QC Development
PO Box 916
Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

October 18, 2019

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT5004
36 Ritch Avenue West, Greenwich, CT 06830
N 41.00500278
W 73.64828889

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 67-foot level of the existing 77-foot Monopine at 36 Ritch Avenue West, Greenwich, CT. The tower is owned by American Tower and the property is owned by 36 Ritch Avenue LLC. AT&T now intends to remove three (3) Quintel antennas and install six (6) CCI DMP65R-BU4DA antennas. AT&T also intends to remove three (3) Ericsson RRUS-11 Remote Radio Units (RRU) and install three (3) 4478-B14 and three (3) 4449-B5/B12 RRUs. The new antennas and RRUs will be installed on new T-Arm Mounts at the 67-foot level of the tower.

The facility was approved by the Siting Council in Docket #414 on July 14th, 2011. This approval included no condition(s) that could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the

Honorable Peter Tesei, First Selectman of the Town of Greenwich, as local elected official, and the Greenwich Planning & Zoning Department, as well as the property owner and tower 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).

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

2. The proposed modifications will not require the 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 replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

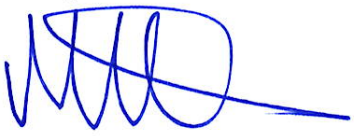
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Peter Tesei - Elected Official
Katie DeLuca – Director of Planning and Zoning
36 Ritch Avenue LLC - Property Owner
American Tower – Tower Owner (via e-mail)

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							26.15%
AT&T UMTS	2	656	67	0.1269	850	0.5667	2.24%
AT&T LTE	2	730	67	0.1411	700	0.4667	3.02%
AT&T LTE	4	1055	67	0.2039	850	0.5667	3.60%
AT&T LTE	2	1456	67	0.5629	1900	1.0000	5.63%
AT&T LTE	4	1634	67	0.6317	2100	1.0000	6.32%
AT&T LTE	4	2105	67	0.8138	2300	1.0000	8.14%
Site Total							55.09%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							26.15%
AT&T UMTS	1	488	67	0.0472	850	0.5667	0.83%
AT&T LTE	1	1476	67	0.1426	700	0.4667	3.06%
AT&T LTE	1	2951	67	0.2852	700	0.4667	6.11%
AT&T LTE	1	1000	67	0.0966	850	0.5667	1.71%
AT&T 5G	1	1000	67	0.0966	850	0.5667	1.71%
AT&T LTE	2	4842	67	0.9359	1900	1.0000	9.36%
AT&T LTE	1	5070	67	0.4900	2100	1.0000	4.90%
AT&T LTE	1	1285	67	0.1242	2300	1.0000	1.24%
Site Total							53.36%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPINE:
- NEW AT&T ANTENNAS: DMP65R-BU4DA (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- NEW AT&T RRUS: B5/B12 4449 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T DC ONLY SURGE ARRESTOR DC6-48-60-0-8C-EV (TOTAL OF 1) WITH (2) DC POWER RUN.
- PROPOSED MOUNT SITEPRO1 PART# RMV12-496

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP BB FOR (2) RBS 6630.
- ADD RBS 6630 FOR 5G.
- ADD IDLE.
- NEW AT&T RRUS: RRUS-E2 B29 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3)

ITEMS TO BE REMOVED:
- EXISTING AT&T LTE ANTENNAS @ POS. 4 (QS66512-2) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS-11 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T T-ARM (TYP. OF 1 PER SECTOR, TOTAL OF 3).

SITE ADDRESS:	36 RITCH AVE WEST GREENWICH, CT 06830
LATITUDE:	41.005063° N, 41° 0' 18.23" N
LONGITUDE:	73.648311° W, 73° 38' 53.91" W
TYPE OF SITE:	MONOPINE / INDOOR
STRUCTURE HEIGHT:	77'-0"±
RAD CENTER:	67'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT5004

SITE NAME: GREENWICH SW

FA CODE: 10071045

PACE ID: MRCTB039373, MRCTB039391, MRCTB039353, & MRCTB039419

PROJECT: LTE 6C/7C/5G 2019 UPGRADE

DRAWING INDEX

AMERICAN TOWER CORP. SITE NAME: BYRAM PARK CT
AMERICAN TOWER CORP. SITE #: 414240

VICINITY MAP

DIRECTIONS TO SITE:

MERGE ONTO I-91 S. FOLLOW I-91 S, CT-15 S AND I-95 S TO FRONTAGE RD IN GREENWICH. TAKE EXIT 2 FROM I-95 S. MERGE ONTO I-91 S. TAKE EXIT 17 TO MERGE ONTO CT-15 S/WILBUR CROSS PKWY. CONTINUE TO FOLLOW CT-15 S. TAKE EXIT 52 FOR STATE ROUTE 108 S/STATE ROUTE 8 S TOWARD BRIDGEPORT. KEEP LEFT, FOLLOW SIGNS FOR CT-8 S/BRIDGEPORT AND MERGE ONTO CT-8 S TAKE THE INTERSTATE 95 S EXIT TOWARD N.Y. CITY. MERGE ONTO I-95 S. TAKE EXIT 2 TOWARD DELAVAN AVE/BYRAM. CONTINUE ON FRONTAGE RD. DRIVE TO RITCH AVE W. CONTINUE ONTO FRONTAGE RD. TURN LEFT ONTO DELAVAN AVE. CONTINUE ONTO RITCH AVE W. DESTINATION WILL BE ON THE LEFT. 36 RITCH AVE W, GREENWICH, CT 06830

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT5004
SITE NAME: GREENWICH SW
AMERICAN TOWER CORP. SITE # ID: 414240

36 RITCH AVE WEST
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FAIRFIELD COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: GA

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
LTE 6C/7C/5G 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5004	T-1	1

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 STANDARDS) 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 AND #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 AWG 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 – SAI
   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. TOUCH UP 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		

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT5004
SITE NAME: GREENWICH SW
AMERICAN TOWER CORP. SITE # ID: 414240

36 RITCH AVE WEST
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FAIRFIELD COUNTY

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

STATE OF CONNECTICUT – DANIEL P. HAMM – No. 24178 – LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
LTE 6C/7C/5G 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5004	GN-1	1

NOTE:

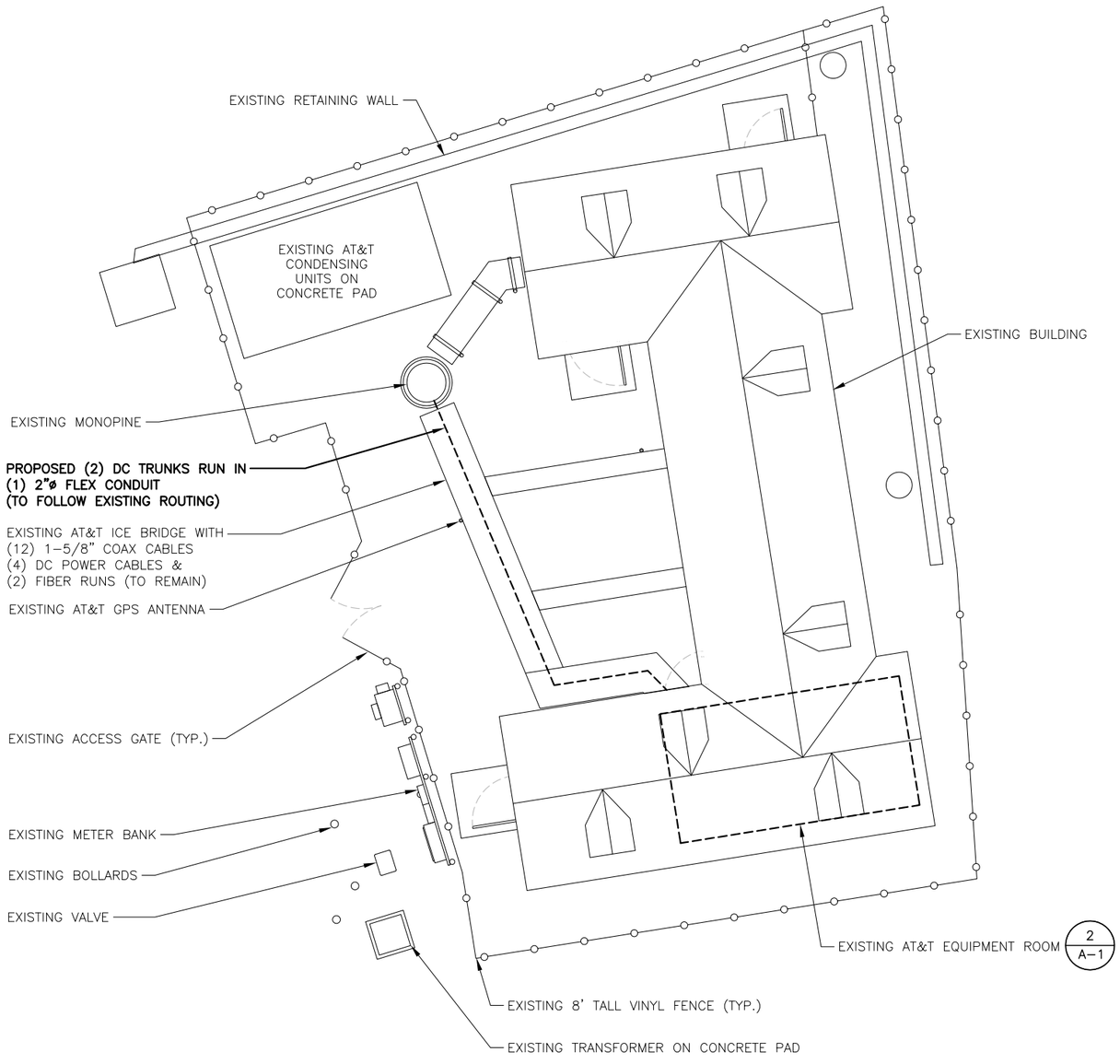
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

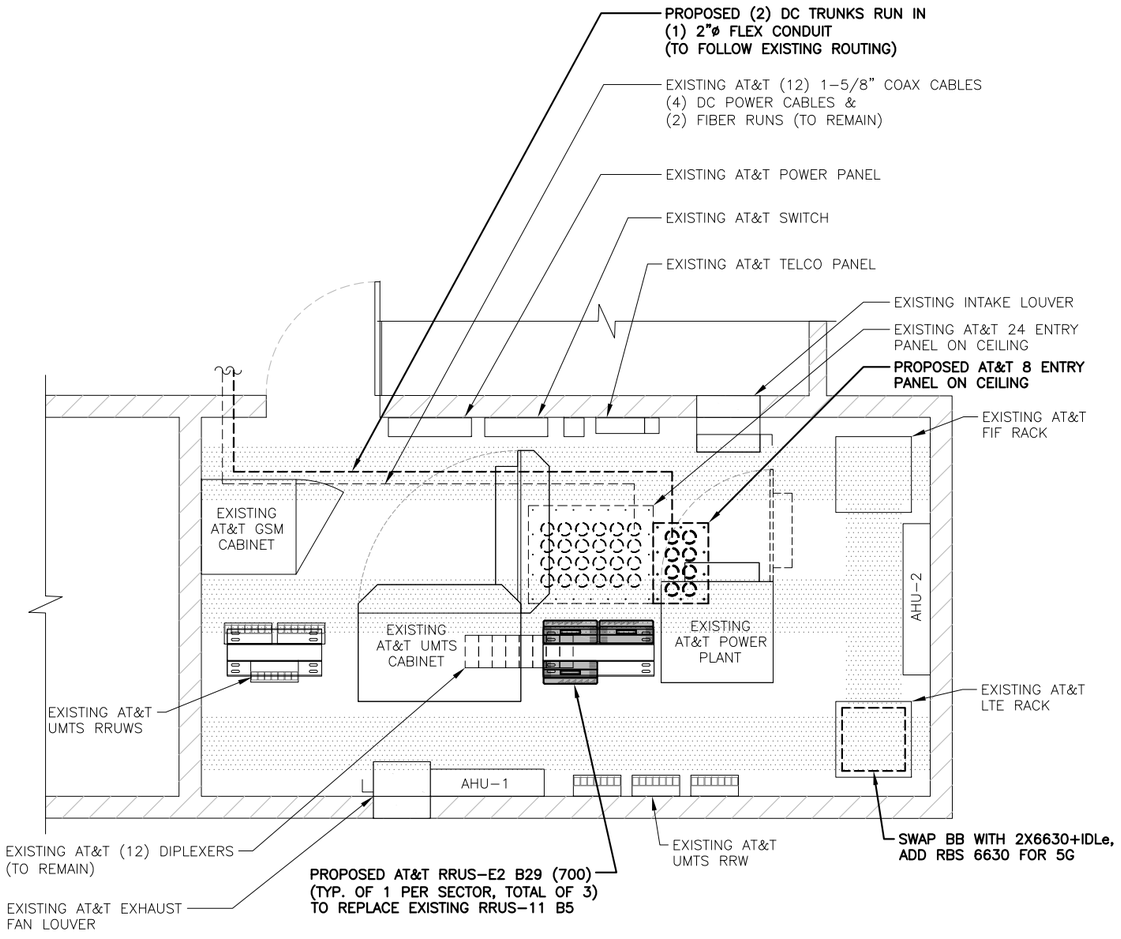
NOTE:

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

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: HUDSON DESIGN GROUP, LLC.
DATED: OCTOBER 02, 2019





MAGNETIC NORTH 12°59' TRUE NORTH

COMPOUND PLAN 1 A-1
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"
0 2'-8" 5'-4" 10'-8" 16'-0"

MAGNETIC NORTH 12°59' TRUE NORTH

EQUIPMENT PLAN 2 A-1
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

HUDSON Design Group LLC
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STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 6C/7C/5G 2019 UPGRADE

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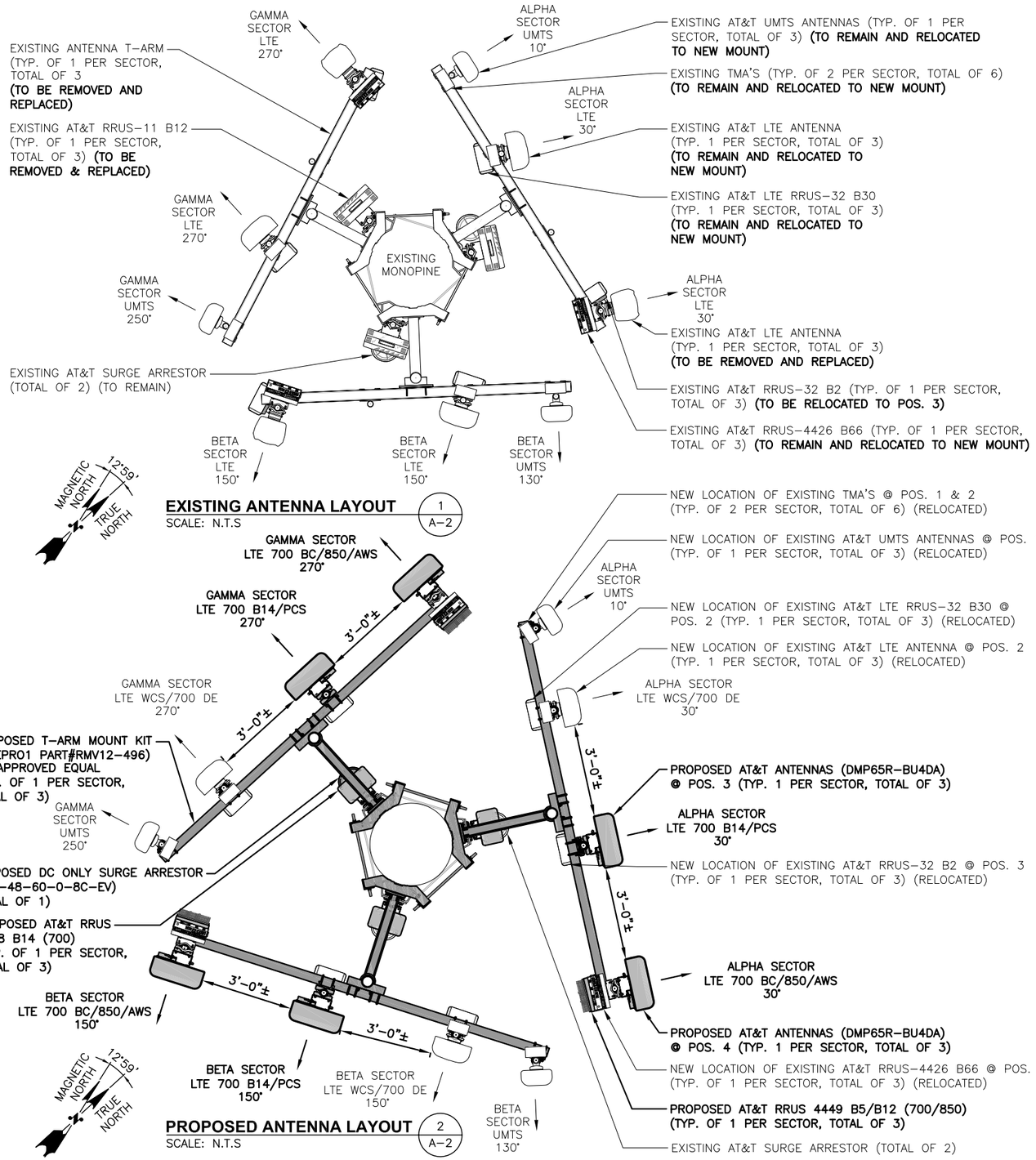
CT5004	A-1	1



EXISTING ANTENNA LAYOUT

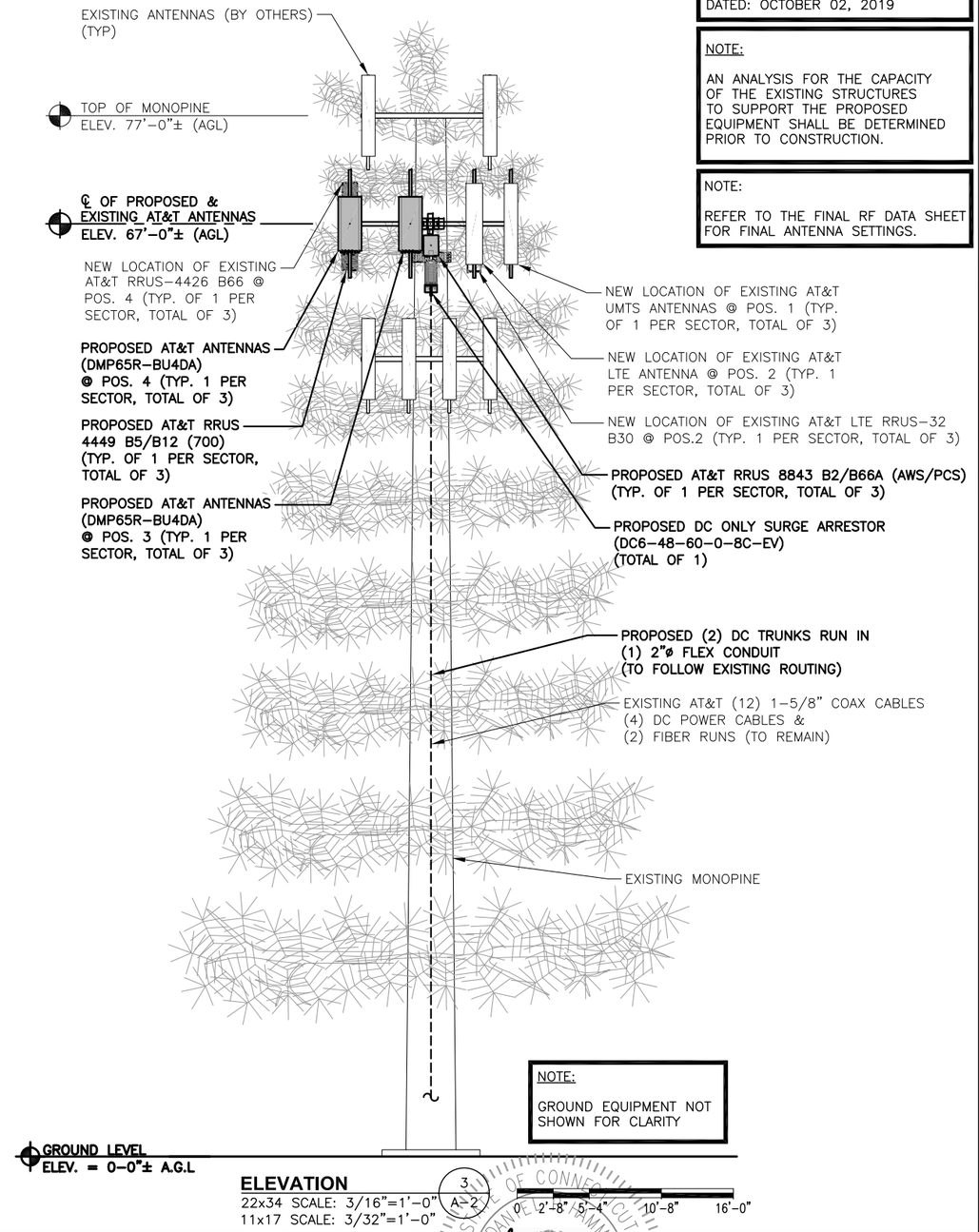
1 / A-2

SCALE: N.T.S

PROPOSED ANTENNA LAYOUT

2 / A-2

SCALE: N.T.S



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BY: HUDSON DESIGN GROUP, LLC.
DATED: OCTOBER 02, 2019

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

NOTE:

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

NOTE:

GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION

3 / A-2

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

0 2'-8" 5'-4" 10'-8" 16'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
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FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SITE NUMBER: CT5004
SITE NAME: GREENWICH SW
AMERICAN TOWER CORP. SITE # ID: 414240

36 RITCH AVE WEST
GREENWICH, CT 06830
FAIRFIELD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/16/19	ISSUED FOR CONSTRUCTION	SF	AT	DPH
A	10/02/19	ISSUED FOR REVIEW	GA	AT	DPH

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

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
LTE 6C/7C/5G 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5004	A-2	1

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	EXISTING	UMTS	P65-16-XLH-RR	72x12x6	67'-0"±	10°	(1)(E) DTMABP7819VG12A	– –	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE WCS/700 DE	OPA-65R-LCUU-H6	72x14.8x7.4	67'-0"±	30°	(1)(E) DTMABP7819VG12A	**(G)(1)(P) RRUS-E2 B29 (700)** (1)(E) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"**2 –	(2)1-5/8 COAX	
A3	**PROPOSED**	**LTE 700 B14/PCS**	**DMP65R-BU4DA**	**48x20.7x7.7**	**67'-0"±**	**30°**	–	**(1)(P) 4478 B14 (700)** (1)(E) RRUS-32 B2 (PCS)	**18.1"x13.4"x8.3"**2 –	–	
A4	**PROPOSED**	**700 BC/850/AWS**	**DMP65R-BU4DA**	**48x20.7x7.7**	**67'-0"±**	**30°**	–	**(1)(P) 4449 B5/B12 (700/850)** (1)(E) 4426 B66 (AWS)	**14.9"x13.2"x10.4"** –	–	
B1	EXISTING	UMTS	P65-16-XLH-RR	72x12x6	67'-0"±	130°	(1)(E) DTMABP7819VG12A	– –	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE WCS/700 DE	OPA-65R-LCUU-H6	72x14.8x7.4	67'-0"±	150°	(1)(E) DTMABP7819VG12A	**(G)(1)(P) RRUS-E2 B29 (700)** (1)(E) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"**2 –	(2)1-5/8 COAX	
B3	**PROPOSED**	**LTE 700 B14/PCS**	**DMP65R-BU4DA**	**48x20.7x7.7**	**67'-0"±**	**150°**	–	**(1)(P) 4478 B14 (700)** (1)(E) RRUS-32 B2 (PCS)	**18.1"x13.4"x8.3"**2 –	–	
B4	**PROPOSED**	**700 BC/850/AWS**	**DMP65R-BU4DA**	**48x20.7x7.7**	**67'-0"±**	**150°**	–	**(1)(P) 4449 B5/B12 (700/850)** (1)(E) 4426 B66 (AWS)	**14.9"x13.2"x10.4"** –	–	
C1	EXISTING	UMTS	P65-16-XLH-RR	72x12x6	67'-0"±	250°	(1)(E) DTMABP7819VG12A	– –	–	(2)1-5/8 COAX	**(P) (1) RAYCAP DC6-48-60-0-8C-EV**
C2	EXISTING	LTE WCS/700 DE	OPA-65R-LCUU-H6	72x14.8x7.4	67'-0"±	270°	(1)(E) DTMABP7819VG12A	**(G)(1)(P) RRUS-E2 B29 (700)** (1)(E) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"**2 –	(2)1-5/8 COAX	
C3	**PROPOSED**	**LTE 700 B14/PCS**	**DMP65R-BU4DA**	**48x20.7x7.7**	**67'-0"±**	**270°**	–	**(1)(P) 4478 B14 (700)** (1)(E) RRUS-32 B2 (PCS)	**18.1"x13.4"x8.3"**2 –	–	
C4	**PROPOSED**	**700 BC/850/AWS**	**DMP65R-BU4DA**	**48x20.7x7.7**	**67'-0"±**	**270°**	–	**(1)(P) 4449 B5/B12 (700/850)** (1)(E) 4426 B66 (AWS)	**14.9"x13.2"x10.4"** –	–	

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: HUDSON DESIGN GROUP, LLC.
DATED: OCTOBER 02, 2019

NOTE:

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

NOTE:

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

FINAL ANTENNA SCHEDULE

SCALE: N.T.S

(1) A-3

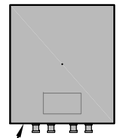
RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(P)	4449 (850/700)	14.9"x13.2"x10.4"
3(P)(G)	RRUS-E2 B29 (700)	20.4"x18.5"x7.5"
3(P)	4478 B14 (700)	18.1"x13.4"x8.3"
3(E)	4426	14.9"x13.2"x5.8"
3(E)	RRUS-32 (PCS)	27.2"x12.1"x7.0"
3(E)	RRUS-32 (WCS)	27.2"x12.1"x7.0"
6(E)(G)	RRUW	23.6"x13.8"x4.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



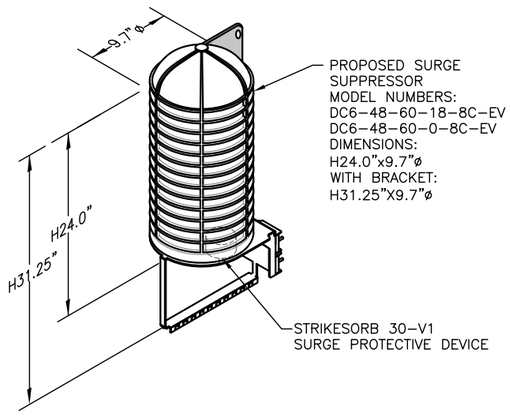
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL

SCALE: N.T.S

(2) A-3

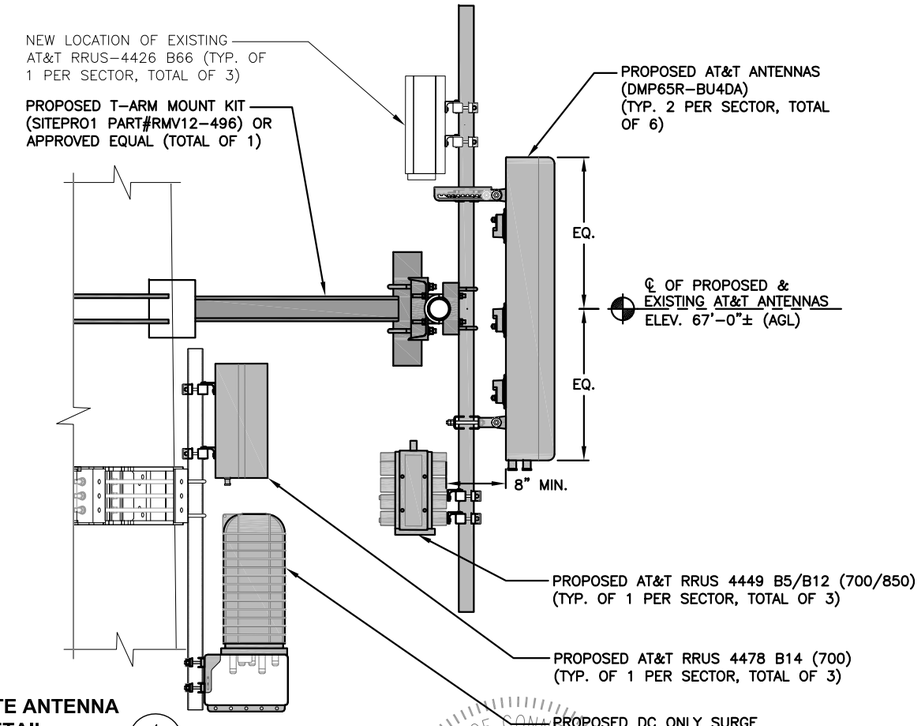


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

SCALE: N.T.S

(3) A-3



PROPOSED LTE ANTENNA MOUNTING DETAIL

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

(4) A-3

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SITE NUMBER: CT5004
SITE NAME: GREENWICH SW
AMERICAN TOWER CORP. SITE # ID: 414240

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FAIRFIELD COUNTY

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

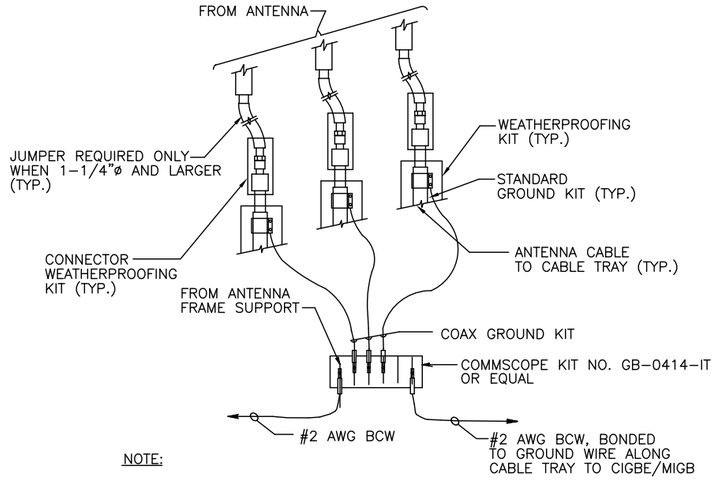
STATE OF CONNECTICUT DANIEL P. HAMM No.24178 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS

LTE 6C/7C/5G 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5004	A-3	1



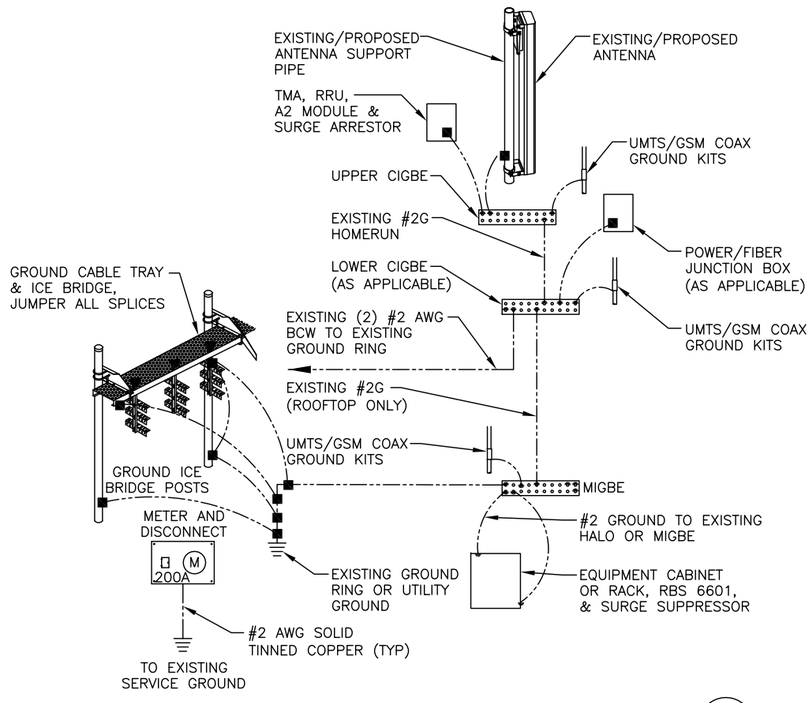
NOTE:

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

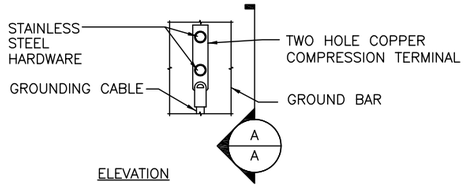
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:

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

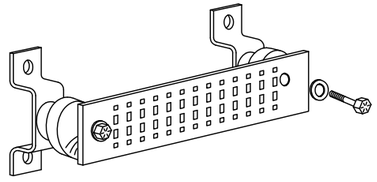
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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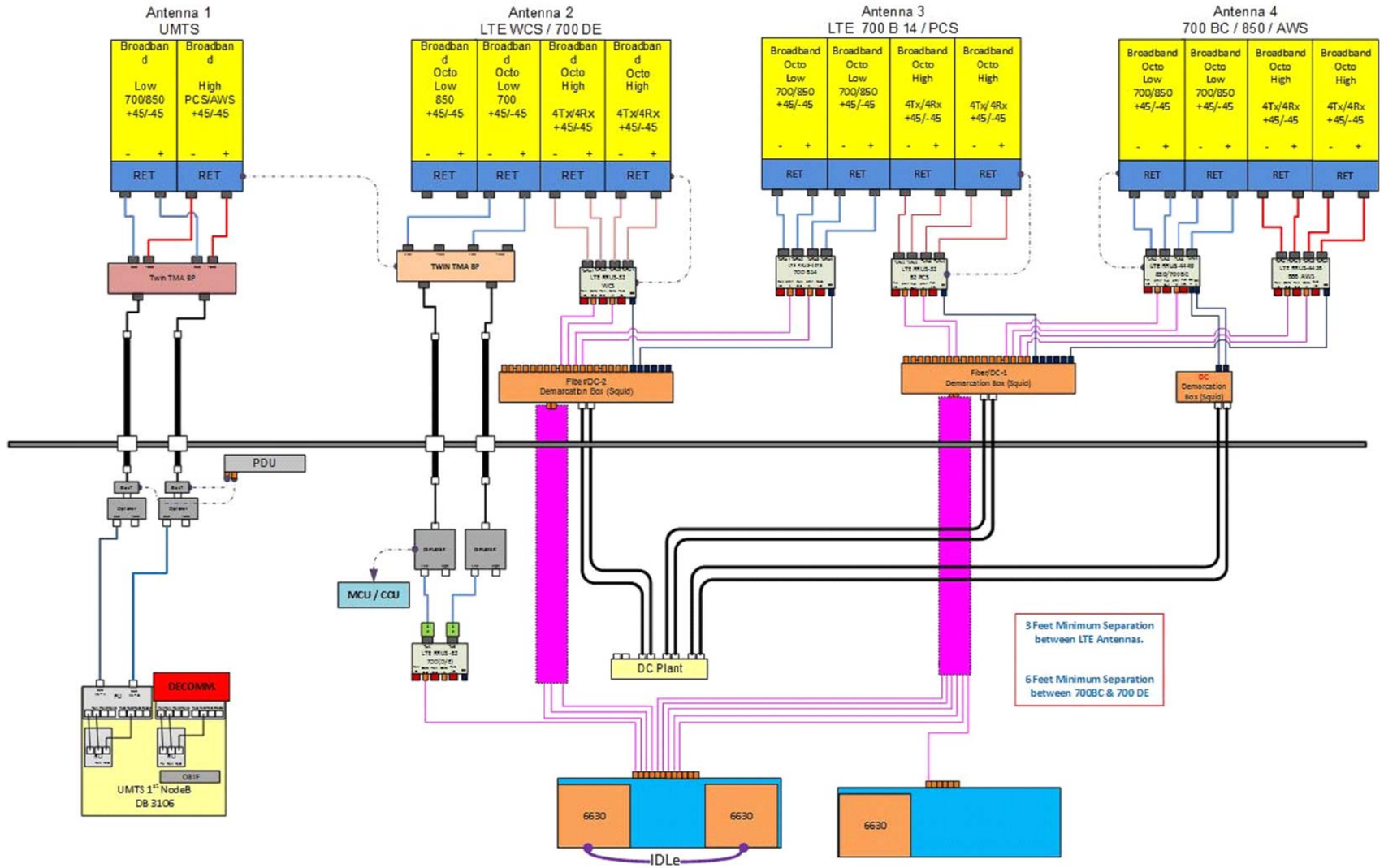
STATE OF CONNECTICUT DANIEL P. HAMM No.24178 LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
LTE 6C/7C/5G 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5004	G-1	1



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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AT&T

RF PLUMBING DIAGRAM
LTE 6C/7C/5G 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5004	RF–1	1

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**82.7 ft Monopine**
ATC Site Name	:	**Byram Park CT, CT**
ATC Asset Number	:	**414240**
Engineering Number	:	**OAA752407_C3_01**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**GREENWICH SW**
Carrier Site Number	:	**CT5004**
Site Location	:	**48 RITCH AVENUE WEST** **GREENWICH, CT 06830-9992** **41.005100,-73.648300**
County	:	**Fairfield**
Date	:	**September 27, 2019**
Max Usage	:	**59%**
Result	:	**Pass**

Prepared By:
Thomas Pham
Structural Engineer I

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 82.7 ft monopine to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	EEI Project #16733 Rev. 3, dated December 9, 2011
Foundation Drawing	Centek Engineering Job #09129 Rev. 0, dated February 14, 2012
Geotechnical Report	DET Job #2010.14, dated October 4, 2010
Modifications	ATC Project #OAA711130_C6_09, dated October 26, 2018

Analysis

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

Basic Wind Speed:	93 mph (3-Second Gust, V_{asd}) / 120 mph (3-Second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.26, S_1 = 0.07
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
89.0	2	dbSpectra DS7C09P36U-D	Pole Mount	(2) 1/2" Coax (2) 7/8" Coax	TOWN OF GREENWICH, CT
	1	Bird 428D-83I-01-T			
77.0	3	Ericsson RRUS 32 B66	T-Arm	(4) 1 1/4" Hybriflex Cable (3) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE
	3	Ericsson Radio 4449 B12,B71			
	3	Ericsson AIR-32 B2A/B66Aa			
	3	RFS APX16DWV-16DWVS-E-A20 (60" Height)			
	3	RFS APXVAARR24_43-U-NA20			
67.0	3	Ericsson RRUS 32 B2	Sector Frame	(2) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 4426 B66			
	2	Raycap DC6-48-60-18-8F(32.8 lbs)			
	6	CCI DTMABP7819VG12A			
	3	Ericsson RRUS-32 (77 lbs)			
	3	CCI OPA-65R-LCUU-H6			
	3	Powerwave Allgon P65-16-XLH-RR			
56.0	3	Alcatel-Lucent B66 RRH4x45	T-Arm	(18) 1 5/8" Coax (1) 1 5/8" (1.63"-41.3mm) Fiber (1) 1 5/8" Hybriflex	VERIZON WIRELESS
	2	Commscope RC2DC-4750-PF-48			
	3	Amphenol Antel BXA-171063-12CF			
	4	Commscope SBNHH-1D45A			
	3	Alcatel-Lucent RRH2x60 700			
	6	Amphenol Antel LPA-80063-6CF-EDIN-X			
	3	Alcatel-Lucent RRH 2X60-1900			
	2	Commscope SBNHH-1D65A			
	1	VZW Unused Reserve: 14138 sq in			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
67.0	3	Quintel QS66512-2	-	-	AT&T MOBILITY
	3	Ericsson RRUS-11			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
67.0	1	Raycap DC6-48-60-0-8C-EV	Sector Frame	(2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 4478 B14			
	6	CCI DMP65R-BU4D			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	39%	Pass
Shaft	37%	Pass
Base Plate	19%	Pass
Flange	1%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	4,555.2	2,310.2	51%
Shear (Kips)	74.4	44.0	59%

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) (°)
67.0	Raycap DC6-48-60-0-8C-EV	AT&T MOBILITY	0.189	0.281
	Ericsson RRUS 4449 B5, B12			
	Ericsson RRUS 4478 B14			
	CCI DMP65R-BU4D			

***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.

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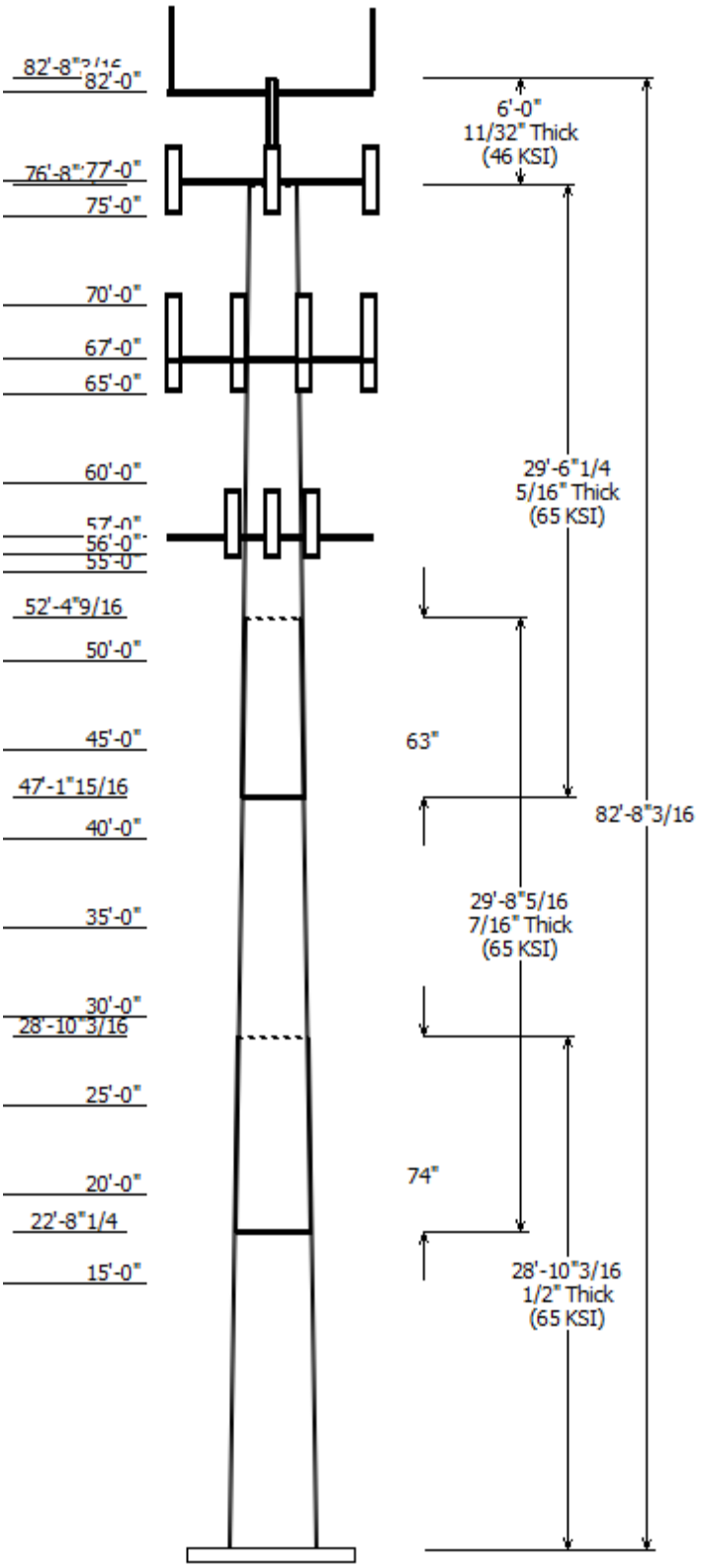


Job Information

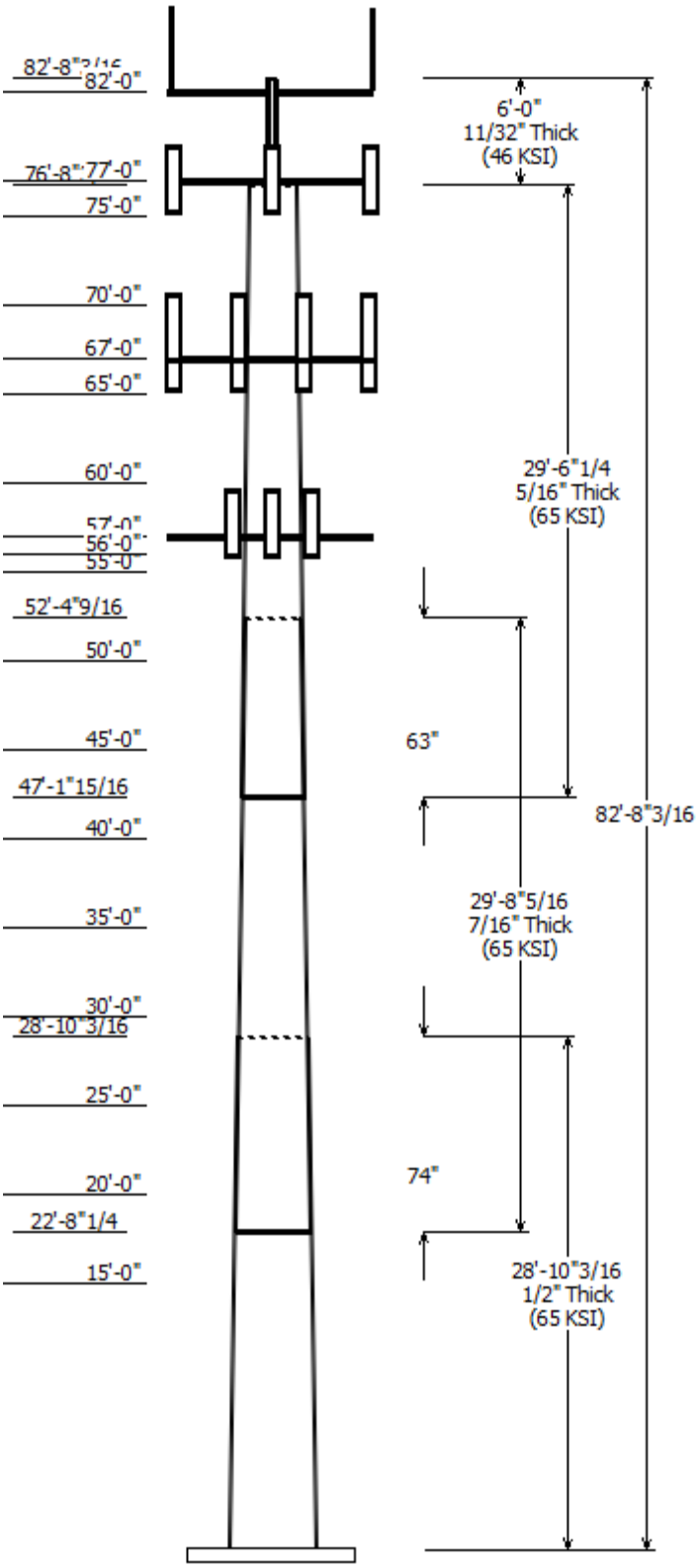
Client :	AT&T MOBILITY		
Pole :	414240	Code:	ANSI/TIA-222-G
Location :	Byram Park CT, CT		
Description :	77 ft monopine	Struct Class :	II
Shape :	18 Sides	Exposure :	C
Height :	82.68 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.335790 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	28.852	42.31	52.00	0.500		0.000	18 Sides	65
2	29.693	35.28	45.25	0.438	Slip Joint	73.969	18 Sides	65
3	29.521	27.75	37.66	0.313	Slip Joint	62.656	18 Sides	65
4	6.000	4.500	4.500	0.337	Butt Joint	0.000	Round	46

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
82.000	89.000	2	dbSpectra DS7C09P36U-D
82.000	89.000	1	Bird 428D-83I-01-T
82.000	82.000	2	Pole Mount
77.000	77.000	3	Flat T-Arms
77.000	77.000	3	RFS APXVAARR24_43-U-NA20
77.000	77.000	3	RFS APX16DWV-16DWVS-E-A20
77.000	77.000	3	Ericsson AIR-32 B2A/B66Aa
77.000	77.000	3	Ericsson RRUS 32 B66
77.000	77.000	3	Ericsson Radio 4449 B12,B71
75.000	75.400	1	Pine Branches
70.000	70.000	1	Pine Branches
67.000	67.000	3	Flat T-Arm
67.000	68.000	3	CCI OPA-65R-LCUU-H6
67.000	67.000	6	CCI DMP65R-BU4D
67.000	68.000	3	Powerwave Allgon P65-16-
67.000	68.000	3	Ericsson RRUS-32 (77 lbs)
67.000	68.000	3	Ericsson RRUS 32 B2
67.000	67.000	3	Ericsson RRUS 4478 B14
67.000	67.000	3	Ericsson RRUS 4449 B5, B12
67.000	68.000	3	Ericsson RRUS 4426 B66
67.000	68.000	2	Raycap DC6-48-60-18-8F(32.8 lb
67.000	67.000	1	Raycap DC6-48-60-0-8C-EV
67.000	68.000	6	CCI DTMABP7819VG12A
65.000	65.000	1	Pine Branches
60.000	60.000	1	Pine Branches
57.000	57.000	3	Flat T-Arm
56.000	57.000	3	Alcatel-Lucent RRH2x60 700
56.000	56.000	1	VZW Unused Reserve: 14138
56.000	57.000	6	Amphenol Antel LPA-80063-
56.000	57.000	4	Commscope SBNHH-1D45A
56.000	57.000	2	Commscope SBNHH-1D65A
56.000	57.000	3	Amphenol Antel BXA-171063-
56.000	57.000	2	Commscope RC2DC-4750-PF-
56.000	57.000	3	Alcatel-Lucent B66 RRH4x45
56.000	57.000	3	Alcatel-Lucent RRH 2X60-1900
55.000	55.000	1	Pine Branches
50.000	50.000	1	Pine Branches
45.000	45.000	1	Pine Branches
40.000	40.000	1	Pine Branches
35.000	35.000	1	Pine Branches
30.000	30.000	1	Pine Branches
25.000	25.000	1	Pine Branches
20.000	20.000	1	Pine Branches
15.000	15.000	1	Pine Branches



Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	56.000	1 5/8" (1.63"-	No
0.000	56.000	1 5/8" Coax	No
0.000	56.000	1 5/8" Hybriflex	No
0.000	57.000	1 5/8" Coax	No
0.000	67.000	0.39" (10mm)	No
0.000	67.000	0.78" (19.7mm) 8	No
0.000	67.000	0.78" (19.7mm) 8	No
0.000	67.000	1 5/8" Coax	No
0.000	67.000	2" conduit	No
0.000	77.000	1 1/4" Hybriflex	No
0.000	77.000	1 5/8" (1.63"-	No
0.000	89.000	1/2" Coax	No
0.000	89.000	7/8" Coax	No

Load Cases

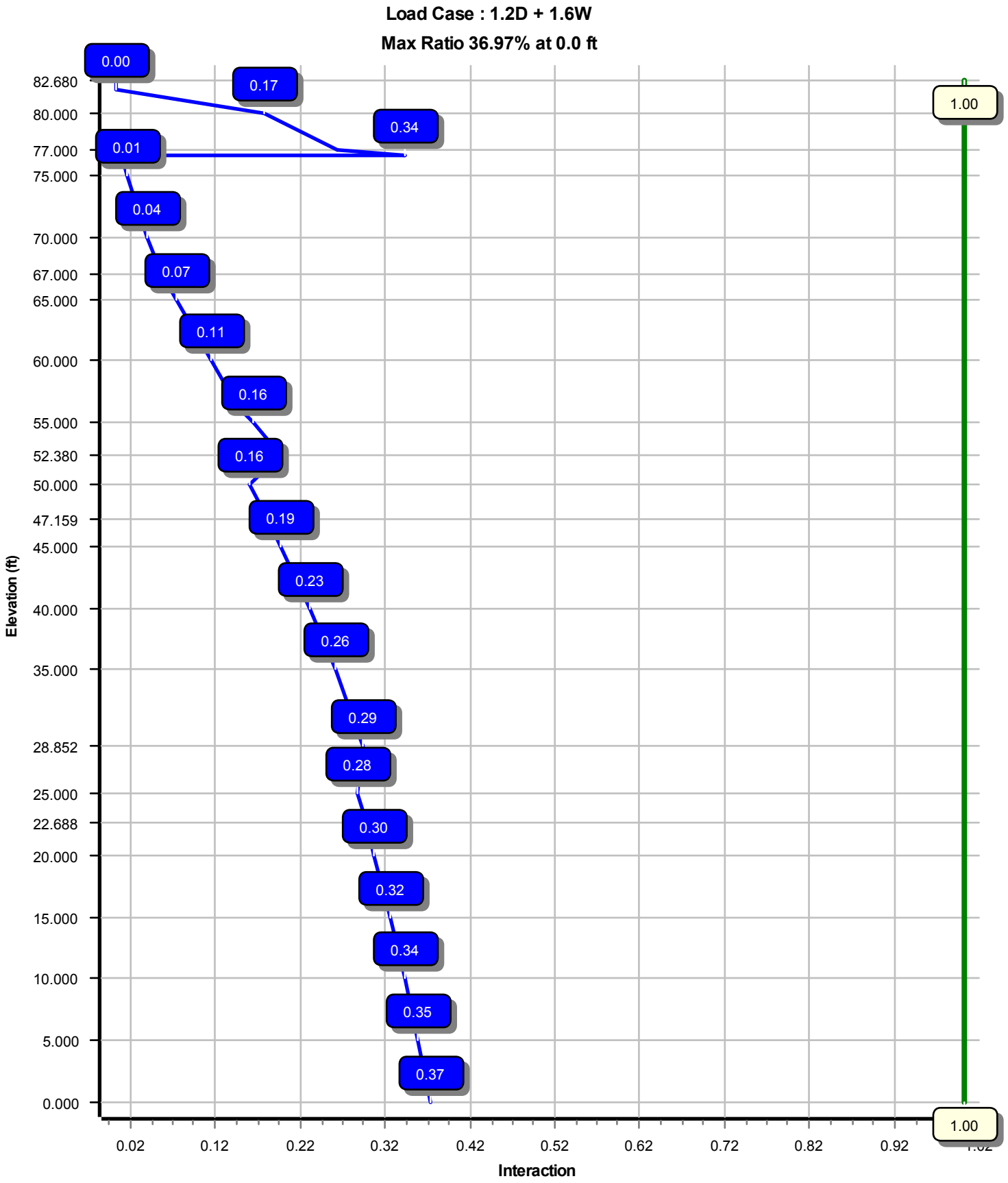
1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL)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

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2310.19	44.05	42.01
0.9D + 1.6W	2305.53	44.04	31.50
1.2D + 1.0Di + 1.0Wi	663.42	12.76	59.21
(1.2 + 0.2Sds) * DL + E ELFM	199.89	3.63	42.00
(1.2 + 0.2Sds) * DL + E EMAM	141.68	2.41	42.00
(0.9 - 0.2Sds) * DL + E ELFM	199.36	3.63	28.27
(0.9 - 0.2Sds) * DL + E EMAM	141.28	2.41	28.27
1.0D + 1.0W	537.41	10.26	35.05

Dish Deflections

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


Load Case : 1.2D + 1.6W
Max Ratio 36.97% at 0.0 ft
0.00
0.17
0.34
0.01
0.04
0.07
0.11
0.16
0.16
0.19
0.23
0.26
0.29
0.28
0.30
0.32
0.34
0.35
0.37
1.00
1.00
82.680
80.000
77.000
75.000
70.000
67.000
65.000
60.000
55.000
52.380
50.000
47.159
45.000
40.000
35.000
28.852
25.000
22.688
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: 414240 Code: ANSI/TIA-222-G © 2007 - 2019 by ATC IP LLC. All rights reserved.

Site Name: Byram Park CT, CT Engineering Number:OAA752407_C3_01 9/27/2019 12:57:55 PM

Customer: AT&T MOBILITY

Analysis Parameters

Location :	Fairfield County, CT	Height (ft) :	82.68
Code :	ANSI/TIA-222-G	Base Diameter (in) :	52.00
Shape :	18 Sides. Sect 4: Round	Top Diameter (in) :	4.50
Pole Type :	Custom	Taper (in/ft) :	0.336
Pole Manfacturer :	EEI	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	93 mph
Exposure Category:	C	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):	0.72				
T_L (sec):	6	p:	1	C_s:	0.104
S_s:	0.260	S_1:	0.070	C_s Max:	0.104
F_a:	1.592	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.276	S_{d1}:	0.112		

Load Cases

1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E 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

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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	28.852	0.5000	65		0.00	7,269	52.00	0.00	81.73	27386.5	16.57	104.00	42.31	28.85	66.35	14656.0	13.16	84.62	0.335790
2-18	29.693	0.4375	65	Slip	73.97	5,589	45.25	22.69	62.23	15794.9	16.48	103.44	35.28	52.38	48.39	7424.8	12.46	80.65	0.335790
3-18	29.521	0.3125	65	Slip	62.66	3,228	37.66	47.16	37.05	6530.4	19.49	120.53	27.75	76.68	27.22	2588.8	13.90	88.81	0.335790
4-R	6.000	0.3370	46	Butt	0.00	90	4.500	76.68	4.41	9.6	0.00	13.35	4.500	82.68	4.41	9.6	0.00	13.35	0.000000
				Shaft Weight		16,175													

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
82.00	Bird 428D-83I-01-T	1	1.00	7.000	8.90	0.470	1.00	25.39	0.922	1.00
82.00	Pole Mount	2	1.00	0.000	40.00	1.630	1.00	84.45	2.699	1.00
82.00	dbSpectra DS7C09P36U-D	2	1.00	7.000	70.00	3.550	1.00	156.42	8.306	1.00
77.00	Ericsson Radio 4449 B12,B71	3	0.80	0.000	74.00	1.640	0.50	126.47	2.431	0.50
77.00	Ericsson RRUS 32 B66	3	0.80	0.000	53.00	2.740	0.67	121.93	3.835	0.67
77.00	Ericsson AIR-32 B2A/B66Aa	3	0.80	0.000	132.20	6.510	0.71	281.79	8.563	0.71
77.00	RFS APX16DWV-16DWVS-E-A20	3	0.80	0.000	41.90	7.010	0.60	156.91	9.179	0.60
77.00	Flat T-Arms	3	0.75	0.000	250.00	12.900	0.67	445.88	20.565	0.67
77.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.240	0.63	495.84	23.716	0.63
75.00	Pine Branches	1	1.00	0.400	600.00	45.000	1.00	989.48	74.211	1.00
70.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	987.28	74.046	1.00
67.00	CCI DTMABP7819VG12A	6	0.80	1.000	19.20	0.970	0.50	42.71	1.573	0.50
67.00	Raycap DC6-48-60-0-8C-EV	1	0.80	0.000	16.00	1.020	1.00	57.80	1.541	1.00
67.00	Raycap DC6-48-60-18-8F(32.8	2	0.80	1.000	32.80	1.470	1.00	89.75	2.115	1.00
67.00	Ericsson RRUS 4426 B66	3	0.80	1.000	48.40	1.650	0.50	89.61	2.434	0.50
67.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.970	0.50	130.49	2.831	0.50
67.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.020	0.67	116.05	2.890	0.67
67.00	Ericsson RRUS 32 B2	3	0.80	1.000	53.00	2.740	0.67	120.89	3.818	0.67
67.00	Ericsson RRUS-32 (77 lbs)	3	0.80	1.000	77.00	3.310	0.71	166.77	4.493	0.71
67.00	Powerwave Allgon P65-16-XLH-	3	0.80	1.000	53.00	8.130	0.67	205.04	10.702	0.67
67.00	CCI DMP65R-BU4D	6	0.80	0.000	67.90	8.280	0.62	234.61	10.149	0.62
67.00	CCI OPA-65R-LCUU-H6	3	0.80	1.000	73.00	9.660	0.66	260.87	12.219	0.66
67.00	Flat T-Arm	3	0.75	0.000	250.00	12.900	0.67	442.92	20.449	0.67
65.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	983.74	73.781	1.00
60.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	981.21	73.591	1.00
57.00	Flat T-Arm	3	0.75	0.000	250.00	12.900	0.67	439.94	20.333	0.67
56.00	Alcatel-Lucent RRH 2X60-1900	3	0.80	1.000	39.60	1.880	0.50	89.41	2.732	0.50
56.00	Alcatel-Lucent RRH2x60 700	3	0.80	1.000	56.70	2.150	0.67	118.44	3.059	0.67
56.00	Alcatel-Lucent B66 RRH4x45	3	0.80	1.000	67.00	2.580	0.67	131.28	3.602	0.67
56.00	Commscope RC2DC-4750-PF-48	2	0.80	1.000	26.00	3.780	0.77	125.45	4.979	0.77
56.00	Amphenol Antel BXA-171063-	3	0.80	1.000	12.80	4.790	0.72	99.67	6.930	0.72
56.00	Commscope SBNHH-1D65A	2	0.80	1.000	33.50	5.880	0.77	156.30	7.809	0.77
56.00	Commscope SBNHH-1D45A	4	0.80	1.000	50.50	7.240	0.63	193.87	9.015	0.63
56.00	Amphenol Antel LPA-80063-6CF-	6	0.80	1.000	27.00	9.730	0.75	263.74	12.214	0.75
56.00	VZW Unused Reserve: 14138 sq	1	0.80	0.000	1,488.20	98.180	0.90	2,428.77	160.231	0.90
55.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	977.96	73.347	1.00
50.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	974.19	73.065	1.00
45.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	969.22	72.692	1.00
40.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	964.63	72.347	1.00
35.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	959.45	71.959	1.00
30.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	955.90	71.692	1.00
25.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	948.49	71.137	1.00
20.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	937.87	70.341	1.00
15.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	926.69	69.502	1.00
Totals	Num Loadings:44	105			15,974.00			32,435.22		

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Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	89.00	2	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	TOWN OF
0.00	89.00	2	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	TOWN OF
0.00	77.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	77.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	67.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	67.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	67.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	67.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	67.00	1	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	57.00	2	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	56.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	56.00	16	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	56.00	1	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS

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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		0.5000	52.000	81.728	27,386.5	16.57	104.00	81.9	1037.	0.0	0.0
5.00		0.5000	50.321	79.063	24,794.4	15.98	100.64	82.6	970.5	0.0	1,367.8
10.00		0.5000	48.642	76.399	22,371.2	15.39	97.28	82.6	905.9	0.0	1,322.5
15.00		0.5000	46.963	73.734	20,111.3	14.80	93.93	82.6	843.5	0.0	1,277.2
20.00		0.5000	45.284	71.070	18,009.0	14.21	90.57	82.6	783.3	0.0	1,231.8
22.69	Bot - Section 2	0.5000	44.382	69.638	16,942.1	13.89	88.76	82.6	751.9	0.0	643.4
25.00		0.5000	43.605	68.406	16,058.5	13.61	87.21	82.6	725.4	0.0	1,028.6
28.85	Top - Section 1	0.4375	43.187	59.361	13,706.1	15.64	98.71	82.6	625.1	0.0	1,672.8
30.00		0.4375	42.801	58.825	13,338.5	15.49	97.83	82.6	613.8	0.0	230.9
35.00		0.4375	41.122	56.494	11,814.7	14.81	93.99	82.6	565.9	0.0	981.0
40.00		0.4375	39.443	54.163	10,411.5	14.13	90.16	82.6	519.9	0.0	941.3
45.00		0.4375	37.764	51.831	9,124.1	13.46	86.32	82.6	475.9	0.0	901.7
47.16	Bot - Section 3	0.4375	37.040	50.825	8,602.8	13.16	84.66	82.6	457.5	0.0	377.1
50.00		0.4375	36.086	49.500	7,947.5	12.78	82.48	82.6	433.8	0.0	838.5
52.38	Top - Section 2	0.3125	35.911	35.308	5,653.3	18.50	114.92	79.6	310.1	0.0	685.6
55.00		0.3125	35.032	34.436	5,244.4	18.00	112.10	80.2	294.9	0.0	310.9
56.00		0.3125	34.696	34.103	5,093.7	17.81	111.03	80.4	289.2	0.0	116.6
57.00		0.3125	34.360	33.770	4,945.9	17.62	109.95	80.7	283.5	0.0	115.5
60.00		0.3125	33.353	32.770	4,519.8	17.06	106.73	81.3	266.9	0.0	339.6
65.00		0.3125	31.674	31.105	3,865.2	16.11	101.36	82.5	240.4	0.0	543.4
67.00		0.3125	31.002	30.439	3,622.2	15.73	99.21	82.6	230.1	0.0	209.4
70.00		0.3125	29.995	29.440	3,277.1	15.16	95.98	82.6	215.2	0.0	305.6
75.00		0.3125	28.316	27.775	2,751.8	14.21	90.61	82.6	191.4	0.0	486.7
76.68	Top - Section 3	0.3125	27.752	27.215	2,588.8	13.90	88.81	82.6	183.7	0.0	157.2
76.68	Bot - Section 4	0.3370	4.500	4.407	9.6	0.00	13.35	46.0	4.2	5.9	
77.00		0.3370	4.500	4.407	9.6	0.00	13.35	46.0	4.2	5.9	4.8
80.00		0.3370	4.500	4.407	9.6	0.00	13.35	46.0	4.2	5.9	45.0
82.00		0.3370	4.500	4.407	9.6	0.00	13.35	46.0	4.2	5.9	30.0
82.68		0.3370	4.500	4.407	9.6	0.00	13.35	46.0	4.2	5.9	10.2
											16,175.3

Site Number: 414240 Code: ANSI/TIA-222-G © 2007 - 2019 by ATC IP LLC. All rights reserved.

Site Name: Byram Park CT, CT Engineering Number:OAA752407_C3_01 9/27/2019 12:57:55 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 93 mph with No Ice 15 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		221.4	0.0					0.0	0.0	221.4	0.0	0.0	0.0
5.00		435.5	1,641.4					0.0	267.7	435.5	1,909.1	0.0	0.0
10.00		420.9	1,587.0					0.0	267.7	420.9	1,854.7	0.0	0.0
15.00	Appurtenance(s)	412.7	1,532.6	1,416.0	0.0	0.0	720.0	0.0	267.7	1,828.8	2,520.3	0.0	0.0
20.00	Appurtenance(s)	318.0	1,478.2	1,502.5	0.0	0.0	720.0	0.0	267.7	1,820.5	2,465.9	0.0	0.0
22.69	Bot - Section 2	211.0	772.1					0.0	143.9	211.0	915.9	0.0	0.0
25.00	Appurtenance(s)	263.9	1,234.3	1,574.7	0.0	0.0	720.0	0.0	123.8	1,838.6	2,078.1	0.0	0.0
28.85	Top - Section 1	214.2	2,007.4					0.0	206.2	214.2	2,213.6	0.0	0.0
30.00	Appurtenance(s)	262.6	277.1	1,636.4	0.0	0.0	720.0	0.0	61.5	1,898.9	1,058.6	0.0	0.0
35.00	Appurtenance(s)	424.5	1,177.2	1,690.3	0.0	0.0	720.0	0.0	267.7	2,114.8	2,164.9	0.0	0.0
40.00	Appurtenance(s)	418.8	1,129.6	1,738.5	0.0	0.0	720.0	0.0	267.7	2,157.3	2,117.3	0.0	0.0
45.00	Appurtenance(s)	296.1	1,082.0	1,782.2	0.0	0.0	720.0	0.0	267.7	2,078.3	2,069.7	0.0	0.0
47.16	Bot - Section 3	205.3	452.5					0.0	115.6	205.3	568.0	0.0	0.0
50.00	Appurtenance(s)	213.7	1,006.3	1,822.1	0.0	0.0	720.0	0.0	152.1	2,035.8	1,878.3	0.0	0.0
52.38	Top - Section 2	201.8	822.7					0.0	127.4	201.8	950.1	0.0	0.0
55.00	Appurtenance(s)	144.7	373.0	1,859.1	0.0	0.0	720.0	0.0	140.2	2,003.8	1,233.3	0.0	0.0
56.00	Appurtenance(s)	79.1	139.9	6,247.5	0.0	3,316.0	2,999.4	0.0	53.5	6,326.6	3,192.9	0.0	0.0
57.00	Appurtenance(s)	156.4	138.6	809.5	0.0	0.0	900.0	0.0	34.3	965.8	1,072.9	0.0	0.0
60.00	Appurtenance(s)	306.6	407.6	1,893.4	0.0	0.0	720.0	0.0	97.0	2,200.1	1,224.5	0.0	0.0
65.00	Appurtenance(s)	263.7	652.1	1,925.6	0.0	0.0	720.0	0.0	161.6	2,189.4	1,533.7	0.0	0.0
67.00	Appurtenance(s)	182.9	251.3	4,123.0	0.0	1,947.5	3,190.3	0.0	64.7	4,305.9	3,506.3	0.0	0.0
70.00	Appurtenance(s)	284.4	366.8	1,955.9	0.0	0.0	720.0	0.0	35.2	2,240.3	1,122.0	0.0	0.0
75.00	Appurtenance(s)	232.8	584.1	1,986.7	0.0	794.7	720.0	0.0	58.7	2,219.5	1,362.8	0.0	0.0
76.68	Top - Section 3	59.9	188.6					0.0	19.7	59.9	208.4	0.0	0.0
77.00	Appurtenance(s)	27.8	5.8	3,441.7	0.0	0.0	2,444.4	0.0	3.8	3,469.5	2,453.9	0.0	0.0
80.00		42.0	54.0					0.0	3.5	42.0	57.4	0.0	0.0
82.00	Appurtenance(s)	22.5	36.0	492.6	0.0	2,422.6	274.7	0.0	2.3	515.1	313.0	0.0	0.0
82.68		5.7	12.2					0.0	0.8	5.7	13.0	0.0	0.0
								Totals:		44,226.8	42,058.5	0.00	0.00

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Load Case: 1.2D + 1.6W 93 mph with No Ice 15 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	-42.01	-44.05	0.00	-2,310.19	0.00	2,310.19	6,024.56	3,012.28	12,725.4	6,372.20	0.00	0.00	0.370
5.00	-40.02	-43.69	0.00	-2,089.95	0.00	2,089.95	5,874.00	2,937.00	11,999.0	6,008.46	0.06	-0.11	0.355
10.00	-38.08	-43.34	0.00	-1,871.50	0.00	1,871.50	5,676.05	2,838.02	11,200.1	5,608.37	0.25	-0.23	0.341
15.00	-35.49	-41.57	0.00	-1,654.80	0.00	1,654.80	5,478.10	2,739.05	10,428.6	5,222.07	0.55	-0.34	0.324
20.00	-32.98	-39.78	0.00	-1,446.97	0.00	1,446.97	5,280.14	2,640.07	9,684.72	4,849.56	0.96	-0.45	0.305
22.69	-32.02	-39.59	0.00	-1,340.07	0.00	1,340.07	5,173.75	2,586.87	9,296.23	4,655.02	1.23	-0.51	0.294
25.00	-29.92	-37.77	0.00	-1,248.52	0.00	1,248.52	5,082.19	2,541.10	8,968.32	4,490.82	1.49	-0.56	0.284
28.85	-27.67	-37.55	0.00	-1,103.07	0.00	1,103.07	4,410.21	2,205.11	7,728.69	3,870.09	1.98	-0.64	0.292
30.00	-26.60	-35.67	0.00	-1,059.94	0.00	1,059.94	4,370.43	2,185.21	7,589.18	3,800.23	2.14	-0.66	0.285
35.00	-24.40	-33.57	0.00	-881.58	0.00	881.58	4,197.22	2,098.61	6,996.61	3,503.50	2.89	-0.77	0.258
40.00	-22.26	-31.42	0.00	-713.71	0.00	713.71	4,024.01	2,012.01	6,428.12	3,218.84	3.75	-0.86	0.228
45.00	-20.20	-29.33	0.00	-556.61	0.00	556.61	3,850.81	1,925.40	5,883.72	2,946.23	4.70	-0.95	0.194
47.16	-19.61	-29.13	0.00	-493.29	0.00	493.29	3,776.02	1,888.01	5,656.10	2,832.26	5.14	-0.99	0.180
50.00	-17.75	-27.07	0.00	-410.52	0.00	410.52	3,677.60	1,838.80	5,363.40	2,685.69	5.74	-1.03	0.158
52.38	-16.79	-26.86	0.00	-346.08	0.00	346.08	2,530.81	1,265.41	3,698.60	1,852.05	6.26	-1.06	0.194
55.00	-15.59	-24.84	0.00	-275.71	0.00	275.71	2,486.37	1,243.18	3,543.07	1,774.17	6.85	-1.09	0.162
56.00	-12.51	-18.46	0.00	-247.55	0.00	247.55	2,469.16	1,234.58	3,484.21	1,744.70	7.09	-1.11	0.147
57.00	-11.45	-17.48	0.00	-229.09	0.00	229.09	2,451.82	1,225.91	3,425.65	1,715.37	7.32	-1.12	0.138
60.00	-10.26	-15.26	0.00	-176.66	0.00	176.66	2,398.99	1,199.50	3,251.77	1,628.30	8.03	-1.15	0.113
65.00	-8.76	-13.04	0.00	-100.35	0.00	100.35	2,308.28	1,154.14	2,968.33	1,486.37	9.27	-1.20	0.071
67.00	-5.35	-8.67	0.00	-72.32	0.00	72.32	2,261.48	1,130.74	2,845.26	1,424.74	9.77	-1.21	0.053
70.00	-4.27	-6.40	0.00	-46.31	0.00	46.31	2,187.24	1,093.62	2,660.62	1,332.29	10.54	-1.22	0.037
75.00	-2.96	-4.16	0.00	-13.50	0.00	13.50	2,063.52	1,031.76	2,366.67	1,185.09	11.83	-1.24	0.013
76.68	-2.75	-4.09	0.00	-6.51	0.00	6.51	2,021.95	1,010.98	2,271.76	1,137.57	12.27	-1.24	0.007
76.68	-2.75	-4.09	0.00	-6.51	0.00	6.51	182.47	91.23	29.26	20.19	12.27	-1.24	0.340
77.00	-0.37	-0.57	0.00	-5.20	0.00	5.20	182.47	91.23	29.26	20.19	12.35	-1.24	0.260
80.00	-0.31	-0.53	0.00	-3.49	0.00	3.49	182.47	91.23	29.26	20.19	13.26	-1.63	0.174
82.00	-0.01	-0.01	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	13.98	-1.80	0.000
82.68	0.00	-0.01	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	14.24	-1.80	0.000

Site Number: 414240 Code: ANSI/TIA-222-G © 2007 - 2019 by ATC IP LLC. All rights reserved.

Site Name: Byram Park CT, CT Engineering Number:OAA752407_C3_01 9/27/2019 12:57:58 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W 93 mph with No Ice (Reduced DL) 15 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		221.4	0.0					0.0	0.0	221.4	0.0	0.0	0.0
5.00		435.5	1,231.1					0.0	200.7	435.5	1,431.8	0.0	0.0
10.00		420.9	1,190.3					0.0	200.7	420.9	1,391.0	0.0	0.0
15.00	Appurtenance(s)	412.7	1,149.5	1,416.0	0.0	0.0	540.0	0.0	200.7	1,828.8	1,890.2	0.0	0.0
20.00	Appurtenance(s)	318.0	1,108.7	1,502.5	0.0	0.0	540.0	0.0	200.7	1,820.5	1,849.4	0.0	0.0
22.69	Bot - Section 2	211.0	579.0					0.0	107.9	211.0	686.9	0.0	0.0
25.00	Appurtenance(s)	263.9	925.7	1,574.7	0.0	0.0	540.0	0.0	92.8	1,838.6	1,558.6	0.0	0.0
28.85	Top - Section 1	214.2	1,505.5					0.0	154.6	214.2	1,660.2	0.0	0.0
30.00	Appurtenance(s)	262.6	207.8	1,636.4	0.0	0.0	540.0	0.0	46.1	1,898.9	793.9	0.0	0.0
35.00	Appurtenance(s)	424.5	882.9	1,690.3	0.0	0.0	540.0	0.0	200.7	2,114.8	1,623.7	0.0	0.0
40.00	Appurtenance(s)	418.8	847.2	1,738.5	0.0	0.0	540.0	0.0	200.7	2,157.3	1,588.0	0.0	0.0
45.00	Appurtenance(s)	296.1	811.5	1,782.2	0.0	0.0	540.0	0.0	200.7	2,078.3	1,552.3	0.0	0.0
47.16	Bot - Section 3	205.3	339.4					0.0	86.7	205.3	426.0	0.0	0.0
50.00	Appurtenance(s)	213.7	754.7	1,822.1	0.0	0.0	540.0	0.0	114.1	2,035.8	1,408.8	0.0	0.0
52.38	Top - Section 2	201.8	617.0					0.0	95.6	201.8	712.6	0.0	0.0
55.00	Appurtenance(s)	144.7	279.8	1,859.1	0.0	0.0	540.0	0.0	105.2	2,003.8	925.0	0.0	0.0
56.00	Appurtenance(s)	79.1	104.9	6,247.5	0.0	3,316.0	2,249.5	0.0	40.1	6,326.6	2,394.6	0.0	0.0
57.00	Appurtenance(s)	156.4	103.9	809.5	0.0	0.0	675.0	0.0	25.7	965.8	804.7	0.0	0.0
60.00	Appurtenance(s)	306.6	305.7	1,893.4	0.0	0.0	540.0	0.0	72.7	2,200.1	918.4	0.0	0.0
65.00	Appurtenance(s)	263.7	489.0	1,925.6	0.0	0.0	540.0	0.0	121.2	2,189.4	1,150.3	0.0	0.0
67.00	Appurtenance(s)	182.9	188.5	4,123.0	0.0	1,947.5	2,392.7	0.0	48.5	4,305.9	2,629.7	0.0	0.0
70.00	Appurtenance(s)	284.4	275.1	1,955.9	0.0	0.0	540.0	0.0	26.4	2,240.3	841.5	0.0	0.0
75.00	Appurtenance(s)	232.8	438.1	1,986.7	0.0	794.7	540.0	0.0	44.1	2,219.5	1,022.1	0.0	0.0
76.68	Top - Section 3	59.9	141.5					0.0	14.8	59.9	156.3	0.0	0.0
77.00	Appurtenance(s)	27.8	4.3	3,441.7	0.0	0.0	1,833.3	0.0	2.8	3,469.5	1,840.4	0.0	0.0
80.00		42.0	40.5					0.0	2.6	42.0	43.1	0.0	0.0
82.00	Appurtenance(s)	22.5	27.0	492.6	0.0	2,422.6	206.0	0.0	1.7	515.1	234.7	0.0	0.0
82.68		5.7	9.2					0.0	0.6	5.7	9.8	0.0	0.0
								Totals:		44,226.8	31,543.9	0.00	0.00

Site Number: 414240 Code: ANSI/TIA-222-G © 2007 - 2019 by ATC IP LLC. All rights reserved.

Site Name: Byram Park CT, CT Engineering Number:OAA752407_C3_01 9/27/2019 12:58:00 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W 93 mph with No Ice (Reduced DL) 15 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	-31.50	-44.04	0.00	-2,305.53	0.00	2,305.53	6,024.56	3,012.28	12,725.4	6,372.20	0.00	0.00	0.367
5.00	-29.98	-43.66	0.00	-2,085.35	0.00	2,085.35	5,874.00	2,937.00	11,999.0	6,008.46	0.06	-0.11	0.352
10.00	-28.50	-43.29	0.00	-1,867.05	0.00	1,867.05	5,676.05	2,838.02	11,200.1	5,608.37	0.25	-0.23	0.338
15.00	-26.54	-41.50	0.00	-1,650.60	0.00	1,650.60	5,478.10	2,739.05	10,428.6	5,222.07	0.55	-0.34	0.321
20.00	-24.65	-39.71	0.00	-1,443.08	0.00	1,443.08	5,280.14	2,640.07	9,684.72	4,849.56	0.96	-0.45	0.302
22.69	-23.93	-39.51	0.00	-1,336.37	0.00	1,336.37	5,173.75	2,586.87	9,296.23	4,655.02	1.23	-0.51	0.292
25.00	-22.34	-37.69	0.00	-1,244.99	0.00	1,244.99	5,082.19	2,541.10	8,968.32	4,490.82	1.49	-0.56	0.282
28.85	-20.65	-37.47	0.00	-1,099.85	0.00	1,099.85	4,410.21	2,205.11	7,728.69	3,870.09	1.98	-0.64	0.289
30.00	-19.84	-35.59	0.00	-1,056.81	0.00	1,056.81	4,370.43	2,185.21	7,589.18	3,800.23	2.13	-0.66	0.283
35.00	-18.18	-33.48	0.00	-878.88	0.00	878.88	4,197.22	2,098.61	6,996.61	3,503.50	2.88	-0.77	0.255
40.00	-16.58	-31.33	0.00	-711.46	0.00	711.46	4,024.01	2,012.01	6,428.12	3,218.84	3.74	-0.86	0.225
45.00	-15.03	-29.24	0.00	-554.81	0.00	554.81	3,850.81	1,925.40	5,883.72	2,946.23	4.69	-0.95	0.192
47.16	-14.58	-29.04	0.00	-491.68	0.00	491.68	3,776.02	1,888.01	5,656.10	2,832.26	5.13	-0.98	0.178
50.00	-13.19	-26.99	0.00	-409.17	0.00	409.17	3,677.60	1,838.80	5,363.40	2,685.69	5.73	-1.02	0.156
52.38	-12.47	-26.78	0.00	-344.93	0.00	344.93	2,530.81	1,265.41	3,698.60	1,852.05	6.25	-1.06	0.192
55.00	-11.57	-24.77	0.00	-274.77	0.00	274.77	2,486.37	1,243.18	3,543.07	1,774.17	6.84	-1.09	0.160
56.00	-9.30	-18.40	0.00	-246.69	0.00	246.69	2,469.16	1,234.58	3,484.21	1,744.70	7.07	-1.10	0.145
57.00	-8.50	-17.42	0.00	-228.29	0.00	228.29	2,451.82	1,225.91	3,425.65	1,715.37	7.30	-1.12	0.137
60.00	-7.62	-15.21	0.00	-176.03	0.00	176.03	2,398.99	1,199.50	3,251.77	1,628.30	8.01	-1.15	0.111
65.00	-6.51	-13.00	0.00	-100.00	0.00	100.00	2,308.28	1,154.14	2,968.33	1,486.37	9.24	-1.19	0.070
67.00	-3.97	-8.64	0.00	-72.06	0.00	72.06	2,261.48	1,130.74	2,845.26	1,424.74	9.75	-1.21	0.052
70.00	-3.17	-6.38	0.00	-46.15	0.00	46.15	2,187.24	1,093.62	2,660.62	1,332.29	10.51	-1.22	0.036
75.00	-2.20	-4.14	0.00	-13.45	0.00	13.45	2,063.52	1,031.76	2,366.67	1,185.09	11.80	-1.23	0.012
76.68	-2.04	-4.08	0.00	-6.50	0.00	6.50	2,021.95	1,010.98	2,271.76	1,137.57	12.23	-1.24	0.007
76.68	-2.04	-4.08	0.00	-6.50	0.00	6.50	182.47	91.23	29.26	20.19	12.23	-1.24	0.335
77.00	-0.27	-0.57	0.00	-5.19	0.00	5.19	182.47	91.23	29.26	20.19	12.32	-1.24	0.259
80.00	-0.23	-0.53	0.00	-3.48	0.00	3.48	182.47	91.23	29.26	20.19	13.22	-1.62	0.174
82.00	-0.01	-0.01	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	13.94	-1.80	0.000
82.68	0.00	-0.01	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	14.20	-1.80	0.000

Site Number: 414240 Code: ANSI/TIA-222-G © 2007 - 2019 by ATC IP LLC. All rights reserved.

Site Name: Byram Park CT, CT Engineering Number:OAA752407_C3_01 9/27/2019 12:58:00 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 15 Iterations

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

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		77.1	0.0					0.0	0.0	77.1	0.0	0.0	0.0
5.00		152.2	2,015.1					0.0	267.7	152.2	2,282.8	0.0	0.0
10.00		147.9	1,991.6					0.0	267.7	147.9	2,259.3	0.0	0.0
15.00	Appurtenance(s)	145.6	1,944.7	395.1	0.0	0.0	926.7	0.0	267.7	540.8	3,139.0	0.0	0.0
20.00	Appurtenance(s)	112.6	1,890.0	424.3	0.0	0.0	937.9	0.0	267.7	536.8	3,095.5	0.0	0.0
22.69	Bot - Section 2	74.8	993.6					0.0	143.9	74.8	1,137.4	0.0	0.0
25.00	Appurtenance(s)	93.8	1,427.5	449.7	0.0	0.0	948.5	0.0	123.8	543.5	2,499.8	0.0	0.0
28.85	Top - Section 1	76.2	2,324.1					0.0	206.2	76.2	2,530.3	0.0	0.0
30.00	Appurtenance(s)	93.7	371.6	471.0	0.0	0.0	955.9	0.0	61.5	564.7	1,389.0	0.0	0.0
35.00	Appurtenance(s)	151.8	1,577.0	488.3	0.0	0.0	959.5	0.0	267.7	640.1	2,804.1	0.0	0.0
40.00	Appurtenance(s)	150.4	1,519.4	504.9	0.0	0.0	964.6	0.0	267.7	655.3	2,751.7	0.0	0.0
45.00	Appurtenance(s)	106.6	1,460.7	520.1	0.0	0.0	969.2	0.0	267.7	626.7	2,697.6	0.0	0.0
47.16	Bot - Section 3	74.1	614.3					0.0	115.6	74.1	729.9	0.0	0.0
50.00	Appurtenance(s)	77.2	1,218.6	534.5	0.0	0.0	974.2	0.0	152.1	611.7	2,344.9	0.0	0.0
52.38	Top - Section 2	73.1	997.9					0.0	127.4	73.1	1,125.3	0.0	0.0
55.00	Appurtenance(s)	52.5	562.2	547.4	0.0	0.0	978.0	0.0	140.2	599.9	1,680.4	0.0	0.0
56.00	Appurtenance(s)	28.8	211.7	1,645.4	0.0	781.1	5,847.2	0.0	53.5	1,674.1	6,112.4	0.0	0.0
57.00	Appurtenance(s)	56.9	209.8	230.5	0.0	0.0	1,319.8	0.0	34.3	287.4	1,564.0	0.0	0.0
60.00	Appurtenance(s)	112.0	616.1	559.4	0.0	0.0	981.2	0.0	97.0	671.4	1,694.3	0.0	0.0
65.00	Appurtenance(s)	96.6	985.2	570.4	0.0	0.0	983.7	0.0	161.6	667.0	2,130.6	0.0	0.0
67.00	Appurtenance(s)	67.3	382.6	1,018.7	0.0	471.7	5,853.2	0.0	64.7	1,086.0	6,300.4	0.0	0.0
70.00	Appurtenance(s)	105.1	558.4	581.4	0.0	0.0	987.3	0.0	35.2	686.5	1,580.9	0.0	0.0
75.00	Appurtenance(s)	86.2	888.3	591.9	0.0	236.8	989.5	0.0	58.7	678.2	1,936.5	0.0	0.0
76.68	Top - Section 3	22.3	289.4					0.0	19.7	22.3	309.1	0.0	0.0
77.00	Appurtenance(s)	10.4	9.7	831.2	0.0	0.0	4,451.6	0.0	3.8	841.6	4,465.1	0.0	0.0
80.00		15.7	90.8					0.0	3.5	15.7	94.2	0.0	0.0
82.00	Appurtenance(s)	8.5	60.6	188.6	0.0	1,013.7	479.5	0.0	2.3	197.1	542.4	0.0	0.0
82.68		2.2	20.6					0.0	0.8	2.2	21.4	0.0	0.0
								Totals:		12,824.2	59,218.2	0.00	0.00

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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 15 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	-59.21	-12.76	0.00	-663.42	0.00	663.42	6,024.56	3,012.28	12,725.4	6,372.20	0.00	0.00	0.114
5.00	-56.92	-12.64	0.00	-599.59	0.00	599.59	5,874.00	2,937.00	11,999.0	6,008.46	0.02	-0.03	0.110
10.00	-54.66	-12.53	0.00	-536.37	0.00	536.37	5,676.05	2,838.02	11,200.1	5,608.37	0.07	-0.07	0.105
15.00	-51.51	-12.01	0.00	-473.75	0.00	473.75	5,478.10	2,739.05	10,428.6	5,222.07	0.16	-0.10	0.100
20.00	-48.41	-11.49	0.00	-413.71	0.00	413.71	5,280.14	2,640.07	9,684.72	4,849.56	0.28	-0.13	0.094
22.69	-47.27	-11.42	0.00	-382.84	0.00	382.84	5,173.75	2,586.87	9,296.23	4,655.02	0.35	-0.15	0.091
25.00	-44.77	-10.89	0.00	-356.43	0.00	356.43	5,082.19	2,541.10	8,968.32	4,490.82	0.43	-0.16	0.088
28.85	-42.24	-10.81	0.00	-314.50	0.00	314.50	4,410.21	2,205.11	7,728.69	3,870.09	0.57	-0.18	0.091
30.00	-40.85	-10.26	0.00	-302.09	0.00	302.09	4,370.43	2,185.21	7,589.18	3,800.23	0.61	-0.19	0.089
35.00	-38.04	-9.63	0.00	-250.80	0.00	250.80	4,197.22	2,098.61	6,996.61	3,503.50	0.83	-0.22	0.081
40.00	-35.29	-8.97	0.00	-202.68	0.00	202.68	4,024.01	2,012.01	6,428.12	3,218.84	1.07	-0.25	0.072
45.00	-32.59	-8.35	0.00	-157.80	0.00	157.80	3,850.81	1,925.40	5,883.72	2,946.23	1.35	-0.27	0.062
47.16	-31.86	-8.27	0.00	-139.79	0.00	139.79	3,776.02	1,888.01	5,656.10	2,832.26	1.47	-0.28	0.058
50.00	-29.52	-7.66	0.00	-116.28	0.00	116.28	3,677.60	1,838.80	5,363.40	2,685.69	1.64	-0.29	0.051
52.38	-28.39	-7.58	0.00	-98.06	0.00	98.06	2,530.81	1,265.41	3,698.60	1,852.05	1.79	-0.30	0.064
55.00	-26.71	-6.98	0.00	-78.20	0.00	78.20	2,486.37	1,243.18	3,543.07	1,774.17	1.96	-0.31	0.055
56.00	-20.61	-5.27	0.00	-70.44	0.00	70.44	2,469.16	1,234.58	3,484.21	1,744.70	2.03	-0.32	0.049
57.00	-19.05	-4.98	0.00	-65.17	0.00	65.17	2,451.82	1,225.91	3,425.65	1,715.37	2.09	-0.32	0.046
60.00	-17.36	-4.30	0.00	-50.24	0.00	50.24	2,398.99	1,199.50	3,251.77	1,628.30	2.30	-0.33	0.038
65.00	-15.23	-3.62	0.00	-28.75	0.00	28.75	2,308.28	1,154.14	2,968.33	1,486.37	2.65	-0.34	0.026
67.00	-8.93	-2.50	0.00	-21.04	0.00	21.04	2,261.48	1,130.74	2,845.26	1,424.74	2.79	-0.35	0.019
70.00	-7.36	-1.80	0.00	-13.55	0.00	13.55	2,187.24	1,093.62	2,660.62	1,332.29	3.01	-0.35	0.014
75.00	-5.43	-1.11	0.00	-4.30	0.00	4.30	2,063.52	1,031.76	2,366.67	1,185.09	3.38	-0.35	0.006
76.68	-5.12	-1.09	0.00	-2.43	0.00	2.43	2,021.95	1,010.98	2,271.76	1,137.57	3.50	-0.35	0.005
76.68	-5.12	-1.09	0.00	-2.43	0.00	2.43	182.47	91.23	29.26	20.19	3.50	-0.35	0.149
77.00	-0.66	-0.22	0.00	-2.08	0.00	2.08	182.47	91.23	29.26	20.19	3.53	-0.35	0.107
80.00	-0.56	-0.20	0.00	-1.42	0.00	1.42	182.47	91.23	29.26	20.19	3.80	-0.51	0.074
82.00	-0.02	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	4.03	-0.58	0.000
82.68	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	4.12	-0.58	0.000

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Load Case: 1.0D + 1.0W Serviceability 60 mph 15 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		51.5	0.0					0.0	0.0	51.5	0.0	0.0	0.0
5.00		101.4	1,367.8					0.0	223.0	101.4	1,590.9	0.0	0.0
10.00		98.0	1,322.5					0.0	223.0	98.0	1,545.6	0.0	0.0
15.00	Appurtenance(s)	96.1	1,277.2	329.6	0.0	0.0	600.0	0.0	223.0	425.7	2,100.2	0.0	0.0
20.00	Appurtenance(s)	74.0	1,231.8	349.7	0.0	0.0	600.0	0.0	223.0	423.7	2,054.9	0.0	0.0
22.69	Bot - Section 2	49.1	643.4					0.0	119.9	49.1	763.3	0.0	0.0
25.00	Appurtenance(s)	61.4	1,028.6	366.5	0.0	0.0	600.0	0.0	103.2	428.0	1,731.8	0.0	0.0
28.85	Top - Section 1	49.9	1,672.8					0.0	171.8	49.9	1,844.6	0.0	0.0
30.00	Appurtenance(s)	61.1	230.9	380.9	0.0	0.0	600.0	0.0	51.2	442.0	882.2	0.0	0.0
35.00	Appurtenance(s)	98.8	981.0	393.4	0.0	0.0	600.0	0.0	223.0	492.3	1,804.1	0.0	0.0
40.00	Appurtenance(s)	97.5	941.3	404.7	0.0	0.0	600.0	0.0	223.0	502.1	1,764.4	0.0	0.0
45.00	Appurtenance(s)	68.9	901.7	414.8	0.0	0.0	600.0	0.0	223.0	483.7	1,724.7	0.0	0.0
47.16	Bot - Section 3	47.8	377.1					0.0	96.3	47.8	473.4	0.0	0.0
50.00	Appurtenance(s)	49.7	838.5	424.1	0.0	0.0	600.0	0.0	126.7	473.9	1,565.3	0.0	0.0
52.38	Top - Section 2	47.0	685.6					0.0	106.2	47.0	791.8	0.0	0.0
55.00	Appurtenance(s)	33.7	310.9	432.7	0.0	0.0	600.0	0.0	116.9	466.4	1,027.7	0.0	0.0
56.00	Appurtenance(s)	18.4	116.6	1,454.2	0.0	771.8	2,499.5	0.0	44.6	1,472.6	2,660.7	0.0	0.0
57.00	Appurtenance(s)	36.4	115.5	188.4	0.0	0.0	750.0	0.0	28.6	224.8	894.1	0.0	0.0
60.00	Appurtenance(s)	71.4	339.6	440.7	0.0	0.0	600.0	0.0	80.8	512.1	1,020.5	0.0	0.0
65.00	Appurtenance(s)	61.4	543.4	448.2	0.0	0.0	600.0	0.0	134.7	509.6	1,278.1	0.0	0.0
67.00	Appurtenance(s)	42.6	209.4	959.7	0.0	453.3	2,658.6	0.0	53.9	1,002.2	2,921.9	0.0	0.0
70.00	Appurtenance(s)	66.2	305.6	455.3	0.0	0.0	600.0	0.0	29.4	521.5	935.0	0.0	0.0
75.00	Appurtenance(s)	54.2	486.7	462.4	0.0	185.0	600.0	0.0	48.9	516.6	1,135.7	0.0	0.0
76.68	Top - Section 3	14.1	157.2					0.0	16.4	14.1	173.6	0.0	0.0
77.00	Appurtenance(s)	7.7	4.8	801.1	0.0	0.0	2,037.0	0.0	3.1	808.8	2,044.9	0.0	0.0
80.00		11.7	45.0					0.0	2.9	11.7	47.9	0.0	0.0
82.00	Appurtenance(s)	6.3	30.0	114.7	0.0	563.9	228.9	0.0	1.9	121.0	260.8	0.0	0.0
82.68		1.6	10.2					0.0	0.7	1.6	10.9	0.0	0.0
									Totals:	10,298.9	35,048.7	0.00	0.00

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Load Case: 1.0D + 1.0W Serviceability 60 mph 15 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	-35.05	-10.26	0.00	-537.41	0.00	537.41	6,024.56	3,012.28	12,725.4	6,372.20	0.00	0.00	0.090
5.00	-33.45	-10.17	0.00	-486.13	0.00	486.13	5,874.00	2,937.00	11,999.0	6,008.46	0.01	-0.03	0.087
10.00	-31.90	-10.09	0.00	-435.29	0.00	435.29	5,676.05	2,838.02	11,200.1	5,608.37	0.06	-0.05	0.083
15.00	-29.80	-9.67	0.00	-384.86	0.00	384.86	5,478.10	2,739.05	10,428.6	5,222.07	0.13	-0.08	0.079
20.00	-27.74	-9.25	0.00	-336.51	0.00	336.51	5,280.14	2,640.07	9,684.72	4,849.56	0.22	-0.10	0.075
22.69	-26.97	-9.21	0.00	-311.64	0.00	311.64	5,173.75	2,586.87	9,296.23	4,655.02	0.29	-0.12	0.072
25.00	-25.24	-8.78	0.00	-290.35	0.00	290.35	5,082.19	2,541.10	8,968.32	4,490.82	0.35	-0.13	0.070
28.85	-23.39	-8.73	0.00	-256.52	0.00	256.52	4,410.21	2,205.11	7,728.69	3,870.09	0.46	-0.15	0.072
30.00	-22.51	-8.30	0.00	-246.49	0.00	246.49	4,370.43	2,185.21	7,589.18	3,800.23	0.50	-0.15	0.070
35.00	-20.71	-7.81	0.00	-205.02	0.00	205.02	4,197.22	2,098.61	6,996.61	3,503.50	0.67	-0.18	0.063
40.00	-18.94	-7.31	0.00	-165.99	0.00	165.99	4,024.01	2,012.01	6,428.12	3,218.84	0.87	-0.20	0.056
45.00	-17.22	-6.82	0.00	-129.46	0.00	129.46	3,850.81	1,925.40	5,883.72	2,946.23	1.09	-0.22	0.048
47.16	-16.74	-6.77	0.00	-114.74	0.00	114.74	3,776.02	1,888.01	5,656.10	2,832.26	1.20	-0.23	0.045
50.00	-15.18	-6.29	0.00	-95.50	0.00	95.50	3,677.60	1,838.80	5,363.40	2,685.69	1.34	-0.24	0.040
52.38	-14.38	-6.25	0.00	-80.52	0.00	80.52	2,530.81	1,265.41	3,698.60	1,852.05	1.46	-0.25	0.049
55.00	-13.36	-5.78	0.00	-64.16	0.00	64.16	2,486.37	1,243.18	3,543.07	1,774.17	1.59	-0.25	0.042
56.00	-10.70	-4.29	0.00	-57.61	0.00	57.61	2,469.16	1,234.58	3,484.21	1,744.70	1.65	-0.26	0.037
57.00	-9.81	-4.06	0.00	-53.32	0.00	53.32	2,451.82	1,225.91	3,425.65	1,715.37	1.70	-0.26	0.035
60.00	-8.79	-3.55	0.00	-41.12	0.00	41.12	2,398.99	1,199.50	3,251.77	1,628.30	1.87	-0.27	0.029
65.00	-7.52	-3.03	0.00	-23.38	0.00	23.38	2,308.28	1,154.14	2,968.33	1,486.37	2.16	-0.28	0.019
67.00	-4.60	-2.02	0.00	-16.86	0.00	16.86	2,261.48	1,130.74	2,845.26	1,424.74	2.27	-0.28	0.014
70.00	-3.67	-1.49	0.00	-10.80	0.00	10.80	2,187.24	1,093.62	2,660.62	1,332.29	2.45	-0.28	0.010
75.00	-2.53	-0.97	0.00	-3.16	0.00	3.16	2,063.52	1,031.76	2,366.67	1,185.09	2.75	-0.29	0.004
76.68	-2.36	-0.95	0.00	-1.53	0.00	1.53	2,021.95	1,010.98	2,271.76	1,137.57	2.85	-0.29	0.003
76.68	-2.36	-0.95	0.00	-1.53	0.00	1.53	182.47	91.23	29.26	20.19	2.85	-0.29	0.089
77.00	-0.32	-0.14	0.00	-1.22	0.00	1.22	182.47	91.23	29.26	20.19	2.87	-0.29	0.062
80.00	-0.27	-0.12	0.00	-0.81	0.00	0.81	182.47	91.23	29.26	20.19	3.08	-0.38	0.042
82.00	-0.01	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	3.25	-0.42	0.000
82.68	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	3.31	-0.42	0.000

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Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.26	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.07	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.59	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.28	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11	
Seismic Response Coefficient (C_s):	0.10	
Upper Limit C_s	0.10	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	0.72	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	1.11	
Total Unfactored Dead Load:	35.05	k
Seismic Base Shear (E):	3.63	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)
27	82.34	11	1	0.001	2	14
26	81.00	32	4	0.002	7	40
25	78.50	48	6	0.003	10	60
24	76.84	8	1	0.000	2	10
23	75.84	174	21	0.009	33	218
22	72.50	536	62	0.027	98	672
21	68.50	335	37	0.016	58	420
20	66.00	263	28	0.012	43	330
19	62.50	678	67	0.029	105	851
18	58.50	420	39	0.017	61	528
17	56.50	144	13	0.006	20	181
16	55.50	161	14	0.006	22	202
15	53.69	428	36	0.015	56	537
14	51.19	792	63	0.027	99	994
13	48.58	965	72	0.031	113	1,212
12	46.08	473	33	0.014	52	594
11	42.50	1,125	72	0.031	114	1,412
10	37.50	1,164	65	0.028	103	1,462
9	32.50	1,204	57	0.025	91	1,511
8	29.43	282	12	0.005	19	354
7	26.93	1,845	71	0.031	113	2,315
6	23.84	1,132	38	0.017	60	1,421
5	21.34	763	23	0.010	36	958

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4	17.50	1,455	35	0.015	55	1,826
3	12.50	1,500	25	0.011	39	1,883
2	7.50	1,546	14	0.006	23	1,940
1	2.50	1,591	4	0.002	7	1,997
Bird 428D-83I-01-T	82.00	9	1	0.001	2	11
Pole Mount	82.00	80	11	0.005	17	100
dbSpectra DS7C09P36U	82.00	140	19	0.008	29	176
Ericsson Radio 4449	77.00	222	28	0.012	43	279
Ericsson RRUS 32 B66	77.00	159	20	0.009	31	200
Ericsson AIR-32 B2A/	77.00	397	49	0.021	78	498
RFS APX16DWV-16DWVS-	77.00	126	16	0.007	25	158
Flat T-Arms	77.00	750	93	0.040	147	941
RFS APXVAARR24_43-U-	77.00	384	48	0.021	75	482
Pine Branches	75.00	600	72	0.031	114	753
Pine Branches	70.00	600	67	0.029	106	753
CCI DTMABP7819VG12A	67.00	115	12	0.005	19	145
Raycap DC6-48-60-0-8	67.00	16	2	0.001	3	20
Raycap DC6-48-60-18-	67.00	66	7	0.003	11	82
Ericsson RRUS 4426 B	67.00	145	15	0.007	24	182
Ericsson RRUS 4449 B	67.00	213	23	0.010	36	267
Ericsson RRUS 4478 B	67.00	178	19	0.008	30	224
Ericsson RRUS 32 B2	67.00	159	17	0.007	27	200
Ericsson RRUS-32 (77	67.00	231	25	0.011	39	290
Powerwave Allgon P65	67.00	159	17	0.007	27	200
CCI DMP65R-BU4D	67.00	407	43	0.019	68	511
CCI OPA-65R-LCUU-H6	67.00	219	23	0.010	37	275
Flat T-Arm	67.00	750	80	0.035	126	941
Pine Branches	65.00	600	62	0.027	97	753
Pine Branches	60.00	600	57	0.025	89	753
Flat T-Arm	57.00	750	67	0.029	105	941
Alcatel-Lucent RRH 2	56.00	119	10	0.004	16	149
Alcatel-Lucent RRH2x	56.00	170	15	0.006	23	214
Alcatel-Lucent B66 R	56.00	201	18	0.008	28	252
Commscope RC2DC-4750	56.00	52	5	0.002	7	65
Amphenol Antel BXA-1	56.00	38	3	0.001	5	48
Commscope SBNHH-1D65	56.00	67	6	0.003	9	84
Commscope SBNHH-1D45	56.00	202	18	0.008	28	254
Amphenol Antel LPA-8	56.00	162	14	0.006	22	203
VZW Unused Reserve:	56.00	1,488	130	0.056	205	1,868
Pine Branches	55.00	600	51	0.022	81	753
Pine Branches	50.00	600	46	0.020	73	753
Pine Branches	45.00	600	41	0.018	65	753
Pine Branches	40.00	600	36	0.016	57	753
Pine Branches	35.00	600	31	0.013	49	753
Pine Branches	30.00	600	26	0.011	41	753
Pine Branches	25.00	600	21	0.009	34	753
Pine Branches	20.00	600	17	0.007	26	753
Pine Branches	15.00	600	12	0.005	19	753
		35,049	2,304	1.000	3,633	43,993

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)
27	82.34	11	1	0.001	2	9
26	81.00	32	4	0.002	7	27
25	78.50	48	6	0.003	10	40
24	76.84	8	1	0.000	2	7
23	75.84	174	21	0.009	33	147
22	72.50	536	62	0.027	98	453

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21	68.50	335	37	0.016	58	283
20	66.00	263	28	0.012	43	222
19	62.50	678	67	0.029	105	573
18	58.50	420	39	0.017	61	355
17	56.50	144	13	0.006	20	122
16	55.50	161	14	0.006	22	136
15	53.69	428	36	0.015	56	361
14	51.19	792	63	0.027	99	669
13	48.58	965	72	0.031	113	815
12	46.08	473	33	0.014	52	400
11	42.50	1,125	72	0.031	114	950
10	37.50	1,164	65	0.028	103	984
9	32.50	1,204	57	0.025	91	1,017
8	29.43	282	12	0.005	19	238
7	26.93	1,845	71	0.031	113	1,558
6	23.84	1,132	38	0.017	60	956
5	21.34	763	23	0.010	36	645
4	17.50	1,455	35	0.015	55	1,229
3	12.50	1,500	25	0.011	39	1,267
2	7.50	1,546	14	0.006	23	1,306
1	2.50	1,591	4	0.002	7	1,344
Bird 428D-83I-01-T	82.00	9	1	0.001	2	8
Pole Mount	82.00	80	11	0.005	17	68
dbSpectra DS7C09P36U	82.00	140	19	0.008	29	118
Ericsson Radio 4449	77.00	222	28	0.012	43	188
Ericsson RRUS 32 B66	77.00	159	20	0.009	31	134
Ericsson AIR-32 B2A/	77.00	397	49	0.021	78	335
RFS APX16DWV-16DWVS-	77.00	126	16	0.007	25	106
Flat T-Arms	77.00	750	93	0.040	147	634
RFS APXVAARR24_43-U-	77.00	384	48	0.021	75	324
Pine Branches	75.00	600	72	0.031	114	507
Pine Branches	70.00	600	67	0.029	106	507
CCI DTMABP7819VG12A	67.00	115	12	0.005	19	97
Raycap DC6-48-60-0-8	67.00	16	2	0.001	3	14
Raycap DC6-48-60-18-	67.00	66	7	0.003	11	55
Ericsson RRUS 4426 B	67.00	145	15	0.007	24	123
Ericsson RRUS 4449 B	67.00	213	23	0.010	36	180
Ericsson RRUS 4478 B	67.00	178	19	0.008	30	151
Ericsson RRUS 32 B2	67.00	159	17	0.007	27	134
Ericsson RRUS-32 (77	67.00	231	25	0.011	39	195
Powerwave Allgon P65	67.00	159	17	0.007	27	134
CCI DMP65R-BU4D	67.00	407	43	0.019	68	344
CCI OPA-65R-LCUU-H6	67.00	219	23	0.010	37	185
Flat T-Arm	67.00	750	80	0.035	126	634
Pine Branches	65.00	600	62	0.027	97	507
Pine Branches	60.00	600	57	0.025	89	507
Flat T-Arm	57.00	750	67	0.029	105	634
Alcatel-Lucent RRH 2	56.00	119	10	0.004	16	100
Alcatel-Lucent RRH2x	56.00	170	15	0.006	23	144
Alcatel-Lucent B66 R	56.00	201	18	0.008	28	170
Commscope RC2DC-4750	56.00	52	5	0.002	7	44
Amphenol Antel BXA-1	56.00	38	3	0.001	5	32
Commscope SBNHH-1D65	56.00	67	6	0.003	9	57
Commscope SBNHH-1D45	56.00	202	18	0.008	28	171
Amphenol Antel LPA-8	56.00	162	14	0.006	22	137
VZW Unused Reserve:	56.00	1,488	130	0.056	205	1,257
Pine Branches	55.00	600	51	0.022	81	507
Pine Branches	50.00	600	46	0.020	73	507
Pine Branches	45.00	600	41	0.018	65	507
Pine Branches	40.00	600	36	0.016	57	507
Pine Branches	35.00	600	31	0.013	49	507
Pine Branches	30.00	600	26	0.011	41	507
Pine Branches	25.00	600	21	0.009	34	507
Pine Branches	20.00	600	17	0.007	26	507

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Pine Branches	15.00	600	12	0.005	19	507
		35,049	2,304	1.000	3,633	29,610

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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	-42.00	-3.63	0.00	-199.89	0.00	199.89	6,024.56	3,012.28	12,725.4	6,372.20	0.00	0.00	0.038
5.00	-40.06	-3.61	0.00	-181.74	0.00	181.74	5,874.00	2,937.00	11,999.0	6,008.46	0.01	-0.01	0.037
10.00	-38.17	-3.58	0.00	-163.67	0.00	163.67	5,676.05	2,838.02	11,200.1	5,608.37	0.02	-0.02	0.036
15.00	-35.59	-3.51	0.00	-145.77	0.00	145.77	5,478.10	2,739.05	10,428.6	5,222.07	0.05	-0.03	0.034
20.00	-33.88	-3.45	0.00	-128.21	0.00	128.21	5,280.14	2,640.07	9,684.72	4,849.56	0.08	-0.04	0.033
22.69	-32.46	-3.39	0.00	-118.93	0.00	118.93	5,173.75	2,586.87	9,296.23	4,655.02	0.11	-0.04	0.032
25.00	-29.39	-3.25	0.00	-111.08	0.00	111.08	5,082.19	2,541.10	8,968.32	4,490.82	0.13	-0.05	0.031
28.85	-29.04	-3.23	0.00	-98.57	0.00	98.57	4,410.21	2,205.11	7,728.69	3,870.09	0.17	-0.06	0.032
30.00	-26.77	-3.10	0.00	-94.86	0.00	94.86	4,370.43	2,185.21	7,589.18	3,800.23	0.19	-0.06	0.031
35.00	-24.56	-2.95	0.00	-79.36	0.00	79.36	4,197.22	2,098.61	6,996.61	3,503.50	0.25	-0.07	0.029
40.00	-22.39	-2.78	0.00	-64.62	0.00	64.62	4,024.01	2,012.01	6,428.12	3,218.84	0.33	-0.08	0.026
45.00	-21.04	-2.66	0.00	-50.72	0.00	50.72	3,850.81	1,925.40	5,883.72	2,946.23	0.41	-0.08	0.023
47.16	-19.83	-2.55	0.00	-44.97	0.00	44.97	3,776.02	1,888.01	5,656.10	2,832.26	0.45	-0.09	0.021
50.00	-18.09	-2.38	0.00	-37.73	0.00	37.73	3,677.60	1,838.80	5,363.40	2,685.69	0.51	-0.09	0.019
52.38	-17.55	-2.32	0.00	-32.08	0.00	32.08	2,530.81	1,265.41	3,698.60	1,852.05	0.55	-0.09	0.024
55.00	-16.59	-2.22	0.00	-26.00	0.00	26.00	2,486.37	1,243.18	3,543.07	1,774.17	0.60	-0.10	0.021
56.00	-13.28	-1.85	0.00	-23.78	0.00	23.78	2,469.16	1,234.58	3,484.21	1,744.70	0.63	-0.10	0.019
57.00	-11.81	-1.68	0.00	-21.94	0.00	21.94	2,451.82	1,225.91	3,425.65	1,715.37	0.65	-0.10	0.018
60.00	-10.20	-1.48	0.00	-16.90	0.00	16.90	2,398.99	1,199.50	3,251.77	1,628.30	0.71	-0.10	0.015
65.00	-9.12	-1.34	0.00	-9.49	0.00	9.49	2,308.28	1,154.14	2,968.33	1,486.37	0.82	-0.11	0.010
67.00	-5.36	-0.83	0.00	-6.82	0.00	6.82	2,261.48	1,130.74	2,845.26	1,424.74	0.87	-0.11	0.007
70.00	-3.94	-0.62	0.00	-4.33	0.00	4.33	2,187.24	1,093.62	2,660.62	1,332.29	0.93	-0.11	0.005
75.00	-2.97	-0.47	0.00	-1.22	0.00	1.22	2,063.52	1,031.76	2,366.67	1,185.09	1.05	-0.11	0.002
76.68	-2.96	-0.47	0.00	-0.43	0.00	0.43	2,021.95	1,010.98	2,271.76	1,137.57	1.09	-0.11	0.002
76.68	-2.96	-0.47	0.00	-0.43	0.00	0.43	182.47	91.23	29.26	20.19	1.09	-0.11	0.037
77.00	-0.34	-0.06	0.00	-0.27	0.00	0.27	182.47	91.23	29.26	20.19	1.10	-0.11	0.015
80.00	-0.30	-0.05	0.00	-0.10	0.00	0.10	182.47	91.23	29.26	20.19	1.17	-0.13	0.007
82.00	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	1.23	-0.13	0.000
82.68	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	1.25	-0.13	0.000

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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	-28.27	-3.63	0.00	-199.36	0.00	199.36	6,024.56	3,012.28	12,725.4	6,372.20	0.00	0.00	0.036
5.00	-26.96	-3.61	0.00	-181.21	0.00	181.21	5,874.00	2,937.00	11,999.0	6,008.46	0.01	-0.01	0.035
10.00	-25.69	-3.58	0.00	-163.16	0.00	163.16	5,676.05	2,838.02	11,200.1	5,608.37	0.02	-0.02	0.034
15.00	-23.95	-3.50	0.00	-145.29	0.00	145.29	5,478.10	2,739.05	10,428.6	5,222.07	0.05	-0.03	0.032
20.00	-22.80	-3.44	0.00	-127.77	0.00	127.77	5,280.14	2,640.07	9,684.72	4,849.56	0.08	-0.04	0.031
22.69	-21.85	-3.39	0.00	-118.51	0.00	118.51	5,173.75	2,586.87	9,296.23	4,655.02	0.11	-0.04	0.030
25.00	-19.78	-3.24	0.00	-110.68	0.00	110.68	5,082.19	2,541.10	8,968.32	4,490.82	0.13	-0.05	0.029
28.85	-19.54	-3.22	0.00	-98.20	0.00	98.20	4,410.21	2,205.11	7,728.69	3,870.09	0.17	-0.06	0.030
30.00	-18.02	-3.09	0.00	-94.50	0.00	94.50	4,370.43	2,185.21	7,589.18	3,800.23	0.19	-0.06	0.029
35.00	-16.53	-2.94	0.00	-79.05	0.00	79.05	4,197.22	2,098.61	6,996.61	3,503.50	0.25	-0.07	0.027
40.00	-15.07	-2.77	0.00	-64.36	0.00	64.36	4,024.01	2,012.01	6,428.12	3,218.84	0.33	-0.08	0.024
45.00	-14.16	-2.65	0.00	-50.51	0.00	50.51	3,850.81	1,925.40	5,883.72	2,946.23	0.41	-0.08	0.021
47.16	-13.35	-2.54	0.00	-44.79	0.00	44.79	3,776.02	1,888.01	5,656.10	2,832.26	0.45	-0.09	0.019
50.00	-12.17	-2.37	0.00	-37.57	0.00	37.57	3,677.60	1,838.80	5,363.40	2,685.69	0.50	-0.09	0.017
52.38	-11.81	-2.31	0.00	-31.94	0.00	31.94	2,530.81	1,265.41	3,698.60	1,852.05	0.55	-0.09	0.022
55.00	-11.17	-2.21	0.00	-25.89	0.00	25.89	2,486.37	1,243.18	3,543.07	1,774.17	0.60	-0.10	0.019
56.00	-8.93	-1.84	0.00	-23.69	0.00	23.69	2,469.16	1,234.58	3,484.21	1,744.70	0.62	-0.10	0.017
57.00	-7.95	-1.67	0.00	-21.85	0.00	21.85	2,451.82	1,225.91	3,425.65	1,715.37	0.64	-0.10	0.016
60.00	-6.87	-1.48	0.00	-16.83	0.00	16.83	2,398.99	1,199.50	3,251.77	1,628.30	0.71	-0.10	0.013
65.00	-6.14	-1.33	0.00	-9.46	0.00	9.46	2,308.28	1,154.14	2,968.33	1,486.37	0.82	-0.11	0.009
67.00	-3.61	-0.83	0.00	-6.79	0.00	6.79	2,261.48	1,130.74	2,845.26	1,424.74	0.86	-0.11	0.006
70.00	-2.65	-0.62	0.00	-4.31	0.00	4.31	2,187.24	1,093.62	2,660.62	1,332.29	0.93	-0.11	0.004
75.00	-2.00	-0.47	0.00	-1.21	0.00	1.21	2,063.52	1,031.76	2,366.67	1,185.09	1.05	-0.11	0.002
76.68	-1.99	-0.47	0.00	-0.42	0.00	0.42	2,021.95	1,010.98	2,271.76	1,137.57	1.09	-0.11	0.001
76.68	-1.99	-0.47	0.00	-0.42	0.00	0.42	182.47	91.23	29.26	20.19	1.09	-0.11	0.032
77.00	-0.23	-0.06	0.00	-0.27	0.00	0.27	182.47	91.23	29.26	20.19	1.09	-0.11	0.015
80.00	-0.20	-0.05	0.00	-0.10	0.00	0.10	182.47	91.23	29.26	20.19	1.17	-0.13	0.006
82.00	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	1.22	-0.13	0.000
82.68	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	1.24	-0.13	0.000

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Equivalent Modal Analysis Method

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

Spectral Response Acceleration for Short Period (S_s):	0.26
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.07
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.59
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.28
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Period Based on Rayleigh Method (sec):	0.72
Redundancy Factor (p):	1.00

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
27	82.34	11	1.874	1.899	1.111	0.576	4	14
26	81.00	32	1.814	1.603	1.001	0.523	11	40
25	78.50	48	1.704	1.136	0.820	0.434	14	60
24	76.84	8	1.632	0.882	0.715	0.380	2	10
23	75.84	174	1.590	0.749	0.657	0.350	41	218
22	72.50	536	1.453	0.392	0.489	0.262	94	672
21	68.50	335	1.297	0.117	0.334	0.181	40	420
20	66.00	263	1.204	0.009	0.258	0.142	25	330
19	62.50	678	1.080	-0.080	0.175	0.103	47	851
18	58.50	420	0.946	-0.119	0.106	0.077	22	528
17	56.50	144	0.883	-0.121	0.081	0.069	7	181
16	55.50	161	0.852	-0.119	0.070	0.067	7	202
15	53.69	428	0.797	-0.111	0.053	0.064	18	537
14	51.19	792	0.724	-0.094	0.035	0.063	33	994
13	48.58	965	0.652	-0.071	0.022	0.064	41	1,212
12	46.08	473	0.587	-0.048	0.013	0.066	21	594
11	42.50	1,125	0.499	-0.016	0.007	0.069	52	1,412
10	37.50	1,164	0.389	0.022	0.007	0.070	55	1,462
9	32.50	1,204	0.292	0.047	0.013	0.067	54	1,511
8	29.43	282	0.239	0.057	0.018	0.063	12	354
7	26.93	1,845	0.200	0.063	0.023	0.060	73	2,315
6	23.84	1,132	0.157	0.067	0.029	0.055	41	1,421
5	21.34	763	0.126	0.070	0.034	0.051	26	958
4	17.50	1,455	0.085	0.071	0.039	0.045	44	1,826
3	12.50	1,500	0.043	0.071	0.042	0.039	39	1,883
2	7.50	1,546	0.016	0.061	0.036	0.031	32	1,940
1	2.50	1,591	0.002	0.030	0.017	0.015	16	1,997
Bird 428D-83I-01-T	82.00	9	1.859	1.821	1.082	0.562	3	11
Pole Mount	82.00	80	1.859	1.821	1.082	0.562	30	100
dbSpectra DS7C09P36U	82.00	140	1.859	1.821	1.082	0.562	52	176
Ericsson Radio 4449	77.00	222	1.639	0.905	0.725	0.385	57	279
Ericsson RRUS 32 B66	77.00	159	1.639	0.905	0.725	0.385	41	200
Ericsson AIR-32 B2A/	77.00	397	1.639	0.905	0.725	0.385	102	498
RFS APX16DWV-	77.00	126	1.639	0.905	0.725	0.385	32	158

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Flat T-Arms	77.00	750	1.639	0.905	0.725	0.385	193	941
RFS APXVAARR24_43-U-	77.00	384	1.639	0.905	0.725	0.385	99	482
Pine Branches	75.00	600	1.555	0.646	0.611	0.327	131	753
Pine Branches	70.00	600	1.355	0.204	0.387	0.208	83	753
CCI DTMABP7819VG12A	67.00	115	1.241	0.047	0.287	0.157	12	145
Raycap DC6-48-60-0-8	67.00	16	1.241	0.047	0.287	0.157	2	20
Raycap DC6-48-60-18-	67.00	66	1.241	0.047	0.287	0.157	7	82
Ericsson RRUS 4426 B	67.00	145	1.241	0.047	0.287	0.157	15	182
Ericsson RRUS 4449 B	67.00	213	1.241	0.047	0.287	0.157	22	267
Ericsson RRUS 4478 B	67.00	178	1.241	0.047	0.287	0.157	19	224
Ericsson RRUS 32 B2	67.00	159	1.241	0.047	0.287	0.157	17	200
Ericsson RRUS-32 (77	67.00	231	1.241	0.047	0.287	0.157	24	290
Powerwave Allgon P65	67.00	159	1.241	0.047	0.287	0.157	17	200
CCI DMP65R-BU4D	67.00	407	1.241	0.047	0.287	0.157	43	511
CCI OPA-65R-LCUU-H6	67.00	219	1.241	0.047	0.287	0.157	23	275
Flat T-Arm	67.00	750	1.241	0.047	0.287	0.157	78	941
Pine Branches	65.00	600	1.168	-0.023	0.232	0.129	52	753
Pine Branches	60.00	600	0.995	-0.111	0.129	0.085	34	753
Flat T-Arm	57.00	750	0.898	-0.122	0.087	0.071	35	941
Alcatel-Lucent RRH 2	56.00	119	0.867	-0.121	0.075	0.068	5	149
Alcatel-Lucent RRH2x	56.00	170	0.867	-0.121	0.075	0.068	8	214
Alcatel-Lucent B66 R	56.00	201	0.867	-0.121	0.075	0.068	9	252
Commscope RC2DC-	56.00	52	0.867	-0.121	0.075	0.068	2	65
Amphenol Antel BXA-1	56.00	38	0.867	-0.121	0.075	0.068	2	48
Commscope SBNHH-	56.00	67	0.867	-0.121	0.075	0.068	3	84
Commscope SBNHH-	56.00	202	0.867	-0.121	0.075	0.068	9	254
Amphenol Antel LPA-8	56.00	162	0.867	-0.121	0.075	0.068	7	203
VZW Unused Reserve:	56.00	1,488	0.867	-0.121	0.075	0.068	68	1,868
Pine Branches	55.00	600	0.836	-0.118	0.065	0.066	26	753
Pine Branches	50.00	600	0.691	-0.084	0.028	0.064	25	753
Pine Branches	45.00	600	0.560	-0.038	0.011	0.067	27	753
Pine Branches	40.00	600	0.442	0.004	0.006	0.070	28	753
Pine Branches	35.00	600	0.339	0.036	0.009	0.069	28	753
Pine Branches	30.00	600	0.249	0.056	0.017	0.064	26	753
Pine Branches	25.00	600	0.173	0.066	0.027	0.057	23	753
Pine Branches	20.00	600	0.111	0.070	0.036	0.049	20	753
Pine Branches	15.00	600	0.062	0.072	0.041	0.042	17	753
		35,049	68.683	17.593	19.598	11.849	2,425	43,993

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)
27	82.34	11	1.874	1.899	1.111	0.576	4	9
26	81.00	32	1.814	1.603	1.001	0.523	11	27
25	78.50	48	1.704	1.136	0.820	0.434	14	40
24	76.84	8	1.632	0.882	0.715	0.380	2	7
23	75.84	174	1.590	0.749	0.657	0.350	41	147
22	72.50	536	1.453	0.392	0.489	0.262	94	453
21	68.50	335	1.297	0.117	0.334	0.181	40	283
20	66.00	263	1.204	0.009	0.258	0.142	25	222
19	62.50	678	1.080	-0.080	0.175	0.103	47	573
18	58.50	420	0.946	-0.119	0.106	0.077	22	355
17	56.50	144	0.883	-0.121	0.081	0.069	7	122
16	55.50	161	0.852	-0.119	0.070	0.067	7	136
15	53.69	428	0.797	-0.111	0.053	0.064	18	361
14	51.19	792	0.724	-0.094	0.035	0.063	33	669
13	48.58	965	0.652	-0.071	0.022	0.064	41	815
12	46.08	473	0.587	-0.048	0.013	0.066	21	400

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11	42.50	1,125	0.499	-0.016	0.007	0.069	52	950
10	37.50	1,164	0.389	0.022	0.007	0.070	55	984
9	32.50	1,204	0.292	0.047	0.013	0.067	54	1,017
8	29.43	282	0.239	0.057	0.018	0.063	12	238
7	26.93	1,845	0.200	0.063	0.023	0.060	73	1,558
6	23.84	1,132	0.157	0.067	0.029	0.055	41	956
5	21.34	763	0.126	0.070	0.034	0.051	26	645
4	17.50	1,455	0.085	0.071	0.039	0.045	44	1,229
3	12.50	1,500	0.043	0.071	0.042	0.039	39	1,267
2	7.50	1,546	0.016	0.061	0.036	0.031	32	1,306
1	2.50	1,591	0.002	0.030	0.017	0.015	16	1,344
Bird 428D-83I-01-T	82.00	9	1.859	1.821	1.082	0.562	3	8
Pole Mount	82.00	80	1.859	1.821	1.082	0.562	30	68
dbSpectra DS7C09P36U	82.00	140	1.859	1.821	1.082	0.562	52	118
Ericsson Radio 4449	77.00	222	1.639	0.905	0.725	0.385	57	188
Ericsson RRUS 32 B66	77.00	159	1.639	0.905	0.725	0.385	41	134
Ericsson AIR-32 B2A/	77.00	397	1.639	0.905	0.725	0.385	102	335
RFS APX16DWV-	77.00	126	1.639	0.905	0.725	0.385	32	106
Flat T-Arms	77.00	750	1.639	0.905	0.725	0.385	193	634
RFS APXVAARR24_43-U-	77.00	384	1.639	0.905	0.725	0.385	99	324
Pine Branches	75.00	600	1.555	0.646	0.611	0.327	131	507
Pine Branches	70.00	600	1.355	0.204	0.387	0.208	83	507
CCI DTMABP7819VG12A	67.00	115	1.241	0.047	0.287	0.157	12	97
Raycap DC6-48-60-0-8	67.00	16	1.241	0.047	0.287	0.157	2	14
Raycap DC6-48-60-18-	67.00	66	1.241	0.047	0.287	0.157	7	55
Ericsson RRUS 4426 B	67.00	145	1.241	0.047	0.287	0.157	15	123
Ericsson RRUS 4449 B	67.00	213	1.241	0.047	0.287	0.157	22	180
Ericsson RRUS 4478 B	67.00	178	1.241	0.047	0.287	0.157	19	151
Ericsson RRUS 32 B2	67.00	159	1.241	0.047	0.287	0.157	17	134
Ericsson RRUS-32 (77	67.00	231	1.241	0.047	0.287	0.157	24	195
Powerwave Allgon P65	67.00	159	1.241	0.047	0.287	0.157	17	134
CCI DMP65R-BU4D	67.00	407	1.241	0.047	0.287	0.157	43	344
CCI OPA-65R-LCUU-H6	67.00	219	1.241	0.047	0.287	0.157	23	185
Flat T-Arm	67.00	750	1.241	0.047	0.287	0.157	78	634
Pine Branches	65.00	600	1.168	-0.023	0.232	0.129	52	507
Pine Branches	60.00	600	0.995	-0.111	0.129	0.085	34	507
Flat T-Arm	57.00	750	0.898	-0.122	0.087	0.071	35	634
Alcatel-Lucent RRH 2	56.00	119	0.867	-0.121	0.075	0.068	5	100
Alcatel-Lucent RRH2x	56.00	170	0.867	-0.121	0.075	0.068	8	144
Alcatel-Lucent B66 R	56.00	201	0.867	-0.121	0.075	0.068	9	170
Commscope RC2DC-	56.00	52	0.867	-0.121	0.075	0.068	2	44
Amphenol Antel BXA-1	56.00	38	0.867	-0.121	0.075	0.068	2	32
Commscope SBNHH-	56.00	67	0.867	-0.121	0.075	0.068	3	57
Commscope SBNHH-	56.00	202	0.867	-0.121	0.075	0.068	9	171
Amphenol Antel LPA-8	56.00	162	0.867	-0.121	0.075	0.068	7	137
VZW Unused Reserve:	56.00	1,488	0.867	-0.121	0.075	0.068	68	1,257
Pine Branches	55.00	600	0.836	-0.118	0.065	0.066	26	507
Pine Branches	50.00	600	0.691	-0.084	0.028	0.064	25	507
Pine Branches	45.00	600	0.560	-0.038	0.011	0.067	27	507
Pine Branches	40.00	600	0.442	0.004	0.006	0.070	28	507
Pine Branches	35.00	600	0.339	0.036	0.009	0.069	28	507
Pine Branches	30.00	600	0.249	0.056	0.017	0.064	26	507
Pine Branches	25.00	600	0.173	0.066	0.027	0.057	23	507
Pine Branches	20.00	600	0.111	0.070	0.036	0.049	20	507
Pine Branches	15.00	600	0.062	0.072	0.041	0.042	17	507
		35,049	68.683	17.593	19.598	11.849	2,425	29,610

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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	-42.00	-2.41	0.00	-141.68	0.00	141.68	6,024.56	3,012.28	12,725.49	6,372.20	0.00	0.00	0.029
5.00	-40.06	-2.38	0.00	-129.62	0.00	129.62	5,874.00	2,937.00	11,999.08	6,008.46	0.00	-0.01	0.028
10.00	-38.17	-2.35	0.00	-117.70	0.00	117.70	5,676.05	2,838.02	11,200.10	5,608.37	0.02	-0.01	0.028
15.00	-35.59	-2.29	0.00	-105.95	0.00	105.95	5,478.10	2,739.05	10,428.65	5,222.07	0.03	-0.02	0.027
20.00	-33.88	-2.25	0.00	-94.49	0.00	94.49	5,280.14	2,640.07	9,684.72	4,849.56	0.06	-0.03	0.026
22.69	-32.46	-2.21	0.00	-88.44	0.00	88.44	5,173.75	2,586.87	9,296.23	4,655.02	0.08	-0.03	0.025
25.00	-29.39	-2.11	0.00	-83.33	0.00	83.33	5,082.19	2,541.10	8,968.32	4,490.82	0.09	-0.04	0.024
28.85	-29.04	-2.10	0.00	-75.19	0.00	75.19	4,410.21	2,205.11	7,728.69	3,870.09	0.12	-0.04	0.026
30.00	-26.77	-2.02	0.00	-72.78	0.00	72.78	4,370.43	2,185.21	7,589.18	3,800.23	0.13	-0.04	0.025
35.00	-24.56	-1.94	0.00	-62.65	0.00	62.65	4,197.22	2,098.61	6,996.61	3,503.50	0.18	-0.05	0.024
40.00	-22.39	-1.86	0.00	-52.94	0.00	52.94	4,024.01	2,012.01	6,428.12	3,218.84	0.24	-0.06	0.022
45.00	-21.05	-1.82	0.00	-43.62	0.00	43.62	3,850.81	1,925.40	5,883.72	2,946.23	0.30	-0.06	0.020
47.16	-19.83	-1.77	0.00	-39.69	0.00	39.69	3,776.02	1,888.01	5,656.10	2,832.26	0.33	-0.07	0.019
50.00	-18.09	-1.72	0.00	-34.65	0.00	34.65	3,677.60	1,838.80	5,363.40	2,685.69	0.37	-0.07	0.018
52.38	-17.55	-1.70	0.00	-30.57	0.00	30.57	2,530.81	1,265.41	3,698.60	1,852.05	0.41	-0.07	0.023
55.00	-16.59	-1.66	0.00	-26.12	0.00	26.12	2,486.37	1,243.18	3,543.07	1,774.17	0.45	-0.08	0.021
56.00	-13.28	-1.54	0.00	-24.46	0.00	24.46	2,469.16	1,234.58	3,484.21	1,744.70	0.46	-0.08	0.019
57.00	-11.81	-1.48	0.00	-22.92	0.00	22.92	2,451.82	1,225.91	3,425.65	1,715.37	0.48	-0.08	0.018
60.00	-10.20	-1.40	0.00	-18.48	0.00	18.48	2,398.99	1,199.50	3,251.77	1,628.30	0.53	-0.08	0.016
65.00	-9.12	-1.32	0.00	-11.49	0.00	11.49	2,308.28	1,154.14	2,968.33	1,486.37	0.62	-0.09	0.012
67.00	-5.36	-1.00	0.00	-8.85	0.00	8.85	2,261.48	1,130.74	2,845.26	1,424.74	0.66	-0.09	0.009
70.00	-3.94	-0.82	0.00	-5.86	0.00	5.86	2,187.24	1,093.62	2,660.62	1,332.29	0.71	-0.09	0.006
75.00	-2.97	-0.64	0.00	-1.78	0.00	1.78	2,063.52	1,031.76	2,366.67	1,185.09	0.81	-0.09	0.003
76.68	-2.96	-0.64	0.00	-0.69	0.00	0.69	2,021.95	1,010.98	2,271.76	1,137.57	0.84	-0.09	0.002
76.68	-2.96	-0.64	0.00	-0.69	0.00	0.69	182.47	91.23	29.26	20.19	0.84	-0.09	0.051
77.00	-0.34	-0.10	0.00	-0.49	0.00	0.49	182.47	91.23	29.26	20.19	0.85	-0.09	0.026
80.00	-0.30	-0.09	0.00	-0.18	0.00	0.18	182.47	91.23	29.26	20.19	0.91	-0.12	0.011
82.00	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	0.97	-0.13	0.000
82.68	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	0.98	-0.13	0.000

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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	-28.27	-2.41	0.00	-141.28	0.00	141.28	6,024.56	3,012.28	12,725.49	6,372.20	0.00	0.00	0.027
5.00	-26.96	-2.38	0.00	-129.23	0.00	129.23	5,874.00	2,937.00	11,999.08	6,008.46	0.00	-0.01	0.026
10.00	-25.69	-2.35	0.00	-117.32	0.00	117.32	5,676.05	2,838.02	11,200.10	5,608.37	0.02	-0.01	0.025
15.00	-23.96	-2.29	0.00	-105.59	0.00	105.59	5,478.10	2,739.05	10,428.65	5,222.07	0.03	-0.02	0.025
20.00	-22.80	-2.24	0.00	-94.15	0.00	94.15	5,280.14	2,640.07	9,684.72	4,849.56	0.06	-0.03	0.024
22.69	-21.85	-2.20	0.00	-88.12	0.00	88.12	5,173.75	2,586.87	9,296.23	4,655.02	0.08	-0.03	0.023
25.00	-19.78	-2.11	0.00	-83.02	0.00	83.02	5,082.19	2,541.10	8,968.32	4,490.82	0.09	-0.04	0.022
28.85	-19.54	-2.10	0.00	-74.91	0.00	74.91	4,410.21	2,205.11	7,728.69	3,870.09	0.12	-0.04	0.024
30.00	-18.02	-2.02	0.00	-72.50	0.00	72.50	4,370.43	2,185.21	7,589.18	3,800.23	0.13	-0.04	0.023
35.00	-16.53	-1.94	0.00	-62.42	0.00	62.42	4,197.22	2,098.61	6,996.61	3,503.50	0.18	-0.05	0.022
40.00	-15.07	-1.86	0.00	-52.74	0.00	52.74	4,024.01	2,012.01	6,428.12	3,218.84	0.24	-0.06	0.020
45.00	-14.16	-1.81	0.00	-43.45	0.00	43.45	3,850.81	1,925.40	5,883.72	2,946.23	0.30	-0.06	0.018
47.16	-13.35	-1.77	0.00	-39.55	0.00	39.55	3,776.02	1,888.01	5,656.10	2,832.26	0.33	-0.07	0.017
50.00	-12.17	-1.71	0.00	-34.53	0.00	34.53	3,677.60	1,838.80	5,363.40	2,685.69	0.37	-0.07	0.016
52.38	-11.81	-1.69	0.00	-30.46	0.00	30.46	2,530.81	1,265.41	3,698.60	1,852.05	0.41	-0.07	0.021
55.00	-11.17	-1.66	0.00	-26.04	0.00	26.04	2,486.37	1,243.18	3,543.07	1,774.17	0.45	-0.08	0.019
56.00	-8.94	-1.53	0.00	-24.38	0.00	24.38	2,469.16	1,234.58	3,484.21	1,744.70	0.46	-0.08	0.018
57.00	-7.95	-1.47	0.00	-22.85	0.00	22.85	2,451.82	1,225.91	3,425.65	1,715.37	0.48	-0.08	0.017
60.00	-6.87	-1.39	0.00	-18.43	0.00	18.43	2,398.99	1,199.50	3,251.77	1,628.30	0.53	-0.08	0.014
65.00	-6.14	-1.32	0.00	-11.46	0.00	11.46	2,308.28	1,154.14	2,968.33	1,486.37	0.62	-0.09	0.010
67.00	-3.61	-0.99	0.00	-8.83	0.00	8.83	2,261.48	1,130.74	2,845.26	1,424.74	0.65	-0.09	0.008
70.00	-2.65	-0.82	0.00	-5.85	0.00	5.85	2,187.24	1,093.62	2,660.62	1,332.29	0.71	-0.09	0.006
75.00	-2.00	-0.64	0.00	-1.77	0.00	1.77	2,063.52	1,031.76	2,366.67	1,185.09	0.80	-0.09	0.002
76.68	-1.99	-0.64	0.00	-0.69	0.00	0.69	2,021.95	1,010.98	2,271.76	1,137.57	0.84	-0.09	0.002
76.68	-1.99	-0.64	0.00	-0.69	0.00	0.69	182.47	91.23	29.26	20.19	0.84	-0.09	0.045
77.00	-0.23	-0.10	0.00	-0.48	0.00	0.48	182.47	91.23	29.26	20.19	0.84	-0.09	0.025
80.00	-0.20	-0.09	0.00	-0.18	0.00	0.18	182.47	91.23	29.26	20.19	0.91	-0.12	0.010
82.00	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	0.96	-0.13	0.000
82.68	0.00	0.00	0.00	0.00	0.00	0.00	182.47	91.23	29.26	20.19	0.98	-0.13	0.000

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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	44.05	0.00	42.01	0.00	0.00	2310.19	0.00	0.37
0.9D + 1.6W	44.04	0.00	31.50	0.00	0.00	2305.53	0.00	0.37
1.2D + 1.0Di + 1.0Wi	12.76	0.00	59.21	0.00	0.00	663.42	76.68	0.15
(1.2 + 0.2Sds) * DL + E ELFM	3.63	0.00	42.00	0.00	0.00	199.89	0.00	0.04
(1.2 + 0.2Sds) * DL + E EMAM	2.41	0.00	42.00	0.00	0.00	141.68	76.68	0.05
(0.9 - 0.2Sds) * DL + E ELFM	3.63	0.00	28.27	0.00	0.00	199.36	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.41	0.00	28.27	0.00	0.00	141.28	76.68	0.05
1.0D + 1.0W	10.26	0.00	35.05	0.00	0.00	537.41	0.00	0.09

Base Plate & Anchor Rod Analysis

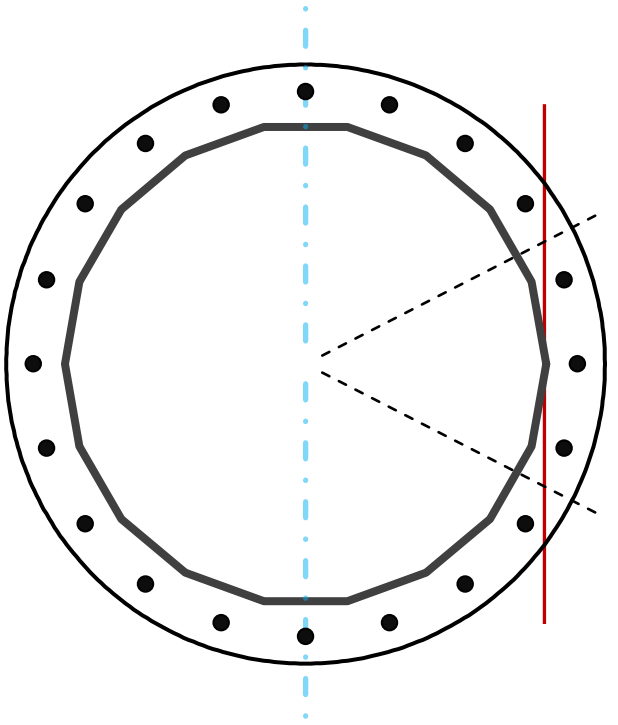
Pole Dimensions		
Number of Sides	18	-
Diameter	52	in
Thickness	0.5	in
Orientation Offset		°

Base Reactions		
Moment, Mu	2310.2	k-ft
Axial, Pu	42.0	k
Shear, Vu	44.1	k
Neutral Axis	270	°

Report Capacities		
Component	Capacity	Result
Base Plate	19%	Pass
Anchor Rods	39%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	66	in
Thickness	2 3/4	in
Grade	A572-50	
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	N/A	in
Orientation Offset		°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	503.1	k
Bending Stress, ϕMn	2606.7	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, ø	2 1/4	in
Bolt Circle	60	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	9.4	in
Orientation Offset		°
Applied Force, Pu	98.3	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	44.1	2310.2	1.00
Anchor Rod Forces	44.1	2310.2	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	80.4859	4.4714	0.3744		26690.34
Bolt	3.9761	3.2477	0.8393	4.5	26977.81
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	Round	-
Diameter, D	66	in
Thickness, t	2.75	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	40.645	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	20	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	60	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	98.3	k
Applied Shear, Vu	1.1	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.378	OK
Interaction Capacity	0.386	OK

External Base Plate		
Chord Length AA	34.296	in
Additional AA	5.500	in
Section Modulus, Z	75.239	in^3
Applied Moment, Mu	503.1	k-ft
Bending Capacity, ϕMn	3385.7	k-ft
Capacity, Mu/ϕMn	0.149	OK
Chord Length AB	33.035	in
Additional AB	5.500	in
Section Modulus, Z	72.855	in^3
Applied Moment, Mu	388.0	k-ft
Bending Capacity, ϕMn	3278.5	k-ft
Capacity, Mu/ϕMn	0.118	OK
Bend Line Length	30.639	in
Additional Bend Line	0.000	in
Section Modulus, Z	57.927	in^3
Applied Moment, Mu	503.1	k-ft
Bending Capacity, ϕMn	2606.7	k-ft
Capacity, Mu/ϕMn	0.193	OK

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

Flange Plate Analysis

Flange Plate			
	Plate Type	***Flange***	***@ 77 ft***
	Pole Diameter	4.5	in
	Pole Thickness	0.337	in
	Plate Diameter	35	in
	Plate Thickness	1.5	in
	Plate Fy	50	ksi
	Weld Length	0.3125	in
	f_s Resistance	936.85	k-in
	Applied	7.52	k-in

Code Rev.	***G***		
Moment	6.5 k-ft		
Axial	2.8 k		

Date	9/27/2019
Engineer	T.Pham
Site #	414240
Carrier	AT&T MOBILITY

Stiffeners			
	#	***6***	***Show***
	Thickness	0.75	in
	Length	12	in
	Height	12	in
	Chamfer	1.25	in
	Offset Angle	0	°
	Fy	50	ksi

Bolts			
	#	***12***	
	Bolt Circle	32	in
	(R)adial / (S)quare	R	
	Bolt Gap	6	in
	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	f_s Resistance	54.52	k
	Applied	0.58	k

Reinforcement		
#	***0***	

Extra Bolts O		
#	***0***	

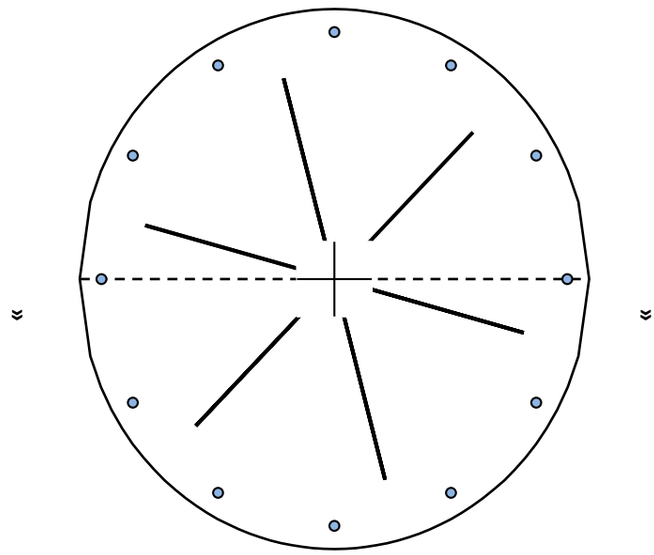


Plate Stress Ratio:

1%	Pass

Bolt Stress Ratio:

1%	Pass

September 10, 2019
October 2, 2019 (Rev.1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT5004 (LTE 6C/7C)
	FA Number:	10071045
	PACE Number:	MRCTB039419
	PT Number:	2051A0P3GN
	Site Name:	GREENWICH SW
	Site Address:	36 Ritch Avenue West Greenwich, CT 06830

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the proposed AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (3) P65-16-XLH-RR Antennas (72.0"x12.0"x6.0"– Wt. = 53 lbs. /each)
- (3) OPA-65R-LCUU-H6 Antennas (72.0"x14.8"x7.4" – Wt. = 73 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)
- (6) DTMABP7819VG12A TMA's (10.7"x11.1"x3.8" - Wt. = 20 lbs. /each)
- (2) Squid Surge Arrestors (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(6) DMP65R-BU4DA Antennas (48.0"x20.7"x7.7" – Wt. = 68 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3"– Wt. = 60 lbs. /each) (Tower Mount)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by SitePro1, P/N RMV12-496, dated July 2, 2015 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.

- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.08 in was used for this analysis.

- HDG considers this site to be exposure category D; tower is located on flat, unobstructed, shorelines.

- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.

- AT&T policy forbids walking on or suspending below T-arm mounts. This Analysis does not include live load conditions for this mount.

Based on our evaluation, we have determined that the New SitePro1, RMV12-496 mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
New (LTE 6C/7C) Mount Rating	1	LC1	86%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N RMV12-496, dated July 2, 2015

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mount will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

	z=	69 (ft)
	z_g=	700 (ft)
K_z= 1.343	α=	11.5

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

K_h=	#DIV/0!	
K_c=		(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	69	
z_s=	55	(Mean elevation of base of structure above sea level)
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	1.00	(from 2.6.8)

(If Category 1 then K_{zt} =1.0)

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.00 in
Importance Factor =	I=	1.0 (from Table 2-3)
	K_{iz} =	1.08 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.08 in

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	77	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	Gh=	1.00

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.343	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	50.95	K_e=	1.00	(from 2.6.8)
$q_{z\,(ice)}$=	8.15	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	2.93	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.08 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	6.00	1.36	414	81	24
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	4.86	1.31	492	93	28
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.32	1.20	422	78	24
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	140	28	8
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	1.20	0	4	0
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	140	28	8
4426 B66 RRH	14.9	13.2	5.8	1.37	1.13	1.20	84	18	5
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.13	1.20	84	18	5
B14 4478 RRH	18.1	8.3	13.4	1.04	2.18	1.20	64	14	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.96	1.20	50	12	3
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	58	12	3
HSS 4x4	4.0	12.0		0.33	0.33	2.00	34		
2" Pipe	2.4	12.0		0.20	0.20	1.20	12		
3-1/2" Pipe	4.0	12.0		0.33	0.33	1.20	20		
4" Pipe	4.5	12.0		0.38	0.38	1.20	23		

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.08	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	414	239	371
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	492	281	439
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	422	179	361
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	126
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	75	85	78
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	126
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	84	37	72
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	84	66	79
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	64	103	74
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	50	17	42

WIND LOADS WITH ICE:

P65-16-XLH-RR Antenna	74.2	14.2	8.2	7.29	4.20	5.24	9.10	1.32	1.47	79	50	71
OPA-65R-LCUU-H6 Antenna	74.2	17.0	9.6	8.73	4.92	4.37	7.76	1.28	1.43	91	57	83
DMP65R-BU4DA Antenna	50.2	22.9	9.9	7.96	3.43	2.19	5.09	1.20	1.32	78	37	68
RRUS-32 B30 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	26
RRUS-32 B30 RRH (Shielded)	29.4	7.1	9.2	1.45	1.87	4.12	3.21	1.27	1.23	15	19	16
RRUS-32 B2 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	26
4426 B66 RRH	17.1	15.4	8.0	1.82	0.94	1.11	2.14	1.20	1.20	18	9	16
4449 B5/B12 RRH	17.1	15.4	12.6	1.82	1.49	1.11	1.36	1.20	1.20	18	15	17
B14 4478 RRH	20.3	10.5	15.6	1.47	2.19	1.94	1.30	1.20	1.20	14	21	16
DTMABP7819VG12A TMA	12.9	13.3	6.0	1.18	0.53	0.97	2.16	1.20	1.20	12	5	10

WIND LOADS AT 30 MPH:

P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	24	14	21
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	28	16	25
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	21
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	4	5	4
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	5	2	4
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	5
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.08	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	414	239	283
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	492	281	334
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	422	179	239
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	99
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	107	85	90
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	99
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	84	37	48
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	84	66	70
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	64	103	93
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	50	17	26

WIND LOADS WITH ICE:

P65-16-XLH-RR Antenna	74.2	14.2	8.2	7.29	4.20	5.24	9.10	1.32	1.47	79	50	57
OPA-65R-LCUU-H6 Antenna	74.2	17.0	9.6	8.73	4.92	4.37	7.76	1.28	1.43	91	57	66
DMP65R-BU4DA Antenna	50.2	22.9	9.9	7.96	3.43	2.19	5.09	1.20	1.32	78	37	47
RRUS-32 B30 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	21
RRUS-32 B30 RRH (Shielded)	29.4	10.7	9.2	2.18	1.87	2.75	3.21	1.21	1.23	22	19	19
RRUS-32 B2 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	21
4426 B66 RRH	17.1	15.4	8.0	1.82	0.94	1.11	2.14	1.20	1.20	18	9	11
4449 B5/B12 RRH	17.1	15.4	12.6	1.82	1.49	1.11	1.36	1.20	1.20	18	15	15
B14 4478 RRH	20.3	10.5	15.6	1.47	2.19	1.94	1.30	1.20	1.20	14	21	20
DTMABP7819VG12A TMA	12.9	13.3	6.0	1.18	0.53	0.97	2.16	1.20	1.20	12	5	7

WIND LOADS AT 30 MPH:

P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	24	14	16
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	28	16	19
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	14
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	6	5	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	5	2	3
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	4
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	5
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	1

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.08	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	414	239	239
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	492	281	281
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	422	179	179
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	85
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	85	85
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	85
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	84	37	37
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	84	66	66
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	64	103	103
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	50	17	17

WIND LOADS WITH ICE:

P65-16-XLH-RR Antenna	74.2	14.2	8.2	7.29	4.20	5.24	9.10	1.32	1.47	79	50	50
OPA-65R-LCUU-H6 Antenna	74.2	17.0	9.6	8.73	4.92	4.37	7.76	1.28	1.43	91	57	57
DMP65R-BU4DA Antenna	50.2	22.9	9.9	7.96	3.43	2.19	5.09	1.20	1.32	78	37	37
RRUS-32 B30 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	19
RRUS-32 B30 RRH (Shielded)	29.4	2.2	9.2	0.44	1.87	13.63	3.21	1.62	1.23	6	19	19
RRUS-32 B2 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	19
4426 B66 RRH	17.1	15.4	8.0	1.82	0.94	1.11	2.14	1.20	1.20	18	9	9
4449 B5/B12 RRH	17.1	15.4	12.6	1.82	1.49	1.11	1.36	1.20	1.20	18	15	15
B14 4478 RRH	20.3	10.5	15.6	1.47	2.19	1.94	1.30	1.20	1.20	14	21	21
DTMABP7819VG12A TMA	12.9	13.3	6.0	1.18	0.53	0.97	2.16	1.20	1.20	12	5	5

WIND LOADS AT 30 MPH:

P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	24	14	14
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	28	16	16
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	10
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	5
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	5	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	5
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	5	2	2
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	4
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	1

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.08	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	414	239	283
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	492	281	334
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	422	179	239
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	99
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	107	85	90
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	99
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	84	37	48
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	84	66	70
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	64	103	93
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	50	17	26

WIND LOADS WITH ICE:

P65-16-XLH-RR Antenna	74.2	14.2	8.2	7.29	4.20	5.24	9.10	1.32	1.47	79	50	57
OPA-65R-LCUU-H6 Antenna	74.2	17.0	9.6	8.73	4.92	4.37	7.76	1.28	1.43	91	57	66
DMP65R-BU4DA Antenna	50.2	22.9	9.9	7.96	3.43	2.19	5.09	1.20	1.32	78	37	47
RRUS-32 B30 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	21
RRUS-32 B30 RRH (Shielded)	29.4	10.7	9.2	2.18	1.87	2.75	3.21	1.21	1.23	22	19	19
RRUS-32 B2 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	21
4426 B66 RRH	17.1	15.4	8.0	1.82	0.94	1.11	2.14	1.20	1.20	18	9	11
4449 B5/B12 RRH	17.1	15.4	12.6	1.82	1.49	1.11	1.36	1.20	1.20	18	15	15
B14 4478 RRH	20.3	10.5	15.6	1.47	2.19	1.94	1.30	1.20	1.20	14	21	20
DTMABP7819VG12A TMA	12.9	13.3	6.0	1.18	0.53	0.97	2.16	1.20	1.20	12	5	7

WIND LOADS AT 30 MPH:

P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	24	14	16
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	28	16	19
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	14
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	6	5	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	5	2	3
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	4
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	5
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	1

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.08	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	414	239	371
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	492	281	439
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	422	179	361
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	126
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	75	85	78
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	140	85	126
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	84	37	72
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	84	66	79
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	64	103	74
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	50	17	42

WIND LOADS WITH ICE:

P65-16-XLH-RR Antenna	74.2	14.2	8.2	7.29	4.20	5.24	9.10	1.32	1.47	79	50	71
OPA-65R-LCUU-H6 Antenna	74.2	17.0	9.6	8.73	4.92	4.37	7.76	1.28	1.43	91	57	83
DMP65R-BU4DA Antenna	50.2	22.9	9.9	7.96	3.43	2.19	5.09	1.20	1.32	78	37	68
RRUS-32 B30 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	26
RRUS-32 B30 RRH (Shielded)	29.4	7.1	9.2	1.45	1.87	4.12	3.21	1.27	1.23	15	19	16
RRUS-32 B2 RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.21	1.20	1.23	28	19	26
4426 B66 RRH	17.1	15.4	8.0	1.82	0.94	1.11	2.14	1.20	1.20	18	9	16
4449 B5/B12 RRH	17.1	15.4	12.6	1.82	1.49	1.11	1.36	1.20	1.20	18	15	17
B14 4478 RRH	20.3	10.5	15.6	1.47	2.19	1.94	1.30	1.20	1.20	14	21	16
DTMABP7819VG12A TMA	12.9	13.3	6.0	1.18	0.53	0.97	2.16	1.20	1.20	12	5	10

WIND LOADS AT 30 MPH:

P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	24	14	21
OPA-65R-LCUU-H6 Antenna	72.0	14.8	7.4	7.40	3.70	4.86	9.73	1.31	1.49	28	16	25
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	21
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	4	5	4
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	5	2	4
4449 B5/B12 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	5
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
DTMABP7819VG12A TMA	10.7	11.1	3.8	0.82	0.28	0.96	2.82	1.20	1.21	3	1	2

Date: 10/2/2019
Project Name: GREENWICH SW
Project No.: CT5004
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.08 in.
Density of ice: 56 pcf

P65-16-XLH-RR Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	12.0	
Depth (in):	6.0	
Total weight of ice on object:		115 lbs
Weight of object:	53.0 lbs	
Combined weight of ice and object:		168 lbs

OPA-65R-LCUU-H6 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		140 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		213 lbs

DMP65R-BU4DA Antenna

Weight of ice based on total radial SF area:

Height (in):	48.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		122 lbs
Weight of object:	68.0 lbs	
Combined weight of ice and object:		190 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		45 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		105 lbs

RRUS-32 B2 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		45 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		105 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		25 lbs
Weight of object:	49.0 lbs	
Combined weight of ice and object:		74 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.4	
Total weight of ice on object:		29 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		102 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		34 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		94 lbs

DTMABP7819VG12A TMA

Weight of ice based on total radial SF area:

Height (in):	10.7	
Width (in):	11.1	
Depth (in):	3.8	
Total weight of ice on object:		15 lbs
Weight of object:	20.0 lbs	
Combined weight of ice and object:		35 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		28 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		61 lbs

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		9 plf

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

4" Pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		7 plf

3-1/2" Pipe

Per foot weight of ice:

diameter (in):	4	
Per foot weight of ice on object:		7 plf

HUDSON
Design Group LLC

Mount Calculations

Bentley

Current Date: 10/2/2019 4:03 PM
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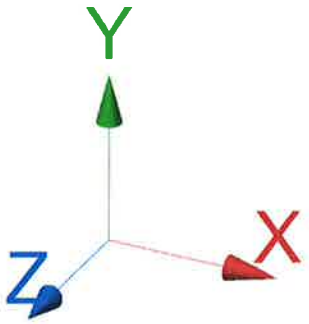

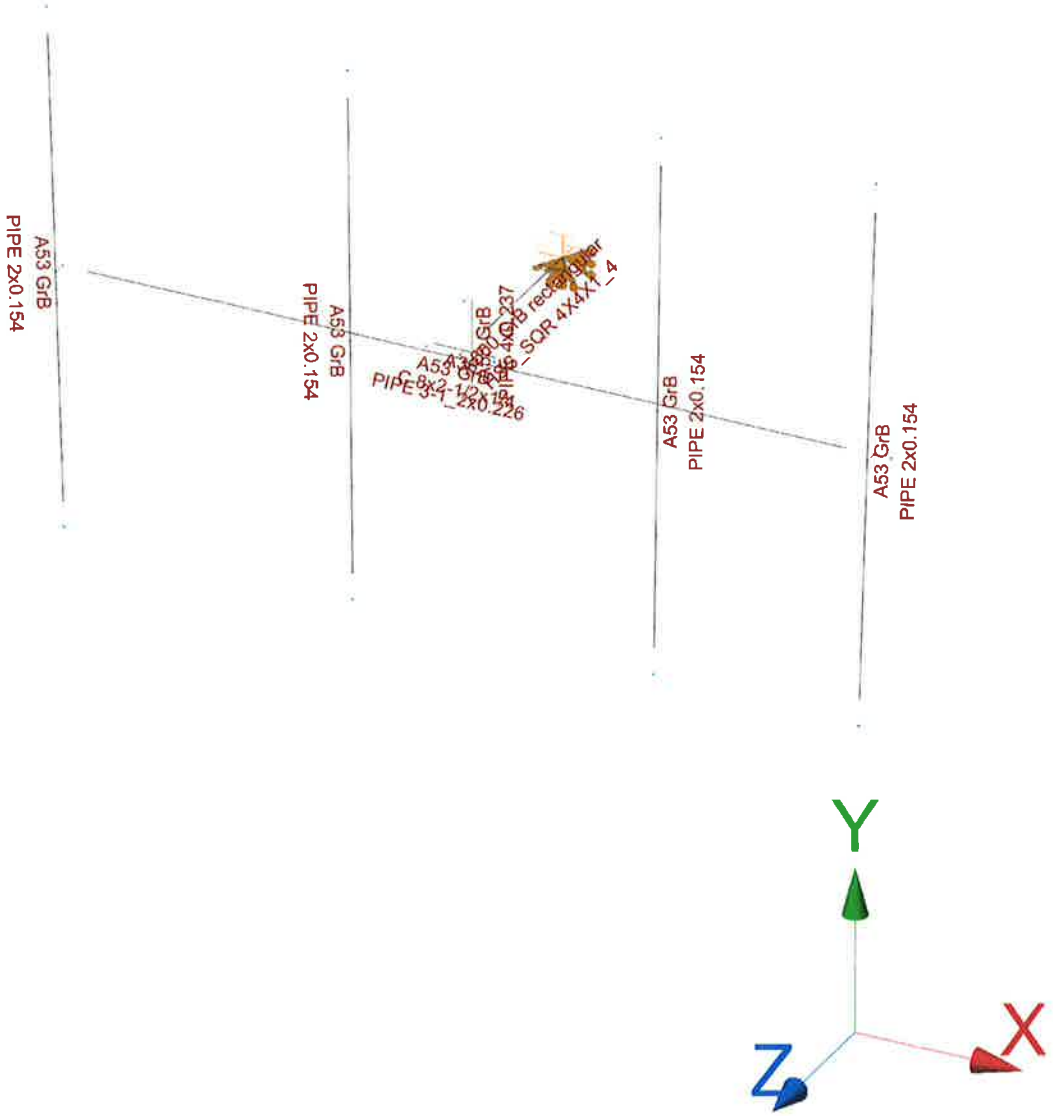
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PIPE 2x0.154
A53 GrB
PIPE 2x0.154
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Y
X
Z

Bentley

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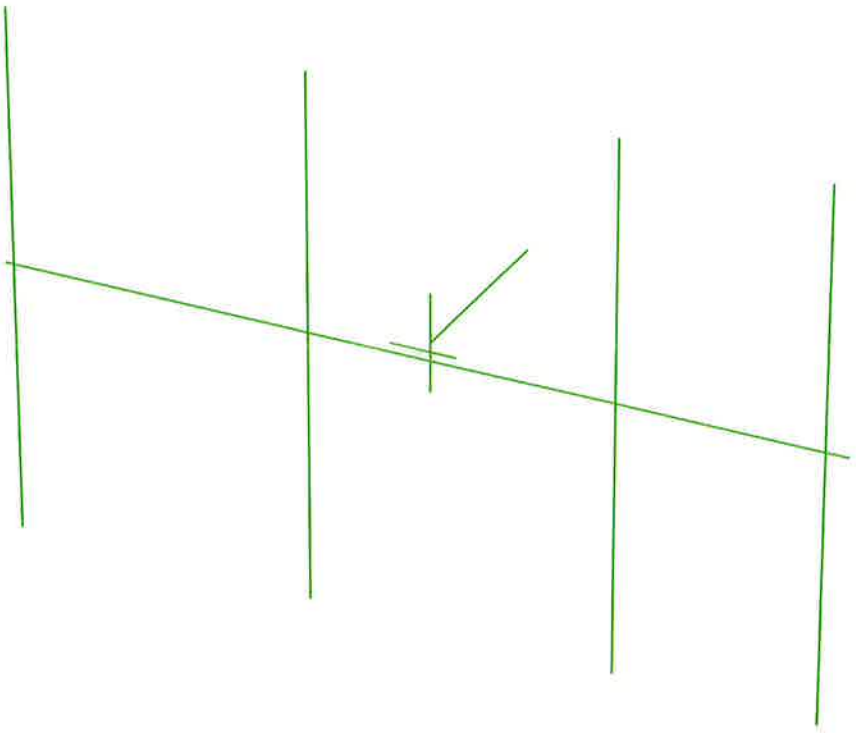
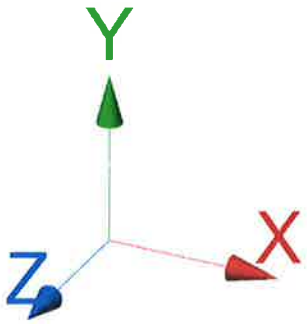
Error on design
Design O.K.
With warnings





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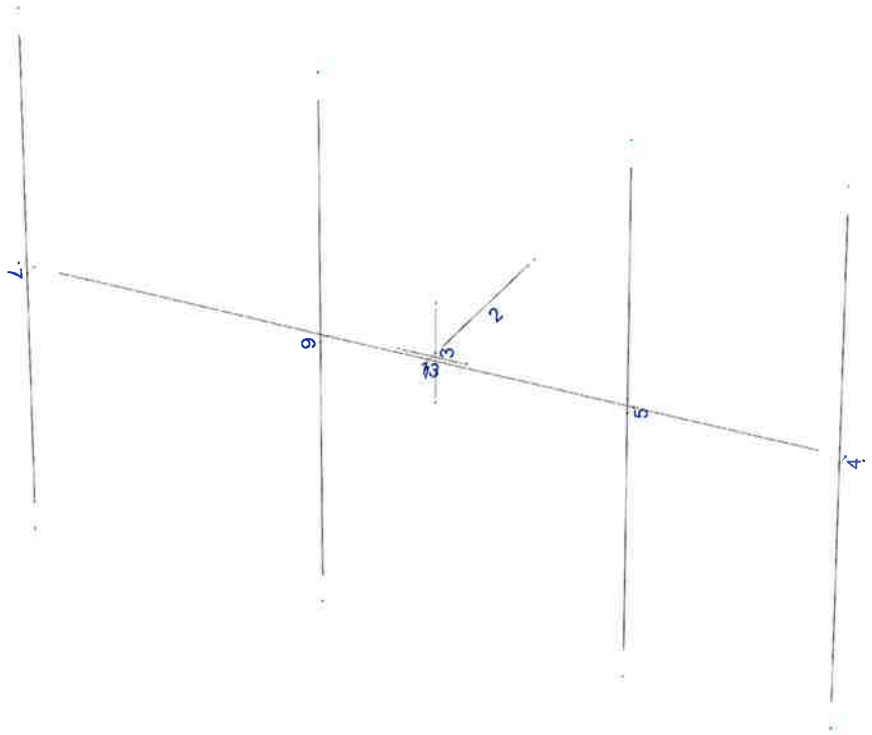

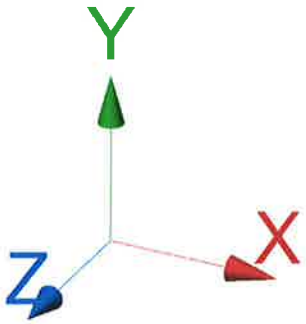

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Load data

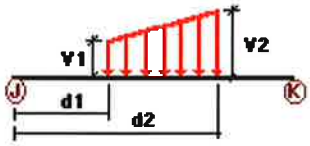
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND

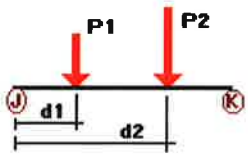
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.02	-0.02	0.00	No	100.00	Yes
	3	z	-0.023	-0.023	0.00	No	100.00	Yes
W30	1	z	-0.034	-0.034	0.00	No	100.00	Yes
	2	z	0.034	0.034	0.00	No	100.00	Yes
	3	z	-0.023	-0.023	0.00	No	100.00	Yes
W60	1	x	-0.034	-0.034	0.00	No	100.00	Yes
	2	x	-0.034	-0.034	0.00	No	100.00	Yes
	3	x	-0.023	-0.023	0.00	No	100.00	Yes

	4	x	-0.012	-0.012	0.00	No	100.00	Yes
	5	x	-0.012	-0.012	0.00	No	100.00	Yes
	6	x	-0.012	-0.012	0.00	No	100.00	Yes
	7	x	-0.012	-0.012	0.00	No	100.00	Yes
W90	2	x	-0.034	-0.034	0.00	No	100.00	Yes
	3	x	-0.023	-0.023	0.00	No	100.00	Yes
	4	x	-0.012	-0.012	0.00	No	100.00	Yes
	5	x	-0.012	-0.012	0.00	No	100.00	Yes
	6	x	-0.012	-0.012	0.00	No	100.00	Yes
	7	x	-0.012	-0.012	0.00	No	100.00	Yes
W120	1	x	-0.034	-0.034	0.00	No	100.00	Yes
	2	x	-0.034	-0.034	0.00	No	100.00	Yes
	3	x	-0.023	-0.023	0.00	No	100.00	Yes
	4	x	-0.012	-0.012	0.00	No	100.00	Yes
	5	x	-0.012	-0.012	0.00	No	100.00	Yes
	6	x	-0.012	-0.012	0.00	No	100.00	Yes
	7	x	-0.012	-0.012	0.00	No	100.00	Yes
W150	1	z	0.034	0.034	0.00	No	100.00	Yes
	2	z	0.034	0.034	0.00	No	100.00	Yes
	3	z	0.023	0.023	0.00	No	100.00	Yes
Di	1	y	-0.007	-0.007	0.00	No	100.00	Yes
	2	y	-0.009	-0.009	0.00	No	100.00	Yes
	3	y	-0.007	-0.007	0.00	No	100.00	Yes
	4	y	-0.005	-0.005	0.00	No	100.00	Yes
	5	y	-0.005	-0.005	0.00	No	100.00	Yes
	6	y	-0.005	-0.005	0.00	No	100.00	Yes
	7	y	-0.005	-0.005	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	4	y	-0.027	1.50	No
		y	-0.027	6.50	No
		y	-0.02	3.00	No
	5	y	-0.037	1.50	No
		y	-0.037	6.50	No
		y	-0.02	3.00	No
		y	-0.06	5.50	No
	6	y	-0.034	2.50	No
		y	-0.034	5.50	No
		y	-0.06	7.00	No
	7	y	-0.034	2.50	No
		y	-0.034	5.50	No
		y	-0.049	1.50	No
		y	-0.073	7.00	No
Wo	4	z	-0.208	1.50	No
		z	-0.208	6.50	No
	5	z	-0.247	1.50	No
		z	-0.247	6.50	No

	6	z	-0.211	2.50	No
		z	-0.211	5.50	No
		z	-0.14	7.00	No
	7	z	-0.211	2.50	No
		z	-0.211	5.50	No
		z	-0.084	1.50	No
		z	-0.084	7.00	No
W30	4	3	-0.186	1.50	No
		3	-0.186	6.50	No
		3	-0.042	3.00	No
	5	3	-0.22	1.50	No
		3	-0.22	6.50	No
		3	-0.042	3.00	No
		3	-0.078	5.50	No
	6	3	-0.181	2.50	No
		3	-0.181	5.50	No
		3	-0.126	7.00	No
	7	3	-0.181	2.50	No
		3	-0.181	5.50	No
		3	-0.072	1.50	No
		3	-0.079	7.00	No
W60	4	3	-0.142	1.50	No
		3	-0.142	6.50	No
		3	-0.026	3.00	No
	5	3	-0.167	1.50	No
		3	-0.167	6.50	No
		3	-0.026	3.00	No
		3	-0.09	5.50	No
	6	3	-0.12	2.50	No
		3	-0.12	5.50	No
		3	-0.099	7.00	No
	7	3	-0.12	2.50	No
		3	-0.12	5.50	No
		3	-0.048	1.50	No
		3	-0.07	7.00	No
W90	4	x	-0.12	1.50	No
		x	-0.12	6.50	No
		x	-0.017	3.00	No
	5	x	-0.141	1.50	No
		x	-0.141	6.50	No
		x	-0.017	3.00	No
		x	-0.085	5.50	No
	6	x	-0.09	2.50	No
		x	-0.09	5.50	No
		x	-0.085	7.00	No
	7	x	-0.09	2.50	No
		x	-0.09	5.50	No
		x	-0.037	1.50	No
		x	-0.066	7.00	No
W120	4	2	-0.142	1.50	No
		2	-0.142	6.50	No
		2	-0.026	3.00	No
	5	2	-0.167	1.50	No
		2	-0.167	6.50	No
		2	-0.026	3.00	No
		2	-0.09	5.50	No
	6	2	-0.12	2.50	No
		2	-0.12	5.50	No
		2	-0.099	7.00	No
	7	2	-0.12	2.50	No

		2	-0.12	5.50	No
		2	-0.048	1.50	No
		2	-0.07	7.00	No
W150	4	2	-0.186	1.50	No
		2	-0.186	6.50	No
		2	-0.042	3.00	No
	5	2	-0.22	1.50	No
		2	-0.22	6.50	No
		2	-0.042	3.00	No
		2	-0.078	5.50	No
	6	2	-0.181	2.50	No
		2	-0.181	5.50	No
		2	-0.126	7.00	No
	7	2	-0.181	2.50	No
		2	-0.181	5.50	No
		2	-0.072	1.50	No
		2	-0.079	7.00	No
Di	4	y	-0.058	1.50	No
		y	-0.058	6.50	No
		y	-0.015	3.00	No
	5	y	-0.07	1.50	No
		y	-0.07	6.50	No
		y	-0.015	3.00	No
		y	-0.045	5.50	No
	6	y	-0.061	2.50	No
		y	-0.061	5.50	No
		y	-0.045	7.00	No
	7	y	-0.061	2.50	No
		y	-0.061	5.50	No
		y	-0.025	1.50	No
		y	-0.029	7.00	No
WI0	4	z	-0.041	1.50	No
		z	-0.041	6.50	No
	5	z	-0.047	1.50	No
		z	-0.047	6.50	No
	6	z	-0.039	2.50	No
		z	-0.039	5.50	No
		z	-0.028	7.00	No
	7	z	-0.039	2.50	No
		z	-0.039	5.50	No
		z	-0.018	1.50	No
		z	-0.018	7.00	No
WI30	4	3	-0.036	1.50	No
		3	-0.036	6.50	No
		3	-0.01	3.00	No
	5	3	-0.042	1.50	No
		3	-0.042	6.50	No
		3	-0.01	3.00	No
		3	-0.016	5.50	No
	6	3	-0.034	2.50	No
		3	-0.034	5.50	No
		3	-0.026	7.00	No
	7	3	-0.034	2.50	No
		3	-0.034	5.50	No
		3	-0.016	1.50	No
		3	-0.017	7.00	No
WI60	4	3	-0.029	1.50	No
		3	-0.029	6.50	No
		3	-0.007	3.00	No
	5	3	-0.033	1.50	No

		3	-0.033	6.50	No
		3	-0.007	3.00	No
		3	-0.019	5.50	No
	6	3	-0.024	2.50	No
		3	-0.024	5.50	No
		3	-0.021	7.00	No
	7	3	-0.024	2.50	No
		3	-0.024	5.50	No
		3	-0.011	1.50	No
		3	-0.015	7.00	No
WI90	4	x	-0.026	1.50	No
		x	-0.026	6.50	No
		x	-0.005	3.00	No
	5	x	-0.029	1.50	No
		x	-0.029	6.50	No
		x	-0.005	3.00	No
		x	-0.019	5.50	No
	6	x	-0.019	2.50	No
		x	-0.019	5.50	No
		x	-0.019	7.00	No
	7	x	-0.019	2.50	No
		x	-0.019	5.50	No
		x	-0.009	1.50	No
		x	-0.015	7.00	No
WI120	4	2	-0.029	1.50	No
		2	-0.029	6.50	No
		2	-0.007	3.00	No
	5	2	-0.033	1.50	No
		2	-0.033	6.50	No
		2	-0.007	3.00	No
		2	-0.019	5.50	No
	6	2	-0.024	2.50	No
		2	-0.024	5.50	No
		2	-0.021	7.00	No
	7	2	-0.024	2.50	No
		2	-0.024	5.50	No
		2	-0.011	1.50	No
		2	-0.015	7.00	No
WI150	4	2	-0.036	1.50	No
		2	-0.036	6.50	No
		2	-0.01	3.00	No
	5	2	-0.042	1.50	No
		2	-0.042	6.50	No
		2	-0.01	3.00	No
		2	-0.016	5.50	No
	6	2	-0.034	2.50	No
		2	-0.034	5.50	No
		2	-0.026	7.00	No
	7	2	-0.034	2.50	No
		2	-0.034	5.50	No
		2	-0.016	1.50	No
		2	-0.017	7.00	No
WL0	4	z	-0.012	1.50	No
		z	-0.012	6.50	No
	5	z	-0.015	1.50	No
		z	-0.015	6.50	No
	6	z	-0.013	2.50	No
		z	-0.013	5.50	No
		z	-0.008	7.00	No
	7	z	-0.013	2.50	No

		z	-0.013	5.50	No
		z	-0.005	1.50	No
		z	-0.005	7.00	No
WL30	4	3	-0.011	1.50	No
		3	-0.011	6.50	No
		3	-0.002	3.00	No
	5	3	-0.013	1.50	No
		3	-0.013	6.50	No
		3	-0.002	3.00	No
		3	-0.004	5.50	No
	6	3	-0.011	2.50	No
		3	-0.011	5.50	No
		3	-0.007	7.00	No
	7	3	-0.011	2.50	No
		3	-0.011	5.50	No
		3	-0.004	1.50	No
		3	-0.005	7.00	No
WL60	4	3	-0.009	1.50	No
		3	-0.009	6.50	No
		3	-0.001	3.00	No
	5	3	-0.01	1.50	No
		3	-0.01	6.50	No
		3	-0.001	3.00	No
		3	-0.005	5.50	No
	6	3	-0.007	2.50	No
		3	-0.007	5.50	No
		3	-0.006	7.00	No
	7	3	-0.007	2.50	No
		3	-0.007	5.50	No
		3	-0.003	1.50	No
		3	-0.004	7.00	No
WL90	4	x	-0.007	1.50	No
		x	-0.007	6.50	No
		x	-0.001	3.00	No
	5	x	-0.009	1.50	No
		x	-0.009	6.50	No
		x	-0.001	3.00	No
		x	-0.005	5.50	No
	6	x	-0.006	2.50	No
		x	-0.006	5.50	No
		x	-0.005	7.00	No
	7	x	-0.006	2.50	No
		x	-0.006	5.50	No
		x	-0.002	1.50	No
		x	-0.004	7.00	No
WL120	4	2	-0.009	1.50	No
		2	-0.009	6.50	No
		2	-0.001	3.00	No
	5	2	-0.01	1.50	No
		2	-0.01	6.50	No
		2	-0.001	3.00	No
		2	-0.005	5.50	No
	6	2	-0.007	2.50	No
		2	-0.007	5.50	No
		2	-0.006	7.00	No
	7	2	-0.007	2.50	No
		2	-0.007	5.50	No
		2	-0.003	1.50	No
		2	-0.004	7.00	No
WL150	4	2	-0.011	1.50	No

	2	-0.011	6.50	No
	2	-0.002	3.00	No
5	2	-0.013	1.50	No
	2	-0.013	6.50	No
	2	-0.002	3.00	No
	2	-0.004	5.50	No
6	2	-0.011	2.50	No
	2	-0.011	5.50	No
	2	-0.007	7.00	No
7	2	-0.011	2.50	No
	2	-0.011	5.50	No
	2	-0.004	1.50	No
	2	-0.005	7.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00

WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00

Bentley

Current Date: 10/2/2019 4:06 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5004\LTE 6C-7C\Rev.1\CT5004 (LTE 6C-7C)(Rev.1).retx\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2

LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 8x2-1/2x1/4	**13**	LC35 at 50.00%	**0.00**	**OK**	
	HSS_SQR 4X4X1_4	**2**	LC11 at 100.00%	**0.60**	**OK**	
	PIPE 2x0.154	**4**	LC1 at 50.00%	0.39	OK	
		5	LC7 at 50.00%	0.47	OK	
		6	LC1 at 50.00%	**0.56**	**OK**	
		7	LC1 at 50.00%	0.43	OK	
	PIPE 3-1_2x0.226	**1**	LC1 at 50.00%	**0.86**	**OK**	
	PIPE 4x0.237	**3**	LC12 at 50.00%	**0.00**	**OK**	

Bentley

Current Date: 10/2/2019 4:07 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5004\LTE 6C-7C\Rev.1\CT5004 (LTE 6C-7C)(Rev.1).retx\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
4	0.00	0.00	-3.20	0
6	0.00	0.75	-0.20	0
7	0.00	-0.75	-0.20	0
16	-1.50	4.00	0.20	0
17	-6.00	4.00	0.20	0
18	6.00	4.00	0.20	0
19	3.00	4.00	0.20	0
20	-1.50	-4.00	0.20	0
21	-6.00	-4.00	0.20	0
22	6.00	-4.00	0.20	0
23	3.00	-4.00	0.20	0
25	0.50	0.00	-0.10	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
4	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	3		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
2	5	4		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
3	6	7		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
4	18	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	19	23		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	16	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	17	21		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	25	26		C 8x2-1/2x1/4	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
4	315.00	0	0.00	0.00	0.00
5	315.00	0	0.00	0.00	0.00
6	315.00	0	0.00	0.00	0.00
7	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
2	0.00	0.00	-3.00	0.00	0.00	-3.00
3	0.00	0.00	-3.00	0.00	0.00	-3.00
13	0.00	0.00	-1.50	0.00	0.00	-1.50

DOCKET NO. 414 - Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 36 Ritch Avenue, Greenwich, Connecticut.	}	Connecticut Siting Council July 14, 2011

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Cellco Partnership d/b/a Verizon Wireless, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 36 Ritch Avenue in Greenwich, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a 77-foot monopole, designed as a simulated pine tree. Simulated branches shall not extend higher than 84 feet above ground level. The tower shall be no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Cellco, T-Mobile, AT&T and other entities, both public and private.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Greenwich for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
    c) simulated pine tree tower designs and photographs of actual installations from various manufacturers.
    d) construction schedule.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, and at the nearest point of abutting property lines consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. Additionally, the Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Greenwich public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Greenwich. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

12. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

14. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

15. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

Pursuant to General Statutes **§** 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the *Greenwich Time.*

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant
Cellco Partnership d/b/a
Verizon Wireless

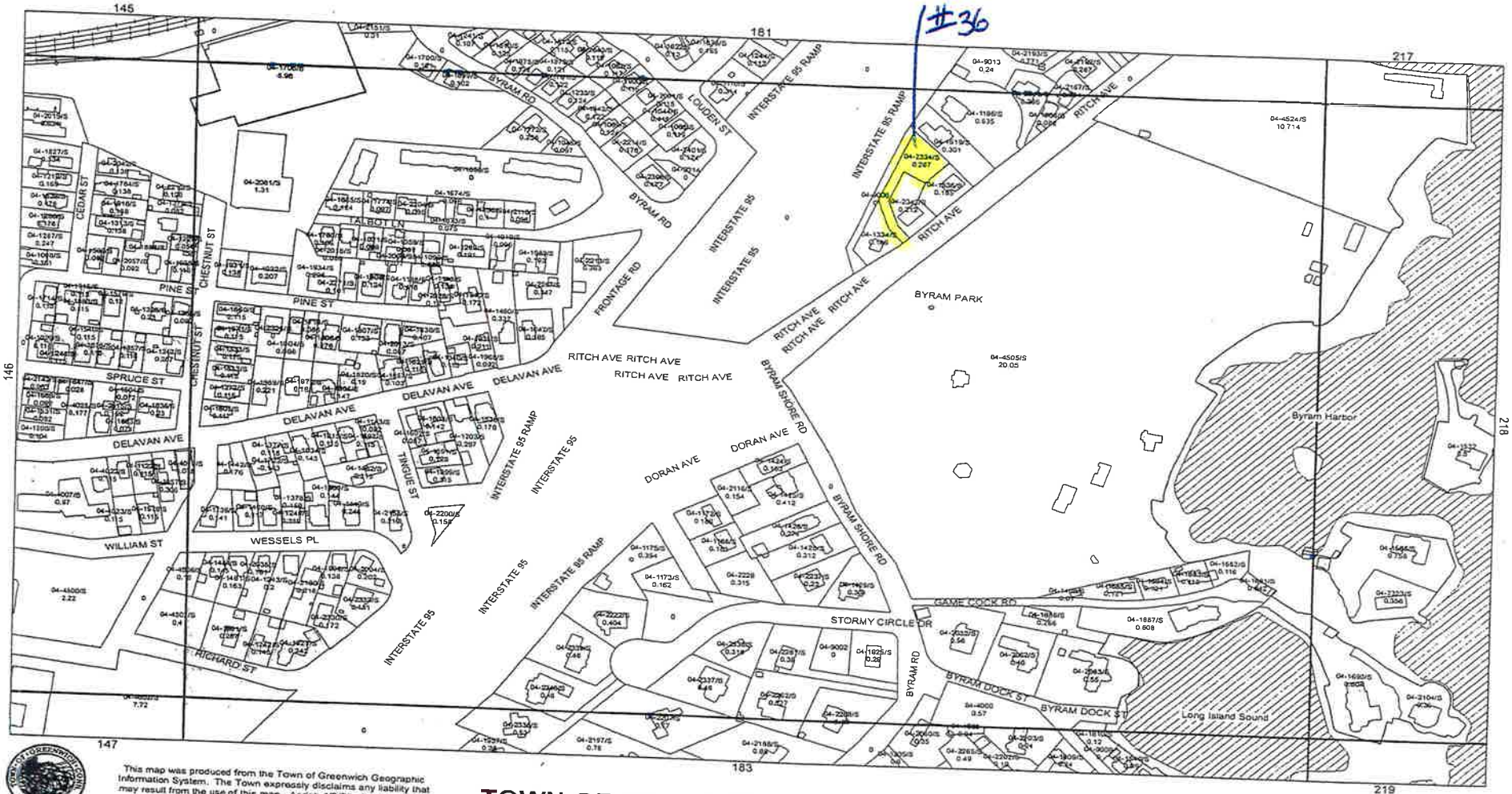
Its Representative
Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

Alexandria Carter
Regulatory Manager
Verizon Wireless
99 East River Drive
East Hartford, CT 06108

Party
John Hartwell
42 Ritch Avenue W.
Greenwich, CT 06830

Intervenor
T-Mobile Northeast LLC

Its Representative
Julie D. Kohler, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604



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TOWN OF GREENWICH TAX MAP 182 VOL 3

Tax ID 182/005 Printed 07/21/2016 Card No. 1 of 1

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
04-2334/S

Parent Parcel Number

Property Address
RITCH AVENUE 0036

Neighborhood
2700 BYRAM

Property Class
270 Telecommunications

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	04	
Section & Plat	040	
Routing Number	7117N0001	

Site Description

Topography:

Public Utilities:
Water, Sewer, Electric

Street or Road:

Neighborhood:

Zoning:
R-7 Single Family 7,500 SF

Legal Acres:
0.2670

OWNERSHIP

36 RITCH AVENUE LLC
16B ARTHER STREET
GREENWICH, CT 06831

LOT NO PT5 & PT7A-1-1-3 R ITCH AV N1B

TRANSFER OF OWNERSHIP

Date		
02/15/2002	KELLY BRIAN & LAURA W/S	Bk/Pg: 3786, 114 $0
11/16/2000	CATALANO ANTHONY ETAL DBA CATALANO B	Bk/Pg: 3492, 86 $125000
08/20/1986	NA	Bk/Pg: 1611, 290 $0

COMMERCIAL

VALUATION RECORD

Assessment Year		10/01/2005	11/30/2005	10/01/2010	10/01/2012	10/01/2015	10/01/2015	10/01/2015
Reason for Change		2005 Reval	2005 BAA	2010 Reval	2012 List	2015 Prelim	2015 Final	2015 BAA
VALUATION	L	622000	264400	605600	605600	664000	664000	664000
Market	B	0	0	101300	579000	2350700	2350700	2236000
	T	622000	264400	706900	1184600	3014700	3014700	2900000
VALUATION	I	435400	185080	423920	423920	464800	464800	464800
70% Assessed	B	0	0	70910	405300	1645490	1645490	1565200
	T	435400	185080	494830	829220	2110290	2110290	2030000

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				11630.52	57.09	57.09	664000		664000

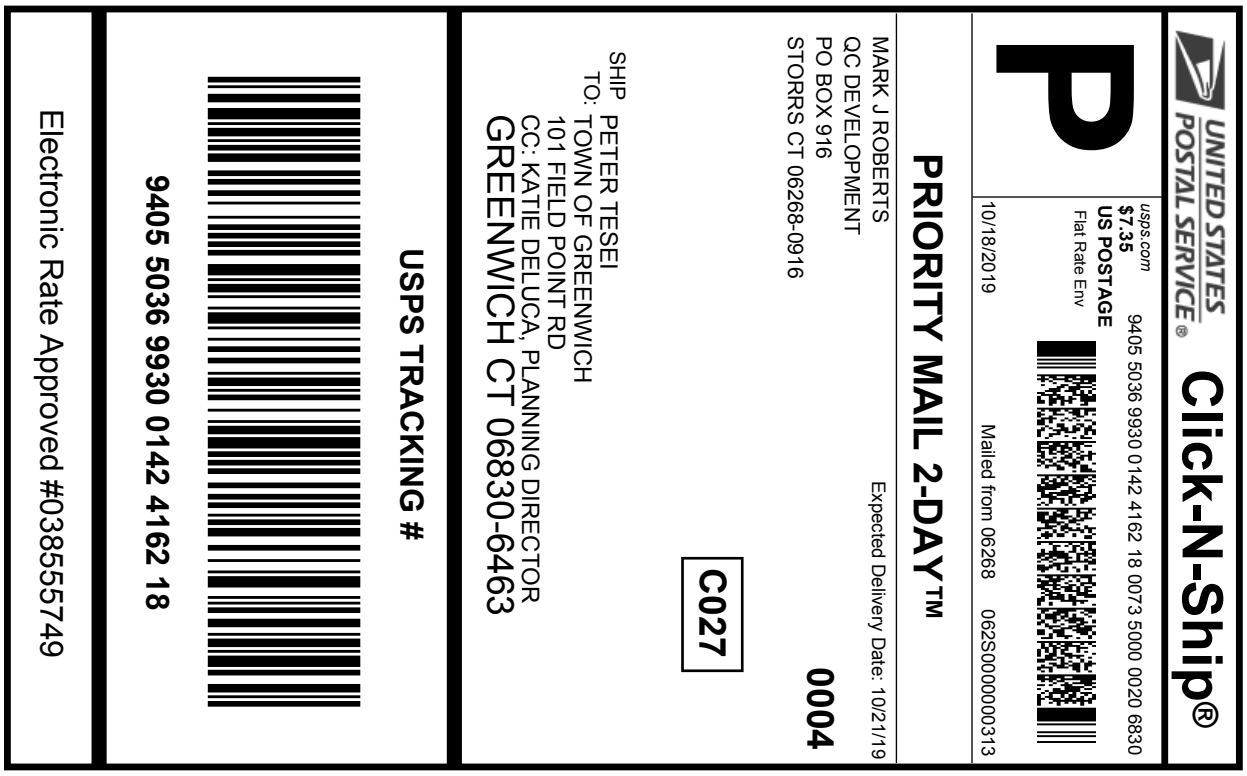
BA10: Sustained
BA15: Decrease Total value by $114,700
BP12: 11-4098 Erection of 77' monopine to rplc orig flagpole type mono pole cmplt. Construction of equip storage bldg. cmplt. Both poles stndg and tied in as of 10/11/12 w/ orig. still operating. Add 2nd pole and misc site imprvmnts.
BP15: 15-0972, 9 Anteenna Panels, $15,000
CKMP: 8586
DBA: Telecommunications site w/ a 70' flagpole monopole owned by Cingular (and carrier), and a 77' monopine (pole) owned by Verizon (w/ Verizon, ATT & Mobile carriers) both serviced by a custom utility bldg.
LAND: See BP03 memo.

Permit Number / Type	FilingDate	Est. Cost / Est. SqFt	Field Visit

Supplemental Cards

TRUE TAX VALUE 664000

Supplemental Cards
TOTAL LAND VALUE 664000



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0142 4162 18

Trans. #:	475087259
Print Date:	10/18/2019
Ship Date:	10/18/2019
Expected Delivery Date:	10/21/2019

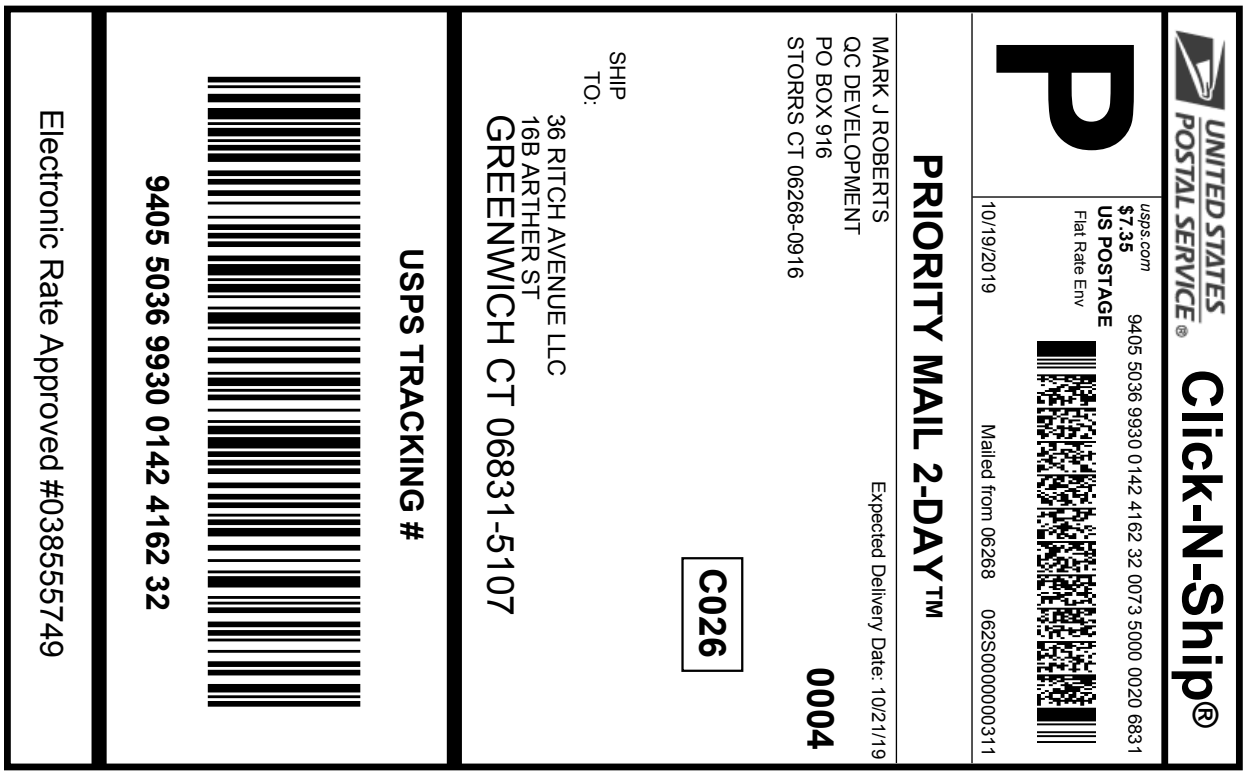
Priority Mail® Postage:	**$7.35**
Total:	**$7.35**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: PETER TESEI
TOWN OF GREENWICH
101 FIELD POINT RD
CC: KATIE DELUCA, PLANNING DIRECTOR
GREENWICH CT 06830-6463

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0142 4162 32

Trans. #:	475087259
Print Date:	10/18/2019
Ship Date:	10/19/2019
Expected Delivery Date:	10/21/2019

Priority Mail® Postage:	**$7.35**
Total:	**$7.35**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: 36 RITCH AVENUE LLC
16B ARTHER ST
GREENWICH CT 06831-5107

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UNITED STATES POSTAL SERVICE®

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