



QC Development

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Storrs, CT 06268

860-670-9068

Mark.Roberts@QCDevelopment.net

March 30, 2018

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) – CT5458
954 Norwich Road, Plainfield, CT 06347
N 41-39-31.37
W 71-55-29.69

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 115-foot level of the existing 130-foot Monopole at 954 Norwich Road, Plainfield, CT. The tower is owned by Crown Castle. The property is owned by the Caya Enterprises LLC. AT&T now intends to remove (3) Andrew antennas and install (3) new CCI TPA-65R-LCUUUU-H8 antennas. AT&T also intends to add (3) new RRUS-32 Remote Radio Units (RRU). The new antennas and RRUs will also be installed at the 115-foot level of the tower.

This facility was approved by the Plainfield Planning & Zoning Commission on June 8, 1999. No conditions were attached to the approval that would relate to the scope of this modification and therefore, this modification 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 Cathy Tendrich, First Selectman of the Town of Plainfield, and the Plainfield Planning & Engineering Department, as well as the property owner and the tower owner.

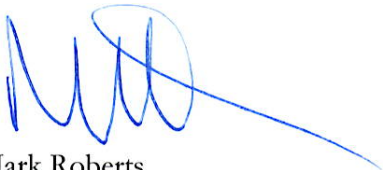
The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

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: Cathy Tendrich - as Elected Official
Ryan Brais – Zoning Officer
Caya Enterprises LLC - as Property Owner
Crown Castle - 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*							0.68%
AT&T GSM	2	414	115	0.0251	850	0.5667	0.44%
AT&T UMTS	2	414	115	0.0251	850	0.5667	0.44%
AT&T UMTS	2	656	115	0.0397	1900	1.0000	0.40%
AT&T LTE	2	1239	115	0.0750	700	0.4667	1.61%
AT&T LTE	2	1876	115	0.1135	1900	1.0000	1.14%
Site Total							4.70%

*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*							0.68%
AT&T UMTS	1	294	115	0.0089	850	0.5667	0.16%
AT&T UMTS	1	382	115	0.0116	1900	1.0000	0.12%
AT&T LTE	2	2951	115	0.1786	700	0.4667	3.83%
AT&T LTE	2	3664	115	0.2218	1900	1.0000	2.22%
AT&T LTE	1	1285	115	0.0389	2300	1.0000	0.39%
Site Total							7.38%

*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: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
 SITE ADDRESS: 954 NORWICH ROAD
 PLAINFIELD, CT 06374
 LATITUDE: 41° 39' 30.57" N
 LONGITUDE: -71° 55' 31.44" W
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES
 CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY
 DESIGN GUIDELINE: LTE 3C & 4C

SITE NUMBER: CT5458
SITE NAME: PLAINFIELD SOUTH

954 NORWICH ROAD
 PLAINFIELD, CT 06374
 WINDHAM COUNTY
 CROWN SITE # 876359

DRAWING INDEX

REV

LOCUS MAP

GENERAL NOTES

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



- 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.



- DRIVING DIRECTIONS FROM 550 COCHITUATE ROAD, FRAMINGHAM, MA:
- Head northeast toward Leggatt McCall Conn
 - Turn left onto Leggatt McCall Conn
 - Continue onto Burr St
 - Turn left onto Cochituate Rd
 - Use the right lane to take the ramp to I-90 E/Masspike W/Springfield/Boston
 - Keep left at the fork, follow signs for Interstate 90 W/Massachusetts Turnpike/Worcester/Springfield and merge onto I-90 W/Massachusetts Turnpike
 - Merge onto I-90 W/Massachusetts Turnpike
 - Take exit 10 toward MA-12 N/Auburn/Worcester
 - Keep right at the fork, follow signs for I-395 S/US-20 E/Norwich Ct
 - Continue onto I-395 S
 - Take exit 28 for Lathrop Rd
 - Turn right onto Lathrop Rd
 - Turn left onto CT-12 S



DIG SAFE SYSTEM, INC.



CALL BEFORE YOU DIG

CALL TOLL FREE: 811 OR 888-DIG-SAFE

UNDERGROUND SERVICE ALERT



SITE NUMBER: CT5458
SITE NAME: PLAINFIELD SOUTH
 954 NORWICH ROAD
 PLAINFIELD, CT 06374
 WINDHAM COUNTY



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

NO.	DATE	REVISIONS	BY	CHK
0	01/24/18	ISSUED FOR REVIEW	JWH	MRC
1	03/05/18	ISSUED FOR CONSTRUCTION	JWH	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.

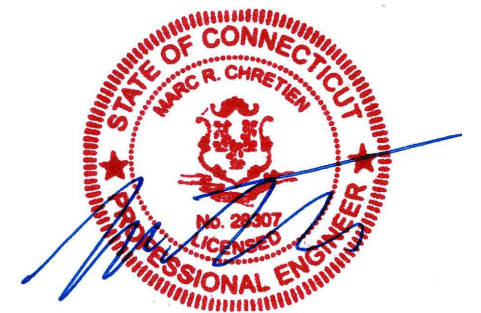
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

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: CT5458
SITE NAME: PLAINFIELD SOUTH
954 NORWICH ROAD
PLAINFIELD, CT 06374
WINDHAM COUNTY



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

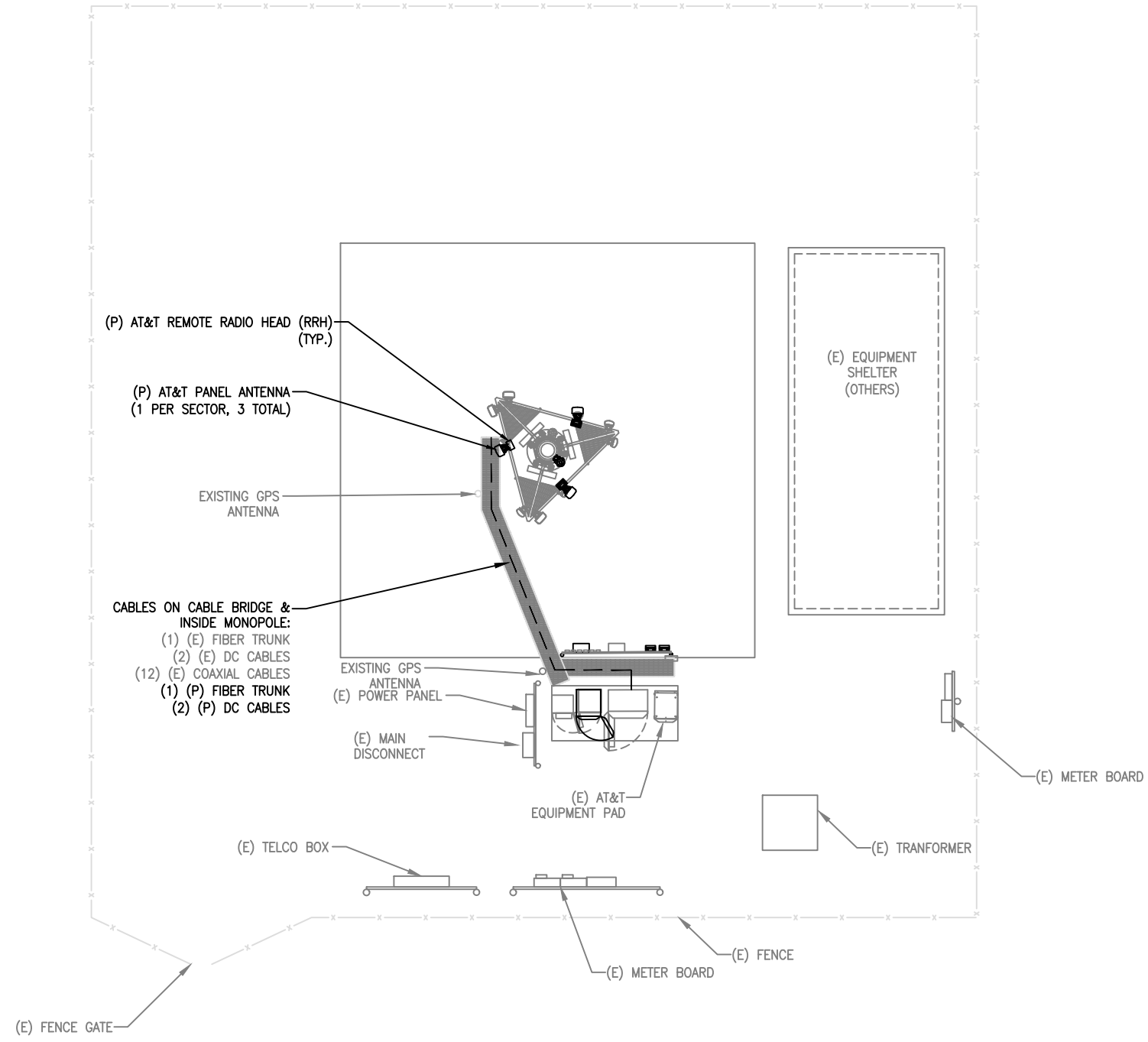
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GENERAL NOTES

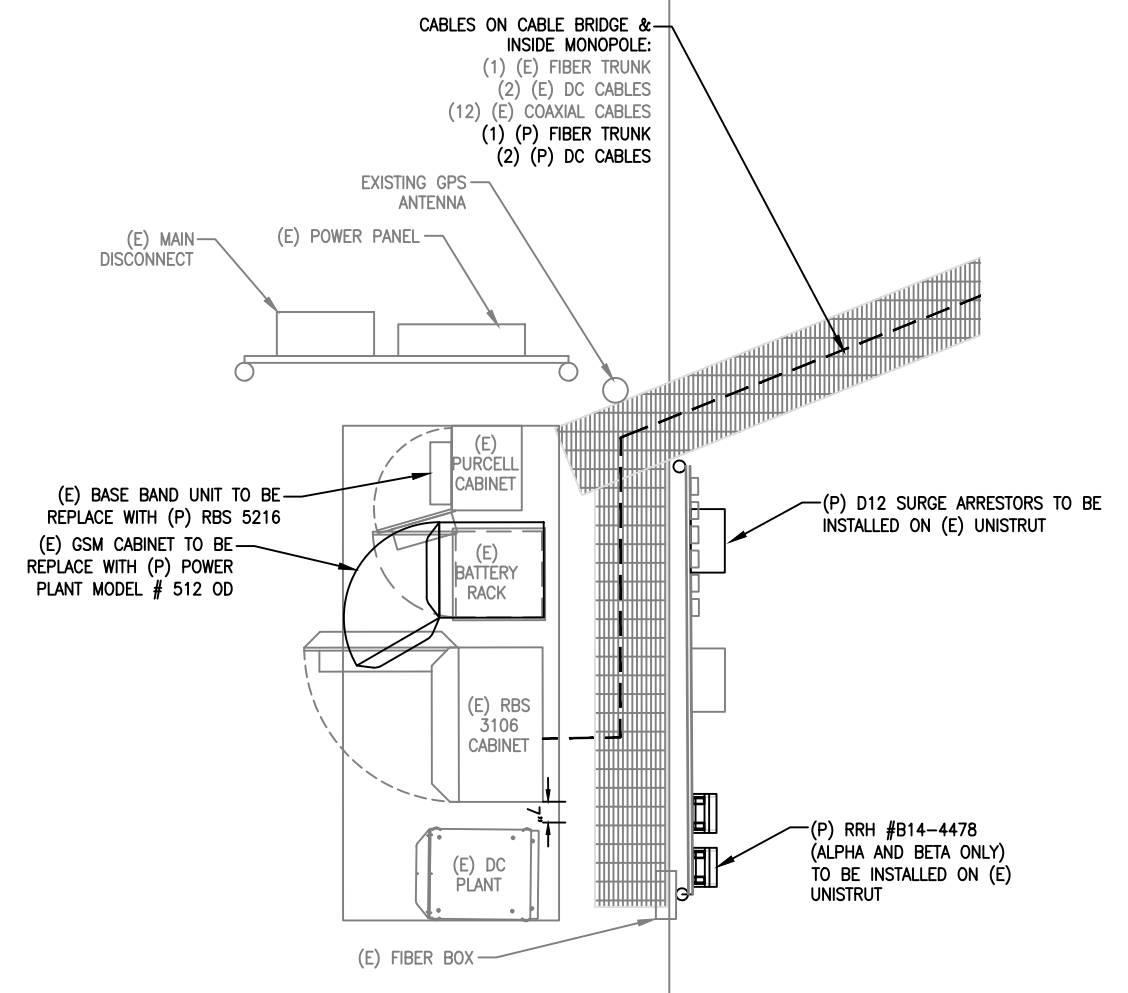
SHEET NO.

GN-1

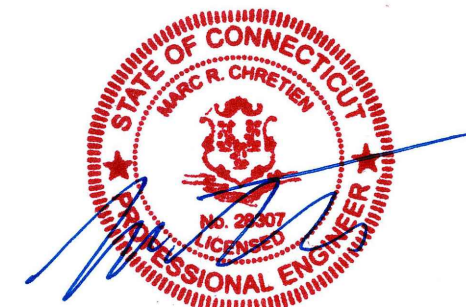
HALF SIZE PRINT
THIS DRAWING IS SCALEABLE
AT HALF THE NOTED SCALE



1
A-1
NORTH
SCALE: 1/8"=1'-0"
COMPOUND PLAN



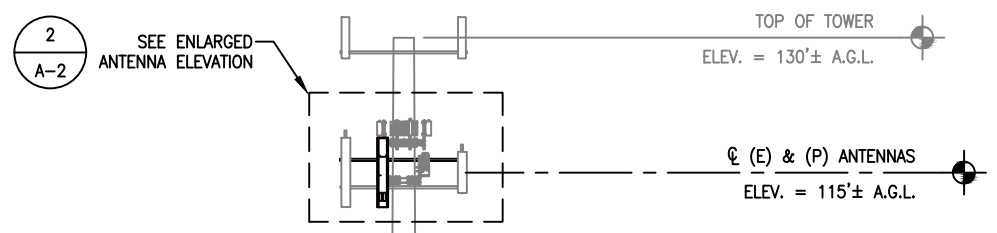
2
A-1
NORTH
SCALE: 1/2"=1'-0"
EQUIPMENT PAD PLAN



NO.	DATE	REVISIONS	BY	CHK
0	01/24/18	ISSUED FOR REVIEW	JWH	MRC
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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 HAS BEEN COMPLETED BY: B+T GROUP DATED: 3/1/18. ALL PROPOSED WORK SHALL CONFORM WITH THIS ANALYSIS.



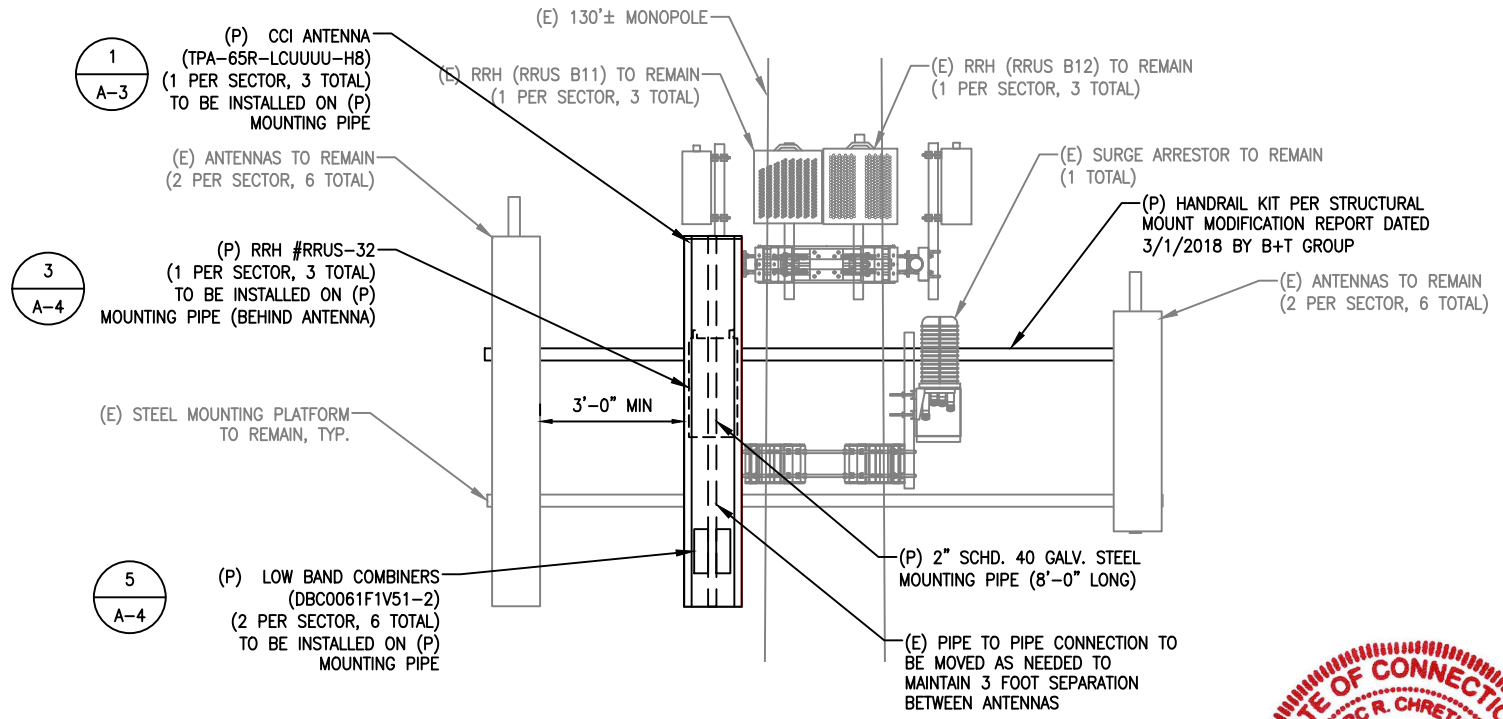
SEE ENLARGED ANTENNA ELEVATION

NOTE:
ALL ANTENNAS, EQUIPMENT AND CABLES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

(E) & (P) CABLES RUNNING ACROSS CABLE BRIDGE & UP INSIDE MONOPOLE:
(1) (E) FIBER TRUNK
(2) (E) DC CABLES
(12) (E) COAXIAL CABLES
(2) (P) DC POWER CABLES
(1) (P) FIBER CABLE



1
A-2
ELEVATION
SCALE: 3/32" = 1'-0"



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



RF SYSTEM SCHEDULE											
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	HPA-65R-BUU-H8	15°	115'	EXISTING(T), EXISTING(T)	RRUS-11, RRUS-12	-	-	-	3
	II-A	PROPOSED	TPA-65R-LCUUUU-H8	15°	115'	PROPOSED(B), PROPOSED(T)	B14-4478, RRUS-32	-	-	2	1
	III-A	-	-	-	-	-	-	-	-	-	-
	IV-A	EXISTING	POWER WAVE 7770	25°	115'	-	-	EXISTING,	LGP21401,	2	-
BETA	I-B	EXISTING	POWER WAVE 7770	120°	115'	-	-	EXISTING,	LGP21401,	2	-
	II-B	-	-	-	-	-	-	-	-	-	-
	III-B	PROPOSED	TPA-65R-LCUUUU-H8	145°	115'	PROPOSED(B), PROPOSED(T)	B14-4478, RRUS-32	-	-	2	1
	IV-B	EXISTING	HPA-65R-BUU-H8	145°	115'	EXISTING(T), EXISTING(T)	RRUS-11, RRUS-12	-	-	-	3
GAMMA	I-C	EXISTING	POWER WAVE 7770	240°	115'	-	-	EXISTING,	LGP21401,	2	-
	II-C	-	-	-	-	-	-	-	-	-	-
	III-C	PROPOSED	TPA-65R-LCUUUU-H8	255°	115'	PROPOSED(T)	RRUS-32	-	-	2	1
	IV-C	EXISTING	HPA-65R-BUU-H8	255°	115'	EXISTING(T), EXISTING(T)	RRUS-11, RRUS-12	-	-	-	3

* CONTRACTOR TO VERIFY FINAL RFDS PRIOR TO CONSTRUCTION

LEGEND: (A)=ACTIVE, (B)=BOTTOM, (S)=SPARE, (T)=TOP
IF UNLABELED ASSUME ACTIVE AND AT TOP



SITE NUMBER: CT5458
SITE NAME: PLAINFIELD SOUTH
954 NORWICH ROAD
PLAINFIELD, CT 06374
WINDHAM COUNTY

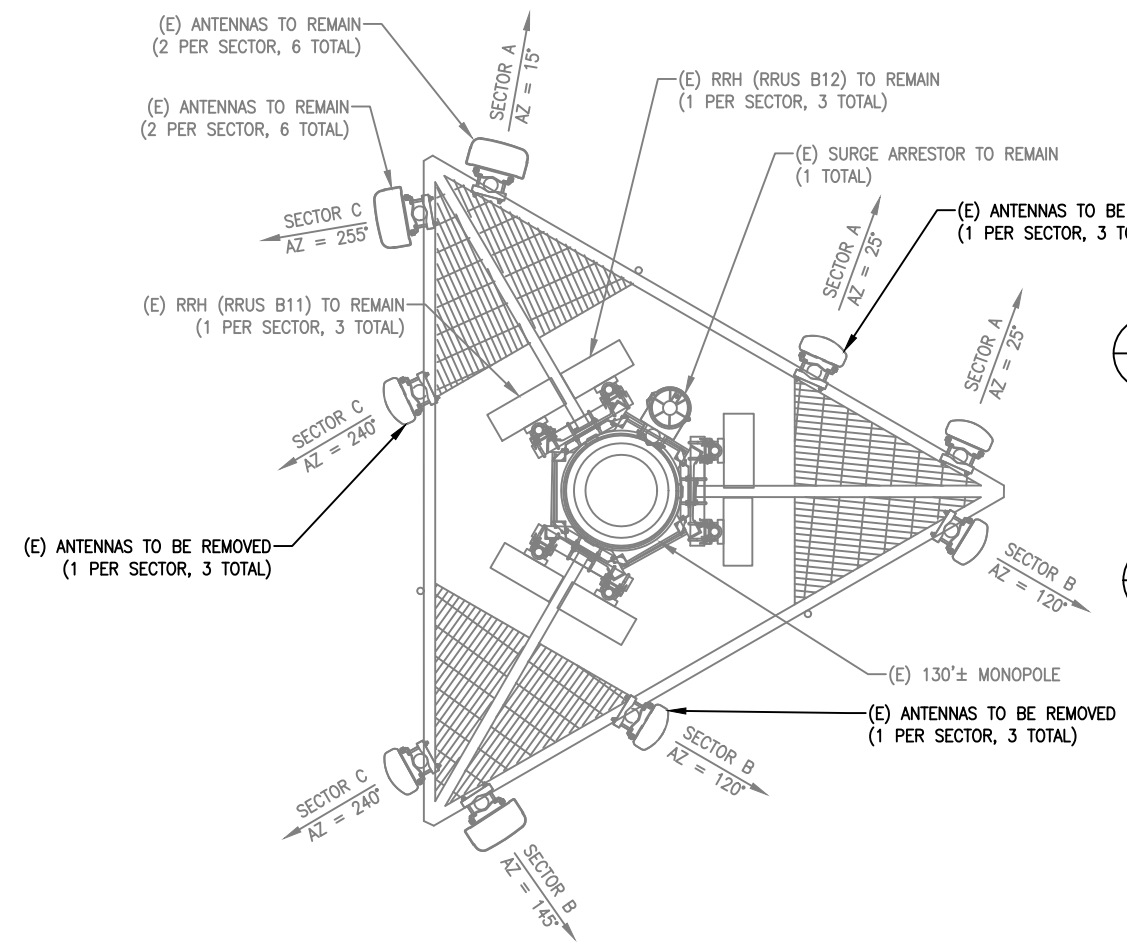


NO.	DATE	REVISIONS	BY	CHK
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1	03/05/18	ISSUED FOR CONSTRUCTION	JWH	MRC

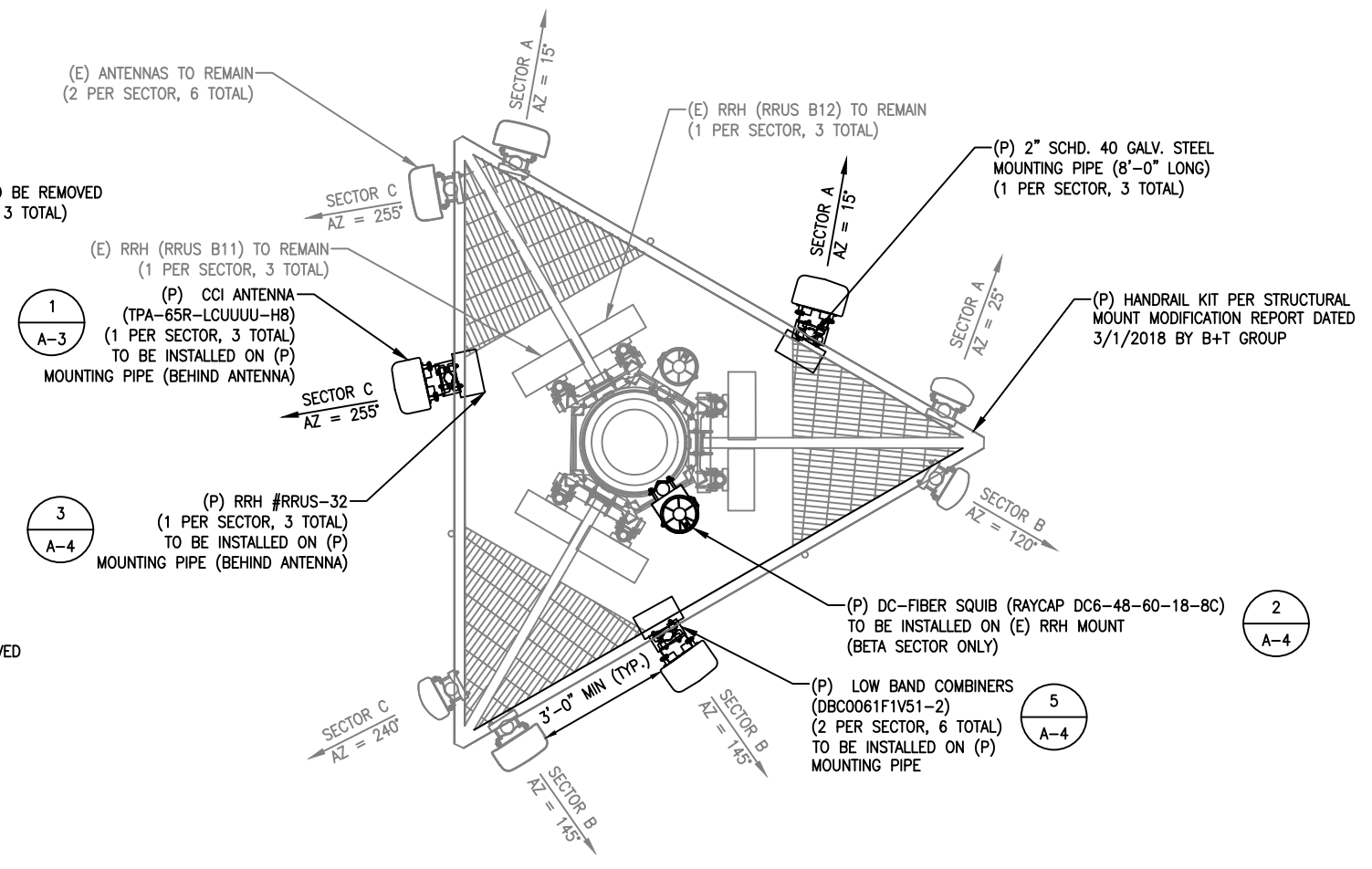
ELEVATIONS AND
RF SYSTEM SCHEDULE

SHEET NO. **A-2**

MOUNT ANALYSIS NOTE:
AN ANALYSIS TO DETERMINE THE STRUCTURAL CAPACITY OF THE EXISTING MOUNTS HAS BEEN COMPLETED BY: B+T GROUP DATED: 3/1/18. ALL PROPOSED WORK SHALL CONFORM WITH THIS ANALYSIS.



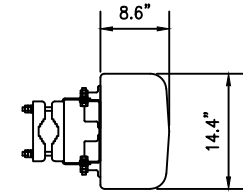
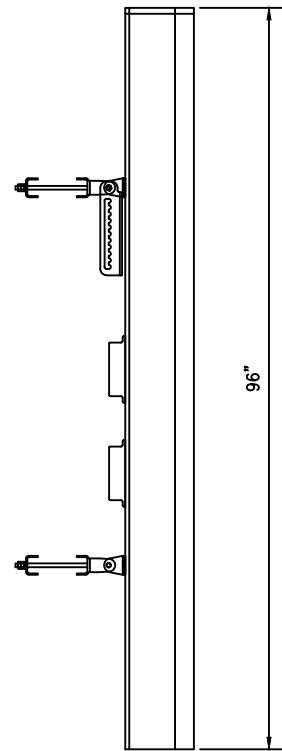
1 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0"



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

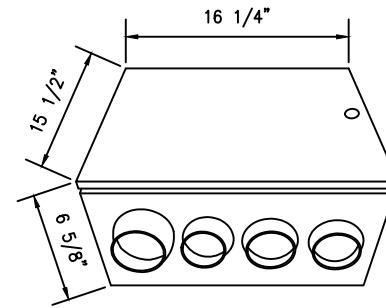


NO.	DATE	REVISIONS	BY	CHK
0	01/24/18	ISSUED FOR REVIEW	JWH	MRC
1	03/05/18	ISSUED FOR CONSTRUCTION	JWH	MRC



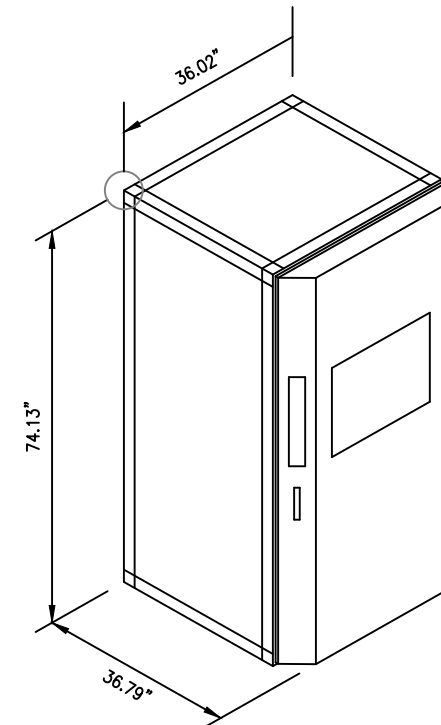
TPA-65R-LCUUUU-H8
 MANUFACTURER: CCI
 DIMENSIONS: (HxWxD) 96"x14.4"x8.6"
 WEIGHT: 75 LBS.
 (EXCLUDES MOUNTS & RET SYSTEM)

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



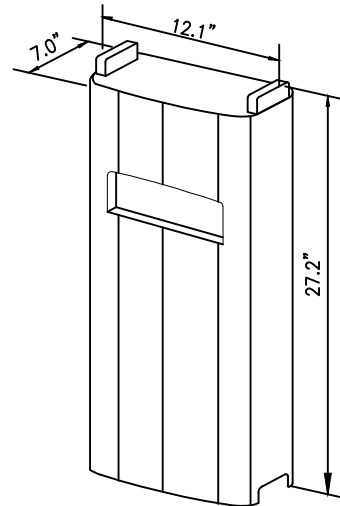
**CENTRAL FIBER OPTIC & DC
 POWER CONNECTION BOX**
 RAYCAP MODEL#
 FC12-PC6-10E

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

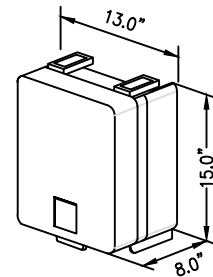


MODEL: 512_OD
 MANUFACTURER: EMERSON NETWORK POWER
 DIMENSIONS (H x W x D): 74.13" x 36.02" x 36.79"

4 POWER PLANT DETAIL
 A-4 SCALE: N.T.S.

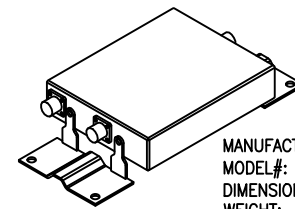


ERICSSON RRUS-32 B2
 -DIMENSIONS (H x W x D):
 27.2" x 12.1" x 7.0"
 -WEIGHT: 53 LBS



B14 4478
 MANUFACTURER: ERICSSON
 DIMENSIONS (HxWxD): 15.0"x13.0"x8.0"
 WEIGHT: 60 LBS

3 RRH DETAIL
 A-4 SCALE: N.T.S.



MANUFACTURER: KAELOS
 MODEL#: DBC0061F1V51-2
 DIMENSIONS: (HxWxD) 8"x6.2"x3.2"
 WEIGHT: 9.5 LBS.

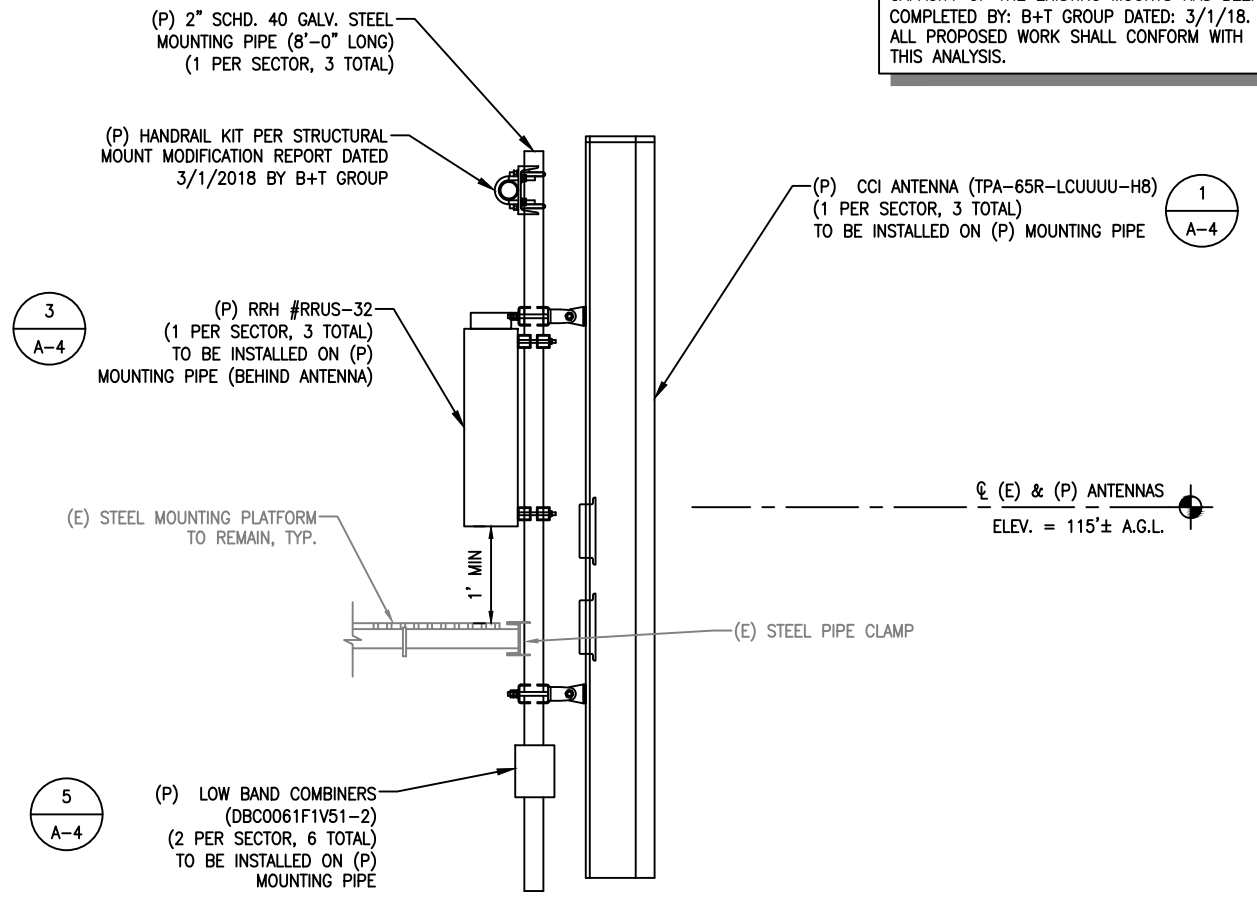
5 COMBINER DETAIL
 A-4 SCALE: N.T.S.



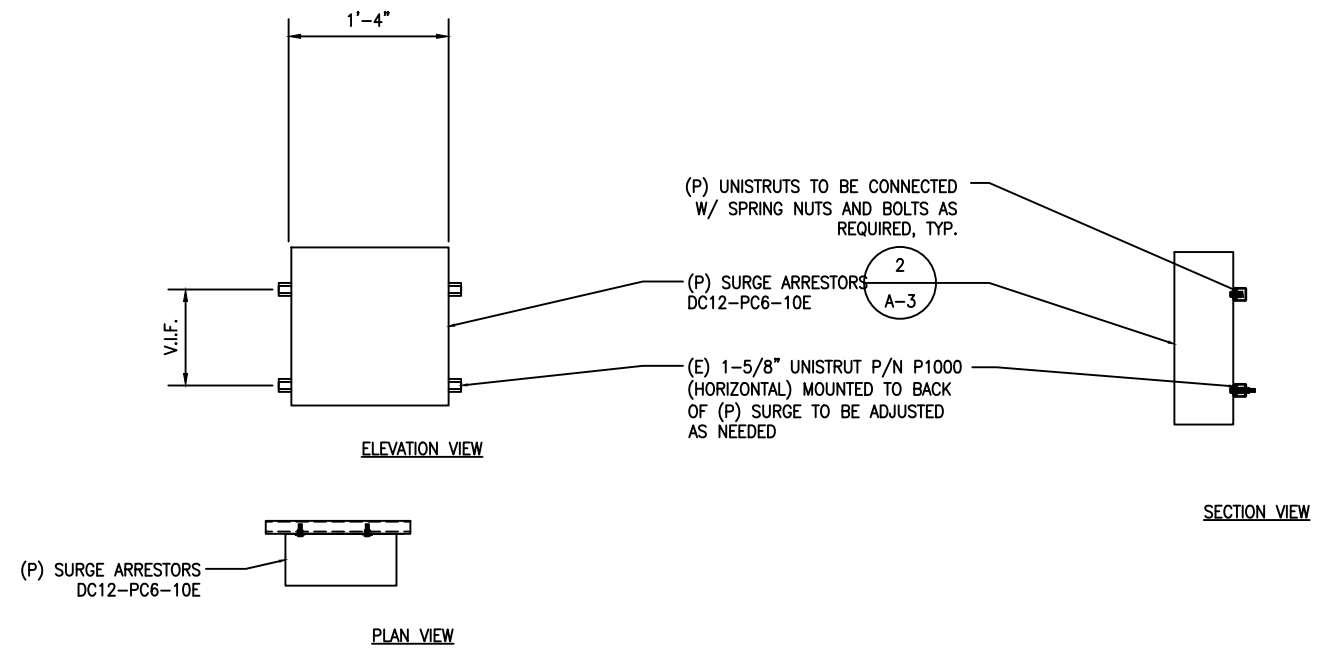
NO.	DATE	REVISIONS	BY	CHK
0	01/24/18	ISSUED FOR REVIEW	JWH	MRC
1	03/05/18	ISSUED FOR CONSTRUCTION	JWH	MRC

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

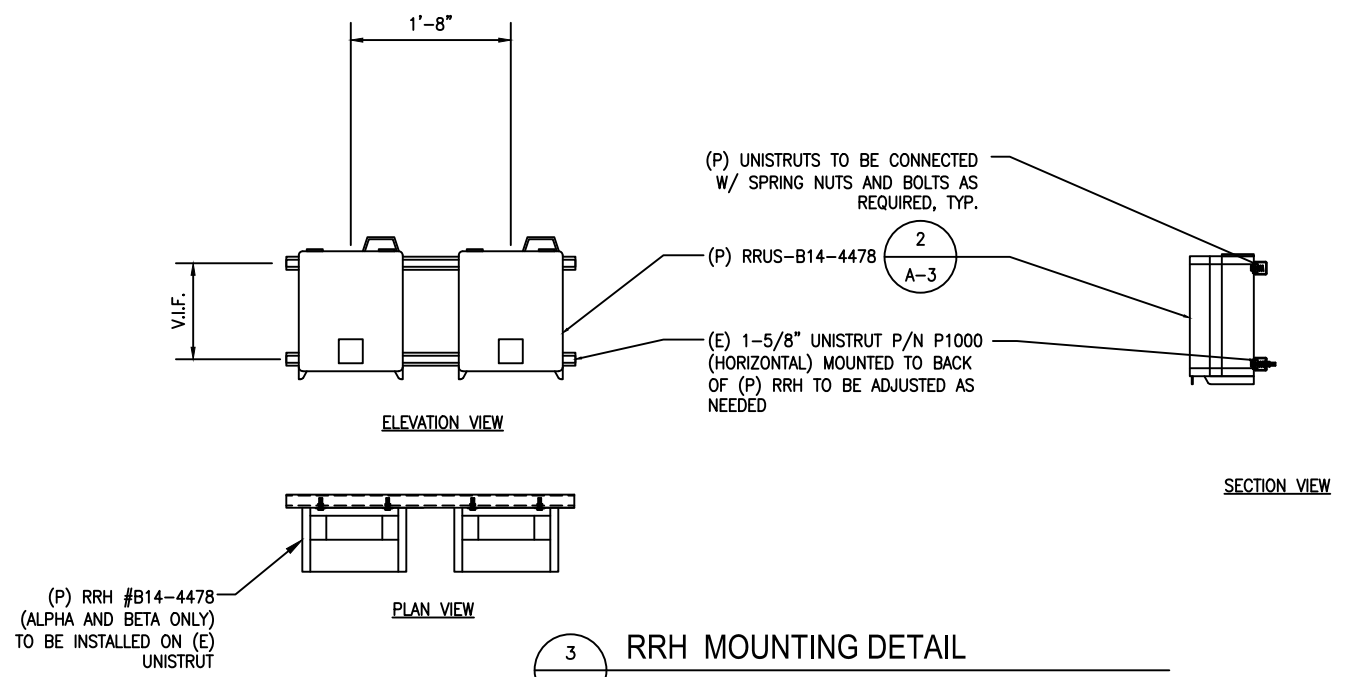
MOUNT ANALYSIS NOTE:
AN ANALYSIS TO DETERMINE THE STRUCTURAL CAPACITY OF THE EXISTING MOUNTS HAS BEEN COMPLETED BY: B+T GROUP DATED: 3/1/18. ALL PROPOSED WORK SHALL CONFORM WITH THIS ANALYSIS.



1 ANTENNA AND RRH MOUNTING DETAIL
S-1 SCALE: 1" = 1'-0"



2 SURGE ARESTOR MOUNTING DETAIL
S-1 SCALE: 1 1/2" = 1'-0"



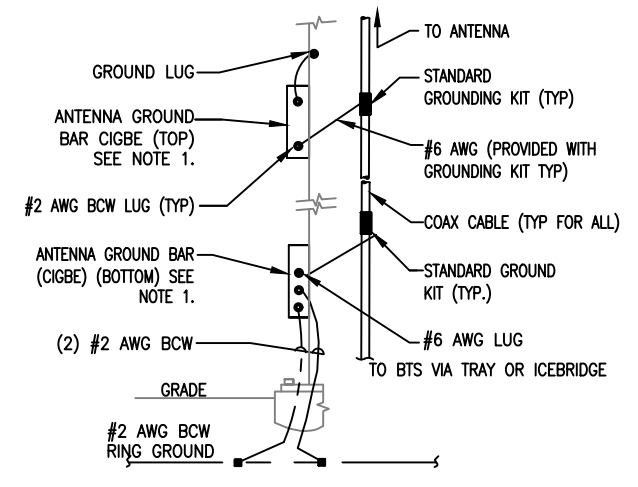
3 RRH MOUNTING DETAIL
S-1 SCALE: 1 1/2" = 1'-0"



NO.	DATE	REVISIONS	BY	CHK
0	01/24/18	ISSUED FOR REVIEW	JWH	MRC
1	03/05/18	ISSUED FOR CONSTRUCTION	JWH	MRC

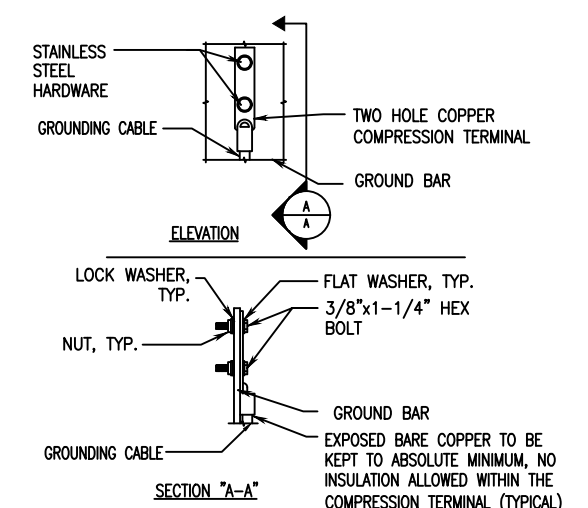
- CIRCUIT BREAKER ELECTRIC BOX
- ELECTRICAL CONDUIT
- EXOTHERMIC CONNECTION (CADWELD) TO GROUND RING AND COMPRESSION TO GROUND HALO
- DISCONNECT SWITCH
- GROUND ROD
- GROUND ROD WITH ACCESS
- MECHANICAL GROUND CONN.
- GROUND ACCESS WELL
- GROUNDING WIRE
- GENERATOR
- FUSE
- GROUND BUS BAR
- REVISION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

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



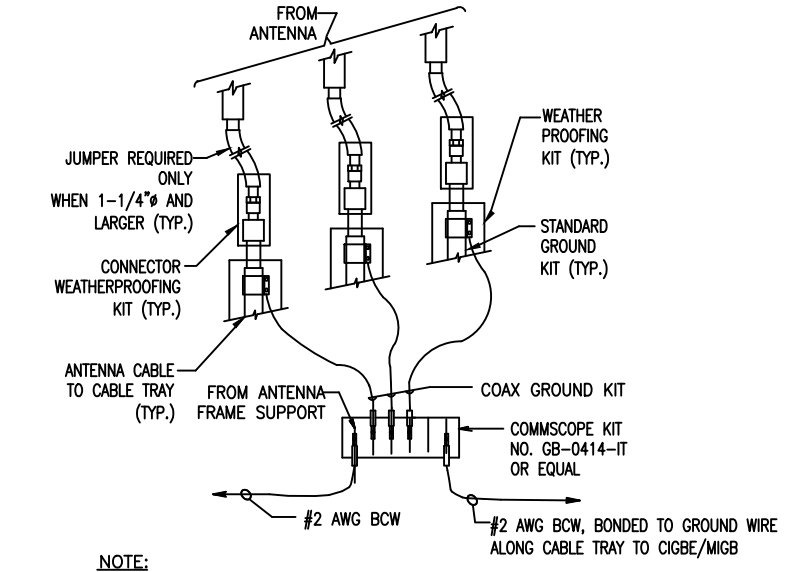
NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

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.

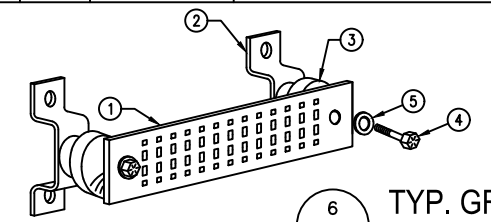
WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2		WALL MTG. BRKT.
3	2		INSULATORS
4	4		5/8"-11x1" H.H.C.S.
5	4		5/8 LOCKWASHER

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

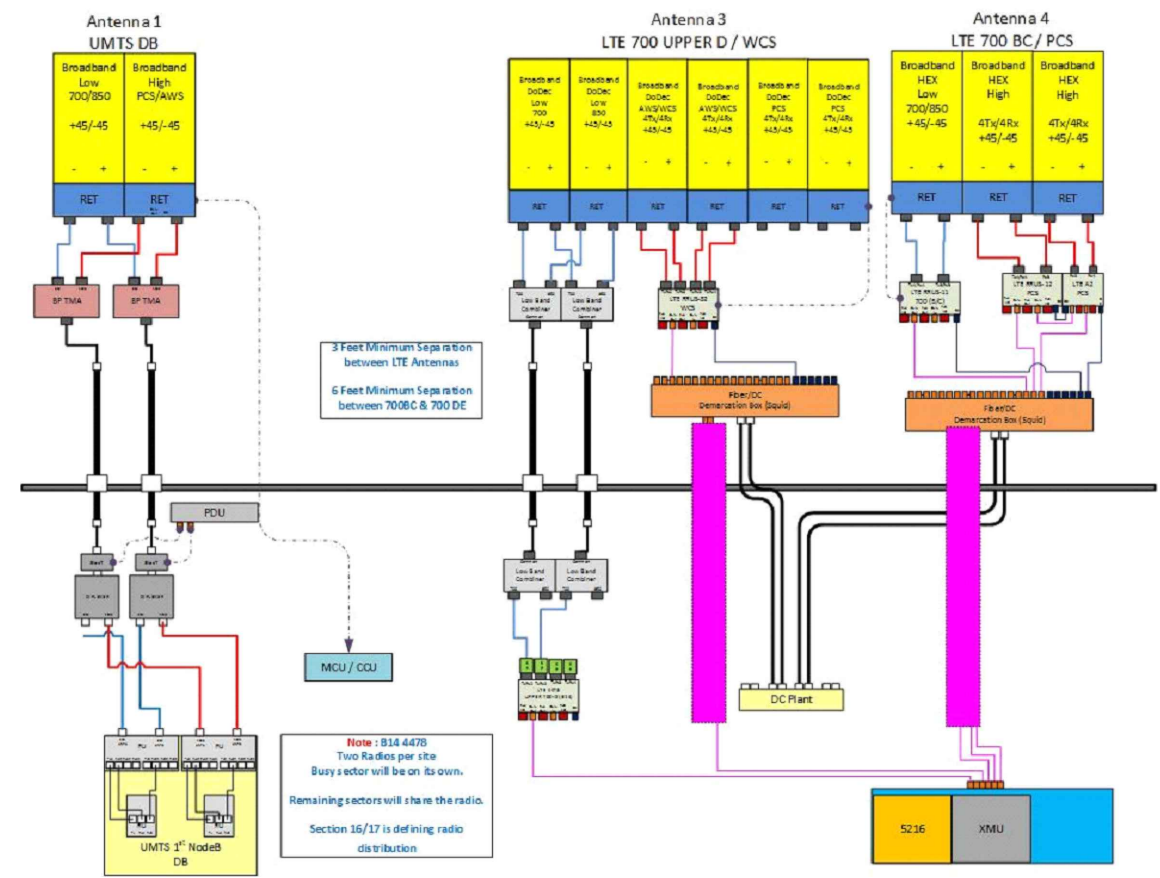
- SECTION "P" - SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
 - GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
 - TELCO GROUND BAR
 - COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
 - +24V POWER SUPPLY RETURN BAR (#2)
 - 48V POWER SUPPLY RETURN BAR (#2)
 - RECTIFIER FRAMES.

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

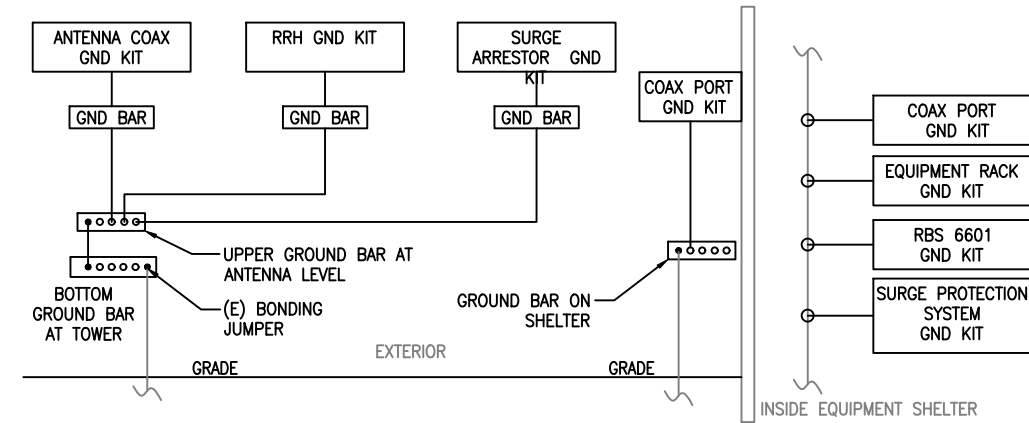
GROUNDING NOTES:
ALL GROUNDING SHALL BE DONE IN ACCORDANCE WITH THE AT&T MOBILITY GROUNDING GUIDE.



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



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



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



NO.	DATE	REVISIONS	BY	CHK
0	01/24/18	ISSUED FOR REVIEW	JWH	MRC
1	03/05/18	ISSUED FOR CONSTRUCTION	JWH	MRC

Date: **March 06, 2018**

Marianne Dunst
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT5458
Carrier Site Name: PLAINFIELD SOUTH

Crown Castle Designation: **Crown Castle BU Number:** 876359
Crown Castle Site Name: NORWICH
Crown Castle JDE Job Number: 478173
Crown Castle Work Order Number: 1518520
Crown Castle Application Number: 421276 Rev. 1

Engineering Firm Designation: **Crown Castle Project Number:** 1518520

Site Data: **954 Norwich Road, PLAINFIELD, Windham County, CT**
Latitude 41° 39' 31.46", Longitude -71° 55' 29.75"
130 Foot - Monopole Tower

Dear Marianne Dunst,

Crown Castle is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1518520, in accordance with application 421276, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Emma McCarty / DLT

Respectfully submitted by:

Maham Barimani, P.E.
Senior Project Engineer

tnxTower Report - version 7.0.5.1

03-16-2018



TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 - Tower Component Stresses vs. Capacity – LC7

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 130 ft Monopole tower designed by SUMMIT in July of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 105 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
116.0	116.0	3	ericsson	RRUS12/RRUS A2	-	-	-
114.0	115.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	2 1	3/4 3/8	-
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe			
		3	ericsson	RRUS 32			
		6	powerwave technologies	7020.00			
		1	raycap	DC6-48-60-18-8C			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
130.0	130.0	3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ	3 1	1-1/4 7/8	2	
		6	alcatel lucent	RRH2X50-800				
		3	alcatel lucent	TD-RRH8X20-25				
		3	kmw communications	ETCR-654L12H6 w/ Mount Pipe				
		1	tower mounts	Kicker [NA 509-3]				
		1	tower mounts	Handrail [NA 510-1]				
		1	tower mounts	Platform Mount [LP 1201-1]				-
116.0	116.0	3	ericsson	RRUS-11	-	-	1	
		1	tower mounts	Side Arm Mount [SO 102-3]				
114.0	115.0	3	powerwave technologies	LGP21401	12 2 1 1	1-1/4 3/4 3/8 Conduit	1	
		3	powerwave technologies	7770.00 w/ Mount Pipe				
		3	powerwave technologies	7770.00 w/ Mount Pipe	-	-		3
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	kmw communications	AM-X-CD-17-65-00T-RET w/ Mount Pipe			
	114.0	3	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21901			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]	-	-	1

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment To Be Removed; Not Considered In Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
130	130	12	Generic	DB98OH PCS	-	-
110	110	12	Generic	Panel Antenna	-	-
90	90	12	Generic	Panel Antenna	-	-
80	80	1	Generic	GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Vanasse Hangen Brustlin, INC.	1616503	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, Inc.	1616546	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, Inc.	1446983	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	130 - 83	Pole	TP26.06x16x0.25	1	-10.48	1418.92	72.0	Pass
L2	83 - 43.25	Pole	TP34.068x24.864x0.313	2	-16.69	2279.24	79.4	Pass
L3	43.25 - 0	Pole	TP42.7x32.533x0.375	3	-27.87	3420.09	76.4	Pass
							Summary	
						Pole (L2)	79.4	Pass
						Rating =	79.4	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	70.9	Pass
1	Base Plate	0	66.1	Pass
1,2	Base Foundation (Compared w/ Design Loads)	0	73.0	Pass

Structure Rating (max from all components) =	79.4%
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Notes:

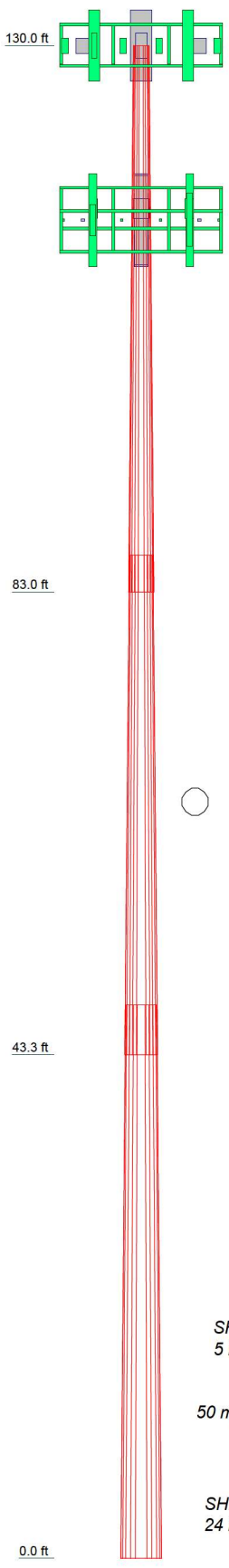
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Foundation capacity determined by comparing analysis reactions to original design reactions.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	14.2
Length (ft)	47.00	43.00	47.50	
Number of Sides	12	12	12	
Thickness (in)	0.250	0.313	0.375	
Socket Length (ft)	3.25	4.25		
Top Dia (in)	16.000	24.864	32.533	
Bot Dia (in)	26.060	34.068	42.700	
Grade		A607-65		
Weight (K)	2.7	4.3	7.3	



DESIGNED APPURTENANCE LOADING

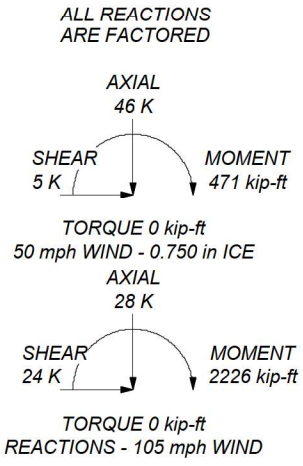
TYPE	ELEVATION	TYPE	ELEVATION
Top Hat - 12'	130	(2) 4' x 2" Pipe Mount	116
Lighting Rod 1" x 8'	130	(2) 4' x 2" Pipe Mount	116
ETCR-654L12H6 w/ Mount Pipe	130	(2) 4' x 2" Pipe Mount	116
ETCR-654L12H6 w/ Mount Pipe	130	Side Arm Mount [SO 102-3]	116
ETCR-654L12H6 w/ Mount Pipe	130	7770.00 w/ Mount Pipe	114
PCS 1900MHZ 4X45W-65MHZ	130	7770.00 w/ Mount Pipe	114
PCS 1900MHZ 4X45W-65MHZ	130	7770.00 w/ Mount Pipe	114
PCS 1900MHZ 4X45W-65MHZ	130	LGP21401	114
(2) RRH2X50-800	130	LGP21401	114
(2) RRH2X50-800	130	LGP21401	114
(2) RRH2X50-800	130	DC6-48-60-18-8F	114
TD-RRH8X20-25	130	HPA-65R-BUU-H8 w/ Mount Pipe	114
TD-RRH8X20-25	130	HPA-65R-BUU-H8 w/ Mount Pipe	114
TD-RRH8X20-25	130	HPA-65R-BUU-H8 w/ Mount Pipe	114
Miscellaneous [NA 510-1]	130	TPA-65R-LCUUUU-H8 w/ Mount Pipe	114
Miscellaneous [NA 509-3]	130	TPA-65R-LCUUUU-H8 w/ Mount Pipe	114
8' x 2" Mount Pipe	130	TPA-65R-LCUUUU-H8 w/ Mount Pipe	114
8' x 2" Mount Pipe	130	(2) 7020.00	114
8' x 2" Mount Pipe	130	(2) 7020.00	114
Platform Mount [LP 1201-1]	130	(2) 7020.00	114
RRUS-11	116	RRUS 32	114
RRUS-11	116	RRUS 32	114
RRUS-11	116	RRUS 32	114
RRUS12/RRUS A2	116	DC6-48-60-18-8C	114
RRUS12/RRUS A2	116	Platform Mount [LP 303-1]	114
RRUS12/RRUS A2	116		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 79.4%



<p>CROWN CASTLE The Pathway to Possible</p>	<p>Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416-2000 FAX:</p>	<p>Job: BU 876359 Project: WO 1518520 Client: Crown Castle Code: TIA-222-G Path: C:\Users\emccarty\Desktop\876359\876359.dwg</p>	<p>Drawn by: emccarty Date: 02/28/18 Scale: NTS Dwg No. E-1</p>
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Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- 4) Tower is located in Windham County, Connecticut.
- 5) Basic wind speed of 105 mph.
- 6) Structure Class II.
- 7) Exposure Category B.
- 8) Topographic Category 1.
- 9) Crest Height 0.00 ft.
- 10) Nominal ice thickness of 0.750 in.
- 11) Ice thickness is considered to increase with height.
- 12) Ice density of 56.00 pcf.
- 13) A wind speed of 50 mph is used in combination with ice.
- 14) Temperature drop of 50 °F.
- 15) Deflections calculated using a wind speed of 60 mph.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.
- 19) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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Tapered Pole Section Geometry

Section	Elevation <i>ft</i>	Section Length <i>ft</i>	Splice Length <i>ft</i>	Number of Sides	Top Diameter <i>in</i>	Bottom Diameter <i>in</i>	Wall Thickness <i>in</i>	Bend Radius <i>in</i>	Pole Grade
L1	130.00-83.00	47.00	3.25	12	16.000	26.060	0.250	1.000	A607-65 (65 ksi)
L2	83.00-43.25	43.00	4.25	12	24.864	34.068	0.313	1.250	A607-65 (65 ksi)
L3	43.25-0.00	47.50		12	32.533	42.700	0.375	1.500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	16.564	12.679	401.443	5.638	8.288	48.437	813.432	6.240	3.618	14.472
	26.979	20.777	1766.631	9.240	13.499	130.870	3579.673	10.226	6.314	25.256
L2	26.462	24.705	1900.838	8.790	12.880	147.584	3851.613	12.159	5.826	18.644
	35.270	33.966	4939.983	12.084	17.647	279.930	10009.745	16.717	8.293	26.537
L3	34.623	38.831	5125.708	11.513	16.852	304.155	10386.074	19.112	7.714	20.57
	44.206	51.107	11685.949	15.152	22.119	528.331	23678.901	25.154	10.439	27.836

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontal	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 130.00-83.00				1	1	1			
L2 83.00-43.25				1	1	1			
L3 43.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter r in	Perimeter r in	Weight klf
**										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight klf
**							
130							
HB114-08U3M12-XXXF(7/8)	B	No	Inside Pole	130.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
HB114-1-08U4-M5F(1-1/4)	B	No	Inside Pole	130.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
114							
LDF6-50A(1-1/4)	A	No	Inside Pole	114.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
FB-L98B-002-75000(3/8)	A	No	Inside Pole	114.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	114.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
FB-L98B-034-XXX(3/8)	A	No	Inside Pole	114.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	114.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
2" Rigid Conduit	A	No	Inside Pole	114.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00

Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	130.00-83.00	A	0.000	0.000	0.000	0.000	0.39
		B	0.000	0.000	0.000	0.000	0.22
		C	0.000	0.000	0.000	0.000	0.00
L2	83.00-43.25	A	0.000	0.000	0.000	0.000	0.49
		B	0.000	0.000	0.000	0.000	0.18
		C	0.000	0.000	0.000	0.000	0.00
L3	43.25-0.00	A	0.000	0.000	0.000	0.000	0.54
		B	0.000	0.000	0.000	0.000	0.20
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	130.00-83.00	A	1.684	0.000	0.000	0.000	0.000	0.39
		B		0.000	0.000	0.000	0.000	0.22
		C		0.000	0.000	0.000	0.000	0.00
L2	83.00-43.25	A	1.599	0.000	0.000	0.000	0.000	0.49
		B		0.000	0.000	0.000	0.000	0.18
		C		0.000	0.000	0.000	0.000	0.00
L3	43.25-0.00	A	1.433	0.000	0.000	0.000	0.000	0.54
		B		0.000	0.000	0.000	0.000	0.20
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	130.00-83.00	0.000	0.000	0.000	0.000
L2	83.00-43.25	0.000	0.000	0.000	0.000
L3	43.25-0.00	0.000	0.000	0.000	0.000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C_{AA} Front ft ²	C_{AA} Side ft ²	Weight K	
*									
Top Hat - 12'	C	None		0.000	130.00	No Ice	14.00	14.00	0.30

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral	Vert						ft
			ft	ft	ft	°	ft	ft ²	ft ²	K	
							1/2"	0.00	0.00	0.39	
							Ice	0.00	0.00	0.48	
							1" Ice				
Lighting Rod 1" x 8'	C	None				0.000	130.00	No Ice	0.80	0.80	0.03
							1/2"	1.62	1.62	0.04	
							Ice	2.45	2.45	0.05	
							1" Ice				
**											
ETCR-654L12H6 w/ Mount Pipe	A	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	13.27	6.54	0.10
			0.00				1/2"	13.88	7.71	0.19	
			0.00				Ice	14.45	8.61	0.29	
							1" Ice				
ETCR-654L12H6 w/ Mount Pipe	B	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	13.27	6.54	0.10
			0.00				1/2"	13.88	7.71	0.19	
			0.00				Ice	14.45	8.61	0.29	
							1" Ice				
ETCR-654L12H6 w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	13.27	6.54	0.10
			0.00				1/2"	13.88	7.71	0.19	
			0.00				Ice	14.45	8.61	0.29	
							1" Ice				
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	2.32	2.24	0.06
			0.00				1/2"	2.53	2.44	0.08	
			0.00				Ice	2.74	2.65	0.11	
							1" Ice				
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	2.32	2.24	0.06
			0.00				1/2"	2.53	2.44	0.08	
			0.00				Ice	2.74	2.65	0.11	
							1" Ice				
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	2.32	2.24	0.06
			0.00				1/2"	2.53	2.44	0.08	
			0.00				Ice	2.74	2.65	0.11	
							1" Ice				
(2) RRH2X50-800	A	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	1.70	1.28	0.05
			0.00				1/2"	1.86	1.43	0.07	
			0.00				Ice	2.03	1.58	0.09	
							1" Ice				
(2) RRH2X50-800	B	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	1.70	1.28	0.05
			0.00				1/2"	1.86	1.43	0.07	
			0.00				Ice	2.03	1.58	0.09	
							1" Ice				
(2) RRH2X50-800	C	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	1.70	1.28	0.05
			0.00				1/2"	1.86	1.43	0.07	
			0.00				Ice	2.03	1.58	0.09	
							1" Ice				
TD-RRH8X20-25	A	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	4.05	1.53	0.07
			0.00				1/2"	4.30	1.71	0.10	
			0.00				Ice	4.56	1.90	0.13	
							1" Ice				
TD-RRH8X20-25	B	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	4.05	1.53	0.07
			0.00				1/2"	4.30	1.71	0.10	
			0.00				Ice	4.56	1.90	0.13	
							1" Ice				
TD-RRH8X20-25	C	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	4.05	1.53	0.07
			0.00				1/2"	4.30	1.71	0.10	
			0.00				Ice	4.56	1.90	0.13	
							1" Ice				
Miscellaneous [NA 510-1]	C	None				0.000	130.00	No Ice	6.00	6.00	0.26
							1/2"	8.50	8.50	0.34	
							Ice	11.00	11.00	0.42	
							1" Ice				
Miscellaneous [NA 509-3]	C	None				0.000	130.00	No Ice	11.84	11.84	0.28
							1/2"	16.96	16.96	0.30	
							Ice	22.08	22.08	0.32	
							1" Ice				
8' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.00	0.000	130.00	No Ice	1.90	1.90	0.03

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
			0.00				1/2"	2.73	2.73	0.04
			0.00				Ice	3.40	3.40	0.06
							1" Ice			
8' x 2" Mount Pipe	B	From Leg	4.00	0.000	130.00		No Ice	1.90	1.90	0.03
			0.00				1/2"	2.73	2.73	0.04
			0.00				Ice	3.40	3.40	0.06
							1" Ice			
8' x 2" Mount Pipe	C	From Leg	4.00	0.000	130.00		No Ice	1.90	1.90	0.03
			0.00				1/2"	2.73	2.73	0.04
			0.00				Ice	3.40	3.40	0.06
							1" Ice			
Platform Mount [LP 1201-1]	C	None		0.000	130.00		No Ice	23.10	23.10	2.10
							1/2"	26.80	26.80	2.50
							Ice	30.50	30.50	2.90
							1" Ice			
**										
**										
RRUS-11	A	From Leg	4.00	0.000	116.00		No Ice	2.78	1.19	0.05
			0.00				1/2"	2.99	1.33	0.07
			0.00				Ice	3.21	1.49	0.09
							1" Ice			
RRUS-11	B	From Leg	4.00	0.000	116.00		No Ice	2.78	1.19	0.05
			0.00				1/2"	2.99	1.33	0.07
			0.00				Ice	3.21	1.49	0.09
							1" Ice			
RRUS-11	C	From Leg	4.00	0.000	116.00		No Ice	2.78	1.19	0.05
			0.00				1/2"	2.99	1.33	0.07
			0.00				Ice	3.21	1.49	0.09
							1" Ice			
RRUS12/RRUS A2	A	From Leg	4.00	0.000	116.00		No Ice	3.14	1.84	0.07
			0.00				1/2"	3.36	2.01	0.10
			0.00				Ice	3.59	2.20	0.13
							1" Ice			
RRUS12/RRUS A2	B	From Leg	4.00	0.000	116.00		No Ice	3.14	1.84	0.07
			0.00				1/2"	3.36	2.01	0.10
			0.00				Ice	3.59	2.20	0.13
							1" Ice			
RRUS12/RRUS A2	C	From Leg	4.00	0.000	116.00		No Ice	3.14	1.84	0.07
			0.00				1/2"	3.36	2.01	0.10
			0.00				Ice	3.59	2.20	0.13
							1" Ice			
(2) 4' x 2" Pipe Mount	A	From Leg	4.00	0.000	116.00		No Ice	0.79	0.79	0.03
			0.00				1/2"	1.03	1.03	0.04
			0.00				Ice	1.28	1.28	0.04
							1" Ice			
(2) 4' x 2" Pipe Mount	B	From Leg	4.00	0.000	116.00		No Ice	0.79	0.79	0.03
			0.00				1/2"	1.03	1.03	0.04
			0.00				Ice	1.28	1.28	0.04
							1" Ice			
(2) 4' x 2" Pipe Mount	C	From Leg	4.00	0.000	116.00		No Ice	0.79	0.79	0.03
			0.00				1/2"	1.03	1.03	0.04
			0.00				Ice	1.28	1.28	0.04
							1" Ice			
Side Arm Mount [SO 102-3]	C	None		0.000	116.00		No Ice	3.00	3.00	0.08
							1/2"	3.48	3.48	0.11
							Ice	3.96	3.96	0.14
							1" Ice			
**										
**										
7770.00 w/ Mount Pipe	A	From Leg	4.00	0.000	114.00		No Ice	5.75	4.25	0.06
			0.00				1/2"	6.18	5.01	0.10
			1.00				Ice	6.61	5.71	0.16
							1" Ice			
7770.00 w/ Mount Pipe	B	From Leg	4.00	0.000	114.00		No Ice	5.75	4.25	0.06
			0.00				1/2"	6.18	5.01	0.10

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			1.00				Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00	0.000	114.00	1" Ice	5.75	4.25	0.06	
			0.00			No Ice	6.18	5.01	0.10	
			1.00			1/2"	6.61	5.71	0.16	
LGP21401	A	From Leg	4.00	0.000	114.00	1" Ice	1.10	0.21	0.01	
			0.00			No Ice	1.24	0.27	0.02	
			1.00			1/2"	1.38	0.35	0.03	
LGP21401	B	From Leg	4.00	0.000	114.00	1" Ice	1.10	0.21	0.01	
			0.00			No Ice	1.24	0.27	0.02	
			1.00			1/2"	1.38	0.35	0.03	
LGP21401	C	From Leg	4.00	0.000	114.00	1" Ice	1.10	0.21	0.01	
			0.00			No Ice	1.24	0.27	0.02	
			1.00			1/2"	1.38	0.35	0.03	
DC6-48-60-18-8F	B	From Leg	4.00	0.000	114.00	1" Ice	0.79	0.79	0.02	
			0.00			No Ice	1.27	1.27	0.04	
			0.00			1/2"	1.45	1.45	0.05	
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00	0.000	114.00	1" Ice	13.21	9.58	0.10	
			0.00			No Ice	13.90	11.05	0.20	
			1.00			1/2"	14.59	12.50	0.30	
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00	0.000	114.00	1" Ice	13.21	9.58	0.10	
			0.00			No Ice	13.90	11.05	0.20	
			1.00			1/2"	14.59	12.50	0.30	
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00	0.000	114.00	1" Ice	13.21	9.58	0.10	
			0.00			No Ice	13.90	11.05	0.20	
			1.00			1/2"	14.59	12.50	0.30	
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.00	0.000	114.00	1" Ice	13.54	10.96	0.11	
			0.00			No Ice	14.24	12.49	0.22	
			1.00			1/2"	14.95	14.04	0.33	
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00	0.000	114.00	1" Ice	13.54	10.96	0.11	
			0.00			No Ice	14.24	12.49	0.22	
			1.00			1/2"	14.95	14.04	0.33	
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.00	0.000	114.00	1" Ice	13.54	10.96	0.11	
			0.00			No Ice	14.24	12.49	0.22	
			1.00			1/2"	14.95	14.04	0.33	
(2) 7020.00	A	From Leg	4.00	0.000	114.00	1" Ice	0.10	0.17	0.00	
			0.00			No Ice	0.15	0.24	0.01	
			1.00			1/2"	0.20	0.31	0.01	
(2) 7020.00	B	From Leg	4.00	0.000	114.00	1" Ice	0.10	0.17	0.00	
			0.00			No Ice	0.15	0.24	0.01	
			1.00			1/2"	0.20	0.31	0.01	
(2) 7020.00	C	From Leg	4.00	0.000	114.00	1" Ice	0.10	0.17	0.00	
			0.00			No Ice	0.15	0.24	0.01	
			1.00			1/2"	0.20	0.31	0.01	
RRUS 32	A	From Leg	4.00	0.000	114.00	1" Ice	2.86	1.78	0.06	
			0.00			No Ice	3.08	1.97	0.08	
			1.00			1/2"	3.32	2.17	0.10	
RRUS 32	B	From Leg	4.00	0.000	114.00	1" Ice	2.86	1.78	0.06	
			0.00			No Ice	3.08	1.97	0.08	
			1.00			1/2"	3.32	2.17	0.10	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
RRUS 32	C	From Leg	4.00 0.00 1.00	0.000	114.00	1" Ice			
						No Ice	2.86	1.78	0.06
						1/2" Ice	3.08	1.97	0.08
DC6-48-60-18-8C	C	From Leg	4.00 0.00 1.00	0.000	114.00	1" Ice			
						No Ice	2.74	2.74	0.03
						1/2" Ice	2.96	2.96	0.05
Platform Mount [LP 303-1]	C	None		0.000	114.00	1" Ice			
						No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						Ice	23.08	23.08	1.71
**									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service

Comb. No.	Description
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	130 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.74	0.23	-0.58
			Max. Mx	20	-10.48	515.78	-0.14
			Max. My	14	-10.48	0.04	-515.88
			Max. Vy	20	-15.73	515.78	-0.14
			Max. Vx	14	15.73	0.04	-515.88
			Max. Torque	10			-0.45
L2	83 - 43.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.95	0.23	-0.58
			Max. Mx	20	-16.69	1197.38	-0.15
			Max. My	14	-16.69	0.05	-1197.48
			Max. Vy	20	-19.45	1197.38	-0.15
			Max. Vx	14	19.45	0.05	-1197.48
			Max. Torque	10			-0.45
L3	43.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.86	0.23	-0.58
			Max. Mx	20	-27.87	2225.60	-0.15
			Max. My	14	-27.87	0.05	-2225.71
			Max. Vy	20	-23.86	2225.60	-0.15
			Max. Vx	14	23.86	0.05	-2225.71
			Max. Torque	10			-0.45

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	45.86	0.00	-4.68
	Max. H _x	21	20.92	23.83	-0.00
	Max. H _z	3	20.92	0.00	23.83
	Max. M _x	2	2225.39	0.00	23.83
	Max. M _z	8	2225.49	-23.83	-0.00
	Max. Torsion	22	0.45	20.63	11.91
	Min. Vert	13	20.92	-11.91	-20.63
	Min. H _x	9	20.92	-23.83	-0.00
	Min. H _z	15	20.92	0.00	-23.83
	Min. M _x	14	-2225.71	0.00	-23.83
	Min. M _z	20	-2225.60	23.83	-0.00
	Min. Torsion	10	-0.45	-20.63	-11.91

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	23.25	0.00	0.00	0.12	0.04	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	27.90	-0.00	-23.83	-2225.39	0.05	-0.31
0.9 Dead+1.6 Wind 0 deg - No Ice	20.92	-0.00	-23.83	-2195.95	0.04	-0.31
1.2 Dead+1.6 Wind 30 deg - No Ice	27.90	11.91	-20.63	-1927.22	-1112.72	-0.10
0.9 Dead+1.6 Wind 30 deg - No Ice	20.92	11.91	-20.63	-1901.74	-1098.00	-0.10
1.2 Dead+1.6 Wind 60 deg - No Ice	27.90	20.63	-11.91	-1112.62	-1927.33	0.13
0.9 Dead+1.6 Wind 60 deg - No Ice	20.92	20.63	-11.91	-1097.92	-1901.82	0.13
1.2 Dead+1.6 Wind 90 deg - No Ice	27.90	23.83	0.00	0.15	-2225.49	0.33
0.9 Dead+1.6 Wind 90 deg - No Ice	20.92	23.83	0.00	0.11	-2196.03	0.33
1.2 Dead+1.6 Wind 120 deg - No Ice	27.90	20.63	11.91	1112.93	-1927.33	0.45
0.9 Dead+1.6 Wind 120 deg - No Ice	20.92	20.63	11.91	1098.15	-1901.82	0.44
1.2 Dead+1.6 Wind 150 deg - No Ice	27.90	11.91	20.63	1927.54	-1112.73	0.44
0.9 Dead+1.6 Wind 150 deg - No Ice	20.92	11.91	20.63	1901.97	-1098.00	0.44
1.2 Dead+1.6 Wind 180 deg - No Ice	27.90	-0.00	23.83	2225.71	0.05	0.31
0.9 Dead+1.6 Wind 180 deg - No Ice	20.92	-0.00	23.83	2196.18	0.04	0.31
1.2 Dead+1.6 Wind 210 deg - No Ice	27.90	-11.91	20.63	1927.54	1112.83	0.10
0.9 Dead+1.6 Wind 210 deg - No Ice	20.92	-11.91	20.63	1901.97	1098.08	0.10
1.2 Dead+1.6 Wind 240 deg - No Ice	27.90	-20.63	11.91	1112.93	1927.44	-0.13
0.9 Dead+1.6 Wind 240 deg - No Ice	20.92	-20.63	11.91	1098.15	1901.90	-0.13
1.2 Dead+1.6 Wind 270 deg - No Ice	27.90	-23.83	0.00	0.15	2225.60	-0.33
0.9 Dead+1.6 Wind 270 deg - No Ice	20.92	-23.83	0.00	0.11	2196.11	-0.33
1.2 Dead+1.6 Wind 300 deg - No Ice	27.90	-20.63	-11.91	-1112.62	1927.43	-0.45
0.9 Dead+1.6 Wind 300 deg - No Ice	20.92	-20.63	-11.91	-1097.93	1901.89	-0.44
1.2 Dead+1.6 Wind 330 deg - No Ice	27.90	-11.91	-20.63	-1927.23	1112.82	-0.44
0.9 Dead+1.6 Wind 330 deg - No Ice	20.92	-11.91	-20.63	-1901.74	1098.07	-0.44
1.2 Dead+1.0 Ice+1.0 Temp	45.86	-0.00	0.00	0.58	0.23	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	45.86	-0.00	-4.68	-469.60	0.26	-0.05
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	45.86	2.34	-4.05	-406.60	-234.87	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	45.86	4.05	-2.34	-234.47	-407.00	0.05
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	45.86	4.68	0.00	0.67	-470.01	0.08
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	45.86	4.05	2.34	235.80	-407.00	0.09
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	45.86	2.34	4.05	407.93	-234.87	0.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	45.86	-0.00	4.68	470.94	0.26	0.05
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	45.86	-2.34	4.05	407.93	235.40	-0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	45.86	-4.05	2.34	235.80	407.53	-0.05
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	45.86	-4.68	0.00	0.67	470.53	-0.08

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	45.86	-4.05	-2.34	-234.47	407.53	-0.09
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	45.86	-2.34	-4.05	-406.60	235.40	-0.08
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	23.25	0.00	-4.35	-403.71	0.05	-0.06
Dead+Wind 30 deg - Service	23.25	2.18	-3.77	-349.61	-201.88	-0.02
Dead+Wind 60 deg - Service	23.25	3.77	-2.18	-201.79	-349.69	0.02
Dead+Wind 90 deg - Service	23.25	4.35	0.00	0.13	-403.80	0.06
Dead+Wind 120 deg - Service	23.25	3.77	2.18	202.05	-349.69	0.08
Dead+Wind 150 deg - Service	23.25	2.18	3.77	349.87	-201.88	0.08
Dead+Wind 180 deg - Service	23.25	0.00	4.35	403.97	0.05	0.06
Dead+Wind 210 deg - Service	23.25	-2.18	3.77	349.87	201.97	0.02
Dead+Wind 240 deg - Service	23.25	-3.77	2.18	202.05	349.78	-0.02
Dead+Wind 270 deg - Service	23.25	-4.35	0.00	0.13	403.89	-0.06
Dead+Wind 300 deg - Service	23.25	-3.77	-2.18	-201.79	349.78	-0.08
Dead+Wind 330 deg - Service	23.25	-2.18	-3.77	-349.61	201.97	-0.08

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-23.25	0.00	0.00	23.25	0.00	0.000%
2	0.00	-27.90	-23.83	0.00	27.90	23.83	0.000%
3	0.00	-20.92	-23.83	0.00	20.92	23.83	0.000%
4	11.91	-27.90	-20.63	-11.91	27.90	20.63	0.000%
5	11.91	-20.92	-20.63	-11.91	20.92	20.63	0.000%
6	20.63	-27.90	-11.91	-20.63	27.90	11.91	0.000%
7	20.63	-20.92	-11.91	-20.63	20.92	11.91	0.000%
8	23.83	-27.90	0.00	-23.83	27.90	-0.00	0.000%
9	23.83	-20.92	0.00	-23.83	20.92	-0.00	0.000%
10	20.63	-27.90	11.91	-20.63	27.90	-11.91	0.000%
11	20.63	-20.92	11.91	-20.63	20.92	-11.91	0.000%
12	11.91	-27.90	20.63	-11.91	27.90	-20.63	0.000%
13	11.91	-20.92	20.63	-11.91	20.92	-20.63	0.000%
14	0.00	-27.90	23.83	0.00	27.90	-23.83	0.000%
15	0.00	-20.92	23.83	0.00	20.92	-23.83	0.000%
16	-11.91	-27.90	20.63	11.91	27.90	-20.63	0.000%
17	-11.91	-20.92	20.63	11.91	20.92	-20.63	0.000%
18	-20.63	-27.90	11.91	20.63	27.90	-11.91	0.000%
19	-20.63	-20.92	11.91	20.63	20.92	-11.91	0.000%
20	-23.83	-27.90	0.00	23.83	27.90	-0.00	0.000%
21	-23.83	-20.92	0.00	23.83	20.92	-0.00	0.000%
22	-20.63	-27.90	-11.91	20.63	27.90	11.91	0.000%
23	-20.63	-20.92	-11.91	20.63	20.92	11.91	0.000%
24	-11.91	-27.90	-20.63	11.91	27.90	20.63	0.000%
25	-11.91	-20.92	-20.63	11.91	20.92	20.63	0.000%
26	0.00	-45.86	0.00	0.00	45.86	-0.00	0.000%
27	0.00	-45.86	-4.68	0.00	45.86	4.68	0.000%
28	2.34	-45.86	-4.05	-2.34	45.86	4.05	0.000%
29	4.05	-45.86	-2.34	-4.05	45.86	2.34	0.000%
30	4.68	-45.86	0.00	-4.68	45.86	-0.00	0.000%
31	4.05	-45.86	2.34	-4.05	45.86	-2.34	0.000%
32	2.34	-45.86	4.05	-2.34	45.86	-4.05	0.000%
33	0.00	-45.86	4.68	0.00	45.86	-4.68	0.000%
34	-2.34	-45.86	4.05	2.34	45.86	-4.05	0.000%
35	-4.05	-45.86	2.34	4.05	45.86	-2.34	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
36	-4.68	-45.86	0.00	4.68	45.86	-0.00	0.000%
37	-4.05	-45.86	-2.34	4.05	45.86	2.34	0.000%
38	-2.34	-45.86	-4.05	2.34	45.86	4.05	0.000%
39	0.00	-23.25	-4.35	0.00	23.25	4.35	0.000%
40	2.18	-23.25	-3.77	-2.18	23.25	3.77	0.000%
41	3.77	-23.25	-2.18	-3.77	23.25	2.18	0.000%
42	4.35	-23.25	0.00	-4.35	23.25	0.00	0.000%
43	3.77	-23.25	2.18	-3.77	23.25	-2.18	0.000%
44	2.18	-23.25	3.77	-2.18	23.25	-3.77	0.000%
45	0.00	-23.25	4.35	0.00	23.25	-4.35	0.000%
46	-2.18	-23.25	3.77	2.18	23.25	-3.77	0.000%
47	-3.77	-23.25	2.18	3.77	23.25	-2.18	0.000%
48	-4.35	-23.25	0.00	4.35	23.25	0.00	0.000%
49	-3.77	-23.25	-2.18	3.77	23.25	2.18	0.000%
50	-2.18	-23.25	-3.77	2.18	23.25	3.77	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00003027
3	Yes	4	0.00000001	0.00066141
4	Yes	6	0.00000001	0.00015593
5	Yes	6	0.00000001	0.00004448
6	Yes	6	0.00000001	0.00015583
7	Yes	6	0.00000001	0.00004445
8	Yes	5	0.00000001	0.00003275
9	Yes	4	0.00000001	0.00067072
10	Yes	6	0.00000001	0.00015804
11	Yes	6	0.00000001	0.00004520
12	Yes	6	0.00000001	0.00015479
13	Yes	6	0.00000001	0.00004408
14	Yes	5	0.00000001	0.00003028
15	Yes	4	0.00000001	0.00066162
16	Yes	6	0.00000001	0.00015679
17	Yes	6	0.00000001	0.00004477
18	Yes	6	0.00000001	0.00015690
19	Yes	6	0.00000001	0.00004480
20	Yes	5	0.00000001	0.00003276
21	Yes	4	0.00000001	0.00067079
22	Yes	6	0.00000001	0.00015472
23	Yes	6	0.00000001	0.00004406
24	Yes	6	0.00000001	0.00015797
25	Yes	6	0.00000001	0.00004518
26	Yes	4	0.00000001	0.00000598
27	Yes	5	0.00000001	0.00044556
28	Yes	5	0.00000001	0.00060170
29	Yes	5	0.00000001	0.00060060
30	Yes	5	0.00000001	0.00044656
31	Yes	5	0.00000001	0.00060830
32	Yes	5	0.00000001	0.00060422
33	Yes	5	0.00000001	0.00044847
34	Yes	5	0.00000001	0.00060773
35	Yes	5	0.00000001	0.00060889
36	Yes	5	0.00000001	0.00044770
37	Yes	5	0.00000001	0.00060131
38	Yes	5	0.00000001	0.00060531
39	Yes	4	0.00000001	0.00007867
40	Yes	4	0.00000001	0.00037800
41	Yes	4	0.00000001	0.00037712
42	Yes	4	0.00000001	0.00007920
43	Yes	4	0.00000001	0.00039697
44	Yes	4	0.00000001	0.00036971
45	Yes	4	0.00000001	0.00007891

46	Yes	4	0.00000001	0.00038614
47	Yes	4	0.00000001	0.00038705
48	Yes	4	0.00000001	0.00007928
49	Yes	4	0.00000001	0.00036866
50	Yes	4	0.00000001	0.00039586

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 83	20.654	45	1.468	0.001
L2	86.25 - 43.25	8.697	46	1.020	0.001
L3	47.5 - 0	2.484	46	0.495	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	Top Hat - 12'	45	20.654	1.468	0.001	30862
116.00	RRUS-11	45	16.516	1.339	0.001	11022
114.00	7770.00 w/ Mount Pipe	45	15.937	1.320	0.001	9644

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 83	113.758	14	8.103	0.007
L2	86.25 - 43.25	47.943	14	5.629	0.003
L3	47.5 - 0	13.697	14	2.732	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	Top Hat - 12'	14	113.758	8.103	0.007	5776
116.00	RRUS-11	14	90.985	7.389	0.006	2060
114.00	7770.00 w/ Mount Pipe	14	87.800	7.284	0.005	1802

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
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Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	130 - 83 (1)	TP26.06x16x0.25	47.00	0.00	0.0	20.217	-10.48	1418.92	0.007
L2	83 - 43.25 (2)	TP34.068x24.864x0.313	43.00	0.00	0.0	33.051	-16.69	2279.24	0.007
L3	43.25 - 0 (3)	TP42.7x32.533x0.375	47.50	0.00	0.0	51.107	-27.87	3420.09	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio M _{ux} / φM _{nx}	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio M _{uy} / φM _{ny}
L1	130 - 83 (1)	TP26.06x16x0.25	515.89	724.52	0.712	0.00	724.52	0.000
L2	83 - 43.25 (2)	TP34.068x24.864x0.313	1197.48	1522.77	0.786	0.00	1522.77	0.000
L3	43.25 - 0 (3)	TP42.7x32.533x0.375	2225.72	2946.31	0.755	0.00	2946.31	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	φV _n K	Ratio V _u / φV _n	Actual T _u kip-ft	φT _n kip-ft	Ratio T _u / φT _n
L1	130 - 83 (1)	TP26.06x16x0.25	15.73	709.46	0.022	0.10	1469.11	0.000
L2	83 - 43.25 (2)	TP34.068x24.864x0.313	19.45	1139.62	0.017	0.10	3087.69	0.000
L3	43.25 - 0 (3)	TP42.7x32.533x0.375	23.86	1710.04	0.014	0.10	5974.20	0.000

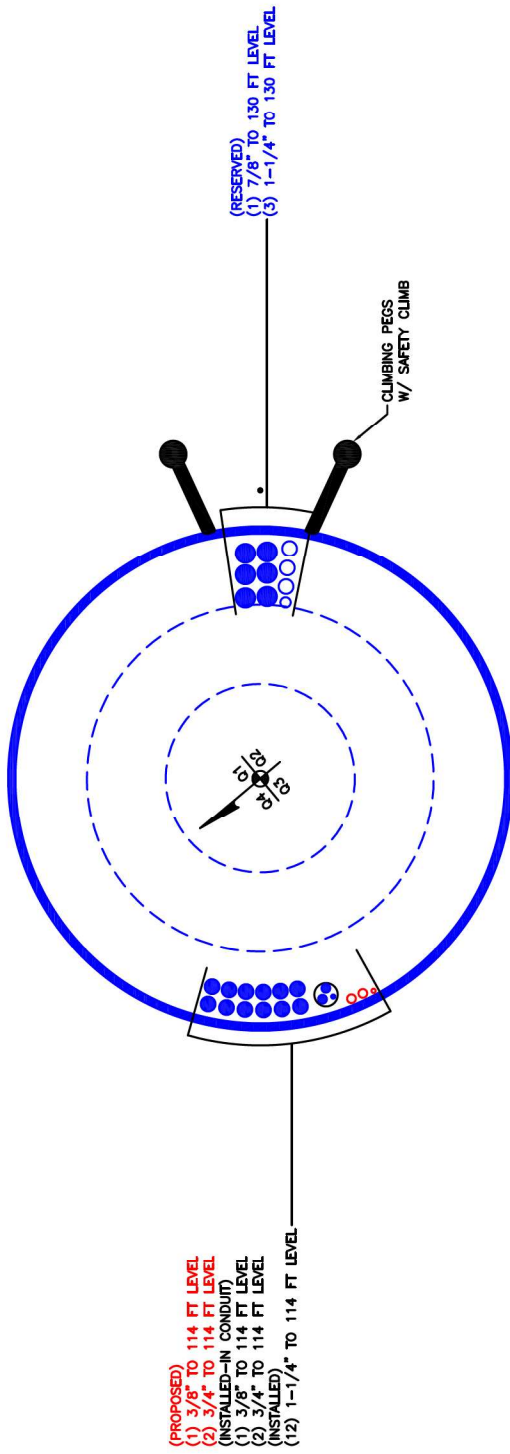
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P _u	Ratio M _{ux}	Ratio M _{uy}	Ratio V _u	Ratio T _u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		φP _n	φM _{nx}	φM _{ny}	φV _n	φT _n			
L1	130 - 83 (1)	0.007	0.712	0.000	0.022	0.000	0.720	1.000	4.8.2
L2	83 - 43.25 (2)	0.007	0.786	0.000	0.017	0.000	0.794	1.000	4.8.2
L3	43.25 - 0 (3)	0.008	0.755	0.000	0.014	0.000	0.764	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail	
L1	130 - 83	Pole	TP26.06x16x0.25	1	-10.48	1418.92	72.0	Pass	
L2	83 - 43.25	Pole	TP34.068x24.864x0.313	2	-16.69	2279.24	79.4	Pass	
L3	43.25 - 0	Pole	TP42.7x32.533x0.375	3	-27.87	3420.09	76.4	Pass	
							Summary		
							Pole (L2)	79.4	Pass
							RATING =	79.4	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F / G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
 - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
 - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: 876359		
Site Name: NORWICH		
App #: 421276 Rev. 1		
Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, F_y :	75	ksi
Strength, F_u :	100	ksi
Bolt Circle:	50	in
Anchor Spacing:	6	in

Plate Data

W=Side:	48	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	42.7	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, M_u :	2226	ft-kips
Factored Axial, P_u :	28	kips
Factored Shear, V_u :	24	kips

Anchor Rod Results

TIA G --> Max Rod ($C_u + V_u/\eta$): 184.4 Kips
 Axial Design Strength, $\Phi * F_u * A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 70.9% **Pass**

Base Plate Results

Base Plate Stress: 29.7 ksi
 PL Design Bending Strength, $\Phi * F_y$: 45.0 ksi
 Base Plate Stress Ratio: 66.1% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	25.18
Max PL Length:	25.18

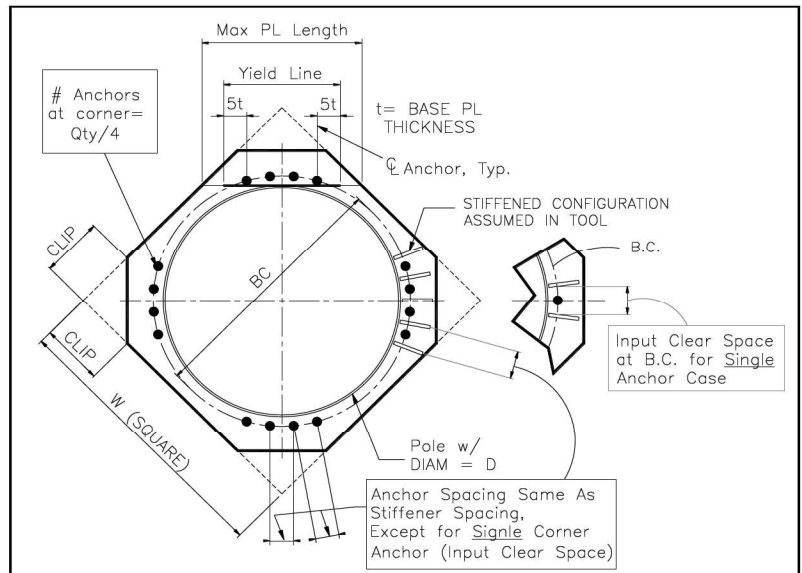
N/A - Unstiffened

Stiffener Results

Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

Pole Punching Shear Check: N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

FOUNDATION REACTION COMPARISON

BU# 876359
WO# 1518520

REACTIONS	DESIGN REACTIONS	*MODIFIED DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
MOMENT (kip-ft)	2260.0	3051.0	2226.0	73.0%
SHEAR (kips)	26.0	35.1	24.0	68.4%

Design loads from: CClites Doc #1446983

* Design loads were multiplied by 1.35 for comparison as allowed by TIA-222-G, Section 15.5.

CCISeismic - Design Category

Per 2012/2015 IBC

Site BU: 876359
 Work Order: 1518520
 Application: 421276 Rev. 1



	Degrees	Minutes	Seconds	
Site Latitude =	41	39	31.46	41.6587 degrees
Site Longitude =	-71	55	29.75	-71.9249 degrees
Ground Supported Structure =	Yes			
Structure Class =	II			(Table 2-1)
Site Class =	D - Stiff Soil			(Table 2-11)
Spectral response acceleration short periods, S_s =	0.170			USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.061			
Importance Factor, I =	1.0			(Table 2-3)
Acceleration-based site coefficient, F_a =	1.6			(Table 2-12)
Velocity-based site coefficient, F_v =	2.4			(Table 2-13)
Design spectral response acceleration short period, S_{DS} =	0.181			(2.7.6)
Design spectral response acceleration 1 s period, S_{D1} =	0.098			(2.7.6)
Seismic Design Category - Short Period Response =	B			ASCE 7-05 Table 11.6-1
Seismic Design Category - 1s Period Response =	B			ASCE 7-05 Table 11.6-2
Worst Case Seismic Design Category =	B			ASCE 7-05 Tables 11.6-1 and 6-2

954 NORWICH RD

Location 954 NORWICH RD

Mblu 010/ 013B/ 0015/ /

Acct# 010-013B-0015

Owner CAYA ENTERPRISES LLC

Assessment \$239,570

Appraisal \$342,250

PID 893

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$123,500	\$218,750	\$342,250
Assessment			
Valuation Year	Improvements	Land	Total
2017	\$86,440	\$153,130	\$239,570

Owner of Record

Owner CAYA ENTERPRISES LLC

Sale Price \$300,000

Co-Owner

Certificate

Address 151 SOUTH MAIN ST
BROOKLYN, CT 06234

Book & Page 0483/0730

Sale Date 12/29/2014

Instrument 08

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
CAYA ENTERPRISES LLC	\$300,000		0483/0730	08	12/29/2014
CHUDY CARL L	\$0		0409/0144	29	04/02/2009
CHUDY GLADYS L	\$0		0397/0022	10	05/21/2008
CHUDY STANLEY V + GLADYS L	\$0		0189/0716		06/27/1989

Building Information

Building 1 : Section 1

Year Built: 1973
Living Area: 5,625
Replacement Cost: \$165,839
Building Percent Good: 73
Replacement Cost Less Depreciation: \$121,060

Building Photo

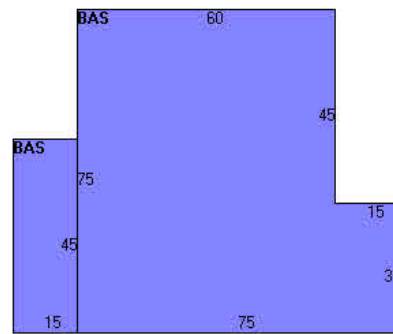
Building Attributes

Field	Description
STYLE	Light Indust
MODEL	Comm/Ind
Grade	D
Stories:	1
Occupancy	1
Exterior Wall 1	Pre-finish Metl
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	AUTO REPR
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3030
Heat/AC	HEAT ONLY
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	18
% Comn Wall	



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Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	5,625	5,625
		5,625	5,625

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
OD1	Overhead Dr-Wood/Mtl	2 UNITS	\$520	1
OD1	Overhead Dr-Wood/Mtl	2 UNITS	\$720	1

Land

Land Use

Use Code 3320
Description AUTO REPR
Zone C
Neighborhood 1010
Alt Land Appr No

Land Line Valuation

Size (Acres) 4.5
Frontage
Depth
Assessed Value \$153,130
Appraised Value \$218,750

Category

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FN1	Fence 4' Chain			600 L.F.	\$1,200	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$123,500	\$218,750	\$342,250
2016	\$83,800	\$218,750	\$302,550
2015	\$83,800	\$218,750	\$302,550

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$86,440	\$153,130	\$239,570
2016	\$58,660	\$153,130	\$211,790
2015	\$58,660	\$153,130	\$211,790

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Town Hall
8 Community Avenue
Plainfield, CT 06374

Telephone (860) 564-4071
Fax (860) 564-0612

THE PLAINFIELD TOWN HALL

PLAINFIELD • CENTRAL VILLAGE • MOOSUP • WAUREGAN

PLANNING AND ZONING COMMISSION

June 14, 1999

Sprint Spectrum L.P.
C/O Thomas J. Regan
Brown, Rudnick, Freed & Gesmer
185 Asylum St., 38th Fl.
Hartford, CT 06103-3402

Dear Applicant:

At its meeting on Tuesday, June 8, 1999, the Planning & Zoning Commission approved your request SP-99-08 for a Special Permit for property located at 954 Norwich Rd., Plainfield. Map 10, Block 133, Lot 15.


The Conditions are:

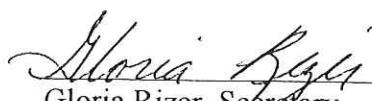

- A Zoning Permit, Building Permit and NDDH approval will need to be obtained prior to construction.
- Please file the enclosed notice on the Land Records of the town.

A copy of the Legal Notice is enclosed for your records and will appear in the Norwich Bulletin on Wednesday, June 16, 1999.

Yours Truly,

PLANNING & ZONING COMMISSION


Dennis Jolley, Chairman


Gloria Rizer, Secretary 

CC: Stanley Chuddy, Owner

TOWN OF PLAINFIELD
SPECIAL PERMIT RECORD

In accordance with Section 8-3d of the Connecticut General Statutes and the Plainfield Zoning Regulations, this Record must be filed in the Town Land Records. The Town Clerk shall index this record in the Grantor Index under the name of the owner of Record of such property at the time the Special Permit is granted. The Special Permit is not effective until the Record is filed.

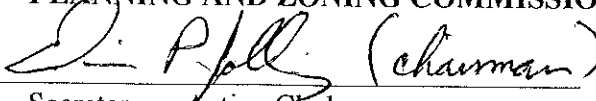
1. Grantor(s): Chuddy Stanley
(Last) (First) (Middle)
2. Assessor's Information 10 133 15
(Map) (Block) (Parcel)
3. Location of Property: 954 Norwich Rd., Plainfield
4. Zoning District in which property is located: C-1
5. Description of Project/Activity:
Construction of 130 ft. telecommunications tower and related equipment for the provision of wireless telecommunications service.
6. Special Permit granted under the following Sections of the Plainfield Zoning Regulations: Section 6.35 Wireless Telecommunication Facilities
7. Date Special Permit Granted: June 8, 1999
8. Approval is granted subject to the following conditions:
None
9. Reasons for granting Special Permit: None Stated.


The Planning and Zoning Commission finds that the proposed use or development satisfies all criteria identified within the Planning Zoning Regulations for the approval of a Special Permit.

I certify that this is a true Record of the Special Permit granted for the subject Property.

Dated at Plainfield, CT
this 15th day of June 1999

PLANNING AND ZONING COMMISSION


Secretary or Acting Clerk




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

0024

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SHIP TO: CATHY TENDRICH
 TOWN OF PLAINFIELD
 8 COMMUNITY AVE
 PLAINFIELD CT 06374-1238

USPS TRACKING #



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Electronic Rate Approved #038555749



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Print Date:	03/30/2018	Insurance Fee	\$0.00
Ship Date:	03/31/2018	Total	\$6.70
Expected Delivery Date:	04/02/2018		
Insured Value:	\$50.00		

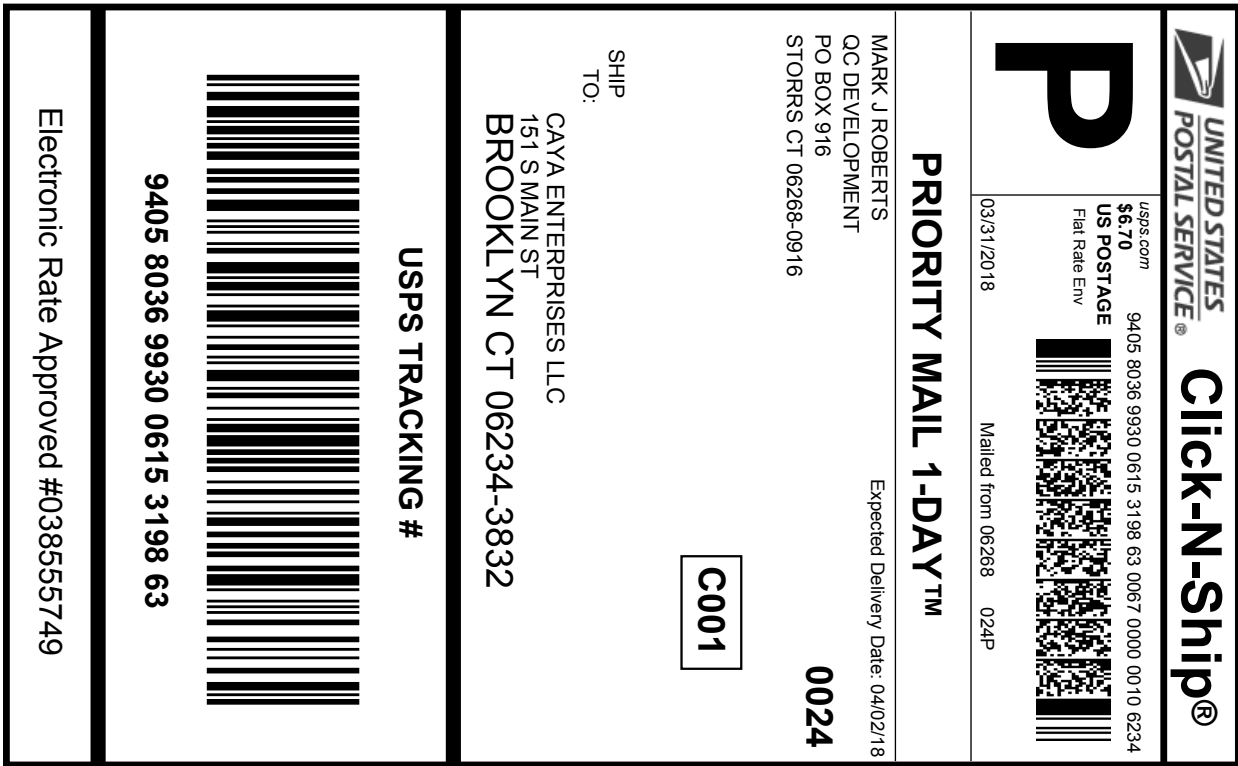
From: MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

To: CATHY TENDRICH
 TOWN OF PLAINFIELD
 8 COMMUNITY AVE
 PLAINFIELD CT 06374-1238

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9405 8036 9930 0615 3198 63

Trans. #:	431300899	Priority Mail® Postage:	\$6.70
Print Date:	03/30/2018	Insurance Fee	\$0.00
Ship Date:	03/31/2018	Total	\$6.70
Expected Delivery Date:	04/02/2018		
Insured Value:	\$50.00		

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

To: CAYA ENTERPRISES LLC
 151 S MAIN ST
 BROOKLYN CT 06234-3832

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