EMPIRE telecom

April 4, 2019

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

Regarding:	Notice of Exempt Modification – Antenna Modification
Property Address:	80 Shuttle Meadow Rd.; Southington, CT 06489 (the "Property")
Applicant:	AT&T Mobility ("AT&T", Site # CT1004)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 164-foot monopole at the above-referenced address, latitude 41.6385750°, longitude -72.8411381°. Said monopole and its underlying property is owned by American Tower.

AT&T desires to modify its existing telecommunications facility by adding three (3) antennas and upgrading ancillary equipment as follow: adding (9) remote-radio heads ("RRHs"), adding (6) Diplexers, adding (1) Squid Surge Suppressor with associated cables, and removing (3) tower mounted amplifiers ("TMAs"). The centerline height of the existing antennas and ancillary tower-mounted equipment is and will remain at 154 feet.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to the Mark J. Sciota, Town Manager of the Town of Southington; John Smigel, as Chief Building Official with the Town of Southington; Southern New England Telephone Co, as property owner; and the tower 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 added antennas and accessory equipment will be installed at the existing height of 154 feet on the 164-foot monopole.

2. The proposed modifications will not involve any changes to AT&T's ground-space footprint, and therefore 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 decibels or more, or to levels that exceed state and local criteria.

Julia Coughlin • Empire Telecom USA, LLC • 16 Esquire Road, Billerica, MA 01862 • 978-384-3376 • jcoughlin@empiretelecomm.com

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 (enclosed) for AT&T's modified facility is herein provided.

5. 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 for AT&T's modified facility is herein provided.

6. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

7. The existing structure and its foundation can support AT&T's proposed modifications. Please see enclosed structural analysis completed by American Tower Corporation, dated February 26, 2019 and stamped by Esha Kaushal Modi on February 28, 2019.

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

Sincerely,

Julia Coughlin

Julia Coughlin
Site Acquisition Specialist
Empire Telecom USA, LLC
jcoughlin@empiretelecomm.com

Enclosures: Exhibit 1 – Field Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Analysis
Exhibit 4 – RF Emissions Analysis Report Evaluation

cc:

Town Manager Mark J. Sciota
Southington Town Hall
75 Main Street
Southington, CT 06489

John Smigel
Chief Building Official
Municipal Center
196 North Main Street
Southington, CT 06489

Southern New England
Telephone Co
C/O American Tower Land
Management
10 Presidential Way
Woburn, MA 01801

American Tower Corporation
Attn: Ryan Tierney
10 Presidential Way
Woburn, MA 01801

Town of Southington, CT
Property Listing Report

GIS PIN 184019

Account 11918

Property Information

Property Location	80 SHUTTLE MEADOW RD
Owner	SOUTHERN NEW ENGLAND TELEPHONE CO
Co-Owner	SITE# 302475 - STTN SOUTHINGTON CT
Mailing Address	C/O AMERICAN TOWER LAND MNGMT WOBURN MA 01801
Land Use	433V Radio, Television Trans Ld
Land Class	I
Water Service	

Sewer Service	
Census Tract	4303
Neighborhood	090
Zoning Code	R-80
Acreage	0.17
Book / Page	331/ 320
Lot Setting/Desc	
Trash Day	

Photo

184 019 05/24/2015

Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	0
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	0
Total Living Area	0

Report Created On 4/4/2019

Town of Southington, CT
Property Listing Report

GIS PIN 184019

Account 11918

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings		0
Outbuildings	18560	12990
Improvements	18560	12990
Extras	0	0
Land	227860	159500
Total	246420	172490

Outbuilding and Extra Items

Type	Description
Fence - Chain	2600.00 L.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	0	0

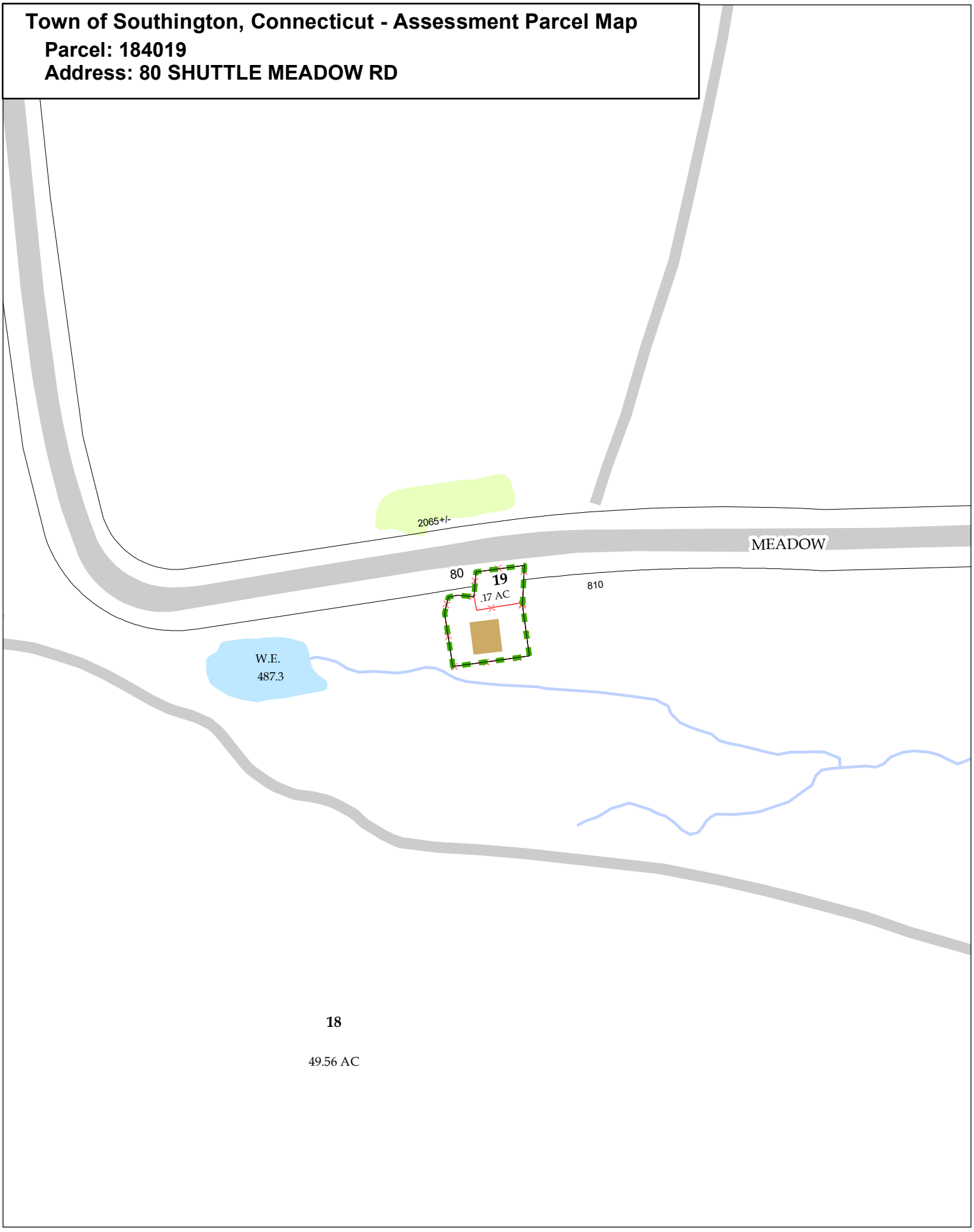
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
SOUTHERN NEW ENGLAND TELEPHONE CO	331/ 320	1983-02-14	0

Report Created On 4/4/2019

Town of Southington, Connecticut - Assessment Parcel Map

Parcel: 184019
Address: 80 SHUTTLE MEADOW RD



Approximate Scale:

20 0 20 40 60 80 Feet

Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Southington and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced October 2018

PROJECT NOTES

1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:
   A. PLAN ENTITLED "SOUTHINGTON CT1004" PREPARED BY CENTEK ENGINEERING CENTERED SOLUTIONS OF BRANFORD, CT LAST REVISED 11/30/16.
   B. LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 05/31/18.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
6. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. 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 POTENTIALLY DANGEROUS EXPOSURE LEVELS.
10. THE PROPOSED FACILITY WILL CAUSE AN INSIGNIFICANT OR "DE-MINIMUS" INCREASE IN STORM WATER RUNOFF, THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
11. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
12. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
13. THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
14. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
15. THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-H AS PER IBC REQUIREMENTS.
16. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
17. CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
18. CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE STRUCTURAL ANALYSIS IS TO BE PERFORMED BY OTHERS.
19. CONTRACTOR SHALL CONTACT STATE SPECIFIC ONE CALL SYSTEM THREE WORKING DAYS PRIOR TO ANY EARTH MOVING ACTIVITIES.

SITE NAME: SOUTHINGTON
FA NUMBER: 10034967
SITE NUMBER: CT1004
4C - MRCTB031023
5C - MRCTB031027
6C - MRCTB031731
SHUTTLE MEADOW ROAD
SOUTHINGTON, CT 06489
HARTFORD COUNTY
CROWN BU#: 302475

VICINITY MAP

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

1. 2018 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2015 IBC
2. 2017 NATIONAL ELECTRICAL CODE - NFPA 70
3. 2017 NFPA 101
4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10
5. AMERICAN CONCRETE INSTITUTE
6. TIA-222-G
7. TIA 607 FOR GROUNDING
8. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81 IEEE C2 LATEST EDITION
9. TELCORDIA GR-1275
10. ANSI T1.311
11. PROPOSED USE: UNMANNED TELECOM FACILITY
12. HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
13. CONSTRUCTION TYPE: IIB
14. USE GROUP: U

PROJECT INFORMATION

SITE INFORMATION

LATITUDE: 41.6385750° N
LONGITUDE: 72.8411381° W
JURISDICTION: HARTFORD COUNTY

APPLICANT/LESSEE

COMPANY: NEW CINGULAR WIRELESS PCS, LLC
ADDRESS: 550 COCHITUATE ROAD
CITY, STATE, ZIP: FRAMINGHAM, MA 01701

STRUCTURE OWNER

COMPANY: AMERICAN TOWER CORPORATION
ADDRESS: 10 PRESIDENTIAL WAY
CITY, STATE, ZIP: WOBURN, MA 01801

CLIENT REPRESENTATIVE

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
CITY, STATE, ZIP: BILLERICA, MA 01862
CONTACT: DAVID COOPER
E-MAIL: DCOOPER@EMPIRETELECOM.COM

SITE ACQUISITION

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
CITY, STATE, ZIP: BILLERICA, MA 01862
CONTACT: DAVID COOPER
E-MAIL: DCOOPER@EMPIRETELECOM.COM

ENGINEER

COMPANY: MASER CONSULTING CT
ADDRESS: 331 NEWMAN SPRINGS ROAD, SUITE 203
CITY, STATE, ZIP: RED BANK, NJ 07701
CONTACT: ROBERT ANDREWS
PHONE: (856) 797-0412
E-MAIL: RANDREWS@MASERCONSULTING.COM

PROJECT DESCRIPTION/ SCOPE OF WORK

- INSTALL (9) NEW RRU'S, (3) PER SECTOR
- INSTALL (3) NEW PANEL ANTENNAS, (1) PER SECTOR
- INSTALL (2) NEW DC-6 SURGE SUPPRESSION DOME
- INSTALL (1) NEW 18-PAIR FIBER CABLE
- INSTALL (4) NEW 6/C DC CABLES
- INSTALL (6) NEW LOW BAND COMBINERS, (2) PER SECTOR
- INSTALL (1) RBS 6630, SWAP BOTH DUS WITH 5216
- INSTALL 2ND XMU AND IDLe

PROPOSED PROJECT SCOPE BASED ON RFDS ID# 2318704, VERSION 2.00, LAST UPDATED 06/14/2018.

SHEET INDEX

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SCALE: AS SHOWN
JOB NUMBER: 18963001A

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0	03/13/19	STRUCTURAL REVISION	AJC	RA
1	09/14/18	ISSUED FOR REVIEW	AJC	RA

PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32577

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFFESIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:

SOUTHINGTON
FA# 10034967
SITE# CT1004

SHUTTLE MEADOW ROAD
SOUTHINGTON, CT 06489
HARTFORD COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701
Phone: 732.383.1950
Fax: 732.383.1120
email: solutions@maserconsulting.com

SHEET TITLE: TITLE SHEET

SHEET NUMBER: T-1

GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5O HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. 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.
6. 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.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. 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.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.
22. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

    CONTRACTOR - EMPIRE TELECOM
    SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
    OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)

23. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
24. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
25. 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.
26. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
27. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
28. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
29. 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.
30. 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.
31. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
32. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
33. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
34. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
35. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
36. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
37. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
38. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
39. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
40. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
41. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
42. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
43. 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.
44. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
45. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
46. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
47. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
48. 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.
49. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION, ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
50. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN ALERT OF DANGEROUS EXPOSURE LEVELS.

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SCALE:	JOB NUMBER:
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PETROS E. SOUKAKAS
CONNECTICUT PROFESSIONAL ENGINEER LICENSE NUMBER: 32577

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SITE# CT1004

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HARTFORD COUNTY

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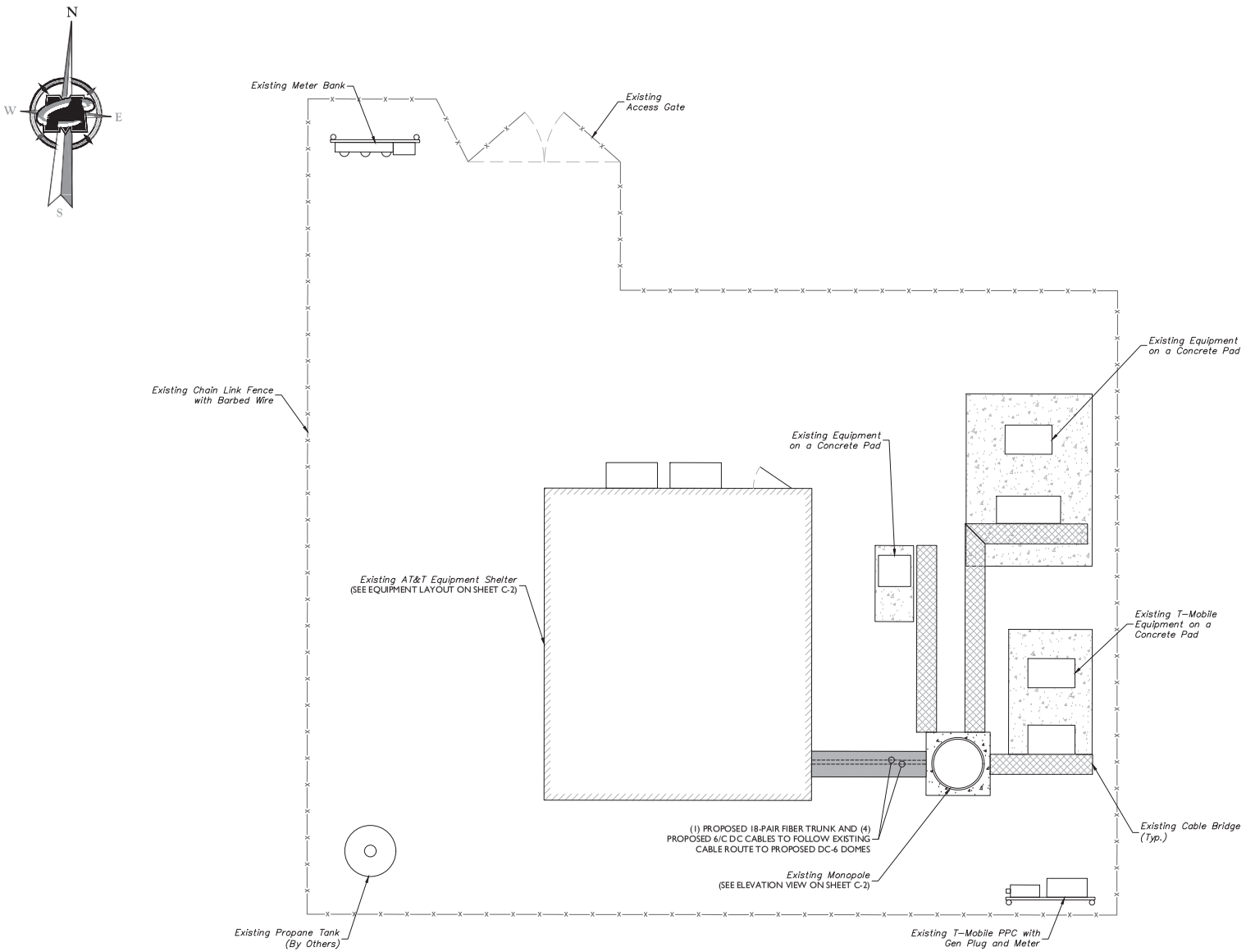
Phone: 732.383.1950
Fax: 732.383.1120
email: solutions@maserconsulting.com

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
GN-1



COMPOUND PLAN

SCALE : 1" = 4' FOR 22"X34"
(SCALE : 1" = 8' FOR 11"X17")

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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
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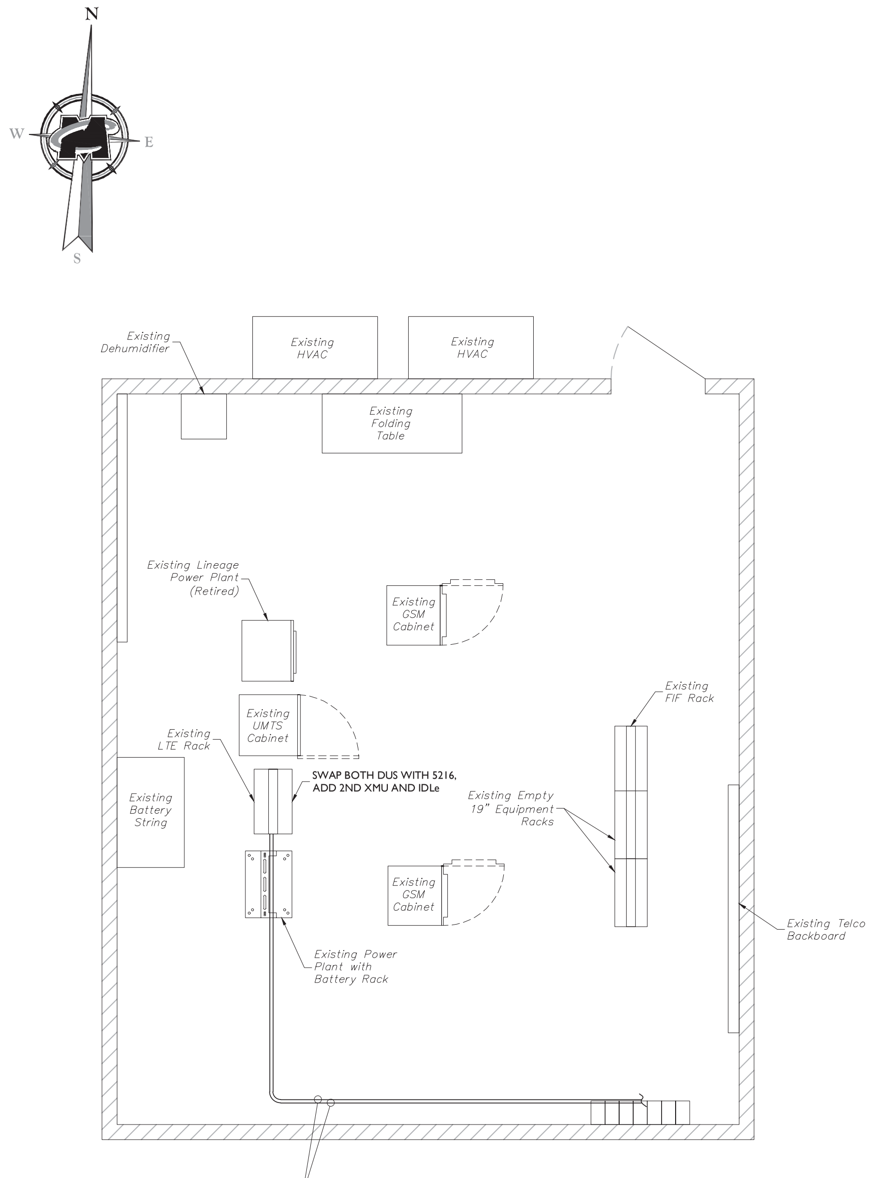
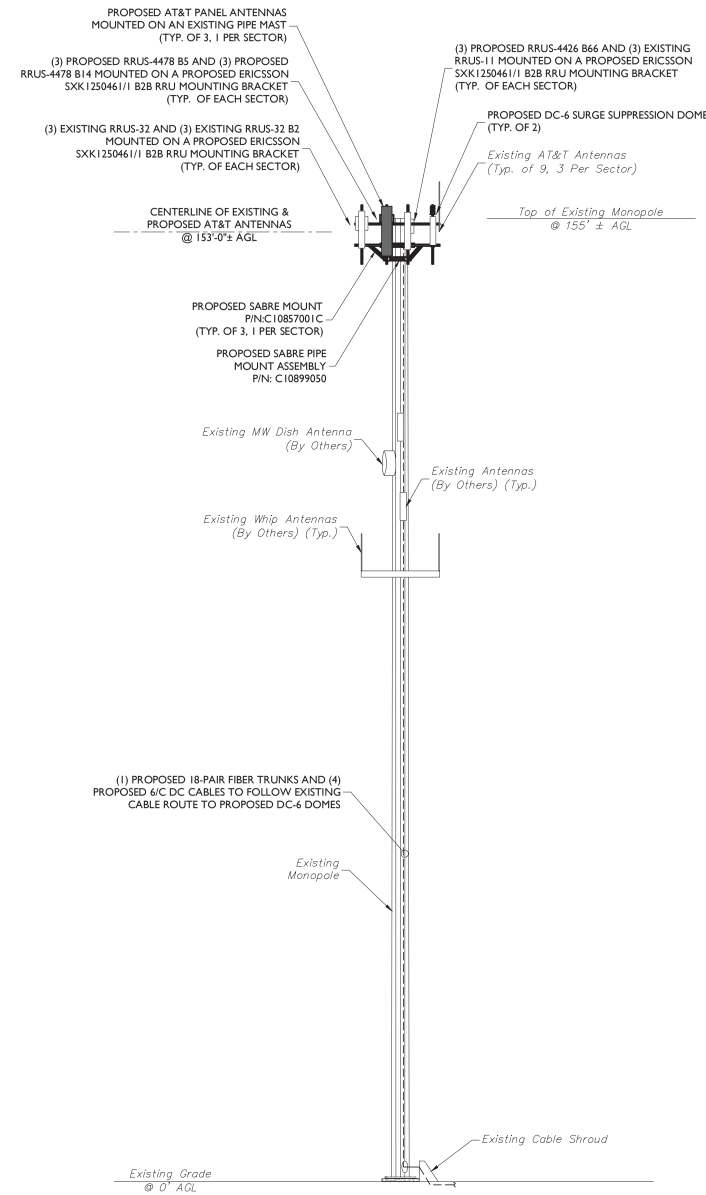
SHEET TITLE:
COMPOUND PLAN

SHEET NUMBER:
C-1



EQUIPMENT LAYOUT

SCALE : 1" = 2' FOR 22"X34"
(SCALE : 1" = 4' FOR 11"X17")



ELEVATION VIEW

SCALE : 1" = 10' FOR 22"X34"
(SCALE : 1" = 20' FOR 11"X17")

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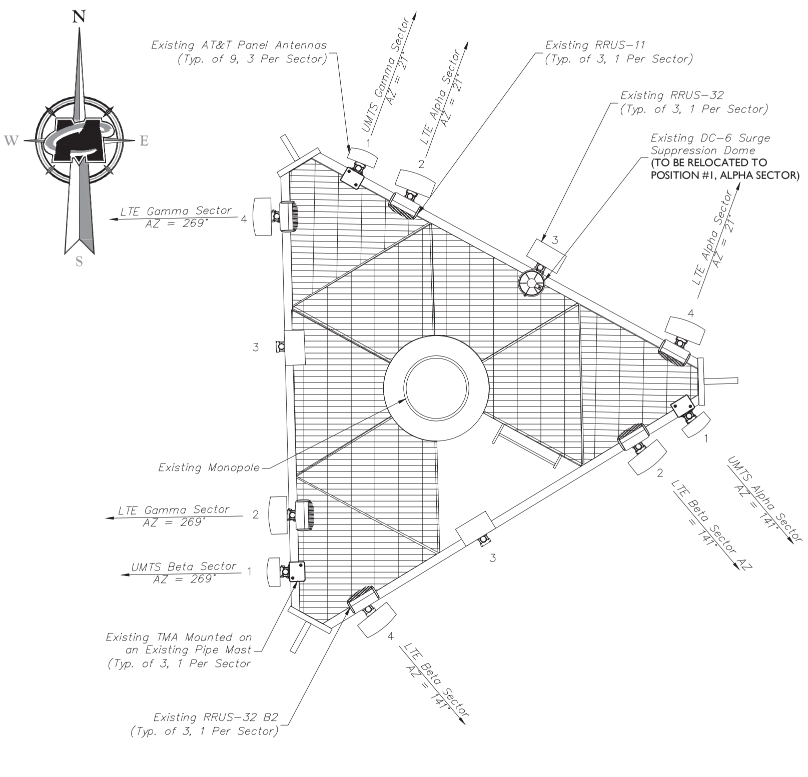
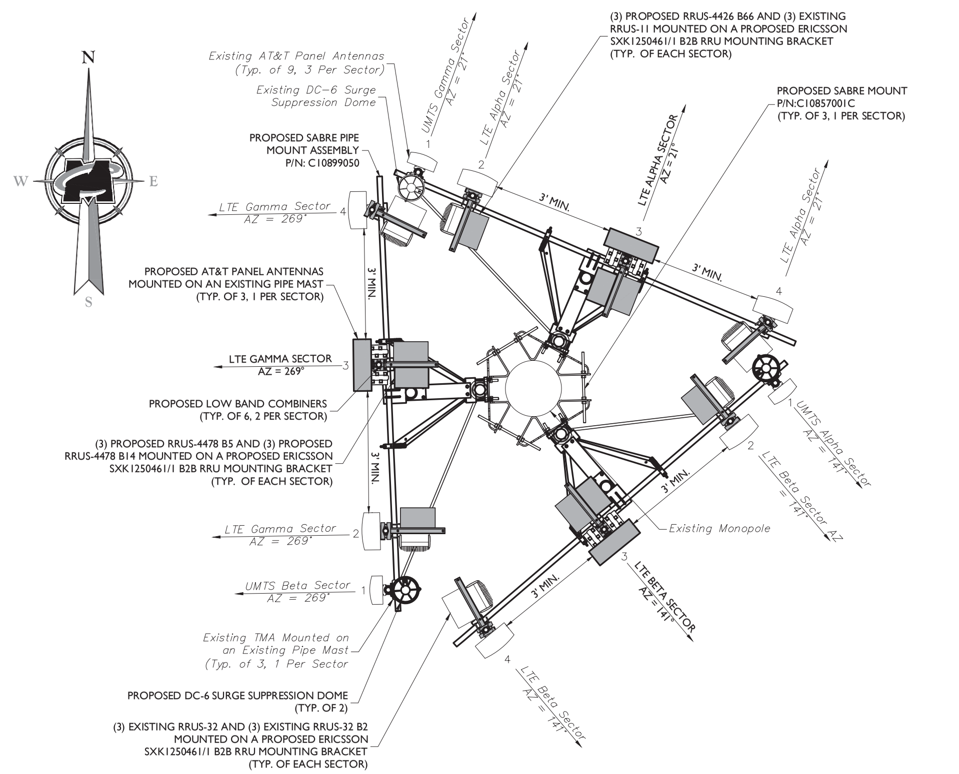
SHEET TITLE:
EQUIPMENT LAYOUT AND ELEVATION VIEW

SHEET NUMBER:
C-2



EXISTING ANTENNA LAYOUT

NOT TO SCALE



PROPOSED ANTENNA LAYOUT

NOT TO SCALE

ANTENNA SCHEDULE

SECTOR		EXISTING ANTENNA	PROPOSED ANTENNA	TECHNOLOGY	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZIMUTH (DEG)	ANT. CL ELEV. (ft)	REMOTE RADIO/TMA CONFIGURATION	TRANSMISSION CABLE QUANTITY	TYPE	STATUS
Sector 1	1	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	141	133'	(2) CM-007-DAPxxC-002 (1) DTMABP7819VG12A	2	7/8" COAX	EXISTING
	2	KMW AM-X-CD-16-65-00T-RET	KMW AM-X-CD-16-65-00T-RET	LTE	EXISTING	72.00	11.80	5.90	43.50	21	133'	(1) RRUS-11			
	3		KATHREIN 80010965	LTE	PROPOSED	70.70	20.00	6.90	108.60	21	133'	(3) DBC0062F1V51-1 (1) RRUS-4478 B14 (1) RRUS-4478 B5 (1) RRUS-4426 B66	1/4	FIBER/DC	PROPOSED
	4	QUINTEL QS66512-2	QUINTEL QS66512-2	LTE	EXISTING	72.00	12.00	9.60	126.60	21	133'	(1) RRUS-32 (1) RRUS-32 B2 (4) TPX-070821	1/2"	FIBER/DC	EXISTING
Sector 2	1	POWERWAVE 7770		UMTS	EXISTING					269	133'	(2) CM-007-DAPxxC-002 (1) DTMABP7819VG12A	2	7/8" COAX	EXISTING
	2	KMW AM-X-CD-16-65-00T-RET		LTE	EXISTING					141	133'	(1) RRUS-11		-	-
	3		KATHREIN 80010965	LTE	PROPOSED	70.70	20.00	6.90	108.60	141	133'	(3) DBC0062F1V51-1 (1) RRUS-4478 B14 (1) RRUS-4478 B5 (1) RRUS-4426 B66		-	-
	4	QUINTEL QS66512-2		LTE	EXISTING					141	133'	(1) RRUS-32 (1) RRUS-32 B2 (4) TPX-070821		-	-
Sector 3	1	POWERWAVE 7770		UMTS	EXISTING					21	133'	(2) CM-007-DAPxxC-002 (1) DTMABP7819VG12A	2	7/8" COAX	EXISTING
	2	COMMSCOPE SBNH-1D6565C		LTE	EXISTING					269	133'	(1) RRUS-11		-	-
	3		KATHREIN 80010966	LTE	PROPOSED	96.00	20.00	6.90	115.70	269	133'	(3) DBC0062F1V51-1 (1) RRUS-4478 B14 (1) RRUS-4478 B5 (1) RRUS-4426 B66		-	-
	4	QUINTEL QS66512-2		LTE	EXISTING					269	133'	(1) RRUS-32 (1) RRUS-32 B2 (4) TPX-070821		-	-

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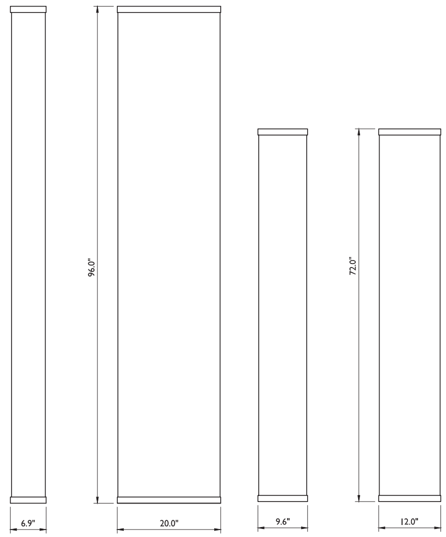
SHEET TITLE:
ANTENNA LAYOUTS AND ANTENNA SCHEDULE

SHEET NUMBER:
C-3



WEIGHT = 114.6 LBS

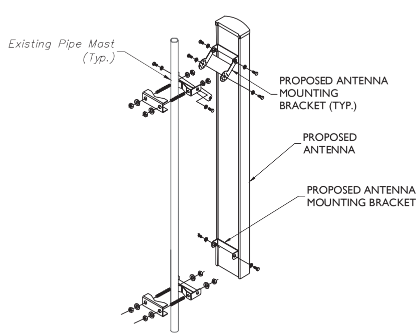
KATHRIEN 800-1966

WEIGHT = 111.0 LBS

QUINTEL QS66512-2

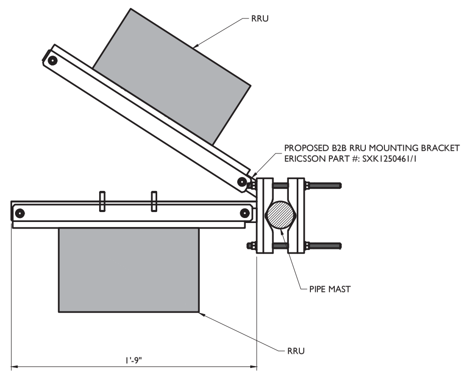
ANTENNA DETAILS

NOT TO SCALE



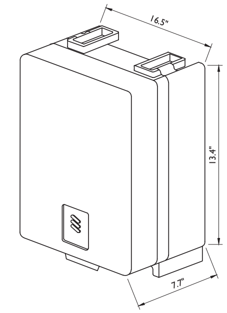
ANTENNA MOUNTING DETAIL

NOT TO SCALE



RRU MOUNTING DETAIL

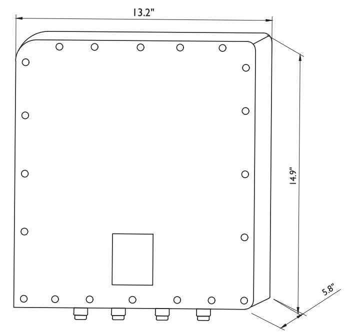
NOT TO SCALE



DIMENSIONS (H X W X D): 16.5"H X 13.4"W X 7.7"D (INCLUDES SUNSHIELD)
WEIGHT: 59.9 LBS

RRU-4478-B5 DETAIL

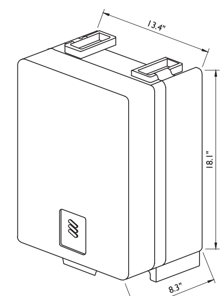
NOT TO SCALE



RRUS 4426 B66 DIMENSIONS (H X W X D): 14.9" X 13.2" X 5.9"
(INCLUDES SUNSHIELD) WEIGHT: 48 LBS

RRUS 4426 B66 DETAIL

NOT TO SCALE



DIMENSIONS (H X W X D): 18.1"H X 13.4"W X 8.3"D (INCLUDES SUNSHIELD)
WEIGHT: 59.4 LBS

RRUS-4478 B14 DETAIL

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PETROS E. SOUKAS
CONNECTICUT PROFESSIONAL ENGINEER LICENSE NUMBER: 32577

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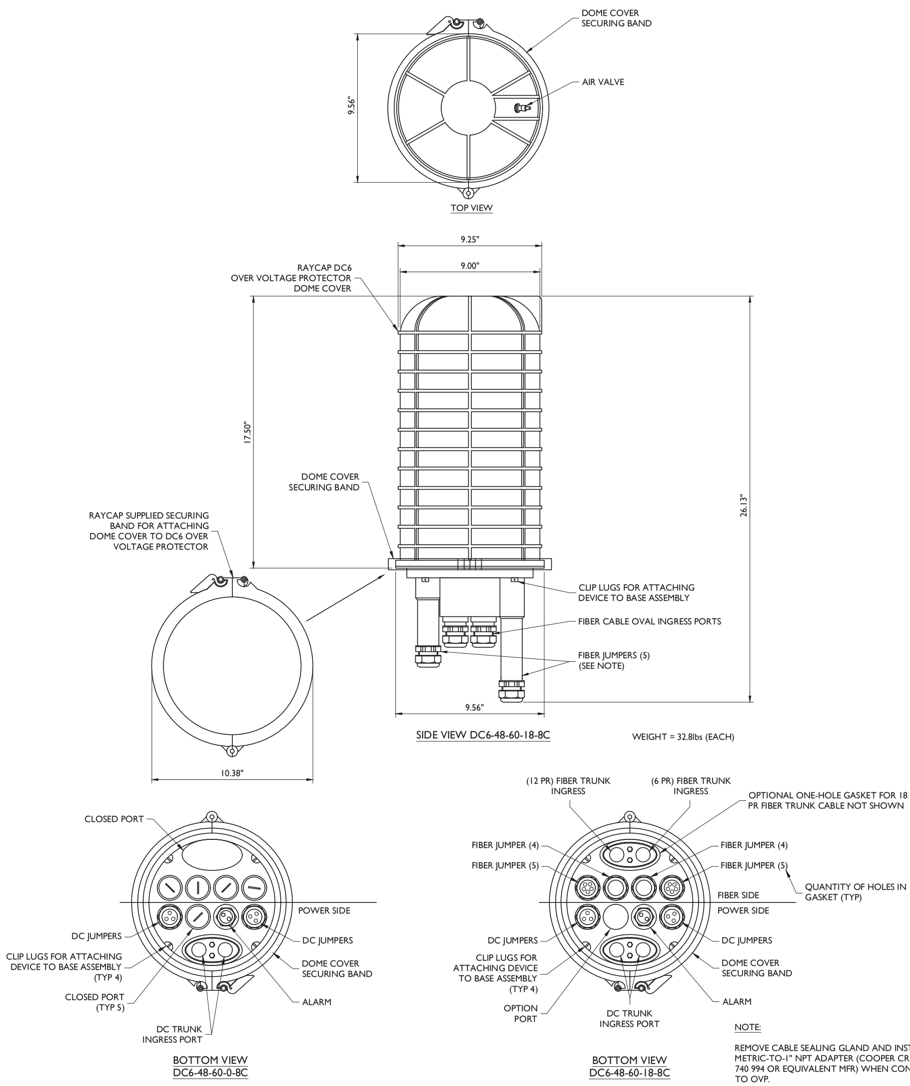
SHEET TITLE:
DETAILS

SHEET NUMBER:
A-1

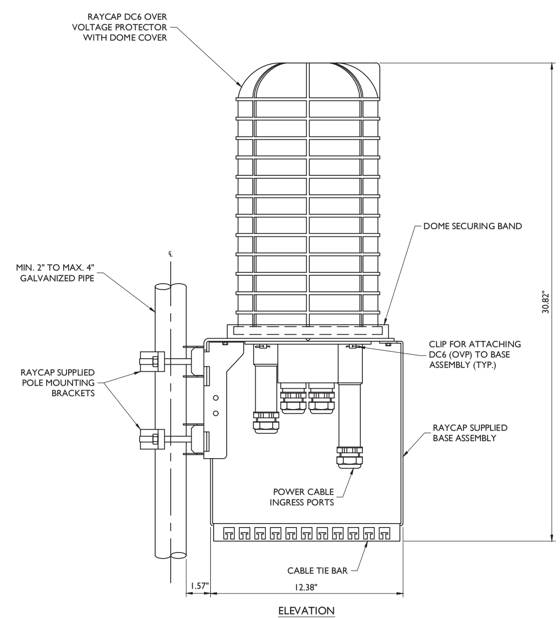


NOTE:

REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

DC6 SURGE SUPPRESSION DOME DETAIL

NOT TO SCALE



NOTES:

RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

RAYCAP DC6-48-60-18-8F & DC6-48-60-0-8F
DC POWER OVER VOLTAGE PROTECTOR (OVP)
POLE MOUNT BASE ASSEMBLY

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SHEET TITLE:
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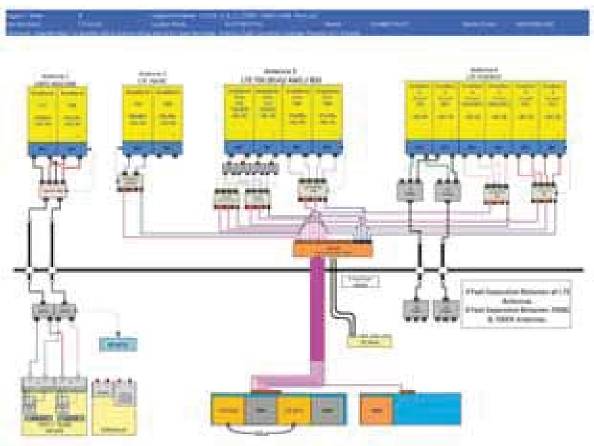
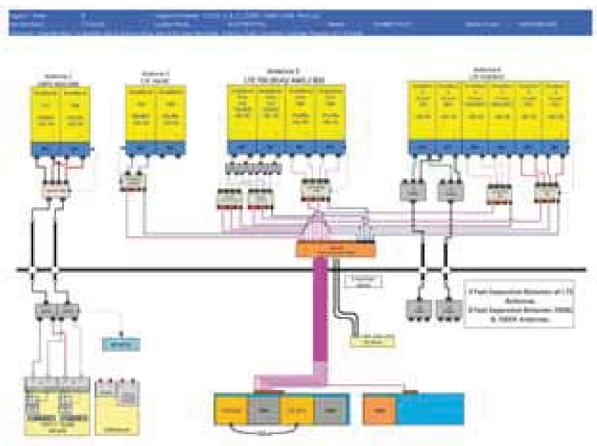
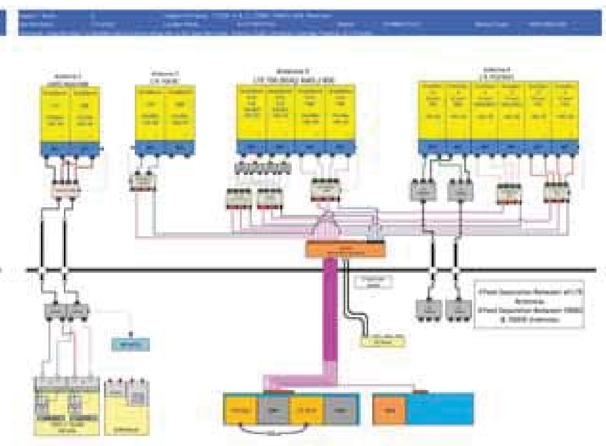
A-2



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR

BASED ON: RF ENGINEERING DESIGN ENTITLED "CTL01004_2019-LTE-Next-Carrier_LTE_mm093q_2051A0GHBJ_10034967_59332", LAST REVISED 06/14/2018.

RF PLUMBING DIAGRAMS

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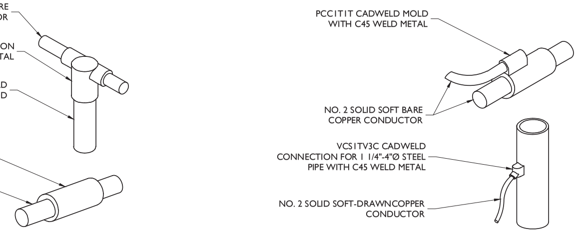
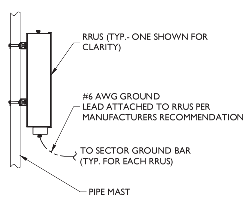
SHEET TITLE:
RF PLUMBING DIAGRAM

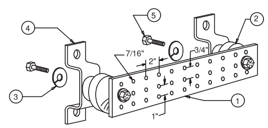
SHEET NUMBER:
A-3



CADWELD DETAILS
NOT TO SCALE



RRU GROUNDING
NOT TO SCALE



LEGEND

1- TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.

2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4

3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8

4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056

5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

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

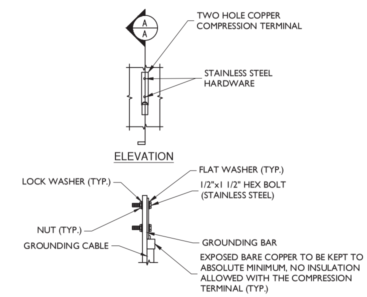
SECTION "P" - SURGE PRODUCERS

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

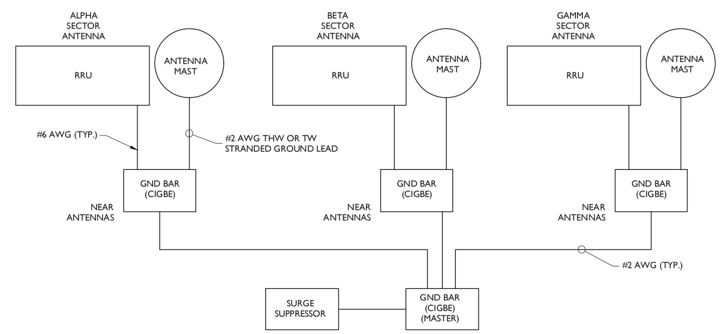
SECTION "A" - SURGE ABSORBERS

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

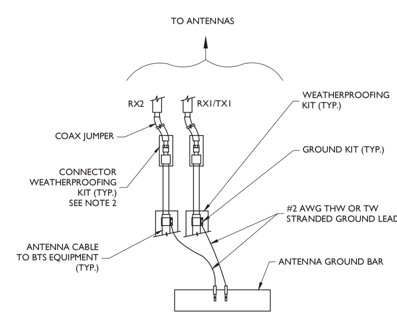
MASTER GROUND BAR
NOT TO SCALE



TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



SCHEMATIC DIAGRAM GROUNDING SYSTEM

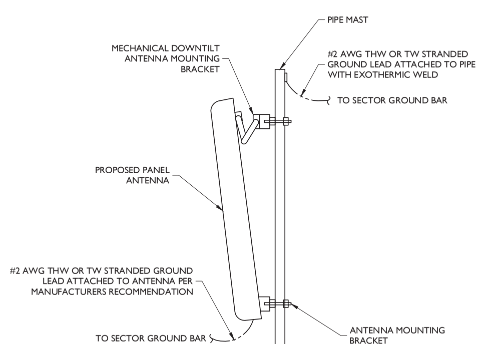


NOTES:

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

2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

TYPICAL GROUND WIRE TO GROUNDING BAR
NOT TO SCALE



ANTENNA GROUNDING
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REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0	03/13/19	STRUCTURAL REVISION	AJC	RA
1	09/14/18	ISSUED FOR REVIEW	AJC	RA

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FA# 10034967
SITE# CT1004

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SOUTHINGTON, CT 06489
HARTFORD COUNTY

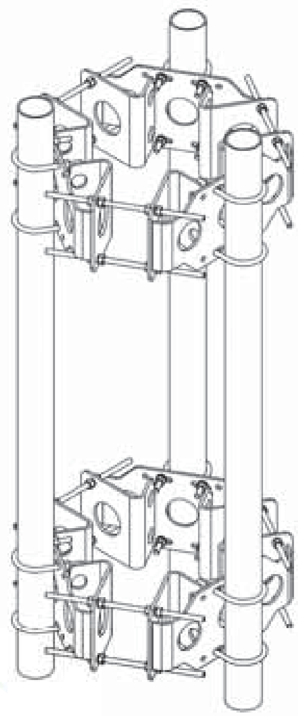
RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701
Phone: 732.383.1950
Fax: 732.383.1120
email: solutions@maserconsulting.com

SHEET TITLE: GROUNDING DETAILS

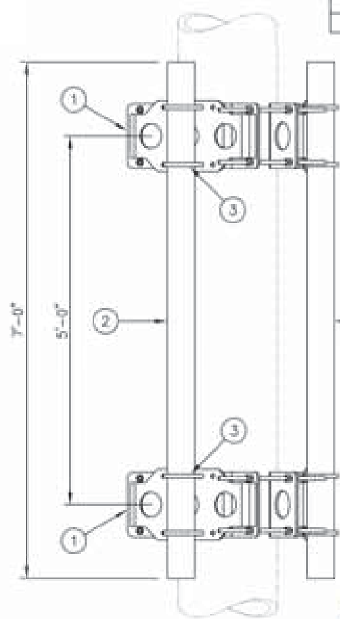
SHEET NUMBER: G-1

NOTE:
SEE DRAWING C10112300 FOR INSTALLATION OF TRI-COLLAR BRACKET ASSEMBLY

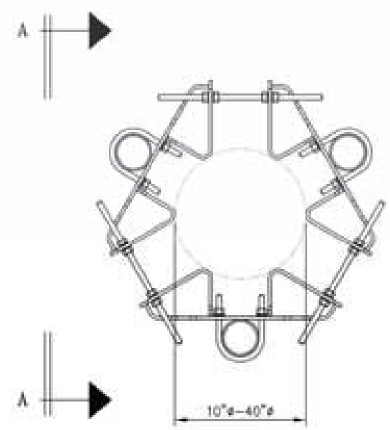
C10899050 4 1/2" O.D. PIPE MOUNT ASSEMBLY				
ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
1.	2	C10112300	TRI-COLLAR BRACKET ASSEMBLY	386
2.	3	C10901407	PIPE, 4 1/2 O.D. X .237 X 7'-0	236
3.	12	C40034032	U-BOLT ASSEMBLY, 5/8 ⌀ X 5 3/16 C-C	26
			TOTAL WEIGHT	648



ISOMETRIC VIEW



VIEW A-A



PLAN VIEW

This mount satisfies the requirements as specified in AT&T RPF No. 20160229.002.P for Antenna Sector Mounts as a Three Sector Mount on monopoles when used with the following sector mounts:
(3) Sabre C10737001C - AT&T Heavy-5
(3) Sabre C10857001C - AT&T Heavy-10
(3) Sabre C10857007C - AT&T Heavy-WLL

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES
TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG DECIMALS ± .010"

MATERIAL:
TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION

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Towers and Poles

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4 1/2" O.D. PIPE MOUNT ASSEMBLY FOR MONOPOLES (FITS 10" TO 40" DIAMETER)

DATE	01/26/16	SIZE	DRAWING NO.	REV
DRAWN BY	WRF	B	C10899050	0
CHECKED BY	DLW		SCALE None	PAGE 1 OF 1

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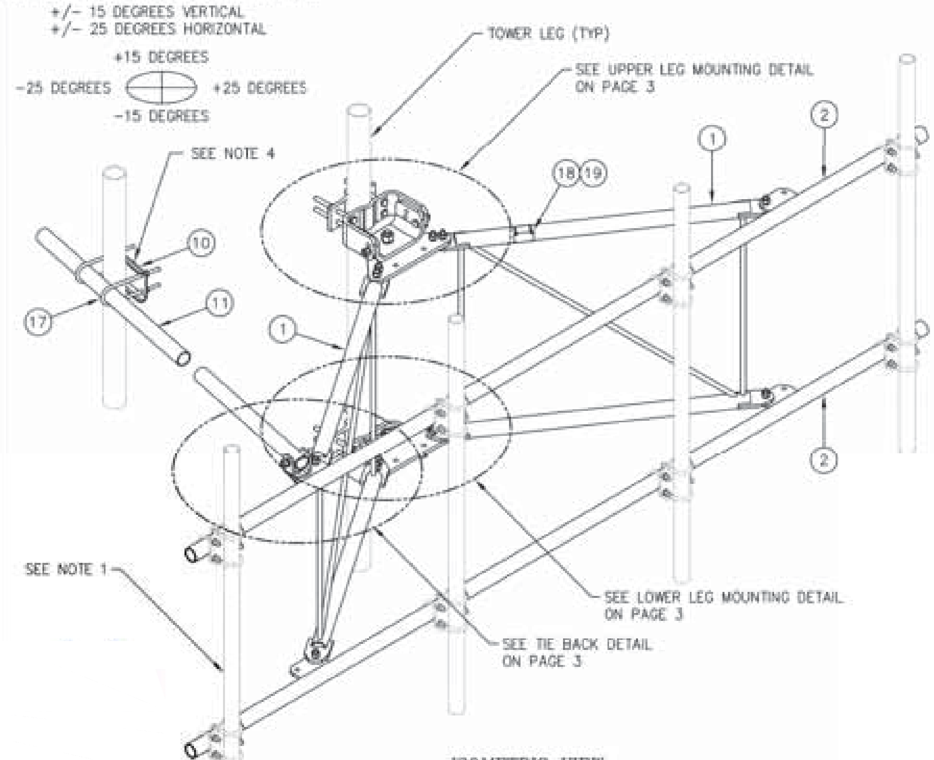
SHEET TITLE:
STRUCTURAL DETAILS

SHEET NUMBER:
S-1

TIEBACK ANGLE RANGE DETAIL

+/- 15 DEGREES VERTICAL
+/- 25 DEGREES HORIZONTAL

+15 DEGREES
-25 DEGREES +25 DEGREES
-15 DEGREES



ISOMETRIC VIEW

C10857001C 12' HD V-BOOM ASSEMBLY W/TIEBACK

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
1.	2	CW01222	WELDMENT, STANDOFF ARM	126
2.	2	CW01223	WELDMENT, FACE PIPE	147
3.	2	CS03109	PLATE, ROTATING	34
4.	1	CS03110	PLATE, PIVOTING (UPPER)	16
5.	1	CS03111	PLATE, LEG CLAMP (UPPER)	17
6.	1	CS03112	PLATE, PIVOTING (LOWER)	14
7.	1	CS03113	PLATE, LEG CLAMP (LOWER)	17
8.	2	CS03114	PLATE, LEG CLAMP (BACK)	14
9.	1	CS00098	PLATE, TIE BACK SWIVEL	3
10.	1	CS03285	PLATE, TIE BACK CLAMP	4
11.	1	CS03333	PIPE, TIE BACK	38
12.	2	C40026073	BOLT ASSEMBLY, 1 ø X 3 A325	4
13.	8	C40140004	BOLT ASSEMBLY, 5/8 ø X 8 A307	13
14.	1	C40026033	BOLT ASSEMBLY, 5/8 ø X 4 1/2 A325	1
15.	12	C40026025	BOLT ASSEMBLY, 5/8 ø X 2 1/2 A325	6
16.	5	C40026024	BOLT ASSEMBLY, 5/8 ø X 2 1/4 A325	3
17.	2	C40034183	U-BOLT ASSEMBLY, 1/2 ø X 2 9/16 C-C	3
18.	1	Z30992001	MOUNT CLASSIFICATION TAG C10857001C	1
19.	2	C40062103	STAINLESS STEEL SELF-LOCKING CABLE TIE	1
			TOTAL WEIGHT	462

PACKAGING NOTE

CK00386 INCLUDES ITEMS 1, 3, 4, 5, 6, 7, 12 & 15 (8 QTY)
CK00387 INCLUDES ITEMS 2, 8, 9, 10, 11, 13, 14, 15 (4 QTY), 16, 17, 18 & 19

This mount satisfies the Heavy-10 requirements as specified in AT&T RPF No. 20160229.002.P for Antenna Sector Mounts.
It satisfies ANSI/TIA-222-G for the following parameters:
Structure Class II, Exposure Category C, Topographic Category 1
Mount and antenna centerline at 300' AGL
Gust effect factor = 1.0, Wind direction probability factor = 0.95
Four mount pipes symmetrically placed as shown
Bare condition
Basic wind speed = 120 mph
$(EPA)_N = (EPA)_T$ = 15.0 sq.ft. per mount pipe
Factored Weight = 663 lbs per mount pipe
Iced condition
Basic wind speed = 60 mph, Design ice thickness, t_i = 1.0 in
$(EPA)_N = (EPA)_T$ = 24.0 sq.ft. per mount pipe
Factored Weight = 1325 lbs per mount pipe

Mount EPA's in accordance with ANSI/TIA-222-G:
$(EPA)_N$ = 9.12 sq.ft.
$(EPA)_T$ = 5.23 sq.ft.
***Excludes mount pipes**

NOTES:

1. MOUNTING PIPES & CROSSOVER PLATE KITS MUST BE PURCHASED SEPARATELY.
2. QUANTITIES SHOWN IN LISTS OF MATERIAL ARE FOR ONE (1) V-BOOM ONLY.
3. THIS V-BOOM WILL MOUNT TO THE FOLLOWING: 1 1/2"ø TO 5 9/16"ø ROUND LEG.
4. TIEBACK MUST BE CONNECTED TO A RIGID MEMBER THAT PROVIDES ADEQUATE SUPPORT WITHIN THE LIMITS NOTED ABOVE IN THE TIEBACK ANGLE RANGE DETAIL UNLESS APPROVED BY THE ENGINEER OF RECORD.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES
TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"
MATERIAL:
TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
2	02/05/16	DLW	DEL	ADDED PACKAGING NOTE
1	07/27/15	KLE	EK	REVISED NOTES & ADDED TIEBACK ANGLE RANGE DETAIL

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12' HD V-BOOM ASSEMBLY W/TIEBACK
(3' STANDOFF)
W/NO ANTENNA MOUNTING PIPES

DATE	12/22/15	SIZE	DRAWING NO.	REV
DRAWN BY	WRF	B	C10857001C	2
CHECKED BY	EK		SCALE None	PAGE 1 OF 3

SABRE MOUNT
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SABRE SECTOR FRAME
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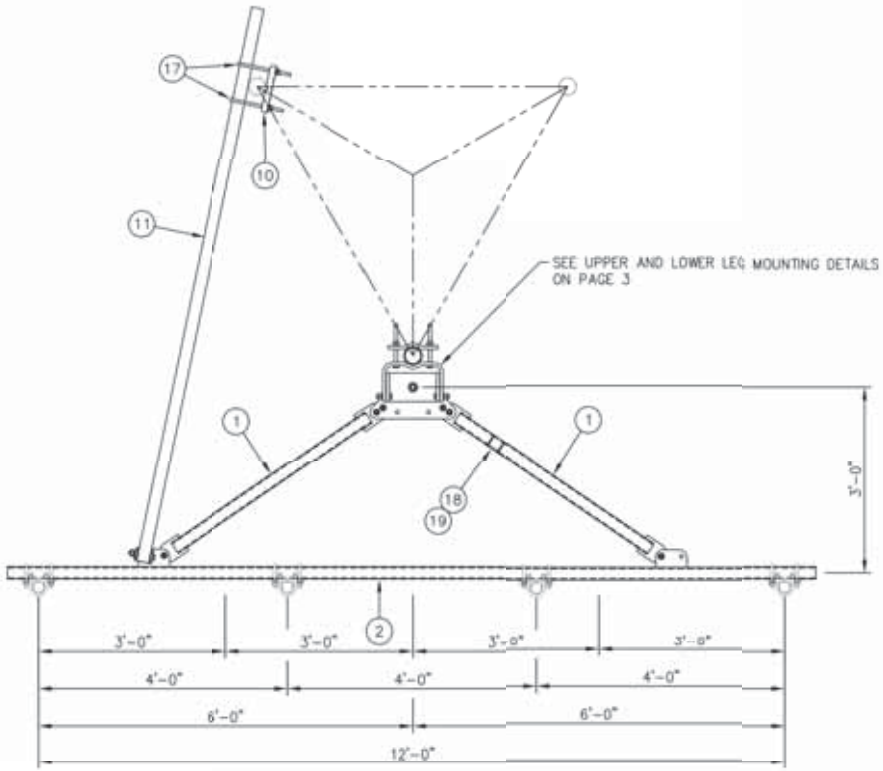
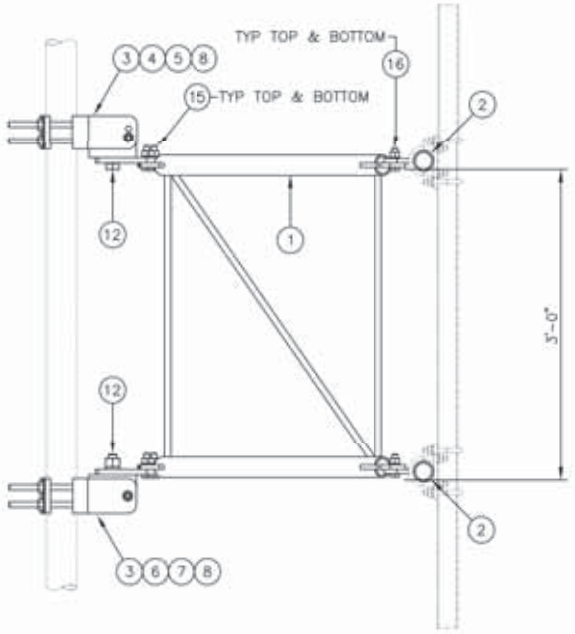
SHEET TITLE:
STRUCTURAL DETAILS

SHEET NUMBER:
S-2





SIDE VIEW

MOUNTING OPTIONS

SHOWING MOUNTING PIPE PLACEMENTS

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TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"
MATERIAL: TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRAWN	DESCRIPTION
2	12/22/15	WRF	ADDED TIEBACK PACKING NOTE
1	10/27/15	EK	ADDED NOTES & ADDED TIEBACK ANGLE RANGE DETAIL

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12' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/NO ANTENNA MOUNTING PIPES

		SIZE	DRAWING NO.	REV
DATE	12/22/15	B	C10857001C	2
DRAWN BY	WRF			
CHECKED BY	EK		SCALE None	PAGE 2 OF 3

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STATE OF CONNECTICUT
PETROS E. TSOUKARAS
CONNECTICUT PROFESSIONAL ENGINEER LICENSE NUMBER: 32577
32577

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Suite 203
Red Bank, NJ 07701
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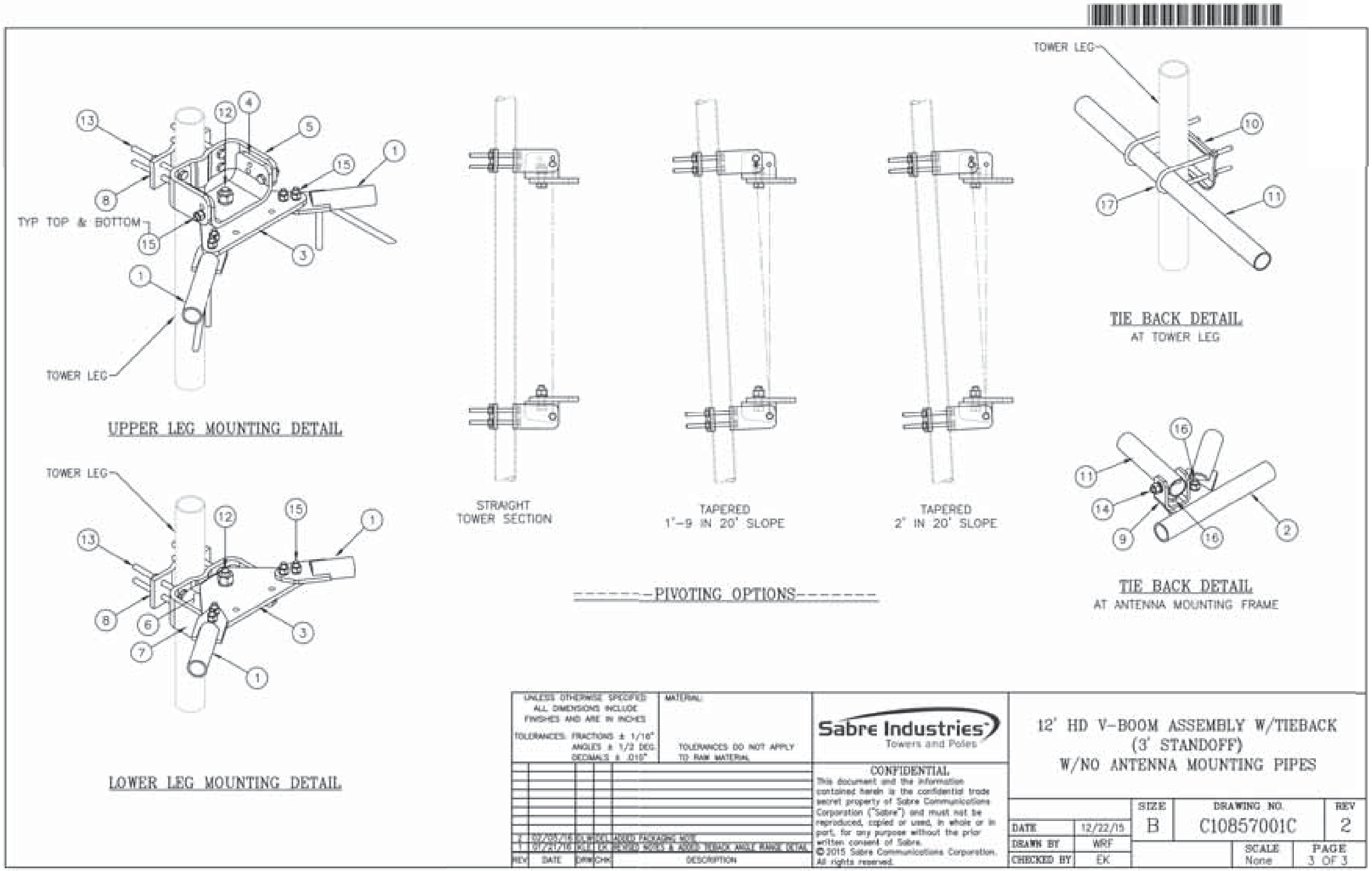
SHEET TITLE: STRUCTURAL DETAILS

SHEET NUMBER: S-3



SABRE SECTOR FRAME

NOT TO SCALE

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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1	09/14/18	ISSUED FOR REVIEW	AJC	RA

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SHEET TITLE: STRUCTURAL DETAILS

SHEET NUMBER: S-4

AMERICAN TOWER®
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Structural Analysis Report

Structure	:	**150 ft Monopole**
ATC Site Name	:	**Sttn - Southington, CT**
ATC Site Number	:	**302475**
Engineering Number	:	**OAA740798_C4_06**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**SOUTHINGTON**
Carrier Site Number	:	**CT1004**
Site Location	:	**80 Shuttle Meadow Road** **Southington, CT 06489-1313** **41.638600,-72.841100**
County	:	**HARTFORD**
Date	:	**February 26, 2019**
Max Usage	:	**99%**
Result	:	**Pass**

Prepared By:
Zackaryah Hughes
Structural Engineer I

Zackaryah Hughes

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32598
LICENSED PROFESSIONAL ENGINEER

Authorized by "EOR"
Feb 28 2019 8:54 AM cosign

COA: PEC.0001553

AMERICAN TOWER®
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Table of Contents

Introduction

The purpose of this report is to summarize results of a post-modification structural analysis performed on the 150 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	SpectraSite Mapping Site #CT-0011, dated May 29, 2002 AT&T Technologies Project #AT-8935, dated April 13, 1984
Foundation Drawing	Girard & Co. Engineers Project #38922, dated May 18, 1983
Geotechnical Report	GeoTechnologies Project #1-02-0934-EA, dated July 12, 2002
Modifications	ATC Job #40480332, dated May 25, 2007 ATC Job #42608538, dated April 22, 2009 ATC Job #OAA740798_C6_05, dated January 22, 2019 (Pending)

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:	97 mph (3-Second Gust, Vasd) / 125 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.18, S_1 = 0.06
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 the pending modifications cited in the Supporting Documents table are not completed, the results of this analysis are no longer valid, and AT&T Mobility should contact American Tower's Site Manager for further direction on how to proceed.

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					
150.0	153.0	6	CCI TPX-070821	-	(12) 7/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 3" conduit	AT&T Mobility
		2	Raycap DC6-48-60-18-8F (23.5" Height)			
		3	CCI DTMABP7819VG12A (w/ Bracket)			
		3	Ericsson RRUS-11 (50 lbs.)			
		3	Ericsson RRUS 32 B2			
		3	Ericsson RRUS-32 (77 lbs)			
		3	Powerwave 7770.00			
		2	KMW AM-X-CD-16-65-00T-RET			
		3	Quintel QS66512-3 (112 lbs.)			
		1	Andrew SBNH-1D6565C (60.8 lbs)			
	154.0	1	10' Omni		(3) 1 5/8" Coax	Other
134.0	134.0	3	Kathrein Smart Bias Tee	Site-Pro UWS6-NPs	(12) 1 5/8" Coax	Metro PCS
		3	RFS APXV18-206517S-C			
		3	Andrew LNX-6515DS-VTM			
120.0	120.0	1	DragonWave Horizon Compact	Side Arms	(4) 1 1/4" Hybriflex (2) 2" conduit (1) 1/2" Coax	Clearwire
		1	12" x 12" Junction Box			
		6	Alcatel-Lucent RRH2x50-08			
		3	Nokia FZHN Flexi RRH 8TR 2600 9*20W			
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	RFS APXVTM14-ALU-I20			
		1	DragonWave A-ANT-11G-2.5-C			
		3	Commscope NNVV-65B-R4			
105.0	109.0	1	dB Systems 5100A	Side Arms	(6) 7/8" Coax	M/a Com Private Radio Systems
		4	dB Systems 5100A-D			
	104.0	1	VertexRSI 101V VPD			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
153.0	153.0	1	Andrew SBNH-1D6565C	Platform w. Handrails	-	AT&T Mobility
		3	Quintel QS66512-3			
		3	Powerwave 7770.00			
		2	KMW AM-X-CD-16-65-00T-RET			
		3	CCI DTMABP7819VG12A			
		6	CCI TPX-070821			
		3	Ericsson RRUS-32			
		3	Ericsson RRUS-11			
		3	Ericsson RRUS 32 B2			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	153.0	6	Kaelus DBCT108F1V92-1	Sabre 12' HD V-Boom Sector Frames	(2) 0.78" 8 AWG 6	AT&T Mobility
		1	Raycap DC6-48-60-18-8F ("Squid")			
		3	Ericsson RRUS 4426 B66			
		3	Ericsson RRUS 4478 B14			
		3	Ericsson RRUS 4478 B5			
		2	Kathrein 80010965			
		1	Kathrein 80010966			

[1]Mount 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).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	88%	Pass
Shaft	86%	Pass
Base Plate	63%	Pass
Flanges	96%	Pass
Reinforcement	88%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,723.7	99%
Axial (Kips)	39.9	65%
Shear (Kips)	27.2	42%

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) (°)
150.0	Kaelus DBCT108F1V92-1	AT&T Mobility	2.654	1.974
	Raycap DC6-48-60-18-8F ("Squid")			
	Ericsson RRUS 4426 B66			
	Ericsson RRUS 4478 B5			
	Ericsson RRUS 4478 B14			
	Kathrein Scala 80010965			
	Kathrein Scala 80010966			
120.0	DragonWave A-ANT-11G-2.5-C	Clearwire Corporation	1.729	1.441

***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 performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

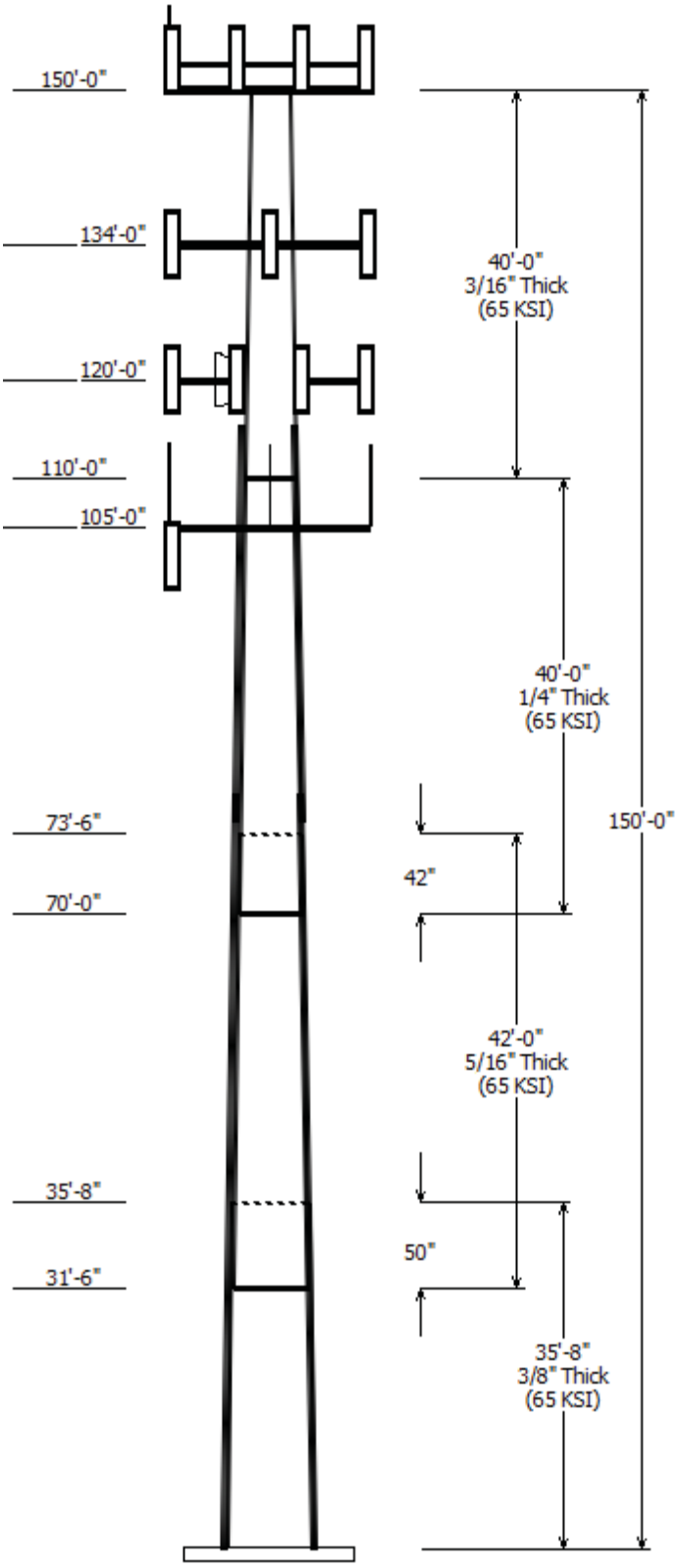
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

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 supplied herein.



Job Information

Pole :	302475	Code:	ANSI/TIA-222-G
Location :	Sttn - Southington, CT		
Description :	150' ITT Meyer Type "B" Monopole		
Client :	AT&T MOBILITY	Struct Class :	II
Shape :	12 Sides	Exposure :	B
Height :	150.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.160833 (in/ft)		

Sections Properties

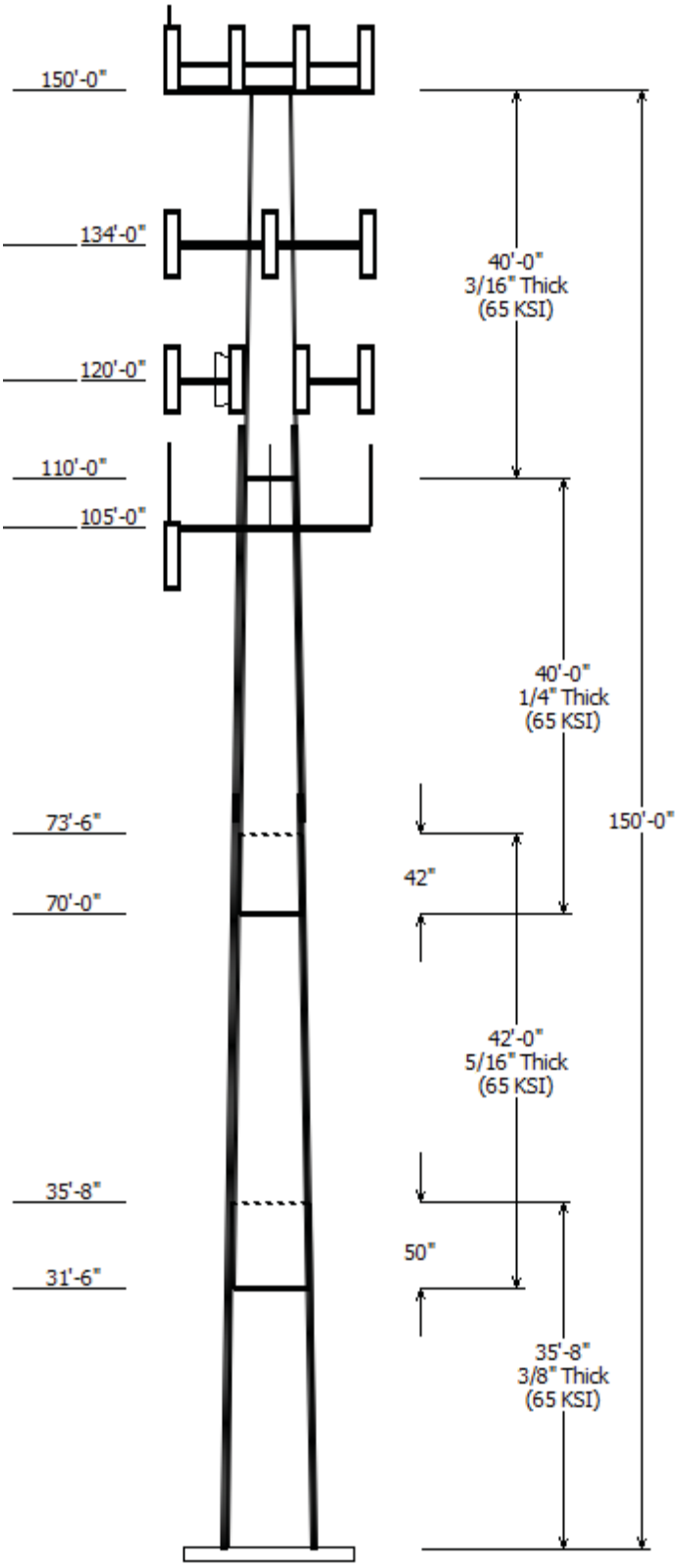
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	35.667	31.26	37.00	0.375		0.000	12 Sides	65
2	42.000	25.80	32.55	0.313	Slip Joint	50.000	12 Sides	65
3	40.000	20.43	26.86	0.250	Slip Joint	42.000	12 Sides	65
4	40.000	14.00	20.43	0.188	Butt Joint	0.000	12 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
150.000	150.000	3	Round Sector Frame
150.000	153.000	1	Andrew SBNH-1D6565C (60.8
150.000	153.000	3	Quintel QS66512-3 (112 lbs.)
150.000	153.000	2	KMW AM-X-CD-16-65-00T-RET
150.000	153.000	3	Powerwave Allgon 7770.00
150.000	153.000	3	Ericsson RRUS-32 (77 lbs)
150.000	154.000	1	10' Omni
150.000	153.000	3	Ericsson RRUS 32 B2
150.000	153.000	3	Ericsson RRUS-11 (50 lbs.)
150.000	153.000	3	CCI DTMABP7819VG12A (w/
150.000	153.000	2	Raycap DC6-48-60-18-8F (23.5"
150.000	153.000	6	CCI TPX-070821
150.000	153.000	1	Kathrein Scala 80010966
150.000	153.000	2	Kathrein Scala 80010965
150.000	153.000	3	Ericsson RRUS 4478 B14
150.000	153.000	3	Ericsson RRUS 4478 B5
150.000	153.000	3	Ericsson RRUS 4426 B66
150.000	153.000	1	Raycap DC6-48-60-18-8F
150.000	153.000	6	Kaelus DBCT108F1V92-1
134.000	134.000	3	Andrew LNX-6515DS-VTM
134.000	134.000	3	RFS APXV18-206517S-C
134.000	134.000	3	Site-Pro UWS6-NP
134.000	134.000	3	Kathrein Smart Bias Tee
120.000	120.000	3	Nokia FZHN Flexi RRH 8TR 2600
120.000	120.000	1	DragonWave A-ANT-11G-2.5-C
120.000	120.000	3	Commscope NNVV-65B-R4
120.000	120.000	3	RFS APXVTM14-ALU-I20
120.000	120.000	3	Alcatel-Lucent 1900 MHz 4X45
120.000	120.000	6	Alcatel-Lucent RRH2x50-08
120.000	120.000	1	DragonWave Horizon Compact
120.000	120.000	1	12" x 12" Junction Box
120.000	120.000	2	Side Arms
105.000	105.000	3	Round Side Arm
105.000	105.000	3	Round Side Arm
105.000	109.000	4	dB Systems 5100A-D
105.000	104.000	1	VertexRSI 101V VPD
105.000	109.000	1	dB Systems 5100A

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
82.500	119.0	#20 Dywidag Bars	Yes



0.000	120.0	1 1/4" Hybriflex	Yes
0.000	120.0	1/2" Coax	Yes
0.000	120.0	2" conduit	Yes
0.000	134.0	1 5/8" Coax	Yes
0.000	134.0	1 5/8" Coax	Yes
0.000	150.0	0.39" (10mm)	No
0.000	150.0	0.78" (19.7mm) 8	No
0.000	150.0	0.78" (19.7mm) 8	No
0.000	150.0	1 5/8" Coax	No
0.000	150.0	3" conduit	No
0.000	150.0	7/8" Coax	No
0.000	82.500	#20 Dywidag Bars	Yes
0.000	105.0	7/8" Coax	Yes

Load Cases

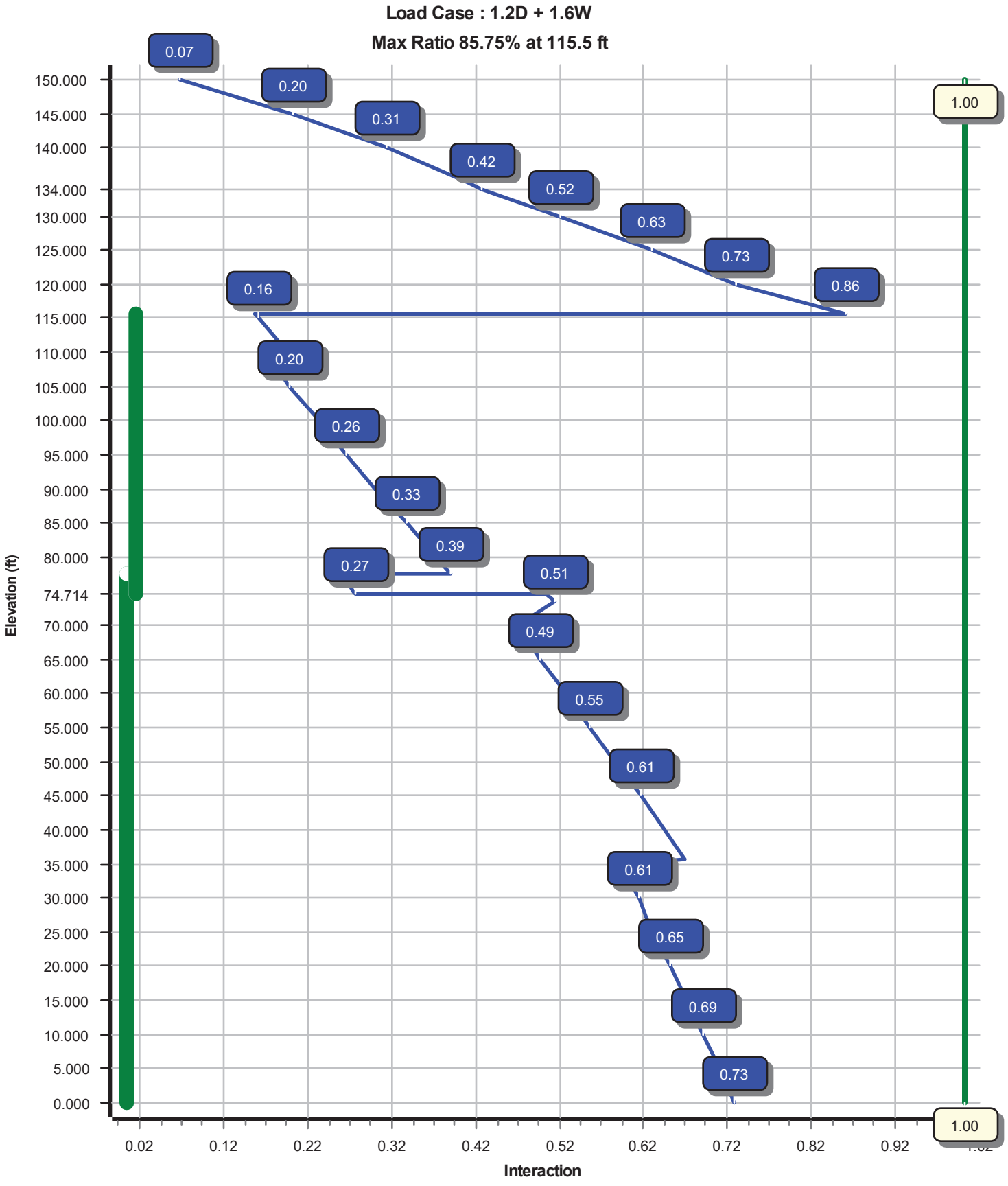
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) 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	2723.73	27.20	39.91
0.9D + 1.6W	2682.17	27.17	29.91
1.2D + 1.0Di + 1.0Wi	792.42	6.97	81.81
(1.2 + 0.2Sds) * DL + E ELFM	122.53	1.00	39.70
(1.2 + 0.2Sds) * DL + E EMAM	162.49	1.37	39.70
(0.9 - 0.2Sds) * DL + E ELFM	120.18	1.00	27.57
(0.9 - 0.2Sds) * DL + E EMAM	159.10	1.37	27.57
1.0D + 1.0W	648.77	6.53	33.31

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	120.00	20.743	1.441


Load Case : 1.2D + 1.6W
Max Ratio 85.75% at 115.5 ft
0.07
0.20
0.31
0.42
0.52
0.63
0.73
0.86
0.16
0.20
0.26
0.33
0.39
0.27
0.51
0.49
0.55
0.61
0.61
0.65
0.69
0.73
1.00
1.00
150.000
145.000
140.000
134.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
74.714
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	**302475**	**Code: ANSI/TIA-222-G**	
Site Name:	**Sttn - Southington, CT**	**Engineering Number:OAA740798_C4_06**	**2/26/2019 4:43:27 PM**
Customer:	**AT&T MOBILITY**		

Analysis Parameters

Location :	**HARTFORD County, CT**	**Height (ft) :**	**150**
Code :	**ANSI/TIA-222-G**	**Base Diameter (in) :**	**37.00**
Shape :	**12 Sides**	**Top Diameter (in) :**	**14.00**
Pole Type :	**Taper**	**Taper (in/ft) :**	**0.161**
Pole Manfacturer :	**ITT Meyer**	**Rotation (deg) :**	**0.00**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**97 mph**
Exposure Category:	**B**	**Design Wind Speed With Ice:**	**50 mph**
Topographic Category:	**1**	**Operational Wind Speed:**	**60 mph**
Crest Height:	**0 ft**	**Design Ice Thickness:**	**1.00 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**2.66**				
T_L (sec):	**6**	**p:**	**1**	**C_s:**	**0.030**
S_s:	**0.184**	**S_1:**	**0.064**	**C_s Max:**	**0.030**
F_a:	**1.600**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.196**	**S_{d1}:**	**0.102**		

Load Cases

1.2D + 1.6W	**97 mph with No Ice**
0.9D + 1.6W	**97 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 1.00 in Radial Ice**
(1.2 + 0.2Sds) * DL + E ELFM	**Seismic Equivalent Lateral Forces Method**
(1.2 + 0.2Sds) * DL + E EMAM	**Seismic Equivalent Modal Analysis Method**
(0.9 - 0.2Sds) * DL + E ELFM	**Seismic (Reduced DL) Equivalent Lateral Forces Method**
(0.9 - 0.2Sds) * DL + E EMAM	**Seismic (Reduced DL) Equivalent Modal Analysis Method**
1.0D + 1.0W	**Serviceability 60 mph**

Site Number: 302475 **Code:** ANSI/TIA-222-G

Site Name: Sttn - Southington, CT **Engineering Number:**OAA740798_C4_06 **2/26/2019 4:43:27 PM**

Customer: AT&T MOBILITY

Shaft Section Properties

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	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	35.667	0.3750	65		0.00	4,947	37.00	0.00	44.22	7571.9	23.76	98.67	31.26	35.67	37.30	4542.2	19.66	83.37	0.160833
2-12	42.000	0.3125	65	Slip	50.00	4,152	32.55	31.50	32.45	4306.6	25.24	104.19	25.80	73.50	25.65	2127.5	19.45	82.57	0.160833
3-12	40.000	0.2500	65	Slip	42.00	2,564	26.86	70.00	21.43	1937.5	26.12	107.47	20.43	110.00	16.25	844.8	19.22	81.73	0.160833
4-12	40.000	0.1875	65	Butt	0.00	1,399	20.43	110.00	12.22	639.5	26.52	108.98	14.00	150.00	8.34	203.1	17.33	74.67	0.160833
				Shaft Weight		13,062													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
150.00	CCI TPX-070821	6	0.75	3.000	7.50	0.550	0.50	23.67	1.299	0.50
150.00	Kaelus DBCT108F1V92-1	6	0.75	3.000	13.90	0.740	0.50	47.48	1.591	0.50
150.00	Raycap DC6-48-60-18-8F (23.5"	2	0.75	3.000	20.00	1.110	0.50	90.25	1.884	0.50
150.00	Raycap DC6-48-60-18-8F	1	0.75	3.000	31.80	1.280	1.00	114.24	2.091	1.00
150.00	CCI DTMABP7819VG12A (w/	3	0.75	3.000	19.20	1.370	0.50	64.69	2.411	0.50
150.00	Ericsson RRUS 4426 B66	3	0.75	3.000	48.40	1.650	0.50	107.77	2.783	0.50
150.00	Ericsson RRUS 4478 B5	3	0.75	3.000	59.90	1.840	0.50	133.93	3.035	0.50
150.00	Ericsson RRUS 4478 B14	3	0.75	3.000	59.90	1.840	0.50	133.93	3.035	0.50
150.00	Ericsson RRUS-11 (50 lbs.)	3	0.75	3.000	50.00	2.570	0.50	141.06	3.969	0.50
150.00	Ericsson RRUS 32 B2	3	0.75	3.000	53.00	2.740	0.50	151.00	4.298	0.50
150.00	10' Omni	1	1.00	4.000	25.00	3.000	1.00	126.28	7.800	1.00
150.00	Ericsson RRUS-32 (77 lbs)	3	0.75	3.000	77.00	3.310	0.50	206.72	5.020	0.50
150.00	Powerwave Allgon 7770.00	3	0.75	3.000	35.00	5.510	0.65	228.57	6.943	0.65
150.00	KMW AM-X-CD-16-65-00T-RET	2	0.75	3.000	48.50	8.020	0.67	264.37	11.739	0.67
150.00	Quintel QS66512-3 (112 lbs.)	3	0.75	3.000	112.00	8.130	0.74	377.38	11.847	0.74
150.00	Andrew SBNH-1D6565C (60.8 lbs)	1	0.75	3.000	60.80	11.450	0.70	367.01	15.770	0.70
150.00	Kathrein Scala 80010965	2	0.75	3.000	97.60	13.810	0.62	453.11	17.878	0.62
150.00	Round Sector Frame	3	0.75	0.000	300.00	14.400	0.67	790.63	36.478	0.67
150.00	Kathrein Scala 80010966	1	0.80	3.000	114.60	17.360	0.63	542.68	22.280	0.63
134.00	Kathrein Smart Bias Tee	3	0.80	0.000	3.31	0.090	0.50	7.66	0.399	0.50
134.00	Site-Pro UWS6-NP	3	0.75	0.000	92.00	1.500	0.50	193.45	3.182	0.50
134.00	RFS APXV18-206517S-C	3	0.80	0.000	26.40	5.170	0.68	148.67	8.296	0.68
134.00	Andrew LNX-6515DS-VTM	3	0.80	0.000	51.30	11.430	0.70	353.48	15.705	0.70
120.00	DragonWave Horizon Compact	1	0.80	0.000	10.60	0.840	0.50	39.97	2.140	0.50
120.00	12" x 12" Junction Box	1	0.80	0.000	10.00	1.200	0.50	64.33	2.146	0.50
120.00	Alcatel-Lucent RRH2x50-08	6	0.80	0.000	52.90	1.700	0.50	130.28	2.824	0.50
120.00	Nokia FZHN Flexi RRH 8TR 2600	3	0.80	0.000	44.10	2.020	0.50	129.32	2.803	0.50
120.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	0.000	60.00	2.320	0.50	165.21	3.728	0.50
120.00	RFS APXVTM14-ALU-I20	3	0.80	0.000	56.20	6.340	0.66	155.26	9.053	0.66
120.00	Side Arms	2	1.00	0.000	560.00	8.500	1.00	1,170.53	17.767	1.00
120.00	DragonWave A-ANT-11G-2.5-C	1	1.00	0.000	47.60	8.670	1.00	278.53	10.923	1.00
120.00	Commscope NNVV-65B-R4	3	0.80	0.000	77.40	12.270	0.64	459.84	14.220	0.64
105.00	dB Systems 5100A	1	0.80	4.000	21.00	2.070	1.00	89.68	3.826	1.00
105.00	VertexRSI 101V VPD	1	0.80	-1.000	4.00	2.540	1.00	103.60	11.386	1.00
105.00	dB Systems 5100A-D	4	0.80	4.000	38.00	3.110	1.00	163.64	4.924	1.00
105.00	Round Side Arm	3	1.00	0.000	150.00	5.200	0.67	244.08	8.694	0.67
105.00	Round Side Arm	3	1.00	0.000	150.00	5.200	0.67	244.08	8.694	0.67
Totals	Num Loadings:37	99			6,950.73			20,856.24		

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	150.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T Mobility

0.00	150.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	150.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	150.00	3	1 5/8" Coax	1.98	0.82	N	0.00	N	Other
0.00	150.00	1	3" conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	150.00	12	7/8" Coax	1.09	0.33	N	0.00	N	AT&T Mobility
0.00	134.00	6	1 5/8" Coax	1.98	0.82	N	3.96	Y	Metro PCS
0.00	134.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Metro PCS
0.00	120.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	Y	Clearwire Corporation
0.00	120.00	1	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire Corporation
0.00	120.00	2	2" conduit	2.38	3.65	N	2.38	Y	Clearwire Corporation
82.50	119.00	4	#20 Dywidag Bars	2.72	0.00	N	3.64	Y	-
0.00	105.00	6	7/8" Coax	1.09	0.33	N	0.00	Y	ITT Corporation
0.00	82.50	4	#20 Dywidag Bars	2.72	0.00	N	1.70	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	77.44	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	No
74.71	115.5	4	SOL #20 All Thread	80	5.15	6" T Bracket	30.0	3.31	5/8" A36 U-Bolt	No

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)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
0.00		0.3750	37.000	44.225	7,571.9	23.76	98.67	78.8	395.3	0.0	0.0	19.64	4,734	0.0
5.00		0.3750	36.196	43.254	7,084.0	23.18	96.52	79.4	378.1	0.0	744.2	19.64	4,563	334.0
10.00		0.3750	35.392	42.283	6,617.6	22.61	94.38	80.1	361.2	0.0	727.7	19.64	4,394	334.0
15.00		0.3750	34.588	41.312	6,172.0	22.03	92.23	80.7	344.7	0.0	711.1	19.64	4,229	334.0
20.00		0.3750	33.783	40.341	5,747.0	21.46	90.09	81.3	328.6	0.0	694.6	19.64	4,067	334.0
25.00		0.3750	32.979	39.370	5,341.9	20.89	87.94	81.9	312.9	0.0	678.1	19.64	3,908	334.0
30.00		0.3750	32.175	38.398	4,956.3	20.31	85.80	81.9	297.6	0.0	661.6	19.64	3,752	334.0
31.50	Bot - Section 2	0.3750	31.934	38.107	4,844.3	20.14	85.16	81.9	293.1	0.0	195.2	19.64	3,706	100.2
35.00		0.3750	31.371	37.427	4,589.7	19.74	83.66	81.9	282.6	0.0	832.9	19.64	3,718	233.8
35.67	Top - Section 1	0.3125	31.889	31.773	4,043.6	24.66	102.04	77.8	245.0	0.0	157.0	19.64	3,697	44.5
40.00		0.3125	31.192	31.072	3,781.7	24.07	99.81	78.5	234.2	0.0	463.3	19.64	3,566	289.5
45.00		0.3125	30.388	30.263	3,493.9	23.38	97.24	79.2	222.1	0.0	521.8	19.64	3,417	334.0
50.00		0.3125	29.583	29.454	3,221.0	22.69	94.67	80.0	210.3	0.0	508.0	19.64	3,271	334.0
55.00		0.3125	28.779	28.645	2,962.8	22.00	92.09	80.7	198.9	0.0	494.2	19.64	3,129	334.0
60.00		0.3125	27.975	27.835	2,718.7	21.31	89.52	81.5	187.7	0.0	480.5	19.64	2,990	334.0
65.00		0.3125	27.171	27.026	2,488.5	20.62	86.95	81.9	176.9	0.0	466.7	19.64	2,854	334.0
70.00	Bot - Section 3	0.3125	26.367	26.217	2,271.6	19.93	84.37	81.9	166.4	0.0	452.9	19.64	2,721	334.0
73.50	Top - Section 2	0.2500	26.304	20.973	1,817.2	25.51	105.22	76.9	133.5	0.0	561.3	19.64	2,711	233.8
74.71	Reinf Bottom	0.2500	26.109	20.816	1,776.6	25.30	104.43	77.1	131.5	0.0	86.3	19.64	2,679	81.1
75.00		0.2500	26.063	20.779	1,767.1	25.25	104.25	77.2	131.0	0.0	20.3	39.28	6,387	38.3
77.44	Reinf. Top	0.2500	25.670	20.463	1,687.8	24.83	102.68	77.6	127.0	0.0	171.0	39.28	6,312	182.0
80.00		0.2500	25.258	20.132	1,607.1	24.39	101.03	78.1	122.9	0.0	177.0	19.64	3,563	171.2
85.00		0.2500	24.454	19.484	1,457.0	23.53	97.82	79.1	115.1	0.0	337.0	19.64	3,414	334.0
90.00		0.2500	23.650	18.837	1,316.5	22.67	94.60	80.0	107.5	0.0	326.0	19.64	3,269	334.0
95.00		0.2500	22.846	18.190	1,185.4	21.81	91.38	80.9	100.2	0.0	315.0	19.64	3,127	334.0
100.0		0.2500	22.042	17.542	1,063.3	20.94	88.17	81.9	93.2	0.0	304.0	19.64	2,987	334.0
105.0		0.2500	21.238	16.895	949.9	20.08	84.95	81.9	86.4	0.0	293.0	19.64	2,851	334.0
110.0	Top - Section 3	0.2500	20.433	16.248	844.8	19.22	81.73	81.9	79.9	0.0	281.9	19.64	2,719	334.0
110.0	Bot - Section 4	0.1875	20.433	12.223	639.5	26.52	108.98	75.8	60.5	0.0		19.64	2,719	
115.0		0.1875	19.629	11.738	566.3	25.37	104.69	77.0	55.7	0.0	203.8	19.64	2,589	334.0
115.5	Reinf. Top	0.1875	19.545	11.687	559.0	25.25	104.24	77.2	55.3	0.0	20.8	19.64	2,576	34.8
120.0		0.1875	18.825	11.252	498.9	24.22	100.40	78.3	51.2	0.0	174.8			
125.0		0.1875	18.021	10.767	437.1	23.07	96.11	79.5	46.9	0.0	187.3			
130.0		0.1875	17.217	10.281	380.6	21.92	91.82	80.8	42.7	0.0	179.1			
134.0		0.1875	16.573	9.893	339.0	21.00	88.39	81.8	39.5	0.0	137.3			
135.0		0.1875	16.413	9.796	329.2	20.77	87.53	81.9	38.7	0.0	33.5			
140.0		0.1875	15.608	9.310	282.6	19.63	83.24	81.9	35.0	0.0	162.5			
145.0		0.1875	14.804	8.825	240.7	18.48	78.96	81.9	31.4	0.0	154.3			
150.0		0.1875	14.000	8.339	203.1	17.33	74.67	81.9	28.0	0.0	146.0			
											13,062.0			7,755.0

Site Number: 302475 | Code: ANSI/TIA-222-G |

Site Name: Sttn - Southington, CT | Engineering Number:OAA740798_C4_06 | 2/26/2019 4:43:28 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W | 97 mph with No Ice | 26 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

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	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		266.0	0.0					0.0	0.0	266.0	0.0	0.0	0.0
5.00		526.2	893.0					112.9	646.4	639.2	1,539.4	0.0	0.0
10.00		514.6	873.2					112.9	646.4	627.5	1,519.6	0.0	0.0
15.00		502.9	853.4					112.9	646.4	615.8	1,499.7	0.0	0.0
20.00		491.2	833.5					112.9	646.4	604.1	1,479.9	0.0	0.0
25.00		479.5	813.7					112.9	646.4	592.4	1,460.1	0.0	0.0
30.00		307.3	793.9					112.9	646.4	420.2	1,440.3	0.0	0.0
31.50	Bot - Section 2	239.7	234.3					34.1	193.9	273.9	428.2	0.0	0.0
35.00		201.8	999.4					81.5	452.5	283.2	1,451.9	0.0	0.0
35.67	Top - Section 1	245.0	188.4					15.8	86.2	260.8	274.5	0.0	0.0
40.00		460.0	556.0					104.6	560.2	564.6	1,116.2	0.0	0.0
45.00		496.2	626.1					124.8	646.4	621.1	1,272.5	0.0	0.0
50.00		497.9	609.6					128.9	646.4	626.8	1,256.0	0.0	0.0
55.00		497.8	593.1					132.6	646.4	630.4	1,239.5	0.0	0.0
60.00		496.0	576.6					136.1	646.4	632.1	1,222.9	0.0	0.0
65.00		493.0	560.0					139.4	646.4	632.3	1,206.4	0.0	0.0
70.00	Bot - Section 3	419.2	543.5					142.5	646.4	561.7	1,189.9	0.0	0.0
73.50	Top - Section 2	233.6	673.6					101.5	452.5	335.1	1,126.1	0.0	0.0
74.71	Reinf Bottom	74.0	103.5					35.5	156.9	109.6	260.4	0.0	0.0
75.00		133.9	24.3					8.4	60.0	142.3	84.3	0.0	0.0
77.44	Reinf. Top	244.8	205.2					71.9	338.1	316.7	543.3	0.0	0.0
80.00		366.5	212.4					76.3	331.3	442.8	543.7	0.0	0.0
85.00		479.0	404.4					169.1	646.4	648.1	1,050.8	0.0	0.0
90.00		470.9	391.2					190.5	646.4	661.4	1,037.6	0.0	0.0
95.00		462.0	378.0					193.5	646.4	655.5	1,024.4	0.0	0.0
100.00		452.3	364.8					196.4	646.4	648.8	1,011.1	0.0	0.0
105.00	Appurtenance(s)	441.9	351.5	1,393.8	0.0	1,805.5	1,292.4	199.3	646.4	2,035.0	2,290.3	0.0	0.0
110.00	Top - Section 3	430.9	338.3					201.8	634.5	632.7	972.8	0.0	0.0
115.00		234.4	244.6					203.9	634.5	438.3	879.1	0.0	0.0
115.52	Reinf. Top	206.6	24.9					21.4	66.1	228.0	91.0	0.0	0.0
120.00	Appurtenance(s)	385.2	209.8	2,701.1	0.0	0.0	2,662.4	169.4	209.4	3,255.8	3,081.6	0.0	0.0
125.00		394.2	224.8					81.4	165.0	475.6	389.8	0.0	0.0
130.00		344.0	214.9					81.9	165.0	425.9	379.9	0.0	0.0
134.00	Appurtenance(s)	180.9	164.8	1,269.0	0.0	0.0	622.8	65.8	132.0	1,515.7	919.6	0.0	0.0
135.00		180.7	40.2					0.0	21.2	180.7	61.4	0.0	0.0
140.00		293.9	195.0					0.0	106.0	293.9	301.0	0.0	0.0
145.00		281.5	185.1					0.0	106.0	281.5	291.1	0.0	0.0
150.00	Appurtenance(s)	137.6	175.2	4,646.7	0.0	11,175.3	3,763.2	0.0	106.0	4,784.4	4,044.4	0.0	0.0
									Totals:	27,359.4	39,980.6	0.00	0.00

Site Number: 302475 Code: ANSI/TIA-222-G

Site Name: Sttn - Southington, CT Engineering Number:OAA740798_C4_06 2/26/2019 4:43:32 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 97 mph with No Ice 26 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	-39.91	-27.20	0.00	-2,723.73	0.00	2,723.73	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.726
5.00	-38.23	-26.76	0.00	-2,587.72	0.00	2,587.72	3,092.06	1,546.03	4,560.72	2,252.37	0.16	-0.31	0.708
10.00	-36.57	-26.32	0.00	-2,453.90	0.00	2,453.90	3,046.49	1,523.25	4,391.58	2,168.84	0.65	-0.61	0.688
15.00	-34.94	-25.87	0.00	-2,322.30	0.00	2,322.30	2,999.83	1,499.91	4,223.96	2,086.05	1.46	-0.92	0.669
20.00	-33.33	-25.42	0.00	-2,192.93	0.00	2,192.93	2,952.07	1,476.04	4,057.95	2,004.07	2.59	-1.23	0.649
25.00	-31.76	-24.97	0.00	-2,065.82	0.00	2,065.82	2,901.93	1,450.96	3,891.94	1,922.08	4.05	-1.54	0.628
30.00	-30.24	-24.61	0.00	-1,940.99	0.00	1,940.99	2,830.35	1,415.18	3,701.25	1,827.91	5.83	-1.85	0.612
31.50	-29.76	-24.40	0.00	-1,904.08	0.00	1,904.08	2,808.88	1,404.44	3,644.98	1,800.12	6.42	-1.94	0.607
35.00	-28.26	-24.13	0.00	-1,818.67	0.00	1,818.67	2,758.78	1,379.39	3,515.36	1,736.10	7.93	-2.16	0.586
35.67	-27.93	-23.93	0.00	-1,802.59	0.00	1,802.59	2,225.24	1,112.62	2,894.88	1,429.67	8.24	-2.20	0.667
40.00	-26.72	-23.46	0.00	-1,698.87	0.00	1,698.87	2,194.35	1,097.17	2,791.07	1,378.40	10.35	-2.46	0.642
45.00	-25.36	-22.92	0.00	-1,581.58	0.00	1,581.58	2,157.69	1,078.84	2,672.25	1,319.72	13.10	-2.78	0.613
50.00	-24.01	-22.36	0.00	-1,466.97	0.00	1,466.97	2,119.93	1,059.96	2,554.56	1,261.60	16.18	-3.09	0.584
55.00	-22.69	-21.78	0.00	-1,355.16	0.00	1,355.16	2,081.07	1,040.54	2,438.12	1,204.10	19.59	-3.40	0.554
60.00	-21.40	-21.19	0.00	-1,246.24	0.00	1,246.24	2,041.12	1,020.56	2,323.03	1,147.26	23.32	-3.71	0.524
65.00	-20.14	-20.58	0.00	-1,140.29	0.00	1,140.29	1,992.10	996.05	2,200.59	1,086.79	27.36	-4.00	0.495
70.00	-18.90	-20.02	0.00	-1,037.39	0.00	1,037.39	1,932.46	966.23	2,070.05	1,022.32	31.70	-4.29	0.468
73.50	-17.76	-19.64	0.00	-967.34	0.00	967.34	1,451.36	725.68	1,558.37	769.62	34.92	-4.49	0.511
74.71	-17.50	-19.52	0.00	-943.51	0.00	943.51	1,444.76	722.38	1,539.55	760.33	36.08	-4.56	0.502
75.00	-17.41	-19.39	0.00	-937.91	0.00	937.91	1,443.19	721.60	1,535.11	758.14	36.35	-4.58	0.273
77.44	-16.86	-19.05	0.00	-890.66	0.00	890.66	1,429.71	714.86	1,497.46	739.54	38.71	-4.66	0.259
77.44	-16.86	-19.05	0.00	-890.66	0.00	890.66	1,429.71	714.86	1,497.46	739.54	38.71	-4.66	0.388
80.00	-16.31	-18.61	0.00	-841.85	0.00	841.85	1,415.26	707.63	1,458.06	720.08	41.23	-4.74	0.370
85.00	-15.25	-17.93	0.00	-748.82	0.00	748.82	1,386.24	693.12	1,381.78	682.41	46.30	-4.96	0.334
90.00	-14.22	-17.23	0.00	-659.18	0.00	659.18	1,356.12	678.06	1,306.38	645.17	51.60	-5.16	0.299
95.00	-13.20	-16.52	0.00	-573.04	0.00	573.04	1,324.90	662.45	1,231.99	608.43	57.10	-5.35	0.264
100.00	-12.21	-15.82	0.00	-490.43	0.00	490.43	1,293.04	646.52	1,159.10	572.44	62.79	-5.53	0.230
105.00	-10.10	-13.59	0.00	-409.54	0.00	409.54	1,245.33	622.66	1,074.67	530.74	68.66	-5.69	0.197
110.00	-9.16	-12.89	0.00	-341.57	0.00	341.57	1,197.61	598.80	993.42	490.61	74.68	-5.83	0.169
110.00	-9.16	-12.89	0.00	-341.57	0.00	341.57	833.77	416.88	695.90	343.68	74.68	-5.83	0.194
115.00	-8.32	-12.37	0.00	-277.13	0.00	277.13	813.89	406.95	652.08	322.04	80.85	-5.95	0.159
115.52	-8.24	-12.14	0.00	-270.69	0.00	270.69	811.76	405.88	647.55	319.80	81.49	-5.96	0.156
115.52	-8.24	-12.14	0.00	-270.69	0.00	270.69	811.76	405.88	647.55	319.80	81.49	-5.96	0.857
120.00	-5.47	-8.61	0.00	-216.29	0.00	216.29	792.92	396.46	608.75	300.64	87.13	-6.06	0.727
125.00	-5.06	-8.15	0.00	-173.22	0.00	173.22	770.85	385.43	566.02	279.54	93.77	-6.62	0.627
130.00	-4.68	-7.71	0.00	-132.49	0.00	132.49	747.69	373.84	524.00	258.78	100.95	-7.11	0.519
134.00	-3.93	-6.11	0.00	-101.64	0.00	101.64	728.37	364.19	490.97	242.47	107.05	-7.46	0.425
135.00	-3.87	-5.93	0.00	-95.53	0.00	95.53	722.05	361.03	481.88	237.98	108.62	-7.55	0.407
140.00	-3.58	-5.62	0.00	-65.86	0.00	65.86	686.26	343.13	435.03	214.85	116.70	-7.90	0.312
145.00	-3.32	-5.31	0.00	-37.75	0.00	37.75	650.48	325.24	390.59	192.90	125.09	-8.16	0.201
150.00	0.00	-4.78	0.00	-11.18	0.00	11.18	614.69	307.34	348.53	172.13	133.69	-8.30	0.065

Site Number: 302475 | Code: ANSI/TIA-222-G |

Site Name: Sttn - Southington, CT | Engineering Number:OAA740798_C4_06 | 2/26/2019 4:43:32 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W | 97 mph with No Ice (Reduced DL) | 26 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

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	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		266.0	0.0					0.0	0.0	266.0	0.0	0.0	0.0
5.00		526.2	669.8					112.9	484.8	639.2	1,154.5	0.0	0.0
10.00		514.6	654.9					112.9	484.8	627.5	1,139.7	0.0	0.0
15.00		502.9	640.0					112.9	484.8	615.8	1,124.8	0.0	0.0
20.00		491.2	625.1					112.9	484.8	604.1	1,109.9	0.0	0.0
25.00		479.5	610.3					112.9	484.8	592.4	1,095.1	0.0	0.0
30.00		307.3	595.4					112.9	484.8	420.2	1,080.2	0.0	0.0
31.50	Bot - Section 2	239.7	175.7					34.1	145.4	273.9	321.2	0.0	0.0
35.00		201.8	749.6					81.5	339.3	283.2	1,088.9	0.0	0.0
35.67	Top - Section 1	245.0	141.3					15.8	64.6	260.8	205.9	0.0	0.0
40.00		460.0	417.0					104.6	420.1	564.6	837.2	0.0	0.0
45.00		496.2	469.6					124.8	484.8	621.1	954.4	0.0	0.0
50.00		497.9	457.2					128.9	484.8	626.8	942.0	0.0	0.0
55.00		497.8	444.8					132.6	484.8	630.4	929.6	0.0	0.0
60.00		496.0	432.4					136.1	484.8	632.1	917.2	0.0	0.0
65.00		493.0	420.0					139.4	484.8	632.3	904.8	0.0	0.0
70.00	Bot - Section 3	419.2	407.6					142.5	484.8	561.7	892.4	0.0	0.0
73.50	Top - Section 2	233.6	505.2					101.5	339.3	335.1	844.6	0.0	0.0
74.71	Reinf Bottom	74.0	77.7					35.5	117.7	109.6	195.3	0.0	0.0
75.00		133.9	18.2					8.4	45.0	142.3	63.3	0.0	0.0
77.44	Reinf. Top	244.8	153.9					71.9	253.6	316.7	407.5	0.0	0.0
80.00		366.5	159.3					76.3	248.5	442.8	407.7	0.0	0.0
85.00		479.0	303.3					169.1	484.8	648.1	788.1	0.0	0.0
90.00		470.9	293.4					190.5	484.8	661.4	778.2	0.0	0.0
95.00		462.0	283.5					193.5	484.8	655.5	768.3	0.0	0.0
100.00		452.3	273.6					196.4	484.8	648.8	758.4	0.0	0.0
105.00	Appurtenance(s)	441.9	263.7	1,393.8	0.0	1,805.5	969.3	199.3	484.8	2,035.0	1,717.7	0.0	0.0
110.00	Top - Section 3	430.9	253.7					201.8	475.9	632.7	729.6	0.0	0.0
115.00		234.4	183.5					203.9	475.9	438.3	659.3	0.0	0.0
115.52	Reinf. Top	206.6	18.7					21.4	49.6	228.0	68.2	0.0	0.0
120.00	Appurtenance(s)	385.2	157.3	2,701.1	0.0	0.0	1,996.8	169.4	157.0	3,255.8	2,311.2	0.0	0.0
125.00		394.2	168.6					81.4	123.7	475.6	292.3	0.0	0.0
130.00		344.0	161.2					81.9	123.7	425.9	284.9	0.0	0.0
134.00	Appurtenance(s)	180.9	123.6	1,269.0	0.0	0.0	467.1	65.8	99.0	1,515.7	689.7	0.0	0.0
135.00		180.7	30.1					0.0	15.9	180.7	46.0	0.0	0.0
140.00		293.9	146.3					0.0	79.5	293.9	225.8	0.0	0.0
145.00		281.5	138.8					0.0	79.5	281.5	218.3	0.0	0.0
150.00	Appurtenance(s)	137.6	131.4	4,646.7	0.0	11,175.3	2,822.4	0.0	79.5	4,784.4	3,033.3	0.0	0.0
									Totals:	27,359.4	29,985.4	0.00	0.00

Site Number: 302475 Code: ANSI/TIA-222-G

Site Name: Sttn - Southington, CT Engineering Number:OAA740798_C4_06 2/26/2019 4:43:37 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 26 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	-29.91	-27.17	0.00	-2,682.17	0.00	2,682.17	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.713
5.00	-28.62	-26.68	0.00	-2,546.30	0.00	2,546.30	3,092.06	1,546.03	4,560.72	2,252.37	0.16	-0.30	0.694
10.00	-27.35	-26.19	0.00	-2,412.89	0.00	2,412.89	3,046.49	1,523.25	4,391.58	2,168.84	0.64	-0.61	0.675
15.00	-26.09	-25.70	0.00	-2,281.94	0.00	2,281.94	2,999.83	1,499.91	4,223.96	2,086.05	1.44	-0.91	0.655
20.00	-24.86	-25.21	0.00	-2,153.44	0.00	2,153.44	2,952.07	1,476.04	4,057.95	2,004.07	2.55	-1.21	0.635
25.00	-23.65	-24.71	0.00	-2,027.41	0.00	2,027.41	2,901.93	1,450.96	3,891.94	1,922.08	3.98	-1.51	0.615
30.00	-22.50	-24.34	0.00	-1,903.85	0.00	1,903.85	2,830.35	1,415.18	3,701.25	1,827.91	5.73	-1.82	0.598
31.50	-22.12	-24.11	0.00	-1,867.34	0.00	1,867.34	2,808.88	1,404.44	3,644.98	1,800.12	6.32	-1.91	0.593
35.00	-20.99	-23.84	0.00	-1,782.94	0.00	1,782.94	2,758.78	1,379.39	3,515.36	1,736.10	7.80	-2.12	0.573
35.67	-20.74	-23.62	0.00	-1,767.05	0.00	1,767.05	2,225.24	1,112.62	2,894.88	1,429.67	8.10	-2.16	0.652
40.00	-19.81	-23.13	0.00	-1,664.68	0.00	1,664.68	2,194.35	1,097.17	2,791.07	1,378.40	10.18	-2.42	0.628
45.00	-18.76	-22.56	0.00	-1,549.05	0.00	1,549.05	2,157.69	1,078.84	2,672.25	1,319.72	12.88	-2.73	0.599
50.00	-17.73	-21.99	0.00	-1,436.23	0.00	1,436.23	2,119.93	1,059.96	2,554.56	1,261.60	15.90	-3.04	0.570
55.00	-16.73	-21.39	0.00	-1,326.31	0.00	1,326.31	2,081.07	1,040.54	2,438.12	1,204.10	19.24	-3.34	0.541
60.00	-15.75	-20.79	0.00	-1,219.35	0.00	1,219.35	2,041.12	1,020.56	2,323.03	1,147.26	22.90	-3.64	0.511
65.00	-14.78	-20.17	0.00	-1,115.42	0.00	1,115.42	1,992.10	996.05	2,200.59	1,086.79	26.86	-3.93	0.483
70.00	-13.85	-19.60	0.00	-1,014.57	0.00	1,014.57	1,932.46	966.23	2,070.05	1,022.32	31.13	-4.21	0.456
73.50	-12.99	-19.24	0.00	-945.95	0.00	945.95	1,451.36	725.68	1,558.37	769.62	34.29	-4.41	0.499
74.71	-12.79	-19.12	0.00	-922.61	0.00	922.61	1,444.76	722.38	1,539.55	760.33	35.42	-4.47	0.489
75.00	-12.72	-18.98	0.00	-917.13	0.00	917.13	1,443.19	721.60	1,535.11	758.14	35.68	-4.49	0.266
77.44	-12.32	-18.65	0.00	-870.86	0.00	870.86	1,429.71	714.86	1,497.46	739.54	38.00	-4.57	0.252
77.44	-12.32	-18.65	0.00	-870.86	0.00	870.86	1,429.71	714.86	1,497.46	739.54	38.00	-4.57	0.378
80.00	-11.90	-18.21	0.00	-823.06	0.00	823.06	1,415.26	707.63	1,458.06	720.08	40.47	-4.64	0.360
85.00	-11.11	-17.54	0.00	-732.01	0.00	732.01	1,386.24	693.12	1,381.78	682.41	45.44	-4.86	0.325
90.00	-10.33	-16.85	0.00	-644.32	0.00	644.32	1,356.12	678.06	1,306.38	645.17	50.63	-5.06	0.291
95.00	-9.57	-16.16	0.00	-560.08	0.00	560.08	1,324.90	662.45	1,231.99	608.43	56.03	-5.25	0.257
100.00	-8.83	-15.46	0.00	-479.30	0.00	479.30	1,293.04	646.52	1,159.10	572.44	61.61	-5.42	0.224
105.00	-7.29	-13.29	0.00	-400.17	0.00	400.17	1,245.33	622.66	1,074.67	530.74	67.36	-5.57	0.192
110.00	-6.59	-12.61	0.00	-333.71	0.00	333.71	1,197.61	598.80	993.42	490.61	73.26	-5.71	0.164
110.00	-6.59	-12.61	0.00	-333.71	0.00	333.71	833.77	416.88	695.90	343.68	73.26	-5.71	0.189
115.00	-5.97	-12.11	0.00	-270.67	0.00	270.67	813.89	406.95	652.08	322.04	79.30	-5.83	0.154
115.52	-5.91	-11.88	0.00	-264.37	0.00	264.37	811.76	405.88	647.55	319.80	79.93	-5.84	0.151
115.52	-5.91	-11.88	0.00	-264.37	0.00	264.37	811.76	405.88	647.55	319.80	79.93	-5.84	0.835
120.00	-3.90	-8.43	0.00	-211.14	0.00	211.14	792.92	396.46	608.75	300.64	85.46	-5.94	0.708
125.00	-3.59	-7.96	0.00	-168.99	0.00	168.99	770.85	385.43	566.02	279.54	91.96	-6.48	0.610
130.00	-3.30	-7.53	0.00	-129.21	0.00	129.21	747.69	373.84	524.00	258.78	99.00	-6.97	0.504
134.00	-2.79	-5.95	0.00	-99.10	0.00	99.10	728.37	364.19	490.97	242.47	104.97	-7.31	0.413
135.00	-2.74	-5.77	0.00	-93.16	0.00	93.16	722.05	361.03	481.88	237.98	106.50	-7.39	0.396
140.00	-2.53	-5.46	0.00	-64.30	0.00	64.30	686.26	343.13	435.03	214.85	114.41	-7.73	0.303
145.00	-2.33	-5.16	0.00	-36.99	0.00	36.99	650.48	325.24	390.59	192.90	122.62	-7.98	0.196
150.00	0.00	-4.78	0.00	-11.18	0.00	11.18	614.69	307.34	348.53	172.13	131.05	-8.13	0.065

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 1.00 in Radial Ice — 26 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 Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		48.0	0.0					0.0	0.0	48.0	0.0	0.0	0.0
5.00		95.4	1,270.5					40.5	1,109.1	135.9	2,379.6	0.0	0.0
10.00		94.1	1,287.4					43.0	1,171.0	137.1	2,458.4	0.0	0.0
15.00		92.5	1,280.9					44.3	1,203.2	136.8	2,484.1	0.0	0.0
20.00		90.8	1,266.6					45.2	1,225.8	136.0	2,492.4	0.0	0.0
25.00		89.0	1,248.4					45.9	1,243.3	134.9	2,491.7	0.0	0.0
30.00		57.2	1,227.6					46.4	1,257.8	103.6	2,485.4	0.0	0.0
31.50	Bot - Section 2	44.7	365.0					14.1	379.8	58.9	744.9	0.0	0.0
35.00		37.7	1,307.6					33.9	890.3	71.5	2,197.9	0.0	0.0
35.67	Top - Section 1	45.9	247.2					6.6	170.2	52.5	417.4	0.0	0.0
40.00		86.4	933.6					43.8	1,110.8	130.2	2,044.4	0.0	0.0
45.00		93.6	1,056.5					52.7	1,290.7	146.2	2,347.2	0.0	0.0
50.00		94.3	1,034.3					54.7	1,299.5	149.0	2,333.8	0.0	0.0
55.00		94.7	1,011.4					56.7	1,307.5	151.3	2,318.9	0.0	0.0
60.00		94.8	987.9					58.5	1,314.9	153.3	2,302.8	0.0	0.0
65.00		94.7	964.0					60.2	1,321.7	154.9	2,285.7	0.0	0.0
70.00	Bot - Section 3	80.8	939.6					61.8	1,328.1	142.6	2,267.7	0.0	0.0
73.50	Top - Section 2	45.1	952.1					44.2	933.2	89.3	1,885.3	0.0	0.0
74.71	Reinf Bottom	14.3	199.7					15.5	324.2	29.8	524.0	0.0	0.0
75.00		25.9	47.0					3.7	99.6	29.6	146.6	0.0	0.0
77.44	Reinf. Top	47.5	396.1					31.4	675.4	78.9	1,071.5	0.0	0.0
80.00		71.4	410.7					33.4	687.3	104.8	1,098.0	0.0	0.0
85.00		93.7	781.9					69.3	1,345.1	163.0	2,127.0	0.0	0.0
90.00		92.7	759.6					73.8	1,350.2	166.5	2,109.8	0.0	0.0
95.00		91.5	737.1					75.2	1,355.0	166.7	2,092.1	0.0	0.0
100.00		90.2	714.3					76.6	1,359.7	166.8	2,074.0	0.0	0.0
105.00	Appurtenance(s)	88.7	691.3	422.6	0.0	449.0	3,079.7	77.9	1,364.1	589.3	5,135.1	0.0	0.0
110.00	Top - Section 3	87.1	668.2					79.2	1,265.3	166.4	1,933.4	0.0	0.0
115.00		47.6	564.3					80.5	1,268.8	128.1	1,833.1	0.0	0.0
115.52	Reinf. Top	42.3	58.2					8.5	132.4	50.8	190.5	0.0	0.0
120.00	Appurtenance(s)	79.2	487.0	689.1	0.0	0.0	7,124.1	67.6	752.8	835.9	8,363.9	0.0	0.0
125.00		81.8	523.7					29.8	458.9	111.6	982.6	0.0	0.0
130.00		72.0	503.2					30.2	460.2	102.3	963.4	0.0	0.0
134.00	Appurtenance(s)	39.4	388.6	316.0	0.0	0.0	1,267.0	24.5	369.1	379.9	2,024.8	0.0	0.0
135.00		46.1	95.8					0.0	21.2	46.1	117.0	0.0	0.0
140.00		75.6	461.7					0.0	106.0	75.6	567.7	0.0	0.0
145.00		73.4	440.8					0.0	106.0	73.4	546.8	0.0	0.0
150.00	Appurtenance(s)	36.1	419.8	1,324.1	0.0	2,806.2	11,448.4	0.0	106.0	1,360.2	11,974.1	0.0	0.0
								Totals:		6,957.54	81,813.2	0.00	0.00

Site Number: 302475 Code: ANSI/TIA-222-G

Site Name: Sttn - Southington, CT Engineering Number:OAA740798_C4_06 2/26/2019 4:43:42 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 26 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 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	-81.81	-6.97	0.00	-792.42	0.00	792.42	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.227
5.00	-79.42	-6.96	0.00	-757.55	0.00	757.55	3,092.06	1,546.03	4,560.72	2,252.37	0.05	-0.09	0.222
10.00	-76.95	-6.94	0.00	-722.75	0.00	722.75	3,046.49	1,523.25	4,391.58	2,168.84	0.19	-0.18	0.218
15.00	-74.45	-6.91	0.00	-688.05	0.00	688.05	2,999.83	1,499.91	4,223.96	2,086.05	0.43	-0.27	0.213
20.00	-71.95	-6.88	0.00	-653.48	0.00	653.48	2,952.07	1,476.04	4,057.95	2,004.07	0.76	-0.36	0.207
25.00	-69.45	-6.84	0.00	-619.09	0.00	619.09	2,901.93	1,450.96	3,891.94	1,922.08	1.19	-0.46	0.202
30.00	-66.96	-6.78	0.00	-584.91	0.00	584.91	2,830.35	1,415.18	3,701.25	1,827.91	1.72	-0.55	0.198
31.50	-66.21	-6.77	0.00	-574.73	0.00	574.73	2,808.88	1,404.44	3,644.98	1,800.12	1.89	-0.58	0.196
35.00	-64.01	-6.72	0.00	-551.03	0.00	551.03	2,758.78	1,379.39	3,515.36	1,736.10	2.34	-0.64	0.191
35.67	-63.58	-6.71	0.00	-546.55	0.00	546.55	2,225.24	1,112.62	2,894.88	1,429.67	2.43	-0.65	0.217
40.00	-61.53	-6.65	0.00	-517.46	0.00	517.46	2,194.35	1,097.17	2,791.07	1,378.40	3.06	-0.73	0.210
45.00	-59.18	-6.58	0.00	-484.20	0.00	484.20	2,157.69	1,078.84	2,672.25	1,319.72	3.88	-0.83	0.202
50.00	-56.83	-6.49	0.00	-451.32	0.00	451.32	2,119.93	1,059.96	2,554.56	1,261.60	4.80	-0.93	0.194
55.00	-54.51	-6.38	0.00	-418.89	0.00	418.89	2,081.07	1,040.54	2,438.12	1,204.10	5.83	-1.02	0.185
60.00	-52.20	-6.27	0.00	-386.97	0.00	386.97	2,041.12	1,020.56	2,323.03	1,147.26	6.95	-1.12	0.176
65.00	-49.91	-6.15	0.00	-355.60	0.00	355.60	1,992.10	996.05	2,200.59	1,086.79	8.17	-1.21	0.167
70.00	-47.63	-6.02	0.00	-324.84	0.00	324.84	1,932.46	966.23	2,070.05	1,022.32	9.48	-1.30	0.159
73.50	-45.75	-5.92	0.00	-303.76	0.00	303.76	1,451.36	725.68	1,558.37	769.62	10.46	-1.36	0.175
74.71	-45.22	-5.89	0.00	-296.57	0.00	296.57	1,444.76	722.38	1,539.55	760.33	10.81	-1.38	0.172
75.00	-45.07	-5.87	0.00	-294.88	0.00	294.88	1,443.19	721.60	1,535.11	758.14	10.89	-1.39	0.095
77.44	-44.00	-5.78	0.00	-280.57	0.00	280.57	1,429.71	714.86	1,497.46	739.54	11.60	-1.41	0.091
77.44	-44.00	-5.78	0.00	-280.57	0.00	280.57	1,429.71	714.86	1,497.46	739.54	11.60	-1.41	0.136
80.00	-42.90	-5.69	0.00	-265.75	0.00	265.75	1,415.26	707.63	1,458.06	720.08	12.37	-1.44	0.130
85.00	-40.77	-5.52	0.00	-237.31	0.00	237.31	1,386.24	693.12	1,381.78	682.41	13.91	-1.51	0.119
90.00	-38.66	-5.34	0.00	-209.72	0.00	209.72	1,356.12	678.06	1,306.38	645.17	15.53	-1.57	0.107
95.00	-36.57	-5.15	0.00	-183.03	0.00	183.03	1,324.90	662.45	1,231.99	608.43	17.21	-1.63	0.096
100.00	-34.50	-4.96	0.00	-157.29	0.00	157.29	1,293.04	646.52	1,159.10	572.44	18.95	-1.69	0.085
105.00	-29.38	-4.24	0.00	-132.06	0.00	132.06	1,245.33	622.66	1,074.67	530.74	20.75	-1.74	0.073
110.00	-27.45	-4.03	0.00	-110.88	0.00	110.88	1,197.61	598.80	993.42	490.61	22.60	-1.79	0.064
110.00	-27.45	-4.03	0.00	-110.88	0.00	110.88	833.77	416.88	695.90	343.68	22.60	-1.79	0.074
115.00	-25.62	-3.86	0.00	-90.72	0.00	90.72	813.89	406.95	652.08	322.04	24.49	-1.83	0.062
115.52	-25.43	-3.81	0.00	-88.71	0.00	88.71	811.76	405.88	647.55	319.80	24.69	-1.83	0.061
115.52	-25.43	-3.81	0.00	-88.71	0.00	88.71	811.76	405.88	647.55	319.80	24.69	-1.83	0.309
120.00	-17.09	-2.74	0.00	-71.66	0.00	71.66	792.92	396.46	608.75	300.64	26.42	-1.86	0.260
125.00	-16.11	-2.64	0.00	-57.99	0.00	57.99	770.85	385.43	566.02	279.54	28.48	-2.05	0.228
130.00	-15.14	-2.54	0.00	-44.79	0.00	44.79	747.69	373.84	524.00	258.78	30.71	-2.22	0.193
134.00	-13.13	-2.10	0.00	-34.64	0.00	34.64	728.37	364.19	490.97	242.47	32.62	-2.33	0.161
135.00	-13.01	-2.06	0.00	-32.54	0.00	32.54	722.05	361.03	481.88	237.98	33.11	-2.36	0.155
140.00	-12.45	-1.98	0.00	-22.23	0.00	22.23	686.26	343.13	435.03	214.85	35.65	-2.48	0.122
145.00	-11.90	-1.90	0.00	-12.31	0.00	12.31	650.48	325.24	390.59	192.90	38.30	-2.57	0.082
150.00	0.00	-1.36	0.00	-2.81	0.00	2.81	614.69	307.34	348.53	172.13	41.02	-2.61	0.016

Load Case: 1.0D + 1.0W Serviceability 60 mph 25 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

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	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		63.9	0.0					0.0	0.0	63.9	0.0	0.0	0.0
5.00		126.3	744.2					27.1	538.6	153.4	1,282.8	0.0	0.0
10.00		123.5	727.7					27.1	538.6	150.6	1,266.3	0.0	0.0
15.00		120.7	711.1					27.1	538.6	147.8	1,249.8	0.0	0.0
20.00		117.9	694.6					27.1	538.6	145.0	1,233.3	0.0	0.0
25.00		115.1	678.1					27.1	538.6	142.2	1,216.7	0.0	0.0
30.00		73.8	661.6					27.1	538.6	100.9	1,200.2	0.0	0.0
31.50	Bot - Section 2	57.5	195.2					8.2	161.6	65.7	356.8	0.0	0.0
35.00		48.4	832.9					19.6	377.1	68.0	1,209.9	0.0	0.0
35.67	Top - Section 1	58.8	157.0					3.8	71.8	62.6	228.8	0.0	0.0
40.00		110.4	463.3					25.1	466.8	135.5	930.2	0.0	0.0
45.00		119.1	521.8					30.0	538.6	149.1	1,060.4	0.0	0.0
50.00		119.5	508.0					30.9	538.6	150.4	1,046.7	0.0	0.0
55.00		119.5	494.2					31.8	538.6	151.3	1,032.9	0.0	0.0
60.00		119.1	480.5					32.7	538.6	151.7	1,019.1	0.0	0.0
65.00		118.3	466.7					33.5	538.6	151.8	1,005.4	0.0	0.0
70.00	Bot - Section 3	100.6	452.9					34.2	538.6	134.8	991.6	0.0	0.0
73.50	Top - Section 2	56.1	561.3					24.4	377.1	80.4	938.4	0.0	0.0
74.71	Reinf Bottom	17.8	86.3					8.5	130.7	26.3	217.0	0.0	0.0
75.00		32.1	20.3					2.0	50.0	34.2	70.3	0.0	0.0
77.44	Reinf. Top	58.8	171.0					17.3	281.7	76.0	452.8	0.0	0.0
80.00		88.0	177.0					18.3	276.1	106.3	453.0	0.0	0.0
85.00		115.0	337.0					40.6	538.6	155.6	875.7	0.0	0.0
90.00		113.0	326.0					45.7	538.6	158.7	864.6	0.0	0.0
95.00		110.9	315.0					46.4	538.6	157.3	853.6	0.0	0.0
100.00		108.6	304.0					47.1	538.6	155.7	842.6	0.0	0.0
105.00	Appurtenance(s)	106.1	293.0	334.5	0.0	433.4	1,077.0	47.8	538.6	488.4	1,908.6	0.0	0.0
110.00	Top - Section 3	103.4	281.9					48.5	528.7	151.9	810.7	0.0	0.0
115.00		56.3	203.8					49.1	528.7	105.4	732.6	0.0	0.0
115.52	Reinf. Top	49.6	20.8					5.2	55.1	54.7	75.8	0.0	0.0
120.00	Appurtenance(s)	92.5	174.8	648.3	0.0	0.0	2,218.7	40.9	174.5	781.7	2,568.0	0.0	0.0
125.00		94.6	187.3					20.0	137.5	114.6	324.8	0.0	0.0
130.00		82.6	179.1					20.2	137.5	102.8	316.6	0.0	0.0
134.00	Appurtenance(s)	43.4	137.3	304.6	0.0	0.0	519.0	16.3	110.0	364.3	766.3	0.0	0.0
135.00		43.4	33.5					0.0	17.7	43.4	51.2	0.0	0.0
140.00		70.5	162.5					0.0	88.3	70.5	250.8	0.0	0.0
145.00		67.6	154.3					0.0	88.3	67.6	242.6	0.0	0.0
150.00	Appurtenance(s)	33.0	146.0	1,115.3	0.0	2,682.3	3,136.0	0.0	88.3	1,148.4	3,370.3	0.0	0.0
									Totals:	6,568.91	33,317.1	0.00	0.00

Site Number: 302475 Code: ANSI/TIA-222-G

Site Name: Sttn - Southington, CT Engineering Number:OAA740798_C4_06 2/26/2019 4:43:47 PM

Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W Serviceability 60 mph 25 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	-33.31	-6.53	0.00	-648.77	0.00	648.77	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.178
5.00	-32.02	-6.41	0.00	-616.14	0.00	616.14	3,092.06	1,546.03	4,560.72	2,252.37	0.04	-0.07	0.174
10.00	-30.75	-6.30	0.00	-584.07	0.00	584.07	3,046.49	1,523.25	4,391.58	2,168.84	0.16	-0.15	0.169
15.00	-29.49	-6.19	0.00	-552.58	0.00	552.58	2,999.83	1,499.91	4,223.96	2,086.05	0.35	-0.22	0.164
20.00	-28.25	-6.07	0.00	-521.65	0.00	521.65	2,952.07	1,476.04	4,057.95	2,004.07	0.62	-0.29	0.159
25.00	-27.03	-5.96	0.00	-491.30	0.00	491.30	2,901.93	1,450.96	3,891.94	1,922.08	0.96	-0.37	0.154
30.00	-25.82	-5.87	0.00	-461.52	0.00	461.52	2,830.35	1,415.18	3,701.25	1,827.91	1.39	-0.44	0.150
31.50	-25.46	-5.82	0.00	-452.71	0.00	452.71	2,808.88	1,404.44	3,644.98	1,800.12	1.53	-0.46	0.148
35.00	-24.25	-5.75	0.00	-432.36	0.00	432.36	2,758.78	1,379.39	3,515.36	1,736.10	1.89	-0.51	0.143
35.67	-24.02	-5.70	0.00	-428.52	0.00	428.52	2,225.24	1,112.62	2,894.88	1,429.67	1.96	-0.52	0.163
40.00	-23.08	-5.58	0.00	-403.82	0.00	403.82	2,194.35	1,097.17	2,791.07	1,378.40	2.46	-0.59	0.157
45.00	-22.02	-5.45	0.00	-375.89	0.00	375.89	2,157.69	1,078.84	2,672.25	1,319.72	3.12	-0.66	0.150
50.00	-20.97	-5.32	0.00	-348.63	0.00	348.63	2,119.93	1,059.96	2,554.56	1,261.60	3.85	-0.74	0.143
55.00	-19.93	-5.18	0.00	-322.04	0.00	322.04	2,081.07	1,040.54	2,438.12	1,204.10	4.66	-0.81	0.136
60.00	-18.91	-5.03	0.00	-296.16	0.00	296.16	2,041.12	1,020.56	2,323.03	1,147.26	5.55	-0.88	0.128
65.00	-17.90	-4.89	0.00	-270.99	0.00	270.99	1,992.10	996.05	2,200.59	1,086.79	6.51	-0.95	0.121
70.00	-16.90	-4.75	0.00	-246.55	0.00	246.55	1,932.46	966.23	2,070.05	1,022.32	7.55	-1.02	0.115
73.50	-15.96	-4.66	0.00	-229.91	0.00	229.91	1,451.36	725.68	1,558.37	769.62	8.31	-1.07	0.126
74.71	-15.75	-4.64	0.00	-224.25	0.00	224.25	1,444.76	722.38	1,539.55	760.33	8.59	-1.08	0.123
75.00	-15.68	-4.60	0.00	-222.93	0.00	222.93	1,443.19	721.60	1,535.11	758.14	8.65	-1.09	0.068
77.44	-15.22	-4.52	0.00	-211.70	0.00	211.70	1,429.71	714.86	1,497.46	739.54	9.21	-1.11	0.064
77.44	-15.22	-4.52	0.00	-211.70	0.00	211.70	1,429.71	714.86	1,497.46	739.54	9.21	-1.11	0.096
80.00	-14.77	-4.42	0.00	-200.11	0.00	200.11	1,415.26	707.63	1,458.06	720.08	9.81	-1.13	0.092
85.00	-13.89	-4.26	0.00	-178.01	0.00	178.01	1,386.24	693.12	1,381.78	682.41	11.02	-1.18	0.083
90.00	-13.03	-4.09	0.00	-156.73	0.00	156.73	1,356.12	678.06	1,306.38	645.17	12.28	-1.23	0.074
95.00	-12.18	-3.93	0.00	-136.27	0.00	136.27	1,324.90	662.45	1,231.99	608.43	13.59	-1.27	0.066
100.00	-11.33	-3.76	0.00	-116.64	0.00	116.64	1,293.04	646.52	1,159.10	572.44	14.95	-1.31	0.058
105.00	-9.44	-3.23	0.00	-97.42	0.00	97.42	1,245.33	622.66	1,074.67	530.74	16.34	-1.35	0.049
110.00	-8.63	-3.06	0.00	-81.26	0.00	81.26	1,197.61	598.80	993.42	490.61	17.78	-1.39	0.043
110.00	-8.63	-3.06	0.00	-81.26	0.00	81.26	833.77	416.88	695.90	343.68	17.78	-1.39	0.049
115.00	-7.90	-2.94	0.00	-65.94	0.00	65.94	813.89	406.95	652.08	322.04	19.25	-1.41	0.040
115.52	-7.82	-2.89	0.00	-64.40	0.00	64.40	811.76	405.88	647.55	319.80	19.40	-1.42	0.040
115.52	-7.82	-2.89	0.00	-64.40	0.00	64.40	811.76	405.88	647.55	319.80	19.40	-1.42	0.211
120.00	-5.27	-2.05	0.00	-51.46	0.00	51.46	792.92	396.46	608.75	300.64	20.74	-1.44	0.178
125.00	-4.94	-1.94	0.00	-41.21	0.00	41.21	770.85	385.43	566.02	279.54	22.32	-1.57	0.154
130.00	-4.63	-1.83	0.00	-31.51	0.00	31.51	747.69	373.84	524.00	258.78	24.04	-1.69	0.128
134.00	-3.87	-1.45	0.00	-24.17	0.00	24.17	728.37	364.19	490.97	242.47	25.49	-1.78	0.105
135.00	-3.82	-1.41	0.00	-22.72	0.00	22.72	722.05	361.03	481.88	237.98	25.87	-1.79	0.101
140.00	-3.57	-1.34	0.00	-15.68	0.00	15.68	686.26	343.13	435.03	214.85	27.79	-1.88	0.078
145.00	-3.33	-1.26	0.00	-9.00	0.00	9.00	650.48	325.24	390.59	192.90	29.79	-1.94	0.052
150.00	0.00	-1.15	0.00	-2.68	0.00	2.68	614.69	307.34	348.53	172.13	31.85	-1.97	0.016

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
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):	2.66	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	2.00	
Total Unfactored Dead Load:	33.32	k
Seismic Base Shear (E):	1.00	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)
37	147.50	234	5,098	0.020	20	290
36	142.50	243	4,926	0.020	20	301
35	137.50	251	4,742	0.019	19	311
34	134.50	51	925	0.004	4	63
33	132.00	247	4,309	0.017	17	306
32	127.50	317	5,146	0.020	20	392
31	122.50	325	4,874	0.019	19	403
30	117.76	349	4,844	0.019	19	433
29	115.26	76	1,007	0.004	4	94
28	112.50	733	9,272	0.037	37	908
27	107.50	811	9,369	0.037	37	1,005
26	102.50	832	8,737	0.035	35	1,031
25	97.50	843	8,010	0.032	32	1,044
24	92.50	854	7,304	0.029	29	1,058
23	87.50	865	6,620	0.026	26	1,072
22	82.50	876	5,960	0.024	24	1,085
21	78.72	453	2,807	0.011	11	561
20	76.22	453	2,630	0.010	10	561
19	74.86	70	394	0.002	2	87
18	74.11	217	1,192	0.005	5	269
17	71.75	938	4,831	0.019	19	1,163
16	67.50	992	4,518	0.018	18	1,229
15	62.50	1,005	3,927	0.016	16	1,246

14	57.50	1,019	3,369	0.013	13	1,263
13	52.50	1,033	2,847	0.011	11	1,280
12	47.50	1,047	2,362	0.009	9	1,297
11	42.50	1,060	1,915	0.008	8	1,314
10	37.83	930	1,331	0.005	5	1,153
9	35.33	229	286	0.001	1	284
8	33.25	1,210	1,338	0.005	5	1,499
7	30.75	357	337	0.001	1	442
6	27.50	1,200	908	0.004	4	1,487
5	22.50	1,217	616	0.002	2	1,508
4	17.50	1,233	378	0.002	2	1,528
3	12.50	1,250	195	0.001	1	1,549
2	7.50	1,266	71	0.000	0	1,569
1	2.50	1,283	8	0.000	0	1,590
CCI TPX-070821	150.00	45	1,013	0.004	4	56
Kaelus DBCT108F1V92-	150.00	83	1,876	0.007	7	103
Raycap DC6-48-60-18-	150.00	40	900	0.004	4	50
Raycap DC6-48-60-18-	150.00	32	715	0.003	3	39
CCI DTMABP7819VG12A	150.00	58	1,296	0.005	5	71
Ericsson RRUS 4426 B	150.00	145	3,267	0.013	13	180
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	223
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	223
Ericsson RRUS-11 (50	150.00	150	3,375	0.013	13	186
Ericsson RRUS 32 B2	150.00	159	3,577	0.014	14	197
10' Omni	150.00	25	563	0.002	2	31
Ericsson RRUS-32 (77	150.00	231	5,198	0.021	21	286
Powerwave Allgon 777	150.00	105	2,363	0.009	9	130
KMW AM-X-CD-16-65-00	150.00	97	2,183	0.009	9	120
Quintel QS66512-3 (1	150.00	336	7,560	0.030	30	416
Andrew SBNH-1D6565C	150.00	61	1,368	0.005	5	75
Kathrein Scala 80010	150.00	195	4,392	0.017	17	242
Round Sector Frame	150.00	900	20,250	0.081	81	1,115
Kathrein Scala 80010	150.00	115	2,579	0.010	10	142
Kathrein Smart Bias	134.00	10	178	0.001	1	12
Site-Pro UWS6-NP	134.00	276	4,956	0.020	20	342
RFS APXV18-206517S-C	134.00	79	1,422	0.006	6	98
Andrew LNX-6515DS-VT	134.00	154	2,763	0.011	11	191
DragonWave Horizon C	120.00	11	153	0.001	1	13
12" x 12" Junction B	120.00	10	144	0.001	1	12
Alcatel-Lucent RRH2x	120.00	317	4,571	0.018	18	393
Nokia FZHN Flexi RRH	120.00	132	1,905	0.008	8	164
Alcatel-Lucent 1900	120.00	180	2,592	0.010	10	223
RFS APXVTM14-ALU-I20	120.00	169	2,428	0.010	10	209
Side Arms	120.00	1,120	16,128	0.064	64	1,388
DragonWave A-ANT-11G	120.00	48	685	0.003	3	59
Commscope NNVV-65B-R	120.00	232	3,344	0.013	13	288
dB Systems 5100A	105.00	21	232	0.001	1	26
VertexRSI 101V VPD	105.00	4	44	0.000	0	5
dB Systems 5100A-D	105.00	152	1,676	0.007	7	188
Round Side Arm	105.00	450	4,961	0.020	20	558
Round Side Arm	105.00	450	4,961	0.020	20	558
		33,317	251,106	1.000	1,000	41,288

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)
37	147.50	234	5,098	0.020	20	202
36	142.50	243	4,926	0.020	20	209
35	137.50	251	4,742	0.019	19	216

34	134.50	51	925	0.004	4	44
33	132.00	247	4,309	0.017	17	213
32	127.50	317	5,146	0.020	20	272
31	122.50	325	4,874	0.019	19	280
30	117.76	349	4,844	0.019	19	301
29	115.26	76	1,007	0.004	4	65
28	112.50	733	9,272	0.037	37	631
27	107.50	811	9,369	0.037	37	698
26	102.50	832	8,737	0.035	35	716
25	97.50	843	8,010	0.032	32	725
24	92.50	854	7,304	0.029	29	735
23	87.50	865	6,620	0.026	26	744
22	82.50	876	5,960	0.024	24	754
21	78.72	453	2,807	0.011	11	390
20	76.22	453	2,630	0.010	10	390
19	74.86	70	394	0.002	2	60
18	74.11	217	1,192	0.005	5	187
17	71.75	938	4,831	0.019	19	808
16	67.50	992	4,518	0.018	18	854
15	62.50	1,005	3,927	0.016	16	865
14	57.50	1,019	3,369	0.013	13	877
13	52.50	1,033	2,847	0.011	11	889
12	47.50	1,047	2,362	0.009	9	901
11	42.50	1,060	1,915	0.008	8	913
10	37.83	930	1,331	0.005	5	801
9	35.33	229	286	0.001	1	197
8	33.25	1,210	1,338	0.005	5	1,041
7	30.75	357	337	0.001	1	307
6	27.50	1,200	908	0.004	4	1,033
5	22.50	1,217	616	0.002	2	1,047
4	17.50	1,233	378	0.002	2	1,062
3	12.50	1,250	195	0.001	1	1,076
2	7.50	1,266	71	0.000	0	1,090
1	2.50	1,283	8	0.000	0	1,104
CCI TPX-070821	150.00	45	1,013	0.004	4	39
Kaelus DBCT108F1V92-	150.00	83	1,876	0.007	7	72
Raycap DC6-48-60-18-	150.00	40	900	0.004	4	34
Raycap DC6-48-60-18-	150.00	32	715	0.003	3	27
CCI DTMABP7819VG12A	150.00	58	1,296	0.005	5	50
Ericsson RRUS 4426 B	150.00	145	3,267	0.013	13	125
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	155
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	155
Ericsson RRUS-11 (50	150.00	150	3,375	0.013	13	129
Ericsson RRUS 32 B2	150.00	159	3,577	0.014	14	137
10' Omni	150.00	25	563	0.002	2	22
Ericsson RRUS-32 (77	150.00	231	5,198	0.021	21	199
Powerwave Allgon 777	150.00	105	2,363	0.009	9	90
KMW AM-X-CD-16-65-00	150.00	97	2,183	0.009	9	83
Quintel QS66512-3 (1	150.00	336	7,560	0.030	30	289
Andrew SBNH-1D6565C	150.00	61	1,368	0.005	5	52
Kathrein Scala 80010	150.00	195	4,392	0.017	17	168
Round Sector Frame	150.00	900	20,250	0.081	81	775
Kathrein Scala 80010	150.00	115	2,579	0.010	10	99
Kathrein Smart Bias	134.00	10	178	0.001	1	9
Site-Pro UWS6-NP	134.00	276	4,956	0.020	20	238
RFS APXV18-206517S-C	134.00	79	1,422	0.006	6	68
Andrew LNX-6515DS-VT	134.00	154	2,763	0.011	11	132
DragonWave Horizon C	120.00	11	153	0.001	1	9
12" x 12" Junction B	120.00	10	144	0.001	1	9
Alcatel-Lucent RRH2x	120.00	317	4,571	0.018	18	273
Nokia FZHN Flexi RRH	120.00	132	1,905	0.008	8	114
Alcatel-Lucent 1900	120.00	180	2,592	0.010	10	155
RFS APXVTM14-ALU-I20	120.00	169	2,428	0.010	10	145
Side Arms	120.00	1,120	16,128	0.064	64	964

DragonWave A-ANT-11G	120.00	48	685	0.003	3	41
Commscope NNVV-65B-R	120.00	232	3,344	0.013	13	200
dB Systems 5100A	105.00	21	232	0.001	1	18
VertexRSI 101V VPD	105.00	4	44	0.000	0	3
dB Systems 5100A-D	105.00	152	1,676	0.007	7	131
Round Side Arm	105.00	450	4,961	0.020	20	387
Round Side Arm	105.00	450	4,961	0.020	20	387
		33,317	251,106	1.000	1,000	28,678

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	-39.70	-1.00	0.00	-122.53	0.00	122.53	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.041
5.00	-38.13	-1.01	0.00	-117.51	0.00	117.51	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.01	0.040
10.00	-36.58	-1.02	0.00	-112.45	0.00	112.45	3,046.49	1,523.25	4,391.58	2,168.84	0.03	-0.03	0.039
15.00	-35.05	-1.03	0.00	-107.35	0.00	107.35	2,999.83	1,499.91	4,223.96	2,086.05	0.07	-0.04	0.038
20.00	-33.54	-1.03	0.00	-102.22	0.00	102.22	2,952.07	1,476.04	4,057.95	2,004.07	0.12	-0.06	0.038
25.00	-32.06	-1.03	0.00	-97.07	0.00	97.07	2,901.93	1,450.96	3,891.94	1,922.08	0.18	-0.07	0.037
30.00	-31.61	-1.04	0.00	-91.90	0.00	91.90	2,830.35	1,415.18	3,701.25	1,827.91	0.27	-0.09	0.036
31.50	-30.11	-1.03	0.00	-90.35	0.00	90.35	2,808.88	1,404.44	3,644.98	1,800.12	0.29	-0.09	0.036
35.00	-29.83	-1.03	0.00	-86.73	0.00	86.73	2,758.78	1,379.39	3,515.36	1,736.10	0.36	-0.10	0.035
35.67	-28.68	-1.03	0.00	-86.04	0.00	86.04	2,225.24	1,112.62	2,894.88	1,429.67	0.38	-0.10	0.039
40.00	-27.36	-1.03	0.00	-81.57	0.00	81.57	2,194.35	1,097.17	2,791.07	1,378.40	0.48	-0.11	0.038
45.00	-26.07	-1.02	0.00	-76.44	0.00	76.44	2,157.69	1,078.84	2,672.25	1,319.72	0.61	-0.13	0.037
50.00	-24.79	-1.01	0.00	-71.33	0.00	71.33	2,119.93	1,059.96	2,554.56	1,261.60	0.75	-0.15	0.035
55.00	-23.52	-1.00	0.00	-66.25	0.00	66.25	2,081.07	1,040.54	2,438.12	1,204.10	0.91	-0.16	0.033
60.00	-22.28	-0.99	0.00	-61.23	0.00	61.23	2,041.12	1,020.56	2,323.03	1,147.26	1.09	-0.18	0.032
65.00	-21.05	-0.97	0.00	-56.28	0.00	56.28	1,992.10	996.05	2,200.59	1,086.79	1.28	-0.19	0.030
70.00	-19.88	-0.95	0.00	-51.41	0.00	51.41	1,932.46	966.23	2,070.05	1,022.32	1.48	-0.20	0.029
73.50	-19.62	-0.95	0.00	-48.07	0.00	48.07	1,451.36	725.68	1,558.37	769.62	1.64	-0.21	0.032
74.71	-19.53	-0.95	0.00	-46.92	0.00	46.92	1,444.76	722.38	1,539.55	760.33	1.69	-0.22	0.032
75.00	-18.97	-0.94	0.00	-46.64	0.00	46.64	1,443.19	721.60	1,535.11	758.14	1.70	-0.22	0.018
77.44	-18.41	-0.93	0.00	-44.36	0.00	44.36	1,429.71	714.86	1,497.46	739.54	1.82	-0.22	0.017
77.44	-18.41	-0.93	0.00	-44.36	0.00	44.36	1,429.71	714.86	1,497.46	739.54	1.82	-0.22	0.026
80.00	-17.32	-0.90	0.00	-41.98	0.00	41.98	1,415.26	707.63	1,458.06	720.08	1.94	-0.23	0.024
85.00	-16.25	-0.87	0.00	-37.48	0.00	37.48	1,386.24	693.12	1,381.78	682.41	2.18	-0.24	0.022
90.00	-15.19	-0.84	0.00	-33.11	0.00	33.11	1,356.12	678.06	1,306.38	645.17	2.43	-0.25	0.020
95.00	-14.15	-0.81	0.00	-28.90	0.00	28.90	1,324.90	662.45	1,231.99	608.43	2.70	-0.26	0.018
100.00	-13.12	-0.77	0.00	-24.86	0.00	24.86	1,293.04	646.52	1,159.10	572.44	2.97	-0.27	0.016
105.00	-10.78	-0.68	0.00	-21.01	0.00	21.01	1,245.33	622.66	1,074.67	530.74	3.26	-0.27	0.014
110.00	-9.87	-0.64	0.00	-17.63	0.00	17.63	1,197.61	598.80	993.42	490.61	3.55	-0.28	0.012
110.00	-9.87	-0.64	0.00	-17.63	0.00	17.63	833.77	416.88	695.90	343.68	3.55	-0.28	0.014
115.00	-9.78	-0.63	0.00	-14.45	0.00	14.45	813.89	406.95	652.08	322.04	3.84	-0.29	0.013
115.52	-9.34	-0.61	0.00	-14.12	0.00	14.12	811.76	405.88	647.55	319.80	3.88	-0.29	0.012
115.52	-9.34	-0.61	0.00	-14.12	0.00	14.12	811.76	405.88	647.55	319.80	3.88	-0.29	0.056
120.00	-6.19	-0.45	0.00	-11.38	0.00	11.38	792.92	396.46	608.75	300.64	4.15	-0.29	0.046
125.00	-5.80	-0.43	0.00	-9.13	0.00	9.13	770.85	385.43	566.02	279.54	4.47	-0.32	0.040
130.00	-5.49	-0.41	0.00	-6.97	0.00	6.97	747.69	373.84	524.00	258.78	4.82	-0.35	0.034
134.00	-4.79	-0.37	0.00	-5.31	0.00	5.31	728.37	364.19	490.97	242.47	5.13	-0.37	0.028
135.00	-4.48	-0.35	0.00	-4.94	0.00	4.94	722.05	361.03	481.88	237.98	5.20	-0.37	0.027
140.00	-4.17	-0.33	0.00	-3.19	0.00	3.19	686.26	343.13	435.03	214.85	5.60	-0.39	0.021
145.00	-3.88	-0.31	0.00	-1.54	0.00	1.54	650.48	325.24	390.59	192.90	6.02	-0.40	0.014
150.00	0.00	-0.28	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	6.44	-0.41	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELFM **Seismic (Reduced DL) 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	-27.57	-1.00	0.00	-120.18	0.00	120.18	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.038
5.00	-26.48	-1.01	0.00	-115.17	0.00	115.17	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.01	0.037
10.00	-25.41	-1.01	0.00	-110.13	0.00	110.13	3,046.49	1,523.25	4,391.58	2,168.84	0.03	-0.03	0.036
15.00	-24.35	-1.02	0.00	-105.07	0.00	105.07	2,999.83	1,499.91	4,223.96	2,086.05	0.06	-0.04	0.035
20.00	-23.30	-1.02	0.00	-99.99	0.00	99.99	2,952.07	1,476.04	4,057.95	2,004.07	0.12	-0.06	0.035
25.00	-22.26	-1.02	0.00	-94.89	0.00	94.89	2,901.93	1,450.96	3,891.94	1,922.08	0.18	-0.07	0.034
30.00	-21.96	-1.02	0.00	-89.80	0.00	89.80	2,830.35	1,415.18	3,701.25	1,827.91	0.26	-0.08	0.033
31.50	-20.92	-1.02	0.00	-88.26	0.00	88.26	2,808.88	1,404.44	3,644.98	1,800.12	0.29	-0.09	0.033
35.00	-20.72	-1.02	0.00	-84.70	0.00	84.70	2,758.78	1,379.39	3,515.36	1,736.10	0.36	-0.10	0.032
35.67	-19.92	-1.01	0.00	-84.02	0.00	84.02	2,225.24	1,112.62	2,894.88	1,429.67	0.37	-0.10	0.036
40.00	-19.00	-1.01	0.00	-79.63	0.00	79.63	2,194.35	1,097.17	2,791.07	1,378.40	0.47	-0.11	0.035
45.00	-18.10	-1.00	0.00	-74.59	0.00	74.59	2,157.69	1,078.84	2,672.25	1,319.72	0.59	-0.13	0.034
50.00	-17.21	-0.99	0.00	-69.58	0.00	69.58	2,119.93	1,059.96	2,554.56	1,261.60	0.73	-0.14	0.032
55.00	-16.34	-0.98	0.00	-64.61	0.00	64.61	2,081.07	1,040.54	2,438.12	1,204.10	0.89	-0.16	0.031
60.00	-15.47	-0.97	0.00	-59.70	0.00	59.70	2,041.12	1,020.56	2,323.03	1,147.26	1.06	-0.17	0.029
65.00	-14.62	-0.95	0.00	-54.86	0.00	54.86	1,992.10	996.05	2,200.59	1,086.79	1.25	-0.19	0.028
70.00	-13.81	-0.93	0.00	-50.11	0.00	50.11	1,932.46	966.23	2,070.05	1,022.32	1.45	-0.20	0.026
73.50	-13.62	-0.93	0.00	-46.85	0.00	46.85	1,451.36	725.68	1,558.37	769.62	1.60	-0.21	0.029
74.71	-13.56	-0.93	0.00	-45.72	0.00	45.72	1,444.76	722.38	1,539.55	760.33	1.65	-0.21	0.029
75.00	-13.17	-0.92	0.00	-45.46	0.00	45.46	1,443.19	721.60	1,535.11	758.14	1.67	-0.21	0.016
77.44	-12.78	-0.90	0.00	-43.23	0.00	43.23	1,429.71	714.86	1,497.46	739.54	1.78	-0.22	0.015
77.44	-12.78	-0.90	0.00	-43.23	0.00	43.23	1,429.71	714.86	1,497.46	739.54	1.78	-0.22	0.023
80.00	-12.03	-0.88	0.00	-40.91	0.00	40.91	1,415.26	707.63	1,458.06	720.08	1.89	-0.22	0.022
85.00	-11.28	-0.85	0.00	-36.52	0.00	36.52	1,386.24	693.12	1,381.78	682.41	2.13	-0.23	0.020
90.00	-10.55	-0.82	0.00	-32.27	0.00	32.27	1,356.12	678.06	1,306.38	645.17	2.38	-0.24	0.018
95.00	-9.82	-0.79	0.00	-28.16	0.00	28.16	1,324.90	662.45	1,231.99	608.43	2.64	-0.25	0.016
100.00	-9.11	-0.75	0.00	-24.23	0.00	24.23	1,293.04	646.52	1,159.10	572.44	2.91	-0.26	0.014
105.00	-7.48	-0.66	0.00	-20.47	0.00	20.47	1,245.33	622.66	1,074.67	530.74	3.18	-0.27	0.012
110.00	-6.85	-0.62	0.00	-17.17	0.00	17.17	1,197.61	598.80	993.42	490.61	3.47	-0.27	0.011
110.00	-6.85	-0.62	0.00	-17.17	0.00	17.17	833.77	416.88	695.90	343.68	3.47	-0.27	0.013
115.00	-6.79	-0.62	0.00	-14.07	0.00	14.07	813.89	406.95	652.08	322.04	3.76	-0.28	0.011
115.52	-6.49	-0.60	0.00	-13.75	0.00	13.75	811.76	405.88	647.55	319.80	3.79	-0.28	0.011
115.52	-6.49	-0.60	0.00	-13.75	0.00	13.75	811.76	405.88	647.55	319.80	3.79	-0.28	0.051
120.00	-4.30	-0.44	0.00	-11.08	0.00	11.08	792.92	396.46	608.75	300.64	4.05	-0.29	0.042
125.00	-4.03	-0.42	0.00	-8.88	0.00	8.88	770.85	385.43	566.02	279.54	4.37	-0.31	0.037
130.00	-3.81	-0.40	0.00	-6.78	0.00	6.78	747.69	373.84	524.00	258.78	4.71	-0.34	0.031
134.00	-3.32	-0.36	0.00	-5.16	0.00	5.16	728.37	364.19	490.97	242.47	5.01	-0.36	0.026
135.00	-3.11	-0.34	0.00	-4.80	0.00	4.80	722.05	361.03	481.88	237.98	5.08	-0.36	0.024
140.00	-2.90	-0.32	0.00	-3.10	0.00	3.10	686.26	343.13	435.03	214.85	5.47	-0.38	0.019
145.00	-2.70	-0.30	0.00	-1.50	0.00	1.50	650.48	325.24	390.59	192.90	5.88	-0.39	0.012
150.00	0.00	-0.28	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	6.29	-0.40	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):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
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}):	0.20
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.66
Redundancy Factor (p):	1.00

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)
37	147.50	234	1.828	1.667	1.025	0.331	52	290
36	142.50	243	1.706	1.144	0.823	0.256	41	301
35	137.50	251	1.588	0.742	0.654	0.189	32	311
34	134.50	51	1.520	0.550	0.566	0.154	5	63
33	132.00	247	1.464	0.415	0.501	0.126	21	306
32	127.50	317	1.366	0.222	0.397	0.082	17	392
31	122.50	325	1.261	0.069	0.302	0.040	9	403
30	117.76	349	1.165	-0.026	0.229	0.007	2	433
29	115.26	76	1.116	-0.061	0.197	-0.007	0	94
28	112.50	733	1.063	-0.088	0.165	-0.021	-10	908
27	107.50	811	0.971	-0.116	0.117	-0.039	-21	1,005
26	102.50	832	0.883	-0.121	0.081	-0.050	-28	1,031
25	97.50	843	0.799	-0.112	0.053	-0.052	-29	1,044
24	92.50	854	0.719	-0.092	0.034	-0.047	-27	1,058
23	87.50	865	0.643	-0.068	0.020	-0.035	-20	1,072
22	82.50	876	0.572	-0.043	0.012	-0.018	-11	1,085
21	78.72	453	0.521	-0.024	0.008	-0.003	-1	561
20	76.22	453	0.488	-0.012	0.007	0.006	2	561
19	74.86	70	0.471	-0.006	0.006	0.012	1	87
18	74.11	217	0.461	-0.002	0.006	0.014	2	269
17	71.75	938	0.432	0.008	0.006	0.023	14	1,163
16	67.50	992	0.383	0.023	0.007	0.035	23	1,229
15	62.50	1,005	0.328	0.039	0.010	0.046	31	1,246
14	57.50	1,019	0.278	0.050	0.014	0.052	35	1,263
13	52.50	1,033	0.232	0.058	0.019	0.055	38	1,280
12	47.50	1,047	0.190	0.064	0.025	0.056	39	1,297
11	42.50	1,060	0.152	0.068	0.030	0.055	39	1,314
10	37.83	930	0.120	0.070	0.034	0.054	34	1,153
9	35.33	229	0.105	0.071	0.037	0.054	8	284
8	33.25	1,210	0.093	0.071	0.038	0.053	43	1,499
7	30.75	357	0.079	0.072	0.040	0.052	12	442
6	27.50	1,200	0.064	0.072	0.041	0.052	41	1,487
5	22.50	1,217	0.043	0.070	0.042	0.050	41	1,508
4	17.50	1,233	0.026	0.067	0.040	0.048	39	1,528

3	12.50	1,250	0.013	0.059	0.034	0.043	36	1,549
2	7.50	1,266	0.005	0.044	0.025	0.034	29	1,569
1	2.50	1,283	0.001	0.018	0.010	0.016	14	1,590
CCI TPX-070821	150.00	45	1.890	1.980	1.140	0.371	11	56
Kaelus DBCT108F1V92-	150.00	83	1.890	1.980	1.140	0.371	21	103
Raycap DC6-48-60-18-	150.00	40	1.890	1.980	1.140	0.371	10	50
Raycap DC6-48-60-18-	150.00	32	1.890	1.980	1.140	0.371	8	39
CCI DTMABP7819VG12A	150.00	58	1.890	1.980	1.140	0.371	14	71
Ericsson RRUS 4426 B	150.00	145	1.890	1.980	1.140	0.371	36	180
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.371	44	223
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.371	44	223
Ericsson RRUS-11 (50	150.00	150	1.890	1.980	1.140	0.371	37	186
Ericsson RRUS 32 B2	150.00	159	1.890	1.980	1.140	0.371	39	197
10' Omni	150.00	25	1.890	1.980	1.140	0.371	6	31
Ericsson RRUS-32 (77	150.00	231	1.890	1.980	1.140	0.371	57	286
Powerwave Allgon 777	150.00	105	1.890	1.980	1.140	0.371	26	130
KMW AM-X-CD-16-65-00	150.00	97	1.890	1.980	1.140	0.371	24	120
Quintel QS66512-3 (1	150.00	336	1.890	1.980	1.140	0.371	83	416
Andrew SBNH-1D6565C	150.00	61	1.890	1.980	1.140	0.371	15	75
Kathrein Scala 80010	150.00	195	1.890	1.980	1.140	0.371	48	242
Round Sector Frame	150.00	900	1.890	1.980	1.140	0.371	223	1,115
Kathrein Scala 80010	150.00	115	1.890	1.980	1.140	0.371	28	142
Kathrein Smart Bias	134.00	10	1.508	0.522	0.553	0.148	1	12
Site-Pro UWS6-NP	134.00	276	1.508	0.522	0.553	0.148	27	342
RFS APXV18-206517S-C	134.00	79	1.508	0.522	0.553	0.148	8	98
Andrew LNX-6515DS-VT	134.00	154	1.508	0.522	0.553	0.148	15	191
DragonWave Horizon C	120.00	11	1.210	0.014	0.262	0.022	0	13
12" x 12" Junction B	120.00	10	1.210	0.014	0.262	0.022	0	12
Alcatel-Lucent RRH2x	120.00	317	1.210	0.014	0.262	0.022	5	393
Nokia FZHN Flexi RRH	120.00	132	1.210	0.014	0.262	0.022	2	164
Alcatel-Lucent 1900	120.00	180	1.210	0.014	0.262	0.022	3	223
RFS APXVTM14-ALU-I20	120.00	169	1.210	0.014	0.262	0.022	2	209
Side Arms	120.00	1,120	1.210	0.014	0.262	0.022	16	1,388
DragonWave A-ANT-11G	120.00	48	1.210	0.014	0.262	0.022	1	59
Commscope NNVV-	120.00	232	1.210	0.014	0.262	0.022	3	288
dB Systems 5100A	105.00	21	0.926	-0.121	0.098	-0.045	-1	26
VertexRSI 101V VPD	105.00	4	0.926	-0.121	0.098	-0.045	0	5
dB Systems 5100A-D	105.00	152	0.926	-0.121	0.098	-0.045	-5	188
Round Side Arm	105.00	450	0.926	-0.121	0.098	-0.045	-14	558
Round Side Arm	105.00	450	0.926	-0.121	0.098	-0.045	-14	558
		33,317	80.602	44.190	32.373	9.333	1,378	41,288

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)
37	147.50	234	1.828	1.667	1.025	0.331	52	202
36	142.50	243	1.706	1.144	0.823	0.256	41	209
35	137.50	251	1.588	0.742	0.654	0.189	32	216
34	134.50	51	1.520	0.550	0.566	0.154	5	44
33	132.00	247	1.464	0.415	0.501	0.126	21	213
32	127.50	317	1.366	0.222	0.397	0.082	17	272
31	122.50	325	1.261	0.069	0.302	0.040	9	280
30	117.76	349	1.165	-0.026	0.229	0.007	2	301
29	115.26	76	1.116	-0.061	0.197	-0.007	0	65
28	112.50	733	1.063	-0.088	0.165	-0.021	-10	631
27	107.50	811	0.971	-0.116	0.117	-0.039	-21	698
26	102.50	832	0.883	-0.121	0.081	-0.050	-28	716
25	97.50	843	0.799	-0.112	0.053	-0.052	-29	725

24	92.50	854	0.719	-0.092	0.034	-0.047	-27	735
23	87.50	865	0.643	-0.068	0.020	-0.035	-20	744
22	82.50	876	0.572	-0.043	0.012	-0.018	-11	754
21	78.72	453	0.521	-0.024	0.008	-0.003	-1	390
20	76.22	453	0.488	-0.012	0.007	0.006	2	390
19	74.86	70	0.471	-0.006	0.006	0.012	1	60
18	74.11	217	0.461	-0.002	0.006	0.014	2	187
17	71.75	938	0.432	0.008	0.006	0.023	14	808
16	67.50	992	0.383	0.023	0.007	0.035	23	854
15	62.50	1,005	0.328	0.039	0.010	0.046	31	865
14	57.50	1,019	0.278	0.050	0.014	0.052	35	877
13	52.50	1,033	0.232	0.058	0.019	0.055	38	889
12	47.50	1,047	0.190	0.064	0.025	0.056	39	901
11	42.50	1,060	0.152	0.068	0.030	0.055	39	913
10	37.83	930	0.120	0.070	0.034	0.054	34	801
9	35.33	229	0.105	0.071	0.037	0.054	8	197
8	33.25	1,210	0.093	0.071	0.038	0.053	43	1,041
7	30.75	357	0.079	0.072	0.040	0.052	12	307
6	27.50	1,200	0.064	0.072	0.041	0.052	41	1,033
5	22.50	1,217	0.043	0.070	0.042	0.050	41	1,047
4	17.50	1,233	0.026	0.067	0.040	0.048	39	1,062
3	12.50	1,250	0.013	0.059	0.034	0.043	36	1,076
2	7.50	1,266	0.005	0.044	0.025	0.034	29	1,090
1	2.50	1,283	0.001	0.018	0.010	0.016	14	1,104
CCI TPX-070821	150.00	45	1.890	1.980	1.140	0.371	11	39
Kaelus DBCT108F1V92-	150.00	83	1.890	1.980	1.140	0.371	21	72
Raycap DC6-48-60-18-	150.00	40	1.890	1.980	1.140	0.371	10	34
Raycap DC6-48-60-18-	150.00	32	1.890	1.980	1.140	0.371	8	27
CCI DTMABP7819VG12A	150.00	58	1.890	1.980	1.140	0.371	14	50
Ericsson RRUS 4426 B	150.00	145	1.890	1.980	1.140	0.371	36	125
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.371	44	155
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.371	44	155
Ericsson RRUS-11 (50	150.00	150	1.890	1.980	1.140	0.371	37	129
Ericsson RRUS 32 B2	150.00	159	1.890	1.980	1.140	0.371	39	137
10' Omni	150.00	25	1.890	1.980	1.140	0.371	6	22
Ericsson RRUS-32 (77	150.00	231	1.890	1.980	1.140	0.371	57	199
Powerwave Allgon 777	150.00	105	1.890	1.980	1.140	0.371	26	90
KMW AM-X-CD-16-65-00	150.00	97	1.890	1.980	1.140	0.371	24	83
Quintel QS66512-3 (1	150.00	336	1.890	1.980	1.140	0.371	83	289
Andrew SBNH-1D6565C	150.00	61	1.890	1.980	1.140	0.371	15	52
Kathrein Scala 80010	150.00	195	1.890	1.980	1.140	0.371	48	168
Round Sector Frame	150.00	900	1.890	1.980	1.140	0.371	223	775
Kathrein Scala 80010	150.00	115	1.890	1.980	1.140	0.371	28	99
Kathrein Smart Bias	134.00	10	1.508	0.522	0.553	0.148	1	9
Site-Pro UWS6-NP	134.00	276	1.508	0.522	0.553	0.148	27	238
RFS APXV18-206517S-C	134.00	79	1.508	0.522	0.553	0.148	8	68
Andrew LNX-6515DS-VT	134.00	154	1.508	0.522	0.553	0.148	15	132
DragonWave Horizon C	120.00	11	1.210	0.014	0.262	0.022	0	9
12" x 12" Junction B	120.00	10	1.210	0.014	0.262	0.022	0	9
Alcatel-Lucent RRH2x	120.00	317	1.210	0.014	0.262	0.022	5	273
Nokia FZHN Flexi RRH	120.00	132	1.210	0.014	0.262	0.022	2	114
Alcatel-Lucent 1900	120.00	180	1.210	0.014	0.262	0.022	3	155
RFS APXVTM14-ALU-I20	120.00	169	1.210	0.014	0.262	0.022	2	145
Side Arms	120.00	1,120	1.210	0.014	0.262	0.022	16	964
DragonWave A-ANT-11G	120.00	48	1.210	0.014	0.262	0.022	1	41
Commscope NNVV-	120.00	232	1.210	0.014	0.262	0.022	3	200
dB Systems 5100A	105.00	21	0.926	-0.121	0.098	-0.045	-1	18
VertexRSI 101V VPD	105.00	4	0.926	-0.121	0.098	-0.045	0	3
dB Systems 5100A-D	105.00	152	0.926	-0.121	0.098	-0.045	-5	131
Round Side Arm	105.00	450	0.926	-0.121	0.098	-0.045	-14	387
Round Side Arm	105.00	450	0.926	-0.121	0.098	-0.045	-14	387
		33,317	80.602	44.190	32.373	9.333	1,378	28,678

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	-39.70	-1.37	0.00	-162.49	0.00	162.49	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.052
5.00	-38.13	-1.35	0.00	-155.64	0.00	155.64	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.02	0.051
10.00	-36.58	-1.33	0.00	-148.88	0.00	148.88	3,046.49	1,523.25	4,391.58	2,168.84	0.04	-0.04	0.049
15.00	-35.05	-1.30	0.00	-142.23	0.00	142.23	2,999.83	1,499.91	4,223.96	2,086.05	0.09	-0.06	0.048
20.00	-33.54	-1.27	0.00	-135.74	0.00	135.74	2,952.07	1,476.04	4,057.95	2,004.07	0.16	-0.07	0.047
25.00	-32.05	-1.24	0.00	-129.40	0.00	129.40	2,901.93	1,450.96	3,891.94	1,922.08	0.24	-0.09	0.046
30.00	-31.61	-1.23	0.00	-123.22	0.00	123.22	2,830.35	1,415.18	3,701.25	1,827.91	0.35	-0.11	0.046
31.50	-30.11	-1.19	0.00	-121.37	0.00	121.37	2,808.88	1,404.44	3,644.98	1,800.12	0.39	-0.12	0.045
35.00	-29.83	-1.18	0.00	-117.21	0.00	117.21	2,758.78	1,379.39	3,515.36	1,736.10	0.48	-0.13	0.044
35.67	-28.68	-1.15	0.00	-116.42	0.00	116.42	2,225.24	1,112.62	2,894.88	1,429.67	0.50	-0.14	0.051
40.00	-27.36	-1.12	0.00	-111.43	0.00	111.43	2,194.35	1,097.17	2,791.07	1,378.40	0.63	-0.15	0.049
45.00	-26.06	-1.09	0.00	-105.83	0.00	105.83	2,157.69	1,078.84	2,672.25	1,319.72	0.80	-0.17	0.048
50.00	-24.78	-1.05	0.00	-100.40	0.00	100.40	2,119.93	1,059.96	2,554.56	1,261.60	1.00	-0.20	0.046
55.00	-23.52	-1.02	0.00	-95.13	0.00	95.13	2,081.07	1,040.54	2,438.12	1,204.10	1.21	-0.22	0.045
60.00	-22.28	-1.00	0.00	-90.01	0.00	90.01	2,041.12	1,020.56	2,323.03	1,147.26	1.45	-0.24	0.044
65.00	-21.05	-0.98	0.00	-85.03	0.00	85.03	1,992.10	996.05	2,200.59	1,086.79	1.71	-0.26	0.043
70.00	-19.88	-0.96	0.00	-80.15	0.00	80.15	1,932.46	966.23	2,070.05	1,022.32	2.00	-0.28	0.042
73.50	-19.61	-0.96	0.00	-76.78	0.00	76.78	1,451.36	725.68	1,558.37	769.62	2.21	-0.30	0.047
74.71	-19.53	-0.96	0.00	-75.62	0.00	75.62	1,444.76	722.38	1,539.55	760.33	2.29	-0.30	0.047
75.00	-18.97	-0.96	0.00	-75.34	0.00	75.34	1,443.19	721.60	1,535.11	758.14	2.31	-0.30	0.026
77.44	-18.40	-0.96	0.00	-73.00	0.00	73.00	1,429.71	714.86	1,497.46	739.54	2.46	-0.31	0.025
77.44	-18.40	-0.96	0.00	-73.00	0.00	73.00	1,429.71	714.86	1,497.46	739.54	2.46	-0.31	0.038
80.00	-17.32	-0.97	0.00	-70.54	0.00	70.54	1,415.26	707.63	1,458.06	720.08	2.63	-0.32	0.037
85.00	-16.25	-0.99	0.00	-65.71	0.00	65.71	1,386.24	693.12	1,381.78	682.41	2.97	-0.34	0.035
90.00	-15.19	-1.01	0.00	-60.77	0.00	60.77	1,356.12	678.06	1,306.38	645.17	3.34	-0.35	0.033
95.00	-14.14	-1.04	0.00	-55.71	0.00	55.71	1,324.90	662.45	1,231.99	608.43	3.72	-0.37	0.030
100.00	-13.11	-1.06	0.00	-50.51	0.00	50.51	1,293.04	646.52	1,159.10	572.44	4.12	-0.39	0.028
105.00	-10.77	-1.10	0.00	-45.19	0.00	45.19	1,245.33	622.66	1,074.67	530.74	4.53	-0.41	0.025
110.00	-9.86	-1.11	0.00	-39.66	0.00	39.66	1,197.61	598.80	993.42	490.61	4.97	-0.42	0.023
110.00	-9.86	-1.11	0.00	-39.66	0.00	39.66	833.77	416.88	695.90	343.68	4.97	-0.42	0.027
115.00	-9.77	-1.11	0.00	-34.11	0.00	34.11	813.89	406.95	652.08	322.04	5.42	-0.44	0.024
115.52	-9.34	-1.11	0.00	-33.53	0.00	33.53	811.76	405.88	647.55	319.80	5.47	-0.44	0.023
115.52	-9.34	-1.11	0.00	-33.53	0.00	33.53	811.76	405.88	647.55	319.80	5.47	-0.44	0.116
120.00	-6.18	-1.05	0.00	-28.57	0.00	28.57	792.92	396.46	608.75	300.64	5.89	-0.45	0.103
125.00	-5.79	-1.03	0.00	-23.33	0.00	23.33	770.85	385.43	566.02	279.54	6.40	-0.53	0.091
130.00	-5.48	-1.02	0.00	-18.16	0.00	18.16	747.69	373.84	524.00	258.78	6.99	-0.59	0.078
134.00	-4.78	-0.95	0.00	-14.09	0.00	14.09	728.37	364.19	490.97	242.47	7.51	-0.64	0.065
135.00	-4.47	-0.92	0.00	-13.14	0.00	13.14	722.05	361.03	481.88	237.98	7.64	-0.65	0.061
140.00	-4.17	-0.88	0.00	-8.53	0.00	8.53	686.26	343.13	435.03	214.85	8.35	-0.70	0.046
145.00	-3.88	-0.83	0.00	-4.13	0.00	4.13	650.48	325.24	390.59	192.90	9.10	-0.73	0.027
150.00	0.00	-0.78	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	9.88	-0.74	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	-27.57	-1.37	0.00	-159.10	0.00	159.10	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.048
5.00	-26.48	-1.35	0.00	-152.26	0.00	152.26	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.02	0.047
10.00	-25.41	-1.32	0.00	-145.52	0.00	145.52	3,046.49	1,523.25	4,391.58	2,168.84	0.04	-0.04	0.046
15.00	-24.34	-1.29	0.00	-138.93	0.00	138.93	2,999.83	1,499.91	4,223.96	2,086.05	0.09	-0.05	0.045
20.00	-23.30	-1.25	0.00	-132.50	0.00	132.50	2,952.07	1,476.04	4,057.95	2,004.07	0.15	-0.07	0.044
25.00	-22.26	-1.22	0.00	-126.23	0.00	126.23	2,901.93	1,450.96	3,891.94	1,922.08	0.24	-0.09	0.043
30.00	-21.96	-1.21	0.00	-120.15	0.00	120.15	2,830.35	1,415.18	3,701.25	1,827.91	0.35	-0.11	0.043
31.50	-20.91	-1.17	0.00	-118.34	0.00	118.34	2,808.88	1,404.44	3,644.98	1,800.12	0.38	-0.12	0.042
35.00	-20.72	-1.16	0.00	-114.25	0.00	114.25	2,758.78	1,379.39	3,515.36	1,736.10	0.47	-0.13	0.041
35.67	-19.92	-1.13	0.00	-113.47	0.00	113.47	2,225.24	1,112.62	2,894.88	1,429.67	0.49	-0.13	0.047
40.00	-19.00	-1.09	0.00	-108.58	0.00	108.58	2,194.35	1,097.17	2,791.07	1,378.40	0.62	-0.15	0.046
45.00	-18.10	-1.06	0.00	-103.11	0.00	103.11	2,157.69	1,078.84	2,672.25	1,319.72	0.79	-0.17	0.045
50.00	-17.21	-1.03	0.00	-97.81	0.00	97.81	2,119.93	1,059.96	2,554.56	1,261.60	0.98	-0.19	0.043
55.00	-16.34	-0.99	0.00	-92.68	0.00	92.68	2,081.07	1,040.54	2,438.12	1,204.10	1.19	-0.21	0.042
60.00	-15.47	-0.96	0.00	-87.72	0.00	87.72	2,041.12	1,020.56	2,323.03	1,147.26	1.42	-0.23	0.041
65.00	-14.62	-0.94	0.00	-82.89	0.00	82.89	1,992.10	996.05	2,200.59	1,086.79	1.67	-0.25	0.040
70.00	-13.81	-0.93	0.00	-78.17	0.00	78.17	1,932.46	966.23	2,070.05	1,022.32	1.95	-0.28	0.039
73.50	-13.62	-0.93	0.00	-74.92	0.00	74.92	1,451.36	725.68	1,558.37	769.62	2.16	-0.29	0.044
74.71	-13.56	-0.93	0.00	-73.79	0.00	73.79	1,444.76	722.38	1,539.55	760.33	2.23	-0.30	0.044
75.00	-13.17	-0.93	0.00	-73.53	0.00	73.53	1,443.19	721.60	1,535.11	758.14	2.25	-0.30	0.024
77.44	-12.78	-0.93	0.00	-71.27	0.00	71.27	1,429.71	714.86	1,497.46	739.54	2.40	-0.30	0.023
77.44	-12.78	-0.93	0.00	-71.27	0.00	71.27	1,429.71	714.86	1,497.46	739.54	2.40	-0.30	0.035
80.00	-12.03	-0.94	0.00	-68.89	0.00	68.89	1,415.26	707.63	1,458.06	720.08	2.57	-0.31	0.034
85.00	-11.28	-0.96	0.00	-64.21	0.00	64.21	1,386.24	693.12	1,381.78	682.41	2.90	-0.33	0.032
90.00	-10.55	-0.98	0.00	-59.44	0.00	59.44	1,356.12	678.06	1,306.38	645.17	3.26	-0.35	0.030
95.00	-9.82	-1.01	0.00	-54.53	0.00	54.53	1,324.90	662.45	1,231.99	608.43	3.63	-0.36	0.028
100.00	-9.11	-1.03	0.00	-49.48	0.00	49.48	1,293.04	646.52	1,159.10	572.44	4.02	-0.38	0.026
105.00	-7.48	-1.08	0.00	-44.31	0.00	44.31	1,245.33	622.66	1,074.67	530.74	4.43	-0.40	0.024
110.00	-6.85	-1.09	0.00	-38.91	0.00	38.91	1,197.61	598.80	993.42	490.61	4.85	-0.41	0.021
110.00	-6.85	-1.09	0.00	-38.91	0.00	38.91	833.77	416.88	695.90	343.68	4.85	-0.41	0.025
115.00	-6.78	-1.09	0.00	-33.47	0.00	33.47	813.89	406.95	652.08	322.04	5.29	-0.43	0.022
115.52	-6.48	-1.08	0.00	-32.91	0.00	32.91	811.76	405.88	647.55	319.80	5.34	-0.43	0.021
115.52	-6.48	-1.08	0.00	-32.91	0.00	32.91	811.76	405.88	647.55	319.80	5.34	-0.43	0.111
120.00	-4.29	-1.03	0.00	-28.05	0.00	28.05	792.92	396.46	608.75	300.64	5.75	-0.44	0.099
125.00	-4.02	-1.02	0.00	-22.89	0.00	22.89	770.85	385.43	566.02	279.54	6.25	-0.51	0.087
130.00	-3.81	-1.00	0.00	-17.81	0.00	17.81	747.69	373.84	524.00	258.78	6.82	-0.58	0.074
134.00	-3.32	-0.94	0.00	-13.83	0.00	13.83	728.37	364.19	490.97	242.47	7.33	-0.63	0.062
135.00	-3.10	-0.90	0.00	-12.89	0.00	12.89	722.05	361.03	481.88	237.98	7.46	-0.64	0.058
140.00	-2.89	-0.86	0.00	-8.36	0.00	8.36	686.26	343.13	435.03	214.85	8.16	-0.68	0.043
145.00	-2.69	-0.81	0.00	-4.05	0.00	4.05	650.48	325.24	390.59	192.90	8.89	-0.72	0.025
150.00	0.00	-0.78	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	9.65	-0.73	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	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	27.20	0.00	39.91	0.00	0.00	2723.73	115.52	0.86
0.9D + 1.6W	27.17	0.00	29.91	0.00	0.00	2682.17	115.52	0.83
1.2D + 1.0Di + 1.0Wi	6.97	0.00	81.81	0.00	0.00	792.42	115.52	0.31
(1.2 + 0.2Sds) * DL + E ELFM	1.00	0.00	39.70	0.00	0.00	122.53	115.52	0.06
(1.2 + 0.2Sds) * DL + E EMAM	1.37	0.00	39.70	0.00	0.00	162.49	115.52	0.12
(0.9 - 0.2Sds) * DL + E ELFM	1.00	0.00	27.57	0.00	0.00	120.18	115.52	0.05
(0.9 - 0.2Sds) * DL + E EMAM	1.37	0.00	27.57	0.00	0.00	159.10	115.52	0.11
1.0D + 1.0W	6.53	0.00	33.31	0.00	0.00	648.77	115.52	0.21

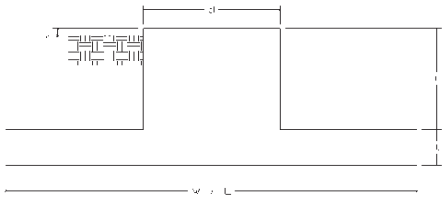
Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Max Member Pu (kip)	phiPn (kip)	Ratio
0.00	77.44	(4) SOL-#20 All Thread Bar	354.8	10.6	16.8	0.633	289.2	330.5	0.875
74.71	115.52	(4) SOL-#20 All Thread Bar	337.6	10.1	16.8	0.603	191.5	330.5	0.579

Elev From (ft)	Elev To (ft)	Member	Upper Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	Lower Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	77.44	(4) SOL-#20 All Thread Bar	108.0	12.0	10	12	0.750	0.0	12.0	0	0	0.000
74.71	115.52	(4) SOL-#20 All Thread Bar	82.3	12.0	7	8	0.857	132.2	12.0	12	16	0.689

Site Name:	Sttn- Southington, CT
Site Number:	302475
Engineering Number:	OAA740798
Engineer:	Zackaryah.Hughes
Date:	02/26/19
Tower Type:	MP

Program Last Updated: *5/13/2014*



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

Design / Analysis / Mapping:	Analysis				
Compression/Leg:	39.9	k	Concrete Strength (f'_c):	3000	psi
Uplift/Leg:	0.0	k	Pad Tension Steel Depth:	32.00	in
Total Shear:	27.2	k	ϕ_{Shear}:	0.75	
Moment:	2723.7	k-ft	$\phi_{Flexure\ /\ Tension}$:	0.90	
Tower + Appurtenance Weight:	39.9	k	$\phi_{Compression:}$	0.65	
Depth to Base of Foundation (l + t - h):	8.00	ft	β:	0.85	
Diameter of Pier (d):	4.33	ft	Bottom Pad Rebar Size #:	10	
Height of Pier above Ground (h):	0.50		# of Bottom Pad Rebar:	36	
Width of Pad (W):	18.00	ft	Pad Bottom Steel Area:	45.72	in^2
Length of Pad (L):	18.00	ft	Pad Steel F_y:	60000	psi
Thickness of Pad (t):	3.00	ft	Top Pad Rebar Size #:	5	
Tower Leg Center to Center:	0.00	ft	# of Top Pad Rebar:	36	
Number of Tower Legs:	1.0	(1 if MP or GT)	Pad Top Steel Area:	11.16	in^2
Tower Center from Mat Center:	0.00	ft	Pier Rebar Size #:	11	
Depth Below Ground Surface to Water Table:	9.00	ft	Pier Steel Area (Single Bar):	1.56	in^2
Unit Weight of Concrete:	150.0	pcf	# of Pier Rebar:	52	
Unit Weight of Soil Above Water Table:	115.0	pcf	Pier Steel F_y:	60000	psi
Unit Weight of Water:	62.4	pcf	Pier Cage Diameter:	44.0	in
Unit Weight of Soil Below Water Table:	52.6	pcf	Rebar Strain Limit:	0.008	
Friction Angle of Uplift:	0.0	Degrees	Steel Elastic Modulus:	29000	ksi
Ultimate Coefficient of Shear Friction:	0.35		Tie Rebar Size #:	4	
Ultimate Compressive Bearing Pressure:	12000.0	psf	Tie Steel Area (Single Bar):	0.20	in^2
Ultimate Passive Pressure on Pad Face:	0.0	psf	Tie Spacing:	12	in
$\phi_{Soil\ and\ Concrete\ Weight}$:	0.9		Tie Steel F_y:	60000	psi
ϕ_{Soil}:	0.75				

Overturning Moment Usage

Design OTM:	2954.9	k-ft
OTM Resistance:	2989.2	k-ft
Design OTM / OTM Resistance:	0.99	Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	5808	psf
Factored Nominal Bearing Pressure:	9000	psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.65	Result: OK
Load Direction Controling Design Bearing Pressure:	Diagonal to Pad Edge	

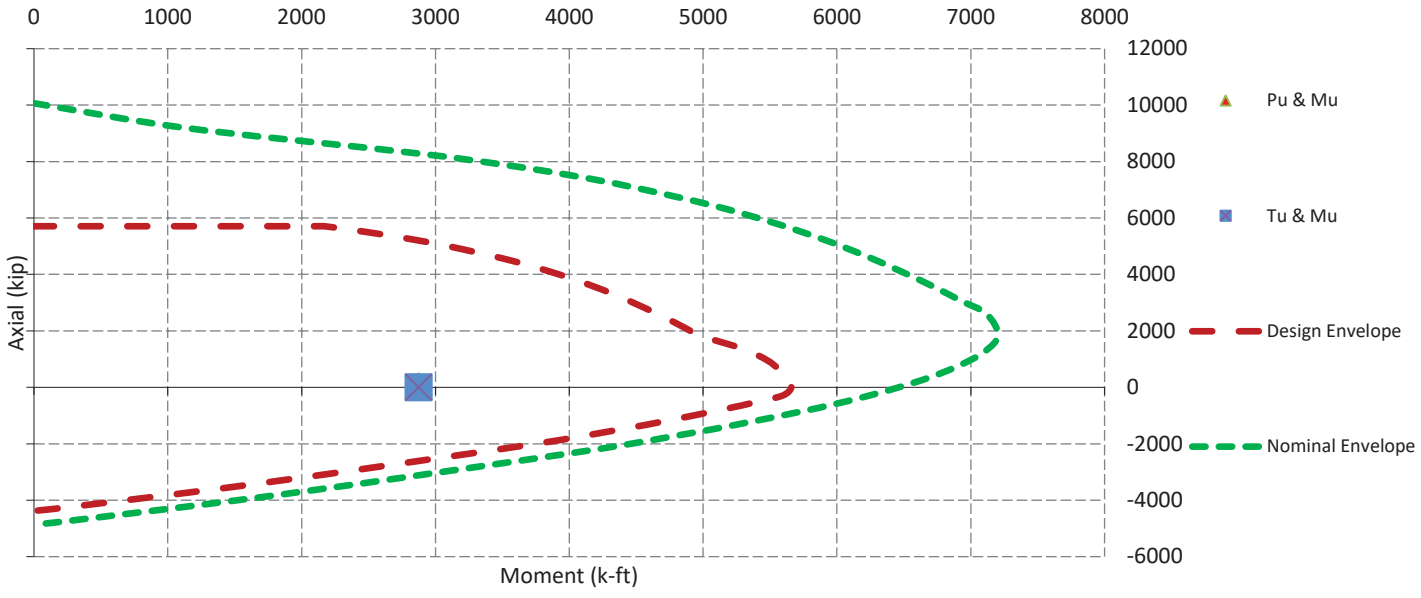
Sliding Factor of Safety

Total Factored Sliding Resistance:	96.9	k
Sliding Design / Sliding Resistance:	0.28	Result: OK

One Way Shear, Flexual Capacity, and Punching Shear

Factored One Way Shear (V_u):	209.8	k
One Way Shear Capacity (ϕV_c):	498.2	k - ACI11.3.1.1
V_u / ϕV_c:	0.42	Result: OK
Load Direction Controling Shear Capacity:	Diagonal to Pad Edge	
Lower Steel Pad Factored Moment (M_u):	1225.2	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	6148.2	k-ft - ACI10.3
M_u / ϕM_n:	0.20	Result: OK
Load Direction Controling Flexural Capacity:	Parallel to Pad Edge	
Upper Steel Pad Factored Moment (M_u):	688.3	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	1581.1	k-ft
M_u / ϕM_n:	0.44	Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0066	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0016	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	1386.9	k - ACI11.12.2.1
V_u / ϕV_c:	0.00	Result: OK
Factored Moment in Pier (M_u):	2873.3	k-ft
Pier Moment Capacity (ϕM_n):	7846.3	k-ft
M_u / ϕM_n:	0.37	Result: OK
Factored Shear in Pier (V_u):	27.2	k
Pier Shear Capacity (ϕV_n):	175.9	k
V_u / ϕV_c:	0.15	Result: OK
Pier Shear Reinforcement Ratio:	0.0009	No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0	k
Pier Tension Capacity (ϕT_n):	4380.5	k
T_u / ϕT_n:	0.00	Result: OK
Factored Compression in Pier (P_u):	39.9	k
Pier Compression Capacity (ϕP_n):	2704.2	k - ACI10.3.6.2
P_u / ϕP_n:	0.01	Result: OK
Pier Compression Reinforcement Ratio:	0.038	OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.37	Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



Base Plate & Anchor Rod Analysis

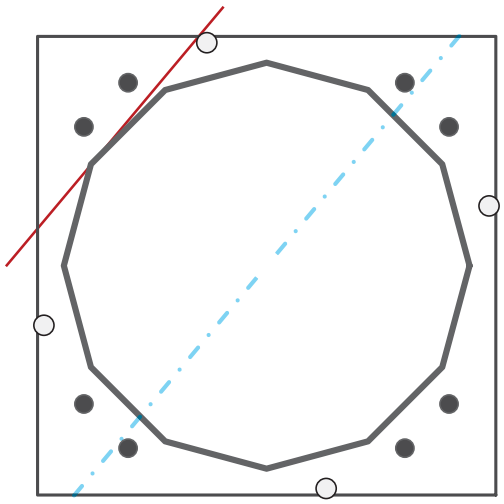
Pole Dimensions		
Number of Sides	12	-
Diameter	37.38	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2723.7	k-ft
Axial, Pu	39.9	k
Shear, Vu	27.2	k
Neutral Axis	50	°

Report Capacities		
Component	Capacity	Result
Base Plate	63%	Pass
Anchor Rods	88%	Pass
Dwyidag	62%	Pass

Base Plate		
Shape	Square	-
Width	44	in
Thickness	2 1/2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	0	in
Orientation Offset	0	°
Anchor Rod Detail	c	η=0.55
Clear Distance	N/A	in
Applied Moment, Mu	1304.1	k
Bending Stress, ϕMn	2075.7	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, ø	2 1/4	in
Bolt Circle	44	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	227.2	k
Anchor Rods, ϕPn	259.8	k



Dywidag Reinforcement		
Quantity	4	-
Bar Size	#20	in
Diameter, ø	2.5	in
Bracket Type	Angle	-
Circle	44.26	in
Orientation Offset	15	°
Applied Force, Pu	242.5	k
Dywidag Bar, ϕPn	392.7	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	27.2	1648.0	0.61
Anchor Rod Forces	27.2	1648.0	0.61
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1075.7	0.39
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	43.0934	3.5911	0.1692		7376.38
Bolt	3.9761	3.2477	0.8393	4.5	6294.24
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		4814.56
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	44	in
Thickness, t	2.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	23.219	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

External Base Plate		
Chord Length AA	24.600	in
Additional AA	0.000	in
Section Modulus, Z	38.438	in^3
Applied Moment, Mu	1304.1	k-ft
Bending Capacity, ϕMn	2075.7	k-ft
Capacity, Mu/ϕMn	0.628	OK
Chord Length AB	23.273	in
Additional AB	0.000	in
Section Modulus, Z	36.364	in^3
Applied Moment, Mu	1006.0	k-ft
Bending Capacity, ϕMn	1963.7	k-ft
Capacity, Mu/ϕMn	0.512	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Anchor Rods		
Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	44	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	227.2	k
Applied Shear, Vu	0.3	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.875	OK
Interaction Capacity	0.877	OK

Additional Bolt Group 1		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Compressive Capacity, ϕPn		
Interaction Capacity		

Additional Bolt Group 2		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Compressive Capacity, ϕPn		
Interaction Capacity		

Dywidag Reinforcement		
Dywidag Quantity, N	4	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	44.255	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	242.5	k
Compressive Capacity, ϕPn	392.7	k
Capacity, Pu/ϕPn	0.617	OK

Base Plate Stiffeners		
Applied Axial Force, Pu	0.0	k
Applied Horizontal Force, Vu	0.00	k

Vertical Weld		
Vert.-to-Stiffener a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Compressive Capacity, ϕPn	#DIV/0!	k
Vert.-to-Plate a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, ϕVn	#DIV/0!	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$		

Horizontal Weld		
Horz.-to-Stiffener a=e_x/l	0.000	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Effective Fillet	0.000	in
Compressive Capacity, ϕPn	#DIV/0!	k
Horz.-to-Pole a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, ϕVn	#DIV/0!	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$		

Plate Tension		
Gross Cross Section	0.000	in^2
Net Cross Section	0.000	in^2
Tensile Capacity, ϕTn	0.0	k
Capacity, Tu/ϕTn		

Plate Compression		
Radius of Gyration	#DIV/0!	in^3
kl/r	#DIV/0!	-
4.71 $\sqrt{(E/Fy)}$	0.00	-
Buckling Stress(Fe)	0.0	-
Crit. Buckling Stress(Fcr)	0.0	ksi
Compressive Capacity, ϕPn	0.0	k
Capacity, Pu/ϕPn		

Base/Flange Plate			
	Plate Type	***Flange***	***@ 110.0 ft***
	Pole Diameter	20.43	in
	Pole Thickness	0.1875	in
	Plate Diameter	28	in
	Plate Thickness	1	in
	Plate Fy	36	ksi
	Weld Length	0.125	in
	ϕ_s Resistance	347.07	k-in
	Applied	103.08	k-in

Stiffeners			
	#	***12***	***Show***
	Thickness	0.75	in
	Length	3	in
	Height	6	in
	Chamfer	0.75	in
	Offset Angle	0	°
	Fy	50	ksi

Bolts			
	#	***12***	
	Bolt Circle	25.75	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	52.26	k

Reinforcement ●		
#	***0***	

Extra Bolts O		
#	***0***	

Code Rev. ***G***

Moment 341.6 k-ft

Axial 9.2 k

Date 2/26/2019

Engineer Zackaryah.Hughes

Site # 302475

Carrier AT&T MOBILITY

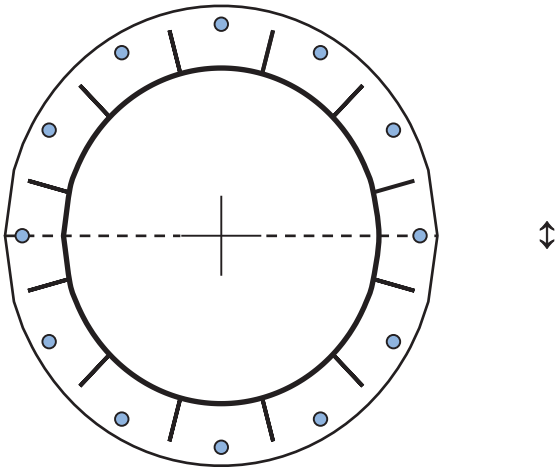


Plate Stress Ratio:

0.30 (Pass)

Bolt Stress Ratio:

0.96 (Pass)

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1004

FA#: 10034967

Southington
Shuttle Meadow Road
Southington, CT 06489

March 29, 2019

Centerline Communications Project Number: 950006-173

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**7.51 %**

March 29, 2019

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

Emissions Analysis for Site: **CT1004 – Southington**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **Shuttle Meadow Road, Southington, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 population 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 population 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 performed for the proposed AT&T Wireless antenna facility located at **Shuttle Meadow Road, Southington, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	40
LTE	700 MHz (Band 14)	4	40
LTE	850 MHz	2	40
LTE	2100 MHz (AWS)	4	30
5G	850 MHz	2	25
LTE	2300 MHz (WCS)	4	60
LTE	1900 MHz (PCS)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	155
A	2	KMW AM-X-CD-16-65-00T-RET	155
A	3	Kathrein 800-10965	155
A	4	Quintel QS66512-2	155
B	1	Powerwave 7770	155
B	2	KMW AM-X-CD-16-65-00T-RET	155
B	3	Kathrein 800-10965	155
B	4	Quintel QS66512-2	155
C	1	Powerwave 7770	155
C	2	Commscope SBNH-1D6565C	155
C	3	Kathrein 800-10966	155
C	4	Quintel QS66512-2	155

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.45
Antenna A2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	80	1,730.17	0.60
Antenna A3	Kathrein 800-10965	700 MHz (Band 14) / 850 MHz / 2100 MHz (AWS)	12.65 / 13.45 / 15.95	12	410	10,544.86	2.61
Antenna A4	Quintel QS66512-2	2300 MHz (WCS) / 1900 MHz (PCS)	14.85 / 13.85	8	280	7,548.48	1.22
						Sector A Composite MPE%	**4.88**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.45
Antenna B2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	80	1,730.17	0.60
Antenna B3	Kathrein 800-10965	700 MHz (Band 14) / 850 MHz / 2100 MHz (AWS)	12.65 / 13.45 / 15.95	12	410	10,544.86	2.61
Antenna B4	Quintel QS66512-2	2300 MHz (WCS) / 1900 MHz (PCS)	14.85 / 13.85	8	280	7,548.48	1.22
						Sector B Composite MPE%	**4.88**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.45
Antenna C2	Commscope SBNH-1D6565C	700 MHz	13.65	2	80	1,853.92	0.64
Antenna C3	Kathrein 800-10966	700 MHz (Band 14) / 850 MHz / 2100 MHz (AWS)	13.55 / 14.25 / 16.15	12	410	12,027.54	3.05
Antenna C4	Quintel QS66512-2	2300 MHz (WCS) / 1900 MHz (PCS)	14.85 / 13.85	8	280	7,548.48	1.22
						Sector C Composite MPE%	**5.36**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sector with the largest calculated MPE% is Sector C. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Per Sector Value (Sector C)	**5.36 %**
Clearwire	0.14 %
T-Mobile	2.01 %
Site Total MPE %:	**7.51 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	4.88 %
AT&T Sector B Total:	4.88 %
AT&T Sector C Total:	5.36 %
Site Total:	7.51 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sector with the largest calculated MPE% is Sector C.

AT&T _ Frequency Band / Technology Max Power Values (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS – Antenna 1	2	414.12	155	1.34	850 MHz	567	0.24%
AT&T 1900 MHz (PCS) UMTS – Antenna	2	656.33	155	2.13	1900 MHz (PCS)	1000	0.21%
AT&T 700 MHz LTE – Antenna 2	2	926.96	155	3.00	700 MHz	467	0.64%
AT&T 700 MHz (Band 14) LTE – Antenna 3	4	905.86	155	5.87	700 MHz	467	1.26%
AT&T 850 MHz LTE – Antenna 3	2	1,064.29	155	3.45	850 MHz	567	0.61%
AT&T 2100 MHz (AWS) LTE – Antenna 3	4	1,236.29	155	8.01	2100 MHz (AWS)	1000	0.80%
AT&T 850 MHz 5G – Antenna 3	2	665.18	155	2.15	850 MHz	567	0.38%
AT&T 2300 MHz (WCS) LTE – Antenna 4	4	916.48	155	5.94	2300 MHz (WCS)	1000	0.59%
AT&T 1900 MHz (PCS) LTE – Antenna 4	4	970.64	155	6.29	1900 MHz (PCS)	1000	0.63%
						Total:	**5.36%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	4.88 %
Sector B:	4.88 %
Sector C:	5.36 %
AT&T Maximum Total (Sector C):	5.36 %
Site Total:	7.51 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.51 %** of the allowable FCC established general population 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.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please select a different Service Type or visit a Post Office™ location to complete your shipment.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300468266368

SCAN® Form: 947570369930030981827 8

Terms
Acceptance Cutoff: 04/04/2019 4:30 PM
Acceptance Time: 04/04/2019 3:09 PM
Scheduled Date: 04/06/2019 11:59 PM
Delivery Status: Delivered, In/At Mailbox
Label Actions 2019-04-08 15:46:00.0

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
JULIA COUGHLIN
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
ne_sa_deliverable@empiretelecomm.com

Delivery Address:
JOHN SMIGEL
MUNICIPAL CENTER
196 N MAIN ST
SOUTHINGTON, CT 06489-2514

Package:
Ship Date: 04/04/19
Value: $0.00
From: 01862

Service:
Priority Mail® 2-Day
Flat Rate Envelope
USPS Tracking®

Transaction Number: 460858219
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

Postage Cost	$7.35
USPS Tracking®	Free
Label Total:	**$7.35**
Order Total:	**$29.40**

Timestamp	Message
04-04-2019 12:36:55	LABEL PRINTED
04-04-2019 12:33:39	Getting Payment
04-04-2019 12:32:24	Setting Payment

Back to Shipping History

Feedback

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please select a different Service Type or visit a Post Office™ location to complete your shipment.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300468266351

SCAN® Form: 947570369930030981827 8

Terms
Acceptance Cutoff: 04/04/2019 4:30 PM
Acceptance Time: 04/04/2019 3:09 PM
Scheduled Date: 04/06/2019 11:59 PM
Delivery Status: Delivered, Front Desk/Reception/Mail Room 2019-04-08 09:20:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
JULIA COUGHLIN
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
ne_sa_deliverable@empiretelecomm.com

Delivery Address:
MARK J SCIOTA
TOWN HALL
75 MAIN ST
SOUTHINGTON, CT 06489-2504

Package:
Ship Date: 04/04/19
Value: $50.00
From: 01862

Service:
Priority Mail® 2-Day
Flat Rate Envelope
USPS Tracking®

Transaction Number: 460858219
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

Postage Cost	$7.35
USPS Tracking®	Free
Label Total:	**$7.35**
Order Total:	**$29.40**

Timestamp	Message
04-04-2019 12:34:44	LABEL PRINTED
04-04-2019 12:33:39	Getting Payment
04-04-2019 12:32:24	Setting Payment

Back to Shipping History

Feedback

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please select a different Service Type or visit a Post Office™ location to complete your shipment.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300468266382

SCAN® Form: 947570369930030981827 8

Terms
Acceptance Cutoff: 04/04/2019 4:30 PM
Acceptance Time: 04/04/2019 3:09 PM
Scheduled Date: 04/05/2019 11:59 PM
Delivery Status: Delivered, Front Desk/Reception/Mail Room 2019-04-05 10:54:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
JULIA COUGHLIN
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
ne_sa_deliverable@empiretelecomm.com

Delivery Address:
RYAN TIERNEY
AMERICAN TOWER COMRPORATON
10 PRESIDENTIAL WAY
WOBURN, MA 01801-1053

Package:
Ship Date: 04/04/19
Value: $50.00
From: 01862

Service:
Priority Mail® 1-Day
Flat Rate Envelope
USPS Tracking®

Transaction Number: 460858219
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

Postage Cost	$7.35
USPS Tracking®	Free
Label Total:	**$7.35**
Order Total:	**$29.40**

Timestamp	Message
04-04-2019 12:38:59	LABEL PRINTED
04-04-2019 12:33:39	Getting Payment
04-04-2019 12:32:24	Setting Payment

Back to Shipping History

Feedback

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please select a different Service Type or visit a Post Office™ location to complete your shipment.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300468266375

SCAN® Form: 947570369930030981827 8

Terms
Acceptance Cutoff: 04/04/2019 4:30 PM
Acceptance Time: 04/04/2019 3:09 PM
Scheduled Date: 04/05/2019 11:59 PM
Delivery Status: Delivered, Front Desk/Reception/Mail Room 2019-04-05 10:54:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
JULIA COUGHLIN
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
ne_sa_deliverable@empiretelecomm.com

Delivery Address:
SOUTHERN NEW ENGLAND TELEPHONE COMPANY
10 PRESIDENTIAL WAY
C/O AMERICAN TOWER LAND MANAGEMENT
WOBURN, MA 01801-1053

Package:
Ship Date: 04/04/19
Value: $50.00
From: 01862

Service:
Priority Mail® 1-Day
Flat Rate Envelope
USPS Tracking®

Transaction Number: 460858219
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

Postage Cost	$7.35
USPS Tracking®	Free
Label Total:	**$7.35**
Order Total:	**$29.40**

Timestamp	Message
04-04-2019 12:38:07	LABEL PRINTED
04-04-2019 12:33:39	Getting Payment
04-04-2019 12:32:24	Setting Payment

Back to Shipping History

Feedback