



October 27, 2016

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

Regarding: Notice of Exempt Modification – Antenna and RRU Swap
Property Address: 585 South Main Street, Naugatuck, CT 06770
AT&T Site: CT2166- Naugatuck South Main

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 49-foot monopole at the above-referenced address, latitude 41.4784361, longitude -73.0484989. Said monopole is owned by American Tower Corporation. The existing equipment shelter is 16' x 12' totaling 192 square feet.

AT&T desires to modify its existing telecommunications facility by swapping two (2) antennas and (2) remote radio heads (RRUs). The centerline height of said antennas is and will remain at 52 feet. Antennas are mounted utilizing a platform with hand rails.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to N. Warren "Pete" Hess III, Mayor of the Town of Naugatuck, as well as to the landowner The Office LLC. A copy of this letter is also being sent to the monopole owner American Tower Corporation.

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

1. The planned modification will not result in an increase in the height of the existing structure. The antennas to be swapped will be installed at the existing height of 52 feet on the 49-foot monopole.
2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission

(FCC) safety standard. An RF emissions calculation (attached) for AT&T's modified facility is herein provided.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The monopole and its foundation can support AT&T's proposed modifications (please see attached structural analysis completed by American Tower dated October 6, 2016).

For the foregoing reasons, AT&T respectfully requests that the proposed antenna and remote radio head installation be allowed within the exempt modifications under j-72 (b)(2).

Sincerely,

Sarah Snell

Sarah Snell
Site Acquisition Specialist

cc: N. Warren "Pete" Hess III, Mayor of the Town of Naugatuck
The Office LLC, Landowner
American Tower Corporation, Monopole Owner



Borough of Naugatuck, CT

Property Listing Report

Map Block Lot

26-35E23

Account

011-8400

Property Information

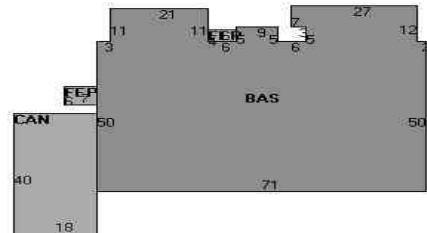
Property Location	585 S MAIN ST
Owner	THE OFFICE LLC
Co-Owner	
Mailing Address	585 S MAIN ST NAUGATUCK CT 06770
Land Use	3260 REST/CLUBS
Land Class	C
Zoning Code	
Census Tract	
Sub Lot	
Neighborhood	B
Acreage	1.76
Utilities	
Lot Setting/Desc	
Survey Map	
Additional Info	

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



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

Sub Areas

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

Sales History

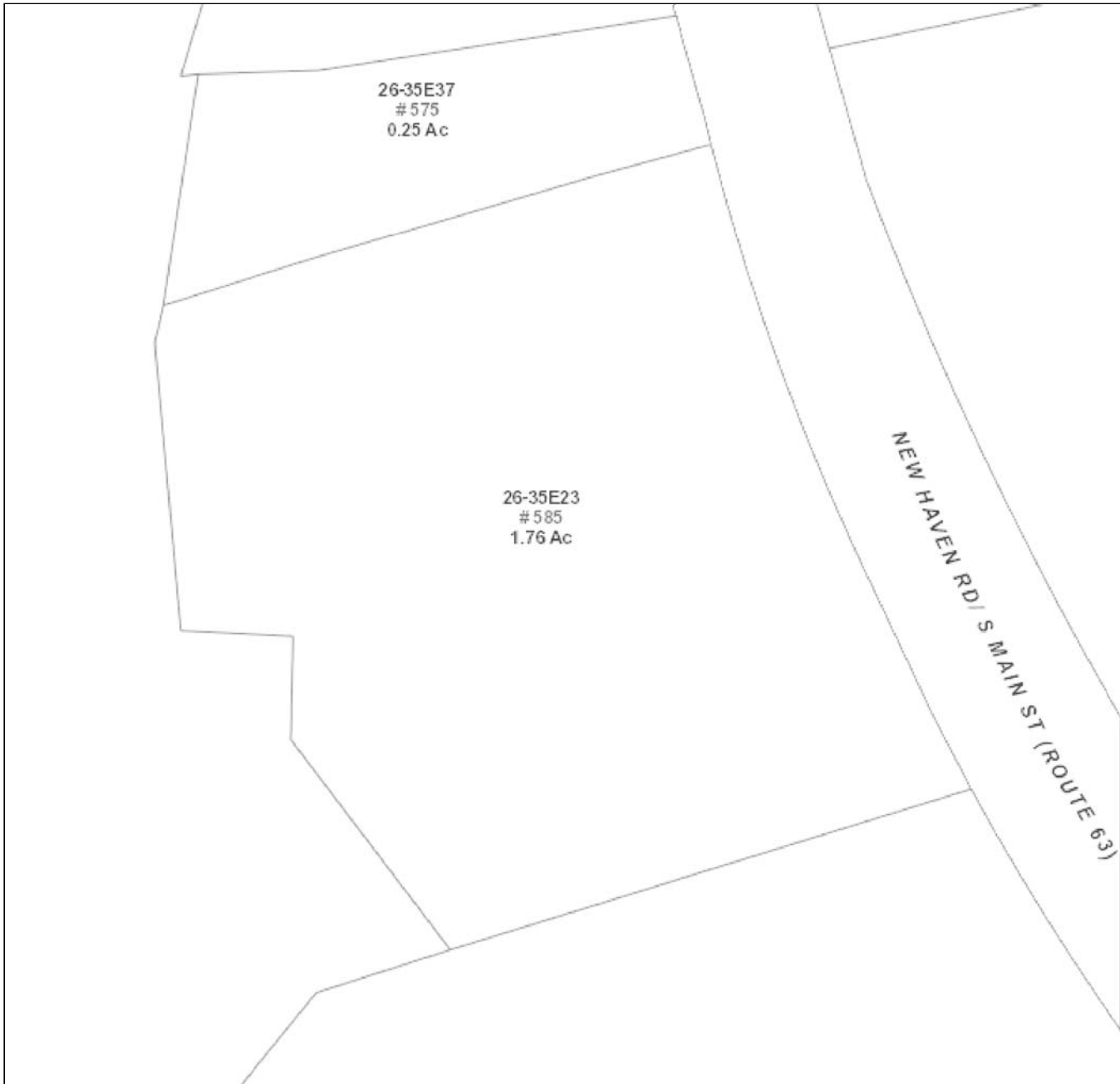
Owner of Record	Book/ Page	Sale Date	Sale Price
THE OFFICE LLC	875/ 80	9/20/2010	
TARZAK BUILDERS LLC	871/ 365	7/7/2010	
CHRISTOFORO COLUMBO SOCIETY	747/ 363	2/27/2006	
CHRISTOFORO COLUMBO SOCIETY	747/ 357	2/27/2006	
CHRISTOFORO COLUMBO SOCIETY	747/ 345	2/27/2006	198000
CHRISTOFORO COLUMBO SOCIETY	110/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

Town of Naugatuck

Geographic Information System (GIS)



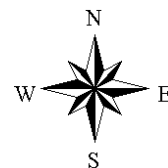
Date Printed: 10/27/2016



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. 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.

Approximate Scale: 1 inch = 50 feet



PROJECT TEAM

CLIENT REPRESENTATIVE:

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

SITE ACQUISITION & ZONING:

ENGINEERING:

TRYLON TSF
24 QUEEN ST E
BRAMPTON, ON L6V 1A2
KATYA SERAVALLE
PHONE: 519-465-4125

RF ENGINEER:

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

CONSTRUCTION MANAGEMENT:

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

TOWER OWNER:

AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN, MA 01801

GENERAL NOTES

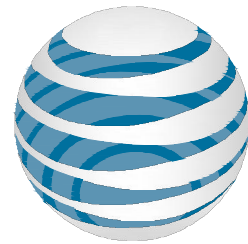
DO NOT SCALE DRAWINGS

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

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

SITE INFORMATION

LATITUDE: 41° 28' 42.36996" N
LONGITUDE: 73° 2' 54.59604" W
LAT./LONG. TYPE: NAD 83
GROUND ELEVATION: N/A
APN/UPC: N/A
AREA OF CONSTRUCTION: EXISTING
ZONING/JURISDICTION: NEW HAVEN COUNTY
CURRENT ZONING: UNKNOWN
EXISTING USE: UNMANNED TELECOMMUNICATIONS FACILITY
COUNTY: NEW HAVEN COUNTY
HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.



at&t
Mobility

**LTE MULTI CARRIER RRH ADD
CT2166
NAUGATUCK SOUTH MAIN
585 SOUTH MAIN STREET
NAUGATUCK, CT 06770
FA CODE: 10035065**

APPROVALS

AT&T (RF): _____ DATE: _____
AT&T (CONST.): _____ DATE: _____
AT&T (OPS): _____ DATE: _____
TOWER OWNER: _____ DATE: _____

JURISDICTIONAL APPROVAL

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

PROJECT DESCRIPTION

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

- REMOVE (2) EXISTING ANTENNA (1) PER SECTOR FOR (2) SECTORS.
- INSTALL (2) NEW ANTENNA (1) PER SECTOR FOR (2) SECTORS.
- REUSE (4) EXISTING ANTENNA (2) PER SECTOR FOR (2) SECTORS.
- REMOVE (2) EXISTING RRUS-11 (1) PER SECTOR FOR (2) SECTORS.
- RELOCATE (2) EXISTING RRUS-11 (1) PER SECTOR FOR (2) SECTOR.
- INSTALL (2) NEW RRUS-32 B2, (1) PER SECTOR FOR (2) SECTORS.
- REUSE (2) EXISTING FIBER TRUNK.
- REUSE (4) EXISTING DC TRUNK.
- REUSE (1) EXISTING RET CABLE.
- REUSE (2) EXISTING DC/FIBER SQUID.
- REUSE (8) EXISTING RF CABLES.

CHANGES IN THE EXISTING AT&T EQUIPMENT ENCLOSURE AREA:

- INSTALL (1) NEW XMU.
- INSTALL (1) IDL2.

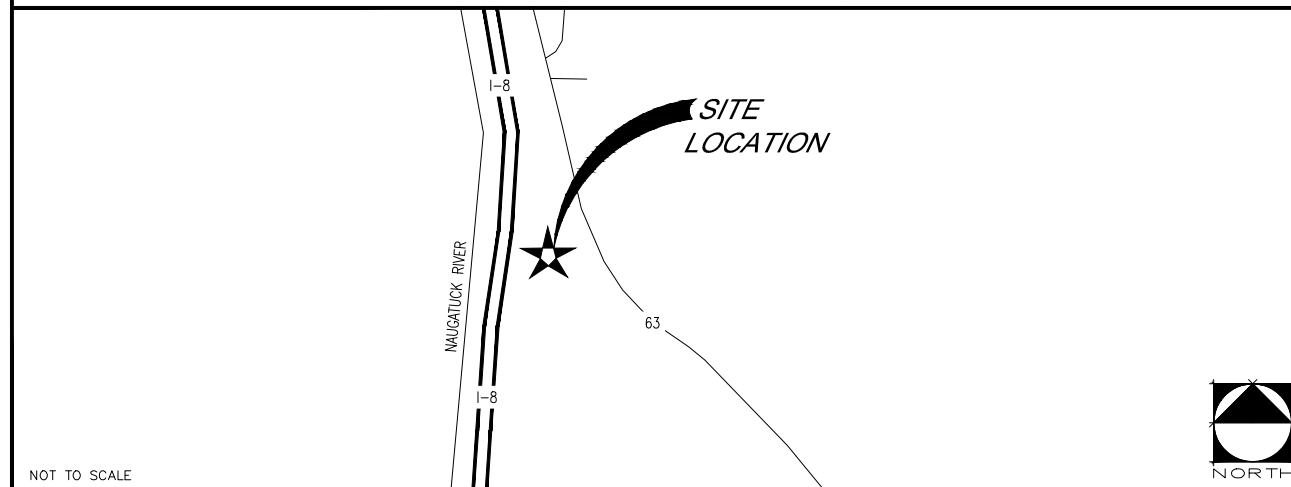
MFP PROJECT #23216-032

SHEET

DESCRIPTION

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

VICINITY MAP



DRIVING DIRECTIONS

2166 NAUGATUCK RT. 8 SOUTH TO EXIT 26. AT END OF EXIT TAKE A LEFT TO LIGHT. RIGHT ON RT. 63 SOUTH, .6 OF A MILE TO CHRIS COLUMBUS CAFE. CELL IN REAR OF PARKING LOT. POWER COMPANY CL & POUTAGE PHONE NUMBER 860-947-2000 METER #: 89 177 793 2

CODE COMPLIANCE

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

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.



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



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



PLANS PREPARED BY:



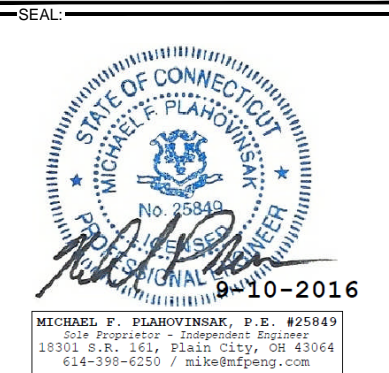
24 QUEEN ST E
BRAMPTON, ON
1 (519) 572-9995

NO.	DATE	DESCRIPTION	BY
A	09/03/16	FOR REVIEW	RSN
0	09/08/16	ISSUE FOR CONSTRUCTION	RSN

SITE INFORMATION:

**CT2166
NAUGATUCK SOUTH MAIN
FA CODE: 10035065**

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770



SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 - CONTRACTOR - EMPIRE TELECOM
 - SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 - OWNER - AT&T MOBILITY
 - DEM - ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCR1 'AP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
 - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
 - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
 - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
 - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
 - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
 - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
 - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
 - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
 - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
 - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

PLANS PREPARED BY:



24 QUEEN ST E
BRAMPTON, ON
1 (519) 572-9995

NO.	DATE	DESCRIPTION	BY
A	09/03/16	FOR REVIEW	RSN
0	09/08/16	ISSUE FOR CONSTRUCTION	RSN

SITE INFORMATION:

CT2166
NAUGATUCK SOUTH MAIN
FA CODE: 10035065

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770

SEAL:



SHEET TITLE:

**GENERAL NOTES &
GROUNDING NOTES**

SHEET NUMBER:

GN-1



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

PLANS PREPARED BY:



24 QUEEN ST E
BRAMPTON, ON
1 (519) 572-9995

NO.	DATE	DESCRIPTION	BY
A	09/03/16	FOR REVIEW	RSN
0	09/08/16	ISSUE FOR CONSTRUCTION	RSN

SITE INFORMATION:

CT2166
NAUGATUCK SOUTH MAIN
FA CODE: 10035065

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770

SEAL:



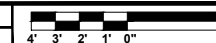
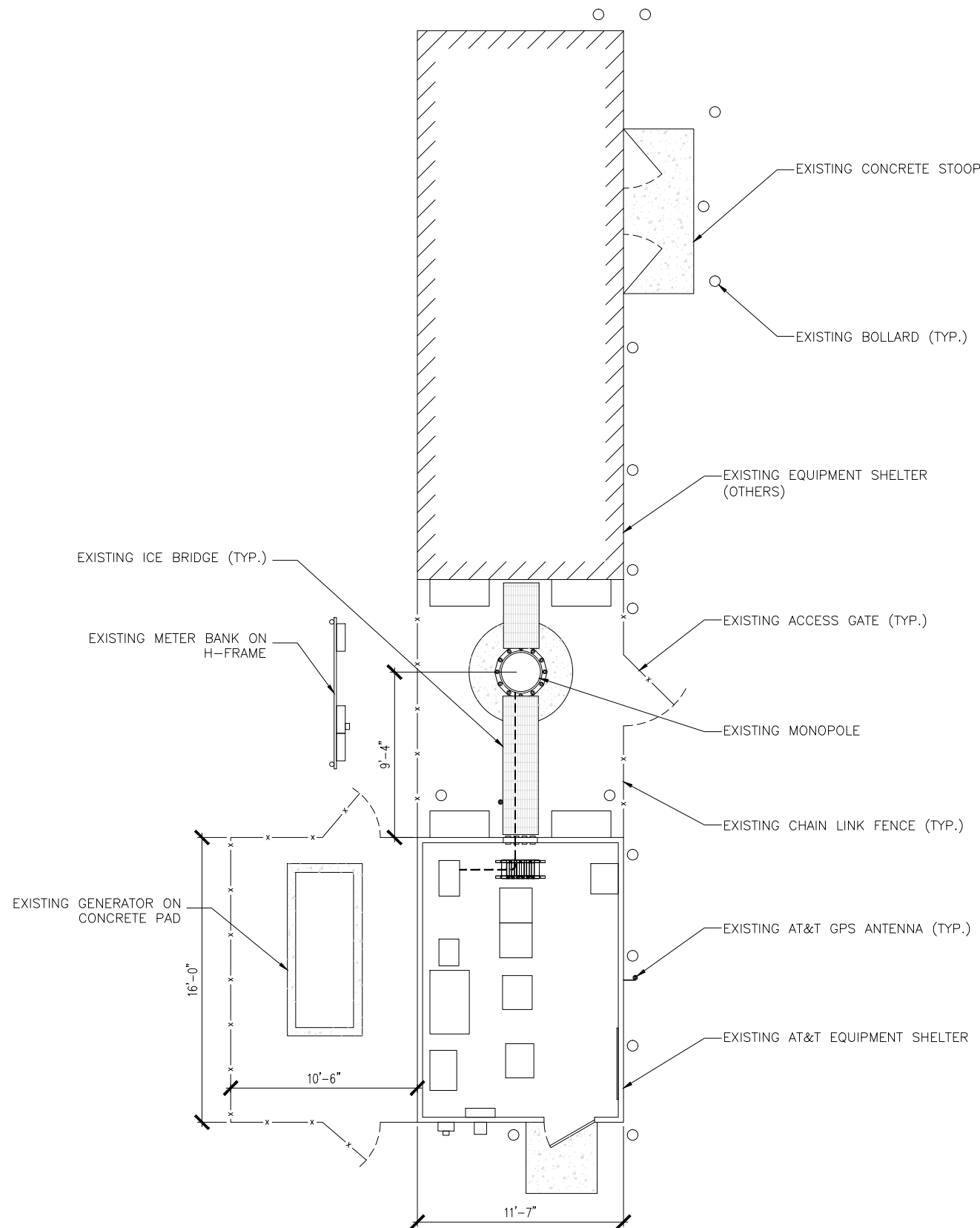
MICHAEL F. PLAHOVINSAK, P.E. #25849
Sole Proprietor - Independent Engineer
18301 S.R. 161, Plain City, OH 43064
614-398-6250 / mike@mpeng.com

SHEET TITLE:

COMPOUND PLAN

SHEET NUMBER:

A-1





1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

PLANS PREPARED BY:



24 QUEEN ST E
BRAMPTON, ON
1 (519) 572-9995

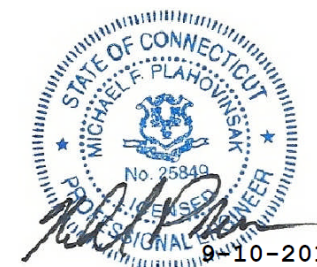
NO.	DATE	DESCRIPTION	BY
A	09/03/16	FOR REVIEW	RSN
0	09/08/16	ISSUE FOR CONSTRUCTION	RSN

SITE INFORMATION:

CT2166
NAUGATUCK SOUTH MAIN
FA CODE: 10035065

585 SOUTH MAIN STREET
NAUGATUCK, CT 06770

SEAL:



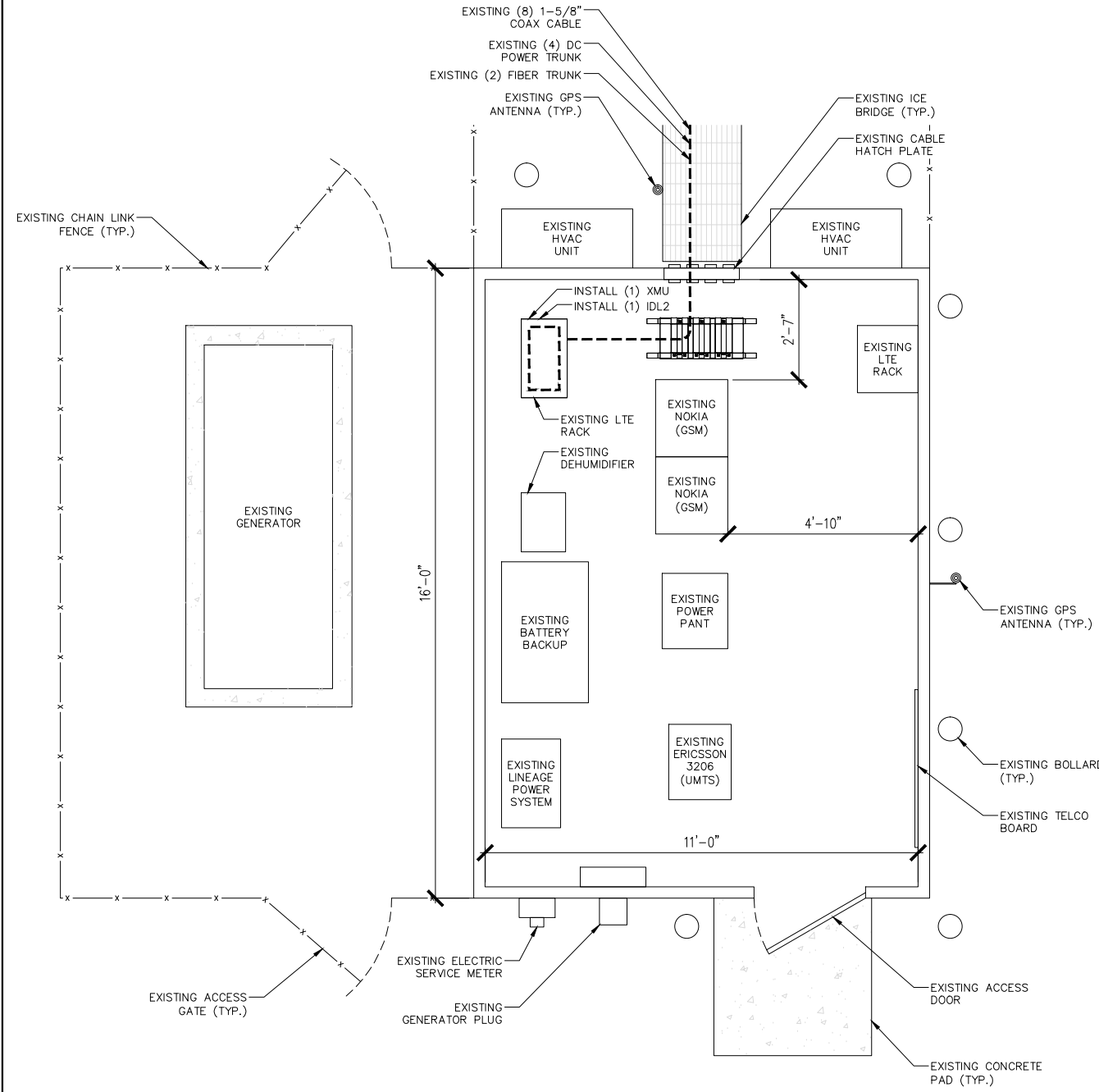
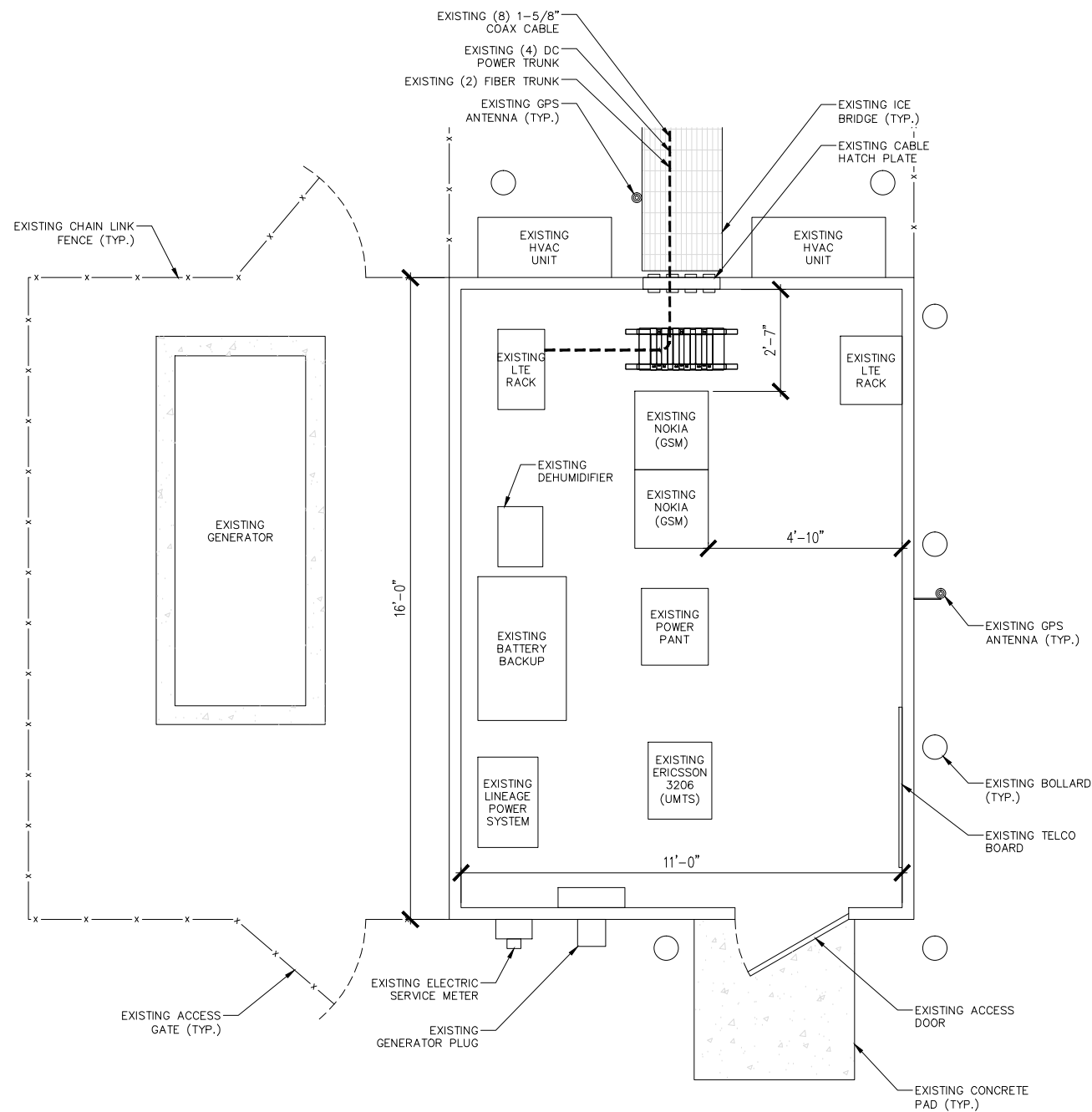
MICHAEL F. PLAHOVINSK, P.E. #25849
Sole Proprietor - Independent Engineer
18301 S.R. 161, Plain City, OH 43064
614-398-6250 / mike@mfpeng.com

SHEET TITLE:

EQUIPMENT LAYOUTS

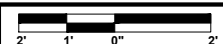
SHEET NUMBER:

A-2



EQUIPMENT EQUIPMENT LAYOUT

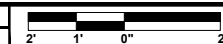
22"x34" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"



1

PROPOSED EQUIPMENT LAYOUT

22"x34" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"



2



1355 WEST UNIVERSITY DRIVE
MESA, AZ 85201-5419



16 ESQUIRE ROAD
BILLERICA, MA 01821

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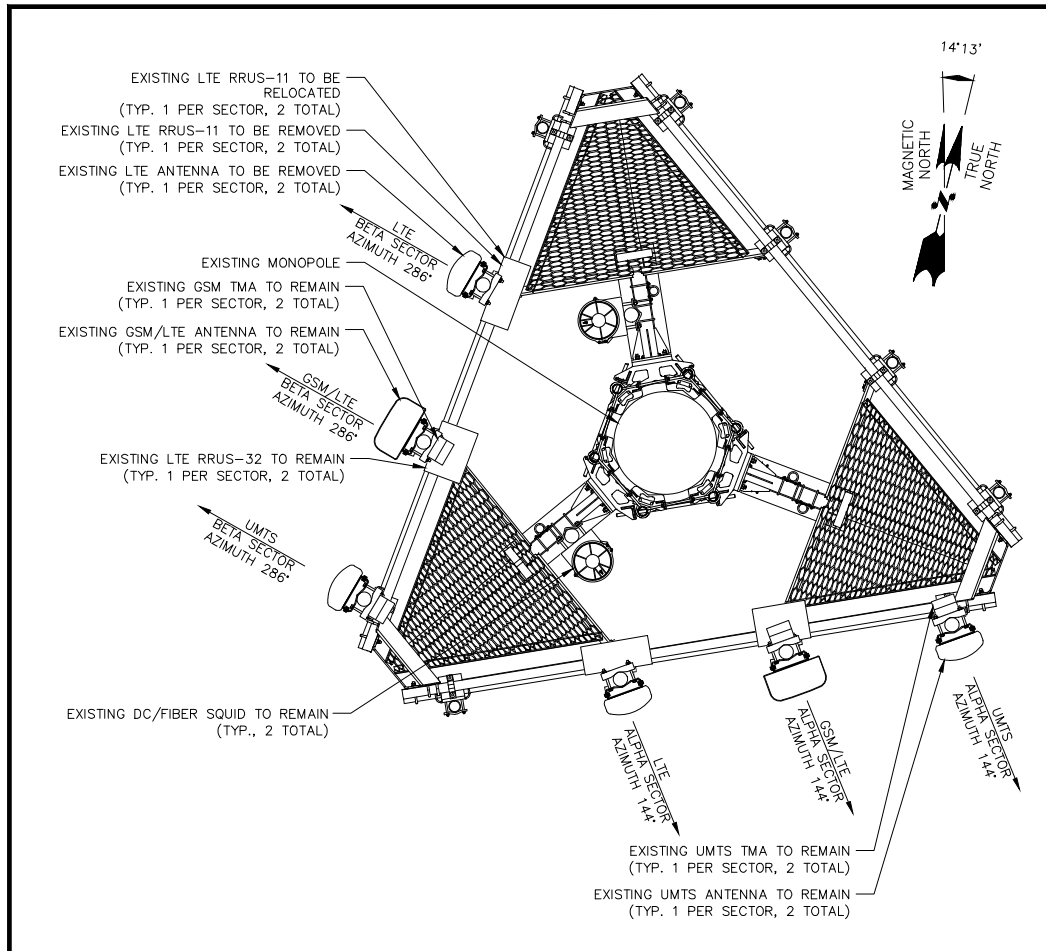
CT2166
NAUGATUCK SOUTH MAIN
FA CODE: 10035065
585 SOUTH MAIN STREET
NAUGATUCK, CT 06770

SEAL:

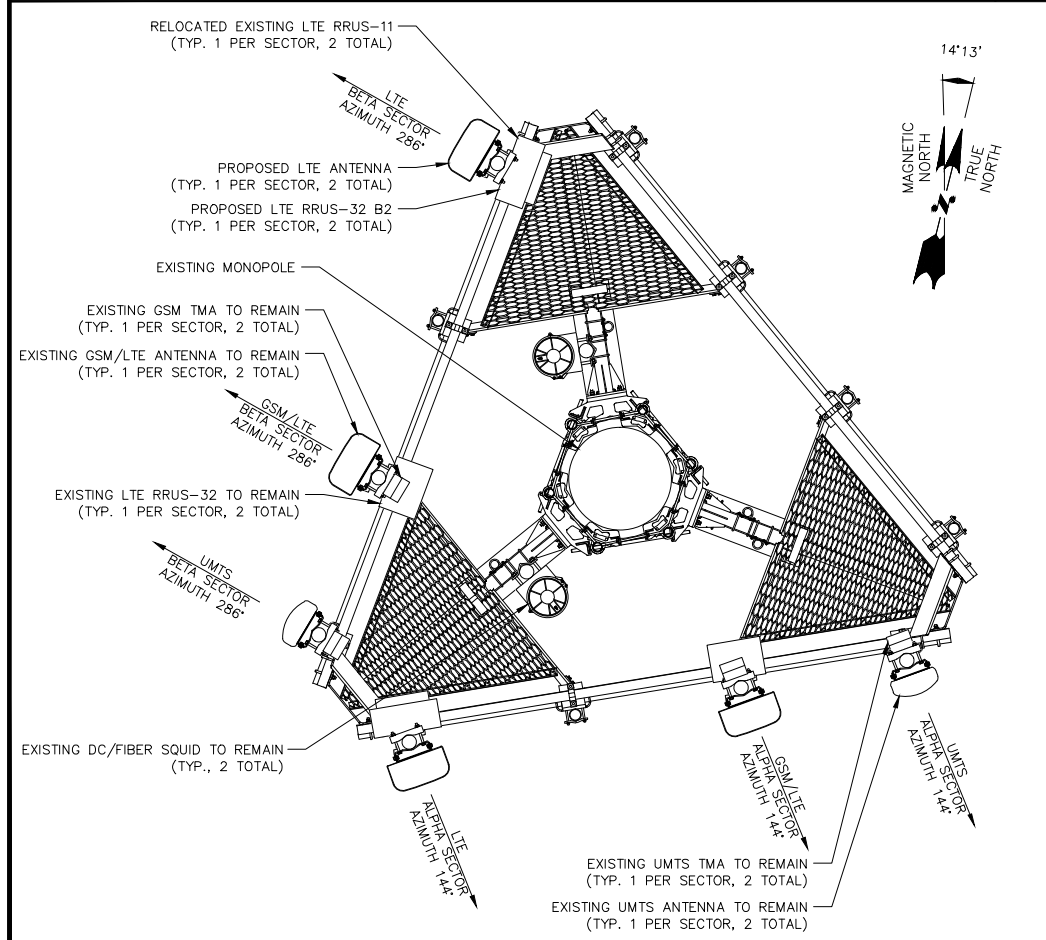
MICHAEL F. PLAHOVINSAK, P.E. #25849
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614-398-6250 / mike@mpeng.com

SHEET TITLE:
**ANTENNA LAYOUTS
& TOWER ELEVATIONS**

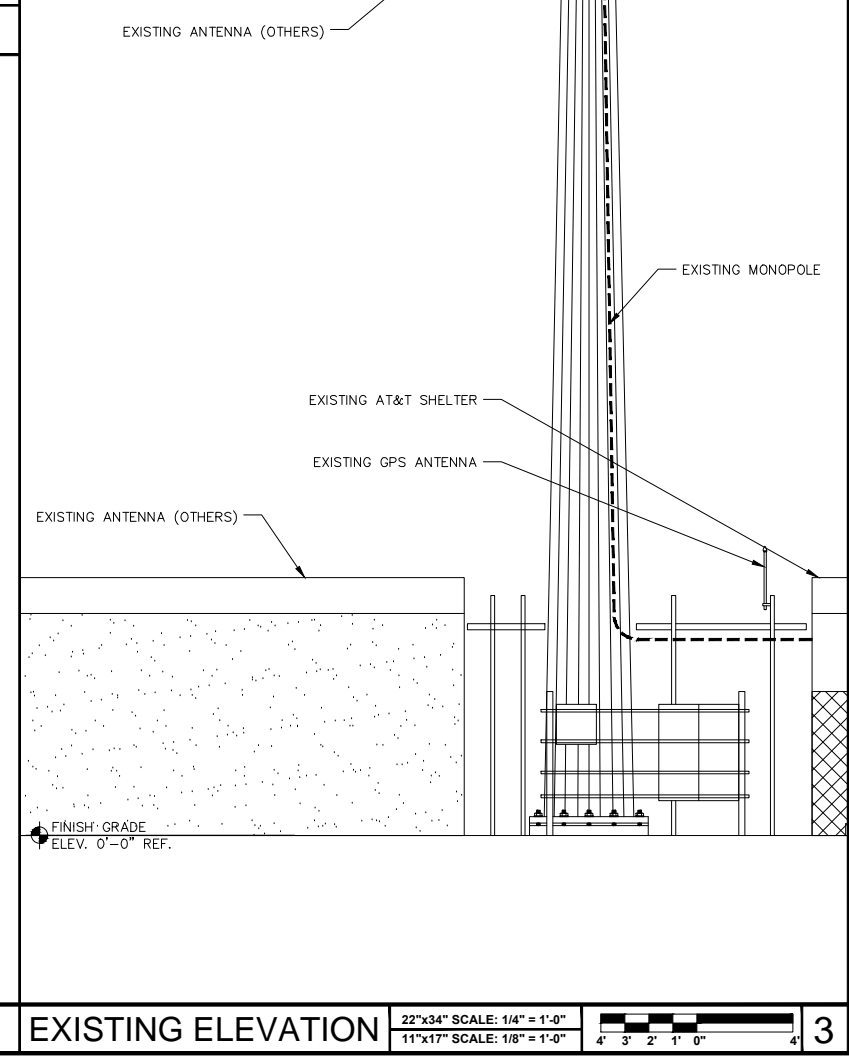
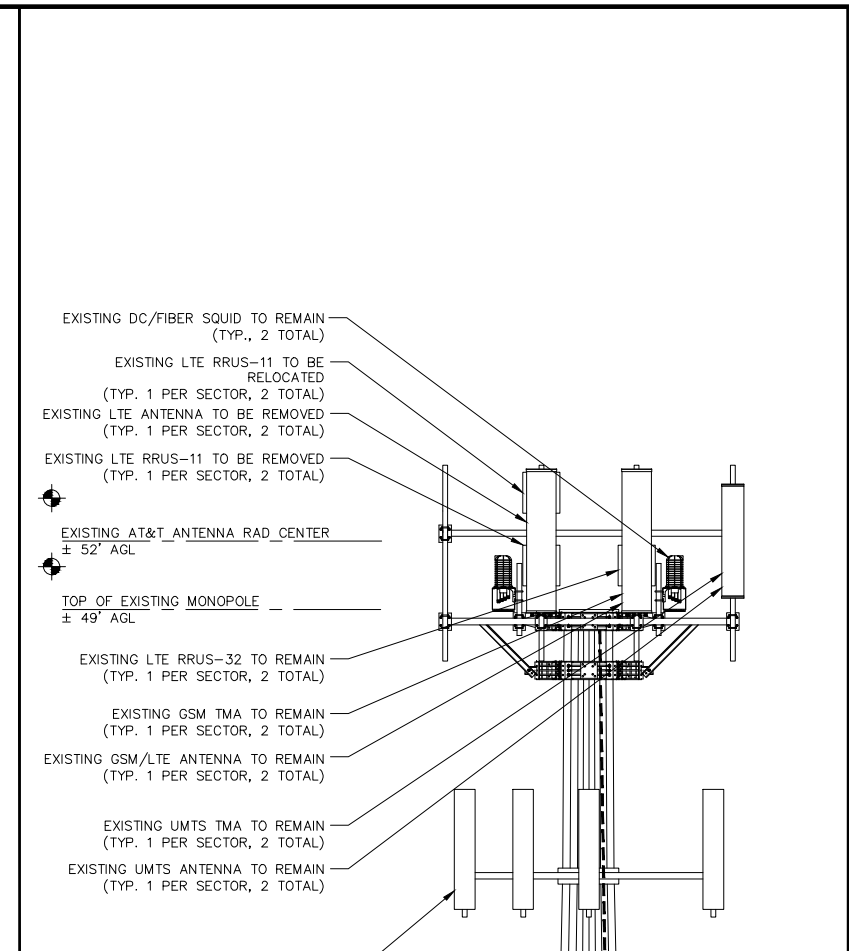
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A-3



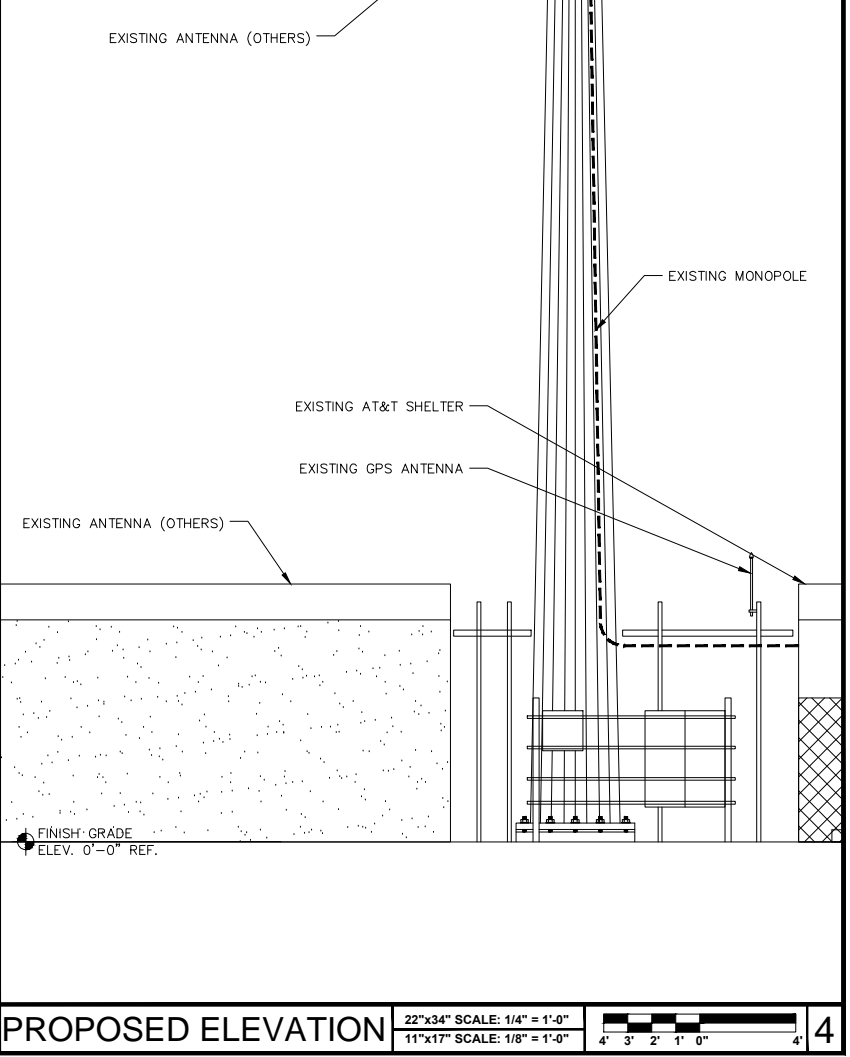
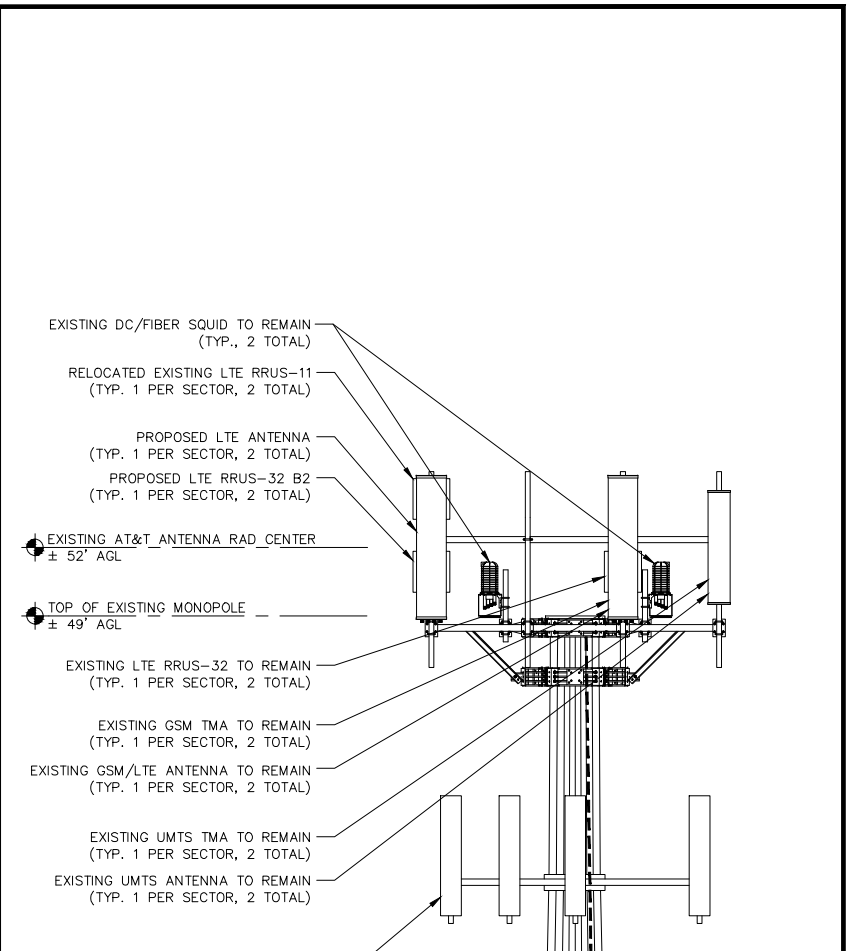
EXISTING ANTENNA LAYOUT 22"x34" SCALE: 1/2" = 1'-0" 11"x17" SCALE: 1/4" = 1'-0" 1 2'



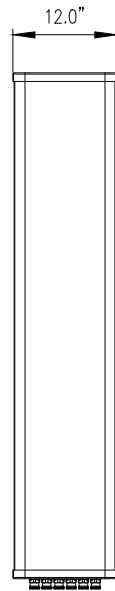
PROPOSED ANTENNA LAYOUT 22"x34" SCALE: 1/2" = 1'-0" 11"x17" SCALE: 1/4" = 1'-0" 2 2'



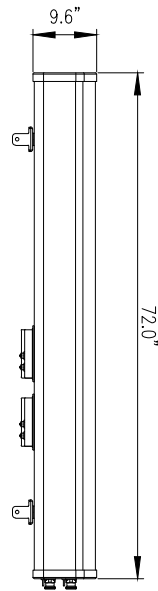
EXISTING ELEVATION 22"x34" SCALE: 1/4" = 1'-0" 11"x17" SCALE: 1/8" = 1'-0" 3 4'



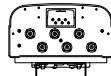
PROPOSED ELEVATION 22"x34" SCALE: 1/4" = 1'-0" 11"x17" SCALE: 1/8" = 1'-0" 4 4'



FRONT VIEW

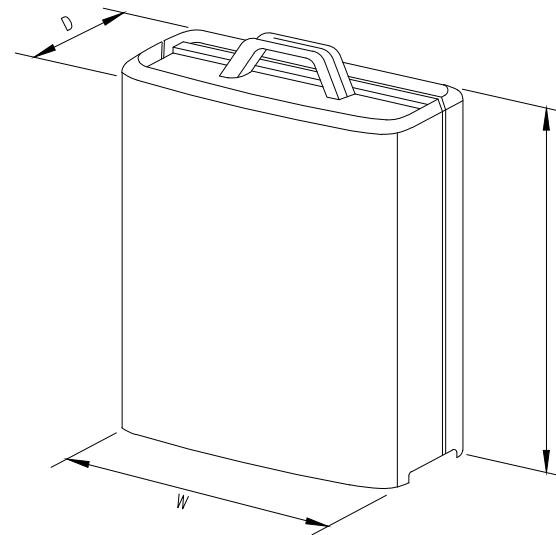


SIDE VIEW



BOTTOM VIEW

MANUFACTURER	QUINTEL
MODEL	QS66512-2
WEIGHT	111 LBS



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

LTE ANTENNA DETAILS

N.T.S 1

RRUS DETAILS

N.T.S 2

NOT USED

N.T.S 3



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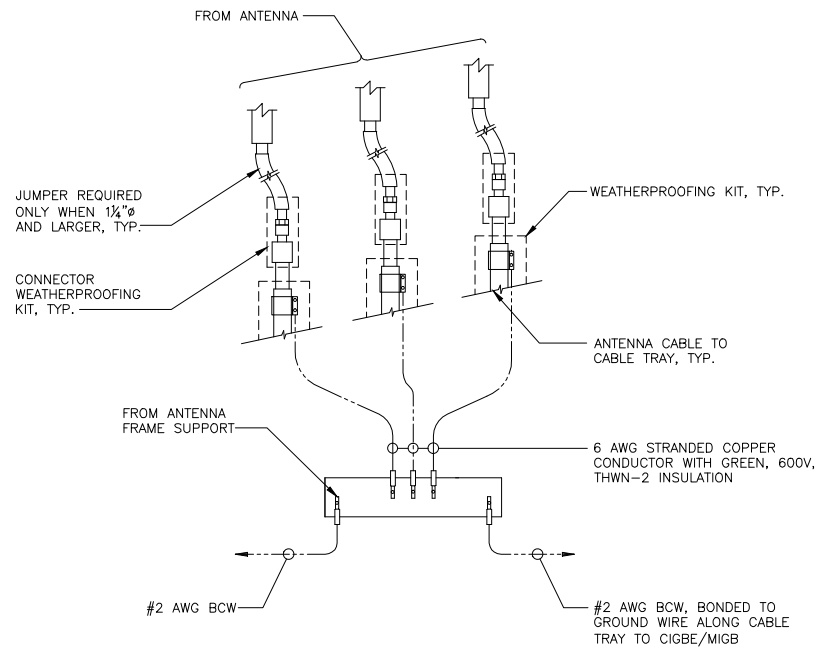
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SHEET TITLE:

DETAILS

SHEET NUMBER:

A-4

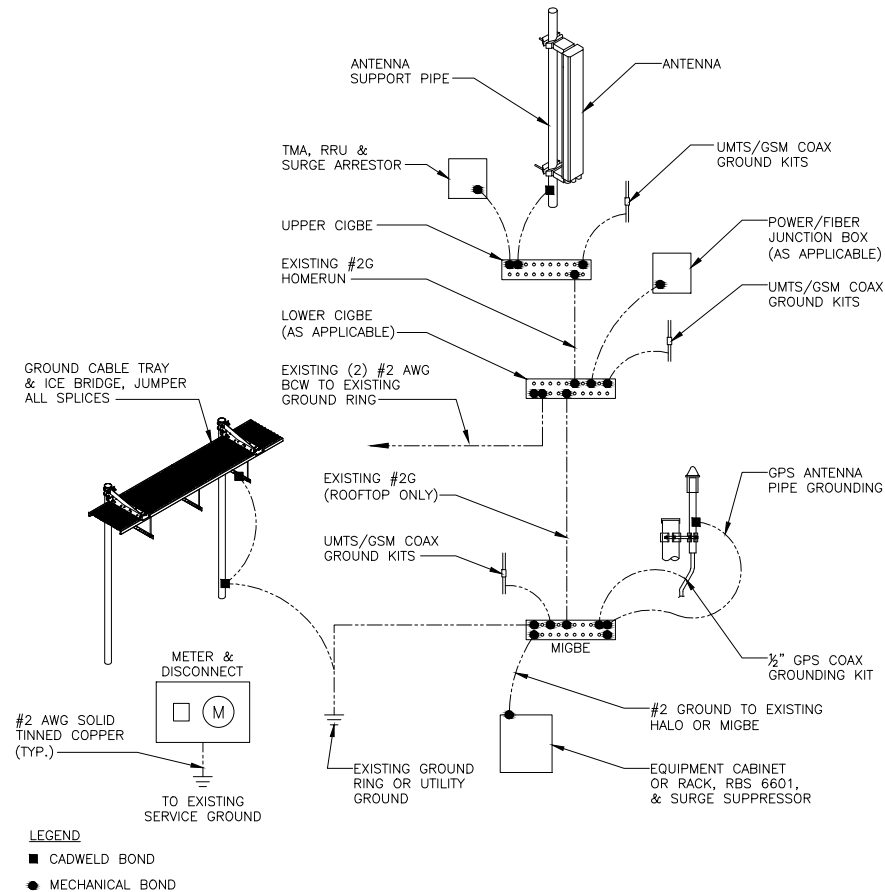


GROUND WIRE TO GROUND BAR CONNECTION DETAILS

N.T.S

1

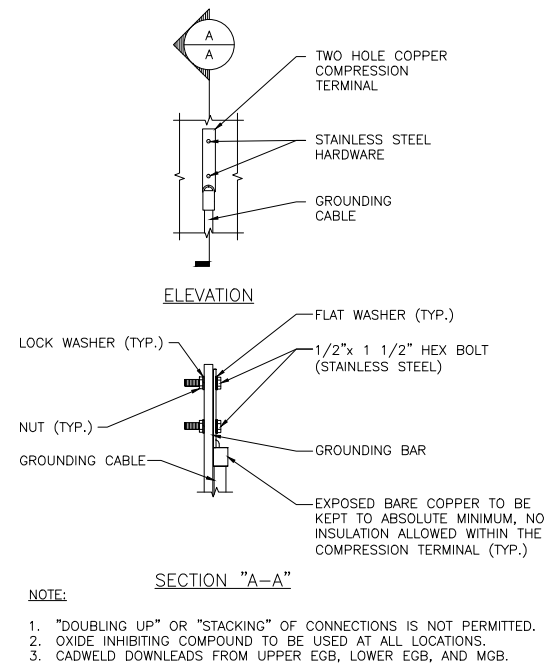
GROUND RISER DIAGRAM



N.T.S

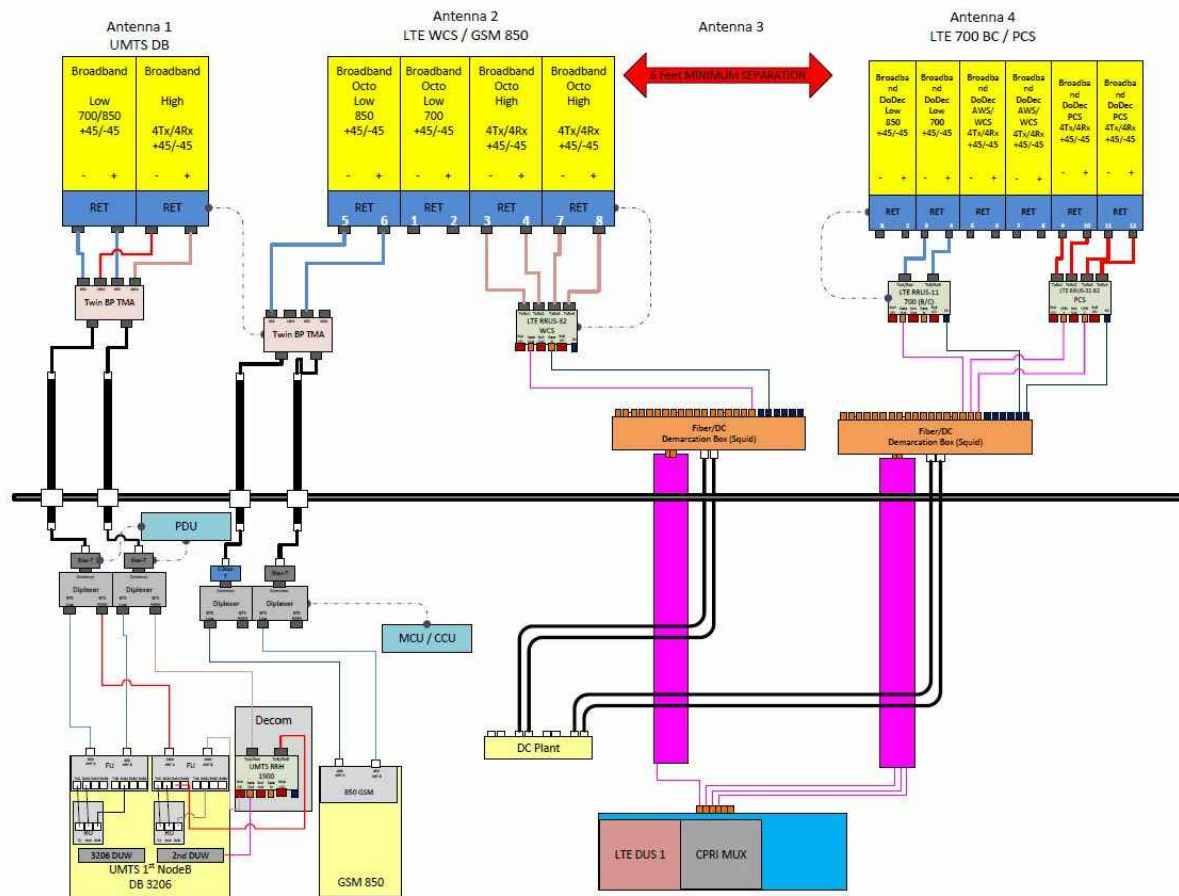
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TYPICAL GROUND BAR CONNECTION DETAILS



N.T.S

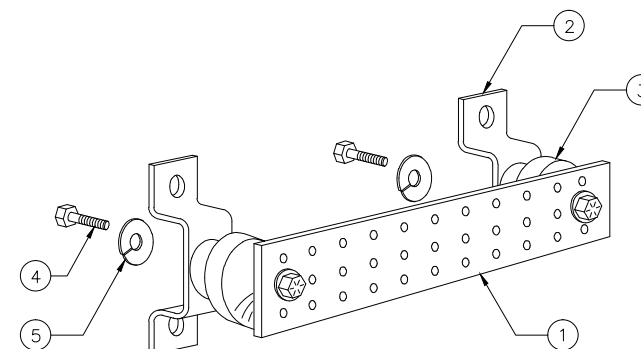
3



PLUMBING DIAGRAM

N.T.S 4

GROUND BAR DETAILS



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x 1/4")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	3/8"-11x1" H.H.C.S.
5	4	3/8" LOCK WASHER

NOTES:

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

- SECTION "P" - SURGE PRODUCERS**
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
 - GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
 - TELCO GROUND BAR
 - COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
 - +24V POWER SUPPLY RETURN BAR (#2)
 - 48V POWER SUPPLY RETURN BAR (#2)
 - RECTIFIER FRAMES

- SECTION "A" - SURGE ABSORBERS**
- INTERIOR GROUND RING (#2)
 - EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
 - METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
 - BUILDING STEEL (IF AVAILABLE) (#2)

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SEAL:

18301 S.R. 161, Plain City, OH 43064
614-398-6250 / mike@mfpeng.com

SHEET TITLE:

GROUNDING, ONE-LINE
DIAGRAM & DETAILS

SHEET NUMBER:

G-1



AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by



Structural Analysis Report

Structure : 49 ft Monopole
ATC Site Name : Naugatuck (telephone Pole), CT
ATC Site Number : 302526
Engineering Number : OAA686614_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
41.478444,-73.048500
County : New Haven
Date : October 6, 2016
Max Usage : 64%
Result : Pass

Prepared By:
Harleen Sandhu

COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
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Equipment to be Removed.....	2
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Structure Usages	3
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Deflection, Twist, and Sway.....	3
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Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 49 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

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:	$S_s = 0.19$, $S_1 = 0.06$
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					
52.0	52.0	4	Powerwave CM1007-DBPXBC-003	Platform w/ Handrails	(2) 2" conduit (2) 1 5/8" Coax (4) 0.78" 8 AWG 6 (1) 0.51" Hybrid	AT&T Mobility
		4	CCI DTMABP7819VG12A			
		1	Raycap DC6-48-60-18-8F ("Squid")			
		2	Ericsson RRUS 11 (Band 12) (55 lb)			
		2	Powerwave 7770.00			
		2	CCI OPA-65R-LCUU-H6			
43.0	43.0	6	RFS FD9R6004/1C-3L	Low Profile Platform	(12) 7/8" Coax (2) 1 5/8" Hybriflex Cable	Verizon
		3	Alcatel-Lucent RRH2X60-1900			
		3	Alcatel-Lucent RRH2X60-AWS			
		3	Alcatel-Lucent RRH2x60 700			
		6	Decibel DB844H80E-XY			
		2	RFS DB-T1-6Z-8AB-OZ			
		6	Commscope SBNHH-1D65B			

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
52.0	52.0	2	KMW AM-X-CD-16-65-00T-RET	-	-	AT&T Mobility
		2	Ericsson RRUS 32 B30			

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
52.0	52.0	1	Raycap DC6-48-60-18-8F ("Squid")	Platform w/ Handrails	(6) 1 5/8" Coax (2) 0.39" Fiber Trunk	AT&T Mobility
		2	Ericsson RRUS 32 B2			
		2	Ericsson RRUS-32 (77 lbs)			
		2	Quintel QS66512-2			

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

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	45%	Pass
Shaft	64%	Pass
Base Plate	57%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	288.5	389.5	281.8	72%
Shear (Kips)	7.0	9.5	6.4	68%

* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
52.0	Raycap DC6-48-60-18-8F ("Squid")	AT&T Mobility	0.000	0.000
	Ericsson RRUS 32 B2			
	Ericsson RRUS-32 (77 lbs)			
	Quintel QS66512-2			

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



Standard Conditions

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

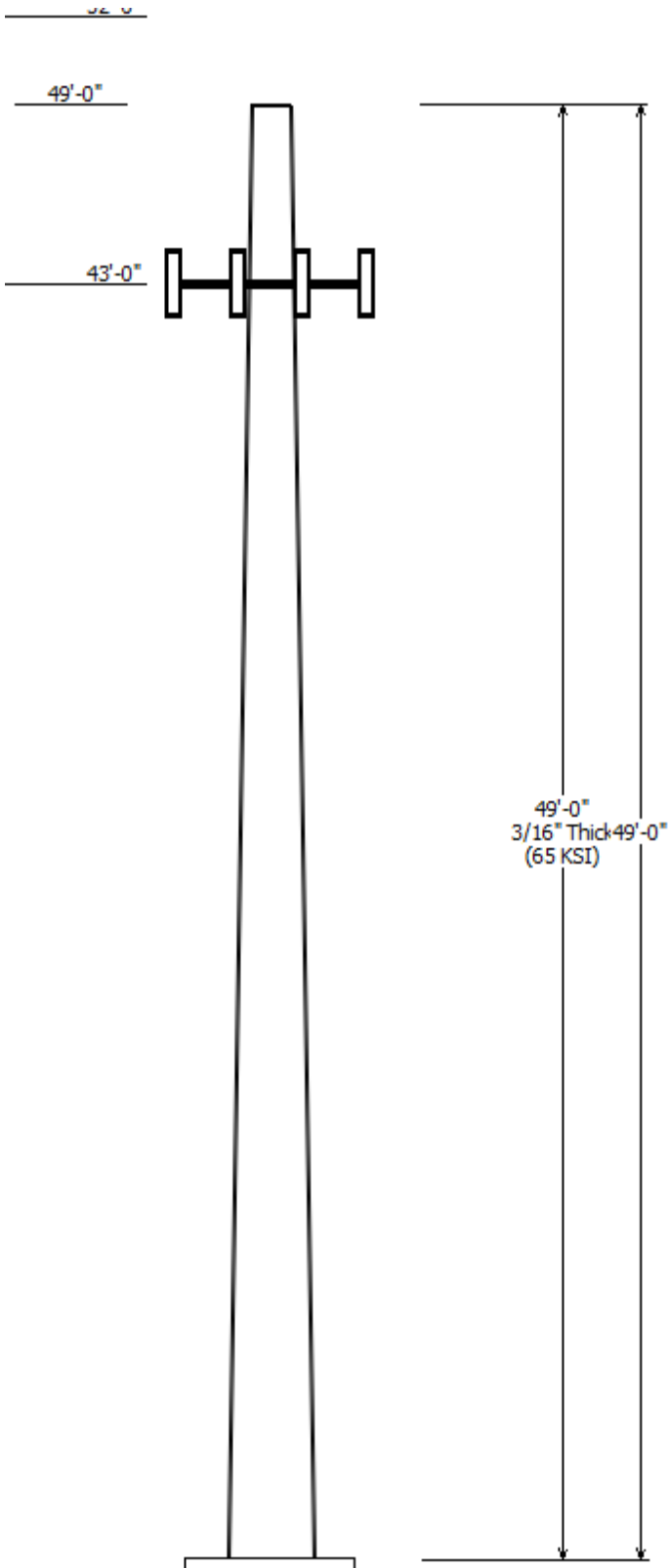
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements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

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

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

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

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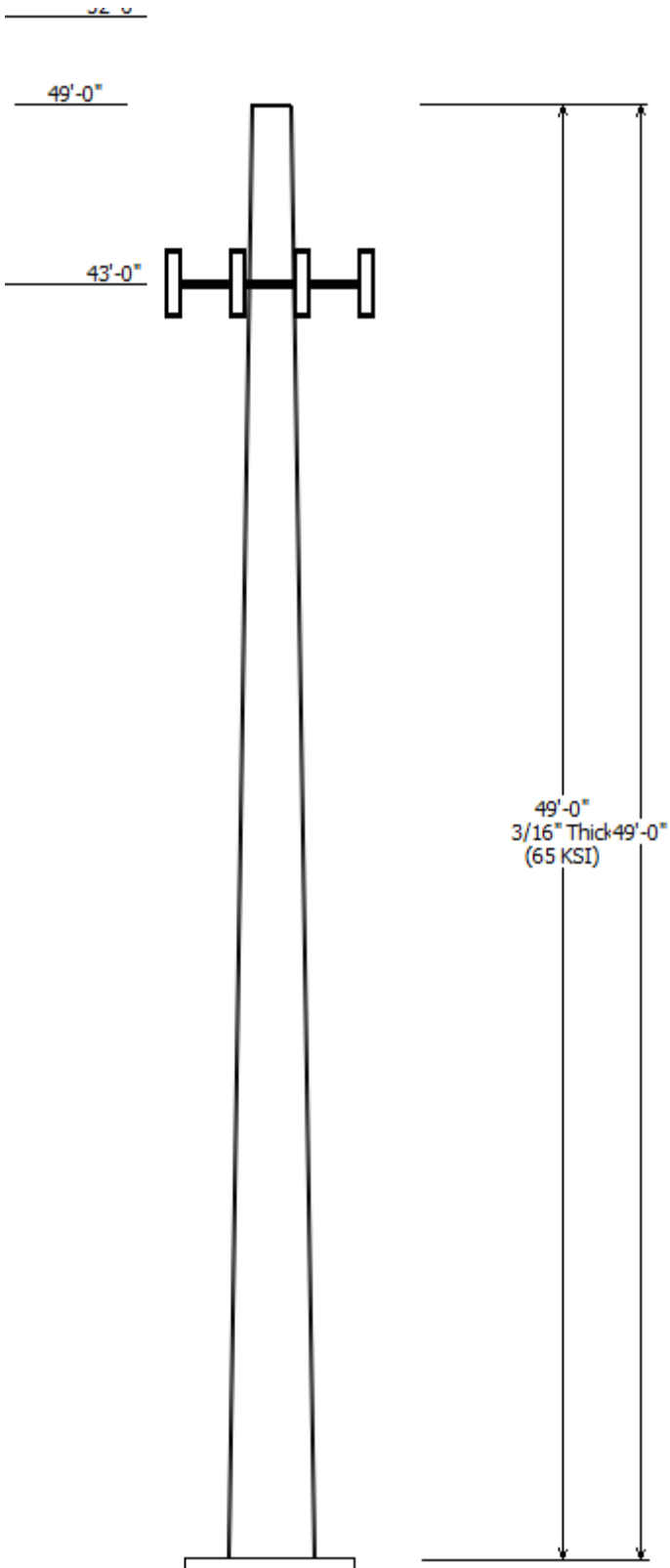
Job Information	
Pole :	302526
Code:	ANSI/TIA-222-G
Description :	49' EEI Monopole
Client :	AT&T Mobility
Struct Class :	II
Location :	Naugatuck (telephone Pole), CT
Shape :	18 Sides
Exposure :	B
Height :	49.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.183674in/ft

Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Taper Grade (ksi)
		Across Top	Flats Bottom			
1	49.000	14.00	23.00	0.188	0.000	0.183700 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
52.000	52.000	1	Raycap DC6-48-60-18-8F
52.000	52.000	1	Round Platform w/ Handrails
52.000	52.000	2	CCI OPA-65R-LCUU-H6
52.000	52.000	2	Quintel QS66512-2
52.000	52.000	2	Powerwave 7770.00
52.000	52.000	2	Ericsson RRUS-32 (77 lbs)
52.000	52.000	2	Ericsson RRUS 32 B2
52.000	52.000	2	Ericsson RRUS 11 (Band 12) (55
52.000	52.000	1	Raycap DC6-48-60-18-8F
52.000	52.000	4	CCI DTMABP7819VG12A
52.000	52.000	4	Powerwave Allgon CM1007-
43.000	43.000	6	Commscope SBNHH-1D65B
43.000	43.000	2	RFS DB-T1-6Z-8AB-0Z
43.000	43.000	6	Decibel DB844H80E-XY
43.000	43.000	3	Alcatel-Lucent RRH2x60 700
43.000	43.000	3	Alcatel-Lucent RRH2X60-1900
43.000	43.000	3	Alcatel-Lucent RRH2X60-AWS
43.000	43.000	6	RFS FD9R6004/1C-3L
43.000	43.000	1	Flat Low Profile Platform

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
0.000	43.000	1 5/8" Hybriflex	No
0.000	43.000	7/8" Coax	No
0.000	52.000	0.39" (10mm)	No
0.000	52.000	0.51" (13mm)	No
0.000	52.000	0.78" (19.7mm) 8	No
0.000	52.000	1 5/8" Coax	No
0.000	52.000	1 5/8" Coax	No
0.000	52.000	2" conduit	No

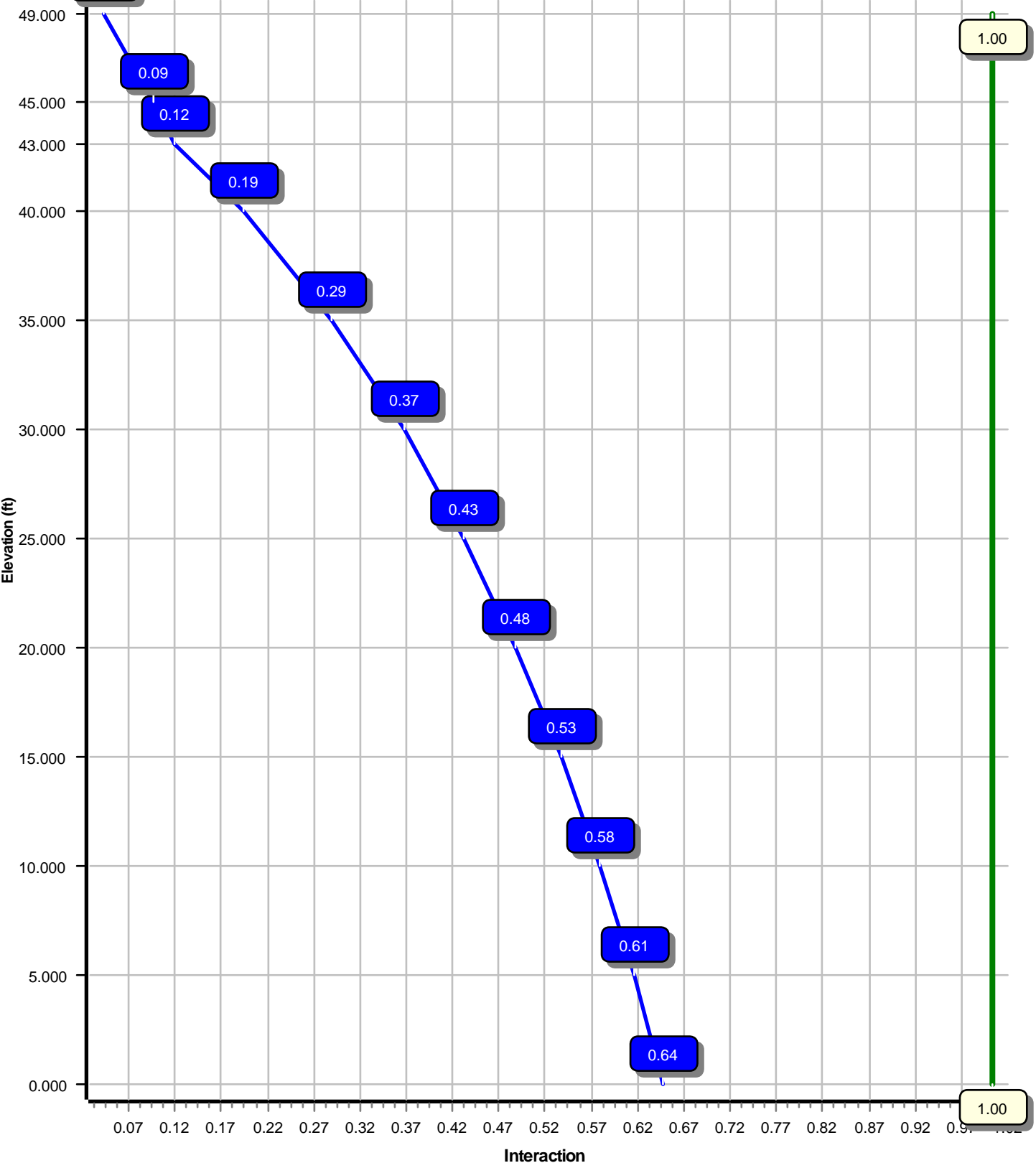
Load Cases	
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (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	281.84	6.44	9.94
0.9D + 1.6W	278.87	6.43	7.45
1.2D + 1.0Di + 1.0Wi	71.69	1.65	17.05
(1.2 + 0.2Sds) * DL + E ELFM	10.48	0.27	6.19
(1.2 + 0.2Sds) * DL + E EMAM	18.50	0.46	6.19
(0.9 - 0.2Sds) * DL + E ELFM	10.42	0.26	4.29
(0.9 - 0.2Sds) * DL + E EMAM	18.40	0.46	4.29
1.0D + 1.0W	66.95	1.54	8.31

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 64.40% at 0.0 ft



Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

10/6/2016 6:12:25 PM

Customer: AT&T Mobility

Analysis Parameters

Location:	New Haven County, CT		
Code:	ANSI/TIA-222-G	Height (ft):	49
Shape:	18 Sides	Base Diameter (in):	23.00
Pole Type:	Taper	Top Diameter (in):	14.00
Pole Manufacturer:	EEl	Taper (in/ft) :	0.184

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:	0.0 ft	Design Ice Thickness:	0.50 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	1.36		
T _L (sec):	6	p:	1.3
S _s :	0.191	S ₁ :	0.064
F _a :	1.600	F _v :	2.400
S _{ds} :	0.204	S _{d1} :	0.102
		C _s :	0.050
		C _s Max:	0.050
		C _s Min:	0.030

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 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

10/6/2016 6:12:25 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					Top							
							Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	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
Shaft Weight						1,817													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
52.00	CCI DTMABP7819VG12A	4	19.20	0.970	0.50	48.06	1.341	0.50	0.000	0.000
52.00	CCI OPA-65R-LCUU-H6	2	73.00	9.660	0.79	275.49	10.869	0.79	0.000	0.000
52.00	Ericsson RRUS 11 (Band 12)	2	55.00	2.520	0.67	124.73	3.088	0.67	0.000	0.000
52.00	Ericsson RRUS 32 B2	2	53.00	2.740	0.67	129.41	3.388	0.67	0.000	0.000
52.00	Ericsson RRUS-32 (77 lbs)	2	77.00	3.310	0.67	163.78	4.454	0.67	0.000	0.000
52.00	Powerwave 7770.00	2	35.00	5.510	0.77	152.37	6.442	0.77	0.000	0.000
52.00	Powerwave Allgon CM1007-	4	6.50	0.430	0.50	21.78	0.618	0.50	0.000	0.000
52.00	Quintel QS66512-2	2	111.00	8.130	0.92	309.52	9.278	0.92	0.000	0.000
52.00	Raycap DC6-48-60-18-8F	1	31.80	1.280	1.00	112.54	2.776	1.00	0.000	0.000
52.00	Raycap DC6-48-60-18-8F	1	31.80	1.280	1.00	112.54	2.776	1.00	0.000	0.000
52.00	Round Platform w/ Handrails	1	2000.00	27.200	1.00	3,156.17	49.011	1.00	0.000	0.000
43.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	126.22	2.693	0.67	0.000	0.000
43.00	Alcatel-Lucent RRH2X60-	3	43.00	1.880	0.50	100.63	2.395	0.50	0.000	0.000
43.00	Alcatel-Lucent RRH2X60-	3	44.00	1.880	0.50	103.00	2.395	0.50	0.000	0.000
43.00	Commscope SBNHH-1D65B	6	50.70	8.170	0.83	225.49	9.311	0.83	0.000	0.000
43.00	Decibel DB844H80E-XY	6	14.00	3.610	0.92	108.43	4.391	0.92	0.000	0.000
43.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,070.94	42.924	1.00	0.000	0.000
43.00	RFS DB-T1-6Z-8AB-OZ	2	44.00	4.800	0.67	167.69	5.562	0.67	0.000	0.000
43.00	RFS FD9R6004/1C-3L	6	3.10	0.370	0.50	13.83	0.543	0.50	0.000	0.000
Totals		53	5400.30			11,453.66			Number of Loadings : 19	

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	52.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0.39	N	AT&T MOBILITY
0.00	52.00	1	0.51" (13mm) Hybrid	0.51	0.14	N	0.51	N	AT&T MOBILITY
0.00	52.00	4	0.78" (19.7mm) 8	0.78	0.59	N	0.78	N	AT&T MOBILITY
0.00	52.00	2	1 5/8" Coax	1.98	0.82	N	1.98	N	AT&T MOBILITY
0.00	52.00	6	1 5/8" Coax	1.98	0.82	N	1.98	N	AT&T MOBILITY
0.00	52.00	2	2" conduit	2.38	3.65	N	2.38	N	AT&T MOBILITY
0.00	43.00	2	1 5/8" Hybriflex	1.98	1.30	N	1.98	N	Verizon
0.00	43.00	12	7/8" Coax	1.09	0.33	N	1.09	N	Verizon

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

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)
0.00		0.1875	23.000	13.576	892.6	20.22	122.67	77.6	76.4	0.0	0.0
5.00		0.1875	22.082	13.029	789.1	19.36	117.77	78.6	70.4	0.0	226.3
10.00		0.1875	21.163	12.483	693.9	18.49	112.87	79.7	64.6	0.0	217.0
15.00		0.1875	20.245	11.936	606.7	17.63	107.97	80.7	59.0	0.0	207.7
20.00		0.1875	19.327	11.390	527.1	16.76	103.07	81.7	53.7	0.0	198.4
25.00		0.1875	18.408	10.843	454.8	15.90	98.18	82.6	48.7	0.0	189.1
30.00		0.1875	17.490	10.297	389.5	15.04	93.28	82.6	43.9	0.0	179.8
35.00		0.1875	16.571	9.750	330.7	14.17	88.38	82.6	39.3	0.0	170.5
40.00		0.1875	15.653	9.204	278.1	13.31	83.48	82.6	35.0	0.0	161.2
43.00		0.1875	15.102	8.876	249.4	12.79	80.54	82.6	32.5	0.0	92.3
45.00		0.1875	14.735	8.657	231.5	12.45	78.59	82.6	30.9	0.0	59.7
49.00		0.1875	14.000	8.220	198.1	11.76	74.67	82.6	27.9	0.0	114.9
											1,817.1

Site Number: 302526

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

97 mph with No Ice

18 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		87.4	0.0					0.0	0.0	87.4	0.0	0.0	0.0
5.00		171.2	271.6					0.0	138.2	171.2	409.8	0.0	0.0
10.00		164.1	260.4					0.0	138.2	164.1	398.7	0.0	0.0
15.00		157.0	249.3					0.0	138.2	157.0	387.5	0.0	0.0
20.00		149.8	238.1					0.0	138.2	149.8	376.4	0.0	0.0
25.00		142.7	227.0					0.0	138.2	142.7	365.2	0.0	0.0
30.00		137.2	215.8					0.0	138.2	137.2	354.0	0.0	0.0
35.00		134.2	204.6					0.0	138.2	134.2	342.9	0.0	0.0
40.00		105.9	193.5					0.0	138.2	105.9	331.7	0.0	0.0
43.00	Appertunance(s)	65.1	110.7	2,770.5	0.0	0.0	2,911.1	0.0	82.9	2,835.6	3,104.8	0.0	0.0
45.00		76.5	71.6					0.0	39.6	76.5	111.1	0.0	0.0
49.00		50.7	137.8					0.0	79.1	50.7	216.9	0.0	0.0
Totals:										4,212.31	6,399.08	0.00	0.00

Site Number: 302526

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA686614_C3_01

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Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

97 mph with No Ice

18 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	-9.94	-6.44	0.00	-281.84	0.00	281.84	948.37	474.19	888.66	444.99	0.00	0.00	0.644
5.00	-9.49	-6.33	0.00	-249.66	0.00	249.66	922.11	461.05	828.98	415.11	0.23	-0.42	0.612
10.00	-9.05	-6.23	0.00	-217.99	0.00	217.99	894.84	447.42	770.44	385.79	0.90	-0.85	0.575
15.00	-8.62	-6.13	0.00	-186.83	0.00	186.83	866.57	433.29	713.14	357.10	2.01	-1.26	0.533
20.00	-8.20	-6.03	0.00	-156.19	0.00	156.19	837.31	418.65	657.22	329.10	3.55	-1.66	0.485
25.00	-7.81	-5.92	0.00	-126.06	0.00	126.06	805.59	402.80	601.69	301.29	5.50	-2.04	0.428
30.00	-7.43	-5.81	0.00	-96.45	0.00	96.45	764.99	382.50	542.27	271.54	7.83	-2.39	0.365
35.00	-7.06	-5.70	0.00	-67.39	0.00	67.39	724.39	362.19	485.94	243.33	10.50	-2.69	0.287
40.00	-6.72	-5.59	0.00	-38.91	0.00	38.91	683.78	341.89	432.70	216.67	13.45	-2.92	0.190
43.00	-3.76	-2.60	0.00	-22.13	0.00	22.13	659.42	329.71	402.24	201.42	15.31	-3.01	0.116
45.00	-3.66	-2.53	0.00	-16.92	0.00	16.92	643.18	321.59	382.55	191.56	16.59	-3.06	0.094
49.00	0.00	-2.32	0.00	-6.82	0.00	6.82	610.70	305.35	344.65	172.58	19.17	-3.12	0.040

Site Number: 302526

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

18 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		87.4	0.0					0.0	0.0	87.4	0.0	0.0	0.0
5.00		171.2	203.7					0.0	103.7	171.2	307.4	0.0	0.0
10.00		164.1	195.3					0.0	103.7	164.1	299.0	0.0	0.0
15.00		157.0	187.0					0.0	103.7	157.0	290.6	0.0	0.0
20.00		149.8	178.6					0.0	103.7	149.8	282.3	0.0	0.0
25.00		142.7	170.2					0.0	103.7	142.7	273.9	0.0	0.0
30.00		137.2	161.9					0.0	103.7	137.2	265.5	0.0	0.0
35.00		134.2	153.5					0.0	103.7	134.2	257.2	0.0	0.0
40.00		105.9	145.1					0.0	103.7	105.9	248.8	0.0	0.0
43.00	Appertunance(s)	65.1	83.1	2,770.5	0.0	0.0	2,183.3	0.0	62.2	2,835.6	2,328.6	0.0	0.0
45.00		76.5	53.7					0.0	29.7	76.5	83.4	0.0	0.0
49.00		50.7	103.4					0.0	59.3	50.7	162.7	0.0	0.0
Totals:										4,212.31	4,799.31	0.00	0.00

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

18 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	-7.45	-6.43	0.00	-278.87	0.00	278.87	948.37	474.19	888.66	444.99	0.00	0.00	0.635
5.00	-7.10	-6.31	0.00	-246.74	0.00	246.74	922.11	461.05	828.98	415.11	0.23	-0.42	0.602
10.00	-6.76	-6.19	0.00	-215.21	0.00	215.21	894.84	447.42	770.44	385.79	0.89	-0.84	0.566
15.00	-6.43	-6.07	0.00	-184.27	0.00	184.27	866.57	433.29	713.14	357.10	1.99	-1.24	0.524
20.00	-6.11	-5.96	0.00	-153.91	0.00	153.91	837.31	418.65	657.22	329.10	3.50	-1.64	0.475
25.00	-5.80	-5.84	0.00	-124.14	0.00	124.14	805.59	402.80	601.69	301.29	5.43	-2.02	0.419
30.00	-5.51	-5.72	0.00	-94.94	0.00	94.94	764.99	382.50	542.27	271.54	7.73	-2.36	0.357
35.00	-5.23	-5.60	0.00	-66.32	0.00	66.32	724.39	362.19	485.94	243.33	10.36	-2.65	0.280
40.00	-4.98	-5.50	0.00	-38.30	0.00	38.30	683.78	341.89	432.70	216.67	13.27	-2.88	0.184
43.00	-2.79	-2.55	0.00	-21.81	0.00	21.81	659.42	329.71	402.24	201.42	15.11	-2.97	0.113
45.00	-2.71	-2.47	0.00	-16.71	0.00	16.71	643.18	321.59	382.55	191.56	16.37	-3.01	0.092
49.00	0.00	-2.32	0.00	-6.82	0.00	6.82	610.70	305.35	344.65	172.58	18.92	-3.07	0.040

Site Number: 302526

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

17 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		29.5	0.0					0.0	0.0	29.5	0.0	0.0	0.0
5.00		58.2	440.2					0.0	138.2	58.2	578.5	0.0	0.0
10.00		56.5	442.3					0.0	138.2	56.5	580.5	0.0	0.0
15.00		54.6	433.4					0.0	138.2	54.6	571.6	0.0	0.0
20.00		52.6	420.9					0.0	138.2	52.6	559.1	0.0	0.0
25.00		50.6	406.4					0.0	138.2	50.6	544.6	0.0	0.0
30.00		49.1	390.6					0.0	138.2	49.1	528.9	0.0	0.0
35.00		48.5	374.0					0.0	138.2	48.5	512.3	0.0	0.0
40.00		38.6	356.8					0.0	138.2	38.6	495.0	0.0	0.0
43.00	Appertunance(s)	23.9	206.6	606.3	0.0	0.0	5,767.6	0.0	82.9	630.3	6,057.2	0.0	0.0
45.00		28.4	134.5					0.0	39.6	28.4	174.0	0.0	0.0
49.00		18.9	258.8					0.0	79.1	18.9	337.9	0.0	0.0
Totals:										1,115.81	10,939.6	0.00	0.00

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Customer: AT&T Mobility

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

17 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	-17.05	-1.65	0.00	-71.69	0.00	71.69	948.37	474.19	888.66	444.99	0.00	0.00	0.179
5.00	-16.47	-1.62	0.00	-63.43	0.00	63.43	922.11	461.05	828.98	415.11	0.06	-0.11	0.171
10.00	-15.88	-1.60	0.00	-55.31	0.00	55.31	894.84	447.42	770.44	385.79	0.23	-0.21	0.161
15.00	-15.31	-1.57	0.00	-47.33	0.00	47.33	866.57	433.29	713.14	357.10	0.51	-0.32	0.150
20.00	-14.75	-1.54	0.00	-39.50	0.00	39.50	837.31	418.65	657.22	329.10	0.90	-0.42	0.138
25.00	-14.20	-1.50	0.00	-31.83	0.00	31.83	805.59	402.80	601.69	301.29	1.40	-0.52	0.123
30.00	-13.67	-1.47	0.00	-24.31	0.00	24.31	764.99	382.50	542.27	271.54	1.99	-0.61	0.107
35.00	-13.16	-1.43	0.00	-16.97	0.00	16.97	724.39	362.19	485.94	243.33	2.66	-0.68	0.088
40.00	-12.66	-1.39	0.00	-9.82	0.00	9.82	683.78	341.89	432.70	216.67	3.41	-0.74	0.064
43.00	-6.61	-0.69	0.00	-5.64	0.00	5.64	659.42	329.71	402.24	201.42	3.88	-0.76	0.038
45.00	-6.44	-0.66	0.00	-4.27	0.00	4.27	643.18	321.59	382.55	191.56	4.20	-0.77	0.032
49.00	0.00	-0.57	0.00	-1.65	0.00	1.65	610.70	305.35	344.65	172.58	4.86	-0.79	0.010

Site Number: 302526

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

17 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		20.9	0.0					0.0	0.0	20.9	0.0	0.0	0.0
5.00		40.9	226.3					0.0	115.2	40.9	341.5	0.0	0.0
10.00		39.2	217.0					0.0	115.2	39.2	332.2	0.0	0.0
15.00		37.5	207.7					0.0	115.2	37.5	322.9	0.0	0.0
20.00		35.8	198.4					0.0	115.2	35.8	313.6	0.0	0.0
25.00		34.1	189.1					0.0	115.2	34.1	304.3	0.0	0.0
30.00		32.8	179.8					0.0	115.2	32.8	295.0	0.0	0.0
35.00		32.1	170.5					0.0	115.2	32.1	285.7	0.0	0.0
40.00		25.3	161.2					0.0	115.2	25.3	276.4	0.0	0.0
43.00	Appertunance(s)	15.6	92.3	662.5	0.0	0.0	2,425.9	0.0	69.1	678.1	2,587.3	0.0	0.0
45.00		18.3	59.7					0.0	33.0	18.3	92.6	0.0	0.0
49.00		12.1	114.9					0.0	65.9	12.1	180.8	0.0	0.0
Totals:										1,007.30	5,332.56	0.00	0.00

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA686614_C3_01

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Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

17 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	-8.31	-1.54	0.00	-66.95	0.00	66.95	948.37	474.19	888.66	444.99	0.00	0.00	0.159
5.00	-7.96	-1.51	0.00	-59.26	0.00	59.26	922.11	461.05	828.98	415.11	0.05	-0.10	0.151
10.00	-7.63	-1.48	0.00	-51.71	0.00	51.71	894.84	447.42	770.44	385.79	0.21	-0.20	0.143
15.00	-7.30	-1.46	0.00	-44.30	0.00	44.30	866.57	433.29	713.14	357.10	0.48	-0.30	0.132
20.00	-6.99	-1.43	0.00	-37.01	0.00	37.01	837.31	418.65	657.22	329.10	0.84	-0.39	0.121
25.00	-6.68	-1.40	0.00	-29.86	0.00	29.86	805.59	402.80	601.69	301.29	1.30	-0.48	0.107
30.00	-6.38	-1.38	0.00	-22.84	0.00	22.84	764.99	382.50	542.27	271.54	1.86	-0.57	0.092
35.00	-6.10	-1.35	0.00	-15.96	0.00	15.96	724.39	362.19	485.94	243.33	2.49	-0.64	0.074
40.00	-5.82	-1.32	0.00	-9.22	0.00	9.22	683.78	341.89	432.70	216.67	3.19	-0.69	0.051
43.00	-3.24	-0.61	0.00	-5.25	0.00	5.25	659.42	329.71	402.24	201.42	3.63	-0.71	0.031
45.00	-3.15	-0.60	0.00	-4.02	0.00	4.02	643.18	321.59	382.55	191.56	3.93	-0.72	0.026
49.00	0.00	-0.56	0.00	-1.63	0.00	1.63	610.70	305.35	344.65	172.58	4.55	-0.74	0.009

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_{d1}):	0.06
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.05
Upper Limit C_s	0.05
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	1.36
Redundancy Factor (ρ):	1.30
Seismic Force Distribution Exponent (k):	1.43
Total Unfactored Dead Load:	8.31 k
Seismic Base Shear (E):	0.54 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)
11	47.00	181	45	0.027	15	224
10	44.00	93	21	0.013	7	115
9	41.50	161	33	0.020	11	200
8	37.50	276	49	0.030	16	343
7	32.50	286	42	0.025	14	355
6	27.50	295	34	0.020	11	366
5	22.50	304	26	0.016	9	378
4	17.50	314	19	0.011	6	389
3	12.50	323	12	0.007	4	401
2	7.50	332	6	0.004	2	412
1	2.50	342	1	0.001	0	424
Powerwave Allgon CM1	52.00	26	7	0.004	2	32
CCI DTMABP7819VG12A	52.00	77	22	0.013	7	95
Raycap DC6-48-60-18-	52.00	32	9	0.005	3	39
Raycap DC6-48-60-18-	52.00	32	9	0.005	3	39
Ericsson RRUS 11 (Ba	52.00	110	31	0.019	10	136
Ericsson RRUS 32 B2	52.00	106	30	0.018	10	132
Ericsson RRUS-32 (77	52.00	154	44	0.026	14	191
Powerwave 7770.00	52.00	70	20	0.012	6	87
Quintel QS66512-2	52.00	222	63	0.038	21	275
CCI OPA-65R-LCUU-H6	52.00	146	42	0.025	14	181
Round Platform w/ Ha	52.00	2,000	572	0.343	186	2,481
RFS FD9R6004/1C-3L	43.00	19	4	0.002	1	23

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Alcatel-Lucent RRH2X	43.00	132	29	0.017	9	164
Alcatel-Lucent RRH2X	43.00	129	28	0.017	9	160
Alcatel-Lucent RRH2x	43.00	170	37	0.022	12	211
Decibel DB844H80E-XY	43.00	84	18	0.011	6	104
RFS DB-T1-6Z-8AB-0Z	43.00	88	19	0.011	6	109
Commscope SBNHH-1D65	43.00	304	66	0.040	22	377
Flat Low Profile Pla	43.00	1,500	327	0.196	106	1,861
		8,307	1,667	1.000	541	10,307

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)
11	47.00	181	45	0.027	15	155
10	44.00	93	21	0.013	7	80
9	41.50	161	33	0.020	11	139
8	37.50	276	49	0.030	16	238
7	32.50	286	42	0.025	14	246
6	27.50	295	34	0.020	11	254
5	22.50	304	26	0.016	9	261
4	17.50	314	19	0.011	6	269
3	12.50	323	12	0.007	4	277
2	7.50	332	6	0.004	2	285
1	2.50	342	1	0.001	0	293
Powerwave Allgon CM1	52.00	26	7	0.004	2	22
CCI DTMAPB7819VG12A	52.00	77	22	0.013	7	66
Raycap DC6-48-60-18-	52.00	32	9	0.005	3	27
Raycap DC6-48-60-18-	52.00	32	9	0.005	3	27
Ericsson RRUS 11 (Ba	52.00	110	31	0.019	10	95
Ericsson RRUS 32 B2	52.00	106	30	0.018	10	91
Ericsson RRUS-32 (77	52.00	154	44	0.026	14	132
Powerwave 7770.00	52.00	70	20	0.012	6	60
Quintel QS66512-2	52.00	222	63	0.038	21	191
CCI OPA-65R-LCUU-H6	52.00	146	42	0.025	14	125
Round Platform w/ Ha	52.00	2,000	572	0.343	186	1,719
RFS FD9R6004/1C-3L	43.00	19	4	0.002	1	16
Alcatel-Lucent RRH2X	43.00	132	29	0.017	9	113
Alcatel-Lucent RRH2X	43.00	129	28	0.017	9	111
Alcatel-Lucent RRH2x	43.00	170	37	0.022	12	146
Decibel DB844H80E-XY	43.00	84	18	0.011	6	72
RFS DB-T1-6Z-8AB-0Z	43.00	88	19	0.011	6	76
Commscope SBNHH-1D65	43.00	304	66	0.040	22	261
Flat Low Profile Pla	43.00	1,500	327	0.196	106	1,289
		8,307	1,667	1.000	541	7,138

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	-6.19	-0.27	0.00	-10.48	0.00	10.48	948.37	474.19	888.66	444.99	0.00	0.00	0.030
5.00	-5.78	-0.26	0.00	-9.15	0.00	9.15	922.11	461.05	828.98	415.11	0.01	-0.02	0.028
10.00	-5.38	-0.26	0.00	-7.83	0.00	7.83	894.84	447.42	770.44	385.79	0.03	-0.03	0.026
15.00	-4.99	-0.26	0.00	-6.52	0.00	6.52	866.57	433.29	713.14	357.10	0.07	-0.05	0.024
20.00	-4.61	-0.25	0.00	-5.23	0.00	5.23	837.31	418.65	657.22	329.10	0.13	-0.06	0.021
25.00	-4.25	-0.24	0.00	-3.99	0.00	3.99	805.59	402.80	601.69	301.29	0.20	-0.07	0.019
30.00	-3.89	-0.23	0.00	-2.79	0.00	2.79	764.99	382.50	542.27	271.54	0.28	-0.08	0.015
35.00	-3.55	-0.21	0.00	-1.67	0.00	1.67	724.39	362.19	485.94	243.33	0.37	-0.09	0.012
40.00	-3.35	-0.20	0.00	-0.62	0.00	0.62	683.78	341.89	432.70	216.67	0.47	-0.10	0.008
43.00	-0.22	-0.01	0.00	-0.03	0.00	0.03	659.42	329.71	402.24	201.42	0.53	-0.10	0.000
45.00	0.00	0.00	0.00	0.00	0.00	0.00	643.18	321.59	382.55	191.56	0.57	-0.10	0.000
49.00	0.00	0.00	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	0.65	-0.10	0.000

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

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	-4.29	-0.26	0.00	-10.42	0.00	10.42	948.37	474.19	888.66	444.99	0.00	0.00	0.028
5.00	-4.00	-0.26	0.00	-9.09	0.00	9.09	922.11	461.05	828.98	415.11	0.01	-0.02	0.026
10.00	-3.73	-0.26	0.00	-7.77	0.00	7.77	894.84	447.42	770.44	385.79	0.03	-0.03	0.024
15.00	-3.46	-0.26	0.00	-6.47	0.00	6.47	866.57	433.29	713.14	357.10	0.07	-0.05	0.022
20.00	-3.19	-0.25	0.00	-5.19	0.00	5.19	837.31	418.65	657.22	329.10	0.13	-0.06	0.020
25.00	-2.94	-0.24	0.00	-3.96	0.00	3.96	805.59	402.80	601.69	301.29	0.20	-0.07	0.017
30.00	-2.70	-0.22	0.00	-2.77	0.00	2.77	764.99	382.50	542.27	271.54	0.28	-0.08	0.014
35.00	-2.46	-0.21	0.00	-1.65	0.00	1.65	724.39	362.19	485.94	243.33	0.37	-0.09	0.010
40.00	-2.32	-0.20	0.00	-0.62	0.00	0.62	683.78	341.89	432.70	216.67	0.47	-0.09	0.006
43.00	-0.16	-0.01	0.00	-0.03	0.00	0.03	659.42	329.71	402.24	201.42	0.53	-0.10	0.000
45.00	0.00	0.00	0.00	0.00	0.00	0.00	643.18	321.59	382.55	191.56	0.57	-0.10	0.000
49.00	0.00	0.00	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	0.65	-0.10	0.000

Site Number: 302526

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

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
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.36
Redundancy Factor (ρ):	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)
11	47.00	181	1.739	1.275	0.876	0.306	48	224
10	44.00	93	1.524	0.562	0.572	0.186	15	115
9	41.50	161	1.356	0.205	0.388	0.110	15	200
8	37.50	276	1.107	-0.066	0.191	0.030	7	343
7	32.50	286	0.831	-0.117	0.063	-0.002	0	355
6	27.50	295	0.595	-0.051	0.014	0.016	4	366
5	22.50	304	0.399	0.019	0.007	0.039	10	378
4	17.50	314	0.241	0.057	0.018	0.046	13	389
3	12.50	323	0.123	0.070	0.034	0.043	12	401
2	7.50	332	0.044	0.071	0.042	0.037	11	412
1	2.50	342	0.005	0.044	0.025	0.023	7	424
Powerwave Allgon	52.00	26	2.129	3.490	1.651	0.576	13	32
CCI DTMAPB7819VG12A	52.00	77	2.129	3.490	1.651	0.576	38	95
Raycap DC6-48-60-18-	52.00	32	2.129	3.490	1.651	0.576	16	39
Raycap DC6-48-60-18-	52.00	32	2.129	3.490	1.651	0.576	16	39
Ericsson RRUS 11 (Ba	52.00	110	2.129	3.490	1.651	0.576	55	136
Ericsson RRUS 32 B2	52.00	106	2.129	3.490	1.651	0.576	53	132
Ericsson RRUS-32 (77	52.00	154	2.129	3.490	1.651	0.576	77	191
Powerwave 7770.00	52.00	70	2.129	3.490	1.651	0.576	35	87
Quintel QS66512-2	52.00	222	2.129	3.490	1.651	0.576	111	275
CCI OPA-65R-LCUU-H6	52.00	146	2.129	3.490	1.651	0.576	73	181
Round Platform w/ Ha	52.00	2,000	2.129	3.490	1.651	0.576	998	2,481
RFS FD9R6004/1C-3L	43.00	19	1.455	0.397	0.491	0.153	2	23
Alcatel-Lucent RRH2X	43.00	132	1.455	0.397	0.491	0.153	18	164
Alcatel-Lucent RRH2X	43.00	129	1.455	0.397	0.491	0.153	17	160
Alcatel-Lucent RRH2x	43.00	170	1.455	0.397	0.491	0.153	23	211
Decibel DB844H80E-XY	43.00	84	1.455	0.397	0.491	0.153	11	104
RFS DB-T1-6Z-8AB-0Z	43.00	88	1.455	0.397	0.491	0.153	12	109
Commscope SBNHH-	43.00	304	1.455	0.397	0.491	0.153	40	377
Flat Low Profile Pla	43.00	1,500	1.455	0.397	0.491	0.153	199	1,861
		8,307	43.022	43.635	24.324	8.395	1,948	10,307

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)
11	47.00	181	1.739	1.275	0.876	0.306	48	155
10	44.00	93	1.524	0.562	0.572	0.186	15	80
9	41.50	161	1.356	0.205	0.388	0.110	15	139
8	37.50	276	1.107	-0.066	0.191	0.030	7	238
7	32.50	286	0.831	-0.117	0.063	-0.002	0	246
6	27.50	295	0.595	-0.051	0.014	0.016	4	254
5	22.50	304	0.399	0.019	0.007	0.039	10	261
4	17.50	314	0.241	0.057	0.018	0.046	13	269
3	12.50	323	0.123	0.070	0.034	0.043	12	277
2	7.50	332	0.044	0.071	0.042	0.037	11	285
1	2.50	342	0.005	0.044	0.025	0.023	7	293
Powerwave Allgon	52.00	26	2.129	3.490	1.651	0.576	13	22
CCI DTMAP7819VG12A	52.00	77	2.129	3.490	1.651	0.576	38	66
Raycap DC6-48-60-18-	52.00	32	2.129	3.490	1.651	0.576	16	27
Raycap DC6-48-60-18-	52.00	32	2.129	3.490	1.651	0.576	16	27
Ericsson RRUS 11 (Ba	52.00	110	2.129	3.490	1.651	0.576	55	95
Ericsson RRUS 32 B2	52.00	106	2.129	3.490	1.651	0.576	53	91
Ericsson RRUS-32 (77	52.00	154	2.129	3.490	1.651	0.576	77	132
Powerwave 7770.00	52.00	70	2.129	3.490	1.651	0.576	35	60
Quintel QS66512-2	52.00	222	2.129	3.490	1.651	0.576	111	191
CCI OPA-65R-LCUU-H6	52.00	146	2.129	3.490	1.651	0.576	73	125
Round Platform w/ Ha	52.00	2,000	2.129	3.490	1.651	0.576	998	1,719
RFS FD9R6004/1C-3L	43.00	19	1.455	0.397	0.491	0.153	2	16
Alcatel-Lucent RRH2X	43.00	132	1.455	0.397	0.491	0.153	18	113
Alcatel-Lucent RRH2X	43.00	129	1.455	0.397	0.491	0.153	17	111
Alcatel-Lucent RRH2x	43.00	170	1.455	0.397	0.491	0.153	23	146
Decibel DB844H80E-XY	43.00	84	1.455	0.397	0.491	0.153	11	72
RFS DB-T1-6Z-8AB-OZ	43.00	88	1.455	0.397	0.491	0.153	12	76
Commscope SBNHH-	43.00	304	1.455	0.397	0.491	0.153	40	261
Flat Low Profile Pla	43.00	1,500	1.455	0.397	0.491	0.153	199	1,289
		8,307	43.022	43.635	24.324	8.395	1,948	7,138

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	-6.19	-0.46	0.00	-18.50	0.00	18.50	948.37	474.19	888.66	444.99	0.00	0.00	0.048
5.00	-5.78	-0.45	0.00	-16.21	0.00	16.21	922.11	461.05	828.98	415.11	0.01	-0.03	0.045
10.00	-5.38	-0.44	0.00	-13.96	0.00	13.96	894.84	447.42	770.44	385.79	0.06	-0.05	0.042
15.00	-4.99	-0.43	0.00	-11.76	0.00	11.76	866.57	433.29	713.14	357.10	0.13	-0.08	0.039
20.00	-4.61	-0.42	0.00	-9.61	0.00	9.61	837.31	418.65	657.22	329.10	0.23	-0.11	0.035
25.00	-4.25	-0.42	0.00	-7.51	0.00	7.51	805.59	402.80	601.69	301.29	0.35	-0.13	0.030
30.00	-3.89	-0.42	0.00	-5.43	0.00	5.43	764.99	382.50	542.27	271.54	0.50	-0.15	0.025
35.00	-3.55	-0.41	0.00	-3.34	0.00	3.34	724.39	362.19	485.94	243.33	0.67	-0.17	0.019
40.00	-3.35	-0.40	0.00	-1.28	0.00	1.28	683.78	341.89	432.70	216.67	0.85	-0.18	0.011
43.00	-0.22	-0.05	0.00	-0.10	0.00	0.10	659.42	329.71	402.24	201.42	0.96	-0.18	0.001
45.00	0.00	0.00	0.00	0.00	0.00	0.00	643.18	321.59	382.55	191.56	1.03	-0.18	0.000
49.00	0.00	0.00	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	1.18	-0.18	0.000

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

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	-4.29	-0.46	0.00	-18.40	0.00	18.40	948.37	474.19	888.66	444.99	0.00	0.00	0.046
5.00	-4.00	-0.45	0.00	-16.11	0.00	16.11	922.11	461.05	828.98	415.11	0.01	-0.03	0.043
10.00	-3.73	-0.44	0.00	-13.86	0.00	13.86	894.84	447.42	770.44	385.79	0.06	-0.05	0.040
15.00	-3.46	-0.43	0.00	-11.67	0.00	11.67	866.57	433.29	713.14	357.10	0.13	-0.08	0.037
20.00	-3.19	-0.42	0.00	-9.54	0.00	9.54	837.31	418.65	657.22	329.10	0.23	-0.11	0.033
25.00	-2.94	-0.41	0.00	-7.45	0.00	7.45	805.59	402.80	601.69	301.29	0.35	-0.13	0.028
30.00	-2.69	-0.41	0.00	-5.38	0.00	5.38	764.99	382.50	542.27	271.54	0.50	-0.15	0.023
35.00	-2.46	-0.41	0.00	-3.31	0.00	3.31	724.39	362.19	485.94	243.33	0.66	-0.16	0.017
40.00	-2.32	-0.39	0.00	-1.27	0.00	1.27	683.78	341.89	432.70	216.67	0.84	-0.17	0.009
43.00	-0.16	-0.05	0.00	-0.10	0.00	0.10	659.42	329.71	402.24	201.42	0.95	-0.18	0.001
45.00	0.00	0.00	0.00	0.00	0.00	0.00	643.18	321.59	382.55	191.56	1.02	-0.18	0.000
49.00	0.00	0.00	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	1.17	-0.18	0.000

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	6.44	0.00	9.94	0.00	0.00	281.84	0.00	0.64
0.9D + 1.6W	6.43	0.00	7.45	0.00	0.00	278.87	0.00	0.63
1.2D + 1.0Di + 1.0Wi	1.65	0.00	17.05	0.00	0.00	71.69	0.00	0.18
(1.2 + 0.2Sds) * DL + E ELFM	0.27	0.00	6.19	0.00	0.00	10.48	0.00	0.03
(1.2 + 0.2Sds) * DL + E EMAM	0.46	0.00	6.19	0.00	0.00	18.50	0.00	0.05
(0.9 - 0.2Sds) * DL + E ELFM	0.26	0.00	4.29	0.00	0.00	10.42	0.00	0.03
(0.9 - 0.2Sds) * DL + E EMAM	0.46	0.00	4.29	0.00	0.00	18.40	0.00	0.05
1.0D + 1.0W	1.54	0.00	8.31	0.00	0.00	66.95	0.00	0.16

Site Number: 302526

Code: ANSI/TIA-222-G

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Site Name: Naugatuck (telephone Pole), CT Engineering Number: OAA686614_C3_01

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Customer: AT&T Mobility

Base Summary

Reactions

Original Design			Analysis			Moment Design %
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	
288.50	6.70	7.00	281.84	17.05	6.44	72.36

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
60.0	1.500	37.000	Round	0	0.00	18.250	317.41	554.34	0.57

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
31.00	04	2.25" 18J	2.25	75.00	100.00	Radial	0.00	45.0	113.36	260.00	0.45	104.84	260.00	0.42



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

AT&T Existing Facility

Site ID: CT2166

Naugatuck South Main
585 South Main Street
Naugatuck, CT 06770

September 19, 2016

EBI Project Number: 6216004126

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	67.26 %



September 19, 2016

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

Emissions Analysis for Site: **CT2166 – Naugatuck South Main**

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

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

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

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



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **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.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Powerwave 7770, CCI OPA-65R-LCUU-H6 and the Quintel QS66512-2** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) 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.
- 10) The antenna mounting height centerlines of the proposed antennas are **52 feet** above ground level (AGL) for **Sector A** and **52 feet** above ground level (AGL) for **Sector B**.
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B
Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	52 feet	Height (AGL):	52 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	4.71 %	Antenna B1 MPE%	4.71 %
Antenna #:	2	Antenna #:	2
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd
Height (AGL):	52 feet	Height (AGL):	52 feet
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	5,263.78	ERP (W):	5,263.78
Antenna A2 MPE%	10.31 %	Antenna B2 MPE%	10.31 %
Antenna #:	3	Antenna #:	3
Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2
Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd
Height (AGL):	52 feet	Height (AGL):	52 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	4,371.36	ERP (W):	4,371.36
Antenna A3 MPE%	10.26 %	Antenna B3 MPE%	10.26 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	25.28 %
Verizon Wireless	41.98 %
Site Total MPE %:	67.26 %

AT&T Sector A Total:	25.28 %
AT&T Sector B Total:	25.28 %
Site Total:	67.26 %

AT&T _ Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	52	14.07	850 MHz	567	2.48%
AT&T 1900 MHz (PCS) UMTS	2	656.33	52	22.30	1900 MHz (PCS)	1000	2.23%
AT&T 850 MHz GSM	2	527.38	52	17.92	850 MHz	567	3.16%
AT&T 2300 MHz (WCS) LTE	2	2,104.51	52	71.51	2300 MHz (WCS)	1000	7.15%
AT&T 700 MHz LTE	2	729.71	52	24.80	700 MHz	467	5.31%
AT&T 1900 MHz (PCS) LTE	2	1,455.97	52	49.47	1900 MHz (PCS)	1000	4.95%
						Total:	25.28%



Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	25.28 %
Sector B:	25.28 %
AT&T Maximum Total (per sector):	25.28 %
Site Total:	67.26 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **67.26 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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