



December 12, 2016

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

Regarding: Notice of Exempt Modification – Remote Radio (“RRH”) Swap
Property Address: 20 Post Office Lane Westport, CT 06880 (AKA Maple Ln)
AT&T Site: CT2103 – Westport Post Office Lane

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 142-foot monopole at the above-referenced address, latitude 41.12346944, longitude -73.31306111. Said monopole is owned by American Tower Corporation. The existing equipment shelter is 24.5’ x 12’ totaling 294 square feet.

AT&T desires to modify its existing telecommunications facility by swapping three (3) remote-radio heads (“RRHs”). The centerline height of said antennas is and will remain at 131 feet. Antennas are mounted utilizing a platform with hand rails.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Jim Marpe, First Selectmen for the Town of Westport, as well as to the landowner Jay Sherwood. A copy of this letter is also being sent to the monopole owner American Tower Corporation.

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

1. The planned modification will not result in an increase in the height of the existing structure. The antennas to be swapped will be installed at the existing height of 131 feet on the 142-foot monopole.
2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (attached) for AT&T's modified facility is herein provided.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The monopole and its foundation can support AT&T's proposed modifications (please see attached structural analysis completed by American Tower dated October 28, 2016).

For the foregoing reasons, AT&T respectfully requests that the proposed remote radio head swap be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Sarah Snell

Sarah Snell
Site Acquisition Specialist

cc: James Marpe, First Selectman, Town of Westport (Municipality)
Jay Sherwood (Landowner)
American Tower Corporation (Tower Owner)

Westport CT - CityMap

Tasks



Parcel Details

Field	Value
OBJECTID	3800
VISION_PID	7785
GIS_ID	H06017000
ST_	
STREET	MAPLE LN
UNIT	
ALTERNATE_PID	5452217-C
MAP	H06
LOT	17
SUB_LOT	0
GRANTEE	SHERWOOD JAY
MAILING_ADDRES	P O BOX 48
CITY	WESTPORT
ST	CT
ZIP	06881
BOOK_PAGE	469/ 137
LAND_USE	
SURVEY	3206
ACRE_S	2.07

[NAVIGATE](#) [ZOOM IN](#) [FULL EXTENT](#) [BACK](#) [FORWARD](#) [IDENTIFY](#) [SELECT](#) [HYPERLINK](#) [MEASURE](#) [CLEAR](#) [BING](#) [PLACES](#) [PRINT](#) [HELP](#)



PROJECT TEAM

CLIENT REPRESENTATIVE:

EMPIRE TELECOM
16 ESQUIRE ROAD
BILLERICA, MA 01821
DAVID COOPER
617-639-4908
dcooper@empiretelecomm.com

SITE ACQUISITION & ZONING:

EMPIRE TELECOM
16 ESQUIRE ROAD
BILLERICA, MA 01821
DAVID COOPER
617-639-4908
dcooper@empiretelecomm.com

ENGINEERING:

TRYLON TSF
1825 W. WALNUT HILL LANE SUITE 302
IRVING, TX 75038
KATYA SERAVALLE
PHONE: 519-465-4125

RF ENGINEER:

AT&T MOBILITY - NEW ENGLAND
550 COCHITUATE ROAD
SUITE 550 13 & 14
FRAMINGHAM, MA 01701
CAMERON SYME
508-596-7146
cs6970@att.com

CONSTRUCTION MANAGEMENT:

EMPIRE TELECOM
16 ESQUIRE ROAD
BILLERICA, MA 01821
GRZEGORZ "GREG" DORMAN
484-683-1750
gdorman@empiretelecomm.com

TOWER OWNER:

UNKNOWN

GENERAL NOTES

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

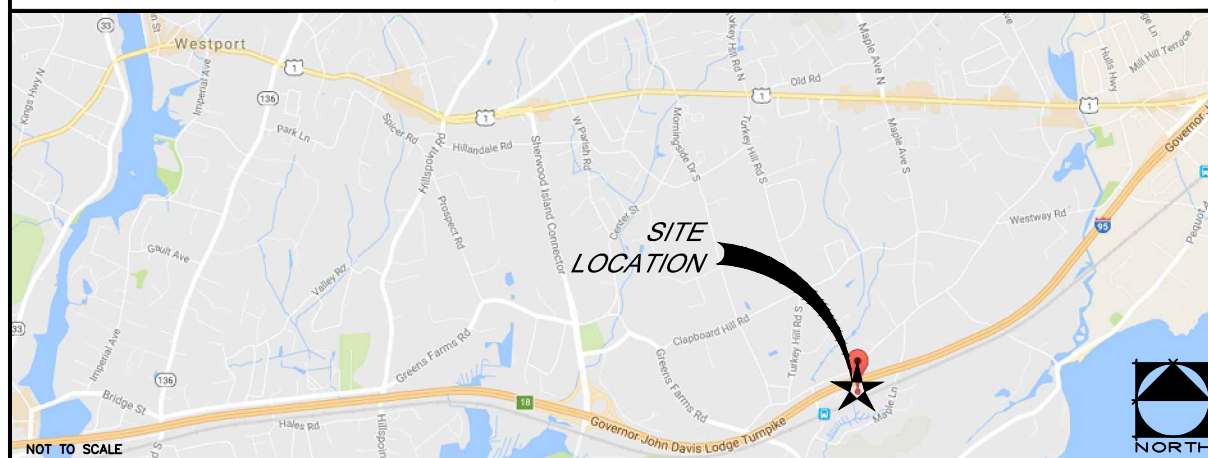
SITE INFORMATION

LATITUDE: 41° 7' 24.36996" N
LONGITUDE: 73° 18' 46.998" W
LAT./LONG. TYPE: NAD 83
GROUND ELEVATION: N/A
APN/UPC: N/A
AREA OF CONSTRUCTION: EXISTING
ZONING/JURISDICTION: CITY OF WESTPORT
CURRENT ZONING: N/A
EXISTING USE: TELECOMMUNICATIONS FACILITY
COUNTY: FAIRFIELD COUNTY
HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.



**LTE BWE EXPANSION
CT2103
WESTPORT SOUTH
19-20 POST OFFICE LANE
WESTPORT, CT 06880
FA CODE: 10035073**

VICINITY MAP



DRIVING DIRECTIONS

2103 WESTPORT SOUTH I 95 TO EXIT 18 TO NYALA FARM ROAD TO RIGHT ON GREENS FARM ROAD TO NEW CREEK ROAD GO UNDER I 95 AND 1ST LEFT ON POST OFFICE LANE SITE AT END OF PARKING LOT.

CODE COMPLIANCE

BUILDING CODE: 2012 CONNECTICUT COMMERCIAL BUILDING CODE
ELECTRICAL CODE: 2014 CONNECTICUT ELECTRICAL CODE
LIGHTNING PROTECTION CODE: NFPA 780 - 2000, LIGHTNING PROTECTION CODE

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.

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.



CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DAL 811

APPROVALS

AT&T (RF): _____ DATE: _____

AT&T (CONST.): _____ DATE: _____

AT&T (OPS): _____ DATE: _____

TOWER OWNER: _____ DATE: _____

JURISDICTIONAL APPROVAL

BASED ON INFORMATION PROVIDED BY AT&T REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW OR ADMINISTRATIVE REVIEW).

PROJECT DESCRIPTION

THIS PROJECT WILL BE COMPRISED OF:
CHANGES ON THE EXISTING SELF SUPPORTING TOWER:

- REMOVE (3) EXISTING RRUS-12 + RRUS-A2 (1) PER SECTOR FOR (3) SECTORS.
- INSTALL (3) NEW RRUS-32 B2, (1) PER SECTOR FOR (3) SECTORS.
- REUSE (1) EXISTING DC6 SQUID.
- REUSE (2) EXISTING DC POWER TRUNK.
- REUSE (1) EXISTING FIBER TRUNK.
- REUSE (12) EXISTING RF CABLES.

CHANGES IN THE EXISTING AT&T EQUIPMENT ENCLOSURE AREA:

- INSTALL (1) NEW XMU.

SHEET

DESCRIPTION

T-1	TITLE SHEET
GN-1	GROUNDING & GENERAL NOTES
A-1	COMPOUND PLAN
A-2	EQUIPMENT LAYOUTS
A-3	ANTENNA LAYOUTS
A-4	TOWER ELEVATION
A-5	DETAILS
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



PLANS PREPARED BY:



1825 W. WALNUT HILL LANE SUITE 302
IRVING, TX 75038

NO.	DATE	DESCRIPTION	BY
A	10/28/16	FOR REVIEW	OS
0	11/17/16	FOR CONSTRUCTION	OS

SITE INFORMATION:

**CT2103
WESTPORT SOUTH
FA CODE: 10035073**

19-20 POST OFFICE LANE
WESTPORT, CT 06880

SEAL:



MICHAEL F. PLAHOVINSAK, P.E. #25849
Soil Properties - Independent Engineer
18301 S.R. 161, Plain City, OH 43064
614-398-6250 / mike@fpeng.com

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR - EMPIRE TELECOM
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER - AT&T MOBILITY
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
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. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. 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.
8. 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. 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.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCR1 'AP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. 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). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. 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.
17. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
19. 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.
 - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
 - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
 - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. 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, THIRTEENTH EDITION
 - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
 - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
 - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
 - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
 - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
 - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. 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.

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GESS'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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
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 WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

PLANS PREPARED BY:



1825 W. WALNUT HILL LANE SUITE 302
IRVING, TX 75038

NO.	DATE	DESCRIPTION	BY
A	10/28/16	FOR REVIEW	OS
0	11/17/16	FOR CONSTRUCTION	OS

SITE INFORMATION:

CT2103
WESTPORT SOUTH
FA CODE: 10035073

19-20 POST OFFICE LANE
WESTPORT, CT 06880

SEAL:

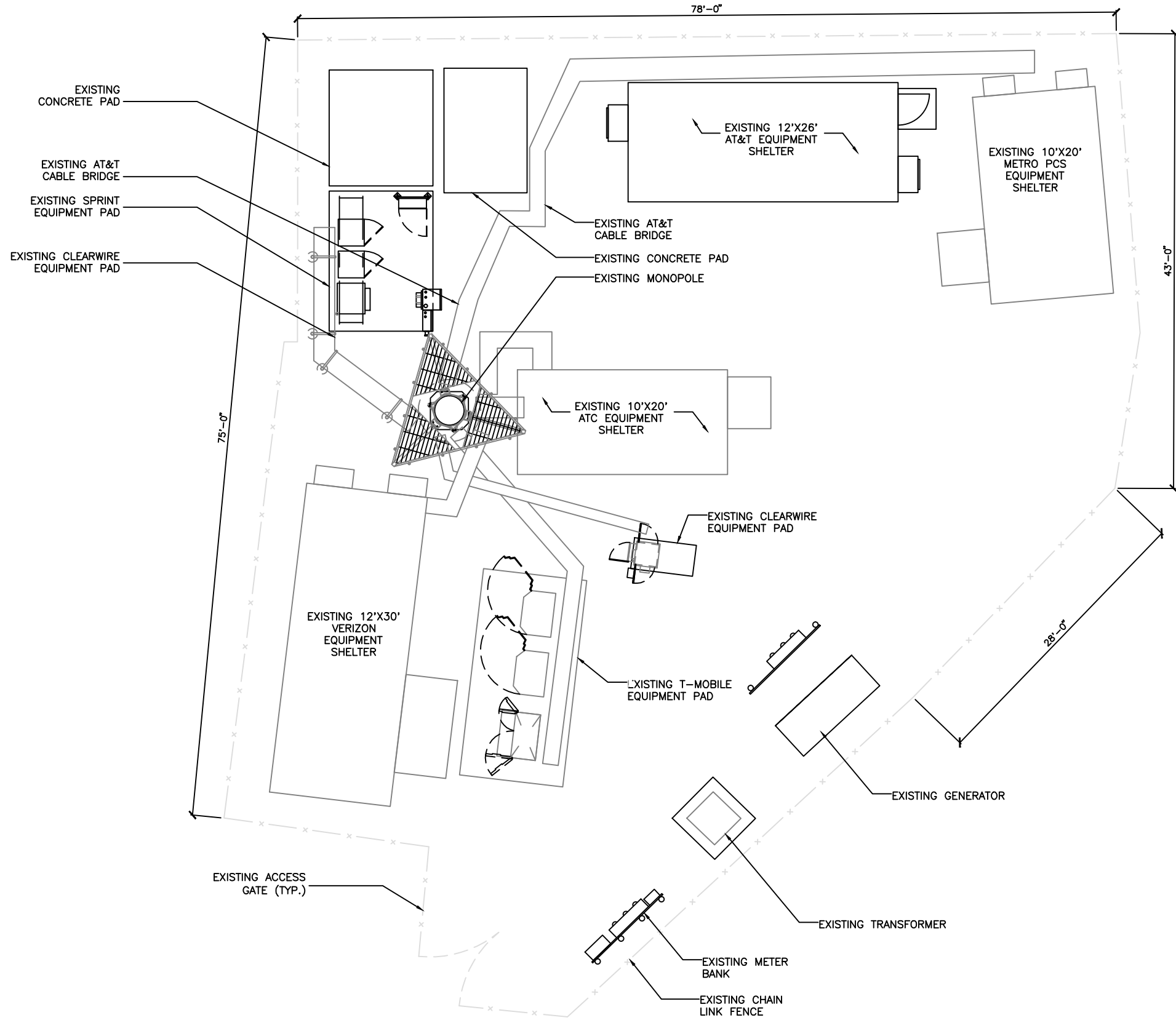


SHEET TITLE:

GENERAL NOTES &
GROUNDING NOTES

SHEET NUMBER:

GN-1



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

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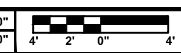


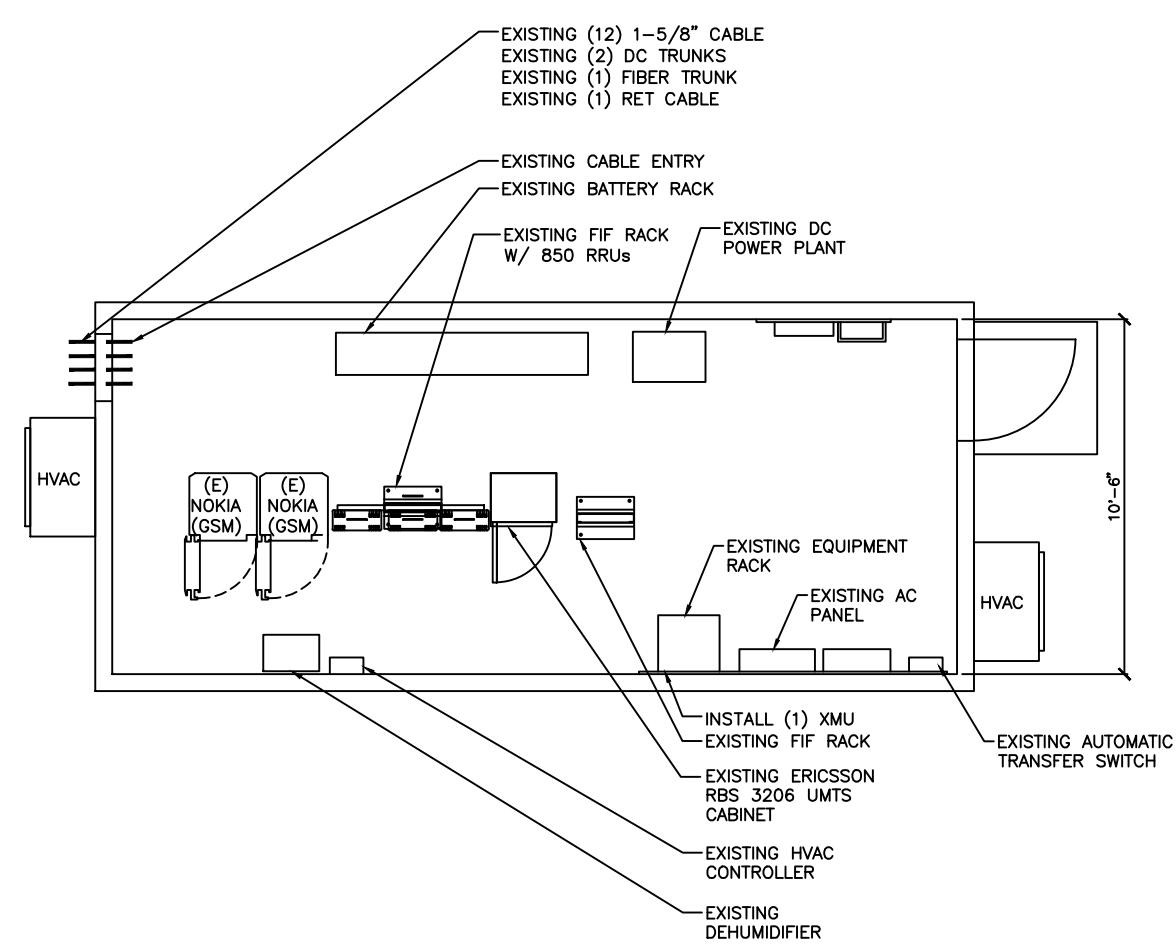
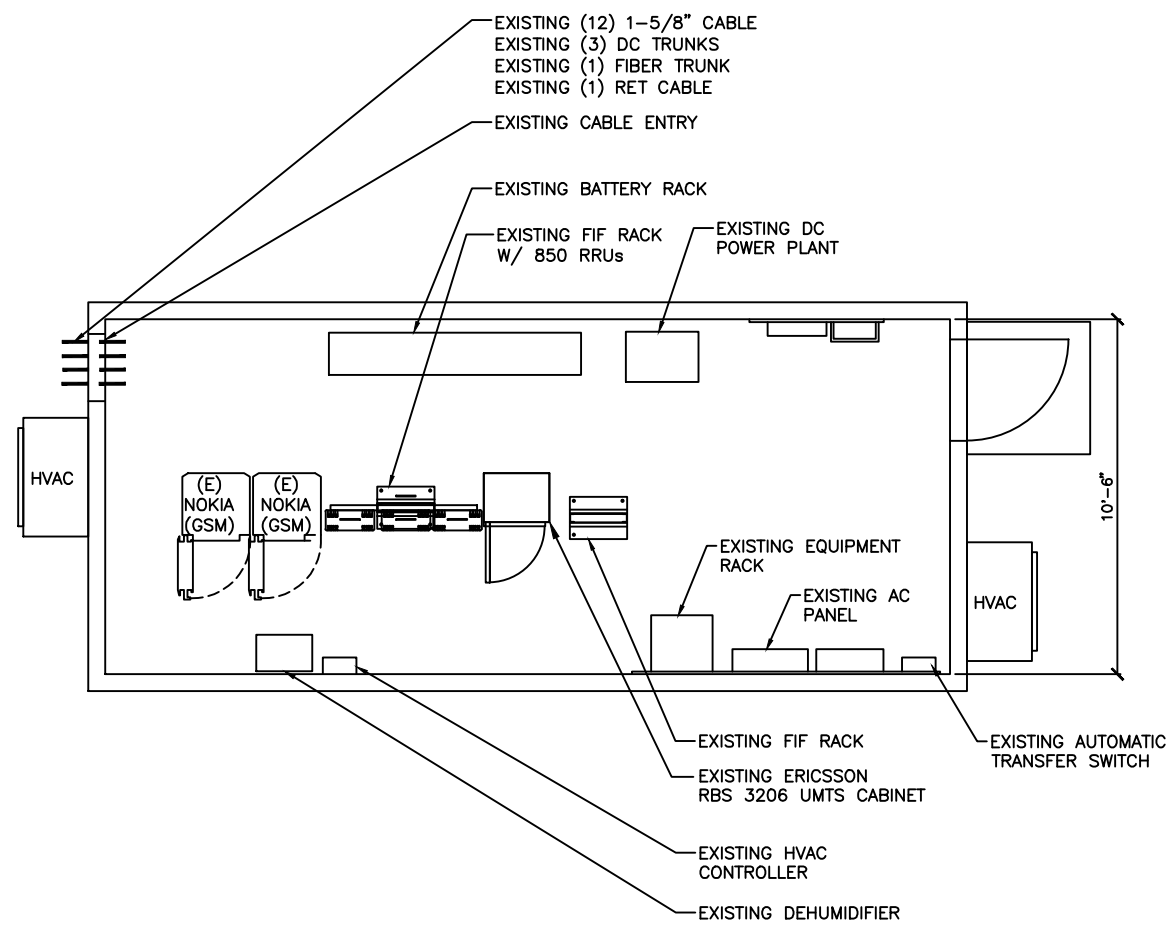
SHEET TITLE:

COMPOUND PLAN

SHEET NUMBER:

A-1





at&t
 Mobility
 1355 WEST UNIVERSITY DRIVE
 MESA, AZ 85201-5419

EMPIRE
 telecom
 16 ESQUIRE ROAD
 BILLERICA, MA 01821

PLANS PREPARED BY:

 1825 W. WALNUT HILL LANE SUITE 302
 IRVING, TX 75038

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SITE INFORMATION:
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 WESTPORT SOUTH
 FA CODE: 10035073
 19-20 POST OFFICE LANE
 WESTPORT, CT 06880

SEAL:

 MICHAEL F. PLAHOVINSAK, P.E. #25849
 Sole Proprietor - Independent Engineer
 18301 S.R. 161, Plain City, OH 43064
 614-398-6250 / mike@mfeng.com

SHEET TITLE:
 EQUIPMENT LAYOUTS

SHEET NUMBER:
 A-2

EXISTING EQUIPMENT LAYOUT

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

1

PROPOSED EQUIPMENT LAYOUT

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

2



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

PLANS PREPARED BY:



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SEAL:



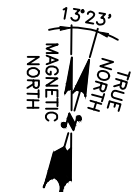
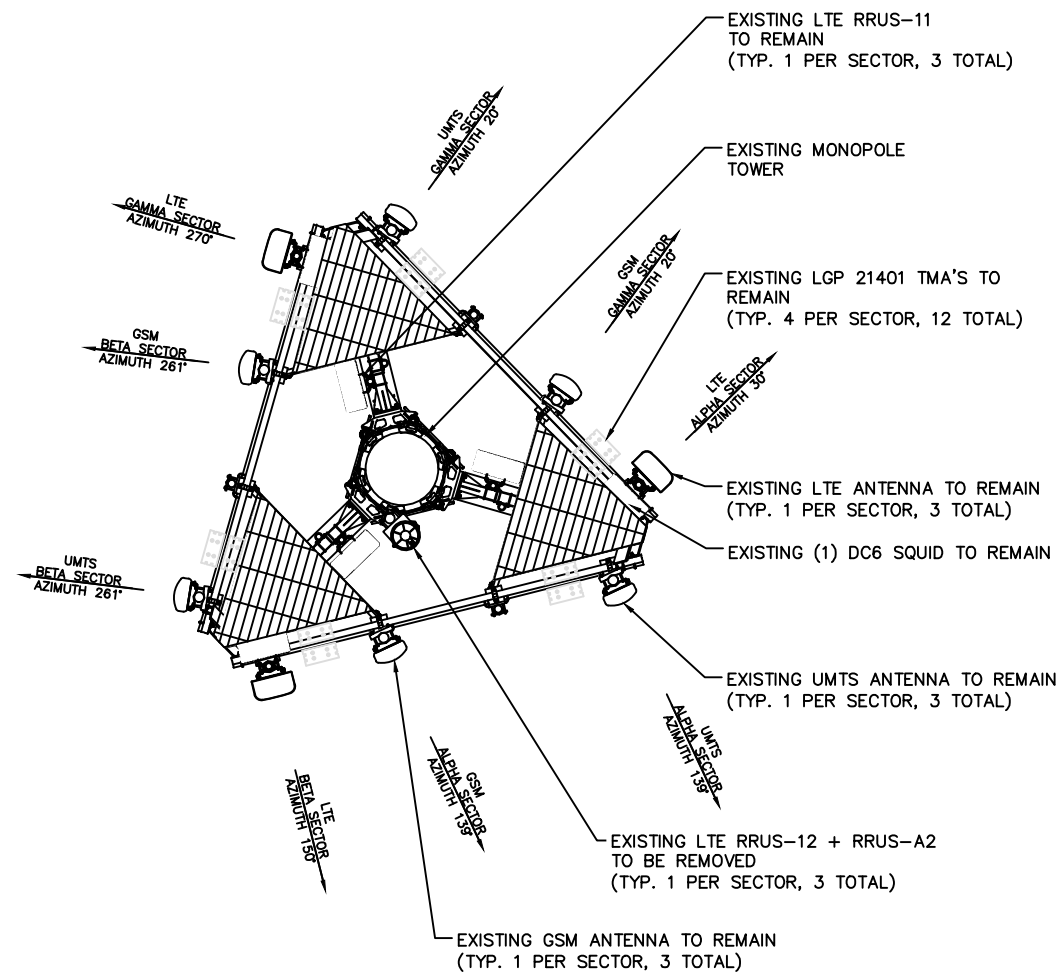
MICHAEL F. PLAHOVINSAK, P.E. #25849
18301 S.R. 151, Plain City, OH 43064
614-398-6250 / mike@mpeng.com

SHEET TITLE:

ANTENNA LAYOUTS

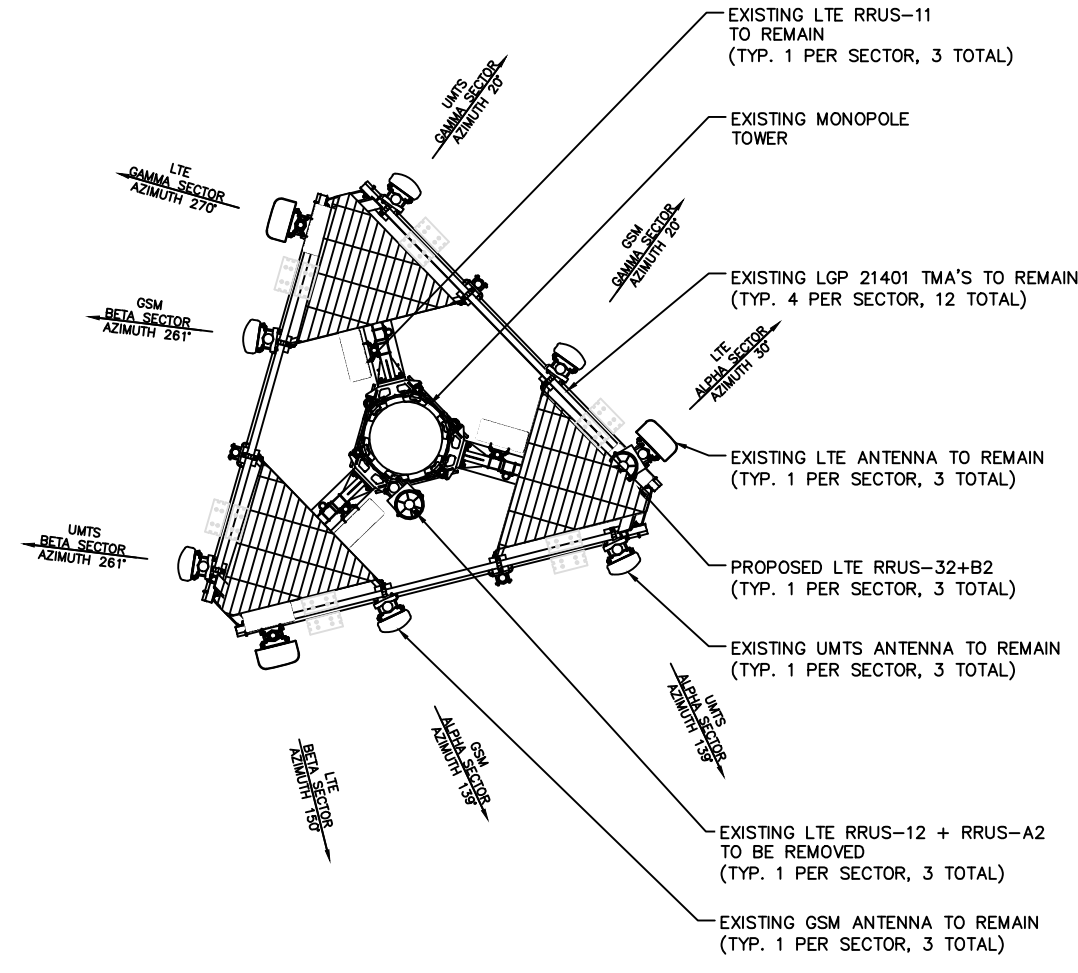
SHEET NUMBER:

A-3



EXISTING ANTENNA LAYOUT

NOT TO SCALE 1



PROPOSED ANTENNA LAYOUT

NOT TO SCALE 2



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

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0	11/17/16	FOR CONSTRUCTION	OS

SITE INFORMATION:

CT2103
WESTPORT SOUTH
FA CODE: 10035073

19-20 POST OFFICE LANE
WESTPORT, CT 06880

SEAL:

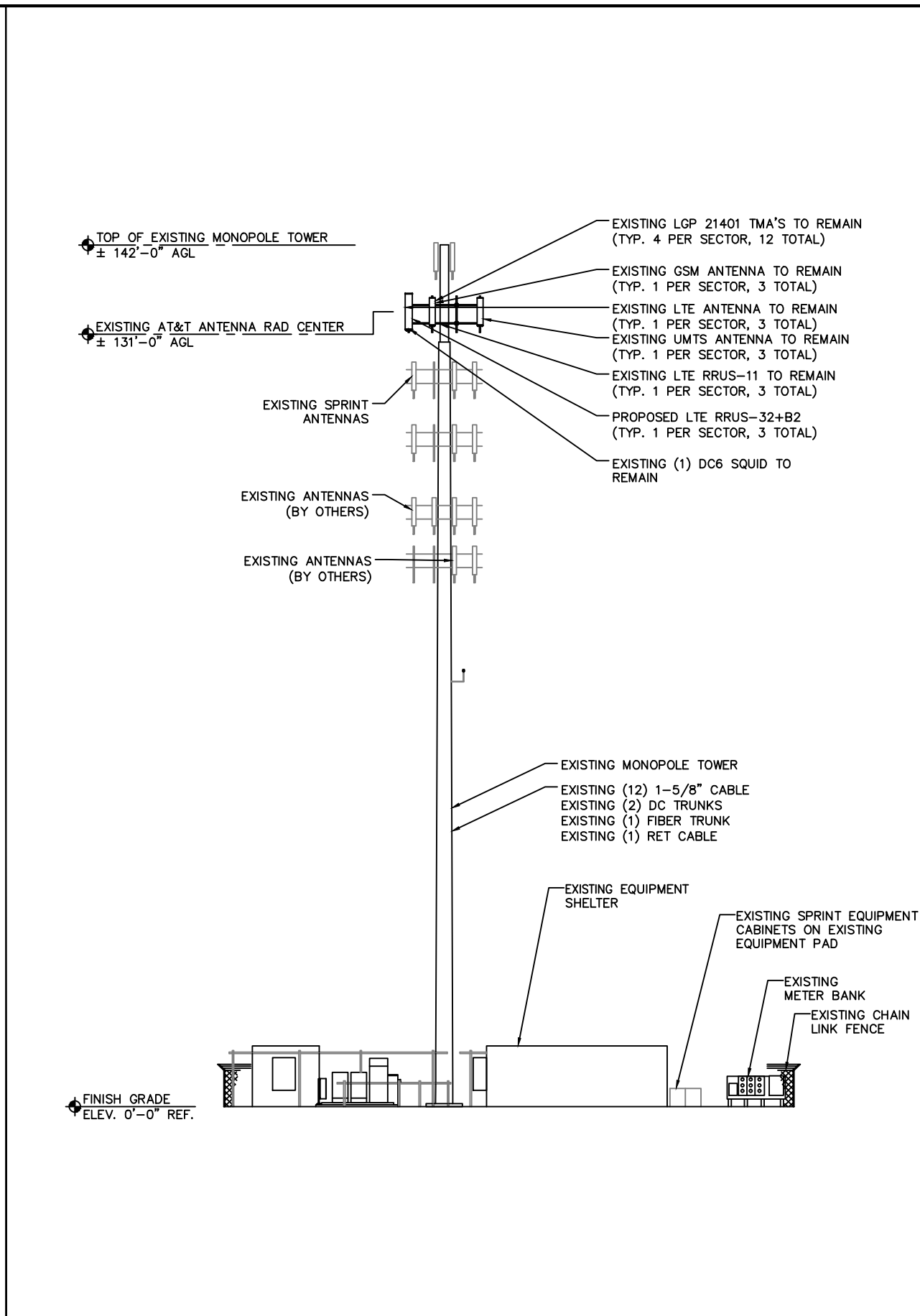
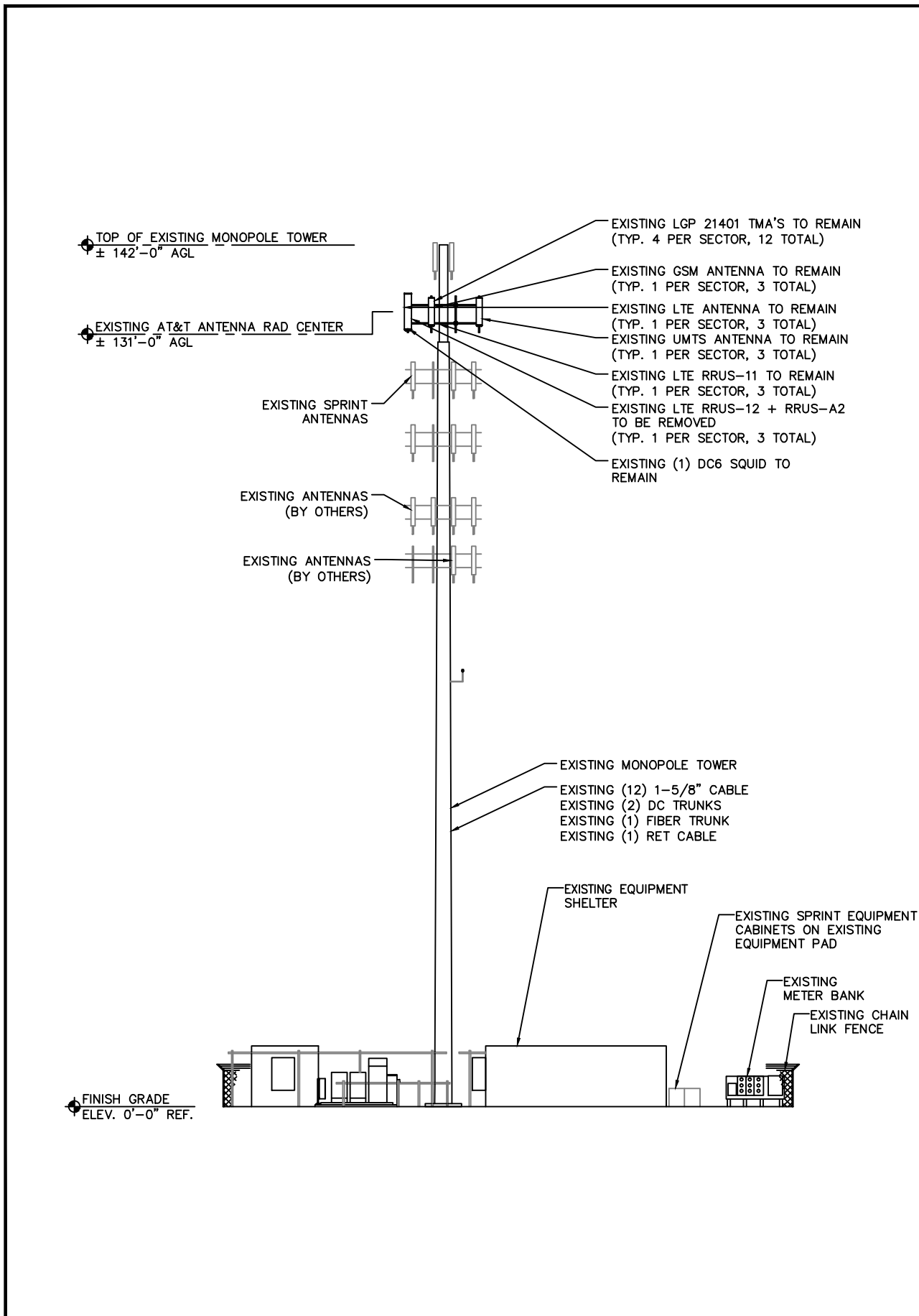


SHEET TITLE:

TOWER ELEVATION

SHEET NUMBER:

A-4



EXISTING TOWER ELEVATION

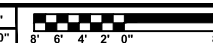
22"x34" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"



1

PROPOSED TOWER ELEVATION

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



2



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419

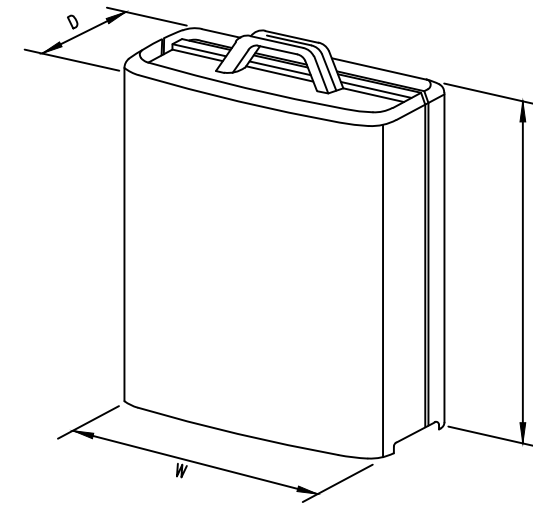


16 ESQUIRE ROAD
BILLERICA, MA 01821

PLANS PREPARED BY:



1825 W. WALNUT HILL LANE SUITE 302
IRVING, TX 75038



MODEL	L x W x H	WEIGHT
RRUS-11	19.69' x 16.97' x 7.17'	50.7 LBS
RRUS-12	20.4' x 18.5' x 7.5'	58 LBS
RRUS-32	29.9' x 13.3' x 9.5'	77 LBS
RRUS-32 B2	20.9' x 9.5' x 3.3'	77 LBS
RRUS-E2	20.4' x 18.5' x 7.5'	58 LBS
A2 MODULE	16.4' x 15.2' x 3.4'	22 LBS

NO.	DATE	DESCRIPTION	BY
A	10/28/16	FOR REVIEW	OS
0	11/17/16	FOR CONSTRUCTION	OS

NOT USED

N.T.S 1

RRUS DETAILS

N.T.S 2

SITE INFORMATION:

CT2103
WESTPORT SOUTH
FA CODE: 10035073

19-20 POST OFFICE LANE
WESTPORT, CT 06880

SEAL:



SHEET TITLE:

DETAILS

SHEET NUMBER:

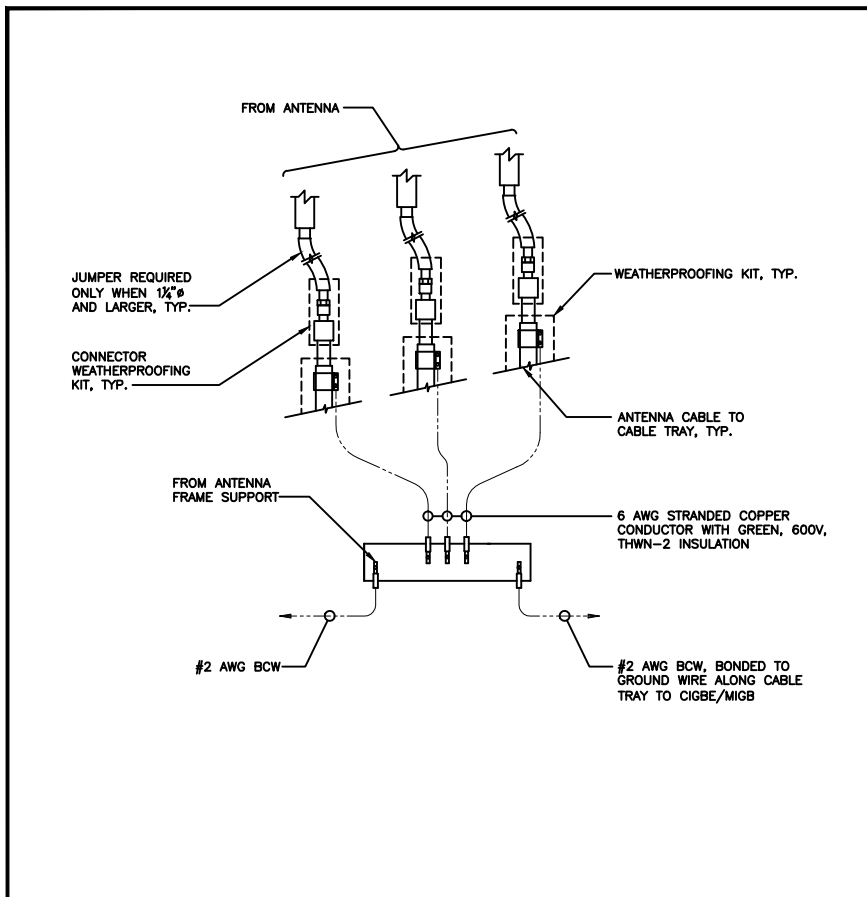
A-5

NOT USED

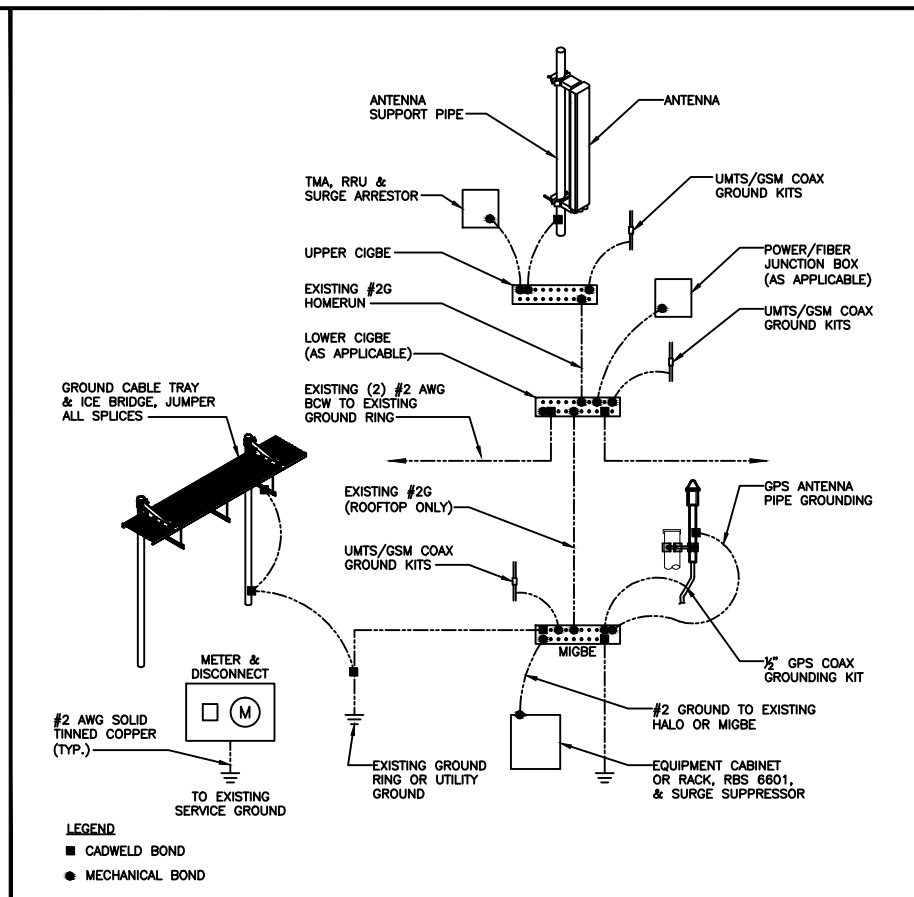
N.T.S 3

NOT USED

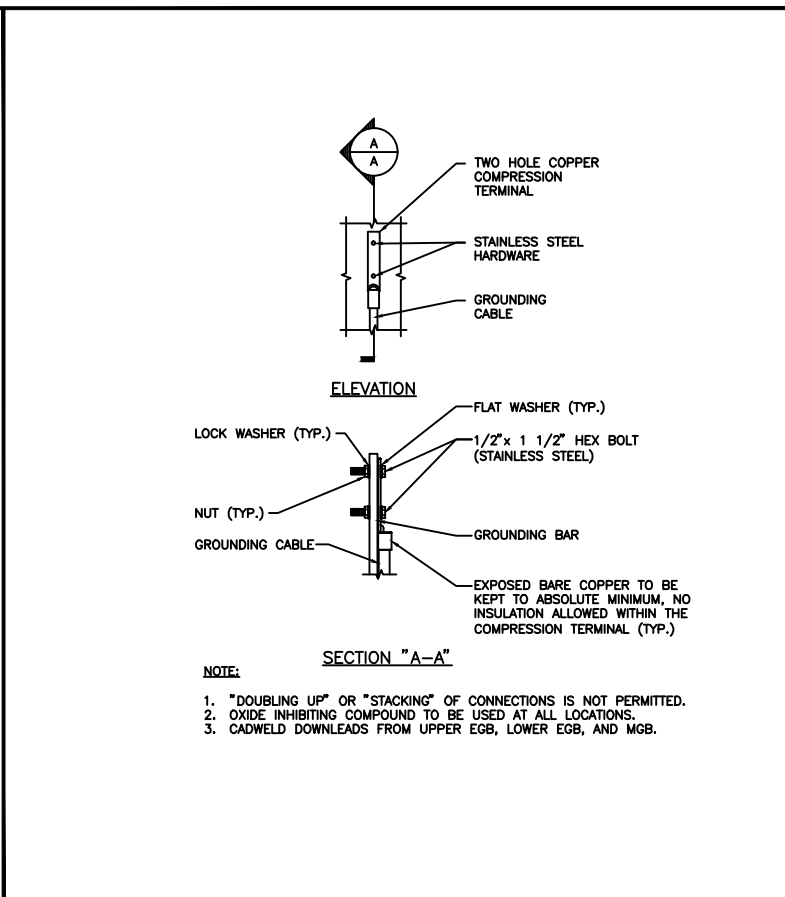
N.T.S 4



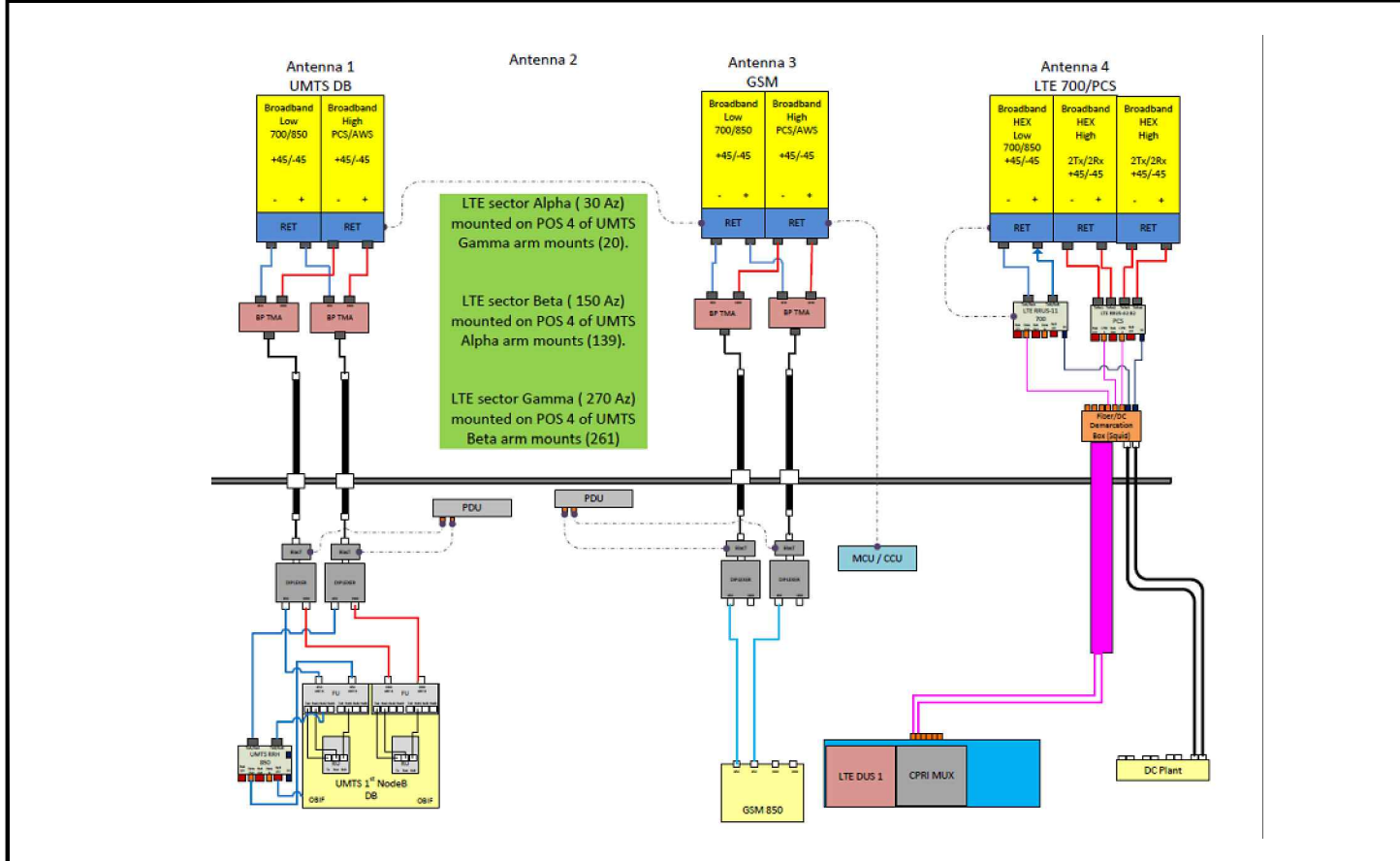
GROUND WIRE TO GROUND BAR CONNECTION DETAILS N.T.S 1



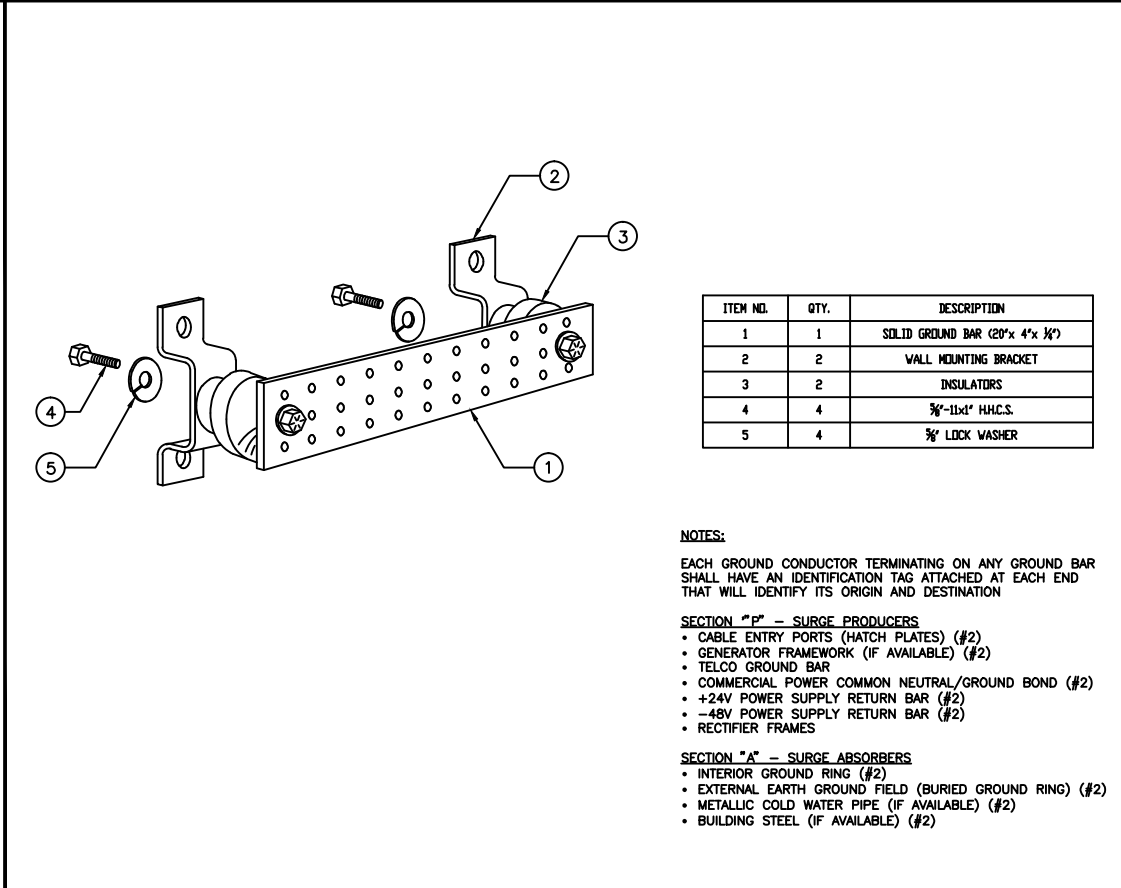
GROUND RISER DIAGRAM N.T.S 2



TYPICAL GROUND BAR CONNECTION DETAILS N.T.S 3



PLUMBING DIAGRAM N.T.S 4

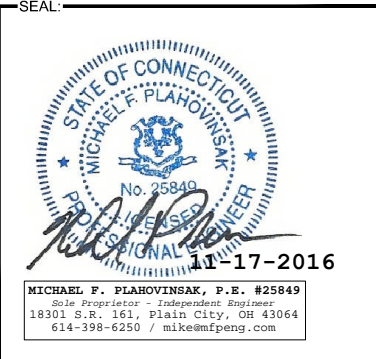


GROUND BAR DETAILS N.T.S 5



NO.	DATE	DESCRIPTION	BY
A	10/28/16	FOR REVIEW	OS
0	11/17/16	FOR CONSTRUCTION	OS

SITE INFORMATION:
 CT2103
 WESTPORT SOUTH
 FA CODE: 10035073
 19-20 POST OFFICE LANE
 WESTPORT, CT 06880



SHEET TITLE:
 GROUNDING, ONE-LINE
 DIAGRAM & DETAILS

SHEET NUMBER:
 G-1



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 142 ft Monopole
ATC Site Name : WSPT - South, CT
ATC Site Number : 302511
Engineering Number : OAA688000_C3_02
Proposed Carrier : AT&T Mobility
Carrier Site Name : Westport South
Carrier Site Number : CT2103
Site Location : 20 Post Office Lane
Westport, CT 06880-6226
41.123444,-73.313100
County : Fairfield
Date : October 28, 2016
Max Usage : 79%
Result : Pass

Prepared By:
Aaron Black
Structural Engineer I

Reviewed By:

COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
Conclusion.....	1
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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 142 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	SpectraSite Site #CT-0047, dated August 12, 2005
Foundation Drawing	Mapping by TEP Project #65218-72422, dated December 28, 2015
Geotechnical Report	MB&A Project #011105, dated July 17, 2001
Modifications	ATC Job #42046633, dated October 16, 2008 ATC Job #46844332/46993332, dated April 15, 2011

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	93 mph (3-Second Gust, V_{ASD}) / 120 mph (3-Second Gust, V_{ULT})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Spectral Response:	$S_s = 0.22$, $S_1 = 0.07$
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
136.0	140.0	3	Kathrein 742-218 / AP20-1940/045D/ADT/XP	Flush	(6) 1 5/8" Coax (1) 3/8" Coax	Metro PCS
	136.0	3	RCU (Remote Control Unit)			
131.0	131.0	3	Ericsson RRUS-11 (50 lbs.)	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.65" 8 AWG 2C (1) 0.28" RG-6	AT&T Mobility
		12	Powerwave LGP21401			
		1	Raycap DC6-48-60-18-8F ("Squid")			
		6	Powerwave 7770.00			
		3	CCI HPA-65R-BUU-H6			
120.0	120.0	2	DragonWave Horizon Compact	Platform w/ Handrails	(4) 1 1/4" Hybriflex (2) 1/2" Coax (6) 5/16" Coax (1) 2" Conduit (1) 3/8" Coax	Clearwire
		3	NextNet BTS-2500			
		3	Argus LLPX310R			
		2	DragonWave A-ANT-18G-2-C			
		3	Alcatel-Lucent 800MHz 2X50W RRH w/ Filter			Sprint Nextel
		3	Alcatel-Lucent 1900MHz 4x45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
		3	RFS RFS APXV9TM14-ALU-I20			
3	RFS APXVSP18-C-A20					
111.0	111.0	9	48" x 8" Panel	Platform w/ Handrails	(12) 7/8" Coax (1) 1/2" Coax	
100.0	100.0	6	RFS FD9R6004/1C-3L	Platform w/ Handrails	(12) 1 5/8" Coax (1) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent RRH2x40-AWS			
		3	Rymsa MGD3-800TX			
		3	Antel BXA-171063/12CF__2 FP			
		1	RFS DB-T1-6Z-8AB-0Z			
		3	Antel BXA-70080/6CF__			
		3	Powerwave P65-16-XL-2			
90.0	90.0	4	12" x 9" x 6" TMA	Platform w/ Handrails	(14) 1 5/8" Coax (1) 1 1/4" Fiber	T-Mobile
		4	RFS ATMAA1412D-1A20			
		3	Ericsson RRUS 11 B12			
		4	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Andrew LNX-6515DS-VTM			
80.0	80.0	2	Diamond X50A	Stand-Offs	(2) 1/2" Coax	Senet
63.0	63.0	1	PCTEL GPS-TMG-HR-26N	Stand-Off	(1) 1/2" Coax	Sprint Nextel

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						



Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
131.0	131.0	12	Powerwave 7020.00 Dual Band RET	Platform w/ Handrails	-	AT&T Mobility
		3	Ericsson RRUS 32 B2			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	43%	Pass
Shaft	68%	Pass
Base Plate	34%	Pass
Reinforcement	59%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,828.0	79%
Axial (Kips)	49.5	30%
Shear (Kips)	30.9	23%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
131.0	Powerwave Allgon 7020.00 Dual Band RET	AT&T Mobility	1.537	1.326
	Ericsson RRUS 32 B2			
120.0	DragonWave A-ANT-18G-2-C	Clearwire	1.285	1.294

*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



Standard Conditions

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

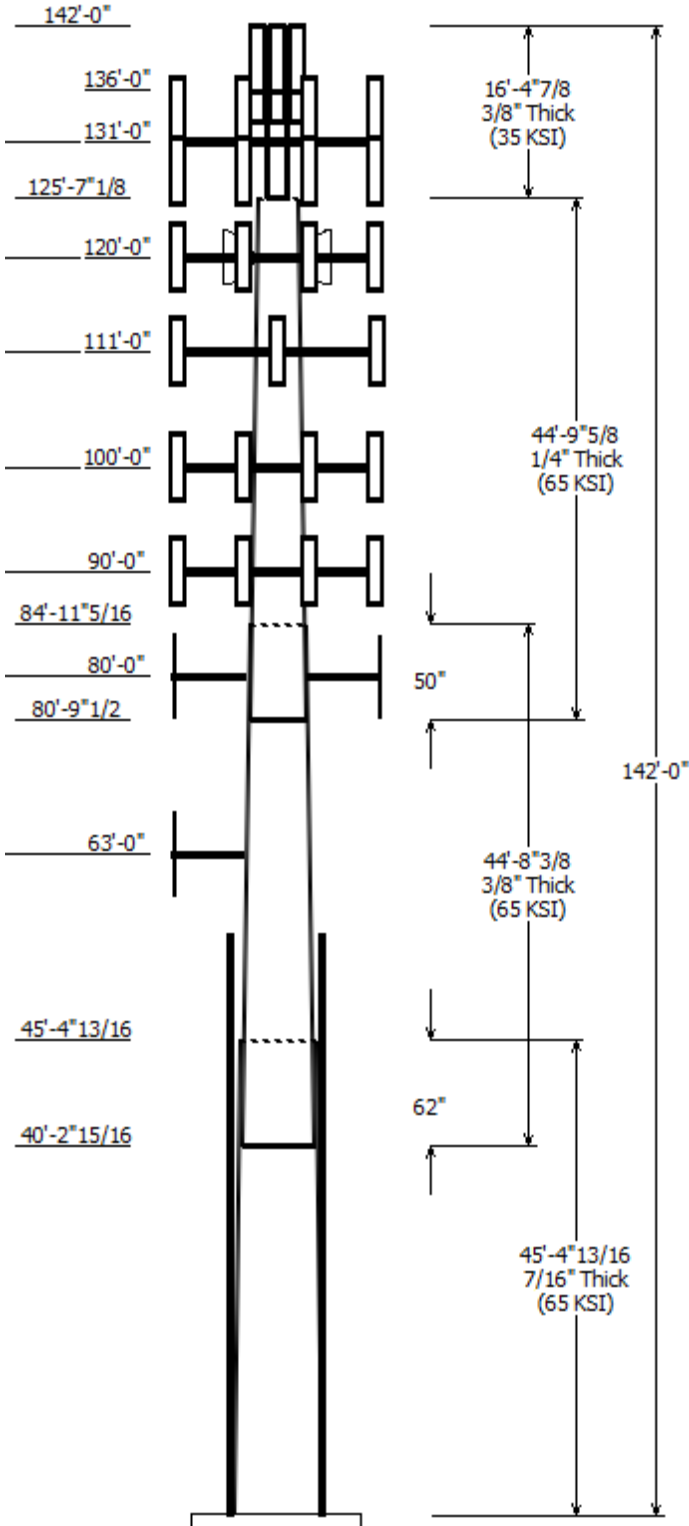
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements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

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

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

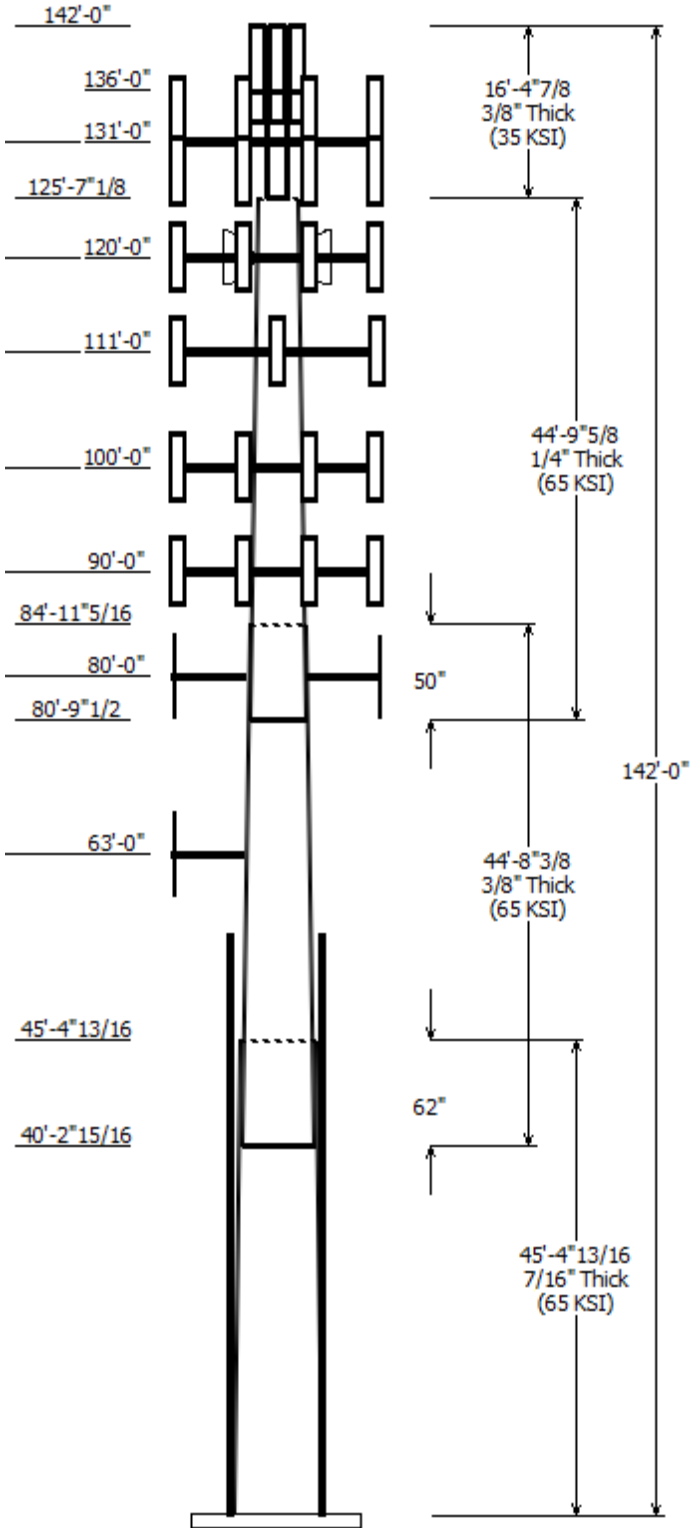
All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Job Information	
Pole :	302511
Code:	ANSI/TIA-222-G
Description :	142 ft EEI Monopole
Client :	AT&T Mobility
Struct Class :	II
Location :	WSPT - South, CT
Shape :	12 Sides
Exposure :	B
Height :	142.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.212634in/ft)



Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Taper (in/ft)	Steel Grade (ksi)
		Top	Bottom					
1	45.400	35.34	45.00	0.438		0.000	0.212600	65
2	44.700	27.68	37.19	0.375	Slip Joint	61.875	0.212600	65
3	44.800	19.54	29.07	0.250	Slip Joint	49.813	0.212600	65
4	16.407	10.75	10.75	0.375	Butt Joint	0.000	0.000000	35

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
136.000	136.000	3	RCU (Remote Control Unit)
136.000	140.000	3	Kathrein Scala 742-218 / AP20-
131.000	132.000	3	Ericsson RRUS 32 B2
131.000	128.000	3	CCI HPA-65R-BUU-H6
131.000	128.000	12	Powerwave Allgon LGP21401
131.000	128.000	1	Raycap DC6-48-60-18-8F
131.000	132.000	3	Ericsson RRUS-11 (50 lbs.)
131.000	132.000	12	Powerwave Allgon 7020.00
131.000	128.000	6	Powerwave Allgon 7770.00
131.000	131.000	1	Flat Platform w/ Handrails
120.000	120.000	3	RFS RFS APXV9TM14-ALU-I20
120.000	120.000	3	Alcatel-Lucent TD-RRH8x20-25
120.000	120.000	3	Alcatel-Lucent 800 MHz 2X50W
120.000	120.000	3	Alcatel-Lucent 1900 MHz 4x45
120.000	120.000	3	RFS APXVSP18-C-A20
120.000	120.000	3	Argus LLPX310R
120.000	120.000	2	DragonWave Horizon Compact
120.000	120.000	2	DragonWave A-ANT-18G-2-C
120.000	120.000	3	NextNet BTS-2500
120.000	120.000	1	Flat Platform w/ Handrails
111.000	111.000	1	Flat Platform w/ Handrails
111.000	111.000	9	48" x 8" Panel
100.000	100.000	3	Antel BXA-171063/12CF_2 FP
100.000	100.000	3	Antel BXA-70080/6CF_
100.000	100.000	1	RFS DB-T1-6Z-8AB-0Z
100.000	100.000	3	Alcatel-Lucent RRH2x40-AWS
100.000	100.000	6	RFS FD9R6004/1C-3L
100.000	100.000	3	Powerwave Allgon P65-16-XL-
100.000	100.000	3	Rymsa MGD3-800TX
100.000	100.000	1	Flat Platform w/ Handrails
90.000	90.000	4	12" x 9" x 6" TMA
90.000	90.000	3	Andrew LNX-6515DS-VTM
90.000	90.000	3	Ericsson RRUS 11 B12
90.000	90.000	3	Ericsson AIR 21, 1.3M, B4A B2P
90.000	90.000	4	Ericsson AIR 21, 1.3 M, B2A B4
90.000	90.000	4	RFS ATMAA1412D-1A20
90.000	90.000	1	Flat Platform w/ Handrails
80.000	80.000	2	Stand-Offs
80.000	80.000	2	Diamond X50A
63.000	63.000	1	Stand-Off
63.000	63.000	1	PCTEL GPS-TMG-HR-26N



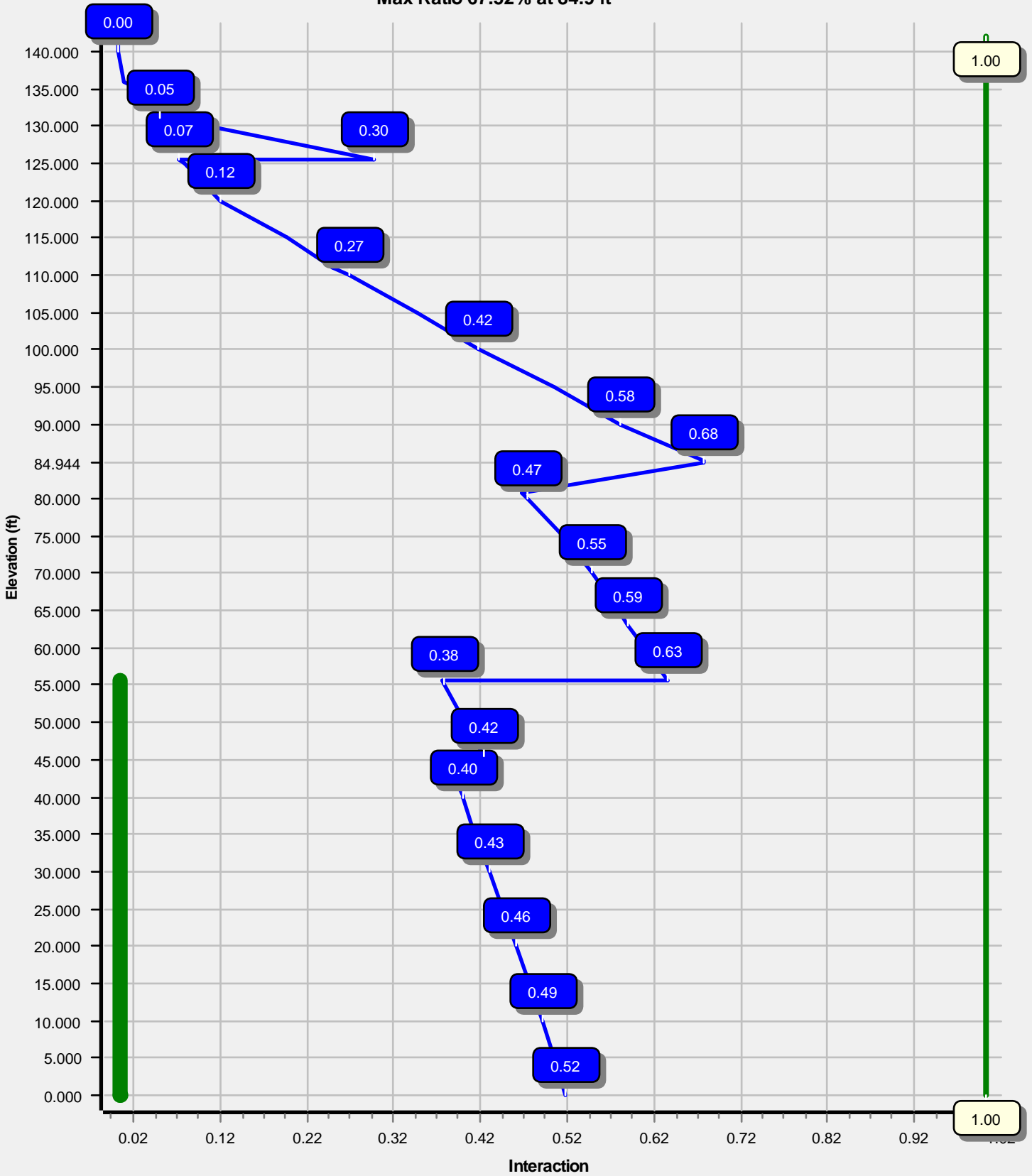
Linear Appurtenance			
Elev (ft)	From To		Exposed To Wind
	From	To	
0.000	63.000	1/2" Coax	No
0.000	63.000	DYWIDAG	Yes
0.000	80.000	1/2" Coax	No
0.000	90.000	1 1/4" Fiber	No
0.000	90.000	1 5/8" Coax	Yes
0.000	100.0	1 5/8" Coax	No
0.000	100.0	1 5/8" Hybriflex	No
0.000	111.0	1/2" Coax	No
0.000	111.0	7/8" Coax	No
0.000	120.0	1 1/4" Hybriflex	No
0.000	120.0	1/2" Coax	No
0.000	120.0	2" Conduit	No
0.000	120.0	3/8" Coax	No
0.000	120.0	5/16" Coax	No
0.000	131.0	0.28" RG-6	No
0.000	131.0	0.65" 8 AWG 2C	No
0.000	131.0	1 1/4" Coax	No
0.000	136.0	1 5/8" Coax	Yes
0.000	136.0	3/8" Coax	No

Load Cases	
1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2828.00	30.94	49.51
0.9D + 1.6W	2756.93	30.02	37.12
1.2D + 1.0Di + 1.0Wi	719.01	7.34	82.03
(1.2 + 0.2Sds) * DL + E ELFM	189.15	1.76	49.46
(1.2 + 0.2Sds) * DL + E EMAM	147.64	1.66	49.46
(0.9 - 0.2Sds) * DL + E ELFM	186.52	1.76	33.83
(0.9 - 0.2Sds) * DL + E EMAM	145.39	1.66	33.83
1.0D + 1.0W	722.14	7.82	41.30

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	120.00	15.420	1.294

Load Case : 1.2D + 1.6W
Max Ratio 67.52% at 84.9 ft



Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:24 AM

Customer: AT&T Mobility

Analysis Parameters

Location:	Fairfield County, CT		
Code:	ANSI/TIA-222-G	Height (ft):	142
Shape:	12 Sides, Sect 4: Round	Base Diameter (in):	45.00
Pole Type:	Custom	Top Diameter (in):	10.75
Pole Manufacturer:	EEl	Taper (in/ft) :	0.213

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	93 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.15		
T _L (sec):	6	p:	1.3
S _s :	0.221	S ₁ :	0.066
F _a :	1.600	F _v :	2.400
S _{ds} :	0.236	S _{d1} :	0.106
		C _s :	0.033
		C _s Max:	0.033
		C _s Min:	0.030

Load Cases

1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:24 AM

Customer: AT&T Mobility

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip		Weight (lb)	Bottom						Top							
				Joint Type	Joint Len (in)		Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)	
1-12	45.400	0.4375	65		0.00	8,648	45.00	0.00	62.78	15912.1	25.42	102.86	35.34	45.40	49.18	7649.3	19.50	80.79	0.212638	
2-12	44.700	0.3750	65	Slip	61.88	5,889	37.19	40.24	44.46	7692.0	24.43	99.18	27.68	84.94	32.98	3140.3	17.64	73.83	0.212638	
3-12	44.800	0.2500	65	Slip	49.81	2,952	29.07	80.79	23.20	2459.7	29.01	116.28	19.54	125.59	15.53	738.0	18.80	78.18	0.212638	
4-R	16.407	0.3750	35	Butt	0.00	682	10.75	125.59	12.22	164.6	0.00	28.67	10.75	142.00	12.22	164.6	0.00	28.67	0.000000	
Shaft Weight						18,172														

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor		
136.00	Kathrein Scala 742-218 /	3	22.50	3.850	0.73	110.51	4.762	0.73	0.000	4.000
136.00	RCU (Remote Control Unit)	3	1.00	0.160	0.50	11.01	0.359	0.50	0.000	0.000
131.00	CCI HPA-65R-BUU-H6	3	51.00	9.660	0.83	295.12	11.006	0.83	0.000	-3.000
131.00	Ericsson RRUS 32 B2	3	53.00	2.740	0.67	139.60	3.463	0.67	0.000	1.000
131.00	Ericsson RRUS-11 (50 lbs.)	3	50.00	2.570	0.50	129.98	3.205	0.50	0.000	1.000
131.00	Flat Platform w/ Handrails	1	2000.00	39.500	1.00	3,404.39	58.807	1.00	0.000	0.000
131.00	Powerwave Allgon 7020.00	12	2.20	0.400	0.50	17.61	0.619	0.50	0.000	1.000
131.00	Powerwave Allgon 7770.00	6	35.00	5.510	0.77	167.80	6.544	0.77	0.000	-3.000
131.00	Powerwave Allgon LGP21401	12	14.10	1.100	0.50	47.10	1.556	0.50	0.000	-3.000
131.00	Raycap DC6-48-60-18-8F	1	31.80	1.280	1.00	123.18	2.843	1.00	0.000	-3.000
120.00	Alcatel-Lucent 1900 MHZ	3	60.00	2.320	0.67	152.37	2.975	0.67	0.000	0.000
120.00	Alcatel-Lucent 800 MHZ	3	64.00	2.060	0.67	152.13	2.640	0.67	0.000	0.000
120.00	Alcatel-Lucent TD-RRH8x20-	3	70.00	4.050	0.67	159.37	5.675	0.67	0.000	0.000
120.00	Argus LLPX310R	3	28.60	4.290	0.73	133.23	5.166	0.73	0.000	0.000
120.00	DragonWave A-ANT-18G-2-C	2	27.10	4.690	1.00	122.53	5.936	1.00	0.000	0.000
120.00	DragonWave Horizon	2	10.60	0.430	0.50	39.85	0.653	0.50	0.000	0.000
120.00	Flat Platform w/ Handrails	1	2000.00	39.500	1.00	3,389.73	58.605	1.00	0.000	0.000
120.00	NextNet BTS-2500	3	35.00	1.820	0.50	91.05	2.383	0.50	0.000	0.000
120.00	RFS APXVSP18-C-A20	3	57.00	8.020	0.83	250.96	9.281	0.83	0.000	0.000
120.00	RFS RFS APXV9TM14-ALU-I20	3	55.10	6.340	0.78	210.83	7.422	0.78	0.000	0.000
111.00	48" x 8" Panel	9	20.00	3.610	0.90	148.46	6.020	0.90	0.000	0.000
111.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,381.22	62.783	1.00	0.000	0.000
100.00	Alcatel-Lucent RRH2x40-AWS	3	44.00	2.160	0.50	113.66	2.774	0.50	0.000	0.000
100.00	Antel BXA-171063/12CF__2	3	15.00	4.790	0.88	128.79	5.957	0.88	0.000	0.000
100.00	Antel BXA-70080/6CF__	3	18.00	5.840	0.88	161.39	7.030	0.88	0.000	0.000
100.00	Flat Platform w/ Handrails	1	2000.00	39.600	1.00	3,364.04	58.400	1.00	0.000	0.000
100.00	Powerwave Allgon P65-16-	3	33.00	8.130	0.75	205.57	9.371	0.75	0.000	0.000
100.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	0.67	175.07	5.634	0.67	0.000	0.000
100.00	RFS FD9R6004/1C-3L	6	3.10	0.370	0.50	15.39	0.568	0.50	0.000	0.000
100.00	Ryma MGD3-800TX	3	15.40	3.340	0.82	97.74	4.235	0.82	0.000	0.000
90.00	12" x 9" x 6" TMA	4	20.00	0.900	0.50	55.82	1.291	0.50	0.000	0.000
90.00	Andrew LNX-6515DS-VTM	3	51.30	11.430	0.84	298.51	13.005	0.84	0.000	0.000
90.00	Ericsson AIR 21, 1.3 M, B2A	4	83.00	6.050	0.86	241.54	7.087	0.86	0.000	0.000
90.00	Ericsson AIR 21, 1.3M, B4A	3	81.50	6.090	0.85	240.00	7.132	0.85	0.000	0.000
90.00	Ericsson RRUS 11 B12	3	50.70	2.790	0.67	131.59	3.431	0.67	0.000	0.000
90.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,349.36	62.312	1.00	0.000	0.000
90.00	RFS ATMAA1412D-1A20	4	13.00	1.000	0.50	45.68	1.407	0.50	0.000	0.000
80.00	Diamond X50A	2	2.30	1.120	1.00	56.95	2.427	1.00	0.000	0.000
80.00	Stand-Offs	2	50.00	3.000	0.67	72.87	4.470	0.67	0.000	0.000
63.00	PCTEL GPS-TMG-HR-26N	1	0.60	0.090	1.00	9.79	0.255	1.00	0.000	0.000
63.00	Stand-Off	1	30.00	1.000	0.67	43.41	1.479	0.67	0.000	0.000
Totals		134	13922.90			32,048.88			Number of Loadings : 41	

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:24 AM

Customer: AT&T Mobility

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	136.00	6	1 5/8" Coax	1.98	0.82	N	1.98	Y	Metro PCS
0.00	136.00	1	3/8" Coax	0.44	0.08	N	0.44	N	Metro PCS
0.00	131.00	1	0.28" RG-6	0.28	0.03	N	0.00	N	AT&T Mobility
0.00	131.00	2	0.65" 8 AWG 2C	0.65	0.31	N	0.00	N	AT&T Mobility
0.00	131.00	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
0.00	120.00	4	1 1/4" Hybriflex	1.54	1.00	N	0.00	N	Sprint Nextel
0.00	120.00	2	1/2" Coax	0.63	0.15	N	0.00	N	Clearwire
0.00	120.00	1	2" Conduit	2.38	3.65	N	0.00	N	Clearwire
0.00	120.00	1	3/8" Coax	0.44	0.08	N	0.00	N	Clearwire
0.00	120.00	6	5/16" Coax	0.31	0.05	N	0.00	N	Clearwire
0.00	111.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	111.00	12	7/8" Coax	1.09	0.33	N	0.00	N	Sprint Nextel
0.00	100.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	100.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon
0.00	90.00	1	1 1/4" Fiber	1.25	1.05	N	0.00	N	T-Mobile
0.00	90.00	14	1 5/8" Coax	1.98	0.82	N	3.96	Y	T-Mobile
0.00	80.00	2	1/2" Coax	0.63	0.15	N	0.00	N	Senet, Inc.
0.00	63.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	63.00	4	DYWIDAG	4.00	0.00	N	2.50	Y	--

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Intermediate Connections			Connectors	Continuation?
					Description	Spacing (in)	Len (in)			
0.00	55.68	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)	Additional Reinforcing		
												Area (in ²)	Ix (in ⁴)	Weight (lb)
0.00		0.4375	45.000	62.777	15,912.1	25.42	102.86	77.0	683.1	0.0	0.0	19.64	6,615	0.0
5.00		0.4375	43.937	61.280	14,800.2	24.77	100.43	77.7	650.7	0.0	1,055.3	19.64	6,347	334.0
10.00		0.4375	42.874	59.782	13,741.3	24.11	98.00	78.4	619.2	0.0	1,029.9	19.64	6,084	334.0
15.00		0.4375	41.810	58.284	12,734.1	23.46	95.57	79.1	588.4	0.0	1,004.4	19.64	5,827	334.0
20.00		0.4375	40.747	56.786	11,777.4	22.81	93.14	79.8	558.4	0.0	978.9	19.64	5,576	334.0
25.00		0.4375	39.684	55.289	10,869.9	22.16	90.71	80.5	529.2	0.0	953.4	19.64	5,330	334.0
30.00		0.4375	38.621	53.791	10,010.2	21.51	88.28	81.3	500.7	0.0	927.9	19.64	5,090	334.0
35.00		0.4375	37.558	52.293	9,197.1	20.86	85.85	81.9	473.1	0.0	902.4	19.64	4,855	334.0
40.00		0.4375	36.494	50.795	8,429.2	20.21	83.42	81.9	446.2	0.0	877.0	19.64	4,626	334.0
40.24	Bot - Section 2	0.4375	36.443	50.722	8,392.9	20.18	83.30	81.9	444.9	0.0	42.1	19.64	4,615	16.3
45.00		0.4375	35.431	49.297	7,705.4	19.56	80.99	81.9	420.1	0.0	1,519.0	19.64	4,559	317.7
45.40	Top - Section 1	0.3750	36.096	43.133	7,025.1	23.65	96.26	78.9	376.0	0.0	125.8	19.64	4,541	26.7
50.00		0.3750	35.118	41.952	6,463.7	22.95	93.65	79.7	355.6	0.0	665.9	19.64	4,337	307.3
55.00		0.3750	34.055	40.668	5,888.2	22.19	90.81	80.5	334.0	0.0	702.9	19.64	4,121	334.0
55.68	Reinf. Top	0.3750	33.911	40.495	5,813.1	22.09	90.43	80.6	331.2	0.0	93.5	19.64	4,092	45.2
60.00		0.3750	32.992	39.385	5,348.0	21.43	87.98	81.3	313.2	0.0	587.5			
63.00		0.3750	32.354	38.614	5,040.3	20.97	86.28	81.8	301.0	0.0	398.1			
65.00		0.3750	31.929	38.101	4,841.9	20.67	85.14	81.9	293.0	0.0	261.0			
70.00		0.3750	30.865	36.817	4,368.8	19.91	82.31	81.9	273.4	0.0	637.3			
75.00		0.3750	29.802	35.533	3,927.5	19.15	79.47	81.9	254.6	0.0	615.5			
80.00		0.3750	28.739	34.249	3,517.0	18.39	76.64	81.9	236.4	0.0	593.6			
80.79	Bot - Section 3	0.3750	28.570	34.046	3,454.7	18.27	76.19	81.9	233.6	0.0	92.1			
84.94	Top - Section 2	0.2500	28.188	22.490	2,240.5	28.07	112.75	74.1	153.6	0.0	796.1			
85.00		0.2500	28.176	22.480	2,237.7	28.06	112.70	74.1	153.4	0.0	4.3			
90.00		0.2500	27.113	21.624	1,991.7	26.92	108.45	75.4	141.9	0.0	375.2			
95.00		0.2500	26.049	20.768	1,764.4	25.78	104.20	76.6	130.9	0.0	360.6			
100.0		0.2500	24.986	19.913	1,555.2	24.64	99.94	77.8	120.2	0.0	346.1			
105.0		0.2500	23.923	19.057	1,363.1	23.50	95.69	79.1	110.1	0.0	331.5			
110.0		0.2500	22.860	18.201	1,187.6	22.36	91.44	80.3	100.4	0.0	316.9			
111.0		0.2500	22.647	18.030	1,154.4	22.13	90.59	80.6	98.5	0.0	61.6			
115.0		0.2500	21.797	17.345	1,027.8	21.22	87.19	81.6	91.1	0.0	240.7			
120.0		0.2500	20.733	16.489	883.1	20.08	82.93	81.9	82.3	0.0	287.8			
125.0		0.2500	19.670	15.633	752.6	18.94	78.68	81.9	73.9	0.0	273.3			
125.5	Top - Section 3	0.2500	19.544	15.532	738.0	18.80	78.18	81.9	72.9	0.0	31.4			
125.5	Bot - Section 4	0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4				
130.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	183.3			
131.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	41.6			
135.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	166.4			
136.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	41.6			
140.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	166.4			
142.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	83.2			
											18,171.7			3,719.2

Load Case: 1.2D + 1.6W	93 mph with No Ice	25 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

Shaft Segment Forces (Factored)

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	14.724	16.19	302.07	1.000	0.000	0.00	0.000	0.00	310.7	0.0	0.0
5.00		1.00	0.70	14.724	16.19	298.51	1.250	* 0.000	5.00	19.182	23.98	617.2	0.0	1,266.4
10.00		1.00	0.70	14.724	16.19	291.37	1.263	* 0.000	5.00	18.723	23.66	608.9	0.0	1,235.8
15.00		1.00	0.70	14.724	16.19	284.23	1.278	* 0.000	5.00	18.265	23.34	600.6	0.0	1,205.3
20.00		1.00	0.70	14.724	16.19	277.09	1.292	* 0.000	5.00	17.806	23.01	567.9	0.0	1,174.7
25.00		1.00	0.70	14.724	16.19	269.96	1.200	* 0.000	5.00	17.348	20.82	532.3	0.0	1,144.1
30.00		1.00	0.70	14.724	16.19	262.82	1.200	* 0.000	5.00	16.889	20.27	524.2	0.0	1,113.5
35.00		1.00	0.71	15.077	16.58	258.73	1.200	* 0.000	5.00	16.430	19.72	526.5	0.0	1,082.9
40.00		1.00	0.74	15.707	17.27	256.71	1.200	* 0.000	5.00	15.972	19.17	277.9	0.0	1,052.4
40.24	Bot - Section 2	1.00	0.76	16.013	17.61	255.29	1.200	* 0.000	0.24	0.767	0.92	272.0	0.0	50.5
45.00		1.00	0.77	16.292	17.92	253.75	1.200	* 0.000	4.76	15.054	18.06	280.8	0.0	1,822.8
45.40	Top - Section 1	1.00	0.78	16.567	18.22	251.99	1.200	* 0.000	0.40	1.247	1.50	272.9	0.0	151.0
50.00		1.00	0.80	16.824	18.50	255.50	1.200	* 0.000	4.60	14.131	16.96	523.5	0.0	799.1
55.00		1.00	0.82	17.292	19.02	251.60	1.200	* 0.000	5.00	14.919	17.90	309.2	0.0	843.4
55.68	Reinf. Top	1.00	0.83	17.554	19.30	249.07	1.200	* 0.000	0.68	1.985	2.38	271.0	0.0	112.2
60.00		1.00	0.84	17.777	19.55	246.73	1.200	* 0.000	4.32	12.476	14.97	395.8	0.0	705.0
63.00	Appertunance(s)	1.00	0.86	18.091	19.90	243.11	1.200	* 0.000	3.00	8.456	10.15	271.9	0.0	477.7
65.00		1.00	0.87	18.298	20.12	240.52	1.236	* 0.000	2.00	5.546	6.85	386.7	0.0	313.3
70.00		1.00	0.88	18.579	20.43	236.74	1.248	* 0.000	5.00	13.544	16.91	553.1	0.0	764.8
75.00		1.00	0.90	18.962	20.85	231.07	1.267	* 0.000	5.00	13.085	16.58	553.3	0.0	738.6
80.00	Appertunance(s)	1.00	0.91	19.327	21.25	225.11	1.288	* 0.000	5.00	12.626	16.26	317.0	0.0	712.4
80.79	Bot - Section 3	1.00	0.92	19.530	21.48	221.53	1.200	* 0.000	0.79	1.960	2.35	253.7	0.0	110.5
84.94	Top - Section 2	1.00	0.93	19.700	21.67	218.41	1.200	* 0.000	4.15	10.253	12.30	216.2	0.0	955.3
85.00		1.00	0.94	19.842	21.82	219.61	1.200	* 0.000	0.06	0.137	0.16	254.8	0.0	5.2
90.00	Appertunance(s)	1.00	0.95	20.009	22.01	216.32	1.200	* 0.000	5.00	11.925	14.31	457.1	0.0	450.2
95.00		1.00	0.96	20.329	22.36	209.66	1.000	0.000	5.00	11.466	11.47	405.0	0.0	432.8
100.0	Appertunance(s)	1.00	0.98	20.637	22.70	202.79	1.000	0.000	5.00	11.007	11.01	394.2	0.0	415.3
105.0		1.00	0.99	20.934	23.02	195.74	1.000	0.000	5.00	10.549	10.55	382.8	0.0	397.8
110.0		1.00	1.00	21.221	23.34	188.50	1.000	0.000	5.00	10.090	10.09	225.4	0.0	380.3
111.0	Appertunance(s)	1.00	1.01	21.388	23.52	184.09	1.000	0.000	1.00	1.963	1.96	182.2	0.0	74.0
115.0		1.00	1.02	21.526	23.67	180.36	1.000	0.000	4.00	7.669	7.67	321.0	0.0	288.9
120.0	Appertunance(s)	1.00	1.03	21.767	23.94	173.56	1.000	0.000	5.00	9.173	9.17	344.6	0.0	345.4
125.0		1.00	1.04	22.028	24.23	165.87	1.000	0.000	5.00	8.714	8.71	188.5	0.0	327.9
125.5	Top - Section 3	1.00	1.05	22.170	24.38	161.50	1.000	0.000	0.59	1.003	1.00	77.8	0.0	37.7
130.0		1.00	1.06	22.296	24.52	85.774	0.752	* 0.000	4.41	3.948	2.97	71.5	0.0	220.0
131.0	Appertunance(s)	1.00	1.06	22.430	24.67	86.031	0.752	* 0.000	1.00	0.896	0.67	66.7	0.0	49.9
135.0		1.00	1.07	22.551	24.80	86.265	0.752	* 0.000	4.00	3.583	2.69	66.9	0.0	199.6
136.0	Appertunance(s)	1.00	1.07	22.672	24.93	86.494	0.752	* 0.000	1.00	0.896	0.67	56.6	0.0	49.9
140.0		1.00	1.08	22.790	25.07	86.721	0.600	0.000	4.00	3.583	2.15	64.8	0.0	199.6
142.0		1.00	1.09	22.931	25.22	86.987	0.600	0.000	2.00	1.792	1.08	21.7	0.0	99.8
								Totals:	142.00			13,024.8	0.0	21,806.0

* = Cf Adjusted By Linear Load Ra Effect

Load Case: 1.2D + 1.6W	93 mph with No Ice	25 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		310.7	0.0					0.0	0.0	310.7	0.0	0.0	0.0
5.00		617.2	1,266.4					0.0	699.4	617.2	1,965.8	0.0	0.0
10.00		608.9	1,235.8					0.0	699.4	608.9	1,935.2	0.0	0.0
15.00		600.6	1,205.3					0.0	699.4	600.6	1,904.6	0.0	0.0
20.00		567.9	1,174.7					0.0	699.4	567.9	1,874.1	0.0	0.0
25.00		532.3	1,144.1					109.4	699.4	641.7	1,843.5	0.0	0.0
30.00		524.2	1,113.5					109.4	699.4	633.6	1,812.9	0.0	0.0
35.00		526.5	1,082.9					112.0	699.4	638.5	1,782.3	0.0	0.0
40.00		277.9	1,052.4					116.7	699.4	394.5	1,751.7	0.0	0.0
40.24	Bot - Section 2	272.0	50.5					5.8	34.1	277.8	84.6	0.0	0.0
45.00		280.8	1,822.8					115.1	665.3	395.9	2,488.1	0.0	0.0
45.40	Top - Section 1	272.9	151.0					9.8	56.0	282.7	206.9	0.0	0.0
50.00		523.5	799.1					115.0	643.4	638.4	1,442.5	0.0	0.0
55.00		309.2	843.4					128.4	699.4	437.6	1,542.8	0.0	0.0
55.68	Reinf. Top	271.0	112.2					17.7	94.7	288.6	206.9	0.0	0.0
60.00		395.8	705.0					114.2	258.2	509.9	963.2	0.0	0.0
63.00	Appertunance(s)	271.9	477.7	24.4	0.0	0.0	36.7	80.6	179.2	376.9	693.6	0.0	0.0
65.00		386.7	313.3					0.0	119.1	386.7	432.3	0.0	0.0
70.00		553.1	764.8					0.0	297.7	553.1	1,062.5	0.0	0.0
75.00		553.3	738.6					0.0	297.7	553.3	1,036.3	0.0	0.0
80.00	Appertunance(s)	317.0	712.4	214.9	0.0	0.0	125.5	0.0	297.7	531.9	1,135.6	0.0	0.0
80.79	Bot - Section 3	253.7	110.5					16.2	46.9	269.9	157.4	0.0	0.0
84.94	Top - Section 2	216.2	955.3					85.5	245.6	301.7	1,200.9	0.0	0.0
85.00		254.8	5.2					1.2	3.3	256.0	8.5	0.0	0.0
90.00	Appertunance(s)	457.1	450.2	3,490.2	0.0	0.0	3,617.4	104.6	295.9	4,051.8	4,363.5	0.0	0.0
95.00		405.0	432.8					0.0	220.7	405.0	653.5	0.0	0.0
100.00	Appertunance(s)	394.2	415.3	3,153.7	0.0	0.0	2,926.6	0.0	220.7	3,548.0	3,562.6	0.0	0.0
105.00		382.8	397.8					0.0	153.9	382.8	551.7	0.0	0.0
110.00		225.4	380.3					0.0	153.9	225.4	534.2	0.0	0.0
111.00	Appertunance(s)	182.2	74.0	2,424.8	0.0	0.0	2,616.0	0.0	30.8	2,607.0	2,720.7	0.0	0.0
115.00		321.0	288.9					0.0	103.4	321.0	392.3	0.0	0.0
120.00	Appertunance(s)	344.6	345.4	3,652.3	0.0	0.0	3,821.4	0.0	129.2	3,996.9	4,296.0	0.0	0.0
125.00		188.5	327.9					0.0	79.2	188.5	407.2	0.0	0.0
125.59	Top - Section 3	77.8	37.7					0.0	9.4	77.8	47.1	0.0	0.0
130.00		71.5	220.0					0.0	69.8	71.5	289.8	0.0	0.0
131.00	Appertunance(s)	66.7	49.9	3,600.2	0.0	-4,719.9	3,479.3	0.0	15.8	3,666.9	3,545.0	0.0	0.0
135.00		66.9	199.6					0.0	24.0	66.9	223.6	0.0	0.0
136.00	Appertunance(s)	56.6	49.9	349.2	0.0	1,358.4	84.6	0.0	6.0	405.7	140.5	0.0	0.0
140.00		64.8	199.6					0.0	0.0	64.8	199.6	0.0	0.0
142.00		21.7	99.8					0.0	0.0	21.7	99.8	0.0	0.0
Totals:										31,175.6	49,559.5	0.00	0.00

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:27 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

93 mph with No Ice

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.51	-30.94	0.00	-2,828.00	0.00	2,828.00	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.515
5.00	-47.45	-30.47	0.00	-2,673.30	0.00	2,673.30	4,285.51	2,142.75	7,679.11	3,792.42	0.09	-0.17	0.502
10.00	-45.43	-29.99	0.00	-2,520.97	0.00	2,520.97	4,218.97	2,109.49	7,373.27	3,641.38	0.37	-0.35	0.488
15.00	-43.44	-29.51	0.00	-2,371.03	0.00	2,371.03	4,150.52	2,075.26	7,070.06	3,491.64	0.83	-0.52	0.474
20.00	-41.48	-29.05	0.00	-2,223.51	0.00	2,223.51	4,080.16	2,040.08	6,769.73	3,343.32	1.47	-0.70	0.459
25.00	-39.56	-28.50	0.00	-2,078.28	0.00	2,078.28	4,007.88	2,003.94	6,472.54	3,196.54	2.30	-0.88	0.444
30.00	-37.67	-27.95	0.00	-1,935.78	0.00	1,935.78	3,933.69	1,966.85	6,178.73	3,051.44	3.32	-1.05	0.428
35.00	-35.82	-27.39	0.00	-1,796.03	0.00	1,796.03	3,854.52	1,927.26	5,883.88	2,905.83	4.51	-1.23	0.411
40.00	-34.04	-27.01	0.00	-1,659.09	0.00	1,659.09	3,744.12	1,872.06	5,549.75	2,740.81	5.89	-1.40	0.398
40.24	-33.92	-26.78	0.00	-1,652.50	0.00	1,652.50	3,738.74	1,869.37	5,533.71	2,732.89	5.97	-1.41	0.397
45.00	-31.40	-26.37	0.00	-1,525.14	0.00	1,525.14	3,633.72	1,816.86	5,225.39	2,580.62	7.46	-1.58	0.378
45.40	-31.16	-26.13	0.00	-1,514.59	0.00	1,514.59	3,063.79	1,531.89	4,506.32	2,225.50	7.59	-1.59	0.421
50.00	-29.66	-25.53	0.00	-1,394.41	0.00	1,394.41	3,008.67	1,504.34	4,302.82	2,125.00	9.20	-1.75	0.400
55.00	-28.09	-25.09	0.00	-1,266.75	0.00	1,266.75	2,946.93	1,473.46	4,084.17	2,017.02	11.13	-1.92	0.376
55.68	-27.86	-24.84	0.00	-1,249.77	0.00	1,249.77	2,938.42	1,469.21	4,054.78	2,002.51	11.40	-1.95	0.373
55.68	-27.86	-24.84	0.00	-1,249.77	0.00	1,249.77	2,938.42	1,469.21	4,054.78	2,002.51	11.40	-1.95	0.634
60.00	-26.84	-24.37	0.00	-1,142.38	0.00	1,142.38	2,883.27	1,441.64	3,868.42	1,910.47	13.23	-2.10	0.608
63.00	-26.10	-24.04	0.00	-1,069.27	0.00	1,069.27	2,844.16	1,422.08	3,740.46	1,847.27	14.61	-2.27	0.588
65.00	-25.60	-23.72	0.00	-1,021.19	0.00	1,021.19	2,808.42	1,404.21	3,643.77	1,799.52	15.59	-2.39	0.577
70.00	-24.45	-23.24	0.00	-902.58	0.00	902.58	2,713.79	1,356.89	3,400.96	1,679.61	18.24	-2.67	0.547
75.00	-23.34	-22.75	0.00	-786.37	0.00	786.37	2,619.16	1,309.58	3,166.52	1,563.83	21.19	-2.95	0.512
80.00	-22.18	-22.22	0.00	-672.62	0.00	672.62	2,524.53	1,262.26	2,940.46	1,452.18	24.42	-3.21	0.472
80.79	-21.98	-21.99	0.00	-655.01	0.00	655.01	2,509.53	1,254.76	2,905.39	1,434.86	24.95	-3.25	0.466
84.94	-20.76	-21.65	0.00	-563.74	0.00	563.74	1,499.90	749.95	1,728.05	853.42	27.88	-3.46	0.675
85.00	-20.71	-21.46	0.00	-562.53	0.00	562.53	1,499.54	749.77	1,726.89	852.85	27.92	-3.47	0.674
90.00	-16.52	-17.23	0.00	-455.24	0.00	455.24	1,466.64	733.32	1,624.12	802.09	31.72	-3.79	0.579
95.00	-15.81	-16.85	0.00	-369.11	0.00	369.11	1,431.82	715.91	1,522.23	751.77	35.85	-4.08	0.503
100.00	-12.46	-13.11	0.00	-284.84	0.00	284.84	1,395.09	697.54	1,421.47	702.01	40.27	-4.35	0.415
105.00	-11.90	-12.73	0.00	-219.30	0.00	219.30	1,356.44	678.22	1,322.10	652.93	44.95	-4.58	0.345
110.00	-11.36	-12.48	0.00	-155.66	0.00	155.66	1,315.88	657.94	1,224.36	604.67	49.84	-4.77	0.266
111.00	-8.85	-9.67	0.00	-143.18	0.00	143.18	1,307.54	653.77	1,205.03	595.12	50.85	-4.81	0.248
115.00	-8.47	-9.33	0.00	-104.51	0.00	104.51	1,273.40	636.70	1,128.51	557.33	54.93	-4.93	0.194
120.00	-4.53	-4.98	0.00	-57.84	0.00	57.84	1,215.41	607.71	1,023.37	505.40	60.15	-5.04	0.118
125.00	-4.14	-4.76	0.00	-32.92	0.00	32.92	1,152.33	576.16	919.28	454.00	65.47	-5.12	0.076
125.59	-4.10	-4.68	0.00	-30.10	0.00	30.10	1,144.85	572.43	907.31	448.09	66.10	-5.12	0.071
125.59	-4.10	-4.68	0.00	-30.10	0.00	30.10	385.02	192.51	160.54	106.00	66.10	-5.12	0.295
130.00	-3.81	-4.59	0.00	-9.46	0.00	9.46	385.02	192.51	160.54	106.00	70.84	-5.16	0.100
131.00	-0.61	-0.62	0.00	-4.87	0.00	4.87	385.02	192.51	160.54	106.00	71.92	-5.17	0.048
135.00	-0.39	-0.53	0.00	-2.40	0.00	2.40	385.02	192.51	160.54	106.00	76.26	-5.19	0.024
136.00	-0.29	-0.11	0.00	-0.51	0.00	0.51	385.02	192.51	160.54	106.00	77.35	-5.20	0.006
140.00	-0.10	-0.03	0.00	-0.06	0.00	0.06	385.02	192.51	160.54	106.00	81.70	-5.20	0.001
142.00	0.00	-0.02	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	83.87	-5.20	0.000

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:27 AM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

93 mph with No Ice (Reduced DL)

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Shaft Segment Forces (Factored)

Seg Top	Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
	0.00		1.00	0.70	14.724	16.19	302.07	1.000	0.000	0.00	0.000	0.00	248.5	0.0	0.0
	5.00		1.00	0.70	14.724	16.19	298.51	1.000	* 0.000	5.00	19.182	19.18	491.1	0.0	949.8
	10.00		1.00	0.70	14.724	16.19	291.37	1.000	* 0.000	5.00	18.723	18.72	479.3	0.0	926.9
	15.00		1.00	0.70	14.724	16.19	284.23	1.000	* 0.000	5.00	18.265	18.26	467.4	0.0	903.9
	20.00		1.00	0.70	14.724	16.19	277.09	1.000	* 0.000	5.00	17.806	17.81	500.4	0.0	881.0
	25.00		1.00	0.70	14.724	16.19	269.96	1.200	* 0.000	5.00	17.348	20.82	532.3	0.0	858.1
	30.00		1.00	0.70	14.724	16.19	262.82	1.200	* 0.000	5.00	16.889	20.27	524.2	0.0	835.1
	35.00		1.00	0.71	15.077	16.58	258.73	1.200	* 0.000	5.00	16.430	19.72	526.5	0.0	812.2
	40.00		1.00	0.74	15.707	17.27	256.71	1.200	* 0.000	5.00	15.972	19.17	277.9	0.0	789.3
	40.24	Bot - Section 2	1.00	0.76	16.013	17.61	255.29	1.200	* 0.000	0.24	0.767	0.92	272.0	0.0	37.9
	45.00		1.00	0.77	16.292	17.92	253.75	1.200	* 0.000	4.76	15.054	18.06	280.8	0.0	1,367.1
	45.40	Top - Section 1	1.00	0.78	16.567	18.22	251.99	1.200	* 0.000	0.40	1.247	1.50	272.9	0.0	113.2
	50.00		1.00	0.80	16.824	18.50	255.50	1.200	* 0.000	4.60	14.131	16.96	523.5	0.0	599.3
	55.00		1.00	0.82	17.292	19.02	251.60	1.200	* 0.000	5.00	14.919	17.90	309.2	0.0	632.6
	55.68	Reinf. Top	1.00	0.83	17.554	19.30	249.07	1.200	* 0.000	0.68	1.985	2.38	271.0	0.0	84.1
	60.00		1.00	0.84	17.777	19.55	246.73	1.200	* 0.000	4.32	12.476	14.97	395.8	0.0	528.8
	63.00	Appertunance(s)	1.00	0.86	18.091	19.90	243.11	1.200	* 0.000	3.00	8.456	10.15	250.9	0.0	358.3
	65.00		1.00	0.87	18.298	20.12	240.52	1.000	* 0.000	2.00	5.546	5.55	310.7	0.0	234.9
	70.00		1.00	0.88	18.579	20.43	236.74	1.000	* 0.000	5.00	13.544	13.54	439.8	0.0	573.6
	75.00		1.00	0.90	18.962	20.85	231.07	1.000	* 0.000	5.00	13.085	13.08	433.1	0.0	553.9
	80.00	Appertunance(s)	1.00	0.91	19.327	21.25	225.11	1.000	* 0.000	5.00	12.626	12.63	255.2	0.0	534.3
	80.79	Bot - Section 3	1.00	0.92	19.530	21.48	221.53	1.200	* 0.000	0.79	1.960	2.35	253.7	0.0	82.9
	84.94	Top - Section 2	1.00	0.93	19.700	21.67	218.41	1.200	* 0.000	4.15	10.253	12.30	216.2	0.0	716.5
	85.00		1.00	0.94	19.842	21.82	219.61	1.200	* 0.000	0.06	0.137	0.16	254.8	0.0	3.9
	90.00	Appertunance(s)	1.00	0.95	20.009	22.01	216.32	1.200	* 0.000	5.00	11.925	14.31	457.1	0.0	337.7
	95.00		1.00	0.96	20.329	22.36	209.66	1.000	0.000	5.00	11.466	11.47	405.0	0.0	324.6
	100.0	Appertunance(s)	1.00	0.98	20.637	22.70	202.79	1.000	0.000	5.00	11.007	11.01	394.2	0.0	311.5
	105.0		1.00	0.99	20.934	23.02	195.74	1.000	0.000	5.00	10.549	10.55	382.8	0.0	298.4
	110.0		1.00	1.00	21.221	23.34	188.50	1.000	0.000	5.00	10.090	10.09	225.4	0.0	285.3
	111.0	Appertunance(s)	1.00	1.01	21.388	23.52	184.09	1.000	0.000	1.00	1.963	1.96	182.2	0.0	55.5
	115.0		1.00	1.02	21.526	23.67	180.36	1.000	0.000	4.00	7.669	7.67	321.0	0.0	216.7
	120.0	Appertunance(s)	1.00	1.03	21.767	23.94	173.56	1.000	0.000	5.00	9.173	9.17	344.6	0.0	259.0
	125.0		1.00	1.04	22.028	24.23	165.87	1.000	0.000	5.00	8.714	8.71	188.5	0.0	245.9
	125.5	Top - Section 3	1.00	1.05	22.170	24.38	161.50	1.000	0.000	0.59	1.003	1.00	66.0	0.0	28.3
	130.0		1.00	1.06	22.296	24.52	85.774	0.600	* 0.000	4.41	3.948	2.37	57.1	0.0	165.0
	131.0	Appertunance(s)	1.00	1.06	22.430	24.67	86.031	0.600	* 0.000	1.00	0.896	0.54	53.3	0.0	37.4
	135.0		1.00	1.07	22.551	24.80	86.265	0.600	* 0.000	4.00	3.583	2.15	53.4	0.0	149.7
	136.0	Appertunance(s)	1.00	1.07	22.672	24.93	86.494	0.600	* 0.000	1.00	0.896	0.54	53.8	0.0	37.4
	140.0		1.00	1.08	22.790	25.07	86.721	0.600	0.000	4.00	3.583	2.15	64.8	0.0	149.7
	142.0		1.00	1.09	22.931	25.22	86.987	0.600	0.000	2.00	1.792	1.08	21.7	0.0	74.9
									Totals:	142.00			12,058.0	0.0	16,354.5

* = Cf Adjusted By Linear Load Ra Effect

Load Case: 0.9D + 1.6W	93 mph with No Ice (Reduced DL)	24 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :0.90		
Wind Load Factor :1.60		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		248.5	0.0					0.0	0.0	248.5	0.0	0.0	0.0
5.00		491.1	949.8					0.0	524.5	491.1	1,474.4	0.0	0.0
10.00		479.3	926.9					0.0	524.5	479.3	1,451.4	0.0	0.0
15.00		467.4	903.9					0.0	524.5	467.4	1,428.5	0.0	0.0
20.00		500.4	881.0					0.0	524.5	500.4	1,405.5	0.0	0.0
25.00		532.3	858.1					109.4	524.5	641.7	1,382.6	0.0	0.0
30.00		524.2	835.1					109.4	524.5	633.6	1,359.7	0.0	0.0
35.00		526.5	812.2					112.0	524.5	638.5	1,336.7	0.0	0.0
40.00		277.9	789.3					116.7	524.5	394.5	1,313.8	0.0	0.0
40.24	Bot - Section 2	272.0	37.9					5.8	25.6	277.8	63.5	0.0	0.0
45.00		280.8	1,367.1					115.1	499.0	395.9	1,866.1	0.0	0.0
45.40	Top - Section 1	272.9	113.2					9.8	42.0	282.7	155.2	0.0	0.0
50.00		523.5	599.3					115.0	482.6	638.4	1,081.9	0.0	0.0
55.00		309.2	632.6					128.4	524.5	437.6	1,157.1	0.0	0.0
55.68	Reinf. Top	271.0	84.1					17.7	71.0	288.6	155.2	0.0	0.0
60.00		395.8	528.8					114.2	193.6	509.9	722.4	0.0	0.0
63.00	Appertunance(s)	250.9	358.3	24.4	0.0	0.0	27.5	80.6	134.4	355.8	520.2	0.0	0.0
65.00		310.7	234.9					0.0	89.3	310.7	324.2	0.0	0.0
70.00		439.8	573.6					0.0	223.3	439.8	796.9	0.0	0.0
75.00		433.1	553.9					0.0	223.3	433.1	777.2	0.0	0.0
80.00	Appertunance(s)	255.2	534.3	214.9	0.0	0.0	94.1	0.0	223.3	470.0	851.7	0.0	0.0
80.79	Bot - Section 3	253.7	82.9					16.2	35.2	269.9	118.1	0.0	0.0
84.94	Top - Section 2	216.2	716.5					85.5	184.2	301.7	900.7	0.0	0.0
85.00		254.8	3.9					1.2	2.5	256.0	6.4	0.0	0.0
90.00	Appertunance(s)	457.1	337.7	3,490.2	0.0	0.0	2,713.0	104.6	221.9	4,051.8	3,272.6	0.0	0.0
95.00		405.0	324.6					0.0	165.5	405.0	490.1	0.0	0.0
100.00	Appertunance(s)	394.2	311.5	3,153.7	0.0	0.0	2,194.9	0.0	165.5	3,548.0	2,671.9	0.0	0.0
105.00		382.8	298.4					0.0	115.4	382.8	413.8	0.0	0.0
110.00		225.4	285.3					0.0	115.4	225.4	400.7	0.0	0.0
111.00	Appertunance(s)	182.2	55.5	2,424.8	0.0	0.0	1,962.0	0.0	23.1	2,607.0	2,040.6	0.0	0.0
115.00		321.0	216.7					0.0	77.5	321.0	294.2	0.0	0.0
120.00	Appertunance(s)	344.6	259.0	3,652.3	0.0	0.0	2,866.0	0.0	96.9	3,996.9	3,222.0	0.0	0.0
125.00		188.5	245.9					0.0	59.4	188.5	305.4	0.0	0.0
125.59	Top - Section 3	66.0	28.3					0.0	7.0	66.0	35.3	0.0	0.0
130.00		57.1	165.0					0.0	52.4	57.1	217.4	0.0	0.0
131.00	Appertunance(s)	53.3	37.4	3,600.2	0.0	-4,719.9	2,609.5	0.0	11.9	3,653.4	2,658.8	0.0	0.0
135.00		53.4	149.7					0.0	18.0	53.4	167.7	0.0	0.0
136.00	Appertunance(s)	53.8	37.4	349.2	0.0	1,358.4	63.4	0.0	4.5	403.0	105.4	0.0	0.0
140.00		64.8	149.7					0.0	0.0	64.8	149.7	0.0	0.0
142.00		21.7	74.9					0.0	0.0	21.7	74.9	0.0	0.0
Totals:										30,208.8	37,169.6	0.00	0.00

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:30 AM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

93 mph with No Ice (Reduced DL)

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.12	-30.02	0.00	-2,756.93	0.00	2,756.93	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.500
5.00	-35.56	-29.63	0.00	-2,606.85	0.00	2,606.85	4,285.51	2,142.75	7,679.11	3,792.42	0.09	-0.17	0.488
10.00	-34.03	-29.24	0.00	-2,458.72	0.00	2,458.72	4,218.97	2,109.49	7,373.27	3,641.38	0.36	-0.34	0.474
15.00	-32.52	-28.86	0.00	-2,312.50	0.00	2,312.50	4,150.52	2,075.26	7,070.06	3,491.64	0.81	-0.51	0.460
20.00	-31.03	-28.44	0.00	-2,168.19	0.00	2,168.19	4,080.16	2,040.08	6,769.73	3,343.32	1.44	-0.68	0.446
25.00	-29.57	-27.87	0.00	-2,025.98	0.00	2,025.98	4,007.88	2,003.94	6,472.54	3,196.54	2.24	-0.85	0.431
30.00	-28.14	-27.30	0.00	-1,886.64	0.00	1,886.64	3,933.69	1,966.85	6,178.73	3,051.44	3.23	-1.03	0.415
35.00	-26.74	-26.71	0.00	-1,750.15	0.00	1,750.15	3,854.52	1,927.26	5,883.88	2,905.83	4.40	-1.20	0.399
40.00	-25.39	-26.33	0.00	-1,616.58	0.00	1,616.58	3,744.12	1,872.06	5,549.75	2,740.81	5.75	-1.37	0.386
40.24	-25.30	-26.09	0.00	-1,610.16	0.00	1,610.16	3,738.74	1,869.37	5,533.71	2,732.89	5.82	-1.38	0.385
45.00	-23.40	-25.68	0.00	-1,486.08	0.00	1,486.08	3,633.72	1,816.86	5,225.39	2,580.62	7.27	-1.54	0.367
45.40	-23.22	-25.43	0.00	-1,475.81	0.00	1,475.81	3,063.79	1,531.89	4,506.32	2,225.50	7.40	-1.55	0.408
50.00	-22.08	-24.82	0.00	-1,358.85	0.00	1,358.85	3,008.67	1,504.34	4,302.82	2,125.00	8.97	-1.70	0.388
55.00	-20.90	-24.38	0.00	-1,234.75	0.00	1,234.75	2,946.93	1,473.46	4,084.17	2,017.02	10.85	-1.87	0.365
55.68	-20.72	-24.12	0.00	-1,218.24	0.00	1,218.24	2,938.42	1,469.21	4,054.78	2,002.51	11.12	-1.90	0.362
55.68	-20.72	-24.12	0.00	-1,218.24	0.00	1,218.24	2,938.42	1,469.21	4,054.78	2,002.51	11.12	-1.90	0.616
60.00	-19.95	-23.64	0.00	-1,113.97	0.00	1,113.97	2,883.27	1,441.64	3,868.42	1,910.47	12.90	-2.04	0.590
63.00	-19.39	-23.31	0.00	-1,043.05	0.00	1,043.05	2,844.16	1,422.08	3,740.46	1,847.27	14.24	-2.21	0.572
65.00	-18.99	-23.06	0.00	-996.43	0.00	996.43	2,808.42	1,404.21	3,643.77	1,799.52	15.19	-2.33	0.561
70.00	-18.11	-22.67	0.00	-881.15	0.00	881.15	2,713.79	1,356.89	3,400.96	1,679.61	17.78	-2.61	0.532
75.00	-17.25	-22.28	0.00	-767.81	0.00	767.81	2,619.16	1,309.58	3,166.52	1,563.83	20.66	-2.87	0.498
80.00	-16.37	-21.81	0.00	-656.42	0.00	656.42	2,524.53	1,262.26	2,940.46	1,452.18	23.81	-3.13	0.459
80.79	-16.22	-21.57	0.00	-639.13	0.00	639.13	2,509.53	1,254.76	2,905.39	1,434.86	24.33	-3.17	0.452
84.94	-15.30	-21.24	0.00	-549.61	0.00	549.61	1,499.90	749.95	1,728.05	853.42	27.18	-3.38	0.655
85.00	-15.25	-21.03	0.00	-548.42	0.00	548.42	1,499.54	749.77	1,726.89	852.85	27.22	-3.38	0.654
90.00	-12.15	-16.85	0.00	-443.28	0.00	443.28	1,466.64	733.32	1,624.12	802.09	30.93	-3.69	0.561
95.00	-11.61	-16.46	0.00	-359.05	0.00	359.05	1,431.82	715.91	1,522.23	751.77	34.96	-3.98	0.486
100.00	-9.14	-12.77	0.00	-276.74	0.00	276.74	1,395.09	697.54	1,421.47	702.01	39.27	-4.24	0.401
105.00	-8.71	-12.39	0.00	-212.88	0.00	212.88	1,356.44	678.22	1,322.10	652.93	43.82	-4.46	0.333
110.00	-8.31	-12.15	0.00	-150.93	0.00	150.93	1,315.88	657.94	1,224.36	604.67	48.60	-4.65	0.256
111.00	-6.48	-9.39	0.00	-138.78	0.00	138.78	1,307.54	653.77	1,205.03	595.12	49.58	-4.69	0.238
115.00	-6.19	-9.06	0.00	-101.21	0.00	101.21	1,273.40	636.70	1,128.51	557.33	53.55	-4.80	0.187
120.00	-3.31	-4.81	0.00	-55.90	0.00	55.90	1,215.41	607.71	1,023.37	505.40	58.64	-4.91	0.113
125.00	-3.02	-4.60	0.00	-31.84	0.00	31.84	1,152.33	576.16	919.28	454.00	63.82	-4.98	0.073
125.59	-2.99	-4.53	0.00	-29.12	0.00	29.12	1,144.85	572.43	907.31	448.09	64.44	-4.99	0.068
125.59	-2.99	-4.53	0.00	-29.12	0.00	29.12	385.02	192.51	160.54	106.00	64.44	-4.99	0.283
130.00	-2.78	-4.46	0.00	-9.15	0.00	9.15	385.02	192.51	160.54	106.00	69.06	-5.02	0.094
131.00	-0.45	-0.58	0.00	-4.69	0.00	4.69	385.02	192.51	160.54	106.00	70.11	-5.04	0.045
135.00	-0.29	-0.52	0.00	-2.35	0.00	2.35	385.02	192.51	160.54	106.00	74.33	-5.06	0.023
136.00	-0.22	-0.11	0.00	-0.48	0.00	0.48	385.02	192.51	160.54	106.00	75.39	-5.06	0.005
140.00	-0.07	-0.03	0.00	-0.06	0.00	0.06	385.02	192.51	160.54	106.00	79.63	-5.06	0.001
142.00	0.00	-0.02	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	81.75	-5.06	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi			50 mph with 0.75 in Radial Ice			24 Iterations			
Gust Response Factor :1.10		Ice Dead Load Factor :1.00				Wind Importance Factor :1.00			
Dead Load Factor :1.20						Ice Importance Factor :1.00			
Wind Load Factor :1.00									

Shaft Segment Forces (Factored)

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.682	0.000	1.200	0.000	0.00	0.000	0.00	56.6	0.0	0.0
5.00		1.00	0.70	4.256	4.682	0.000	1.200	* 1.159	5.00	20.148	24.18	112.2	338.5	1,604.9
10.00		1.00	0.70	4.256	4.682	0.000	1.200	* 1.293	5.00	19.801	23.76	110.1	369.9	1,605.8
15.00		1.00	0.70	4.256	4.682	0.000	1.200	* 1.361	5.00	19.399	23.28	107.8	380.5	1,585.8
20.00		1.00	0.70	4.256	4.682	0.000	1.200	* 1.408	5.00	18.979	22.78	105.4	384.2	1,558.9
25.00		1.00	0.70	4.256	4.682	0.000	1.200	* 1.444	5.00	18.551	22.26	103.0	384.4	1,528.5
30.00		1.00	0.70	4.256	4.682	0.000	1.200	* 1.473	5.00	18.116	21.74	101.7	382.3	1,495.8
35.00		1.00	0.71	4.358	4.794	0.000	1.200	* 1.498	5.00	17.678	21.21	102.5	378.7	1,461.6
40.00		1.00	0.74	4.540	4.994	0.000	1.200	* 1.519	5.00	17.238	20.69	54.2	373.9	1,426.2
40.24	Bot - Section 2	1.00	0.76	4.629	5.091	0.000	1.200	* 1.530	0.24	0.829	0.99	53.1	18.3	68.9
45.00		1.00	0.77	4.709	5.180	0.000	1.200	* 1.539	4.76	16.274	19.53	54.8	357.4	2,180.2
45.40	Top - Section 1	1.00	0.78	4.789	5.268	0.000	1.200	* 1.548	0.40	1.350	1.62	53.5	30.2	181.1
50.00		1.00	0.80	4.863	5.349	0.000	1.200	* 1.556	4.60	15.324	18.39	102.7	339.9	1,139.0
55.00		1.00	0.82	4.998	5.498	0.000	1.200	* 1.571	5.00	16.229	19.47	60.8	362.3	1,205.7
55.68	Reinf. Top	1.00	0.83	5.074	5.581	0.000	1.200	* 1.580	0.68	2.163	2.60	53.4	49.1	161.3
60.00		1.00	0.84	5.138	5.652	0.000	1.200	* 1.587	4.32	13.619	16.34	78.1	307.0	1,012.0
63.00	Appertunance(s)	1.00	0.86	5.229	5.752	0.000	1.200	* 1.596	3.00	9.255	11.11	53.2	210.4	688.2
65.00		1.00	0.87	5.289	5.818	0.000	1.200	* 1.603	2.00	6.080	7.30	74.0	139.1	452.4
70.00		1.00	0.88	5.370	5.907	0.000	1.200	* 1.611	5.00	14.886	17.86	105.0	338.6	1,103.4
75.00		1.00	0.90	5.481	6.029	0.000	1.200	* 1.623	5.00	14.437	17.32	103.8	330.0	1,068.6
80.00	Appertunance(s)	1.00	0.91	5.586	6.145	0.000	1.200	* 1.634	5.00	13.988	16.79	59.7	321.0	1,033.4
80.79	Bot - Section 3	1.00	0.92	5.645	6.210	0.000	1.200	* 1.640	0.79	2.176	2.61	50.9	50.8	161.3
84.94	Top - Section 2	1.00	0.93	5.694	6.264	0.000	1.200	* 1.645	4.15	11.391	13.67	43.4	263.5	1,218.8
85.00		1.00	0.94	5.735	6.309	0.000	1.200	* 1.649	0.06	0.152	0.18	51.4	3.6	8.7
90.00	Appertunance(s)	1.00	0.95	5.784	6.362	0.000	1.200	* 1.654	5.00	13.303	15.96	100.6	307.7	758.0
95.00		1.00	0.96	5.876	6.464	0.000	1.200	* 1.663	5.00	12.852	15.42	98.7	298.1	730.8
100.00	Appertunance(s)	1.00	0.98	5.965	6.562	0.000	1.200	* 1.672	5.00	12.400	14.88	96.5	288.2	703.5
105.00		1.00	0.99	6.051	6.656	0.000	1.200	* 1.680	5.00	11.949	14.34	94.3	278.2	676.0
110.00		1.00	1.00	6.134	6.747	0.000	1.200	* 1.688	5.00	11.497	13.80	55.7	268.0	648.3
111.00	Appertunance(s)	1.00	1.01	6.182	6.801	0.000	1.200	* 1.693	1.00	2.245	2.69	45.3	53.3	127.3
115.00		1.00	1.02	6.222	6.844	0.000	1.200	* 1.696	4.00	8.800	10.56	80.1	206.2	495.1
120.00	Appertunance(s)	1.00	1.03	6.292	6.921	0.000	1.200	* 1.703	5.00	10.592	12.71	86.6	247.0	592.4
125.00		1.00	1.04	6.367	7.004	0.000	1.200	* 1.710	5.00	10.140	12.17	47.6	236.4	564.3
125.50	Top - Section 3	1.00	1.05	6.408	7.049	0.000	1.200	* 1.714	0.59	1.172	1.41	27.1	27.9	65.6
130.00		1.00	1.06	6.445	7.089	0.000	1.200	* 1.717	4.41	5.210	6.25	27.2	115.2	335.2
131.00	Appertunance(s)	1.00	1.06	6.483	7.132	0.000	1.200	* 1.721	1.00	1.183	1.42	25.4	26.2	76.1
135.00		1.00	1.07	6.519	7.170	0.000	1.200	* 1.724	4.00	4.733	5.68	25.5	105.1	304.7
136.00	Appertunance(s)	1.00	1.07	6.553	7.209	0.000	1.200	* 1.728	1.00	1.184	1.42	25.7	26.3	76.2
140.00		1.00	1.08	6.588	7.246	0.000	1.200	* 1.731	4.00	4.737	5.68	31.0	105.5	305.1
142.00		1.00	1.09	6.628	7.291	0.000	1.200	* 1.734	2.00	2.370	2.84	10.4	52.9	152.7
								Totals:	142.00			2,729.0	8,755.9	30,561.9

* = Cf Adjusted By Linear Load Ra Effect

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice	24 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	Wind Importance Factor :1.00
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		56.6	0.0					0.0	0.0	56.6	0.0	0.0	0.0
5.00		112.2	1,604.9					0.0	1,034.0	112.2	2,638.9	0.0	0.0
10.00		110.1	1,605.8					0.0	1,069.1	110.1	2,674.9	0.0	0.0
15.00		107.8	1,585.8					0.0	1,087.1	107.8	2,672.9	0.0	0.0
20.00		105.4	1,558.9					0.0	1,099.5	105.4	2,658.4	0.0	0.0
25.00		103.0	1,528.5					40.0	1,109.1	143.0	2,637.6	0.0	0.0
30.00		101.7	1,495.8					40.4	1,117.0	142.2	2,612.9	0.0	0.0
35.00		102.5	1,461.6					41.8	1,123.8	144.3	2,585.4	0.0	0.0
40.00		54.2	1,426.2					43.8	1,129.6	98.0	2,555.8	0.0	0.0
40.24	Bot - Section 2	53.1	68.9					2.2	55.2	55.3	124.1	0.0	0.0
45.00		54.8	2,180.2					43.5	1,079.6	98.4	3,259.9	0.0	0.0
45.40	Top - Section 1	53.5	181.1					3.7	91.0	57.2	272.1	0.0	0.0
50.00		102.7	1,139.0					43.7	1,048.5	146.5	2,187.5	0.0	0.0
55.00		60.8	1,205.7					49.1	1,143.8	109.9	2,349.5	0.0	0.0
55.68	Reinf. Top	53.4	161.3					6.8	155.2	60.2	316.5	0.0	0.0
60.00		78.1	1,012.0					43.9	646.0	122.0	1,658.0	0.0	0.0
63.00	Appertunance(s)	53.2	688.2	7.2	0.0	0.0	39.3	31.1	449.9	91.5	1,177.4	0.0	0.0
65.00		74.0	452.4					0.0	243.4	74.0	695.8	0.0	0.0
70.00		105.0	1,103.4					0.0	610.3	105.0	1,713.7	0.0	0.0
75.00		103.8	1,068.6					0.0	612.5	103.8	1,681.1	0.0	0.0
80.00	Appertunance(s)	59.7	1,033.4	67.3	0.0	0.0	380.6	0.0	614.6	126.9	2,028.6	0.0	0.0
80.79	Bot - Section 3	50.9	161.3					6.2	97.3	57.1	258.7	0.0	0.0
84.94	Top - Section 2	43.4	1,218.8					32.6	510.5	75.9	1,729.4	0.0	0.0
85.00		51.4	8.7					0.4	6.9	51.8	15.7	0.0	0.0
90.00	Appertunance(s)	100.6	758.0	821.1	0.0	0.0	6,884.7	39.9	616.7	961.7	8,259.4	0.0	0.0
95.00		98.7	730.8					0.0	324.2	98.7	1,055.1	0.0	0.0
100.00	Appertunance(s)	96.5	703.5	759.9	0.0	0.0	5,790.6	0.0	324.8	856.4	6,819.0	0.0	0.0
105.00		94.3	676.0					0.0	258.6	94.3	934.6	0.0	0.0
110.00		55.7	648.3					0.0	259.1	55.7	907.4	0.0	0.0
111.00	Appertunance(s)	45.3	127.3	676.5	0.0	0.0	4,703.4	0.0	51.9	721.8	4,882.5	0.0	0.0
115.00		80.1	495.1					0.0	188.0	80.1	683.1	0.0	0.0
120.00	Appertunance(s)	86.6	592.4	881.1	0.0	0.0	7,216.6	0.0	235.4	967.7	8,044.5	0.0	0.0
125.00		47.6	564.3					0.0	185.9	47.6	750.2	0.0	0.0
125.59	Top - Section 3	27.1	65.6					0.0	22.1	27.1	87.7	0.0	0.0
130.00		27.2	335.2					0.0	164.3	27.2	499.5	0.0	0.0
131.00	Appertunance(s)	25.4	76.1	874.3	0.0	-1,031.1	7,135.0	0.0	37.3	899.7	7,248.4	0.0	0.0
135.00		25.5	304.7					0.0	110.1	25.5	414.8	0.0	0.0
136.00	Appertunance(s)	25.7	76.2	79.8	0.0	303.5	378.7	0.0	27.6	105.5	482.5	0.0	0.0
140.00		31.0	305.1					0.0	0.0	31.0	305.1	0.0	0.0
142.00		10.4	152.7					0.0	0.0	10.4	152.7	0.0	0.0
Totals:										7,365.42	82,031.0	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

24 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-82.03	-7.34	0.00	-719.01	0.00	719.01	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.143
5.00	-79.38	-7.29	0.00	-682.31	0.00	682.31	4,285.51	2,142.75	7,679.11	3,792.42	0.02	-0.04	0.140
10.00	-76.70	-7.24	0.00	-645.87	0.00	645.87	4,218.97	2,109.49	7,373.27	3,641.38	0.09	-0.09	0.137
15.00	-74.02	-7.18	0.00	-609.69	0.00	609.69	4,150.52	2,075.26	7,070.06	3,491.64	0.21	-0.13	0.133
20.00	-71.36	-7.13	0.00	-573.78	0.00	573.78	4,080.16	2,040.08	6,769.73	3,343.32	0.38	-0.18	0.129
25.00	-68.72	-7.03	0.00	-538.15	0.00	538.15	4,007.88	2,003.94	6,472.54	3,196.54	0.59	-0.22	0.126
30.00	-66.10	-6.93	0.00	-503.01	0.00	503.01	3,933.69	1,966.85	6,178.73	3,051.44	0.85	-0.27	0.122
35.00	-63.51	-6.82	0.00	-468.38	0.00	468.38	3,854.52	1,927.26	5,883.88	2,905.83	1.16	-0.32	0.117
40.00	-60.95	-6.73	0.00	-434.28	0.00	434.28	3,744.12	1,872.06	5,549.75	2,740.81	1.51	-0.36	0.114
40.24	-60.83	-6.70	0.00	-432.64	0.00	432.64	3,738.74	1,869.37	5,533.71	2,732.89	1.53	-0.36	0.114
45.00	-57.56	-6.60	0.00	-400.77	0.00	400.77	3,633.72	1,816.86	5,225.39	2,580.62	1.92	-0.41	0.109
45.40	-57.29	-6.57	0.00	-398.13	0.00	398.13	3,063.79	1,531.89	4,506.32	2,225.50	1.95	-0.41	0.122
50.00	-55.10	-6.45	0.00	-367.92	0.00	367.92	3,008.67	1,504.34	4,302.82	2,125.00	2.37	-0.45	0.116
55.00	-52.75	-6.34	0.00	-335.69	0.00	335.69	2,946.93	1,473.46	4,084.17	2,017.02	2.87	-0.50	0.110
55.68	-52.43	-6.30	0.00	-331.39	0.00	331.39	2,938.42	1,469.21	4,054.78	2,002.51	2.94	-0.51	0.109
55.68	-52.43	-6.30	0.00	-331.39	0.00	331.39	2,938.42	1,469.21	4,054.78	2,002.51	2.94	-0.51	0.183
60.00	-50.77	-6.20	0.00	-304.16	0.00	304.16	2,883.27	1,441.64	3,868.42	1,910.47	3.41	-0.54	0.177
63.00	-49.59	-6.13	0.00	-285.56	0.00	285.56	2,844.16	1,422.08	3,740.46	1,847.27	3.77	-0.59	0.172
65.00	-48.89	-6.10	0.00	-273.30	0.00	273.30	2,808.42	1,404.21	3,643.77	1,799.52	4.03	-0.62	0.169
70.00	-47.17	-6.03	0.00	-242.82	0.00	242.82	2,713.79	1,356.89	3,400.96	1,679.61	4.72	-0.70	0.162
75.00	-45.48	-5.97	0.00	-212.66	0.00	212.66	2,619.16	1,309.58	3,166.52	1,563.83	5.49	-0.77	0.153
80.00	-43.45	-5.84	0.00	-182.83	0.00	182.83	2,524.53	1,262.26	2,940.46	1,452.18	6.34	-0.84	0.143
80.79	-43.19	-5.81	0.00	-178.20	0.00	178.20	2,509.53	1,254.76	2,905.39	1,434.86	6.48	-0.86	0.141
84.94	-41.46	-5.72	0.00	-154.10	0.00	154.10	1,499.90	749.95	1,728.05	853.42	7.25	-0.91	0.208
85.00	-41.44	-5.71	0.00	-153.78	0.00	153.78	1,499.54	749.77	1,726.89	852.85	7.26	-0.91	0.208
90.00	-33.19	-4.65	0.00	-125.25	0.00	125.25	1,466.64	733.32	1,624.12	802.09	8.27	-1.00	0.179
95.00	-32.13	-4.58	0.00	-101.98	0.00	101.98	1,431.82	715.91	1,522.23	751.77	9.37	-1.08	0.158
100.00	-25.32	-3.62	0.00	-79.08	0.00	79.08	1,395.09	697.54	1,421.47	702.01	10.54	-1.16	0.131
105.00	-24.39	-3.53	0.00	-60.98	0.00	60.98	1,356.44	678.22	1,322.10	652.93	11.79	-1.22	0.111
110.00	-23.48	-3.47	0.00	-43.32	0.00	43.32	1,315.88	657.94	1,224.36	604.67	13.10	-1.28	0.090
111.00	-18.61	-2.65	0.00	-39.85	0.00	39.85	1,307.54	653.77	1,205.03	595.12	13.37	-1.29	0.081
115.00	-17.93	-2.56	0.00	-29.27	0.00	29.27	1,273.40	636.70	1,128.51	557.33	14.46	-1.32	0.067
120.00	-9.91	-1.41	0.00	-16.47	0.00	16.47	1,215.41	607.71	1,023.37	505.40	15.86	-1.35	0.041
125.00	-9.16	-1.35	0.00	-9.42	0.00	9.42	1,152.33	576.16	919.28	454.00	17.29	-1.37	0.029
125.59	-9.07	-1.32	0.00	-8.62	0.00	8.62	1,144.85	572.43	907.31	448.09	17.46	-1.37	0.027
125.59	-9.07	-1.32	0.00	-8.62	0.00	8.62	385.02	192.51	160.54	106.00	17.46	-1.37	0.105
130.00	-8.58	-1.28	0.00	-2.81	0.00	2.81	385.02	192.51	160.54	106.00	18.73	-1.38	0.049
131.00	-1.35	-0.21	0.00	-1.53	0.00	1.53	385.02	192.51	160.54	106.00	19.02	-1.39	0.018
135.00	-0.94	-0.17	0.00	-0.71	0.00	0.71	385.02	192.51	160.54	106.00	20.19	-1.40	0.009
136.00	-0.46	-0.05	0.00	-0.24	0.00	0.24	385.02	192.51	160.54	106.00	20.48	-1.40	0.003
140.00	-0.15	-0.01	0.00	-0.03	0.00	0.03	385.02	192.51	160.54	106.00	21.65	-1.40	0.001
142.00	0.00	-0.01	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	22.23	-1.40	0.000

Load Case: 1.0D + 1.0W	Serviceability 60 mph	23 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Shaft Segment Forces (Factored)

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.742	194.88	1.000	0.000	0.00	0.000	0.00	64.7	0.0	0.0
5.00		1.00	0.70	6.129	6.742	192.58	1.000	* 0.000	5.00	19.182	19.18	127.8	0.0	1,055.3
10.00		1.00	0.70	6.129	6.742	187.98	1.000	* 0.000	5.00	18.723	18.72	124.7	0.0	1,029.9
15.00		1.00	0.70	6.129	6.742	183.37	1.000	* 0.000	5.00	18.265	18.26	121.6	0.0	1,004.4
20.00		1.00	0.70	6.129	6.742	178.77	1.000	* 0.000	5.00	17.806	17.81	130.2	0.0	978.9
25.00		1.00	0.70	6.129	6.742	174.16	1.200	* 0.000	5.00	17.348	20.82	138.5	0.0	953.4
30.00		1.00	0.70	6.129	6.742	169.56	1.200	* 0.000	5.00	16.889	20.27	136.4	0.0	927.9
35.00		1.00	0.71	6.276	6.903	166.92	1.200	* 0.000	5.00	16.430	19.72	137.0	0.0	902.4
40.00		1.00	0.74	6.538	7.191	165.61	1.200	* 0.000	5.00	15.972	19.17	72.3	0.0	877.0
40.24	Bot - Section 2	1.00	0.76	6.665	7.332	164.70	1.200	* 0.000	0.24	0.767	0.92	70.7	0.0	42.1
45.00		1.00	0.77	6.781	7.459	163.71	1.200	* 0.000	4.76	15.054	18.06	73.1	0.0	1,519.0
45.40	Top - Section 1	1.00	0.78	6.896	7.586	162.57	1.200	* 0.000	0.40	1.247	1.50	71.0	0.0	125.8
50.00		1.00	0.80	7.003	7.703	164.84	1.200	* 0.000	4.60	14.131	16.96	136.2	0.0	665.9
55.00		1.00	0.82	7.197	7.917	162.32	1.200	* 0.000	5.00	14.919	17.90	80.4	0.0	702.9
55.68	Reinf. Top	1.00	0.83	7.306	8.037	160.69	1.200	* 0.000	0.68	1.985	2.38	70.5	0.0	93.5
60.00		1.00	0.84	7.399	8.139	159.18	1.200	* 0.000	4.32	12.476	14.97	103.0	0.0	587.5
63.00	Appertunance(s)	1.00	0.86	7.530	8.283	156.84	1.200	* 0.000	3.00	8.456	10.15	65.3	0.0	398.1
65.00		1.00	0.87	7.616	8.378	155.17	1.000	* 0.000	2.00	5.546	5.55	80.8	0.0	261.0
70.00		1.00	0.88	7.733	8.506	152.74	1.000	* 0.000	5.00	13.544	13.54	114.4	0.0	637.3
75.00		1.00	0.90	7.893	8.682	149.08	1.000	* 0.000	5.00	13.085	13.08	112.7	0.0	615.5
80.00	Appertunance(s)	1.00	0.91	8.044	8.849	145.23	1.000	* 0.000	5.00	12.626	12.63	66.4	0.0	593.6
80.79	Bot - Section 3	1.00	0.92	8.129	8.942	142.92	1.200	* 0.000	0.79	1.960	2.35	66.0	0.0	92.1
84.94	Top - Section 2	1.00	0.93	8.200	9.020	140.91	1.200	* 0.000	4.15	10.253	12.30	56.2	0.0	796.1
85.00		1.00	0.94	8.259	9.085	141.68	1.200	* 0.000	0.06	0.137	0.16	66.3	0.0	4.3
90.00	Appertunance(s)	1.00	0.95	8.328	9.161	139.56	1.200	* 0.000	5.00	11.925	14.31	118.9	0.0	375.2
95.00		1.00	0.96	8.462	9.308	135.26	1.000	0.000	5.00	11.466	11.47	105.4	0.0	360.6
100.00	Appertunance(s)	1.00	0.98	8.590	9.449	130.83	1.000	0.000	5.00	11.007	11.01	102.6	0.0	346.1
105.00		1.00	0.99	8.713	9.585	126.28	1.000	0.000	5.00	10.549	10.55	99.6	0.0	331.5
110.00		1.00	1.00	8.833	9.716	121.61	1.000	0.000	5.00	10.090	10.09	58.6	0.0	316.9
111.00	Appertunance(s)	1.00	1.01	8.903	9.793	118.76	1.000	0.000	1.00	1.963	1.96	47.4	0.0	61.6
115.00		1.00	1.02	8.960	9.856	116.36	1.000	0.000	4.00	7.669	7.67	83.5	0.0	240.7
120.00	Appertunance(s)	1.00	1.03	9.060	9.966	111.97	1.000	0.000	5.00	9.173	9.17	89.7	0.0	287.8
125.00		1.00	1.04	9.169	10.08	107.01	1.000	0.000	5.00	8.714	8.71	49.0	0.0	273.3
125.50	Top - Section 3	1.00	1.05	9.228	10.15	104.19	1.000	0.000	0.59	1.003	1.00	19.1	0.0	31.4
130.00		1.00	1.06	9.280	10.20	55.338	0.694	* 0.000	4.41	3.948	2.74	17.2	0.0	183.3
131.00	Appertunance(s)	1.00	1.06	9.336	10.26	55.504	0.692	* 0.000	1.00	0.896	0.62	15.9	0.0	41.6
135.00		1.00	1.07	9.387	10.32	55.655	0.690	* 0.000	4.00	3.583	2.47	16.0	0.0	166.4
136.00	Appertunance(s)	1.00	1.07	9.437	10.38	55.803	0.688	* 0.000	1.00	0.896	0.62	16.0	0.0	41.6
140.00		1.00	1.08	9.486	10.43	55.949	0.686	0.000	4.00	3.583	2.46	19.3	0.0	166.4
142.00		1.00	1.09	9.545	10.49	56.121	0.684	0.000	2.00	1.792	1.23	6.4	0.0	83.2
								Totals:	142.00			3,150.4	0.0	18,171.7

* = Cf Adjusted By Linear Load Ra Effect

Load Case: 1.0D + 1.0W	Serviceability 60 mph	23 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		64.7	0.0					0.0	0.0	64.7	0.0	0.0	0.0
5.00		127.8	1,055.3					0.0	582.8	127.8	1,638.2	0.0	0.0
10.00		124.7	1,029.9					0.0	582.8	124.7	1,612.7	0.0	0.0
15.00		121.6	1,004.4					0.0	582.8	121.6	1,587.2	0.0	0.0
20.00		130.2	978.9					0.0	582.8	130.2	1,561.7	0.0	0.0
25.00		138.5	953.4					28.4	582.8	166.9	1,536.2	0.0	0.0
30.00		136.4	927.9					28.4	582.8	164.8	1,510.8	0.0	0.0
35.00		137.0	902.4					29.1	582.8	166.1	1,485.3	0.0	0.0
40.00		72.3	877.0					30.3	582.8	102.6	1,459.8	0.0	0.0
40.24	Bot - Section 2	70.7	42.1					1.5	28.4	72.3	70.5	0.0	0.0
45.00		73.1	1,519.0					29.9	554.4	103.0	2,073.4	0.0	0.0
45.40	Top - Section 1	71.0	125.8					2.6	46.6	73.5	172.4	0.0	0.0
50.00		136.2	665.9					29.9	536.2	166.1	1,202.1	0.0	0.0
55.00		80.4	702.9					33.4	582.8	113.9	1,285.7	0.0	0.0
55.68	Reinf. Top	70.5	93.5					4.6	78.9	75.1	172.4	0.0	0.0
60.00		103.0	587.5					29.7	215.1	132.6	802.7	0.0	0.0
63.00	Appertunance(s)	65.3	398.1	6.3	0.0	0.0	30.6	21.0	149.3	92.6	578.0	0.0	0.0
65.00		80.8	261.0					0.0	99.2	80.8	360.3	0.0	0.0
70.00		114.4	637.3					0.0	248.1	114.4	885.4	0.0	0.0
75.00		112.7	615.5					0.0	248.1	112.7	863.6	0.0	0.0
80.00	Appertunance(s)	66.4	593.6	55.9	0.0	0.0	104.6	0.0	248.1	122.3	946.3	0.0	0.0
80.79	Bot - Section 3	66.0	92.1					4.2	39.1	70.2	131.2	0.0	0.0
84.94	Top - Section 2	56.2	796.1					22.2	204.7	78.5	1,000.8	0.0	0.0
85.00		66.3	4.3					0.3	2.8	66.6	7.1	0.0	0.0
90.00	Appertunance(s)	118.9	375.2	908.0	0.0	0.0	3,014.5	27.2	246.6	1,054.1	3,636.3	0.0	0.0
95.00		105.4	360.6					0.0	183.9	105.4	544.6	0.0	0.0
100.00	Appertunance(s)	102.6	346.1	820.4	0.0	0.0	2,438.8	0.0	183.9	923.0	2,968.8	0.0	0.0
105.00		99.6	331.5					0.0	128.2	99.6	459.7	0.0	0.0
110.00		58.6	316.9					0.0	128.2	58.6	445.2	0.0	0.0
111.00	Appertunance(s)	47.4	61.6	630.8	0.0	0.0	2,180.0	0.0	25.6	678.2	2,267.3	0.0	0.0
115.00		83.5	240.7					0.0	86.1	83.5	326.9	0.0	0.0
120.00	Appertunance(s)	89.7	287.8	950.1	0.0	0.0	3,184.5	0.0	107.7	1,039.8	3,580.0	0.0	0.0
125.00		49.0	273.3					0.0	66.0	49.0	339.3	0.0	0.0
125.59	Top - Section 3	19.1	31.4					0.0	7.8	19.1	39.3	0.0	0.0
130.00		17.2	183.3					0.0	58.2	17.2	241.5	0.0	0.0
131.00	Appertunance(s)	15.9	41.6	936.6	0.0	-1,227.9	2,899.4	0.0	13.2	952.5	2,954.2	0.0	0.0
135.00		16.0	166.4					0.0	20.0	16.0	186.4	0.0	0.0
136.00	Appertunance(s)	16.0	41.6	90.8	0.0	353.4	70.5	0.0	5.0	106.9	117.1	0.0	0.0
140.00		19.3	166.4					0.0	0.0	19.3	166.4	0.0	0.0
142.00		6.4	83.2					0.0	0.0	6.4	83.2	0.0	0.0
Totals:										7,872.30	41,299.6	0.00	0.00

Load Case: 1.0D + 1.0W	Serviceability 60 mph	23 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-41.30	-7.82	0.00	-722.14	0.00	722.14	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.137
5.00	-39.65	-7.73	0.00	-683.03	0.00	683.03	4,285.51	2,142.75	7,679.11	3,792.42	0.02	-0.04	0.133
10.00	-38.03	-7.63	0.00	-644.40	0.00	644.40	4,218.97	2,109.49	7,373.27	3,641.38	0.09	-0.09	0.129
15.00	-36.44	-7.53	0.00	-606.26	0.00	606.26	4,150.52	2,075.26	7,070.06	3,491.64	0.21	-0.13	0.126
20.00	-34.87	-7.43	0.00	-568.60	0.00	568.60	4,080.16	2,040.08	6,769.73	3,343.32	0.38	-0.18	0.122
25.00	-33.33	-7.28	0.00	-531.47	0.00	531.47	4,007.88	2,003.94	6,472.54	3,196.54	0.59	-0.22	0.118
30.00	-31.82	-7.13	0.00	-495.08	0.00	495.08	3,933.69	1,966.85	6,178.73	3,051.44	0.85	-0.27	0.113
35.00	-30.33	-6.98	0.00	-459.41	0.00	459.41	3,854.52	1,927.26	5,883.88	2,905.83	1.15	-0.31	0.109
40.00	-28.87	-6.88	0.00	-424.50	0.00	424.50	3,744.12	1,872.06	5,549.75	2,740.81	1.51	-0.36	0.106
40.24	-28.79	-6.82	0.00	-422.82	0.00	422.82	3,738.74	1,869.37	5,533.71	2,732.89	1.52	-0.36	0.105
45.00	-26.72	-6.72	0.00	-390.37	0.00	390.37	3,633.72	1,816.86	5,225.39	2,580.62	1.91	-0.40	0.100
45.40	-26.54	-6.65	0.00	-387.69	0.00	387.69	3,063.79	1,531.89	4,506.32	2,225.50	1.94	-0.41	0.112
50.00	-25.34	-6.50	0.00	-357.09	0.00	357.09	3,008.67	1,504.34	4,302.82	2,125.00	2.35	-0.45	0.106
55.00	-24.05	-6.38	0.00	-324.61	0.00	324.61	2,946.93	1,473.46	4,084.17	2,017.02	2.84	-0.49	0.100
55.68	-23.88	-6.31	0.00	-320.29	0.00	320.29	2,938.42	1,469.21	4,054.78	2,002.51	2.92	-0.50	0.099
55.68	-23.88	-6.31	0.00	-320.29	0.00	320.29	2,938.42	1,469.21	4,054.78	2,002.51	2.92	-0.50	0.168
60.00	-23.07	-6.19	0.00	-293.00	0.00	293.00	2,883.27	1,441.64	3,868.42	1,910.47	3.38	-0.54	0.161
63.00	-22.49	-6.11	0.00	-274.43	0.00	274.43	2,844.16	1,422.08	3,740.46	1,847.27	3.74	-0.58	0.156
65.00	-22.12	-6.04	0.00	-262.21	0.00	262.21	2,808.42	1,404.21	3,643.77	1,799.52	3.99	-0.61	0.154
70.00	-21.23	-5.95	0.00	-232.00	0.00	232.00	2,713.79	1,356.89	3,400.96	1,679.61	4.67	-0.68	0.146
75.00	-20.36	-5.85	0.00	-202.27	0.00	202.27	2,619.16	1,309.58	3,166.52	1,563.83	5.42	-0.75	0.137
80.00	-19.41	-5.72	0.00	-173.04	0.00	173.04	2,524.53	1,262.26	2,940.46	1,452.18	6.25	-0.82	0.127
80.79	-19.28	-5.66	0.00	-168.50	0.00	168.50	2,509.53	1,254.76	2,905.39	1,434.86	6.39	-0.83	0.125
84.94	-18.28	-5.58	0.00	-144.99	0.00	144.99	1,499.90	749.95	1,728.05	853.42	7.14	-0.89	0.182
85.00	-18.27	-5.53	0.00	-144.68	0.00	144.68	1,499.54	749.77	1,726.89	852.85	7.15	-0.89	0.182
90.00	-14.64	-4.43	0.00	-117.05	0.00	117.05	1,466.64	733.32	1,624.12	802.09	8.12	-0.97	0.156
95.00	-14.10	-4.34	0.00	-94.89	0.00	94.89	1,431.82	715.91	1,522.23	751.77	9.18	-1.05	0.136
100.00	-11.14	-3.37	0.00	-73.21	0.00	73.21	1,395.09	697.54	1,421.47	702.01	10.32	-1.11	0.112
105.00	-10.68	-3.27	0.00	-56.37	0.00	56.37	1,356.44	678.22	1,322.10	652.93	11.52	-1.17	0.094
110.00	-10.23	-3.21	0.00	-40.02	0.00	40.02	1,315.88	657.94	1,224.36	604.67	12.77	-1.22	0.074
111.00	-7.98	-2.48	0.00	-36.81	0.00	36.81	1,307.54	653.77	1,205.03	595.12	13.03	-1.23	0.068
115.00	-7.66	-2.40	0.00	-26.88	0.00	26.88	1,273.40	636.70	1,128.51	557.33	14.08	-1.26	0.054
120.00	-4.10	-1.28	0.00	-14.89	0.00	14.89	1,215.41	607.71	1,023.37	505.40	15.42	-1.29	0.033
125.00	-3.76	-1.22	0.00	-8.49	0.00	8.49	1,152.33	576.16	919.28	454.00	16.79	-1.31	0.022
125.59	-3.72	-1.20	0.00	-7.77	0.00	7.77	1,144.85	572.43	907.31	448.09	16.95	-1.31	0.021
125.59	-3.72	-1.20	0.00	-7.77	0.00	7.77	385.02	192.51	160.54	106.00	16.95	-1.31	0.083
130.00	-3.48	-1.18	0.00	-2.46	0.00	2.46	385.02	192.51	160.54	106.00	18.17	-1.32	0.032
131.00	-0.55	-0.16	0.00	-1.28	0.00	1.28	385.02	192.51	160.54	106.00	18.44	-1.33	0.014
135.00	-0.36	-0.14	0.00	-0.64	0.00	0.64	385.02	192.51	160.54	106.00	19.56	-1.33	0.007
136.00	-0.25	-0.03	0.00	-0.14	0.00	0.14	385.02	192.51	160.54	106.00	19.84	-1.33	0.002
140.00	-0.08	-0.01	0.00	-0.02	0.00	0.02	385.02	192.51	160.54	106.00	20.96	-1.33	0.000
142.00	0.00	-0.01	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	21.52	-1.33	0.000

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.22
Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.07
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.24
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.15
Redundancy Factor (ρ):	1.30
Seismic Force Distribution Exponent (k):	1.82
Total Unfactored Dead Load:	41.30 k
Seismic Base Shear (E):	1.76 k

Load Case (1.2 + 0.2Sds) * DL + E ELFM

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	141.00	83	696	0.006	10	104
38	138.00	166	1,338	0.011	19	207
37	135.50	47	362	0.003	5	58
36	133.00	186	1,401	0.011	20	232
35	130.50	55	398	0.003	6	68
34	127.80	242	1,688	0.014	24	301
33	125.30	39	265	0.002	4	49
32	122.50	339	2,195	0.018	32	423
31	117.50	396	2,371	0.019	34	493
30	113.00	327	1,825	0.015	26	408
29	110.50	87	468	0.004	7	109
28	107.50	445	2,269	0.019	33	555
27	102.50	460	2,148	0.018	31	573
26	97.50	530	2,260	0.019	33	661
25	92.50	545	2,110	0.017	30	679
24	87.50	622	2,177	0.018	31	775
23	84.97	7	23	0.000	0	9
22	82.87	1,001	3,172	0.026	46	1,248
21	80.40	131	394	0.003	6	164
20	77.50	842	2,361	0.019	34	1,050
19	72.50	864	2,145	0.018	31	1,077
18	67.50	885	1,930	0.016	28	1,104
17	64.00	360	713	0.006	10	449

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:36 AM

Customer: AT&T Mobility

16	61.50	547	1,007	0.008	15	683
15	57.84	803	1,320	0.011	19	1,001
14	55.34	172	262	0.002	4	215
13	52.50	1,286	1,772	0.015	26	1,603
12	47.70	1,202	1,391	0.011	20	1,499
11	45.20	172	181	0.001	3	215
10	42.62	2,073	1,953	0.016	28	2,586
9	40.12	71	59	0.000	1	88
8	37.50	1,460	1,089	0.009	16	1,821
7	32.50	1,485	853	0.007	12	1,852
6	27.50	1,511	640	0.005	9	1,884
5	22.50	1,536	451	0.004	7	1,916
4	17.50	1,562	290	0.002	4	1,948
3	12.50	1,587	159	0.001	2	1,979
2	7.50	1,613	64	0.001	1	2,011
1	2.50	1,638	9	0.000	0	2,043
RCU (Remote Control	136.00	3	23	0.000	0	4
Kathrein Scala 742-2	136.00	68	528	0.004	8	84
Powerwave Allgon 702	131.00	26	193	0.002	3	33
Powerwave Allgon LGP	131.00	169	1,237	0.010	18	211
Raycap DC6-48-60-18-	131.00	32	232	0.002	3	40
Ericsson RRUS-11 (50	131.00	150	1,097	0.009	16	187
Ericsson RRUS 32 B2	131.00	159	1,162	0.010	17	198
Powerwave Allgon 777	131.00	210	1,535	0.013	22	262
CCI HPA-65R-BUU-H6	131.00	153	1,119	0.009	16	191
Flat Platform w/ Han	131.00	2,000	14,622	0.120	211	2,494
DragonWave Horizon C	120.00	21	132	0.001	2	26
NextNet BTS-2500	120.00	105	654	0.005	9	131
Alcatel-Lucent 800 M	120.00	192	1,196	0.010	17	239
Alcatel-Lucent 1900	120.00	180	1,121	0.009	16	224
Alcatel-Lucent TD-RR	120.00	210	1,308	0.011	19	262
Argus LLPX310R	120.00	86	535	0.004	8	107
DragonWave A-ANT-18G	120.00	54	338	0.003	5	68
RFS RFS APXV9TM14-AL	120.00	165	1,030	0.008	15	206
RFS APXVSP18-C-A20	120.00	171	1,065	0.009	15	213
Flat Platform w/ Han	120.00	2,000	12,460	0.102	180	2,494
48" x 8" Panel	111.00	180	973	0.008	14	224
Flat Platform w/ Han	111.00	2,000	10,807	0.089	156	2,494
RFS FD9R6004/1C-3L	100.00	19	83	0.001	1	23
Alcatel-Lucent RRH2x	100.00	132	590	0.005	8	165
Rymosa MGD3-800TX	100.00	46	206	0.002	3	58
Antel BXA-171063/12C	100.00	45	201	0.002	3	56
RFS DB-T1-6Z-8AB-0Z	100.00	44	197	0.002	3	55
Antel BXA-70080/6CF_	100.00	54	241	0.002	3	67
Powerwave Allgon P65	100.00	99	442	0.004	6	123
Flat Platform w/ Han	100.00	2,000	8,933	0.073	129	2,494
12" x 9" x 6" TMA	90.00	80	295	0.002	4	100
RFS ATMAA1412D-1A20	90.00	52	192	0.002	3	65
Ericsson RRUS 11 B12	90.00	152	561	0.005	8	190
Ericsson AIR 21, 1.3	90.00	332	1,223	0.010	18	414
Ericsson AIR 21, 1.3	90.00	244	901	0.007	13	305
Andrew LNX-6515DS-VT	90.00	154	567	0.005	8	192
Flat Platform w/ Han	90.00	2,000	7,370	0.060	106	2,494
Diamond X50A	80.00	5	14	0.000	0	6
Stand-Offs	80.00	100	297	0.002	4	125
PCTEL GPS-TMG-HR-26N	63.00	1	1	0.000	0	1
Stand-Off	63.00	30	58	0.000	1	37
		41,300	121,945	1.000	1,758	51,507

Load Case (0.9 - 0.2Sds) * DL + E ELFM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	141.00	83	696	0.006	10	71
38	138.00	166	1,338	0.011	19	142
37	135.50	47	362	0.003	5	40
36	133.00	186	1,401	0.011	20	159
35	130.50	55	398	0.003	6	47
34	127.80	242	1,688	0.014	24	206
33	125.30	39	265	0.002	4	33
32	122.50	339	2,195	0.018	32	289
31	117.50	396	2,371	0.019	34	337
30	113.00	327	1,825	0.015	26	279
29	110.50	87	468	0.004	7	74
28	107.50	445	2,269	0.019	33	380
27	102.50	460	2,148	0.018	31	392
26	97.50	530	2,260	0.019	33	452
25	92.50	545	2,110	0.017	30	464
24	87.50	622	2,177	0.018	31	530
23	84.97	7	23	0.000	0	6
22	82.87	1,001	3,172	0.026	46	854
21	80.40	131	394	0.003	6	112
20	77.50	842	2,361	0.019	34	718
19	72.50	864	2,145	0.018	31	736
18	67.50	885	1,930	0.016	28	755
17	64.00	360	713	0.006	10	307
16	61.50	547	1,007	0.008	15	467
15	57.84	803	1,320	0.011	19	685
14	55.34	172	262	0.002	4	147
13	52.50	1,286	1,772	0.015	26	1,096
12	47.70	1,202	1,391	0.011	20	1,025
11	45.20	172	181	0.001	3	147
10	42.62	2,073	1,953	0.016	28	1,768
9	40.12	71	59	0.000	1	60
8	37.50	1,460	1,089	0.009	16	1,245
7	32.50	1,485	853	0.007	12	1,267
6	27.50	1,511	640	0.005	9	1,288
5	22.50	1,536	451	0.004	7	1,310
4	17.50	1,562	290	0.002	4	1,332
3	12.50	1,587	159	0.001	2	1,354
2	7.50	1,613	64	0.001	1	1,375
1	2.50	1,638	9	0.000	0	1,397
RCU (Remote Control)	136.00	3	23	0.000	0	3
Kathrein Scala 742-2	136.00	68	528	0.004	8	58
Powerwave Allgon 702	131.00	26	193	0.002	3	23
Powerwave Allgon LGP	131.00	169	1,237	0.010	18	144
Raycap DC6-48-60-18-	131.00	32	232	0.002	3	27
Ericsson RRUS-11 (50	131.00	150	1,097	0.009	16	128
Ericsson RRUS 32 B2	131.00	159	1,162	0.010	17	136
Powerwave Allgon 777	131.00	210	1,535	0.013	22	179
CCI HPA-65R-BUU-H6	131.00	153	1,119	0.009	16	130
Flat Platform w/ Han	131.00	2,000	14,622	0.120	211	1,706
DragonWave Horizon C	120.00	21	132	0.001	2	18
NextNet BTS-2500	120.00	105	654	0.005	9	90
Alcatel-Lucent 800 M	120.00	192	1,196	0.010	17	164
Alcatel-Lucent 1900	120.00	180	1,121	0.009	16	154
Alcatel-Lucent TD-RR	120.00	210	1,308	0.011	19	179
Argus LLPX310R	120.00	86	535	0.004	8	73
DragonWave A-ANT-18G	120.00	54	338	0.003	5	46
RFS RFS APXV9TM14-AL	120.00	165	1,030	0.008	15	141

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:36 AM

Customer: AT&T Mobility

RFS APXVSP18-C-A20	120.00	171	1,065	0.009	15	146
Flat Platform w/ Han	120.00	2,000	12,460	0.102	180	1,706
48" x 8" Panel	111.00	180	973	0.008	14	154
Flat Platform w/ Han	111.00	2,000	10,807	0.089	156	1,706
RFS FD9R6004/1C-3L	100.00	19	83	0.001	1	16
Alcatel-Lucent RRH2x	100.00	132	590	0.005	8	113
Rymasa MGD3-800TX	100.00	46	206	0.002	3	39
Antel BXA-171063/12C	100.00	45	201	0.002	3	38
RFS DB-T1-6Z-8AB-0Z	100.00	44	197	0.002	3	38
Antel BXA-70080/6CF_	100.00	54	241	0.002	3	46
Powerwave Allgon P65	100.00	99	442	0.004	6	84
Flat Platform w/ Han	100.00	2,000	8,933	0.073	129	1,706
12" x 9" x 6" TMA	90.00	80	295	0.002	4	68
RFS ATMAA1412D-1A20	90.00	52	192	0.002	3	44
Ericsson RRUS 11 B12	90.00	152	561	0.005	8	130
Ericsson AIR 21, 1.3	90.00	332	1,223	0.010	18	283
Ericsson AIR 21, 1.3	90.00	244	901	0.007	13	209
Andrew LNX-6515DS-VT	90.00	154	567	0.005	8	131
Flat Platform w/ Han	90.00	2,000	7,370	0.060	106	1,706
Diamond X50A	80.00	5	14	0.000	0	4
Stand-Offs	80.00	100	297	0.002	4	85
PCTEL GPS-TMG-HR-26N	63.00	1	1	0.000	0	1
Stand-Off	63.00	30	58	0.000	1	26
		41,300	121,945	1.000	1,758	35,223

Load Case (1.2 + 0.2Sds) * DL + E ELFM

Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.46	-1.76	0.00	-189.15	0.00	189.15	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.043
5.00	-47.45	-1.77	0.00	-180.34	0.00	180.34	4,285.51	2,142.75	7,679.11	3,792.42	0.01	-0.01	0.042
10.00	-45.47	-1.78	0.00	-171.48	0.00	171.48	4,218.97	2,109.49	7,373.27	3,641.38	0.02	-0.02	0.041
15.00	-43.52	-1.78	0.00	-162.60	0.00	162.60	4,150.52	2,075.26	7,070.06	3,491.64	0.06	-0.04	0.040
20.00	-41.61	-1.78	0.00	-153.69	0.00	153.69	4,080.16	2,040.08	6,769.73	3,343.32	0.10	-0.05	0.039
25.00	-39.72	-1.78	0.00	-144.78	0.00	144.78	4,007.88	2,003.94	6,472.54	3,196.54	0.16	-0.06	0.038
30.00	-37.87	-1.77	0.00	-135.88	0.00	135.88	3,933.69	1,966.85	6,178.73	3,051.44	0.23	-0.07	0.037
35.00	-36.05	-1.76	0.00	-127.01	0.00	127.01	3,854.52	1,927.26	5,883.88	2,905.83	0.31	-0.08	0.035
40.00	-35.96	-1.77	0.00	-118.20	0.00	118.20	3,744.12	1,872.06	5,549.75	2,740.81	0.40	-0.10	0.035
40.24	-33.38	-1.74	0.00	-117.77	0.00	117.77	3,738.74	1,869.37	5,533.71	2,732.89	0.41	-0.10	0.034
45.00	-33.16	-1.74	0.00	-109.51	0.00	109.51	3,633.72	1,816.86	5,225.39	2,580.62	0.51	-0.11	0.033
45.40	-31.66	-1.72	0.00	-108.81	0.00	108.81	3,063.79	1,531.89	4,506.32	2,225.50	0.52	-0.11	0.037
50.00	-30.06	-1.70	0.00	-100.91	0.00	100.91	3,008.67	1,504.34	4,302.82	2,125.00	0.63	-0.12	0.035
55.00	-29.84	-1.70	0.00	-92.43	0.00	92.43	2,946.93	1,473.46	4,084.17	2,017.02	0.77	-0.13	0.034
55.68	-28.84	-1.68	0.00	-91.28	0.00	91.28	2,938.42	1,469.21	4,054.78	2,002.51	0.79	-0.14	0.033
55.68	-28.84	-1.68	0.00	-91.28	0.00	91.28	2,938.42	1,469.21	4,054.78	2,002.51	0.79	-0.14	0.055
60.00	-28.16	-1.67	0.00	-84.03	0.00	84.03	2,883.27	1,441.64	3,868.42	1,910.47	0.91	-0.15	0.054
63.00	-27.67	-1.66	0.00	-79.03	0.00	79.03	2,844.16	1,422.08	3,740.46	1,847.27	1.01	-0.16	0.053
65.00	-26.57	-1.64	0.00	-75.71	0.00	75.71	2,808.42	1,404.21	3,643.77	1,799.52	1.08	-0.17	0.052
70.00	-25.49	-1.61	0.00	-67.53	0.00	67.53	2,713.79	1,356.89	3,400.96	1,679.61	1.27	-0.19	0.050
75.00	-24.44	-1.58	0.00	-59.48	0.00	59.48	2,619.16	1,309.58	3,166.52	1,563.83	1.48	-0.21	0.047
80.00	-24.14	-1.58	0.00	-51.57	0.00	51.57	2,524.53	1,262.26	2,940.46	1,452.18	1.71	-0.23	0.045
80.79	-22.90	-1.53	0.00	-50.32	0.00	50.32	2,509.53	1,254.76	2,905.39	1,434.86	1.75	-0.23	0.044
84.94	-22.89	-1.53	0.00	-43.97	0.00	43.97	1,499.90	749.95	1,728.05	853.42	1.96	-0.25	0.067
85.00	-22.11	-1.50	0.00	-43.89	0.00	43.89	1,499.54	749.77	1,726.89	852.85	1.96	-0.25	0.066
90.00	-17.67	-1.30	0.00	-36.38	0.00	36.38	1,466.64	733.32	1,624.12	802.09	2.24	-0.28	0.057
95.00	-17.01	-1.27	0.00	-29.89	0.00	29.89	1,431.82	715.91	1,522.23	751.77	2.54	-0.30	0.052
100.00	-13.40	-1.07	0.00	-23.54	0.00	23.54	1,395.09	697.54	1,421.47	702.01	2.87	-0.32	0.043
105.00	-12.84	-1.03	0.00	-18.21	0.00	18.21	1,356.44	678.22	1,322.10	652.93	3.21	-0.34	0.037
110.00	-12.73	-1.03	0.00	-13.04	0.00	13.04	1,315.88	657.94	1,224.36	604.67	3.58	-0.36	0.031
111.00	-9.61	-0.81	0.00	-12.01	0.00	12.01	1,307.54	653.77	1,205.03	595.12	3.65	-0.36	0.028
115.00	-9.11	-0.78	0.00	-8.75	0.00	8.75	1,273.40	636.70	1,128.51	557.33	3.96	-0.37	0.023
120.00	-4.72	-0.43	0.00	-4.86	0.00	4.86	1,215.41	607.71	1,023.37	505.40	4.35	-0.38	0.013
125.00	-4.67	-0.43	0.00	-2.69	0.00	2.69	1,152.33	576.16	919.28	454.00	4.75	-0.39	0.010
125.59	-4.37	-0.40	0.00	-2.44	0.00	2.44	1,144.85	572.43	907.31	448.09	4.80	-0.39	0.009
125.59	-4.37	-0.40	0.00	-2.44	0.00	2.44	385.02	192.51	160.54	106.00	4.80	-0.39	0.034
130.00	-4.30	-0.40	0.00	-0.66	0.00	0.66	385.02	192.51	160.54	106.00	5.16	-0.39	0.017
131.00	-0.46	-0.05	0.00	-0.26	0.00	0.26	385.02	192.51	160.54	106.00	5.24	-0.39	0.004
135.00	-0.40	-0.04	0.00	-0.08	0.00	0.08	385.02	192.51	160.54	106.00	5.56	-0.39	0.002
136.00	-0.10	-0.01	0.00	-0.04	0.00	0.04	385.02	192.51	160.54	106.00	5.65	-0.39	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	5.97	-0.39	0.000
142.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	6.14	-0.39	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-33.83	-1.76	0.00	-186.52	0.00	186.52	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.039
5.00	-32.45	-1.77	0.00	-177.71	0.00	177.71	4,285.51	2,142.75	7,679.11	3,792.42	0.01	-0.01	0.039
10.00	-31.10	-1.77	0.00	-168.88	0.00	168.88	4,218.97	2,109.49	7,373.27	3,641.38	0.02	-0.02	0.038
15.00	-29.76	-1.77	0.00	-160.03	0.00	160.03	4,150.52	2,075.26	7,070.06	3,491.64	0.06	-0.03	0.037
20.00	-28.45	-1.77	0.00	-151.18	0.00	151.18	4,080.16	2,040.08	6,769.73	3,343.32	0.10	-0.05	0.036
25.00	-27.16	-1.76	0.00	-142.33	0.00	142.33	4,007.88	2,003.94	6,472.54	3,196.54	0.15	-0.06	0.035
30.00	-25.90	-1.76	0.00	-133.51	0.00	133.51	3,933.69	1,966.85	6,178.73	3,051.44	0.22	-0.07	0.034
35.00	-24.65	-1.74	0.00	-124.73	0.00	124.73	3,854.52	1,927.26	5,883.88	2,905.83	0.30	-0.08	0.033
40.00	-24.59	-1.75	0.00	-116.00	0.00	116.00	3,744.12	1,872.06	5,549.75	2,740.81	0.40	-0.10	0.032
40.24	-22.82	-1.72	0.00	-115.58	0.00	115.58	3,738.74	1,869.37	5,533.71	2,732.89	0.40	-0.10	0.032
45.00	-22.68	-1.72	0.00	-107.41	0.00	107.41	3,633.72	1,816.86	5,225.39	2,580.62	0.50	-0.11	0.031
45.40	-21.65	-1.70	0.00	-106.72	0.00	106.72	3,063.79	1,531.89	4,506.32	2,225.50	0.51	-0.11	0.034
50.00	-20.55	-1.67	0.00	-98.91	0.00	98.91	3,008.67	1,504.34	4,302.82	2,125.00	0.62	-0.12	0.033
55.00	-20.41	-1.67	0.00	-90.54	0.00	90.54	2,946.93	1,473.46	4,084.17	2,017.02	0.75	-0.13	0.031
55.68	-19.72	-1.65	0.00	-89.41	0.00	89.41	2,938.42	1,469.21	4,054.78	2,002.51	0.77	-0.13	0.031
55.68	-19.72	-1.65	0.00	-89.41	0.00	89.41	2,938.42	1,469.21	4,054.78	2,002.51	0.77	-0.13	0.051
60.00	-19.25	-1.64	0.00	-82.26	0.00	82.26	2,883.27	1,441.64	3,868.42	1,910.47	0.90	-0.14	0.050
63.00	-18.92	-1.63	0.00	-77.34	0.00	77.34	2,844.16	1,422.08	3,740.46	1,847.27	0.99	-0.16	0.049
65.00	-18.17	-1.61	0.00	-74.07	0.00	74.07	2,808.42	1,404.21	3,643.77	1,799.52	1.06	-0.17	0.048
70.00	-17.43	-1.58	0.00	-66.03	0.00	66.03	2,713.79	1,356.89	3,400.96	1,679.61	1.25	-0.19	0.046
75.00	-16.71	-1.55	0.00	-58.12	0.00	58.12	2,619.16	1,309.58	3,166.52	1,563.83	1.45	-0.21	0.044
80.00	-16.51	-1.54	0.00	-50.36	0.00	50.36	2,524.53	1,262.26	2,940.46	1,452.18	1.68	-0.23	0.041
80.79	-15.65	-1.50	0.00	-49.14	0.00	49.14	2,509.53	1,254.76	2,905.39	1,434.86	1.72	-0.23	0.040
84.94	-15.65	-1.50	0.00	-42.93	0.00	42.93	1,499.90	749.95	1,728.05	853.42	1.92	-0.25	0.061
85.00	-15.12	-1.47	0.00	-42.84	0.00	42.84	1,499.54	749.77	1,726.89	852.85	1.93	-0.25	0.060
90.00	-12.08	-1.27	0.00	-35.50	0.00	35.50	1,466.64	733.32	1,624.12	802.09	2.20	-0.27	0.053
95.00	-11.63	-1.24	0.00	-29.16	0.00	29.16	1,431.82	715.91	1,522.23	751.77	2.49	-0.29	0.047
100.00	-9.16	-1.04	0.00	-22.97	0.00	22.97	1,395.09	697.54	1,421.47	702.01	2.81	-0.31	0.039
105.00	-8.78	-1.01	0.00	-17.76	0.00	17.76	1,356.44	678.22	1,322.10	652.93	3.15	-0.33	0.034
110.00	-8.71	-1.00	0.00	-12.72	0.00	12.72	1,315.88	657.94	1,224.36	604.67	3.51	-0.35	0.028
111.00	-6.57	-0.79	0.00	-11.72	0.00	11.72	1,307.54	653.77	1,205.03	595.12	3.58	-0.35	0.025
115.00	-6.23	-0.76	0.00	-8.54	0.00	8.54	1,273.40	636.70	1,128.51	557.33	3.88	-0.36	0.020
120.00	-3.23	-0.42	0.00	-4.74	0.00	4.74	1,215.41	607.71	1,023.37	505.40	4.27	-0.37	0.012
125.00	-3.19	-0.42	0.00	-2.63	0.00	2.63	1,152.33	576.16	919.28	454.00	4.66	-0.38	0.009
125.59	-2.99	-0.39	0.00	-2.38	0.00	2.38	1,144.85	572.43	907.31	448.09	4.71	-0.38	0.008
125.59	-2.99	-0.39	0.00	-2.38	0.00	2.38	385.02	192.51	160.54	106.00	4.71	-0.38	0.030
130.00	-2.94	-0.39	0.00	-0.65	0.00	0.65	385.02	192.51	160.54	106.00	5.06	-0.38	0.014
131.00	-0.31	-0.04	0.00	-0.26	0.00	0.26	385.02	192.51	160.54	106.00	5.14	-0.38	0.003
135.00	-0.27	-0.04	0.00	-0.08	0.00	0.08	385.02	192.51	160.54	106.00	5.45	-0.38	0.001
136.00	-0.07	-0.01	0.00	-0.04	0.00	0.04	385.02	192.51	160.54	106.00	5.53	-0.38	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	5.85	-0.38	0.000
142.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	6.02	-0.38	0.000

Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.22
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.07
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.24
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Period Based on Rayleigh Method (sec):	2.15
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E EMAM

Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
39	141.00	83	1.863	1.843	1.090	0.426	31	104
38	138.00	166	1.785	1.471	0.952	0.366	53	207
37	135.50	47	1.721	1.203	0.847	0.319	13	58
36	133.00	186	1.658	0.969	0.752	0.275	44	232
35	130.50	55	1.596	0.767	0.665	0.234	11	68
34	127.80	242	1.531	0.580	0.580	0.193	40	301
33	125.30	39	1.472	0.433	0.510	0.158	5	49
32	122.50	339	1.407	0.296	0.439	0.121	36	423
31	117.50	396	1.294	0.112	0.331	0.065	22	493
30	113.00	327	1.197	0.002	0.252	0.023	7	408
29	110.50	87	1.144	-0.041	0.215	0.004	0	109
28	107.50	445	1.083	-0.079	0.177	-0.016	-6	555
27	102.50	460	0.985	-0.113	0.124	-0.041	-16	573
26	97.50	530	0.891	-0.122	0.084	-0.055	-25	661
25	92.50	545	0.802	-0.112	0.054	-0.058	-28	679
24	87.50	622	0.718	-0.092	0.033	-0.052	-28	775
23	84.97	7	0.677	-0.080	0.026	-0.045	0	9
22	82.87	1,001	0.644	-0.068	0.020	-0.038	-33	1,248
21	80.40	131	0.606	-0.055	0.015	-0.028	-3	164
20	77.50	842	0.563	-0.039	0.011	-0.015	-11	1,050
19	72.50	864	0.493	-0.013	0.007	0.008	6	1,077
18	67.50	885	0.427	0.009	0.006	0.030	23	1,104
17	64.00	360	0.384	0.023	0.007	0.042	13	449
16	61.50	547	0.355	0.032	0.008	0.049	23	683
15	57.84	803	0.314	0.042	0.011	0.056	39	1,001
14	55.34	172	0.287	0.048	0.013	0.060	9	215
13	52.50	1,286	0.258	0.054	0.016	0.063	70	1,603
12	47.70	1,202	0.213	0.061	0.021	0.065	68	1,499
11	45.20	172	0.191	0.064	0.024	0.065	10	215
10	42.62	2,073	0.170	0.066	0.027	0.065	117	2,586
9	40.12	71	0.151	0.068	0.030	0.065	4	88
8	37.50	1,460	0.132	0.069	0.033	0.064	81	1,821
7	32.50	1,485	0.099	0.071	0.037	0.062	80	1,852
6	27.50	1,511	0.071	0.072	0.041	0.061	80	1,884

5	22.50	1,536	0.047	0.071	0.042	0.059	79	1,916
4	17.50	1,562	0.029	0.068	0.040	0.056	76	1,948
3	12.50	1,587	0.015	0.060	0.035	0.051	70	1,979
2	7.50	1,613	0.005	0.045	0.026	0.041	57	2,011
1	2.50	1,638	0.001	0.019	0.010	0.019	28	2,043
RCU (Remote Control	136.00	3	1.734	1.254	0.867	0.328	1	4
Kathrein Scala 742-2	136.00	68	1.734	1.254	0.867	0.328	19	84
Powerwave Allgon 702	131.00	26	1.609	0.805	0.682	0.242	6	33
Powerwave Allgon LGP	131.00	169	1.609	0.805	0.682	0.242	36	211
Raycap DC6-48-60-18-	131.00	32	1.609	0.805	0.682	0.242	7	40
Ericsson RRUS-11 (50	131.00	150	1.609	0.805	0.682	0.242	31	187
Ericsson RRUS 32 B2	131.00	159	1.609	0.805	0.682	0.242	33	198
Powerwave Allgon 777	131.00	210	1.609	0.805	0.682	0.242	44	262
CCI HPA-65R-BUU-H6	131.00	153	1.609	0.805	0.682	0.242	32	191
Flat Platform w/ Han	131.00	2,000	1.609	0.805	0.682	0.242	420	2,494
DragonWave Horizon C	120.00	21	1.350	0.195	0.382	0.092	2	26
NextNet BTS-2500	120.00	105	1.350	0.195	0.382	0.092	8	131
Alcatel-Lucent 800 M	120.00	192	1.350	0.195	0.382	0.092	15	239
Alcatel-Lucent 1900	120.00	180	1.350	0.195	0.382	0.092	14	224
Alcatel-Lucent TD-RR	120.00	210	1.350	0.195	0.382	0.092	17	262
Argus LLPX310R	120.00	86	1.350	0.195	0.382	0.092	7	107
DragonWave A-ANT-18G	120.00	54	1.350	0.195	0.382	0.092	4	68
RFS RFS APXV9TM14-	120.00	165	1.350	0.195	0.382	0.092	13	206
RFS APXVSP18-C-A20	120.00	171	1.350	0.195	0.382	0.092	14	213
Flat Platform w/ Han	120.00	2,000	1.350	0.195	0.382	0.092	159	2,494
48" x 8" Panel	111.00	180	1.155	-0.034	0.223	0.008	1	224
Flat Platform w/ Han	111.00	2,000	1.155	-0.034	0.223	0.008	13	2,494
RFS FD9R6004/1C-3L	100.00	19	0.937	-0.120	0.102	-0.049	-1	23
Alcatel-Lucent RRH2x	100.00	132	0.937	-0.120	0.102	-0.049	-6	165
Rymasa MGD3-800TX	100.00	46	0.937	-0.120	0.102	-0.049	-2	58
Antel BXA-171063/12C	100.00	45	0.937	-0.120	0.102	-0.049	-2	56
RFS DB-T1-6Z-8AB-QZ	100.00	44	0.937	-0.120	0.102	-0.049	-2	55
Antel BXA-70080/6CF_	100.00	54	0.937	-0.120	0.102	-0.049	-2	67
Powerwave Allgon P65	100.00	99	0.937	-0.120	0.102	-0.049	-4	123
Flat Platform w/ Han	100.00	2,000	0.937	-0.120	0.102	-0.049	-85	2,494
12" x 9" x 6" TMA	90.00	80	0.759	-0.103	0.043	-0.056	-4	100
RFS ATMAA1412D-1A20	90.00	52	0.759	-0.103	0.043	-0.056	-3	65
Ericsson RRUS 11 B12	90.00	152	0.759	-0.103	0.043	-0.056	-7	190
Ericsson AIR 21, 1.3	90.00	332	0.759	-0.103	0.043	-0.056	-16	414
Ericsson AIR 21, 1.3	90.00	244	0.759	-0.103	0.043	-0.056	-12	305
Andrew LNX-6515DS-VT	90.00	154	0.759	-0.103	0.043	-0.056	-8	192
Flat Platform w/ Han	90.00	2,000	0.759	-0.103	0.043	-0.056	-98	2,494
Diamond X50A	80.00	5	0.600	-0.053	0.015	-0.026	0	6
Stand-Offs	80.00	100	0.600	-0.053	0.015	-0.026	-2	125
PCTEL GPS-TMG-HR-	63.00	1	0.372	0.027	0.008	0.045	0	1
Stand-Off	63.00	30	0.372	0.027	0.008	0.045	1	37
		41,300	74.177	16.903	20.229	5.596	1,689	51,507

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
39	141.00	83	1.863	1.843	1.090	0.426	31	71
38	138.00	166	1.785	1.471	0.952	0.366	53	142
37	135.50	47	1.721	1.203	0.847	0.319	13	40
36	133.00	186	1.658	0.969	0.752	0.275	44	159
35	130.50	55	1.596	0.767	0.665	0.234	11	47
34	127.80	242	1.531	0.580	0.580	0.193	40	206
33	125.30	39	1.472	0.433	0.510	0.158	5	33

32	122.50	339	1.407	0.296	0.439	0.121	36	289
31	117.50	396	1.294	0.112	0.331	0.065	22	337
30	113.00	327	1.197	0.002	0.252	0.023	7	279
29	110.50	87	1.144	-0.041	0.215	0.004	0	74
28	107.50	445	1.083	-0.079	0.177	-0.016	-6	380
27	102.50	460	0.985	-0.113	0.124	-0.041	-16	392
26	97.50	530	0.891	-0.122	0.084	-0.055	-25	452
25	92.50	545	0.802	-0.112	0.054	-0.058	-28	464
24	87.50	622	0.718	-0.092	0.033	-0.052	-28	530
23	84.97	7	0.677	-0.080	0.026	-0.045	0	6
22	82.87	1,001	0.644	-0.068	0.020	-0.038	-33	854
21	80.40	131	0.606	-0.055	0.015	-0.028	-3	112
20	77.50	842	0.563	-0.039	0.011	-0.015	-11	718
19	72.50	864	0.493	-0.013	0.007	0.008	6	736
18	67.50	885	0.427	0.009	0.006	0.030	23	755
17	64.00	360	0.384	0.023	0.007	0.042	13	307
16	61.50	547	0.355	0.032	0.008	0.049	23	467
15	57.84	803	0.314	0.042	0.011	0.056	39	685
14	55.34	172	0.287	0.048	0.013	0.060	9	147
13	52.50	1,286	0.258	0.054	0.016	0.063	70	1,096
12	47.70	1,202	0.213	0.061	0.021	0.065	68	1,025
11	45.20	172	0.191	0.064	0.024	0.065	10	147
10	42.62	2,073	0.170	0.066	0.027	0.065	117	1,768
9	40.12	71	0.151	0.068	0.030	0.065	4	60
8	37.50	1,460	0.132	0.069	0.033	0.064	81	1,245
7	32.50	1,485	0.099	0.071	0.037	0.062	80	1,267
6	27.50	1,511	0.071	0.072	0.041	0.061	80	1,288
5	22.50	1,536	0.047	0.071	0.042	0.059	79	1,310
4	17.50	1,562	0.029	0.068	0.040	0.056	76	1,332
3	12.50	1,587	0.015	0.060	0.035	0.051	70	1,354
2	7.50	1,613	0.005	0.045	0.026	0.041	57	1,375
1	2.50	1,638	0.001	0.019	0.010	0.019	28	1,397
RCU (Remote Control	136.00	3	1.734	1.254	0.867	0.328	1	3
Kathrein Scala 742-2	136.00	68	1.734	1.254	0.867	0.328	19	58
Powerwave Allgon 702	131.00	26	1.609	0.805	0.682	0.242	6	23
Powerwave Allgon LGP	131.00	169	1.609	0.805	0.682	0.242	36	144
Raycap DC6-48-60-18-	131.00	32	1.609	0.805	0.682	0.242	7	27
Ericsson RRUS-11 (50	131.00	150	1.609	0.805	0.682	0.242	31	128
Ericsson RRUS 32 B2	131.00	159	1.609	0.805	0.682	0.242	33	136
Powerwave Allgon 777	131.00	210	1.609	0.805	0.682	0.242	44	179
CCI HPA-65R-BUU-H6	131.00	153	1.609	0.805	0.682	0.242	32	130
Flat Platform w/ Han	131.00	2,000	1.609	0.805	0.682	0.242	420	1,706
DragonWave Horizon C	120.00	21	1.350	0.195	0.382	0.092	2	18
NextNet BTS-2500	120.00	105	1.350	0.195	0.382	0.092	8	90
Alcatel-Lucent 800 M	120.00	192	1.350	0.195	0.382	0.092	15	164
Alcatel-Lucent 1900	120.00	180	1.350	0.195	0.382	0.092	14	154
Alcatel-Lucent TD-RR	120.00	210	1.350	0.195	0.382	0.092	17	179
Argus LLPX310R	120.00	86	1.350	0.195	0.382	0.092	7	73
DragonWave A-ANT-18G	120.00	54	1.350	0.195	0.382	0.092	4	46
RFS RFS APXV9TM14-	120.00	165	1.350	0.195	0.382	0.092	13	141
RFS APXVSP18-C-A20	120.00	171	1.350	0.195	0.382	0.092	14	146
Flat Platform w/ Han	120.00	2,000	1.350	0.195	0.382	0.092	159	1,706
48" x 8" Panel	111.00	180	1.155	-0.034	0.223	0.008	1	154
Flat Platform w/ Han	111.00	2,000	1.155	-0.034	0.223	0.008	13	1,706
RFS FD9R6004/1C-3L	100.00	19	0.937	-0.120	0.102	-0.049	-1	16
Alcatel-Lucent RRH2x	100.00	132	0.937	-0.120	0.102	-0.049	-6	113
Ryma MGD3-800TX	100.00	46	0.937	-0.120	0.102	-0.049	-2	39
Antel BXA-171063/12C	100.00	45	0.937	-0.120	0.102	-0.049	-2	38
RFS DB-T1-6Z-8AB-OZ	100.00	44	0.937	-0.120	0.102	-0.049	-2	38
Antel BXA-70080/6CF_	100.00	54	0.937	-0.120	0.102	-0.049	-2	46
Powerwave Allgon P65	100.00	99	0.937	-0.120	0.102	-0.049	-4	84
Flat Platform w/ Han	100.00	2,000	0.937	-0.120	0.102	-0.049	-85	1,706
12" x 9" x 6" TMA	90.00	80	0.759	-0.103	0.043	-0.056	-4	68
RFS ATMAA1412D-1A20	90.00	52	0.759	-0.103	0.043	-0.056	-3	44

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:36 AM

Customer: AT&T Mobility

Ericsson RRUS 11 B12	90.00	152	0.759	-0.103	0.043	-0.056	-7	130
Ericsson AIR 21, 1.3	90.00	332	0.759	-0.103	0.043	-0.056	-16	283
Ericsson AIR 21, 1.3	90.00	244	0.759	-0.103	0.043	-0.056	-12	209
Andrew LNX-6515DS-VT	90.00	154	0.759	-0.103	0.043	-0.056	-8	131
Flat Platform w/ Han	90.00	2,000	0.759	-0.103	0.043	-0.056	-98	1,706
Diamond X50A	80.00	5	0.600	-0.053	0.015	-0.026	0	4
Stand-Offs	80.00	100	0.600	-0.053	0.015	-0.026	-2	85
PCTEL GPS-TMG-HR-	63.00	1	0.372	0.027	0.008	0.045	0	1
Stand-Off	63.00	30	0.372	0.027	0.008	0.045	1	26
		41,300	74.177	16.903	20.229	5.596	1,689	35,223

Load Case (1.2 + 0.2Sds) * DL + E EMAM

Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.46	-1.66	0.00	-147.64	0.00	147.64	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.035
5.00	-47.45	-1.61	0.00	-139.32	0.00	139.32	4,285.51	2,142.75	7,679.11	3,792.42	0.00	-0.01	0.034
10.00	-45.47	-1.55	0.00	-131.25	0.00	131.25	4,218.97	2,109.49	7,373.27	3,641.38	0.02	-0.02	0.033
15.00	-43.52	-1.48	0.00	-123.50	0.00	123.50	4,150.52	2,075.26	7,070.06	3,491.64	0.04	-0.03	0.032
20.00	-41.61	-1.41	0.00	-116.09	0.00	116.09	4,080.16	2,040.08	6,769.73	3,343.32	0.08	-0.04	0.031
25.00	-39.72	-1.33	0.00	-109.05	0.00	109.05	4,007.88	2,003.94	6,472.54	3,196.54	0.12	-0.05	0.030
30.00	-37.87	-1.26	0.00	-102.38	0.00	102.38	3,933.69	1,966.85	6,178.73	3,051.44	0.17	-0.05	0.029
35.00	-36.05	-1.18	0.00	-96.09	0.00	96.09	3,854.52	1,927.26	5,883.88	2,905.83	0.24	-0.06	0.028
40.00	-35.96	-1.18	0.00	-90.19	0.00	90.19	3,744.12	1,872.06	5,549.75	2,740.81	0.31	-0.07	0.028
40.24	-33.38	-1.06	0.00	-89.90	0.00	89.90	3,738.74	1,869.37	5,533.71	2,732.89	0.31	-0.07	0.028
45.00	-33.16	-1.05	0.00	-84.85	0.00	84.85	3,633.72	1,816.86	5,225.39	2,580.62	0.39	-0.08	0.027
45.40	-31.66	-0.99	0.00	-84.43	0.00	84.43	3,063.79	1,531.89	4,506.32	2,225.50	0.40	-0.08	0.030
50.00	-30.06	-0.92	0.00	-79.89	0.00	79.89	3,008.67	1,504.34	4,302.82	2,125.00	0.48	-0.09	0.029
55.00	-29.84	-0.91	0.00	-75.29	0.00	75.29	2,946.93	1,473.46	4,084.17	2,017.02	0.59	-0.10	0.029
55.68	-28.84	-0.88	0.00	-74.67	0.00	74.67	2,938.42	1,469.21	4,054.78	2,002.51	0.60	-0.10	0.028
55.68	-28.84	-0.88	0.00	-74.67	0.00	74.67	2,938.42	1,469.21	4,054.78	2,002.51	0.60	-0.10	0.047
60.00	-28.16	-0.86	0.00	-70.88	0.00	70.88	2,883.27	1,441.64	3,868.42	1,910.47	0.70	-0.11	0.047
63.00	-27.67	-0.85	0.00	-68.31	0.00	68.31	2,844.16	1,422.08	3,740.46	1,847.27	0.77	-0.12	0.047
65.00	-26.57	-0.83	0.00	-66.62	0.00	66.62	2,808.42	1,404.21	3,643.77	1,799.52	0.83	-0.13	0.046
70.00	-25.49	-0.83	0.00	-62.49	0.00	62.49	2,713.79	1,356.89	3,400.96	1,679.61	0.98	-0.15	0.047
75.00	-24.44	-0.84	0.00	-58.36	0.00	58.36	2,619.16	1,309.58	3,166.52	1,563.83	1.15	-0.17	0.047
80.00	-24.15	-0.85	0.00	-54.15	0.00	54.15	2,524.53	1,262.26	2,940.46	1,452.18	1.34	-0.19	0.047
80.79	-22.90	-0.89	0.00	-53.47	0.00	53.47	2,509.53	1,254.76	2,905.39	1,434.86	1.37	-0.19	0.046
84.94	-22.89	-0.89	0.00	-49.80	0.00	49.80	1,499.90	749.95	1,728.05	853.42	1.55	-0.21	0.074
85.00	-22.11	-0.92	0.00	-49.75	0.00	49.75	1,499.54	749.77	1,726.89	852.85	1.55	-0.21	0.073
90.00	-17.67	-1.09	0.00	-45.15	0.00	45.15	1,466.64	733.32	1,624.12	802.09	1.79	-0.24	0.068
95.00	-17.01	-1.12	0.00	-39.71	0.00	39.71	1,431.82	715.91	1,522.23	751.77	2.06	-0.27	0.065
100.00	-13.40	-1.23	0.00	-34.12	0.00	34.12	1,395.09	697.54	1,421.47	702.01	2.36	-0.30	0.058
105.00	-12.84	-1.24	0.00	-27.99	0.00	27.99	1,356.44	678.22	1,322.10	652.93	2.69	-0.33	0.052
110.00	-12.73	-1.24	0.00	-21.81	0.00	21.81	1,315.88	657.94	1,224.36	604.67	3.05	-0.36	0.046
111.00	-9.60	-1.20	0.00	-20.58	0.00	20.58	1,307.54	653.77	1,205.03	595.12	3.13	-0.36	0.042
115.00	-9.11	-1.18	0.00	-15.78	0.00	15.78	1,273.40	636.70	1,128.51	557.33	3.44	-0.38	0.035
120.00	-4.72	-0.86	0.00	-9.89	0.00	9.89	1,215.41	607.71	1,023.37	505.40	3.85	-0.40	0.023
125.00	-4.67	-0.85	0.00	-5.60	0.00	5.60	1,152.33	576.16	919.28	454.00	4.27	-0.41	0.016
125.59	-4.37	-0.81	0.00	-5.09	0.00	5.09	1,144.85	572.43	907.31	448.09	4.32	-0.41	0.015
125.59	-4.37	-0.81	0.00	-5.09	0.00	5.09	385.02	192.51	160.54	106.00	4.32	-0.41	0.059
130.00	-4.30	-0.80	0.00	-1.51	0.00	1.51	385.02	192.51	160.54	106.00	4.71	-0.42	0.025
131.00	-0.46	-0.12	0.00	-0.71	0.00	0.71	385.02	192.51	160.54	106.00	4.80	-0.42	0.008
135.00	-0.40	-0.11	0.00	-0.23	0.00	0.23	385.02	192.51	160.54	106.00	5.15	-0.42	0.003
136.00	-0.10	-0.03	0.00	-0.13	0.00	0.13	385.02	192.51	160.54	106.00	5.24	-0.42	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	5.59	-0.42	0.000
142.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	5.77	-0.42	0.000

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-33.83	-1.66	0.00	-145.39	0.00	145.39	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.032
5.00	-32.45	-1.61	0.00	-137.08	0.00	137.08	4,285.51	2,142.75	7,679.11	3,792.42	0.00	-0.01	0.031
10.00	-31.10	-1.55	0.00	-129.02	0.00	129.02	4,218.97	2,109.49	7,373.27	3,641.38	0.02	-0.02	0.030
15.00	-29.76	-1.47	0.00	-121.30	0.00	121.30	4,150.52	2,075.26	7,070.06	3,491.64	0.04	-0.03	0.029
20.00	-28.45	-1.40	0.00	-113.93	0.00	113.93	4,080.16	2,040.08	6,769.73	3,343.32	0.08	-0.04	0.028
25.00	-27.16	-1.32	0.00	-106.94	0.00	106.94	4,007.88	2,003.94	6,472.54	3,196.54	0.12	-0.04	0.027
30.00	-25.90	-1.24	0.00	-100.33	0.00	100.33	3,933.69	1,966.85	6,178.73	3,051.44	0.17	-0.05	0.027
35.00	-24.65	-1.17	0.00	-94.11	0.00	94.11	3,854.52	1,927.26	5,883.88	2,905.83	0.23	-0.06	0.026
40.00	-24.59	-1.16	0.00	-88.27	0.00	88.27	3,744.12	1,872.06	5,549.75	2,740.81	0.30	-0.07	0.026
40.24	-22.82	-1.05	0.00	-87.99	0.00	87.99	3,738.74	1,869.37	5,533.71	2,732.89	0.31	-0.07	0.025
45.00	-22.68	-1.04	0.00	-83.01	0.00	83.01	3,633.72	1,816.86	5,225.39	2,580.62	0.38	-0.08	0.025
45.40	-21.65	-0.97	0.00	-82.60	0.00	82.60	3,063.79	1,531.89	4,506.32	2,225.50	0.39	-0.08	0.027
50.00	-20.56	-0.90	0.00	-78.13	0.00	78.13	3,008.67	1,504.34	4,302.82	2,125.00	0.47	-0.09	0.027
55.00	-20.41	-0.90	0.00	-73.61	0.00	73.61	2,946.93	1,473.46	4,084.17	2,017.02	0.57	-0.10	0.026
55.68	-19.72	-0.86	0.00	-73.00	0.00	73.00	2,938.42	1,469.21	4,054.78	2,002.51	0.59	-0.10	0.026
55.68	-19.72	-0.86	0.00	-73.00	0.00	73.00	2,938.42	1,469.21	4,054.78	2,002.51	0.59	-0.10	0.043
60.00	-19.26	-0.84	0.00	-69.30	0.00	69.30	2,883.27	1,441.64	3,868.42	1,910.47	0.69	-0.11	0.043
63.00	-18.92	-0.83	0.00	-66.79	0.00	66.79	2,844.16	1,422.08	3,740.46	1,847.27	0.76	-0.12	0.043
65.00	-18.17	-0.80	0.00	-65.14	0.00	65.14	2,808.42	1,404.21	3,643.77	1,799.52	0.81	-0.13	0.043
70.00	-17.43	-0.80	0.00	-61.11	0.00	61.11	2,713.79	1,356.89	3,400.96	1,679.61	0.96	-0.15	0.043
75.00	-16.71	-0.82	0.00	-57.10	0.00	57.10	2,619.16	1,309.58	3,166.52	1,563.83	1.12	-0.17	0.043
80.00	-16.51	-0.83	0.00	-53.01	0.00	53.01	2,524.53	1,262.26	2,940.46	1,452.18	1.31	-0.19	0.043
80.79	-15.66	-0.86	0.00	-52.36	0.00	52.36	2,509.53	1,254.76	2,905.39	1,434.86	1.34	-0.19	0.043
84.94	-15.65	-0.86	0.00	-48.79	0.00	48.79	1,499.90	749.95	1,728.05	853.42	1.51	-0.21	0.068
85.00	-15.12	-0.89	0.00	-48.75	0.00	48.75	1,499.54	749.77	1,726.89	852.85	1.52	-0.21	0.067
90.00	-12.08	-1.06	0.00	-44.29	0.00	44.29	1,466.64	733.32	1,624.12	802.09	1.75	-0.24	0.063
95.00	-11.63	-1.09	0.00	-38.99	0.00	38.99	1,431.82	715.91	1,522.23	751.77	2.02	-0.27	0.060
100.00	-9.16	-1.20	0.00	-33.54	0.00	33.54	1,395.09	697.54	1,421.47	702.01	2.31	-0.30	0.054
105.00	-8.78	-1.21	0.00	-27.53	0.00	27.53	1,356.44	678.22	1,322.10	652.93	2.64	-0.32	0.049
110.00	-8.70	-1.21	0.00	-21.48	0.00	21.48	1,315.88	657.94	1,224.36	604.67	2.99	-0.35	0.042
111.00	-6.57	-1.18	0.00	-20.27	0.00	20.27	1,307.54	653.77	1,205.03	595.12	3.07	-0.36	0.039
115.00	-6.23	-1.16	0.00	-15.55	0.00	15.55	1,273.40	636.70	1,128.51	557.33	3.37	-0.37	0.033
120.00	-3.22	-0.85	0.00	-9.77	0.00	9.77	1,215.41	607.71	1,023.37	505.40	3.77	-0.39	0.022
125.00	-3.19	-0.84	0.00	-5.53	0.00	5.53	1,152.33	576.16	919.28	454.00	4.19	-0.40	0.015
125.59	-2.99	-0.80	0.00	-5.03	0.00	5.03	1,144.85	572.43	907.31	448.09	4.24	-0.40	0.014
125.59	-2.99	-0.80	0.00	-5.03	0.00	5.03	385.02	192.51	160.54	106.00	4.24	-0.40	0.055
130.00	-2.94	-0.79	0.00	-1.49	0.00	1.49	385.02	192.51	160.54	106.00	4.62	-0.41	0.022
131.00	-0.31	-0.12	0.00	-0.70	0.00	0.70	385.02	192.51	160.54	106.00	4.70	-0.41	0.007
135.00	-0.27	-0.11	0.00	-0.23	0.00	0.23	385.02	192.51	160.54	106.00	5.05	-0.41	0.003
136.00	-0.07	-0.03	0.00	-0.12	0.00	0.12	385.02	192.51	160.54	106.00	5.14	-0.42	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	5.48	-0.42	0.000
142.00	0.00	0.00	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	5.66	-0.42	0.000

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: OAA688000_C3_02

10/28/2016 9:01:36 AM

Customer: AT&T Mobility

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	30.94	0.00	49.51	0.00	0.00	2828.00	84.94	0.68
0.9D + 1.6W	30.02	0.00	37.12	0.00	0.00	2756.93	84.94	0.66
1.2D + 1.0Di + 1.0Wi	7.34	0.00	82.03	0.00	0.00	719.01	84.94	0.21
(1.2 + 0.2Sds) * DL + E ELFM	1.76	0.00	49.46	0.00	0.00	189.15	84.94	0.07
(1.2 + 0.2Sds) * DL + E EMAM	1.66	0.00	49.46	0.00	0.00	147.64	84.94	0.07
(0.9 - 0.2Sds) * DL + E ELFM	1.76	0.00	33.83	0.00	0.00	186.52	84.94	0.06
(0.9 - 0.2Sds) * DL + E EMAM	1.66	0.00	33.83	0.00	0.00	145.39	84.94	0.07
1.0D + 1.0W	7.82	0.00	41.30	0.00	0.00	722.14	84.94	0.18

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Applied (kips)	phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	55.6	(4) SOL-#20 All Thre	251.9	7.6	16.8	151.6	12.0	13	22	0.0	12.0	0	0	194.8	330.5	0.589

Base/Flange Plate	Plate Type	Baseplate
	Pole Diameter	45 in
	Pole Thickness	0.4375 in
	Plate Diameter	60 in
	Plate Thickness	2 in
	Plate Fy	60 ksi
	Weld Length	0.3125 in
	ϕ_s Resistance	942.65 k-in
	Applied	323.01 k-in
Stiffeners	#	16 Show
	Thickness	0.5 in
	Length	4 in
	Height	10 in
	Chamfer	0 in
	Offset Angle	0°
	Fy	36 ksi

Code Rev. **G**

Date 10/28/2016
 Engineer A. Black
 Site # 302511
 Carrier AT&T Mobility

Moment 2828.0 k-ft
 Axial 49.5 k

Bolts	#	16
	Bolt Circle (R)adial / (S)quare	54 in R
	Diameter	2.25 in
	Hole Diameter	2.625 in
	Type	18J
	Fy	75 ksi
	Fu	100 ksi
	ϕ_s Resistance	259.82 k
	Applied	112.35 k
Reinforcement	#	4
	DYW. Circle	52 in
	Offset Angle	11.25°
	Type	#20
	Diameter	2.5 in
	Fu	100 ksi
ϕ_s Resistance	392.70 k	
Applied	194.42 k	
Extra Bolts O	#	0

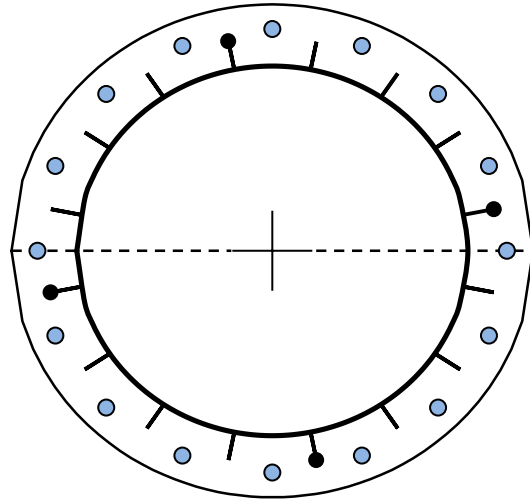


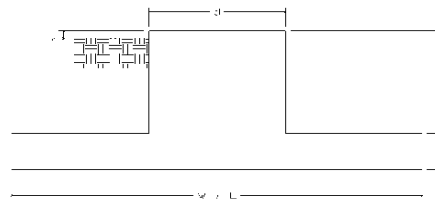
Plate Stress Ratio:
0.34 (Pass)

Bolt Stress Ratio:
0.43 (Pass)

Reinforcement Stress Ratio:
0.50 (Pass)

Site Name: WSPT - South, CT, CT
 Site Number: 302511
 Engineering Number: OAA688000
 Engineer: A. Black
 Date: 10/28/16
 Tower Type: MP

Program Last Updated: 5/13/2014



Design Loads (Factored) - Analysis per TIA-222-G Standards

Design / Analysis / Mapping:	Mapping
Compression/Leg:	49.5 k
Uplift/Leg:	0.0 k
Total Shear:	30.9 k
Moment:	2828.0 k-ft
Tower + Appurtenance Weight:	37.1 k
Depth to Base of Foundation (l + t - h):	7.50 ft
Diameter of Pier (d):	7.33 ft
Height of Pier above Ground (h):	0.50
Width of Pad (W):	18.00 ft
Length of Pad (L):	22.00 ft
Thickness of Pad (t):	3.00 ft
Tower Leg Center to Center:	0.00 ft
Number of Tower Legs:	1.0 (1 if MP or GT)
Tower Center from Mat Center:	0.00 ft
Depth Below Ground Surface to Water Table:	9.50 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	120.0 pcf
Unit Weight of Water:	62.4 pcf
Unit Weight of Soil Below Water Table:	60.0 pcf
Friction Angle of Uplift:	15.0 Degrees
Ultimate Coefficient of Shear Friction:	0.35
Ultimate Compressive Bearing Pressure:	20000.0 psf
Ultimate Passive Pressure on Pad Face:	500.0 psf
$\phi_{\text{Soil and Concrete Weight}}$:	0.9
ϕ_{Soil} :	0.75

Overturning Moment Usage

Design OTM:	3075.5 k-ft
OTM Resistance:	3872.3 k-ft
Design OTM / OTM Resistance:	0.79 Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	4440 psf
Factored Nominal Bearing Pressure:	15000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.30 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

Sliding Factor of Safety

Total Factored Sliding Resistance:	135.6 k
Sliding Design / Sliding Resistance:	0.23 Result: OK



RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT2103

Westport South
19-20 Post Office Lane
Westport, CT 06880

November 27, 2016

EBI Project Number: 6216005531

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	17.65 %



November 27, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2103 – Westport South**

EBI Consulting was directed to analyze the proposed AT&T facility located at **19-20 Post Office Lane, Westport, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **19-20 Post Office Lane, Westport, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **Powerwave 7770** and the **CCI HPA-65R-BUU-H6** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **131 feet** above ground level (AGL) for **Sector A**, **131 feet** above ground level (AGL) for **Sector B** and **131 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.



AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	131 feet	Height (AGL):	131 feet	Height (AGL):	131 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	0.64 %	Antenna B1 MPE%	0.64 %	Antenna C1 MPE%	0.64 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 dBd	Gain:	11.4 dBd	Gain:	11.4 dBd
Height (AGL):	131 feet	Height (AGL):	131 feet	Height (AGL):	131 feet
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60 Watts	Total TX Power(W):	60 Watts	Total TX Power(W):	60 Watts
ERP (W):	828.23	ERP (W):	828.23	ERP (W):	828.23
Antenna A2 MPE%	0.34 %	Antenna B2 MPE%	0.34 %	Antenna C2 MPE%	0.34 %
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	131 feet	Height (AGL):	131 feet	Height (AGL):	131 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A3 MPE%	1.75 %	Antenna B3 MPE%	1.75 %	Antenna C3 MPE%	1.75 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	2.72 %
Verizon	6.23 %
MetroPCS	1.24 %
T-Mobile	5.70 %
Clearwire	0.08 %
Sprint	1.15 %
Nextel	0.53 %
Enertrac	0.00 %
Site Total MPE %:	17.65 %

AT&T Sector A Total:	2.72 %
AT&T Sector B Total:	2.72 %
AT&T Sector C Total:	2.72 %
Site Total:	17.65 %

AT&T _ Frequency Band / Technology per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	131	1.91	850 MHz	567	0.34%
AT&T 1900 MHz (PCS) UMTS	2	656.33	131	3.02	1900 MHz (PCS)	1000	0.30%
AT&T 850 MHz GSM	2	414.12	131	1.91	850 MHz	567	0.34%
AT&T 700 MHz LTE	2	940.05	131	4.33	700 MHz	467	0.93%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	131	8.24	1900 MHz (PCS)	1000	0.82%
						Total:	2.72%



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	2.72 %
Sector B:	2.72 %
Sector C:	2.72 %
AT&T Maximum Total (per sector):	2.72 %
Site Total:	17.65 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **17.65 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.