January 14, 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:	585 South Main Street, Naugatuck, CT 06770 (the "Property")
Applicant:	New Cingular Wireless PCS, LLC ("AT&T", Site # CT2166)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 89-foot monopole at the above-referenced address, latitude 41.4784361111111 °, longitude -73.0484527777778°. Said monopole is owned by American Tower Asset Sub II, LLC and the underlying property owner is The Office LLC.

AT&T desires to modify its existing telecommunications facility by adding two (2) antennas, adding (6) remote-radio heads ("RRHs") and adding two (2) surge suppressors with associated cabling. The centerline height of the existing antennas is and will remain at 90 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 Honorable N. Warren "Pete" Hess III, Mayor of Borough of Naugatuck, Ed Carter, as Zoning Enforcement Officer with the Borough of Naugatuck, The Office LLC, as property owner and the tower owner, American Tower Asset Sub II, LLC.

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 along with equipment to be swapped will be installed at the existing height of 90 feet on the 89-foot monopole.

2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.

Julia Coughlin • Empire Telecom USA, LLC • 16 Esquire Road, Billerica, MA 01862 • 978-284-3376 • jcoughlin@empiretelecomm.com

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.

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

6. The existing structure and its foundation can support AT&T's proposed modifications (please see enclosed structural analysis completed by American Tower Corporation, dated December 17, 2018; stamped on Dec 17, 2018).

For the foregoing reasons, AT&T respectfully requests that the proposed antenna and remote-radio head 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

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

cc:
Honorable N. Warren "Pete" Hess III; Mayor of Borough of Naugatuck at 229 Church Street, 4th Floor Naugatuck, CT 06770
Ed Carter, as Zoning Enforcement Officer at 229 Church Street 2nd Floor, Naugatuck, CT 06770
The Office LLC, as Property Owner at 585 S Main St, Naugatuck, CT 06770
American Tower Asset Sub II, LLC, as Tower Owner at 10 Presidential Way, Woburn, MA 01801 Attn. Ryan Tierney

Borough of Naugatuck, CT

Property Listing Report

Map Block Lot	26-35E23	Account	011-8400

Property Information

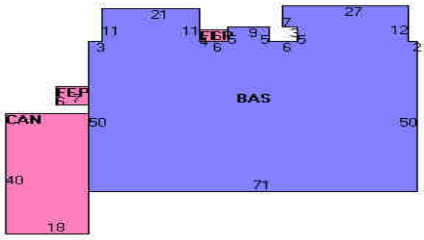
Property Location	585 S MAIN ST
Owner	THE OFFICE LLC
Co-Owner	
Mailing Address	585 S MAIN ST NAUGATUCK CT 06770
Land Use	3260 REST/CLUBS
Land Class	C
Zoning Code	
Census Tract	
Sub Lot	

Neighborhood	B
Acreage	1.76
Utilities	
Lot Setting/Desc	
Survey Map	
Additional Info	

Photo

011-8400 03/23/2012

Sketch



Primary Construction Details

Year Built	1960
Stories	1
Building Style	Nightclub/Bar
Building Use	Comm/Ind
Building Condition	C
Floors	Vinyl
Total Rooms	

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

Exterior Walls	Concr/Cinder
Interior Walls	Drywall
Heating Type	Forced Hot Air
Heating Fuel	Oil
AC Type	Central
Gross Bldg Area	4921
Total Living Area	4135

Report Created On 11/27/2018

Borough of Naugatuck, CT

Property Listing Report | Map Block Lot **26-35E23** | Account **011-8400**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	108730	76110
Extras	0	0
Outbuildings	102100	71470
Land	184900	129430
Total	395730	277010

Outbuilding and Extra Items

Type	Description
CELL BLDG	240 S.F.
CELL TOWER	49 HEIGHT
Paving Asphalt	19000 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	4135	4135
Porch, Enclosed	66	0
Canopy	720	0
Total Area	4921	4135

Sales History

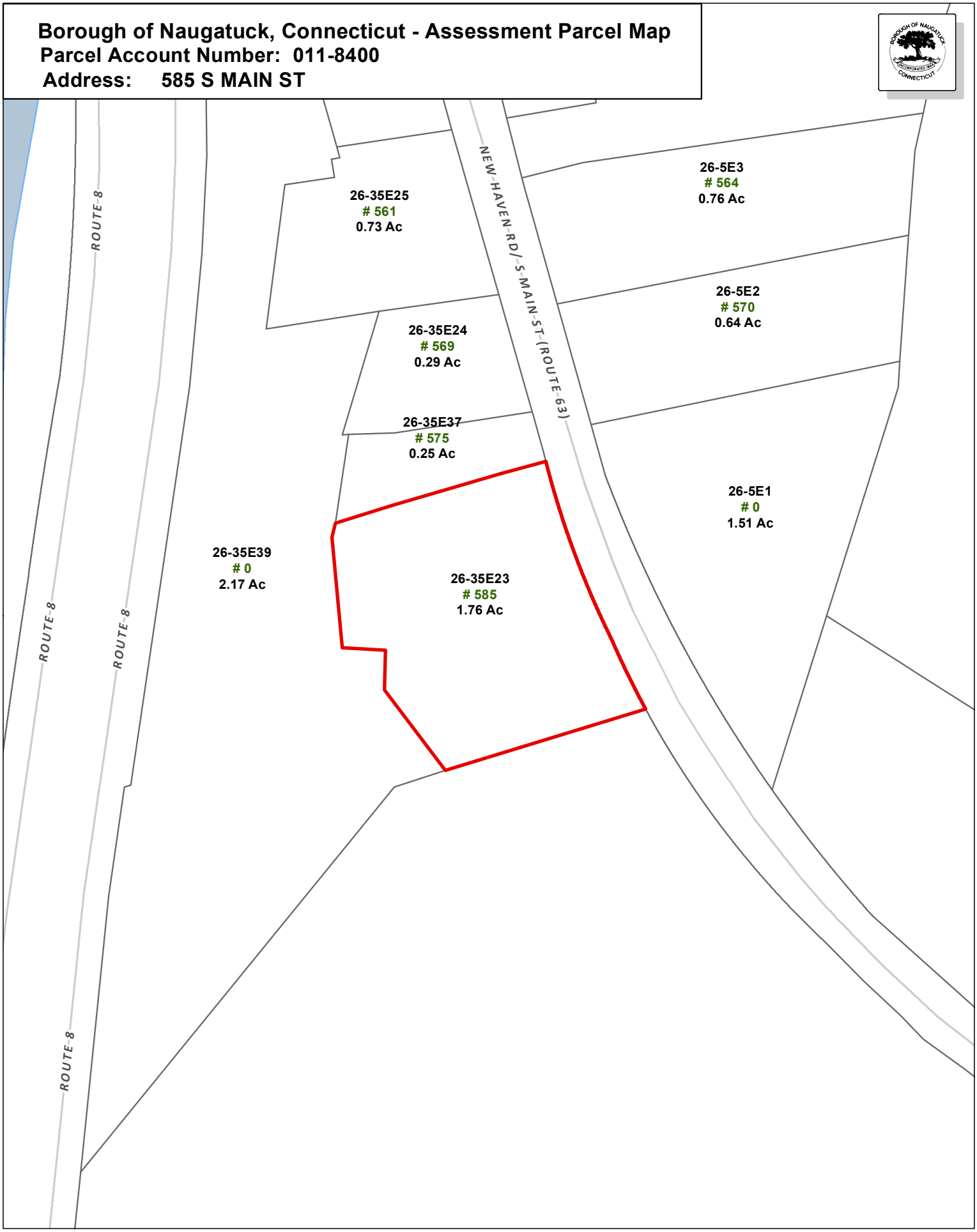
Owner of Record	Book/ Page	Sale Date	Sale Price
THE OFFICE LLC	875/ 80	9/20/2010	
TARZAK BUILDERS LLC	871/ 365	7/7/2010	
CHRISTOFORO COLUMBO SOCIETY	747/ 363	2/27/2006	
CHRISTOFORO COLUMBO SOCIETY	747/ 357	2/27/2006	
CHRISTOFORO COLUMBO SOCIETY	747/ 345	2/27/2006	198000
CHRISTOFORO COLUMBO SOCIETY	110/ 174	6/3/1953	0
CHRISTOFORO COLUMBO	83/ 407	4/19/1937	0

Report Created On **11/27/2018**

Borough of Naugatuck, Connecticut - Assessment Parcel Map

Parcel Account Number: 011-8400

Address: 585 S MAIN ST



0 25 50 75 100 Feet

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

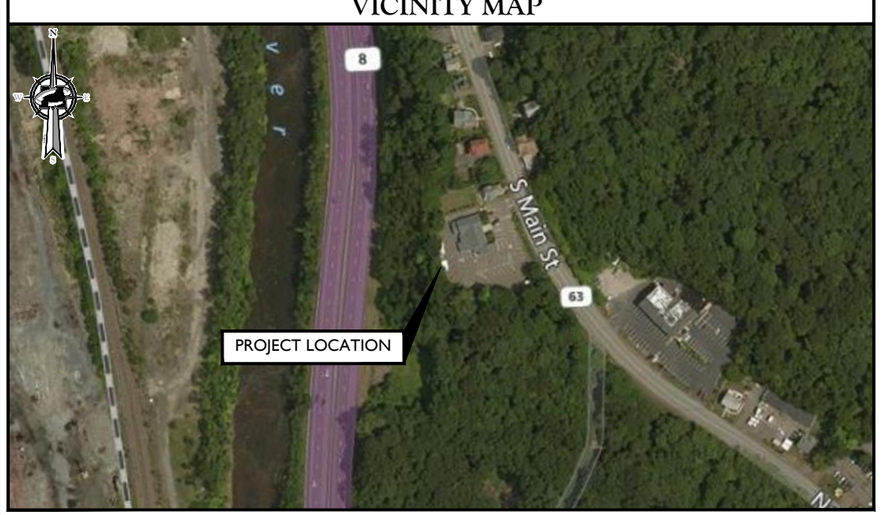
Map Produced March 2017

PROJECT NOTES

1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:
   A. PLAN ENTITLED "NAUGATUCK SOUTH MAIN" PREPARED BY TRYLON OF BRAMTON, ON LAST REVISED 09/08/2016.
   B. LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 05/30/2018.
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-G AS PER IBC REQUIREMENTS.
16. CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
17. 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.

SITE NAME: NAUGATUCK SOUTH MAIN
FA NUMBER: 10035065
SITE NUMBER: CT2166
LTE - 4C/5C/6C
585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
NEW HAVEN COUNTY

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. 2016 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2012 IBC
2. 2014 NATIONAL ELECTRICAL CODE - NFPA 70
3. 2012 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:	41.4784361° N
LONGITUDE:	73.0484989° W
JURISDICTION:	NEW HAVEN COUNTY

APPLICANT/LESSEE

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

STRUCTURE OWNER

COMPANY:	AMERICAN TOWER CORP.
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 P.A.
ADDRESS:	2000 MIDLANTIC DRIVE, SUITE 100
CITY, STATE, ZIP:	MT. LAUREL, NJ 08054
CONTACT:	ROBERT ANDREWS
PHONE:	(856) 797-0412
E-MAIL:	RANDREWS@MASERCONSULTING.COM

PROJECT DESCRIPTION/ SCOPE OF WORK

- INSTALL (2) NEW RRUS-4478 B14 BEHIND PANEL, (1) PER SECTOR
- INSTALL (2) NEW RRUS-4478 B5 BEHIND PANEL, (1) PER SECTOR
- INSTALL (2) NEW RRUS-4426 B66 BEHIND PANEL, (1) PER SECTOR
- INSTALL (2) NEW KATHREIN 800-10965 PANEL ANTENNA, (1) PER SECTOR
- INSTALL (4) NEW DBCT108F1V92-1 LOW BAND COMBINERS BEHIND PANEL IN POSITION #3, (2) PER SECTOR
- INSTALL (2) NEW DC-6 SURGE SUPPRESSION DOMES, (1) PER ALPHA AND BETA SECTORS
- INSTALL (2) NEW 18-PAIR FIBER TRUNKS, (1) PER DC-6
- INSTALL (4) NEW 6/C DC CABLES, (2) PER DC-6

PROPOSED EQUIPMENT IN SHELTER:

- SWITCH BB TO (2) 5216, ADD 2ND XMU AND IDLe IN EXISTING LTE RACK
- INSTALL (1) NEW RACK MOUNTED DC-12 IN EXISTING LTE RACK
- INSTALL (4) NEW 6/C DC CABLES FOR NEW RACK MOUNTED DC-12

PROPOSED PROJECT SCOPE BASED ON RFDS ID# 2311484, VERSION 2.00, LAST UPDATED 06/13/2018.

SHEET INDEX

SHEET	DESCRIPTION
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GN-1	GENERAL NOTES
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C-2	EQUIPMENT LAYOUT AND ELEVATION VIEW
C-3	ANTENNA LAYOUTS AND ANTENNA SCHEDULE
A-1	CONSTRUCTION DETAILS
A-2	CONSTRUCTION DETAILS
A-3	RF PLUMBING DIAGRAM
G-1	GROUNDING DETAILS AND NOTES
S-1	STRUCTURAL DETAILS

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	18963006A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
2	01/21/19	REVISED PER COMMENTS	RA	RA
0	10/18/18	FOR CONSTRUCTION	AJC	RA
1	09/14/18	ISSUED FOR REVIEW	AJC	RA

STATE OF CONNECTICUT — PETROS P. SOUKALAS — 32577 — LICENSED PROFESSIONAL ENGINEER

PETROS P. SOUKALAS
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 PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:

NAUGATUCK SOUTH MAIN
FA# 10035065
SITE# CT2166

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
NEW HAVEN COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: .732.383.1950
Fax: .732.383.1984
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 :
AS SHOWN	18963006A

REV	DATE	DESCRIPTION	BY	CHECKED BY
2	01/21/19	REVISED PER COMMENTS	RA	RA
0	10/18/18	FOR CONSTRUCTION	AJC	RA
1	09/14/18	ISSUED FOR REVIEW	AJC	RA

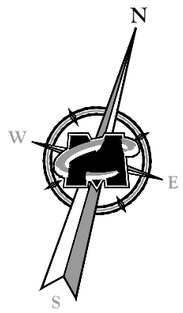
STATE OF CONNECTICUT — PETROS E. TSOUKALAS — LICENSED PROFESSIONAL ENGINEER
PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32578

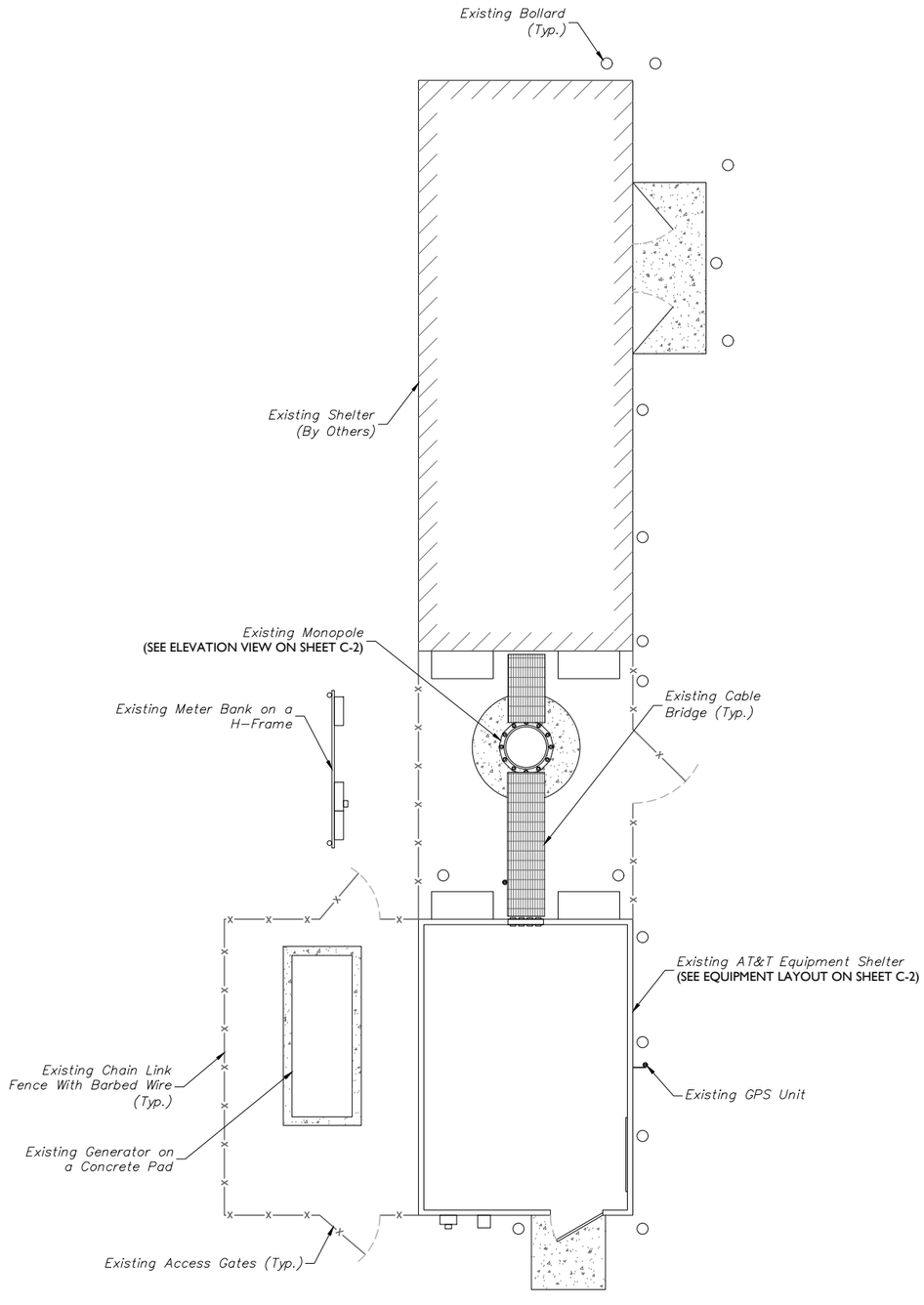
SITE NAME:
NAUGATUCK SOUTH MAIN
FA# 10035065
SITE# CT2166
585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
NEW HAVEN COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: .732.383.1950
Fax: .732.383.1984
email: solutions@maserconsulting.com

SHEET TITLE :
GENERAL NOTES

SHEET NUMBER :
GN-1





COMPOUND PLAN

4 3.2 2.4 1.6 0.8 0 2 4 8

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

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2	01/21/19	REVISED PER COMMENTS	RA	RA
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STATE OF CONNECTICUT
PETROS E. SOUKALAS
PROFESSIONAL ENGINEER
LICENSED
32579

PETROS E. SOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32579

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

SITE NAME:

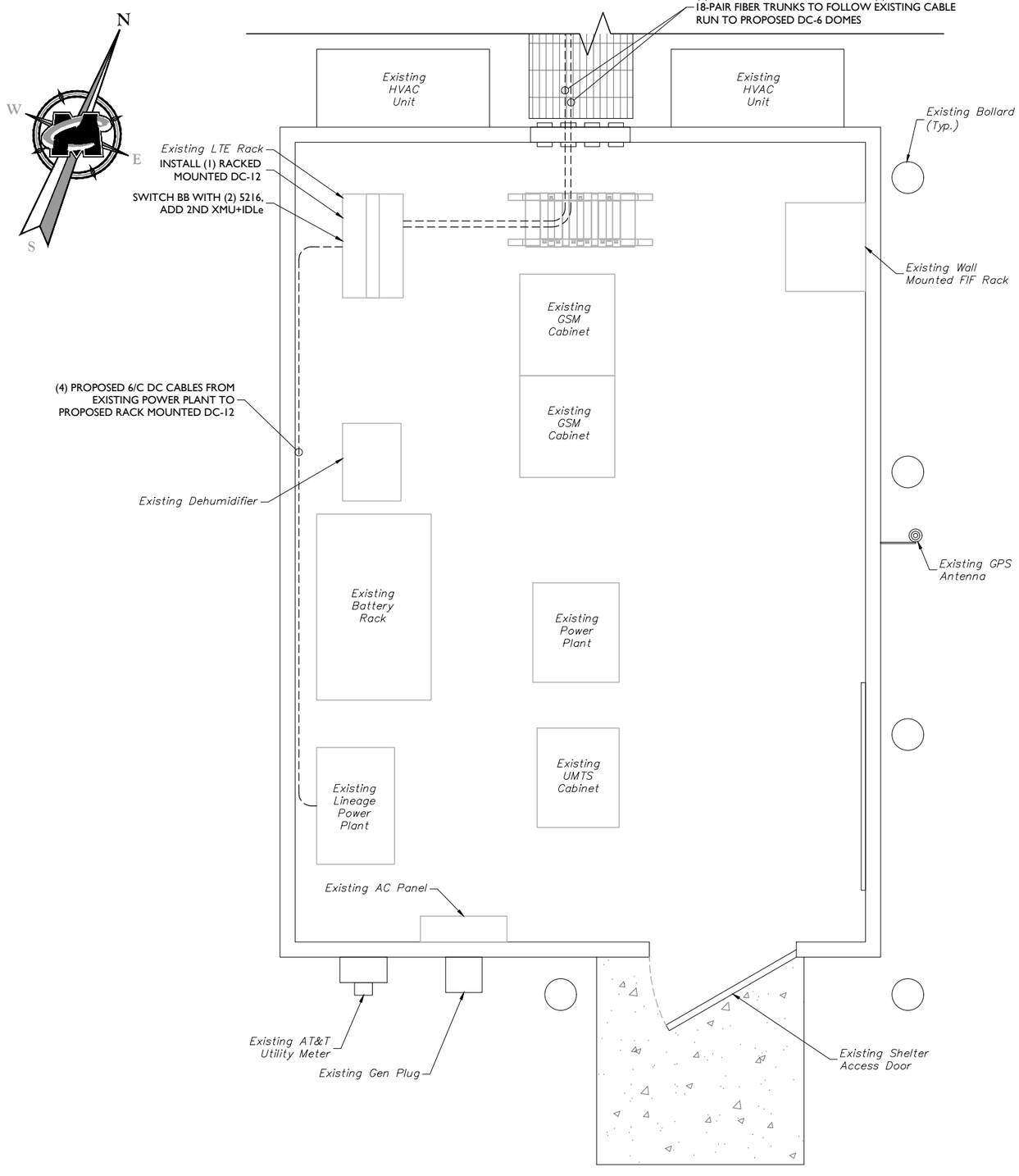
NAUGATUCK SOUTH MAIN
FA# 10035065
SITE# CT2166

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
NEW HAVEN COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984
email: solutions@maserconsulting.com

SHEET TITLE :
COMPOUND PLAN

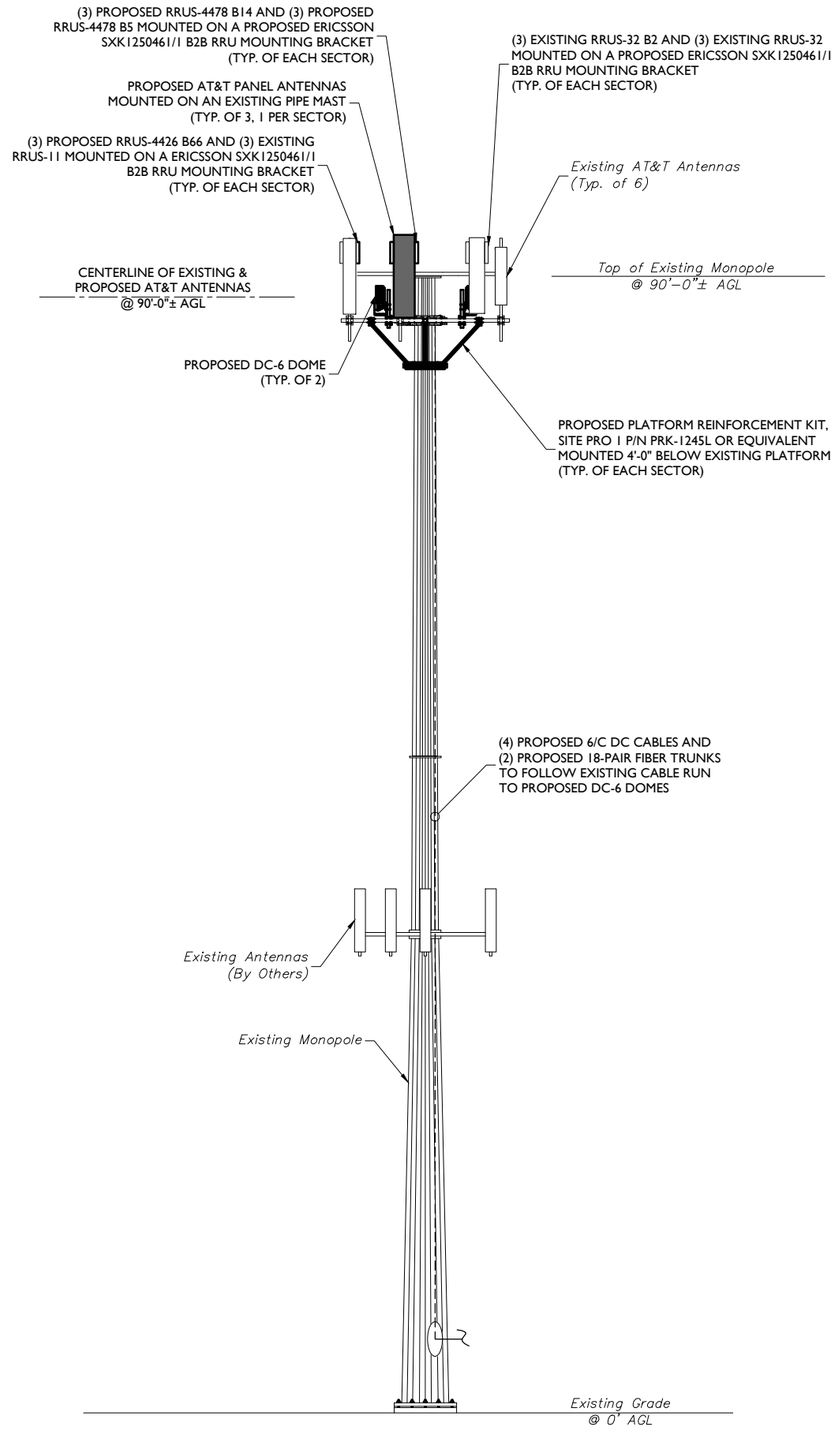
SHEET NUMBER :
C-1



EQUIPMENT LAYOUT

2 1.6 1.2 0.8 0.4 0 1 2 4

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



ELEVATION VIEW

6 4.8 3.6 2.4 1.2 0 3 6 12

SCALE : 1" = 6' FOR 22"X34"
(SCALE : 1" = 12' FOR 11"X17")

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STATE OF CONNECTICUT · PETROS S. SOUKALAS · 32577 · LICENSED PROFESSIONAL ENGINEER

PETROS S. SOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32577

SITE NAME:

NAUGATUCK SOUTH MAIN
FA# 10035065
SITE# CT2166

585 SOUTH MAIN STREET
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NEW HAVEN COUNTY

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331 Newman Springs Road
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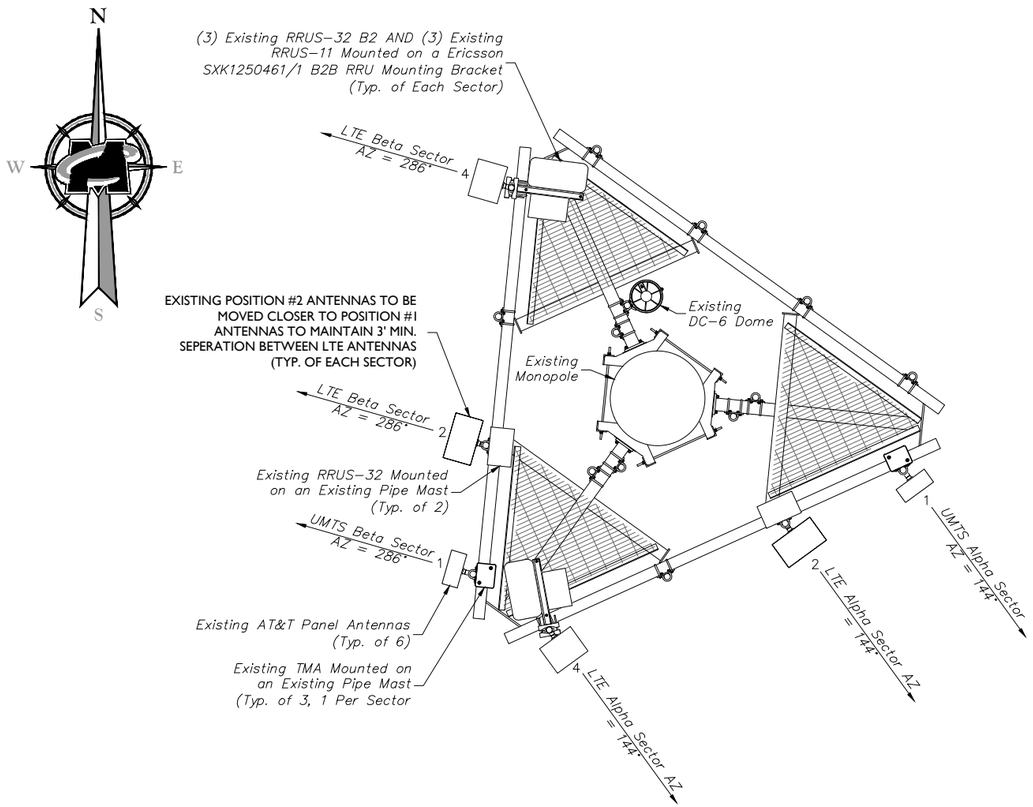
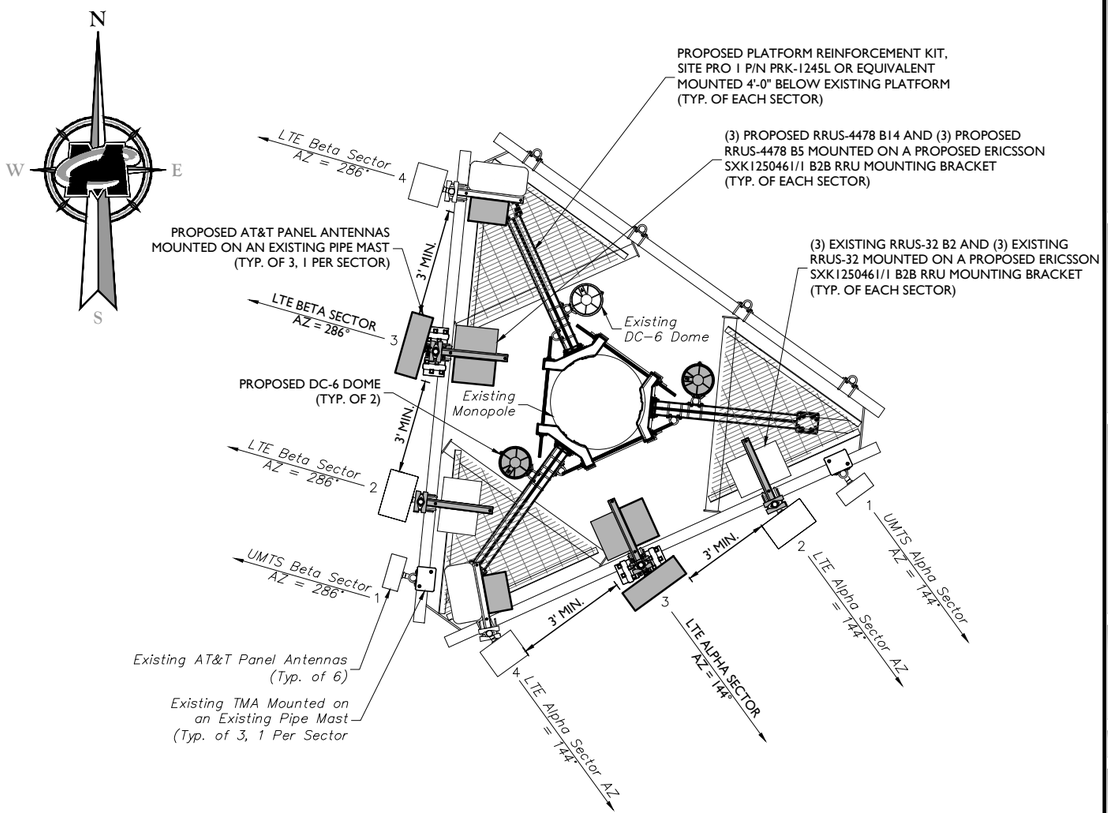
Phone: 732.383.1950
Fax: 732.383.1984
email: solutions@maserconsulting.com

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	144.00	90'	(2) CM1007-DBPXBC-003 (1) DTMABP7819VG12A		1 5/8" COAX	EXISTING
	2	CCI OPA-65R-LCUU-H6	CCI OPA-65R-LCUU-H6	LTE	EXISTING	72.30	14.40	7.30	69.50	144.00	90'	(1) RRUS-32		-	-
	3		KATHREIN 80010965	LTE	PROPOSED	78.70	20.00	6.90	108.60	144.00	90'	(2) DBCT108F1V92-1 (1) RRUS-4478 B14 (1) RRUS-4478 B5 (1) RRUS-32 B2	1/2	FIBER/DC	PROPOSED
	4	QUINTEL Q566512-2	QUINTEL Q566512-2	LTE	EXISTING	72.00	12.00	9.60	126.60	144.00	90'	(1) RRUS-4426 B66 (1) RRUS-11	1/2	FIBER/DC	EXISTING
Sector 2	1	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	286.00	90'	(2) CM1007-DBPXBC-003 (1) DTMABP7819VG12A		1 5/8" COAX	EXISTING
	2	CCI OPA-65R-LCUU-H6	CCI OPA-65R-LCUU-H6	LTE	EXISTING	72.30	14.40	7.30	69.50	286.00	90'	(1) RRUS-32		-	-
	3		KATHREIN 80010965	LTE	PROPOSED	78.70	20.00	6.90	108.60	286.00	90'	(2) DBCT108F1V92-1 (1) RRUS-4478 B14 (1) RRUS-4478 B5 (1) RRUS-32 B2	1/2	FIBER/DC	PROPOSED
	4	QUINTEL Q566512-2	QUINTEL Q566512-2	LTE	EXISTING	72.00	12.00	9.60	126.60	286.00	90'	(1) RRUS-4426 B66 (1) RRUS-11		-	-
Sector 3	1														
	2														
	3														
	4														

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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32578
LICENSED PROFESSIONAL ENGINEER

SITE NAME:

NAUGATUCK SOUTH MAIN
FA# 10035065
SITE# CT2166

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
NEW HAVEN COUNTY

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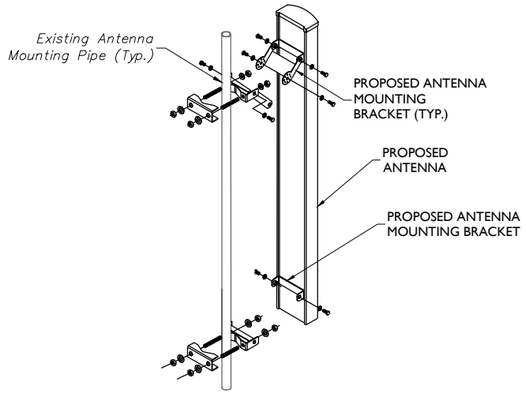
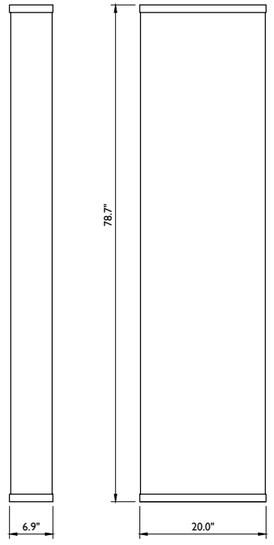
email: solutions@maserconsulting.com

SHEET TITLE :
ANTENNA LAYOUT AND ANTENNA SCHEDULE

SHEET NUMBER :
C-3



ANTENNA MOUNTING DETAIL
NOT TO SCALE

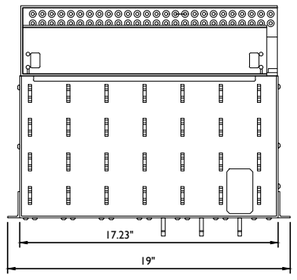


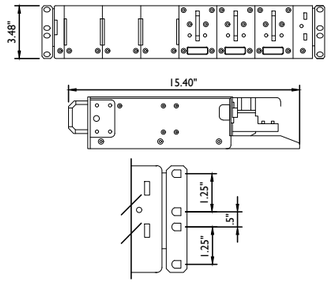
WEIGHT = 108.6 LBS

KATHREIN 800-10965

ANTENNA DETAIL
NOT TO SCALE

DC Surge Protection for RRHs
Rack Mount RM Series
DC6-48-60-RM - DC12-48-60-RM

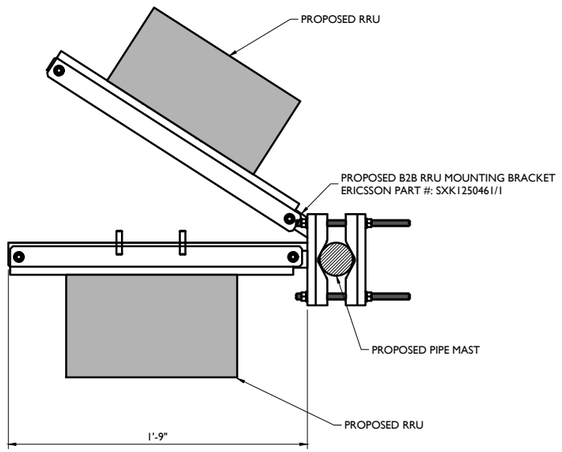




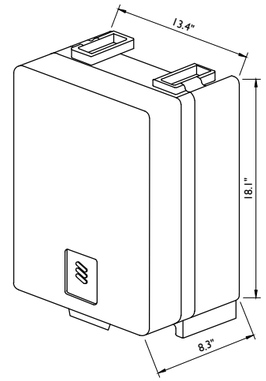
ELECTRICAL SPECIFICATIONS	
MODEL NUMBER:	DC12-48-60-RM
SURGE PROTECTIVE DEVICE TYPE:	CLASS I
MAXIMUM CONTINUOUS OPERATING:	75 VDC
DC VOLTAGE:	48 VDC
NOMINAL DISCHARGE CURRENT:	20kA 8/20 us
MAXIMUM IMPULSE CURRENT:	5kA 10/350 us
MAXIMUM SURGE CURRENT:	60kA 8/20 us
VOLTAGE PROTECTION RATING:	300V
NUMBER OF PROTECTED RADIOS:	12

MECHANICAL SPECIFICATIONS	
SUPPRESSION METHOD:	COMPRESSION LUG 2-HOLE, #10, 5/8 PITCH, 12-4 AWG
WEIGHT:	27 LBS
OPERATING TEMPERATURE:	-40°C TO +80°C
STORAGE TEMPERATURE:	-70°C TO +80°C
ENCLOSURE TYPE:	INDOOR ONLY

DC-12-48-60-RM DETAIL

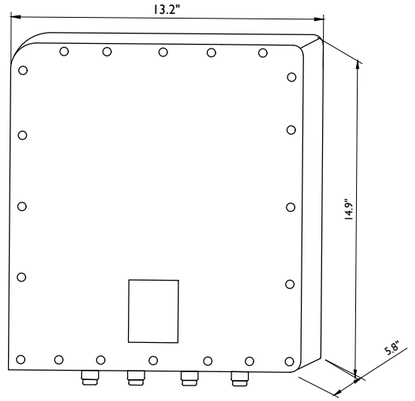


RRU MOUNTING DETAIL
NOT TO SCALE



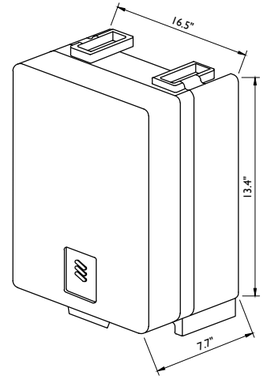
DIMENSIONS (H X W X D): 18.1"H X 13.4"W X 8.3"D (INCLUDES SUNSHIELD)
WEIGHT: 59.4 LBS

RRUS-4478 B14 DETAIL
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): 16.5"H X 13.4"W X 7.7"D (INCLUDES SUNSHIELD)
WEIGHT: 59.9 LBS

RRU-4478-B5 DETAIL
NOT TO SCALE

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STATE OF CONNECTICUT — PETROS E. SOUKALAS — PROFESSIONAL ENGINEER — LICENSED

PETROS E. SOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32518

SITE NAME:

NAUGATUCK SOUTH MAIN
FA# 10035065
SITE# CT2166

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
NEW HAVEN COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
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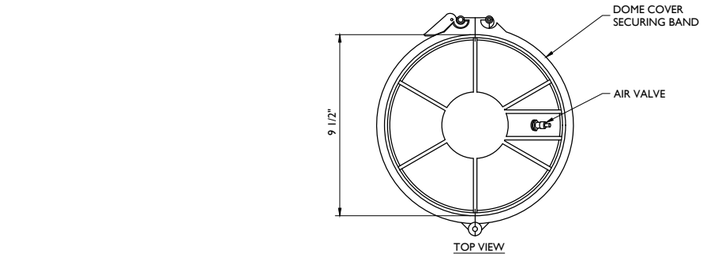
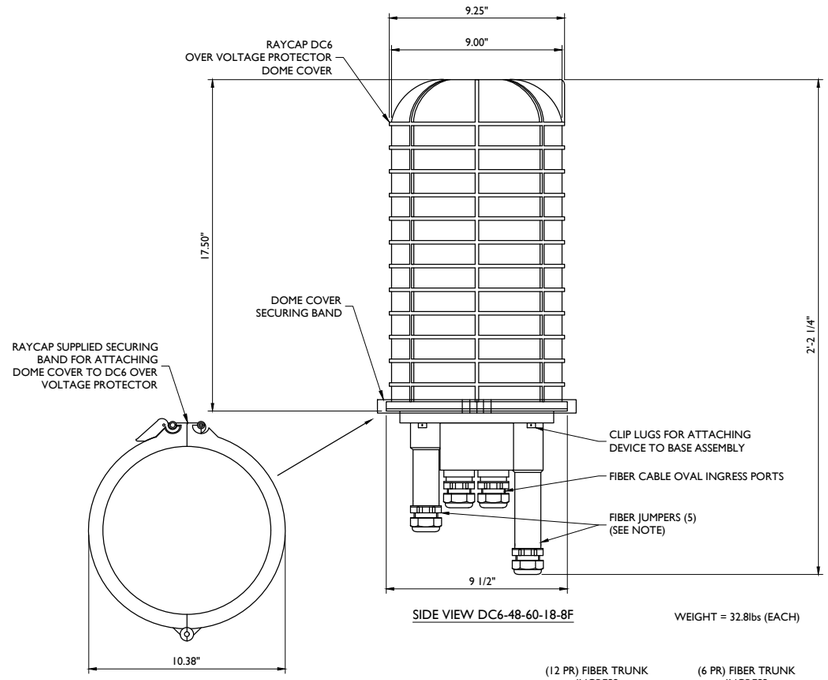
Fax: .732.383.1984
email: solutions@maserconsulting.com

SHEET TITLE : DETAILS

SHEET NUMBER : A-1

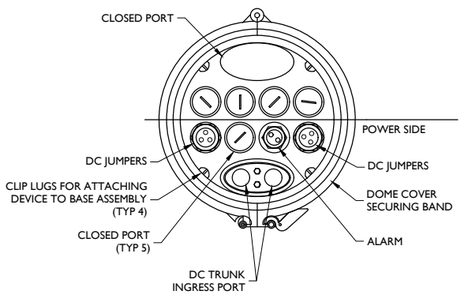


TOP VIEW

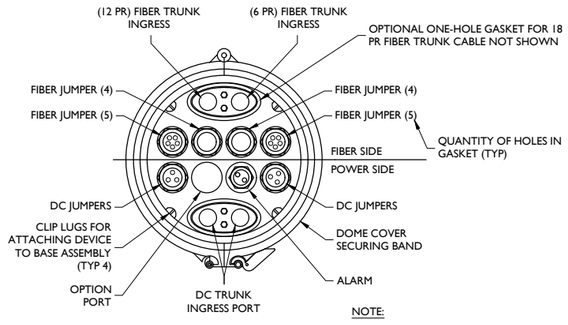


SIDE VIEW DC6-48-60-18-8F

WEIGHT = 32.8lbs (EACH)



BOTTOM VIEW
DC6-48-60-0-8F



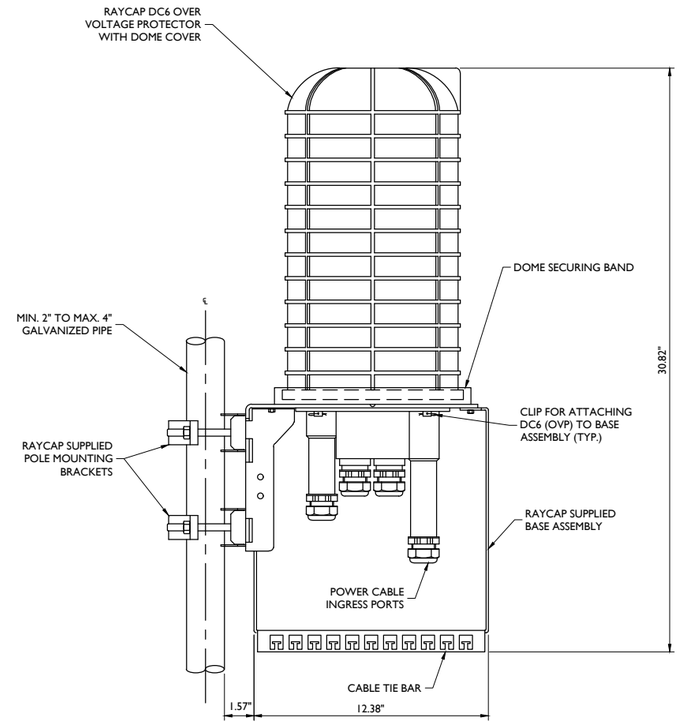
BOTTOM VIEW
DC6-48-60-18-8F

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



ELEVATION

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

NOT TO SCALE

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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
PROFESSIONAL ENGINEER
LICENSED
PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32578

SITE NAME:

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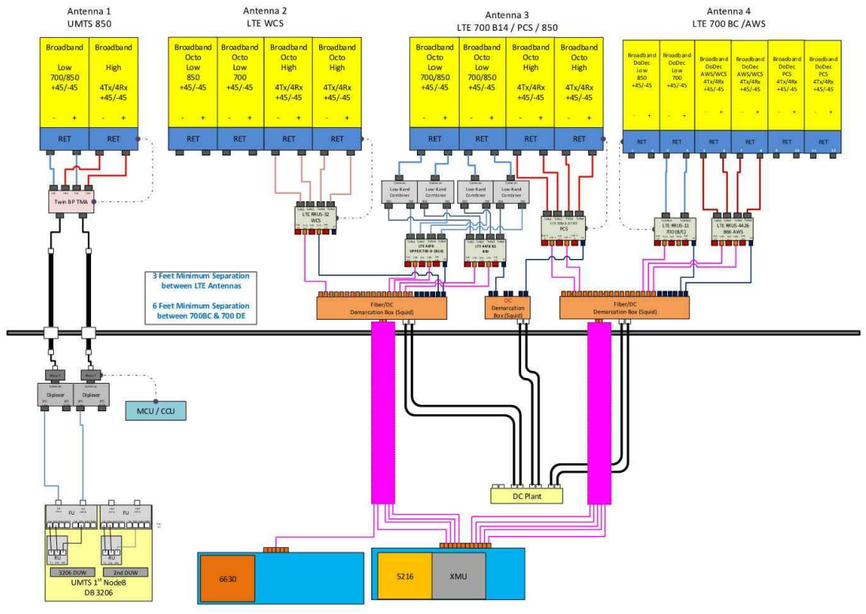
SHEET TITLE :
DETAILS

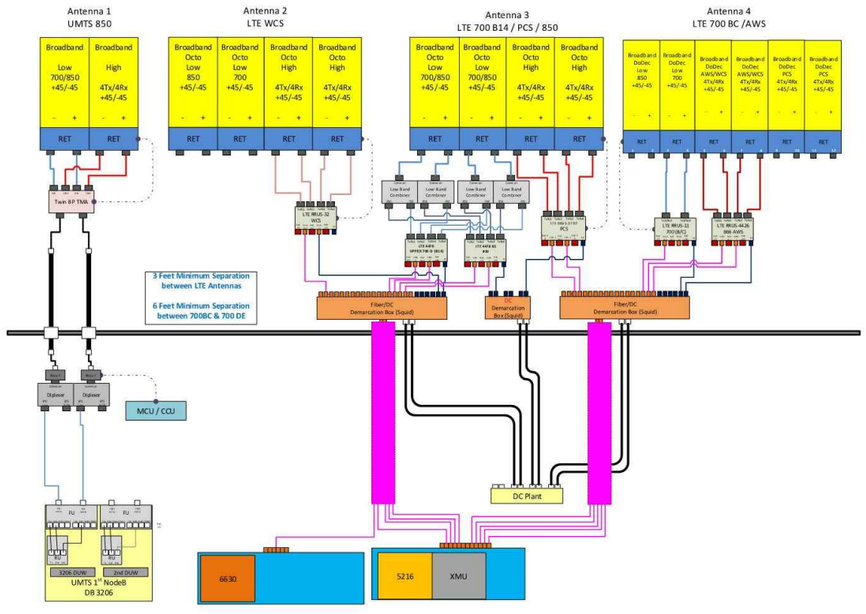
SHEET NUMBER :
A-2

Diagram - Sector A | Diagram File Name - FN_5G_CT2166_A_B_LTE 6C_Rev2vsd.vsd
Atoll Site Name - CT2166 | Location Name - NAUGATUCK SOUTH MAIN | Market - CONNECTICUT | Market Cluster - NEW ENGLAND
Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson "



ALPHA SECTOR

Diagram - Sector B | Diagram File Name - FN_5G_CT2166_A_B_LTE 6C_Rev2vsd.vsd
Atoll Site Name - CT2166 | Location Name - NAUGATUCK SOUTH MAIN | Market - CONNECTICUT | Market Cluster - NEW ENGLAND
Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson "



BETA SECTOR

BASED ON: RF ENGINEERING DESIGN ENTITLED "CT2166_2018-LTE-Next-Carrier_LTE_rx855w_2051A0GH7J_10035065_61187 final", LAST REVISED 06/13/2018.

RF PLUMBING DIAGRAMS

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SCALE :	JOB NUMBER :
AS SHOWN	18963006A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
2	01/21/19	REVISED PER COMMENTS	RA	RA
0	10/18/18	FOR CONSTRUCTION	AJC	RA
1	09/14/18	ISSUED FOR REVIEW	AJC	RA

STATE OF CONNECTICUT — PETROS E. TSOUKALAS — 32577 — LICENSED PROFESSIONAL ENGINEER

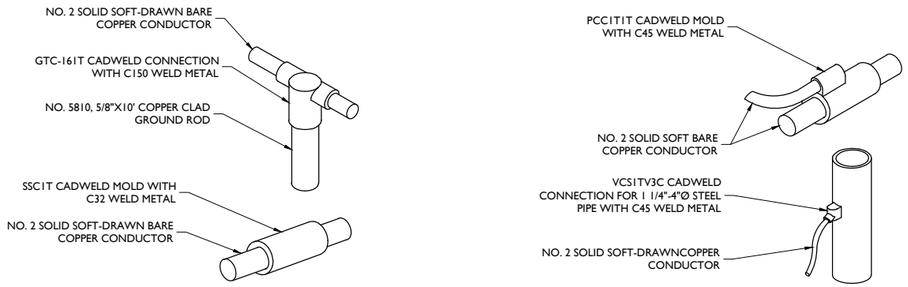
PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32577

SITE NAME:
NAUGATUCK SOUTH MAIN
FA# 10035065
SITE# CT2166
585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
NEW HAVEN COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984
email: solutions@maserconsulting.com

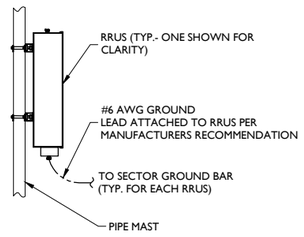
SHEET TITLE :
RF PLUMBING DIAGRAM

SHEET NUMBER :
A-3



CADWELD DETAILS

NOT TO SCALE



RRU GROUNDING

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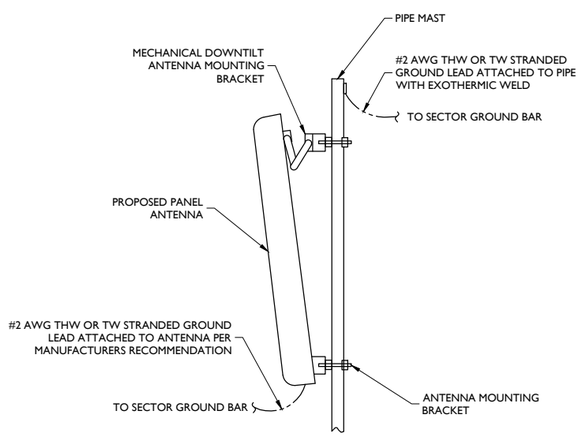

ANTENNA GROUNDING

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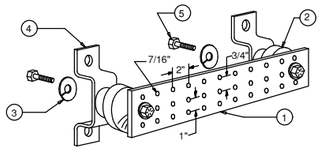


LEGEND

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

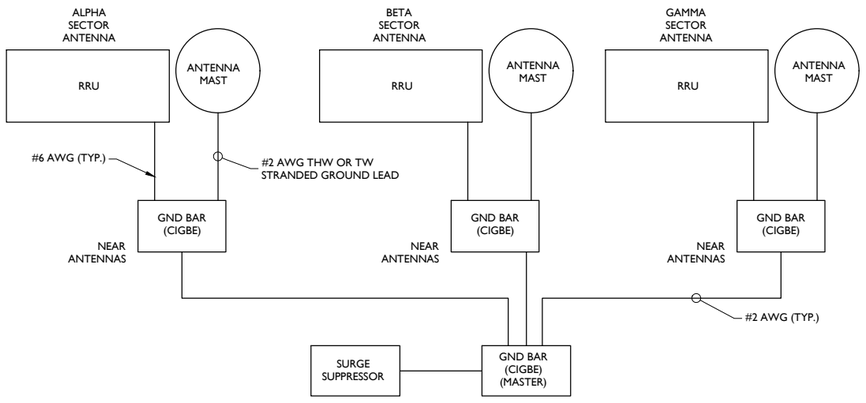
CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLT RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

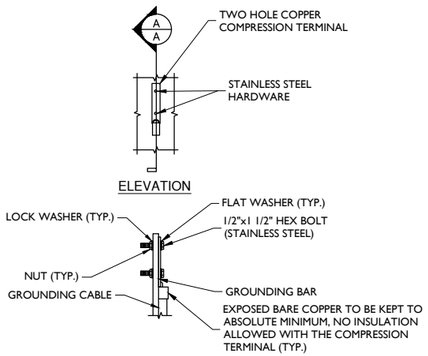
INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

MASTER GROUND BAR

NOT TO SCALE



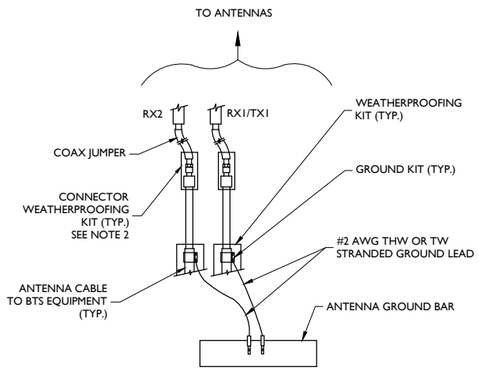
SCHEMATIC DIAGRAM GROUNDING SYSTEM



SECTION A-A

TYPICAL GROUND BAR CONNECTION DETAIL

NOT TO SCALE



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

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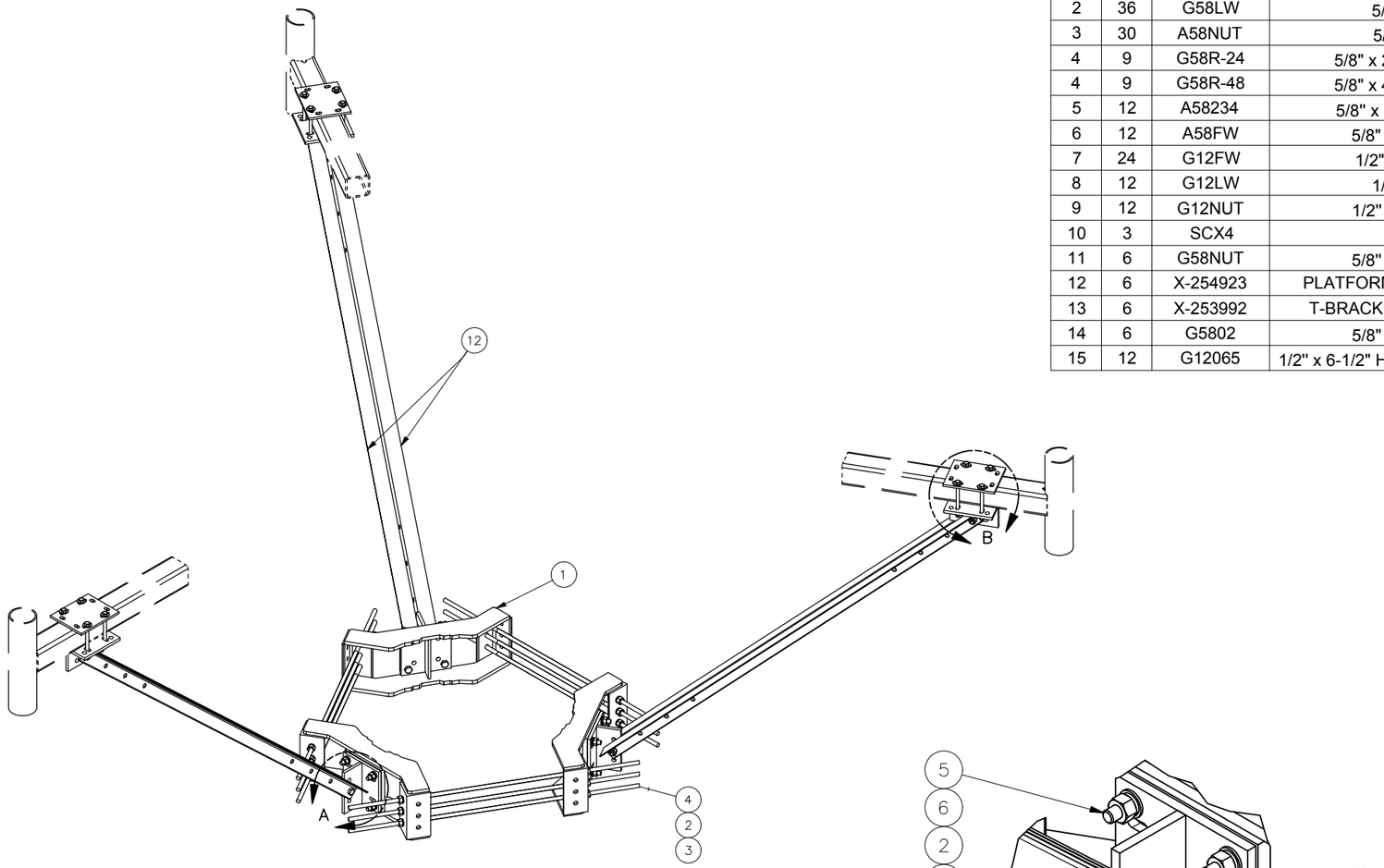
email: solutions@maserconsulting.com

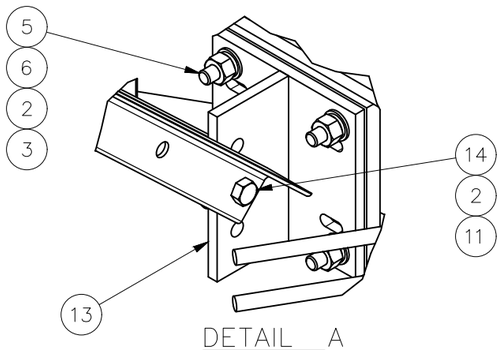
SHEET TITLE :

GROUNDING DETAILS

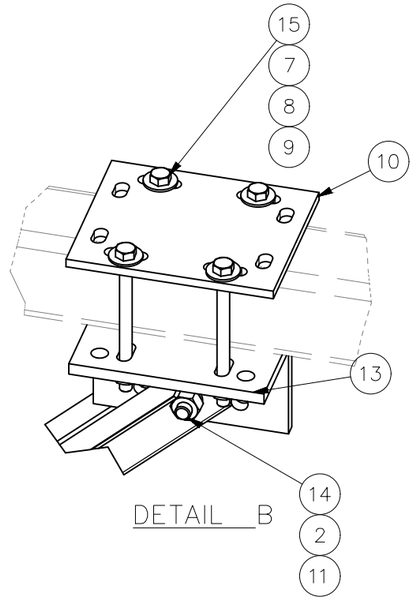
SHEET NUMBER :

G-1





DETAIL A



DETAIL B

SITE PRO1 P/N:PRK-1245L

NOT TO SCALE

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	36	G58LW	5/8" HDG LOCKWASHER		0.03	0.94
3	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
4	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.55	4.94
4	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.55	4.94
5	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	4.27
6	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
7	24	G12FW	1/2" HDG USS FLATWASHER		0.03	0.82
8	12	G12LW	1/2" HDG LOCKWASHER		0.01	0.17
9	12	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.86
10	3	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	18.06
11	6	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.78
12	6	X-254923	PLATFORM REINFORCEMENT KIT ANGLE	84 in	22.83	137.00
13	6	X-253992	T-BRACKET FOR REINFORCEMENT KIT		13.55	81.27
14	6	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.62
15	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
					TOTAL WT. #	515.92

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SHEET TITLE :

STRUCTURAL DETAILS

SHEET NUMBER :

S-1

AMERICAN TOWER®
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Structural Analysis Report

Structure	:	**89 ft Monopole**
ATC Site Name	:	**Naugatuck (Telephone Pole), CT**
ATC Site Number	:	**302526**
Engineering Number	:	**OAA742050_C3_01**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Naugatuck South Main**
Carrier Site Number	:	**CT2166**
Site Location	:	**585 South Main St. (soc. Club)** **Naugatuck, CT 06770-4725** **41.478400,-73.048500**
County	:	**New Haven**
Date	:	**December 17, 2018**
Max Usage	:	**92%**
Result	:	**Pass**

Prepared By:
Travis J. Gatling
Structural Engineer I

Travis J. Gatling

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Dec 17 2018 5:00 PM cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 89 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	EEI Job #11696, dated January 22, 2001
Foundation Drawing	EEI Job #11696, dated June 5, 2003
Geotechnical Report	CET Project #07729-76, dated March 28, 2003
Modifications	ATC Project #OAA698250_C6_03, dated June 8, 2017

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 V_{ASD}) / 125 mph (3-Second Gust V_{ULT})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.19, 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 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					
89.0	90.0	4	CCI DTMABP7819VG12A	Platform w/ Handrails	(8) 1 5/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (2) 2" conduit (1) 0.51" Hybrid	AT&T Mobility
		2	Raycap DC6-48-60-18-8F ("Squid")			
		2	Ericsson RRUS 11 (Band 12) (55 lb)			
		2	Ericsson RRUS 32 (50.8 lbs)			
		2	Ericsson RRUS 32 B2			
		2	Powerwave 7770.00			
		2	Quintel QS66512-2			
		2	CCI OPA-65R-LCUU-H6			
42.0	42.0	3	RFS FD9R6004/1C-3L	Low Profile Platform	(12) 7/8" Coax (2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent RRH2X60-1900			
		3	Alcatel-Lucent RRH2x60 700			
		3	Alcatel-Lucent B66 RRH4x45			
		6	Decibel DB844H80E-XY			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Commscope SBNHH-1D65B			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
90.0	90.0	4	Powerwave CM1007-DBPXBC-003	-	-	AT&T Mobility

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
89.0	90.0	4	Kaelus DBCT108F1V92-1	Platform w/ Handrails	(2) 0.78" 8 AWG 6	AT&T Mobility
		1	Raycap DC6-48-60-0-8F			
		2	Ericsson RRUS 4426 B66			
		2	Ericsson 4478 Band 14 (15" Height)			
		2	Ericsson RRUS 4478 B5 (56.1 lbs)			
		2	Kathrein 80010965			

[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	19%	Pass
Shaft	80%	Pass
Base Plate	24%	Pass
Flanges	17%	Pass
Reinforcement	74%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	564.6	90%
Axial (Kips)	17.3	92%
Shear (Kips)	10.0	32%

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) (°)
89.0	Kaelus DBCT108F1V92-1	AT&T Mobility	0.683	0.906
	Raycap DC6-48-60-0-8F			
	Ericsson RRUS 4426 B66			
	Ericsson 4478 Band 14 (15" Height)			
	Ericsson RRUS 4478 B5 (56.1 lbs)			
	Kathrein Scala 80010965			

***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:

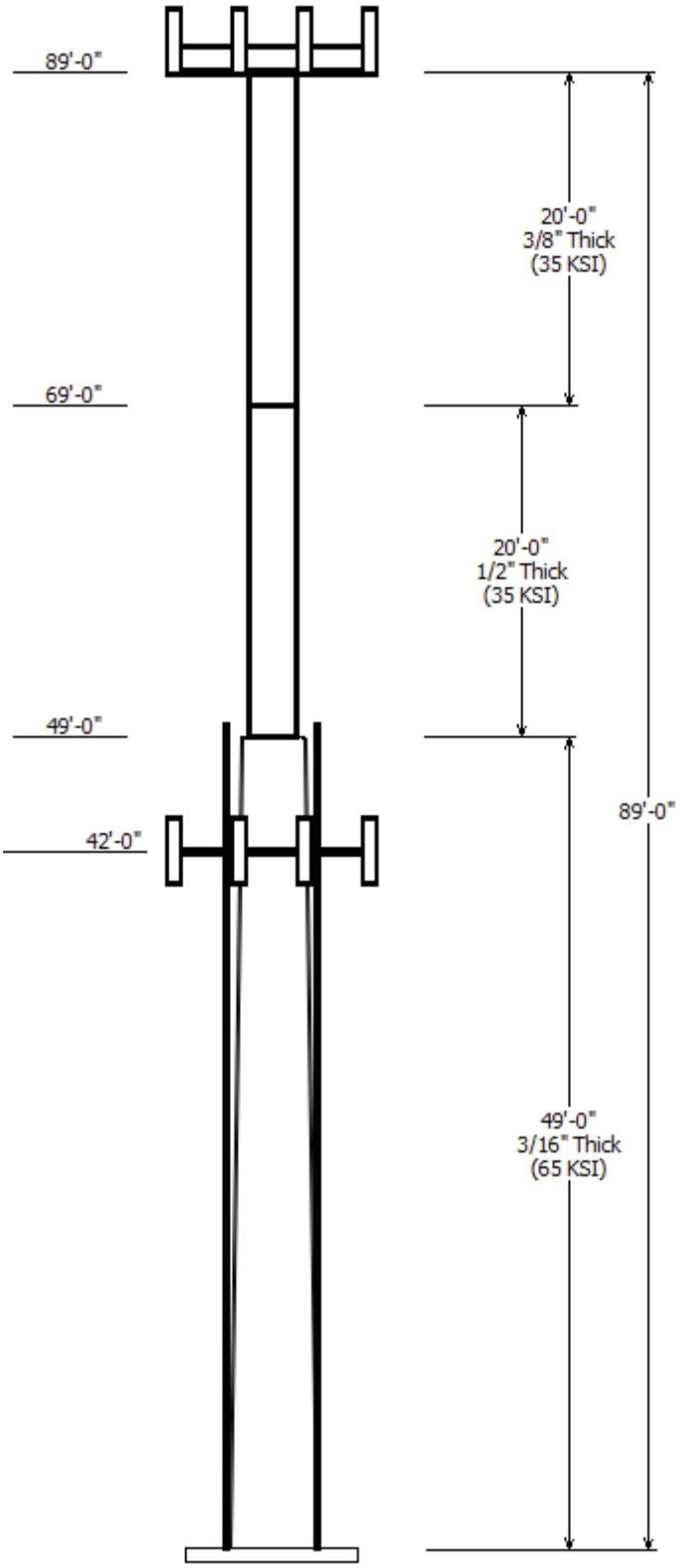
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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 :	302526	Code:	ANSI/TIA-222-G
Location :	Naugatuck (telephone Pole), CT		
Description :	49' EEI Monopole w/ Proposed 40 ft extension		
Client :	AT&T MOBILITY	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	89.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.183673 (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	49.000	14.00	23.00	0.188		0.000	18 Sides	65
2	20.000	12.75	12.75	0.500	Butt Joint	0.000	Round	35
3	20.000	12.75	12.75	0.375	Butt Joint	0.000	Round	35

Discrete Appurtenance

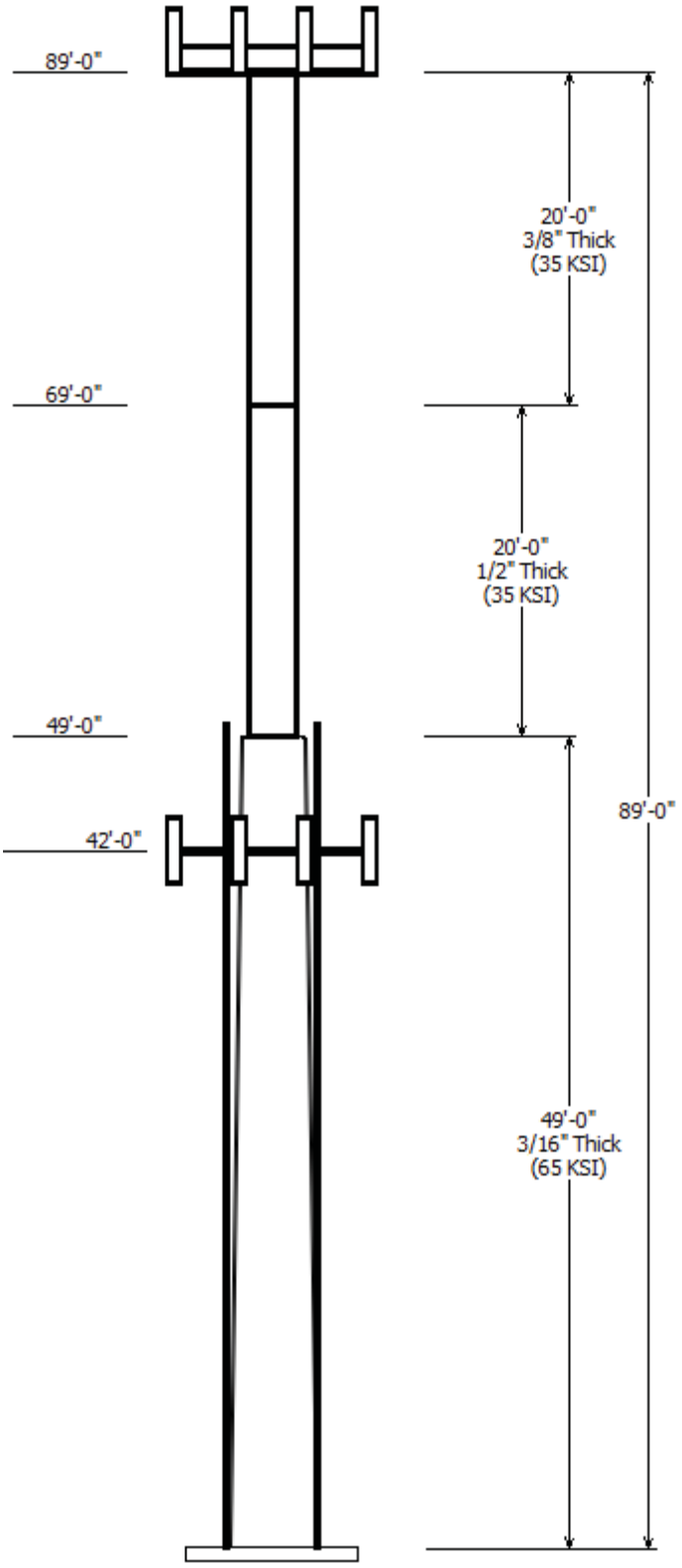
Attach Elev (ft)	Force Elev (ft)	Qty	Description
89.000	90.000	2	Ericsson RRUS 4478 B5 (56.1 lb
89.000	90.000	2	Ericsson 4478 Band 14 (15" Hei
89.000	90.000	2	Ericsson RRUS 4426 B66
89.000	90.000	1	Raycap DC6-48-60-0-8F
89.000	90.000	4	Kaelus DBCT108F1V92-1
89.000	90.000	2	Ericsson RRUS 11 (Band 12) (55
89.000	89.000	1	Round Platform w/ Handrails
89.000	90.000	2	Kathrein Scala 80010965
89.000	90.000	2	Raycap DC6-48-60-18-8F
89.000	90.000	4	CCI DTMABP7819VG12A
89.000	90.000	2	Quintel QS66512-2
89.000	90.000	2	CCI OPA-65R-LCUU-H6
89.000	90.000	2	Powerwave Allgon 7770.00
89.000	90.000	2	Ericsson RRUS 32 B2
89.000	90.000	2	Ericsson RRUS 32 (50.8 lbs)
42.000	42.000	1	Flat Low Profile Platform
42.000	42.000	6	Commscope SBNHH-1D65B
42.000	42.000	2	RFS DB-T1-6Z-8AB-0Z
42.000	42.000	6	Decibel DB844H80E-XY
42.000	42.000	3	Alcatel-Lucent RRH2x60 700
42.000	42.000	3	Alcatel-Lucent RRH2X60-1900
42.000	42.000	3	Alcatel-Lucent B66 RRH4x45
42.000	42.000	3	RFS FD9R6004/1C-3L

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	42.000	1 5/8" Hybriflex	No
0.000	42.000	7/8" Coax	No
0.000	53.500	#20 Threaded Bar	Yes
0.000	89.000	0.39" Fiber Trunk	No
0.000	89.000	0.51" Hybrid	No
0.000	89.000	0.78" 8 AWG 6	No
0.000	89.000	0.78" 8 AWG 6	No
0.000	89.000	1 5/8" Coax	No
0.000	89.000	2" conduit	No

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)



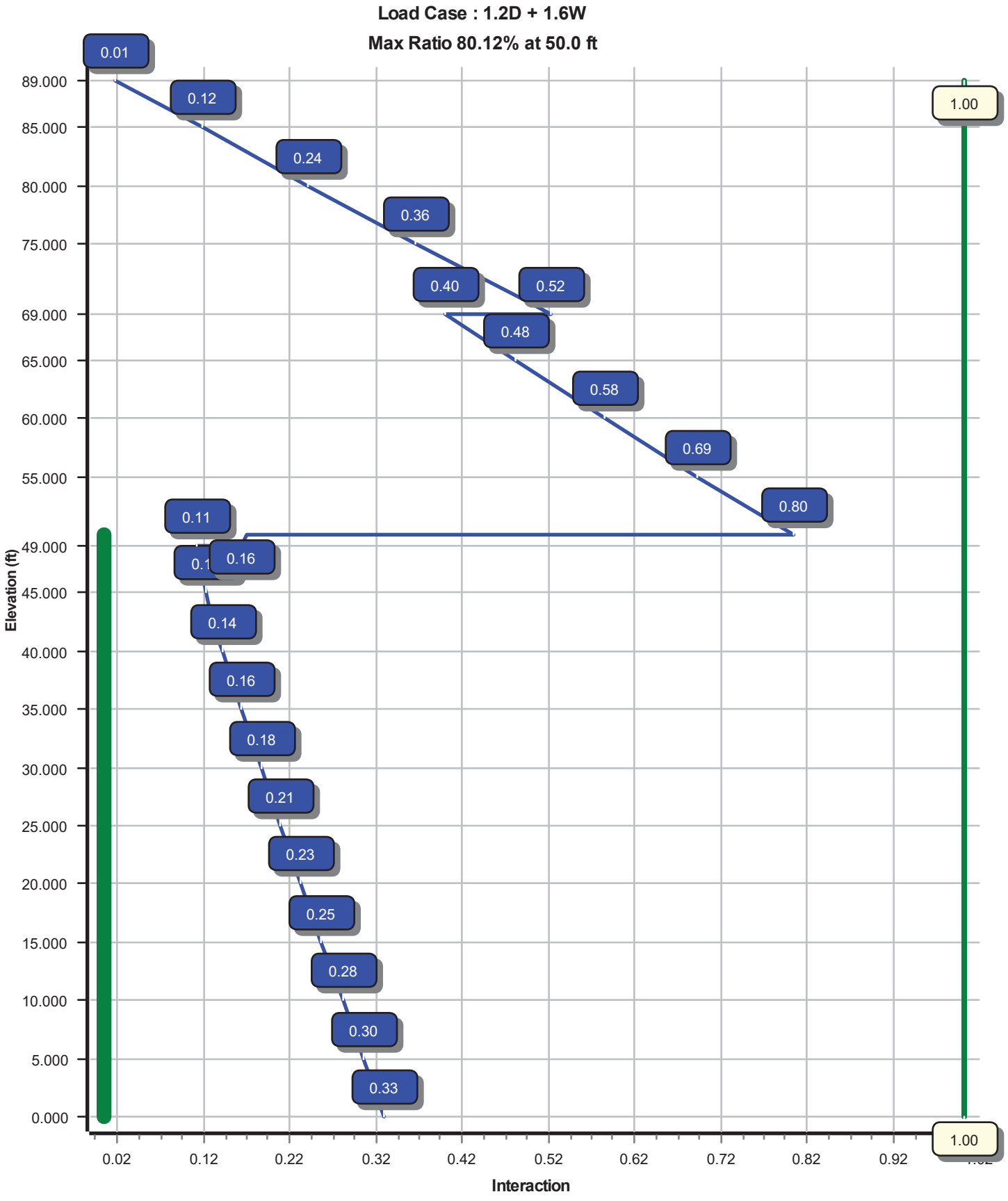
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	564.56	9.99	17.34
0.9D + 1.6W	558.77	9.98	13.00
1.2D + 1.0Di + 1.0Wi	146.46	2.42	27.61
(1.2 + 0.2Sds) * DL + E ELFM	52.25	0.69	17.21
(1.2 + 0.2Sds) * DL + E EMAM	132.99	1.60	17.20
(0.9 - 0.2Sds) * DL + E ELFM	51.53	0.69	11.92
(0.9 - 0.2Sds) * DL + E EMAM	130.99	1.60	11.91
1.0D + 1.0W	136.54	2.45	14.46

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000


Load Case : 1.2D + 1.6W
Max Ratio 80.12% at 50.0 ft
Elevation (ft)
89.000
85.000
80.000
75.000
69.000
65.000
60.000
55.000
49.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.01
0.12
0.24
0.36
0.40
0.52
0.48
0.58
0.69
0.80
0.11
0.16
0.14
0.16
0.18
0.21
0.23
0.25
0.28
0.30
0.33
1.00
1.00
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	**302526**	**Code: ANSI/TIA-222-G**	
Site Name:	**Naugatuck (telephone Pole), CT**	**Engineering Number:OAA742050_C3_01**	**12/17/2018 12:21:36 PM**
Customer:	**AT&T MOBILITY**		

Analysis Parameters

Location :	**NEW HAVEN County, CT**	**Height (ft) :**	**89**
Code :	**ANSI/TIA-222-G**	**Base Diameter (in) :**	**23.00**
Shape :	**18 Sides. Sect 2: Round. Sect 3: Round**	**Top Diameter (in) :**	**12.75**
Pole Type :	**Custom**	**Taper (in/ft) :**	**0.184**
Pole Manfacturer :	**EEI**	**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:**	**0.75 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**1.86**				
T_L (sec):	**6**	**p:**	**1.3**	**C_s:**	**0.037**
S_s:	**0.191**	**S_1:**	**0.064**	**C_s Max:**	**0.037**
F_a:	**1.600**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.204**	**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 0.75 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: 302526 **Code:** ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT **Engineering Number:**OAA742050_C3_01 **12/17/2018 12:21:36 PM**

Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	49.000	0.1875	65		0.00	1,817	23.00	0.00	13.58	892.6	20.22	122.67	14.00	49.00	8.22	198.1	11.76	74.67	0.183673
2-R	20.000	0.5000	35	Butt	0.00	1,310	12.75	49.00	19.24	361.2	0.00	25.50	12.75	69.00	19.24	361.2	0.00	25.50	0.000000
3-R	20.000	0.3750	35	Butt	0.00	992	12.75	69.00	14.58	279.3	0.00	34.00	12.75	89.00	14.58	279.3	0.00	34.00	0.000000
				Shaft Weight		4,119													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
89.00	CCI DTMABP7819VG12A	4	0.000	1.000	19.20	0.970	0.50
89.00	CCI OPA-65R-LCUU-H6	2	0.000	1.000	73.00	9.660	0.66
89.00	Ericsson 4478 Band 14 (15" Hei	2	0.000	1.000	59.90	1.840	0.50
89.00	Ericsson RRUS 11 (Band 12) (55	2	0.000	1.000	55.00	2.520	0.67
89.00	Ericsson RRUS 32 (50.8 lbs)	2	0.000	1.000	50.80	2.690	0.67
89.00	Ericsson RRUS 32 B2	2	0.000	1.000	53.00	2.740	0.67
89.00	Ericsson RRUS 4426 B66	2	0.000	1.000	48.40	1.650	0.50
89.00	Ericsson RRUS 4478 B5 (56.1 lb	2	0.000	1.000	56.10	2.040	0.67
89.00	Kaelus DBCT108F1V92-1	4	0.000	1.000	13.90	0.740	0.50
89.00	Kathrein Scala 80010965	2	0.000	1.000	97.60	13.810	0.62
89.00	Powerwave Allgon 7770.00	2	0.000	1.000	35.00	5.510	0.65
89.00	Quintel QS66512-2	2	0.000	1.000	111.00	8.130	0.74
89.00	Raycap DC6-48-60-0-8F	1	0.000	1.000	32.80	1.190	1.00
89.00	Raycap DC6-48-60-18-8F ("Squid	2	0.000	1.000	31.80	1.280	1.00
89.00	Round Platform w/ Handrails	1	0.000	0.000	2000.00	27.200	1.00
42.00	Alcatel-Lucent B66 RRH4x45	3	0.000	0.000	67.00	2.580	0.67
42.00	Alcatel-Lucent RRH2x60 700	3	0.000	0.000	56.70	2.150	0.67
42.00	Alcatel-Lucent RRH2X60-1900	3	0.000	0.000	43.00	1.880	0.50
42.00	Commscope SBNHH-1D65B	6	0.000	0.000	50.70	8.170	0.69
42.00	Decibel DB844H80E-XY	6	0.000	0.000	14.00	3.610	0.74
42.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	1.00
42.00	RFS DB-T1-6Z-8AB-0Z	2	0.000	0.000	44.00	4.800	0.67
42.00	RFS FD9R6004/1C-3L	3	0.000	0.000	3.10	0.370	0.50
Totals	Num Loadings:23	59			5994.00		

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	89.00	2	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
0.00	89.00	1	0.51" Hybrid	0.51	0.14	N	0.00	N	AT&T Mobility
0.00	89.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	89.00	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	89.00	8	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	89.00	2	2" conduit	2.38	3.65	N	0.00	N	AT&T Mobility
0.00	53.50	3	#20 Threaded Bar	2.72	0.00	N	6.00	Y	
0.00	42.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon
0.00	42.00	12	7/8" Coax	1.09	0.33	N	0.00	N	Verizon

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	50.00	3	SOL #20 All Thread	80	6.25	6" Angle Bracket	48.0	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		0.1875	23.000	13.576	892.6	20.22	122.67	77.6	76.4	0.0	0.0	14.73	2,664	0.0
5.00		0.1875	22.082	13.029	789.1	19.36	117.77	78.6	70.4	0.0	226.3	14.73	2,537	250.5
10.00		0.1875	21.163	12.483	693.9	18.49	112.87	79.7	64.6	0.0	217.0	14.73	2,413	250.5
15.00		0.1875	20.245	11.936	606.7	17.63	107.97	80.7	59.0	0.0	207.7	14.73	2,293	250.5
20.00		0.1875	19.327	11.390	527.1	16.76	103.07	81.7	53.7	0.0	198.4	14.73	2,175	250.5
25.00		0.1875	18.408	10.843	454.8	15.90	98.18	82.6	48.7	0.0	189.1	14.73	2,060	250.5
30.00		0.1875	17.490	10.297	389.5	15.04	93.28	82.6	43.9	0.0	179.8	14.73	1,949	250.5
35.00		0.1875	16.571	9.750	330.7	14.17	88.38	82.6	39.3	0.0	170.5	14.73	1,841	250.5
40.00		0.1875	15.653	9.204	278.1	13.31	83.48	82.6	35.0	0.0	161.2	14.73	1,735	250.5
42.00		0.1875	15.286	8.985	258.8	12.96	81.52	82.6	33.3	0.0	61.9	14.73	1,694	100.2
45.00		0.1875	14.735	8.657	231.5	12.45	78.59	82.6	30.9	0.0	90.0	14.73	1,633	150.3
49.00	Top - Section 1	0.1875	14.000	8.220	198.1	11.76	74.67	82.6	27.9	0.0	114.9	14.73	1,554	200.4
49.00	Bot - Section 2	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1		14.73	1,554	
50.00	Reinf. Top	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	65.5	14.73	1,423	50.1
55.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
60.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
65.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
69.00	Top - Section 2	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	261.9			
69.00	Bot - Section 3	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
70.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	49.6			
75.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
80.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
85.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
89.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	198.4			
											4,118.8			2,505.0

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_01 12/17/2018 12:21:36 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 97 mph with No Ice 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces 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		161.3	0.0					0.0	0.0	161.3	0.0	0.0	0.0
5.00		316.1	271.6					66.7	445.9	382.8	717.5	0.0	0.0
10.00		302.9	260.4					66.7	445.9	369.6	706.4	0.0	0.0
15.00		289.8	249.3					66.7	445.9	356.5	695.2	0.0	0.0
20.00		276.6	238.1					66.7	445.9	343.3	684.0	0.0	0.0
25.00		263.5	227.0					66.7	445.9	330.2	672.9	0.0	0.0
30.00		253.3	215.8					66.7	445.9	320.0	661.7	0.0	0.0
35.00		247.8	204.6					67.5	445.9	315.3	650.6	0.0	0.0
40.00		171.5	193.5					68.9	445.9	240.3	639.4	0.0	0.0
42.00	Appurtenance(s)	120.2	74.3	2,529.5	0.0	0.0	2,982.7	27.9	178.4	2,677.6	3,235.4	0.0	0.0
45.00		165.3	108.1					42.2	243.9	207.5	352.0	0.0	0.0
49.00	Top - Section 1	114.3	137.8					56.9	325.2	171.3	463.1	0.0	0.0
50.00	Reinf. Top	126.3	78.6					14.3	81.3	140.6	159.9	0.0	0.0
55.00		159.7	392.9					50.6	106.0	210.3	498.8	0.0	0.0
60.00		109.6	392.9					0.0	106.0	109.6	498.8	0.0	0.0
65.00		100.7	392.9					0.0	106.0	100.7	498.8	0.0	0.0
69.00	Top - Section 2	56.7	314.3					0.0	84.8	56.7	399.1	0.0	0.0
70.00		69.3	59.5					0.0	21.2	69.3	80.7	0.0	0.0
75.00		116.8	297.7					0.0	106.0	116.8	403.6	0.0	0.0
80.00		119.0	297.7					0.0	106.0	119.0	403.6	0.0	0.0
85.00		108.8	297.7					0.0	106.0	108.8	403.6	0.0	0.0
89.00	Appurtenance(s)	48.8	238.1	3,164.9	0.0	2,117.8	4,210.1	0.0	84.8	3,213.7	4,533.0	0.0	0.0
								Totals:		10,121.2	17,358.0	0.00	0.00

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_01 12/17/2018 12:21:38 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 97 mph with No Ice 21 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	-17.34	-9.99	0.00	-564.56	0.00	564.56	948.37	474.19	888.66	444.99	0.00	0.00	0.328
5.00	-16.59	-9.67	0.00	-514.59	0.00	514.59	922.11	461.05	828.98	415.11	0.12	-0.22	0.303
10.00	-15.85	-9.35	0.00	-466.24	0.00	466.24	894.84	447.42	770.44	385.79	0.46	-0.43	0.278
15.00	-15.12	-9.04	0.00	-419.47	0.00	419.47	866.57	433.29	713.14	357.10	1.02	-0.63	0.254
20.00	-14.42	-8.74	0.00	-374.25	0.00	374.25	837.31	418.65	657.22	329.10	1.78	-0.82	0.230
25.00	-13.72	-8.44	0.00	-330.55	0.00	330.55	805.59	402.80	601.69	301.29	2.74	-1.01	0.206
30.00	-13.04	-8.15	0.00	-288.34	0.00	288.34	764.99	382.50	542.27	271.54	3.90	-1.18	0.184
35.00	-12.38	-7.85	0.00	-247.60	0.00	247.60	724.39	362.19	485.94	243.33	5.23	-1.35	0.162
40.00	-11.73	-7.62	0.00	-208.34	0.00	208.34	683.78	341.89	432.70	216.67	6.72	-1.50	0.140
42.00	-8.56	-4.86	0.00	-193.11	0.00	193.11	667.54	333.77	412.27	206.44	7.36	-1.55	0.129
45.00	-8.21	-4.66	0.00	-178.51	0.00	178.51	643.18	321.59	382.55	191.56	8.36	-1.63	0.121
49.00	-7.75	-4.48	0.00	-159.87	0.00	159.87	610.70	305.35	344.65	172.58	9.78	-1.74	0.109
49.00	-7.75	-4.48	0.00	-159.87	0.00	159.87	606.13	303.07	297.07	197.07	9.78	-1.74	0.160
50.00	-7.59	-4.35	0.00	-155.39	0.00	155.39	606.13	303.07	297.07	197.07	10.14	-1.76	0.167
50.00	-7.59	-4.35	0.00	-155.39	0.00	155.39	606.13	303.07	297.07	197.07	10.14	-1.76	0.801
55.00	-7.07	-4.16	0.00	-133.65	0.00	133.65	606.13	303.07	297.07	197.07	12.05	-1.88	0.690
60.00	-6.55	-4.08	0.00	-112.85	0.00	112.85	606.13	303.07	297.07	197.07	14.28	-2.36	0.584
65.00	-6.03	-3.99	0.00	-92.44	0.00	92.44	606.13	303.07	297.07	197.07	16.97	-2.77	0.479
69.00	-5.62	-3.93	0.00	-76.46	0.00	76.46	606.13	303.07	297.07	197.07	19.41	-3.03	0.397
69.00	-5.62	-3.93	0.00	-76.46	0.00	76.46	459.24	229.62	229.69	150.79	19.41	-3.03	0.520
70.00	-5.53	-3.88	0.00	-72.53	0.00	72.53	459.24	229.62	229.69	150.79	20.05	-3.09	0.493
75.00	-5.12	-3.76	0.00	-53.13	0.00	53.13	459.24	229.62	229.69	150.79	23.46	-3.41	0.364
80.00	-4.71	-3.63	0.00	-34.31	0.00	34.31	459.24	229.62	229.69	150.79	27.16	-3.63	0.238
85.00	-4.31	-3.51	0.00	-16.14	0.00	16.14	459.24	229.62	229.69	150.79	31.04	-3.76	0.117
89.00	0.00	-3.21	0.00	-2.12	0.00	2.12	459.24	229.62	229.69	150.79	34.21	-3.80	0.014

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_01 12/17/2018 12:21:39 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces 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		161.3	0.0					0.0	0.0	161.3	0.0	0.0	0.0
5.00		316.1	203.7					66.7	334.4	382.8	538.1	0.0	0.0
10.00		302.9	195.3					66.7	334.4	369.6	529.8	0.0	0.0
15.00		289.8	187.0					66.7	334.4	356.5	521.4	0.0	0.0
20.00		276.6	178.6					66.7	334.4	343.3	513.0	0.0	0.0
25.00		263.5	170.2					66.7	334.4	330.2	504.7	0.0	0.0
30.00		253.3	161.9					66.7	334.4	320.0	496.3	0.0	0.0
35.00		247.8	153.5					67.5	334.4	315.3	487.9	0.0	0.0
40.00		171.5	145.1					68.9	334.4	240.3	479.6	0.0	0.0
42.00	Appurtenance(s)	120.2	55.7	2,529.5	0.0	0.0	2,237.0	27.9	133.8	2,677.6	2,426.5	0.0	0.0
45.00		165.3	81.0					42.2	183.0	207.5	264.0	0.0	0.0
49.00	Top - Section 1	114.3	103.4					56.9	243.9	171.3	347.3	0.0	0.0
50.00	Reinf. Top	126.3	58.9					14.3	61.0	140.6	119.9	0.0	0.0
55.00		159.7	294.6					50.6	79.5	210.3	374.1	0.0	0.0
60.00		109.6	294.6					0.0	79.5	109.6	374.1	0.0	0.0
65.00		100.7	294.6					0.0	79.5	100.7	374.1	0.0	0.0
69.00	Top - Section 2	56.7	235.7					0.0	63.6	56.7	299.3	0.0	0.0
70.00		69.3	44.6					0.0	15.9	69.3	60.5	0.0	0.0
75.00		116.8	223.2					0.0	79.5	116.8	302.7	0.0	0.0
80.00		119.0	223.2					0.0	79.5	119.0	302.7	0.0	0.0
85.00		108.8	223.2					0.0	79.5	108.8	302.7	0.0	0.0
89.00	Appurtenance(s)	48.8	178.6	3,164.9	0.0	2,117.8	3,157.6	0.0	63.6	3,213.7	3,399.7	0.0	0.0
								Totals:		10,121.2	13,018.5	0.00	0.00

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_01 12/17/2018 12:21:40 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 21 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	-13.00	-9.98	0.00	-558.77	0.00	558.77	948.37	474.19	888.66	444.99	0.00	0.00	0.322
5.00	-12.43	-9.65	0.00	-508.85	0.00	508.85	922.11	461.05	828.98	415.11	0.12	-0.21	0.298
10.00	-11.87	-9.32	0.00	-460.62	0.00	460.62	894.84	447.42	770.44	385.79	0.45	-0.42	0.273
15.00	-11.32	-8.99	0.00	-414.04	0.00	414.04	866.57	433.29	713.14	357.10	1.00	-0.62	0.249
20.00	-10.78	-8.68	0.00	-369.07	0.00	369.07	837.31	418.65	657.22	329.10	1.76	-0.81	0.225
25.00	-10.25	-8.37	0.00	-325.67	0.00	325.67	805.59	402.80	601.69	301.29	2.71	-1.00	0.201
30.00	-9.74	-8.07	0.00	-283.81	0.00	283.81	764.99	382.50	542.27	271.54	3.85	-1.17	0.180
35.00	-9.24	-7.77	0.00	-243.45	0.00	243.45	724.39	362.19	485.94	243.33	5.16	-1.33	0.158
40.00	-8.75	-7.53	0.00	-204.59	0.00	204.59	683.78	341.89	432.70	216.67	6.64	-1.48	0.136
42.00	-6.39	-4.80	0.00	-189.53	0.00	189.53	667.54	333.77	412.27	206.44	7.27	-1.53	0.125
45.00	-6.13	-4.60	0.00	-175.12	0.00	175.12	643.18	321.59	382.55	191.56	8.26	-1.61	0.117
49.00	-5.78	-4.42	0.00	-156.74	0.00	156.74	610.70	305.35	344.65	172.58	9.65	-1.71	0.106
49.00	-5.78	-4.42	0.00	-156.74	0.00	156.74	606.13	303.07	297.07	197.07	9.65	-1.71	0.156
50.00	-5.66	-4.28	0.00	-152.32	0.00	152.32	606.13	303.07	297.07	197.07	10.01	-1.74	0.162
50.00	-5.66	-4.28	0.00	-152.32	0.00	152.32	606.13	303.07	297.07	197.07	10.01	-1.74	0.782
55.00	-5.27	-4.09	0.00	-130.90	0.00	130.90	606.13	303.07	297.07	197.07	11.89	-1.85	0.673
60.00	-4.87	-4.00	0.00	-110.45	0.00	110.45	606.13	303.07	297.07	197.07	14.08	-2.33	0.569
65.00	-4.48	-3.91	0.00	-90.43	0.00	90.43	606.13	303.07	297.07	197.07	16.73	-2.72	0.466
69.00	-4.17	-3.85	0.00	-74.78	0.00	74.78	606.13	303.07	297.07	197.07	19.12	-2.98	0.387
69.00	-4.17	-3.85	0.00	-74.78	0.00	74.78	459.24	229.62	229.69	150.79	19.12	-2.98	0.505
70.00	-4.10	-3.79	0.00	-70.93	0.00	70.93	459.24	229.62	229.69	150.79	19.76	-3.04	0.480
75.00	-3.79	-3.68	0.00	-51.97	0.00	51.97	459.24	229.62	229.69	150.79	23.11	-3.35	0.353
80.00	-3.48	-3.55	0.00	-33.58	0.00	33.58	459.24	229.62	229.69	150.79	26.74	-3.57	0.231
85.00	-3.18	-3.43	0.00	-15.83	0.00	15.83	459.24	229.62	229.69	150.79	30.55	-3.69	0.112
89.00	0.00	-3.21	0.00	-2.12	0.00	2.12	459.24	229.62	229.69	150.79	33.66	-3.73	0.014

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 20 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

		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		29.5	0.0					0.0	0.0	29.5	0.0	0.0	0.0
5.00		58.2	440.2					19.5	500.2	77.7	940.4	0.0	0.0
10.00		56.5	442.3					20.1	506.4	76.6	948.7	0.0	0.0
15.00		54.6	433.4					20.4	509.7	75.0	943.1	0.0	0.0
20.00		52.6	420.9					20.6	512.0	73.2	932.8	0.0	0.0
25.00		50.6	406.4					20.8	513.7	71.4	920.1	0.0	0.0
30.00		49.1	390.6					20.9	515.2	70.0	905.8	0.0	0.0
35.00		48.5	374.0					21.6	516.4	70.1	890.4	0.0	0.0
40.00		33.8	356.8					22.6	517.5	56.4	874.3	0.0	0.0
42.00	Appurtenance(s)	23.9	138.8	558.5	0.0	0.0	5,844.6	9.3	207.3	591.7	6,190.7	0.0	0.0
45.00		33.2	202.3					14.2	287.6	47.4	489.9	0.0	0.0
49.00	Top - Section 1	23.1	258.8					19.4	383.9	42.6	642.7	0.0	0.0
50.00	Reinf. Top	26.1	105.9					4.9	96.1	31.1	201.9	0.0	0.0
55.00		44.3	530.3					17.6	157.9	61.9	688.2	0.0	0.0
60.00		45.5	531.6					0.0	106.0	45.5	637.6	0.0	0.0
65.00		41.9	532.9					0.0	106.0	41.9	638.9	0.0	0.0
69.00	Top - Section 2	23.6	427.2					0.0	84.8	23.6	512.0	0.0	0.0
70.00		28.9	87.9					0.0	21.2	28.9	109.1	0.0	0.0
75.00		48.7	440.1					0.0	106.0	48.7	546.0	0.0	0.0
80.00		49.7	441.1					0.0	106.0	49.7	547.1	0.0	0.0
85.00		45.5	442.1					0.0	106.0	45.5	548.1	0.0	0.0
89.00	Appurtenance(s)	20.4	354.4	755.1	0.0	432.9	8,059.9	0.0	84.8	775.5	8,499.1	0.0	0.0
									Totals:	2,433.84	27,606.8	0.00	0.00

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_01 12/17/2018 12:21:43 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 20 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	-27.61	-2.42	0.00	-146.46	0.00	146.46	948.37	474.19	888.66	444.99	0.00	0.00	0.097
5.00	-26.66	-2.37	0.00	-134.37	0.00	134.37	922.11	461.05	828.98	415.11	0.03	-0.06	0.090
10.00	-25.71	-2.31	0.00	-122.54	0.00	122.54	894.84	447.42	770.44	385.79	0.12	-0.11	0.084
15.00	-24.77	-2.26	0.00	-110.99	0.00	110.99	866.57	433.29	713.14	357.10	0.26	-0.16	0.078
20.00	-23.83	-2.20	0.00	-99.70	0.00	99.70	837.31	418.65	657.22	329.10	0.47	-0.22	0.072
25.00	-22.91	-2.15	0.00	-88.69	0.00	88.69	805.59	402.80	601.69	301.29	0.72	-0.27	0.065
30.00	-22.00	-2.09	0.00	-77.96	0.00	77.96	764.99	382.50	542.27	271.54	1.02	-0.31	0.060
35.00	-21.11	-2.03	0.00	-67.52	0.00	67.52	724.39	362.19	485.94	243.33	1.38	-0.36	0.054
40.00	-20.24	-1.98	0.00	-57.37	0.00	57.37	683.78	341.89	432.70	216.67	1.77	-0.40	0.048
42.00	-14.05	-1.35	0.00	-53.42	0.00	53.42	667.54	333.77	412.27	206.44	1.94	-0.41	0.042
45.00	-13.56	-1.30	0.00	-49.38	0.00	49.38	643.18	321.59	382.55	191.56	2.21	-0.44	0.040
49.00	-12.92	-1.26	0.00	-44.18	0.00	44.18	610.70	305.35	344.65	172.58	2.59	-0.46	0.037
49.00	-12.92	-1.26	0.00	-44.18	0.00	44.18	606.13	303.07	297.07	197.07	2.59	-0.46	0.054
50.00	-12.72	-1.23	0.00	-42.92	0.00	42.92	606.13	303.07	297.07	197.07	2.69	-0.47	0.056
50.00	-12.72	-1.23	0.00	-42.92	0.00	42.92	606.13	303.07	297.07	197.07	2.69	-0.47	0.239
55.00	-12.03	-1.18	0.00	-36.77	0.00	36.77	606.13	303.07	297.07	197.07	3.20	-0.50	0.206
60.00	-11.39	-1.15	0.00	-30.88	0.00	30.88	606.13	303.07	297.07	197.07	3.80	-0.64	0.175
65.00	-10.75	-1.12	0.00	-25.12	0.00	25.12	606.13	303.07	297.07	197.07	4.52	-0.75	0.145
69.00	-10.23	-1.10	0.00	-20.65	0.00	20.65	606.13	303.07	297.07	197.07	5.18	-0.82	0.122
69.00	-10.23	-1.10	0.00	-20.65	0.00	20.65	459.24	229.62	229.69	150.79	5.18	-0.82	0.159
70.00	-10.12	-1.07	0.00	-19.55	0.00	19.55	459.24	229.62	229.69	150.79	5.35	-0.83	0.152
75.00	-9.58	-1.03	0.00	-14.18	0.00	14.18	459.24	229.62	229.69	150.79	6.28	-0.92	0.115
80.00	-9.03	-0.98	0.00	-9.03	0.00	9.03	459.24	229.62	229.69	150.79	7.27	-0.98	0.080
85.00	-8.48	-0.93	0.00	-4.14	0.00	4.14	459.24	229.62	229.69	150.79	8.32	-1.01	0.046
89.00	0.00	-0.78	0.00	-0.43	0.00	0.43	459.24	229.62	229.69	150.79	9.17	-1.02	0.003

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 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		38.6	0.0					0.0	0.0	38.6	0.0	0.0	0.0
5.00		75.6	226.3					20.2	371.6	95.8	597.9	0.0	0.0
10.00		72.4	217.0					20.2	371.6	92.7	588.6	0.0	0.0
15.00		69.3	207.7					20.2	371.6	89.5	579.3	0.0	0.0
20.00		66.1	198.4					20.2	371.6	86.4	570.0	0.0	0.0
25.00		63.0	189.1					20.2	371.6	83.2	560.7	0.0	0.0
30.00		60.6	179.8					20.2	371.6	80.8	551.4	0.0	0.0
35.00		59.3	170.5					20.7	371.6	80.0	542.1	0.0	0.0
40.00		41.0	161.2					21.6	371.6	62.6	532.8	0.0	0.0
42.00	Appurtenance(s)	28.7	61.9	604.9	0.0	0.0	2,485.6	8.9	148.6	642.5	2,696.1	0.0	0.0
45.00		39.5	90.0					13.5	203.3	53.0	293.3	0.0	0.0
49.00	Top - Section 1	27.3	114.9					18.4	271.0	45.8	385.9	0.0	0.0
50.00	Reinf. Top	30.2	65.5					4.7	67.8	34.9	133.2	0.0	0.0
55.00		39.4	327.4					16.6	88.3	56.0	415.7	0.0	0.0
60.00		28.5	327.4					0.0	88.3	28.5	415.7	0.0	0.0
65.00		25.9	327.4					0.0	88.3	25.9	415.7	0.0	0.0
69.00	Top - Section 2	14.5	261.9					0.0	70.6	14.5	332.5	0.0	0.0
70.00		17.5	49.6					0.0	17.7	17.5	67.3	0.0	0.0
75.00		29.4	248.0					0.0	88.3	29.4	336.3	0.0	0.0
80.00		29.7	248.0					0.0	88.3	29.7	336.3	0.0	0.0
85.00		26.9	248.0					0.0	88.3	26.9	336.3	0.0	0.0
89.00	Appurtenance(s)	12.0	198.4	756.8	0.0	506.4	3,508.4	0.0	70.6	768.8	3,777.5	0.0	0.0
									Totals:	2,482.89	14,465.0	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 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	-14.46	-2.45	0.00	-136.54	0.00	136.54	948.37	474.19	888.66	444.99	0.00	0.00	0.084
5.00	-13.86	-2.37	0.00	-124.29	0.00	124.29	922.11	461.05	828.98	415.11	0.03	-0.05	0.078
10.00	-13.27	-2.29	0.00	-112.45	0.00	112.45	894.84	447.42	770.44	385.79	0.11	-0.10	0.072
15.00	-12.69	-2.20	0.00	-101.03	0.00	101.03	866.57	433.29	713.14	357.10	0.25	-0.15	0.066
20.00	-12.12	-2.13	0.00	-90.00	0.00	90.00	837.31	418.65	657.22	329.10	0.43	-0.20	0.060
25.00	-11.56	-2.05	0.00	-79.37	0.00	79.37	805.59	402.80	601.69	301.29	0.66	-0.24	0.054
30.00	-11.01	-1.97	0.00	-69.12	0.00	69.12	764.99	382.50	542.27	271.54	0.94	-0.29	0.048
35.00	-10.46	-1.90	0.00	-59.25	0.00	59.25	724.39	362.19	485.94	243.33	1.26	-0.32	0.043
40.00	-9.93	-1.84	0.00	-49.76	0.00	49.76	683.78	341.89	432.70	216.67	1.62	-0.36	0.037
42.00	-7.24	-1.18	0.00	-46.08	0.00	46.08	667.54	333.77	412.27	206.44	1.77	-0.37	0.034
45.00	-6.94	-1.13	0.00	-42.55	0.00	42.55	643.18	321.59	382.55	191.56	2.01	-0.39	0.032
49.00	-6.56	-1.08	0.00	-38.04	0.00	38.04	610.70	305.35	344.65	172.58	2.35	-0.42	0.029
49.00	-6.56	-1.08	0.00	-38.04	0.00	38.04	606.13	303.07	297.07	197.07	2.35	-0.42	0.043
50.00	-6.43	-1.05	0.00	-36.96	0.00	36.96	606.13	303.07	297.07	197.07	2.44	-0.42	0.044
50.00	-6.43	-1.05	0.00	-36.96	0.00	36.96	606.13	303.07	297.07	197.07	2.44	-0.42	0.198
55.00	-6.01	-0.99	0.00	-31.73	0.00	31.73	606.13	303.07	297.07	197.07	2.90	-0.45	0.171
60.00	-5.59	-0.97	0.00	-26.76	0.00	26.76	606.13	303.07	297.07	197.07	3.44	-0.57	0.145
65.00	-5.18	-0.95	0.00	-21.90	0.00	21.90	606.13	303.07	297.07	197.07	4.08	-0.66	0.120
69.00	-4.84	-0.93	0.00	-18.10	0.00	18.10	606.13	303.07	297.07	197.07	4.66	-0.72	0.100
69.00	-4.84	-0.93	0.00	-18.10	0.00	18.10	459.24	229.62	229.69	150.79	4.66	-0.72	0.131
70.00	-4.77	-0.92	0.00	-17.17	0.00	17.17	459.24	229.62	229.69	150.79	4.81	-0.74	0.124
75.00	-4.44	-0.89	0.00	-12.57	0.00	12.57	459.24	229.62	229.69	150.79	5.63	-0.81	0.093
80.00	-4.10	-0.86	0.00	-8.11	0.00	8.11	459.24	229.62	229.69	150.79	6.51	-0.87	0.063
85.00	-3.76	-0.83	0.00	-3.82	0.00	3.82	459.24	229.62	229.69	150.79	7.44	-0.90	0.034
89.00	0.00	-0.77	0.00	-0.51	0.00	0.51	459.24	229.62	229.69	150.79	8.20	-0.91	0.003

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.19	
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):	0.04	
Upper Limit C_s	0.04	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	1.86	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.68	
Total Unfactored Dead Load:	14.47	k
Seismic Base Shear (E):	0.69	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)
21	87.00	269	492	0.038	26	334
20	82.50	336	563	0.043	30	417
19	77.50	336	506	0.039	27	417
18	72.50	336	453	0.035	24	417
17	69.50	67	84	0.006	4	83
16	67.00	333	392	0.030	21	413
15	62.50	416	436	0.033	23	516
14	57.50	416	379	0.029	20	516
13	52.50	416	325	0.025	17	516
12	49.50	133	94	0.007	5	165
11	47.00	386	251	0.019	13	479
10	43.50	293	167	0.013	9	364
9	41.00	211	109	0.008	6	261
8	37.50	533	237	0.018	12	661
7	32.50	542	189	0.014	10	673
6	27.50	551	145	0.011	8	684
5	22.50	561	105	0.008	6	696
4	17.50	570	70	0.005	4	707
3	12.50	579	41	0.003	2	719
2	7.50	589	17	0.001	1	730
1	2.50	598	3	0.000	0	742
Kaelus DBCT108F1V92-	89.00	56	106	0.008	6	69
CCI DTMABP7819VG12A	89.00	77	146	0.011	8	95

Raycap DC6-48-60-0-8	89.00	33	62	0.005	3	41
Raycap DC6-48-60-18-	89.00	64	121	0.009	6	79
Ericsson RRUS 4426 B	89.00	97	184	0.014	10	120
Ericsson 4478 Band 1	89.00	120	228	0.017	12	149
Ericsson RRUS 4478 B	89.00	112	213	0.016	11	139
Ericsson RRUS 11 (Ba	89.00	110	209	0.016	11	136
Ericsson RRUS 32 (50	89.00	102	193	0.015	10	126
Ericsson RRUS 32 B2	89.00	106	201	0.015	11	132
Powerwave Allgon 777	89.00	70	133	0.010	7	87
Quintel QS66512-2	89.00	222	422	0.032	22	275
CCI OPA-65R-LCUU-H6	89.00	146	277	0.021	15	181
Kathrein Scala 80010	89.00	195	371	0.028	20	242
Round Platform w/ Ha	89.00	2,000	3,800	0.291	200	2,481
RFS FD9R6004/1C-3L	42.00	9	5	0.000	0	12
Alcatel-Lucent RRH2X	42.00	129	69	0.005	4	160
Alcatel-Lucent RRH2x	42.00	170	91	0.007	5	211
Alcatel-Lucent B66 R	42.00	201	108	0.008	6	249
Decibel DB844H80E-XY	42.00	84	45	0.003	2	104
RFS DB-T1-6Z-8AB-0Z	42.00	88	47	0.004	2	109
Commscope SBNHH-1D65	42.00	304	163	0.013	9	377
Flat Low Profile Pla	42.00	1,500	806	0.062	43	1,861
		14,465	13,061	1.000	689	17,947

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)
21	87.00	269	492	0.038	26	231
20	82.50	336	563	0.043	30	289
19	77.50	336	506	0.039	27	289
18	72.50	336	453	0.035	24	289
17	69.50	67	84	0.006	4	58
16	67.00	333	392	0.030	21	286
15	62.50	416	436	0.033	23	357
14	57.50	416	379	0.029	20	357
13	52.50	416	325	0.025	17	357
12	49.50	133	94	0.007	5	114
11	47.00	386	251	0.019	13	332
10	43.50	293	167	0.013	9	252
9	41.00	211	109	0.008	6	181
8	37.50	533	237	0.018	12	458
7	32.50	542	189	0.014	10	466
6	27.50	551	145	0.011	8	474
5	22.50	561	105	0.008	6	482
4	17.50	570	70	0.005	4	490
3	12.50	579	41	0.003	2	498
2	7.50	589	17	0.001	1	506
1	2.50	598	3	0.000	0	514
Kaelus DBCT108F1V92-	89.00	56	106	0.008	6	48
CCI DTMABP7819VG12A	89.00	77	146	0.011	8	66
Raycap DC6-48-60-0-8	89.00	33	62	0.005	3	28
Raycap DC6-48-60-18-	89.00	64	121	0.009	6	55
Ericsson RRUS 4426 B	89.00	97	184	0.014	10	83
Ericsson 4478 Band 1	89.00	120	228	0.017	12	103
Ericsson RRUS 4478 B	89.00	112	213	0.016	11	96
Ericsson RRUS 11 (Ba	89.00	110	209	0.016	11	95
Ericsson RRUS 32 (50	89.00	102	193	0.015	10	87
Ericsson RRUS 32 B2	89.00	106	201	0.015	11	91
Powerwave Allgon 777	89.00	70	133	0.010	7	60
Quintel QS66512-2	89.00	222	422	0.032	22	191

CCI OPA-65R-LCUU-H6	89.00	146	277	0.021	15	125
Kathrein Scala 80010	89.00	195	371	0.028	20	168
Round Platform w/ Ha	89.00	2,000	3,800	0.291	200	1,719
RFS FD9R6004/1C-3L	42.00	9	5	0.000	0	8
Alcatel-Lucent RRH2X	42.00	129	69	0.005	4	111
Alcatel-Lucent RRH2x	42.00	170	91	0.007	5	146
Alcatel-Lucent B66 R	42.00	201	108	0.008	6	173
Decibel DB844H80E-XY	42.00	84	45	0.003	2	72
RFS DB-T1-6Z-8AB-0Z	42.00	88	47	0.004	2	76
Commscope SBNHH-1D65	42.00	304	163	0.013	9	261
Flat Low Profile Pla	42.00	1,500	806	0.062	43	1,289
		14,465	13,061	1.000	689	12,429

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	-17.21	-0.69	0.00	-52.25	0.00	52.25	948.37	474.19	888.66	444.99	0.00	0.00	0.038
5.00	-16.47	-0.70	0.00	-48.79	0.00	48.79	922.11	461.05	828.98	415.11	0.01	-0.02	0.036
10.00	-15.76	-0.70	0.00	-45.32	0.00	45.32	894.84	447.42	770.44	385.79	0.04	-0.04	0.034
15.00	-15.05	-0.70	0.00	-41.82	0.00	41.82	866.57	433.29	713.14	357.10	0.10	-0.06	0.032
20.00	-14.35	-0.70	0.00	-38.32	0.00	38.32	837.31	418.65	657.22	329.10	0.17	-0.08	0.030
25.00	-13.67	-0.69	0.00	-34.83	0.00	34.83	805.59	402.80	601.69	301.29	0.26	-0.10	0.028
30.00	-13.00	-0.69	0.00	-31.37	0.00	31.37	764.99	382.50	542.27	271.54	0.38	-0.12	0.026
35.00	-12.33	-0.68	0.00	-27.93	0.00	27.93	724.39	362.19	485.94	243.33	0.51	-0.14	0.024
40.00	-12.07	-0.67	0.00	-24.55	0.00	24.55	683.78	341.89	432.70	216.67	0.66	-0.15	0.022
42.00	-8.62	-0.59	0.00	-23.20	0.00	23.20	667.54	333.77	412.27	206.44	0.73	-0.16	0.020
45.00	-8.15	-0.57	0.00	-21.45	0.00	21.45	643.18	321.59	382.55	191.56	0.83	-0.17	0.019
49.00	-7.98	-0.57	0.00	-19.16	0.00	19.16	610.70	305.35	344.65	172.58	0.98	-0.18	0.017
49.00	-7.98	-0.57	0.00	-19.16	0.00	19.16	606.13	303.07	297.07	197.07	0.98	-0.18	0.026
50.00	-7.46	-0.55	0.00	-18.59	0.00	18.59	606.13	303.07	297.07	197.07	1.02	-0.19	0.026
50.00	-7.46	-0.55	0.00	-18.59	0.00	18.59	606.13	303.07	297.07	197.07	1.02	-0.19	0.107
55.00	-6.95	-0.53	0.00	-15.84	0.00	15.84	606.13	303.07	297.07	197.07	1.22	-0.20	0.092
60.00	-6.43	-0.51	0.00	-13.17	0.00	13.17	606.13	303.07	297.07	197.07	1.46	-0.26	0.077
65.00	-6.02	-0.50	0.00	-10.60	0.00	10.60	606.13	303.07	297.07	197.07	1.75	-0.30	0.064
69.00	-5.94	-0.49	0.00	-8.62	0.00	8.62	606.13	303.07	297.07	197.07	2.02	-0.33	0.054
69.00	-5.94	-0.49	0.00	-8.62	0.00	8.62	459.24	229.62	229.69	150.79	2.02	-0.33	0.070
70.00	-5.52	-0.47	0.00	-8.13	0.00	8.13	459.24	229.62	229.69	150.79	2.09	-0.34	0.066
75.00	-5.10	-0.44	0.00	-5.79	0.00	5.79	459.24	229.62	229.69	150.79	2.47	-0.38	0.050
80.00	-4.68	-0.41	0.00	-3.58	0.00	3.58	459.24	229.62	229.69	150.79	2.87	-0.40	0.034
85.00	-4.35	-0.38	0.00	-1.53	0.00	1.53	459.24	229.62	229.69	150.79	3.30	-0.41	0.020
89.00	0.00	-0.35	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	3.64	-0.42	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	-11.92	-0.69	0.00	-51.53	0.00	51.53	948.37	474.19	888.66	444.99	0.00	0.00	0.035
5.00	-11.41	-0.69	0.00	-48.08	0.00	48.08	922.11	461.05	828.98	415.11	0.01	-0.02	0.033
10.00	-10.91	-0.69	0.00	-44.62	0.00	44.62	894.84	447.42	770.44	385.79	0.04	-0.04	0.031
15.00	-10.42	-0.69	0.00	-41.14	0.00	41.14	866.57	433.29	713.14	357.10	0.09	-0.06	0.029
20.00	-9.94	-0.69	0.00	-37.68	0.00	37.68	837.31	418.65	657.22	329.10	0.17	-0.08	0.028
25.00	-9.47	-0.69	0.00	-34.22	0.00	34.22	805.59	402.80	601.69	301.29	0.26	-0.10	0.026
30.00	-9.00	-0.68	0.00	-30.79	0.00	30.79	764.99	382.50	542.27	271.54	0.37	-0.12	0.024
35.00	-8.54	-0.67	0.00	-27.40	0.00	27.40	724.39	362.19	485.94	243.33	0.50	-0.13	0.022
40.00	-8.36	-0.66	0.00	-24.07	0.00	24.07	683.78	341.89	432.70	216.67	0.65	-0.15	0.020
42.00	-5.97	-0.58	0.00	-22.75	0.00	22.75	667.54	333.77	412.27	206.44	0.72	-0.16	0.018
45.00	-5.64	-0.56	0.00	-21.01	0.00	21.01	643.18	321.59	382.55	191.56	0.82	-0.17	0.017
49.00	-5.53	-0.56	0.00	-18.76	0.00	18.76	610.70	305.35	344.65	172.58	0.96	-0.18	0.016
49.00	-5.53	-0.56	0.00	-18.76	0.00	18.76	606.13	303.07	297.07	197.07	0.96	-0.18	0.023
50.00	-5.17	-0.54	0.00	-18.20	0.00	18.20	606.13	303.07	297.07	197.07	1.00	-0.18	0.024
50.00	-5.17	-0.54	0.00	-18.20	0.00	18.20	606.13	303.07	297.07	197.07	1.00	-0.18	0.101
55.00	-4.81	-0.52	0.00	-15.49	0.00	15.49	606.13	303.07	297.07	197.07	1.20	-0.20	0.087
60.00	-4.45	-0.50	0.00	-12.86	0.00	12.86	606.13	303.07	297.07	197.07	1.43	-0.25	0.073
65.00	-4.17	-0.48	0.00	-10.35	0.00	10.35	606.13	303.07	297.07	197.07	1.72	-0.30	0.059
69.00	-4.11	-0.48	0.00	-8.41	0.00	8.41	606.13	303.07	297.07	197.07	1.98	-0.33	0.049
69.00	-4.11	-0.48	0.00	-8.41	0.00	8.41	459.24	229.62	229.69	150.79	1.98	-0.33	0.065
70.00	-3.82	-0.46	0.00	-7.93	0.00	7.93	459.24	229.62	229.69	150.79	2.05	-0.33	0.061
75.00	-3.53	-0.43	0.00	-5.64	0.00	5.64	459.24	229.62	229.69	150.79	2.42	-0.37	0.045
80.00	-3.24	-0.40	0.00	-3.49	0.00	3.49	459.24	229.62	229.69	150.79	2.82	-0.39	0.030
85.00	-3.01	-0.37	0.00	-1.49	0.00	1.49	459.24	229.62	229.69	150.79	3.24	-0.40	0.016
89.00	0.00	-0.35	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	3.58	-0.41	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):	0.19
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):	1.86
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
21	87.00	269	1.806	1.566	0.988	0.336	78	334
20	82.50	336	1.624	0.855	0.703	0.225	66	417
19	77.50	336	1.433	0.350	0.467	0.126	37	417
18	72.50	336	1.254	0.062	0.297	0.051	15	417
17	69.50	67	1.153	-0.035	0.221	0.018	1	83
16	67.00	333	1.071	-0.085	0.170	-0.003	-1	413
15	62.50	416	0.932	-0.121	0.100	-0.026	-9	516
14	57.50	416	0.789	-0.110	0.051	-0.030	-11	516
13	52.50	416	0.658	-0.073	0.022	-0.017	-6	516
12	49.50	133	0.585	-0.047	0.013	-0.003	0	165
11	47.00	386	0.527	-0.026	0.008	0.009	3	479
10	43.50	293	0.452	0.001	0.006	0.025	6	364
9	41.00	211	0.401	0.018	0.007	0.034	6	261
8	37.50	533	0.336	0.037	0.010	0.043	20	661
7	32.50	542	0.252	0.055	0.017	0.050	23	673
6	27.50	551	0.180	0.065	0.026	0.051	24	684
5	22.50	561	0.121	0.070	0.034	0.049	24	696
4	17.50	570	0.073	0.072	0.040	0.047	23	707
3	12.50	579	0.037	0.070	0.041	0.044	22	719
2	7.50	589	0.013	0.059	0.034	0.037	19	730
1	2.50	598	0.001	0.028	0.016	0.020	10	742
Kaelus DBCT108F1V92-	89.00	56	1.890	1.980	1.140	0.392	19	69
CCI DTMABP7819VG12A	89.00	77	1.890	1.980	1.140	0.392	26	95
Raycap DC6-48-60-0-8	89.00	33	1.890	1.980	1.140	0.392	11	41
Raycap DC6-48-60-18-	89.00	64	1.890	1.980	1.140	0.392	22	79
Ericsson RRUS 4426 B	89.00	97	1.890	1.980	1.140	0.392	33	120
Ericsson 4478 Band 1	89.00	120	1.890	1.980	1.140	0.392	41	149
Ericsson RRUS 4478 B	89.00	112	1.890	1.980	1.140	0.392	38	139
Ericsson RRUS 11 (Ba	89.00	110	1.890	1.980	1.140	0.392	37	136
Ericsson RRUS 32 (50	89.00	102	1.890	1.980	1.140	0.392	34	126
Ericsson RRUS 32 B2	89.00	106	1.890	1.980	1.140	0.392	36	132
Powerwave Allgon 777	89.00	70	1.890	1.980	1.140	0.392	24	87
Quintel QS66512-2	89.00	222	1.890	1.980	1.140	0.392	75	275
CCI OPA-65R-LCUU-H6	89.00	146	1.890	1.980	1.140	0.392	50	181

Kathrein Scala 80010	89.00	195	1.890	1.980	1.140	0.392	66	242
Round Platform w/ Ha	89.00	2,000	1.890	1.980	1.140	0.392	679	2,481
RFS FD9R6004/1C-3L	42.00	9	0.421	0.011	0.006	0.030	0	12
Alcatel-Lucent RRH2X	42.00	129	0.421	0.011	0.006	0.030	3	160
Alcatel-Lucent RRH2x	42.00	170	0.421	0.011	0.006	0.030	4	211
Alcatel-Lucent B66 R	42.00	201	0.421	0.011	0.006	0.030	5	249
Decibel DB844H80E-XY	42.00	84	0.421	0.011	0.006	0.030	2	104
RFS DB-T1-6Z-8AB-0Z	42.00	88	0.421	0.011	0.006	0.030	2	109
Commscope SBNHH-	42.00	304	0.421	0.011	0.006	0.030	8	377
Flat Low Profile Pla	42.00	1,500	0.421	0.011	0.006	0.030	40	1,861
		14,465	45.415	32.600	20.419	7.204	1,607	17,947

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)
21	87.00	269	1.806	1.566	0.988	0.336	78	231
20	82.50	336	1.624	0.855	0.703	0.225	66	289
19	77.50	336	1.433	0.350	0.467	0.126	37	289
18	72.50	336	1.254	0.062	0.297	0.051	15	289
17	69.50	67	1.153	-0.035	0.221	0.018	1	58
16	67.00	333	1.071	-0.085	0.170	-0.003	-1	286
15	62.50	416	0.932	-0.121	0.100	-0.026	-9	357
14	57.50	416	0.789	-0.110	0.051	-0.030	-11	357
13	52.50	416	0.658	-0.073	0.022	-0.017	-6	357
12	49.50	133	0.585	-0.047	0.013	-0.003	0	114
11	47.00	386	0.527	-0.026	0.008	0.009	3	332
10	43.50	293	0.452	0.001	0.006	0.025	6	252
9	41.00	211	0.401	0.018	0.007	0.034	6	181
8	37.50	533	0.336	0.037	0.010	0.043	20	458
7	32.50	542	0.252	0.055	0.017	0.050	23	466
6	27.50	551	0.180	0.065	0.026	0.051	24	474
5	22.50	561	0.121	0.070	0.034	0.049	24	482
4	17.50	570	0.073	0.072	0.040	0.047	23	490
3	12.50	579	0.037	0.070	0.041	0.044	22	498
2	7.50	589	0.013	0.059	0.034	0.037	19	506
1	2.50	598	0.001	0.028	0.016	0.020	10	514
Kaelus DBCT108F1V92-	89.00	56	1.890	1.980	1.140	0.392	19	48
CCI DTMABP7819VG12A	89.00	77	1.890	1.980	1.140	0.392	26	66
Raycap DC6-48-60-0-8	89.00	33	1.890	1.980	1.140	0.392	11	28
Raycap DC6-48-60-18-	89.00	64	1.890	1.980	1.140	0.392	22	55
Ericsson RRUS 4426 B	89.00	97	1.890	1.980	1.140	0.392	33	83
Ericsson 4478 Band 1	89.00	120	1.890	1.980	1.140	0.392	41	103
Ericsson RRUS 4478 B	89.00	112	1.890	1.980	1.140	0.392	38	96
Ericsson RRUS 11 (Ba	89.00	110	1.890	1.980	1.140	0.392	37	95
Ericsson RRUS 32 (50	89.00	102	1.890	1.980	1.140	0.392	34	87
Ericsson RRUS 32 B2	89.00	106	1.890	1.980	1.140	0.392	36	91
Powerwave Allgon 777	89.00	70	1.890	1.980	1.140	0.392	24	60
Quintel QS66512-2	89.00	222	1.890	1.980	1.140	0.392	75	191
CCI OPA-65R-LCUU-H6	89.00	146	1.890	1.980	1.140	0.392	50	125
Kathrein Scala 80010	89.00	195	1.890	1.980	1.140	0.392	66	168
Round Platform w/ Ha	89.00	2,000	1.890	1.980	1.140	0.392	679	1,719
RFS FD9R6004/1C-3L	42.00	9	0.421	0.011	0.006	0.030	0	8
Alcatel-Lucent RRH2X	42.00	129	0.421	0.011	0.006	0.030	3	111
Alcatel-Lucent RRH2x	42.00	170	0.421	0.011	0.006	0.030	4	146
Alcatel-Lucent B66 R	42.00	201	0.421	0.011	0.006	0.030	5	173
Decibel DB844H80E-XY	42.00	84	0.421	0.011	0.006	0.030	2	72
RFS DB-T1-6Z-8AB-0Z	42.00	88	0.421	0.011	0.006	0.030	2	76
Commscope SBNHH-	42.00	304	0.421	0.011	0.006	0.030	8	261

Flat Low Profile Pla	42.00	1,500	0.421	0.011	0.006	0.030	40	1,289
		14,465	45.415	32.600	20.419	7.204	1,607	12,429

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	-17.20	-1.60	0.00	-132.99	0.00	132.99	948.37	474.19	888.66	444.99	0.00	0.00	0.084
5.00	-16.47	-1.60	0.00	-124.97	0.00	124.97	922.11	461.05	828.98	415.11	0.03	-0.05	0.080
10.00	-15.75	-1.59	0.00	-116.97	0.00	116.97	894.84	447.42	770.44	385.79	0.11	-0.10	0.076
15.00	-15.04	-1.58	0.00	-109.01	0.00	109.01	866.57	433.29	713.14	357.10	0.25	-0.16	0.072
20.00	-14.35	-1.57	0.00	-101.11	0.00	101.11	837.31	418.65	657.22	329.10	0.44	-0.21	0.067
25.00	-13.66	-1.55	0.00	-93.28	0.00	93.28	805.59	402.80	601.69	301.29	0.68	-0.26	0.063
30.00	-12.99	-1.54	0.00	-85.52	0.00	85.52	764.99	382.50	542.27	271.54	0.98	-0.31	0.059
35.00	-12.33	-1.52	0.00	-77.84	0.00	77.84	724.39	362.19	485.94	243.33	1.33	-0.36	0.056
40.00	-12.06	-1.52	0.00	-70.23	0.00	70.23	683.78	341.89	432.70	216.67	1.73	-0.41	0.052
42.00	-8.62	-1.43	0.00	-67.18	0.00	67.18	667.54	333.77	412.27	206.44	1.90	-0.43	0.048
45.00	-8.14	-1.43	0.00	-62.89	0.00	62.89	643.18	321.59	382.55	191.56	2.18	-0.45	0.045
49.00	-7.97	-1.43	0.00	-57.19	0.00	57.19	610.70	305.35	344.65	172.58	2.58	-0.49	0.042
49.00	-7.97	-1.43	0.00	-57.19	0.00	57.19	606.13	303.07	297.07	197.07	2.58	-0.49	0.062
50.00	-7.45	-1.43	0.00	-55.76	0.00	55.76	606.13	303.07	297.07	197.07	2.68	-0.50	0.064
50.00	-7.45	-1.43	0.00	-55.76	0.00	55.76	606.13	303.07	297.07	197.07	2.68	-0.50	0.295
55.00	-6.94	-1.45	0.00	-48.59	0.00	48.59	606.13	303.07	297.07	197.07	3.23	-0.54	0.258
60.00	-6.42	-1.48	0.00	-41.32	0.00	41.32	606.13	303.07	297.07	197.07	3.89	-0.72	0.220
65.00	-6.00	-1.48	0.00	-33.94	0.00	33.94	606.13	303.07	297.07	197.07	4.72	-0.87	0.182
69.00	-5.91	-1.49	0.00	-28.01	0.00	28.01	606.13	303.07	297.07	197.07	5.49	-0.96	0.152
69.00	-5.91	-1.49	0.00	-28.01	0.00	28.01	459.24	229.62	229.69	150.79	5.49	-0.96	0.199
70.00	-5.50	-1.47	0.00	-26.52	0.00	26.52	459.24	229.62	229.69	150.79	5.70	-0.99	0.188
75.00	-5.08	-1.44	0.00	-19.16	0.00	19.16	459.24	229.62	229.69	150.79	6.79	-1.10	0.138
80.00	-4.66	-1.37	0.00	-11.98	0.00	11.98	459.24	229.62	229.69	150.79	7.99	-1.18	0.090
85.00	-4.33	-1.28	0.00	-5.14	0.00	5.14	459.24	229.62	229.69	150.79	9.26	-1.23	0.044
89.00	0.00	-1.19	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	10.29	-1.24	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	-11.91	-1.60	0.00	-130.99	0.00	130.99	948.37	474.19	888.66	444.99	0.00	0.00	0.080
5.00	-11.41	-1.59	0.00	-122.98	0.00	122.98	922.11	461.05	828.98	415.11	0.03	-0.05	0.076
10.00	-10.91	-1.58	0.00	-115.02	0.00	115.02	894.84	447.42	770.44	385.79	0.11	-0.10	0.072
15.00	-10.42	-1.56	0.00	-107.12	0.00	107.12	866.57	433.29	713.14	357.10	0.24	-0.15	0.068
20.00	-9.93	-1.55	0.00	-99.30	0.00	99.30	837.31	418.65	657.22	329.10	0.43	-0.20	0.064
25.00	-9.46	-1.53	0.00	-91.56	0.00	91.56	805.59	402.80	601.69	301.29	0.67	-0.25	0.060
30.00	-8.99	-1.51	0.00	-83.91	0.00	83.91	764.99	382.50	542.27	271.54	0.96	-0.30	0.056
35.00	-8.53	-1.50	0.00	-76.35	0.00	76.35	724.39	362.19	485.94	243.33	1.31	-0.35	0.052
40.00	-8.35	-1.49	0.00	-68.86	0.00	68.86	683.78	341.89	432.70	216.67	1.70	-0.40	0.049
42.00	-5.96	-1.41	0.00	-65.87	0.00	65.87	667.54	333.77	412.27	206.44	1.87	-0.42	0.046
45.00	-5.63	-1.41	0.00	-61.65	0.00	61.65	643.18	321.59	382.55	191.56	2.14	-0.45	0.043
49.00	-5.52	-1.41	0.00	-56.03	0.00	56.03	610.70	305.35	344.65	172.58	2.53	-0.48	0.040
49.00	-5.52	-1.41	0.00	-56.03	0.00	56.03	606.13	303.07	297.07	197.07	2.53	-0.48	0.059
50.00	-5.16	-1.41	0.00	-54.62	0.00	54.62	606.13	303.07	297.07	197.07	2.63	-0.49	0.061
50.00	-5.16	-1.41	0.00	-54.62	0.00	54.62	606.13	303.07	297.07	197.07	2.63	-0.49	0.286
55.00	-4.80	-1.43	0.00	-47.56	0.00	47.56	606.13	303.07	297.07	197.07	3.17	-0.53	0.249
60.00	-4.44	-1.45	0.00	-40.41	0.00	40.41	606.13	303.07	297.07	197.07	3.82	-0.71	0.212
65.00	-4.15	-1.45	0.00	-33.18	0.00	33.18	606.13	303.07	297.07	197.07	4.64	-0.85	0.175
69.00	-4.09	-1.45	0.00	-27.37	0.00	27.37	606.13	303.07	297.07	197.07	5.39	-0.95	0.146
69.00	-4.09	-1.45	0.00	-27.37	0.00	27.37	459.24	229.62	229.69	150.79	5.39	-0.95	0.190
70.00	-3.80	-1.44	0.00	-25.91	0.00	25.91	459.24	229.62	229.69	150.79	5.59	-0.97	0.180
75.00	-3.51	-1.40	0.00	-18.72	0.00	18.72	459.24	229.62	229.69	150.79	6.67	-1.08	0.132
80.00	-3.22	-1.34	0.00	-11.70	0.00	11.70	459.24	229.62	229.69	150.79	7.84	-1.16	0.085
85.00	-2.99	-1.25	0.00	-5.02	0.00	5.02	459.24	229.62	229.69	150.79	9.08	-1.20	0.040
89.00	0.00	-1.19	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	10.09	-1.21	0.000

Analysis Summary

Load Case	Reactions Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Max Usage Elev (ft)	Interaction Ratio
1.2D + 1.6W	9.99	0.00	17.34	0.00	0.00	564.56	50.00	0.80
0.9D + 1.6W	9.98	0.00	13.00	0.00	0.00	558.77	50.00	0.78
1.2D + 1.0Di + 1.0Wi	2.42	0.00	27.61	0.00	0.00	146.46	50.00	0.24
(1.2 + 0.2Sds) * DL + E ELFM	0.69	0.00	17.21	0.00	0.00	52.25	50.00	0.11
(1.2 + 0.2Sds) * DL + E EMAM	1.60	0.00	17.20	0.00	0.00	132.99	50.00	0.30
(0.9 - 0.2Sds) * DL + E ELFM	0.69	0.00	11.92	0.00	0.00	51.53	50.00	0.10
(0.9 - 0.2Sds) * DL + E EMAM	1.60	0.00	11.91	0.00	0.00	130.99	50.00	0.29
1.0D + 1.0W	2.45	0.00	14.46	0.00	0.00	136.54	50.00	0.20

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Upper Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Lower Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Max Member Pu (kip)	phiPn (kip)	Ratio
0.00	50.0	(3) SOL-#20 All Thre	284.6	13.7	16.8	71.2	12.0	6	8	0.0	12.0	0	0	180.7	297.5	0.607

Base Plate & Anchor Rod Analysis

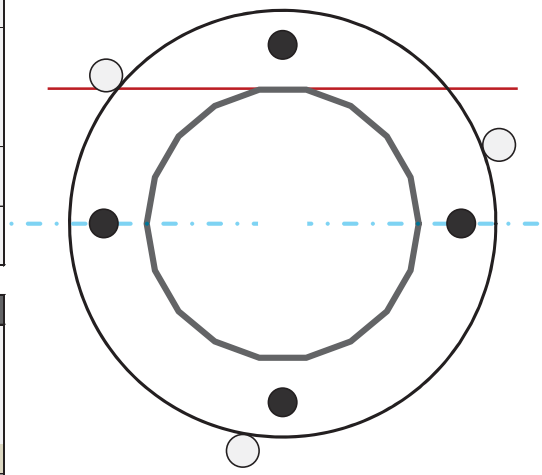
Pole Dimensions		
Number of Sides	18	-
Diameter	23	in
Thickness	0.1875	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	564.6	k-ft
Axial, Pu	17.3	k
Shear, Vu	10.0	k
Neutral Axis	0	°

Report Capacities		
Component	Capacity	Result
Base Plate	24%	Pass
Anchor Rods	19%	Pass
Dwyidag	30%	Pass

Base Plate		
Shape	Round	-
Diameter, ø	37	in
Thickness	1 1/2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	196.2	k
Bending Stress, ϕMn	823.7	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	4	-
Diameter, ø	2 1/4	in
Bolt Circle	31	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	24.3	in
Orientation Offset	0	°
Applied Force, Pu	50.6	k
Anchor Rods, ϕPn	259.8	k



Dywidag Reinforcement		
Quantity	3	-
Bar Size	#20	in
Diameter, ø	2.5	in
Bracket Type	Angle	-
Circle	40.00	in
Orientation Offset	20	°
Applied Force, Pu	116.4	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	10.0	128.5	0.23
Anchor Rod Forces	10.0	128.5	0.23
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	436.0	0.77
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	13.3696	0.7428	0.0087		869.86
Bolt	3.9761	3.2477	0.8393	4.5	1563.87
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		2951.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	37	in
Thickness, t	1.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	28.983	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

External Base Plate		
Chord Length AA	24.118	in
Additional AA	3.000	in
Section Modulus, Z	15.254	in^3
Applied Moment, Mu	196.2	k-ft
Bending Capacity, ϕMn	823.7	k-ft
Capacity, Mu/ϕMn	0.238	OK
Chord Length AB	23.767	in
Additional AB	3.000	in
Section Modulus, Z	15.057	in^3
Applied Moment, Mu	187.1	k-ft
Bending Capacity, ϕMn	813.1	k-ft
Capacity, Mu/ϕMn	0.230	OK
Bend Line Length	34.038	in
Additional Bend Line	0.000	in
Section Modulus, Z	19.146	in^3
Applied Moment, Mu	196.2	k-ft
Bending Capacity, ϕMn	1033.9	k-ft
Capacity, Mu/ϕMn	0.190	OK

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	4	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	31	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	50.6	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.195	OK
Interaction Capacity	0.195	OK

Dywidag Reinforcement		
Dywidag Quantity, N	3	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	40	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	116.4	k
Compressive Capacity, ϕPn	392.7	k
Capacity, Pu/ϕPn	0.296	OK

Base/Flange Plate	Plate Type	*Flange*	*@ 49.0 ft*
	Pole Diameter	12.75	in
	Pole Thickness	0.5	in
	Plate Diameter	28.5	in
	Plate Thickness	2	in
	Plate Fy	50	ksi
	Weld Length	0.4375	in
	ϕ_s Resistance	100.14	k-in
	Applied	13.11	k-in
Stiffeners	#	*0*	

Bolts	#	*18*	
	Bolt Circle	25.75	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.0625	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	2.37	k
Reinforcement ●	#	*3*	
	DYW. Circle	31	in
	Offset Angle	20	°
	Type	#20	
	Diameter	2.5	in
	Fu	100	ksi
	ϕ_s Resistance	392.70	k
	Applied	67.29	k
Extra Bolts O	#	*0*	

Code Rev. ***G***

Moment 159.9 k-ft
Axial 7.8 k

Date 12/17/2018
Engineer Travis.Gatling
Site # 302526
Carrier AT&T MOBILITY

Required Flange Thickness:
0.72 in OK

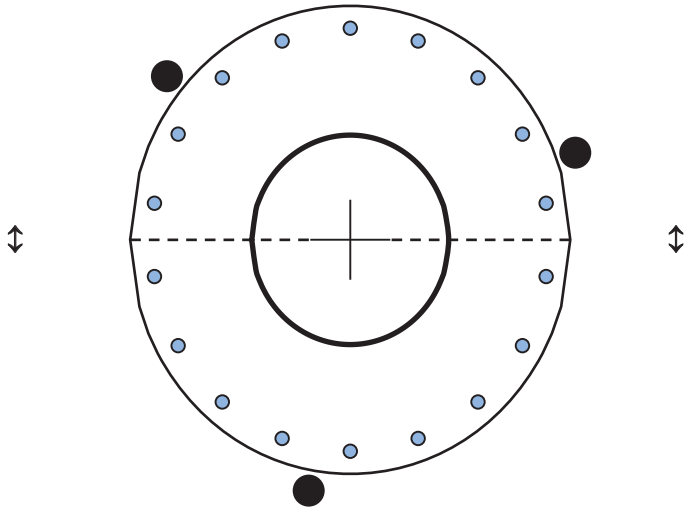


Plate Stress Ratio:
0.13 (Pass)

Bolt Stress Ratio:
0.04 (Pass)

Reinforcement Stress Ratio:
0.17 (Pass)

Base/Flange Plate			
	Plate Type	*Flange* @ *69.0 ft*	
	Pole Diameter	12.75	in
	Pole Thickness	0.375	in
	Plate Diameter	20	in
	Plate Thickness	1.5	in
	Plate Fy	50	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	84.49	k-in
	Applied	14.55	k-in

Stiffeners		
	#	*0*

Bolts			
	#	*12*	
	Bolt Circle	16	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.0625	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	18.62	k

Reinforcement ●		
	#	*0*

Extra Bolts O		
	#	*0*

Code Rev. ***G***

Moment 76.5 k-ft
Axial 5.6 k

Date 12/17/2018
Engineer Travis.Gatling
Site # 302526
Carrier AT&T MOBILITY

Required Flange Thickness:
0.62 in OK

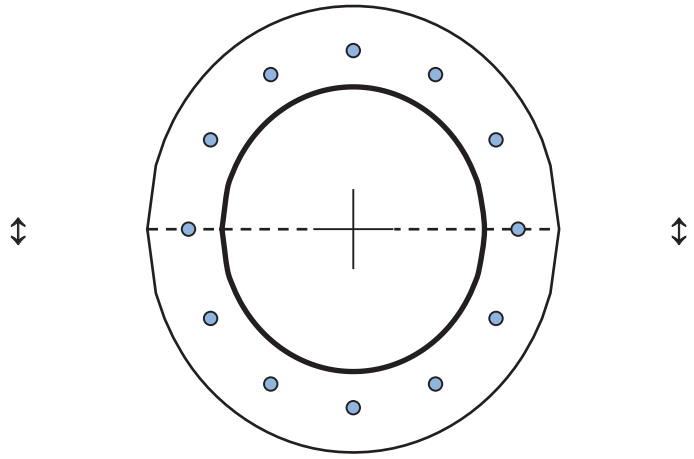
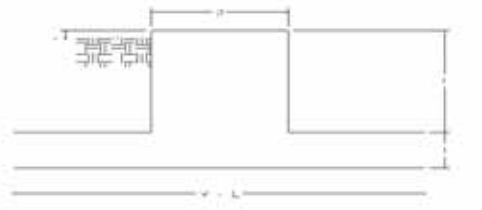


Plate Stress Ratio:
0.17 (Pass)

Bolt Stress Ratio:
0.34 (Pass)

Site Name:	Naugatuck, CT
Site Number:	302526
Engineering Number:	OAA742050
Engineer:	Travis.Gatling
Date:	12/17/18
Tower Type:	MP

Program Last Updated: *5/13/2014*



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

Design / Analysis / Mapping:	Analysis				
Compression/Leg:	17.3	k	Concrete Strength (f'_c):	4000	psi
Uplift/Leg:	0.0	k	Pad Tension Steel Depth:	32.00	in
Total Shear:	10.0	k	ϕ_{Shear}:	0.75	
Moment:	564.6	k-ft	$\phi_{Flexure\ /\ Tension}$:	0.90	
Tower + Appurtenance Weight:	17.3	k	$\phi_{Compression:}$	0.65	
Depth to Base of Foundation (l + t - h):	5.25	ft	β:	0.85	
Diameter of Pier (d):	4.50	ft	Bottom Pad Rebar Size #:	6	
Height of Pier above Ground (h):	1.00		# of Bottom Pad Rebar:	20	
Width of Pad (W):	12.00	ft	Pad Bottom Steel Area:	8.80	in^2
Length of Pad (L):	12.00	ft	Pad Steel F_y:	60000	psi
Thickness of Pad (t):	3.00	ft	Top Pad Rebar Size #:	6	
Tower Leg Center to Center:	0.00	ft	# of Top Pad Rebar:	20	
Number of Tower Legs:	1.0	(1 if MP or GT)	Pad Top Steel Area:	8.80	in^2
Tower Center from Mat Center:	0.00	ft	Pier Rebar Size #:	6	
Depth Below Ground Surface to Water Table:	25.00	ft	Pier Steel Area (Single Bar):	0.44	in^2
Unit Weight of Concrete:	150.0	pcf	# of Pier Rebar:	24	
Unit Weight of Soil Above Water Table:	110.0	pcf	Pier Steel F_y:	60000	psi
Unit Weight of Water:	62.4	pcf	Pier Cage Diameter:	46.0	in
Unit Weight of Soil Below Water Table:	47.6	pcf	Rebar Strain Limit:	0.008	
Friction Angle of Uplift:	30.0	Degrees	Steel Elastic Modulus:	29000	ksi
Ultimate Coefficient of Shear Friction:	0.35		Tie Rebar Size #:	4	
Ultimate Compressive Bearing Pressure:	6000.0	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:	627.0	k-ft
OTM Resistance:	695.7	k-ft
Design OTM / OTM Resistance:	0.90	Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	4154	psf
Factored Nominal Bearing Pressure:	4500	psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.92	Result: OK
Load Direction Controling Design Bearing Pressure:	Diagonal to Pad Edge	

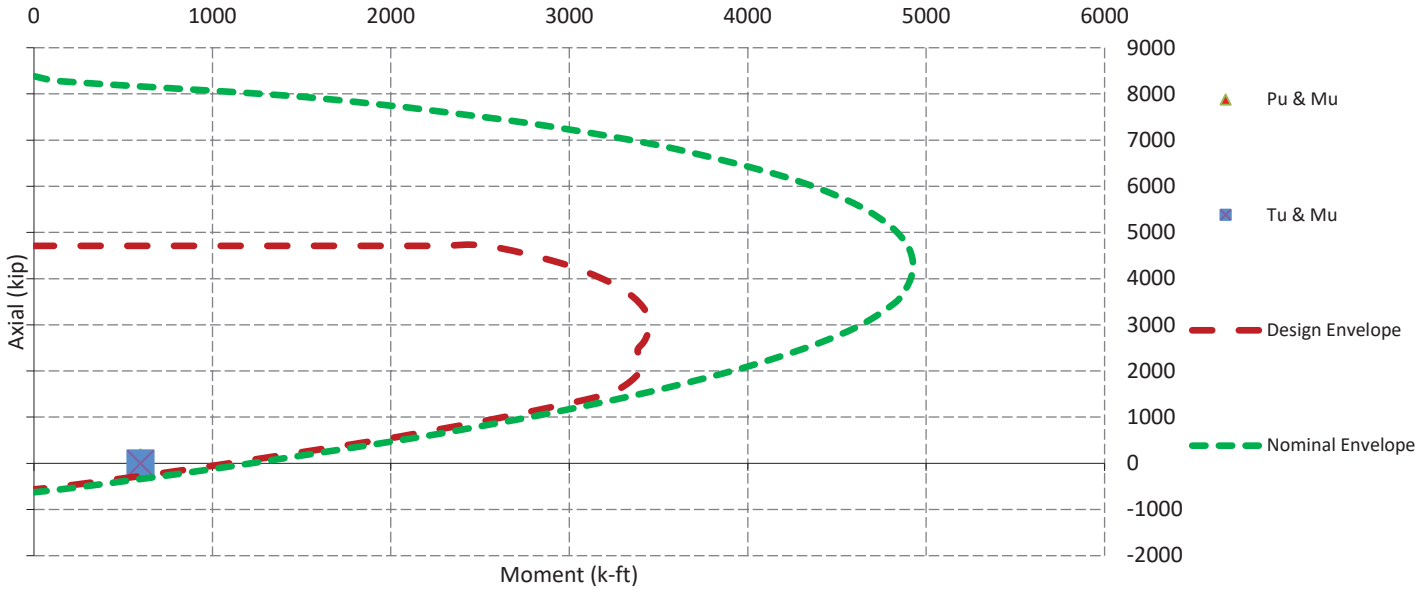
Sliding Factor of Safety

Total Factored Sliding Resistance:	31.2	k
Sliding Design / Sliding Resistance:	0.32	Result: OK

One Way Shear, Flexual Capacity, and Punching Shear

Factored One Way Shear (V_u):	38.5	k
One Way Shear Capacity (ϕV_c):	260.0	k - ACI11.3.1.1
V_u / ϕV_c:	0.15	Result: OK
Load Direction Controling Shear Capacity:	Diagonal to Pad Edge	
Lower Steel Pad Factored Moment (M_u):	215.6	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	1234.3	k-ft - ACI10.3
M_u / ϕM_n:	0.17	Result: OK
Load Direction Controling Flexural Capacity:	Diagonal to Pad Edge	
Upper Steel Pad Factored Moment (M_u):	94.2	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	1249.1	k-ft
M_u / ϕM_n:	0.08	Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0019	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0019	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	7	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	7	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	1640.4	k - ACI11.12.2.1
V_u / ϕV_c:	0.00	Result: OK
Factored Moment in Pier (M_u):	597.0	k-ft
Pier Moment Capacity (ϕM_n):	1070.4	k-ft
M_u / ϕM_n:	0.56	Result: OK
Factored Shear in Pier (V_u):	10.0	k
Pier Shear Capacity (ϕV_n):	218.1	k
V_u / ϕV_c:	0.05	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):	570.2	k
T_u / ϕT_n:	0.00	Result: OK
Factored Compression in Pier (P_u):	17.3	k
Pier Compression Capacity (ϕP_n):	4030.4	k - ACI10.3.6.2
P_u / ϕP_n:	0.00	Result: OK
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.56	Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2166

FA#: 10035065

Naugatuck South Main
585 South Main Street
Naugatuck, CT 06770

January 22, 2019

Centerline Communications Project Number: 950006-147

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**56.39 %**

January 22, 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: **CT2166 – Naugatuck South Main**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **585 South Main Street, Naugatuck, 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 **585 South Main Street, Naugatuck, 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
LTE	2300 MHz (WCS)	4	30
LTE	700 MHz (Band 14)	4	40
LTE	850 MHz	2	40
LTE	1900 MHz (PCS)	4	40
5G	850 MHz	2	25
LTE	700 MHz	4	40
LTE	2100 MHz (AWS)	4	30

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	90
A	2	CCI OPA-65R-LCUU-H6	90
A	3	Kathrein 800-10965	90
A	4	Quintel QS66512-2	90
B	1	Powerwave 7770	90
B	2	CCI OPA-65R-LCUU-H6	90
B	3	Kathrein 800-10965	90
B	4	Quintel QS66512-2	90

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	11.4	2	60	828.23	0.74
Antenna A2	CCI OPA-65R-LCUU-H6	2300 MHz (WCS)	15.45	4	120	4,209.02	2.15
Antenna A3	Kathrein 800-10965	700 MHz / 850 MHz / 1900 MHz (PCS)	12.65 / 13.45 / 15.65	12	450	11,698.78	8.79
Antenna A4	Quintel QS66512-2	700 MHz / 2100 MHz (AWS)	10.85 / 14.35	6	200	4,240.19	2.73
						Sector A Composite MPE%	**14.41**
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.74
Antenna B2	CCI OPA-65R-LCUU-H6	2300 MHz (WCS)	15.45	4	120	4,209.02	2.15
Antenna B3	Kathrein 800-10965	700 MHz / 850 MHz / 1900 MHz (PCS)	12.65 / 13.45 / 15.65	12	450	11,698.78	8.79
Antenna B4	Quintel QS66512-2	700 MHz / 2100 MHz (AWS)	10.85 / 14.35	6	200	4,240.19	2.73
						Sector B Composite MPE%	**14.41**

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, both sectors have the same configuration yielding the same results on both sectors. *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	**14.41 %**
Verizon Wireless	41.98 %
Site Total MPE %:	**56.39 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	14.41 %
AT&T Sector B Total:	14.41 %
Site Total:	56.39 %

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, both sectors have the same configuration yielding the same results on both sectors.

AT&T _ Frequency Band / Technology Max Power Values (Per Sector)	# 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	90	4.22	850 MHz	567	0.74%
AT&T 2300 MHz (WCS) LTE – Antenna 2	4	1,052.26	90	21.45	2300 MHz (WCS)	1000	2.15%
AT&T 700 MHz (Band 14) LTE – Antenna 3	4	736.31	90	15.01	700 MHz	467	3.22%
AT&T 850 MHz LTE – Antenna 3	2	885.24	90	9.02	850 MHz	567	1.59%
AT&T 1900 MHz (PCS) LTE – Antenna 3	4	1,469.13	90	29.94	1900 MHz (PCS)	1000	2.99%
AT&T 850 MHz 5G – Antenna 3	2	553.27	90	5.64	850 MHz	567	0.99%
AT&T 700 MHz LTE – Antenna 4	2	486.47	90	4.96	700 MHz	467	1.07%
AT&T 2100 MHz (AWS) LTE – Antenna 4	4	816.81	90	16.65	2100 MHz (AWS)	1000	1.66%
						Total:	**14.41%**

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:	14.41 %
Sector B:	14.41 %
AT&T Maximum Total (per sector):	14.41 %
Site Total:	56.39 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **56.39 %** 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

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Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300395076627

SCAN® Form: 947570369930030137944 9

Terms
Acceptance Cutoff: 01/22/2019 4:30 PM
Acceptance Time: 01/23/2019 8:09 AM
Scheduled Date: 01/24/2019 11:59 PM
Delivery Status: Delivered, Front Desk/Reception/Mail Room 2019-01-25 10:42:00.0

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:
HONORABLE N.WARREN HESS
MAYOR OF BOROUGH OF NAUGATUCK
229 CHURCH ST
NAUGATUCK, CT 06770-4145

Package:
Ship Date: 01/22/19
Value: $50.00
Weight: 3 lbs 0 oz
From: 01862

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

Transaction Number: 454871668
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

Postage Cost	$6.70
USPS Tracking®	Free
Label Total:	**$6.70**
Order Total:	**$26.80**

Timestamp	Message
01-22-2019 11:08:04	LABEL PRINTED
01-22-2019 11:07:00	Getting Payment
01-22-2019 11:06:25	Setting Payment

Back to Shipping History

Feedback

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Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300395076689

SCAN® Form: 947570369930030137944 9

Terms
Acceptance Cutoff: 01/22/2019 4:30 PM
Acceptance Time: 01/23/2019 8:09 AM
Scheduled Date: 01/24/2019 11:59 PM
Delivery Status: Delivered, Front Desk/Reception/Mail Room 2019-01-25 10:46:00.0
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:
ED CARTER
BOROUGH OF NAUGATUCK ZONING OFFICE
229 CHURCH ST
NAUGATUCK, CT 06770-4145

Package:
Ship Date: 01/22/19
Value: $50.00
Weight: 3 lbs 0 oz
From: 01862

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

Transaction Number: 454871668
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

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USPS Tracking®	Free
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01-22-2019 11:07:00	Getting Payment
01-22-2019 11:06:25	Setting Payment

Back to Shipping History

Feedback

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please visit a Post Office™ location if you wish to ship with this service.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300395076641

SCAN® Form: 947570369930030137944 9

Terms
Acceptance Cutoff: 01/22/2019 4:30 PM
Acceptance Time: 01/23/2019 8:09 AM
Scheduled Date: 01/24/2019 11:59 PM
Delivery Status: Delivered, In/At Mailbox 2019-01-25 09:36:00.0
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:
THE OFFICE LLC
585 S MAIN ST
NAUGATUCK, CT 06770-4723

Package:
Ship Date: 01/22/19
Value: $50.00
Weight: 3 lbs 0 oz
From: 01862

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

Transaction Number: 454871668
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

Postage Cost	$6.70
USPS Tracking®	Free
Label Total:	**$6.70**
Order Total:	**$26.80**

Timestamp	Message
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01-22-2019 11:07:00	Getting Payment
01-22-2019 11:06:25	Setting Payment

Back to Shipping History

Feedback

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please visit a Post Office™ location if you wish to ship with this service.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300395076672

SCAN® Form: 947570369930030137944 9

Terms
Acceptance Cutoff: 01/22/2019 4:30 PM
Acceptance Time: 01/23/2019 8:09 AM
Scheduled Date: 01/23/2019 11:59 PM
Delivery Status: Delivered, Front Desk/Reception/Mail Room 2019-01-24 15:46:00.0

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 CORPORATION
10 PRESIDENTIAL WAY
WOBURN, MA 01801-1053

Package:
Ship Date: 01/22/19
Value: $50.00
Weight: 3 lbs 0 oz
From: 01862

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

Transaction Number: 454871668
Transaction Type: Label
Payment Method: AMEX-1004
Payment Status: Account Charged

Postage Cost	$6.70
USPS Tracking®	Free
Label Total:	**$6.70**
Order Total:	**$26.80**

Timestamp	Message
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01-22-2019 11:07:00	Getting Payment
01-22-2019 11:06:25	Setting Payment

Back to Shipping History

Feedback