80	0.00	2.41	98.75	95.75	101.00	0.00	190.00	53.2%
24	1.750	F1554 Gr 105	105	125	225.0	67.80	0.00	2.41	98.75	95.75	101.00	0.00	190.00	53.2%
25	1.750	F1554 Gr 105	105	125	345.0	67.80	0.00	2.41	98.75	95.75	101.00	0.00	190.00	53.2%

89.75

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

TIA Rev G

Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data	
BU#:	876339
Site Name:	
App #:	
Pole Manufacturer:	Other

Anchor Rod Data	
Qty:	16
Diam:	2.25 in
Rod Material:	A615-J
Strength (Fu):	100 ksi
Yield (Fy):	75 ksi
Bolt Circle:	59.3 in

Plate Data	
Diam:	65.3 in
Thick:	2.75 in
Grade:	60 ksi
Single-Rod B-eff:	10.25 in

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

Pole Data	
Diam:	51 in
Thick:	0.4375 in
Grade:	65 ksi
# of Sides:	12 "0" IF Round
Fu	80 ksi
Reinf. Fillet Weld	0 "0" if None

Reactions		
Mu:	2782	ft-kips
Axial, Pu:	39.7	kips
Shear, Vu:	29.8	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Reactions adjusted to account for post installed anchor rods.

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

Anchor Rod Results

Max Rod (Cu+ Vu/η): 146.9 Kips
 Allowable Axial, Φ*Fu*Anet: 260.0 Kips
 Anchor Rod Stress Ratio: 56.5% **Pass**

Rigid
AISC LRFD
φ*Tn

Base Plate Results

Base Plate Stress: 19.2 ksi
 Allowable Plate Stress: 54.0 ksi
 Base Plate Stress Ratio: 35.5% **Pass**

Flexural Check

Rigid
AISC LRFD
φ*Fy
Y.L. Length:
30.26

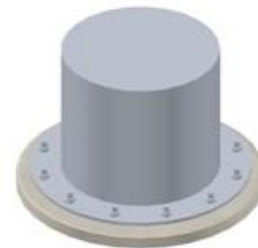
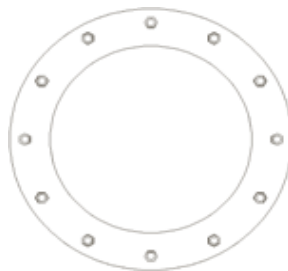
n/a

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



* 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

Reactions at Pole Base*

Moment	4208	k*ft
Axial	56	k
Shear	42	k

*From InxTower

Number of anchors:	4	Water	99	Ft
Foundation Dimensions				
Pier		Mat		
Width	7 ft	Width	23 ft	
Height	4.5 ft	Thickness	3.5 ft	
Projection	0.5 ft	Fdn Depth	7.5 ft	
Foundation Weight		Factored Weights		
		1.2 *Dead	0.9 *Dead	
Pier	33.08 k	39.69 k	29.77 k	
Soil	192.00 k	230.40 k	172.80 k	
Pole*	56 k	56 k	42 k	
Mat	162.19 k	194.63 k	145.97 k	
Total		520.72 k	390.54 k	

*From TNXtower. Contains 1.2 factors from output

1.2*Dead - Tension/Compression	
$T = \frac{MY}{I} - \frac{1.2 * W_F}{N} - \frac{A_{POLE}}{N}$	
$C = \frac{MY}{I} + \frac{1.2 * W_F}{N} + \frac{A_{POLE}}{N}$	
0.9*Dead - Tension/Compression	
$T = \frac{MY}{I} - \frac{0.9 * W_F}{N} - .9 \left(\frac{A_{POLE}}{1.2} \right)$	
$C = \frac{MY}{I} + \frac{0.9 * W_F}{N} + .9 \left(\frac{A_{POLE}}{1.2} \right)$	

Check assuming wind into the corner

1.2 Axial Load Factor

	Load	Distance	Moment	
Moment	4208		4208	k*ft
Shear	42	8	336	k*ft
Total Induced Moment			4544	k*ft

0.9 Axial Load Factor

	Load	Distance	Moment	
Moment	4208		4208	k*ft
Shear	42	8	336	k*ft
Total Induced Moment			4544	k*ft

Anchor Loads:

Group #	# Anchors	ybar (in)	ny ²		
1	2	161	51842		
Total			51842	in2	
				T (kips)	C (kips)
1	(MY)/I	169.34	k	39.16	299.52

Anchor Loads:

Group #	# Anchors	ybar (in)	ny ²		
1	2	161	51842		
Total			51842	in2	
				T (kips)	C (kips)
1	(MY)/I	169.34	k	71.71	266.98

Bearing Pressure:

Max Compression: 299.52
Bearing Area: 2593.12 in2
Bearing Pressure: 16632.92 psf

Bearing Pressure:

Max Compression: 266.98
Bearing Area: 2593.12 in2
Bearing Pressure: 14825.65 psf

Check assuming wind into the Side

1.2 Axial Load Factor

	Load	Distance	Moment	
Moment	4208		4208	k*ft
Shear	42	8	336	k*ft
Total Induced Moment			4544.00	k*ft

0.9 Axial Load Factor

	Load	Distance	Moment	
Moment	4208		4208	k*ft
Shear	42	8	42	k*ft
Total Induced Moment			4250.00	k*ft

Anchor Loads:

Group #	# Anchors	ybar (in)	ny ²		
1	4	114	51984		
Total			51984	in2	
				T (kips)	C (kips)
1	(MY)/I	119.579	k	-10.60	249.76

Anchor Loads:

Group #	# Anchors	ybar (in)	ny ²		
1	4	114	51984		
Total			51984	in2	
				T (kips)	C (kips)
1	(MY)/I	111.842	k	14.21	209.48

Bearing Pressure:

Max Compression: 249.76
Bearing Area: 13248.00 in2
Bearing Pressure: 5429.54 psf

Bearing Pressure:

Max Compression: 209.48
Bearing Area: 13248.00 in2
Bearing Pressure: 4553.85 psf

Bearing Capacity:

Ultimate Capacity: 30000 psf

Factored Capacity: 22500 psf

Max Load in Anchors - 1.2*D

Tension 39.16 k
Compression 16632.92 psf

Ultimate Capacities

Tension 312 k*
Compression 22500 psf

Stress Ratios

Tension 12.6%
Compression 74.0%

*Based on tension capacity of the 1-3/4" Williams R71

Max Load in Anchors - 0.9*D

Tension 71.71 k
Compression 5429.54 psf

Ultimate Capacities

Tension 312 k*
Compression 22500 psf

Stress Ratios

Tension 23.0%
Compression 24.2%

*Based on tension capacity of the 1-3/4" Williams R71

Max Foundation Bending

Pier 4397 k*ft
Mat (Tension) 269.94 k*ft
Mat (Compression) 4745.42 k*ft

Ultimate Capacities*

Pier 8680.53 k*ft
Mat (Tension) 6221.54 k*ft
Mat (Compression) 6221.54 k*ft

Foundation Reinforcing Ratios

Pier 50.7%
Mat (Tension) 4.3%
Mat (Compression) 76.3%

*Obtained From SPColumn

```

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                oo   oo          oo
    ooooo  oooooo  oo          ooooo  oo   oo   o oooooo          o ooooo
oo   o  oo   oo  oo          oo   oo  oo          oo   oo   oo   oo   oo
oo          oo   oo  oo          oo   oo  oo          oo   oo   oo   oo   oo
  ooooo  oo   oo  oo          oo   oo  oo          oo   oo   oo   oo   oo
    oo   oo  oooooo  oo          oo   oo  oo          oo   oo   oo   oo   oo
o   oo  oo          oo   oo  oo   oo  oo   o  oo   oo   oo   oo   oo   oo
ooooo  oo          oooooo  ooooo  ooo  ooooo o  oo   oo   oo   oo   oo (TM)

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=====
                        spColumn v5.00 (TM)
    Computer program for the Strength Design of Reinforced Concrete Sections
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                        All rights reserved
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General Information:

=====
 File Name: G:\TOWER\375_Crown_Castle\2016\37516-2880_876339_Pond Meadow Rd. St...\37516-2880.004.col
 Project:
 Column: Engineer:
 Code: ACI 318-11 Units: English
 Run Option: Investigation Slenderness: Not considered
 Run Axis: X-axis Column Type: Structural

Material Properties:

=====
 Concrete: Standard Steel: Standard
 f'c = 4 ksi fy = 60 ksi
 Ec = 3605 ksi Es = 29000 ksi
 fc = 3.4 ksi Eps_yt = 0.00206897 in/in
 Eps_u = 0.003 in/in
 Beta1 = 0.85

Section:

=====
 Circular: Diameter = 84 in
 Gross section area, Ag = 5541.77 in^2
 Ix = 2.44392e+006 in^4 Iy = 2.44392e+006 in^4
 rx = 21 in ry = 21 in
 Xo = 0 in Yo = 0 in

Reinforcement:

=====
 Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #3 ties with #10 bars, #5 with larger bars.
 phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
 Pattern: All Sides Equal (Cover to transverse reinforcement)
 Total steel area: As = 56.16 in^2 at rho = 1.01%
 Minimum clear spacing = 5.16 in

36 #11 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:

=====
 No. Pu kip Mux k-ft PhiMnx k-ft PhiMn/Mu NA depth in Dt depth in eps_t Phi

1	56.00	4397.00	8680.53	1.974	15.32	79.67	0.01260	0.900
---	-------	---------	---------	-------	-------	-------	---------	-------

*** End of output ***

8680.53
 Used for Pier Bending Analysis

General Information:

=====
 File Name: G:\TOWER\375_Crown_Castle\2016\37516-2880_876339_Pond Meadow Rd...\37516-2880.004_PAD.col
 Project:
 Column: Engineer:
 Code: ACI 318-11 Units: English
 Run Option: Investigation Slenderness: Not considered
 Run Axis: X-axis Column Type: Structural

Material Properties:

=====
 Concrete: Standard Steel: Standard
 f'c = 4 ksi fy = 60 ksi
 Ec = 3605 ksi Es = 29000 ksi
 fc = 3.4 ksi Eps_yt = 0.00206897 in/in
 Eps_u = 0.003 in/in
 Beta1 = 0.85

Section:

=====
 Rectangular: Width = 276 in Depth = 42 in
 Gross section area, Ag = 11592 in^2
 Ix = 1.70402e+006 in^4 Iy = 7.3586e+007 in^4
 rx = 12.1244 in ry = 79.6743 in
 Xo = 0 in Yo = 0 in

Reinforcement:

=====
 Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #3 ties with #10 bars, #5 with larger bars.
 phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Rectangular
 Pattern: Sides Different (Cover to transverse reinforcement)
 Total steel area: As = 74.88 in^2 at rho = 0.65% (Note: rho < 1.0%)
 Minimum clear spacing = 10.21 in

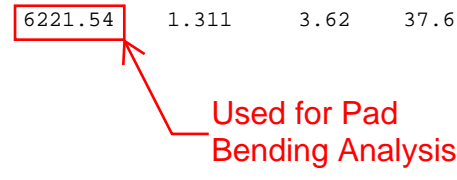
	Top		Bottom		Left		Right	
Bars	24	#11	24	#11	0	#11	0	#11
Cover(in)		3		3		3		3

Factored Loads and Moments with Corresponding Capacities:

=====

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu NA	depth in	Dt in	depth in	eps_t	Phi
1	0.00	4745.42	6221.54	1.311	3.62	37.67	0.02823	0.900	

*** End of output ***



Zoning Commission
26 May 1998

H. Ruppenicker, Jr. made a motion seconded by M. Sacatos to close the Public Hearing and to reconvene to the regular meeting. The motion carried.

II. OLD BUSINESS:

1. 782 Old Clinton Road, Sprint Spectrum L.P., S. Kotfila. Special Permit application for wireless telecommunication site.

J. Taylor said that there was a concern regarding underground utilities versus above ground utilities. He reported that Sprint said that they will put in underground utilities. M. Sacatos said that on page 16, exhibit E it details a monopole that is 180' in height. She said that she thought it was only supposed to be 160' in height. T. Nolder noted that the diagram was a document that was dated 1997. J. Taylor said that it was a sample design and that the plans show a 160' monopole. T. Nolder supplied information regarding the underground utilities and the monopole.

H. Ruppenicker, Jr. made a motion seconded by G. Nicholls to approve the Sprint Spectrum L.P. Special Permit application for a wireless telecommunication site at 782 Old Clinton Road with the following conditions: 1) all new utilities be subsurface and 2) the height of the monopole shall not exceed 160' as described in the plans dated 11/11/96. The motion carried.

2. 977 Boston Post Rd., Westbrook Donuts, Inc., J. Cahelka. Site Plan/CAM application for restaurant.

The Commission took a few minutes to read information received at the meeting from Attorney William Childress.

T. Nolder read a letter from the Concerned Citizens of Westbrook dated 5/22/98 to the Zoning Commission.

T. Nolder read a letter from John Boehme dated 5/26/98.

Attorney William Childress addressed the Commission regarding the legality of continuing a non-conforming use. He noted that having more business is not an expansion. Attorney Childress submitted a list of the uses that have occurred since 1979. They were - Del's Fish and Chips (hours 5 a.m.-9 p.m.); My Dad's (six days a week, 11 a.m.-1 p.m.); Westbrook Diner (seven days a week, 6 a.m.-9 p.m.) and Tiezzi's (6 a.m.-9 p.m.). Attorney Childress reported that there is no evidence by the owner to abandon the non-conforming use.

782 OLD CLINTON RD

Location 782 OLD CLINTON RD

Mblu 169 / / 018 / /

Acct# E0110900

Owner WADE CATHERINE A

Assessment \$469,430

Appraisal \$671,630

PID 1175

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$556,890	\$114,740	\$671,630
Assessment			
Valuation Year	Improvements	Land	Total
2016	\$395,120	\$74,310	\$469,430

Owner of Record

Owner WADE CATHERINE A
Co-Owner
Address 782 OLD CLINTON RD
 WESTBROOK, CT 06498

Sale Price \$0
Certificate
Book & Page 162 / 83
Sale Date 11/10/1993
Instrument 25

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
WADE CATHERINE A	\$0		162 / 83	25	11/10/1993

Building Information

Building 1 : Section 1

Year Built: 1946
Living Area: 3,142
Replacement Cost: \$281,163
Building Percent 58
Good:
Replacement Cost
Less Depreciation: \$163,070

Building Photo

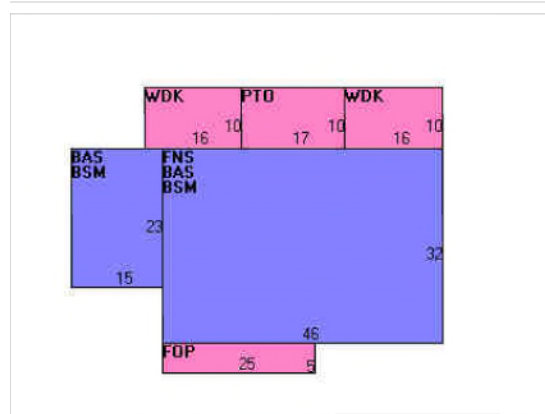
Building Attributes	
Field	Description
Style	Colonial
Model	Residential

Grade:	C+
Stories	1.9
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gambrel
Roof Cover	Asphalt
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	7
Full Bthrms:	3
Half Baths:	0
Extra Fixtures	3
Total Rooms:	10
Bath Style:	Modern
Kitchen Style:	Average
Extra Kitchens	0
Fireplace(s)	1
Gas Fireplace(s)	0
Stacks	1
Bsmt Garage(s)	0
Callback	
Fin Bsmnt	0
Bsmt Heat	
Int Vs Ext	Same



(<http://images.vgsi.com/photos2/WestbrookCTPhotos//\00\00\50\97.jpg>)

Building Layout



Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	1,817	1,817
FNS	Finished 90% Story	1,472	1,325
BSM	Basement	1,817	0
FOP	Open Porch	125	0
PTO	Patio	170	0
WDK	Deck	320	0
		5,721	3,142

Extra Features

Extra Features		Legend
No Data for Extra Features		

Land

Land Use		Land Line Valuation	
Use Code	101	Size (Acres)	5
Description	Res Dwelling	Depth	

Zone RR
Neighborhood 0045
Alt Land Appr No
Category

Assessed Value \$74,310
Appraised Value \$114,740

Special Land			
Land Use Code	Land Use Description	Units	Unit Type
712	490 Tillable C	2	AC

Outbuildings

Outbuildings							<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #	Comment
FGR1	Garage			868 S.F.	\$10,850	1	2CGAR
TCB	Telecomm Bldg			216 UNITS	\$59,400	1	TELCOMM BLDG
TCS	Telecomm Site			700 UNITS	\$269,500	1	TELCOMM SITE
SPL1	Inground Pool - Typical			512 S.F.	\$4,610	1	IG POOL
SHD1	Shed			180 S.F.	\$1,800	1	SHED 2
BRN1	1 Story Barn			360 S.F.	\$5,400	1	
STB	Stable			310 S.F.	\$6,980	1	
LNT	Lean To			264 S.F.	\$660	1	
SHD1	Shed			140 S.F.	\$1,400	1	
GAZ	Gazebo			77 S.F.	\$770	1	
TCM	Telecomm			100 S.F.&HGT	\$2,450	1	SPRINT
TCM	Telecomm			1 S.F.&HGT	\$10,000	1	VERIZEN
TCM	Telecomm			3 S.F.&HGT	\$10,000	1	3 NEW ANTENNAS & 1 FIBRE CAB
TCM	Telecomm			1 S.F.&HGT	\$10,000	1	ADD 3 ANT;3 RADIOHEADS;CABLE

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$556,890	\$114,740	\$671,630
2015	\$662,200	\$112,010	\$774,210
2014	\$657,580	\$112,010	\$769,590

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$395,120	\$74,310	\$469,430
2015	\$463,550	\$72,490	\$536,040
2014	\$460,310	\$72,490	\$532,800

