Crown Castle
12 Gill Street, Suite 5800
Woburn, MA 01801

August 26, 2016

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

RE: **Tower Share Application for T-Mobile Crown Site BU: 876370**
T-Mobile Site ID: CTNH032H
Located at: 41 Beckwith Road, Montville, CT 06370
Latitude: 41° 26' 7.66" / Longitude: -72° 13' 15.07"

Dear Ms. Bachman,

T-Mobile is applying for tower share to add six (6) antennas, six (6) remote radio units and one (1) hybrid cable to the existing 180-foot monopole tower located at 41 Beckwith Road, Montville, CT. The antennas would be installed at the 175-foot level of the tower on a new mount. The tower and the property is owned by Crown Castle. T-Mobile also intends to perform ground work in the form of adding a 15'x10' concrete pad with a four (4) equipment cabinets.

This facility was approved by the Town of Montville Planning and Zoning Commission on May 9, 2000. This approval included the condition(s) that:

1. An A2 survey of the easement to depict accurately the property site so the easement does not encroach on the abutting property owners.

This modification complies with the aforementioned condition(s).

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.S.C.A. § 16-50j-73, a, copy of this letter is being sent to the Honorable Ronald K.

McDaniel, Mayor for the Town of Montville, as well as Crown Castle the property owner and the tower owner.

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

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

3. The proposed modification 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 Communication 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, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Amanda Goodall.

Sincerely,

Amanda Goodall
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
339-205-7017
Amanda.Goodall@crowncastle.com
Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 4: Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)

cc: Mayor Ronald K. McDaniel
Town of Montville
310 Norwich-New London Tpke.
Uncasville, CT 06382

Crown Castle, Tower Owner & Property Owner
c/o 12 Gill Street, Suite 5800
Woburn, Ma 01801

Town of Montville Planning Department
310 Norwich New London Tpke
Uncasville, Ct. 06382

Date: July 20, 2016 # of Pages: 3

To: Amanda

Fax#: 724-416-4185

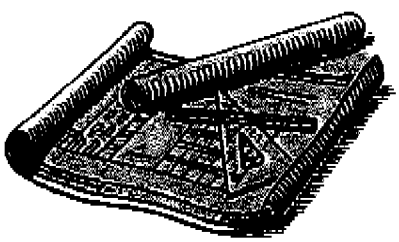
Re: Cell Tower @ 41 Beckwith Rd.
Montville, CT 06382

From: Michelle Giroux
Fax: (860) 848-2354
Phone (860) 848-6779
Email: planningdept@montville-ct.org

Message:

Amanda: As discussed on phone, attached is a copy of the Legal Notice which has the approval date of May 9, 2000. It was GRANTED with CONDITIONS The Conditions are highlighted on the last page of this FAX. IF you have any ?s, please give me a call directly at the phone number listed above.

Michelle M. Giroux



Cc:

c) **D'AMATO:** Establish a bond for Phase III of Robin Hill Estates. A MOTION by COMMISSIONER TINNEL, seconded by COMMISSIONER CHARLAND to CONTINUE to May 23, 2000 meeting. All voted in favor. MOTION CARRIED.

6. Zoning Issues:

a) **Paul J. Benyeda:** An application for an in-law apartment to be constructed above an existing garage on the property located at 27 Tra-Mart Drive, Montville, Connecticut. Shown on Assessor's Map 54, Lot 67. A MOTION by COMMISSIONER TINNEL, seconded by COMMISSIONER BELLAMY to approve this application with CONDITION. **One** utility hook-up will service both residences. All voted in favor. MOTION CARRIED.

7. Public Hearings:

a) **Pat Eldridge & Suzanne Drake:** An application for a Special Permit under Section 6.3.4 of the Zoning Regulations – Riding stables on the property located at 143 Simpson Lane, Montville, Connecticut. Shown on Assessor's Map 38, Lot 50. A MOTION by COMMISSIONER CHARLAND, seconded by COMMISSIONER BELLAMY to CONTINUE to May 23, 2000 meeting. All voted in favor. MOTION CARRIED.

8. Old Business:

a) **Sprint PCS/Bond**: An application for a special permit for telecommunications tower located on the property located at 41 Beckwith Road, Montville, Ct. Shown on Assessor's Map 12, Lot 1. A MOTION by COMMISSIONER TINNEL, seconded by COMMISSIONER CHARLAND to approve the application with *FINDINGS*.

A MOTION by COMMISSIONER BARON for an amendment: An A-2 survey of the easement to depict accurately the property site so the easement doesn't encroach in abutting property owners. A MOTION by COMMISSIONER TINNEL, seconded by COMMISSIONER CHARLAND to accept the Amendment. All voted in favor with COMMISSIONERS BELLAMY, FERRANTE, and MAJEWSKI abstaining. MOTION *CARRIED*.

9. Other business to come before the Commission:

a) **Staff Report:** A letter from the Commission to the Chairman of the Town Council regarding the Capital Plan for 2000 – 2001.

b) **Planning Issues:** Interest was expressed regarding the property at 442 Fire Street.

C. mailed
May 10, '00
MV

LEGAL NOTICE

The Montville Planning and Zoning Commission at its meeting held on, May 9, 2000, took the following action:

Sprint PCS/Bond: An application for a special permit for telecommunucations tower located on the property located at 41 Beckwith Road, Montville, Ct. Shown on Assessor's Map 12, Lot 1. GRANTED with CONDITIONS.

Maps and documentation concerning the above applications are on file in the office of the Town Planner and Town Clerk, Town Hall Annex and Town Hall, respectively, Montville, Ct.

Dated at Montville, Ct. this 10th day of May, 2000.

MONTVILLE PLANNING AND ZONING COMMISSION

Gregory Majewski, Chairman

PUBLISH IN THE NEW LONDON DAY MAY ~~11~~ 12, 2000

PLEASE REFERENCE PURCHASE ORDER 6100 I 1 ON INVOICE.

Note must be 48 hours in advance - per Judy @ the Day.

Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

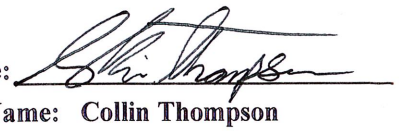
Crown Castle, does hereby authorize **T-Mobile** and its authorized contractors/agents to act as "Applicant" in the processing of all applications, permits, research and other related activities associated with the processing, planning, design review, permitting, entitlement and construction of additional equipment, antennas and site improvements for the Crown Castle existing wireless communications facility described as follows:

Customer Site Name:	**N/A**	**Crown Castle Site ID Number:**	**876370**
Site Address:	**41 Beckwith Rd. – Montville, CT**	**Crown Castle Site Name:**	**MAYBROOK/BOND**

This authorization is fully contingent upon **T-Mobile** authorized contractors/agents' compliance with the following conditions:

1. Crown Castle must review the application prior to submittal. Crown Castle must be provided all applications, narratives, drawings and attachments at least 72 hours in advance of their submittal to the locality. Use of email and electronic attachments is encouraged. A Crown Castle Zoning Subject Matter Expert (SME) will review and provide written comment to the customer within 48 hours of receipt of a complete set of application materials. If Crown Castle indicates that changes are required, submissions shall be altered in accordance with Crown Castle comments prior to submission to the locality. Verification of corrections should also be accomplished via emails and attachments.
2. In no event may **T-Mobile** encourage, suggest, participate in, or permit the imposition of any restrictions or additional obligations whatsoever on the tower site or Crown Castle's current or future use or ability to license space at the tower site as part of or in exchange for obtaining any approval, permit, exception or variance.
3. A copy of the final permit and/or a written summary of the zoning/entitlement decision rendered by the locality and any/all conditions placed on that decision shall be communicated in detail to Crown Castle well within the appeal period provided by the locality (typically 10-15 days).
4. All conditions of approval pertinent to the construction of the proposed project must be included in the construction drawings for the project. The conditions of approval pertinent to the construction of the project shall be copied verbatim from the zoning permit approval language, and shall be present in the drawings prior to submission for building permits and contractor bidding. Crown Castle shall verify the inclusion of appropriate conditions of approval in the construction drawing redline process.
5. Crown Castle will provide a Notice To Proceed (NTP) to construction to the customer upon receipt of the final approved zoning permit and the approved Building Permit.

By Crown Castle:

Signature: 

Printed Name: Collin Thompson

Title: Real Estate Specialist Intern – East Area

Date: July 19, 2016

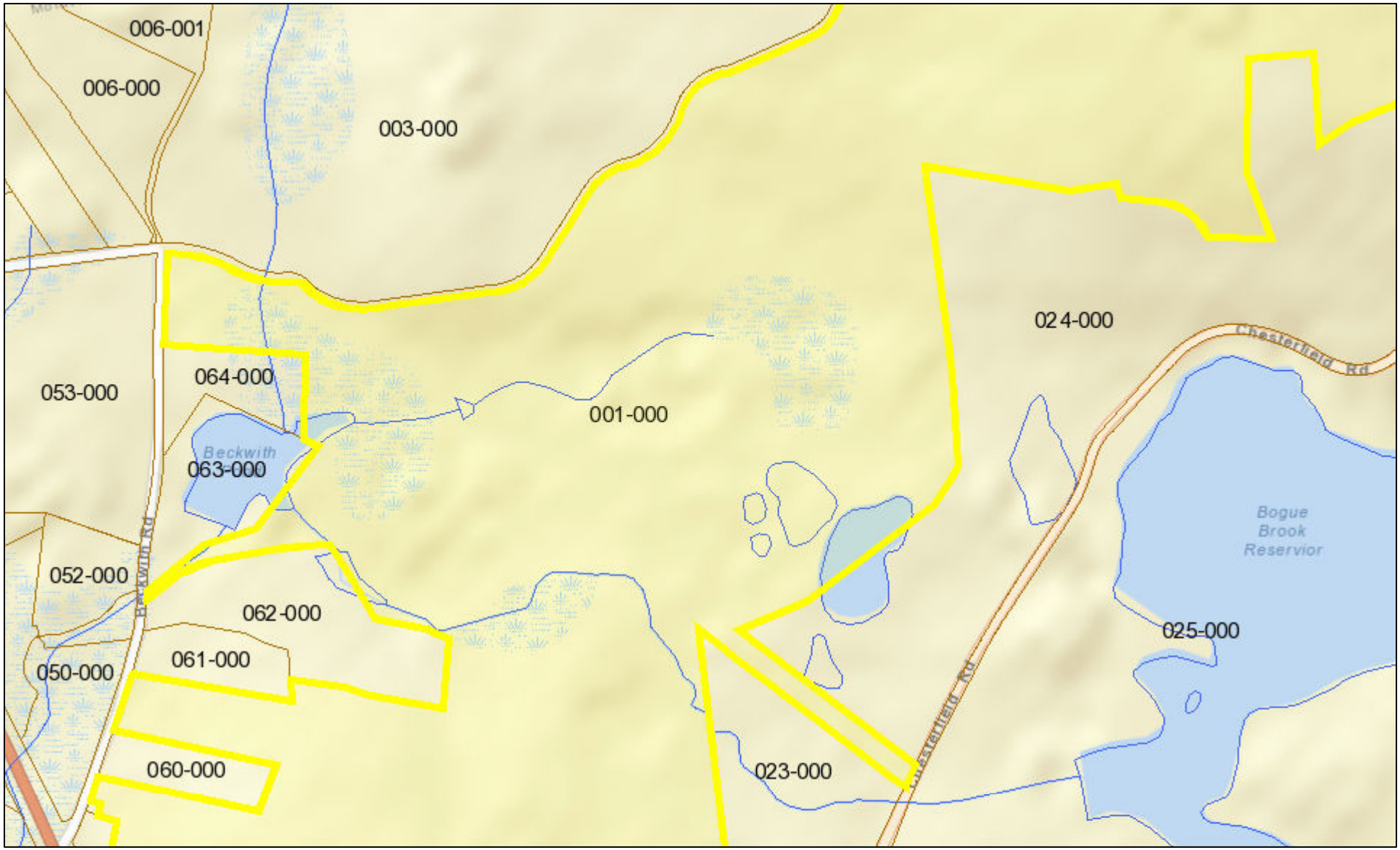
Montville, CT

August 26, 2016

1 inch = 537 Feet

0 537 1074 1611

www.cai-tech.com



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

Property Card: **41 BECKWITH RD**

Town of Montville, CT

Parcel Information

Parcel ID:	012-001-000	**Map:**	012
Vision ID:	101337	**Lot:**	001-CEL
Owner:	SPRINT SPECTRUM LP	**Use Description:**	Cell Tower
Co-Owner:	C/O CROWN CASTLE	**Zone:**	WRP
Mailing Address:	PMB 331 4017 WASHINGTON RD MCMURRAY, PA 15317	**Land Area in Acres:**	0

Sale History		Assessed Value	
Book/Page:	0001/ 0001	**Land:**	$0
Sale Date:	10/1/2011	**Buildings:**	$124,240
Sale Price:		**Extra Bldg Features:**	$0
		Outbuildings:	$124,240
		Total:	$124,240

Building Details: Building # 1

Model:		**Int Wall Desc 1:**	
Living Area:		**Int Wall Desc 2:**	
Appr. Year Built:		**Ext Wall Desc 1:**	
Style:		**Ext Wall Desc 2:**	
Stories:		**Roof Cover:**	
Occupancy:		**Roof Structure:**	
No. Total Rooms:		**Heat Type:**	
No. Bedrooms:		**Heat Fuel:**	
No. Baths:		**A/C Type:**	
No. Half Baths:			

SITE NAME: CTNH032H

41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

T-MOBILE SITE NUMBER: CTNH032H

CROWN BU NUMBER: 876370

RF DESIGN GUIDELINE: 707C TOWER

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
GPS/LMU:	CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

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

SPECIAL STRUCTURAL NOTES

CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS AND GLOBAL STRUCTURAL STABILITY ANALYSIS COMPLETED ON BEHALF OF T-MOBILE ARE INCLUSIVE OF THE ENTIRE SUPPORT STRUCTURE, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T-MOBILE G700 EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.

HUDSON DESIGN ASSUMES THAT THE EQUIPMENT IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

PROJECT SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION
ZONING JURISDICTION: (TOWN OF MONTVILLE)	BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	41 BECKWITH ROAD MONTVILLE, CT 06370
LATITUDE:	41° 26' 7.66" N
LONGITUDE:	72° 13' 15.07" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
CROWN CASTLE SITE NAME:	**MAYBROOK/BOND**
CROWN CASTLE SITE ID:	**876370**

APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-888-DIG-SAFE
OR CALL 811

UNDERGROUND SERVICE ALERT

DRAWING INDEX

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T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
OFFICE: (508) 286-2700
FAX: (508) 286-2893

CROWN CASTLE
CROWN CASTLE
12 GILL STREET, SUITE 5800
WOBURN, MA 01801

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29055
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	08/25/16	CONSTRUCTION FINAL	DJM
1	08/02/16	CONSTRUCTION REVISED	FM
0	07/22/16	ISSUED FOR CONSTRUCTION	FM

SITE NUMBER:
CTNH032H
CROWN CASTLE SITE ID:
876370
SITE NAME:
CTNH032H
SITE ADDRESS:
41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

   CONTRACTOR – CROWN CASTLE INTERNATIONAL
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

16. CONSTRUCTION SHALL COMPLY WITH G700 SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

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

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

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

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 CT AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

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

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

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

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

ABBREVIATIONS

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

T-MOBILE NORTHEAST LLC
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CROWN CASTLE
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12 GILL STREET, SUITE 5800
WOBURN, MA 01801

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
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TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29057
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	08/25/16	CONSTRUCTION FINAL	DJM
1	08/02/16	CONSTRUCTION REVISED	FM
0	07/22/16	ISSUED FOR CONSTRUCTION	FM

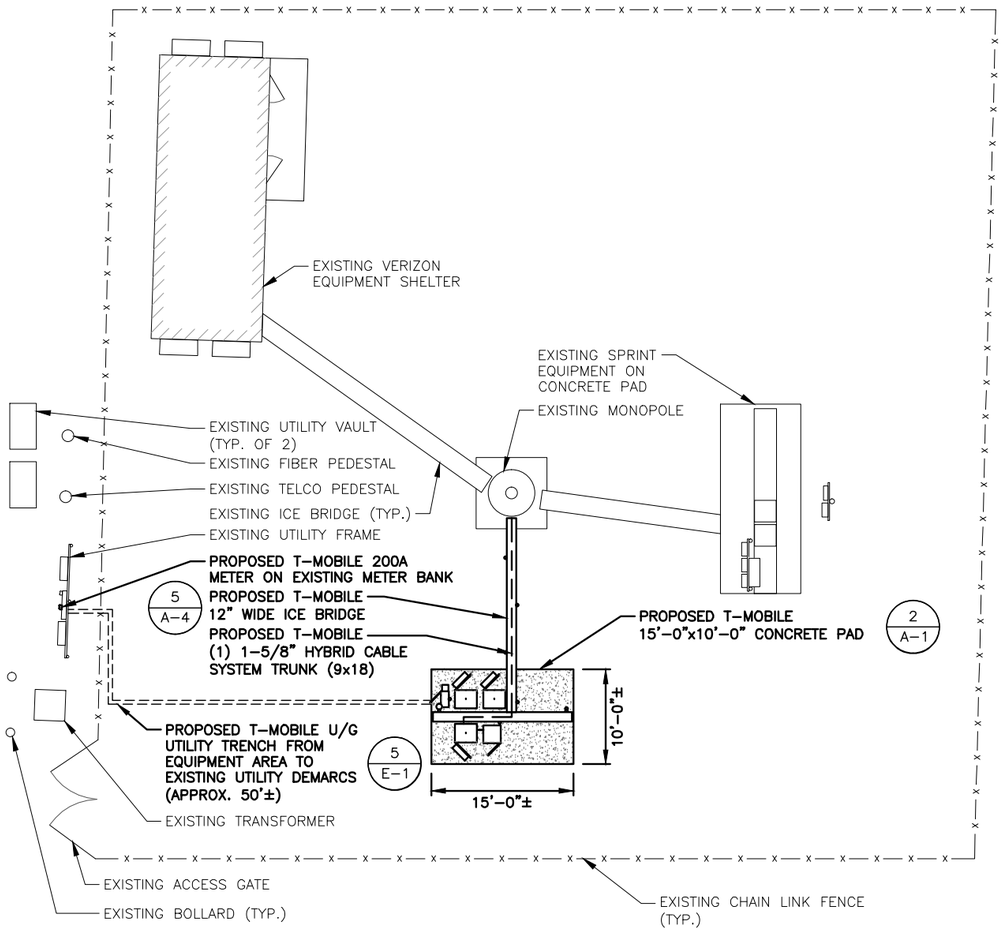
SITE NUMBER:
CTNH032H
CROWN CASTLE SITE ID:
876370
SITE NAME:
CTNH032H
SITE ADDRESS:
41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

STRUCTURAL NOTE:
REFER TO STRUCTURAL ANALYSIS REPORT & BY: CROWN CASTLE, DATED: AUGUST 18, 2016 FOR AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT PRIOR TO COMMENCING CONSTRUCTION.

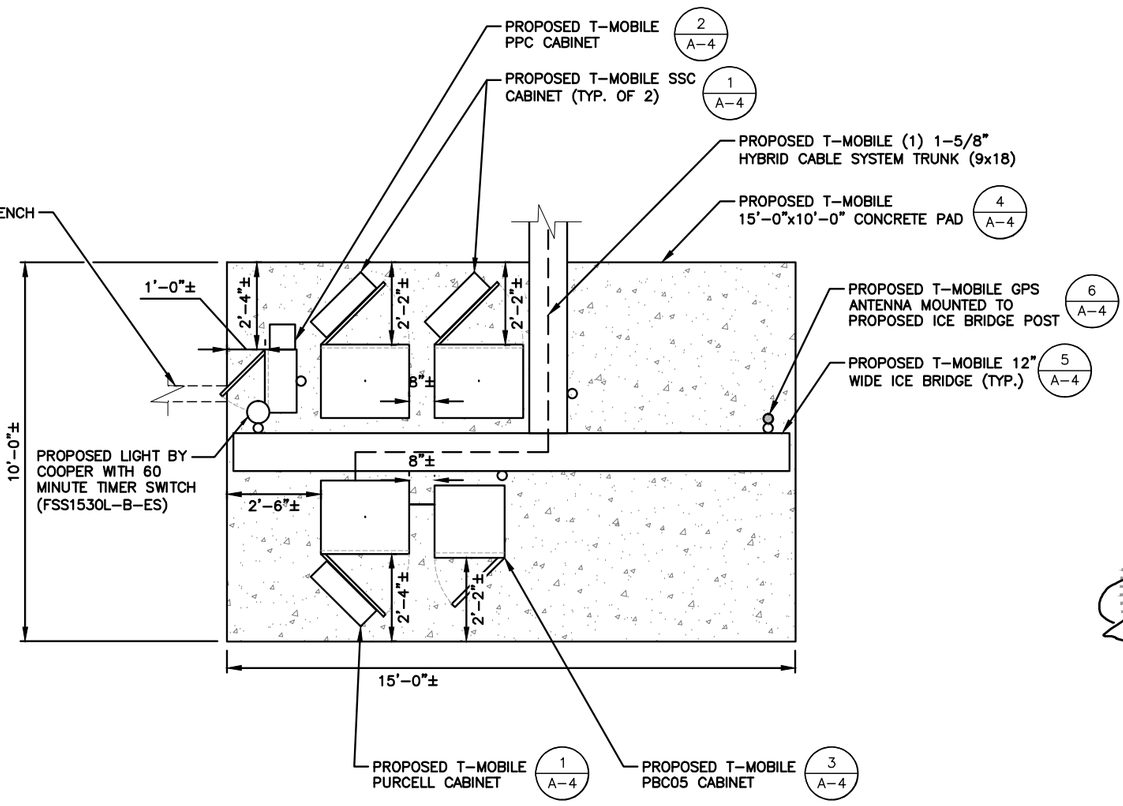
NOTE:
REFER TO FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS



13°59' TRUE NORTH MAGNETIC NORTH

COMPOUND PLAN 1 A-1
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"



NOTE:
SEE CONDUIT PLAN 3/E-1

13°59' TRUE NORTH MAGNETIC NORTH

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

0 1'-0" 2'-0" 4'-0" 6'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 23051
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CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

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CROWN CASTLE SITE ID:
876370
SITE NAME:
CTNH032H
SITE ADDRESS:
41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

SHEET TITLE
COMPOUND PLAN, EQUIPMENT LAYOUT

SHEET NUMBER
A-1

STRUCTURAL NOTE:
REFER TO STRUCTURAL ANALYSIS REPORT & BY: CROWN CASTLE, DATED: AUGUST 18, 2016 FOR AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT PRIOR TO COMMENCING CONSTRUCTION.

NOTE:
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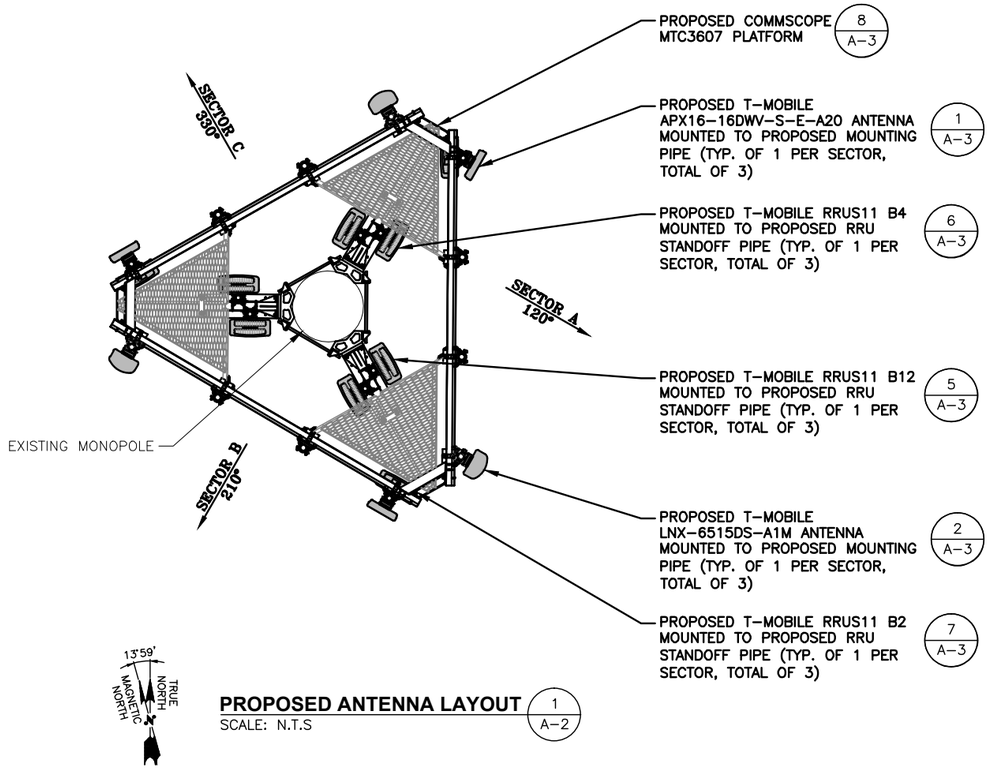
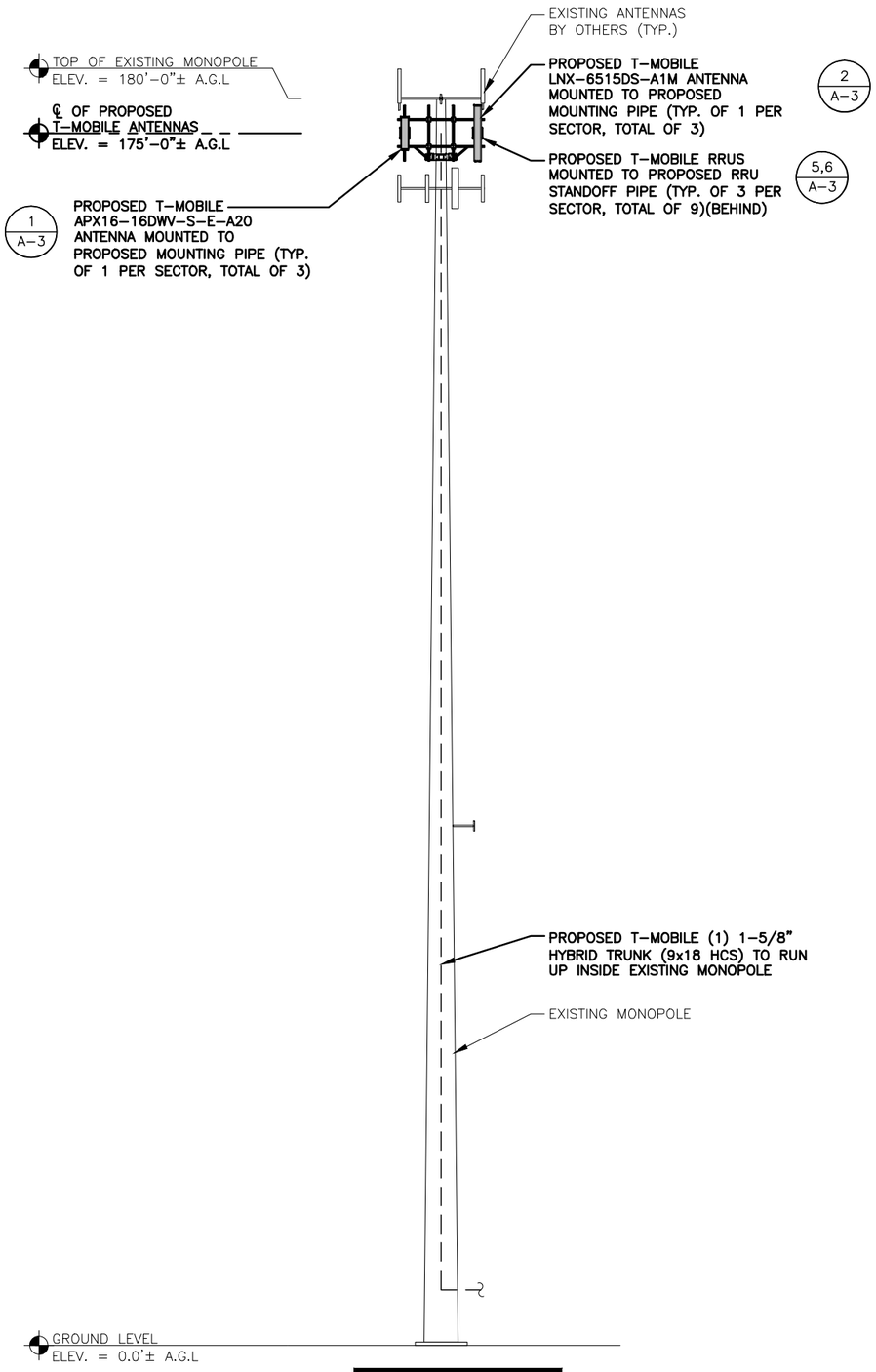


PROPOSED ANTENNA LAYOUT 1 A-2
SCALE: N.T.S



NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

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

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29051
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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0	07/22/16	ISSUED FOR CONSTRUCTION	FM

SITE NUMBER:
CTNH032H
CROWN CASTLE SITE ID:
876370
SITE NAME:
CTNH032H
SITE ADDRESS:
41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

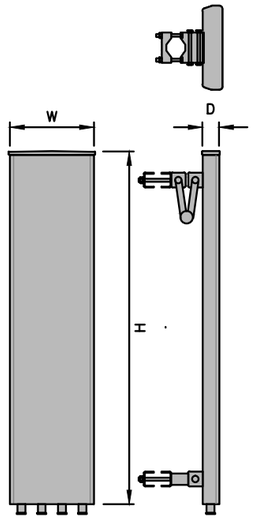
SHEET TITLE
ANTENNA LAYOUT & ELEVATION

SHEET NUMBER
A-2

STRUCTURAL NOTE:
REFER TO STRUCTURAL ANALYSIS REPORT & BY: CROWN CASTLE, DATED: AUGUST 18, 2016 FOR AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT PRIOR TO COMMENCING CONSTRUCTION.

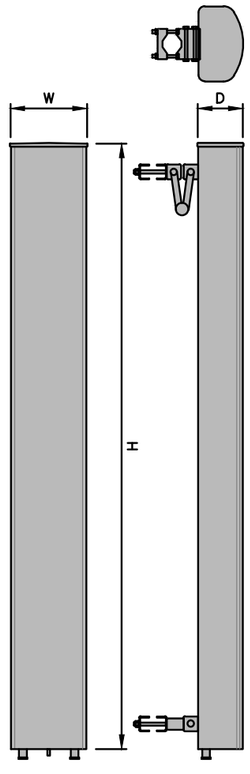
NOTE:
REFER TO FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS

U19/L21 ANTENNA DIMENSIONS	
MODEL #	APX16-16DWV-S-E-A20 (DUAL)
MANUF.	RFS/CELWAVE
HEIGHT	55.9"
WIDTH	13.3"
DEPTH	3.15"
WEIGHT	55 LBS

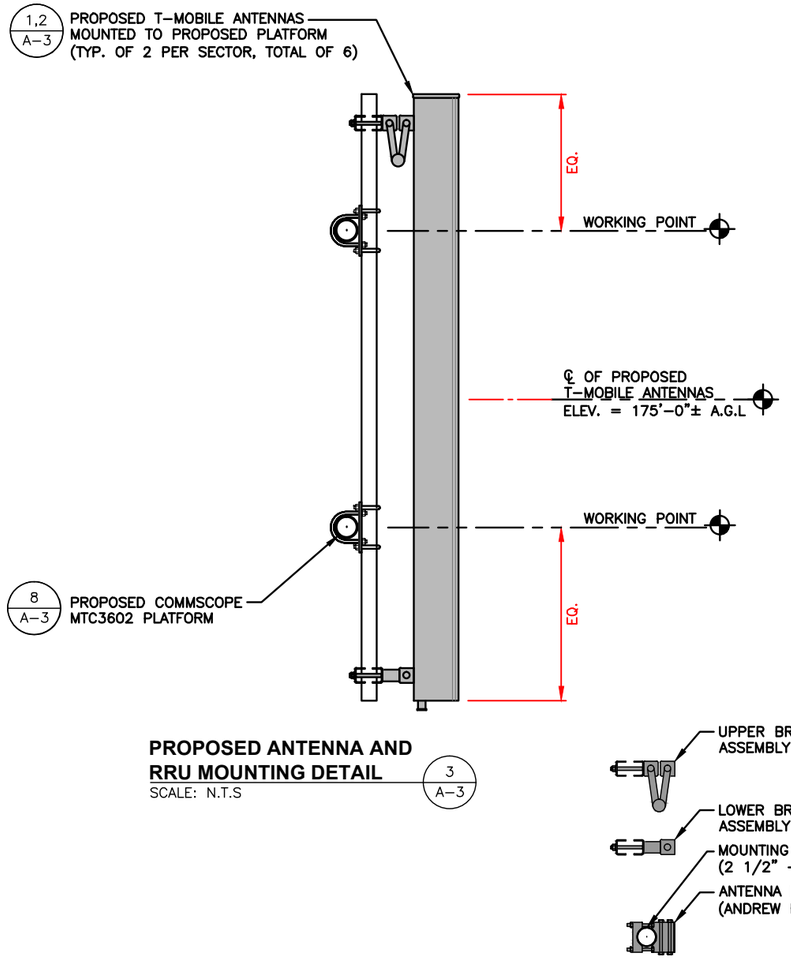


U19/L21 ANTENNA DETAIL (1 / A-3)
SCALE: N.T.S

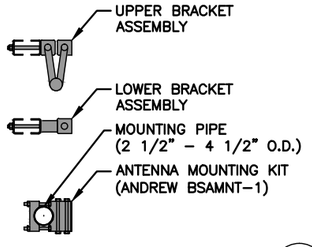
L700 ANTENNA DIMENSIONS	
MODEL #	LNX-6515DS-A1M (DUAL)
MANUF.	COMMSCOPE
HEIGHT	96.4"
WIDTH	11.9"
DEPTH	7.1"
WEIGHT	50.3 LBS



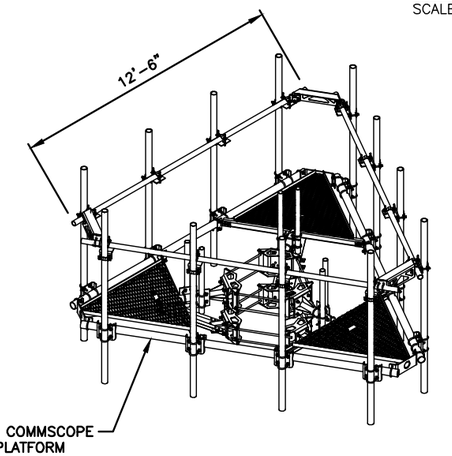
L700 ANTENNA DETAIL (2 / A-3)
SCALE: N.T.S



PROPOSED ANTENNA AND RRU MOUNTING DETAIL (3 / A-3)
SCALE: N.T.S

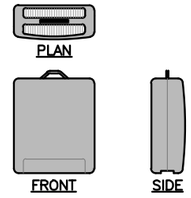


ANTENNA MOUNTING BRACKET (4 / A-3)
SCALE: N.T.S



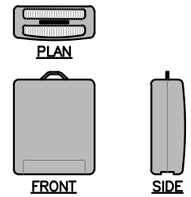
ANTENNA MOUNTING KIT (8 / A-3)
SCALE: N.T.S

RRU DIMENSIONS	
MODEL #	RRUS11 B12
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



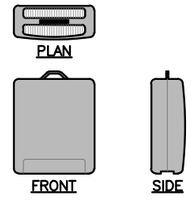
PROPOSED RRU DETAIL (5 / A-3)
SCALE: N.T.S

RRU DIMENSIONS	
MODEL #	RRUS11 B4
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



PROPOSED RRU DETAIL (6 / A-3)
SCALE: N.T.S

RRU DIMENSIONS	
MODEL #	RRUS11 B2
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



PROPOSED RRU DETAIL (7 / A-3)
SCALE: N.T.S

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STATE OF CONNECTICUT
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No. 21051
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PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

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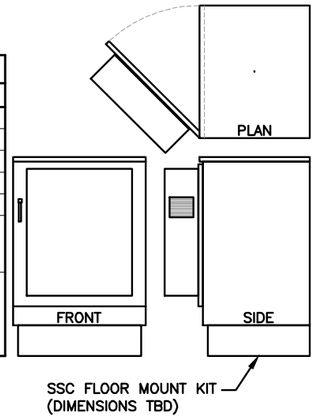
MONTVILLE, CT 06370
NEW LONDON COUNTY

SHEET TITLE
TOWER EQUIPMENT DETAILS

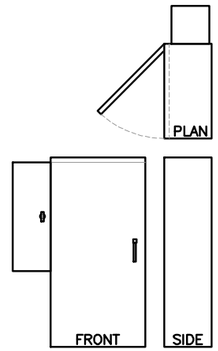
SHEET NUMBER
A-3

SSC DIMENSIONS	
MODEL #	**SXF17-2824**
MANUF.	PURCELL
WIDTH	28"
DEPTH	23.5"
HEIGHT	35.5"
PLINTH	6.5"
WEIGHT (BASE CONFIGURATION)	70 LBS
NOTE: INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	



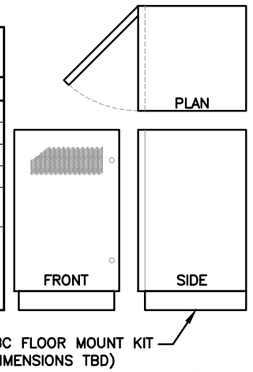
SITE SUPPORT CABINET (SSC) 1/A-4
SCALE: N.T.S

PPC DIMENSIONS	
MODEL #	**3799340400**
MANUF.	DELTA
WIDTH	20"
DEPTH	10"
HEIGHT	40"
WEIGHT	75 LBS
NOTE: INSTALL CABINET ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	

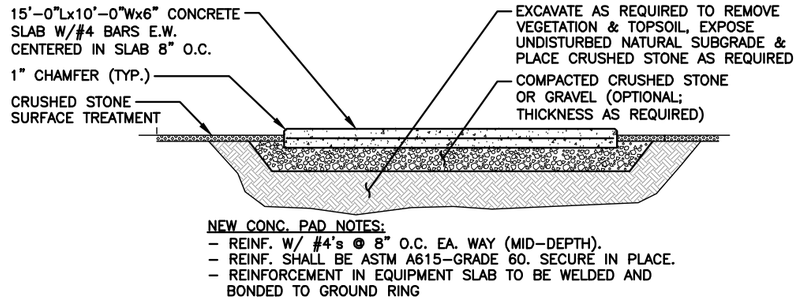


POWER PROTECTION CABINET (PPC) 2/A-4
SCALE: N.T.S

PBC DIMENSIONS	
MODEL #	**PBC-05**
MANUF.	ERICSSON
WIDTH	22.2"
DEPTH	22.8"
HEIGHT	34.1"
WEIGHT W/O BATTERIES	194 LBS
NOTE: INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	

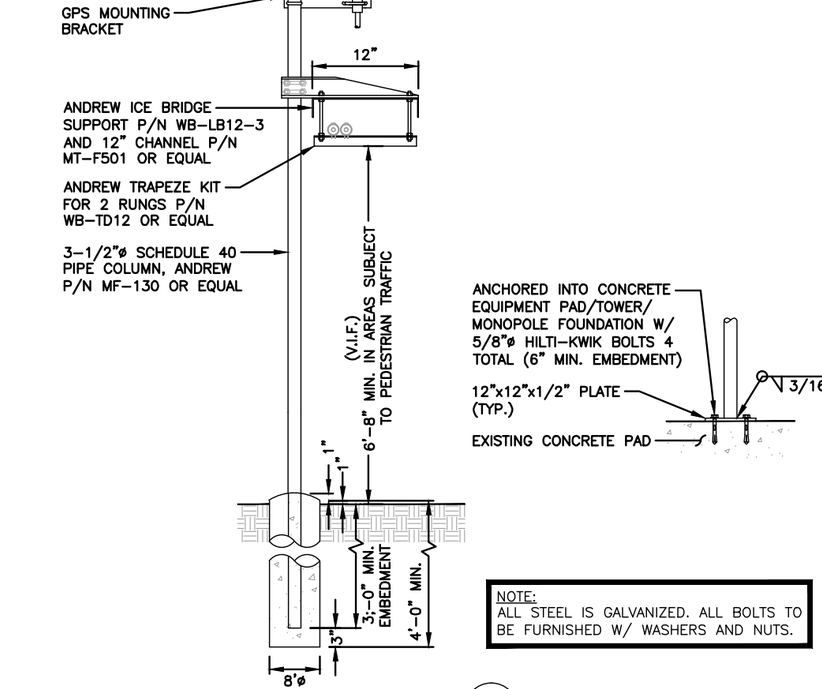


POWER AND BATTERY CABINET (PBC) 3/A-4
SCALE: N.T.S



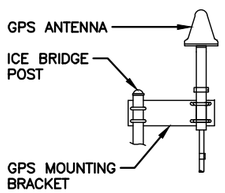
NEW CONC. PAD NOTES:
- REINF. W/ #4's @ 8" O.C. EA. WAY (MID-DEPTH).
- REINF. SHALL BE ASTM A615-GRADE 60. SECURE IN PLACE.
- REINFORCEMENT IN EQUIPMENT SLAB TO BE WELDED AND BONDED TO GROUND RING

CONCRETE PAD DETAIL 4/A-4
SCALE: N.T.S



NOTE:
ALL STEEL IS GALVANIZED. ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.

COAX ICE BRIDGE DETAIL 5/A-4
SCALE: N.T.S



GPS DIMENSIONS	
MODEL #	**CCAH32ST03**
MANUF.	NAIS
HEIGHT	3.9"
WIDTH	3.5"

GPS ANTENNA MOUNTING DETAIL 6/A-4
SCALE: N.T.S

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29755
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SUBMITTALS

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41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

SHEET TITLE
GROUND EQUIPMENT DETAILS

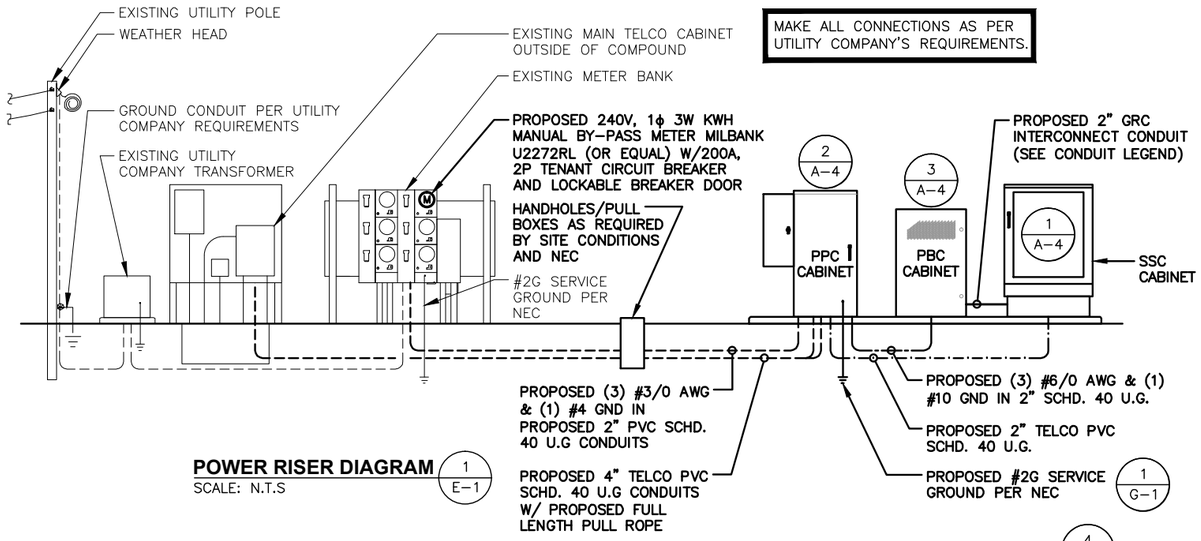
SHEET NUMBER
A-4

ELECTRICAL NOTES

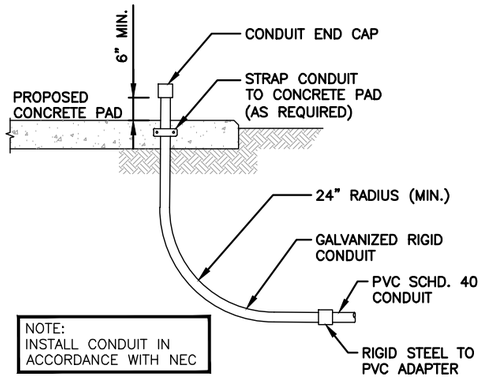
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

LEGEND

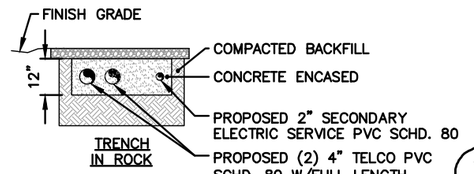
A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊛	GROUND ROD WITH TEST WELL
—●—	● EXOTHERMIC (CAD WELD) OR
	○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

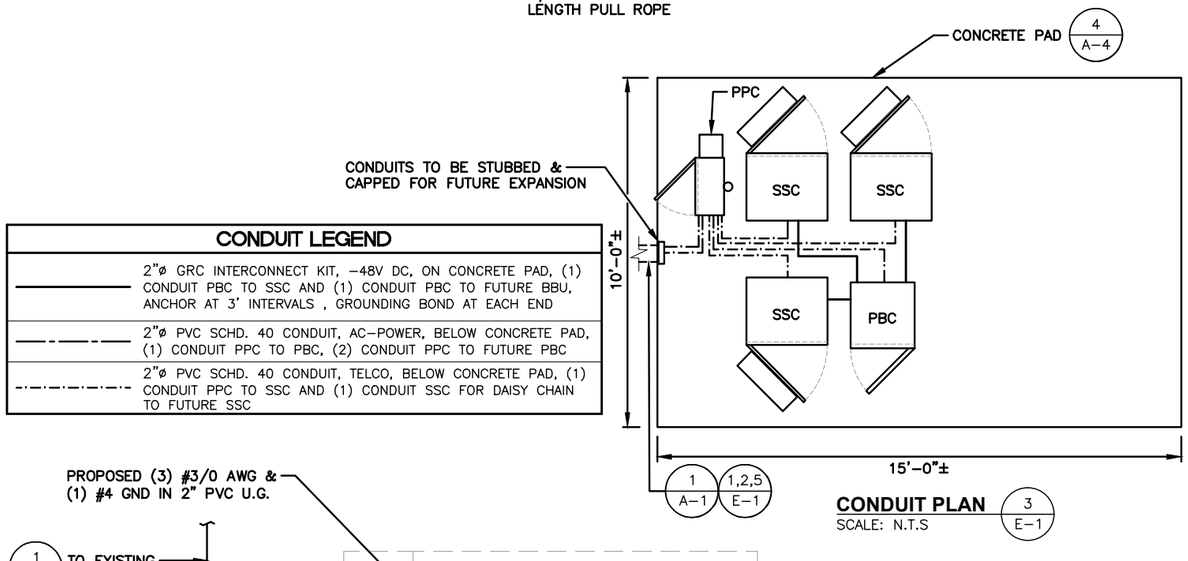


POWER RISER DIAGRAM 1 E-1
SCALE: N.T.S



CONDUIT SWEEP DETAIL 2 E-1
SCALE: N.T.S

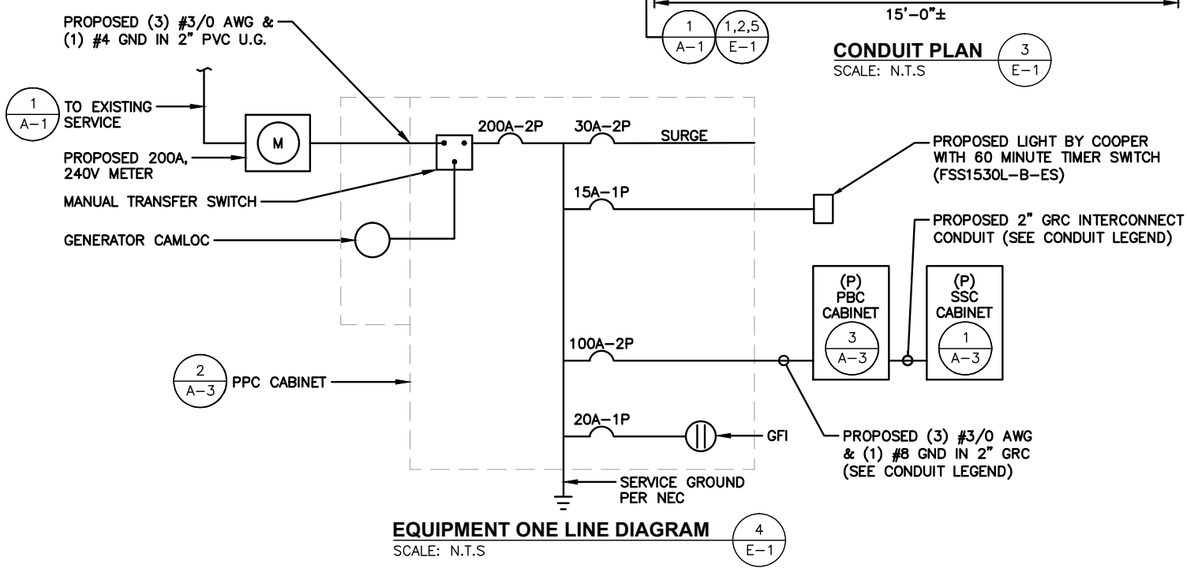




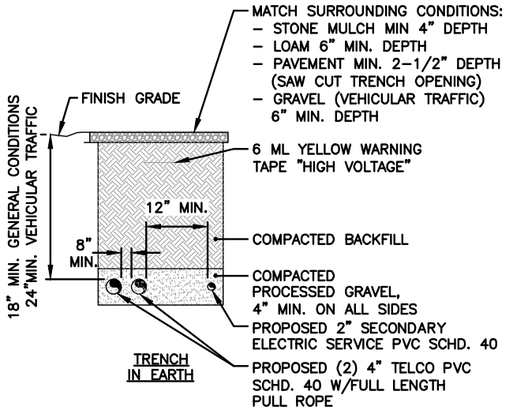
CONDUIT LEGEND

———	2"ø GRC INTERCONNECT KIT, -48V DC, ON CONCRETE PAD, (1) CONDUIT PBC TO SSC AND (1) CONDUIT PBC TO FUTURE BBU, ANCHOR AT 3' INTERVALS , GROUNDING BOND AT EACH END
- - - - -	2"ø PVC SCHD. 40 CONDUIT, AC-POWER, BELOW CONCRETE PAD, (1) CONDUIT PPC TO PBC, (2) CONDUIT PPC TO FUTURE PBC
-·-·-·-	2"ø PVC SCHD. 40 CONDUIT, TELCO, BELOW CONCRETE PAD, (1) CONDUIT PPC TO SSC AND (1) CONDUIT SSC FOR DAISY CHAIN TO FUTURE SSC

CONDUIT PLAN 3 E-1
SCALE: N.T.S



EQUIPMENT ONE LINE DIAGRAM 4 E-1
SCALE: N.T.S



SPECIAL WORK NOTE:
EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. WHERE DIRECTED OR REQUIRED, HAND-EXCAVATE PROPOSED UTILITY TRENCHING

BURIED CONDUIT DETAIL 5 E-1
SCALE: N.T.S

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1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 25057
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	08/25/16	CONSTRUCTION FINAL	DJM
1	08/02/16	CONSTRUCTION REVISED	FM
0	07/22/16	ISSUED FOR CONSTRUCTION	FM

SITE NUMBER:
CTNH032H
CROWN CASTLE SITE ID:
876370
SITE NAME:
CTNH032H
SITE ADDRESS:
41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

SHEET TITLE
ELECTRICAL DETAILS AND NOTES

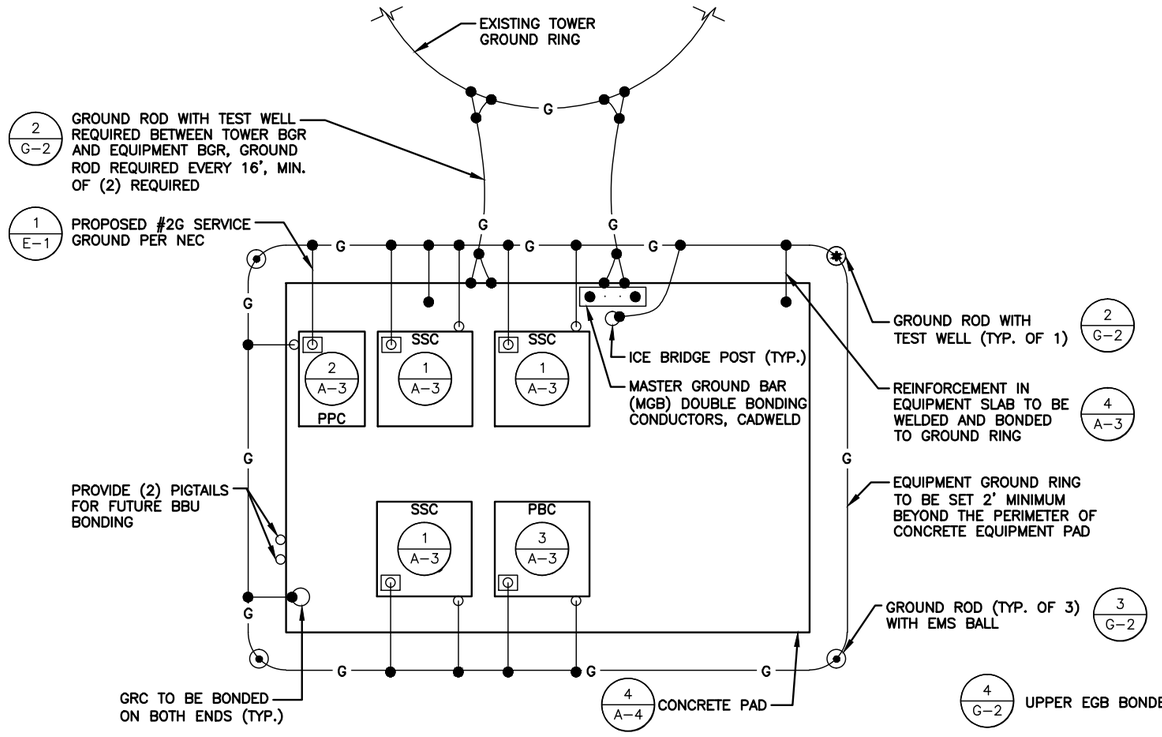
SHEET NUMBER
E-1

ELECTRICAL NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

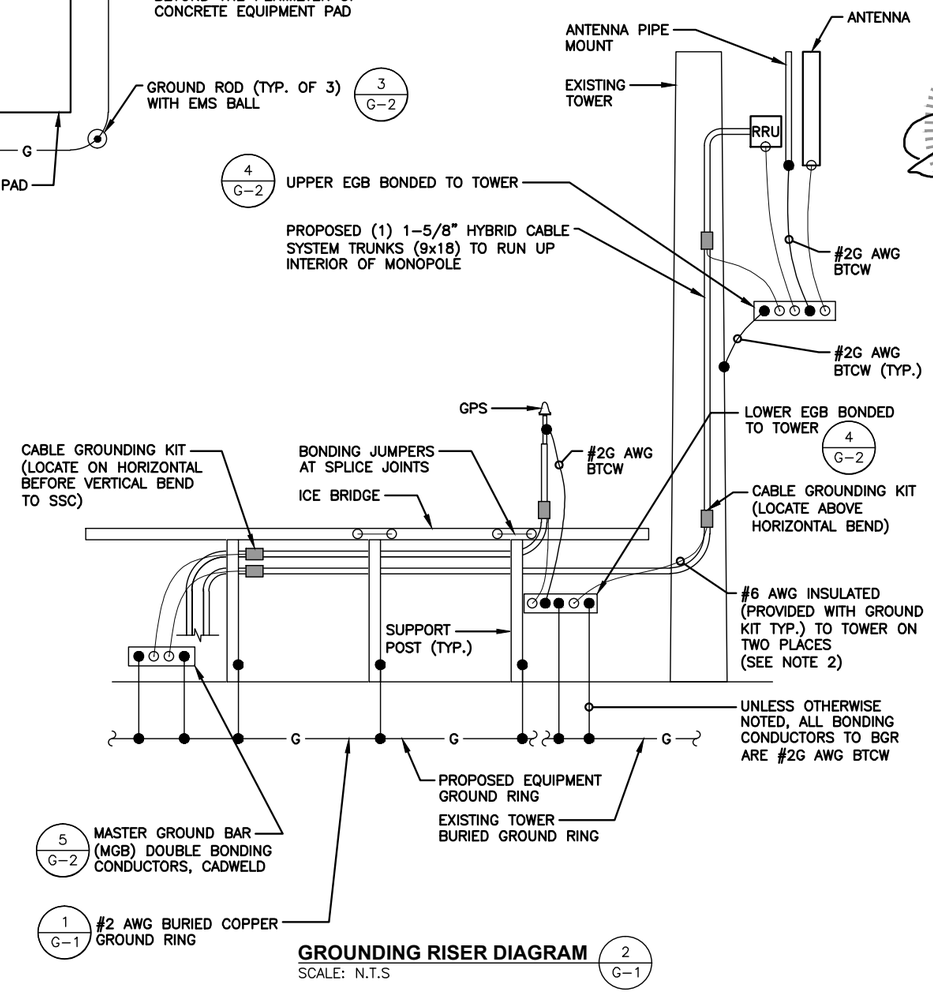
LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
✱	GROUND ROD WITH TEST WELL
—o—●	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI–DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



EQUIPMENT PLAN GROUNDING RING SCHEMATIC 1 G-1
SCALE: N.T.S

NOTE:
1. BASE BID TO INCLUDE INSTALLATION OF A BURIED GROUND RING AND (6) GROUND RODS OR SINGLE XIT HORIZONTAL CHEMICAL ROD AS DETERMINED BY FIELD CONDITIONS. ADDITIONAL RODS AS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE.
2. MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 100 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.
3. ALL CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S GUIDELINES.
4. ALL ABOVE–GRADE DOWNLEADS TO BGR SHALL BE INSTALLED IN 1" NON–METALLIC CONDUIT SECURED EVERY 2' WITH NON–METALLIC CLIPS.



GROUNDING RISER DIAGRAM 2 G-1
SCALE: N.T.S

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
OFFICE: (508) 286-2700
FAX: (508) 286-2893

CROWN CASTLE
CROWN CASTLE
12 GILL STREET, SUITE 5800
WOBURN, MA 01801

Hudson Design Groupllc
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
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STATE OF CONNECTICUT
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No. 23057
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NEW LONDON COUNTY

SHEET TITLE
GROUNDING SCHEMATIC AND RISER DIAGRAM

SHEET NUMBER
G-1

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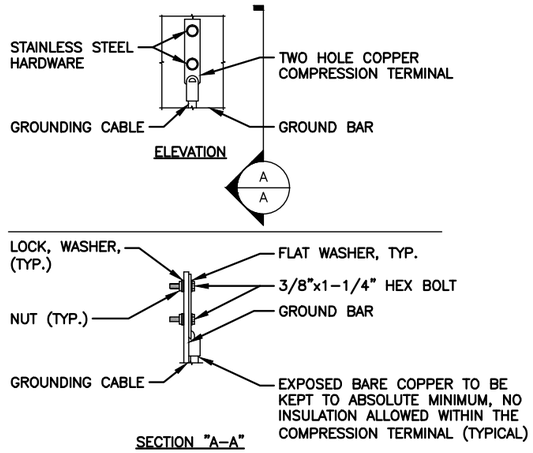
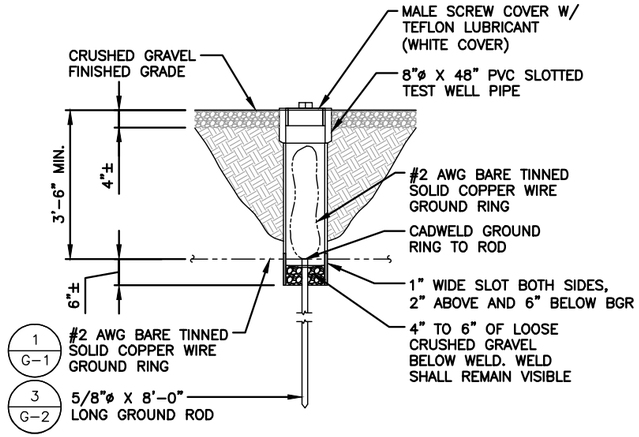


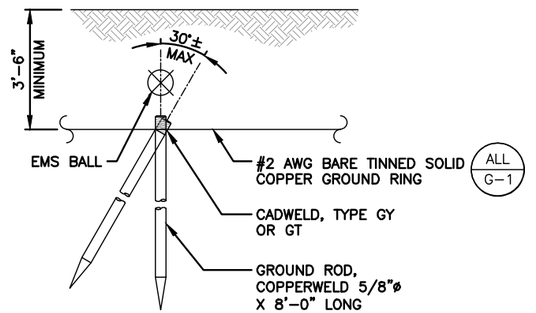
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL (1 / G-2)
SCALE: N.T.S



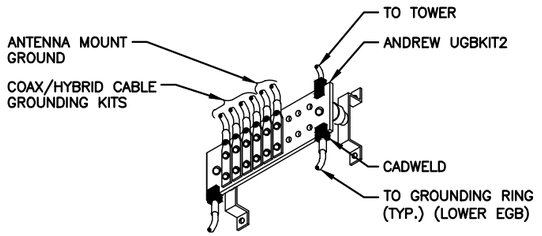
NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND LOOP AND TWO ON THE EQUIPMENT GROUND LOOP

GROUND ROD TEST WELL DETAIL (2 / G-2)
SCALE: N.T.S

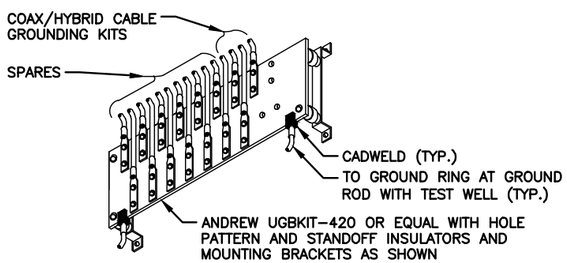


NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 30 DEGREES FROM THE VERTICAL.

GROUND ROD DETAIL (3 / G-2)
SCALE: N.T.S



EQUIPMENT GROUND BAR (EGB) (4 / G-2)
SCALE: N.T.S



MASTER GROUND BAR (MGB) (5 / G-2)
SCALE: N.T.S

T-MOBILE NORTHEAST LLC
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41 BECKWITH ROAD
MONTVILLE, CT 06370
NEW LONDON COUNTY

SHEET TITLE
GROUNDING DETAILS AND NOTES

SHEET NUMBER
G-2

Date: **August 18, 2016**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Dr.
Canonsburg PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate** **Carrier Site Number:**	 CTNH032H
Crown Castle Designation:	**Crown Castle BU Number:** **Crown Castle Site Name:** **Crown Castle JDE Job Number:** **Crown Castle Work Order Number:** **Crown Castle Application Number:**	876370 MAYBROOK / BOND 382811 1286076 345818 Rev. 17
Engineering Firm Designation:	**Crown Castle Project Number:**	1286076
Site Data:	**41 Beckwith Rd., MONTVILLE, New London County, CT** **Latitude *41° 26' 7.66"*, Longitude *-72° 13' 15.07"*** **180 Foot - Monopole Tower**	

Dear Charles McGuirt,

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 1286076, in accordance with application 345818, revision 16.

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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

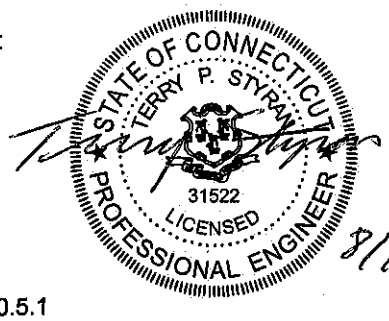
The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 105 mph 3-second gust converted to 85 mph fastest mile.

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: Alexander Greguric, E.I.T. / DMC

Respectfully submitted by:



8/19/2016

Terry P. Styran, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in September of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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	commscope	LNX-6515DS-A1M	1	1-5/8	-
		3	ericsson	RRUS 11 B12			
		6	ericsson	RRUS 11 B4			
		3	rfs celwave	APX16DWV-16DWV-S-E-A20			
		1	tower mounts	Platform Mount [LP 301-1]			

Table 2 - Existing 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
180.0	181.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	1
	180.0	1	tower mounts	Platform Mount [LP 601-1]			
167.0	167.0	3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	12	1-5/8	1
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		6	antel	LPA-80080/4CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Side Arm Mount [SO 202-3]			
		1	tower mounts	T-Arm Mount [TA 602-3]			
75.0	76.0	1	lucent	KS24019-L112A	1	1/2	1
	75.0	1	tower mounts	Side Arm Mount [SO 701-1]			

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)
180	180	12	dapa	48000	-	-
170	170	12	dapa	48000	-	-
160	160	12	dapa	48000	-	-
150	150	12	dapa	48000	-	-
140	140	12	dapa	48000	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Incorporated	1532099	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.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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	180 - 133	Pole	TP27.51x15.5x0.25	1	-6.85	1082.36	85.6	Pass
L2	133 - 87.3333	Pole	TP38.56x25.9879x0.375	2	-13.82	2279.26	71.4	Pass
L3	87.3333 - 42.6667	Pole	TP49.1x36.46x0.4375	3	-20.02	3044.56	64.7	Pass
L4	42.6667 - 0	Pole	TP59x46.5397x0.4375	4	-27.68	3449.70	66.8	Pass
							Summary	
						Pole (L1)	85.6	Pass
						Rating =	85.6	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.0	Pass
1	Base Plate	0	85.6	Pass
1	Base Foundation (Compared w/ Design Loads)	0	75.5	Pass

Structure Rating (max from all components) =	85.6%

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

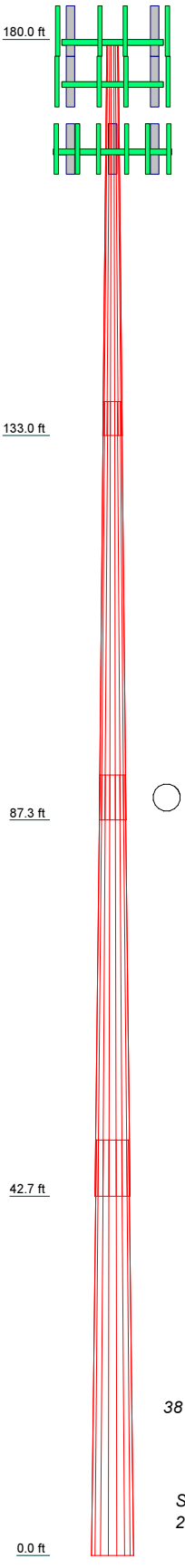
4.1) Recommendations

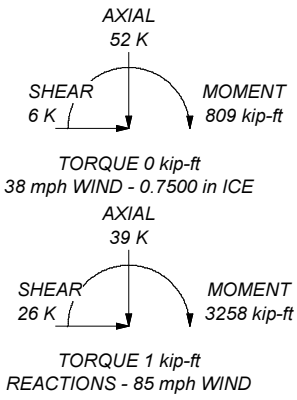
The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

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	47'	18	0.2500	4'	15.5000	27.5100		2.7
2	49'8-1/32"	18	0.3750	5'3-31/32"	25.9879	38.5600		6.4
3	50'	18	0.4375	6'8-1/32"	36.4600	49.1000		10.0
4	49'3-31/32"	18	0.4375		46.5397	59.0000		12.2
							A572-65	31.3





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB980H90E-M w/ Mount Pipe	180	(2) LPA-80080/4CF w/ Mount Pipe	167
(2) DB980H90E-M w/ Mount Pipe	180	(2) LPA-80080/4CF w/ Mount Pipe	167
(2) DB980H90E-M w/ Mount Pipe	180	BXA-70063-6CF-2 w/ Mount Pipe	167
Platform Mount [LP 601-1]	180	BXA-70063-6CF-2 w/ Mount Pipe	167
10' Climbing Ladder (Flat)	180	BXA-70063-6CF-2 w/ Mount Pipe	167
APX16DWV-16DWV-S-E-A20	175	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	167
APX16DWV-16DWV-S-E-A20	175	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	167
APX16DWV-16DWV-S-E-A20	175	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	167
LNX-6515DS-A1M	175	(2) FD9R6004/2C-3L	167
LNX-6515DS-A1M	175	(2) FD9R6004/2C-3L	167
LNX-6515DS-A1M	175	(2) FD9R6004/2C-3L	167
(2) RRUS 11 B4	175	Side Arm Mount [SO 202-3]	167
(2) RRUS 11 B4	175	T-Arm Mount [TA 602-3]	167
(2) RRUS 11 B4	175	KS24019-L112A	75
RRUS 11 B12	175	Side Arm Mount [SO 701-1]	75
RRUS 11 B12	175		
RRUS 11 B12	175		
Platform Mount [LP 301-1]	175		
(2) LPA-80080/4CF w/ Mount Pipe	167		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 85.6%

CROWN CASTLE
The Foundation for a Wireless World

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

Job: **BU 876370**			
Project:			
Client: Crown Castle	Drawn by: Alexander Greguric	App'd:	
Code: TIA/EIA-222-F	Date: 08/17/16	Scale: NTS	
Path: X:\ENG Work Area\AGreguric\WIP\876370 WO 1286076\Rerun\876370.eri		Dwg No. E-1	

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

1) Tower is located in New London County, Connecticut.
2) Basic wind speed of 85 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56.00 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	180'-133'	47'	4'	18	15.5000	27.5100	0.2500	1.0000	A572-65 (65 ksi)
L2	133'-87'3-31/32"	49'8-1/32"	5'3-31/32"	18	25.9879	38.5600	0.3750	1.5000	A572-65 (65 ksi)
L3	87'3-31/32"-42'8-1/32"	50'	6'8-1/32"	18	36.4600	49.1000	0.4375	1.7500	A572-65 (65 ksi)
L4	42'8-1/32"-0'	49'3-31/32"		18	46.5397	59.0000	0.4375	1.7500	A572-65 (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	15.7391	12.1009	355.5445	5.4138	7.8740	45.1542	711.5567	6.0516	2.2880	9.152
	27.9344	21.6308	2030.7756	9.6773	13.9751	145.3141	4064.2233	10.8175	4.4018	17.607
L2	27.4169	30.4857	2526.6814	9.0926	13.2018	191.3886	5056.6874	15.2458	3.9139	10.437
	39.1549	45.4497	8372.4782	13.5557	19.5885	427.4185	16755.9731	22.7292	6.1266	16.337
L3	38.3915	50.0217	8200.5504	12.7880	18.5217	442.7545	16411.8913	25.0156	5.6470	12.907
	49.8574	67.5740	20216.4865	17.2752	24.9428	810.5139	40459.5744	33.7934	7.8716	17.992
L4	48.9674	64.0186	17190.4140	16.3663	23.6421	727.1088	34403.4476	32.0154	7.4210	16.962
	59.9102	81.3214	35235.5662	20.7897	29.9720	1175.6161	70517.4963	40.6684	9.6140	21.975

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 180'-133'				1	1	1			
L2 133'-87'3-31/32"				1	1	1			
L3 87'3-31/32"-42'8-1/32"				1	1	1			
L4 42'8-1/32"-0'				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

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 plf
LDF7-50A(1-5/8")	B	No	Inside Pole	180' - 0'	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
*								
LDF7-50A(1-5/8")	A	No	Inside Pole	167' - 0'	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
*								
LDF4-50A(1/2")	A	No	Inside Pole	75' - 0'	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
*								
MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	B	No	Inside Pole	175' - 0'	1	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
						2" Ice	0.00	1.07

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***						4" Ice	0.00	1.07

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	180'-133'	A	0.000	0.000	0.000	0.000	0.33
		B	0.000	0.000	0.000	0.000	0.28
		C	0.000	0.000	0.000	0.000	0.00
L2	133'-87'3-31/32"	A	0.000	0.000	0.000	0.000	0.45
		B	0.000	0.000	0.000	0.000	0.27
		C	0.000	0.000	0.000	0.000	0.00
L3	87'3-31/32"-42'8-1/32"	A	0.000	0.000	0.000	0.000	0.44
		B	0.000	0.000	0.000	0.000	0.27
		C	0.000	0.000	0.000	0.000	0.00
L4	42'8-1/32"-0'	A	0.000	0.000	0.000	0.000	0.43
		B	0.000	0.000	0.000	0.000	0.26
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	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	180'-133'	A	0.903	0.000	0.000	0.000	0.000	0.33
		B		0.000	0.000	0.000	0.000	0.28
		C		0.000	0.000	0.000	0.000	0.00
L2	133'-87'3-31/32"	A	0.866	0.000	0.000	0.000	0.000	0.45
		B		0.000	0.000	0.000	0.000	0.27
		C		0.000	0.000	0.000	0.000	0.00
L3	87'3-31/32"-42'8-1/32"	A	0.813	0.000	0.000	0.000	0.000	0.44
		B		0.000	0.000	0.000	0.000	0.27
		C		0.000	0.000	0.000	0.000	0.00
L4	42'8-1/32"-0'	A	0.750	0.000	0.000	0.000	0.000	0.43
		B		0.000	0.000	0.000	0.000	0.26
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	180'-133'	0.0000	0.0000	0.0000	0.0000
L2	133'-87'3-31/32"	0.0000	0.0000	0.0000	0.0000
L3	87'3-31/32"-42'8-1/32"	0.0000	0.0000	0.0000	0.0000
L4	42'8-1/32"-0'	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

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
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00 0' 1'	0.000	180'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.07 0.11 0.22 0.55
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00 0' 1'	0.000	180'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.07 0.11 0.22 0.55
(2) DB980H90E-M w/ Mount Pipe	C	From Leg	4.00 0' 1'	0.000	180'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.07 0.11 0.22 0.55
Platform Mount [LP 601-1]	C	None		0.000	180'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.47 33.59 38.71 48.95 69.43	28.47 33.59 38.71 48.95 69.43	1.12 1.51 1.91 2.69 4.26
10' Climbing Ladder (Flat)	B	From Leg	2.00 0' -5'	0.000	180'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.84 10.30 14.76 23.67 41.49	5.84 10.30 14.76 23.67 41.49	0.05 0.07 0.09 0.14 0.23
*									
APX16DWV-16DWV-S-E-A20	A	From Leg	4.00 0' 0'	0.000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.23 7.68 8.14 9.09 11.09	2.15 2.49 2.84 3.55 5.08	0.04 0.07 0.11 0.20 0.46
APX16DWV-16DWV-S-E-A20	B	From Leg	4.00 0' 0'	0.000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.23 7.68 8.14 9.09 11.09	2.15 2.49 2.84 3.55 5.08	0.04 0.07 0.11 0.20 0.46
APX16DWV-16DWV-S-E-A20	C	From Leg	4.00 0' 0'	0.000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.23 7.68 8.14 9.09 11.09	2.15 2.49 2.84 3.55 5.08	0.04 0.07 0.11 0.20 0.46
LNX-6515DS-A1M	A	From Leg	4.00 0' 0'	0.000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.45 12.06 12.69 14.03 17.05	7.70 8.29 8.89 10.11 12.64	0.05 0.12 0.19 0.36 0.80
LNX-6515DS-A1M	B	From Leg	4.00 0' 0'	0.000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.45 12.06 12.69 14.03 17.05	7.70 8.29 8.89 10.11 12.64	0.05 0.12 0.19 0.36 0.80
LNX-6515DS-A1M	C	From Leg	4.00 0' 0'	0.000	175'	No Ice 1/2" Ice 1" Ice	11.45 12.06 12.69 14.03	7.70 8.29 8.89 10.11	0.05 0.12 0.19 0.36

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
						2" Ice	17.05	12.64	0.80
						4" Ice			
(2) RRUS 11 B4	A	From Leg	4.00	0.000	175'	No Ice	3.31	1.36	0.05
			0'			1/2"	3.55	1.54	0.07
			0'			Ice	3.80	1.73	0.10
						1" Ice	4.33	2.13	0.15
						2" Ice	5.50	3.04	0.31
						4" Ice			
(2) RRUS 11 B4	B	From Leg	4.00	0.000	175'	No Ice	3.31	1.36	0.05
			0'			1/2"	3.55	1.54	0.07
			0'			Ice	3.80	1.73	0.10
						1" Ice	4.33	2.13	0.15
						2" Ice	5.50	3.04	0.31
						4" Ice			
(2) RRUS 11 B4	C	From Leg	4.00	0.000	175'	No Ice	3.31	1.36	0.05
			0'			1/2"	3.55	1.54	0.07
			0'			Ice	3.80	1.73	0.10
						1" Ice	4.33	2.13	0.15
						2" Ice	5.50	3.04	0.31
						4" Ice			
RRUS 11 B12	A	From Leg	4.00	0.000	175'	No Ice	3.31	1.36	0.05
			0'			1/2"	3.55	1.54	0.07
			0'			Ice	3.80	1.73	0.10
						1" Ice	4.33	2.13	0.15
						2" Ice	5.50	3.04	0.31
						4" Ice			
RRUS 11 B12	B	From Leg	4.00	0.000	175'	No Ice	3.31	1.36	0.05
			0'			1/2"	3.55	1.54	0.07
			0'			Ice	3.80	1.73	0.10
						1" Ice	4.33	2.13	0.15
						2" Ice	5.50	3.04	0.31
						4" Ice			
RRUS 11 B12	C	From Leg	4.00	0.000	175'	No Ice	3.31	1.36	0.05
			0'			1/2"	3.55	1.54	0.07
			0'			Ice	3.80	1.73	0.10
						1" Ice	4.33	2.13	0.15
						2" Ice	5.50	3.04	0.31
						4" Ice			
Platform Mount [LP 301-1]	C	None		0.000	175'	No Ice	30.10	30.10	1.59
						1/2"	40.80	40.80	2.03
						Ice	51.50	51.50	2.47
						1" Ice	72.90	72.90	3.35
						2" Ice	115.70	115.70	5.11
						4" Ice			
*									
(2) LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.00	0.000	167'	No Ice	2.86	7.23	0.03
			0'			1/2"	3.22	7.92	0.08
			0'			Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
						4" Ice			
(2) LPA-80080/4CF w/ Mount Pipe	B	From Leg	4.00	0.000	167'	No Ice	2.86	7.23	0.03
			0'			1/2"	3.22	7.92	0.08
			0'			Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
						4" Ice			
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.00	0.000	167'	No Ice	2.86	7.23	0.03
			0'			1/2"	3.22	7.92	0.08
			0'			Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
						4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00	0.000	167'	No Ice	7.97	5.80	0.04
			0'			1/2"	8.61	6.95	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
			0'			Ice	9.22	7.82	0.17
						1" Ice	10.46	9.60	0.34
						2" Ice	13.07	13.37	0.80
						4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.000	167'	No Ice	7.97	5.80	0.04
						1/2" Ice	8.61	6.95	0.10
						1" Ice	9.22	7.82	0.17
						2" Ice	10.46	9.60	0.34
						4" Ice	13.07	13.37	0.80
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.000	167'	No Ice	7.97	5.80	0.04
						1/2" Ice	8.61	6.95	0.10
						1" Ice	9.22	7.82	0.17
						2" Ice	10.46	9.60	0.34
						4" Ice	13.07	13.37	0.80
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.000	167'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.000	167'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.000	167'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
(2) FD9R6004/2C-3L	A	From Leg	4.00 0' 0'	0.000	167'	No Ice	0.37	0.08	0.00
						1/2" Ice	0.45	0.14	0.01
						1" Ice	0.54	0.20	0.01
						2" Ice	0.75	0.34	0.02
						4" Ice	1.28	0.74	0.06
(2) FD9R6004/2C-3L	B	From Leg	4.00 0' 0'	0.000	167'	No Ice	0.37	0.08	0.00
						1/2" Ice	0.45	0.14	0.01
						1" Ice	0.54	0.20	0.01
						2" Ice	0.75	0.34	0.02
						4" Ice	1.28	0.74	0.06
(2) FD9R6004/2C-3L	C	From Leg	4.00 0' 0'	0.000	167'	No Ice	0.37	0.08	0.00
						1/2" Ice	0.45	0.14	0.01
						1" Ice	0.54	0.20	0.01
						2" Ice	0.75	0.34	0.02
						4" Ice	1.28	0.74	0.06
Side Arm Mount [SO 202-3]	C	None		0.000	167'	No Ice	6.18	6.18	0.33
						1/2" Ice	8.56	8.56	0.40
						1" Ice	10.94	10.94	0.47
						2" Ice	15.70	15.70	0.61
						4" Ice	25.22	25.22	0.90
T-Arm Mount [TA 602-3]	C	None		0.000	167'	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
						2" Ice	26.99	26.99	1.64
						4" Ice	42.39	42.39	2.50

*

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
KS24019-L112A	A	From Leg	1.50 0' 1'	0.000	75'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.10 0.18 0.26 0.42 0.74	0.10 0.18 0.26 0.42 0.74	0.01 0.01 0.01 0.01 0.02
Side Arm Mount [SO 701-1] *****	A	From Leg	0.75 0' 0'	0.000	75'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	0.07 0.08 0.09 0.12 0.18

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	180 - 133	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-13.80	-0.21	-0.12
			Max. Mx	5	-6.85	-495.14	-0.04
			Max. My	8	-6.85	-0.08	-495.09
			Max. Vy	5	14.65	-495.14	-0.04
			Max. Vx	8	14.65	-0.08	-495.09
			Max. Torque	3			-0.79
L2	133 - 87.3333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.08	-0.21	-0.12
			Max. Mx	5	-13.82	-1219.01	-0.05
			Max. My	8	-13.82	-0.10	-1218.95
			Max. Vy	5	18.08	-1219.01	-0.05
			Max. Vx	2	-18.08	-0.10	1218.82
			Max. Torque	3			-0.78
L3	87.3333 - 42.6667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-34.29	-0.21	0.12
			Max. Mx	5	-24.26	-2084.70	0.12
			Max. My	2	-24.27	-0.11	2083.84
			Max. Vy	5	21.83	-2084.70	0.12
			Max. Vx	2	-21.80	-0.11	2083.84
			Max. Torque	9			0.78
L4	42.6667 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.56	-0.21	0.12
			Max. Mx	5	-39.27	-3258.33	0.12
			Max. My	2	-39.27	-0.11	3255.85
			Max. Vy	5	25.74	-3258.33	0.12
			Max. Vx	2	-25.71	-0.11	3255.85
			Max. Torque	3			-0.69

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	51.56	-5.95	0.00
	Max. H_x	11	39.29	25.72	-0.00
	Max. H_z	2	39.29	-0.00	25.69
	Max. M_x	2	3255.85	-0.00	25.69
	Max. M_z	5	3258.33	-25.72	-0.00
	Max. Torsion	9	0.69	12.86	-22.25
	Min. Vert	1	39.29	0.00	0.00
	Min. H_x	5	39.29	-25.72	-0.00
	Min. H_z	8	39.29	-0.00	-25.69
	Min. M_x	8	-3255.63	-0.00	-25.69
	Min. M_z	11	-3258.09	25.72	-0.00
	Min. Torsion	3	-0.69	-12.86	22.25

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	39.29	0.00	0.00	-0.11	-0.11	0.00
Dead+Wind 0 deg - No Ice	39.29	0.00	-25.69	-3255.85	-0.11	0.67
Dead+Wind 30 deg - No Ice	39.29	12.86	-22.25	-2819.67	-1629.22	0.69
Dead+Wind 60 deg - No Ice	39.29	22.27	-12.84	-1627.99	-2821.81	0.52

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
Dead+Wind 90 deg - No Ice	39.29	25.72	0.00	-0.12	-3258.33	0.21
Dead+Wind 120 deg - No Ice	39.29	22.27	12.84	1627.76	-2821.81	-0.15
Dead+Wind 150 deg - No Ice	39.29	12.86	22.25	2819.45	-1629.22	-0.48
Dead+Wind 180 deg - No Ice	39.29	0.00	25.69	3255.63	-0.11	-0.67
Dead+Wind 210 deg - No Ice	39.29	-12.86	22.25	2819.44	1629.00	-0.69
Dead+Wind 240 deg - No Ice	39.29	-22.27	12.84	1627.75	2821.58	-0.52
Dead+Wind 270 deg - No Ice	39.29	-25.72	0.00	-0.12	3258.09	-0.21
Dead+Wind 300 deg - No Ice	39.29	-22.27	-12.84	-1627.98	2821.58	0.15
Dead+Wind 330 deg - No Ice	39.29	-12.86	-22.25	-2819.67	1628.99	0.48
Dead+Ice+Temp	51.56	0.00	0.00	-0.12	-0.21	0.00
Dead+Wind 0 deg+Ice+Temp	51.56	0.00	-5.94	-808.32	-0.24	0.32
Dead+Wind 30 deg+Ice+Temp	51.56	2.97	-5.14	-700.04	-404.77	0.34
Dead+Wind 60 deg+Ice+Temp	51.56	5.15	-2.97	-404.22	-700.91	0.27
Dead+Wind 90 deg+Ice+Temp	51.56	5.95	0.00	-0.12	-809.30	0.13
Dead+Wind 120 deg+Ice+Temp	51.56	5.15	2.97	403.99	-700.91	-0.05
Dead+Wind 150 deg+Ice+Temp	51.56	2.97	5.14	699.81	-404.77	-0.22
Dead+Wind 180 deg+Ice+Temp	51.56	0.00	5.94	808.09	-0.24	-0.32
Dead+Wind 210 deg+Ice+Temp	51.56	-2.97	5.14	699.81	404.30	-0.34
Dead+Wind 240 deg+Ice+Temp	51.56	-5.15	2.97	403.98	700.44	-0.27
Dead+Wind 270 deg+Ice+Temp	51.56	-5.95	0.00	-0.12	808.83	-0.13
Dead+Wind 300 deg+Ice+Temp	51.56	-5.15	-2.97	-404.22	700.44	0.05
Dead+Wind 330 deg+Ice+Temp	51.56	-2.97	-5.14	-700.04	404.30	0.22
Dead+Wind 0 deg - Service	39.29	0.00	-8.89	-1128.40	-0.12	0.24
Dead+Wind 30 deg - Service	39.29	4.45	-7.70	-977.24	-564.69	0.24
Dead+Wind 60 deg - Service	39.29	7.71	-4.44	-564.26	-977.99	0.18
Dead+Wind 90 deg - Service	39.29	8.90	0.00	-0.11	-1129.27	0.08
Dead+Wind 120 deg - Service	39.29	7.71	4.44	564.03	-977.99	-0.05
Dead+Wind 150 deg - Service	39.29	4.45	7.70	977.02	-564.69	-0.17
Dead+Wind 180 deg - Service	39.29	0.00	8.89	1128.18	-0.12	-0.24
Dead+Wind 210 deg - Service	39.29	-4.45	7.70	977.02	564.45	-0.24
Dead+Wind 240 deg - Service	39.29	-7.71	4.44	564.03	977.75	-0.18
Dead+Wind 270 deg - Service	39.29	-8.90	0.00	-0.11	1129.03	-0.08
Dead+Wind 300 deg - Service	39.29	-7.71	-4.44	-564.26	977.75	0.05
Dead+Wind 330 deg - Service	39.29	-4.45	-7.70	-977.24	564.45	0.17

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	-39.29	0.00	0.00	39.29	0.00	0.000%
2	0.00	-39.29	-25.69	-0.00	39.29	25.69	0.000%
3	12.86	-39.29	-22.25	-12.86	39.29	22.25	0.000%
4	22.27	-39.29	-12.84	-22.27	39.29	12.84	0.000%
5	25.72	-39.29	0.00	-25.72	39.29	-0.00	0.000%
6	22.27	-39.29	12.84	-22.27	39.29	-12.84	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
7	12.86	-39.29	22.25	-12.86	39.29	-22.25	0.000%
8	0.00	-39.29	25.69	-0.00	39.29	-25.69	0.000%
9	-12.86	-39.29	22.25	12.86	39.29	-22.25	0.000%
10	-22.27	-39.29	12.84	22.27	39.29	-12.84	0.000%
11	-25.72	-39.29	0.00	25.72	39.29	-0.00	0.000%
12	-22.27	-39.29	-12.84	22.27	39.29	12.84	0.000%
13	-12.86	-39.29	-22.25	12.86	39.29	22.25	0.000%
14	0.00	-51.56	0.00	0.00	51.56	0.00	0.000%
15	0.00	-51.56	-5.94	0.00	51.56	5.94	0.000%
16	2.97	-51.56	-5.14	-2.97	51.56	5.14	0.000%
17	5.15	-51.56	-2.97	-5.15	51.56	2.97	0.000%
18	5.95	-51.56	0.00	-5.95	51.56	0.00	0.000%
19	5.15	-51.56	2.97	-5.15	51.56	-2.97	0.000%
20	2.97	-51.56	5.14	-2.97	51.56	-5.14	0.000%
21	0.00	-51.56	5.94	0.00	51.56	-5.94	0.000%
22	-2.97	-51.56	5.14	2.97	51.56	-5.14	0.000%
23	-5.15	-51.56	2.97	5.15	51.56	-2.97	0.000%
24	-5.95	-51.56	0.00	5.95	51.56	0.00	0.000%
25	-5.15	-51.56	-2.97	5.15	51.56	2.97	0.000%
26	-2.97	-51.56	-5.14	2.97	51.56	5.14	0.000%
27	0.00	-39.29	-8.89	0.00	39.29	8.89	0.000%
28	4.45	-39.29	-7.70	-4.45	39.29	7.70	0.000%
29	7.71	-39.29	-4.44	-7.71	39.29	4.44	0.000%
30	8.90	-39.29	0.00	-8.90	39.29	0.00	0.000%
31	7.71	-39.29	4.44	-7.71	39.29	-4.44	0.000%
32	4.45	-39.29	7.70	-4.45	39.29	-7.70	0.000%
33	0.00	-39.29	8.89	0.00	39.29	-8.89	0.000%
34	-4.45	-39.29	7.70	4.45	39.29	-7.70	0.000%
35	-7.71	-39.29	4.44	7.71	39.29	-4.44	0.000%
36	-8.90	-39.29	0.00	8.90	39.29	0.00	0.000%
37	-7.71	-39.29	-4.44	7.71	39.29	4.44	0.000%
38	-4.45	-39.29	-7.70	4.45	39.29	7.70	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	0.00035575
3	Yes	5	0.00000001	0.00045868
4	Yes	5	0.00000001	0.00044485
5	Yes	4	0.00000001	0.00025184
6	Yes	5	0.00000001	0.00045045
7	Yes	5	0.00000001	0.00045526
8	Yes	4	0.00000001	0.00035576
9	Yes	5	0.00000001	0.00044363
10	Yes	5	0.00000001	0.00045714
11	Yes	4	0.00000001	0.00025176
12	Yes	5	0.00000001	0.00045127
13	Yes	5	0.00000001	0.00044678
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00015605
16	Yes	5	0.00000001	0.00019044
17	Yes	5	0.00000001	0.00018831
18	Yes	5	0.00000001	0.00015613
19	Yes	5	0.00000001	0.00018916
20	Yes	5	0.00000001	0.00018986
21	Yes	5	0.00000001	0.00015614
22	Yes	5	0.00000001	0.00018795
23	Yes	5	0.00000001	0.00018999
24	Yes	5	0.00000001	0.00015586
25	Yes	5	0.00000001	0.00018885
26	Yes	5	0.00000001	0.00018823
27	Yes	4	0.00000001	0.00007770
28	Yes	4	0.00000001	0.00084257

29	Yes	4	0.00000001	0.00079054
30	Yes	4	0.00000001	0.00006308
31	Yes	4	0.00000001	0.00081122
32	Yes	4	0.00000001	0.00082919
33	Yes	4	0.00000001	0.00007771
34	Yes	4	0.00000001	0.00078553
35	Yes	4	0.00000001	0.00083650
36	Yes	4	0.00000001	0.00006301
37	Yes	4	0.00000001	0.00081354
38	Yes	4	0.00000001	0.00079661

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	180 - 133	42.365	30	2.541	0.007
L2	137 - 87.3333	22.049	30	1.762	0.001
L3	92.6667 - 42.6667	9.228	30	0.997	0.000
L4	49.3333 - 0	2.513	30	0.475	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180'	(2) DB980H90E-M w/ Mount Pipe	30	42.365	2.541	0.007	18259
175'	APX16DWV-16DWV-S-E-A20	30	39.802	2.451	0.006	18259
167'	(2) LPA-80080/4CF w/ Mount Pipe	30	35.743	2.307	0.005	7022
75'	KS24019-L112A	30	5.896	0.759	0.000	4614

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	180 - 133	121.869	5	7.309	0.020
L2	137 - 87.3333	63.520	5	5.075	0.004
L3	92.6667 - 42.6667	26.606	5	2.874	0.001
L4	49.3333 - 0	7.249	5	1.369	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180'	(2) DB980H90E-M w/ Mount Pipe	5	121.869	7.309	0.020	6512
175'	APX16DWV-16DWV-S-E-A20	5	114.512	7.051	0.018	6512
167'	(2) LPA-80080/4CF w/ Mount Pipe	5	102.857	6.638	0.014	2503
75'	KS24019-L112A	5	17.002	2.189	0.001	1605

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	180 - 133 (1)	TP27.51x15.5x0.25	47'	0'	0.0	39.00	20.8198	-6.85	811.97	0.008
L2	133 - 87.3333 (2)	TP38.56x25.9879x0.375	49'8-1/32"	0'	0.0	39.00	43.8428	-13.82	1709.87	0.008
L3	87.3333 - 42.6667 (3)	TP49.1x36.46x0.4375	50'	0'	0.0	39.00	58.5638	-20.02	2283.99	0.009
L4	42.6667 - 0 (4)	TP59x46.5397x0.4375	49'3-31/32"	0'	0.0	39.00	66.3568	-27.68	2587.92	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	180 - 133 (1)	TP27.51x15.5x0.25	495.16	44.15	39.00	1.132	0.00	0.00	39.00	0.000
L2	133 - 87.3333 (2)	TP38.56x25.9879x0.375	1219.03	36.79	39.00	0.943	0.00	0.00	39.00	0.000
L3	87.3333 - 42.6667 (3)	TP49.1x36.46x0.4375	1685.33	33.27	39.00	0.853	0.00	0.00	39.00	0.000
L4	42.6667 - 0 (4)	TP59x46.5397x0.4375	2232.27	34.28	39.00	0.879	0.00	0.00	39.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	180 - 133 (1)	TP27.51x15.5x0.25	14.66	0.70	26.00	0.054	0.00	0.00	26.00	0.000
L2	133 - 87.3333 (2)	TP38.56x25.9879x0.375	18.08	0.41	26.00	0.032	0.00	0.00	26.00	0.000
L3	87.3333 - 42.6667 (3)	TP49.1x36.46x0.4375	20.42	0.35	26.00	0.026	0.21	0.00	26.00	0.000
L4	42.6667 - 0 (4)	TP59x46.5397x0.4375	22.63	0.34	26.00	0.026	0.21	0.00	26.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	180 - 133 (1)	0.008	1.132	0.000	0.054	0.000	1.141 ✔	1.333	H1-3+VT ✔
L2	133 - 87.3333 (2)	0.008	0.943	0.000	0.032	0.000	0.952 ✔	1.333	H1-3+VT ✔
L3	87.3333 - 42.6667 (3)	0.009	0.853	0.000	0.026	0.000	0.862	1.333	H1-3+VT ✔

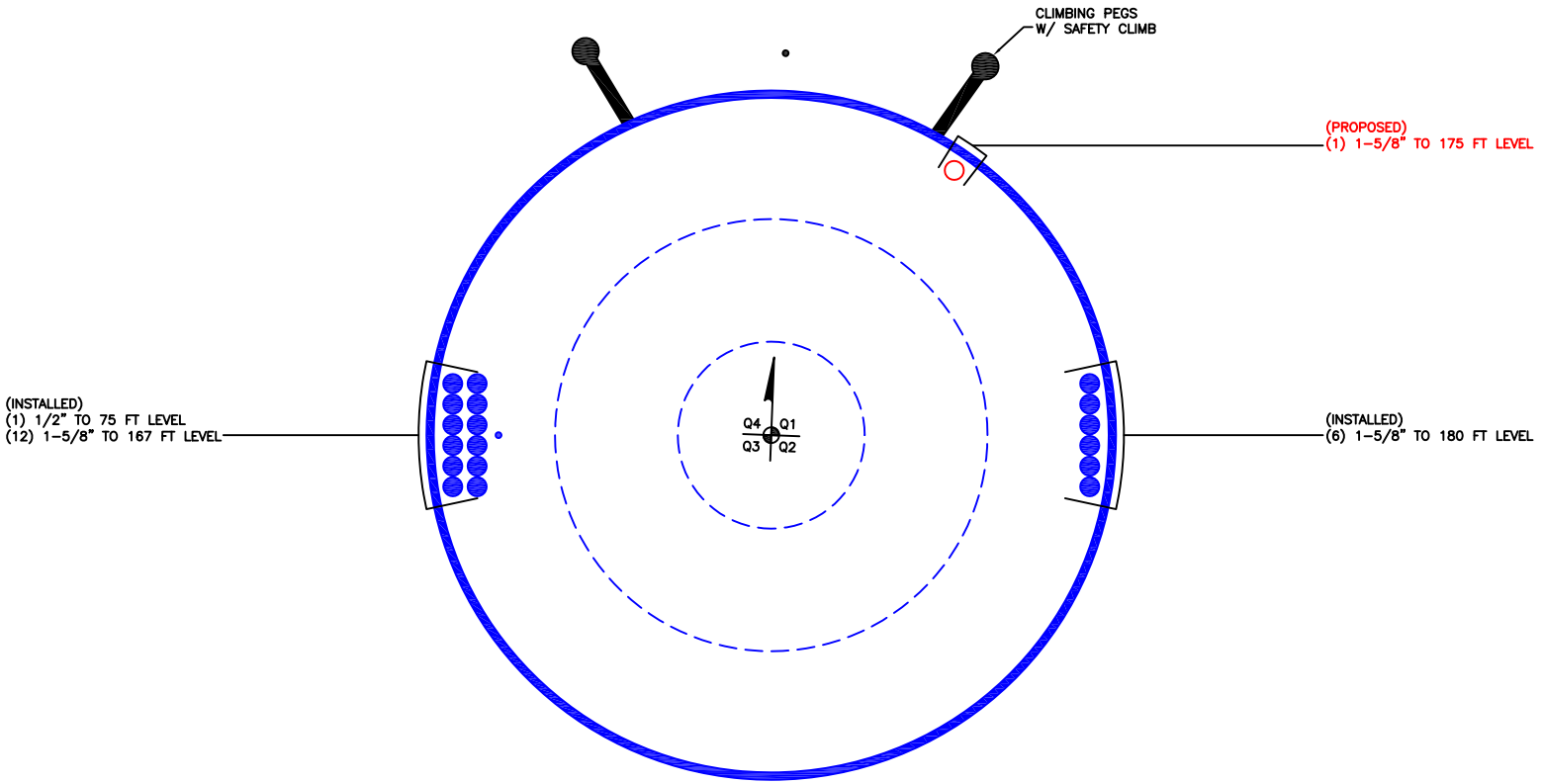
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L4	42.6667 - 0 (4)	0.011	0.879	0.000	0.026	0.000	0.890 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
L1	180 - 133	Pole	TP27.51x15.5x0.25	1	-6.85	1082.36	85.6	Pass
L2	133 - 87.3333	Pole	TP38.56x25.9879x0.375	2	-13.82	2279.26	71.4	Pass
L3	87.3333 - 42.6667	Pole	TP49.1x36.46x0.4375	3	-20.02	3044.56	64.7	Pass
L4	42.6667 - 0	Pole	TP59x46.5397x0.4375	4	-27.68	3449.70	66.8	Pass
							Summary	
							Pole (L1) 85.6	Pass
							RATING = 85.6	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876370 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: *876370*
Site Name: *MAYBROOK / BOND*
App #: *345818 Rev. 17*
Pole Manufacturer: *Other*

Reactions		
Moment:	3258	ft-kips
Axial:	39	kips
Shear:	26	kips

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	68	in

Plate Data		
Diam:	74	in
Thick:	2	in
Grade:	60	ksi
Single-Rod B-eff:	9.36	in

Stiffener Data (Welding at both sides)		
Config:	0	*
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:	59	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

If No stiffeners, Criteria: AISC ASD <-Only Applcable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension:	113.0 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	58.0% **Pass**	Fty*ASIF

Base Plate Results Flexural Check

Base Plate Stress:	51.4 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	85.6% **Pass**	0.75*Fy*ASIF
		Y.L. Length: 33.81

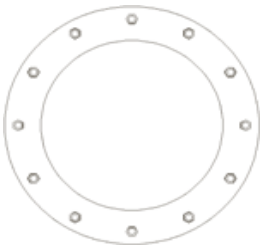
n/a

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



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

FOUNDATION REACTION COMPARISON

BU# 876370
WO# 1286076

REACTIONS	DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
MOMENT (kip-ft)	4315.6	3258.0	75.5%
SHEAR (kips)	33.3	26.0	78.1%

Design loads from: CCIsites Doc #1532099

Although the shear capacity is at 78.1%, the moment reaction is the governing criteria for a monopole drilled pier foundation. Therefore, the overall capacity for this foundation is 75.5%.

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11961A

CT961/ Indian Ledge Park
Indian Ledge Park Road
Trumbull, CT 06611

March 8, 2016

EBI Project Number: 6216001351

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	11.58 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

March 8, 2016

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11961A – CT961/ Indian Ledge Park**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **Indian Ledge Park Road, Trumbull, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **Indian Ledge Park Road, Trumbull, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 GSM / UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope SBNH=1D65C-SR** for 700 MHz and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at their main lobe at 1900 MHz (PCS) and 2100 MHz (AWS). The **Commscope SBNH=1D65C-SR** has a maximum gain of **15.3 dBd** at its main lobe at 2100 MHz (AWS) and **13.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **145 feet** above ground level (AGL).

9) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	145	Height (AGL):	145	Height (AGL):	145
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	**0.87**	Antenna B1 MPE%	**0.87**	Antenna C1 MPE%	**0.87**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope SBNH-1D65C-SR	Make / Model:	Commscope SBNH-1D65C-SR	Make / Model:	Commscope SBNH-1D65C-SR
Gain:	15.3 / 13.6 dBd	Gain:	15.3 / 13.6 dBd	Gain:	15.3 / 13.6 dBd
Height (AGL):	145	Height (AGL):	145	Height (AGL):	145
Frequency Bands	2100 MHz(AWS) / 700 MHz	Frequency Bands	2100 MHz(AWS) / 700 MHz	Frequency Bands	2100 MHz(AWS) / 700 MHz
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power(W):	150	Total TX Power(W):	150	Total TX Power(W):	150
ERP (W):	4,753.39	ERP (W):	4,753.39	ERP (W):	4,753.39
Antenna A2 MPE%	**1.03**	Antenna B2 MPE%	**1.03**	Antenna C2 MPE%	**1.03**

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.90 %**
Town Antennas	4.80 %
AT&T	0.87 %
Sprint	0.82 %
Clearwire	0.07 %
Verizon Wireless	2.66 %
Nextel	0.46 %
Site Total MPE %:	**11.58 %**

T-Mobile Sector 1 Total:	1.90 %
T-Mobile Sector 2 Total:	1.90 %
T-Mobile Sector 3 Total:	1.90 %
Site Total:	11.58 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**2033.07**	**145**	**7.57**	**2100**	**1000**	**0.76 %**
T-Mobile 1900 MHz (PCS) GSM/UMTS	**2**	**1167.71**	**145**	**4.34**	**1900**	**1000**	**0.43 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.71**	**145**	**4.34**	**2100**	**1000**	**0.43 %**
T-Mobile 700 MHz LTE	**1**	**687.26**	**145**	**1.28**	**700**	**467**	**0.27 %**
						Total:	**1.90%**

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Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.90 %
Sector 2:	1.90 %
Sector 3 :	1.90 %
T-Mobile Per Sector Maximum:	1.90 %
Site Total:	11.58 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.58%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

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