QC Development
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Storrs, CT 06268
860-670-9068
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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) – CT5189
88 Main Street, Monroe, CT 06468
N 41-17-59
W 73-14-58

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 175-foot level of the existing 195-foot Monopole at 88 Main Street, Monroe, CT. The tower is owned by Crown Castle. The property is owned by the Stepney Volunteer Fire Co. AT&T now intends to install (3) new Quintel QS66512-2 antennas. AT&T also intends to swap (3) Ericsson RRUS-12 / A2 for (3) RRUS-32 B2 and add (3) new RRUS-32 remote radio units (RRU). The new antennas and RRUs will also be installed at the 175-foot level of the tower.

This facility was approved by the Monroe Planning & Zoning Commission on January 11, 2001. The approval included a tower height limitation of 195 feet, but no others that would relate to the scope of this modification. Since no changes are proposed to the overall tower height, 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 Ken Kellogg, First Selectman of the Town of Monroe, and the Monroe Planning & Zoning Office, 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.

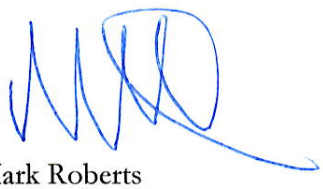
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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: Ken Kellogg - as Elected Official
William Agresta, AICP – Planning & Zoning Administrator
Stepney Volunteer Fire Co - 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*							2.58%
AT&T UMTS	6	475	175	0.0359	850	0.5667	0.63%
AT&T UMTS	2	475	175	0.0120	1900	1.0000	0.12%
AT&T LTE	4	75	175	0.0038	700	0.4667	0.08%
AT&T LTE	4	75	175	0.0038	1900	1.0000	0.04%
Site Total							3.45%

*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*							2.58%
AT&T UMTS	1	248	175	0.0031	850	0.5667	0.06%
AT&T LTE	1	1476	175	0.0186	700	0.4667	0.40%
AT&T LTE	2	4842	175	0.1219	1900	1.0000	1.22%
AT&T LTE	1	1285	175	0.0162	2300	1.0000	0.16%
Site Total							4.41%

*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:	TOWER – INSTALL (3) QUINTEL 12–PORT ANTENNAS. REPLACE (3) 1900 RRUS–12 & A2 UNITS WITH (3) RRUS–32 B2. INSTALL (3) WCS RRUS–32 & (1) SQUID. INSTALL (1) FIBER & (2) DC CABLES. EQUIPMENT AREA – SWAP BB FOR RBS 5216. REUSE EXISTING XMU.
SITE ADDRESS:	88 MAIN STREET MONROE, CT 06468
LATITUDE:	41° 18' 05.95" N (NAD 83)*
LONGITUDE:	73° 15' 02.81" W (NAD 83)* *PER PREVIOUS PLANS
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
NAME OF APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE SUITE 3A ROCKY HILL, CT 06067
TOWER OWNER: TOWER NUMBER:	CROWN CASTLE 826053

at&t Mobility

SITE NAME: MONROE SOUTH
SITE NUMBER: CT5189 3C / RETROFIT
PACE NUMBER: MRCTB027174 (RETROFIT) / MRCTB027283 (3C)

DRAWING INDEX

		REV
T01	TITLE SHEET	0
G01	GENERAL NOTES	0
C01	PROPOSED SITE & EQUIPMENT PLAN	0
C02	PROPOSED ELEVATION & CONSTRUCTION DETAILS	0
C03	EQUIPMENT PLUMBING DIAGRAM	0
E01	GROUNDING NOTES & DETAILS	0

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

STRUCTURAL NOTE:

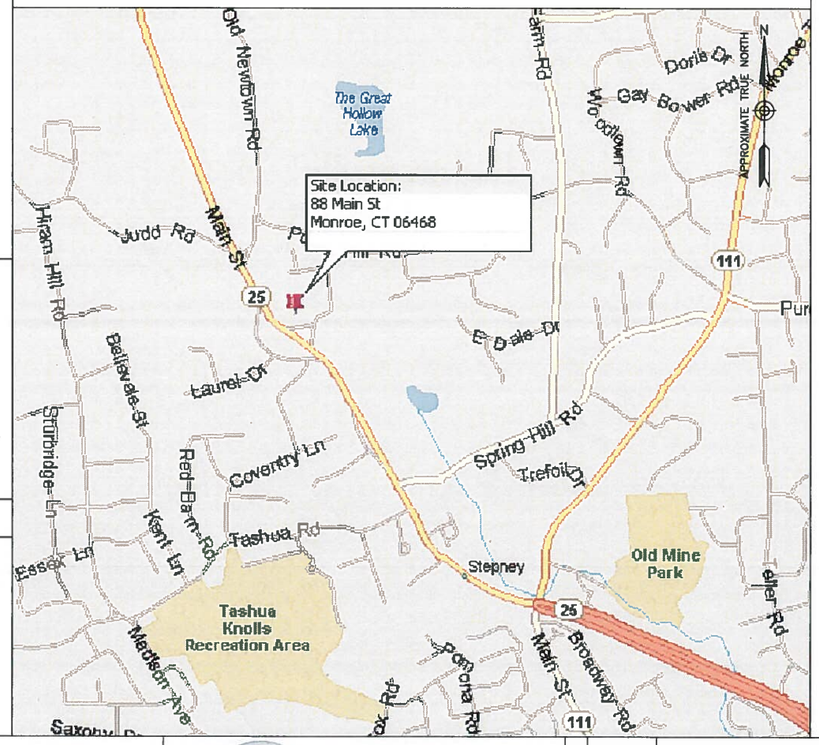
1. AS REQUIRED UNDER TIA/EIA 222H – STANDARD, SAI COMMUNICATIONS SHALL PROVIDE A STRUCTURAL ANALYSIS OF THE TOWER PREPARED BY A LICENSED CONNECTICUT STRUCTURAL ENGINEER CERTIFYING THAT, THE EXISTING TOWER AND ANY REQUIRED IMPROVEMENTS AND REINFORCEMENTS HAVE SUFFICIENT CAPACITY TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, SUPPORTS AND APPURTENANCES AND COMPLIES WITH THE CURRENT CONNECTICUT STATE BUILDING CODE AND EIA/TIA CRITERIA. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

CONTACT INFORMATION

CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	BENJAMIN REVETTE, P.E.	DEWBERRY	(617) 531–0823
SAC:	TIM BURKS	SAI COMMUNICATIONS	(860) 989–0001

VICINITY MAP

DIRECTIONS: FROM FRAMINGHAM, MA: TAKE I–90. TAKE EXISTING 9 TO I–84. TAKE EXISTING 57 & TURN LEFT ON TO ROUTE 15. ROUTE 15 TURNS INTO US–5. AT EXIT 86 TAKE RAMP ONTO I–91. TAKE EXIT 17 AND TURN RIGHT ONTO RAMP. TURN ONTO ROUTE 15. TAKE EXIT 49 ONTO ROUTE 25. TURN RIGHT ONTO MILL STREET. TURN LEFT ONTO PARKING LOT. SITE IS ON THE RIGHT.



APPLICABLE BUILDING CODES AND STANDARDS

CONTRACTOR'S WORK SHALL COMPLY WITH PROJECT STANDARD NOTES, SYMBOLS AND DETAILS (SEE DRAWING INDEX FOR STANDARD NOTES AND DETAILS INCLUDED WITH TYPICAL DRAWING PACKAGE). CONTRACTOR 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:
2016 CONNECTICUT STATE BUILDING CODE (2012 INTERNATIONAL BUILDING CODE)

ELECTRICAL CODE:
NATIONAL ELECTRICAL CODE (NEC)

CONTRACTOR'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–H, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR–1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM – DC POWER SYSTEMS – TELECOM, ENVIRONMENTAL PROTECTION

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.

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

MONROE SOUTH
SITE NO. CT5189 3C/RETROFIT

88 MAIN STREET
MONROE, CT 06468

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/15/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/12/18	FOR REVIEW	KB	DAS	BBR

SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28971
LICENSED
PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

TITLE SHEET

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083720	T01	0

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – SAI
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF PROJECT MANAGEMENT.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
5. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
9. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
10. THE CONTRACTOR SHALL PROTECT EXISTING & PROPOSED IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. 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.
14. CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
15. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
16. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
17. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

SITE WORK GENERAL NOTES:

1. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING 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 CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO:
   A) FALL PROTECTION
   B) CONFINED SPACE
   C) ELECTRICAL SAFETY
   D) TRENCHING & EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING 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 CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE AT&T SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE SOIL COMPACTION NOTES.
11. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE (UNO). SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
   FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION & TOPSOIL EXPOSE UNDISTURBED NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
3. AS AN ALTERNATIVE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.
4. COMPACTED SUBBASE SHALL BE UNIFORM & LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING 1" SIEVE.
5. AS AN ALTERNATIVE TO ITEMS 2 AND 3 PROOFROLL THE SUBGRADE SOILS WITH 5 PASSES OF A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). ANY SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL, AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

1. HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
   CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, AT&T ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
2. COORDINATION OF WORK:
   CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT.
3. CABLE LADDER RACK:
   CONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
3. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
4. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
5. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
6. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
7. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
8. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
9. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
10. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
11. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
12. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL.) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
13. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
14. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
15. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
16. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
17. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
18. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
19. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
20. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
21. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
22. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
23. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
24. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
25. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
26. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
27. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
28. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
29. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
30. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
31. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
32. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

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A	02/12/18	FOR REVIEW	KB	DAS	BBR

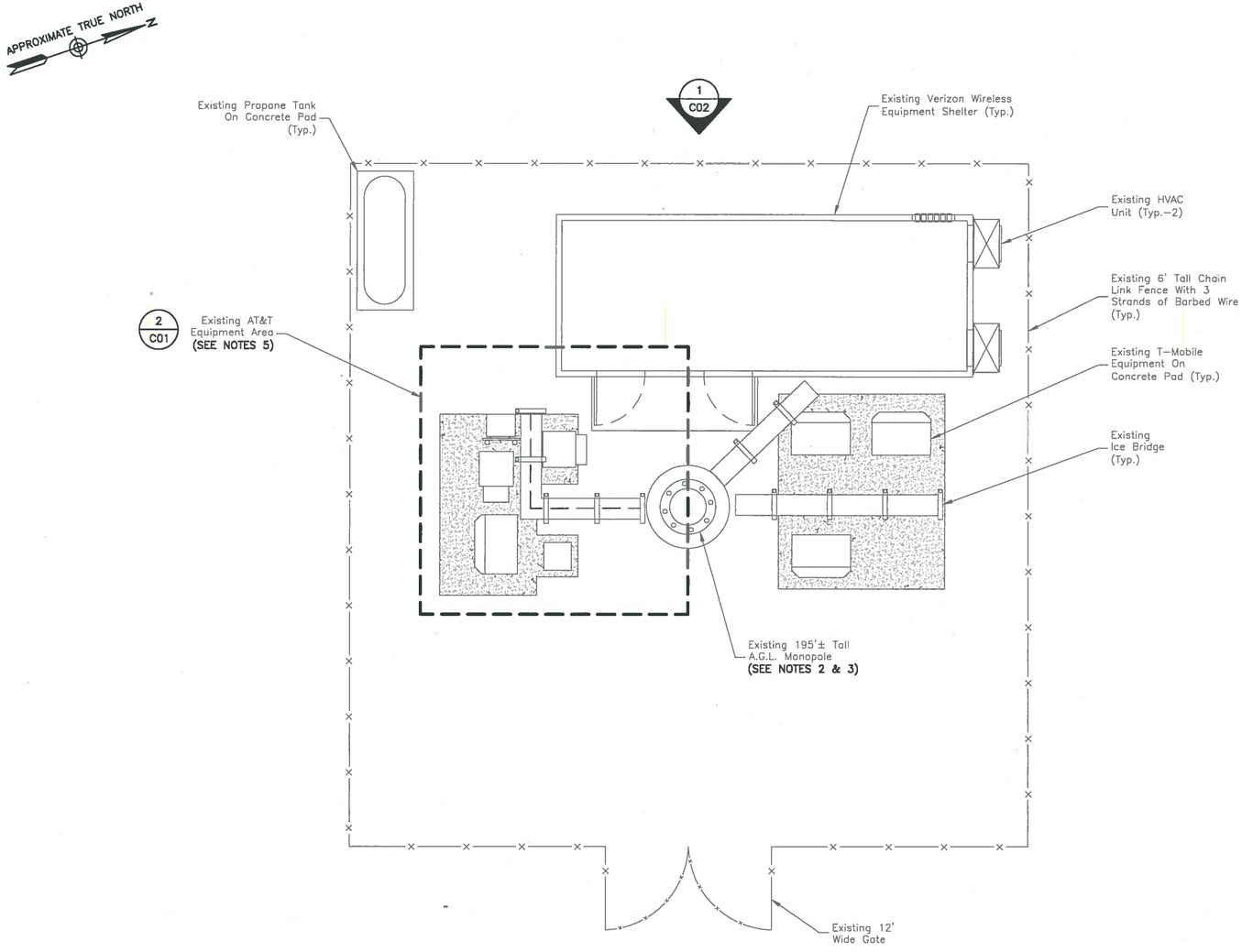
SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28017
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

GENERAL NOTES

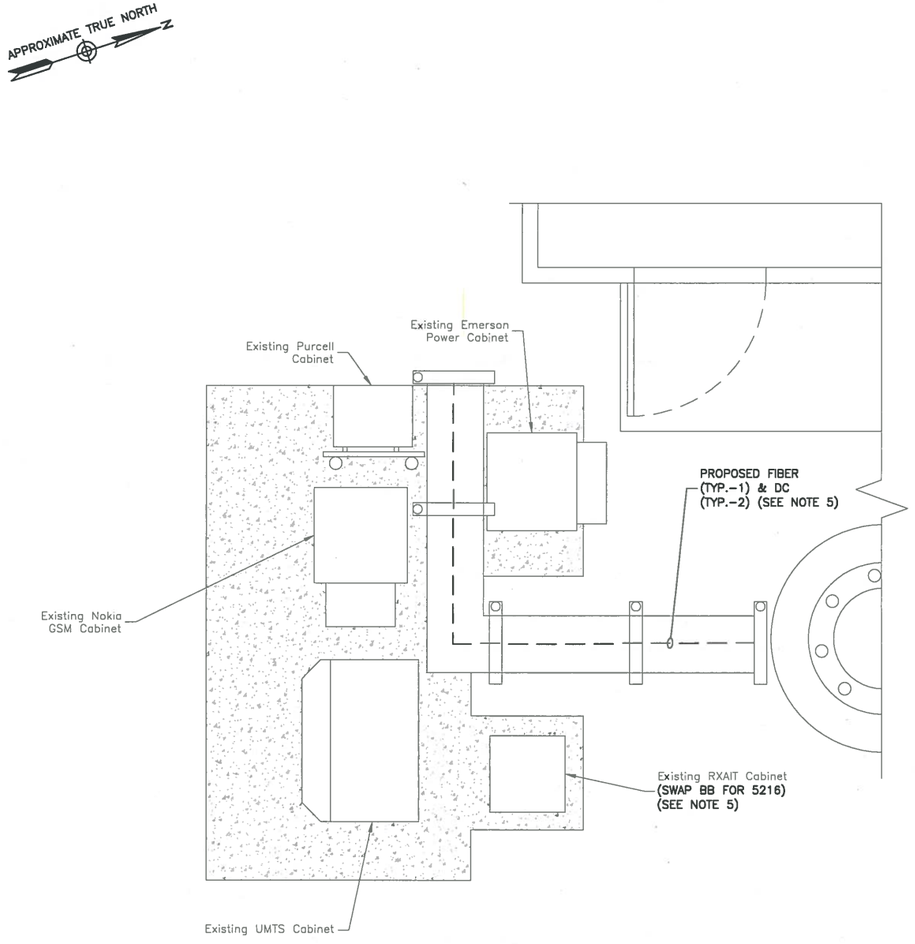
DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083720	G01	0



PROPOSED SITE PLAN 1

SCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"

0' 5' 10'



PROPOSED EQUIPMENT PLAN 2

SCALE: 1"=4' FOR 11"x17"
1"=2' FOR 22"x34"

2' 4'

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE MOUNT ANALYSIS BY HUDSON DESIGN GROUP DATED 02–23–18.
3. DEWBERRY WAS NOT PROVIDED WITH OR CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER. TOWER RELATED IMPROVEMENTS ARE NOT TO BE INSTALLED WITHOUT A PASSING STRUCTURAL ANALYSIS. SEE STRUCTURAL NOTE ON SHEET T01.
4. NOT ALL INFORMATION SHOWN FOR CLARITY.
5. EQUIPMENT MODIFICATION SCOPE:

   TOWER – INSTALL (3) QUINTEL 12–PORT ANTENNAS. REPLACE (3) 1900 RRUS–12 & A2 UNITS WITH (3) RRUS–32 B2. INSTALL (3) WCS RRUS–32 & (1) SQUID. INSTALL (1) FIBER & (2) DC CABLES.

   BOTTOM – SWAP BB FOR RBS 5216. REUSE EXISTING XMU.

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STATE OF CONNECTICUT
BENJAMIN B. REVETTE
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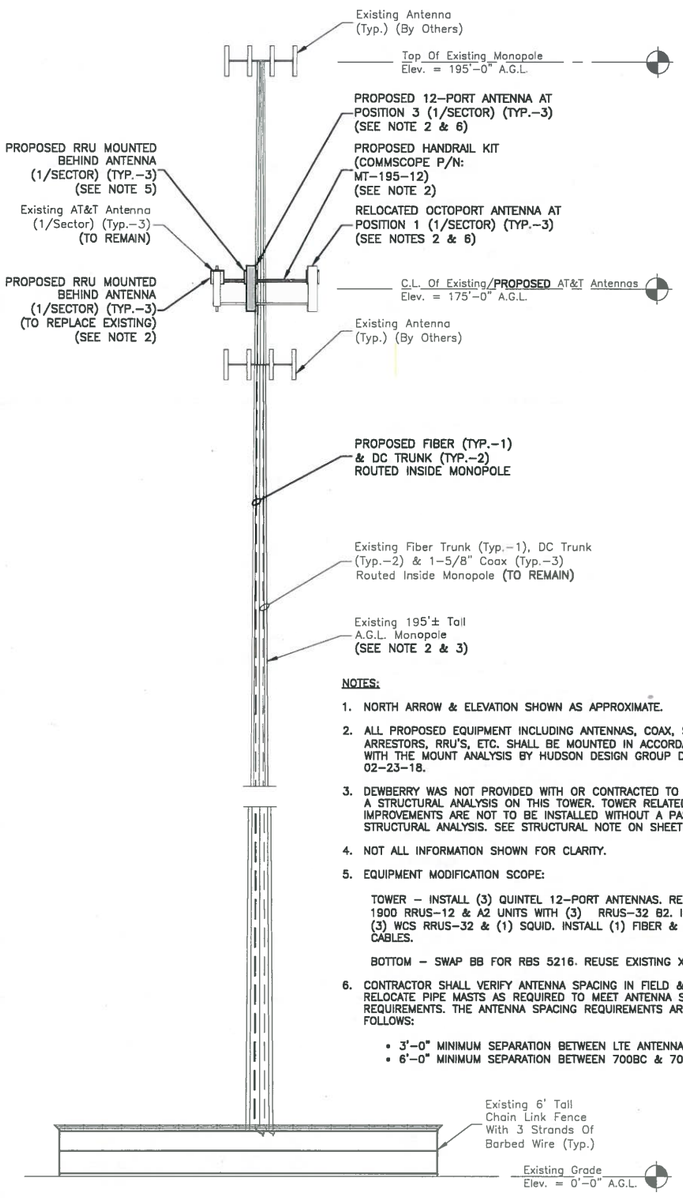
ROCKY HILL, CT 06067

PROPOSED SITE & EQUIPMENT PLAN

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083720	C01	0



NOTES:

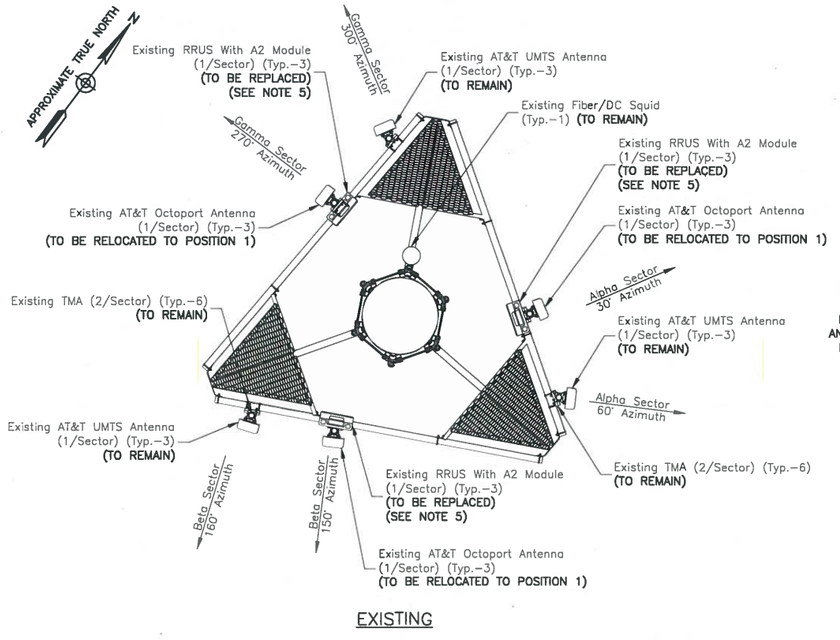
1. NORTH ARROW & ELEVATION SHOWN AS APPROXIMATE.
2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE MOUNT ANALYSIS BY HUDSON DESIGN GROUP DATED 02-23-18.
3. DEWBERRY WAS NOT PROVIDED WITH OR CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER. TOWER RELATED IMPROVEMENTS ARE NOT TO BE INSTALLED WITHOUT A PASSING STRUCTURAL ANALYSIS. SEE STRUCTURAL NOTE ON SHEET T01.
4. NOT ALL INFORMATION SHOWN FOR CLARITY.
5. EQUIPMENT MODIFICATION SCOPE:

   TOWER - INSTALL (3) QUINTEL 12-PORT ANTENNAS. REPLACE (3) 1900 RRUS-12 & A2 UNITS WITH (3) RRUS-32 B2. INSTALL (3) WCS RRUS-32 & (1) SQUID. INSTALL (1) FIBER & (2) DC CABLES.

   BOTTOM - SWAP BB FOR RBS 5216. REUSE EXISTING XMU.
6. CONTRACTOR SHALL VERIFY ANTENNA SPACING IN FIELD & RELOCATE PIPE MASTS AS REQUIRED TO MEET ANTENNA SPACING REQUIREMENTS. THE ANTENNA SPACING REQUIREMENTS ARE AS FOLLOWS:
   - 3'-0" MINIMUM SEPARATION BETWEEN LTE ANTENNAS
   - 6'-0" MINIMUM SEPARATION BETWEEN 700BC & 700DE

PROPOSED ELEVATION 1

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"
0' 10' 20'



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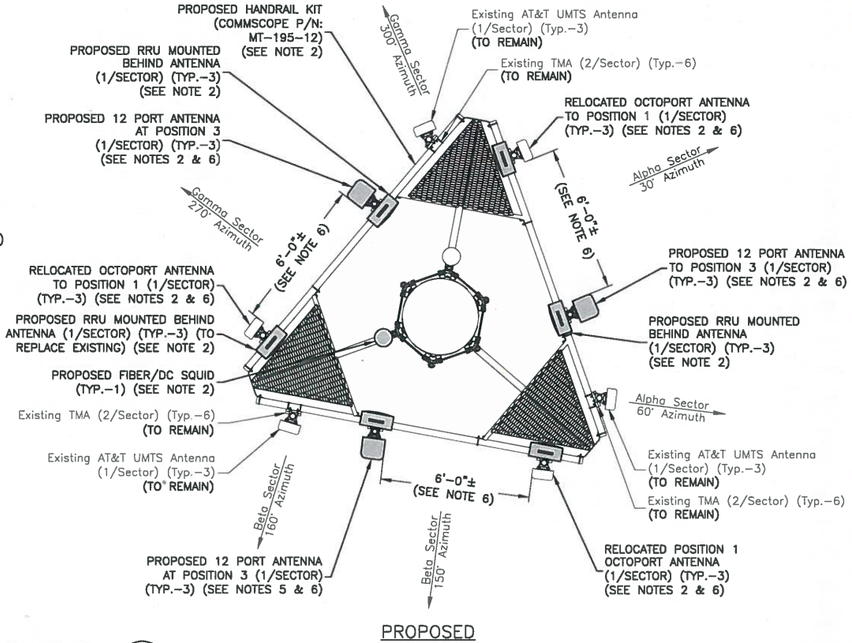

PROPOSED

ANTENNA ORIENTATION PLAN 2

SCALE: N.T.S.

FINAL EQUIPMENT CONFIGURATION

SECTOR	BAND	ANTENNA	SIZE (INCHES) (LxWxD)	RAD. CENTER	AZIMUTH	TMA	RRU	SIZE (INCHES) (LxWxD)	COAX JUMPERS	FIBER JUMPERS
ALPHA	LTE BC 700/WCS	(E) OPA-65R-LCUU-H6	72.0 x 14.8 x 7.4	175'±	30°	-	(E) RRUS-11 700 (P) RRUS-32 WCS	19.7 x 17.0 x 7.2 27.2 x 12.1 x 7.0	-	(E) 2
	-	-	-	-	-	-	-	-	-	-
	LTE 1900	(P) QS66512-2	72.0 x 12.0 x 9.6	175'±	30°	-	(P) RRUS-32 B2 1900	27.2 x 12.1 x 7.0	-	(P) 1
	UMTS 850	(E) 7770	55.0 x 11.0 x 5.0	175'±	60°	(E) LGP 21401 (E) LGP 21401	-	-	(E) 2	-
BETA	LTE BC 700/WCS	(E) OPA-65R-LCUU-H6	72.0 x 14.8 x 7.4	175'±	150°	-	(E) RRUS-11 700 (P) RRUS-32 WCS	19.7 x 17.0 x 7.2 27.2 x 12.1 x 7.0	-	(E) 2
	-	-	-	-	-	-	-	-	-	-
	LTE 1900	(P) QS66512-2	72.0 x 12.0 x 9.6	175'±	150°	-	(P) RRUS-32 B2 1900	27.2 x 12.1 x 7.0	-	(P) 1
	UMTS 850	(E) 7770	55.0 x 11.0 x 5.0	175'±	160°	(E) LGP 21401 (E) LGP 21401	-	-	(E) 2	-
GAMMA	LTE BC 700/WCS	(E) OPA-65R-LCUU-H6	72.0 x 14.8 x 7.4	175'±	270°	-	(E) RRUS-11 700 (P) RRUS-32 WCS	19.7 x 17.0 x 7.2 27.2 x 12.1 x 7.0	-	(E) 2
	-	-	-	-	-	-	-	-	-	-
	LTE 1900	(P) QS66512-2	72.0 x 12.0 x 9.6	175'±	270°	-	(P) RRUS-32 B2 1900	27.2 x 12.1 x 7.0	-	(P) 1
	UMTS 850	(E) 7770	55.0 x 11.0 x 5.0	175'±	300°	(E) LGP 21401 (E) LGP 21401	-	-	(E) 2	-

FINAL EQUIPMENT CONFIGURATION 3

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STATE OF CONNECTICUT
BENJAMIN B. REVETTE
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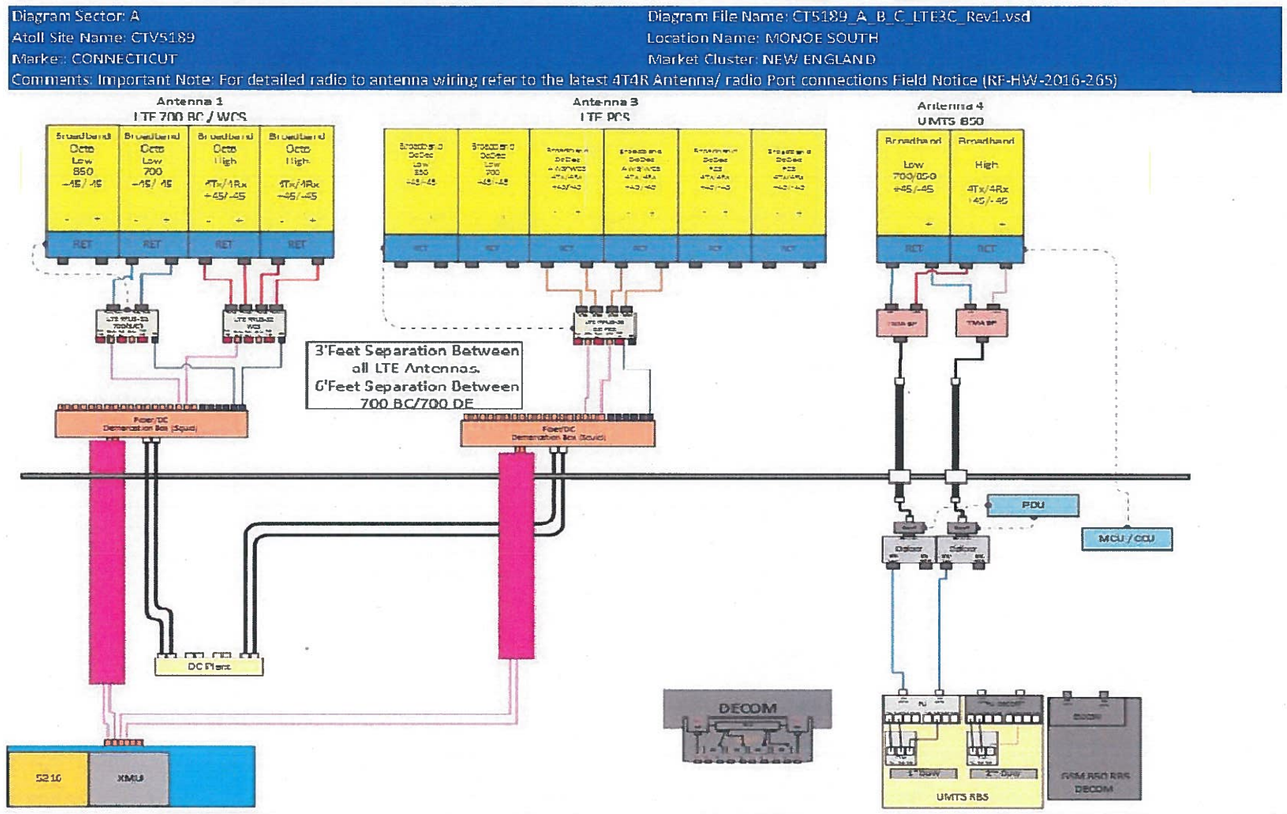
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

PROPOSED ELEVATION & CONSTRUCTION DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083720	C02	0

DIAGRAM A



EQUIPMENT PLUMBING DIAGRAM (1)
SCALE: N.T.S.

NOTES:

1. EQUIPMENT PLUMBING DIAGRAM PER RFDS VERSION 4 DATED 12/07/17.
2. CONTRACTOR TO VERIFY FINAL EQUIPMENT CONFIGURATION & SEPARATIONS WITH AT&T PRIOR TO CONSTRUCTION.

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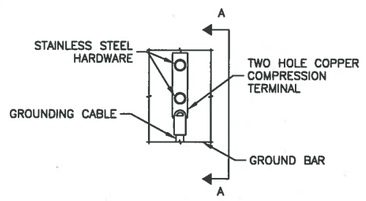
EQUIPMENT PLUMBING DIAGRAM

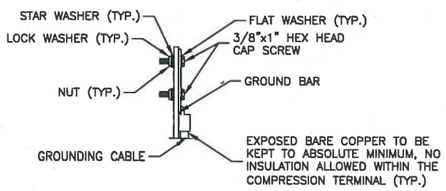
DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083720	C03	0

GROUNDING NOTES:

1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
3. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY CONTRACTOR IN WRITING.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
6. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
7. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO TRANSMISSION EQUIPMENT.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
11. EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
12. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
13. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM SAI COMMUNICATIONS MARKET REPRESENTATIVE.
14. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
15. ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
16. ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP TRANSMISSION EQUIPMENT AND STRUCTURAL STEEL.
17. COAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO-HOLE MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
18. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
19. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
20. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
21. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
22. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.



ELEVATION

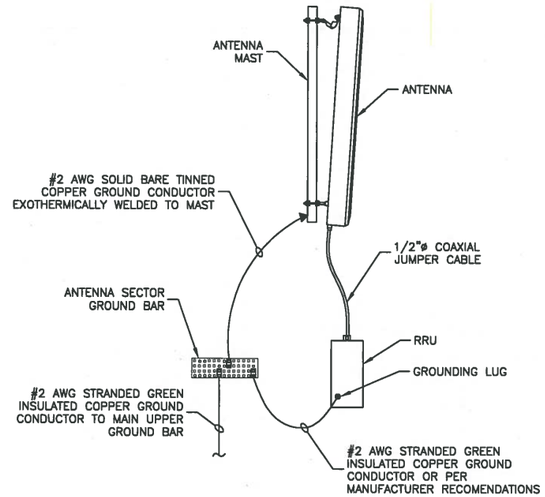


NOTES:

1. DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL 1

SCALE: N.T.S.



NOTES:

1. VERIFY EXISTING GROUNDING SYSTEM IS INSTALLED PER AT&T STANDARDS.
2. BOND NEW EQUIPMENT INTO EXISTING GROUND SYSTEM IN ACCORDANCE WITH AT&T STANDARDS & MANUFACTURER RECOMMENDATIONS.

TYPICAL ANTENNA/RRU GROUNDING DETAIL 2

SCALE: N.T.S

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

MONROE SOUTH
SITE NO. CT5189 3C/RETROFIT

88 MAIN STREET
MONROE, CT 06468

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/15/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/12/18	FOR REVIEW	KB	DAS	BBR

SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28972
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

GROUNDING NOTES & DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083720	E01	0

Date: **January 26, 2018**

Cheryl Schultz
Crown Castle
3530 Toringdon Way, Suite 300
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:	CT5189
	Carrier Site Name:	MONROE SOUTH
Crown Castle Designation:	**Crown Castle BU Number:**	826053
	Crown Castle Site Name:	Monroe-1/Rt 25
	Crown Castle JDE Job Number:	478169
	Crown Castle Work Order Number:	1517667
	Crown Castle Application Number:	421219 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1517667
Site Data:	**88 Main Street, Monroe, Fairfield County, CT** **Latitude *41° 18' 6.06"*, Longitude *-73° 15' 2.92"*** **195 Foot - Monopole Tower**	

Dear Cheryl Schultz,

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 1517667, in accordance with application 421219, 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 120 mph converted to a nominal 3-second gust wind speed of 93 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: Brad Sparks / BMG

Respectfully submitted by:

Maham Barimani, P.E.
Senior Project Engineer

01/28/2018

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 195 ft Monopole tower designed by Summit Manufacturing, LLC. in May of 2001. The tower was originally designed for a wind speed of 85 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 93 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
175.0	175.0	3	ericsson	RRUS 32	4 1	3/4 3/8	-
		3	ericsson	RRUS 32 B2			
		3	quintel technology	QS66512-2 w/ Mount Pipe			
		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
195.0	195.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 71			
		3	ericsson	RRUS 11 B12			
		1	tower mounts	Sector Mount [SM 901-3]			
	193.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
175.0	175.0	3	ericsson	RRUS12/RRUS A2	2 1	7/8 2" Conduit	3
		3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	6 2 1 1	1-5/8 7/8 5/8 3/8	1
		3	ericsson	RRUS-11			
		6	powerwave technologies	7020.00			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
165.0	165.0	3	alcatel lucent	RRH2X60-PCS	6	1-5/8	2
		3	alcatel lucent	RRH2x60-700			
		3	alcatel lucent	RRH4X45-AWS4 B66			
		6	andrew	SBNHH-1D65B w/ Mount Pipe			
		1	rfs celwave	DB-B1-6C-8AB-0Z			
		3	antel	BXA-70063/6CF w/ Mount Pipe	13	1-5/8	1
		6	antel	LPA-80080/6CF w/ Mount Pipe			
		1	rfs celwave	DB-B1-6C-8AB-0Z			
		1	tower mounts	Platform Mount [LP 403-1]			

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)
195	195	12	ems wireless	RR90-17-00DP PCS Panels	-	-
185	185	12	ems wireless	RR90-17-00DP PCS Panels	-	-
175	175	12	ems wireless	RR90-17-00DP PCS Panels	-	-
165	165	12	ems wireless	RR90-17-00DP PCS Panels	-	-
155	155	12	ems wireless	RR90-17-00DP PCS Panels	-	-
140	135	2	generic	10' Whips	-	-
120	115	2	generic	10' Whips	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Jaworski Geotech, Inc.	3488965	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, LLC. / Paul J. Ford and Company	3950063	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, LLC. / Paul J. Ford and Company	3488966	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	195 - 157.5	Pole	TP33.351x26x0.25	1	-12.31	1763.91	21.8	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-20.17	2718.44	44.7	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-31.01	3862.64	50.1	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-43.54	4209.09	61.1	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-62.32	5681.23	57.2	Pass
							Summary	
						Pole (L4)	61.1	Pass
						Rating =	61.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	56.0	Pass
1	Base Plate	0	48.3	Pass
1	Base Foundation Structure	0	53.6	Pass
1	Base Foundation Soil Interaction	0	36.9	Pass

Structure Rating (max from all components) =	61.1%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

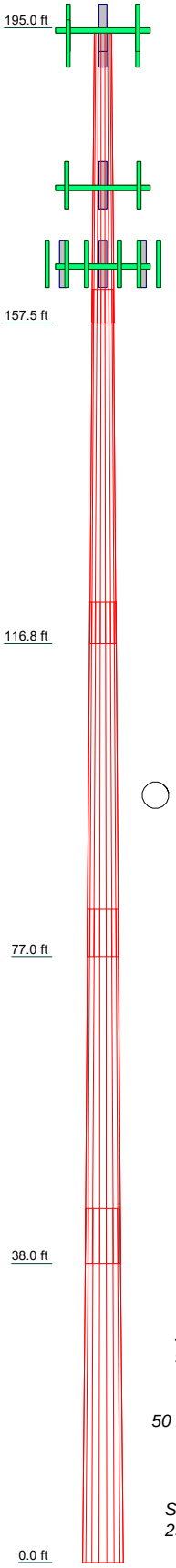
4.1) Recommendations

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	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	37.50	18	0.2500	4.25	26.0000	33.3510		3.0
2	45.00	18	0.3125	5.25	32.0179	40.8390		5.5
3	45.00	18	0.3750	6.00	39.1849	48.0060	A607-65	7.9
4	45.00	18	0.3750	7.00	46.0798	54.9010		9.1
5	45.00	18	0.4375		52.7788	61.6000		12.1
								37.5



ALL REACTIONS ARE FACTORED

AXIAL 98 K
SHEAR 9 K
MOMENT 1286 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 62 K
SHEAR 29 K
MOMENT 4012 kip-ft
TORQUE 1 kip-ft
REACTIONS - 93 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	195	OPA-65R-LCUU-H6 w/ Mount Pipe	175
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	195	7770.00 w/ Mount Pipe	175
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	195	7770.00 w/ Mount Pipe	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	7770.00 w/ Mount Pipe	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	(2) 7020.00	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	(2) 7020.00	175
LNX-6515DS-VTM w/ Mount Pipe	195	(2) 7020.00	175
LNX-6515DS-VTM w/ Mount Pipe	195	(2) LGP21401	175
LNX-6515DS-VTM w/ Mount Pipe	195	(2) LGP21401	175
RRUS 11 B12	195	(2) LGP21401	175
RRUS 11 B12	195	RRUS-11	175
RRUS 11 B12	195	RRUS-11	175
KRY 112 71	195	RRUS-11	175
KRY 112 71	195	DC6-48-60-18-8F	175
KRY 112 71	195	Platform Mount [LP 303-1]	175
6' x 2" Mount Pipe	195	(2) SBNHH-1D65B w/ Mount Pipe	165
6' x 2" Mount Pipe	195	(2) SBNHH-1D65B w/ Mount Pipe	165
6' x 2" Mount Pipe	195	(2) SBNHH-1D65B w/ Mount Pipe	165
Sector Mount [SM 901-3]	195	RRH4X45-AWS4 B66	165
QS66512-2 w/ Mount Pipe	175	RRH4X45-AWS4 B66	165
QS66512-2 w/ Mount Pipe	175	RRH4X45-AWS4 B66	165
QS66512-2 w/ Mount Pipe	175	RRH2x60-700	165
RRUS 32	175	RRH2x60-700	165
RRUS 32	175	RRH2x60-700	165
RRUS 32	175	RRH2X60-PCS	165
RRUS 32 B2	175	RRH2X60-PCS	165
RRUS 32 B2	175	RRH2X60-PCS	165
RRUS 32 B2	175	DB-B1-6C-8AB-0Z	165
DC6-48-60-18-8C	175	(2) LPA-80080/6CF w/ Mount Pipe	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) LPA-80080/6CF w/ Mount Pipe	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) LPA-80080/6CF w/ Mount Pipe	165
		BXA-70063/6CF w/ Mount Pipe	165
		BXA-70063/6CF w/ Mount Pipe	165
		BXA-70063/6CF w/ Mount Pipe	165
		DB-B1-6C-8AB-0Z	165
		Platform Mount [LP 403-1]	165

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 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: 61.1%

CROWN CASTLE
The Foundation for a Wireless World

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-4623

Job: ***BU 826053***			
Project:			
Client: Crown Castle	Drawn by: BSparks		App'd:
Code: TIA-222-G	Date: 01/26/18		Scale: NTS
Path: R:\SA Models - Letters\Work Area\BSparks\WIP\826053 WO 1517667\826053.eri			Dwg No. E-1

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 Fairfield County, Connecticut.
5) Basic wind speed of 93 mph.
6) Structure Class II.
7) Exposure Category B.
8) Topographic Category 1.
9) Crest Height 0.00 ft.
10) Nominal ice thickness of 0.7500 in.
11) Ice thickness is considered to increase with height.
12) Ice density of 56 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		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	195.00-157.50	37.50	4.25	18	26.0000	33.3510	0.2500	1.0000	A607-65 (65 ksi)
L2	157.50-116.75	45.00	5.25	18	32.0179	40.8390	0.3125	1.2500	A607-65 (65 ksi)
L3	116.75-77.00	45.00	6.00	18	39.1849	48.0060	0.3750	1.5000	A607-65 (65 ksi)
L4	77.00-38.00	45.00	7.00	18	46.0798	54.9010	0.3750	1.5000	A607-65 (65 ksi)
L5	38.00-0.00	45.00		18	52.7788	61.6000	0.4375	1.7500	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	It/Q in^2	w in	w/t
L1	26.4011	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
	33.8655	26.2656	3635.8648	11.7509	16.9423	214.6027	7276.5137	13.1353	5.4298	21.719
L2	33.3578	31.4478	3993.8666	11.2554	16.2651	245.5484	7992.9885	15.7269	5.0851	16.272
	41.4690	40.1972	8340.8765	14.3869	20.7462	402.0433	16692.7281	20.1024	6.6377	21.241
L3	40.8344	46.1934	8790.2699	13.7775	19.9059	441.5909	17592.1062	23.1011	6.2365	16.631
	48.7466	56.6928	16249.6772	16.9090	24.3870	666.3241	32520.7362	28.3518	7.7891	20.771
L4	47.9850	54.4002	14356.9598	16.2252	23.4086	613.3208	28732.8109	27.2053	7.4501	19.867
	55.7479	64.8996	24377.3537	19.3567	27.8897	874.0627	48786.7837	32.4560	9.0026	24.007
L5	54.9864	72.6825	25156.8620	18.5812	26.8116	938.2813	50346.8261	36.3481	8.5191	19.472
	62.5503	84.9318	40140.0691	21.7127	31.2928	1282.7254	80332.9556	42.4740	10.0716	23.021

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 195.00-157.50				1	1	1			
L2 157.50-116.75				1	1	1			
L3 116.75-77.00				1	1	1			
L4 77.00-38.00				1	1	1			
L5 38.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
***									
***									
***									
***									
***									
HB158-1-08U8-S8J18(1-5/8)	A	Surface Ar (CaAa)	165.00 - 0.00	1	1	0.470 0.480	1.9800		0.00
***									
***									
***									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf
***							

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
***								
***								
LDF7-50A(1-5/8)	B	No	Inside Pole	195.00 - 0.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	B	No	Inside Pole	195.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
***								
***								
***								
LDF7-50A(1-5/8)	C	No	Inside Pole	175.00 - 0.00	6	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
LDF5-50A(7/8)	C	No	Inside Pole	175.00 - 0.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
9776(5/8)	C	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
FB-L98B-002-XXX(3/8)	C	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
FB-L98B-034-XXX(3/8)	C	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	175.00 - 0.00	4	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
LDF7-50A(1-5/8)	A	No	Inside Pole	165.00 - 0.00	5	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
***								
LDF7-50A(1-5/8)	A	No	Inside Pole	165.00 - 0.00	13	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	195.00-157.50	A	0.000	0.000	1.485	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.41
		C	0.000	0.000	0.000	0.000	0.15
L2	157.50-116.75	A	0.000	0.000	8.069	0.000	0.65
		B	0.000	0.000	0.000	0.000	0.44
		C	0.000	0.000	0.000	0.000	0.34
L3	116.75-77.00	A	0.000	0.000	7.871	0.000	0.64
		B	0.000	0.000	0.000	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.33
L4	77.00-38.00	A	0.000	0.000	7.722	0.000	0.63
		B	0.000	0.000	0.000	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.32
L5	38.00-0.00	A	0.000	0.000	7.524	0.000	0.61
		B	0.000	0.000	0.000	0.000	0.41
		C	0.000	0.000	0.000	0.000	0.32

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	195.00-157.50	A	1.773	0.000	0.000	4.144	0.000	0.18
		B		0.000	0.000	0.000	0.000	0.41
		C		0.000	0.000	0.000	0.000	0.15
L2	157.50-116.75	A	1.729	0.000	0.000	22.518	0.000	0.99
		B		0.000	0.000	0.000	0.000	0.44
		C		0.000	0.000	0.000	0.000	0.34
L3	116.75-77.00	A	1.670	0.000	0.000	21.616	0.000	0.95
		B		0.000	0.000	0.000	0.000	0.43
		C		0.000	0.000	0.000	0.000	0.33
L4	77.00-38.00	A	1.586	0.000	0.000	20.748	0.000	0.92
		B		0.000	0.000	0.000	0.000	0.43
		C		0.000	0.000	0.000	0.000	0.32
L5	38.00-0.00	A	1.416	0.000	0.000	19.575	0.000	0.87
		B		0.000	0.000	0.000	0.000	0.41
		C		0.000	0.000	0.000	0.000	0.32

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	195.00-157.50	-0.0035	-0.0670	-0.0086	-0.1636
L2	157.50-116.75	-0.0152	-0.2894	-0.0354	-0.6753
L3	116.75-77.00	-0.0152	-0.2898	-0.0359	-0.6854
L4	77.00-38.00	-0.0152	-0.2901	-0.0360	-0.6865
L5	38.00-0.00	-0.0152	-0.2903	-0.0355	-0.6780

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	18	HB158-1-08U8-S8J18(1-5/8)	157.50 - 165.00	1.0000	1.0000
L2	18	HB158-1-08U8-S8J18(1-5/8)	116.75 - 157.50	1.0000	1.0000
L3	18	HB158-1-08U8-S8J18(1-5/8)	77.00 - 116.75	1.0000	1.0000
L4	18	HB158-1-08U8-S8J18(1-5/8)	38.00 - 77.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft	C_AA_A Front ft²	C_AA_A Side ft²	Weight K
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
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ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
RRUS 11 B12	A	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
KRY 112 71	A	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	0.58 0.69 0.80	0.40 0.49 0.59	0.01 0.02 0.03
KRY 112 71	B	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	0.58 0.69 0.80	0.40 0.49 0.59	0.01 0.02 0.03
KRY 112 71	C	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	0.58 0.69 0.80	0.40 0.49 0.59	0.01 0.02 0.03
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
Sector Mount [SM 901-3]	C	None		0.0000	195.00	No Ice 1/2" Ice 1" Ice	12.90 17.16 21.42	12.90 17.16 21.42	1.26 1.43 1.61
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QS66512-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
QS66512-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
RRUS 32	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
RRUS 32	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
RRUS 32	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
RRUS 32 B2	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
DC6-48-60-18-8C	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.20	2.74 2.96 3.20	0.03 0.05 0.08
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	7.18 8.36 9.26	0.10 0.18 0.26
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	7.18 8.36 9.26	0.10 0.18 0.26
OPA-65R-LCUU-H6 w/	C	From Leg	4.00	0.0000	175.00	No Ice	9.90	7.18	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00 0.00			1/2" Ice 1" Ice	10.47 11.01	8.36 9.26	0.18 0.26
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7020.00	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(2) 7020.00	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(2) 7020.00	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
RRUS-11	A	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
RRUS-11	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
RRUS-11	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	0.79 1.27 1.45	0.79 1.27 1.45	0.02 0.04 0.05
Platform Mount [LP 303-1]	C	None		0.0000	175.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
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(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
RRH4X45-AWS4 B66	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
RRH4X45-AWS4 B66	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
RRH4X45-AWS4 B66	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
RRH2x60-700	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-700	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-700	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-PCS	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
DB-B1-6C-8AB-0Z	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
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(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.56 5.11 5.61	10.26 11.43 12.31	0.05 0.11 0.19
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.56 5.11 5.61	10.26 11.43 12.31	0.05 0.11 0.19
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.56 5.11 5.61	10.26 11.43 12.31	0.05 0.11 0.19
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	7.82 8.37 8.89	5.70 6.85 7.71	0.04 0.10 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	1" Ice No Ice 1/2" Ice 1" Ice	7.82 8.37 8.89	5.70 6.85 7.71	0.04 0.10 0.17
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	1" Ice No Ice 1/2" Ice 1" Ice	7.82 8.37 8.89	5.70 6.85 7.71	0.04 0.10 0.17
DB-B1-6C-8AB-0Z	B	From Leg	4.00 0.00 0.00	0.0000	165.00	1" Ice No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
Platform Mount [LP 403-1]	C	None		0.0000	165.00	1" Ice No Ice 1/2" Ice 1" Ice	18.85 24.30 29.75	18.85 24.30 29.75	1.50 1.80 2.09
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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

Comb. No.	Description
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
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	195 - 157.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.58	0.24	-1.57
			Max. Mx	20	-12.30	245.93	-0.36
			Max. My	14	-12.32	0.04	-245.90
			Max. Vy	20	-16.51	245.93	-0.36
			Max. Vx	14	16.41	0.04	-245.90
			Max. Torque	23			0.73
L2	157.5 - 116.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.21	0.27	-1.01
			Max. Mx	20	-20.17	970.65	-0.30
			Max. My	14	-20.18	0.05	-966.56
			Max. Vy	20	-19.94	970.65	-0.30
			Max. Vx	14	19.84	0.05	-966.56
			Max. Torque	23			0.73
L3	116.75 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.21	0.31	-0.32
			Max. Mx	20	-31.01	1816.58	-0.20
			Max. My	14	-31.02	0.07	-1808.43
			Max. Vy	20	-23.36	1816.58	-0.20
			Max. Vx	14	23.26	0.07	-1808.43
			Max. Torque	23			0.73
L4	77 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.09	0.35	0.43
			Max. Mx	20	-43.54	2762.88	-0.07
			Max. My	14	-43.55	0.08	-2750.80
			Max. Vy	20	-26.29	2762.88	-0.07
			Max. Vx	2	-26.19	0.08	2750.64
			Max. Torque	23			0.73
L5	38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.01	0.40	1.37
			Max. Mx	20	-62.32	4011.88	0.10
			Max. My	2	-62.32	0.09	3995.43
			Max. Vy	20	-29.09	4011.88	0.10
			Max. Vx	2	-29.00	0.09	3995.43
			Max. Torque	23			0.73

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	98.01	9.24	-0.00
	Max. H_x	21	46.75	29.06	-0.00
	Max. H_z	2	62.34	0.00	28.97
	Max. M_x	2	3995.43	0.00	28.97
	Max. M_z	8	4011.70	-29.06	0.00
	Max. Torsion	23	0.73	25.17	14.48
	Min. Vert	13	46.75	-14.53	-25.09
	Min. H_x	9	46.75	-29.06	-0.00
	Min. H_z	14	62.34	0.00	-28.97
	Min. M_x	14	-3995.24	0.00	-28.97
	Min. M_z	20	-4011.88	29.06	0.00
	Min. Torsion	11	-0.73	-25.17	-14.48

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	51.95	0.00	0.00	-0.09	0.07	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	62.34	-0.00	-28.97	-3995.43	0.09	-0.30
0.9 Dead+1.6 Wind 0 deg - No Ice	46.75	-0.00	-28.97	-3942.90	0.06	-0.30
1.2 Dead+1.6 Wind 30 deg - No Ice	62.34	14.53	-25.09	-3460.19	-2005.82	0.08
0.9 Dead+1.6 Wind 30 deg - No Ice	46.75	14.53	-25.09	-3414.66	-1979.46	0.08
1.2 Dead+1.6 Wind 60 deg - No Ice	62.34	25.17	-14.48	-1997.77	-3474.23	0.43
0.9 Dead+1.6 Wind 60 deg - No Ice	46.75	25.17	-14.48	-1971.48	-3428.56	0.43
1.2 Dead+1.6 Wind 90 deg - No Ice	62.34	29.06	0.00	-0.10	-4011.70	0.67
0.9 Dead+1.6 Wind 90 deg - No Ice	46.75	29.06	0.00	-0.08	-3958.94	0.67
1.2 Dead+1.6 Wind 120 deg - No Ice	62.34	25.17	14.48	1997.57	-3474.24	0.73
0.9 Dead+1.6 Wind 120 deg - No Ice	46.75	25.17	14.48	1971.33	-3428.56	0.73
1.2 Dead+1.6 Wind 150 deg - No Ice	62.34	14.53	25.09	3460.00	-2005.83	0.59
0.9 Dead+1.6 Wind 150 deg - No Ice	46.75	14.53	25.09	3414.51	-1979.47	0.59
1.2 Dead+1.6 Wind 180 deg - No Ice	62.34	-0.00	28.97	3995.24	0.09	0.30
0.9 Dead+1.6 Wind 180 deg - No Ice	46.75	-0.00	28.97	3942.75	0.06	0.30
1.2 Dead+1.6 Wind 210 deg - No Ice	62.34	-14.53	25.09	3460.00	2006.00	-0.08
0.9 Dead+1.6 Wind 210 deg - No Ice	46.75	-14.53	25.09	3414.51	1979.59	-0.08
1.2 Dead+1.6 Wind 240 deg - No Ice	62.34	-25.17	14.48	1997.58	3474.41	-0.43
0.9 Dead+1.6 Wind 240 deg - No Ice	46.75	-25.17	14.48	1971.33	3428.69	-0.43
1.2 Dead+1.6 Wind 270 deg - No Ice	62.34	-29.06	0.00	-0.10	4011.88	-0.67
0.9 Dead+1.6 Wind 270 deg - No Ice	46.75	-29.06	0.00	-0.08	3959.07	-0.67
1.2 Dead+1.6 Wind 300 deg - No Ice	62.34	-25.17	-14.48	-1997.77	3474.41	-0.73
0.9 Dead+1.6 Wind 300 deg - No Ice	46.75	-25.17	-14.48	-1971.48	3428.69	-0.73
1.2 Dead+1.6 Wind 330 deg - No Ice	62.34	-14.53	-25.09	-3460.19	2006.00	-0.59

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.6 Wind 330 deg - No Ice	46.75	-14.53	-25.09	-3414.66	1979.59	-0.59
1.2 Dead+1.0 Ice+1.0 Temp	98.01	0.00	0.00	-1.37	0.40	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	98.01	-0.00	-9.22	-1283.82	0.47	-0.05
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	98.01	4.62	-7.99	-1112.02	-642.51	0.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	98.01	8.00	-4.61	-642.59	-1113.21	0.13
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	98.01	9.24	0.00	-1.33	-1285.46	0.17
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	98.01	8.00	4.61	639.93	-1113.21	0.18
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	98.01	4.62	7.99	1109.36	-642.51	0.13
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	98.01	-0.00	9.22	1281.16	0.47	0.05
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	98.01	-4.62	7.99	1109.36	643.45	-0.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	98.01	-8.00	4.61	639.93	1114.14	-0.13
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	98.01	-9.24	0.00	-1.33	1286.40	-0.17
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	98.01	-8.00	-4.61	-642.59	1114.14	-0.18
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	98.01	-4.62	-7.99	-1112.02	643.45	-0.13
Dead+Wind 0 deg - Service	51.95	0.00	-6.74	-922.91	0.07	-0.07
Dead+Wind 30 deg - Service	51.95	3.38	-5.84	-799.27	-463.24	0.02
Dead+Wind 60 deg - Service	51.95	5.86	-3.37	-461.49	-802.41	0.10
Dead+Wind 90 deg - Service	51.95	6.76	0.00	-0.08	-926.56	0.16
Dead+Wind 120 deg - Service	51.95	5.86	3.37	461.34	-802.41	0.17
Dead+Wind 150 deg - Service	51.95	3.38	5.84	799.12	-463.24	0.14
Dead+Wind 180 deg - Service	51.95	0.00	6.74	922.75	0.07	0.07
Dead+Wind 210 deg - Service	51.95	-3.38	5.84	799.12	463.39	-0.02
Dead+Wind 240 deg - Service	51.95	-5.86	3.37	461.34	802.56	-0.10
Dead+Wind 270 deg - Service	51.95	-6.76	0.00	-0.08	926.70	-0.16
Dead+Wind 300 deg - Service	51.95	-5.86	-3.37	-461.50	802.56	-0.17
Dead+Wind 330 deg - Service	51.95	-3.38	-5.84	-799.28	463.39	-0.14

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-51.95	0.00	0.00	51.95	0.00	0.000%
2	0.00	-62.34	-28.97	0.00	62.34	28.97	0.000%
3	0.00	-46.75	-28.97	0.00	46.75	28.97	0.000%
4	14.53	-62.34	-25.09	-14.53	62.34	25.09	0.000%
5	14.53	-46.75	-25.09	-14.53	46.75	25.09	0.000%
6	25.17	-62.34	-14.48	-25.17	62.34	14.48	0.000%
7	25.17	-46.75	-14.48	-25.17	46.75	14.48	0.000%
8	29.06	-62.34	0.00	-29.06	62.34	0.00	0.000%
9	29.06	-46.75	0.00	-29.06	46.75	-0.00	0.000%
10	25.17	-62.34	14.48	-25.17	62.34	-14.48	0.000%
11	25.17	-46.75	14.48	-25.17	46.75	-14.48	0.000%
12	14.53	-62.34	25.09	-14.53	62.34	-25.09	0.000%
13	14.53	-46.75	25.09	-14.53	46.75	-25.09	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
14	0.00	-62.34	28.97	0.00	62.34	-28.97	0.000%
15	0.00	-46.75	28.97	0.00	46.75	-28.97	0.000%
16	-14.53	-62.34	25.09	14.53	62.34	-25.09	0.000%
17	-14.53	-46.75	25.09	14.53	46.75	-25.09	0.000%
18	-25.17	-62.34	14.48	25.17	62.34	-14.48	0.000%
19	-25.17	-46.75	14.48	25.17	46.75	-14.48	0.000%
20	-29.06	-62.34	0.00	29.06	62.34	0.00	0.000%
21	-29.06	-46.75	0.00	29.06	46.75	-0.00	0.000%
22	-25.17	-62.34	-14.48	25.17	62.34	14.48	0.000%
23	-25.17	-46.75	-14.48	25.17	46.75	14.48	0.000%
24	-14.53	-62.34	-25.09	14.53	62.34	25.09	0.000%
25	-14.53	-46.75	-25.09	14.53	46.75	25.09	0.000%
26	0.00	-98.01	0.00	0.00	98.01	0.00	0.000%
27	0.00	-98.01	-9.22	0.00	98.01	9.22	0.000%
28	4.62	-98.01	-7.99	-4.62	98.01	7.99	0.000%
29	8.00	-98.01	-4.61	-8.00	98.01	4.61	0.000%
30	9.24	-98.01	0.00	-9.24	98.01	-0.00	0.000%
31	8.00	-98.01	4.61	-8.00	98.01	-4.61	0.000%
32	4.62	-98.01	7.99	-4.62	98.01	-7.99	0.000%
33	0.00	-98.01	9.22	0.00	98.01	-9.22	0.000%
34	-4.62	-98.01	7.99	4.62	98.01	-7.99	0.000%
35	-8.00	-98.01	4.61	8.00	98.01	-4.61	0.000%
36	-9.24	-98.01	0.00	9.24	98.01	-0.00	0.000%
37	-8.00	-98.01	-4.61	8.00	98.01	4.61	0.000%
38	-4.62	-98.01	-7.99	4.62	98.01	7.99	0.000%
39	0.00	-51.95	-6.74	0.00	51.95	6.74	0.000%
40	3.38	-51.95	-5.84	-3.38	51.95	5.84	0.000%
41	5.86	-51.95	-3.37	-5.86	51.95	3.37	0.000%
42	6.76	-51.95	0.00	-6.76	51.95	0.00	0.000%
43	5.86	-51.95	3.37	-5.86	51.95	-3.37	0.000%
44	3.38	-51.95	5.84	-3.38	51.95	-5.84	0.000%
45	0.00	-51.95	6.74	0.00	51.95	-6.74	0.000%
46	-3.38	-51.95	5.84	3.38	51.95	-5.84	0.000%
47	-5.86	-51.95	3.37	5.86	51.95	-3.37	0.000%
48	-6.76	-51.95	0.00	6.76	51.95	0.00	0.000%
49	-5.86	-51.95	-3.37	5.86	51.95	3.37	0.000%
50	-3.38	-51.95	-5.84	3.38	51.95	5.84	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	4	0.00000001	0.00084632
3	Yes	4	0.00000001	0.00037965
4	Yes	6	0.00000001	0.00013897
5	Yes	6	0.00000001	0.00004778
6	Yes	6	0.00000001	0.00013809
7	Yes	6	0.00000001	0.00004742
8	Yes	5	0.00000001	0.00005078
9	Yes	4	0.00000001	0.00057539
10	Yes	6	0.00000001	0.00014063
11	Yes	6	0.00000001	0.00004837
12	Yes	6	0.00000001	0.00013764
13	Yes	6	0.00000001	0.00004726
14	Yes	4	0.00000001	0.00084649
15	Yes	4	0.00000001	0.00037969
16	Yes	6	0.00000001	0.00013876
17	Yes	6	0.00000001	0.00004768
18	Yes	6	0.00000001	0.00013998
19	Yes	6	0.00000001	0.00004812
20	Yes	5	0.00000001	0.00005078
21	Yes	4	0.00000001	0.00057541
22	Yes	6	0.00000001	0.00013747
23	Yes	6	0.00000001	0.00004718

24	Yes	6	0.00000001	0.00014013
25	Yes	6	0.00000001	0.00004821
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00092692
28	Yes	6	0.00000001	0.00016090
29	Yes	6	0.00000001	0.00016069
30	Yes	5	0.00000001	0.00092983
31	Yes	6	0.00000001	0.00016166
32	Yes	6	0.00000001	0.00016081
33	Yes	5	0.00000001	0.00092829
34	Yes	6	0.00000001	0.00016124
35	Yes	6	0.00000001	0.00016177
36	Yes	5	0.00000001	0.00093099
37	Yes	6	0.00000001	0.00016081
38	Yes	6	0.00000001	0.00016135
39	Yes	4	0.00000001	0.00009284
40	Yes	4	0.00000001	0.00057303
41	Yes	4	0.00000001	0.00056109
42	Yes	4	0.00000001	0.00009999
43	Yes	4	0.00000001	0.00059456
44	Yes	4	0.00000001	0.00055710
45	Yes	4	0.00000001	0.00009292
46	Yes	4	0.00000001	0.00057087
47	Yes	4	0.00000001	0.00058569
48	Yes	4	0.00000001	0.00010002
49	Yes	4	0.00000001	0.00055396
50	Yes	4	0.00000001	0.00058855

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		*°*	*°*
L1	195 - 157.5	27.209	48	1.1799	0.0010
L2	161.75 - 116.75	19.151	48	1.1094	0.0008
L3	122 - 77	10.832	48	0.8546	0.0004
L4	83 - 38	4.922	48	0.5728	0.0002
L5	45 - 0	1.423	48	0.2867	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	*°*	*°*	*ft*
195.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	48	27.209	1.1799	0.0010	86674
175.00	QS66512-2 w/ Mount Pipe	48	22.297	1.1503	0.0009	21668
165.00	(2) SBNHH-1D65B w/ Mount Pipe	48	19.911	1.1219	0.0008	14451

Maximum Tower Deflections - Design Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		*°*	*°*
L1	195 - 157.5	117.906	20	5.1174	0.0042
L2	161.75 - 116.75	83.001	20	4.8117	0.0035
L3	122 - 77	46.949	20	3.7069	0.0017
L4	83 - 38	21.330	20	2.4835	0.0009
L5	45 - 0	6.165	20	1.2423	0.0003

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	20	117.906	5.1174	0.0043	20326
175.00	QS66512-2 w/ Mount Pipe	20	96.630	4.9894	0.0039	5079
165.00	(2) SBNHH-1D65B w/ Mount Pipe	20	86.290	4.8660	0.0036	3385

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	37.50	0.00	0.0	25.6046	-12.31	1763.91	0.007
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	45.00	0.00	0.0	39.1765	-20.17	2718.44	0.007
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	45.00	0.00	0.0	55.2929	-31.01	3862.64	0.008
L4	77 - 38 (4)	TP54.901x46.0798x0.375	45.00	0.00	0.0	63.2663	-43.54	4209.09	0.010
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	45.00	0.00	0.0	84.9318	-62.32	5681.23	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	246.03	1170.54	0.210	0.00	1170.54	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	970.65	2207.79	0.440	0.00	2207.79	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	1816.58	3689.06	0.492	0.00	3689.06	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	2762.88	4604.28	0.600	0.00	4604.28	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	4011.88	7150.31	0.561	0.00	7150.31	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	195 - 157.5	TP33.351x26x0.25	16.48	881.96	0.019	0.43	2343.95	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L2	157.5 - 116.75 (1) (2)	TP40.839x32.0179x0.3125	19.94	1359.22	0.015	0.67	4420.99	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	23.36	1931.32	0.012	0.67	7387.14	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	26.29	2104.54	0.012	0.67	9219.83	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	29.09	2840.62	0.010	0.67	14318.08	0.000

Pole Interaction Design Data

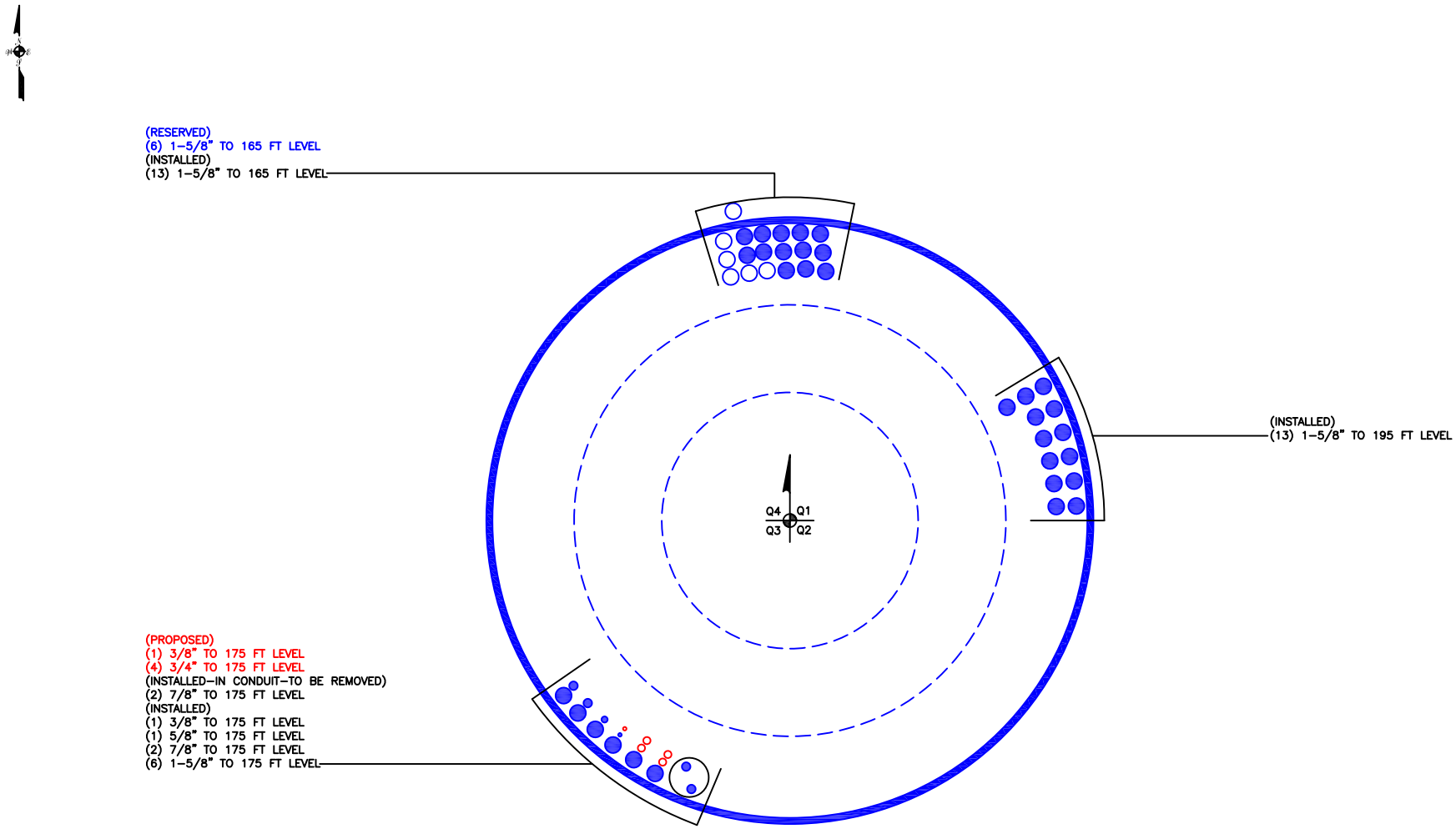
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	195 - 157.5 (1)	0.007	0.210	0.000	0.019	0.000	0.218	1.000	4.8.2
L2	157.5 - 116.75 (2)	0.007	0.440	0.000	0.015	0.000	0.447	1.000	4.8.2
L3	116.75 - 77 (3)	0.008	0.492	0.000	0.012	0.000	0.501	1.000	4.8.2
L4	77 - 38 (4)	0.010	0.600	0.000	0.012	0.000	0.611	1.000	4.8.2
L5	38 - 0 (5)	0.011	0.561	0.000	0.010	0.000	0.572	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	195 - 157.5	Pole	TP33.351x26x0.25	1	-12.31	1763.91	21.8	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-20.17	2718.44	44.7	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-31.01	3862.64	50.1	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-43.54	4209.09	61.1	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-62.32	5681.23	57.2	Pass
							Summary	
						Pole (L4)	61.1	Pass
						RATING =	**61.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 826053 TOWER ID: C_BASELEVEL

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#: *826053*
Site Name: *Monroe-1/Rt 25*
App #: *421219 - Rev. 1*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	69	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	68	in
Thick:	3	in
Grade:	55	ksi
Clip Distance:	10.5	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:	61.6	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	4012	ft-kips
Factored Axial, Pu:	62	kips
Factored Shear, Vu:	29	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	145.6	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	56.0%	**Pass**

Base Plate Results	Flexural Check	
Base Plate Stress:	23.9	ksi
PL Design Bending Strength, Φ*Fy:	49.5	ksi
Base Plate Stress Ratio:	48.3%	**Pass**

PL Ref. Data
Yield Line (in): 34.57
Max PL Length: 34.57

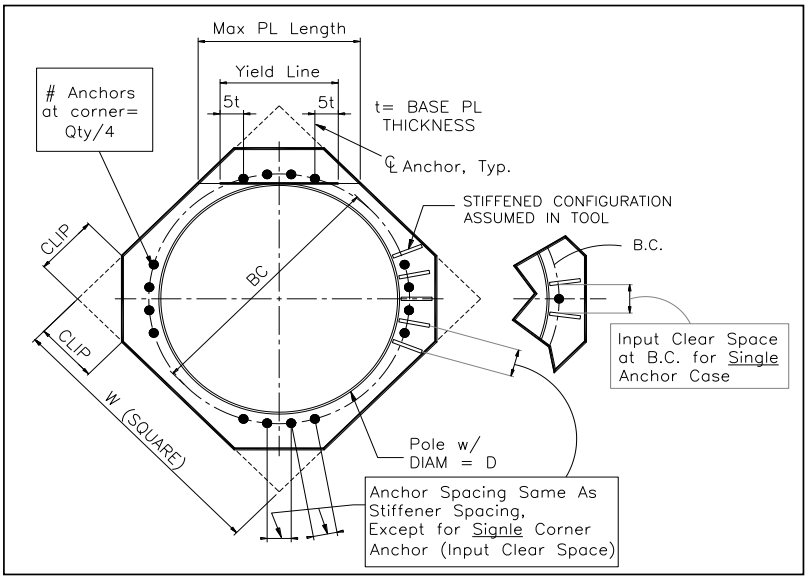
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^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

Drilled Pier Foundation

BU # :	826053
Site Name:	Monroe-1/Rt 25
App. Number:	421219 - Rev. 1

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	4012	
Axial Force (kips)	62	
Shear Force (kips)	29	

Material Properties		
Concrete Strength, f'c:	4.5	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	37	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 37' below grade		
Pier Diameter	8	ft
Rebar Quantity	28	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	14.85	-
Soil Safety Factor	3.60	-
Max Moment (kip-ft)	4475.78	-
Rating	*36.9%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	678.58	-
End Bearing (kips)	1130.97	-
Weight of Concrete (kips)	211.32	-
Total Capacity (kips)	1809.56	-
Axial (kips)	273.32	-
Rating	*15.1%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.87	-
Critical Moment (kip-ft)	4475.78	-
Critical Moment Capacity	8348.02	-
Rating	*53.6%*	-

Soil Interaction Rating	**36.9%**
Structural Foundation Rating	**53.6%**

Soil Profile

Groundwater Depth	3	ft	
# of Layers	3		

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	115	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	13	10	52.6	87.6	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	13	37	24	52.6	87.6	0	34	0.000	0.000	1.50	1.50	30		Cohesionless

CCISeismic - Design Category

Per *2012/2015 IBC*

Site BU: 826053
Work Order: 1517667
Application: 421219 Rev. 1

	Degrees	Minutes	Seconds		
Site Latitude =	41	18	6.05	41.3017	degrees
Site Longitude =	-73	15	2.91	-73.2508	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 =	0.209	USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.065	

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} =	0.223	*(2.7.6)*
Design spectral response acceleration 1 s period, S_{D1} =	0.104	*(2.7.6)*

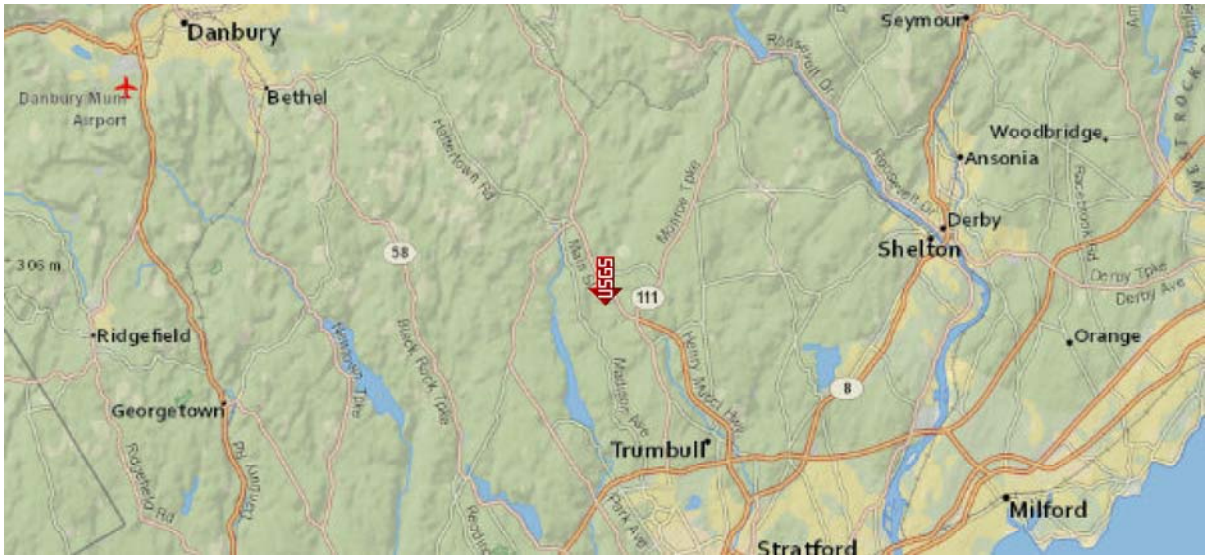
Seismic Design Category - Short Period Response =	B	*ASCE 7-05 Table 11.6-1*
Seismic Design Category - 1s Period Response =	B	*ASCE 7-05 Table 11.6-2*

Worst Case Seismic Design Category =	B	*ASCE 7-05 Tables 11.6-1 and 6-2*

USGS Design Maps Summary Report

User–Specified Input

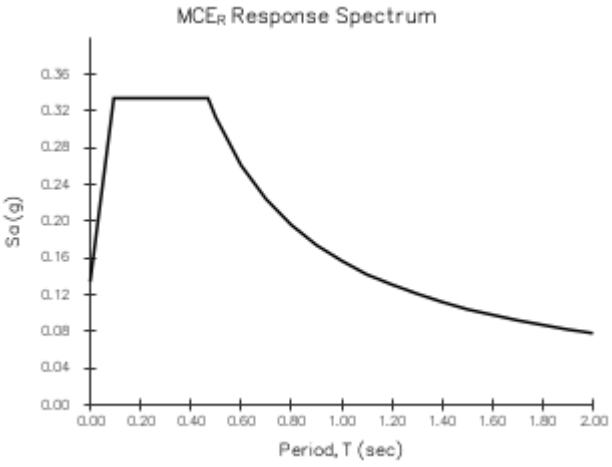
Building Code Reference Document	2012/2015 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	41.30168°N, 73.25081°W
Site Soil Classification	Site Class D – “Stiff Soil”
Risk Category	I/II/III

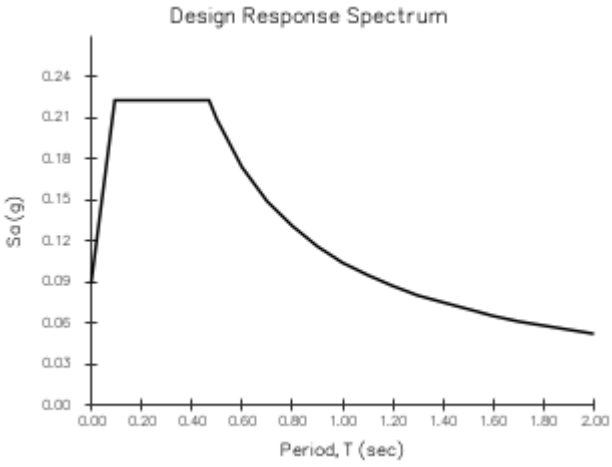


USGS–Provided Output

S_S =	0.209 g	S_{MS} =	0.334 g	S_{DS} =	0.223 g
S_1 =	0.065 g	S_{M1} =	0.157 g	S_{D1} =	0.104 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.





88 MAIN ST

Location	88 MAIN ST	**Map/Lot**	012/ 019/ 0Z/ /
Acct#	0120190Z	**Owner**	STEPNEY VOLUNTEER FIRE CO
Assessment	$267,700	**Appraisal**	$382,400
PID	16246	**Building Count**	1
Survey		**Affordable**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$163,900	$218,500	$382,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$114,700	$153,000	$267,700

Owner of Record

Owner	STEPNEY VOLUNTEER FIRE CO	**Sale Price**	$0
Co-Owner	DEBORAH HEIM, TREASURER	**Certificate**	1
Address	88 MAIN ST MONROE, CT 06468-1637	**Book & Page**	
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
STEPNEY VOLUNTEER FIRE CO	$0	1		

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Stories:	

Building Photo

Occupancy	
Exterior Wall 1	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Fireplaces	
Basement Gar.	
Basement	
In Law Apt	

(http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\64/04.JPG)

Building Layout

(http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/162

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	431
Description	TEL REL TW
Zone	I1
Neighborhood	
Alt Land Approved	No
Category	

Land Line Valuation

Size (Acres)	0.23
Appraised Value	$218,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
RS1	Frame Utility Shed			360 S.F.	$3,600	1
TT4	TOWER MONOPOLE			1 UNITS	$125,000	1
FN1	FENCE CHAIN			2520 L.F.	$35,300	1

Valuation History

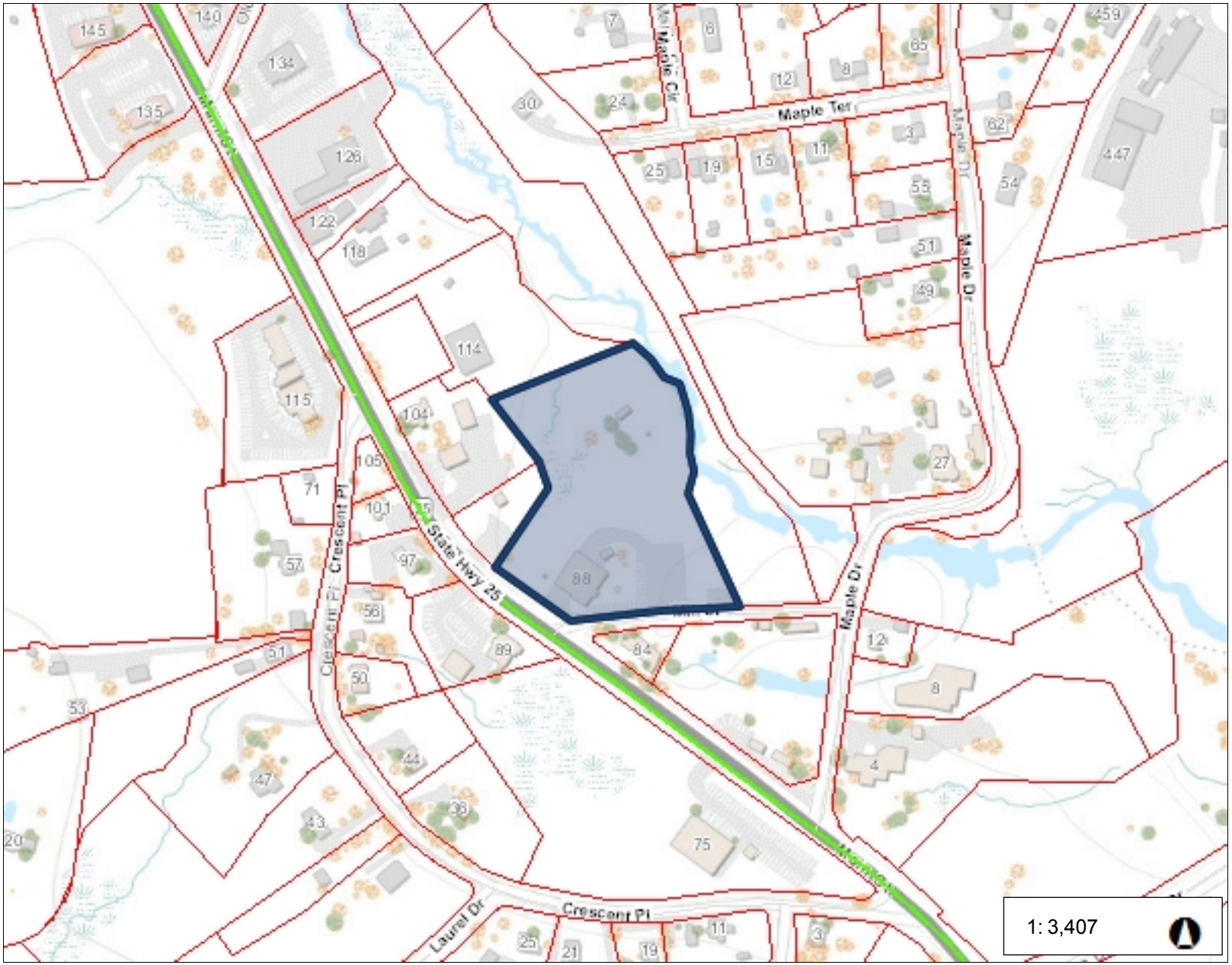
Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$163,900	$218,500	$382,400

2009		$220,000	$390,650

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$114,700	$153,000	$267,700
2009		$154,000	$273,455

Town of Monroe

88 MAIN STREET
MONROE, CT



Legend

- Parcels
- Streetname
- Roadways
  - Local
  - Collector
  - Minor Collector
  - Minor Arterial
  - Major Collector
  - PA Other
  - PA Other Expwy
  - PA Interstate

567.8 0 283.90 567.8 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

METROCOG
Connecticut Metropolitan Council of Governments

KNOW ALL MEN BY THESE PRESENTS, THAT THE TOWN PLANNING AND ZONING COMMISSION OF MONROE, CONNECTICUT, by its own vote on January 11, 2001, granted a **Special Exception Permit** to –

VoiceStream Wireless, Inc., for property at -

88 Main Street (DI-1 zone) - for construction of new wireless communication facility and associated site improvements as provided in Article XXV of the Zoning Regulations.

FURTHER, the approval is given subject to the following specific conditions:

1. The following plans presented at the hearing concluded November 16, 2000, including revisions and additions herein specified by the Commission, shall be the approved plans of record and basis of approval:

   "Site Plan (site address) Stepney Vol. Fire Dept., 88 Main Street, Monroe, CT, SITE #CT 11-215A," by ARCNET Architects, Inc. and Diversified Technology Consultants, Last Revised 10-24-00; Sheet Nos. S-1 (Record Exhibit A), and Z-1 (dated 6-19-00).

2. The final installation tower height be erected at the height proposed in the formal application/presentation (195') above finished grade to accommodate co-location and applicant needs.

3. Adequate area and location shall be reserved on the tower to accommodate the needs of municipal emergency services.

4. The exterior of the westerly and southerly facing sides of the fence enclosure shall be screened with dense evergreen ornamentals approximating the height of the enclosure of a type and nature to be approved by the Commission.

5. Provide copies of relevant final approvals or authorizations of state or federal authorities to the Planning and Zoning Department as a matter of information.

6. Before initiation of the work, final revised plans, based upon the plans of record, shall be filed in the Planning and Zoning Department.

7. The plans shall be revised to incorporate and address all comments in the reviewing reports submitted as part of the application and not previously incorporated into the plans.

8. Final plans shall bear an endorsement block stating:

These plans are the final construction plans and have been reviewed by the Director of Public Works and Town Planner.

_____
Town Planner

_____
Director of Public Works

Said block must appear in the lower right corner of each plan page near the title block.

9. No signs of any nature, other than normal temporary construction signs, are approved by this application. The installation of signs shall be approved only through the normal permit procedure of the Commission.

10. Submittal of all bonds and insurances as required by local and state laws and by the Commission at such times as may be required during the term of construction of the overall project until such time as the improvements or work covered by the applicable bond or insurances is deemed to be acceptably complete by the Commission.

11. A pre-construction conference is to be held with the developer and/or general contractor, engineer and architect, and Town staff, including Town Planner, Director of Public Works, Sanitarian, Building Inspector, Fire Marshal, and police representative prior to any work on the premises.

12. As-built construction plans shall be provided promptly in accordance with Chapter 44 of the Code of the Town of Monroe.

13. Provision of copies of plans, details and/or specifications, as may be required by Town and State agencies from time to time.

14. Should this action be the subject of appeal to the courts, no time limit specified herein shall begin to run until such litigation is fully concluded (date of final court action).

15. The effective date of the special exception permit shall be the date of recording in the Monroe Land Records. It shall be the responsibility of the applicant to record the special exception permit document (prepared by the Planning and Zoning Department) in the Monroe Land Records. Failure to record said document within ninety (90) days of the date of approval shall render the approval null and void.

Re: Special Exception Permit
VoiceStream Wireless, Inc.
88 Main Street - Monroe, CT

16. Failure to meet any specified condition of this approval or maintain compliance with applicable local, state or federal ordinance, regulation or laws may result in the ordered suspension of construction authorizations until such time as such failure or noncompliance has been satisfactorily resolved.

17. Should any changes in site plan be contemplated, they shall be submitted to the Commission for review. Should any changes be considered as major or substantial changes, they shall be applied for under a special exception permit application to modify the approved site plan. Minor changes are considered by the Commission as those which do not change the substance, impact or general locations involved in the proposal and may be authorized by the Commission after appropriate review.

18. It is the responsibility of the owner/developer to notify the Planning and Zoning Department of any change in the status of ownership and/or contractor(s) and/or professional design or inspection consultant involved in the proposal. Additionally, it is the responsibility of the owner/developer to notify any new owner and/or contractor(s) and/or consultants of all construction requirements including all job meeting notes and inspection notes produced up to the date of any such change in project related personnel.

19. This permit and all conditions specified herein shall be binding in perpetuity upon the applicant and property owner and his (their) heirs, assigns and successors unless otherwise amended by a subsequent act of the Commission.

20. This permit and all conditions specified herein shall be binding in perpetuity upon this parcel and premises unless otherwise amended or invalidated under the terms of this approval or a subsequent act of the Commission.

Dated at Monroe, Connecticut, this 16th day of January, 2001.

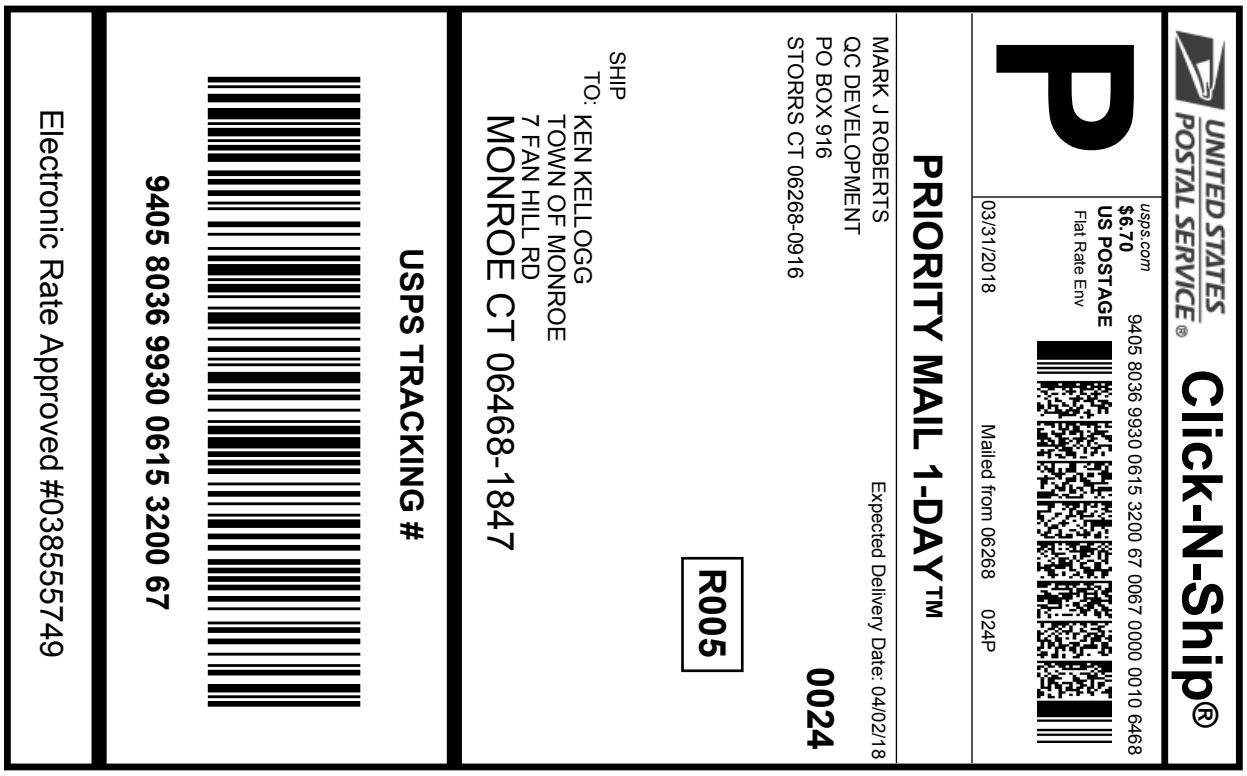
TOWN PLANNING & ZONING COMMISSION

Witness:

Mary E. Mennilli

Daniel A. Tuba
Clerk of Commission

REC'D. FOR RECORD Oct 4 2001
AT 1:28 P M. ATTEST Theresa A. DiGiovanni
Asst. MONROE TOWN CLERK



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3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
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5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0615 3200 67

Trans. #:	431300899
Print Date:	03/30/2018
Ship Date:	03/31/2018
Expected Delivery Date:	04/02/2018
Insured Value:	$50.00

Priority Mail® Postage:	**$6.70**
Insurance Fee	**$0.00**
Total	**$6.70**

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

To: KEN KELLOGG
TOWN OF MONROE
7 FAN HILL RD
MONROE CT 06468-1847

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

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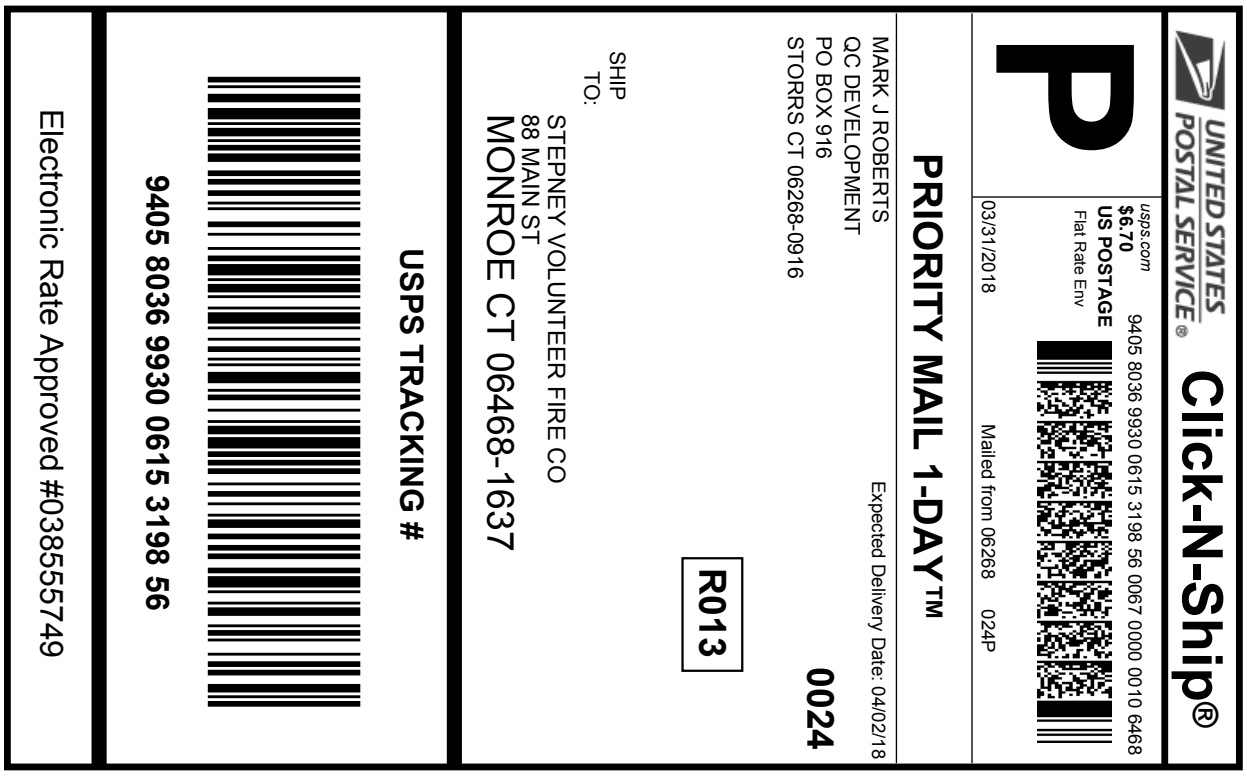

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Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0615 3198 56

Trans. #:	431300899
Print Date:	03/30/2018
Ship Date:	03/31/2018
Expected Delivery Date:	04/02/2018
Insured Value:	$50.00

Priority Mail® Postage:	**$6.70**
Insurance Fee	**$0.00**
Total	**$6.70**

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

To: STEPNEY VOLUNTEER FIRE CO
88 MAIN ST
MONROE CT 06468-1637

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

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