



QC Development

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March 2, 2018

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2023
85 Miner Lane, Waterford, CT 06385
N 41-19-44.85
W 72-07-28.75

Dear Ms. Bachman:

AT&T currently maintains twelve (12) antennas at the 153-foot level of the existing 180-foot Monopole at 85 Miner Lane (aka 15 Miner Lane), Waterford, CT. The tower is owned by American Tower and the property is owned by the Town of Waterford. AT&T now intends to remove three (3) KMW antennas and replace them with three (3) Kathrein 800-10965 antennas. These antennas would be installed at the 153-foot level of the tower. AT&T also intends to swap six (6) Ericsson RRUS-11 for (3) RRUS-32 and (3) RRUS-32 B66, and install (3) RRUS-11 and (3) RRUS-B14 4478 Remote Radio Units (RRU).

This facility was approved by the Connecticut Siting Council, Petition No. 886 on April 7, 2009. There were no conditions 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 Daniel M.

Steward, First Selectman of the Town of Waterford, as elected official and property owner, to Waterford's Director of Planning and Zoning and to the 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: Daniel M. Steward - as Elected Official and Property Owner
Abby Piersall, AICP – Planning Director
American Tower - as 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*							5.65%
AT&T GSM	1	146	153	0.0024	880	0.5867	0.04%
AT&T UMTS	2	285	153	0.0095	880	0.5867	0.16%
AT&T UMTS	2	311	153	0.0104	1900	1.0000	0.08%
AT&T LTE	1	793	153	0.0132	700	0.4667	0.28%
AT&T LTE	1	1734	153	0.0289	1900	1.0000	0.23%
AT&T LTE	1	1991	153	0.0331	2100	1.0000	0.24%
AT&T LTE	1	1096	153	0.0182	2300	1.0000	0.12%
Site Total							7.05%

*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*							5.65%
AT&T UMTS	1	284	153	0.0095	880	0.5867	0.16%
AT&T UMTS	2	311	153	0.0104	1900	1.0000	0.10%
AT&T LTE	2	1991	153	0.0994	700	1.2667	2.13%
AT&T LTE	1	793	153	0.0132	850	0.4667	0.28%
AT&T LTE	1	1991	153	0.0663	1900	1.0000	0.66%
AT&T LTE	1	1734	153	0.0577	2100	1.0000	0.58%
AT&T LTE	1	1094	153	0.0182	2300	1.0000	0.18%
Site Total							9.75%

*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

Note: Proposed Loading may also include corrections to certain Existing Loading values

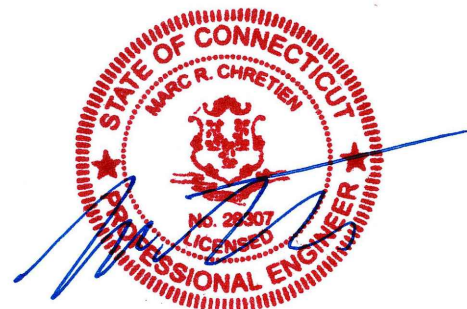
PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
 SITE ADDRESS: 15 MINER LANE
 WATERFORD, CT 06385
 LATITUDE: 41° 19' 45" N
 LONGITUDE: 72° 07' 29" W
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES
 CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY
 DESIGN GUIDELINE: LTE 5C 850, LTE 6C 700DE, LTE 7C 700B14, AND RETROFIT
 SCOPE OF WORK:

DRAWING INDEX

REV

T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND AND EQUIPMENT PLANS	1
A-2	ELEVATIONS AND RF SYSTEM SCHEDULE	1
A-3	ANTENNA PLANS	1
A-4	DETAILS	1
S-1	STRUCTURAL DETAILS	1
G-1	GROUNDING DETAILS AND ONE-LINE DIAGRAM	1



SITE NUMBER: CT2023
SITE NAME: WATERFORD

15 MINER LANE
 WATERFORD, CT 06385
 NEW LONDON COUNTY

LOCUS MAP



DRIVING DIRECTIONS FROM 550 COCHITUATE ROAD, FRAMINGHAM, MA:
 1. HEAD SOUTHWEST, TURN LEFT TOWARD LEGGATT MCCALL CONN
 2. TURN LEFT ONTO LEGGATT MCCALL CONN
 3. CONTINUE ONTO BURR ST
 4. TURN LEFT ONTO COCHITUATE RD
 5. USE THE RIGHT LANE TO TAKE THE RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD/BOSTON
 6. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS TURNPIKE/WORCESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE
 7. MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE
 8. TAKE EXIT 10 TOWARD MA-12 N/AUBURN/WORCESTER
 9. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-395 S/US-20 E/NORWICH CT
 10. CONTINUE ONTO I-395 S
 11. TAKE EXIT 2 FOR CT-85 TOWARD WATERFORD/CHESTERFIELD
 12. TURN LEFT ONTO CT-85 S
 13. TURN RIGHT ONTO JEFFERSON AVE
 14. TURN RIGHT ONTO CHESTER ST
 15. TURN LEFT ONTO CLARK LN
 16. PASS BY CITIZENS BANK (ON THE LEFT IN 1.1 MI)
 17. TURN LEFT ONTO BOSTON POST RD
 18. TURN RIGHT ONTO MINER LN

GENERAL NOTES

- 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.
- 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.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONNECTICUT



CALL BEFORE YOU DIG



CALL TOLL FREE: 800-922-4455

UNDERGROUND SERVICE ALERT



SITE NUMBER: CT2023
 SITE NAME: WATERFORD
 15 MINER LANE
 WATERFORD, CT 06385
 NEW LONDON COUNTY



550 COCHITUATE ROAD, SUITE 13,
 FRAMINGHAM, MA 01701-4681

NO.	DATE	REVISIONS	BY	CHK
0	01/29/18	ISSUED FOR REVIEW	AAB	MRC
1	02/28/18	REVISED	AAB	MRC

TITLE SHEET

SHEET NO. T-1

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE LESEE/LICENSEE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

15. THE CONTRACTOR SHALL NOTIFY THE LESEE/LICENSEE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESEE/LICENSEE REPRESENTATIVE.

16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY: DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1-888-344-7233 CALL BEFORE YOU DIG (CT): 1-800-922-4455

18. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS SHOWN HEREIN.

19. ALL DIMENSIONS SHOWN THUS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECT THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH PROJECT OWNER PRIOR TO CONSTRUCTION.

20. NORTH ARROW SHOWN ON PLANS REFERS TO APPROXIMATE TRUE NORTH. PRIOR TO THE START OF CONSTRUCTION, ORDERING OR FABRICATING OF ANTENNA MOUNTS, CONTRACTOR SHALL CONSULT WITH PROJECT OWNER'S RF ENGINEER AND FIELD VERIFY ALL ANTENNA SECTOR LOCATIONS AND ANTENNA AZIMUTHS.

21. THE CONTRACTOR AND OR HIS SUB CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

22. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.

23. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE PROJECT OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF PROJECT OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE EXHIBIT 3). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.

24. WHEN "PAINT TO MATCH" IS SPECIFIED FOR ANTENNA CONCEALMENT, PAINT PRODUCT FOR ANTENNA RADOME SHALL BE SHERWIN WILLIAMS COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PROJECT OWNER'S GUIDELINE'S.

25. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

26. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

27. ALL (E)ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.

28. ALL (E)INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF UTILITY COMPANY ENGINEERING. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR

29. GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES

30. DURING CONSTRUCTION. PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS

31. FOR WIRELESS COMMUNICATIONS SYSTEMS. PROJECT OWNER'S IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. PROJECT OWNER RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.

32. 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:

2012 INTERNATIONAL BUILDING CODE
2016 CT STATE BUILDING CODE
ELECTRICAL CODE: NEC 2014
NFPA 780 2014

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, NINTH EDITION;

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

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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.

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.

2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.

3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.

4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.

5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.

6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.

7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION.

8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.

9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE AND GREENLEE CONDUIT MEASURING TAPE IN EACH INSTALLED TELCO CONDUIT.

10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.

11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

12. PPC SUPPLIED BY PROJECT OWNER.

13. GROUNDING SHALL COMPLY WITH NEC ART. 250.

14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.

16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.

17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.

18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.

19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

20. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.

21. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ (E) MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.

22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM RESISTANCE REQUIRED.

23. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.



ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	(P)	PROPOSED/NEW	TBR	TO BE REMOVED
(E)	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		
(F)	FUTURE				



SITE NUMBER: CT2023
SITE NAME: WATERFORD
15 MINER LANE
WATERFORD, CT 06385
NEW LONDON COUNTY



550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

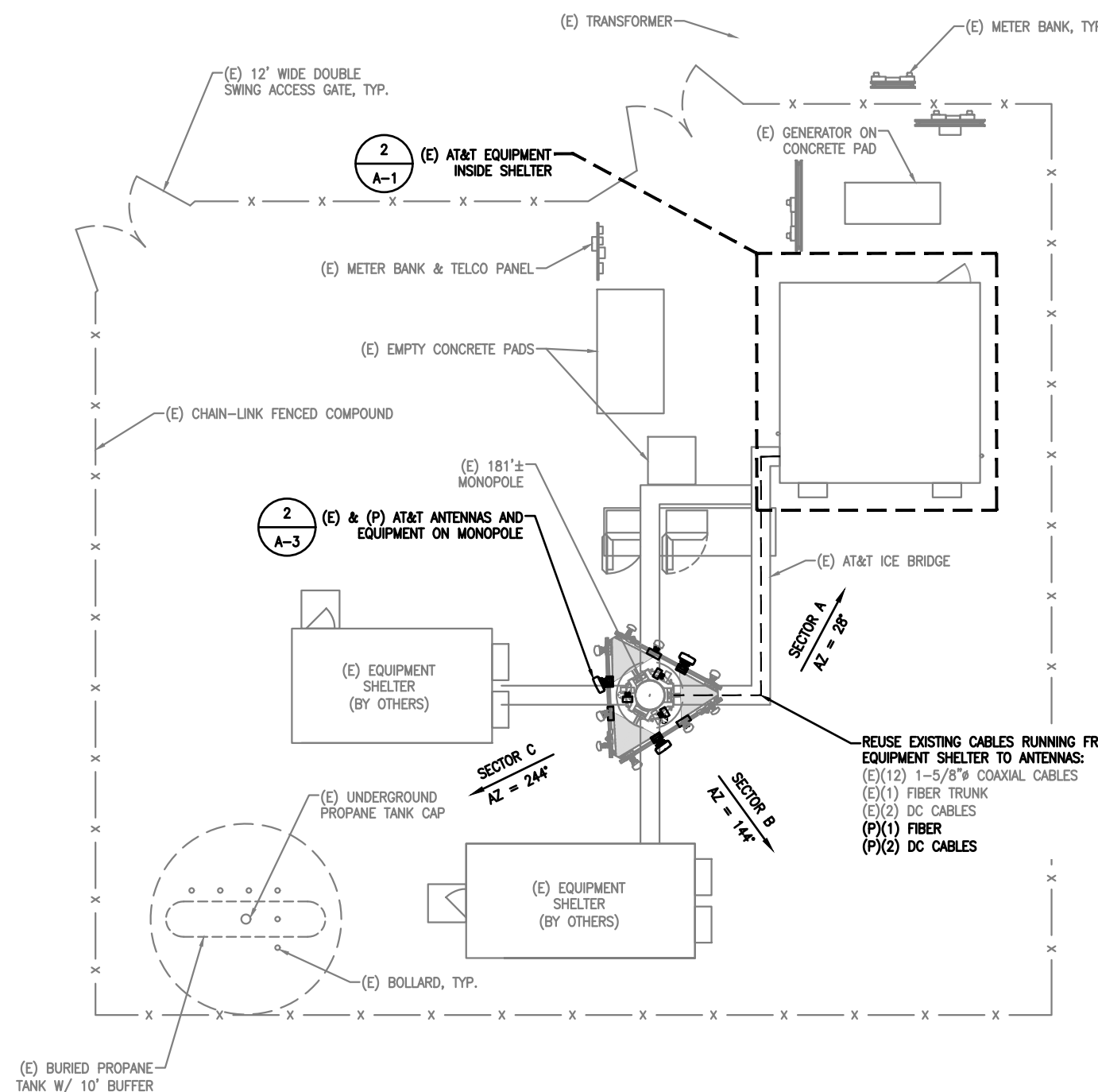
NO.	DATE	REVISIONS	BY	CHK
0	01/29/18	ISSUED FOR REVIEW	AAB	MRC
1	02/28/18	REVISED	AAB	MRC

GENERAL NOTES

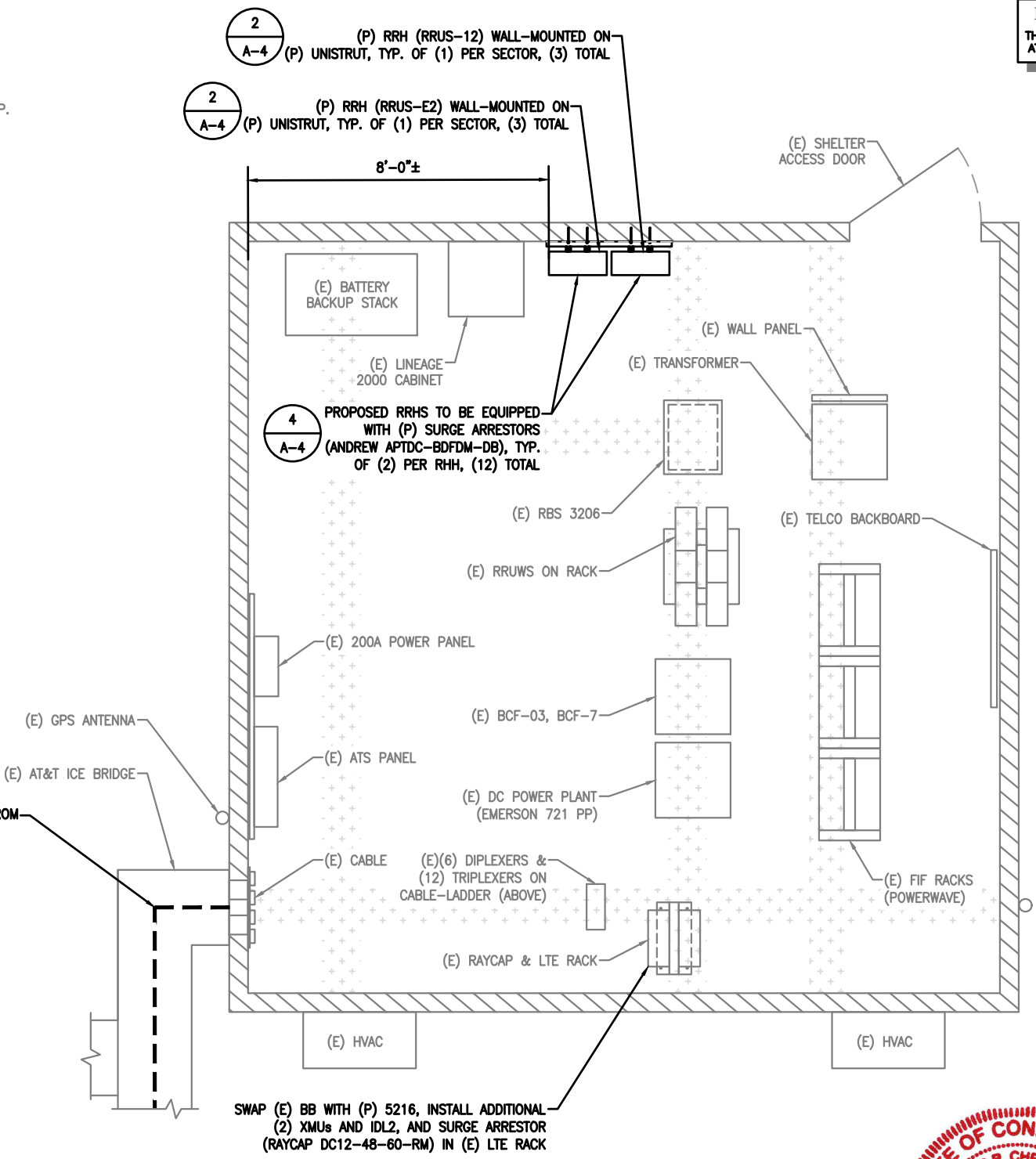
SHEET NO.

GN-1

HALF SIZE PRINT
THIS DRAWING IS SCALEABLE
AT HALF THE NOTED SCALE



1/A-1 COMPOUND PLAN
SCALE: 1"=10'-0"
NORTH



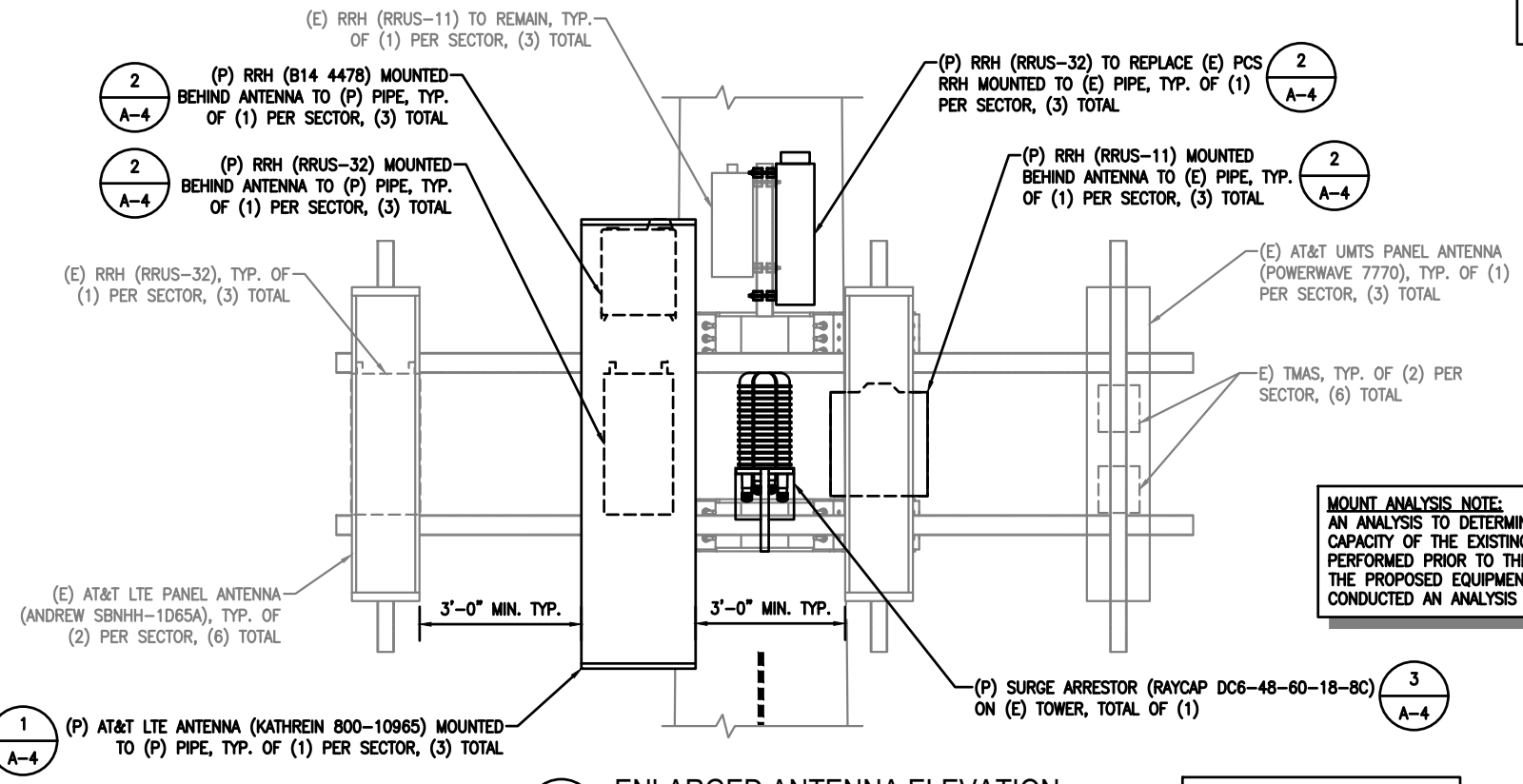
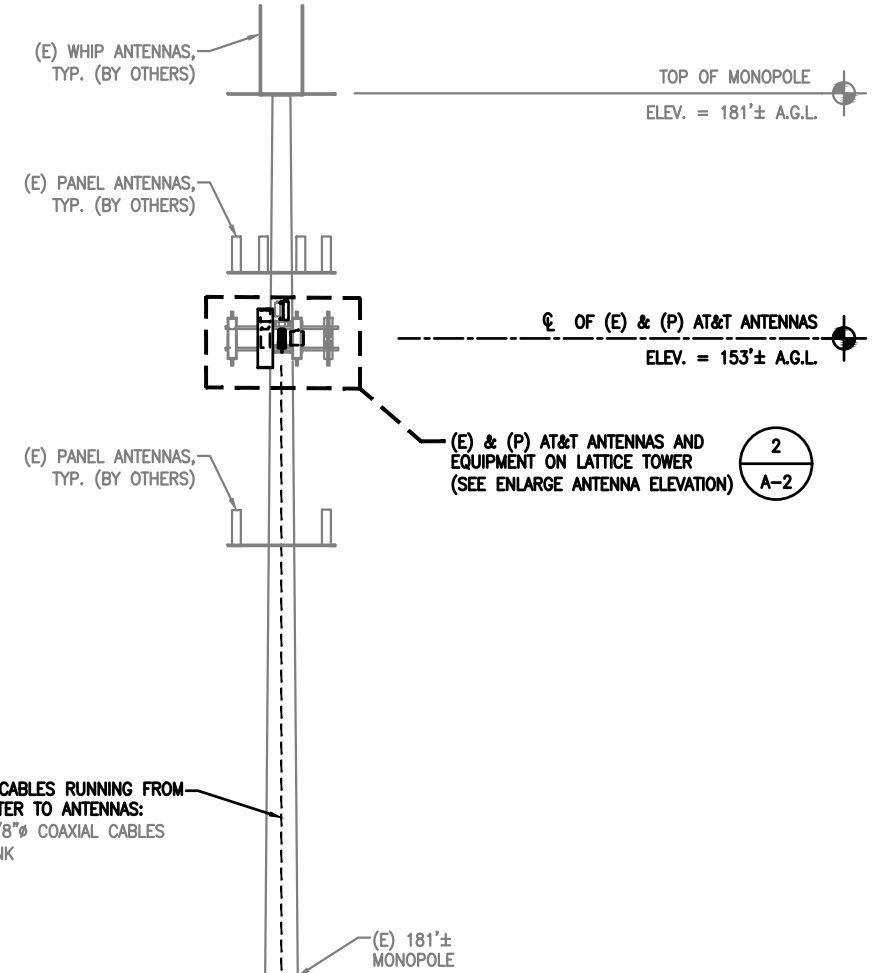
SWAP (E) BB WITH (P) 5216, INSTALL ADDITIONAL (2) XMUs AND IDL2, AND SURGE ARRESTOR (RAYCAP DC12-48-60-RM) IN (E) LTE RACK

2/A-1 EQUIPMENT SHELTER PLAN
SCALE: 1/2"=1'-0"
NORTH



NO.	DATE	REVISIONS	BY	CHK
0	01/29/18	ISSUED FOR REVIEW	AAB	MRC
1	02/28/18	REVISED	AAB	MRC

HALF SIZE PRINT
THIS DRAWING IS SCALEABLE
AT HALF THE NOTED SCALE



MOUNT ANALYSIS NOTE:
AN ANALYSIS TO DETERMINE THE STRUCTURAL CAPACITY OF THE EXISTING MOUNTS SHALL BE PERFORMED PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT. AEG HAS NOT CONDUCTED AN ANALYSIS OF THE MOUNT.

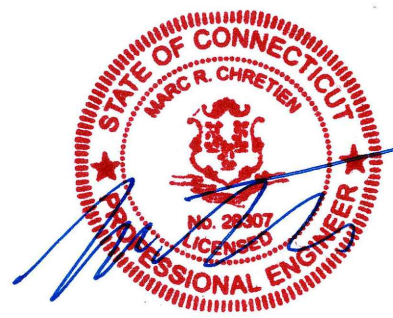
NOTE:
ALL EXISTING AND PROPOSED ANTENNAS ARE TO BE VERTICALLY CENTERED ON PLATFORM.

NOTE:
EXISTING ANTENNAS TO BE RELOCATED TO MAINTAIN A MINIMUM OF 3'-0" SEPARATION BETWEEN EXISTING AND PROPOSED LTE ANTENNAS.

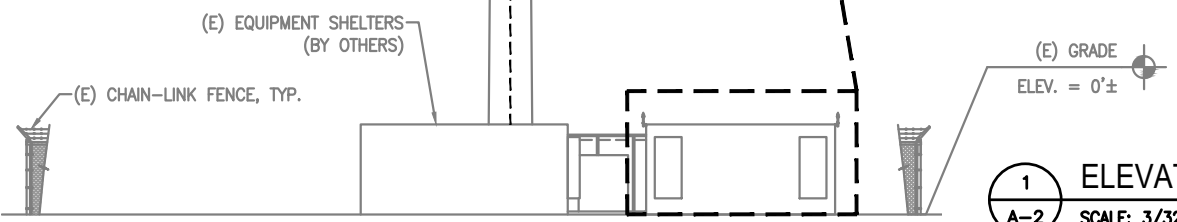
2
A-2 ENLARGED ANTENNA ELEVATION
SCALE: 1/4" = 1'-0"

REUSE EXISTING CABLES RUNNING FROM EQUIPMENT SHELTER TO ANTENNAS:
(E)(12) 1-5/8" COAXIAL CABLES
(E)(1) FIBER TRUNK
(E)(2) DC CABLES
(P)(1) FIBER
(P)(2) DC CABLES

MONOPOLE ANALYSIS NOTE:
AN ANALYSIS TO DETERMINE THE STRUCTURAL CAPACITY OF THE EXISTING MONOPOLE SHALL BE PERFORMED PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT. AEG HAS NOT CONDUCTED AN ANALYSIS OF THE MONOPOLE.



2
A-1 (E) AT&T EQUIPMENT INSIDE SHELTER



SECTOR	ANTENNA INFORMATION					RRH INFORMATION		TMA INFORMATION		JUMPER INFO.	
	POSITION	STATUS	MODEL	AZIMUTH	RAD CTR (A.G.L.)	STATUS	MODEL	STATUS	MODEL	COAX	FIBER
ALPHA	I-A	EXISTING	7770	144°	153'	-	-	EXISTING, EXISTING	LGP17201, LGP17201	2	-
	II-A	EXISTING	SBNHH-1D65A	28°	153'	PROPOSED, PROPOSED	RRUS-11, RRUS-32 B2	-	-	-	3
	III-A	PROPOSED	800-10965	28°	153'	PROPOSED, PROPOSED	B14 4478, RRUS-32 B66	-	-	-	2
	IV-A	EXISTING	SBNHH-1D65A	144°	153'	EXISTING, PROPOSED, PROPOSED	RRUS-32, RRUS-E2, RRUS-12 B5	-	-	2	1
BETA	I-B	EXISTING	7770	264°	153'	-	-	EXISTING, EXISTING	LGP17201, LGP17201	2	-
	II-B	EXISTING	SBNHH-1D65A	144°	153'	PROPOSED, PROPOSED	RRUS-11, RRUS-32 B2	-	-	-	3
	III-B	PROPOSED	800-10965	144°	153'	PROPOSED, PROPOSED	B14 4478, RRUS-32 B66	-	-	-	2
	IV-B	EXISTING	SBNHH-1D65A	264°	153'	EXISTING, PROPOSED, PROPOSED	RRUS-32, RRUS-E2, RRUS-12 B5	-	-	2	1
GAMMA	I-C	EXISTING	7770	28°	153'	-	-	EXISTING, EXISTING	LGP17201, LGP17201	2	-
	II-C	EXISTING	SBNHH-1D65A	244°	153'	PROPOSED, PROPOSED	RRUS-11, RRUS-32 B2	-	-	-	3
	III-C	PROPOSED	800-10965	244°	153'	PROPOSED, PROPOSED	B14 4478, RRUS-32 B66	-	-	-	2
	IV-C	EXISTING	SBNHH-1D65A	28°	153'	EXISTING, PROPOSED, PROPOSED	RRUS-32, RRUS-E2, RRUS-12 B5	-	-	2	1

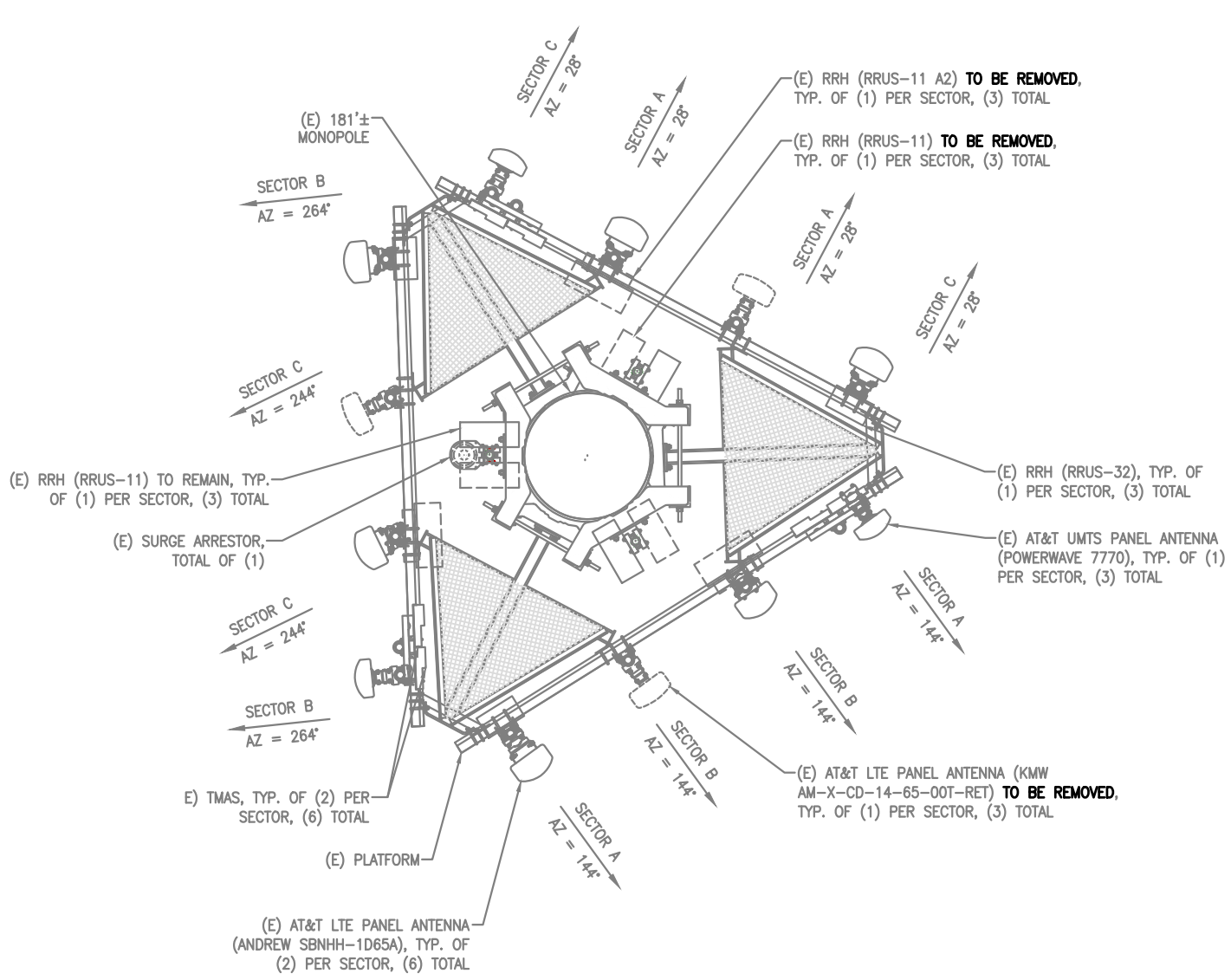
* CONTRACTOR TO VERIFY FINAL RFDS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	BY	CHK
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1	02/28/18	REVISED	AAB	MRC

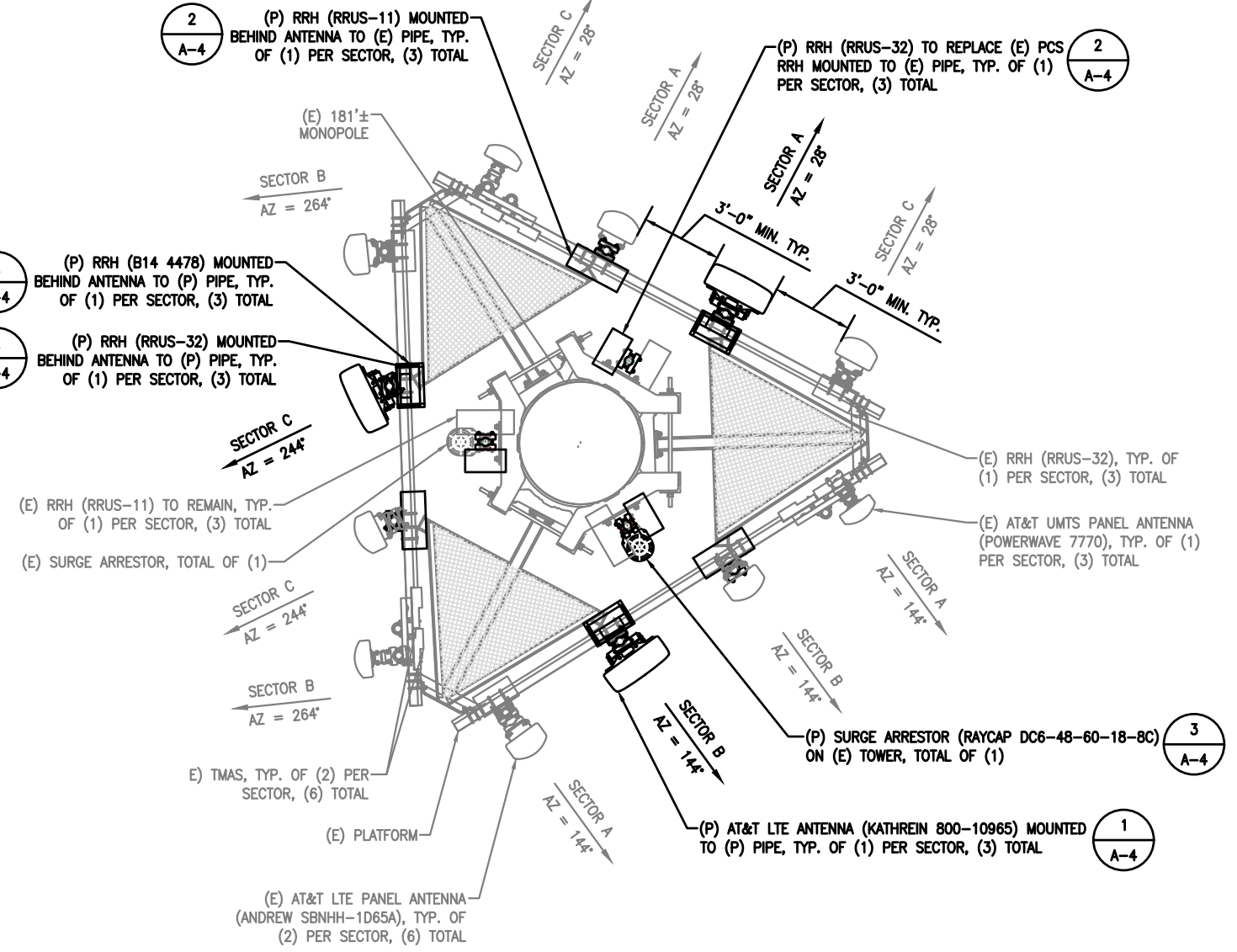
HALF SIZE PRINT
THIS DRAWING IS SCALEABLE
AT HALF THE NOTED SCALE

MOUNT ANALYSIS NOTE:
AN ANALYSIS TO DETERMINE THE STRUCTURAL CAPACITY OF THE EXISTING MOUNTS SHALL BE PERFORMED PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT. AEG HAS NOT CONDUCTED AN ANALYSIS OF THE MOUNT.

NOTE:
EXISTING ANTENNAS TO BE RELOCATED TO MAINTAIN A MINIMUM OF 3'-0" SEPARATION BETWEEN EXISTING AND PROPOSED LTE ANTENNAS.



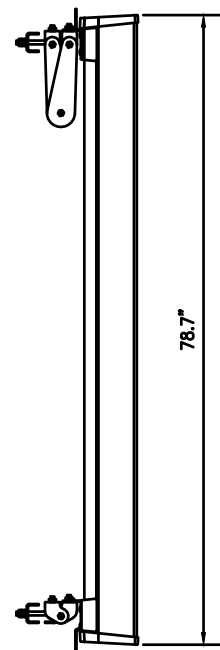
1 EXISTING ANTENNA PLAN
A-3 SCALE: 1/2" = 1'-0"
NORTH



2 PROPOSED ANTENNA PLAN
A-3 SCALE: 1/2" = 1'-0"
NORTH

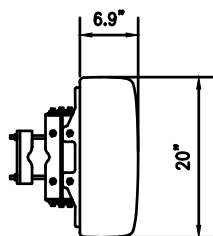


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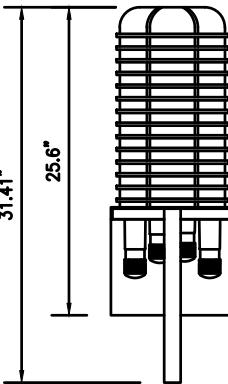
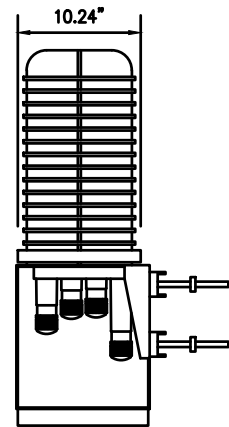


800-10965
 MANUFACTURER: KATHREIN
 DIMENSIONS: (HxWxD) 78.7"x20"x6.9"
 WEIGHT: 108.6 LBS.

1 ANTENNA DETAIL
 A-4 SCALE: N.T.S.



RAYCAP DC6-48-60-18-8c
 NUMBER OF RADIOS PROTECTED:
 SUPPRESSION CONNECTION METHOD:
 COPPER, #2-#12
 ENVIRONMENTAL RATING:
 WEIGHT:



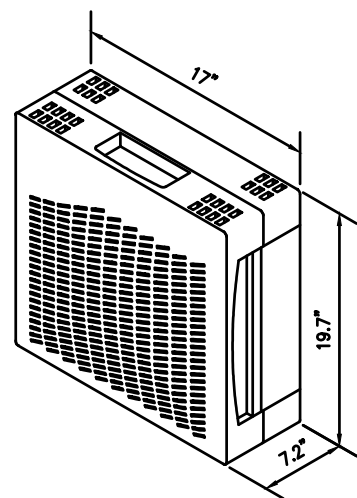
3 SURGE ARRESTOR DETAIL
 A-4 SCALE: N.T.S.



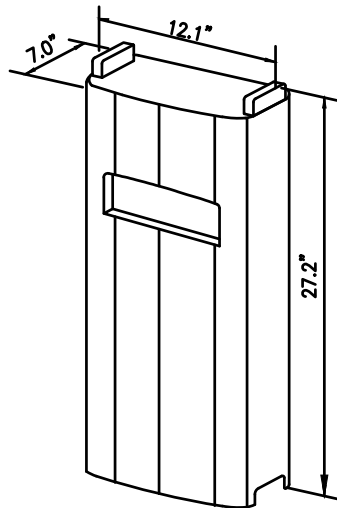
MANUFACTURER: RAYCAP
 WEIGHT: 15.0 LBS.
 TYPE: INDOOR/RACK-MOUNTED

DC12-48-60-RM

5 SURGE ARRESTOR DETAIL
 A-4 SCALE: N.T.S.

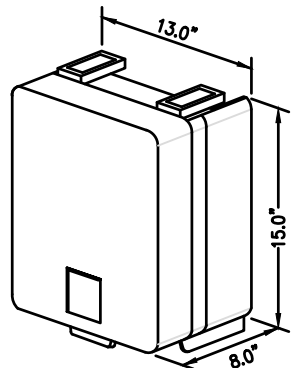


ERICSSON RRUS-11
 -DIMENSIONS (H x W x D): 19.7" x 17.0" x 7.2"
 (INCLUDES SUNSHIELD)
 -WEIGHT: 50 LBS
 -CLIMATE: -40°C TO +55°C (SELF CONVECTION
 SILENT, NO FANS, IP55)
 -POWER CONSUMPTION: 200 WATTS (TYP.)

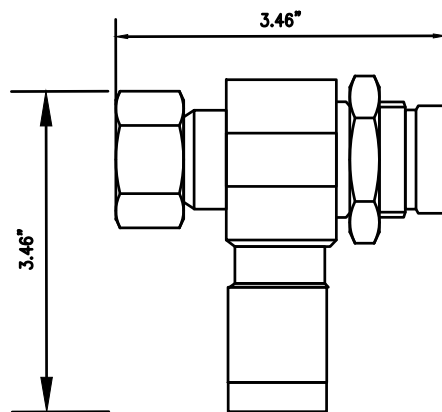


ERICSSON RRUS-32
 -DIMENSIONS (H x W x D):
 27.2" x 12.1" x 7.0"
 -WEIGHT: 53 LBS

2 RRH DETAILS
 A-4 SCALE: N.T.S.



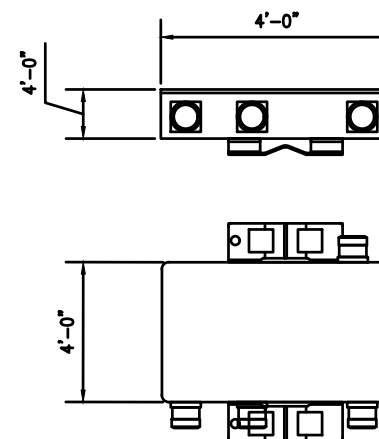
RRUS-4478 B71
 MANUFACTURER: ERICSSON
 DIMENSIONS (HxWxD): 15.0"x13.0"x8.0"
 WEIGHT: 60 LBS



APTDC-BDFDM-DB

MANUFACTURER: ANDREW
 BRAND: ARRESTOR PLUS
 DIMENSIONS (H x W x D): 3.46" x 3.46" x 1.65"
 WEIGHT: 1.32 LBS

4 SURGE ARRESTOR DETAIL
 A-4 SCALE: N.T.S.



CCI: TPX-070821

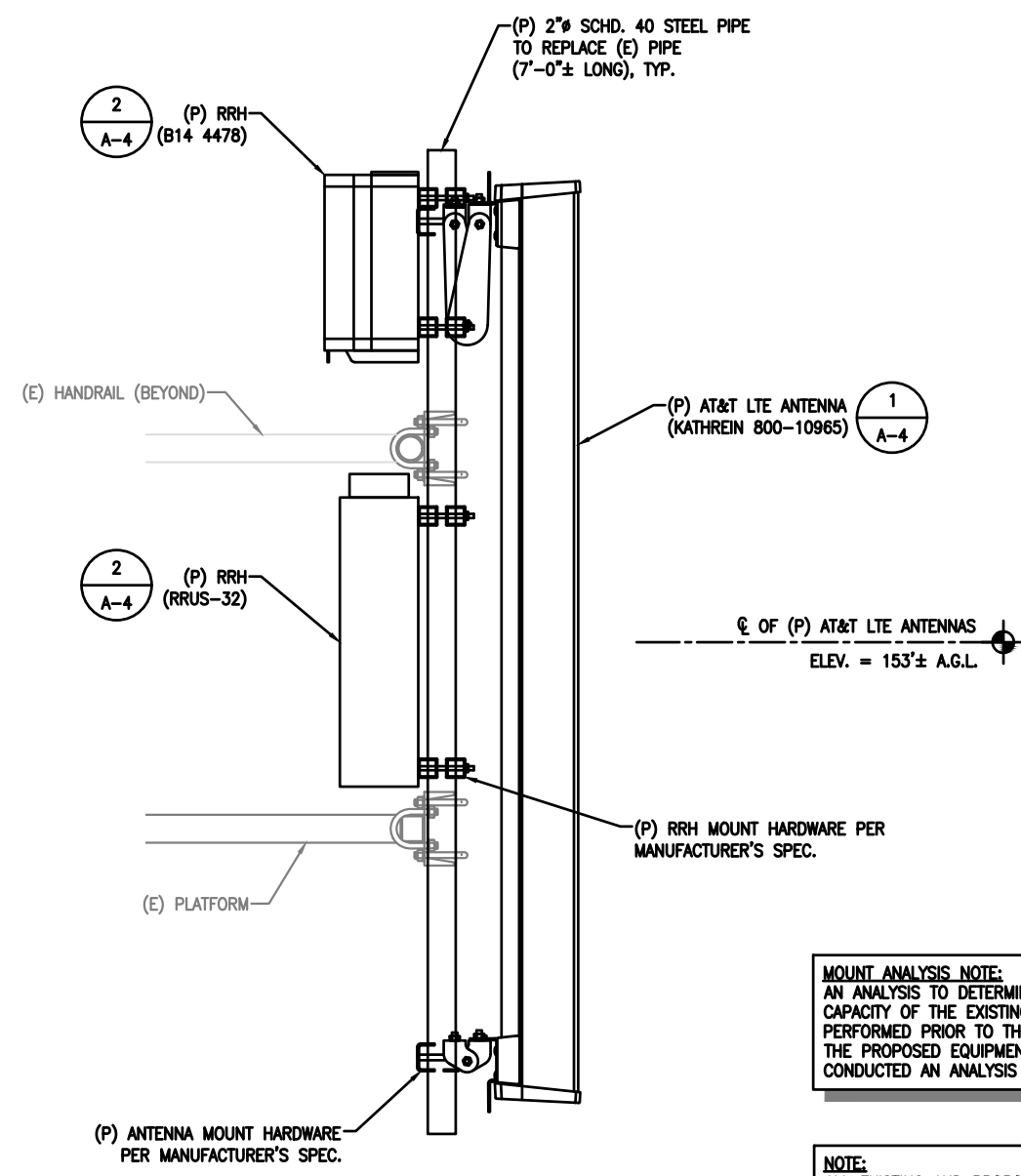
-DIMENSIONS (H x W x D): 5.83" x 9.65" x 2.05"
 -WEIGHT: 7.5 LBS
 -OPERATING TEMP: -40°C TO +60°C
 -POWER CONSUMPTION: 200 WATTS (TYP.)

6 TRIPLEXER DETAILS
 A-3 SCALE: N.T.S.



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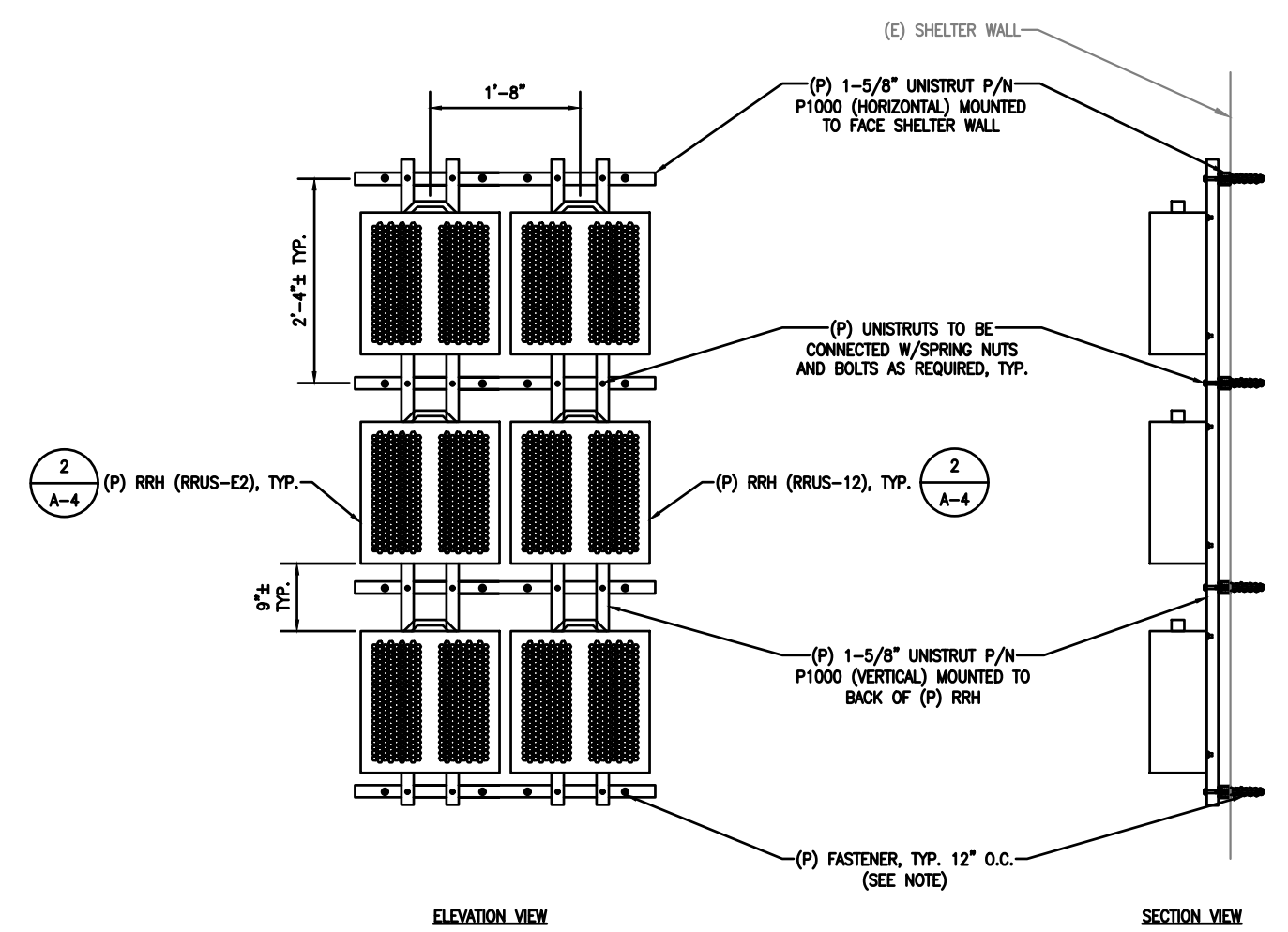
HALF SIZE PRINT
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AT HALF THE NOTED SCALE



1 ANTENNA & RRH MOUNT DETAIL
S-1 SCALE: 1-1/2" = 1'-0"

MOUNT ANALYSIS NOTE:
AN ANALYSIS TO DETERMINE THE STRUCTURAL CAPACITY OF THE EXISTING MOUNTS SHALL BE PERFORMED PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT. AEG HAS NOT CONDUCTED AN ANALYSIS OF THE MOUNT.

NOTE:
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2 RRH MOUNT DETAIL
S-1 SCALE: N.T.S.

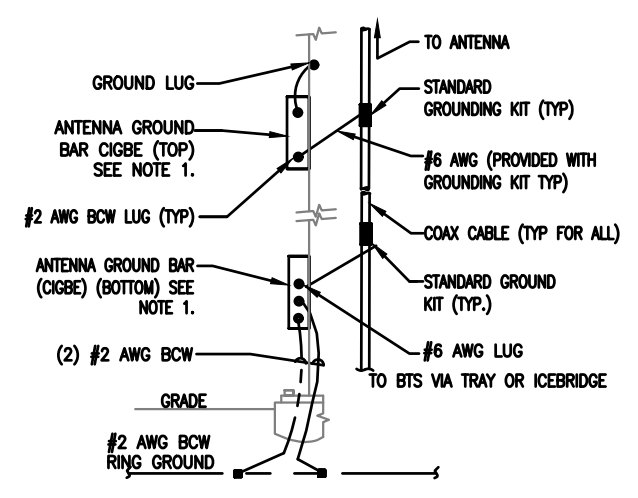
FASTENER NOTE:
-FOR ANCHORING INTO CONCRETE- HILTI QUICK BOLT 1/4" EXPANSION BOLT WITH 4" EMBEDMENT (HILTI HY-70 INJECTABLE MORTAR ADHESIVE, OR APPROVED EQ. AS REQ'D)
-FOR ANCHORING INTO METAL STUD- 1/4" MOLLY FASTENER TOGGLE BOLT
-FOR ANCHORING INTO WOOD STUD- 1/4" SIMPSON STRONG-TIE 1/4" SDS LAG SCREW WITH 4" EMBEDMENT



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1	02/28/18	REVISED	AAB	MRC

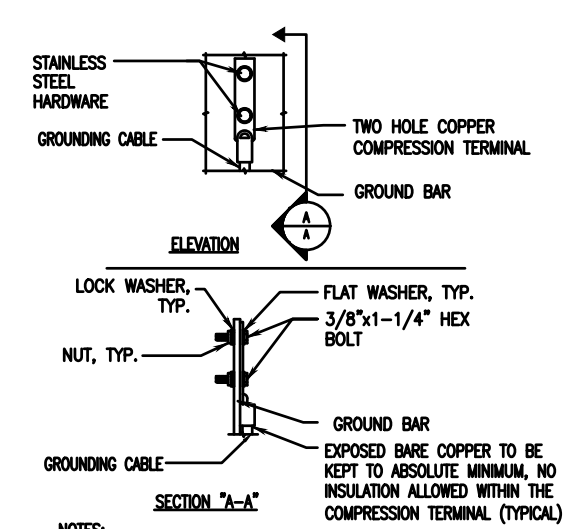
	CIRCUIT BREAKER	ACCA	ANTENNA CABLE COVER ASSEMBLY
	ELECTRIC BOX	AWG	AMERICAN WIRE GAUGE
	ELECTRICAL CONDUIT	BTWC	BARE TINNED COPPER WIRE
	EXOTHERMIC CONNECTION (CADWELD) TO GROUND RING AND COMPRESSION TO GROUND HALO	C	CONDUIT
	DISCONNECT SWITCH	CIGBE	COAX INSULATED GROUND BAR EXTERNAL CONDUIT ONLY
	GROUND ROD	DWG	DRAWING
	GROUND ROD WITH ACCESS	EGB	EXTERNAL GROUND BAR
	MECHANICAL GROUND CONN.	EMT	ELECTRICAL METALLIC TUBING
	GROUND ACCESS WELL	(E)	EXISTING
	GROUNDING WIRE	(F)	FUTURE
	GENERATOR	GEN	GENERATOR
	FUSE	GFI	GROUND FAULT CIRCUIT INTERRUPTER
	GROUND BUS BAR	GND	GROUND
	REVISION	GR	GROWTH
	TELEPHONE BOX	IGR	INTERIOR GROUND RING (HALO)
	UTILITY METER	MIGB	MASTER ISOLATED GROUND BAR
	XIT GROUND ROD	(P)	PROPOSED, NEW (PROVIDE AND INSTALL UNLESS NOTED OTHERWISE)
		PCS	PERSONAL COMMUNICATION SERVICE
		PPC	POWER PROTECTION CABINET
		PRC	PRIMARY RADIO CABINET
		PVC	POLYVINYL CHLORIDE CONDUIT
		RGS	RIGID GALVANIZED STEEL
		RWY	RACEWAY
		S.L.D.	SINGLE LINE DIAGRAM
		TEL	TELEPHONE
		TYP.	TYPICAL
		WP	WEATHER-PROOF EQUIPMENT

1 ELEC. / GROUNDING LEGEND
G-1 SCALE: N.T.S.



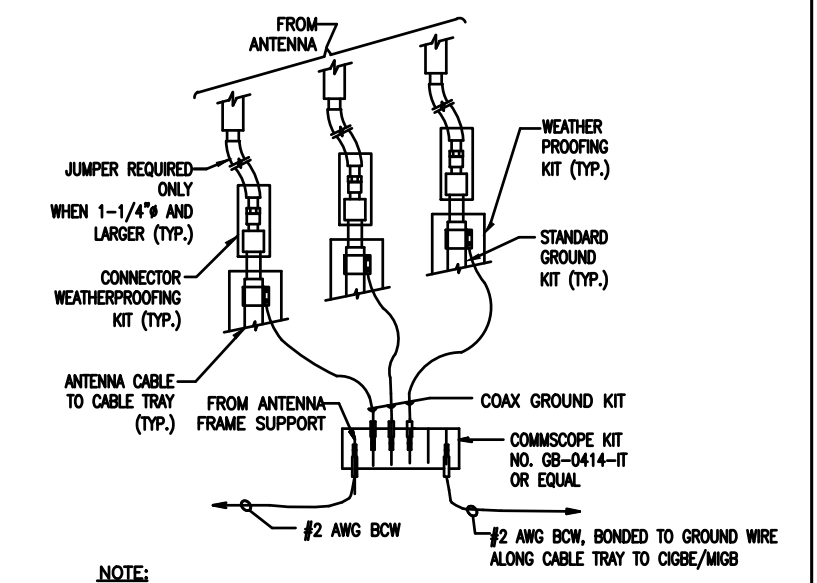
NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

2 TYP. ANTENNA CABLE GROUNDING
G-1 SCALE: N.T.S.



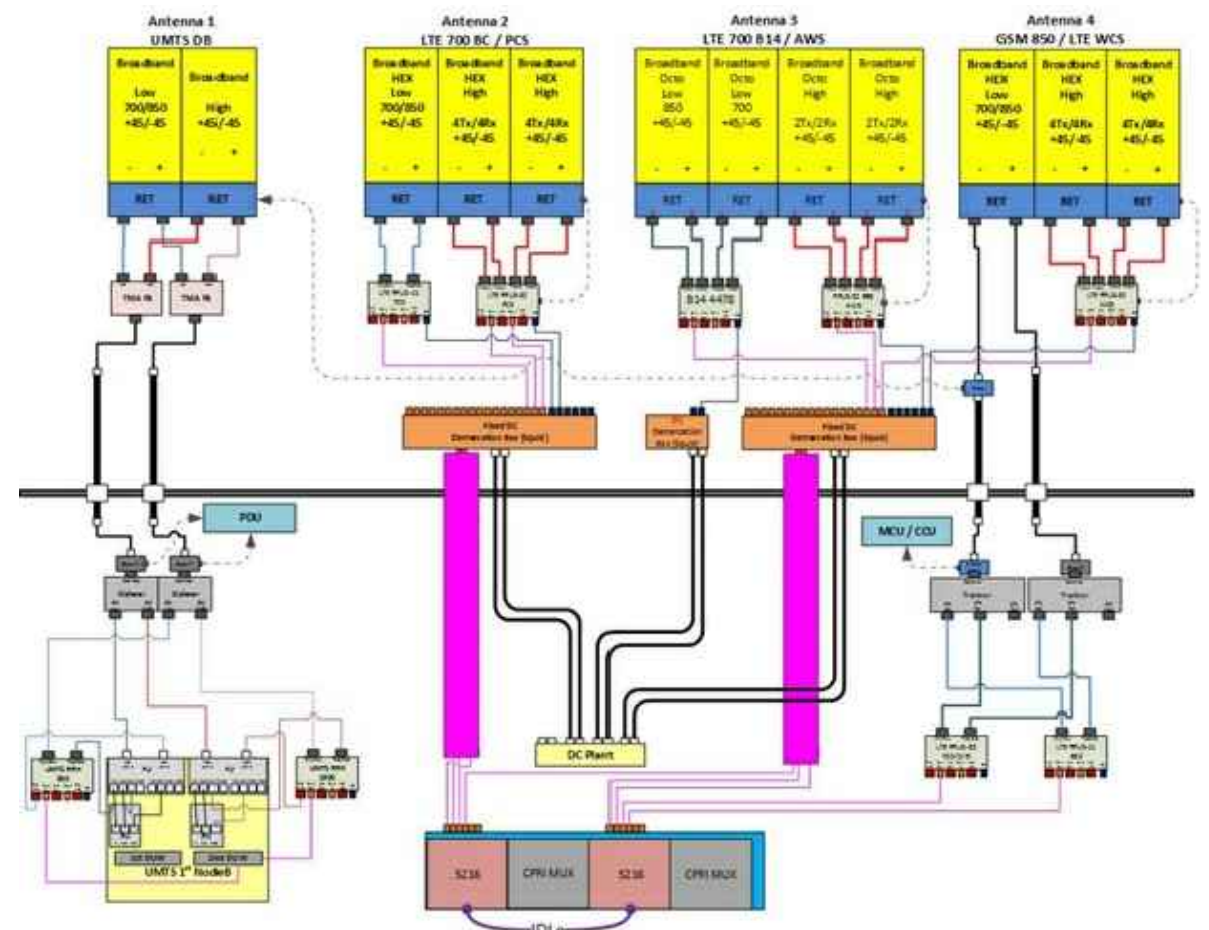
NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.
4. ALL GROUND LUGS MUST BE HEAT SHRUNK AT WIRE/LUG CONNECTION

3 TYP. GROUND BAR CONNECTION
G-1 SCALE: N.T.S.



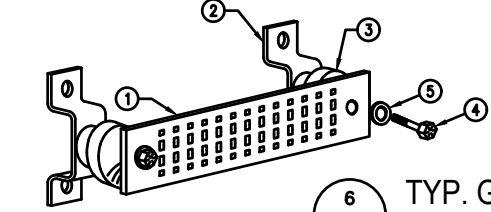
NOTE:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

4 TYP. GROUND WIRE TO GROUND BAR CONN.
G-1 SCALE: N.T.S.

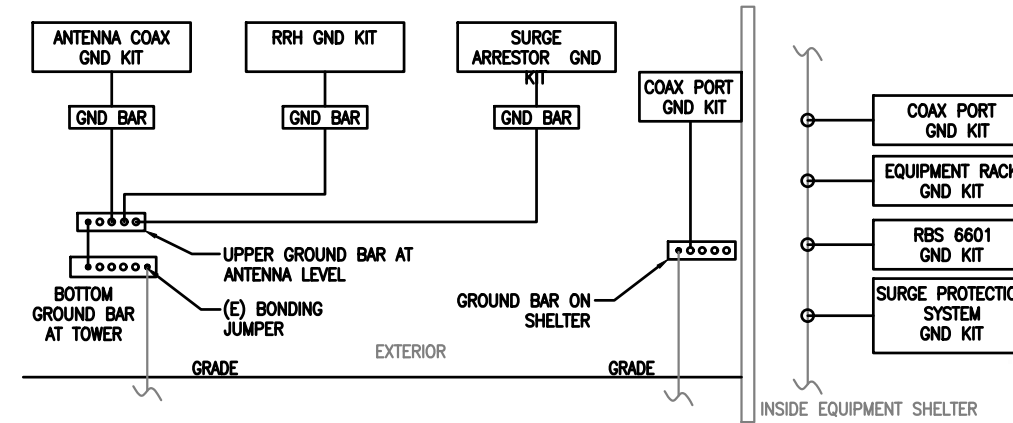


5 ONE LINE PLUMBING DIAGRAM
G-1 SCALE: N.T.S.

WIRELESS SOLUTIONS INC.				
NO.	REQ.	PART NO.	DESCRIPTION	
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")	
2	2		WALL MTG. BRKT.	
3	2		INSULATORS	
4	4		5/8"-11x1" H.H.C.S.	
5	4		5/8 LOCKWASHER	



6 TYP. GROUND BAR CONN.
G-1 SCALE: N.T.S.



7 ONE LINE GROUNDING DIAGRAM
G-1 SCALE: N.T.S.

GROUNDING NOTES:
ALL GROUNDING SHALL BE DONE IN ACCORDANCE WITH THE AT&T MOBILITY GROUNDING GUIDE.



NO.	DATE	REVISIONS	BY	CHK
0	01/29/18	ISSUED FOR REVIEW	AAB	MRC
1	02/28/18	REVISED	AAB	MRC



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 180 ft Monopole
ATC Site Name : Waterford Rebuild CT, CT
ATC Site Number : 310972
Engineering Number : OAA720741_C3_02
Proposed Carrier : AT&T Mobility
Carrier Site Name : Waterford
Carrier Site Number : CT2023
Site Location : 15 Miner Lane
Waterford, CT 06385-3016
41.329100,-72.124600
County : New London
Date : January 22, 2018
Max Usage : 78%
Result : Pass

Prepared By:
Annika A. Venning, E.I.
Structural Engineer I

Reviewed By:

COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
Conclusion.....	1
Existing and Reserved Equipment.....	2
Equipment to be Removed.....	2
Proposed Equipment	3
Structure Usages	3
Foundations	3
Deflection, Twist, and Sway.....	3
Standard Conditions	4
Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 180 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	FWT Job #23766000, dated July 18, 2001
Foundation Drawing	ATC Job #42693971, dated December 8, 2008
Geotechnical Report	Tower Engineering Professionals Project #082973.01, dated November 7, 2008
Modifications	ATC Job #442108F2, dated November 9, 2009

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:	120 mph (3-Second Gust, Vasd) / 155 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.16$, $S_1 = 0.06$
Site Class:	D - Stiff Soil

Conclusion

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

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



Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
180.0	184.0	2	11' Omni	Low Profile Platform	(2) 1 5/8" Coax	Other
	180.0	1	TTA			
170.0	170.0	3	KMW HB-X-WM-17-65-00T-TTLNA (w/BKT)	Side Arms	(6) 1 5/8" Coax	Clearwire
		3	KMW HB-X-WM-17-65-00T			
163.0	163.0	3	Alcatel-Lucent RRH 2X60-1900	Low Profile Platform	(12) 1 5/8" Coax (2) 1 1/4" Hybriflex (2) 1 5/8" Fiber	Verizon
		3	Alcatel-Lucent RRH2x60 700			
		3	Alcatel-Lucent B66a RRH4x45 (AWS-3)			
		2	RFS DB-T1-6Z-8AB-0Z			
		3	Antel BXA-70063/6CF			
		6	Commscope HBXX-6517DS-A2M			
153.0	153.0	3	Antel QUAD656C0000X	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.39" Fiber Trunk (2) 0.78" 8 AWG 6	AT&T Mobility
		6	Powerwave 7020.00 Dual Band RET			
		6	CCI TPX-070821			
		1	Raycap DC6-48-60-18-8F			
		1	Raycap DC6-48-60-18-8F ("Squid")			
		6	Powerwave LGP17201			
		3	Ericsson RRUS 11 (Band 12)			
		3	Ericsson RRUS 32 B30 (60 lbs)			
134.0	134.0	3	Powerwave 7770.00	T-Arms	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex	T-Mobile
		6	Commscope SBNHH-1D65A			
		3	Ericsson KRY 112 144/1			
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
3	Ericsson AIR 21, 1.3M, B4A B2P					
3	Andrew LNX-6515DS-VTM					

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
153.0	153.0	3	KMW AM-X-CD-14-65-00T-RET	-	(2) 0.74" 8 AWG 7	AT&T Mobility
		3	Ericsson RRUS 11 B4			
		3	Ericsson RRUS 11 (Band 12)			
		3	Ericsson RRUS A2 B4			



Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
153.0	153.0	1	Raycap DC6-48-60-18-8C	Platform w/ Handrails	(3) 2" Conduit (4) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk	AT&T Mobility
		3	Ericsson RRUS 4478 B14 (15")			
		3	Ericsson RRUS 32 B66A			
		3	Ericsson RRUS 32 B2			
		3	Kathrein 80010965			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	77%	Pass
Shaft	78%	Pass
Base Plate	29%	Pass
Flanges	30%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	5,651.7	75%
Axial (Kips)	95.1	14%
Shear (Kips)	45.1	72%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
153.0	Raycap DC6-48-60-18-8C	AT&T Mobility	1.272	0.907
	Ericsson RRUS 4478 B14 (15")			
	Ericsson RRUS 32 B66A			
	Ericsson RRUS 32 B2			
	Kathrein Scala 80010965			

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



Standard Conditions

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

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

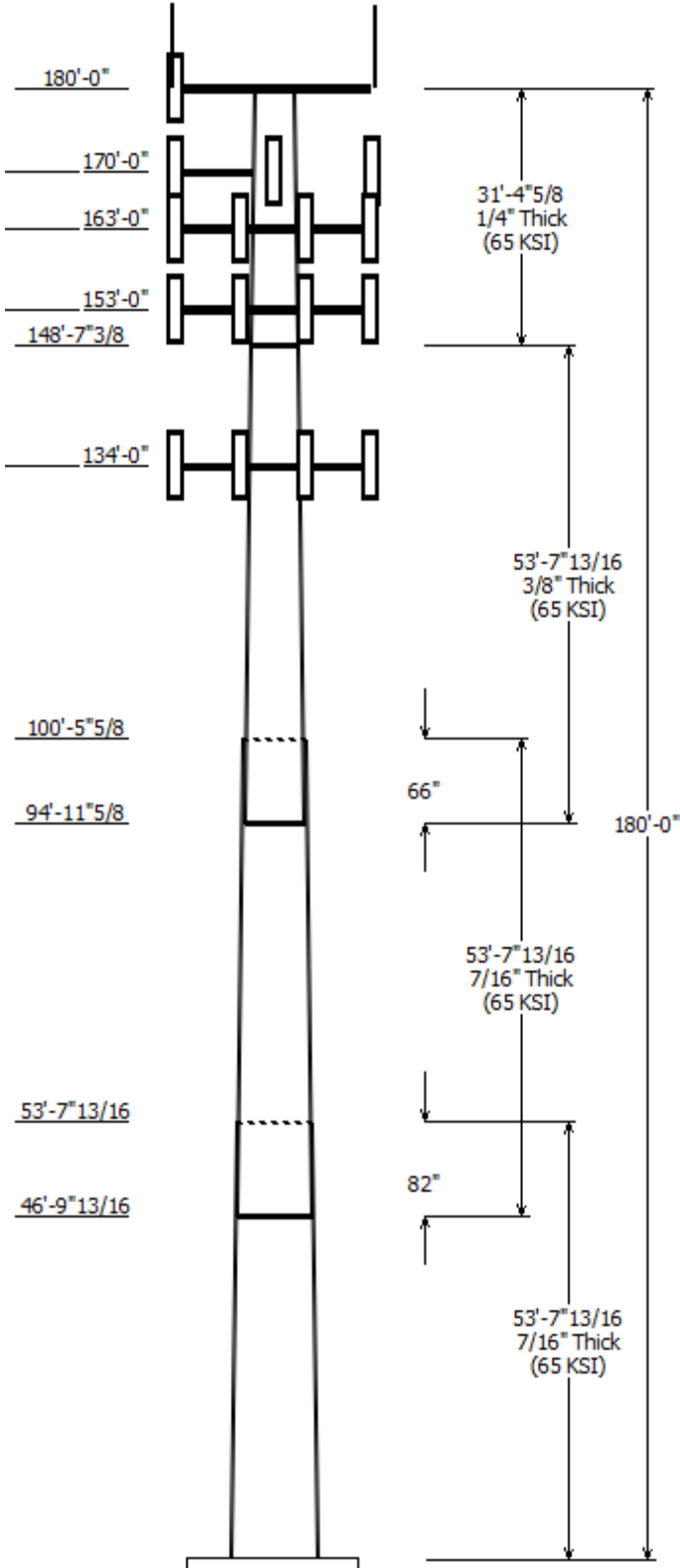
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

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

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

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

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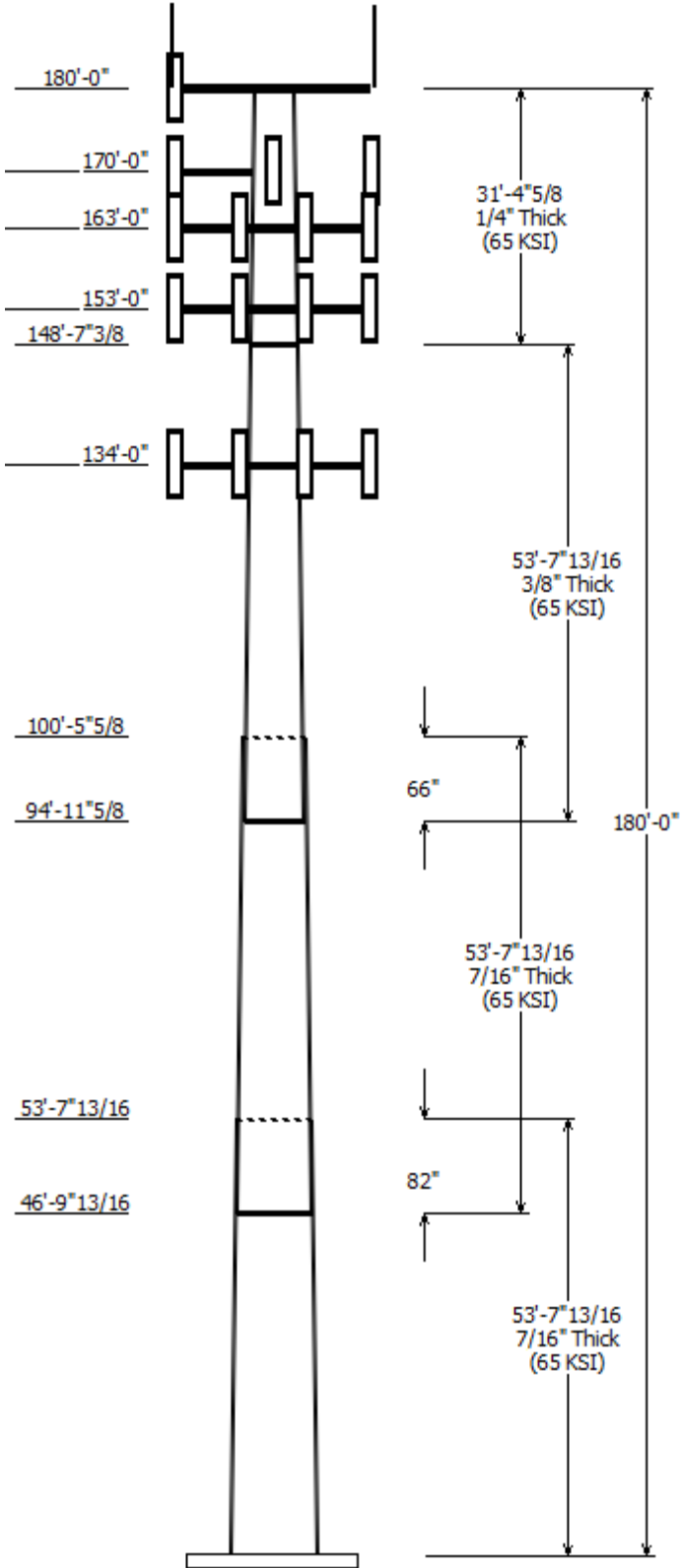


Job Information	
Pole : 310972	Code: ANSI/TIA-222-G
Location : WATERFORD REBUILD CT, CT	
Description : 180' FWT monopole	
Client : AT&T MOBILITY	Struct Class : II
Shape : 18 Sides	Exposure : B
Height : 180.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.22680@in/ft	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Accross Top	Flats Bottom				
1	53.650	50.28	62.45	0.438		0.000	18 Sides 65
2	53.650	40.53	52.70	0.438	Slip Joint	82.000	18 Sides 65
3	53.650	30.36	42.53	0.375	Slip Joint	66.000	18 Sides 65
4	31.383	23.25	30.36	0.250	Butt Joint	0.000	18 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
180.000	184.000	2	11' Omni
180.000	180.000	1	TTA
180.000	180.000	1	Round Low Profile Platform
170.000	170.000	1	Side Arms
170.000	170.000	3	KMW HB-X-WM-17-65-00T-
170.000	170.000	3	KMW HB-X-WM-17-65-00T
163.000	163.000	3	Amphenol Antel
163.000	163.000	3	Alcatel-Lucent B66a RRH4x45
163.000	163.000	1	Round Low Profile Platform
163.000	163.000	6	Commscope HBXX-6517DS-
163.000	163.000	3	Antel BXA-70063/6CF_
163.000	163.000	3	Alcatel-Lucent RRH2x60 700
163.000	163.000	3	Alcatel-Lucent RRH 2X60-1900
163.000	163.000	2	RFS DB-T1-6Z-8AB-0Z
153.000	153.000	3	Kathrein Scala 80010965
153.000	153.000	3	Ericsson RRUS 32 B2
153.000	153.000	3	Ericsson RRUS 32 B66A
153.000	153.000	3	Ericsson RRUS 4478 B14 (15")
153.000	153.000	1	Raycap DC6-48-60-18-8C
153.000	153.000	3	Ericsson RRUS 11 (Band 12)
153.000	153.000	1	Raycap DC6-48-60-18-8F
153.000	153.000	1	Raycap DC6-48-60-18-8F
153.000	153.000	6	Powerwave Allgon LGP17201
153.000	153.000	6	CCI TPX-070821
153.000	153.000	3	Ericsson RRUS 32 B30 (60 lbs)
153.000	153.000	6	Commscope SBNHH-1D65A
153.000	153.000	1	Flat Platform w/ Handrails
153.000	153.000	3	Powerwave Allgon 7770.00
153.000	153.000	6	Powerwave Allgon 7020.00
134.000	134.000	3	Flat T-Arm
134.000	134.000	3	Andrew LNX-6515DS-VTM
134.000	134.000	3	Ericsson AIR 21, 1.3M, B4A B2P
134.000	134.000	3	Ericsson AIR 21, 1.3 M, B2A B4
134.000	134.000	3	Ericsson RRUS 11 B12
134.000	134.000	3	Ericsson KRY 112 144/1

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	134.0	1 1/4" Hybriflex	No
0.000	134.0	1 5/8" Coax	No
0.000	153.0	0.39" Fiber Trunk	No



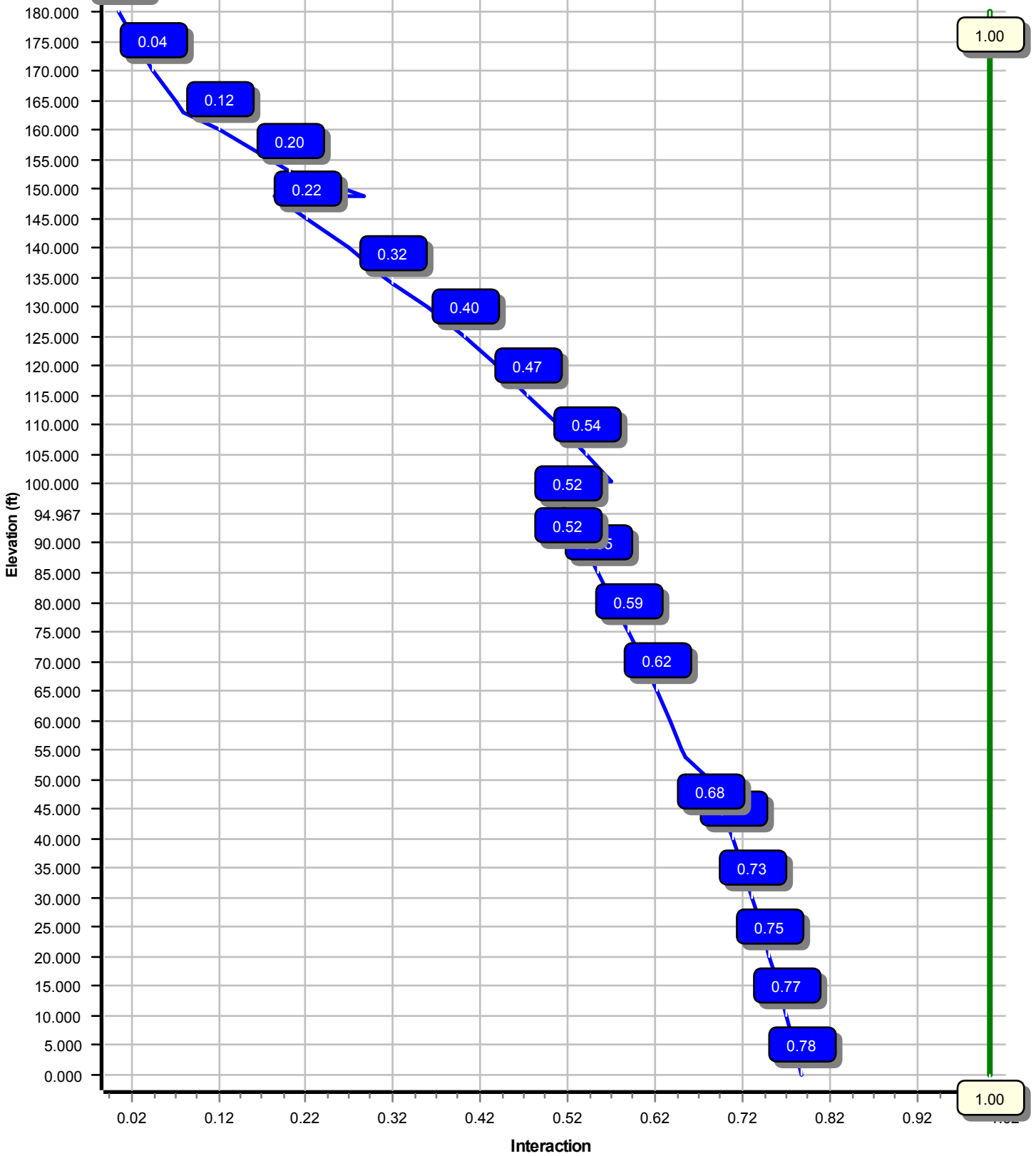
0.000	153.0	0.39" Fiber Trunk	No
0.000	153.0	0.78" 8 AWG 6	No
0.000	153.0	0.78" 8 AWG 6	No
0.000	153.0	1 1/4" Coax	No
0.000	153.0	2" Conduit	No
0.000	163.0	1 1/4" Hybriflex	No
0.000	163.0	1 5/8" Coax	No
0.000	163.0	1 5/8" Fiber	No
0.000	170.0	1 5/8" Coax	No
0.000	180.0	1 5/8" Coax	No

Load Cases	
1.2D + 1.6W	120 mph with No Ice
0.9D + 1.6W	120 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	5651.68	45.15	65.38
0.9D + 1.6W	5587.50	45.12	49.02
1.2D + 1.0Di + 1.0Wi	1055.25	8.46	95.05
(1.2 + 0.2Sds) * DL + E ELFM	300.82	2.13	65.19
(1.2 + 0.2Sds) * DL + E EMAM	282.26	2.23	65.19
(0.9 - 0.2Sds) * DL + E ELFM	296.76	2.13	45.74
(0.9 - 0.2Sds) * DL + E EMAM	278.27	2.23	45.74
1.0D + 1.0W	877.74	7.05	54.55

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 78.48% at 0.0 ft



Site Number: 310972

Code: ANSI/TIA-222-G

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Site Name: WATERFORD REBUILD CT, CT Engineering Number: OAA720741_C3_02

1/22/2018 5:01:39 PM

Customer: AT&T MOBILITY

Analysis Parameters

Location :	NEW LONDON County, CT	Height (ft) :	180
Code :	ANSI/TIA-222-G	Base Diameter (in) :	62.45
Shape :	18 Sides	Top Diameter (in) :	23.25
Pole Type :	Taper	Taper (in/ft) :	0.227
Pole Manufacturer :	FWT Inc	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	120 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.47		
T _L (sec):	6	p:	1.3
S _s :	0.160	S ₁ :	0.058
F _a :	1.600	F _v :	2.400
S _{ds} :	0.171	S _{d1} :	0.093
		C _s :	0.030
		C _s Max:	0.030
		C _s Min:	0.030

Load Cases

1.2D + 1.6W	120 mph with No Ice
0.9D + 1.6W	120 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 310972

Code: ANSI/TIA-222-G

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Site Name: WATERFORD REBUILD CT, CT Engineering Number: OAA720741_C3_02

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Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.650	0.4375	65		0.00	14,178	62.45	0.00	86.11	41837.0	23.41	142.74	50.28	53.65	69.21	21725.6	18.50	114.93	0.226806
2-18	53.650	0.4375	65	Slip	82.00	11,708	52.70	46.82	72.58	25053.0	19.48	120.47	40.53	100.47	55.68	11313.4	14.58	92.66	0.226806
3-18	53.650	0.3750	65	Slip	66.00	7,839	42.53	94.97	50.18	11269.6	18.24	113.43	30.36	148.62	35.70	4057.2	12.52	80.98	0.226806
4-18	31.383	0.2500	65	Butt	0.00	2,250	30.36	148.62	23.90	2738.8	19.66	121.47	23.25	180.00	18.25	1219.7	14.64	93.00	0.226806
Shaft Weight						35,975													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
180.00	11' Omni	2	0.000	4.000	40.00	3.300	1.00
180.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
180.00	TTA	1	0.000	0.000	10.00	1.200	1.00
170.00	KMW HB-X-WM-17-65-00T	3	0.000	0.000	30.00	1.920	1.00
170.00	KMW HB-X-WM-17-65-00T-	3	0.000	0.000	15.90	0.970	0.50
170.00	Side Arms	1	0.000	0.000	560.00	8.500	1.00
163.00	Alcatel-Lucent B66a RRH4x45 (A	3	0.000	0.000	67.00	2.660	0.50
163.00	Alcatel-Lucent RRH 2X60-1900	3	0.000	0.000	39.60	1.880	0.50
163.00	Alcatel-Lucent RRH2x60 700	3	0.000	0.000	56.70	2.150	0.67
163.00	Amphenol Antel	3	0.000	0.000	54.00	13.240	0.62
163.00	Antel BXA-70063/6CF_	3	0.000	0.000	17.00	7.570	0.65
163.00	Commscope HBXX-6517DS-A2M	6	0.000	0.000	40.80	8.530	0.68
163.00	RFS DB-T1-6Z-8AB-0Z	2	0.000	0.000	44.00	4.800	0.67
163.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
153.00	CCI TPX-070821	6	0.000	0.000	7.50	0.550	0.50
153.00	Commscope SBNHH-1D65A	6	0.000	0.000	33.50	5.880	0.69
153.00	Ericsson RRUS 11 (Band 12)	3	0.000	0.000	50.00	2.570	0.67
153.00	Ericsson RRUS 32 B2	3	0.000	0.000	53.00	2.740	0.67
153.00	Ericsson RRUS 32 B30 (60 lbs)	3	0.000	0.000	60.00	2.690	0.67
153.00	Ericsson RRUS 32 B66A	3	0.000	0.000	50.70	2.720	0.67
153.00	Ericsson RRUS 4478 B14 (15")	3	0.000	0.000	59.40	1.650	0.50
153.00	Flat Platform w/ Handrails	1	0.000	0.000	2000.00	42.400	1.00
153.00	Kathrein Scala 80010965	3	0.000	0.000	97.60	13.810	0.62
153.00	Powerwave Allgon 7020.00 Dual	6	0.000	0.000	2.20	0.400	0.50
153.00	Powerwave Allgon 7770.00	3	0.000	0.000	35.00	5.510	0.65
153.00	Powerwave Allgon LGP17201	6	0.000	0.000	31.00	1.670	0.50
153.00	Raycap DC6-48-60-18-8C	1	0.000	0.000	16.00	1.460	0.50
153.00	Raycap DC6-48-60-18-8F	1	0.000	0.000	20.00	1.110	1.00
153.00	Raycap DC6-48-60-18-8F ("Squid	1	0.000	0.000	31.80	1.280	1.00
134.00	Andrew LNX-6515DS-VTM	3	0.000	0.000	51.30	11.430	0.70
134.00	Ericsson AIR 21, 1.3 M, B2A B4	3	0.000	0.000	83.00	6.050	0.71
134.00	Ericsson AIR 21, 1.3M, B4A B2P	3	0.000	0.000	81.50	6.090	0.70
134.00	Ericsson KRY 112 144/1	3	0.000	0.000	11.00	0.410	0.50
134.00	Ericsson RRUS 11 B12	3	0.000	0.000	50.70	2.790	0.67
134.00	Flat T-Arm	3	0.000	0.000	250.00	12.900	0.67
Totals	Num Loadings:35	102			10136.00		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	180.00	2	1 5/8" Coax	1.98	0.82	N	0.00	N	OTHER
0.00	170.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	Clearwire Corporation

Site Number: 310972

Code: ANSI/TIA-222-G

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Site Name: WATERFORD REBUILD CT, CT Engineering Number: OAA720741_C3_02

1/22/2018 5:01:40 PM

Customer: AT&T MOBILITY

0.00	163.00	2	1 1/4" Hybriflex	1.54	1.00	N	0.00	N	Verizon
0.00	163.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	163.00	2	1 5/8" Fiber	1.63	1.61	N	0.00	N	Verizon
0.00	153.00	2	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
0.00	153.00	1	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
0.00	153.00	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	153.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	153.00	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
0.00	153.00	3	2" Conduit	2.38	3.65	N	0.00	N	AT&T Mobility
0.00	134.00	1	1 1/4" Hybriflex	1.54	1.00	N	0.00	N	T-Mobile
0.00	134.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile

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		0.4375	62.450	86.109	41,837.0	23.41	142.74	73.9	1319.	0.0	0.0
5.00		0.4375	61.316	84.534	39,583.4	22.95	140.15	74.4	1271.	0.0	1,451.7
10.00		0.4375	60.182	82.960	37,412.4	22.49	137.56	74.9	1224.	0.0	1,424.9
15.00		0.4375	59.048	81.385	35,322.1	22.03	134.97	75.5	1178.	0.0	1,398.1
20.00		0.4375	57.914	79.810	33,311.2	21.58	132.37	76.0	1132.	0.0	1,371.3
25.00		0.4375	56.780	78.236	31,378.2	21.12	129.78	76.6	1088.	0.0	1,344.5
30.00		0.4375	55.646	76.661	29,521.4	20.66	127.19	77.1	1044.	0.0	1,317.7
35.00		0.4375	54.512	75.086	27,739.3	20.21	124.60	77.6	1002.	0.0	1,290.9
40.00		0.4375	53.378	73.512	26,030.4	19.75	122.01	78.2	960.5	0.0	1,264.1
45.00		0.4375	52.244	71.937	24,393.2	19.29	119.41	78.7	919.6	0.0	1,237.3
46.82	Bot - Section 2	0.4375	51.832	71.365	23,815.8	19.13	118.47	78.9	905.0	0.0	442.9
50.00		0.4375	51.110	70.362	22,826.1	18.84	116.82	79.2	879.7	0.0	1,548.4
53.65	Top - Section 1	0.4375	51.157	70.428	22,889.9	18.85	116.93	79.2	881.3	0.0	1,748.6
55.00		0.4375	50.851	70.003	22,477.9	18.73	116.23	79.4	870.6	0.0	322.6
60.00		0.4375	49.717	68.428	20,994.8	18.27	113.64	79.9	831.7	0.0	1,177.6
65.00		0.4375	48.583	66.853	19,578.5	17.82	111.05	80.4	793.7	0.0	1,150.8
70.00		0.4375	47.449	65.278	18,227.4	17.36	108.45	81.0	756.6	0.0	1,124.0
75.00		0.4375	46.315	63.704	16,939.9	16.90	105.86	81.5	720.4	0.0	1,097.2
80.00		0.4375	45.181	62.129	15,714.5	16.45	103.27	82.1	685.1	0.0	1,070.5
85.00		0.4375	44.047	60.554	14,549.6	15.99	100.68	82.6	650.6	0.0	1,043.7
90.00		0.4375	42.913	58.980	13,443.8	15.53	98.09	82.6	617.0	0.0	1,016.9
94.97	Bot - Section 3	0.4375	41.786	57.416	12,402.3	15.08	95.51	82.6	584.6	0.0	983.6
95.00		0.4375	41.778	57.405	12,395.5	15.07	95.49	82.6	584.4	0.0	12.2
100.0		0.4375	40.644	55.830	11,403.2	14.62	92.90	82.6	552.6	0.0	1,805.4
100.4	Top - Section 2	0.3750	41.289	48.696	10,298.6	17.65	110.10	80.6	491.3	0.0	166.0
105.0		0.3750	40.260	47.472	9,541.5	17.17	107.36	81.2	466.8	0.0	741.7
110.0		0.3750	39.126	46.122	8,750.6	16.63	104.34	81.8	440.5	0.0	796.2
115.0		0.3750	37.992	44.772	8,004.6	16.10	101.31	82.5	415.0	0.0	773.2
120.0		0.3750	36.858	43.423	7,302.3	15.57	98.29	82.6	390.2	0.0	750.3
125.0		0.3750	35.724	42.073	6,642.3	15.03	95.26	82.6	366.2	0.0	727.3
130.0		0.3750	34.590	40.723	6,023.3	14.50	92.24	82.6	343.0	0.0	704.3
134.0		0.3750	33.683	39.643	5,556.8	14.07	89.82	82.6	324.9	0.0	546.9
135.0		0.3750	33.456	39.374	5,444.0	13.97	89.22	82.6	320.5	0.0	134.4
140.0		0.3750	32.322	38.024	4,903.1	13.43	86.19	82.6	298.8	0.0	658.4
145.0		0.3750	31.188	36.674	4,399.3	12.90	83.17	82.6	277.8	0.0	635.5
148.6	Top - Section 3	0.3750	30.368	35.698	4,057.2	12.52	80.98	82.6	263.1	0.0	445.3
148.6	Bot - Section 4	0.2500	30.368	23.898	2,738.8	19.66	121.47	78.3	177.6	0.0	
150.0		0.2500	30.054	23.649	2,654.1	19.43	120.22	78.5	173.9	0.0	111.9
153.0		0.2500	29.374	23.109	2,476.4	18.95	117.50	79.1	166.1	0.0	238.7
155.0		0.2500	28.920	22.749	2,362.5	18.63	115.68	79.5	160.9	0.0	156.0
160.0		0.2500	27.786	21.849	2,093.1	17.83	111.14	80.4	148.4	0.0	379.4
163.0		0.2500	27.106	21.309	1,941.8	17.35	108.42	81.0	141.1	0.0	220.3
165.0		0.2500	26.652	20.949	1,845.0	17.03	106.61	81.4	136.3	0.0	143.8
170.0		0.2500	25.518	20.049	1,617.3	16.23	102.07	82.3	124.8	0.0	348.8
175.0		0.2500	24.384	19.150	1,409.2	15.43	97.54	82.6	113.8	0.0	333.5
180.0		0.2500	23.250	18.250	1,219.7	14.64	93.00	82.6	103.3	0.0	318.2
											35,974.9

Site Number: 310972

Code: ANSI/TIA-222-G

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Site Name: WATERFORD REBUILD CT, CT Engineering Number: OAA720741_C3_02

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Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W

120 mph with No Ice

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces		
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)

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Site Name: WATERFORD REBUILD CT, CT Engineering Number: OAA720741_C3_02

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Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W

120 mph with No Ice

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	Ratio

Site Number: 310972

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Site Name: WATERFORD REBUILD CT, CT Engineering Number: OAA720741_C3_02

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Customer: AT&T MOBILITY

Analysis Summary

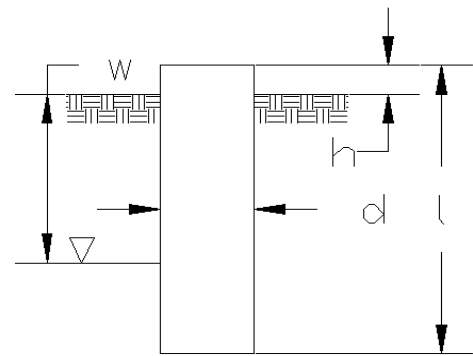
Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio

Site Name: Waterford Rebuild CT, CT
 Site Number: 310972
 Engineer: Annika.Venning
 Engineering Number: OAA720741
 Date: 01/22/18

Program Last Updated: 5/13/2014
 American Tower Corporation

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

Analyze or Design a Foundation? Analyze
 Foundation Mapped: N
 Moment (M): 5651.7 k-ft
 Shear/Leg (V): 45.2 k
 Axial Load (P): 65.4 k
 Uplift/Leg (U): 0.0 k
 Tower Type (GT / SST / MP): MP



Diameter of Caisson (d): 8.0 ft
 Caisson Embedment (L-h): 26.0 ft
 Caisson Height Above Ground (h): 0.5 ft
 Depth Below Ground Surface to Water Table (w): 99.0 ft
 Unit Weight of Concrete: 150.0 pcf
 Unit Weight of Water: 62.4 pcf
 Tension Skin Friction/Compression Skin Friction: 1.00
 Pullout Angle: 30.0 degrees

Engineer Notes

Soil Mechanical Properties

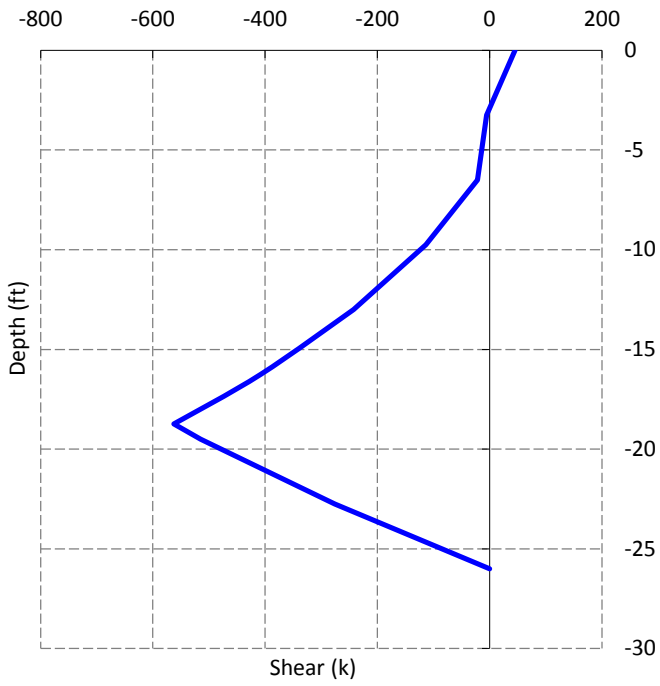
Depth (ft)		γ_{Soil}	Cohesion	ϕ	Ultimate Skin	Ultimate Bearing
Top	Bottom	(pcf)	(psf)	(degree)	Friction (psf)	Pressure (psf)
0.0	4.0	110	0	0	0	0
4.0	20.0	110	0	33	1000	0
20.0	27.0	110	0	33	1400	12000

Required Embedment: 23.9 ft - OK, Caisson Embedment Satisfactory
 Volume of Concrete: 1332.0 ft³ = 49.3 yd³
 Weight of Concrete (Buoyancy Effect Considered): 199.8 k
 Average Soil Unit Weight: 110.0 pcf
 Skin Friction Resistance: 613.2 k
 Compressive Bearing Resistance: 603.2 k
 Pullout Weight (Minus Concrete Weight): 1214.4 k
 Nominal Uplift Capacity per Leg ($\phi_s T_n$): 609.8 k
 Nominal Compressive Capacity per Leg ($\phi_s P_n$): 912.3 k
 P_u : 128.1 k
 $T_u / \phi_s T_n$: 0.00 Result: OK
 $P_u / \phi_s P_n$: 0.14 Result: OK
 Total Lateral Resistance: 2469.0 k
 Inflection Point (Below Ground Surface): 18.7 ft
 Design Overturning Moment At Inflection Point (M_D): 6520.1 k-ft
 Nominal Moment Capacity ($\phi_s M_n$): 8656.0 k-ft
 $M_D / \phi_s M_n$: 0.75 Result: OK
 ϕ_s : 0.75

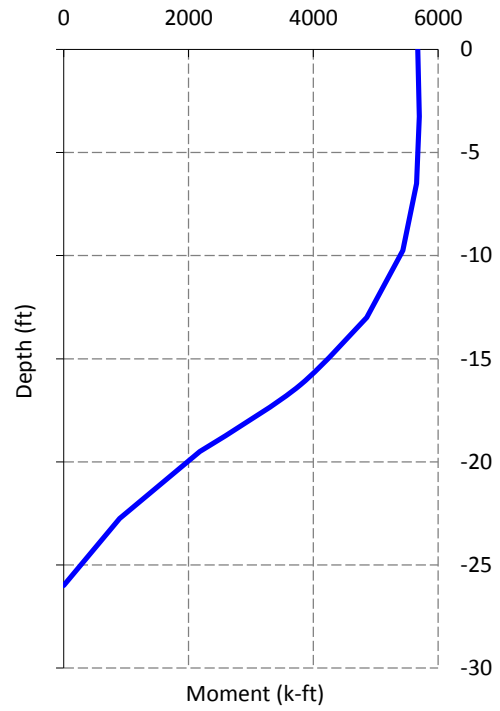
Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	4000 psi
Vertical Steel Rebar Size #:	10
Vertical Steel Rebar Area:	1.27 in ²
# of Vertical Steel Rebars:	40
Vertical Steel Rebar Yield Strength (F_y):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in ²
Design Horizontal Tie / Stirrup Spacing:	6.0 in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	60 ksi
Rebar Cage Diameter:	88.0 in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.85 ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor (ϕ_P):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment (M_u):	5698.9 k-ft
Nominal Moment Capacity ($\phi_B M_n$):	9838.8 k-ft - ACI318-005 - 10.2
$M_u / \phi_B M_n$:	0.58 Result: OK
Design Shear (V_u):	562.6 k
Nominal Shear Capacity ($\phi_V V_n$):	781.8 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u / \phi_V V_n$:	0.72 Result: OK
Design Tension (T_u):	0.0 k
Nominal Tension Capacity ($\phi_T T_n$):	2743.2 k - ACI318-05 - 10.2
$T_u / \phi_T T_n$:	0.00 Result: OK
Design Compression (P_u):	128.1 k
Nominal Compression Capacity ($\phi_P P_n$):	12707.4 k - ACI318-05 - 10.3.6.2
$P_u / \phi_P P_n$:	0.01 Result: OK
Bending Reinforcement Ratio:	0.007 ACI318-05 - 10.8.4 & 10.9.1
$M_u / \phi_B M_n + T_u / \phi_T T_n$:	0.58 Result: OK

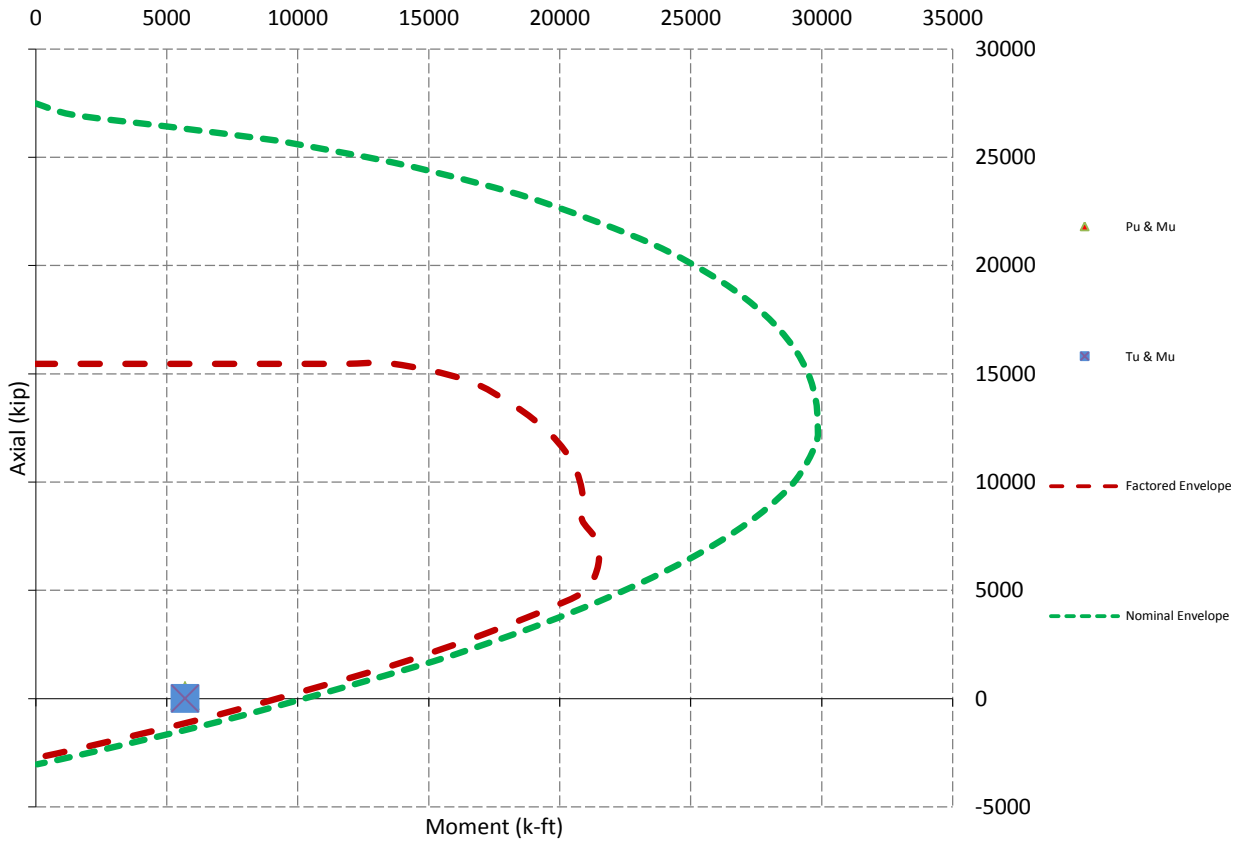
Design Factored Shear / Depth



Design Factored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads



Base/Flange Plate	Plate Type	Baseplate
	Pole Diameter	62.95 in
	Pole Thickness	0.4375 in
	Plate Diameter	75 in
	Plate Thickness	2.75 in
	Plate Fy	60 ksi
	Weld Length	0.3125 in
	ϕ_s Resistance	959.31 k-in
	Applied	279.67 k-in
Stiffeners	#	0

Bolts	#	20
	Bolt Circle (R)adial / (S)quare	69 in R
	Diameter	2.25 in
	Hole Diameter	2.625 in
	Type	A615-75
	Fy	75 ksi
	Fu	100 ksi
	ϕ_s Resistance	259.82 k
	Applied	199.76 k

Reinforcement	#	0
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Extra Bolts O	#	0
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Code Rev. **G**

Date 1/22/2018
 Engineer Annika.Venning
 Site # 310972
 Carrier AT&T MOBILITY

Moment 5651.7 k-ft
 Axial 65.4 k

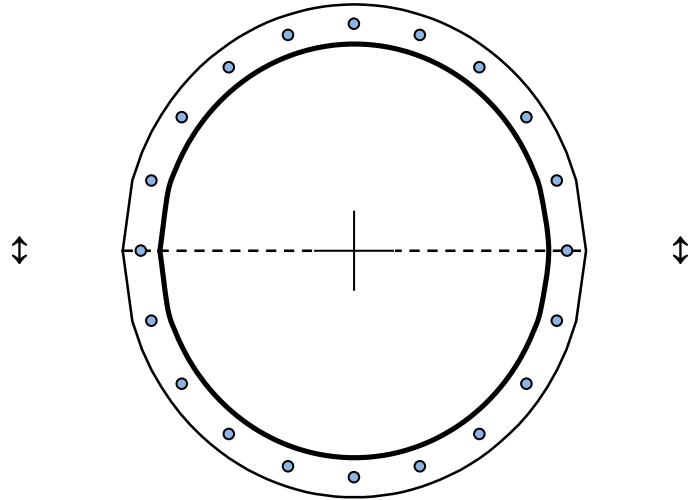


Plate Stress Ratio: **0.29** (Pass)

Bolt Stress Ratio: **0.77** (Pass)

Base/Flange Plate	Plate Type	Flange @ 148.6 ft
	Pole Diameter	30.08 in
	Pole Thickness	0.25 in
	Plate Diameter	37.5 in
	Plate Thickness	2 in
	Plate Fy	50 ksi
	Weld Length	0.3125 in
	ϕ_s Resistance	177.19 k-in
	Applied	22.17 k-in
Stiffeners	#	0

Bolts	#	24
	Bolt Circle	34.5 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.0625 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	ϕ_s Resistance	54.52 k
Applied	16.23 k	

Reinforcement	#	0
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Extra Bolts	#	0
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Code Rev. **G**

Date **1/22/2018**
 Engineer **Annika.Venning**
 Site # **310972**
 Carrier **AT&T MOBILITY**

Moment **288.2 k-ft**
 Axial **11.4 k**

Required Flange Thickness:

0.71 in OK

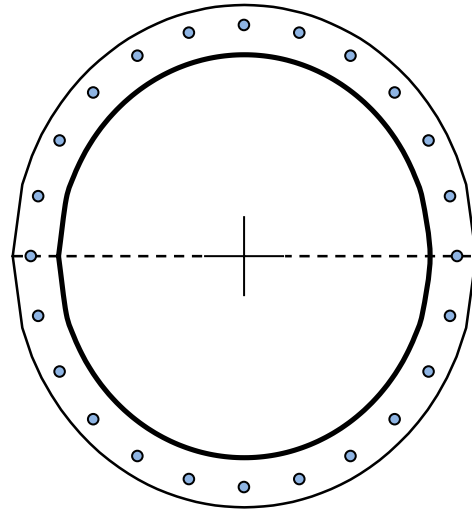


Plate Stress Ratio:
0.13 (Pass)

Bolt Stress Ratio:
0.30 (Pass)

85 MINER LANE

Location 85 MINER LANE

Mblu 153 / / 4766 / /

Acct# 153

Owner WATERFORD TOWN OF

Assessment \$395,920

Appraisal \$565,580

PID 4766

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$224,800	\$340,780	\$565,580

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$157,370	\$238,550	\$395,920

Parcel Addresses

Additional Addresses		
Address	City, State Zip	Type
85 MINER LANE		Primary

Owner of Record

Owner WATERFORD TOWN OF
Co-Owner

Sale Price \$0
Certificate
Book & Page 259 / 774
Sale Date 05/14/1981
Instrument 00

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
WATERFORD TOWN OF	\$0		259 / 774	00	05/14/1981

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: \$0
Building Percent
Good:

Building Photo

Building Attributes	
Field	Description
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
Fin Bsmt Qual	
Bsmt Access	



(<http://images.vgsi.com/photos/WaterfordCTPhotos//\00\01\65\33.jpg>)

Building Layout

Building Layout

(<http://images.vgsi.com/photos/WaterfordCTPhotos//Sketches/4>)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land**Land Use**

Use Code 900
Description Exempt Vac
Zone R-40
Neighborhood 1100
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 25.67
Frontage 0
Depth 0
Assessed Value \$238,550
Appraised Value \$340,780

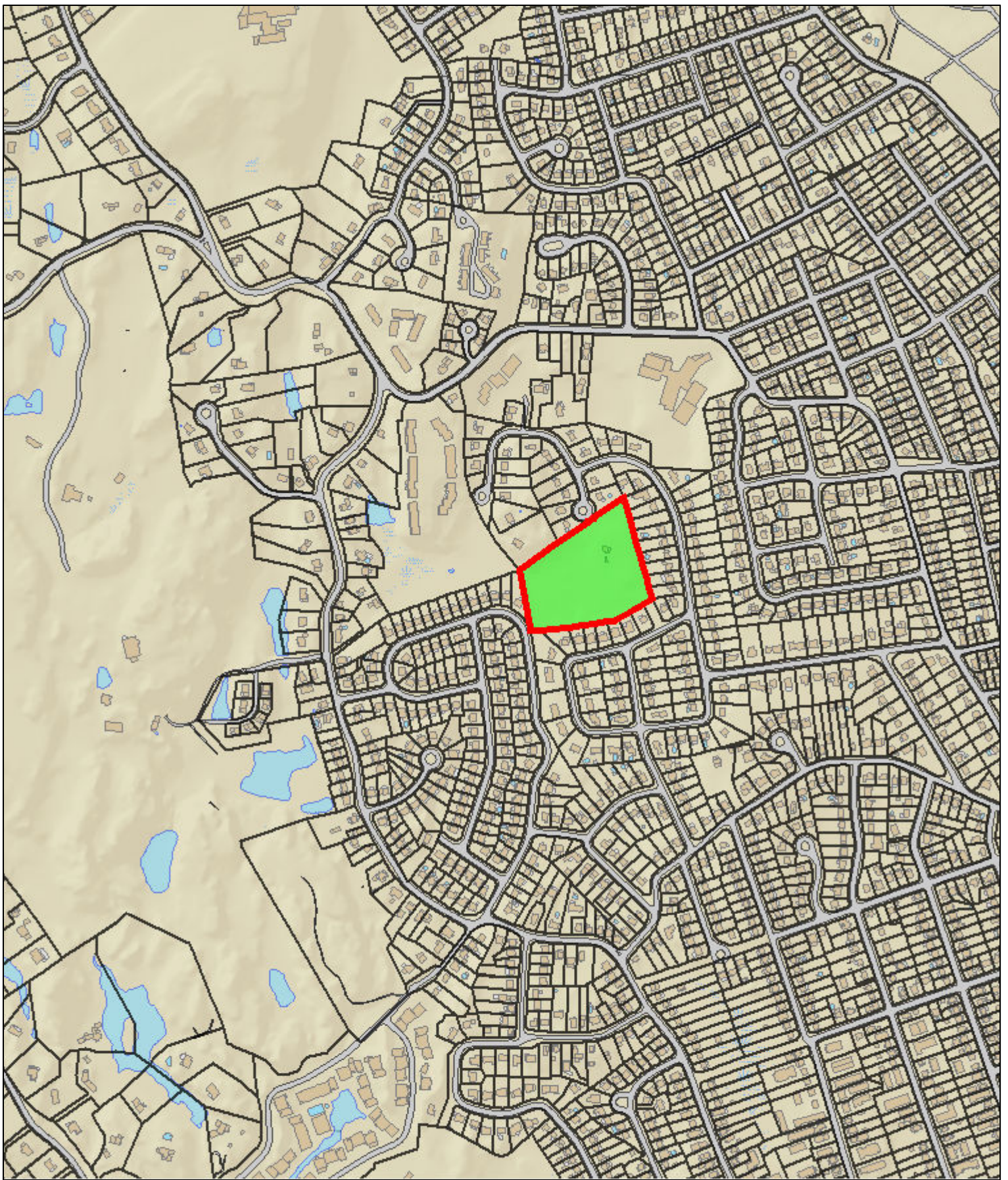
Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD1	Shed	MS	Masonry	400 S.F.	\$5,760	1
SHD1	Shed	FR	Frame	480 S.F.	\$10,580	1
	RADIO TOWER			200	\$200,000	1
FN3	FENCE-6' CHAIN			96 L.F.	\$580	1
SHP	Work Shop	MS	Masonry	240 S.F.	\$7,880	1

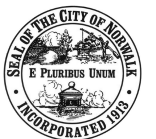
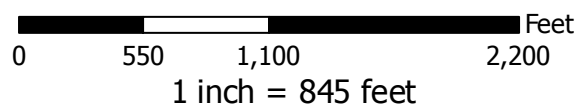
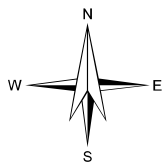
Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$224,800	\$375,840	\$600,640
2013	\$216,920	\$375,840	\$592,760
2010	\$0	\$0	\$529,929

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$157,370	\$263,090	\$420,460
2013	\$151,850	\$263,090	\$414,940
2010	\$0	\$0	\$370,950

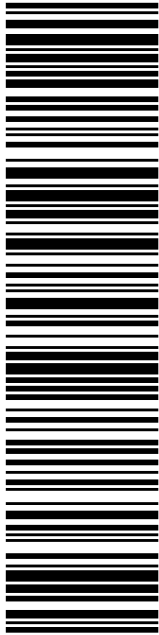


Norwalk, CT



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Ship Date:	03/03/2018	Total	\$6.70
Expected Delivery Date:	03/05/2018		
Insured Value:	\$50.00		

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

To: MR. DANIEL M STEWARD
 TOWN OF WATERFORD
 15 ROPE FERRY RD
 WATERFORD CT 06385-2886

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