UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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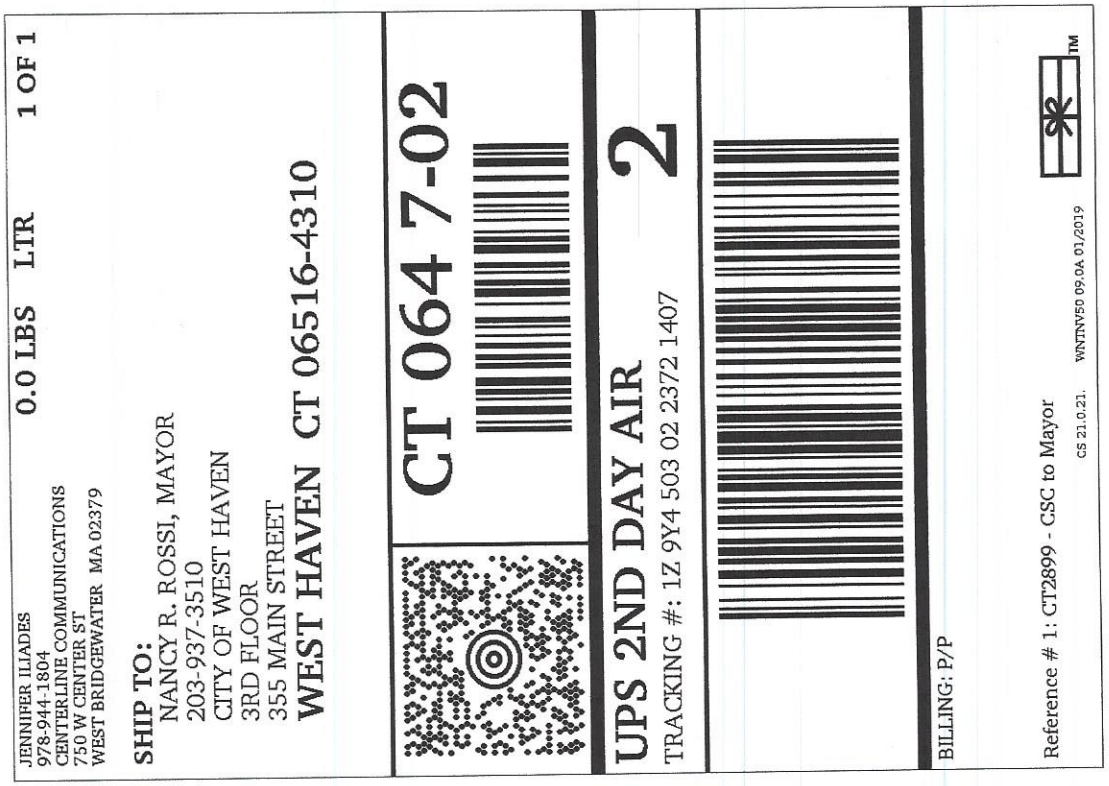
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

UPS Access Point™
M&M SEAFOOD
1124 MAIN ST
BROCKTON ,MA 02301

UPS Access Point™
BOOST MOBILE 649
649 WARREN AVE
BROCKTON ,MA 02301

FOLD HERE



Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, March 15, 2019 12:38 PM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030223721407

Your package has been delivered.

Delivery Date: Friday, 03/15/2019
Delivery Time: 12:35 PM

At the request of CENTERLINE SITE ACQUISITION this notice alerts you that the status of the shipment listed below has changed.

Shipment Detail

Tracking Number:	1Z9Y45030223721407
Ship To:	Nancy R. Rossi, Mayor City of West Haven 355 MAIN ST WEST HAVEN, CT 06516 US
UPS Service:	UPS 2ND DAY AIR
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	RECEIVER BETH
Reference Number 1:	CT2899 - CSC to Mayor

Download the UPS mobile app

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

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   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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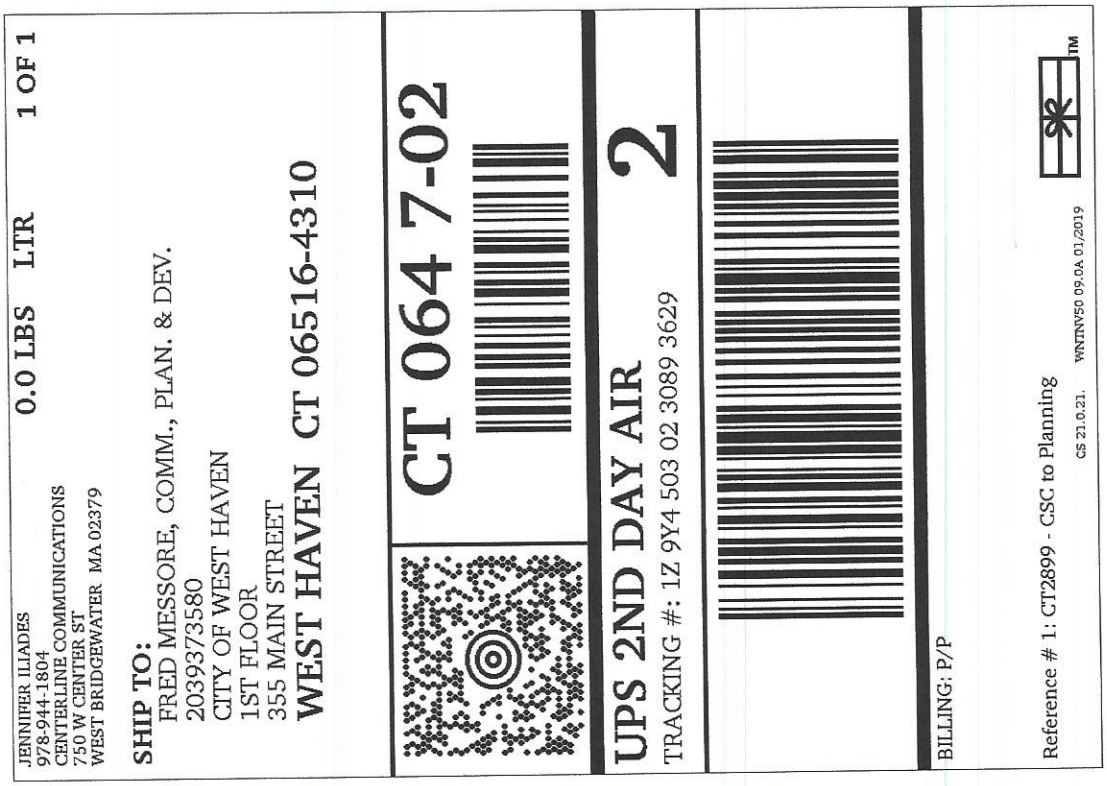

Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, March 15, 2019 12:32 PM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030230893629

Your package has been delivered.

Delivery Date: Friday, 03/15/2019
Delivery Time: 12:28 PM

At the request of CENTERLINE SITE ACQUISITION this notice alerts you that the status of the shipment listed below has changed.

Shipment Detail

Tracking Number:	1Z9Y45030230893629
Ship To:	Fred Messore, Comm., Plan. & Dev. City of West Haven 355 MAIN ST WEST HAVEN, CT 06516 US
UPS Service:	UPS 2ND DAY AIR
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	RECEIVER FMED
Reference Number 1:	CT2899 - CSC to Planning

Download the UPS mobile app

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

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   Hand the package to any UPS driver in your area.

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BOOST MOBILE 649
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BROCKTON ,MA 02301

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Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, March 15, 2019 12:32 PM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030221561012

Your package has been delivered.

Delivery Date: Friday, 03/15/2019
Delivery Time: 12:28 PM

At the request of CENTERLINE SITE ACQUISITION this notice alerts you that the status of the shipment listed below has changed.

Shipment Detail

Tracking Number:	1Z9Y45030221561012
Ship To:	Cathy Conniff, Zoning Enforcement City of West Haven 355 MAIN ST WEST HAVEN, CT 06516 US
UPS Service:	UPS 2ND DAY AIR
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	RECEIVER FMED
Reference Number 1:	CT2899 - CSC to Zoning

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UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

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   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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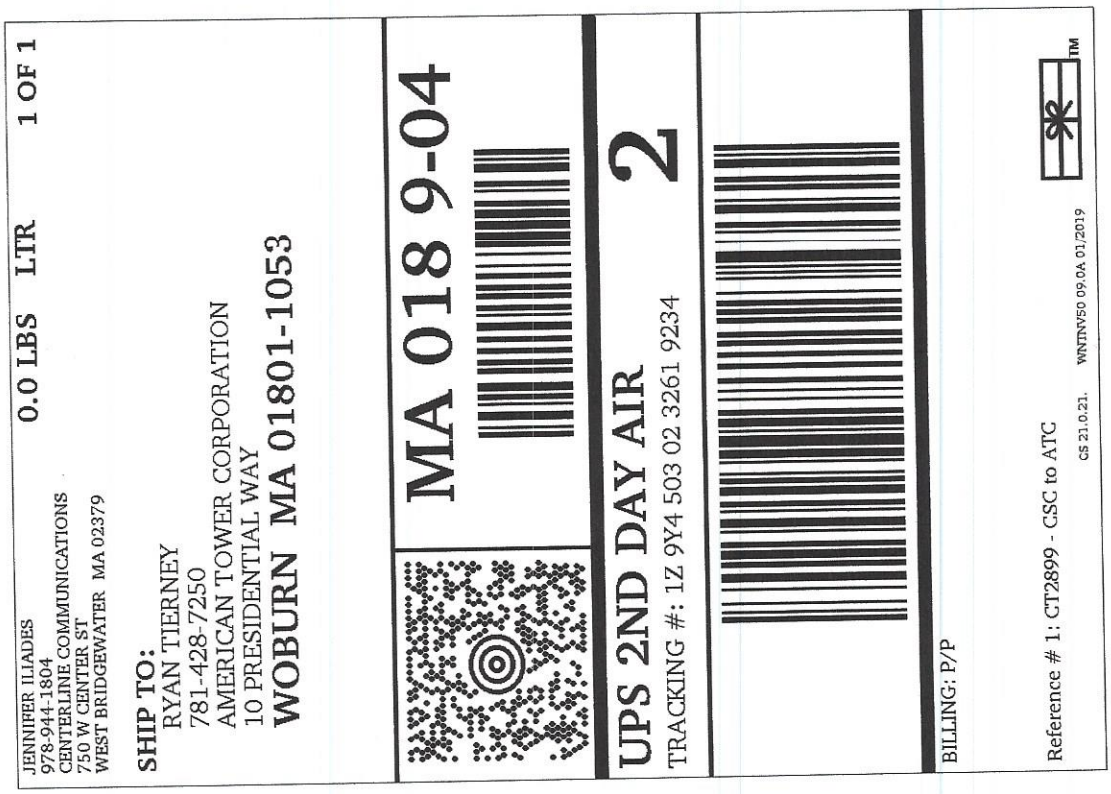


Jennifer Iliades

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, March 15, 2019 11:08 AM
To: Jennifer Iliades
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030232619234

Your package has been delivered.

Delivery Date: Friday, 03/15/2019
Delivery Time: 11:03 AM

At the request of CENTERLINE SITE ACQUISITION this notice alerts you that the status of the shipment listed below has changed.

Shipment Detail

Tracking Number:	1Z9Y45030232619234
Ship To:	Ryan Tierney American Tower Corporation 10 PRESIDENTIAL WAY WOBURN, MA 01801 US
UPS Service:	UPS 2ND DAY AIR
Number of Packages:	1
Shipment Type:	Letter
Delivery Location:	RECEIVER AHCRI
Reference Number 1:	CT2899 - CSC to ATC

Download the UPS mobile app

March 14, 2019

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

Regarding: Notice of Exempt Modification – AT&T Site CT2899
Address: 688 Jones Hill Road, West Haven, CT 06516

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing 149-foot monopole at the above-referenced address, latitude 41.2564000, longitude -72.9724000. Said monopole is operated by American Tower Corporation.

AT&T desires to modify its existing telecommunications facility by adding (6) antennas, adding (2) surge arrestors and accompanying feedlines, swapping (6) remote radio heads (RRU) and adding (3) RRU. The centerline height of the existing antennas is and will remain at 125 feet.

Please accept this letter 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 Nancy R. Rossi, Mayor of the City of West Haven, Fred Messore, Commissioner, Planning & Development for the City of West Haven, Cathy Conniff, Zoning Enforcement Officer of the City of West Haven and American Tower Corporation as tower operator/owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require an extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.*

5. The proposed modifications will not cause an ineligible change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated March 6, 2019 by Hudson Design Group LLC enclosed herewith.*

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

Sincerely,

Jennifer Iliades
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
jiliades@clinellc.com

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

cc: Nancy R. Rossi, Mayor, City of West Haven
Fred Messore, Commissioner, Planning & Development, City of West Haven
Cathy Conniff, Zoning Enforcement Officer, City of West Haven
American Tower Corporation, Tower Operator/Owner

EXHIBIT 1

City of West Haven, CT

Property Listing Report

Map Block Lot	019-0001-0-000A-C	Building #	Section #	Account	00019113

Property Information

Property Location	668 JONES HILL RD
Owner	AMERICAN TOWERS INC.
Co-Owner	ATTN TAX DEPT
Mailing Address	PO BOX 723597 ATLANTA GA 31139
Land Use	431V TEL REL TW MDL-00
Land Class	I
Zoning Code	
Census Tract	

Street Index	
Acreage	0
Utilities	
Lot Setting/Desc	
Additional Info	

Photo

Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Occupancy	
Extra Fixtures	
Bath Style	
Kitchen Style	
AC Type	
Heating Type	
Heating Fuel	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Total Rooms	
Roof Style	
Roof Cover	
Interior Floors 1	
Interior Floors 2	
Exterior Walls	
Exterior Walls 2	
Interior Walls	
Interior Walls 2	

(*Industrial / Commercial Details)

Building Desc.	
Building Grade	
Heat / AC	
Frame Type	
Baths / Plumbing	
Ceiling / Wall	
Rooms / Prtns	
Wall Height	
First Floor Use	

Report Created On 3/13/2019

City of West Haven, CT

Property Listing Report

Map Block Lot	019-0001-0-000A-C	Building #		Section #		Account	00019113

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Improvements		
Outbuildings	431800	302260
Land	0	0
Total	431800	302260

Sub Areas

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

Outbuilding and Extra Features

Type	Description
FENCE-6' CHAIN	200 L.F.
CELL SHED	288 S.F.
TOWER	2 SITES

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
AMERICAN TOWERS INC.	000/ 000	10/1/2010	0

Report Created On 3/13/2019

City of West Haven Connecticut

Planimetric Data and Property Maps 2018

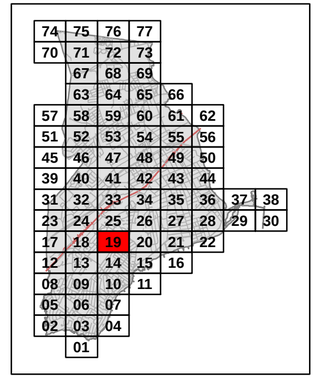
100'	Record Dimension
2 Ac	Acreage
77	Lot Number
15#	Address
———	Property Line
- - - - -	Easement Line
P	Pools
	Building
	Railroad
	Hydro
	Swamps
	Roads, Dirt Roads, Sidewalks and Structures

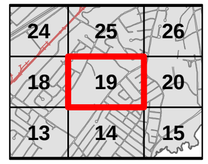
THIS MAP IS PREPARED FOR THE INVENTORY OF REAL PROPERTY FOUND WITHIN THESE JURISDICTION AND IS COMPILED FROM RECORDED DEEDS, PLATS, AND OTHER PUBLIC RECORDS AND DATA. USERS OF THIS MAP ARE HEREBY NOTIFIED THAT THE AFOREMENTIONED PUBLIC PRIMARY INFORMATION CONTAINED ON THIS MAP. THE TOWNS AND THE MAPPING COMPANIES ASSUME NO LEGAL RESPONSIBILITIES FOR THE INFORMATION CONTAINED ON THIS MAP.

Map Produced in February 2019

1 inch = 200 Feet

200 0 200 400 Feet





Map Number: 019

NEGEO
New England Geosystems
www.negeosystems.com
282 Main Street Extension - C2
Middletown, CT 06457 • (203) 404 - 7129

Map Number: 019

EXHIBIT 2

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- NEW AT&T ANTENNAS: (800-10966) (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- NEW AT&T RRUS: B5/B12 4449 (700/850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B2/B66A 8843 (PCS/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4415 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW SURGE ARRESTOR (DC6-48-60-18-8C) (TOTAL OF 1) WITH (2) DC POWER & (1) FIBER LINE.
- NEW DC ONLY SURGE ARRESTOR (DC6-48-60-18-8C-EV) (TOTAL OF 1) WITH (2) DC POWER LINE.
- ANTENNA MODIFICATION/4TXRX ANTENNA RETROFIT.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD 2ND XMU.
- ADD (1) 6630 FOR 5G.

ITEMS TO REMAIN:
- (3) ANTENNAS, (1) SURGE ARRESTOR, (2) DC POWER & (1) FIBER.

SITE ADDRESS:	668 JONES HILL ROAD WEST HAVEN, CT 06516
LATITUDE:	41.256400 N, 41° 15' 23.04" N
LONGITUDE:	72.972358 W, 72° 58' 20.48" W
TYPE OF SITE:	MONOPOLE TOWER/INDOOR EQUIPMENT
STRUCTURE HEIGHT:	149'±
RAD CENTER:	125'±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2899

SITE NAME: WEST HAVEN JONES HILL ROAD

FA CODE: 10578274

PACE ID: MRCTB035084, MRCTB035104, MRCTB035238, MRCTB035353, MRCTB035356

PROJECT: LTE 3C/4C/5C/4TX4RX 2019 UPGRADE

FOR ZONING

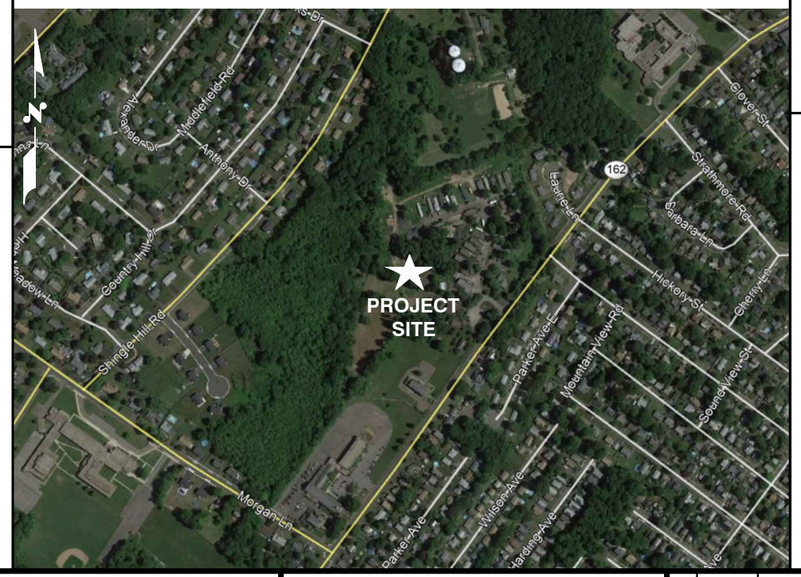
DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
GN-1	GENERAL NOTES	B
A-1	COMPOUND & EQUIPMENT PLANS	B
A-2	ANTENNA LAYOUTS & ELEVATION	B
A-3	DETAILS	B
RF-1	RF PLUMBING DIAGRAM	B
G-1	GROUNDING DETAILS	B

ATC SITE NAME: WEST HAVEN & RT 162 CT
ATC SITE #: 243036

VICINITY MAP

DIRECTIONS TO SITE:
TAKE I-90 W/MASSACHUSETTS TURNPIKE/MASS PIKE TOWARD SPRINGFIELD/WORCESTER. MERGE ONTO I-84 W VIA EXIT 9 TOWARD US-20/HARTFORD/NEW YORK CITY. MERGE ONTO CT-15 S VIA EXIT 57 ON THE LEFT TOWARD I-91 S/CHARTER OAK BR/N.Y. CITY. MERGE ONTO I-91 S VIA EXIT 86 TOWARD NEW HAVEN/N.Y. CITY. MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS LODGE TURNPIKE VIA THE EXIT ON THE LEFT TOWARD N.Y. CITY. TAKE THE CT-162/SAW MILL RD EXIT, EXIT 42. TURN RIGHT ONTO SAWMILL RD/CT-162. CONTINUE TO FOLLOW CT-162. TURN RIGHT ONTO MAIN ST/CT-162. CONTINUE TO FOLLOW CT-162. TURN SLIGHT RIGHT ONTO PLATT AVE/CT-162. CONTINUE TO FOLLOW CT-162. 668 JONES HILL RD IS ON THE RIGHT.



GENERAL NOTES

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

72 HOURS

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

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2899
SITE NAME: WEST HAVEN JONES HILL ROAD
ATC SITE NUMBER: 243036

668 JONES HILL ROAD
WEST HAVEN, CT 06516
NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	03/06/19	ISSUED FOR ZONING	HC	AT	DJC
A	01/29/19	ISSUED FOR REVIEW	GA	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: GA

STATE OF CONNECTICUT · DEREK J. CRESSER · No. 23951 · LICENSED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
(LTE 3C/4C/5C/4TXRX)

SITE NUMBER	DRAWING NUMBER	REV
CT2899	T-1	B

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

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

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

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

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

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

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

ABBREVIATIONS

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

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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2899
SITE NAME: WEST HAVEN JONES HILL ROAD
ATC SITE NUMBER: 243036

668 JONES HILL ROAD
WEST HAVEN, CT 06516
NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: GA

STATE OF CONNECTICUT · DEREK J. CRESSER · No. 23795 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 3C/4C/5C/4TXRX)

SITE NUMBER	DRAWING NUMBER	REV
CT2899	GN-1	B

NOTE:

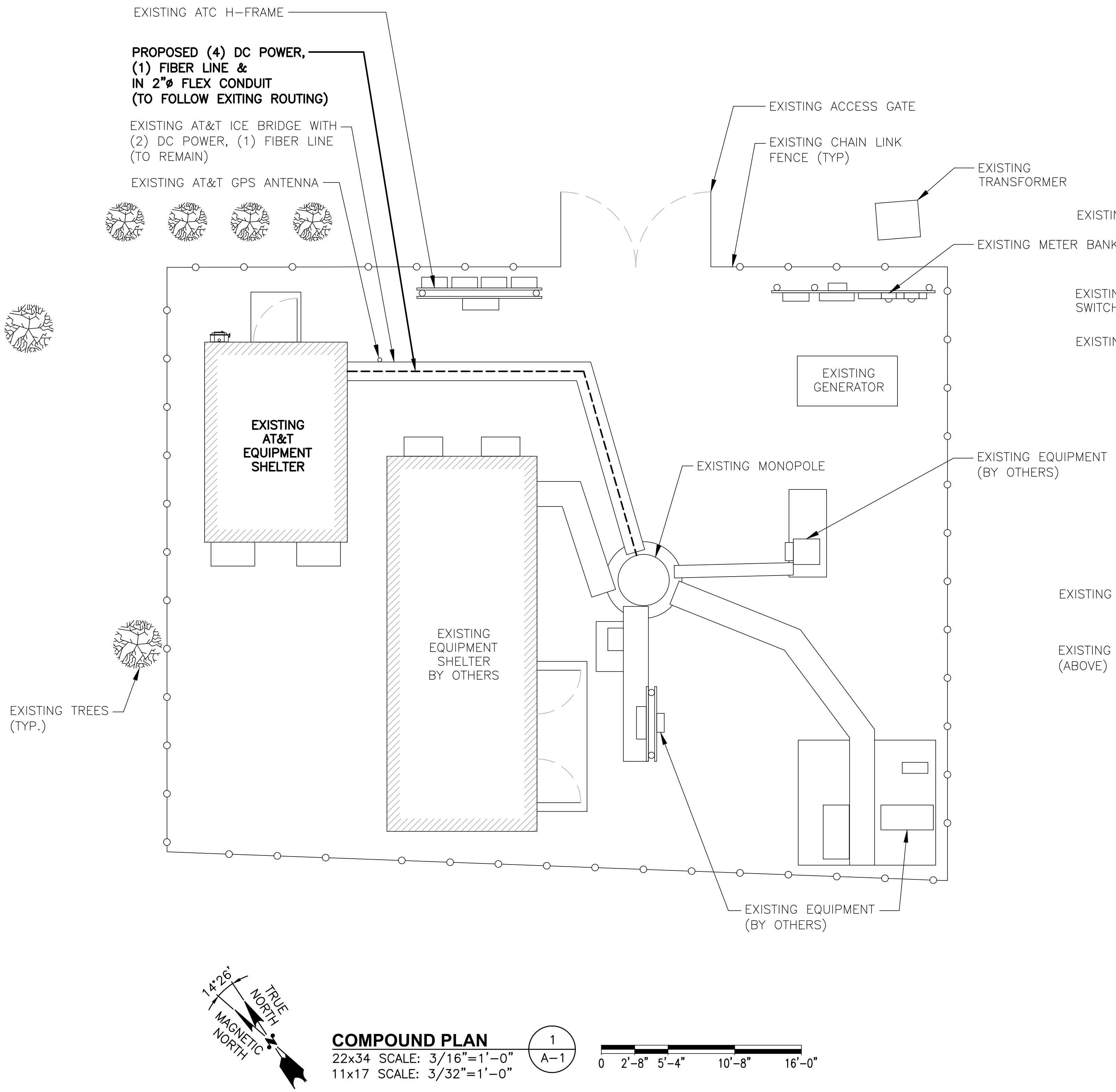
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

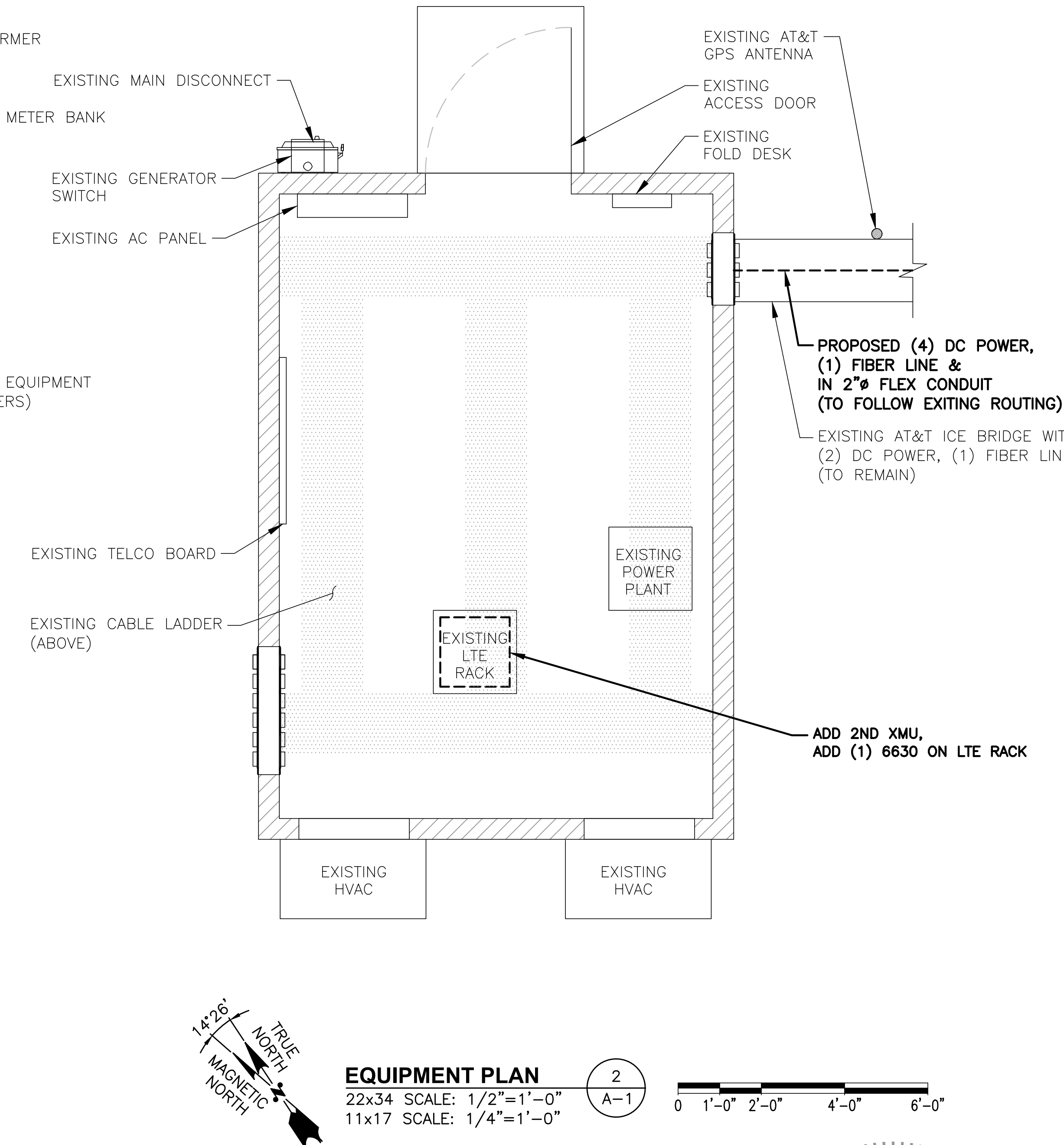
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER AND FINAL RF DATA SHEET



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



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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AT&T
COMPOUND & EQUIPMENT PLANS
(LTE 3C/4C/5C/4TXRX)

SITE NUMBER	DRAWING NUMBER	REV
CT2899	A-1	B

NOTE:
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NOTE:
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NOTE:
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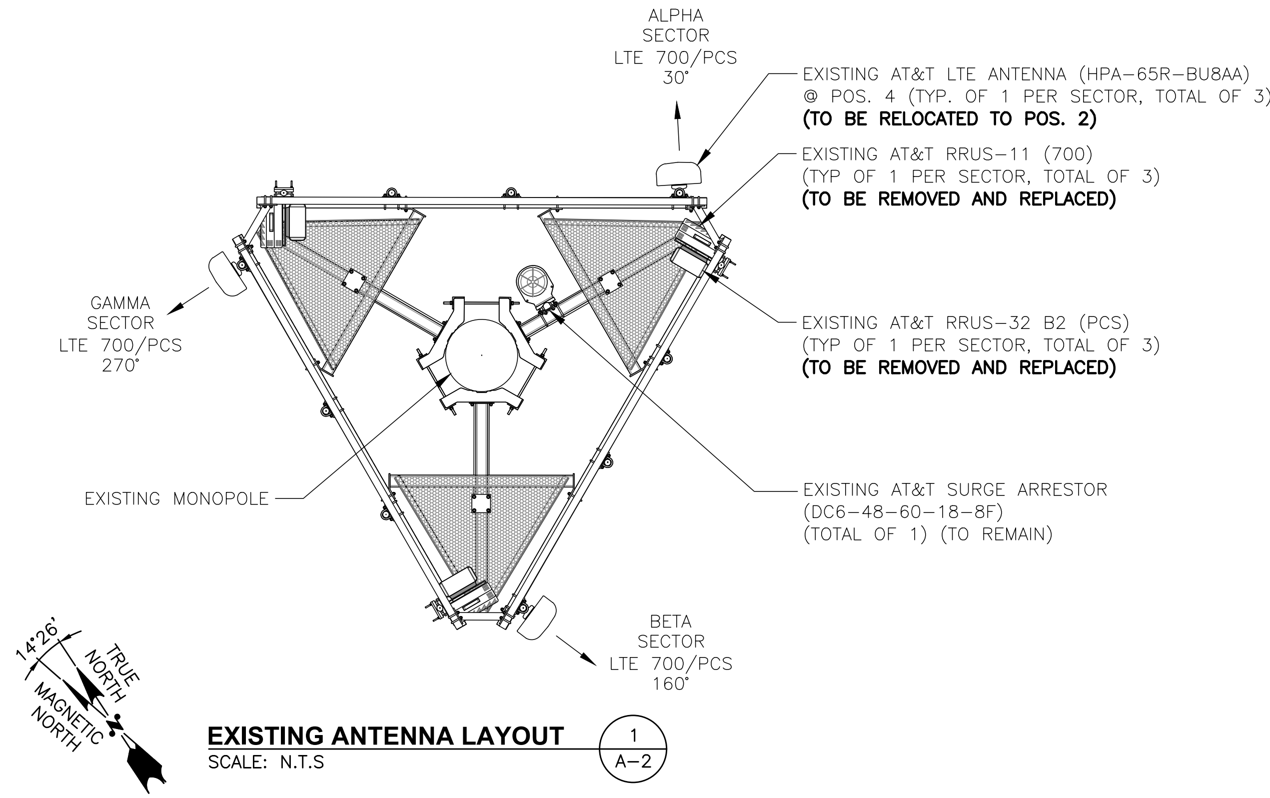
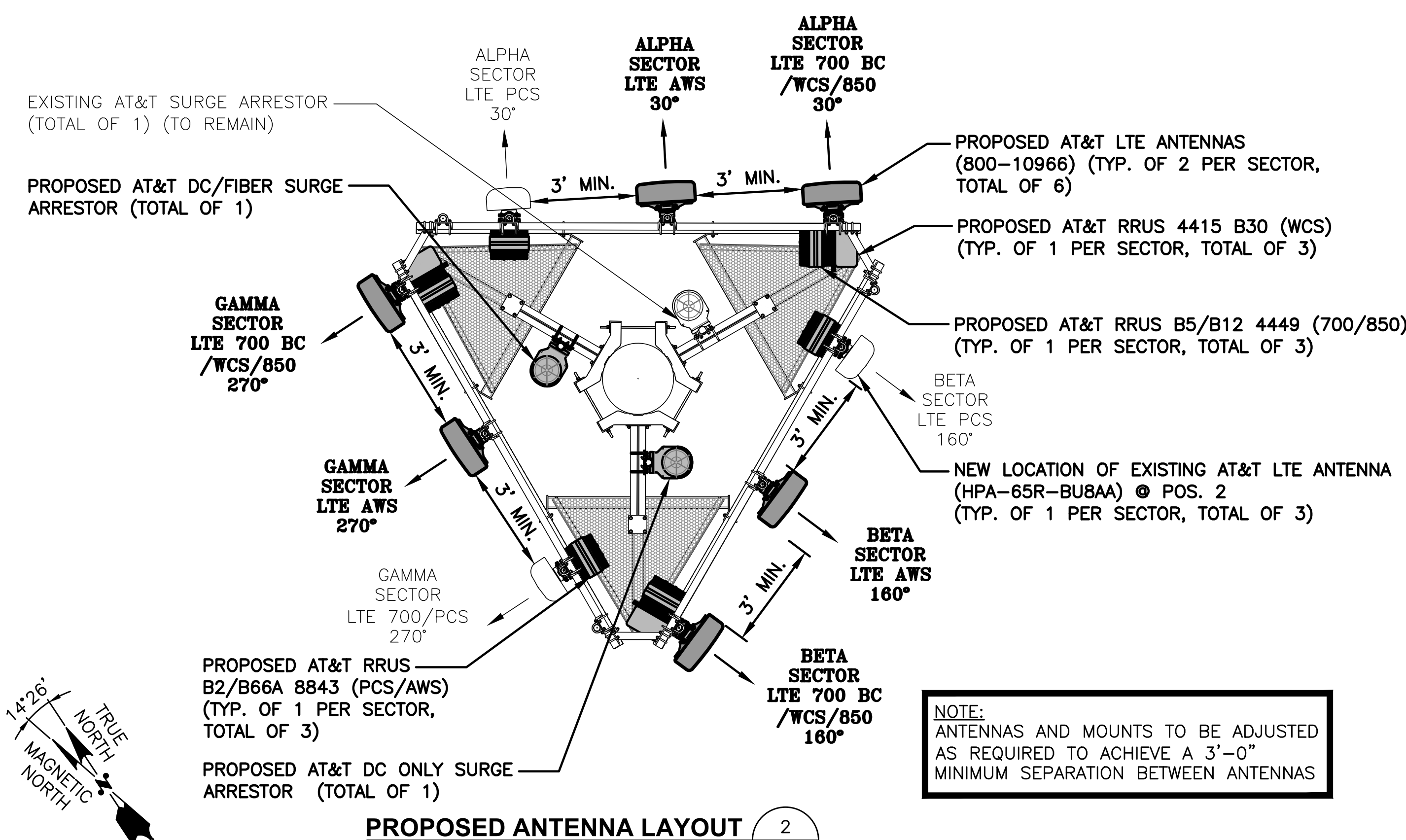
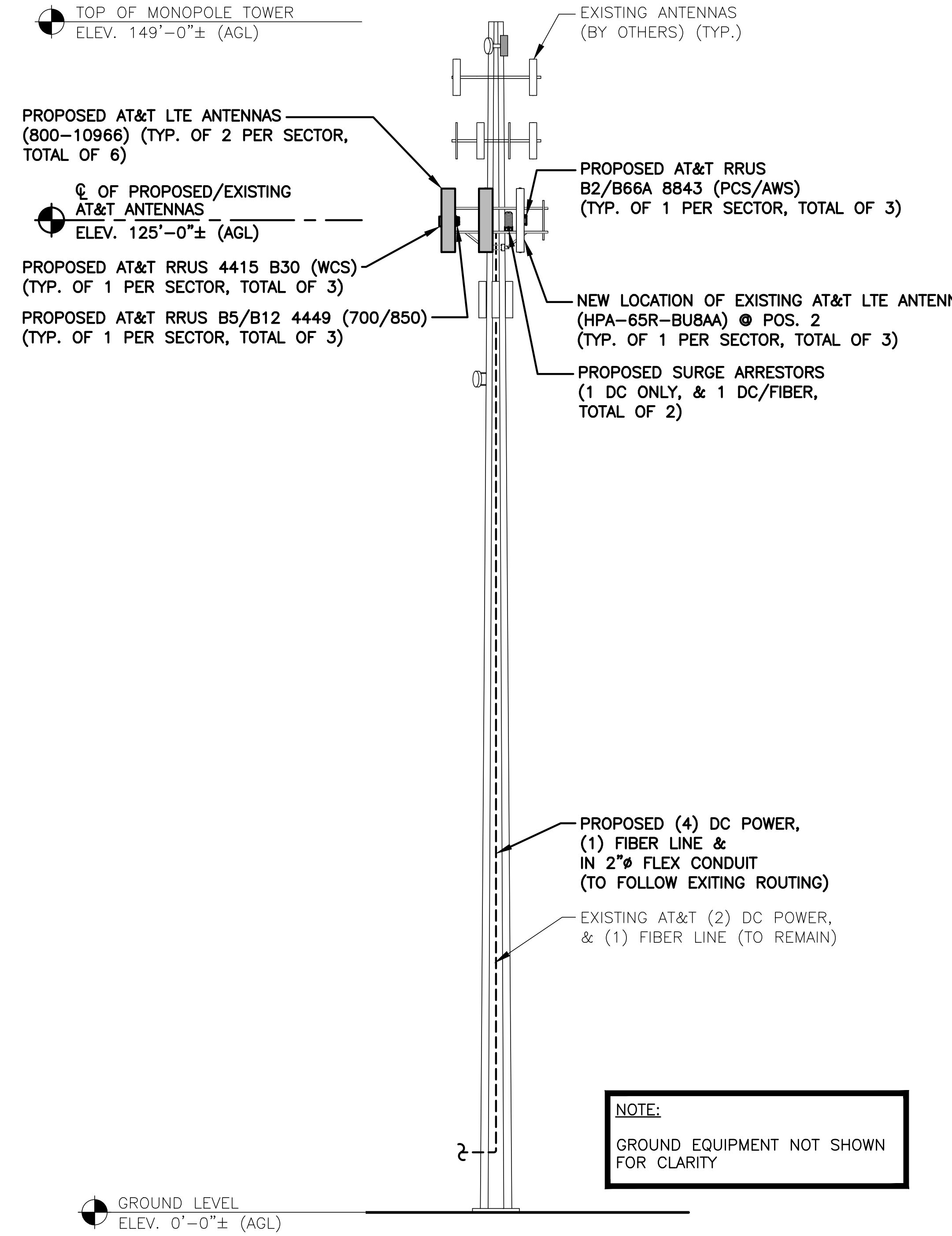


EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S



ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-0"

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STATE OF CONNECTICUT — DEREK J. CREASER — LICENSED PROFESSIONAL ENGINEER

AT&T
ANTENNA LAYOUTS & ELEVATION
(LTE 3C/4C/5C/4TXRX)

SITE NUMBER	DRAWING NUMBER	REV
CT2899	A-2	B

NOTE:

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

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

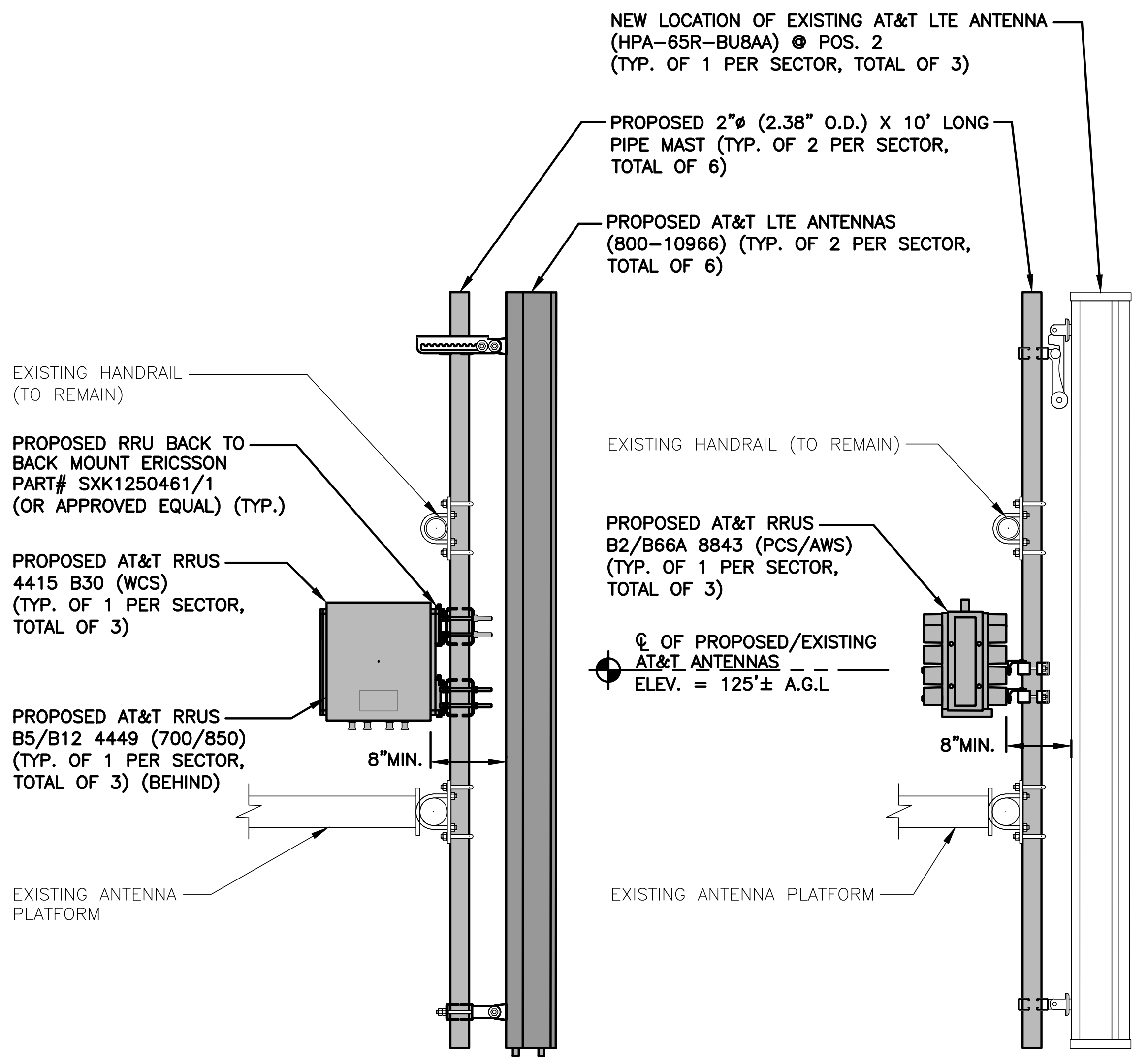
NOTE:

ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER AND FINAL RF DATA SHEET

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8C
A2	EXISTING	LTE PCS	HPA-65R-BU8AA	96X11.7X7.6	±125'	30°	–	(P)(1) B2/B66A 8843 (PCS/AWS)	14.9x13.2x10.9	–	
A3	PROPOSED	LTE AWS	800-10966	96X20X6.9	±125'	30°	–	–	–	–	
A4	PROPOSED	LTE 700 BC /WCS/850	800-10966	96X20X6.9	±125'	30°	–	(P)(1) B5/B12 4449 (700/850) (P)(1) 4415 B30 (WCS)	14.9x13.2x10.4 14.9x13.2x5.4	–	
B1	–	–	–	–	–	–	–	–	–	–	(P) (1) RAYCAP DC6-48-60-18-8C
B2	EXISTING	LTE PCS	HPA-65R-BU8AA	96X11.7X7.6	±125'	160°	–	(P)(1) B2/B66A 8843 (PCS/AWS)	14.9x13.2x10.9	–	
B3	PROPOSED	LTE AWS	800-10966	96X20X6.9	±125'	160°	–	–	–	–	
B4	PROPOSED	LTE 700 BC /WCS/850	800-10966	96X20X6.9	±125'	160°	–	(P)(1) B5/B12 4449 (700/850) (P)(1) 4415 B30 (WCS)	14.9x13.2x10.4 14.9x13.2x5.4	–	
C1	–	–	–	–	–	–	–	–	–	–	(P) (1) RAYCAP DC6-48-60-18-8C-EV (DC ONLY)
C2	EXISTING	LTE PCS	HPA-65R-BU8AA	96X11.7X7.6	±125'	270°	–	(P)(1) B2/B66A 8843 (PCS/AWS)	14.9x13.2x10.9	–	
C3	PROPOSED	LTE AWS	800-10966	96X20X6.9	±125'	270°	–	–	–	–	
C4	PROPOSED	LTE 700 BC /WCS/850	800-10966	96X20X6.9	±125'	270°	–	(P)(1) B5/B12 4449 (700/850) (P)(1) 4415 B30 (WCS)	14.9x13.2x10.4 14.9x13.2x5.4	–	

FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S



LTE ANTENNA & RRH MOUNTING DETAIL (2 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

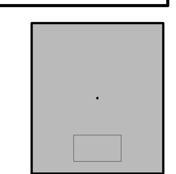
RRU CHART

QUANTITY	MODEL	L	W	D
3(P)	B2/B66A 8843	14.9"	13.2"	10.9"
3(P)	4415 B30	14.9"	13.2"	5.4"
3(P)	B5/B12 4449	14.9"	13.2"	10.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

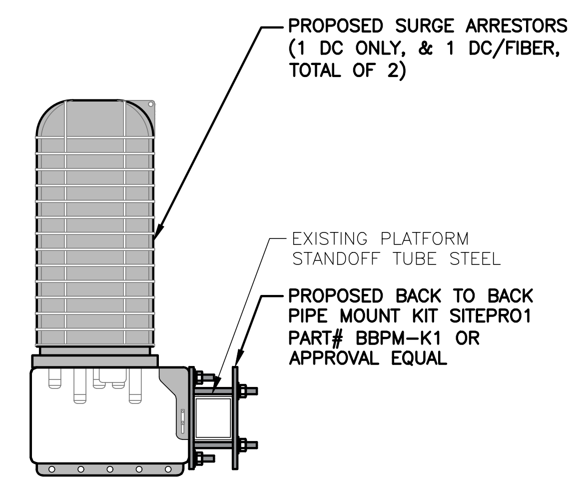
NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

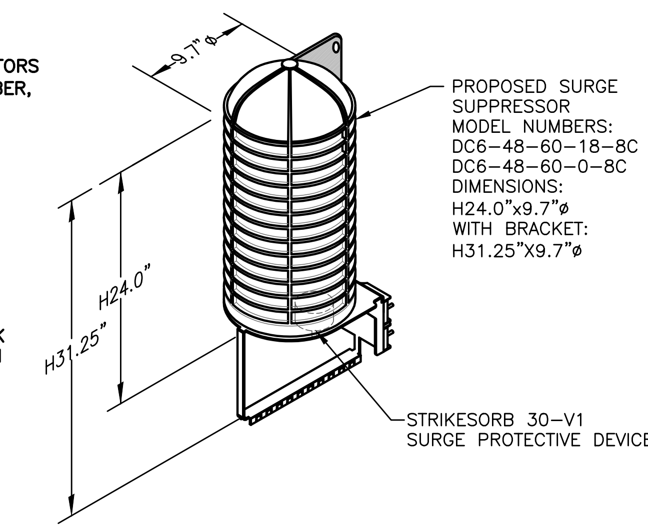


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (3 / A-3)
SCALE: N.T.S



PROPOSED SURGE ARRESTOR MOUNTING DETAIL (4 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (5 / A-3)
SCALE: N.T.S

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at&t
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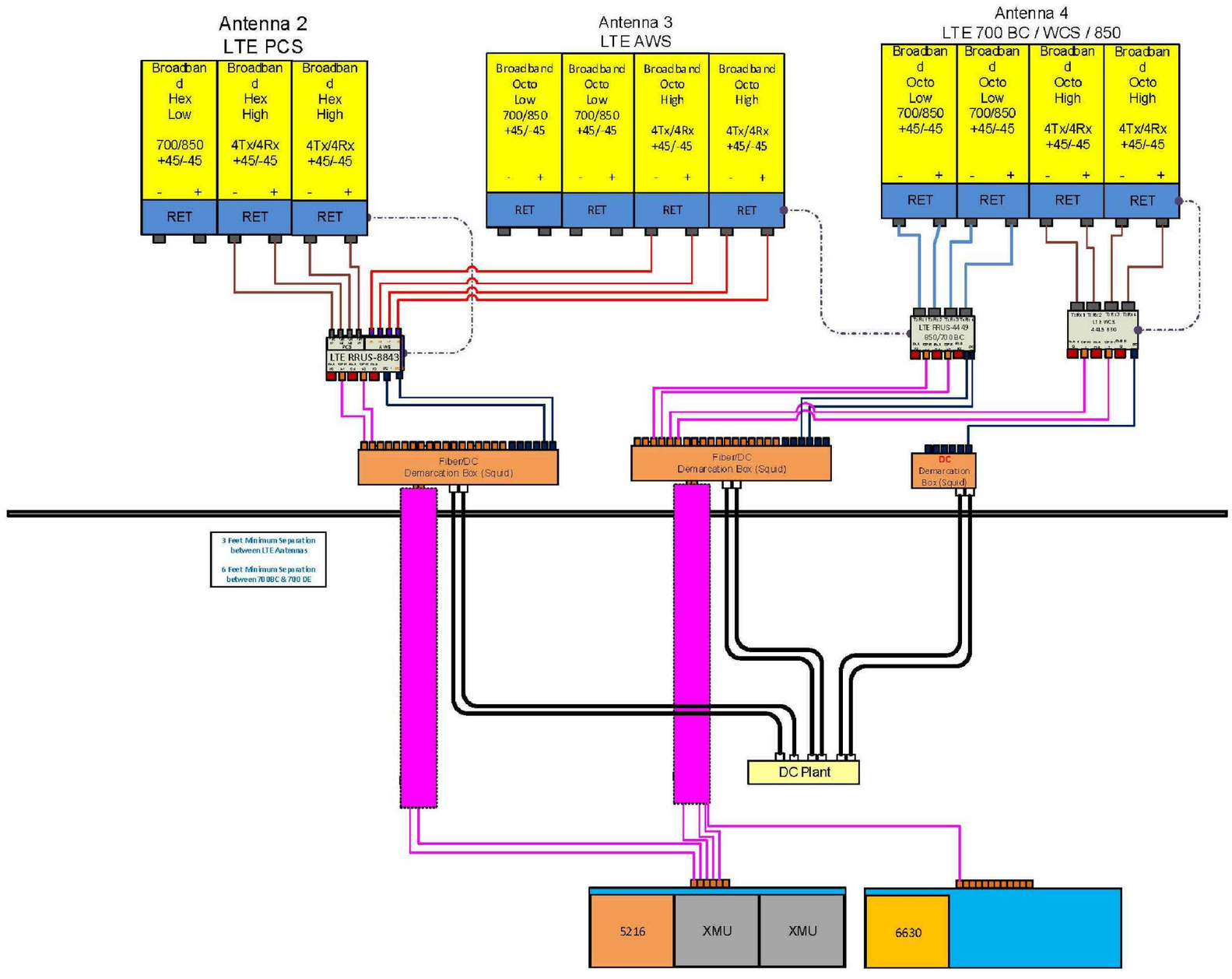
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: GA

STATE OF CONNECTICUT DEREK J. CREASER No. 28551 LICENSED PROFESSIONAL ENGINEER

AT&T
DETAILS
(LTE 3C/4C/5C/4TXRX)

SITE NUMBER	DRAWING NUMBER	REV
CT2899	A-3	B



RF PLUMBING DIAGRAM (1 / RF-1)
SCALE: N.T.S

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

NOTE:

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

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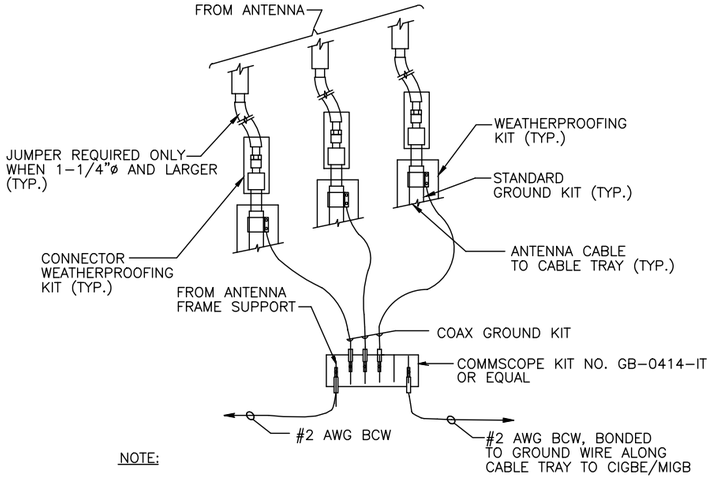
STATE OF CONNECTICUT · DEREK J. CREASER · No. 23554 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE 3C/4C/5C/4TXRX)

SITE NUMBER	DRAWING NUMBER	REV
CT2899	RF-1	B



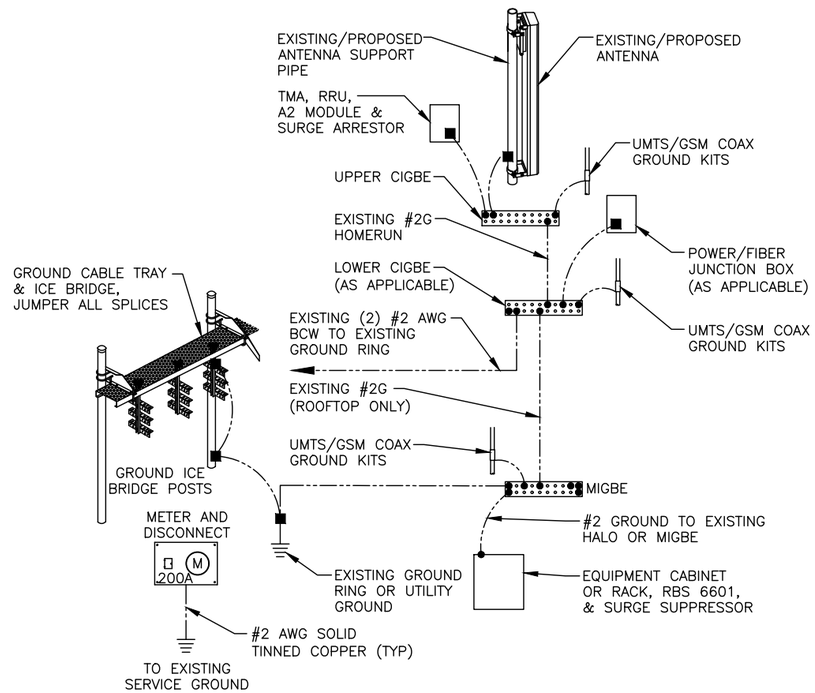
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

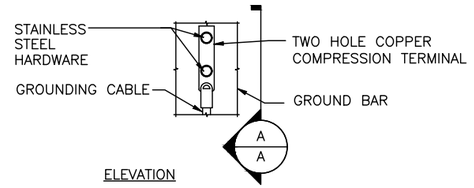
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

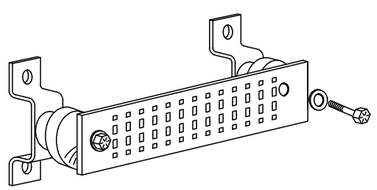
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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AT&T

GROUNDING DETAILS
(LTE 3C/4C/5C/4TXRX)

SITE NUMBER	DRAWING NUMBER	REV
CT2899	G-1	B

EXHIBIT 3

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**149 ft Monopole**
ATC Site Name	:	**WEST HAVEN & RT 162 CT, CT**
ATC Site Number	:	**243036**
Engineering Number	:	**OAA745744_C3_01**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**West Haven Jones Hill Road**
Carrier Site Number	:	**CT2899**
Site Location	:	**668 Jones Hill Road** **West Haven, CT 06516-6311** **41.256400,-72.972400**
County	:	**New Haven**
Date	:	**March 4, 2019**
Max Usage	:	**96%**
Result	:	**Pass**

Prepared By:
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Structural Engineer I

Reviewed By:

STATE OF CONNECTICUT
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PROFESSIONAL ENGINEER

Authorized by "EOR"
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Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 149 ft monopole to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	Sabre Job #06-08204, dated August 19, 2005
Foundation Drawing	Sabre Job #06-10095, dated October 12, 2005
Geotechnical Report	EBI Project #61051509, dated July 12, 2005

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 / 2015 IBC / 2018 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

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
151.0	3	RFS APXVFRR12X-C-I20	T-Arm	(3) 1 1/4" Hybriflex Cable (1) 1.7" (43.2mm) Hybrid (3) 1/2" Coax	CLEARWIRE CORPORATION
	2	DragonWave A-ANT-11G-2-C			
	3	Nokia 2.5G MAA - AAHC(64T64R)			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	6	Alcatel-Lucent RRH2x50-08			
	1	DragonWave A-ANT-23G-1-C			
	3	DragonWave Horizon Compact			
143.0	3	RFS APX16DWV-16DWVS-E-A20	Platform with Handrails	(3) 1 1/4" Hybriflex Cable (15) 1 5/8" Coax	T-MOBILE
	3	RFS APXVAARR24_43-U-NA20			
	3	Ericsson AIR-32 B2A/B66Aa			
	3	Ericsson Radio 4449 B12,B71			
	3	Ericsson KRY 112 489/1			
	3	Ericsson KRY 112 144/2			
134.0	3	Commscope LNX-6514DS-A1M	Low Profile Platform	(1) 1 5/8" (1.63"-41.3mm) Fiber (12) 1 5/8" Coax	VERIZON WIRELESS
	3	Andrew DB854DG65ESX			
	1	RFS DB-T1-6Z-8AB-0Z			
	3	Antel BXA-185085/12CF ___			
	3	Amphenol Antel BXA-171063-12BF-EDIN-X			
	6	RFS FD9R6004/2C-3L			
132.0	3	Alcatel-Lucent RRH2x40-AWS			
125.0	3	CCI CCI-HPA-65R-BUU-H8	Platform w/ Handrails	(1) 0.39" (10mm) Fiber Trunk (2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	1	Raycap DC6-48-60-0-8F (24" Height)			
115.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	METRO PCS INC
106.0	1	Generic 3' Dish w/ Radome	Side Arm	(1) 0.28" (7mm) RG-6	OTHER
	1	Proxim 5054-R-LR			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
125.0	3	Ericsson RRUS 32 (50.8 lbs)	-	-	AT&T MOBILITY
	3	Ericsson RRUS-11 800 MHz			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
125.0	1	Raycap DC6-48-60-0-8F	Platform w/ Handrails	(1) 0.39" (10mm) Fiber Trunk (2) 0.39" (9.8mm) Cable (2) 0.78" (19.7mm) 8 AWG 6 (1) 3" conduit	AT&T MOBILITY
	1	Raycap DC6-48-60-0-8F (24" Height)			
	3	Ericsson Radio 4415 B30			
	3	Ericsson 8843 Rev 2			
	3	Ericsson RRUS 4449 B5, B12			
	6	Kathrein Scala 80010966			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	58%	Pass
Shaft	96%	Pass
Base Plate	47%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	2,840.0	3,834.0	2,893.7	75%
Shear (Kips)	26.3	35.5	24.9	70%

*** 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) (°)
149.0	DragonWave A-ANT-23G-1-C	CLEARWIRE CORPORATION	2.317	1.795
	DragonWave A-ANT-11G-2-C			
125.0	Raycap DC6-48-60-0-8F	AT&T MOBILITY	1.586	1.641
	Raycap DC6-48-60-0-8F (24" Height)			
	Ericsson Radio 4415 B30			
	Ericsson 8843 Rev 2			
	Ericsson RRUS 4449 B5, B12			
	Kathrein Scala 80010966			
106.0	Generic 3' Dish w/ Radome	OTHER	1.093	1.300

***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:

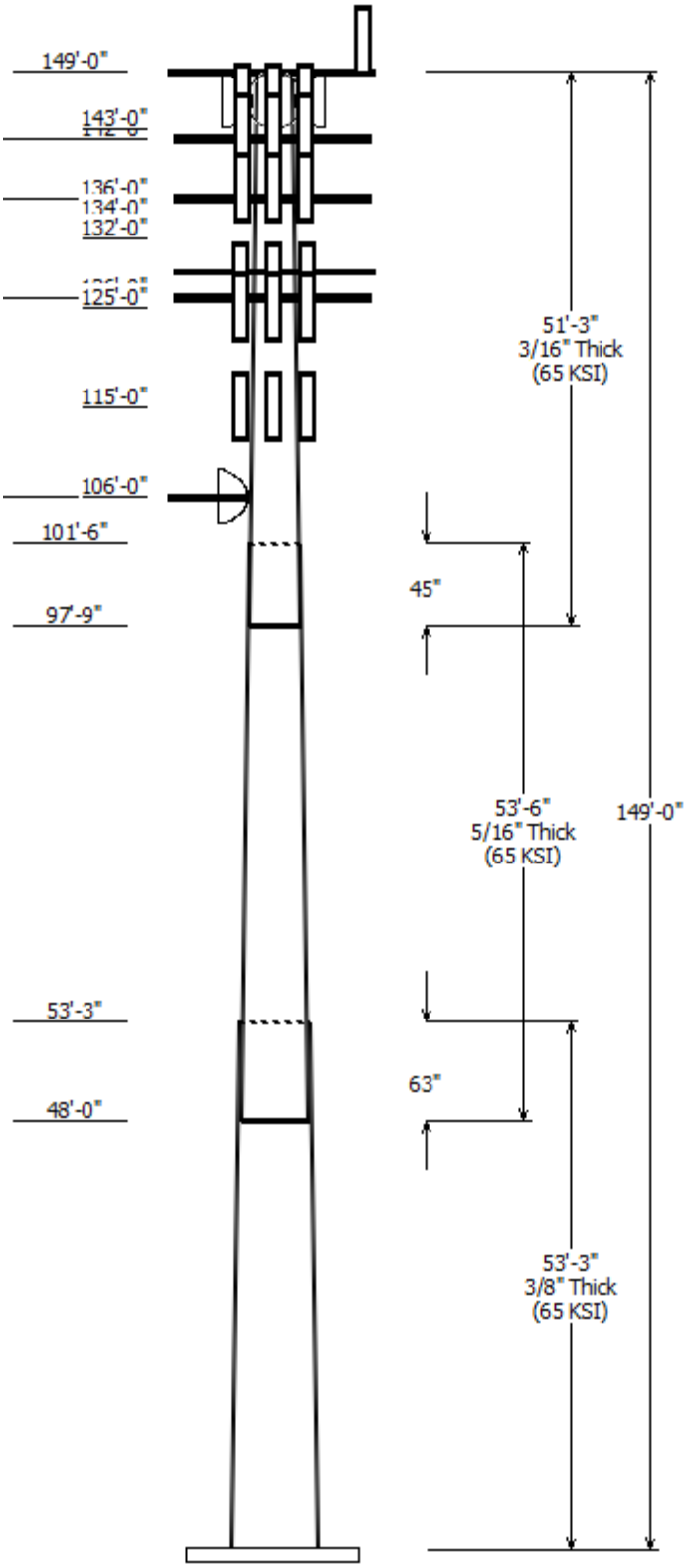
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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 :	243036	Code:	ANSI/TIA-222-G
Location :	WEST HAVEN & RT 162 CT, CT		
Description :	Tower Model Verified: 12/13/2012		
Client :	AT&T MOBILITY	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	149.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.234964 (in/ft)		

Sections Properties

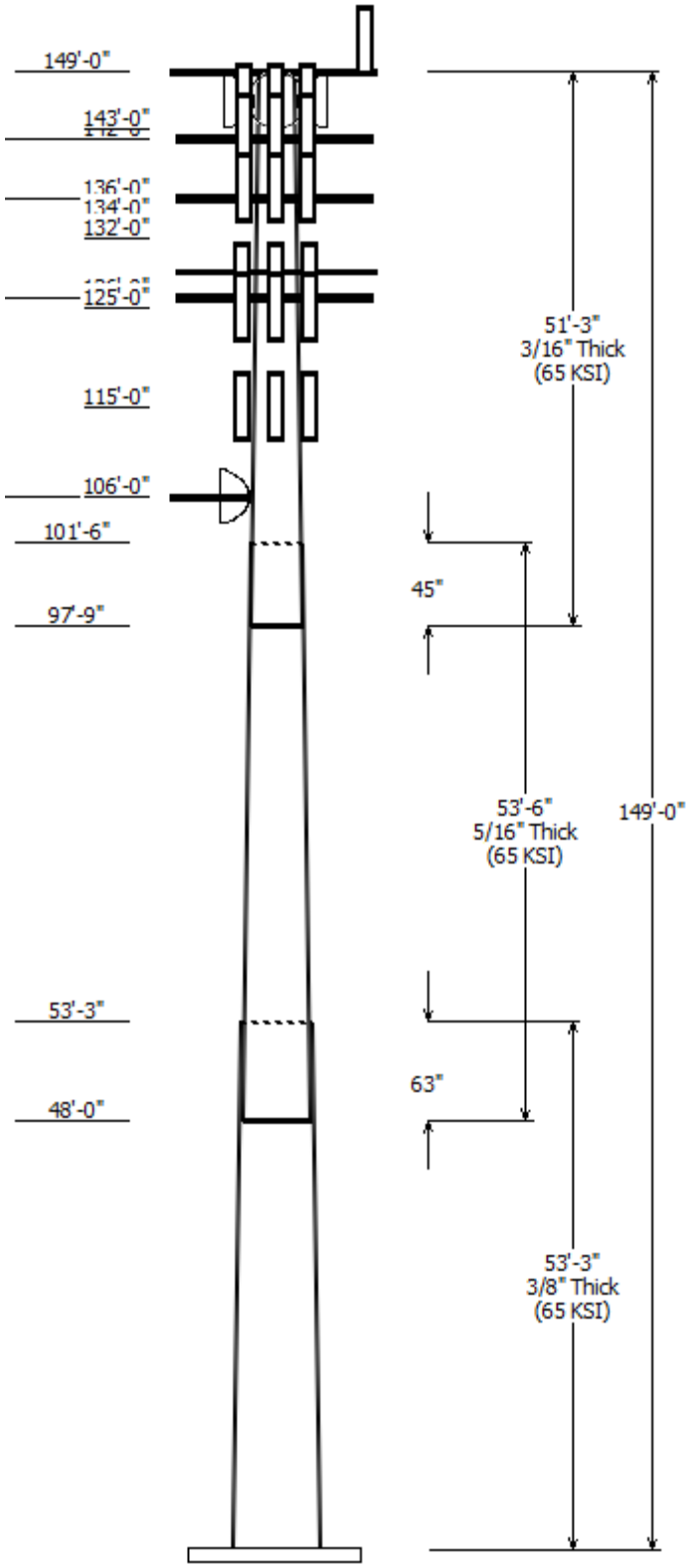
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.250	39.49	52.01	0.375		0.000	18 Sides	65
2	53.500	28.78	41.35	0.313	Slip Joint	63.000	18 Sides	65
3	51.250	18.00	30.04	0.188	Slip Joint	45.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
149.000	151.000	3	RFS APXVFRR12X-C-I20
149.000	148.000	2	DragonWave A-ANT-11G-2-C
149.000	151.000	3	Nokia 2.5G MAA -
149.000	151.000	3	Alcatel-Lucent 1900 MHz 4X45
149.000	151.000	6	Alcatel-Lucent RRH2x50-08
149.000	148.000	1	DragonWave A-ANT-23G-1-C
149.000	148.000	3	DragonWave Horizon Compact
149.000	149.000	3	Flat T-Arm
143.000	143.000	3	RFS APXVAARR24_43-U-NA20
143.000	143.000	3	RFS APX16DWV-16DWVS-E-A20
143.000	144.000	3	Ericsson AIR-32 B2A/B66Aa
143.000	143.000	3	Ericsson Radio 4449 B12,B71
143.000	144.000	3	Ericsson KRY 112 489/1
143.000	143.000	3	Ericsson KRY 112 144/2
142.000	142.000	1	Flat Platform w/ Handrails
136.000	136.000	1	Round Low Profile Platform
134.000	137.000	3	Commscope LNX-6514DS-A1M
134.000	137.000	3	Andrew DB854DG65ESX
134.000	136.000	1	RFS DB-T1-6Z-8AB-0Z
134.000	137.000	3	Antel BXA-185085/12CF ___
134.000	136.000	3	Amphenol Antel BXA-171063-
134.000	136.000	6	RFS FD9R6004/2C-3L
132.000	137.000	3	Alcatel-Lucent RRH2x40-AWS
126.000	126.000	1	Round Platform w/ Handrails
125.000	125.000	6	Kathrein Scala 80010966
125.000	126.000	3	CCI CCI-HPA-65R-BUU-H8
125.000	125.000	3	Ericsson RRUS 4449 B5, B12
125.000	125.000	3	Ericsson 8843 Rev 2
125.000	125.000	3	Ericsson Radio 4415 B30
125.000	126.000	1	Raycap DC6-48-60-0-8F (24" Hei
125.000	126.000	1	Raycap DC6-48-60-0-8F (24" Hei
125.000	125.000	1	Raycap DC6-48-60-0-8F
115.000	115.000	3	RFS APXV18-206517S-C
106.000	106.000	1	Flat Side Arm
106.000	106.000	1	Generic 3' Dish w/ Radome
106.000	106.000	1	Proxim 5054-R-LR

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
4.000	106.0	0.28" (7mm) RG-6	No
4.000	115.0	1 5/8" Coax	No
4.000	125.0	0.39" (10mm)	No



4.000	125.0	0.39" (10mm)	No
4.000	125.0	0.39" (9.8mm)	No
4.000	125.0	0.78" (19.7mm) 8	No
4.000	125.0	0.78" (19.7mm) 8	No
4.000	125.0	3" conduit	No
4.000	134.0	1 5/8" (1.63"-	No
4.000	134.0	1 5/8" Coax	No
4.000	143.0	1 1/4" Hybriflex	Yes
4.000	143.0	1 5/8" Coax	No
4.000	143.0	1 5/8" Coax	No
4.000	149.0	1 1/4" Hybriflex	No
4.000	149.0	1.7" (43.2mm)	No
4.000	149.0	1/2" Coax	No

Load Cases

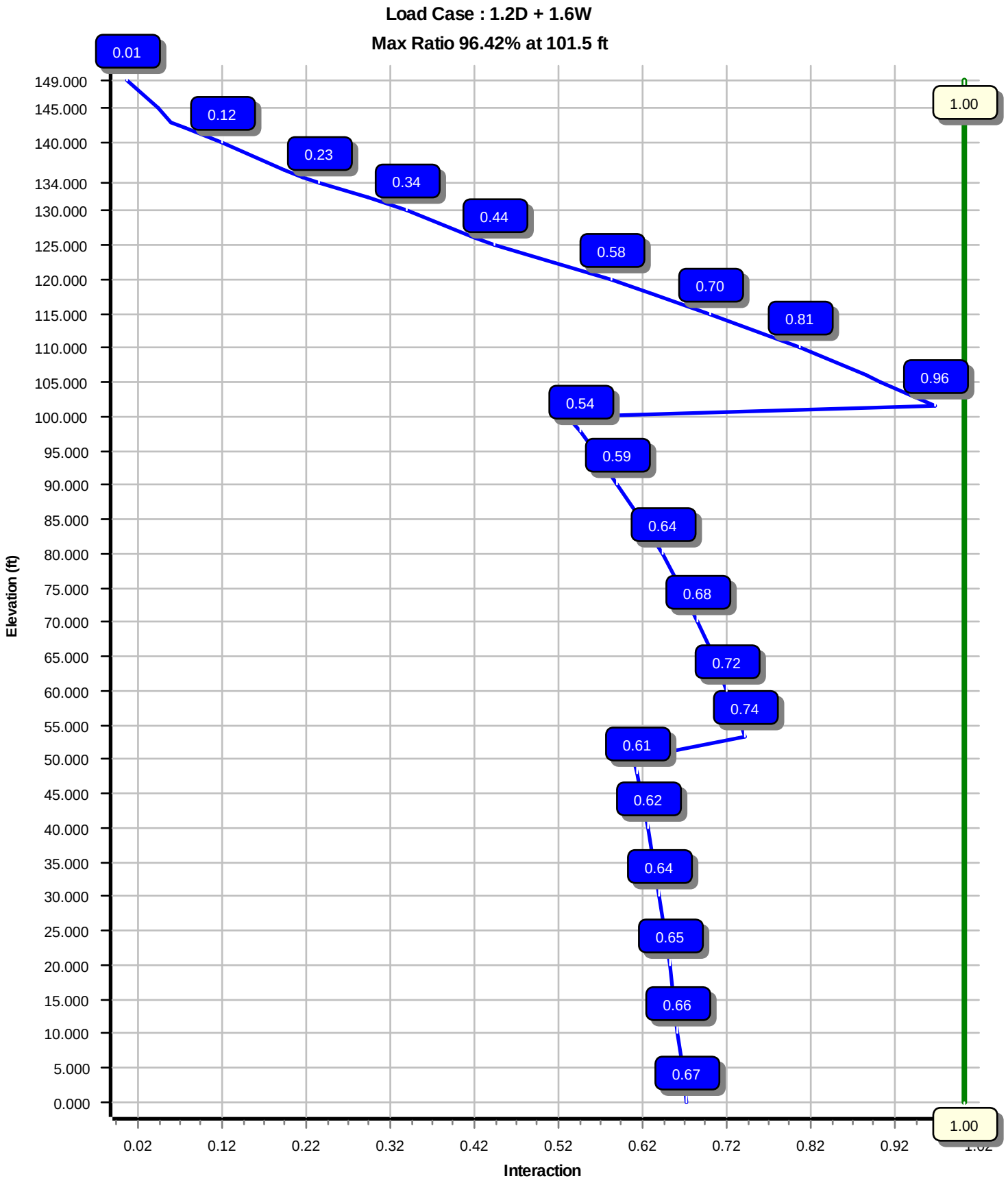
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) 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	2893.74	24.94	42.59
0.9D + 1.6W	2850.04	24.92	31.93
1.2D + 1.0Di + 1.0Wi	836.04	6.89	78.86
(1.2 + 0.2Sds) * DL + E ELFM	179.14	1.39	42.71
(1.2 + 0.2Sds) * DL + E EMAM	322.15	2.59	42.70
(0.9 - 0.2Sds) * DL + E ELFM	175.77	1.39	29.64
(0.9 - 0.2Sds) * DL + E EMAM	315.53	2.58	29.64
1.0D + 1.0W	686.29	5.96	35.53

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	106.00	13.122	1.300
1.0D + 1.0W	149.00	27.809	1.795
1.0D + 1.0W	149.00	27.809	1.795


Load Case : 1.2D + 1.6W
Max Ratio 96.42% at 101.5 ft
0.01
0.12
0.23
0.34
0.44
0.58
0.70
0.81
0.96
0.54
0.59
0.64
0.68
0.72
0.74
0.61
0.62
0.64
0.65
0.66
0.67
1.00
1.00
149.000
145.000
140.000
134.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 243036 **Code:** ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT **Engineering Number:**OAA745744_C3_01 **3/4/2019 8:49:10 AM**

Customer: AT&T MOBILITY

Analysis Parameters

Location :	New Haven County, CT	**Height (ft) :**	149
Code :	ANSI/TIA-222-G	**Base Diameter (in) :**	52.01
Shape :	18 Sides	**Top Diameter (in) :**	18.00
Pole Type :	Taper	**Taper (in/ft) :**	0.235
Pole Manfacturer :	Sabre	**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): 2.69

T_L (sec):	6	**p:**	1.3	**C_s:**	0.030
S_s:	0.186	**S_1:**	0.062	**C_s Max:**	0.030
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.198	**S_{d1}:**	0.099		

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: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA745744_C3_01 3/4/2019 8:49:10 AM

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	53.250	0.3750	65		0.00	9,787	52.01	0.00	61.46	20701.4	22.69	138.69	39.49	53.25	46.56	9004.7	16.81	105.33	0.234964
2-18	53.500	0.3125	65	Slip	63.00	6,276	41.35	48.00	40.71	8664.4	21.57	132.34	28.78	101.50	28.24	2892.7	14.48	92.11	0.234964
3-18	51.250	0.1875	65	Slip	45.00	2,473	30.04	97.75	17.77	2000.7	26.49	160.22	18.00	149.00	10.60	424.9	15.16	96.00	0.234964
				Shaft Weight		18,536													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
149.00	DragonWave Horizon Compact	3	0.80	-1.000	10.60	0.720	0.50	33.09	1.288	0.50
149.00	DragonWave A-ANT-23G-1-C	1	0.80	-1.000	15.00	1.610	1.00	50.33	2.367	1.00
149.00	Alcatel-Lucent RRH2x50-08	6	0.80	2.000	52.90	1.700	0.50	112.16	2.562	0.50
149.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	2.000	60.00	2.320	0.67	140.59	3.400	0.67
149.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.80	2.000	103.60	4.200	0.64	216.34	5.540	0.64
149.00	DragonWave A-ANT-11G-2-C	2	1.00	-1.000	27.00	4.690	1.00	124.46	5.964	1.00
149.00	RFS APXVFRR12X-C-I20	3	0.80	2.000	46.00	4.990	0.71	171.02	6.857	0.71
149.00	Flat T-Arm	3	0.75	0.000	250.00	12.900	0.67	459.00	21.078	0.67
143.00	Ericsson KRY 112 144/2	3	0.75	0.000	9.70	0.480	0.50	23.85	0.952	0.50
143.00	Ericsson KRY 112 489/1	3	0.75	1.000	15.40	0.560	0.50	32.93	1.085	0.50
143.00	Ericsson Radio 4449 B12,B71	3	0.75	0.000	74.00	1.640	0.50	129.81	2.482	0.50
143.00	Ericsson AIR-32 B2A/B66Aa	3	0.75	1.000	132.20	6.510	0.71	291.32	8.694	0.71
143.00	RFS APX16DWV-16DWVS-E-A20	3	0.75	0.000	40.70	6.590	0.60	157.16	8.750	0.60
143.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.240	0.63	519.28	23.937	0.63
142.00	Flat Platform w/ Handrails	1	1.00	0.000	2,000.00	42.400	1.00	3,415.31	63.286	1.00
136.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,142.65	40.744	1.00
134.00	RFS FD9R6004/2C-3L	6	0.80	2.000	2.60	0.310	0.50	10.53	0.687	0.50
134.00	Amphenol Antel BXA-171063-	3	0.80	2.000	15.00	4.730	0.72	108.80	7.046	0.72
134.00	Antel BXA-185085/12CF ___	3	0.80	3.000	13.00	4.790	0.72	131.50	6.001	0.72
134.00	RFS DB-T1-6Z-8AB-0Z	1	0.80	2.000	44.00	4.800	1.00	168.61	6.207	1.00
134.00	Andrew DB854DG65ESX	3	0.80	3.000	18.50	5.250	0.65	149.52	6.231	0.65
134.00	Commscope LNX-6514DS-A1M	3	0.80	3.000	38.80	8.170	0.69	212.99	10.959	0.69
132.00	Alcatel-Lucent RRH2x40-AWS	3	1.00	5.000	44.00	2.160	0.67	103.91	3.194	0.67
126.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,275.49	51.262	1.00
125.00	Raycap DC6-48-60-0-8F	1	0.80	0.000	32.80	1.360	1.00	89.88	2.011	1.00
125.00	Raycap DC6-48-60-0-8F (24"	1	0.80	1.000	32.80	1.470	1.00	137.97	2.156	1.00
125.00	Raycap DC6-48-60-0-8F (24"	1	0.80	1.000	32.80	1.470	1.00	137.97	2.156	1.00
125.00	Ericsson Radio 4415 B30	3	0.80	0.000	43.00	1.650	0.50	84.39	2.484	0.50
125.00	Ericsson 8843 Rev 2	3	0.80	0.000	75.00	1.650	0.50	135.95	2.484	0.50
125.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.970	0.50	134.29	2.886	0.50
125.00	CCI CCI-HPA-65R-BUU-H8	3	0.80	1.000	68.00	12.980	0.67	320.31	16.496	0.67
125.00	Kathrein Scala 80010966	6	0.80	0.000	114.60	17.360	0.63	429.91	20.982	0.63
115.00	RFS APXV18-206517S-C	3	1.00	0.000	26.40	5.160	0.68	116.61	7.463	0.68
106.00	Proxim 5054-R-LR	1	1.00	0.000	6.00	1.320	1.00	36.21	2.054	1.00
106.00	Generic 3' Dish w/ Radome	1	1.00	0.000	100.00	6.100	1.00	276.10	7.259	1.00
106.00	Flat Side Arm	1	1.00	0.000	150.00	6.300	1.00	220.76	8.678	1.00
Totals	Num Loadings:36	94			10,836.40			24,533.79		

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
4.00	149.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	CLEARWIRE CORPORATION
4.00	149.00	1	1.7" (43.2mm) Hybrid	1.70	1.78	N	0.00	N	CLEARWIRE CORPORATION

4.00	149.00	3	1/2" Coax	0.63	0.15	N	0.00	N	CLEARWIRE CORPORATION
4.00	143.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	1.54	Y	T-MOBILE
4.00	143.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-MOBILE
4.00	143.00	3	1 5/8" Coax	1.98	0.82	N	0.00	N	T-MOBILE
4.00	134.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0.00	N	VERIZON WIRELESS
4.00	134.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	VERIZON WIRELESS
4.00	125.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T MOBILITY
4.00	125.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T MOBILITY
4.00	125.00	2	0.39" (9.8mm) Cable	0.39	0.07	N	0.00	N	AT&T MOBILITY
4.00	125.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0.00	N	AT&T MOBILITY
4.00	125.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0.00	N	AT&T MOBILITY
4.00	125.00	1	3" conduit	3.50	7.58	N	0.00	N	AT&T MOBILITY
4.00	115.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	METRO PCS INC
4.00	106.00	1	0.28" (7mm) RG-6	0.28	0.03	N	0.00	N	Other

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		0.3750	52.010	61.456	20,701.4	22.69	138.69	74.7	784.0	0.0	0.0
5.00		0.3750	50.835	60.058	19,320.3	22.14	135.56	75.4	748.6	0.0	1,033.7
10.00		0.3750	49.660	58.659	18,002.0	21.59	132.43	76.0	714.0	0.0	1,009.9
15.00		0.3750	48.485	57.261	16,745.1	21.03	129.29	76.7	680.2	0.0	986.1
20.00		0.3750	47.310	55.863	15,548.1	20.48	126.16	77.3	647.3	0.0	962.3
25.00		0.3750	46.136	54.465	14,409.6	19.93	123.03	78.0	615.2	0.0	938.5
30.00		0.3750	44.961	53.066	13,328.0	19.38	119.90	78.6	583.9	0.0	914.8
35.00		0.3750	43.786	51.668	12,301.9	18.83	116.76	79.3	553.4	0.0	891.0
40.00		0.3750	42.611	50.270	11,329.9	18.27	113.63	79.9	523.7	0.0	867.2
45.00		0.3750	41.436	48.871	10,410.6	17.72	110.50	80.6	494.9	0.0	843.4
48.00	Bot - Section 2	0.3750	40.731	48.032	9,883.6	17.39	108.62	80.9	477.9	0.0	494.6
50.00		0.3750	40.261	47.473	9,542.3	17.17	107.36	81.2	466.8	0.0	600.4
53.25	Top - Section 1	0.3125	40.123	39.485	7,906.5	20.88	128.39	76.8	388.1	0.0	960.8
55.00		0.3125	39.712	39.078	7,664.0	20.64	127.08	77.1	380.1	0.0	233.9
60.00		0.3125	38.537	37.912	6,998.6	19.98	123.32	77.9	357.7	0.0	654.9
65.00		0.3125	37.362	36.747	6,373.0	19.32	119.56	78.7	336.0	0.0	635.1
70.00		0.3125	36.187	35.582	5,785.7	18.66	115.80	79.5	314.9	0.0	615.3
75.00		0.3125	35.012	34.417	5,235.7	17.99	112.04	80.2	294.5	0.0	595.5
80.00		0.3125	33.838	33.251	4,721.7	17.33	108.28	81.0	274.8	0.0	575.6
85.00		0.3125	32.663	32.086	4,242.5	16.67	104.52	81.8	255.8	0.0	555.8
90.00		0.3125	31.488	30.921	3,796.9	16.00	100.76	82.6	237.5	0.0	536.0
95.00		0.3125	30.313	29.756	3,383.6	15.34	97.00	82.6	219.9	0.0	516.2
97.75	Bot - Section 3	0.3125	29.667	29.115	3,169.7	14.98	94.93	82.6	210.4	0.0	275.4
100.0		0.3125	29.138	28.591	3,001.5	14.68	93.24	82.6	202.9	0.0	355.7
101.5	Top - Section 2	0.1875	29.161	17.242	1,828.7	25.66	155.52	71.2	123.5	0.0	233.6
105.0		0.1875	28.338	16.753	1,677.4	24.89	151.14	72.1	116.6	0.0	202.4
106.0		0.1875	28.103	16.613	1,635.7	24.67	149.89	72.4	114.6	0.0	56.8
110.0		0.1875	27.164	16.054	1,476.0	23.78	144.87	73.4	107.0	0.0	222.3
115.0		0.1875	25.989	15.354	1,291.4	22.68	138.61	74.7	97.9	0.0	267.2
117.9		0.1875	25.299	14.944	1,190.5	22.03	134.93	75.5	92.7	0.0	151.4
120.0		0.1875	24.814	14.655	1,122.9	21.57	132.34	76.0	89.1	0.0	103.9
125.0		0.1875	23.639	13.956	969.8	20.47	126.08	77.3	80.8	0.0	243.4
126.0		0.1875	23.404	13.816	940.9	20.25	124.82	77.6	79.2	0.0	47.3
130.0		0.1875	22.464	13.257	831.2	19.36	119.81	78.6	72.9	0.0	184.2
132.0		0.1875	21.994	12.977	779.7	18.92	117.30	79.1	69.8	0.0	89.3
134.0		0.1875	21.524	12.698	730.4	18.48	114.80	79.7	66.8	0.0	87.4
135.0		0.1875	21.290	12.558	706.5	18.26	113.54	79.9	65.4	0.0	43.0
136.0		0.1875	21.055	12.418	683.2	18.04	112.29	80.2	63.9	0.0	42.5
140.0		0.1875	20.115	11.859	595.0	17.15	107.28	81.2	58.3	0.0	165.2
142.0		0.1875	19.645	11.579	553.8	16.71	104.77	81.7	55.5	0.0	79.8
143.0		0.1875	19.410	11.439	534.0	16.49	103.52	82.0	54.2	0.0	39.2
145.0		0.1875	18.940	11.160	495.8	16.05	101.01	82.5	51.6	0.0	76.9
149.0		0.1875	18.000	10.600	424.9	15.16	96.00	82.6	46.5	0.0	148.1
											18,536.1

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA745744_C3_01 3/4/2019 8:49:11 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 97 mph with No Ice 27 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		199.3	0.0					0.0	0.0	199.3	0.0	0.0	0.0
5.00		394.1	1,240.5					0.0	56.6	394.1	1,297.0	0.0	0.0
10.00		385.0	1,211.9					0.0	282.8	385.0	1,494.7	0.0	0.0
15.00		375.9	1,183.4					0.0	282.8	375.9	1,466.1	0.0	0.0
20.00		366.8	1,154.8					0.0	282.8	366.8	1,437.6	0.0	0.0
25.00		357.7	1,126.3					0.0	282.8	357.7	1,409.0	0.0	0.0
30.00		352.7	1,097.7					0.0	282.8	352.7	1,380.5	0.0	0.0
35.00		354.8	1,069.2					0.0	282.8	354.8	1,351.9	0.0	0.0
40.00		358.7	1,040.6					0.0	282.8	358.7	1,323.4	0.0	0.0
45.00		288.5	1,012.1					0.0	282.8	288.5	1,294.8	0.0	0.0
48.00	Bot - Section 2	181.8	593.5					0.0	169.7	181.8	763.2	0.0	0.0
50.00		192.7	720.5					0.0	113.1	192.7	833.6	0.0	0.0
53.25	Top - Section 1	183.4	1,153.0					0.0	183.8	183.4	1,336.8	0.0	0.0
55.00		247.0	280.7					0.0	99.0	247.0	379.7	0.0	0.0
60.00		364.4	785.9					0.0	282.8	364.4	1,068.7	0.0	0.0
65.00		361.5	762.1					0.0	282.8	361.5	1,044.9	0.0	0.0
70.00		357.6	738.4					0.0	282.8	357.6	1,021.1	0.0	0.0
75.00		352.9	714.6					0.0	282.8	352.9	997.3	0.0	0.0
80.00		347.4	690.8					0.0	282.8	347.4	973.6	0.0	0.0
85.00		341.2	667.0					0.0	282.8	341.2	949.8	0.0	0.0
90.00		334.3	643.2					0.0	282.8	334.3	926.0	0.0	0.0
95.00		254.7	619.4					0.0	282.8	254.7	902.2	0.0	0.0
97.75	Bot - Section 3	162.4	330.5					0.0	155.5	162.4	486.1	0.0	0.0
100.00		121.4	426.9					0.0	127.3	121.4	554.1	0.0	0.0
101.50	Top - Section 2	159.4	280.3					0.0	84.8	159.4	365.1	0.0	0.0
105.00		142.5	242.9					0.0	197.9	142.5	440.9	0.0	0.0
106.00	Appurtenance(s)	155.0	68.1	555.2	0.0	0.0	307.2	0.0	56.6	710.3	431.9	0.0	0.0
110.00		274.1	266.8					0.0	226.1	274.1	492.9	0.0	0.0
115.00	Appurtenance(s)	236.5	320.6	436.0	0.0	0.0	95.0	0.0	282.6	672.6	698.3	0.0	0.0
117.94		145.6	181.7					0.0	148.7	145.6	330.4	0.0	0.0
120.00		199.9	124.6					0.0	104.4	199.9	229.0	0.0	0.0
125.00	Appurtenance(s)	168.0	292.1	3,528.7	0.0	987.4	1,868.4	0.0	253.1	3,696.7	2,413.6	0.0	0.0
126.00	Appurtenance(s)	135.2	56.7	1,156.4	0.0	0.0	2,400.0	0.0	38.4	1,291.7	2,495.1	0.0	0.0
130.00		160.3	221.1					0.0	153.5	160.3	374.6	0.0	0.0
132.00	Appurtenance(s)	104.2	107.1	189.1	0.0	945.3	158.4	0.0	76.8	293.3	342.3	0.0	0.0
134.00	Appurtenance(s)	77.2	104.8	1,860.6	0.0	5,027.4	378.6	0.0	76.8	1,937.8	560.2	0.0	0.0
135.00		50.8	51.6					0.0	24.6	50.8	76.2	0.0	0.0
136.00	Appurtenance(s)	124.1	51.0	943.0	0.0	0.0	1,800.0	0.0	24.6	1,067.0	1,875.6	0.0	0.0
140.00		146.8	198.3					0.0	98.5	146.8	296.8	0.0	0.0
142.00	Appurtenance(s)	71.7	95.7	1,865.3	0.0	0.0	2,400.0	0.0	49.3	1,937.0	2,545.0	0.0	0.0
143.00	Appurtenance(s)	70.2	47.0	2,249.2	0.0	487.2	1,439.6	0.0	24.6	2,319.4	1,511.3	0.0	0.0
145.00		136.9	92.3					0.0	12.6	136.9	104.8	0.0	0.0
149.00	Appurtenance(s)	90.3	177.7	2,400.0	0.0	1,525.1	2,156.4	0.0	25.1	2,490.3	2,359.2	0.0	0.0
								Totals:		25,068.4	42,635.3	0.00	0.00

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA745744_C3_01 3/4/2019 8:49:17 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 97 mph with No Ice 27 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	-42.59	-24.94	0.00	-2,893.74	0.00	2,893.74	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.669
5.00	-41.21	-24.69	0.00	-2,769.03	0.00	2,769.03	4,073.39	2,036.69	8,449.37	4,230.97	0.10	-0.19	0.665
10.00	-39.63	-24.44	0.00	-2,645.59	0.00	2,645.59	4,012.85	2,006.43	8,128.58	4,070.33	0.41	-0.39	0.660
15.00	-38.08	-24.18	0.00	-2,523.42	0.00	2,523.42	3,950.68	1,975.34	7,810.43	3,911.02	0.94	-0.60	0.655
20.00	-36.56	-23.94	0.00	-2,402.50	0.00	2,402.50	3,886.87	1,943.43	7,495.19	3,753.17	1.68	-0.81	0.650
25.00	-35.07	-23.69	0.00	-2,282.83	0.00	2,282.83	3,821.43	1,910.71	7,183.08	3,596.88	2.64	-1.02	0.644
30.00	-33.60	-23.44	0.00	-2,164.39	0.00	2,164.39	3,754.35	1,877.17	6,874.35	3,442.28	3.82	-1.24	0.638
35.00	-32.17	-23.18	0.00	-2,047.20	0.00	2,047.20	3,685.64	1,842.82	6,569.23	3,289.50	5.24	-1.47	0.631
40.00	-30.76	-22.91	0.00	-1,931.31	0.00	1,931.31	3,615.29	1,807.64	6,267.96	3,138.64	6.90	-1.70	0.624
45.00	-29.40	-22.68	0.00	-1,816.76	0.00	1,816.76	3,543.30	1,771.65	5,970.78	2,989.83	8.80	-1.93	0.616
48.00	-28.60	-22.53	0.00	-1,748.73	0.00	1,748.73	3,499.33	1,749.66	5,794.53	2,901.57	10.06	-2.08	0.611
50.00	-27.72	-22.37	0.00	-1,703.67	0.00	1,703.67	3,469.68	1,734.84	5,677.92	2,843.18	10.96	-2.18	0.607
53.25	-26.35	-22.19	0.00	-1,630.97	0.00	1,630.97	2,730.90	1,365.45	4,467.29	2,236.97	12.49	-2.34	0.739
55.00	-25.90	-22.02	0.00	-1,592.13	0.00	1,592.13	2,712.29	1,356.15	4,390.67	2,198.60	13.37	-2.43	0.734
60.00	-24.74	-21.73	0.00	-1,482.06	0.00	1,482.06	2,658.02	1,329.01	4,173.50	2,089.85	16.06	-2.71	0.719
65.00	-23.61	-21.44	0.00	-1,373.42	0.00	1,373.42	2,602.11	1,301.05	3,959.12	1,982.50	19.06	-3.00	0.702
70.00	-22.50	-21.14	0.00	-1,266.25	0.00	1,266.25	2,544.56	1,272.28	3,747.77	1,876.67	22.36	-3.30	0.684
75.00	-21.42	-20.84	0.00	-1,160.56	0.00	1,160.56	2,485.39	1,242.69	3,539.70	1,772.48	25.97	-3.60	0.664
80.00	-20.36	-20.54	0.00	-1,056.37	0.00	1,056.37	2,424.57	1,212.29	3,335.13	1,670.04	29.90	-3.90	0.641
85.00	-19.33	-20.23	0.00	-953.69	0.00	953.69	2,362.12	1,181.06	3,134.31	1,569.49	34.14	-4.20	0.616
90.00	-18.33	-19.92	0.00	-852.53	0.00	852.53	2,297.27	1,148.64	2,936.51	1,470.44	38.70	-4.50	0.588
95.00	-17.37	-19.67	0.00	-752.91	0.00	752.91	2,210.70	1,105.35	2,718.30	1,361.17	43.57	-4.80	0.561
97.75	-16.85	-19.51	0.00	-698.82	0.00	698.82	2,163.09	1,081.54	2,601.88	1,302.87	46.38	-4.97	0.544
100.00	-16.27	-19.37	0.00	-654.93	0.00	654.93	2,124.13	1,062.07	2,508.52	1,256.12	48.76	-5.11	0.529
101.50	-15.87	-19.22	0.00	-625.87	0.00	625.87	1,105.19	552.59	1,317.56	659.76	50.37	-5.20	0.964
105.00	-15.39	-19.08	0.00	-558.59	0.00	558.59	1,087.53	543.77	1,259.48	630.68	54.26	-5.40	0.901
106.00	-14.96	-18.39	0.00	-539.52	0.00	539.52	1,082.34	541.17	1,242.93	622.39	55.40	-5.50	0.882
110.00	-14.38	-18.16	0.00	-465.96	0.00	465.96	1,060.92	530.46	1,177.04	589.40	60.15	-5.85	0.805
115.00	-13.66	-17.50	0.00	-375.14	0.00	375.14	1,032.68	516.34	1,095.47	548.55	66.48	-6.25	0.698
117.94	-13.29	-17.36	0.00	-323.74	0.00	323.74	1,015.32	507.66	1,048.03	524.80	70.39	-6.48	0.631
120.00	-13.01	-17.19	0.00	-287.94	0.00	287.94	1,002.79	501.40	1,014.98	508.24	73.22	-6.63	0.581
125.00	-11.01	-13.27	0.00	-201.01	0.00	201.01	971.28	485.64	935.83	468.61	80.32	-6.94	0.441
126.00	-8.67	-11.70	0.00	-187.75	0.00	187.75	964.78	482.39	920.18	460.77	81.78	-7.00	0.417
130.00	-8.29	-11.52	0.00	-140.95	0.00	140.95	938.12	469.06	858.24	429.76	87.71	-7.19	0.337
132.00	-7.97	-11.19	0.00	-116.97	0.00	116.97	924.40	462.20	827.71	414.47	90.74	-7.28	0.291
134.00	-7.65	-9.21	0.00	-89.56	0.00	89.56	910.42	455.21	797.47	399.33	93.80	-7.36	0.233
135.00	-7.58	-9.15	0.00	-80.35	0.00	80.35	903.33	451.67	782.47	391.82	95.34	-7.39	0.214
136.00	-5.84	-7.86	0.00	-71.20	0.00	71.20	896.18	448.09	767.56	384.35	96.89	-7.42	0.192
140.00	-5.56	-7.68	0.00	-39.77	0.00	39.77	866.91	433.46	708.75	354.90	103.13	-7.52	0.119
142.00	-3.29	-5.43	0.00	-24.42	0.00	24.42	851.88	425.94	679.88	340.45	106.28	-7.55	0.076
143.00	-2.10	-2.93	0.00	-18.50	0.00	18.50	844.27	422.14	665.60	333.29	107.86	-7.56	0.058
145.00	-2.01	-2.78	0.00	-12.64	0.00	12.64	828.85	414.43	637.31	319.13	111.02	-7.57	0.042
149.00	0.00	-2.49	0.00	-1.53	0.00	1.53	787.55	393.77	574.90	287.88	117.36	-7.59	0.005

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA745744_C3_01 3/4/2019 8:49:17 AM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 27 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		199.3	0.0					0.0	0.0	199.3	0.0	0.0	0.0
5.00		394.1	930.3					0.0	42.4	394.1	972.8	0.0	0.0
10.00		385.0	908.9					0.0	212.1	385.0	1,121.0	0.0	0.0
15.00		375.9	887.5					0.0	212.1	375.9	1,099.6	0.0	0.0
20.00		366.8	866.1					0.0	212.1	366.8	1,078.2	0.0	0.0
25.00		357.7	844.7					0.0	212.1	357.7	1,056.8	0.0	0.0
30.00		352.7	823.3					0.0	212.1	352.7	1,035.4	0.0	0.0
35.00		354.8	801.9					0.0	212.1	354.8	1,014.0	0.0	0.0
40.00		358.7	780.5					0.0	212.1	358.7	992.5	0.0	0.0
45.00		288.5	759.0					0.0	212.1	288.5	971.1	0.0	0.0
48.00	Bot - Section 2	181.8	445.2					0.0	127.3	181.8	572.4	0.0	0.0
50.00		192.7	540.4					0.0	84.8	192.7	625.2	0.0	0.0
53.25	Top - Section 1	183.4	864.8					0.0	137.9	183.4	1,002.6	0.0	0.0
55.00		247.0	210.5					0.0	74.2	247.0	284.8	0.0	0.0
60.00		364.4	589.5					0.0	212.1	364.4	801.5	0.0	0.0
65.00		361.5	571.6					0.0	212.1	361.5	783.7	0.0	0.0
70.00		357.6	553.8					0.0	212.1	357.6	765.9	0.0	0.0
75.00		352.9	535.9					0.0	212.1	352.9	748.0	0.0	0.0
80.00		347.4	518.1					0.0	212.1	347.4	730.2	0.0	0.0
85.00		341.2	500.2					0.0	212.1	341.2	712.3	0.0	0.0
90.00		334.3	482.4					0.0	212.1	334.3	694.5	0.0	0.0
95.00		254.7	464.6					0.0	212.1	254.7	676.6	0.0	0.0
97.75	Bot - Section 3	162.4	247.9					0.0	116.6	162.4	364.5	0.0	0.0
100.00		121.4	320.2					0.0	95.4	121.4	415.6	0.0	0.0
101.50	Top - Section 2	159.4	210.2					0.0	63.6	159.4	273.8	0.0	0.0
105.00		142.5	182.2					0.0	148.5	142.5	330.7	0.0	0.0
106.00	Appurtenance(s)	155.0	51.1	555.2	0.0	0.0	230.4	0.0	42.4	710.3	323.9	0.0	0.0
110.00		274.1	200.1					0.0	169.6	274.1	369.6	0.0	0.0
115.00	Appurtenance(s)	236.5	240.5	436.0	0.0	0.0	71.3	0.0	211.9	672.6	523.7	0.0	0.0
117.94		145.6	136.3					0.0	111.5	145.6	247.8	0.0	0.0
120.00		199.9	93.5					0.0	78.3	199.9	171.8	0.0	0.0
125.00	Appurtenance(s)	168.0	219.1	3,528.7	0.0	987.4	1,401.3	0.0	189.8	3,696.7	1,810.2	0.0	0.0
126.00	Appurtenance(s)	135.2	42.5	1,156.4	0.0	0.0	1,800.0	0.0	28.8	1,291.7	1,871.3	0.0	0.0
130.00		160.3	165.8					0.0	115.1	160.3	281.0	0.0	0.0
132.00	Appurtenance(s)	104.2	80.3	189.1	0.0	945.3	118.8	0.0	57.6	293.3	256.7	0.0	0.0
134.00	Appurtenance(s)	77.2	78.6	1,860.6	0.0	5,027.4	283.9	0.0	57.6	1,937.8	420.1	0.0	0.0
135.00		50.8	38.7					0.0	18.5	50.8	57.1	0.0	0.0
136.00	Appurtenance(s)	124.1	38.2	943.0	0.0	0.0	1,350.0	0.0	18.5	1,067.0	1,406.7	0.0	0.0
140.00		146.8	148.7					0.0	73.9	146.8	222.6	0.0	0.0
142.00	Appurtenance(s)	71.7	71.8	1,865.3	0.0	0.0	1,800.0	0.0	37.0	1,937.0	1,908.7	0.0	0.0
143.00	Appurtenance(s)	70.2	35.2	2,249.2	0.0	487.2	1,079.7	0.0	18.5	2,319.4	1,133.5	0.0	0.0
145.00		136.9	69.2					0.0	9.4	136.9	78.6	0.0	0.0
149.00	Appurtenance(s)	90.3	133.3	2,400.0	0.0	1,525.1	1,617.3	0.0	18.8	2,490.3	1,769.4	0.0	0.0
								Totals:		25,068.4	31,976.5	0.00	0.00

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 27 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	-31.93	-24.92	0.00	-2,850.04	0.00	2,850.04	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.657
5.00	-30.88	-24.63	0.00	-2,725.43	0.00	2,725.43	4,073.39	2,036.69	8,449.37	4,230.97	0.10	-0.19	0.652
10.00	-29.68	-24.34	0.00	-2,602.27	0.00	2,602.27	4,012.85	2,006.43	8,128.58	4,070.33	0.41	-0.39	0.647
15.00	-28.49	-24.06	0.00	-2,480.55	0.00	2,480.55	3,950.68	1,975.34	7,810.43	3,911.02	0.92	-0.59	0.642
20.00	-27.33	-23.78	0.00	-2,360.25	0.00	2,360.25	3,886.87	1,943.43	7,495.19	3,753.17	1.65	-0.79	0.636
25.00	-26.20	-23.50	0.00	-2,241.35	0.00	2,241.35	3,821.43	1,910.71	7,183.08	3,596.88	2.59	-1.00	0.630
30.00	-25.08	-23.23	0.00	-2,123.83	0.00	2,123.83	3,754.35	1,877.17	6,874.35	3,442.28	3.76	-1.22	0.624
35.00	-23.98	-22.94	0.00	-2,007.71	0.00	2,007.71	3,685.64	1,842.82	6,569.23	3,289.50	5.16	-1.44	0.617
40.00	-22.91	-22.65	0.00	-1,893.00	0.00	1,893.00	3,615.29	1,807.64	6,267.96	3,138.64	6.79	-1.67	0.610
45.00	-21.88	-22.40	0.00	-1,779.77	0.00	1,779.77	3,543.30	1,771.65	5,970.78	2,989.83	8.65	-1.90	0.602
48.00	-21.27	-22.24	0.00	-1,712.57	0.00	1,712.57	3,499.33	1,749.66	5,794.53	2,901.57	9.89	-2.04	0.596
50.00	-20.60	-22.07	0.00	-1,668.08	0.00	1,668.08	3,469.68	1,734.84	5,677.92	2,843.18	10.77	-2.14	0.593
53.25	-19.56	-21.89	0.00	-1,596.34	0.00	1,596.34	2,730.90	1,365.45	4,467.29	2,236.97	12.28	-2.30	0.721
55.00	-19.21	-21.70	0.00	-1,558.03	0.00	1,558.03	2,712.29	1,356.15	4,390.67	2,198.60	13.14	-2.38	0.716
60.00	-18.32	-21.39	0.00	-1,449.54	0.00	1,449.54	2,658.02	1,329.01	4,173.50	2,089.85	15.78	-2.66	0.701
65.00	-17.45	-21.08	0.00	-1,342.60	0.00	1,342.60	2,602.11	1,301.05	3,959.12	1,982.50	18.72	-2.95	0.684
70.00	-16.60	-20.76	0.00	-1,237.22	0.00	1,237.22	2,544.56	1,272.28	3,747.77	1,876.67	21.96	-3.23	0.666
75.00	-15.77	-20.45	0.00	-1,133.42	0.00	1,133.42	2,485.39	1,242.69	3,539.70	1,772.48	25.50	-3.52	0.646
80.00	-14.96	-20.13	0.00	-1,031.18	0.00	1,031.18	2,424.57	1,212.29	3,335.13	1,670.04	29.34	-3.82	0.624
85.00	-14.17	-19.81	0.00	-930.53	0.00	930.53	2,362.12	1,181.06	3,134.31	1,569.49	33.50	-4.11	0.599
90.00	-13.41	-19.50	0.00	-831.46	0.00	831.46	2,297.27	1,148.64	2,936.51	1,470.44	37.96	-4.41	0.572
95.00	-12.68	-19.24	0.00	-733.97	0.00	733.97	2,210.70	1,105.35	2,718.30	1,361.17	42.74	-4.70	0.545
97.75	-12.28	-19.08	0.00	-681.06	0.00	681.06	2,163.09	1,081.54	2,601.88	1,302.87	45.49	-4.87	0.529
100.00	-11.84	-18.95	0.00	-638.13	0.00	638.13	2,124.13	1,062.07	2,508.52	1,256.12	47.81	-5.00	0.514
101.50	-11.53	-18.79	0.00	-609.71	0.00	609.71	1,105.19	552.59	1,317.56	659.76	49.40	-5.09	0.936
105.00	-11.17	-18.65	0.00	-543.94	0.00	543.94	1,087.53	543.77	1,259.48	630.68	53.20	-5.29	0.874
106.00	-10.84	-17.95	0.00	-525.29	0.00	525.29	1,082.34	541.17	1,242.93	622.39	54.32	-5.38	0.855
110.00	-10.39	-17.71	0.00	-453.48	0.00	453.48	1,060.92	530.46	1,177.04	589.40	58.96	-5.72	0.780
115.00	-9.84	-17.04	0.00	-364.92	0.00	364.92	1,032.68	516.34	1,095.47	548.55	65.16	-6.11	0.676
117.94	-9.56	-16.90	0.00	-314.86	0.00	314.86	1,015.32	507.66	1,048.03	524.80	68.98	-6.33	0.610
120.00	-9.34	-16.72	0.00	-280.00	0.00	280.00	1,002.79	501.40	1,014.98	508.24	71.75	-6.48	0.561
125.00	-7.94	-12.86	0.00	-195.41	0.00	195.41	971.28	485.64	935.83	468.61	78.69	-6.78	0.426
126.00	-6.21	-11.37	0.00	-182.55	0.00	182.55	964.78	482.39	920.18	460.77	80.11	-6.84	0.403
130.00	-5.92	-11.19	0.00	-137.06	0.00	137.06	938.12	469.06	858.24	429.76	85.91	-7.03	0.326
132.00	-5.69	-10.88	0.00	-113.72	0.00	113.72	924.40	462.20	827.71	414.47	88.87	-7.12	0.281
134.00	-5.50	-8.91	0.00	-86.94	0.00	86.94	910.42	455.21	797.47	399.33	91.86	-7.19	0.224
135.00	-5.45	-8.85	0.00	-78.03	0.00	78.03	903.33	451.67	782.47	391.82	93.37	-7.22	0.206
136.00	-4.18	-7.62	0.00	-69.18	0.00	69.18	896.18	448.09	767.56	384.35	94.88	-7.25	0.185
140.00	-3.97	-7.45	0.00	-38.68	0.00	38.68	866.91	433.46	708.75	354.90	100.98	-7.34	0.114
142.00	-2.32	-5.29	0.00	-23.78	0.00	23.78	851.88	425.94	679.88	340.45	104.05	-7.37	0.073
143.00	-1.49	-2.84	0.00	-18.00	0.00	18.00	844.27	422.14	665.60	333.29	105.60	-7.38	0.056
145.00	-1.43	-2.70	0.00	-12.32	0.00	12.32	828.85	414.43	637.31	319.13	108.68	-7.40	0.040
149.00	0.00	-2.49	0.00	-1.53	0.00	1.53	787.55	393.77	574.90	287.88	114.87	-7.42	0.005

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 27 Iterations

Gust Response Factor :1.10 | Ice Dead Load Factor :1.00 | Wind Importance Factor :1.00
Dead Load Factor :1.20 | Ice Importance Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		63.8	0.0					0.0	0.0	63.8	0.0	0.0	0.0
5.00		126.6	1,617.9					0.0	63.0	126.6	1,680.9	0.0	0.0
10.00		124.3	1,624.7					0.0	319.2	124.3	1,944.0	0.0	0.0
15.00		121.7	1,608.4					0.0	321.5	121.7	1,929.9	0.0	0.0
20.00		119.1	1,584.4					0.0	323.1	119.1	1,907.6	0.0	0.0
25.00		116.5	1,556.5					0.0	324.4	116.5	1,880.9	0.0	0.0
30.00		115.2	1,526.1					0.0	325.5	115.2	1,851.6	0.0	0.0
35.00		116.2	1,494.0					0.0	326.4	116.2	1,820.3	0.0	0.0
40.00		117.8	1,460.6					0.0	327.1	117.8	1,787.7	0.0	0.0
45.00		94.9	1,426.2					0.0	327.8	94.9	1,754.0	0.0	0.0
48.00	Bot - Section 2	59.9	840.2					0.0	197.0	59.9	1,037.2	0.0	0.0
50.00		63.6	886.5					0.0	131.5	63.6	1,017.9	0.0	0.0
53.25	Top - Section 1	60.6	1,419.2					0.0	213.8	60.6	1,633.1	0.0	0.0
55.00		81.7	423.3					0.0	115.2	81.7	538.6	0.0	0.0
60.00		120.8	1,184.4					0.0	329.6	120.8	1,514.0	0.0	0.0
65.00		120.2	1,152.3					0.0	330.1	120.2	1,482.4	0.0	0.0
70.00		119.3	1,119.8					0.0	330.6	119.3	1,450.3	0.0	0.0
75.00		118.1	1,086.9					0.0	331.0	118.1	1,417.9	0.0	0.0
80.00		116.7	1,053.7					0.0	331.4	116.7	1,385.1	0.0	0.0
85.00		115.0	1,020.2					0.0	331.8	115.0	1,352.0	0.0	0.0
90.00		113.1	986.4					0.0	332.2	113.1	1,318.5	0.0	0.0
95.00		86.5	952.4					0.0	332.5	86.5	1,284.9	0.0	0.0
97.75	Bot - Section 3	55.3	510.7					0.0	183.0	55.3	693.8	0.0	0.0
100.00		41.4	574.0					0.0	149.8	41.4	723.8	0.0	0.0
101.50	Top - Section 2	54.5	377.4					0.0	99.9	54.5	477.4	0.0	0.0
105.00		48.7	464.1					0.0	233.3	48.7	697.4	0.0	0.0
106.00	Appurtenance(s)	53.2	131.0	120.9	0.0	0.0	840.3	0.0	66.7	174.1	1,037.9	0.0	0.0
110.00		94.4	510.8					0.0	266.7	94.4	777.5	0.0	0.0
115.00	Appurtenance(s)	81.8	614.5	104.7	0.0	0.0	444.9	0.0	333.6	186.5	1,393.0	0.0	0.0
117.94		50.5	350.7					0.0	178.8	50.5	529.5	0.0	0.0
120.00		69.7	241.4					0.0	125.6	69.7	367.0	0.0	0.0
125.00	Appurtenance(s)	58.7	563.5	736.3	0.0	211.6	6,838.5	0.0	304.6	795.0	7,706.6	0.0	0.0
126.00	Appurtenance(s)	47.5	110.6	361.9	0.0	0.0	5,675.5	0.0	48.7	409.5	5,834.8	0.0	0.0
130.00		56.5	429.1					0.0	195.0	56.5	624.1	0.0	0.0
132.00	Appurtenance(s)	36.9	209.4	46.4	0.0	232.1	470.1	0.0	97.6	83.3	777.0	0.0	0.0
134.00	Appurtenance(s)	27.4	205.2	412.1	0.0	1,100.8	2,324.3	0.0	97.6	439.5	2,627.1	0.0	0.0
135.00		18.1	101.3					0.0	35.1	18.1	136.4	0.0	0.0
136.00	Appurtenance(s)	44.3	100.3	294.0	0.0	0.0	3,942.7	0.0	35.1	338.3	4,078.0	0.0	0.0
140.00		52.6	387.6					0.0	140.4	52.6	528.0	0.0	0.0
142.00	Appurtenance(s)	25.8	188.5	462.3	0.0	0.0	5,815.3	0.0	70.3	488.1	6,074.1	0.0	0.0
143.00	Appurtenance(s)	25.4	93.0	474.0	0.0	110.8	4,902.7	0.0	35.2	499.3	5,030.8	0.0	0.0
145.00		49.6	182.3					0.0	12.6	49.6	194.8	0.0	0.0
149.00	Appurtenance(s)	32.8	349.9	585.5	0.0	359.4	6,188.7	0.0	25.1	618.3	6,563.7	0.0	0.0
								Totals:		6,914.56	78,861.4	0.00	0.00

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA745744_C3_01 3/4/2019 8:49:29 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 27 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	-78.86	-6.89	0.00	-836.04	0.00	836.04	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.209
5.00	-77.17	-6.84	0.00	-801.59	0.00	801.59	4,073.39	2,036.69	8,449.37	4,230.97	0.03	-0.06	0.208
10.00	-75.22	-6.79	0.00	-767.40	0.00	767.40	4,012.85	2,006.43	8,128.58	4,070.33	0.12	-0.11	0.207
15.00	-73.28	-6.74	0.00	-733.45	0.00	733.45	3,950.68	1,975.34	7,810.43	3,911.02	0.27	-0.17	0.206
20.00	-71.37	-6.69	0.00	-699.76	0.00	699.76	3,886.87	1,943.43	7,495.19	3,753.17	0.49	-0.23	0.205
25.00	-69.48	-6.64	0.00	-666.31	0.00	666.31	3,821.43	1,910.71	7,183.08	3,596.88	0.76	-0.30	0.203
30.00	-67.62	-6.59	0.00	-633.10	0.00	633.10	3,754.35	1,877.17	6,874.35	3,442.28	1.11	-0.36	0.202
35.00	-65.80	-6.54	0.00	-600.14	0.00	600.14	3,685.64	1,842.82	6,569.23	3,289.50	1.52	-0.43	0.200
40.00	-64.00	-6.49	0.00	-567.43	0.00	567.43	3,615.29	1,807.64	6,267.96	3,138.64	2.01	-0.49	0.199
45.00	-62.24	-6.43	0.00	-535.01	0.00	535.01	3,543.30	1,771.65	5,970.78	2,989.83	2.56	-0.56	0.197
48.00	-61.20	-6.40	0.00	-515.71	0.00	515.71	3,499.33	1,749.66	5,794.53	2,901.57	2.93	-0.61	0.195
50.00	-60.18	-6.37	0.00	-502.90	0.00	502.90	3,469.68	1,734.84	5,677.92	2,843.18	3.19	-0.64	0.194
53.25	-58.54	-6.33	0.00	-482.20	0.00	482.20	2,730.90	1,365.45	4,467.29	2,236.97	3.64	-0.68	0.237
55.00	-58.00	-6.30	0.00	-471.13	0.00	471.13	2,712.29	1,356.15	4,390.67	2,198.60	3.89	-0.71	0.236
60.00	-56.48	-6.24	0.00	-439.66	0.00	439.66	2,658.02	1,329.01	4,173.50	2,089.85	4.68	-0.79	0.232
65.00	-54.99	-6.18	0.00	-408.46	0.00	408.46	2,602.11	1,301.05	3,959.12	1,982.50	5.56	-0.88	0.227
70.00	-53.53	-6.12	0.00	-377.56	0.00	377.56	2,544.56	1,272.28	3,747.77	1,876.67	6.53	-0.97	0.222
75.00	-52.11	-6.06	0.00	-346.96	0.00	346.96	2,485.39	1,242.69	3,539.70	1,772.48	7.59	-1.06	0.217
80.00	-50.71	-6.00	0.00	-316.66	0.00	316.66	2,424.57	1,212.29	3,335.13	1,670.04	8.75	-1.15	0.211
85.00	-49.36	-5.93	0.00	-286.69	0.00	286.69	2,362.12	1,181.06	3,134.31	1,569.49	10.00	-1.24	0.204
90.00	-48.03	-5.86	0.00	-257.03	0.00	257.03	2,297.27	1,148.64	2,936.51	1,470.44	11.34	-1.33	0.196
95.00	-46.74	-5.80	0.00	-227.71	0.00	227.71	2,210.70	1,105.35	2,718.30	1,361.17	12.78	-1.42	0.188
97.75	-46.04	-5.77	0.00	-211.75	0.00	211.75	2,163.09	1,081.54	2,601.88	1,302.87	13.62	-1.47	0.184
100.00	-45.32	-5.74	0.00	-198.77	0.00	198.77	2,124.13	1,062.07	2,508.52	1,256.12	14.32	-1.51	0.180
101.50	-44.84	-5.70	0.00	-190.16	0.00	190.16	1,105.19	552.59	1,317.56	659.76	14.80	-1.54	0.329
105.00	-44.14	-5.67	0.00	-170.20	0.00	170.20	1,087.53	543.77	1,259.48	630.68	15.95	-1.60	0.311
106.00	-43.10	-5.52	0.00	-164.53	0.00	164.53	1,082.34	541.17	1,242.93	622.39	16.29	-1.63	0.304
110.00	-42.31	-5.49	0.00	-142.45	0.00	142.45	1,060.92	530.46	1,177.04	589.40	17.70	-1.74	0.282
115.00	-40.92	-5.33	0.00	-115.01	0.00	115.01	1,032.68	516.34	1,095.47	548.55	19.59	-1.86	0.249
117.94	-40.39	-5.30	0.00	-99.36	0.00	99.36	1,015.32	507.66	1,048.03	524.80	20.76	-1.93	0.229
120.00	-40.01	-5.27	0.00	-88.43	0.00	88.43	1,002.79	501.40	1,014.98	508.24	21.60	-1.98	0.214
125.00	-32.34	-4.23	0.00	-61.89	0.00	61.89	971.28	485.64	935.83	468.61	23.73	-2.07	0.165
126.00	-26.52	-3.63	0.00	-57.66	0.00	57.66	964.78	482.39	920.18	460.77	24.17	-2.09	0.153
130.00	-25.89	-3.57	0.00	-43.14	0.00	43.14	938.12	469.06	858.24	429.76	25.94	-2.15	0.128
132.00	-25.12	-3.47	0.00	-35.78	0.00	35.78	924.40	462.20	827.71	414.47	26.85	-2.18	0.114
134.00	-22.51	-2.93	0.00	-27.74	0.00	27.74	910.42	455.21	797.47	399.33	27.77	-2.20	0.094
135.00	-22.37	-2.91	0.00	-24.81	0.00	24.81	903.33	451.67	782.47	391.82	28.23	-2.21	0.088
136.00	-18.31	-2.42	0.00	-21.89	0.00	21.89	896.18	448.09	767.56	384.35	28.69	-2.22	0.077
140.00	-17.78	-2.36	0.00	-12.20	0.00	12.20	866.91	433.46	708.75	354.90	30.57	-2.25	0.055
142.00	-11.73	-1.63	0.00	-7.48	0.00	7.48	851.88	425.94	679.88	340.45	31.51	-2.26	0.036
143.00	-6.73	-0.93	0.00	-5.74	0.00	5.74	844.27	422.14	665.60	333.29	31.99	-2.26	0.025
145.00	-6.53	-0.88	0.00	-3.87	0.00	3.87	828.85	414.43	637.31	319.13	32.94	-2.27	0.020
149.00	0.00	-0.62	0.00	-0.36	0.00	0.36	787.55	393.77	574.90	287.88	34.84	-2.27	0.001

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

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

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		47.7	0.0					0.0	0.0	47.7	0.0	0.0	0.0
5.00		94.2	1,033.7					0.0	47.1	94.2	1,080.8	0.0	0.0
10.00		92.1	1,009.9					0.0	235.7	92.1	1,245.6	0.0	0.0
15.00		89.9	986.1					0.0	235.7	89.9	1,221.8	0.0	0.0
20.00		87.7	962.3					0.0	235.7	87.7	1,198.0	0.0	0.0
25.00		85.5	938.5					0.0	235.7	85.5	1,174.2	0.0	0.0
30.00		84.3	914.8					0.0	235.7	84.3	1,150.4	0.0	0.0
35.00		84.8	891.0					0.0	235.7	84.8	1,126.6	0.0	0.0
40.00		85.8	867.2					0.0	235.7	85.8	1,102.8	0.0	0.0
45.00		69.0	843.4					0.0	235.7	69.0	1,079.0	0.0	0.0
48.00	Bot - Section 2	43.5	494.6					0.0	141.4	43.5	636.0	0.0	0.0
50.00		46.1	600.4					0.0	94.3	46.1	694.7	0.0	0.0
53.25	Top - Section 1	43.9	960.8					0.0	153.2	43.9	1,114.0	0.0	0.0
55.00		59.1	233.9					0.0	82.5	59.1	316.4	0.0	0.0
60.00		87.1	654.9					0.0	235.7	87.1	890.6	0.0	0.0
65.00		86.4	635.1					0.0	235.7	86.4	870.8	0.0	0.0
70.00		85.5	615.3					0.0	235.7	85.5	850.9	0.0	0.0
75.00		84.4	595.5					0.0	235.7	84.4	831.1	0.0	0.0
80.00		83.1	575.6					0.0	235.7	83.1	811.3	0.0	0.0
85.00		81.6	555.8					0.0	235.7	81.6	791.5	0.0	0.0
90.00		80.0	536.0					0.0	235.7	80.0	771.6	0.0	0.0
95.00		60.9	516.2					0.0	235.7	60.9	751.8	0.0	0.0
97.75	Bot - Section 3	38.8	275.4					0.0	129.6	38.8	405.1	0.0	0.0
100.00		29.0	355.7					0.0	106.0	29.0	461.8	0.0	0.0
101.50	Top - Section 2	38.1	233.6					0.0	70.7	38.1	304.3	0.0	0.0
105.00		34.1	202.4					0.0	165.0	34.1	367.4	0.0	0.0
106.00	Appurtenance(s)	37.1	56.8	132.8	0.0	0.0	256.0	0.0	47.1	169.8	359.9	0.0	0.0
110.00		65.5	222.3					0.0	188.4	65.5	410.7	0.0	0.0
115.00	Appurtenance(s)	56.6	267.2	104.3	0.0	0.0	79.2	0.0	235.5	160.8	581.9	0.0	0.0
117.94		34.8	151.4					0.0	123.9	34.8	275.3	0.0	0.0
120.00		47.8	103.9					0.0	87.0	47.8	190.9	0.0	0.0
125.00	Appurtenance(s)	40.2	243.4	843.8	0.0	236.1	1,557.0	0.0	210.9	884.0	2,011.3	0.0	0.0
126.00	Appurtenance(s)	32.3	47.3	276.5	0.0	0.0	2,000.0	0.0	32.0	308.9	2,079.2	0.0	0.0
130.00		38.3	184.2					0.0	127.9	38.3	312.2	0.0	0.0
132.00	Appurtenance(s)	24.9	89.3	45.2	0.0	226.0	132.0	0.0	64.0	70.1	285.2	0.0	0.0
134.00	Appurtenance(s)	18.5	87.4	444.9	0.0	1,202.2	315.5	0.0	64.0	463.4	466.8	0.0	0.0
135.00		12.1	43.0					0.0	20.5	12.1	63.5	0.0	0.0
136.00	Appurtenance(s)	29.7	42.5	225.5	0.0	0.0	1,500.0	0.0	20.5	255.2	1,563.0	0.0	0.0
140.00		35.1	165.2					0.0	82.1	35.1	247.3	0.0	0.0
142.00	Appurtenance(s)	17.1	79.8	446.1	0.0	0.0	2,000.0	0.0	41.1	463.2	2,120.8	0.0	0.0
143.00	Appurtenance(s)	16.8	39.2	537.9	0.0	116.5	1,199.7	0.0	20.5	554.7	1,259.4	0.0	0.0
145.00		32.7	76.9					0.0	10.5	32.7	87.4	0.0	0.0
149.00	Appurtenance(s)	21.6	148.1	573.9	0.0	364.7	1,797.0	0.0	20.9	595.5	1,966.0	0.0	0.0
								Totals:		5,994.69	35,529.4	0.00	0.00

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

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-35.53	-5.96	0.00	-686.29	0.00	686.29	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.165
5.00	-34.44	-5.89	0.00	-656.49	0.00	656.49	4,073.39	2,036.69	8,449.37	4,230.97	0.02	-0.05	0.164
10.00	-33.19	-5.83	0.00	-627.02	0.00	627.02	4,012.85	2,006.43	8,128.58	4,070.33	0.10	-0.09	0.162
15.00	-31.96	-5.76	0.00	-597.88	0.00	597.88	3,950.68	1,975.34	7,810.43	3,911.02	0.22	-0.14	0.161
20.00	-30.76	-5.70	0.00	-569.07	0.00	569.07	3,886.87	1,943.43	7,495.19	3,753.17	0.40	-0.19	0.160
25.00	-29.58	-5.64	0.00	-540.58	0.00	540.58	3,821.43	1,910.71	7,183.08	3,596.88	0.62	-0.24	0.158
30.00	-28.43	-5.57	0.00	-512.40	0.00	512.40	3,754.35	1,877.17	6,874.35	3,442.28	0.91	-0.29	0.156
35.00	-27.30	-5.51	0.00	-484.54	0.00	484.54	3,685.64	1,842.82	6,569.23	3,289.50	1.24	-0.35	0.155
40.00	-26.19	-5.44	0.00	-457.01	0.00	457.01	3,615.29	1,807.64	6,267.96	3,138.64	1.64	-0.40	0.153
45.00	-25.11	-5.38	0.00	-429.82	0.00	429.82	3,543.30	1,771.65	5,970.78	2,989.83	2.09	-0.46	0.151
48.00	-24.47	-5.34	0.00	-413.68	0.00	413.68	3,499.33	1,749.66	5,794.53	2,901.57	2.38	-0.49	0.150
50.00	-23.77	-5.31	0.00	-402.99	0.00	402.99	3,469.68	1,734.84	5,677.92	2,843.18	2.60	-0.52	0.149
53.25	-22.65	-5.26	0.00	-385.75	0.00	385.75	2,730.90	1,365.45	4,467.29	2,236.97	2.96	-0.55	0.181
55.00	-22.33	-5.22	0.00	-376.54	0.00	376.54	2,712.29	1,356.15	4,390.67	2,198.60	3.17	-0.57	0.180
60.00	-21.44	-5.15	0.00	-350.45	0.00	350.45	2,658.02	1,329.01	4,173.50	2,089.85	3.81	-0.64	0.176
65.00	-20.56	-5.07	0.00	-324.72	0.00	324.72	2,602.11	1,301.05	3,959.12	1,982.50	4.51	-0.71	0.172
70.00	-19.71	-5.00	0.00	-299.35	0.00	299.35	2,544.56	1,272.28	3,747.77	1,876.67	5.30	-0.78	0.167
75.00	-18.87	-4.93	0.00	-274.33	0.00	274.33	2,485.39	1,242.69	3,539.70	1,772.48	6.15	-0.85	0.162
80.00	-18.06	-4.86	0.00	-249.69	0.00	249.69	2,424.57	1,212.29	3,335.13	1,670.04	7.08	-0.92	0.157
85.00	-17.26	-4.78	0.00	-225.41	0.00	225.41	2,362.12	1,181.06	3,134.31	1,569.49	8.09	-0.99	0.151
90.00	-16.48	-4.71	0.00	-201.49	0.00	201.49	2,297.27	1,148.64	2,936.51	1,470.44	9.17	-1.07	0.144
95.00	-15.73	-4.65	0.00	-177.94	0.00	177.94	2,210.70	1,105.35	2,718.30	1,361.17	10.32	-1.14	0.138
97.75	-15.32	-4.61	0.00	-165.15	0.00	165.15	2,163.09	1,081.54	2,601.88	1,302.87	10.99	-1.18	0.134
100.00	-14.86	-4.58	0.00	-154.78	0.00	154.78	2,124.13	1,062.07	2,508.52	1,256.12	11.55	-1.21	0.130
101.50	-14.55	-4.55	0.00	-147.91	0.00	147.91	1,105.19	552.59	1,317.56	659.76	11.93	-1.23	0.237
105.00	-14.18	-4.51	0.00	-132.00	0.00	132.00	1,087.53	543.77	1,259.48	630.68	12.85	-1.28	0.222
106.00	-13.82	-4.35	0.00	-127.49	0.00	127.49	1,082.34	541.17	1,242.93	622.39	13.12	-1.30	0.218
110.00	-13.41	-4.29	0.00	-110.10	0.00	110.10	1,060.92	530.46	1,177.04	589.40	14.25	-1.38	0.200
115.00	-12.82	-4.13	0.00	-88.64	0.00	88.64	1,032.68	516.34	1,095.47	548.55	15.75	-1.48	0.174
117.94	-12.55	-4.10	0.00	-76.50	0.00	76.50	1,015.32	507.66	1,048.03	524.80	16.67	-1.53	0.158
120.00	-12.35	-4.06	0.00	-68.04	0.00	68.04	1,002.79	501.40	1,014.98	508.24	17.34	-1.57	0.146
125.00	-10.37	-3.13	0.00	-47.50	0.00	47.50	971.28	485.64	935.83	468.61	19.03	-1.64	0.112
126.00	-8.29	-2.76	0.00	-44.37	0.00	44.37	964.78	482.39	920.18	460.77	19.37	-1.65	0.105
130.00	-7.98	-2.72	0.00	-33.31	0.00	33.31	938.12	469.06	858.24	429.76	20.78	-1.70	0.086
132.00	-7.70	-2.65	0.00	-27.65	0.00	27.65	924.40	462.20	827.71	414.47	21.50	-1.72	0.075
134.00	-7.24	-2.17	0.00	-21.15	0.00	21.15	910.42	455.21	797.47	399.33	22.22	-1.74	0.061
135.00	-7.18	-2.16	0.00	-18.98	0.00	18.98	903.33	451.67	782.47	391.82	22.59	-1.75	0.056
136.00	-5.63	-1.86	0.00	-16.83	0.00	16.83	896.18	448.09	767.56	384.35	22.96	-1.76	0.050
140.00	-5.38	-1.81	0.00	-9.41	0.00	9.41	866.91	433.46	708.75	354.90	24.44	-1.78	0.033
142.00	-3.27	-1.29	0.00	-5.78	0.00	5.78	851.88	425.94	679.88	340.45	25.18	-1.78	0.021
143.00	-2.03	-0.69	0.00	-4.38	0.00	4.38	844.27	422.14	665.60	333.29	25.56	-1.79	0.016
145.00	-1.95	-0.66	0.00	-2.99	0.00	2.99	828.85	414.43	637.31	319.13	26.31	-1.79	0.012
149.00	0.00	-0.60	0.00	-0.36	0.00	0.36	787.55	393.77	574.90	287.88	27.81	-1.80	0.001

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):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.69	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	2.00	
Total Unfactored Dead Load:	35.53	k
Seismic Base Shear (E):	1.39	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)
42	147.00	169	3,652	0.011	16	210
41	144.00	87	1,811	0.006	8	108
40	142.50	60	1,212	0.004	5	74
39	141.00	121	2,402	0.008	10	150
38	138.00	247	4,710	0.015	20	307
37	135.50	63	1,157	0.004	5	78
36	134.50	63	1,149	0.004	5	79
35	133.00	151	2,677	0.008	12	188
34	131.00	153	2,630	0.008	11	190
33	128.00	312	5,115	0.016	22	387
32	125.50	79	1,248	0.004	5	98
31	122.50	454	6,817	0.021	30	563
30	118.97	191	2,701	0.008	12	237
29	116.47	275	3,735	0.012	16	341
28	112.50	503	6,362	0.020	28	623
27	108.00	411	4,791	0.015	21	509
26	105.50	104	1,156	0.004	5	129
25	103.25	367	3,917	0.012	17	455
24	100.75	304	3,089	0.010	13	377
23	98.88	462	4,514	0.014	20	572
22	96.38	405	3,762	0.012	16	502
21	92.50	752	6,433	0.020	28	932
20	87.50	772	5,908	0.018	26	957

19	82.50	791	5,387	0.017	23	981
18	77.50	811	4,873	0.015	21	1,006
17	72.50	831	4,369	0.014	19	1,030
16	67.50	851	3,877	0.012	17	1,055
15	62.50	871	3,401	0.011	15	1,079
14	57.50	891	2,945	0.009	13	1,104
13	54.13	316	927	0.003	4	392
12	51.63	1,114	2,969	0.009	13	1,381
11	49.00	695	1,668	0.005	7	861
10	46.50	636	1,375	0.004	6	788
9	42.50	1,079	1,949	0.006	8	1,338
8	37.50	1,103	1,551	0.005	7	1,367
7	32.50	1,127	1,190	0.004	5	1,397
6	27.50	1,150	870	0.003	4	1,426
5	22.50	1,174	594	0.002	3	1,456
4	17.50	1,198	367	0.001	2	1,485
3	12.50	1,222	191	0.001	1	1,515
2	7.50	1,246	70	0.000	0	1,544
1	2.50	1,081	7	0.000	0	1,340
DragonWave Horizon C	149.00	32	706	0.002	3	39
DragonWave A-ANT-23G	149.00	15	333	0.001	1	19
Alcatel-Lucent RRH2x	149.00	317	7,047	0.022	31	393
Alcatel-Lucent 1900	149.00	180	3,996	0.012	17	223
Nokia 2.5G MAA - AAH	149.00	311	6,900	0.022	30	385
DragonWave A-ANT-11G	149.00	54	1,199	0.004	5	67
RFS APXVFRR12X-C-I20	149.00	138	3,064	0.010	13	171
Flat T-Arm	149.00	750	16,651	0.052	72	930
Ericsson KRY 112 144	143.00	29	595	0.002	3	36
Ericsson KRY 112 489	143.00	46	945	0.003	4	57
Ericsson Radio 4449	143.00	222	4,540	0.014	20	275
Ericsson AIR-32 B2A/	143.00	397	8,110	0.025	35	492
RFS APX16DWV-16DWVS-	143.00	122	2,497	0.008	11	151
RFS APXVAARR24_43-U-	143.00	384	7,846	0.025	34	476
Flat Platform w/ Han	142.00	2,000	40,328	0.126	175	2,479
Round Low Profile Pl	136.00	1,500	27,744	0.087	120	1,860
RFS FD9R6004/2C-3L	134.00	16	280	0.001	1	19
Amphenol Antel BXA-1	134.00	45	808	0.003	3	56
Antel BXA-185085/12C	134.00	39	700	0.002	3	48
RFS DB-T1-6Z-8AB-0Z	134.00	44	790	0.002	3	55
Andrew DB854DG65ESX	134.00	56	997	0.003	4	69
Commscope LNX-6514DS	134.00	116	2,090	0.007	9	144
Alcatel-Lucent RRH2x	132.00	132	2,300	0.007	10	164
Round Platform w/ Ha	126.00	2,000	31,752	0.099	137	2,479
Raycap DC6-48-60-0-8	125.00	33	513	0.002	2	41
Raycap DC6-48-60-0-8	125.00	33	513	0.002	2	41
Raycap DC6-48-60-0-8	125.00	33	513	0.002	2	41
Ericsson Radio 4415	125.00	129	2,016	0.006	9	160
Ericsson 8843 Rev 2	125.00	225	3,516	0.011	15	279
Ericsson RRUS 4449 B	125.00	213	3,328	0.010	14	264
CCI CCI-HPA-65R-BUU-	125.00	204	3,188	0.010	14	253
Kathrein Scala 80010	125.00	688	10,744	0.034	47	852
RFS APXV18-206517S-C	115.00	79	1,047	0.003	5	98
Proxim 5054-R-LR	106.00	6	67	0.000	0	7
Generic 3' Dish w/ R	106.00	100	1,124	0.004	5	124
Flat Side Arm	106.00	150	1,685	0.005	7	186
		35,529	319,996	1.000	1,386	44,045

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)
42	147.00	169	3,652	0.011	16	145
41	144.00	87	1,811	0.006	8	75
40	142.50	60	1,212	0.004	5	51
39	141.00	121	2,402	0.008	10	104
38	138.00	247	4,710	0.015	20	213
37	135.50	63	1,157	0.004	5	54
36	134.50	63	1,149	0.004	5	55
35	133.00	151	2,677	0.008	12	130
34	131.00	153	2,630	0.008	11	132
33	128.00	312	5,115	0.016	22	269
32	125.50	79	1,248	0.004	5	68
31	122.50	454	6,817	0.021	30	391
30	118.97	191	2,701	0.008	12	164
29	116.47	275	3,735	0.012	16	237
28	112.50	503	6,362	0.020	28	432
27	108.00	411	4,791	0.015	21	353
26	105.50	104	1,156	0.004	5	89
25	103.25	367	3,917	0.012	17	316
24	100.75	304	3,089	0.010	13	262
23	98.88	462	4,514	0.014	20	397
22	96.38	405	3,762	0.012	16	348
21	92.50	752	6,433	0.020	28	647
20	87.50	772	5,908	0.018	26	664
19	82.50	791	5,387	0.017	23	681
18	77.50	811	4,873	0.015	21	698
17	72.50	831	4,369	0.014	19	715
16	67.50	851	3,877	0.012	17	732
15	62.50	871	3,401	0.011	15	749
14	57.50	891	2,945	0.009	13	766
13	54.13	316	927	0.003	4	272
12	51.63	1,114	2,969	0.009	13	958
11	49.00	695	1,668	0.005	7	598
10	46.50	636	1,375	0.004	6	547
9	42.50	1,079	1,949	0.006	8	928
8	37.50	1,103	1,551	0.005	7	949
7	32.50	1,127	1,190	0.004	5	969
6	27.50	1,150	870	0.003	4	990
5	22.50	1,174	594	0.002	3	1,010
4	17.50	1,198	367	0.001	2	1,031
3	12.50	1,222	191	0.001	1	1,051
2	7.50	1,246	70	0.000	0	1,072
1	2.50	1,081	7	0.000	0	930
DragonWave Horizon C	149.00	32	706	0.002	3	27
DragonWave A-ANT-23G	149.00	15	333	0.001	1	13
Alcatel-Lucent RRH2x	149.00	317	7,047	0.022	31	273
Alcatel-Lucent 1900	149.00	180	3,996	0.012	17	155
Nokia 2.5G MAA - AAH	149.00	311	6,900	0.022	30	267
DragonWave A-ANT-11G	149.00	54	1,199	0.004	5	46
RFS APXVFRR12X-C-I20	149.00	138	3,064	0.010	13	119
Flat T-Arm	149.00	750	16,651	0.052	72	645
Ericsson KRY 112 144	143.00	29	595	0.002	3	25
Ericsson KRY 112 489	143.00	46	945	0.003	4	40
Ericsson Radio 4449	143.00	222	4,540	0.014	20	191
Ericsson AIR-32 B2A/	143.00	397	8,110	0.025	35	341
RFS APX16DWV-16DWVS-	143.00	122	2,497	0.008	11	105
RFS APXVAARR24_43-U-	143.00	384	7,846	0.025	34	330
Flat Platform w/ Han	142.00	2,000	40,328	0.126	175	1,721

Round Low Profile Pl	136.00	1,500	27,744	0.087	120	1,290
RFS FD9R6004/2C-3L	134.00	16	280	0.001	1	13
Amphenol Antel BXA-1	134.00	45	808	0.003	3	39
Antel BXA-185085/12C	134.00	39	700	0.002	3	34
RFS DB-T1-6Z-8AB-0Z	134.00	44	790	0.002	3	38
Andrew DB854DG65ESX	134.00	56	997	0.003	4	48
Commscope LNX-6514DS	134.00	116	2,090	0.007	9	100
Alcatel-Lucent RRH2x	132.00	132	2,300	0.007	10	114
Round Platform w/ Ha	126.00	2,000	31,752	0.099	137	1,721
Raycap DC6-48-60-0-8	125.00	33	513	0.002	2	28
Raycap DC6-48-60-0-8	125.00	33	513	0.002	2	28
Raycap DC6-48-60-0-8	125.00	33	513	0.002	2	28
Ericsson Radio 4415	125.00	129	2,016	0.006	9	111
Ericsson 8843 Rev 2	125.00	225	3,516	0.011	15	194
Ericsson RRUS 4449 B	125.00	213	3,328	0.010	14	183
CCI CCI-HPA-65R-BUU-	125.00	204	3,188	0.010	14	176
Kathrein Scala 80010	125.00	688	10,744	0.034	47	592
RFS APXV18-206517S-C	115.00	79	1,047	0.003	5	68
Proxim 5054-R-LR	106.00	6	67	0.000	0	5
Generic 3' Dish w/ R	106.00	100	1,124	0.004	5	86
Flat Side Arm	106.00	150	1,685	0.005	7	129
		35,529	319,996	1.000	1,386	30,567

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	-42.71	-1.39	0.00	-179.14	0.00	179.14	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.051
5.00	-41.16	-1.40	0.00	-172.20	0.00	172.20	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.01	0.051
10.00	-39.65	-1.41	0.00	-165.21	0.00	165.21	4,012.85	2,006.43	8,128.58	4,070.33	0.03	-0.02	0.050
15.00	-38.16	-1.41	0.00	-158.18	0.00	158.18	3,950.68	1,975.34	7,810.43	3,911.02	0.06	-0.04	0.050
20.00	-36.70	-1.42	0.00	-151.13	0.00	151.13	3,886.87	1,943.43	7,495.19	3,753.17	0.10	-0.05	0.050
25.00	-35.28	-1.42	0.00	-144.05	0.00	144.05	3,821.43	1,910.71	7,183.08	3,596.88	0.16	-0.06	0.049
30.00	-33.88	-1.42	0.00	-136.95	0.00	136.95	3,754.35	1,877.17	6,874.35	3,442.28	0.24	-0.08	0.049
35.00	-32.51	-1.42	0.00	-129.85	0.00	129.85	3,685.64	1,842.82	6,569.23	3,289.50	0.33	-0.09	0.048
40.00	-31.18	-1.42	0.00	-122.75	0.00	122.75	3,615.29	1,807.64	6,267.96	3,138.64	0.43	-0.11	0.048
45.00	-30.39	-1.42	0.00	-115.66	0.00	115.66	3,543.30	1,771.65	5,970.78	2,989.83	0.55	-0.12	0.047
48.00	-29.53	-1.41	0.00	-111.41	0.00	111.41	3,499.33	1,749.66	5,794.53	2,901.57	0.63	-0.13	0.047
50.00	-28.14	-1.40	0.00	-108.59	0.00	108.59	3,469.68	1,734.84	5,677.92	2,843.18	0.69	-0.14	0.046
53.25	-27.75	-1.40	0.00	-104.04	0.00	104.04	2,730.90	1,365.45	4,467.29	2,236.97	0.78	-0.15	0.057
55.00	-26.65	-1.39	0.00	-101.59	0.00	101.59	2,712.29	1,356.15	4,390.67	2,198.60	0.84	-0.15	0.056
60.00	-25.57	-1.38	0.00	-94.65	0.00	94.65	2,658.02	1,329.01	4,173.50	2,089.85	1.01	-0.17	0.055
65.00	-24.51	-1.37	0.00	-87.76	0.00	87.76	2,602.11	1,301.05	3,959.12	1,982.50	1.20	-0.19	0.054
70.00	-23.48	-1.35	0.00	-80.93	0.00	80.93	2,544.56	1,272.28	3,747.77	1,876.67	1.41	-0.21	0.052
75.00	-22.48	-1.33	0.00	-74.17	0.00	74.17	2,485.39	1,242.69	3,539.70	1,772.48	1.64	-0.23	0.051
80.00	-21.49	-1.31	0.00	-67.50	0.00	67.50	2,424.57	1,212.29	3,335.13	1,670.04	1.89	-0.25	0.049
85.00	-20.54	-1.29	0.00	-60.93	0.00	60.93	2,362.12	1,181.06	3,134.31	1,569.49	2.16	-0.27	0.048
90.00	-19.60	-1.27	0.00	-54.47	0.00	54.47	2,297.27	1,148.64	2,936.51	1,470.44	2.44	-0.29	0.046
95.00	-19.10	-1.25	0.00	-48.14	0.00	48.14	2,210.70	1,105.35	2,718.30	1,361.17	2.75	-0.31	0.044
97.75	-18.53	-1.23	0.00	-44.70	0.00	44.70	2,163.09	1,081.54	2,601.88	1,302.87	2.93	-0.32	0.043
100.00	-18.15	-1.22	0.00	-41.93	0.00	41.93	2,124.13	1,062.07	2,508.52	1,256.12	3.08	-0.32	0.042
101.50	-17.70	-1.20	0.00	-40.10	0.00	40.10	1,105.19	552.59	1,317.56	659.76	3.19	-0.33	0.077
105.00	-17.57	-1.20	0.00	-35.89	0.00	35.89	1,087.53	543.77	1,259.48	630.68	3.43	-0.34	0.073
106.00	-16.74	-1.17	0.00	-34.69	0.00	34.69	1,082.34	541.17	1,242.93	622.39	3.51	-0.35	0.071
110.00	-16.12	-1.14	0.00	-30.03	0.00	30.03	1,060.92	530.46	1,177.04	589.40	3.81	-0.37	0.066
115.00	-15.68	-1.12	0.00	-24.32	0.00	24.32	1,032.68	516.34	1,095.47	548.55	4.21	-0.40	0.060
117.94	-15.44	-1.11	0.00	-21.03	0.00	21.03	1,015.32	507.66	1,048.03	524.80	4.46	-0.41	0.055
120.00	-14.88	-1.08	0.00	-18.73	0.00	18.73	1,002.79	501.40	1,014.98	508.24	4.64	-0.42	0.052
125.00	-12.85	-0.96	0.00	-13.31	0.00	13.31	971.28	485.64	935.83	468.61	5.10	-0.44	0.042
126.00	-9.99	-0.78	0.00	-12.35	0.00	12.35	964.78	482.39	920.18	460.77	5.19	-0.45	0.037
130.00	-9.80	-0.77	0.00	-9.24	0.00	9.24	938.12	469.06	858.24	429.76	5.57	-0.46	0.032
132.00	-9.44	-0.74	0.00	-7.70	0.00	7.70	924.40	462.20	827.71	414.47	5.77	-0.47	0.029
134.00	-8.97	-0.71	0.00	-6.21	0.00	6.21	910.42	455.21	797.47	399.33	5.96	-0.47	0.025
135.00	-8.90	-0.71	0.00	-5.50	0.00	5.50	903.33	451.67	782.47	391.82	6.06	-0.47	0.024
136.00	-6.73	-0.55	0.00	-4.79	0.00	4.79	896.18	448.09	767.56	384.35	6.16	-0.47	0.020
140.00	-6.58	-0.54	0.00	-2.60	0.00	2.60	866.91	433.46	708.75	354.90	6.56	-0.48	0.015
142.00	-4.03	-0.34	0.00	-1.52	0.00	1.52	851.88	425.94	679.88	340.45	6.76	-0.48	0.009
143.00	-2.44	-0.21	0.00	-1.18	0.00	1.18	844.27	422.14	665.60	333.29	6.86	-0.48	0.006
145.00	-2.23	-0.19	0.00	-0.77	0.00	0.77	828.85	414.43	637.31	319.13	7.07	-0.48	0.005
149.00	0.00	-0.17	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	7.47	-0.49	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	-29.64	-1.39	0.00	-175.77	0.00	175.77	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.047
5.00	-28.56	-1.39	0.00	-168.83	0.00	168.83	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.01	0.047
10.00	-27.51	-1.40	0.00	-161.86	0.00	161.86	4,012.85	2,006.43	8,128.58	4,070.33	0.03	-0.02	0.047
15.00	-26.48	-1.40	0.00	-154.87	0.00	154.87	3,950.68	1,975.34	7,810.43	3,911.02	0.06	-0.04	0.046
20.00	-25.47	-1.40	0.00	-147.86	0.00	147.86	3,886.87	1,943.43	7,495.19	3,753.17	0.10	-0.05	0.046
25.00	-24.48	-1.41	0.00	-140.84	0.00	140.84	3,821.43	1,910.71	7,183.08	3,596.88	0.16	-0.06	0.046
30.00	-23.51	-1.40	0.00	-133.81	0.00	133.81	3,754.35	1,877.17	6,874.35	3,442.28	0.23	-0.08	0.045
35.00	-22.56	-1.40	0.00	-126.79	0.00	126.79	3,685.64	1,842.82	6,569.23	3,289.50	0.32	-0.09	0.045
40.00	-21.63	-1.40	0.00	-119.78	0.00	119.78	3,615.29	1,807.64	6,267.96	3,138.64	0.42	-0.10	0.044
45.00	-21.09	-1.39	0.00	-112.79	0.00	112.79	3,543.30	1,771.65	5,970.78	2,989.83	0.54	-0.12	0.044
48.00	-20.49	-1.39	0.00	-108.60	0.00	108.60	3,499.33	1,749.66	5,794.53	2,901.57	0.62	-0.13	0.043
50.00	-19.53	-1.38	0.00	-105.83	0.00	105.83	3,469.68	1,734.84	5,677.92	2,843.18	0.67	-0.13	0.043
53.25	-19.26	-1.37	0.00	-101.35	0.00	101.35	2,730.90	1,365.45	4,467.29	2,236.97	0.77	-0.14	0.052
55.00	-18.49	-1.36	0.00	-98.94	0.00	98.94	2,712.29	1,356.15	4,390.67	2,198.60	0.82	-0.15	0.052
60.00	-17.74	-1.35	0.00	-92.12	0.00	92.12	2,658.02	1,329.01	4,173.50	2,089.85	0.99	-0.17	0.051
65.00	-17.01	-1.34	0.00	-85.36	0.00	85.36	2,602.11	1,301.05	3,959.12	1,982.50	1.17	-0.19	0.050
70.00	-16.29	-1.32	0.00	-78.67	0.00	78.67	2,544.56	1,272.28	3,747.77	1,876.67	1.38	-0.20	0.048
75.00	-15.60	-1.30	0.00	-72.05	0.00	72.05	2,485.39	1,242.69	3,539.70	1,772.48	1.60	-0.22	0.047
80.00	-14.91	-1.28	0.00	-65.53	0.00	65.53	2,424.57	1,212.29	3,335.13	1,670.04	1.84	-0.24	0.045
85.00	-14.25	-1.26	0.00	-59.12	0.00	59.12	2,362.12	1,181.06	3,134.31	1,569.49	2.11	-0.26	0.044
90.00	-13.60	-1.23	0.00	-52.82	0.00	52.82	2,297.27	1,148.64	2,936.51	1,470.44	2.39	-0.28	0.042
95.00	-13.25	-1.22	0.00	-46.65	0.00	46.65	2,210.70	1,105.35	2,718.30	1,361.17	2.69	-0.30	0.040
97.75	-12.86	-1.20	0.00	-43.30	0.00	43.30	2,163.09	1,081.54	2,601.88	1,302.87	2.86	-0.31	0.039
100.00	-12.60	-1.19	0.00	-40.61	0.00	40.61	2,124.13	1,062.07	2,508.52	1,256.12	3.01	-0.32	0.038
101.50	-12.28	-1.17	0.00	-38.83	0.00	38.83	1,105.19	552.59	1,317.56	659.76	3.11	-0.32	0.070
105.00	-12.19	-1.17	0.00	-34.74	0.00	34.74	1,087.53	543.77	1,259.48	630.68	3.35	-0.33	0.066
106.00	-11.62	-1.13	0.00	-33.57	0.00	33.57	1,082.34	541.17	1,242.93	622.39	3.42	-0.34	0.065
110.00	-11.18	-1.11	0.00	-29.05	0.00	29.05	1,060.92	530.46	1,177.04	589.40	3.72	-0.36	0.060
115.00	-10.88	-1.09	0.00	-23.52	0.00	23.52	1,032.68	516.34	1,095.47	548.55	4.11	-0.39	0.053
117.94	-10.71	-1.08	0.00	-20.33	0.00	20.33	1,015.32	507.66	1,048.03	524.80	4.35	-0.40	0.049
120.00	-10.32	-1.05	0.00	-18.11	0.00	18.11	1,002.79	501.40	1,014.98	508.24	4.53	-0.41	0.046
125.00	-8.92	-0.93	0.00	-12.87	0.00	12.87	971.28	485.64	935.83	468.61	4.97	-0.43	0.037
126.00	-6.93	-0.75	0.00	-11.94	0.00	11.94	964.78	482.39	920.18	460.77	5.06	-0.43	0.033
130.00	-6.80	-0.74	0.00	-8.93	0.00	8.93	938.12	469.06	858.24	429.76	5.43	-0.45	0.028
132.00	-6.55	-0.72	0.00	-7.44	0.00	7.44	924.40	462.20	827.71	414.47	5.62	-0.45	0.025
134.00	-6.23	-0.69	0.00	-6.00	0.00	6.00	910.42	455.21	797.47	399.33	5.81	-0.46	0.022
135.00	-6.17	-0.68	0.00	-5.32	0.00	5.32	903.33	451.67	782.47	391.82	5.91	-0.46	0.020
136.00	-4.67	-0.53	0.00	-4.63	0.00	4.63	896.18	448.09	767.56	384.35	6.00	-0.46	0.017
140.00	-4.57	-0.52	0.00	-2.51	0.00	2.51	866.91	433.46	708.75	354.90	6.39	-0.47	0.012
142.00	-2.80	-0.33	0.00	-1.47	0.00	1.47	851.88	425.94	679.88	340.45	6.59	-0.47	0.008
143.00	-1.69	-0.20	0.00	-1.15	0.00	1.15	844.27	422.14	665.60	333.29	6.69	-0.47	0.005
145.00	-1.54	-0.19	0.00	-0.74	0.00	0.74	828.85	414.43	637.31	319.13	6.88	-0.47	0.004
149.00	0.00	-0.17	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	7.28	-0.47	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):	2.69
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)
42	147.00	169	1.840	1.725	1.047	0.341	50	210
41	144.00	87	1.765	1.385	0.919	0.294	22	108
40	142.50	60	1.729	1.234	0.859	0.271	14	74
39	141.00	121	1.692	1.094	0.803	0.250	26	150
38	138.00	247	1.621	0.846	0.699	0.209	45	307
37	135.50	63	1.563	0.669	0.621	0.177	10	78
36	134.50	63	1.540	0.605	0.592	0.165	9	79
35	133.00	151	1.506	0.516	0.550	0.147	19	188
34	131.00	153	1.461	0.409	0.498	0.125	17	190
33	128.00	312	1.395	0.274	0.426	0.094	25	387
32	125.50	79	1.341	0.181	0.373	0.071	5	98
31	122.50	454	1.278	0.091	0.317	0.045	18	563
30	118.97	191	1.205	0.009	0.258	0.019	3	237
29	116.47	275	1.155	-0.034	0.222	0.002	1	341
28	112.50	503	1.077	-0.082	0.173	-0.019	-8	623
27	108.00	411	0.993	-0.112	0.128	-0.038	-14	509
26	105.50	104	0.948	-0.119	0.107	-0.046	-4	129
25	103.25	367	0.908	-0.122	0.090	-0.051	-16	455
24	100.75	304	0.864	-0.120	0.074	-0.054	-14	377
23	98.88	462	0.832	-0.117	0.064	-0.056	-22	572
22	96.38	405	0.791	-0.110	0.051	-0.056	-20	502
21	92.50	752	0.728	-0.095	0.036	-0.052	-34	932
20	87.50	772	0.652	-0.071	0.021	-0.041	-27	957
19	82.50	791	0.579	-0.045	0.012	-0.023	-16	981
18	77.50	811	0.511	-0.020	0.008	-0.002	-2	1,006
17	72.50	831	0.447	0.002	0.006	0.018	13	1,030
16	67.50	851	0.388	0.022	0.007	0.034	25	1,055
15	62.50	871	0.333	0.037	0.010	0.046	35	1,079
14	57.50	891	0.281	0.049	0.014	0.053	41	1,104
13	54.13	316	0.249	0.055	0.017	0.056	15	392
12	51.63	1,114	0.227	0.059	0.020	0.057	55	1,381
11	49.00	695	0.204	0.062	0.023	0.057	35	861
10	46.50	636	0.184	0.065	0.025	0.058	32	788
9	42.50	1,079	0.154	0.068	0.030	0.057	53	1,338

8	37.50	1,103	0.120	0.070	0.034	0.056	53	1,367
7	32.50	1,127	0.090	0.071	0.038	0.055	53	1,397
6	27.50	1,150	0.064	0.072	0.041	0.053	53	1,426
5	22.50	1,174	0.043	0.071	0.042	0.052	53	1,456
4	17.50	1,198	0.026	0.067	0.040	0.049	51	1,485
3	12.50	1,222	0.013	0.059	0.034	0.045	47	1,515
2	7.50	1,246	0.005	0.044	0.025	0.036	39	1,544
1	2.50	1,081	0.001	0.018	0.010	0.017	16	1,340
DragonWave Horizon C	149.00	32	1.890	1.980	1.140	0.374	10	39
DragonWave A-ANT-23G	149.00	15	1.890	1.980	1.140	0.374	5	19
Alcatel-Lucent RRH2x	149.00	317	1.890	1.980	1.140	0.374	103	393
Alcatel-Lucent 1900	149.00	180	1.890	1.980	1.140	0.374	58	223
Nokia 2.5G MAA - AAH	149.00	311	1.890	1.980	1.140	0.374	101	385
DragonWave A-ANT-11G	149.00	54	1.890	1.980	1.140	0.374	18	67
RFS APXVFRR12X-C-I20	149.00	138	1.890	1.980	1.140	0.374	45	171
Flat T-Arm	149.00	750	1.890	1.980	1.140	0.374	243	930
Ericsson KRY 112 144	143.00	29	1.741	1.283	0.879	0.279	7	36
Ericsson KRY 112 489	143.00	46	1.741	1.283	0.879	0.279	11	57
Ericsson Radio 4449	143.00	222	1.741	1.283	0.879	0.279	54	275
Ericsson AIR-32 B2A/	143.00	397	1.741	1.283	0.879	0.279	96	492
RFS APX16DWV-	143.00	122	1.741	1.283	0.879	0.279	30	151
RFS APXVAARR24_43-U-	143.00	384	1.741	1.283	0.879	0.279	93	476
Flat Platform w/ Han	142.00	2,000	1.717	1.186	0.840	0.264	458	2,479
Round Low Profile Pl	136.00	1,500	1.575	0.702	0.636	0.183	238	1,860
RFS FD9R6004/2C-3L	134.00	16	1.529	0.574	0.577	0.159	2	19
Amphenol Antel BXA-1	134.00	45	1.529	0.574	0.577	0.159	6	56
Antel BXA-185085/12C	134.00	39	1.529	0.574	0.577	0.159	5	48
RFS DB-T1-6Z-8AB-0Z	134.00	44	1.529	0.574	0.577	0.159	6	55
Andrew DB854DG65ESX	134.00	56	1.529	0.574	0.577	0.159	8	69
Commscope LNX-	134.00	116	1.529	0.574	0.577	0.159	16	144
Alcatel-Lucent RRH2x	132.00	132	1.483	0.461	0.523	0.136	16	164
Round Platform w/ Ha	126.00	2,000	1.352	0.198	0.384	0.075	130	2,479
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.066	2	41
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.066	2	41
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.066	2	41
Ericsson Radio 4415	125.00	129	1.330	0.164	0.363	0.066	7	160
Ericsson 8843 Rev 2	125.00	225	1.330	0.164	0.363	0.066	13	279
Ericsson RRUS 4449 B	125.00	213	1.330	0.164	0.363	0.066	12	264
CCI CCI-HPA-65R-BUU-	125.00	204	1.330	0.164	0.363	0.066	12	253
Kathrein Scala 80010	125.00	688	1.330	0.164	0.363	0.066	39	852
RFS APXV18-206517S-C	115.00	79	1.126	-0.054	0.203	-0.006	0	98
Proxim 5054-R-LR	106.00	6	0.957	-0.118	0.111	-0.044	0	7
Generic 3' Dish w/ R	106.00	100	0.957	-0.118	0.111	-0.044	-4	124
Flat Side Arm	106.00	150	0.957	-0.118	0.111	-0.044	-6	186
		35,529	88.303	39.319	33.048	9.243	2,594	44,045

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)
42	147.00	169	1.840	1.725	1.047	0.341	50	145
41	144.00	87	1.765	1.385	0.919	0.294	22	75
40	142.50	60	1.729	1.234	0.859	0.271	14	51
39	141.00	121	1.692	1.094	0.803	0.250	26	104
38	138.00	247	1.621	0.846	0.699	0.209	45	213
37	135.50	63	1.563	0.669	0.621	0.177	10	54
36	134.50	63	1.540	0.605	0.592	0.165	9	55
35	133.00	151	1.506	0.516	0.550	0.147	19	130
34	131.00	153	1.461	0.409	0.498	0.125	17	132

33	128.00	312	1.395	0.274	0.426	0.094	25	269
32	125.50	79	1.341	0.181	0.373	0.071	5	68
31	122.50	454	1.278	0.091	0.317	0.045	18	391
30	118.97	191	1.205	0.009	0.258	0.019	3	164
29	116.47	275	1.155	-0.034	0.222	0.002	1	237
28	112.50	503	1.077	-0.082	0.173	-0.019	-8	432
27	108.00	411	0.993	-0.112	0.128	-0.038	-14	353
26	105.50	104	0.948	-0.119	0.107	-0.046	-4	89
25	103.25	367	0.908	-0.122	0.090	-0.051	-16	316
24	100.75	304	0.864	-0.120	0.074	-0.054	-14	262
23	98.88	462	0.832	-0.117	0.064	-0.056	-22	397
22	96.38	405	0.791	-0.110	0.051	-0.056	-20	348
21	92.50	752	0.728	-0.095	0.036	-0.052	-34	647
20	87.50	772	0.652	-0.071	0.021	-0.041	-27	664
19	82.50	791	0.579	-0.045	0.012	-0.023	-16	681
18	77.50	811	0.511	-0.020	0.008	-0.002	-2	698
17	72.50	831	0.447	0.002	0.006	0.018	13	715
16	67.50	851	0.388	0.022	0.007	0.034	25	732
15	62.50	871	0.333	0.037	0.010	0.046	35	749
14	57.50	891	0.281	0.049	0.014	0.053	41	766
13	54.13	316	0.249	0.055	0.017	0.056	15	272
12	51.63	1,114	0.227	0.059	0.020	0.057	55	958
11	49.00	695	0.204	0.062	0.023	0.057	35	598
10	46.50	636	0.184	0.065	0.025	0.058	32	547
9	42.50	1,079	0.154	0.068	0.030	0.057	53	928
8	37.50	1,103	0.120	0.070	0.034	0.056	53	949
7	32.50	1,127	0.090	0.071	0.038	0.055	53	969
6	27.50	1,150	0.064	0.072	0.041	0.053	53	990
5	22.50	1,174	0.043	0.071	0.042	0.052	53	1,010
4	17.50	1,198	0.026	0.067	0.040	0.049	51	1,031
3	12.50	1,222	0.013	0.059	0.034	0.045	47	1,051
2	7.50	1,246	0.005	0.044	0.025	0.036	39	1,072
1	2.50	1,081	0.001	0.018	0.010	0.017	16	930
DragonWave Horizon C	149.00	32	1.890	1.980	1.140	0.374	10	27
DragonWave A-ANT-23G	149.00	15	1.890	1.980	1.140	0.374	5	13
Alcatel-Lucent RRH2x	149.00	317	1.890	1.980	1.140	0.374	103	273
Alcatel-Lucent 1900	149.00	180	1.890	1.980	1.140	0.374	58	155
Nokia 2.5G MAA - AAH	149.00	311	1.890	1.980	1.140	0.374	101	267
DragonWave A-ANT-11G	149.00	54	1.890	1.980	1.140	0.374	18	46
RFS APXVFRR12X-C-I20	149.00	138	1.890	1.980	1.140	0.374	45	119
Flat T-Arm	149.00	750	1.890	1.980	1.140	0.374	243	645
Ericsson KRY 112 144	143.00	29	1.741	1.283	0.879	0.279	7	25
Ericsson KRY 112 489	143.00	46	1.741	1.283	0.879	0.279	11	40
Ericsson Radio 4449	143.00	222	1.741	1.283	0.879	0.279	54	191
Ericsson AIR-32 B2A/	143.00	397	1.741	1.283	0.879	0.279	96	341
RFS APX16DWV-	143.00	122	1.741	1.283	0.879	0.279	30	105
RFS APXVAARR24_43-U-	143.00	384	1.741	1.283	0.879	0.279	93	330
Flat Platform w/ Han	142.00	2,000	1.717	1.186	0.840	0.264	458	1,721
Round Low Profile Pl	136.00	1,500	1.575	0.702	0.636	0.183	238	1,290
RFS FD9R6004/2C-3L	134.00	16	1.529	0.574	0.577	0.159	2	13
Amphenol Antel BXA-1	134.00	45	1.529	0.574	0.577	0.159	6	39
Antel BXA-185085/12C	134.00	39	1.529	0.574	0.577	0.159	5	34
RFS DB-T1-6Z-8AB-0Z	134.00	44	1.529	0.574	0.577	0.159	6	38
Andrew DB854DG65ESX	134.00	56	1.529	0.574	0.577	0.159	8	48
Commscope LNX-	134.00	116	1.529	0.574	0.577	0.159	16	100
Alcatel-Lucent RRH2x	132.00	132	1.483	0.461	0.523	0.136	16	114
Round Platform w/ Ha	126.00	2,000	1.352	0.198	0.384	0.075	130	1,721
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.066	2	28
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.066	2	28
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.066	2	28
Ericsson Radio 4415	125.00	129	1.330	0.164	0.363	0.066	7	111
Ericsson 8843 Rev 2	125.00	225	1.330	0.164	0.363	0.066	13	194
Ericsson RRUS 4449 B	125.00	213	1.330	0.164	0.363	0.066	12	183
CCI CCI-HPA-65R-BUU-	125.00	204	1.330	0.164	0.363	0.066	12	176

Kathrein Scala 80010	125.00	688	1.330	0.164	0.363	0.066	39	592
RFS APXV18-206517S-C	115.00	79	1.126	-0.054	0.203	-0.006	0	68
Proxim 5054-R-LR	106.00	6	0.957	-0.118	0.111	-0.044	0	5
Generic 3' Dish w/ R	106.00	100	0.957	-0.118	0.111	-0.044	-4	86
Flat Side Arm	106.00	150	0.957	-0.118	0.111	-0.044	-6	129
		35,529	88.303	39.319	33.048	9.243	2,594	30,567

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	-42.70	-2.59	0.00	-322.15	0.00	322.15	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.084
5.00	-41.16	-2.56	0.00	-309.22	0.00	309.22	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.02	0.083
10.00	-39.64	-2.53	0.00	-296.41	0.00	296.41	4,012.85	2,006.43	8,128.58	4,070.33	0.05	-0.04	0.083
15.00	-38.16	-2.49	0.00	-283.77	0.00	283.77	3,950.68	1,975.34	7,810.43	3,911.02	0.10	-0.07	0.082
20.00	-36.70	-2.45	0.00	-271.31	0.00	271.31	3,886.87	1,943.43	7,495.19	3,753.17	0.19	-0.09	0.082
25.00	-35.27	-2.41	0.00	-259.04	0.00	259.04	3,821.43	1,910.71	7,183.08	3,596.88	0.30	-0.11	0.081
30.00	-33.88	-2.37	0.00	-246.98	0.00	246.98	3,754.35	1,877.17	6,874.35	3,442.28	0.43	-0.14	0.081
35.00	-32.51	-2.33	0.00	-235.13	0.00	235.13	3,685.64	1,842.82	6,569.23	3,289.50	0.59	-0.17	0.080
40.00	-31.17	-2.29	0.00	-223.48	0.00	223.48	3,615.29	1,807.64	6,267.96	3,138.64	0.78	-0.19	0.080
45.00	-30.38	-2.26	0.00	-212.06	0.00	212.06	3,543.30	1,771.65	5,970.78	2,989.83	0.99	-0.22	0.080
48.00	-29.52	-2.23	0.00	-205.27	0.00	205.27	3,499.33	1,749.66	5,794.53	2,901.57	1.14	-0.24	0.079
50.00	-28.14	-2.18	0.00	-200.81	0.00	200.81	3,469.68	1,734.84	5,677.92	2,843.18	1.24	-0.25	0.079
53.25	-27.75	-2.17	0.00	-193.72	0.00	193.72	2,730.90	1,365.45	4,467.29	2,236.97	1.41	-0.27	0.097
55.00	-26.64	-2.13	0.00	-189.93	0.00	189.93	2,712.29	1,356.15	4,390.67	2,198.60	1.51	-0.28	0.096
60.00	-25.56	-2.11	0.00	-179.26	0.00	179.26	2,658.02	1,329.01	4,173.50	2,089.85	1.82	-0.31	0.095
65.00	-24.50	-2.09	0.00	-168.72	0.00	168.72	2,602.11	1,301.05	3,959.12	1,982.50	2.17	-0.35	0.095
70.00	-23.47	-2.09	0.00	-158.26	0.00	158.26	2,544.56	1,272.28	3,747.77	1,876.67	2.55	-0.38	0.094
75.00	-22.47	-2.10	0.00	-147.82	0.00	147.82	2,485.39	1,242.69	3,539.70	1,772.48	2.97	-0.42	0.092
80.00	-21.48	-2.12	0.00	-137.33	0.00	137.33	2,424.57	1,212.29	3,335.13	1,670.04	3.43	-0.46	0.091
85.00	-20.52	-2.15	0.00	-126.72	0.00	126.72	2,362.12	1,181.06	3,134.31	1,569.49	3.94	-0.50	0.089
90.00	-19.59	-2.19	0.00	-115.95	0.00	115.95	2,297.27	1,148.64	2,936.51	1,470.44	4.48	-0.54	0.087
95.00	-19.09	-2.22	0.00	-104.98	0.00	104.98	2,210.70	1,105.35	2,718.30	1,361.17	5.07	-0.58	0.086
97.75	-18.51	-2.24	0.00	-98.87	0.00	98.87	2,163.09	1,081.54	2,601.88	1,302.87	5.41	-0.61	0.084
100.00	-18.14	-2.26	0.00	-93.83	0.00	93.83	2,124.13	1,062.07	2,508.52	1,256.12	5.71	-0.63	0.083
101.50	-17.68	-2.28	0.00	-90.44	0.00	90.44	1,105.19	552.59	1,317.56	659.76	5.90	-0.64	0.153
105.00	-17.55	-2.29	0.00	-82.47	0.00	82.47	1,087.53	543.77	1,259.48	630.68	6.38	-0.67	0.147
106.00	-16.72	-2.31	0.00	-80.18	0.00	80.18	1,082.34	541.17	1,242.93	622.39	6.52	-0.68	0.144
110.00	-16.10	-2.33	0.00	-70.95	0.00	70.95	1,060.92	530.46	1,177.04	589.40	7.12	-0.73	0.136
115.00	-15.65	-2.33	0.00	-59.32	0.00	59.32	1,032.68	516.34	1,095.47	548.55	7.92	-0.80	0.123
117.94	-15.42	-2.34	0.00	-52.46	0.00	52.46	1,015.32	507.66	1,048.03	524.80	8.42	-0.83	0.115
120.00	-14.85	-2.32	0.00	-47.64	0.00	47.64	1,002.79	501.40	1,014.98	508.24	8.79	-0.86	0.109
125.00	-12.82	-2.20	0.00	-36.04	0.00	36.04	971.28	485.64	935.83	468.61	9.72	-0.91	0.090
126.00	-9.96	-2.00	0.00	-33.84	0.00	33.84	964.78	482.39	920.18	460.77	9.91	-0.92	0.084
130.00	-9.77	-1.99	0.00	-25.83	0.00	25.83	938.12	469.06	858.24	429.76	10.70	-0.96	0.071
132.00	-9.42	-1.95	0.00	-21.85	0.00	21.85	924.40	462.20	827.71	414.47	11.10	-0.97	0.063
134.00	-8.95	-1.89	0.00	-17.95	0.00	17.95	910.42	455.21	797.47	399.33	11.51	-0.99	0.055
135.00	-8.87	-1.88	0.00	-16.06	0.00	16.06	903.33	451.67	782.47	391.82	11.72	-0.99	0.051
136.00	-6.71	-1.56	0.00	-14.18	0.00	14.18	896.18	448.09	767.56	384.35	11.93	-1.00	0.044
140.00	-6.56	-1.53	0.00	-7.93	0.00	7.93	866.91	433.46	708.75	354.90	12.78	-1.02	0.030
142.00	-4.02	-1.02	0.00	-4.86	0.00	4.86	851.88	425.94	679.88	340.45	13.21	-1.03	0.019
143.00	-2.43	-0.68	0.00	-3.85	0.00	3.85	844.27	422.14	665.60	333.29	13.42	-1.03	0.014
145.00	-2.22	-0.62	0.00	-2.49	0.00	2.49	828.85	414.43	637.31	319.13	13.85	-1.03	0.010
149.00	0.00	-0.58	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	14.72	-1.03	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	-29.64	-2.58	0.00	-315.53	0.00	315.53	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.079
5.00	-28.56	-2.55	0.00	-302.63	0.00	302.63	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.02	0.079
10.00	-27.51	-2.52	0.00	-289.86	0.00	289.86	4,012.85	2,006.43	8,128.58	4,070.33	0.05	-0.04	0.078
15.00	-26.48	-2.47	0.00	-277.28	0.00	277.28	3,950.68	1,975.34	7,810.43	3,911.02	0.10	-0.07	0.078
20.00	-25.47	-2.43	0.00	-264.91	0.00	264.91	3,886.87	1,943.43	7,495.19	3,753.17	0.18	-0.09	0.077
25.00	-24.48	-2.39	0.00	-252.76	0.00	252.76	3,821.43	1,910.71	7,183.08	3,596.88	0.29	-0.11	0.077
30.00	-23.51	-2.34	0.00	-240.83	0.00	240.83	3,754.35	1,877.17	6,874.35	3,442.28	0.42	-0.14	0.076
35.00	-22.56	-2.29	0.00	-229.12	0.00	229.12	3,685.64	1,842.82	6,569.23	3,289.50	0.58	-0.16	0.076
40.00	-21.63	-2.25	0.00	-217.65	0.00	217.65	3,615.29	1,807.64	6,267.96	3,138.64	0.76	-0.19	0.075
45.00	-21.08	-2.22	0.00	-206.41	0.00	206.41	3,543.30	1,771.65	5,970.78	2,989.83	0.97	-0.21	0.075
48.00	-20.48	-2.19	0.00	-199.74	0.00	199.74	3,499.33	1,749.66	5,794.53	2,901.57	1.11	-0.23	0.075
50.00	-19.52	-2.14	0.00	-195.36	0.00	195.36	3,469.68	1,734.84	5,677.92	2,843.18	1.21	-0.24	0.074
53.25	-19.25	-2.13	0.00	-188.41	0.00	188.41	2,730.90	1,365.45	4,467.29	2,236.97	1.38	-0.26	0.091
55.00	-18.49	-2.09	0.00	-184.69	0.00	184.69	2,712.29	1,356.15	4,390.67	2,198.60	1.48	-0.27	0.091
60.00	-17.74	-2.06	0.00	-174.25	0.00	174.25	2,658.02	1,329.01	4,173.50	2,089.85	1.78	-0.30	0.090
65.00	-17.00	-2.04	0.00	-163.95	0.00	163.95	2,602.11	1,301.05	3,959.12	1,982.50	2.12	-0.34	0.089
70.00	-16.29	-2.03	0.00	-153.75	0.00	153.75	2,544.56	1,272.28	3,747.77	1,876.67	2.49	-0.37	0.088
75.00	-15.59	-2.04	0.00	-143.58	0.00	143.58	2,485.39	1,242.69	3,539.70	1,772.48	2.90	-0.41	0.087
80.00	-14.90	-2.06	0.00	-133.38	0.00	133.38	2,424.57	1,212.29	3,335.13	1,670.04	3.35	-0.45	0.086
85.00	-14.24	-2.09	0.00	-123.07	0.00	123.07	2,362.12	1,181.06	3,134.31	1,569.49	3.84	-0.49	0.084
90.00	-13.59	-2.13	0.00	-112.60	0.00	112.60	2,297.27	1,148.64	2,936.51	1,470.44	4.37	-0.53	0.082
95.00	-13.24	-2.15	0.00	-101.95	0.00	101.95	2,210.70	1,105.35	2,718.30	1,361.17	4.95	-0.57	0.081
97.75	-12.84	-2.18	0.00	-96.02	0.00	96.02	2,163.09	1,081.54	2,601.88	1,302.87	5.28	-0.59	0.080
100.00	-12.58	-2.19	0.00	-91.12	0.00	91.12	2,124.13	1,062.07	2,508.52	1,256.12	5.56	-0.61	0.078
101.50	-12.26	-2.21	0.00	-87.83	0.00	87.83	1,105.19	552.59	1,317.56	659.76	5.75	-0.62	0.144
105.00	-12.17	-2.22	0.00	-80.10	0.00	80.10	1,087.53	543.77	1,259.48	630.68	6.22	-0.65	0.138
106.00	-11.60	-2.24	0.00	-77.88	0.00	77.88	1,082.34	541.17	1,242.93	622.39	6.36	-0.66	0.136
110.00	-11.16	-2.26	0.00	-68.91	0.00	68.91	1,060.92	530.46	1,177.04	589.40	6.94	-0.71	0.127
115.00	-10.86	-2.26	0.00	-57.63	0.00	57.63	1,032.68	516.34	1,095.47	548.55	7.72	-0.78	0.116
117.94	-10.69	-2.26	0.00	-50.99	0.00	50.99	1,015.32	507.66	1,048.03	524.80	8.21	-0.81	0.108
120.00	-10.30	-2.24	0.00	-46.33	0.00	46.33	1,002.79	501.40	1,014.98	508.24	8.56	-0.83	0.101
125.00	-8.89	-2.13	0.00	-35.11	0.00	35.11	971.28	485.64	935.83	468.61	9.46	-0.89	0.084
126.00	-6.90	-1.95	0.00	-32.98	0.00	32.98	964.78	482.39	920.18	460.77	9.65	-0.90	0.079
130.00	-6.77	-1.93	0.00	-25.18	0.00	25.18	938.12	469.06	858.24	429.76	10.42	-0.93	0.066
132.00	-6.53	-1.90	0.00	-21.31	0.00	21.31	924.40	462.20	827.71	414.47	10.81	-0.95	0.058
134.00	-6.20	-1.84	0.00	-17.51	0.00	17.51	910.42	455.21	797.47	399.33	11.21	-0.96	0.051
135.00	-6.15	-1.83	0.00	-15.67	0.00	15.67	903.33	451.67	782.47	391.82	11.41	-0.97	0.047
136.00	-4.65	-1.52	0.00	-13.84	0.00	13.84	896.18	448.09	767.56	384.35	11.62	-0.97	0.041
140.00	-4.55	-1.50	0.00	-7.75	0.00	7.75	866.91	433.46	708.75	354.90	12.44	-0.99	0.027
142.00	-2.78	-0.99	0.00	-4.76	0.00	4.76	851.88	425.94	679.88	340.45	12.86	-1.00	0.017
143.00	-1.68	-0.66	0.00	-3.77	0.00	3.77	844.27	422.14	665.60	333.29	13.07	-1.00	0.013
145.00	-1.54	-0.61	0.00	-2.44	0.00	2.44	828.85	414.43	637.31	319.13	13.49	-1.00	0.010
149.00	0.00	-0.58	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	14.33	-1.01	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	24.94	0.00	42.59	0.00	0.00	2893.74	101.50	0.96
0.9D + 1.6W	24.92	0.00	31.93	0.00	0.00	2850.04	101.50	0.94
1.2D + 1.0Di + 1.0Wi	6.89	0.00	78.86	0.00	0.00	836.04	101.50	0.33
(1.2 + 0.2Sds) * DL + E ELFM	1.39	0.00	42.71	0.00	0.00	179.14	101.50	0.08
(1.2 + 0.2Sds) * DL + E EMAM	2.59	0.00	42.70	0.00	0.00	322.15	101.50	0.15
(0.9 - 0.2Sds) * DL + E ELFM	1.39	0.00	29.64	0.00	0.00	175.77	101.50	0.07
(0.9 - 0.2Sds) * DL + E EMAM	2.58	0.00	29.64	0.00	0.00	315.53	101.50	0.14
1.0D + 1.0W	5.96	0.00	35.53	0.00	0.00	686.29	101.50	0.24

Base Plate & Anchor Rod Analysis

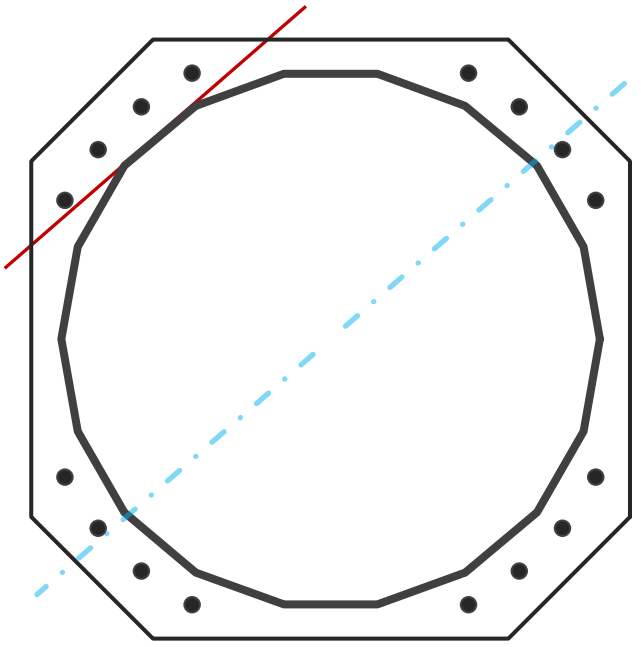
Pole Dimensions		
Number of Sides	18	-
Diameter	52.01	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2893.7	k-ft
Axial, Pu	42.6	k
Shear, Vu	24.9	k
Neutral Axis	41	°

Report Capacities		
Component	Capacity	Result
Base Plate	47%	Pass
Anchor Rods	58%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	59	in
Thickness	2 3/4	in
Grade	Other	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Clip	12	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	1492.2	k
Bending Stress, ϕMn	3183.1	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	59	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	149.6	k
Anchor Rods, ϕPn	259.8	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	24.9	2893.7	1.00
Anchor Rod Forces	24.9	2893.7	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
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	60.5227	3.3624	0.1582		20173.34
Bolt	3.9761	3.2477	0.8393	4.5	22623.84
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	59	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Base Plate Chord	27.856	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	59	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	149.6	k
Applied Shear, Vu	0.1	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.576	OK
Interaction Capacity	0.577	OK

External Base Plate		
Chord Length AA	31.179	in
Additional AA	0.000	in
Section Modulus, Z	58.947	in^3
Applied Moment, Mu	1492.2	k-ft
Bending Capacity, ϕMn	3183.1	k-ft
Capacity, Mu/ϕMn	0.469	OK
Chord Length AB	30.372	in
Additional AB	0.000	in
Section Modulus, Z	57.423	in^3
Applied Moment, Mu	1257.5	k-ft
Bending Capacity, ϕMn	3100.8	k-ft
Capacity, Mu/ϕMn	0.406	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

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

EXHIBIT 4

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2899

FA#: 10578274

West Haven Jones Hill Road
668 Jones Hill Road
West Haven, CT 06516

March 13, 2019

Centerline Communications Project Number: 950012-205

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**13.76 %**

March 13, 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: **CT2899 – West Haven Jones Hill Road**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **668 Jones Hill Road, West Haven, 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 **668 Jones Hill Road, West Haven, 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)
LTE	2100 MHz (AWS)	4	30
LTE	700 MHz	2	40
LTE	850 MHz	2	40
LTE	2300 MHz (WCS)	4	30
5G	850 MHz	2	25
LTE	1900 MHz (PCS)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10966	125
A	2	Kathrein 800-10966	125
A	3	CCI HPA-65R-BU8AA	125
B	1	Kathrein 800-10966	125
B	2	Kathrein 800-10966	125
B	3	CCI HPA-65R-BU8AA	125
C	1	Kathrein 800-10966	125
C	2	Kathrein 800-10966	125
C	3	CCI HPA-65R-BU8AA	125

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	Kathrein 800-10966	2100 MHz (AWS)	16.15	4	120	4,945.17	1.26
Antenna A2	Kathrein 800-10966	700 MHz / 850 MHz / 2300 MHz (WCS)	13.55 / 14.25 / 15.95	10	330	9,993.26	3.73
Antenna A3	CCI HPA-65R-BU8AA	1900 MHz (PCS)	15.95	4	160	6,296.80	1.60
						Sector A Composite MPE%	**6.59**
Antenna B1	Kathrein 800-10966	2100 MHz (AWS)	16.15	4	120	4,945.17	1.26
Antenna B2	Kathrein 800-10966	700 MHz / 850 MHz / 2300 MHz (WCS)	13.55 / 14.25 / 15.95	10	330	9,993.26	3.73
Antenna B3	CCI HPA-65R-BU8AA	1900 MHz (PCS)	15.95	4	160	6,296.80	1.60
						Sector B Composite MPE%	**6.59**
Antenna C1	Kathrein 800-10966	2100 MHz (AWS)	16.15	4	120	4,945.17	1.26
Antenna C2	Kathrein 800-10966	700 MHz / 850 MHz / 2300 MHz (WCS)	13.55 / 14.25 / 15.95	10	330	9,993.26	3.73
Antenna C3	CCI HPA-65R-BU8AA	1900 MHz (PCS)	15.95	4	160	6,296.80	1.60
						Sector C Composite MPE%	**6.59**

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, all three sectors have the same configuration yielding the same results on all three 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	**6.59 %**
T-Mobile	3.38 %
Clearwire	0.12 %
MetroPCS	1.02 %
Computer Hospital	0.23 %
Verizon Wireless	2.42 %
Site Total MPE %:	**13.76 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	6.59 %
AT&T Sector B Total:	6.59 %
AT&T Sector C Total:	6.59 %
Site Total:	13.76 %

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, all three sectors have the same configuration yielding the same results on all three 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 2100 MHz (AWS) LTE	4	1,236.29	125	12.55	2100 MHz (AWS)	1000	1.26%
AT&T 700 MHz LTE	2	905.86	125	4.60	700 MHz	467	0.98%
AT&T 850 MHz LTE	2	1,064.29	125	5.40	850 MHz	567	0.95%
AT&T 2300 MHz (WCS) LTE	4	1,180.65	125	11.99	2300 MHz (WCS)	1000	1.20%
AT&T 850 MHz 5G	2	665.18	125	3.38	850 MHz	567	0.60%
AT&T 1900 MHz (PCS) LTE	4	1,574.20	125	15.99	1900 MHz (PCS)	1000	1.60%
						Total:	**6.59%**

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:	6.59 %
Sector B:	6.59 %
Sector C:	6.59 %
AT&T Maximum Total (per sector):	6.59 %
Site Total:	13.76 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.76 %** 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.

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