



Northeast Site Solutions  
Denise Sabo  
199 Brickyard Rd Farmington, CT 06032  
860-209-4690  
[denise@northeastsitesolutions.com](mailto:denise@northeastsitesolutions.com)

August 16, 2017

Members of the Siting Council  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

RE: Tower Share Application  
7 HOSKINS ROAD, BLOOMFIELD, CT 06002  
Latitude: 41.89284000  
Longitude: -72.76550600  
T-Mobile Site#: CTHA142G-NSD-CMP2

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC ("T-Mobile"). T-Mobile plans to install antennas and related equipment at the tower site located at 7 Hoskins Road in Bloomfield, Connecticut.

T-Mobile will install three (3) 700MHz antenna, three (3) 1900/2100 MHz antennas, three (3) 2100 MHz antennas and six (6) RRUs at the 140.6-foot level of the existing 185foot lattice tower Two (2) hybrid cables will also be installed. T-Mobile's equipment cabinets will be placed within T-Mobile's 120 sq ft lease area. Included are plans by All Points, dated March 21, 2017. **Exhibit C**. Also included is a structural letter prepared by All Points, dated June 14, 2017, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as **Exhibit D**.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of T-Mobile's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Mayor Joan A. Gamble and Jose Giner, Zoning Enforcement Director of the Town of Bloomfield, as well as the tower owner (Eversource) and property owner (Eversource).

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the lattice tower is 185-feet; T-Mobile's proposed antennas will be located at a center line height of 140.6-feet.
2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.
4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 4.68% as evidenced by **Exhibit E**.



# NSS NORTHEAST SITE SOLUTIONS

*Turnkey Wireless Development*

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, T-Mobile respectfully indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting T-Mobile's proposed loading. The structural analysis is included as **Exhibit D**.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this lattice tower in Bloomfield. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit T-Mobile to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as **Exhibit F**, authorizing T-Mobile to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of T-Mobile equipment at the 140.6-foot level of the existing 185-foot tower would have an insignificant visual impact on the area around the tower. T-Mobile's ground equipment would be installed within the existing facility compound. T-Mobile's shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by **Exhibit E**, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. T-Mobile will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist T-Mobile with this tower sharing application.

E. Public Safety Concerns. As discussed above, the lattice tower is structurally capable of supporting T-Mobile's proposed loading. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing lattice tower. T-Mobile's intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Bloomfield.

Sincerely,

Denise Sabo  
Mobile: 860-209-4690  
Fax: 413-521-0558  
Office: 199 Brickyard Rd, Farmington, CT 06032  
Email: denise@northeastsitesolutions.com

Attachments

cc: Mayor Joan A. Gamble, as elected official  
Jose Giner, Zoning Enforcement Director  
Eversource - as tower owner & property owner

# Exhibit A

UNIONVILLE  
24 MILL ST  
UNIONVILLE  
CT

06085-9998  
0883640185

08/17/2017 (800)275-8777 12:27 PM

Product Description	Sale Qty	Final Price
PM 1-Day Flat Rate Env (Domestic) (HARTFORD, CT 06103) (Flat Rate) (Expected Delivery Day) (Friday 08/18/2017) (USPS Tracking #) (9505 5119 1366 7229 0931 39)	1	\$6.65
Insurance (Up to \$50.00 included)	1	\$0.00
PM 1-Day Flat Rate Env (Domestic) (BLOOMFIELD, CT 06002) (Flat Rate) (Expected Delivery Day) (Friday 08/18/2017) (USPS Tracking #) (9505 5119 1366 7229 0931 46)	1	\$6.65
Insurance (Up to \$50.00 included)	1	\$0.00
PM 1-Day Flat Rate Env (Domestic) (BLOOMFIELD, CT 06002) (Flat Rate) (Expected Delivery Day) (Friday 08/18/2017) (USPS Tracking #) (9505 5119 1366 7229 0931 53)	1	\$6.65
Insurance (Up to \$50.00 included)	1	\$0.00

Total \$19.95

Credit Card Remitd \$19.95  
(Card Name:VISA)  
(Account #:XXXXXXXXXX0717)  
(Approval #:02097G)  
(Transaction #:708)

Includes up to \$50 insurance

\*\*\*\*\*  
BRIGHTEN SOMEONE'S MAILBOX. Greeting cards available for purchase at select Post Offices.  
\*\*\*\*\*

Text your tracking number to 28777 (2USPS) to get the latest status.  
Standard Message and P...

Petition No. 1112  
Cellco Partnership d/b/a Verizon Wireless  
Bloomfield, Connecticut  
Staff Report  
August 28, 2014

On July 28, 2014, the Connecticut Siting Council (Council) received a petition from Cellco Partnership d/b/a Verizon Wireless (Cellco) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the replacement and extension of an existing telecommunications facility owned by The Connecticut Light and Power Company (CL&P) located west of St. Andrews Road in Bloomfield. Cellco sent notice to abutting property owners and the Towns of Bloomfield and Simsbury on July 28, 2014. No written comments were received from either Town or any of the abutters.

A field review of the proposed project was conducted on August 18, 2014. The following people attended the field review: Council member Daniel Lynch, Jr., Council staff member Robert Mercier, Cellco representative Attorney Kenneth Baldwin, CL&P representatives John Morissette and Steve Florio, and Simsbury Police Lieutenant Fred Sifodaskalakis.

The site is located on a 40-acre parcel owned by CL&P and is accessed from a separate parcel at 5-7 St. Andrews Road. The existing tower was approved in 1993 in Docket 158. A paved access drive ascends west to the site, generally along an existing CL&P transmission corridor, to a ridge top at 412 feet above mean sea level. The existing tower and fenced compound is adjacent to the east side of the transmission corridor.

Existing tower users include CL&P with multiple whip antennas and dish antennas, AT&T with an antenna array at 158 feet, Cellco with an antenna array at 150 feet and the Towns of Simsbury and Bloomfield both of which utilize the tower for emergency communications. Cellco seeks to upgrade their antennas to support LTE services but the current tower is at structural capacity and cannot be economically reinforced to accommodate the new equipment. Cellco would be responsible for construction of the new tower, transferring equipment to the new tower, and the removal of the existing tower. CL&P would own the new tower.

Cellco proposes to replace the existing 180-foot self-supporting lattice tower with a 185-foot self-supporting lattice tower. The proposed tower would be five feet higher to compensate for a five foot elevation loss between the proposed tower site and the existing tower site. Antennas for all carriers/users, including Cellco, would be mounted approximately five feet higher on the new tower to maintain the existing antenna height above ground level.

The new tower would be constructed adjacent to Cellco's existing equipment shelter, approximately 75 feet southwest of the existing tower and partially within the existing compound. The existing compound would be expanded by 2,150 square feet to the south and west to accommodate the new tower and associated ice bridge. A level spreader would be installed on the west side of the compound to control any runoff coming from the compound area.

Approximately 17 trees with a diameter of 6 inches or greater would be removed to expand the compound. Some tree trimming may be necessary along the access drive to facilitate heavy equipment required to deliver materials to the site. The nearest wetland is 140 feet north of the construction area. A vernal pool is located approximately 260 feet north of the new compound fence. Cellco would implement best management practices from March 1 to September 15 to reduce impacts to vernal pool obligate species.

The new tower would maintain the existing aircraft hazard lighting elevations and pattern as the tower is approximately 4.5 miles south from Runway 6 at Bradley International Airport. The site is in a remote area surrounded by extensive woodland with no nearby structures. The proposed tower would have no effect on existing views.

Staff recommends approval with the following conditions:

- Unless otherwise approved by the Council, the existing tower shall be removed within 180 days of the installation and operation of the new lattice tower;
- The Council shall be notified in writing when the existing tower is removed and the new tower is operational;
- Submit a final structural report depicting final tower loading; and
- Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function.



Existing tower from CL&P right-of-way, view west.



South side of compound - proposed tower location by white dome. Compound would be expanded to the left (west).



Northwest corner of compound. Compound would be expanded towards rocks in photo.

# Exhibit B





[Recent Sales in Neighborhood](#) | [Previous Parcel](#) | [Next Parcel](#) | [Field Definitions](#) | [Return to Main Search](#) | [Bloomfield Home](#)

**Owner and Parcel Information**

<b>Owner Name</b>	CONN LIGHT & POWER CO ATTN: PROPERTY TAX DEPT	<b>Today's Date</b>	August 16, 2017
<b>Mailing Address</b>	P O BOX 270 HARTFORD, CT 06141	<b>Parcel ID</b>	8110 (Account #: R93240)
<b>Location Address</b>	7 HOSKINS RD	<b>Fire District</b>	C
<b>Map / Lot</b>	637 / 1117	<b>Census Tract</b>	0000
<b>Use Class / Description</b>	109 Vacant with OutBldg	<b>Acreage</b>	38.33
<b>Assessing Neighborhood</b>	0001A	<b>Parcel Map</b>	<a href="#">Show Parcel Map</a>   <a href="#">Owner List By Radius</a>
		<b>Utilities</b>	

**Current Appraised Value Information**

Building Value	XF Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
\$ 0	\$ 0	\$ 18,000	\$ 296,300		\$ 314,300	\$ 314,300	\$ 72,300

**Assessment History**

Year	Building	OB/Misc	Land	Total Assessment
Current	0	\$ 12,600	\$ 59,700	\$ 72,300
2016	0	\$ 12,600	\$ 59,700	\$ 72,300
2013	0	\$ 12,600	\$ 70,760	\$ 83,360

**Land Information**

Use	Class	Zoning	Area	Value
Vacant with OutBldg	R	R-80	1.84 AC	\$ 70,500
Forest	S	R-80	34.66 AC	\$ 217,600
Residential Land	R	R-80	1.83 AC	\$ 8,200

**Building Information**

No Building Information available for this parcel.

**Out Buildings / Extra Features**

Description	Sub Description	Area	Year Built	Value
Pump House		480 S.F.	1962	\$ 14,400
Pump House		120 S.F.	1986	\$ 3,600

**Sale Information**

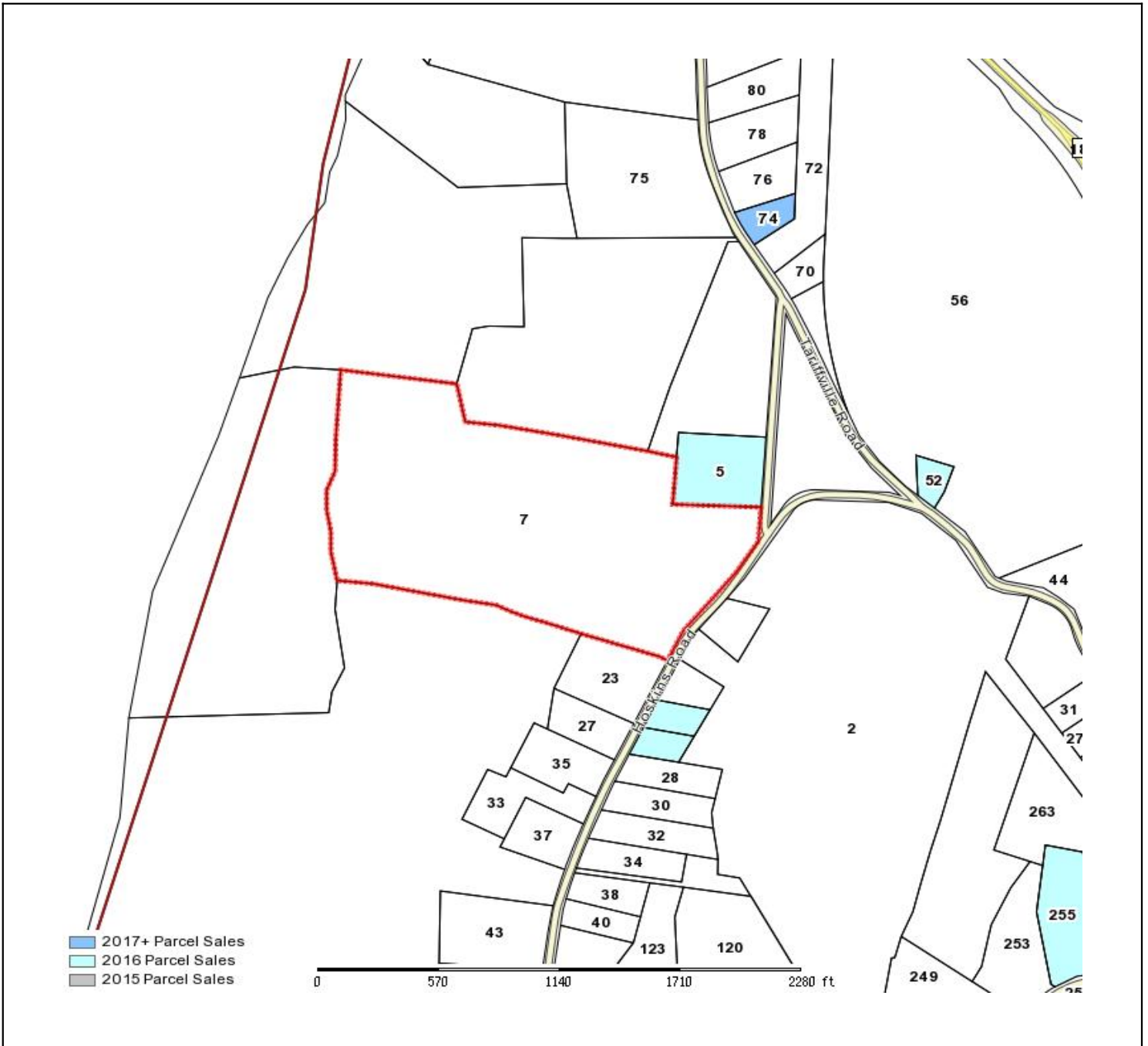
Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
00/00/0000		292/ 97	Unqualified	Old sale- Validity unknown	Vacant	CONN LIGHT & POWER CO ATTN: PROPERTY TAX DEPT

**Permit Information**

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
B-16-7633		CM	Commercial	\$ 35,000		0		ANTENNAS

[Recent Sales in Neighborhood](#) | [Previous Parcel](#) | [Next Parcel](#) | [Field Definitions](#) | [Return to Main Search Page](#) | [Bloomfield Home](#)

The Town of Bloomfield Assessor's Office makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. Website Updated: August 5, 2017



Town of Bloomfield			
Parcel: 8110 Acres: 38.33			
Name:	CONN LIGHT & POWER CO	Land Value	296300
Site:	7 HOSKINS RD	Building Value	0
Sale:	0 on 0000-00-00 Reason=U Qual=34	Misc Value	0
Mail:	P O BOX 270 HARTFORD, CT 06141	Just Value	314300
		Assessed Value	0
		Exempt Value	0
		Taxable Value	0



Town of Bloomfield makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. The assessment information is from the 2011 tax year. Property Tax Maps are for assessment purposes only. Neither the town nor its employees assume responsibility for errors or omissions. ---THIS IS NOT A SURVEY---

Date printed: 08/16/17 : 09:13:51

# Exhibit C

# ..T..Mobile..

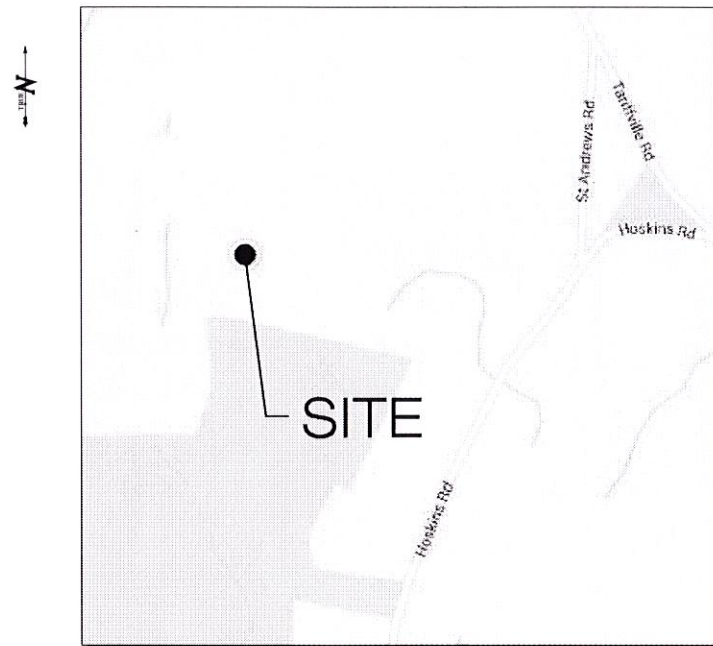
NORTHEAST, LLC.

## NEW SITE DEVELOPMENT (NSD)

### "EVERSOURCE"

CTHA142G

7 HOSKINS ROAD  
BLOOMFIELD, CT 06002



**VICINITY MAP**  
SCALE: 1" = 500'

#### DRAWING INDEX

- T-1 TITLE SHEET & INDEX
- SP-1 SITE PLAN
- A-1 COMPOUND PLAN & ELEVATION
- A-2 ANTENNA & EQUIPMENT DETAILS
- A-3 ANTENNA CABLING
- S-1 STRUCTURAL DETAILS
- E-1 ELECTRICAL/TELCO PLAN & DETAILS
- E-2 GROUNDING PLAN & DETAILS
- N-1 NOTES & SPECIFICATIONS

#### SITE INFORMATION

T-MOBILE SITE NAME: "EVERSOURCE"  
T-MOBILE SITE NUMBER: CTHA142G  
SITE ADDRESS: 7 HOSKINS ROAD,  
BLOOMFIELD, CT 06002

SITE TYPE/DESCRIPTION: INSTALL (9) NEW PANEL ANTENNAS, (6) NEW RRUs WITH NEW MOUNTS ON EXISTING LATTICE TOWER. INSTALL (1) NEW PPC, (1) NEW TELCO CABINET, & (2) NEW RBS CABINETS ON NEW 10x20' CONCRETE PAD W/STEEL CANOPY.

PROPERTY OWNER: EVERSOURCE  
P.O. BOX 270  
HARTFORD, CT 06141

LEASING CONTACT: MATTHEW BANDLE  
(508) 642-8801

CONSTRUCTION CONTACT: ---

ENGINEER CONTACT: ROBERT BURNS  
(860) 663-1697 x206

LATITUDE: 41°53'33.4795"N  
LONGITUDE: 72°45'56.5386"W  
ELEVATION: 408± AMSL  
MAP: 637  
LOT: 1117  
MUNICIPALITY: BLOOMFIELD  
ZONING DISTRICT: R-80

APPLICANT:  
T-MOBILE  
35 GRIFFIN ROAD  
BLOOMFIELD, CT 06002

POWER PROVIDER:  
EVERSOURCE (800) 286-2000

TELCO PROVIDER:  
FRONTIER: (800)-921-8102

CALL BEFORE YOU DIG:  
811

CODE COMPLIANCE INFORMATION:  
STATE OF CONNECTICUT BUILDING CODE, LATEST EDITION  
ANSI/TIA-222-G  
NATIONAL ELECTRIC CODE, LATEST EDITION

**ALL-POINTS  
TECHNOLOGY CORPORATION**  
3 SADDLEBROOK DRIVE PHONE: (860) 663-1697  
KILLINGWORTH, CT 06419 FAX: (860) 663-0935  
WWW.ALLPOINTSTECH.COM

**..T..Mobile..**  
NORTHEAST, LLC.

35 GRIFFIN ROAD  
BLOOMFIELD, CT 06002  
OFFICE: (860)-692-7100

APPROVALS	
LANDLORD: _____	DATE: _____
RF ENGINEER: _____	DATE: _____
CONSTRUCTION: _____	DATE: _____
OPERATIONS: _____	DATE: _____
SITE ACQ: _____	DATE: _____

CONSTRUCTION DOCUMENTS		
NO	DATE	REVISION
0	12/09/16	FOR REVIEW: RCB
1	03/21/17	FOR REVIEW: RCB
2		
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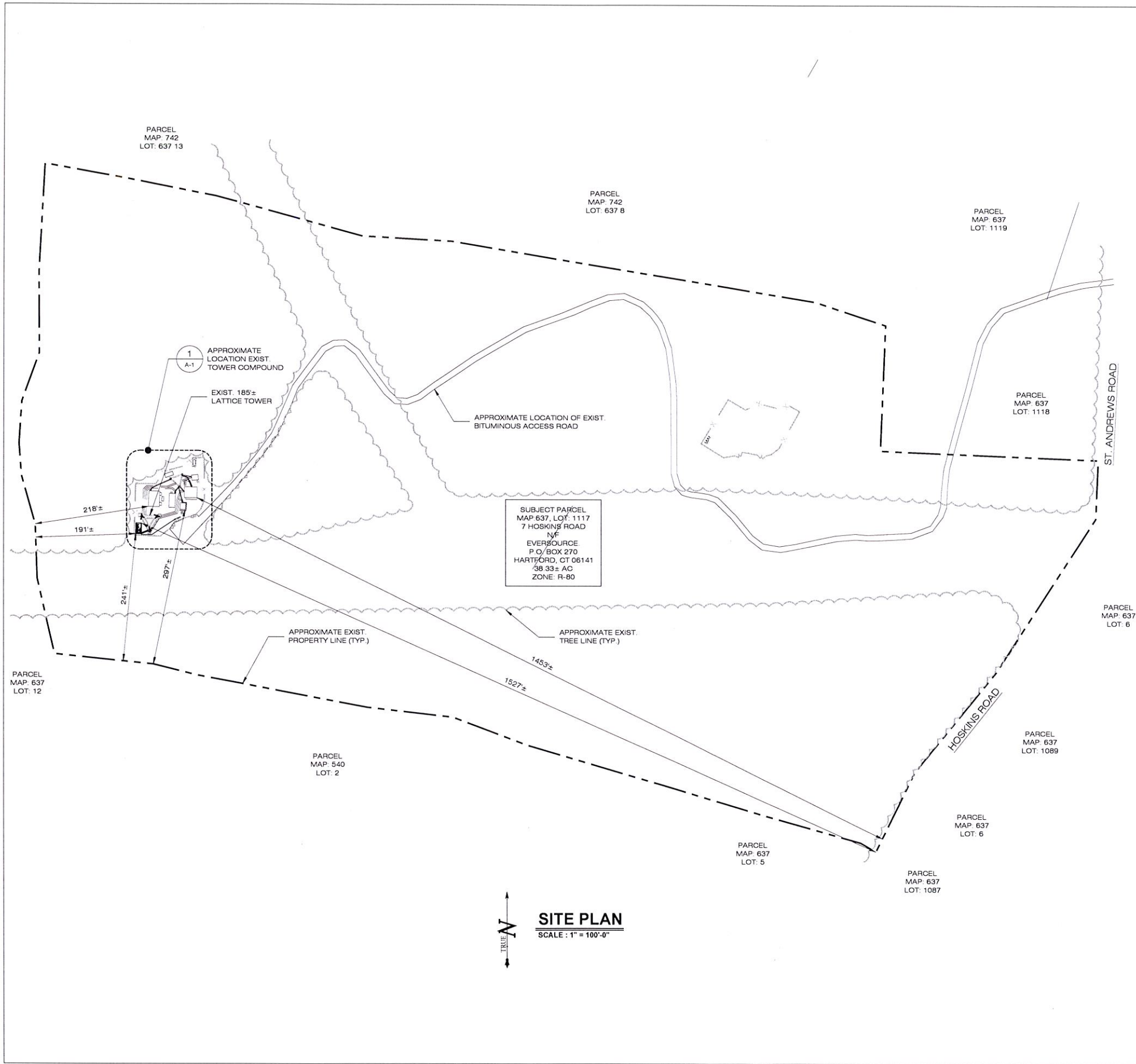
DESIGN PROFESSIONALS OF RECORD  
PROF: SCOTT M. CHASSE P.E.  
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 3 SADDLEBROOK DRIVE  
KILLINGWORTH, CT 06419

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T-MOBILE  
"EVERSOURCE"  
SITE 7 HOSKINS ROAD,  
ADDRESS: BLOOMFIELD, CT 06002  
APT FILING NUMBER: CT409140  
SITE NUMBER: CTHA142G  
DRAWN BY: CSH CHECKED BY: RCB  
DATE: 12/09/16

CONFIGURATION  
**707B**  
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

SHEET TITLE:  
**TITLE SHEET & INDEX**  
SHEET NUMBER:  
**T-1**



BULK TABLE			
BLOOMFIELD 7 HOSKINS ROAD BLOOMFIELD, CT 06002 MAP 637 LOT 1117 ZONED R-80			
ITEM	ALLOWABLE	EXISTING	NEW
MIN. LOT AREA (SF)	80,000 (1.84 AC.)	1,669,655 (38.33 AC.)	NC
MIN. FRONT YARD (FT)	50	1,453±	NC
MIN. SIDE YARD (EACH) (FT)	35	297±	241±
MIN. REAR YARD (FT)	50	218±	191±
MAX. BUILDING HEIGHT (FT)/STORIES	35/2	12/1	NC
MAX. BUILDING COVERAGE (%)	15.0	0.1	NC
MIN. LOT WIDTH (FT.)	200	723	NC

NA = NOT APPLICABLE      NC = NO CHANGE

- SITE PLAN NOTES**
- PROPERTY OWNER: EVERSOURCE  
P.O. BOX 270  
HARTFORD, CT 06141
- NEW USE: INSTALLATION OF PERSONAL WIRELESS SERVICES FACILITY ON EXISTING 185± AGL LATTICE TOWER W/ NEW GROUND EQUIPMENT AT THE BASE OF THE TOWER.
  - BOUNDARY, SITE & TOPOGRAPHIC INFORMATION TAKEN FROM TOWN OF BLOOMFIELD GEOGRAPHIC INFORMATION SYSTEMS AND CONNECTICUT ENVIRONMENTAL CONDITIONS ONLINE AND SUPPLEMENTED WITH FIELD MEASUREMENTS.
  - NO ADDITIONAL PARKING IS NEEDED, AS THE NEW GROUND FACILITY INSTALLATION IS UNMANNED & VISITED APPROXIMATELY ONCE A MONTH FOR ROUTINE MAINTENANCE. ACCORDINGLY, THE NEW DEVELOPMENT WILL NOT ADVERSELY CHANGE OR AFFECT TRAFFIC PATTERNS.
  - SUBJECT FACILITY ON-SITE IS LOCATED WITHIN ZONE X FLOOD ZONE DESIGNATION (FIRM FLOOD INSURANCE RATE MAP #09003C0194F).
  - NEW EQUIPMENT SPACE WILL BE OUTFITTED WITH TWO 150W EXTERIOR LIGHT W/ MOTION DETECTOR (RAB H101B).
  - NO STORMWATER DRAINAGE, WATER SUPPLY, SEWAGE DISPOSAL, REFUSE STORAGE, IS REQUIRED, AS THE NEW INSTALLATION IS FOR AN UNMANNED FACILITY.
  - ALL NEW UTILITIES FOR NEW EQUIPMENT WILL BE PROVIDED FROM NEARBY SERVICES CURRENTLY SERVICING THE SITE. CONNECTIONS TO SHALL BE DETERMINED BY A LOCAL UTILITY REPRESENTATIVE.
  - NO DUST, FUMES, ODORS, OR VIBRATIONS WILL OCCUR AS A RESULT OF THE NEW INSTALLATION.

**LEGEND**

CONCRETE CURB	UTILITY POLE
DROP CURB	BOLLARD
WALL	CHAIN LINK FENCE
EDGE OF PAVEMENT	STOCKADE FENCE
OVERHEAD WIRES	FENCE OTHER
STRUCTURE - MANHOLE	TOP/BOTTOM OF CURB
STRUCTURE - TELEPHONE	SPOT ELEVATION
STRUCTURE - DRAINAGE	CONCRETE
WATER VALVE	TREE LINE
WATER METER	MONUMENT
FIRE HYDRANT	HEDGE
DRAINAGE INLET	TREE
SIGN	HANDICAP PARKING
LIGHT POLE	PARKING STALL COUNT

**ALL-POINTS TECHNOLOGY CORPORATION**  
3 SADDLEBROOK DRIVE PHONE (860) 663-1697  
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WWW.ALLPOINTSTECH.COM

**T-Mobile NORTHEAST, LLC.**  
35 GRIFFIN ROAD  
BLOOMFIELD, CT 06002  
OFFICE: (860)-692-7100

**APPROVALS**

LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_  
RF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_  
CONSTRUCTION: \_\_\_\_\_ DATE: \_\_\_\_\_  
OPERATIONS: \_\_\_\_\_ DATE: \_\_\_\_\_  
SITE ACQ.: \_\_\_\_\_ DATE: \_\_\_\_\_

**CONSTRUCTION DOCUMENTS**

NO	DATE	REVISION
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**DESIGN PROFESSIONALS OF RECORD**

PROF: SCOTT M. CHASSE P.E.  
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
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KILLINGWORTH, CT 06419

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**CONFIGURATION**

**707B**

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

SHEET TITLE: **SITE PLAN**

SHEET NUMBER: **SP-1**

STATE OF CONNECTICUT  
SCOTT M. CHASSE  
REGISTERED PROFESSIONAL ENGINEER

**APPROVALS**

LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_  
 RF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_  
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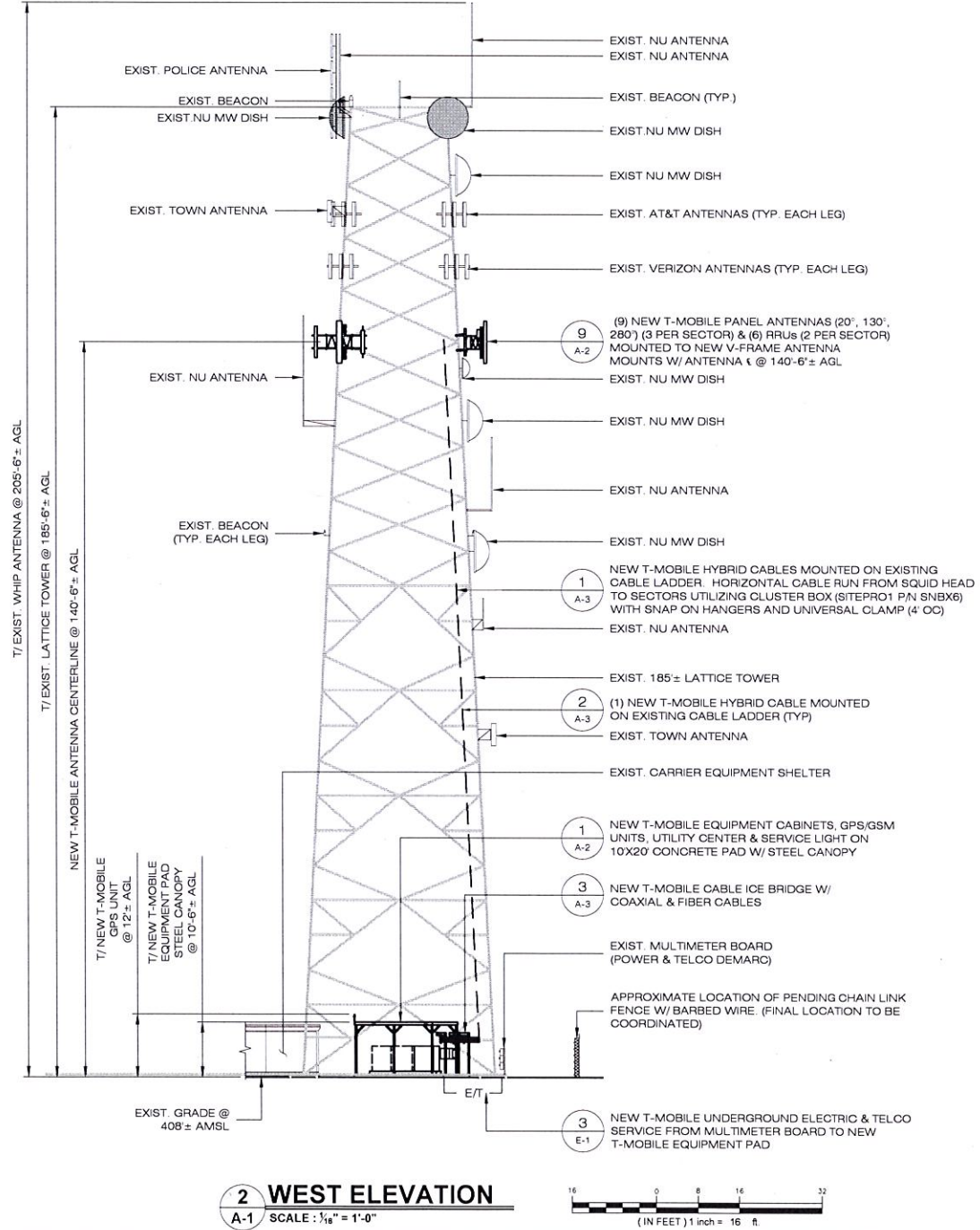
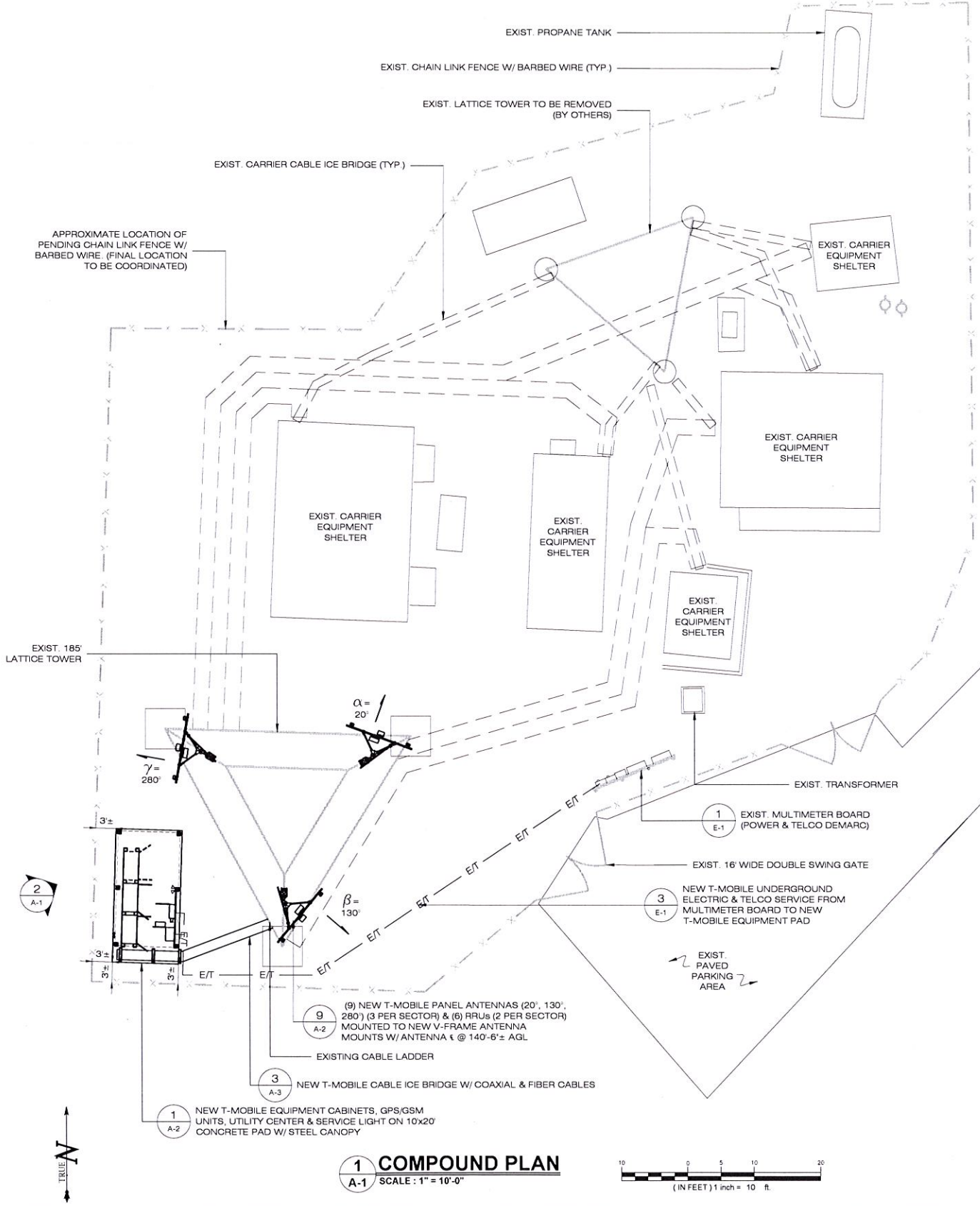
**707B**

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

SHEET TITLE: **COMPOUND PLAN & ELEVATION**

SHEET NUMBER: **A-1**

STATE OF CONNECTICUT PROFESSIONAL ENGINEER



**APPROVALS**

LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_  
 RF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_  
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 ADDRESS: BLOOMFIELD, CT 06002  
 APT FILING NUMBER: CT409140  
 SITE NUMBER: CTHA142G

DRAWN BY: CSH CHECKED BY: RCB  
 DATE: 12/09/16

**CONFIGURATION**

**707B**

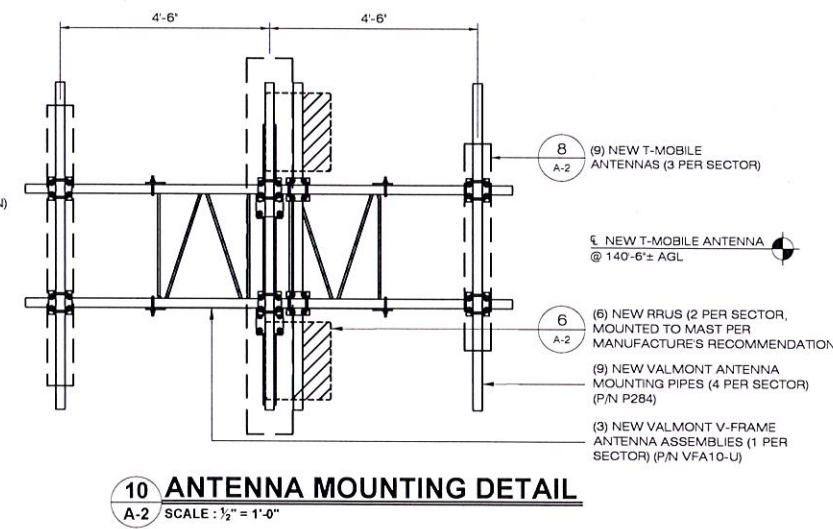
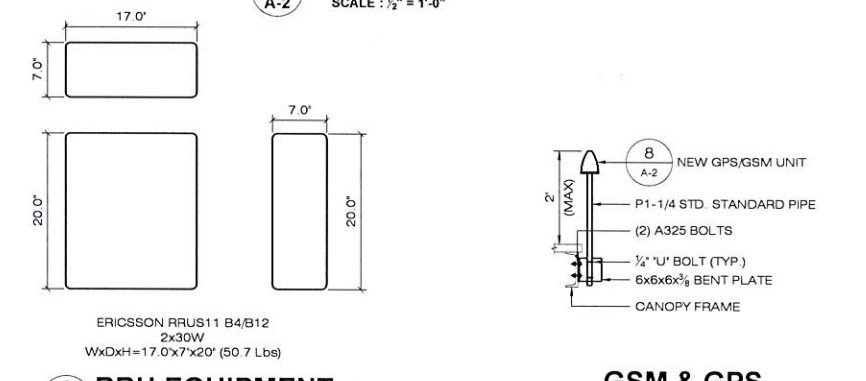
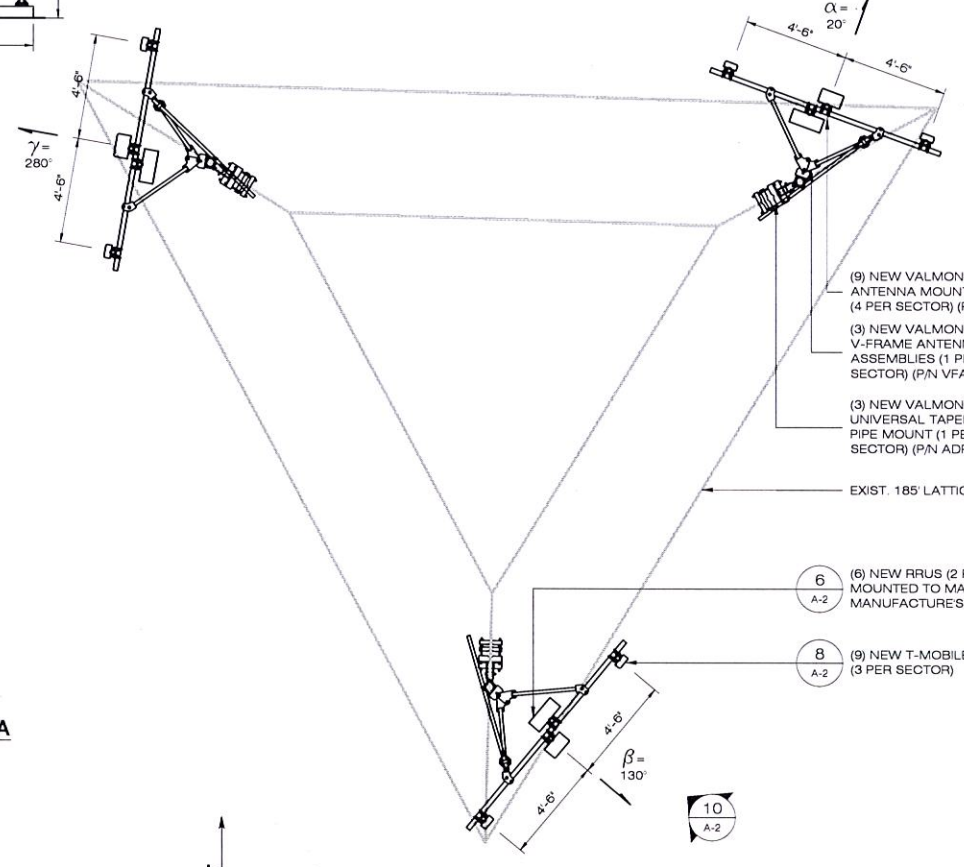
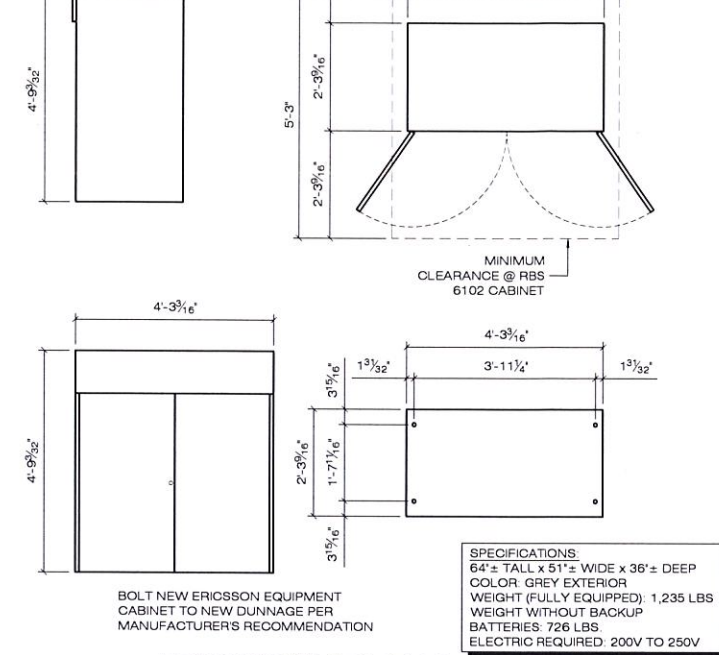
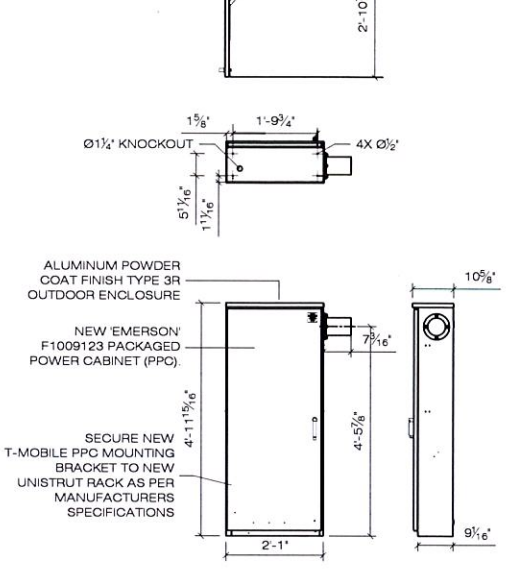
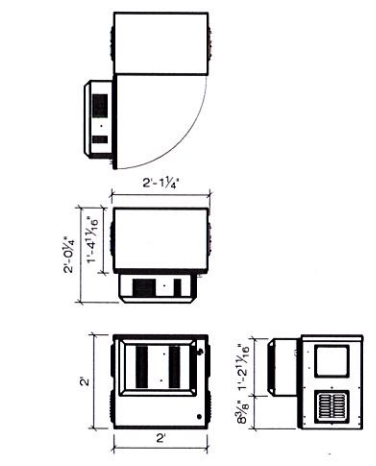
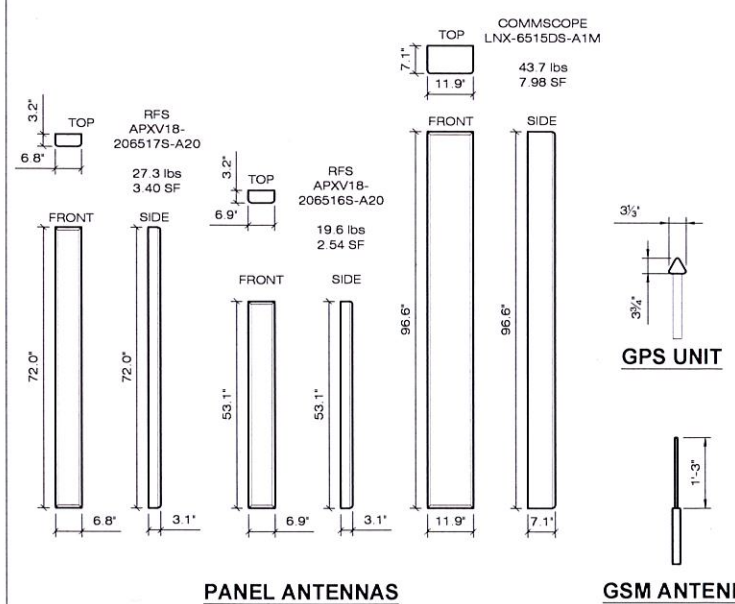
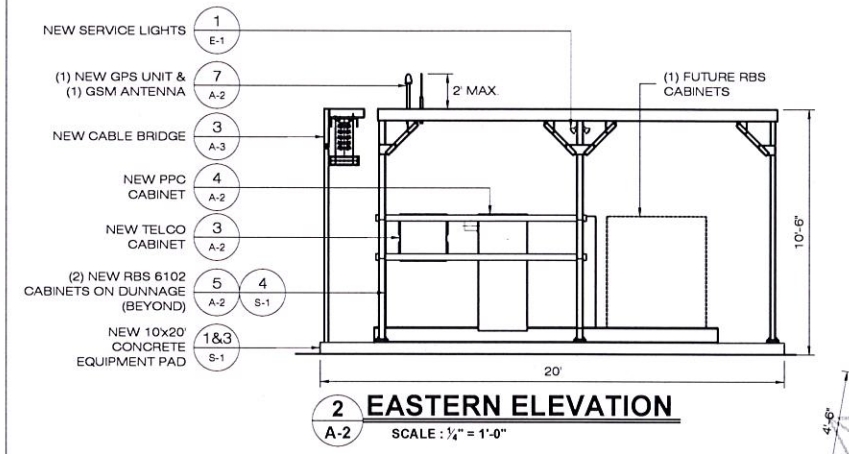
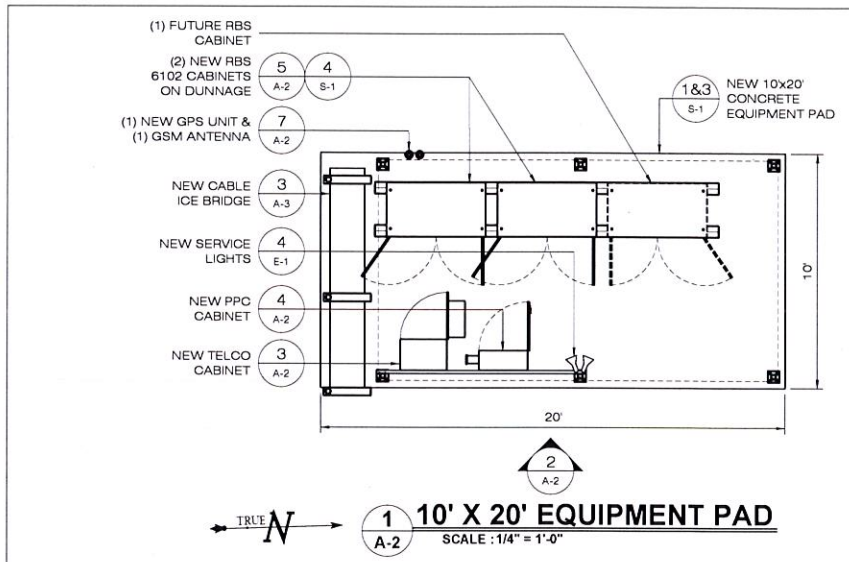
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

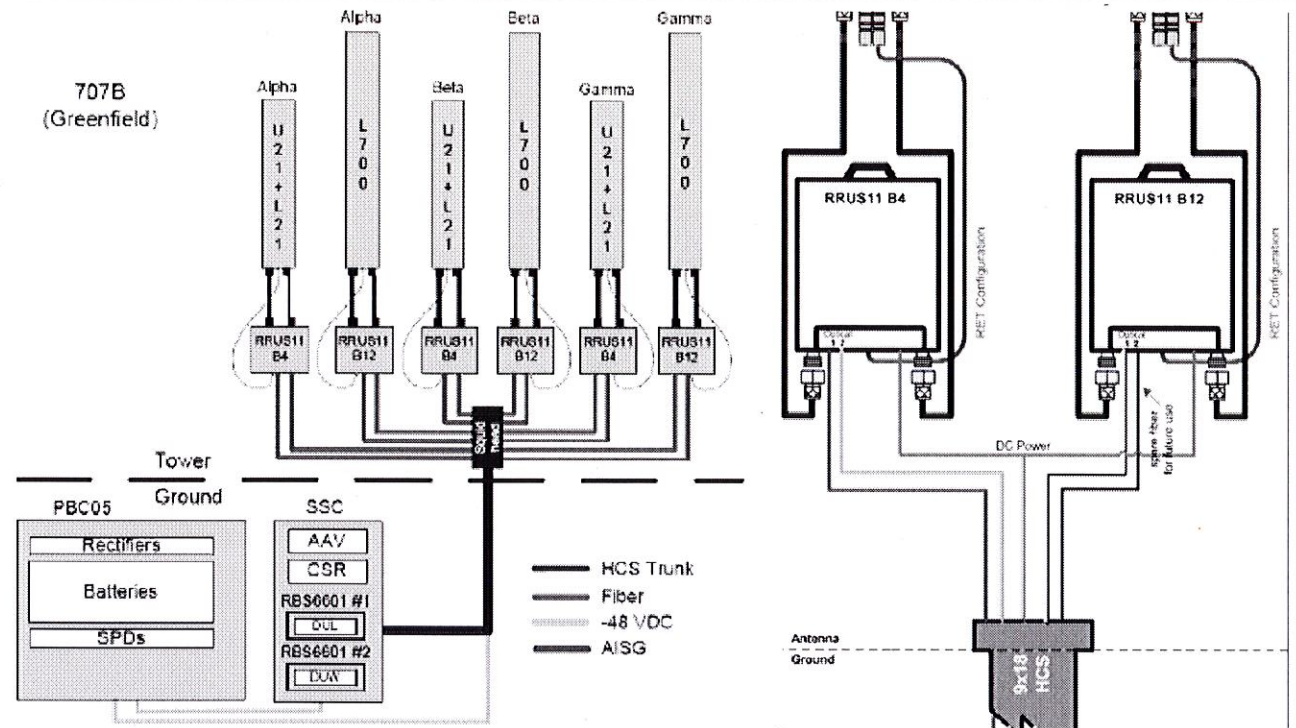
**SHEET TITLE**

**ANTENNA & EQUIPMENT DETAILS**

**SHEET NUMBER:**

**A-2**





**1 ANTENNA CABLING SCHEMATIC**  
A-3 SCALE: N.T.S.

ANTENNA DATA										
NEW ANTENNA SPECIFICATIONS										
SECTOR	MODEL	QTY	AZIMUTH	ELEC D - TILT	MECH D - TILT	STATUS	RRU	CABLE SIZE	CABLE LENGTH	
ALPHA	LTE RFS APXV18-206516S-A20	1	20°	2°	0°	NEW	2	(1) NEW 6x18 HYBRID CABLE	190±	
	LTE COMMSCOPE LNX6515DS-A1M	1		2°	0°	NEW				
BETA	LTE RFS APXV18-206516S-A20	1	130°	4°	0°	NEW	2	(1) NEW 6x18 HYBRID CABLE	190±	
	LTE COMMSCOPE LNX6515DS-A1M	1		2°	0°	NEW				
GAMMA	LTE RFS APXV18-206516S-A20	1	280°	2°	0°	NEW	2	(1) NEW 6x18 HYBRID CABLE	190±	
	LTE COMMSCOPE LNX6515DS-A1M	1		2°	0°	NEW				
GPS/GSM	GPS: CONFIRM WITH T-MOBILE GSM: CONFIRM WITH T-MOBILE					(1) NEW (1) NEW		CONFIRM CONFIRM	15± 15±	

- NOTES:  
 (1) INFORMATION BASED ON RFDS VERSION 0.1, DATED 02/14/17 CHECK WITH RF ENGINEER FOR LATEST RFDS  
 (2) CONTRACTOR SHALL PROVIDE MECHANICAL DOWNTILT BRACKETS  
 (3) CONTRACTOR TO FIELD VERIFY ALL CABLE LENGTHS PRIOR TO ORDERING NEW CABLE (TYP. EACH SECTOR)  
 (4) VERIFY CABLE DIAMETER WITH T-MOBILE PRIOR TO ORDERING  
 (5) CONTRACTOR SHALL CONFIRM GPS/GSM ANTENNA MODEL AND CABLE WITH T-MOBILE

**ALL-POINTS TECHNOLOGY CORPORATION**  
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**T-Mobile NORTHEAST, LLC.**  
 35 GRIFFIN ROAD  
 BLOOMFIELD, CT 06002  
 OFFICE: (860)-692-7100

**APPROVALS**

LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_  
 RF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CONSTRUCTION: \_\_\_\_\_ DATE: \_\_\_\_\_  
 OPERATIONS: \_\_\_\_\_ DATE: \_\_\_\_\_  
 SITE ACQ.: \_\_\_\_\_ DATE: \_\_\_\_\_

**CONSTRUCTION DOCUMENTS**

NO	DATE	REVISION
0	12/09/16	FOR REVIEW: RCB
1	03/21/17	FOR REVIEW: RCB
2		
3		
4		
5		
6		

**DESIGN PROFESSIONALS OF RECORD**

PROF: SCOTT M. CHASSE P.E.  
 COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
 ADD: 3 SADDLEBROOK DRIVE  
 KILLINGWORTH, CT 06419

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**T-MOBILE "EVERSOURCE"**

SITE: 7 HOSKINS ROAD,  
 ADDRESS: BLOOMFIELD, CT 06002

APT FILING NUMBER: CT409140  
 SITE NUMBER: CTHA142G

DRAWN BY: CSH CHECKED BY: RCB  
 DATE: 12/09/16

**CONFIGURATION**

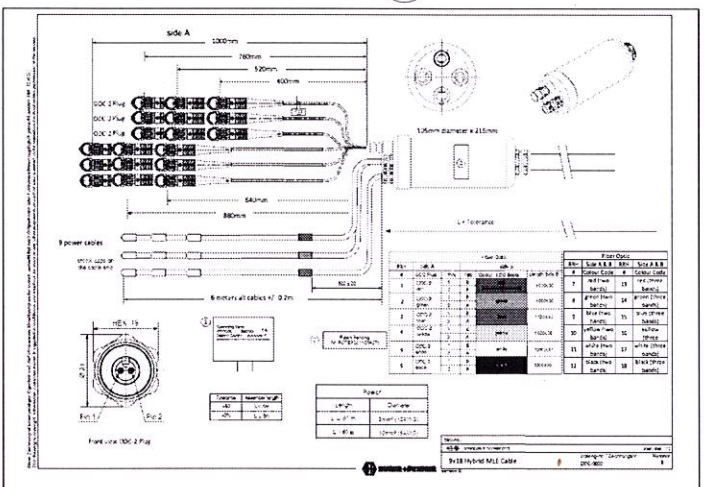
**707B**

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

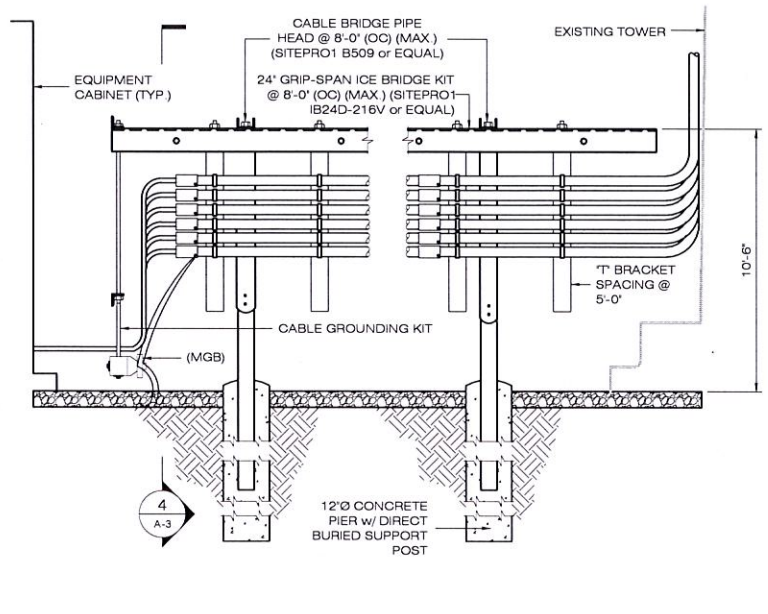
SHEET TITLE: **ANTENNA CABLING**

SHEET NUMBER: **A-3**

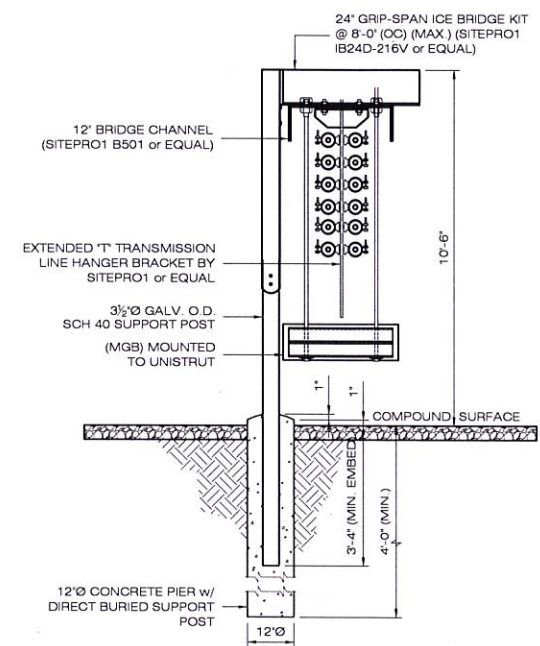
STATE OF CONNECTICUT PROFESSIONAL ENGINEER



**2 9x18 HYBRID CABLE SYSTEM**  
A-3 SCALE: N.T.S.



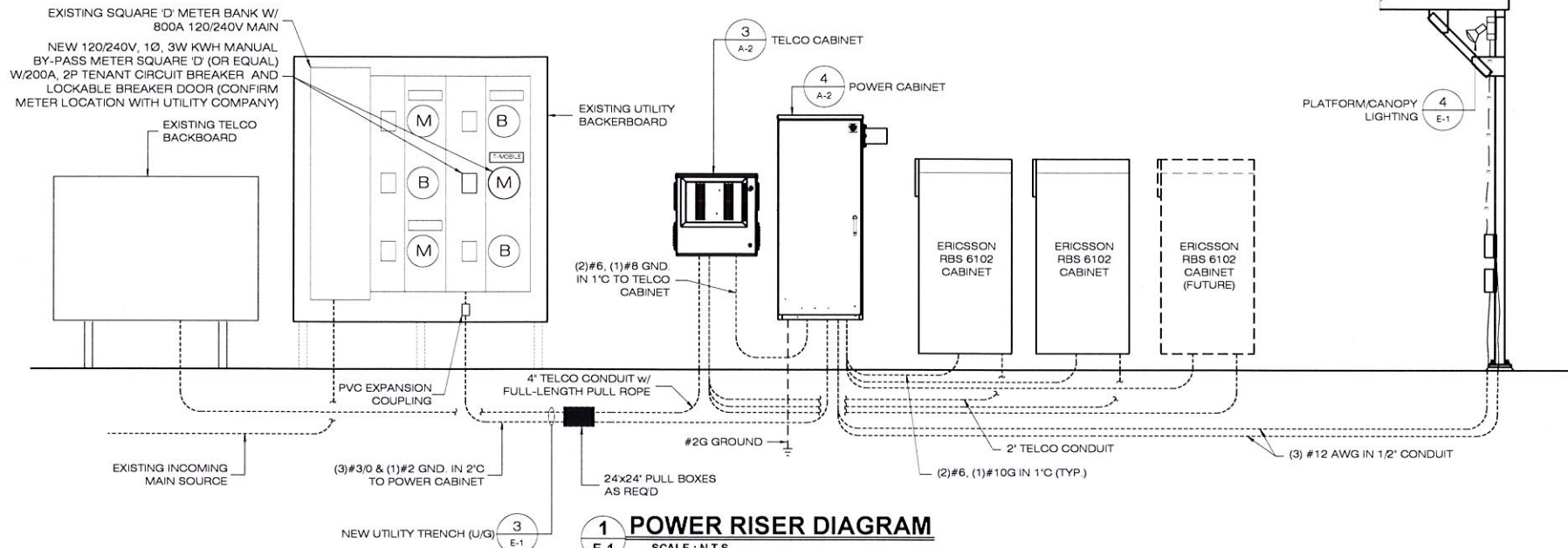
**3 CABLE BRIDGE DETAIL**  
A-3 SCALE: N.T.S.



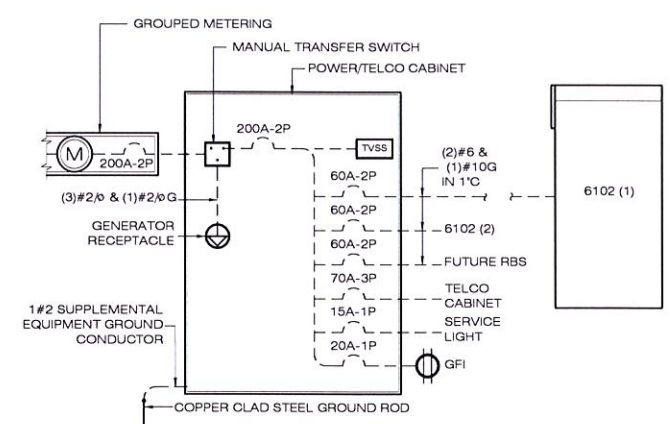
**4 SECTION VIEW**  
A-3 SCALE: N.T.S.



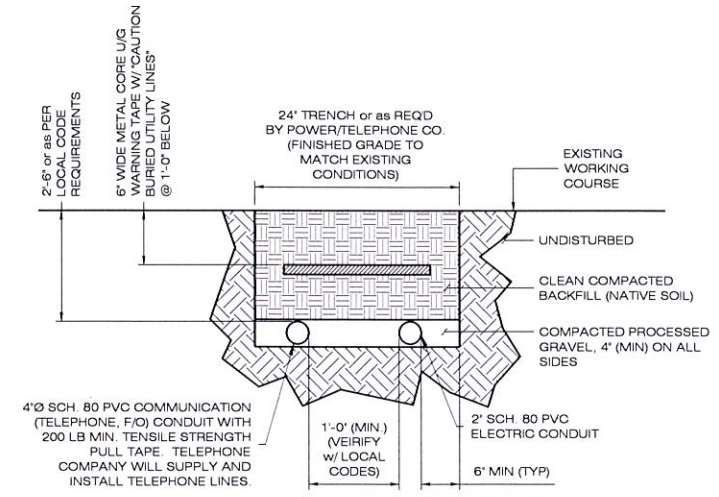




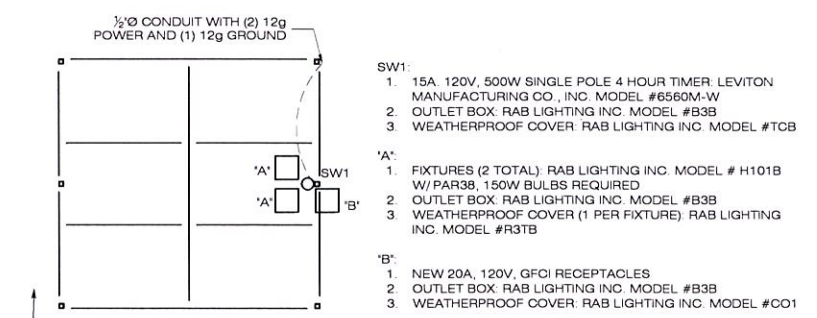
**1 POWER RISER DIAGRAM**  
E-1 SCALE: N.T.S.



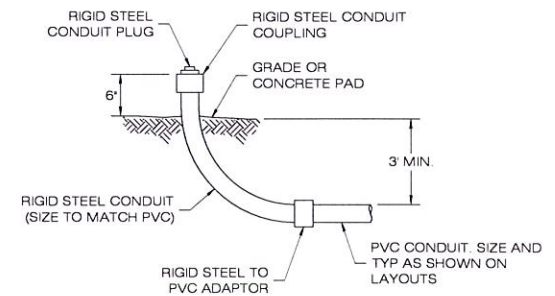
**2 ONE LINE DIAGRAM**  
E-1 SCALE: N.T.S.



**3 TRENCH DETAIL**  
E-1 SCALE: N.T.S.



**4 PLATFORM/CANOPY LIGHTING**  
E-1 SCALE: N.T.S.



**5 UTILITY SWEEP**  
E-1 SCALE: N.T.S.

**ELECTRICAL LEGEND**

U O N	UNLESS OTHERWISE NOTED	NEW PANEL BOARD, SURFACE MOUNTED
WP	WEATHERPROOF	EXISTING PANEL BOARD, SURFACE MOUNTED
GFI	GROUND FAULT INTERRUPTER	DRY TYPE TRANSFORMER
A	AMPERE	METER
V	VOLT	CIRCUIT BREAKER
KWH	KILOWATT - HOUR	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
C	CONDUIT	FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
G	GROUND	TRANSIENT VOLTAGE SURGE SUPPRESSOR w/ BUILT-IN FUSES, SURFACE MOUNTED
⊥	GROUND	DUPLX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
MGB	MASTER GROUND BAR	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
1/4"x8"x24"	COPPER	EXPOSED WIRING
1/2"x4"x12" OR 1/2"x4"x18"	COPPER	HOME RUNS, MINIMUM 2#10 + 1#10G IN 3/4" CONDUIT U.O.N.
—	GROUND COPPER WIRE, SIZE AS NOTED	A.F.F. ABOVE FINISHED FLOOR
—	EXPOSED WIRING	
—	COAXIAL CABLE	
⊙	5/8"x8" COPPER CLAD STEEL GROUND ROD	
—	EXOTHERMIC (CADWELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION	

**ELECTRICAL AND GROUNDING NOTES**

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE & LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED & PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR & MATERIAL DESCRIBED BY DRAWINGS & SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING & APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, & IS RESPONSIBLE FOR OBTAINING SAID PERMITS & COORDINATION OF INSPECTIONS.
- ELECTRICAL & TELCO WIRING OUTSIDE A BUILDING & EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS or SCHEDULE 80 PVC (as PERMITTED BY CODE) & WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL or NONMETALLIC CONDUITS.
- BURIED CONDUIT SHALL BE SCHEDULE 80 PVC, UON.
- ELECTRICAL WIRING SHALL BE COPPER w/ TYPE XHHW, THWN, or THININSULATION.
- RUN ELECTRICAL CONDUIT or CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT & LESSEE/LICENSEE CELL SITE POWER PEDESTAL as INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE COORDINATE INSTALLATION w/ UTILITY COMPANY.
- RUN TELCO CONDUIT or CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT & LESSEE/LICENSEE CELL SITE TELCO CABINET & BTS CABINET as INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENILEE CONDUIT MEASURING TAPE @ EACH END.
- WHERE CONDUIT BETWEEN BTS & LESSEE/LICENSEE CELL SITE POWER PEDESTAL & BETWEEN BTS & LESSEE/LICENSEE CELL SITE TELCO SERVICE CABINET ARE U/G USE PVC, SCH 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- POWER PEDESTAL SUPPLIED BY LESSEE/LICENSEE.
- GROUNDING SHALL COMPLY w/ NEC ART. 250.
- GROUND COAXIAL CABLE SHIELDS MINIMUM @ BOTH ENDS USING MANUFACTURER'S COAX CABLE GROUNDING KITS SUPPLIED BY LESSEE/LICENSEE.
- USE #6 COPPER STRANDED WIRE w/ GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) & #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING as INDICATED ON THE DRAWING.
- ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS or CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT w/ GALVANIZED STEEL.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST & STRAIGHTEST PATH POSSIBLE, EXCEPT as OTHERWISE INDICATED GROUNDING LEADS SHOULD NEVER BE BENT @ RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT @ 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS w/in 7 FEET OF LESSEE/LICENSEE EQUIPMENT or CABINET TO MASTER GROUND BAR.
- CONNECTIONS TO GROUND BARS SHALL BE MADE w/ TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, & ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
- BOND ANTENNA EGB'S & MGB TO GROUND RING.
- TEST COMPLETED GROUND SYSTEM & RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.

**ALL-POINTS TECHNOLOGY CORPORATION**  
3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419  
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**T-Mobile NORTHEAST, LLC.**  
35 GRIFFIN ROAD BLOOMFIELD, CT 06002  
OFFICE: (860)-692-7100

**APPROVALS**

LANDLORD:	DATE:
RF ENGINEER:	DATE:
CONSTRUCTION:	DATE:
OPERATIONS:	DATE:
SITE ACQ.:	DATE:

**CONSTRUCTION DOCUMENTS**

NO	DATE	REVISION
0	12/09/16	FOR REVIEW: RCB
1	03/21/17	FOR REVIEW: RCB
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4		
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6		

**DESIGN PROFESSIONALS OF RECORD**  
PROF: SCOTT M. CHASSE P.E.  
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

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**T-MOBILE "EVERSOURCE"**  
SITE: 7 HOSKINS ROAD, ADDRESS: BLOOMFIELD, CT 06002  
APT FILING NUMBER: CT409140  
SITE NUMBER: CTHA142G

**CONFIGURATION**  
**707B**  
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

SHEET TITLE: **ELECTRICAL/TELCO PLAN & DETAILS**  
SHEET NUMBER: **E-1**  
DRAWN BY: CSH CHECKED BY: RCB  
DATE: 12/09/16  
PROFESSIONAL ENGINEER

APPROVALS

LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_  
 RF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CONSTRUCTION: \_\_\_\_\_ DATE: \_\_\_\_\_  
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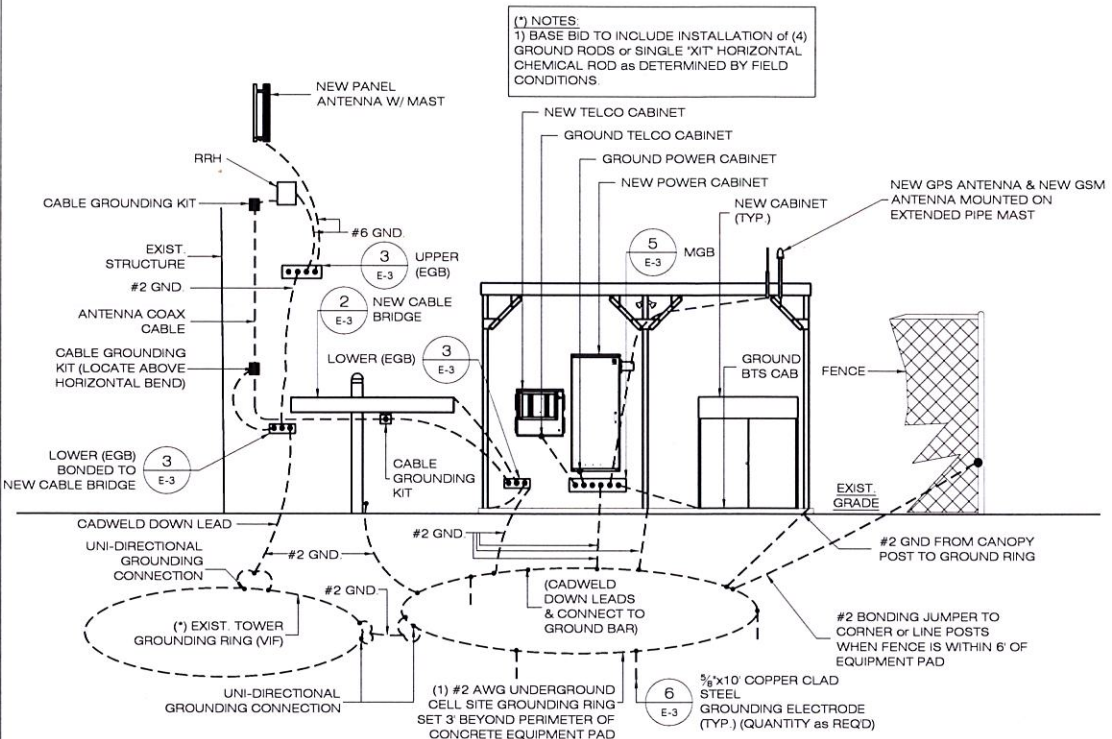
**707B**

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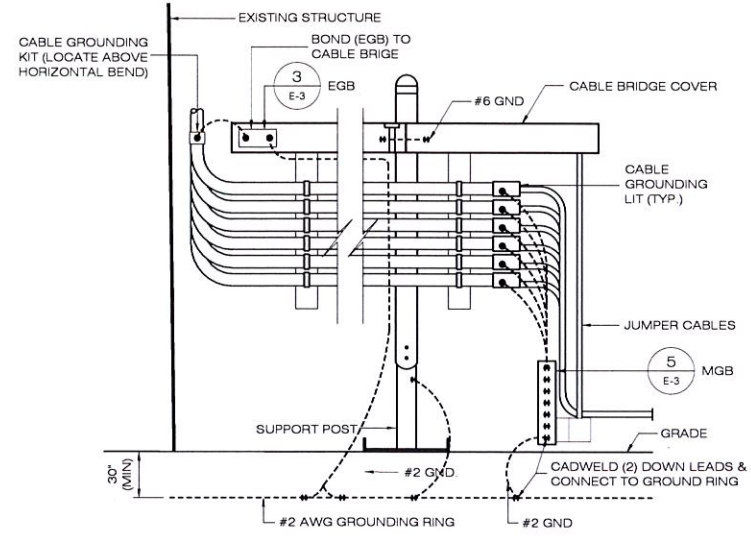
SHEET TITLE: **GROUNDING PLAN & DETAILS**

SHEET NUMBER: **E-2**

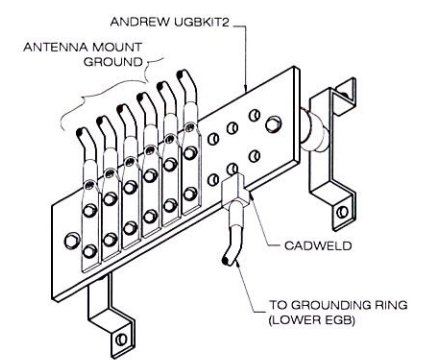
STATE OF CONNECTICUT  
 SCOTT M. CHASSE  
 PROFESSIONAL ENGINEER



**1 GROUNDING RISER DIAGRAM**  
 E-3 SCALE: N.T.S.

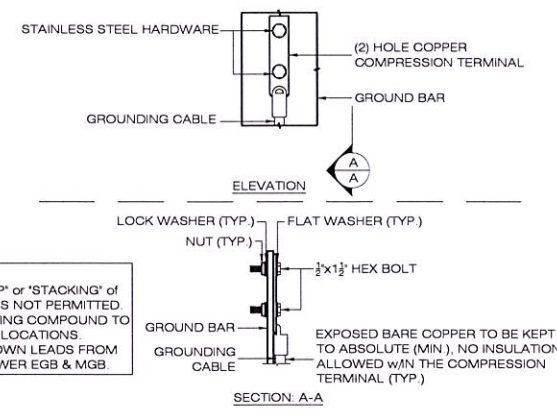


**2 CABLE BRIDGE GROUNDING DETAIL**  
 E-3 SCALE: N.T.S.



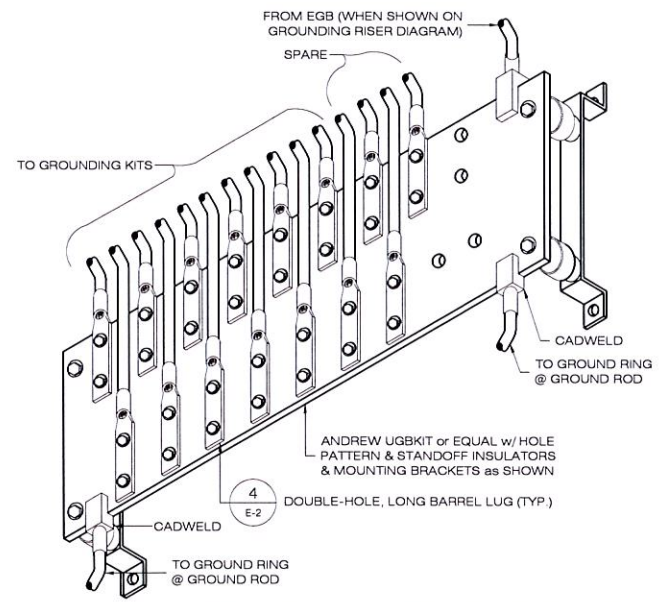
**(EGB) EQUIPMENT GROUND BAR**  
 E-2 SCALE: N.T.S.

NOTE:  
 FOR ANTENNA, TMA AND COAXIAL CABLING REQUIREMENTS INCLUDING LAYOUT & COLOR CODING, REFER TO RF CONFIGURATION SHEET PROVIDED UNDER SEPARATE COVER

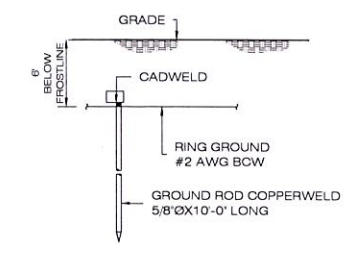


NOTES:  
 1) 'DOUBLING UP' or 'STACKING' of CONNECTIONS IS NOT PERMITTED.  
 2) OXIDE INHIBITING COMPOUND TO BE USED @ ALL LOCATIONS.  
 3) CADWELD DOWN LEADS FROM UPPER EGB, LOWER EGB & MGB.

**4 GROUND BAR CONNECTION DETAIL**  
 E-2 SCALE: N.T.S.



**5 (MGB) MASTER GROUND BAR**  
 E-2 SCALE: N.T.S.



**6 GROUND ROD DETAIL**  
 E-2 SCALE: N.T.S.

**GENERAL CONDITIONS**

IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL BUILDING CODES, PERMIT CONDITIONS AND SAFETY CODES DURING CONSTRUCTION.

THE ENGINEER IS NOT A GUARANTOR OF THE INSTALLING CONTRACTOR'S WORK, RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE WORK SITE, IN CONTROL OF THE SAFETY OR ADEQUACY OF ANY BUILDING COMPONENT, SCAFFOLDING, OR OTHER RELATED WORK AIDS, OR RESPONSIBLE FOR SUPERINTENDING THE WORK.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL PERMITS, INSPECTIONS, TESTING AND CERTIFICATES NEEDED FOR LEGAL OCCUPANCY OF THE FINISHED PROJECT.

THE CONTRACTOR IS RESPONSIBLE TO REVIEW THIS COMPLETE PLAN SET AND VERIFY THE EXISTING CONDITIONS SHOWN IN THESE PLANS AS THEY RELATE TO HIS WORK PRIOR TO SUBMITTING PRICE. SIGNIFICANT DEVIATIONS FROM WHAT IS SHOWN AFFECTING THE WORK SHALL BE REPORTED IMMEDIATELY TO THE CONSTRUCTION MANAGER.

DETAILS INCLUDED IN THIS PLAN SET ARE TYPICAL AND APPLY TO SIMILAR CONDITIONS.

EXISTING ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER AND ALL TENETS.

THE CONTRACTOR SHALL DILIGENTLY PROTECT THE EXISTING BUILDING SITE CONDITIONS AND THOSE OF ANY ADJACENT BUILDINGS/SITES AND RESTORE ANY DAMAGE CAUSED BY HIS ACTIVITIES TO THE PRE-CONSTRUCTION CONDITION.

THE CONTRACTOR SHALL SAFEGUARD AGAINST CREATING A FIRE HAZARD, AFFECTING TENANT EGRESS OR COMPROMISING BUILDING/SITE SECURITY MEASURES.

THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND CONSTRUCTION WASTE FROM THE SITE EACH DAY. WORK AREAS SHALL BE SWEEPED AND MADE CLEAN AT THE END OF EACH WORK DAY.

ALL MATERIALS LEFT ON A ROOF SHALL BE ADEQUATELY TIED DOWN SO AS NOT TO CREATE A SAFETY HAZARD CAUSED BY WIND.

THE CONTRACTOR'S HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY OWNER.

THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER IF ASBESTOS IS ENCOUNTERED DURING THE EXECUTION OF HIS WORK. THE CONTRACTOR SHALL CEASE ALL ACTIVITIES WHERE THE ASBESTOS MATERIAL IS FOUND UNTIL NOTIFIED BY THE CONSTRUCTION MANAGER TO RESUME HIS OPERATIONS.

**CONCRETE**

ALL CONCRETE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) CODES 301 & 318, LATEST EDITION.

ALL CONCRETE USED SHALL BE 4000 PSI (28 DAY COMP STRENGTH), THE CONCRETE MIX SHALL BE BASED ON USING THE FOLLOWING MATERIALS AND PARAMETERS:

- PORTLAND CEMENT - ASTM C150, T1
- AGGREGATE - ASTM C33, 1" MAX
- WATER
- AD MIXTURE - NON-CHLORIDE
- AIR - 6%
- SLUMP - 4" NCH

UNLESS NOTED OTHERWISE, ALL CONCRETE EXPOSED TO FREEZING WEATHER SHALL CONTAIN ENHANCED AIR PER ACI 211 TABLE 4.2.1 OF ACI 318-95.

ALL REINFORCING STEEL SHALL BE ASTM A615, GR 60 (EPOXIMED) UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPACERS SHALL BE CLASS B AND ALL HOOKS SHALL BE ACI STANDARD AND REINFORCING BARS SHALL BE COIL BENT WHERE REQUIRED AND TIED (NOT WELDED).

THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

- CONCRETE CAST AGAINST EARTH + 3" N
- CONCRETE EXPOSED TO EARTH OR WEATHER #5 AND LARGER = 2" N
- #5 AND SMALLER = 1 1/2" N
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND SLAB AND WALL = 3/4" N
- BEAMS AND COLUMNS = 1 1/2" N

A 3/4" IN CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OR CORNERS, UNLESS IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

CONCRETE SHALL BE PLACED IN A UNIFORM MANNER AND CONSOLIDATED IN PLACE.

CONCRETE FOOTINGS SHALL BE CAST AGAINST LEVEL, UNCOMPACTED, NON-FROZEN BASE SOIL. FREE OF STANDING WATER.

**STEEL**

**MATERIALS**

- WELDLANE - ASTM A572 GR 50
- TUBING - ASTM A500, GR B
- PIPE - ASTM A53, GR B
- GRATES - ASTM A225
- GRATING - TYPE GW-2 (1"x3/16" BARS)
- MISC. METALS - ASTM A36

ALL STEEL SHAPES SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123 WITH A COATING WEIGHT OF 2 OZ/SF.

**DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL** SHALL CONFORM TO CURRENT AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS.

THE STEEL STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.

SHOP DRAWINGS ARE TO BE CHECKED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.

**CONNECTIONS**

CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF TYPE 2 CONNECTION UNLESS OTHERWISE DETAILED.

DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MIN).

CONNECTIONS SHALL BE MADE USING 3/4" ASTM A325 BOLTS (SHD TIGHT OR SLIP CRITICAL) OR WELDS IF TENSION CONTROL BOLTS ARE USED. CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLTS ALLOWABLE LOAD VALUES.

USE THE LARGER OF 1/4" FILLET WELDS OR MINIMUM SIZE PER AISC REQUIREMENTS WHERE NO WELD SIZE IS SHOWN ON THE DRAWINGS.

ALL ARC AND GAS WELDING SHALL BE DONE BY A LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AMERICAN WELDING SOCIETY.

ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AWS D1.1. UPON THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

USE PRECAUTIONS AND PROCEDURES PER AWS D1.1 WHEN WELDING GALVANIZED METALS.

TOUCH-UP ALL DAMAGED GALVANIZED STEEL WITH ZINC-DIP GALVANIZING, DRY GALVIZING OR APPROVED EQUAL. IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. TOUCH-UP DAMAGED NON-GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

**ANCHORS**

EXPANSION ANCHORS SHALL BE USED WHERE ATTACHING TO CONCRETE. MASONRY MOUNTS SHALL HAVE INJECTION ADHESIVE ANCHORING.

EXPANSION BOLTS SHALL BE HLT1 KWIK BOLT II OR APPROVED EQUAL. MINIMUM EMBEDMENT 4 INCHES.

INJECTION ADHESIVE ANCHORING IN MASONRY WITH VOIDS SHALL BE HLT1 HIT HY-20 OR EQUAL WITH THREADED ROD AND SCREEN TUBES TO THE FOLLOWING BASE MATERIALS:

- BRICK WITH HOLES - SPACE ANCHORS 2 COMPLETE BRICKS APART MINIMUM MAINTAIN 2 COMPLETE BRICKS OR 16 INCHES FROM FREE EDGES (WHICHEVER IS LESS) EMBEDMENT 3-1/2 INCHES MINIMUM
- HOLLOW CONCRETE BLOCK - USE 50% MORE ANCHORS THAN SHOWN IN DETAIL. SPACING ONE ANCHOR MAXIMUM PER BLOCK CELL. MAINTAIN 1/2" SPACING FROM FREE EDGES EMBEDMENT THROUGH FACE
- INJECTION ADHESIVE ANCHORING IN SOLID MASONRY AND GROUT FILLED BLOCK SHALL BE HLT1 HIT HY-150 OR EQUAL WITH THREADED ROD MAINTAIN 12 INCHES BETWEEN ANCHORS AND ALL FREE EDGES. MINIMUM SPACING BETWEEN ANCHORS IS 8 INCHES
- ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND SHALL NOT BE INSTALLED IN MORTAR JOINTS
- GRATING SHALL BE ATTACHED USING FOUR GRATING CLAMPS OR 1/4" FILLET WELDS PER SECTION

**SITE GENERAL**

CONTRACTOR SHALL FOLLOW CONDITIONS OF ALL APPLICABLE PERMITS AND WORK IN ACCORD WITH OSHA REGULATIONS.

UTILITY INFORMATION SHOWN ON THE PLAN IS BASED ON VISIBLE FIELD EVIDENCE AND AVAILABLE RECORDS. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UTILITIES PRIOR TO COMMENCING WORK. THESE DRAWINGS MAY NOT ACCURATELY DEPICT AS-BUILT LOCATIONS AND OTHER UNKNOWN STRUCTURES. THE CONTRACTOR SHALL THEREFORE DETERMINE THE EXACT LOCATION OF EXISTING UNDERGROUND ELEMENTS AND EXCAVATE WITH CARE AFTER CALLING CALL BEFORE YOU DIG AT 811 OR 1-800-992-4849, 72 HOURS BEFORE DIGGING, DRILLING OR BLASTING. CARE SHALL BE TAKEN NOT TO DISTURB EXISTING UTILITIES AND SERVICE CONNECTIONS OR PORTIONS THERE OF TO REMAIN. CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING STRUCTURES OR UTILITIES DAMAGED BY HIS OPERATIONS.

ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE, BUT NOT BE LIMITED TO: A) FALL PROTECTION, B) CONFINED SPACE ENTRY, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.

IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, OR OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK. SUBJECT TO THE APPROVAL OF THE CONSTRUCTION MANAGER.

CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING STRUCTURES OR UTILITIES DAMAGED BY HIS OPERATIONS.

CONTRACTOR SHALL PROTECT EXISTING PAVED AND GRAVEL SURFACES, CURBS, LANDSCAPE AND STRUCTURES AND RESTORE SITE TO PRE-CONSTRUCTION CONDITION WITH AS GOOD OR BETTER MATERIALS AS NEW MATERIALS SHALL MATCH EXISTING THICKNESS AND TYPE.

THE CONTRACTOR SHALL SHORE ALL TRENCH EXCAVATION GREATER THAN 5 FEET IN DEPTH OR LESS WHERE SOIL CONDITIONS ARE DEEMED UNSTABLE. ALL SHEETING AND/OR SHORING METHODS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER.

THE CONTRACTOR IS RESPONSIBLE FOR MANAGING GROUNDWATER LEVELS IN THE VICINITY OF EXCAVATIONS TO PROTECT ADJACENT PROPERTIES AND NEW WORK.

GROUNDWATER SHALL BE DRAINED IN ACCORDANCE WITH LOCAL SEDIMENTATION & EROSION CONTROL GUIDELINES.

**EXCAVATION**

EXCAVATIONS FOR FOOTINGS SHALL BE CUT LEVEL TO THE REQUIRED DEPTH AND TO UNDISTURBED SOIL. REPORT UNSUITABLE SOIL CONDITIONS TO THE CONSTRUCTION MANAGER.

TRENCH EXCAVATIONS SHALL BE BACKFILLED AT THE END OF EACH DAY.

SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE.

**MATERIAL**

NATIVE GRAVEL MATERIAL MAY BE USED FOR TRENCH BACKFILL WHERE SELECT MATERIAL IS NOT SPECIFIED. GRAVEL MATERIAL FOR CONDUIT TRENCH BACKFILL SHALL NOT CONTAIN ROCK GREATER THAN 2 INCHES IN DIAMETER.

BANK OR CRUSHED GRAVEL SHALL CONSIST OF TOUGH DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE OF SOFT, THIN, ELONGATED OR LAMINATED PIECES AND MEET THE GRADATION.

PROCESSED AGGREGATE BASE SHALL CONSIST OF COURSE AND FINE AGGREGATES COMBINED AND MIXED SO THAT THE RESULTING MATERIAL CONFORMS TO THE GRADATION COURSE AGGREGATE SHALL BE EITHER GRAVEL OR BROKEN STONE AND FINE AGGREGATE SHALL CONSIST OF SAND.

SQUARE FEET	PERCENT PASSING BY WEIGHT	PERCENT PASSING BY WEIGHT
MESH	SIEVE	AGG BASE
PASS 5	100	90-100
PASS 3-1/2"	100	90-100
PASS 2-1/4"	100	90-100
PASS 2"	95-100	
PASS 1-1/2"	55-100	55-95
PASS 1"		
PASS 3/4"		50-75
PASS 1/4"	25-60	25-45
PASS 1/2"	15-45	15-45
PASS #40	2-25	5-20
PASS #100	0-10	0-12
PASS #200	0-5	0-5

FILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, ICE, TRASH AND DEBRIS.

**SEDIMENTATION & EROSION CONTROL**

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENTATION CONTROL.

LIMITS OF CLEARING AND GRUBBING SHALL BE CLEARLY MARKED BEFORE COMMENCING WITH SUCH WORK.

SEDIMENTATION AND EROSION CONTROL (SEC) MEASURES SHOWN SHALL BE INSTALLED PRIOR TO LAND CLEARING, EXCAVATION OR GRADING OPERATIONS. REQUIREMENTS OF LOCAL WETLAND AGENCY SHALL BE MET PRIOR TO EARTHWORK OPERATIONS.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN SEC MEASURES THROUGHOUT DURATION OF PROJECT UNTIL DISTURBED LAND IS THOROUGHLY VEGETATED.

FAILURE OF THE SEC SYSTEMS SHALL BE CORRECTED IMMEDIATELY AND SUPPLEMENTED WITH ADDITIONAL MEASURES AS NEEDED.

TOPSOIL SHALL BE SPREAD TO FINISH GRADES AND SEEDED AS SOON AS FINISHED GRADES ARE ESTABLISHED. STRAW MULCH, JUTE NETTING OR MATS SHALL BE USED WHERE THE NEW SEED IS PLACED.

VEGETATIVE SEEDING - AREA TO BE SEEDED SHALL BE LOOSE AND FRAGILE TO A DEPTH OF 3" TOPSOIL SHALL BE LOOSEBEN BY RAKING OR DISKING BEFORE SEEDING. APPLY 50 LBS OF COMPOSTED LIMESTONE AND 25 LBS OF 10-10-10 FERTILIZER PER 1000 SF HOLLOW LIME AND FERTILIZER INTO LOOSE SOIL. APPLY COMMON BERKUDA AND RYE GRASS AT 50 LBS/ACRE. USE CYCLONE SEED DRILL CULTIPACKER SEEDER OR HYDROSEEDER (SEED & FERTILIZER SLURRY FOR STEEP SLOPES) IRRIGATE UNTIL VEGETATION IS COMPLETELY ESTABLISHED.

**GROUNDING**

**MATERIALS**

- #6 THWN SHALL BE STRANDED #6 COPPER WITH GREEN THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
- #2 THWN SHALL BE STRANDED #2 COPPER WITH THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
- #2 BARE TINNED SHALL BE SOLID COPPER TINNED. ALL BURNED WIRE SHALL MEET THIS CRITERIA.

FENCE GATE BONDING JUMPER SHALL BE 40 WELDING CABLE THAT HAS BEEN CRIMPED ON EACH END WITH A CAP FOR THE CADWELD - PROCESS.

ALL LUGS SHALL BE 2-HOLE LONG BARREL, TINNED SOLID COPPER UNLESS OTHERWISE SPECIFIED. LUGS SHALL BE THOMAS AND BETTS SERIES 548 #4W OR EQUIVALENT (I.E. #2 THWN - 548586E; #2 SOLID - 548586E AND #6 THWN - 548528E).

ALL HARDWARE, BOLTS, NUTS, WASHERS, AND BELLEVILLE WASHERS SHALL BE 18-8 STAINLESS STEEL. EVERY CONNECTION SHALL BE BOLT-FLAT WASHER-BUSS-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT IN THAT EXACT ORDER. BACK-TO-BACK LOGGING, BOLT-FLAT WASHER- LUG- BUSS-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT IN THAT EXACT ORDER, IS ACCEPTED WHERE NECESSARY TO CONNECT MANY LUGS TO A BUSS BAR. STACKING OF LUGS, BUSS-LUG-LUG, IS NOT ACCEPTABLE.

WHERE CONNECTIONS ARE MADE TO STEEL OR DISSIMILAR METALS, A THOMAS AND BETTS DRAGON TOOTH WASHER MODEL DTM #4 SHALL BE USED BETWEEN THE LUG AND THE STEEL. BOLT-FLAT WASHER-STEEL-DRAGON TOOTH WASHER-LUG - FLAT WASHER-BELLEVILLE WASHER-NUT.

WATER PIPE CLAMPS SHALL BE CUSTOM MADE FROM BRASS. THE CLAMP SHALL COME IN CONTACT WITH A MINIMUM OF 4 LINEAR INCHES OF PIPE ON THE SERVICE SIDE OF THE MAIN DRILL CLAMP TO ACCEPT A 2-HOLE 1/2" FISH HARDWARE 750 MCM LUG.

ALL CONNECTIONS, INTERIOR AND EXTERIOR, SHALL BE MADE WITH THOMAS AND BETTS XPOB-SHIELD™ COAT ALL WIRES BEFORE LOGGING AND COAT ALL SURFACES BEFORE CONNECTING.

THE MINIMUM BEND RADIUS SHALL BE 8 INCHES FOR #6 WIRE AND SMALLER AND 12 INCHES FOR WIRE LARGER THAN #6.

GROUND ROOF SHALL BE 6 IN STEEL, CLAD WITH A PURE COPPER JACKET OF NOT LESS THAN 0.0012 INCHES THICK, 10 FEET LONG. THE TOP OF GROUND ROOF SHALL BE INSTALLED AT THE SAME DEPTH AS THE GROUND RING.

BELOW-GRADE GROUND RINGS SHALL BE BARE TINNED #2 SOLID COPPER WIRE AS SPECIFIED FOR ABOVE-GRADE INSTALLATIONS. THE USE OF THWN-INSULATED, CONTINUOUS GREEN COLOR, SOLID COPPER WIRE OR THWN, CONTINUOUS GREEN COLOR, STRANDED COPPER WIRE IS ACCEPTABLE.

ALL CONNECTIONS TO THE GROUND RING SHALL BE CADWELD.

GROUND RINGS SHALL BE SOLID COPPER STRAP WITH #6 WIRE AND 2-HOLE COMPRESSION CRAMPED LUGS.

BOND THE SUPPORTING STRUCTURE FOR THE WAVEGUIDE BRIDGE TO THE EXTERIOR RING AT EACH END OF THE BRIDGE. EACH SECTION OF BRIDGE CANOPY SHALL BE BONDED TO ANOTHER SECTION VIA CADWELD - CONNECTION OF #2 TINNED WIRE.

FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUND RING SHALL NOT BE USED.

GROUND BARS SHALL BE FURNISHED AND INSTALLED WITH PRE-DRILLED HOLE DIAMETERS AND SPACINGS. GROUND BARS SHALL NEITHER BE FIELD FABRICATED NOR NEW HOLES DRILLED. GROUND LUGS SHALL MATCH THE HOLE SPACING ON THE BAR. HARDWARE DIAMETER SHALL BE MINIMUM 3/8 INCH.

GROUNDING SOURCE RESISTANCE IS NOT TO EXCEED 5 OHMS. NOTIFY CONSTRUCTION MANAGER IF GROUNDING RESISTANCE LEVEL CAN NOT BE MET.

FOR ROOF TOP SHELTER SITES - A GROUND BAR SHALL BE LOCATED AT EACH ANTENNA SECTOR (AGB). AT END OF CABLE TRAY AT SHELTER (AGB), UNDER WAVEGUIDE PORT EXTERIOR (EGB) AND INTERIOR (MGB). BOTH THE AGB AT CABLE TRAY AND EGB ON SHELTER SHALL BE CONNECTED TO A GROUND RING LAID ON THE ROOF AROUND THE SHELTER. THE GROUND RING IS TO BE GROUND TO BUILDING WATER MAIN.

FOR FAN OUT EQUIPMENT SPACES - A GROUND BAR SHALL BE LOCATED AT EACH ANTENNA SECTOR (AGB). AT END OF CABLE TRAY AT PARAPET (AGB), THE GROUND SHALL NOT SWEEP VERTICALLY UP WITH COAXIAL CABLES, BUT RATHER RUN THROUGH PARAPET IN PVC SLEEVE. THE SINGLE GROUND FROM ROOF TOP SHALL BE GROUND DIRECTLY TO WATER MAIN. EQUIPMENT ROOM GROUND BAR (MGB & EGB) SHALL BE MOUNTED AT RELATIVELY EQUAL HEIGHT AND TO THE SIDE OF POLYPHASE WAVEGUIDE PORT GROUND MGB TO EGB AND TO WATER MAIN.

FOR LAND SITE - A GROUND BAR SHALL BE LOCATED ON MOUNTING STRUCTURE BETWEEN ANTENNA SECTORS (AGB). EACH SECTOR SHALL GROUND TO THE SINGLE AGB AND THE RING AND TIED INTO IN-SITU GROUNDING SYSTEM. SEE GROUNDING PLAN.

ALL CABLE TRAY AND/OR PLATFORM STEEL SHALL BE BONDED TOGETHER WITH JUMPERS (#6 IN EQUIPMENT ROOM, #2 ELSEWHERE AND HOMERUN).

ALL POLYPHASE GROUND BARS SHALL BE GROUND TO MGB WITH #6 WIRE (2 PER EACH POLYPHASE BAR).

THE EQUIPMENT ROOM SHALL HAVE A #2 INTERNAL GROUND RING ON WALLS INSTALLED BETWEEN CEILING AND TOP ELEVATION CABLE TRAY - CLOSED LOOP.

**DEMOLITION SPECIFICATION AND NOTES**

REMOVE AND LEGALLY DISPOSE OF ITEMS EXCEPT THOSE INDICATED TO BE REINSTALLED, SALVAGED, OR TO REMAIN THE OWNER'S PROPERTY.

PROTECT CONSTRUCTION INDICATED TO REMAIN AGAINST DAMAGE AND SOLID DURING DEMOLITION. WHEN PERMITTED, ITEMS MAY BE REMOVED TO A SUITABLE PROTECTED STORAGE AREA DURING DEMOLITION AND THEN CLEANED AND REINSTALLED IN THEIR ORIGINAL LOCATIONS.

DEMOLISHED MATERIALS SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM THE SITE WITH FURTHER DISPOSITION AT THE CONTRACTOR'S OPTION.

COMPLY WITH GOVERNING LOCAL, STATE AND FEDERAL NOTIFICATION REGULATIONS BEFORE STARTING DEMOLITION.

COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.

BUILDING COMPONENTS TO BE DEMOLISHED SHALL BE VACATED AND THEIR USE DISCONTINUED BEFORE START OF DEMOLITION.

STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE WILL NOT BE PERMITTED.

ARRANGE DEMOLITION ACTIVITIES SO AS NOT TO INTERFERE WITH THE OWNERS ON-SITE OPERATIONS.

VERIFY THAT ALL UTILITIES HAVE BEEN DISCONNECTED AND CAPPED.

PERFORM INSPECTIONS AS THE DEMOLITION PROGRESSES TO DETECT HAZARDOUS RESULTING FROM SAID ACTIVITIES.

MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE DURING DEMOLITION OPERATIONS.

DO NOT INTERRUPT EXISTING UTILITIES SERVING OCCUPED OR OPERATING FACILITIES EXCEPT WHEN AUTHORIZED IN WRITING BY THE OWNER. PROVIDE TEMPORARY SERVICES DURING INTERRUPTIONS TO EXISTING UTILITIES, AS ACCEPTABLE TO THE OWNER.

PROVIDE NOT LESS THAN 72 HOURS NOTICE TO OWNER IF SHUTDOWN OF SERVICE IS REQUIRED DURING CHANGEOVER.

LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP OFF INDICATED UTILITIES SERVICES SERVING STRUCTURES TO BE DEMOLISHED.

ARRANGE TO SHUT OFF INDICATED UTILITIES WITH THE OWNER AND UTILITY COMPANIES.

DO NOT START DEMOLITION WORK UNTIL UTILITY DISCONNECTING AND SEALING HAVE BEEN COMPLETED.

CONDUCT DEMOLITION OPERATIONS AND REMOVE DEBRIS TO ENSURE MINIMUM INTERFERENCE WITH ADJACENT AREAS, OTHER OCCUPIED AREAS, COMMON AREAS THROUGHOUT BUILDING, WALKWAYS, AND ROADWAYS.

DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR USED AREAS WITHOUT PERMISSION FROM OWNER. IF REQUIRED, PROVIDE FOR ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAY.

CONDUCT DEMOLITION OPERATIONS TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT AREAS, BUILDINGS, AND/OR FACILITIES TO REMAIN. ENSURE SAFE PASSAGE OF PEOPLE AROUND DEMOLITION AREAS.

PROVIDE AND MAINTAIN INTERIOR AND EXTERIOR SHORING, BRACING, OR STRUCTURAL SUPPORT TO PRESERVE STABILITY AND PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF PERIPHERAL STRUCTURES AND/OR AREAS.

USE WATER MIST, TEMPORARY ENCLOSURES, AND OTHER SUITABLE METHODS TO LIMIT THE SPREAD OF DUST AND DIRT. COMPLY WITH GOVERNING ENVIRONMENTAL PROTECTION REGULATIONS.

DO NOT CREATE HAZARDOUS OR OBJECTIONABLE CONDITIONS, SUCH AS ICE, FLOODING, AND POLLUTION, WHEN USING WATER.

REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT WILL PREVENT SPILLAGE ON ADJACENT SURFACES AND AREAS.

CLEAN ADJACENT AREAS AND IMPROVEMENTS OF DUST. REMOVE AND TRANSPORT DEBRIS CAUSED BY DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE START OF DEMOLITION.

USE METHODS REQUIRED TO COMPLETE DEMOLITION WITH LIMITATIONS OF GOVERNING REGULATIONS.

LOCATE DEMOLITION EQUIPMENT THROUGHOUT THE BUILDING AND REMOVE DEBRIS & MATERIALS SO AS NOT TO IMPOSE EXCESSIVE LOADS ON SUPPORTING WALLS, FLOORS, OR FRAMING.

DISPOSE OF DEMOLISHED ITEMS AND MATERIALS PROMPTLY. ON-SITE STORAGE OR SALE OF REMOVED ITEMS IS PROHIBITED.

DEMOLISH CONCRETE AND MASONRY IN SMALL SECTIONS.

REMOVE AIR-CONDITIONING EQUIPMENT WITHOUT RELEASING REFRIGERANTS.

BREAKUP AND REMOVE CONCRETE SLABS ON GRADE, UNLESS OTHERWISE NOTED.

REMOVE BELOW-GRADE CONSTRUCTION, INCLUDING FOUNDATION WALLS, TO AT LEAST 24 INCHES BELOW GRADE.

BREAK UP BELOW-GRADE CONCRETE SLABS IN SECTIONS NO LARGER THAN 24 INCHES SQUARE. PROMPTLY REPAIR DAMAGES TO ADJACENT FACILITIES CAUSED BY DEMOLITION.

PATCH TO PRODUCE SUITABLE SURFACES FOR NEW MATERIALS WHEN REPAIRING EXISTING SURFACES.

EXTEND RESTORED EXPOSURE FINISHES OF PATCH SURFACES INTO ADJOINING CONSTRUCTION IN A MANNER THAT ELIMINATES EVIDENCE OF PATCHING AND REPAIRS.

DO NOT BURN DEMOLISHED MATERIALS.

TRANSPORT DEMOLISHED MATERIALS OFF OWNERS PROPERTY AND LEGALLY DISPOSE OF THEM.

PROMPTLY SUBMIT A WRITTEN REPORT TO THE ENGINEER SHOULD UNANTICIPATED STRUCTURAL, ELECTRICAL, OR MECHANICAL CONDITIONS BE ENCOUNTERED. THE SUBMITTED REPORT SHALL INCLUDE SUFFICIENT DETAIL REGARDING THE EXTENT AND NATURE OF THE CONDITION.

DEMOLITION/CONSTRUCTION WORK SHALL BE LIMITED TO THE NORMAL HOURS OF 8AM TO 6PM.

MAINTAIN BUILDING SECURITY TO ADJACENT AND COMMON AREAS DURING DEMOLITION ACTIVITIES TO PREVENT UNAUTHORIZED PERSONS FROM ENTERING THE SITE.

DUE CARE SHALL BE TAKEN SO THAT THE EQUIPMENT AND ITS INSTALLATION ARE HANDLED IN A MANNER THAT WILL NOT AFFECT FIRE SAFETY OR CREATE A FIRE HAZARD.

**FINISHES**

FIRE SEPARATION ASSEMBLIES SHALL BE 1 HOUR F-RATED, UNLESS OTHERWISE NOTED. AND SHALL CONSIST OF 3/8" 28 GA. GALVANIZED STEEL STUDS AND CHANNELS (ASTM C645) INSTALLED AT 16" O.C. CHANNELS SHALL BE ATTACHED TO FLOOR AND CEILING AT 24" O.C. (MAX) STUDS SHALL BE ATTACHED TO TRACK USING SELF-TAPPING STEEL SCREWS TO EACH SIDE. MINERAL WOOL BATT SHALL BE FIT BETWEEN STUDS AND STAPLED IN PLACE. THERMAFIBER SAFB OR EQUAL-MEA ONE LAYER OF 58" GYPSUM WALLBOARD (ASTM C36 TYPE X) SHALL BE INSTALLED FROM FLOOR TO CEILING EACH SIDE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. VINYL JOINT COMPOUND AND TAPE SHALL BE APPLIED TO ALL JOINTS AND TOP AND BOTTOM SEAMS SEALED. ALL PENETRATIONS THROUGH ASSEMBLY SHALL COMPLY WITH FIRE STOPPING SPECIFICATION.

EXISTING CONCRETE CEILING SHALL BE PATCHED AND PAINTED. OTHER EXISTING CEILING TYPES SHALL RECEIVE ONE LAYER OF 58" GYPSUM WALLBOARD (ASTM C36-TYPE X) INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BE FINISHED IN ACCORDANCE WITH FIRE SEPARATION ASSEMBLY SPECIFICATION, UNO FRIED SPACES SHALL BE FIRE STOPPED.

ALL NEW WALLS & DOORS SHALL BE PAINTED USING BENJAMIN MOORE PAINT - ACRYLIC SEMI-GLOSS.

PAINT COLOR SHALL BE SELECTED BY CONSTRUCTION MANAGER.

ALL SURFACES TO BE PAINTED SHALL BE PREPARED IN ACCORD WITH PAINT MANUFACTURER'S RECOMMENDATIONS, PRIMED AND RECEIVE 2 FINISH COATS OF PAINT.

ALL PAINTS SHALL BE IN COMPLIANCE WITH ALL STATE FEDERAL AND LOCAL VOLATILE ORGANIC COMPOUND REQUIREMENTS.

PAINT COLOR SHALL MATCH EXISTING ADJUTING SURFACES WHERE APPLICABLE.

NEW EQUIPMENT ROOMS SHALL HAVE VCT FLOORING AND VINYL BASE. INSTALL VINYL BASE TO BOTH SIDES OF NEW WALLS. COLOR AND PATTERN TO BE SELECTED BY CONSTRUCTION MANAGER.

**CABLE TRAY/BIDGE**

CABLE TRAY AND BRIDGE SHALL BE MADE OF EITHER CORROSION RESISTANT METAL OR WITH A CORROSION RESISTANT FINISH.

CABLE TRAY SHALL BE OF LADDER TRAY TYPE WITH FLAT COVER CLAMPED TO SIDE RAILS.

CABLE LADDER SHALL BE SIZED TO FIT ALL CABLES IN ACCORD WITH NEC AND NEMA 11-15-84.

CABLE LADDER TRAYS SHALL BE NEMA CLASS 12A BY PW INDUSTRIES, INC. OR EQUAL.

CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

ALL WORKMANSHIP SHALL CONFORM TO THESE REQUIREMENTS AND ALL LOCAL CODES AND STANDARDS TO ENSURE SAFE AND ADEQUATE GROUNDING SYSTEM.

TYPICAL WOVEN WIRE FENCING NOTES:

- (INSTALL FENCING PER ASTM F-567, SWING GATES PER ASTM F-900).
- GATE POST, CORNER, TERMINAL OR PULL POST 2 1/2" O D SCHEDULE 40. FOR GATE WIDTHS UP THROUGH 8 FEET OR 12 FEET FOR DOUBLE SWING. GATE PER ASTM-F1063.
- LINE POST: 2" O SCHEDULE 40 PIPE PER ASTM-F1063.
- GATE FRAME: 1 1/2" O SCHEDULE 40 PIPE PER ASTM-F1063.
- TOP RAIL & BRACE RAIL: 1 1/2" O SCHEDULE 40 PIPE PER ASTM-F1063.
- FABRIC: 12 GA. CORE WIRE SIZE 2" MESH, CONFORMING TO ASTM-A392.
- TE WIRE: MINIMUM 1/4" GA. GALVANIZED STEEL, AT POSTS AND RAILS. A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAX 24" INTERVALS.
- TENSION WIRE: 7 GA. GALVANIZED STEEL.
- BARBED WIRE: DOUBLE STRAND 12-1/2" O D TWISTED WIRE TO MATCH. W/ FABRIC 14 GA. 4 FT BARBS SPACED ON APPROXIMATELY 5 CENTERS.
- GATE LATCH: DROP DOWN LOCKABLE FORK LATCH AND LOCK KEYPAD ALIKE FOR ALL SITES.
- LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED IF REQUIRED.
- HEIGHT = 6 VERTICAL - 1 BARBED WIRE VERTICAL DIMENSION.

**APPROVALS**

LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_

RF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_

CONSTRUCTION: \_\_\_\_\_ DATE: \_\_\_\_\_

OPERATIONS: \_\_\_\_\_ DATE: \_\_\_\_\_

SITE ACQ: \_\_\_\_\_ DATE: \_\_\_\_\_

**CONSTRUCTION DOCUMENTS**

NO	DATE	REVISION
0	12/09/16	FOR REVIEW: RCB
1	03/21/17	FOR REVIEW: RCB
2		
3		
4		
5		
6		

**DESIGN PROFESSIONALS OF RECORD**

PROF: SCOTT M. CHASSE P.E.  
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 ADDR: 3 SADDLEBROOK DRIVE, KILLINGWORTH, CT 06419

**NOTE:**

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**T-MOBILE "EVERSOURCE"**

SITE: 7 HOSKINS ROAD,  
 ADDRESS: BLOOMFIELD, CT 06002

APT FILING NUMBER: CT409140

SITE NUMBER: CTHA142G

DRAWN BY: CSH CHECKED BY: RCB

DATE: 12/09/16

**CONFIGURATION**

**707B**

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

SHEET TITLE: \_\_\_\_\_

**NOTES & SPECIFICATIONS**

SHEET NUMBER: \_\_\_\_\_

**N-1**



**APPROVALS**

LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_

RF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_

CONSTRUCTION: \_\_\_\_\_ DATE: \_\_\_\_\_

OPERATIONS: \_\_\_\_\_ DATE: \_\_\_\_\_

SITE ACQ: \_\_\_\_\_ DATE: \_\_\_\_\_

**CONSTRUCTION DOCUMENTS**

NO	DATE	REVISION
0	12/09/16	FOR REVIEW: RCB
1	03/21/17	FOR REVIEW: RCB
2		
3		
4		
5		
6		

**DESIGN PROFESSIONALS OF RECORD**

PROF: SCOTT M. CHASSE P.E.  
 COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
 ADDR: 3 SADDLEBROOK DRIVE, KILLINGWORTH, CT 06419

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SHEET TITLE: \_\_\_\_\_

**NOTES & SPECIFICATIONS**

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**N-1**

# Exhibit D

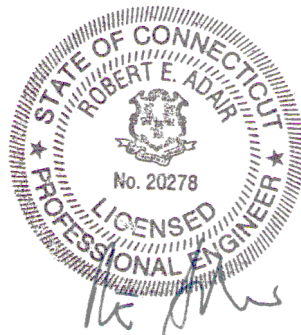


**STRUCTURAL ANALYSIS REPORT  
185' SELF-SUPPORTING TOWER  
BLOOMFIELD, CONNECTICUT**

Prepared for  
T-Mobile

**T-Mobile Site #CTHA142A**

June 14, 2017



APT Project #CT1071510

**STRUCTURAL ANALYSIS REPORT  
185' SELF-SUPPORTING TOWER  
BLOOMFIELD, CONNECTICUT  
prepared for  
T-Mobile**

**EXECUTIVE SUMMARY:**

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of Northeast Utilities' (Eversource Energy) 185-foot self-supporting tower. The analysis was performed for T-Mobile's proposed installation of nine panel antennas, six remote radio heads (RRHs) and one cylindrical 'squid' distribution box (D-box) at 140' as detailed below. The equipment will be mounted on three sector mounts and is to be fed by two hybrid power/fiber cables.

APT's analysis indicates the tower and foundation meet the requirements of the Connecticut State Building Code and TIA-222 with T-Mobile's proposed equipment. Deflection values were also found to be within Northeast Utilities Substation Standards requirements.

**INTRODUCTION:**

A structural analysis was performed on the above-mentioned communications tower by APT for T-Mobile. The tower is located at 7 Hoskins Road in Bloomfield, Connecticut. The structure is a 185-foot galvanized steel self-supporting tower manufactured by Sabre Communications Corporation. The tower features pipe legs with angle steel bracing members.

APT did not performed a site visit for this analysis. The analysis relied solely on the following documents:

<b>Document</b>	<b>Remarks</b>	<b>Date</b>	<b>Source</b>
Geotechnical Testing Report	Design Earth Technology #2014.15	10/14/2014	NU
Structural Design Report	Sabre Communications #127272	8/19/2015	NU
Final Erection Drawings	Sabre Communications #127272	9/26/2015	NU
Feedline Plan	Centek Engineering	12/7/2016	T-Mobile
Construction Drawings	APT Filing no. CT409140	12/9/2016	APT
RFDS/antenna rec	T-Mobile site no. CTHA142A	2/14/2017	T-Mobile

The analysis was performed in accordance with TIA-222-G using the following antenna inventory (proposed equipment shown in **bold** text; reserved equipment shown in *italic* text):

Carrier	Elev.	Antenna	Mount	Coax.
	185'	Beacon	Leg	3/8"
NU	185'	20', 14' omnidirectional whips, 20' 8-bay dipole, ANT450F10 omni	Pipes on legs	(3) 1-5/8", (2) 7/8", 1/2"
NU	183'	(3) 8' dishes with radome	(3) pipes on legs	(6) EW-63
NU	172'	8' dish with radome	Pipe on leg	(2) EW-63
NU	171'	(2) 6' dishes with radome	(2) pipes on legs	(4) EW-63
Town/NU	165'	PR-900 Paraflector, ANT450F10 omni	Pipe on leg, 3' sidearm	(2) 7/8"
AT&T	165'	(3) SBNH-1D8585C, (6) OPA-65R-LCUU-H8 panels, (12) RRHs, (3) A2 Modules, (3) E15Z01P13, (1) D-box	(3) 12' sector mounts	(6) 1-5/8", (6) power, (3) fiber
Verizon	155'	(6) HBXX-6517DS, (6) LNX-6514DS panels, (9) RRHs, (2) D-boxes	(3) 12' sector mounts	(6) 1-5/8", (2) hybrid
<b>T-Mobile</b>	<b>140'</b>	<b>(3) APXV18-206516, (3) LNX-6515DS, (3) APXV18-206517 panels, (6) RRUS-11 RRHs, (1) cylindrical 'squid' D-box</b>	<b>(3) 12' sector mounts</b>	<b>(2) 6x12 hybrid</b>
NU	135'	6' dish with radome	Pipe on leg	(2) EW-63
NU	135'	4' dish with radome	Pipe on leg	EW-90
NU	125'	8' dish with radome	Pipe on leg	(2) EW-63
NU	125'	20' omnidirectional whip, 12' dipole	(2) 6' sidearms	(2) 7/8"
NU	111'	12' single dipole	6' sidearm	7/8"
NU	108'	14' omnidirectional whip	6' sidearm	7/8"
	103'	(3) Obstruction lights	Legs	3/8"
NU	100'	8' dish with radome	Pipe on leg	(2) EW-63
NU	90.5'	3' omnidirectional whip	3' sidearm	7/8"
NU	87'	12' single dipole	6' sidearm	7/8"
NU	69'	10' 4-bay dipole	6' sidearm	7/8"
Town	66'	18" square panel	3' sidearm	Cat5e

## RIGOROUS STRUCTURAL ANALYSIS:

### Methodology:

The structural analysis was done in accordance with the Connecticut State Building Code and TIA-222, Revision G (TIA), Structural Standard for Antenna Supporting Structures and Antennas.

The analysis was conducted using a 3-second gust wind speed of 105 miles per hour with no ice and 50-mph with 1" radial ice in accordance with the TIA-222-G standard. The following additional design criteria were used:

---

### All-Points Technology Corporation

116 Grandview Road  
 Conway, NH 03818  
 (603) 496-5853

3 Saddlebrook Drive  
 Killingworth, CT 06419  
 (860) 663-1697



Structure Class: III  
 Topographic Category: 2  
 Exposure Category: C  
 Crest Height: 200'

**Analysis Results:**

Analysis of the tower was conducted in accordance with the criteria outlined herein with antenna changes as previously described. The following table summarizes the results of the analysis based on stresses of individual leg and bracing members:

Elevation	Leg Capacity	Bracing Capacity
180'-185'	2%	19%
160'-180'	12%	76%
140'-160'	36%	59%
120'-140'	69%	84%
100'-120'	65%	91%
80'-100'	73%	70%
60'-80'	65%	77%
40'-60'	85%	88%
20'-40'	77%	100%
0'-20'	75%	89%

**Bracing, Splice and Anchor Bolts:**

Bracing, splice and anchor bolts were evaluated under the proposed loading. All evaluated bolts were found to be adequately sized to support the proposed loads.

**Base Foundation:**

Evaluation of the existing base foundation was performed from original Sabre foundation drawings. The base foundation was found to be adequately sized to support the proposed equipment. Factored base reactions imposed with the additional antennas were calculated as follows:

Reaction	Original Design	Calculated
Compression	775 k	705 k
Uplift	656 k	602 k
Shear	132 k	122 k
OTM	23690 ft-k	21508 ft-k

---

**All-Points Technology Corporation**

### Deflection:

Combined twist and sway was evaluated per Northeast Utilities Substation Standard SUB 090, Section 7 under service wind as well as design wind speeds. The tower was found to be within the allowable 0.5 degree total maximum. Results are summarized as follows:

Load Case	Tilt	Twist	Combined Max.
Service Wind – 60-mph	0.0827°	0.0022°	0.0827°
Design Wind – 105-mph	0.4600°	0.0122°	0.4602°

### CONCLUSIONS AND RECOMMENDATIONS:

APT's structural analysis indicates that the 185-foot self-supporting tower and foundation located at 7 Hoskins Road in Bloomfield, Connecticut meets the requirements of the Connecticut State Building Code and TIA-222 with T-Mobile's proposed equipment.

### LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in an undeteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or strengthening bracing members.
2. Reinforcing vertical members in any manner.
3. Adding or relocating torque arms or guys.
4. Installing antenna mounting gates or side arms.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein,

---

#### All-Points Technology Corporation

116 Grandview Road  
Conway, NH 03818  
(603) 496-5853

3 Saddlebrook Drive  
Killingworth, CT 06419  
(860) 663-1697

or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

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**All-Points Technology Corporation**

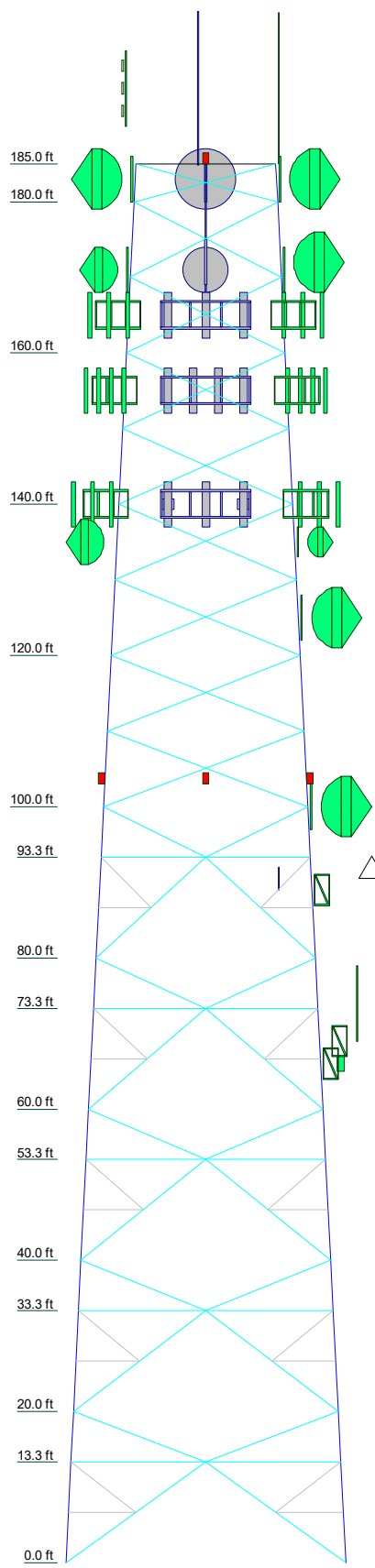
116 Grandview Road  
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# ***Appendix A***

*Tower Schematic*

Section	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	P12.75x.5	P10.75x.5	P10.75x.5	P10.75x.5	P10.75x.385	P8.625x.5	P8.625x.5	P8.625x.322	A572-50	L5x5x3/8	L5x5x3/8	L5x5x3/8	L5x5x3/8	L5x5x3/8	L5x5x3/8
Leg Grade	L6x6x1/2	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8
Diagonals	L6x6x1/2	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8	L6x6x3/8
Top Chords	A36	A36	A36	A36	A36	A36	A36	A36	A36	A36	A36	A36	A36	A36	A36
Horizontals	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Red. Horizontals	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16
Red. Diagonals	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16	L3 1/2x4x5/16
Red. Hips	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4
Face Width (ft)	35	33.6667	33.6667	33.6667	31.6667	29.6667	29.6667	27.6667	27.6667	25	23	21	19	18.5	18.5
# Panels @ (ft)	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333	1 @ 13.3333
Weight (lb) 59654.3	7427.4	3488.3	6612.9	2620.1	5254.3	2252.8	4877.9	2237.1	4302.4	1886.4	5824.3	4586.6	4131.7	2013.0	1827.2



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
LED beacon (NU)	185	ALU B66a RRH4x45w/bracket (Verizon)	155
20' x 3" omni whip (NU)	185	ALU B66a RRH4x45w/bracket (Verizon)	155
Tower Top Amplifier (NU)	185	DB-T1-6Z-8AB-0Z (Verizon)	155
Telewave ANT450F10	185	DB-T1-6Z-8AB-0Z (Verizon)	155
20' 8 Bay Dipole (Bloomfield PD)	185	Rohn 6' x 12' Boom Gate (1) (Verizon)	155
14' x 3" Dia Omni (NU)	185	Rohn 6' x 12' Boom Gate (1) (Verizon)	155
Telewave ANT450F10 (NU)	185 - 165	Rohn 6' x 12' Boom Gate (1) (Verizon)	155
6'x4 1/2" Pipe Mount (NU)	183	(2) HBXX-6517DS (Verizon)	155
6'x4 1/2" Pipe Mount (NU)	183	(2) HBXX-6517DS (Verizon)	155
6'x4 1/2" Pipe Mount (NU)	183	(2) LNX-6514DS-VTM (Verizon)	155
8' Dish (NU)	183	(2) LNX-6514DS-VTM (Verizon)	155
8' Dish (NU)	183	(2) LNX-6514DS-VTM (Verizon)	155
8' Dish (NU)	183	(2) LNX-6514DS-VTM (Verizon)	155
6'x4 1/2" Pipe Mount (NU)	172	20' x 3" Dia Omni (NU)	145 - 125
6'x4 1/2" Pipe Mount (NU)	172	LNX-6515DS-T4M (T-Mobile)	140
6'x4 1/2" Pipe Mount (NU)	171	LNX-6515DS-T4M (T-Mobile)	140
6' dish with radome	171	(2) Ericsson RRUS-11 (T-Mobile)	140
6' dish with radome	171	(2) Ericsson RRUS-11 (T-Mobile)	140
(2) OPA-65R-LCUU-H8 (ATI)	165	(2) Ericsson RRUS-11 (T-Mobile)	140
(2) OPA-65R-LCUU-H8 (ATI)	165	(2) Ericsson RRUS-11 (T-Mobile)	140
(2) OPA-65R-LCUU-H8 (ATI)	165	T-Mobile Mini-Squid (T-Mobile)	140
RRUS-11 (ATI)	165	12' T-frame sector mnt	140
RRUS-11 (ATI)	165	12' T-frame sector mnt	140
RRUS-11 (ATI)	165	12' T-frame sector mnt	140
RRUS-12 (ATI)	165	LNX-6515DS-T4M (T-Mobile)	140
RRUS-12 (ATI)	165	APXV18-206516 (T-Mobile)	140
RRUS-12 (ATI)	165	APXV18-206516 (T-Mobile)	140
RRUS-32 (ATI)	165	APXV18-206516 (T-Mobile)	140
RRUS-32 (ATI)	165	APXV18-206516 (T-Mobile)	140
RRUS-32 (ATI)	165	APXV18-206516 (T-Mobile)	140
RRUS-E2 (ATI)	165	APXV18-206516 (T-Mobile)	140
RRUS-E2 (ATI)	165	4'x4 1/2" Pipe Mount (NU)	135
RRUS-E2 (ATI)	165	4' dish (NU)	135
A2 (ATI)	165	6' dish with radome	135
A2 (ATI)	165	6'x4 1/2" Pipe Mount (NU)	125
A2 (ATI)	165	Rohn 6' Side-Arm(1) (NU)	125
E15Z01P13 (ATI)	165	Rohn 6' Side-Arm(1) (NU)	125
E15Z01P13 (ATI)	165	8' Dish (NU)	125
E15Z01P13 (ATI)	165	12' single dipole (NU)	125
DC6-48-60-18-8F Surge Arrestor (ATI)	165	14' x 3" Dia Omni (NU)	114.5
Rohn 6' x 12' Boom Gate (1) (ATI)	165	12' Dipole (NU)	111
Rohn 6' x 12' Boom Gate (1) (ATI)	165	Rohn 6' Side-Arm(1) (NU)	109
Rohn 6' x 12' Boom Gate (1) (ATI)	165	Rohn 6' Side-Arm(1) (NU)	108
ROHN 3-ft Side Arm (NU)	165	Obstruction light (NU)	103
SBNH-1D8585C (ATI)	165	Obstruction light (NU)	103
3' x 6' Paraflactor (Simsbury PD)	165	Obstruction light (NU)	103
6'x3" Pipe Mount (Simsbury PD)	165	6'x4 1/2" Pipe Mount (NU)	100
SBNH-1D8585C (ATI)	165	8' Dish (NU)	100
SBNH-1D8585C (ATI)	165	3' x 2" omni whip (NU)	92 - 89
RRH2x40-AWS (Verizon)	155	3' sidearm (NU)	89
RRH2x40-AWS (Verizon)	155	Rohn 6' Side-Arm(1) (NU)	87
RRH2x40-AWS (Verizon)	155	12' Dipole (NU)	87
RRH2x40-07-U (Verizon)	155	10' 4-bay dipole (NU)	79 - 69
RRH2x40-07-U (Verizon)	155	6' sidearm (NU)	69
RRH2x40-07-U (Verizon)	155	2' square panel (NU)	66
ALU B66a RRH4x45w/bracket (Verizon)	155	3' sidearm (NU)	66

### SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3 1/2x3 1/2x1/4	C	L5x5x5/16
B	L6x6x3/8	D	1 @ 6.66667

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

**All-Points Technology Corporation** Job: **185' Self-Supporting Tower**

116 Grandview Road  
 Conway, NH 03818  
 Phone: (603) 496-5853  
 FAX: (603) 447-2124

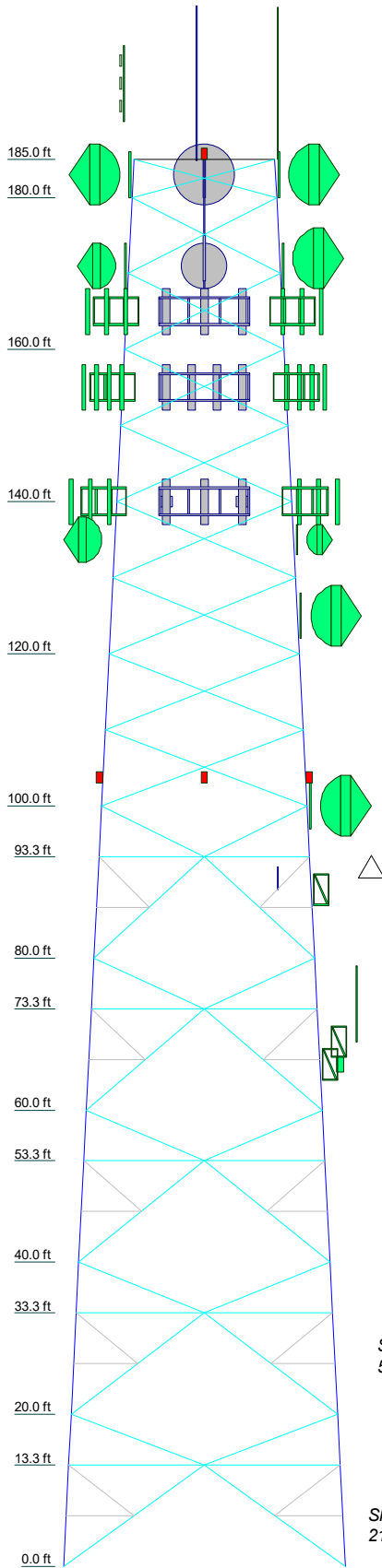
Project: **CT1071510 Bloomfield**  
 Client: T-Mobile; Site #CTHA142H Drawn by: Rob Adair App'd:  
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**SYMBOL LIST**

MARK	SIZE	MARK	SIZE
A	L3 1/2x3 1/2x1/4	C	L5x5x5/16
B	L6x6x3/8	D	1 @ 6.6667

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

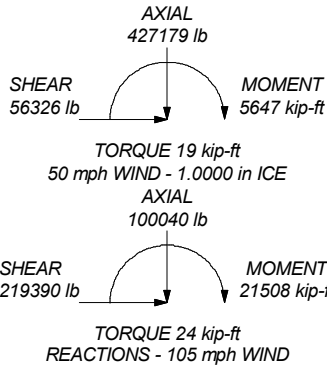


ALL REACTIONS  
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 704558 lb  
SHEAR: 122288 lb

UPLIFT: -601804 lb  
SHEAR: 108124 lb



Section	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	P12.75x.5	P10.75x.5	P10.75x.5	P10.75x.5	P10.75x.385	P8.625x.5	P8.625x.322	P8.625x.280							
Leg Grade	L6x6x1/2														
Diagonals	L6x6x3/8														
Diagonal Grade	A36														
Top Chirts	N.A.														
Horizontals	L5x5x5/16	N.A.	L5x5x5/16	N.A.	L5x5x5/16	N.A.	L4x4x5/16	N.A.	L4x4x5/16	N.A.	L5x5x5/16	L4x4x1/4			
Red. Horizontals	L3 1/2x4x5/16	N.A.	L3x3x5/16	N.A.	L3x3x5/16	N.A.	L3x3x1/4	N.A.	L3x3x1/4	N.A.	L3x3x1/4	L4x4x1/4			
Red. Diagonals	L3 1/2x4x5/16	N.A.	L3x3x5/16	N.A.	L3x3x5/16	N.A.	L3x3x1/4	N.A.	L3x3x1/4	N.A.	L3x3x1/4	L4x4x1/4			
Red. Hips	L3 1/2x3 1/2x1/4	N.A.	L3 1/2x3 1/2x1/4	N.A.	L3 1/2x3 1/2x1/4	N.A.	L3 1/2x3 1/2x1/4	N.A.	L3 1/2x3 1/2x1/4	N.A.	L3 1/2x3 1/2x1/4	L4x4x1/4			
Face Width (ft)	35.6667	35	33.6667	33	31.6667	31	29.6667	29	27.6667	27	25	23	21	19	18.5
# Panels @ (ft)	1 @ 13.3333	D	1 @ 13.3333	D	1 @ 13.3333	D	1 @ 13.3333	D	1 @ 13.3333	D	1 @ 13.3333	D	8 @ 10	2013.0	1 @ 5
Weight (lb)	7427.4	3488.3	6612.9	2620.1	5254.3	2252.8	4877.9	2237.1	4302.4	1886.4	5824.3	4586.6	4131.7	2013.0	1827.2

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	Project: <b>CT1071510 Bloomfield</b>		
	Client: T-Mobile; Site #CTHA142H	Drawn by: Rob Adair	App'd:
	Code: TIA-222-G	Date: 06/14/17	Scale: NTS
	Path: Y:\Shared\NH Office\Archive\CT\CT1071510 Bloomfield\CTHA142A\CT1071510 Bloomfield.et	Dwg No. E-1	

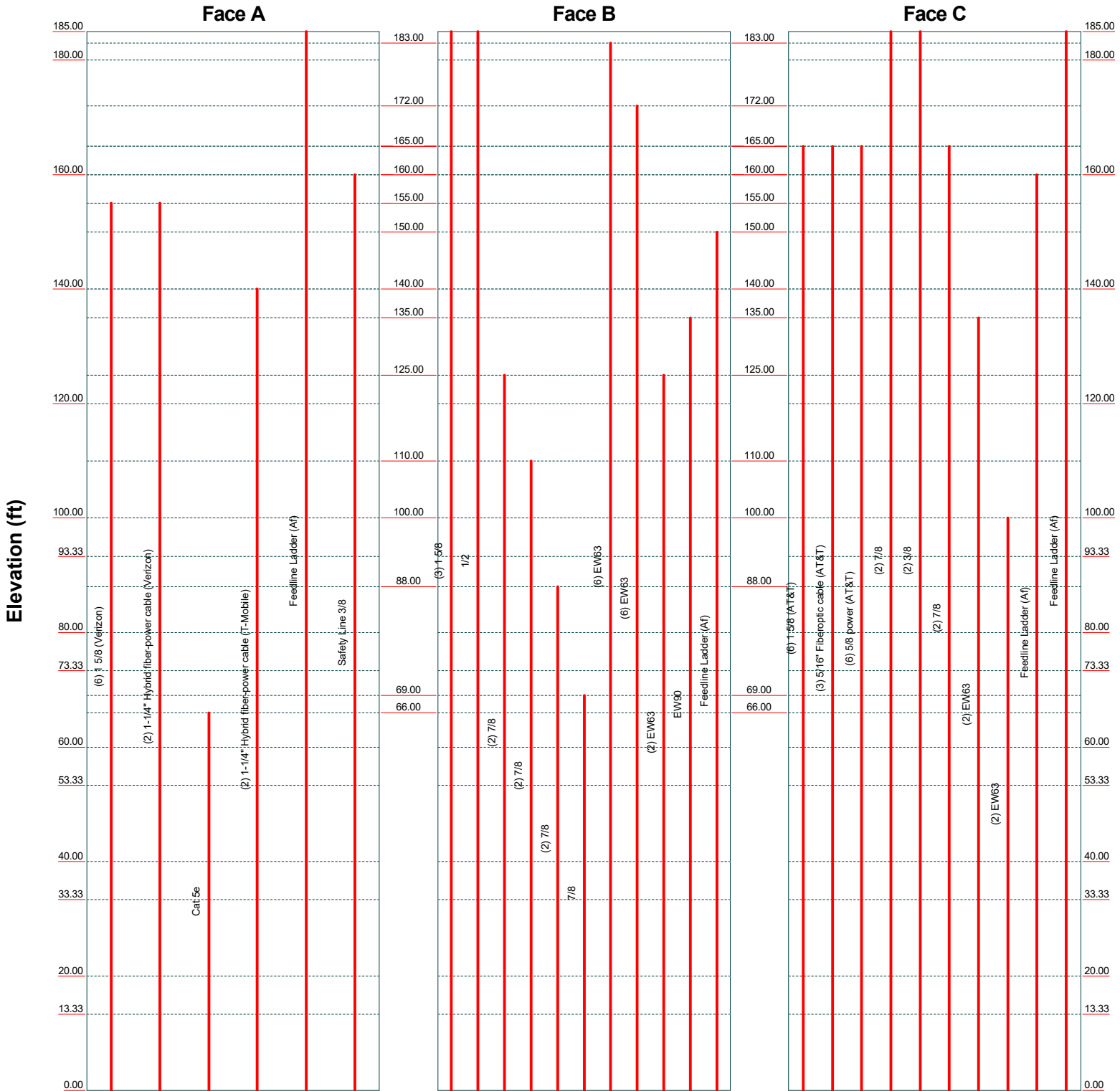
# ***Appendix B***

*Calculations*

# Feed Line Distribution Chart

## 0' - 185'

— Round   
 — Flat   
 — App In Face   
 — App Out Face   
 — Truss Leg



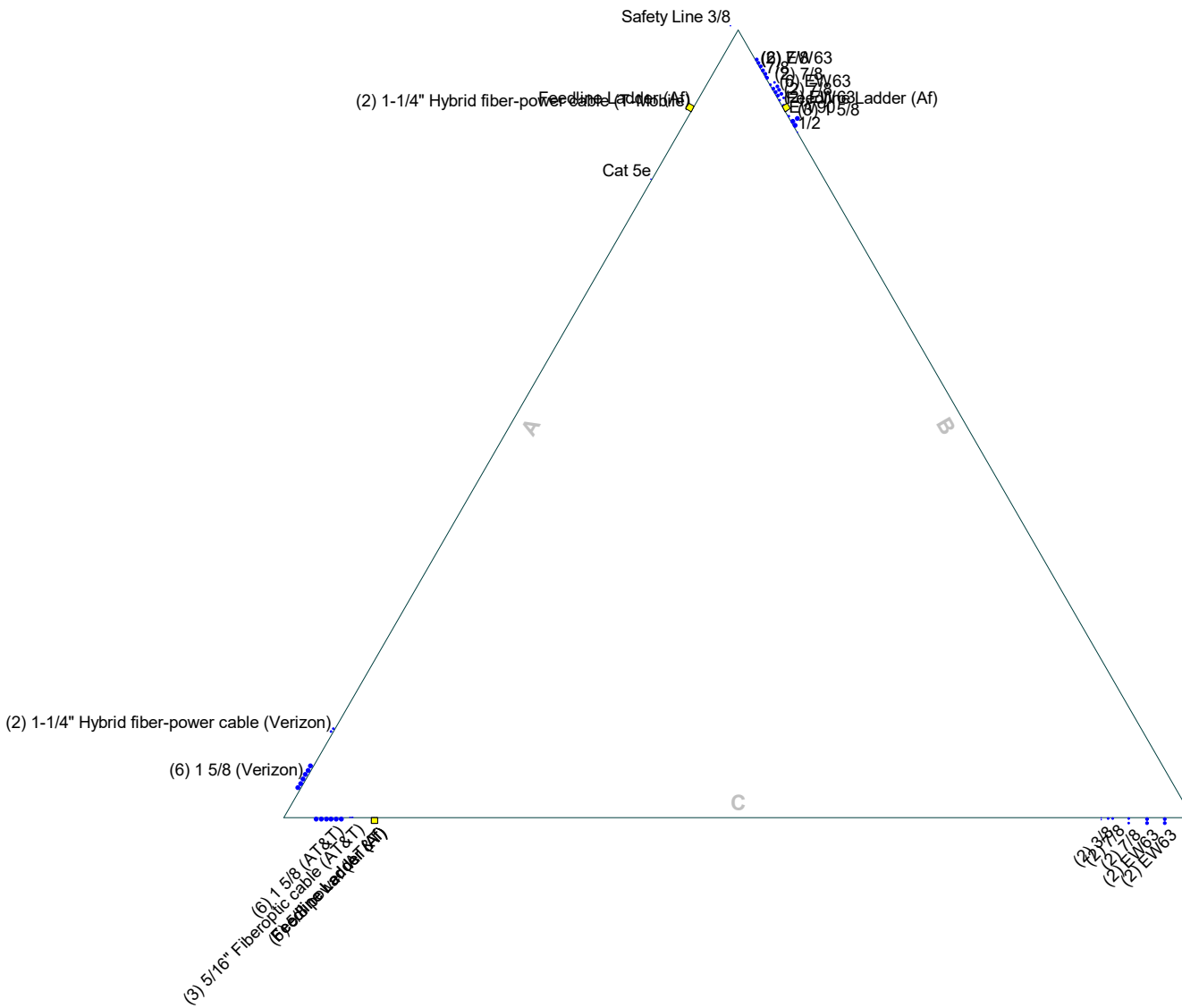
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<b>Job: 185' Self-Supporting Tower</b>		
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Code: TIA-222-G	Date: 06/14/17	Scale: NTS
Path:	Dwg No. E-7	



# Feed Line Plan

— Round   
 — Flat   
 — App In Face   
 — App Out Face



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Client: T-Mobile; Site #CTHA142H	Code: TIA-222-G	Drawn by: Rob Adair	Date: 06/14/17
Path: Y:\Shared\NH Office\Archive\CT\CT1071510 Bloomfield CTHA142A\CT1071510 Bloomfield.et		Scale: NTS	Dwg No. E-7

<b><i>tnxTower</i></b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b> 185' Self-Supporting Tower	<b>Page</b> 1 of 31
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	<b>Client</b> T-Mobile; Site #CTHA142H	<b>Designed by</b> Rob Adair

## Tower Input Data

The main tower is a 3x free standing tower with an overall height of 185.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 18.50 ft at the top and 37.00 ft at the base.

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

The following design criteria apply:

Basic wind speed of 105 mph.

Structure Class III.

Exposure Category C.

Topographic Category 2.

Crest Height 200.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>√ Use Code Stress Ratios</li> <li>√ Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>√ Include Bolts In Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>√ Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul> | <ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>√ Use Clear Spans For KL/r</li> <li>Retension Guys To Initial Tension</li> <li>Bypass Mast Stability Checks</li> <li>Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>Autocalc Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> </ul> | <ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>√ Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>SR Leg Bolts Resist Compression</li> <li>√ All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>√ Consider Feed Line Torque</li> <li>Include Angle Block Shear Check</li> <li>Use TIA-222-G Bracing Resist. Exemption</li> <li>Use TIA-222-G Tension Splice Exemption</li> <li style="background-color: #e0e0e0;">Poles</li> <li>Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> </ul> |
|--|--|--|



<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	3 of 31
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Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	185.00-180.00	5.00	X Brace	No	No	0.0000	0.0000
T2	180.00-160.00	10.00	X Brace	No	No	0.0000	0.0000
T3	160.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T4	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T5	120.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T6	100.00-93.33	6.67	Diamond	No	Yes	0.0000	0.0000
T7	93.33-80.00	13.33	K1 Down	No	Yes	0.0000	0.0000
T8	80.00-73.33	6.67	Diamond	No	Yes	0.0000	0.0000
T9	73.33-60.00	13.33	K1 Down	No	Yes	0.0000	0.0000
T10	60.00-53.33	6.67	Diamond	No	Yes	0.0000	0.0000
T11	53.33-40.00	13.33	K1 Down	No	Yes	0.0000	0.0000
T12	40.00-33.33	6.67	Diamond	No	Yes	0.0000	0.0000
T13	33.33-20.00	13.33	K1 Down	No	Yes	0.0000	0.0000
T14	20.00-13.33	6.67	Diamond	No	Yes	0.0000	0.0000
T15	13.33-0.00	13.33	K1 Down	No	Yes	0.0000	0.0000

### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 185.00-180.00	Pipe	P6.625x.280	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T2 180.00-160.00	Pipe	P6.625x.280	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T3 160.00-140.00	Pipe	P6.625x.280	A572-50 (50 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T4 140.00-120.00	Pipe	P6.625x.280	A572-50 (50 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T5 120.00-100.00	Pipe	P8.625x.322	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A36 (36 ksi)
T6 100.00-93.33	Pipe	P8.625x.322	A572-50 (50 ksi)	Equal Angle	L6x6x3/8	A36 (36 ksi)
T7 93.33-80.00	Pipe	P8.625x.322	A572-50 (50 ksi)	Single Angle	L4x6x1/2	A36 (36 ksi)
T8 80.00-73.33	Pipe	P8.625x.5	A572-50 (50 ksi)	Equal Angle	L6x6x3/8	A36 (36 ksi)
T9 73.33-60.00	Pipe	P8.625x.5	A572-50 (50 ksi)	Equal Angle	L6x6x3/8	A36 (36 ksi)
T10 60.00-53.33	Pipe	P10.75x.365	A572-50 (50 ksi)	Equal Angle	L6x6x3/8	A36 (36 ksi)
T11 53.33-40.00	Pipe	P10.75x.365	A572-50 (50 ksi)	Equal Angle	L6x6x3/8	A36 (36 ksi)
T12 40.00-33.33	Pipe	P10.75x.5	A572-50 (50 ksi)	Equal Angle	L6x6x3/8	A36 (36 ksi)
T13 33.33-20.00	Pipe	P10.75x.5	A572-50 (50 ksi)	Equal Angle	L6x6x1/2	A36 (36 ksi)
T14 20.00-13.33	Pipe	P12.75x.5	A572-50 (50 ksi)	Equal Angle	L6x6x1/2	A36 (36 ksi)
T15 13.33-0.00	Pipe	P12.75x.5	A572-50 (50 ksi)	Equal Angle	L6x6x1/2	A36 (36 ksi)

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**Tower Section Geometry (cont'd)**

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 185.00-180.00	Equal Angle	L5x5x5/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

**Tower Section Geometry (cont'd)**

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T6 100.00-93.33	None	Single Angle		A36 (36 ksi)	Solid Round	None	A36 (36 ksi)
T7 93.33-80.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T8 80.00-73.33	None	Single Angle		A36 (36 ksi)	Solid Round	None	A36 (36 ksi)
T9 73.33-60.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T10 60.00-53.33	None	Single Angle		A36 (36 ksi)	Solid Round	None	A36 (36 ksi)
T11 53.33-40.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T12 40.00-33.33	None	Single Angle		A36 (36 ksi)	Solid Round	None	A36 (36 ksi)
T13 33.33-20.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T14 20.00-13.33	None	Single Angle		A36 (36 ksi)	Solid Round	None	A36 (36 ksi)
T15 13.33-0.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)

**Tower Section Geometry (cont'd)**

Tower Elevation ft	Redundant Bracing Grade	Redundant Type	Redundant Size	K Factor
T7 93.33-80.00	A36 (36 ksi)	Horizontal (1) Diagonal (1) Hip (1)	Equal Angle Equal Angle Equal Angle	1 1 1
T9 73.33-60.00	A36 (36 ksi)	Horizontal (1) Diagonal (1) Hip (1)	Equal Angle Equal Angle Equal Angle	1 1 1
T11 53.33-40.00	A36 (36 ksi)	Horizontal (1) Diagonal (1) Hip (1)	Equal Angle Equal Angle Equal Angle	1 1 1
T13 33.33-20.00	A36 (36 ksi)	Horizontal (1) Diagonal (1) Hip (1)	Equal Angle Equal Angle Equal Angle	1 1 1





<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>All-Points Technology Corporation</b>  116 Grandview Road  Conway, NH 03818  Phone: (603) 496-5853  FAX: (603) 447-2124</p>	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	7 of 31
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Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T10 60.00-53.33	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T11 53.33-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T12 40.00-33.33	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T13 33.33-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T14 20.00-13.33	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T15 13.33-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

### Tower Section Geometry (cont'd)

Tower Elevation ft	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
in	in	in	in	in	in	in	in	
T1 185.00-180.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T2 180.00-160.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T3 160.00-140.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T4 140.00-120.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T5 120.00-100.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T6 100.00-93.33	0.0000	0.0000	0.0000	4.0000	0.0000	4.0000	0.0000	0.0000
T7 93.33-80.00	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000	0.0000	0.0000
T8 80.00-73.33	0.0000	0.0000	0.0000	8.0000	0.0000	8.0000	0.0000	0.0000
T9 73.33-60.00	0.0000	0.0000	0.0000	0.0000	0.0000	4.0000	0.0000	0.0000
T10 60.00-53.33	0.0000	0.0000	0.0000	9.0000	0.0000	9.0000	0.0000	0.0000
T11 53.33-40.00	0.0000	0.0000	0.0000	0.0000	0.0000	5.0000	0.0000	0.0000
T12 40.00-33.33	0.0000	0.0000	0.0000	9.0000	0.0000	9.0000	0.0000	0.0000
T13 33.33-20.00	0.0000	0.0000	0.0000	0.0000	0.0000	5.0000	0.0000	0.0000
T14 20.00-13.33	0.0000	0.0000	0.0000	9.0000	0.0000	9.0000	0.0000	0.0000
T15 13.33-0.00	0.0000	0.0000	0.0000	0.0000	0.0000	5.0000	0.0000	0.0000



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### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 185.00-180.00	Flange	1.2500 A325N	6	0.7500 A325X	1	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	1.2500 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	1.2500 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	1.2500 A325N	8	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	1.5000 A325N	8	0.7500 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.6250 A325N	0
T6 100.00-93.33	Flange	0.0000 A325N	0	1.0000 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.6250 A325N	0
T7 93.33-80.00	Flange	1.5000 A325N	8	1.0000 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	1.0000 A325N	2	0.6250 A325N	0
T8 80.00-73.33	Flange	0.0000 A325N	0	0.8750 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.6250 A325N	0
T9 73.33-60.00	Flange	1.5000 A325N	8	0.8750 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.8750 A325X	2	0.6250 A325N	0
T10 60.00-53.33	Flange	0.0000 A325N	0	0.8750 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325X	0	0.6250 A325N	0
T11 53.33-40.00	Flange	1.5000 A325N	8	0.8750 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.8750 A325X	2	0.6250 A325N	0
T12 40.00-33.33	Flange	0.0000 A325N	0	1.0000 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.0000 A325X	0	0.6250 A325N	0
T13 33.33-20.00	Flange	1.5000 A325N	8	1.0000 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	1.0000 A325X	2	0.6250 A325N	0
T14 20.00-13.33	Flange	0.0000 A325N	0	1.0000 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.0000 A325X	0	0.6250 A325N	0
T15 13.33-0.00	Flange	1.7500 F1554-105	6	1.0000 A325X	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	1.0000 A325X	2	0.6250 A325N	0

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (AT&T)	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.45	6	6	0.5000	1.9800		1.04
5/16" Fiberoptic cable (AT&T)	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.425	3	3	0.3125	0.3125		0.25
5/8 power (AT&T)	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.4	6	3	0.6450	0.6450		0.40
1 5/8 (Verizon)	A	No	Ar (CaAa)	155.00 - 0.00	0.0000	-0.45	6	6	0.5000	1.9800		1.04
1-1/4" Hybrid fiber-power cable (Verizon)	A	No	Ar (CaAa)	155.00 - 0.00	0.0000	-0.39	2	2	0.5000	1.2500		0.66
1 5/8	B	No	Ar (CaAa)	185.00 - 0.00	0.0000	-0.38	3	2	0.5000	1.9800		1.04

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8	C	No	Ar (CaAa)	185.00 - 0.00	0.0000	-0.41	2	2	1.1100	1.1100		0.54
3/8	C	No	Ar (CaAa)	185.00 - 0.00	0.0000	-0.4	2	1	0.4400	0.4400		0.08
1/2	B	No	Ar (CaAa)	185.00 - 0.00	0.0000	-0.37	1	1	0.5800	0.5800		0.25
7/8	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	-0.43	2	1	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.45	2	2	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	110.00 - 0.00	0.0000	-0.41	2	1	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	88.00 - 0.00	0.0000	-0.43	2	1	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	69.00 - 0.00	0.0000	-0.44	1	1	1.1100	1.1100		0.54
Cat 5c	A	No	Ar (CaAa)	66.00 - 0.00	0.0000	0.31	1	1	0.3125	0.3125		0.02
EW63	B	No	Ar (CaAa)	183.00 - 0.00	0.0000	-0.45	6	6	0.5000	1.5742		0.51
EW63	B	No	Ar (CaAa)	172.00 - 0.00	0.0000	-0.42	6	3	0.5000	1.5742		0.51
EW63	B	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.4	2	2	0.5000	1.5742		0.51
EW90	B	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.39	1	1	0.5000	0.9869		0.32
EW63	C	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.47	2	1	0.5000	1.5742		0.51
EW63	C	No	Ar (CaAa)	100.00 - 0.00	0.0000	-0.45	2	1	0.5000	1.5742		0.51
1-1/4" Hybrid fiber-power cable (T-Mobile)	A	No	Ar (CaAa)	140.00 - 0.00	0.0000	0.4	2	2	0.5000	1.2500		0.66
Feedline Ladder (Af)	C	No	Af (CaAa)	160.00 - 0.00	0.0000	0.4	1	1	0.0000	3.0000		8.40
Feedline Ladder (Af)	B	No	Af (CaAa)	150.00 - 0.00	0.0000	-0.4	1	1	0.0000	3.0000		8.40
Feedline Ladder (Af)	A	No	Af (CaAa)	185.00 - 0.00	0.0000	0.4	1	1	0.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	185.00 - 0.00	0.0000	0.4	1	1	0.0000	3.0000		8.40
Safety Line 3/8	A	No	Ar (CaAa)	160.00 - 0.00	4.0000	0.5	1	1	0.3750	0.3750		0.22

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub>	A <sub>F</sub>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T1	185.00-180.00	A	0.000	0.000	2.500	0.000	42.00
		B	0.000	0.000	6.094	0.000	26.03
		C	0.000	0.000	4.050	0.000	48.20
T2	180.00-160.00	A	0.000	0.000	10.000	0.000	168.00
		B	0.000	0.000	43.265	0.000	165.32
		C	0.000	0.000	25.654	0.000	245.15
T3	160.00-140.00	A	0.000	0.000	32.320	0.000	285.80
		B	0.000	0.000	55.821	0.000	273.80
		C	0.000	0.000	64.015	0.000	570.20
T4	140.00-120.00	A	0.000	0.000	44.510	0.000	350.00
		B	0.000	0.000	64.986	0.000	373.10
		C	0.000	0.000	68.738	0.000	585.50
T5	120.00-100.00	A	0.000	0.000	44.510	0.000	350.00
		B	0.000	0.000	75.752	0.000	417.00
		C	0.000	0.000	70.312	0.000	590.60
T6	100.00-93.33	A	0.000	0.000	14.837	0.000	116.67
		B	0.000	0.000	25.991	0.000	142.60
		C	0.000	0.000	25.536	0.000	203.67
T7	93.33-80.00	A	0.000	0.000	29.673	0.000	233.33
		B	0.000	0.000	53.757	0.000	293.84
		C	0.000	0.000	51.072	0.000	407.33
T8	80.00-73.33	A	0.000	0.000	14.837	0.000	116.67

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	10 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight lb
T9	73.33-60.00	B	0.000	0.000	27.471	0.000	149.80
		C	0.000	0.000	25.536	0.000	203.67
		A	0.000	0.000	29.861	0.000	233.47
T10	60.00-53.33	B	0.000	0.000	55.940	0.000	304.46
		C	0.000	0.000	51.072	0.000	407.33
		A	0.000	0.000	15.045	0.000	116.81
T11	53.33-40.00	B	0.000	0.000	28.211	0.000	153.40
		C	0.000	0.000	25.536	0.000	203.67
		A	0.000	0.000	30.090	0.000	233.63
T12	40.00-33.33	B	0.000	0.000	56.421	0.000	306.80
		C	0.000	0.000	51.072	0.000	407.33
		A	0.000	0.000	15.045	0.000	116.81
T13	33.33-20.00	B	0.000	0.000	28.211	0.000	153.40
		C	0.000	0.000	25.536	0.000	203.67
		A	0.000	0.000	30.090	0.000	233.63
T14	20.00-13.33	B	0.000	0.000	56.421	0.000	306.80
		C	0.000	0.000	51.072	0.000	407.33
		A	0.000	0.000	15.045	0.000	116.81
T15	13.33-0.00	B	0.000	0.000	28.211	0.000	153.40
		C	0.000	0.000	25.536	0.000	203.67
		A	0.000	0.000	30.090	0.000	233.63
		B	0.000	0.000	56.421	0.000	306.80
		C	0.000	0.000	51.072	0.000	407.33

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight lb
T1	185.00-180.00	A	3.246	0.000	0.000	5.746	0.000	195.30
		B		0.000	0.000	20.763	0.000	411.80
		C		0.000	0.000	20.037	0.000	465.00
T2	180.00-160.00	A	3.245	0.000	0.000	22.981	0.000	780.97
		B		0.000	0.000	126.974	0.000	2548.90
		C		0.000	0.000	116.597	0.000	2583.11
T3	160.00-140.00	A	3.243	0.000	0.000	101.875	0.000	2357.06
		B		0.000	0.000	154.289	0.000	3267.10
		C		0.000	0.000	248.884	0.000	5531.26
T4	140.00-120.00	A	3.240	0.000	0.000	154.112	0.000	3259.64
		B		0.000	0.000	192.724	0.000	4160.13
		C		0.000	0.000	272.986	0.000	6110.77
T5	120.00-100.00	A	3.234	0.000	0.000	153.934	0.000	3251.63
		B		0.000	0.000	259.171	0.000	5341.36
		C		0.000	0.000	280.720	0.000	6289.55
T6	100.00-93.33	A	3.227	0.000	0.000	51.244	0.000	1080.86
		B		0.000	0.000	91.425	0.000	1892.87
		C		0.000	0.000	104.193	0.000	2349.32
T7	93.33-80.00	A	3.219	0.000	0.000	102.341	0.000	2155.17
		B		0.000	0.000	194.920	0.000	4054.65
		C		0.000	0.000	208.059	0.000	4682.81
T8	80.00-73.33	A	3.209	0.000	0.000	51.070	0.000	1073.09
		B		0.000	0.000	101.361	0.000	2111.38
		C		0.000	0.000	103.805	0.000	2330.55
T9	73.33-60.00	A	3.194	0.000	0.000	105.883	0.000	2216.06
		B		0.000	0.000	208.881	0.000	4352.29
		C		0.000	0.000	206.992	0.000	4631.25
T10	60.00-53.33	A	3.174	0.000	0.000	55.179	0.000	1148.63
		B		0.000	0.000	105.629	0.000	2194.14

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	11 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T11	53.33-40.00	C	3.145	0.000	0.000	103.067	0.000	2294.97
		A		0.000	0.000	109.739	0.000	2270.17
		B		0.000	0.000	210.026	0.000	4333.36
T12	40.00-33.33	C	3.104	0.000	0.000	204.921	0.000	4531.99
		A		0.000	0.000	54.421	0.000	1115.60
		B		0.000	0.000	104.121	0.000	2127.22
T13	33.33-20.00	C	3.041	0.000	0.000	101.583	0.000	2224.36
		A		0.000	0.000	107.479	0.000	2172.65
		B		0.000	0.000	205.534	0.000	4135.90
T14	20.00-13.33	C	2.936	0.000	0.000	200.499	0.000	4323.72
		A		0.000	0.000	52.603	0.000	1038.37
		B		0.000	0.000	100.507	0.000	1970.95
T15	13.33-0.00	C	2.713	0.000	0.000	98.026	0.000	2059.65
		A		0.000	0.000	100.365	0.000	1879.61
		B		0.000	0.000	191.385	0.000	3543.91
		C		0.000	0.000	186.574	0.000	3700.54

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>X</sub> in	CP <sub>Z</sub> in	CP <sub>X</sub> Ice in	CP <sub>Z</sub> Ice in
T1	185.00-180.00	-0.2713	-4.1259	-1.3057	-2.1525
T2	180.00-160.00	-1.4766	-7.8906	-1.0667	-3.7296
T3	160.00-140.00	-7.7786	-2.5097	-4.2311	-1.8241
T4	140.00-120.00	-7.7310	-3.5348	-3.2888	-2.7573
T5	120.00-100.00	-7.3213	-4.8844	-2.8315	-3.7118
T6	100.00-93.33	-6.6635	-4.7877	-1.6993	-3.6526
T7	93.33-80.00	-6.8045	-5.3190	-1.6023	-4.3055
T8	80.00-73.33	-6.9395	-5.7118	-1.6749	-5.1046
T9	73.33-60.00	-6.8141	-5.8806	-1.6354	-5.6581
T10	60.00-53.33	-7.0569	-6.2432	-1.8132	-6.6033
T11	53.33-40.00	-6.8737	-6.0804	-1.7735	-6.3760
T12	40.00-33.33	-7.4274	-6.5694	-1.9703	-6.9522
T13	33.33-20.00	-7.2161	-6.3819	-1.9480	-6.6818
T14	20.00-13.33	-7.5886	-6.7106	-2.1987	-7.1937
T15	13.33-0.00	-7.3112	-6.4647	-2.3101	-6.8337

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T1	6	1 5/8	180.00 - 185.00	0.6000	0.4003
T1	7	7/8	180.00 - 185.00	0.6000	0.4003
T1	8	3/8	180.00 - 185.00	0.6000	0.4003
T1	9	1/2	180.00 - 185.00	0.6000	0.4003
T1	16	EW63	180.00 -	0.6000	0.4003

<b><i>tnxTower</i></b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	12 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			183.00		
T1	25	Feedline Ladder (Af)	180.00 - 185.00	0.6000	0.4003
T1	26	Feedline Ladder (Af)	180.00 - 185.00	0.6000	0.4003
T2	1	1 5/8	160.00 - 165.00	0.6000	0.6000
T2	2	5/16" Fiberoptic cable	160.00 - 165.00	0.6000	0.6000
T2	3	5/8 power	160.00 - 165.00	0.6000	0.6000
T2	6	1 5/8	160.00 - 180.00	0.6000	0.6000
T2	7	7/8	160.00 - 180.00	0.6000	0.6000
T2	8	3/8	160.00 - 180.00	0.6000	0.6000
T2	9	1/2	160.00 - 180.00	0.6000	0.6000
T2	10	7/8	160.00 - 180.00	0.6000	0.6000
T2	16	EW63	160.00 - 180.00	0.6000	0.6000
T2	17	EW63	160.00 - 172.00	0.6000	0.6000
T2	25	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T2	26	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T3	1	1 5/8	140.00 - 160.00	0.6000	0.6000
T3	2	5/16" Fiberoptic cable	140.00 - 160.00	0.6000	0.6000
T3	3	5/8 power	140.00 - 160.00	0.6000	0.6000
T3	4	1 5/8	140.00 - 155.00	0.6000	0.6000
T3	5	1-1/4" Hybrid fiber-power cable	140.00 - 155.00	0.6000	0.6000
T3	6	1 5/8	140.00 - 160.00	0.6000	0.6000
T3	7	7/8	140.00 - 160.00	0.6000	0.6000
T3	8	3/8	140.00 - 160.00	0.6000	0.6000
T3	9	1/2	140.00 - 160.00	0.6000	0.6000
T3	10	7/8	140.00 - 160.00	0.6000	0.6000
T3	16	EW63	140.00 - 160.00	0.6000	0.6000
T3	17	EW63	140.00 - 160.00	0.6000	0.6000
T3	23	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	24	Feedline Ladder (Af)	140.00 - 150.00	0.6000	0.6000
T3	25	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	26	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	27	Safety Line 3/8	140.00 -	1.0000	1.0000

<b><i>tnxTower</i></b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b> 185' Self-Supporting Tower	<b>Page</b> 13 of 31
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	<b>Client</b> T-Mobile; Site #CTHA142H	<b>Designed by</b> Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			160.00		
T4	1	1 5/8	120.00 - 140.00	0.6000	0.6000
T4	2	5/16" Fiberoptic cable	120.00 - 140.00	0.6000	0.6000
T4	3	5/8 power	120.00 - 140.00	0.6000	0.6000
T4	4	1 5/8	120.00 - 140.00	0.6000	0.6000
T4	5	1-1/4" Hybrid fiber-power cable	120.00 - 140.00	0.6000	0.6000
T4	6	1 5/8	120.00 - 140.00	0.6000	0.6000
T4	7	7/8	120.00 - 140.00	0.6000	0.6000
T4	8	3/8	120.00 - 140.00	0.6000	0.6000
T4	9	1/2	120.00 - 140.00	0.6000	0.6000
T4	10	7/8	120.00 - 140.00	0.6000	0.6000
T4	11	7/8	120.00 - 125.00	0.6000	0.6000
T4	16	EW63	120.00 - 140.00	0.6000	0.6000
T4	17	EW63	120.00 - 140.00	0.6000	0.6000
T4	18	EW63	120.00 - 125.00	0.6000	0.6000
T4	19	EW90	120.00 - 135.00	0.6000	0.6000
T4	20	EW63	120.00 - 135.00	0.6000	0.6000
T4	22	1-1/4" Hybrid fiber-power cable	120.00 - 140.00	0.6000	0.6000
T4	23	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	24	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	25	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	26	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	27	Safety Line 3/8	120.00 - 140.00	1.0000	1.0000
T5	1	1 5/8	100.00 - 120.00	0.6000	0.6000
T5	2	5/16" Fiberoptic cable	100.00 - 120.00	0.6000	0.6000
T5	3	5/8 power	100.00 - 120.00	0.6000	0.6000
T5	4	1 5/8	100.00 - 120.00	0.6000	0.6000
T5	5	1-1/4" Hybrid fiber-power cable	100.00 - 120.00	0.6000	0.6000
T5	6	1 5/8	100.00 - 120.00	0.6000	0.6000
T5	7	7/8	100.00 - 120.00	0.6000	0.6000
T5	8	3/8	100.00 - 120.00	0.6000	0.6000
T5	9	1/2	100.00 -	0.6000	0.6000

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	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			120.00		
T5	10	7/8	100.00 - 120.00	0.6000	0.6000
T5	11	7/8	100.00 - 120.00	0.6000	0.6000
T5	12	7/8	100.00 - 110.00	0.6000	0.6000
T5	16	EW63	100.00 - 120.00	0.6000	0.6000
T5	17	EW63	100.00 - 120.00	0.6000	0.6000
T5	18	EW63	100.00 - 120.00	0.6000	0.6000
T5	19	EW90	100.00 - 120.00	0.6000	0.6000
T5	20	EW63	100.00 - 120.00	0.6000	0.6000
T5	22	1-1/4" Hybrid fiber-power cable	100.00 - 120.00	0.6000	0.6000
T5	23	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	24	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	25	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	26	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	27	Safety Line 3/8	100.00 - 120.00	1.0000	1.0000
T6	1	1 5/8	93.33 - 100.00	0.6000	0.6000
T6	2	5/16" Fiberoptic cable	93.33 - 100.00	0.6000	0.6000
T6	3	5/8 power	93.33 - 100.00	0.6000	0.6000
T6	4	1 5/8	93.33 - 100.00	0.6000	0.6000
T6	5	1-1/4" Hybrid fiber-power cable	93.33 - 100.00	0.6000	0.6000
T6	6	1 5/8	93.33 - 100.00	0.6000	0.6000
T6	7	7/8	93.33 - 100.00	0.6000	0.6000
T6	8	3/8	93.33 - 100.00	0.6000	0.6000
T6	9	1/2	93.33 - 100.00	0.6000	0.6000
T6	10	7/8	93.33 - 100.00	0.6000	0.6000
T6	11	7/8	93.33 - 100.00	0.6000	0.6000
T6	12	7/8	93.33 - 100.00	0.6000	0.6000
T6	16	EW63	93.33 - 100.00	0.6000	0.6000
T6	17	EW63	93.33 - 100.00	0.6000	0.6000
T6	18	EW63	93.33 - 100.00	0.6000	0.6000
T6	19	EW90	93.33 - 100.00	0.6000	0.6000
T6	20	EW63	93.33 - 100.00	0.6000	0.6000
T6	21	EW63	93.33 - 100.00	0.6000	0.6000
T6	22	1-1/4" Hybrid fiber-power cable	93.33 - 100.00	0.6000	0.6000
T6	23	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T6	24	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T6	25	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T6	26	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T6	27	Safety Line 3/8	93.33 - 100.00	1.0000	1.0000
T7	1	1 5/8	80.00 - 93.33	0.6000	0.6000
T7	2	5/16" Fiberoptic cable	80.00 - 93.33	0.6000	0.6000
T7	3	5/8 power	80.00 - 93.33	0.6000	0.6000
T7	4	1 5/8	80.00 - 93.33	0.6000	0.6000
T7	5	1-1/4" Hybrid fiber-power cable	80.00 - 93.33	0.6000	0.6000
T7	6	1 5/8	80.00 - 93.33	0.6000	0.6000

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	15 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T7	7	7/8	80.00 - 93.33	0.6000	0.6000
T7	8	3/8	80.00 - 93.33	0.6000	0.6000
T7	9	1/2	80.00 - 93.33	0.6000	0.6000
T7	10	7/8	80.00 - 93.33	0.6000	0.6000
T7	11	7/8	80.00 - 93.33	0.6000	0.6000
T7	12	7/8	80.00 - 93.33	0.6000	0.6000
T7	13	7/8	80.00 - 88.00	0.6000	0.6000
T7	16	EW63	80.00 - 93.33	0.6000	0.6000
T7	17	EW63	80.00 - 93.33	0.6000	0.6000
T7	18	EW63	80.00 - 93.33	0.6000	0.6000
T7	19	EW90	80.00 - 93.33	0.6000	0.6000
T7	20	EW63	80.00 - 93.33	0.6000	0.6000
T7	21	EW63	80.00 - 93.33	0.6000	0.6000
T7	22	1-1/4" Hybrid fiber-power cable	80.00 - 93.33	0.6000	0.6000
T7	23	Feedline Ladder (Af)	80.00 - 93.33	0.6000	0.6000
T7	24	Feedline Ladder (Af)	80.00 - 93.33	0.6000	0.6000
T7	25	Feedline Ladder (Af)	80.00 - 93.33	0.6000	0.6000
T7	26	Feedline Ladder (Af)	80.00 - 93.33	0.6000	0.6000
T7	27	Safety Line 3/8	80.00 - 93.33	1.0000	1.0000
T8	1	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	2	5/16" Fiberoptic cable	73.33 - 80.00	0.6000	0.6000
T8	3	5/8 power	73.33 - 80.00	0.6000	0.6000
T8	4	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	5	1-1/4" Hybrid fiber-power cable	73.33 - 80.00	0.6000	0.6000
T8	6	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	7	7/8	73.33 - 80.00	0.6000	0.6000
T8	8	3/8	73.33 - 80.00	0.6000	0.6000
T8	9	1/2	73.33 - 80.00	0.6000	0.6000
T8	10	7/8	73.33 - 80.00	0.6000	0.6000
T8	11	7/8	73.33 - 80.00	0.6000	0.6000
T8	12	7/8	73.33 - 80.00	0.6000	0.6000
T8	13	7/8	73.33 - 80.00	0.6000	0.6000
T8	16	EW63	73.33 - 80.00	0.6000	0.6000
T8	17	EW63	73.33 - 80.00	0.6000	0.6000
T8	18	EW63	73.33 - 80.00	0.6000	0.6000
T8	19	EW90	73.33 - 80.00	0.6000	0.6000
T8	20	EW63	73.33 - 80.00	0.6000	0.6000
T8	21	EW63	73.33 - 80.00	0.6000	0.6000
T8	22	1-1/4" Hybrid fiber-power cable	73.33 - 80.00	0.6000	0.6000
T8	23	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T8	24	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T8	25	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T8	26	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T8	27	Safety Line 3/8	73.33 - 80.00	1.0000	1.0000
T9	1	1 5/8	60.00 - 73.33	0.6000	0.6000
T9	2	5/16" Fiberoptic cable	60.00 - 73.33	0.6000	0.6000
T9	3	5/8 power	60.00 - 73.33	0.6000	0.6000
T9	4	1 5/8	60.00 - 73.33	0.6000	0.6000
T9	5	1-1/4" Hybrid fiber-power cable	60.00 - 73.33	0.6000	0.6000
T9	6	1 5/8	60.00 - 73.33	0.6000	0.6000
T9	7	7/8	60.00 - 73.33	0.6000	0.6000
T9	8	3/8	60.00 - 73.33	0.6000	0.6000
T9	9	1/2	60.00 - 73.33	0.6000	0.6000
T9	10	7/8	60.00 - 73.33	0.6000	0.6000
T9	11	7/8	60.00 - 73.33	0.6000	0.6000
T9	12	7/8	60.00 - 73.33	0.6000	0.6000
T9	13	7/8	60.00 - 73.33	0.6000	0.6000
T9	14	7/8	60.00 - 69.00	0.6000	0.6000



<b><i>tnxTower</i></b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	16 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T9	15	Cat 5e	60.00 - 66.00	0.6000	0.6000
T9	16	EW63	60.00 - 73.33	0.6000	0.6000
T9	17	EW63	60.00 - 73.33	0.6000	0.6000
T9	18	EW63	60.00 - 73.33	0.6000	0.6000
T9	19	EW90	60.00 - 73.33	0.6000	0.6000
T9	20	EW63	60.00 - 73.33	0.6000	0.6000
T9	21	EW63	60.00 - 73.33	0.6000	0.6000
T9	22	1-1/4" Hybrid fiber-power cable	60.00 - 73.33	0.6000	0.6000
T9	23	Feedline Ladder (Af)	60.00 - 73.33	0.6000	0.6000
T9	24	Feedline Ladder (Af)	60.00 - 73.33	0.6000	0.6000
T9	25	Feedline Ladder (Af)	60.00 - 73.33	0.6000	0.6000
T9	26	Feedline Ladder (Af)	60.00 - 73.33	0.6000	0.6000
T9	27	Safety Line 3/8	60.00 - 73.33	1.0000	1.0000
T10	1	1 5/8	53.33 - 60.00	0.6000	0.6000
T10	2	5/16" Fiberoptic cable	53.33 - 60.00	0.6000	0.6000
T10	3	5/8 power	53.33 - 60.00	0.6000	0.6000
T10	4	1 5/8	53.33 - 60.00	0.6000	0.6000
T10	5	1-1/4" Hybrid fiber-power cable	53.33 - 60.00	0.6000	0.6000
T10	6	1 5/8	53.33 - 60.00	0.6000	0.6000
T10	7	7/8	53.33 - 60.00	0.6000	0.6000
T10	8	3/8	53.33 - 60.00	0.6000	0.6000
T10	9	1/2	53.33 - 60.00	0.6000	0.6000
T10	10	7/8	53.33 - 60.00	0.6000	0.6000
T10	11	7/8	53.33 - 60.00	0.6000	0.6000
T10	12	7/8	53.33 - 60.00	0.6000	0.6000
T10	13	7/8	53.33 - 60.00	0.6000	0.6000
T10	14	7/8	53.33 - 60.00	0.6000	0.6000
T10	15	Cat 5e	53.33 - 60.00	0.6000	0.6000
T10	16	EW63	53.33 - 60.00	0.6000	0.6000
T10	17	EW63	53.33 - 60.00	0.6000	0.6000
T10	18	EW63	53.33 - 60.00	0.6000	0.6000
T10	19	EW90	53.33 - 60.00	0.6000	0.6000
T10	20	EW63	53.33 - 60.00	0.6000	0.6000
T10	21	EW63	53.33 - 60.00	0.6000	0.6000
T10	22	1-1/4" Hybrid fiber-power cable	53.33 - 60.00	0.6000	0.6000
T10	23	Feedline Ladder (Af)	53.33 - 60.00	0.6000	0.6000
T10	24	Feedline Ladder (Af)	53.33 - 60.00	0.6000	0.6000
T10	25	Feedline Ladder (Af)	53.33 - 60.00	0.6000	0.6000
T10	26	Feedline Ladder (Af)	53.33 - 60.00	0.6000	0.6000
T10	27	Safety Line 3/8	53.33 - 60.00	1.0000	1.0000
T11	1	1 5/8	40.00 - 53.33	0.6000	0.6000
T11	2	5/16" Fiberoptic cable	40.00 - 53.33	0.6000	0.6000
T11	3	5/8 power	40.00 - 53.33	0.6000	0.6000
T11	4	1 5/8	40.00 - 53.33	0.6000	0.6000
T11	5	1-1/4" Hybrid fiber-power cable	40.00 - 53.33	0.6000	0.6000
T11	6	1 5/8	40.00 - 53.33	0.6000	0.6000
T11	7	7/8	40.00 - 53.33	0.6000	0.6000
T11	8	3/8	40.00 - 53.33	0.6000	0.6000
T11	9	1/2	40.00 - 53.33	0.6000	0.6000
T11	10	7/8	40.00 - 53.33	0.6000	0.6000
T11	11	7/8	40.00 - 53.33	0.6000	0.6000
T11	12	7/8	40.00 - 53.33	0.6000	0.6000
T11	13	7/8	40.00 - 53.33	0.6000	0.6000
T11	14	7/8	40.00 - 53.33	0.6000	0.6000
T11	15	Cat 5e	40.00 - 53.33	0.6000	0.6000
T11	16	EW63	40.00 - 53.33	0.6000	0.6000
T11	17	EW63	40.00 - 53.33	0.6000	0.6000
T11	18	EW63	40.00 - 53.33	0.6000	0.6000

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	17 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T11	19	EW90	40.00 - 53.33	0.6000	0.6000
T11	20	EW63	40.00 - 53.33	0.6000	0.6000
T11	21	EW63	40.00 - 53.33	0.6000	0.6000
T11	22	1-1/4" Hybrid fiber-power cable	40.00 - 53.33	0.6000	0.6000
T11	23	Feedline Ladder (Af)	40.00 - 53.33	0.6000	0.6000
T11	24	Feedline Ladder (Af)	40.00 - 53.33	0.6000	0.6000
T11	25	Feedline Ladder (Af)	40.00 - 53.33	0.6000	0.6000
T11	26	Feedline Ladder (Af)	40.00 - 53.33	0.6000	0.6000
T11	27	Safety Line 3/8	40.00 - 53.33	1.0000	1.0000
T12	1	1 5/8	33.33 - 40.00	0.6000	0.6000
T12	2	5/16" Fiberoptic cable	33.33 - 40.00	0.6000	0.6000
T12	3	5/8 power	33.33 - 40.00	0.6000	0.6000
T12	4	1 5/8	33.33 - 40.00	0.6000	0.6000
T12	5	1-1/4" Hybrid fiber-power cable	33.33 - 40.00	0.6000	0.6000
T12	6	1 5/8	33.33 - 40.00	0.6000	0.6000
T12	7	7/8	33.33 - 40.00	0.6000	0.6000
T12	8	3/8	33.33 - 40.00	0.6000	0.6000
T12	9	1/2	33.33 - 40.00	0.6000	0.6000
T12	10	7/8	33.33 - 40.00	0.6000	0.6000
T12	11	7/8	33.33 - 40.00	0.6000	0.6000
T12	12	7/8	33.33 - 40.00	0.6000	0.6000
T12	13	7/8	33.33 - 40.00	0.6000	0.6000
T12	14	7/8	33.33 - 40.00	0.6000	0.6000
T12	15	Cat 5e	33.33 - 40.00	0.6000	0.6000
T12	16	EW63	33.33 - 40.00	0.6000	0.6000
T12	17	EW63	33.33 - 40.00	0.6000	0.6000
T12	18	EW63	33.33 - 40.00	0.6000	0.6000
T12	19	EW90	33.33 - 40.00	0.6000	0.6000
T12	20	EW63	33.33 - 40.00	0.6000	0.6000
T12	21	EW63	33.33 - 40.00	0.6000	0.6000
T12	22	1-1/4" Hybrid fiber-power cable	33.33 - 40.00	0.6000	0.6000
T12	23	Feedline Ladder (Af)	33.33 - 40.00	0.6000	0.6000
T12	24	Feedline Ladder (Af)	33.33 - 40.00	0.6000	0.6000
T12	25	Feedline Ladder (Af)	33.33 - 40.00	0.6000	0.6000
T12	26	Feedline Ladder (Af)	33.33 - 40.00	0.6000	0.6000
T12	27	Safety Line 3/8	33.33 - 40.00	1.0000	1.0000
T13	1	1 5/8	20.00 - 33.33	0.6000	0.6000
T13	2	5/16" Fiberoptic cable	20.00 - 33.33	0.6000	0.6000
T13	3	5/8 power	20.00 - 33.33	0.6000	0.6000
T13	4	1 5/8	20.00 - 33.33	0.6000	0.6000
T13	5	1-1/4" Hybrid fiber-power cable	20.00 - 33.33	0.6000	0.6000
T13	6	1 5/8	20.00 - 33.33	0.6000	0.6000
T13	7	7/8	20.00 - 33.33	0.6000	0.6000
T13	8	3/8	20.00 - 33.33	0.6000	0.6000
T13	9	1/2	20.00 - 33.33	0.6000	0.6000
T13	10	7/8	20.00 - 33.33	0.6000	0.6000
T13	11	7/8	20.00 - 33.33	0.6000	0.6000
T13	12	7/8	20.00 - 33.33	0.6000	0.6000
T13	13	7/8	20.00 - 33.33	0.6000	0.6000
T13	14	7/8	20.00 - 33.33	0.6000	0.6000
T13	15	Cat 5e	20.00 - 33.33	0.6000	0.6000
T13	16	EW63	20.00 - 33.33	0.6000	0.6000
T13	17	EW63	20.00 - 33.33	0.6000	0.6000
T13	18	EW63	20.00 - 33.33	0.6000	0.6000
T13	19	EW90	20.00 - 33.33	0.6000	0.6000
T13	20	EW63	20.00 - 33.33	0.6000	0.6000
T13	21	EW63	20.00 - 33.33	0.6000	0.6000
T13	22	1-1/4" Hybrid fiber-power	20.00 - 33.33	0.6000	0.6000

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b> 185' Self-Supporting Tower	<b>Page</b> 18 of 31
	<b>Project</b> CT1071510 Bloomfield	<b>Date</b> 11:09:29 06/14/17
	<b>Client</b> T-Mobile; Site #CTHA142H	<b>Designed by</b> Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
		cable			
T13	23	Feedline Ladder (Af)	20.00 - 33.33	0.6000	0.6000
T13	24	Feedline Ladder (Af)	20.00 - 33.33	0.6000	0.6000
T13	25	Feedline Ladder (Af)	20.00 - 33.33	0.6000	0.6000
T13	26	Feedline Ladder (Af)	20.00 - 33.33	0.6000	0.6000
T13	27	Safety Line 3/8	20.00 - 33.33	1.0000	1.0000
T14	1	1 5/8	13.33 - 20.00	0.6000	0.6000
T14	2	5/16" Fiberoptic cable	13.33 - 20.00	0.6000	0.6000
T14	3	5/8 power	13.33 - 20.00	0.6000	0.6000
T14	4	1 5/8	13.33 - 20.00	0.6000	0.6000
T14	5	1-1/4" Hybrid fiber-power cable	13.33 - 20.00	0.6000	0.6000
T14	6	1 5/8	13.33 - 20.00	0.6000	0.6000
T14	7	7/8	13.33 - 20.00	0.6000	0.6000
T14	8	3/8	13.33 - 20.00	0.6000	0.6000
T14	9	1/2	13.33 - 20.00	0.6000	0.6000
T14	10	7/8	13.33 - 20.00	0.6000	0.6000
T14	11	7/8	13.33 - 20.00	0.6000	0.6000
T14	12	7/8	13.33 - 20.00	0.6000	0.6000
T14	13	7/8	13.33 - 20.00	0.6000	0.6000
T14	14	7/8	13.33 - 20.00	0.6000	0.6000
T14	15	Cat 5e	13.33 - 20.00	0.6000	0.6000
T14	16	EW63	13.33 - 20.00	0.6000	0.6000
T14	17	EW63	13.33 - 20.00	0.6000	0.6000
T14	18	EW63	13.33 - 20.00	0.6000	0.6000
T14	19	EW90	13.33 - 20.00	0.6000	0.6000
T14	20	EW63	13.33 - 20.00	0.6000	0.6000
T14	21	EW63	13.33 - 20.00	0.6000	0.6000
T14	22	1-1/4" Hybrid fiber-power cable	13.33 - 20.00	0.6000	0.6000
T14	23	Feedline Ladder (Af)	13.33 - 20.00	0.6000	0.6000
T14	24	Feedline Ladder (Af)	13.33 - 20.00	0.6000	0.6000
T14	25	Feedline Ladder (Af)	13.33 - 20.00	0.6000	0.6000
T14	26	Feedline Ladder (Af)	13.33 - 20.00	0.6000	0.6000
T14	27	Safety Line 3/8	13.33 - 20.00	1.0000	1.0000
T15	1	1 5/8	0.00 - 13.33	0.6000	0.6000
T15	2	5/16" Fiberoptic cable	0.00 - 13.33	0.6000	0.6000
T15	3	5/8 power	0.00 - 13.33	0.6000	0.6000
T15	4	1 5/8	0.00 - 13.33	0.6000	0.6000
T15	5	1-1/4" Hybrid fiber-power cable	0.00 - 13.33	0.6000	0.6000
T15	6	1 5/8	0.00 - 13.33	0.6000	0.6000
T15	7	7/8	0.00 - 13.33	0.6000	0.6000
T15	8	3/8	0.00 - 13.33	0.6000	0.6000
T15	9	1/2	0.00 - 13.33	0.6000	0.6000
T15	10	7/8	0.00 - 13.33	0.6000	0.6000
T15	11	7/8	0.00 - 13.33	0.6000	0.6000
T15	12	7/8	0.00 - 13.33	0.6000	0.6000
T15	13	7/8	0.00 - 13.33	0.6000	0.6000
T15	14	7/8	0.00 - 13.33	0.6000	0.6000
T15	15	Cat 5e	0.00 - 13.33	0.6000	0.6000
T15	16	EW63	0.00 - 13.33	0.6000	0.6000
T15	17	EW63	0.00 - 13.33	0.6000	0.6000
T15	18	EW63	0.00 - 13.33	0.6000	0.6000
T15	19	EW90	0.00 - 13.33	0.6000	0.6000
T15	20	EW63	0.00 - 13.33	0.6000	0.6000
T15	21	EW63	0.00 - 13.33	0.6000	0.6000
T15	22	1-1/4" Hybrid fiber-power cable	0.00 - 13.33	0.6000	0.6000
T15	23	Feedline Ladder (Af)	0.00 - 13.33	0.6000	0.6000
T15	24	Feedline Ladder (Af)	0.00 - 13.33	0.6000	0.6000
T15	25	Feedline Ladder (Af)	0.00 - 13.33	0.6000	0.6000

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	19 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T15	26	Feedline Ladder (Af)	0.00 - 13.33	0.6000	0.6000
T15	27	Safety Line 3/8	0.00 - 13.33	1.0000	1.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight lb
LED beacon (NU)	C	None		0.0000	185.00	No Ice	0.40	30.00
						1/2" Ice	0.68	43.19
						1" Ice	0.80	58.50
20' x 3" omni whip (NU)	B	From Leg	1.00	0.0000	185.00	No Ice	5.01	50.00
			1.00			1/2" Ice	8.03	93.17
			10.00			1" Ice	10.08	149.01
Tower Top Amplifier (NU)	B	From Leg	1.00	0.0000	185.00	No Ice	3.11	40.00
			1.00			1/2" Ice	3.35	58.76
			0.00			1" Ice	3.60	80.44
Telewave ANT450F10	A	From Leg	1.00	0.0000	185.00	No Ice	5.08	41.00
			-1.00			1/2" Ice	7.15	78.57
			10.00			1" Ice	9.22	128.98
20' 8 Bay Dipole (Bloomfield PD)	C	From Leg	1.00	0.0000	185.00	No Ice	4.00	55.00
			1.00			1/2" Ice	6.00	100.00
			10.00			1" Ice	8.00	145.00
14' x 3" Dia Omni (NU)	C	From Leg	1.00	0.0000	185.00	No Ice	4.20	40.00
			-1.00			1/2" Ice	5.63	70.34
			7.00			1" Ice	7.08	109.69
6'x4 1/2" Pipe Mount (NU)	A	From Leg	0.50	0.0000	183.00	No Ice	1.46	64.70
			0.00			1/2" Ice	2.62	83.80
			0.00			1" Ice	3.00	107.17
6'x4 1/2" Pipe Mount (NU)	B	From Leg	0.50	0.0000	183.00	No Ice	1.46	64.70
			0.00			1/2" Ice	2.62	83.80
			0.00			1" Ice	3.00	107.17
6'x4 1/2" Pipe Mount (NU)	C	From Leg	0.50	0.0000	183.00	No Ice	1.46	64.70
			0.00			1/2" Ice	2.62	83.80
			0.00			1" Ice	3.00	107.17
6'x4 1/2" Pipe Mount (NU)	A	From Leg	0.50	0.0000	172.00	No Ice	1.45	64.70
			0.00			1/2" Ice	2.62	83.80
			0.00			1" Ice	3.00	107.17
6'x4 1/2" Pipe Mount (NU)	B	From Leg	0.50	0.0000	171.00	No Ice	1.45	64.70
			0.00			1/2" Ice	2.62	83.80
			0.00			1" Ice	3.00	107.17
6'x4 1/2" Pipe Mount (NU)	C	From Leg	0.50	0.0000	171.00	No Ice	1.45	64.70
			0.00			1/2" Ice	2.62	83.80
			0.00			1" Ice	3.00	107.17
3' x 6' Paraflactor (Simsbury PD)	C	From Leg	0.50	0.0000	165.00	No Ice	6.35	38.00
			0.00			1/2" Ice	11.43	49.40
			0.00			1" Ice	16.51	60.80
6'x3" Pipe Mount (Simsbury PD)	C	From Leg	0.50	0.0000	165.00	No Ice	1.77	30.00
			0.00			1/2" Ice	2.13	47.98
			0.00			1" Ice	2.50	65.33
Telewave ANT450F10	A	From Leg	1.00	0.0000	185.00 - 165.00	No Ice	5.08	41.00

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>		185' Self-Supporting Tower					<b>Page</b>		20 of 31
	<b>Project</b>		CT1071510 Bloomfield					<b>Date</b>		11:09:29 06/14/17
	<b>Client</b>		T-Mobile; Site #CTHA142H					<b>Designed by</b>		Rob Adair

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(NU)			0.00			1/2" Ice	7.15	7.15	78.57
			0.00			1" Ice	9.22	9.22	128.98
ROHN 3-ft Side Arm	A	From Leg	1.50		0.0000	No Ice	3.10	3.10	70.00
(NU)			0.00			1/2" Ice	5.00	5.00	100.00
			0.00			1" Ice	6.90	6.90	130.00
SBNH-1D8585C (AT&T)	A	From Leg	3.00		0.0000	No Ice	11.45	7.70	55.00
			0.00			1/2" Ice	12.06	8.29	120.87
			0.00			1" Ice	12.69	8.89	194.41
SBNH-1D8585C (AT&T)	B	From Leg	3.00		0.0000	No Ice	11.45	7.70	55.00
			0.00			1/2" Ice	12.06	8.29	120.87
			0.00			1" Ice	12.69	8.89	194.41
SBNH-1D8585C (AT&T)	C	From Leg	3.00		0.0000	No Ice	11.45	7.70	55.00
			0.00			1/2" Ice	12.06	8.29	120.87
			0.00			1" Ice	12.69	8.89	194.41
(2) OPA-65R-LCUU-H8 (AT&T)	A	From Leg	3.00		0.0000	No Ice	12.75	7.25	90.00
			0.00			1/2" Ice	13.33	7.82	161.29
			0.00			1" Ice	13.92	8.40	240.16
(2) OPA-65R-LCUU-H8 (AT&T)	B	From Leg	3.00		0.0000	No Ice	12.75	7.25	90.00
			0.00			1/2" Ice	13.33	7.82	161.29
			0.00			1" Ice	13.92	8.40	240.16
(2) OPA-65R-LCUU-H8 (AT&T)	C	From Leg	3.00		0.0000	No Ice	12.75	7.25	90.00
			0.00			1/2" Ice	13.33	7.82	161.29
			0.00			1" Ice	13.92	8.40	240.16
RRUS-11 (AT&T)	A	From Leg	3.00		0.0000	No Ice	2.99	1.25	50.00
			0.00			1/2" Ice	3.23	1.41	69.57
			0.00			1" Ice	3.47	1.59	92.08
RRUS-11 (AT&T)	B	From Leg	3.00		0.0000	No Ice	2.99	1.25	50.00
			0.00			1/2" Ice	3.23	1.41	69.57
			0.00			1" Ice	3.47	1.59	92.08
RRUS-11 (AT&T)	C	From Leg	3.00		0.0000	No Ice	2.99	1.25	50.00
			0.00			1/2" Ice	3.23	1.41	69.57
			0.00			1" Ice	3.47	1.59	92.08
RRUS-12 (AT&T)	A	From Leg	3.00		0.0000	No Ice	3.67	1.49	60.00
			0.00			1/2" Ice	3.93	1.67	81.22
			0.00			1" Ice	4.19	1.87	107.65
RRUS-12 (AT&T)	B	From Leg	3.00		0.0000	No Ice	3.67	1.49	60.00
			0.00			1/2" Ice	3.93	1.67	81.22
			0.00			1" Ice	4.19	1.87	107.65
RRUS-12 (AT&T)	C	From Leg	3.00		0.0000	No Ice	3.67	1.49	60.00
			0.00			1/2" Ice	3.93	1.67	81.22
			0.00			1" Ice	4.19	1.87	107.65
RRUS-32 (AT&T)	A	From Leg	3.00		0.0000	No Ice	3.87	2.76	80.00
			0.00			1/2" Ice	4.15	3.02	104.93
			0.00			1" Ice	4.44	3.29	136.47
RRUS-32 (AT&T)	B	From Leg	3.00		0.0000	No Ice	3.87	2.76	80.00
			0.00			1/2" Ice	4.15	3.02	104.93
			0.00			1" Ice	4.44	3.29	136.47
RRUS-32 (AT&T)	C	From Leg	3.00		0.0000	No Ice	3.87	2.76	80.00
			0.00			1/2" Ice	4.15	3.02	104.93
			0.00			1" Ice	4.44	3.29	136.47
RRUS-E2 (AT&T)	A	From Leg	3.00		0.0000	No Ice	3.67	1.49	60.00
			0.00			1/2" Ice	3.93	1.67	81.22
			0.00			1" Ice	4.19	1.87	107.65
RRUS-E2 (AT&T)	B	From Leg	3.00		0.0000	No Ice	3.67	1.49	60.00
			0.00			1/2" Ice	3.93	1.67	81.22
			0.00			1" Ice	4.19	1.87	107.65
RRUS-E2	C	From Leg	3.00		0.0000	No Ice	3.67	1.49	60.00

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>		185' Self-Supporting Tower				<b>Page</b>		21 of 31
	<b>Project</b>		CT1071510 Bloomfield				<b>Date</b>		11:09:29 06/14/17
	<b>Client</b>		T-Mobile; Site #CTHA142H				<b>Designed by</b>		Rob Adair

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(AT&T)			0.00			1/2" Ice	3.93	1.67	81.22
			0.00			1" Ice	4.19	1.87	107.65
A2	A	From Leg	3.00		0.0000	No Ice	2.42	0.54	20.00
(AT&T)			0.00			1/2" Ice	2.63	0.67	34.73
			0.00			1" Ice	2.85	0.82	49.92
A2	B	From Leg	3.00		0.0000	No Ice	2.42	0.54	20.00
(AT&T)			0.00			1/2" Ice	2.63	0.67	34.73
			0.00			1" Ice	2.85	0.82	49.92
A2	C	From Leg	3.00		0.0000	No Ice	2.42	0.54	20.00
(AT&T)			0.00			1/2" Ice	2.63	0.67	34.73
			0.00			1" Ice	2.85	0.82	49.92
E15Z01P13	A	From Leg	3.00		0.0000	No Ice	0.91	0.70	20.00
(AT&T)			0.00			1/2" Ice	1.05	0.82	31.50
			0.00			1" Ice	1.19	0.95	40.86
E15Z01P13	B	From Leg	3.00		0.0000	No Ice	0.91	0.70	20.00
(AT&T)			0.00			1/2" Ice	1.05	0.82	31.50
			0.00			1" Ice	1.19	0.95	40.86
E15Z01P13	C	From Leg	3.00		0.0000	No Ice	0.91	0.70	20.00
(AT&T)			0.00			1/2" Ice	1.05	0.82	31.50
			0.00			1" Ice	1.19	0.95	40.86
DC6-48-60-18-8F Surge Arrestor	A	From Leg	3.00		0.0000	No Ice	2.23	2.23	20.00
(AT&T)			0.00			1/2" Ice	2.45	2.45	39.36
			0.00			1" Ice	2.68	2.68	61.70
Rohn 6' x 12' Boom Gate (1)	A	From Leg	1.50		0.0000	No Ice	16.60	16.60	560.00
(AT&T)			0.00			1/2" Ice	19.80	19.80	700.00
			0.00			1" Ice	23.00	23.00	840.00
Rohn 6' x 12' Boom Gate (1)	B	From Leg	1.50		0.0000	No Ice	16.60	16.60	560.00
(AT&T)			0.00			1/2" Ice	19.80	19.80	700.00
			0.00			1" Ice	23.00	23.00	840.00
Rohn 6' x 12' Boom Gate (1)	C	From Leg	1.50		0.0000	No Ice	16.60	16.60	560.00
(AT&T)			0.00			1/2" Ice	19.80	19.80	700.00
			0.00			1" Ice	23.00	23.00	840.00
(2) HBXX-6517DS (Verizon)	A	From Leg	3.00		0.0000	No Ice	8.53	5.24	45.00
			0.00			1/2" Ice	9.00	5.71	95.49
			0.00			1" Ice	9.48	6.18	152.23
(2) HBXX-6517DS (Verizon)	B	From Leg	3.00		0.0000	No Ice	8.53	5.24	45.00
			0.00			1/2" Ice	9.00	5.71	95.49
			0.00			1" Ice	9.48	6.18	152.23
(2) HBXX-6517DS (Verizon)	C	From Leg	3.00		0.0000	No Ice	8.53	5.24	45.00
			0.00			1/2" Ice	9.00	5.71	95.49
			0.00			1" Ice	9.48	6.18	152.23
(2) LNX-6514DS-VTM (Verizon)	A	From Leg	3.00		0.0000	No Ice	8.17	4.17	30.00
			0.00			1/2" Ice	8.63	4.61	74.68
			0.00			1" Ice	9.10	5.07	125.36
(2) LNX-6514DS-VTM (Verizon)	B	From Leg	3.00		0.0000	No Ice	8.17	4.17	30.00
			0.00			1/2" Ice	8.63	4.61	74.68
			0.00			1" Ice	9.10	5.07	125.36
(2) LNX-6514DS-VTM (Verizon)	C	From Leg	3.00		0.0000	No Ice	8.17	4.17	30.00
			0.00			1/2" Ice	8.63	4.61	74.68
			0.00			1" Ice	9.10	5.07	125.36
RRH2x40-AWS (Verizon)	A	From Leg	3.00		0.0000	No Ice	2.52	1.59	40.00
			0.00			1/2" Ice	2.75	1.80	61.40
			0.00			1" Ice	2.99	2.01	81.69
RRH2x40-AWS (Verizon)	B	From Leg	3.00		0.0000	No Ice	2.52	1.59	40.00
			0.00			1/2" Ice	2.75	1.80	61.40
			0.00			1" Ice	2.99	2.01	81.69
RRH2x40-AWS	C	From Leg	3.00		0.0000	No Ice	2.52	1.59	40.00

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	22 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(Verizon)			0.00			1/2" Ice	2.75	1.80	61.40
			0.00			1" Ice	2.99	2.01	81.69
RRH2x40-07-U	A	From Leg	3.00		0.0000	No Ice	2.25	1.23	50.00
(Verizon)			0.00			1/2" Ice	2.45	1.39	66.85
			0.00			1" Ice	2.66	1.55	86.39
RRH2x40-07-U	B	From Leg	3.00		0.0000	No Ice	2.25	1.23	50.00
(Verizon)			0.00			1/2" Ice	2.45	1.39	66.85
			0.00			1" Ice	2.66	1.55	86.39
RRH2x40-07-U	C	From Leg	3.00		0.0000	No Ice	2.25	1.23	50.00
(Verizon)			0.00			1/2" Ice	2.45	1.39	66.85
			0.00			1" Ice	2.66	1.55	86.39
ALU B66a	A	From Leg	3.00		0.0000	No Ice	2.58	1.63	80.00
RRH4x45w/bracket			0.00			1/2" Ice	2.79	1.81	100.47
(Verizon)			0.00			1" Ice	3.01	2.00	124.06
ALU B66a	B	From Leg	3.00		0.0000	No Ice	2.58	1.63	80.00
RRH4x45w/bracket			0.00			1/2" Ice	2.79	1.81	100.47
(Verizon)			0.00			1" Ice	3.01	2.00	124.06
ALU B66a	C	From Leg	3.00		0.0000	No Ice	2.58	1.63	80.00
RRH4x45w/bracket			0.00			1/2" Ice	2.79	1.81	100.47
(Verizon)			0.00			1" Ice	3.01	2.00	124.06
DB-T1-6Z-8AB-0Z	A	From Leg	3.00		0.0000	No Ice	5.60	2.33	40.00
(Verizon)			0.00			1/2" Ice	5.92	2.56	80.13
			0.00			1" Ice	6.24	2.79	120.22
DB-T1-6Z-8AB-0Z	B	From Leg	3.00		0.0000	No Ice	5.60	2.33	40.00
(Verizon)			0.00			1/2" Ice	5.92	2.56	80.13
			0.00			1" Ice	6.24	2.79	120.22
Rohn 6' x 12' Boom Gate (1)	A	From Leg	1.50		0.0000	No Ice	16.60	16.60	560.00
(Verizon)			0.00			1/2" Ice	19.80	19.80	700.00
			0.00			1" Ice	23.00	23.00	840.00
Rohn 6' x 12' Boom Gate (1)	B	From Leg	1.50		0.0000	No Ice	16.60	16.60	560.00
(Verizon)			0.00			1/2" Ice	19.80	19.80	700.00
			0.00			1" Ice	23.00	23.00	840.00
Rohn 6' x 12' Boom Gate (1)	C	From Leg	1.50		0.0000	No Ice	16.60	16.60	560.00
(Verizon)			0.00			1/2" Ice	19.80	19.80	700.00
			0.00			1" Ice	23.00	23.00	840.00
APXV18-206516	A	From Leg	4.00		0.0000	No Ice	3.57	2.00	15.00
(T-Mobile)			0.00			1/2" Ice	3.91	2.33	34.86
			0.00			1" Ice	4.25	2.66	58.99
APXV18-206516	B	From Leg	4.00		0.0000	No Ice	3.57	2.00	15.00
(T-Mobile)			0.00			1/2" Ice	3.91	2.33	34.86
			0.00			1" Ice	4.25	2.66	58.99
APXV18-206516	C	From Leg	4.00		0.0000	No Ice	3.57	2.00	15.00
(T-Mobile)			0.00			1/2" Ice	3.91	2.33	34.86
			0.00			1" Ice	4.25	2.66	58.99
APXV18-206517	A	From Leg	4.00		0.0000	No Ice	5.17	3.04	30.00
(T-Mobile)			0.00			1/2" Ice	5.62	3.47	56.60
			0.00			1" Ice	6.08	3.91	88.70
APXV18-206517	B	From Leg	4.00		0.0000	No Ice	5.17	3.04	30.00
(T-Mobile)			0.00			1/2" Ice	5.62	3.47	56.60
			0.00			1" Ice	6.08	3.91	88.70
APXV18-206517	C	From Leg	4.00		0.0000	No Ice	5.17	3.04	30.00
(T-Mobile)			0.00			1/2" Ice	5.62	3.47	56.60
			0.00			1" Ice	6.08	3.91	88.70
LNX-6515DS-T4M	A	From Leg	4.00		0.0000	No Ice	11.39	7.66	50.00
(T-Mobile)			0.00			1/2" Ice	12.01	8.25	115.61
			0.00			1" Ice	12.63	8.84	188.87
LNX-6515DS-T4M	B	From Leg	4.00		0.0000	No Ice	11.39	7.66	50.00

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>		185' Self-Supporting Tower					<b>Page</b>		23 of 31
	<b>Project</b>		CT1071510 Bloomfield					<b>Date</b>		11:09:29 06/14/17
	<b>Client</b>		T-Mobile; Site #CTHA142H					<b>Designed by</b>		Rob Adair

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
(T-Mobile)			0.00				1/2" Ice	12.01	8.25	115.61
			0.00				1" Ice	12.63	8.84	188.87
LNX-6515DS-T4M (T-Mobile)	C	From Leg	4.00		0.0000	140.00	No Ice	11.39	7.66	50.00
			0.00				1/2" Ice	12.01	8.25	115.61
			0.00				1" Ice	12.63	8.84	188.87
(2) Ericsson RRUS-11 (T-Mobile)	A	From Leg	3.50		0.0000	140.00	No Ice	2.79	1.02	55.00
			0.00				1/2" Ice	3.00	1.16	75.86
			0.00				1" Ice	3.21	1.30	99.77
(2) Ericsson RRUS-11 (T-Mobile)	B	From Leg	3.50		0.0000	140.00	No Ice	2.79	1.02	55.00
			0.00				1/2" Ice	3.00	1.16	75.86
			0.00				1" Ice	3.21	1.30	99.77
(2) Ericsson RRUS-11 (T-Mobile)	C	From Leg	3.50		0.0000	140.00	No Ice	2.79	1.02	55.00
			0.00				1/2" Ice	3.00	1.16	75.86
			0.00				1" Ice	3.21	1.30	99.77
T-Mobile Mini-Squid (T-Mobile)	C	None			0.0000	140.00	No Ice	0.13	0.13	4.00
							1/2" Ice	0.24	0.24	6.69
							1" Ice	0.31	0.31	10.38
12' T-frame sector mnt	A	From Leg	2.00		0.0000	140.00	No Ice	10.20	5.10	600.00
			0.00				1/2" Ice	13.80	6.90	750.00
			0.00				1" Ice	17.40	8.70	900.00
12' T-frame sector mnt	B	From Leg	2.00		0.0000	140.00	No Ice	10.20	5.10	600.00
			0.00				1/2" Ice	13.80	6.90	750.00
			0.00				1" Ice	17.40	8.70	900.00
12' T-frame sector mnt	C	From Leg	2.00		0.0000	140.00	No Ice	10.20	5.10	600.00
			0.00				1/2" Ice	13.80	6.90	750.00
			0.00				1" Ice	17.40	8.70	900.00
4'x4 1/2" Pipe Mount (NU)	B	From Leg	0.50		0.0000	135.00	No Ice	0.95	0.95	43.10
			0.00				1/2" Ice	1.58	1.58	56.09
			0.00				1" Ice	1.84	1.84	72.13
6'x4 1/2" Pipe Mount (NU)	B	From Leg	0.50		0.0000	125.00	No Ice	1.44	1.44	64.70
			0.00				1/2" Ice	2.62	2.62	83.80
			0.00				1" Ice	3.00	3.00	107.17
20' x 3" Dia Omni (NU)	C	From Leg	6.00		0.0000	145.00 - 125.00	No Ice	6.00	6.00	50.00
			0.00				1/2" Ice	8.03	8.03	93.17
			0.00				1" Ice	10.08	10.08	149.01
Rohn 6' Side-Arm(1) (NU)	C	From Leg	3.00		0.0000	125.00	No Ice	10.60	10.60	140.00
			0.00				1/2" Ice	15.40	15.40	212.00
			0.00				1" Ice	20.20	20.20	284.00
Rohn 6' Side-Arm(1) (NU)	A	From Leg	3.00		0.0000	125.00	No Ice	10.60	10.60	140.00
			0.00				1/2" Ice	15.40	15.40	212.00
			0.00				1" Ice	20.20	20.20	284.00
12' single dipole (NU)	A	From Leg	6.00		0.0000	125.00	No Ice	2.25	2.25	30.00
			0.00				1/2" Ice	4.83	4.83	51.65
			0.00				1" Ice	7.43	7.43	89.22
12' Dipole (NU)	A	From Leg	6.00		0.0000	111.00	No Ice	6.00	6.00	70.00
			0.00				1/2" Ice	8.00	8.00	90.00
			0.00				1" Ice	10.00	10.00	110.00
Rohn 6' Side-Arm(1) (NU)	A	From Leg	3.00		0.0000	109.00	No Ice	10.60	10.60	140.00
			0.00				1/2" Ice	15.40	15.40	212.00
			0.00				1" Ice	20.20	20.20	284.00
14' x 3" Dia Omni (NU)	B	From Leg	6.00		0.0000	114.50	No Ice	4.20	4.20	40.00
			0.00				1/2" Ice	5.63	5.63	70.34
			7.00				1" Ice	7.08	7.08	109.69
Rohn 6' Side-Arm(1) (NU)	C	From Leg	3.00		0.0000	108.00	No Ice	10.60	10.60	140.00
			0.00				1/2" Ice	15.40	15.40	212.00
			0.00				1" Ice	20.20	20.20	284.00
Obstruction light	A	From Leg	0.50		0.0000	103.00	No Ice	0.12	0.12	8.00



<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	24 of 31
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	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(NU)			0.00			1/2" Ice	0.22	0.22	10.47
			0.00			1" Ice	0.29	0.29	13.91
Obstruction light (NU)	B	From Leg	0.50		0.0000	No Ice	0.12	0.12	8.00
			0.00			1/2" Ice	0.22	0.22	10.47
			0.00			1" Ice	0.29	0.29	13.91
Obstruction light (NU)	C	From Leg	0.50		0.0000	No Ice	0.12	0.12	8.00
			0.00			1/2" Ice	0.22	0.22	10.47
			0.00			1" Ice	0.29	0.29	13.91
6'x4 1/2" Pipe Mount (NU)	B	From Leg	0.50		0.0000	No Ice	1.44	1.44	64.70
			0.00			1/2" Ice	2.62	2.62	83.80
			0.00			1" Ice	3.00	3.00	107.17
3' x 2" omni whip (NU)	B	From Face	3.00		0.0000	No Ice	0.52	0.52	15.00
			0.00			1/2" Ice	0.71	0.71	19.81
			0.00			1" Ice	0.90	0.90	26.81
3' sidearm (NU)	B	From Leg	1.50		0.0000	No Ice	1.43	0.72	30.00
			0.00			1/2" Ice	2.18	1.09	65.00
			0.00			1" Ice	2.93	1.47	105.00
12' Dipole (NU)	A	From Leg	6.00		0.0000	No Ice	6.00	6.00	70.00
			0.00			1/2" Ice	8.00	8.00	90.00
			6.00			1" Ice	10.00	10.00	110.00
Rohn 6' Side-Arm(1) (NU)	A	From Leg	3.00		0.0000	No Ice	10.60	10.60	140.00
			0.00			1/2" Ice	15.40	15.40	212.00
			0.00			1" Ice	20.20	20.20	284.00
10' 4-bay dipole (NU)	B	From Leg	6.00		0.0000	No Ice	2.46	2.46	75.00
			0.00			1/2" Ice	3.53	3.53	93.64
			0.00			1" Ice	4.58	4.58	118.79
6' sidearm (NU)	B	From Leg	3.00		0.0000	No Ice	4.17	2.09	75.00
			0.00			1/2" Ice	6.17	3.09	125.00
			0.00			1" Ice	8.17	4.09	200.00
2' square panel (NU)	B	From Leg	3.00		0.0000	No Ice	4.80	0.52	25.00
			0.00			1/2" Ice	5.07	0.67	48.43
			0.00			1" Ice	5.35	0.83	75.30
3' sidearm (NU)	B	From Leg	1.50		0.0000	No Ice	1.43	0.72	30.00
			0.00			1/2" Ice	2.18	1.09	65.00
			0.00			1" Ice	2.93	1.47	105.00

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz Lateral	Vert							
			ft	ft	°	°	ft	ft	ft <sup>2</sup>	lb		
8' Dish (NU)	A	Paraboloid w/Radome	From Leg	2.00		Worst		183.00	8.00	No Ice	50.27	100.00
				0.00						1/2" Ice	51.32	260.00
				0.00						1" Ice	52.37	490.00
8' Dish (NU)	B	Paraboloid w/Radome	From Leg	2.00		Worst		183.00	8.00	No Ice	50.27	100.00
				0.00						1/2" Ice	51.32	260.00
				0.00						1" Ice	52.37	490.00
8' Dish (NU)	C	Paraboloid w/Radome	From Leg	2.00		Worst		183.00	8.00	No Ice	50.27	100.00
				0.00						1/2" Ice	51.32	260.00

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	25 of 31
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Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight lb
8' Dish (NU)	B	Paraboloid w/Radome	From Leg	0.00 2.00 0.00	Worst		172.00	8.00	1" Ice 52.37 No Ice 50.27 1/2" Ice 51.32	490.00 100.00 260.00
4' dish (NU)	B	Paraboloid w/Radome	From Leg	0.00 2.00 0.00	Worst		135.00	4.00	1" Ice 52.37 No Ice 12.57 1/2" Ice 13.10	490.00 150.00 220.00
8' Dish (NU)	B	Paraboloid w/Radome	From Leg	0.00 2.00 0.00	Worst		125.00	8.00	1" Ice 52.37 No Ice 50.27 1/2" Ice 51.32	490.00 100.00 260.00
8' Dish (NU)	B	Paraboloid w/Radome	From Leg	0.00 2.00 0.00	Worst		100.00	8.00	1" Ice 52.37 No Ice 50.27 1/2" Ice 51.32	490.00 100.00 260.00
6' dish with radome	A	Paraboloid w/Radome	From Leg	0.00 2.00 0.00	Worst		171.00	6.00	1" Ice 29.86 No Ice 28.27 1/2" Ice 29.07	550.00 250.00 400.00
6' dish with radome	C	Paraboloid w/Radome	From Leg	0.00 2.00 0.00	Worst		171.00	6.00	1" Ice 29.86 No Ice 28.27 1/2" Ice 29.07	550.00 250.00 400.00
6' dish with radome	C	Paraboloid w/Radome	From Leg	0.00 2.00 0.00	Worst		135.00	6.00	1" Ice 29.86 No Ice 28.27 1/2" Ice 29.07	550.00 250.00 400.00

## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>All-Points Technology Corporation</b>  116 Grandview Road  Conway, NH 03818  Phone: (603) 496-5853  FAX: (603) 447-2124</p>	<b>Job</b> 185' Self-Supporting Tower	<b>Page</b> 26 of 31
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Comb. No.	Description
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °	Combined Displacement °
T1	185 - 180	2.164	62	0.0826	0.0021	0.0826
T2	180 - 160	2.076	62	0.0827	0.0022	0.0827
T3	160 - 140	1.714	62	0.0815	0.0019	
T4	140 - 120	1.359	62	0.0765	0.0019	
T5	120 - 100	1.023	62	0.0667	0.0017	
T6	100 - 93.3333	0.724	62	0.0569	0.0012	
T7	93.3333 - 80	0.637	62	0.0528	0.0010	
T8	80 - 73.3333	0.489	62	0.0444	0.0007	
T9	73.3333 - 60	0.417	62	0.0410	0.0006	
T10	60 - 53.3333	0.292	62	0.0342	0.0003	
T11	53.3333 - 40	0.234	62	0.0299	0.0002	
T12	40 - 33.3333	0.144	62	0.0213	0.0001	
T13	33.3333 - 20	0.102	62	0.0176	0.0001	
T14	20 - 13.3333	0.047	56	0.0103	0.0001	
T15	13.3333 - 0	0.025	56	0.0068	0.0001	

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### Critical Deflections and Radius of Curvature - Service Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>		<i>Comb.</i>	<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
185.00	LED beacon	62	2.164	0.0826	0.0021	313505
183.00	8' Dish	62	2.129	0.0827	0.0021	313505
180.00	Telewave ANT450F10	62	2.076	0.0827	0.0022	313505
175.00	Telewave ANT450F10	62	1.986	0.0826	0.0021	380933
172.00	8' Dish	62	1.932	0.0825	0.0021	580301
171.00	6' dish with radome	62	1.914	0.0825	0.0021	702949
170.00	Telewave ANT450F10	62	1.895	0.0824	0.0020	891285
165.00	3' x 6' Paraflactor	62	1.805	0.0821	0.0020	Inf
155.00	(2) HBXX-6517DS	62	1.624	0.0808	0.0018	411030
145.00	20' x 3" Dia Omni	62	1.447	0.0783	0.0019	336521
140.00	APXV18-206516	62	1.359	0.0765	0.0019	291819
135.00	4' dish	62	1.273	0.0744	0.0019	218722
130.00	20' x 3" Dia Omni	62	1.187	0.0719	0.0018	169753
125.00	8' Dish	62	1.104	0.0693	0.0018	138700
114.50	14' x 3" Dia Omni	62	0.936	0.0641	0.0016	112139
111.00	12' Dipole	62	0.883	0.0625	0.0016	109111
109.00	Rohn 6' Side-Arm(1)	62	0.853	0.0616	0.0015	107453
108.00	Rohn 6' Side-Arm(1)	62	0.838	0.0611	0.0015	106643
103.00	Obstruction light	62	0.766	0.0586	0.0013	101320
100.00	8' Dish	62	0.724	0.0569	0.0012	82531
92.00	3' x 2" omni whip	62	0.621	0.0519	0.0009	45057
90.50	3' x 2" omni whip	62	0.603	0.0509	0.0009	51639
89.00	3' x 2" omni whip	62	0.586	0.0499	0.0009	64687
87.00	12' Dipole	62	0.564	0.0486	0.0008	102287
79.00	10' 4-bay dipole	62	0.478	0.0438	0.0007	451526
74.00	10' 4-bay dipole	62	0.424	0.0413	0.0006	68734
69.00	10' 4-bay dipole	62	0.374	0.0389	0.0005	76003
66.00	2' square panel	62	0.346	0.0375	0.0004	132079

### Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation</i>	<i>Horz. Deflection</i>	<i>Gov. Load</i>	<i>Tilt</i>	<i>Twist</i>	<i>Combined Displacement</i>
	<i>ft</i>	<i>in</i>	<i>Comb.</i>	<i>°</i>	<i>°</i>	<i>°</i>
T1	185 - 180	12.085	2	0.4599	0.0118	0.4601
T2	180 - 160	11.591	2	0.4600	0.0122	0.4602
T3	160 - 140	9.580	2	0.4537	0.0106	
T4	140 - 120	7.602	2	0.4262	0.0106	
T5	120 - 100	5.727	2	0.3721	0.0096	
T6	100 - 93.3333	4.059	2	0.3177	0.0070	
T7	93.3333 - 80	3.569	2	0.2947	0.0055	
T8	80 - 73.3333	2.744	2	0.2479	0.0039	
T9	73.3333 - 60	2.339	2	0.2291	0.0032	
T10	60 - 53.3333	1.639	2	0.1911	0.0020	
T11	53.3333 - 40	1.313	2	0.1672	0.0014	
T12	40 - 33.3333	0.810	2	0.1189	0.0010	
T13	33.3333 - 20	0.575	13	0.0986	0.0009	
T14	20 - 13.3333	0.263	12	0.0574	0.0005	
T15	13.3333 - 0	0.140	12	0.0383	0.0005	

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### Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	LED beacon	2	12.085	0.4599	0.0118	55766
183.00	8' Dish	2	11.888	0.4599	0.0120	55766
180.00	Telewave ANT450F10	2	11.591	0.4600	0.0122	55766
175.00	Telewave ANT450F10	2	11.092	0.4596	0.0120	68860
172.00	8' Dish	2	10.791	0.4591	0.0118	107129
171.00	6' dish with radome	2	10.690	0.4589	0.0117	131487
170.00	Telewave ANT450F10	2	10.589	0.4586	0.0115	170181
165.00	3' x 6' Paraflactor	2	10.084	0.4567	0.0110	333450
155.00	(2) HBXX-6517DS	2	9.079	0.4495	0.0104	75768
145.00	20' x 3" Dia Omni	2	8.090	0.4360	0.0105	62172
140.00	APXV18-206516	2	7.602	0.4262	0.0106	54001
135.00	4' dish	2	7.120	0.4141	0.0105	40136
130.00	20' x 3" Dia Omni	2	6.645	0.4004	0.0103	30957
125.00	8' Dish	2	6.180	0.3861	0.0099	25195
114.50	14' x 3" Dia Omni	2	5.244	0.3577	0.0092	20297
111.00	12' Dipole	2	4.946	0.3487	0.0088	19738
109.00	Rohn 6' Side-Arm(1)	2	4.779	0.3435	0.0086	19433
108.00	Rohn 6' Side-Arm(1)	2	4.697	0.3408	0.0084	19283
103.00	Obstruction light	2	4.294	0.3269	0.0076	18304
100.00	8' Dish	2	4.059	0.3177	0.0070	14862
92.00	3' x 2" omni whip	2	3.479	0.2898	0.0053	8058
90.50	3' x 2" omni whip	2	3.381	0.2843	0.0051	9239
89.00	3' x 2" omni whip	2	3.287	0.2788	0.0049	11586
87.00	12' Dipole	2	3.164	0.2716	0.0047	18378
79.00	10' 4-bay dipole	2	2.683	0.2448	0.0038	78751
74.00	10' 4-bay dipole	2	2.378	0.2309	0.0033	12207
69.00	10' 4-bay dipole	2	2.098	0.2176	0.0028	13571
66.00	2' square panel	2	1.942	0.2093	0.0025	23893

### Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	185	Leg	A325N	1.2500	6	283.34	82835.00	0.003	✓	1 Bolt Tension
		Diagonal	A325X	0.7500	1	2839.78	17835.00	0.159	✓	1 Member Bearing
		Top Girt	A325X	0.7500	1	1353.18	21868.40	0.062	✓	1 Bolt Shear
T2	180	Leg	A325N	1.2500	6	3046.05	82835.00	0.037	✓	1 Bolt Tension
		Diagonal	A325X	0.7500	1	11501.80	17835.00	0.645	✓	1 Member Bearing
T3	160	Leg	A325N	1.2500	6	9882.39	82835.00	0.119	✓	1 Bolt Tension
		Diagonal	A325X	0.7500	1	18902.70	21868.40	0.864	✓	1 Bolt Shear
T4	140	Leg	A325N	1.2500	8	14515.00	82835.00	0.175	✓	1 Bolt Tension
		Diagonal	A325X	0.6250	2	13234.90	15186.40	0.871	✓	1 Bolt Shear
T5	120	Leg	A325N	1.5000	8	23030.70	119282.00	0.193	✓	1 Bolt Tension

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	29 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
		Diagonal	A325X	0.7500	2	15396.90	21868.40	0.704	✓	1 Bolt Shear
T6	100	Diagonal	A325X	1.0000	2	17686.20	33603.80	0.526	✓	1 Member Bearing
T7	93.3333	Leg	A325N	1.5000	8	27786.90	119282.00	0.233	✓	1 Bolt Tension
		Diagonal	A325X	1.0000	2	22647.70	38877.20	0.583	✓	1 Bolt Shear
		Horizontal	A325N	1.0000	2	2278.60	28003.10	0.081	✓	1 Member Bearing
T8	80	Diagonal	A325X	0.8750	2	18875.60	29765.40	0.634	✓	1 Bolt Shear
T9	73.3333	Leg	A325N	1.5000	8	37307.30	119282.00	0.313	✓	1 Bolt Tension
		Diagonal	A325X	0.8750	2	24327.50	29765.40	0.817	✓	1 Bolt Shear
		Horizontal	A325X	0.8750	2	3044.36	24468.80	0.124	✓	1 Member Bearing
T10	60	Diagonal	A325X	0.8750	2	20612.50	29765.40	0.692	✓	1 Bolt Shear
T11	53.3333	Leg	A325N	1.5000	8	46822.90	119282.00	0.393	✓	1 Bolt Tension
		Diagonal	A325X	0.8750	2	26753.50	29765.40	0.899	✓	1 Bolt Shear
		Horizontal	A325X	0.8750	2	3815.31	24468.80	0.156	✓	1 Member Bearing
T12	40	Diagonal	A325X	1.0000	2	22420.80	33603.80	0.667	✓	1 Member Bearing
T13	33.3333	Leg	A325N	1.5000	8	57066.10	119282.00	0.478	✓	1 Bolt Tension
		Diagonal	A325X	1.0000	2	28783.90	38877.20	0.740	✓	1 Bolt Shear
		Horizontal	A325X	1.0000	2	4647.80	28003.10	0.166	✓	1 Member Bearing
T14	20	Diagonal	A325X	1.0000	2	24079.70	38877.20	0.619	✓	1 Bolt Shear
T15	13.3333	Leg	F1554-105	1.7500	6	90076.90	169121.00	0.533	✓	1 Bolt Tension
		Diagonal	A325X	1.0000	2	31028.70	38877.20	0.798	✓	1 Bolt Shear
		Horizontal	A325X	1.0000	2	5505.99	28003.10	0.197	✓	1 Member Bearing

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
<b>T1</b>	<b>185 - 180</b>	<b>Leg</b>	<b>P6.625x.280</b>	<b>3</b>	<b>-5100.15</b>	<b>238344.00</b>	<b>2.1</b>	<b>Pass</b>
		Diagonal	L3 1/2x3 1/2x1/4	11	-2820.09	14514.00	19.4	Pass
		Top Girt	L5x5x5/16	4	-1353.18	15030.40	9.0	Pass
<b>T2</b>	<b>180 - 160</b>	<b>Leg</b>	<b>P6.625x.280</b>	<b>15</b>	<b>-24675.80</b>	<b>203686.00</b>	<b>12.1</b>	<b>Pass</b>
		Diagonal	L4x4x1/4	18	-11652.60	15308.00	76.1	Pass
<b>T3</b>	<b>160 - 140</b>	<b>Leg</b>	<b>P6.625x.280</b>	<b>28</b>	<b>-73893.70</b>	<b>203686.00</b>	<b>36.3</b>	<b>Pass</b>
		Diagonal	L5x5x5/16	33	-18867.50	31990.30	59.0	Pass
<b>T4</b>	<b>140 - 120</b>	<b>Leg</b>	<b>P6.625x.280</b>	<b>43</b>	<b>-140279.00</b>	<b>203686.00</b>	<b>68.9</b>	<b>Pass</b>
		Diagonal	L5x5x5/16	47	-26401.30	31330.00	84.3	Pass
<b>T5</b>	<b>120 - 100</b>	<b>Leg</b>	<b>P8.625x.322</b>	<b>58</b>	<b>-217895.00</b>	<b>334421.00</b>	<b>65.2</b>	<b>Pass</b>
		Diagonal	L5x5x3/8	62	-30351.30	33543.00	90.5	Pass
<b>T6</b>	<b>100 - 93.3333</b>	<b>Leg</b>	<b>P8.625x.322</b>	<b>73</b>	<b>-262782.00</b>	<b>357954.00</b>	<b>73.4</b>	<b>Pass</b>
		Diagonal	L6x6x3/8	77	-35560.20	54670.60	65.0	Pass
<b>T7</b>	<b>93.3333 - 80</b>	<b>Leg</b>	<b>P8.625x.322</b>	<b>87</b>	<b>-262502.00</b>	<b>357954.00</b>	<b>73.3</b>	<b>Pass</b>
		Diagonal	L4x6x1/2	91	-45295.40	64584.40	70.1	Pass

<b>tnxTower</b>  <b>All-Points Technology Corporation</b> 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	30 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail	
		Horizontal	L4x4x5/16	76	-4557.21	16552.00	27.5	Pass	
		Redund Horz 1	L3x3x1/4	98	-4552.34	18406.80	24.7	Pass	
		Bracing							
		Redund Diag 1	L3x3x1/4	90	-3087.26	10086.00	30.6	Pass	
		Bracing							
		Redund Hip 1	L3x3x1/4	100	-109.26	16549.70	0.8	Pass	
		Bracing							
<b>T8</b>	<b>80 - 73.3333</b>	<b>Leg</b>	<b>P8.625x.5</b>	<b>111</b>	<b>-351094.00</b>	<b>542674.00</b>	<b>64.7</b>	<b>Pass</b>	
		Diagonal	L6x6x3/8	113	-37071.50	51708.80	71.7	Pass	
<b>T9</b>	<b>73.3333 - 60</b>	<b>Leg</b>	<b>P8.625x.5</b>	<b>123</b>	<b>-350641.00</b>	<b>542674.00</b>	<b>64.6</b>	<b>Pass</b>	
		Diagonal	L6x6x3/8	127	-48655.00	62971.70	77.3	Pass	
							81.7 (b)		
		Horizontal	L4x4x5/16	115	-6088.72	14569.50	41.8	Pass	
		Redund Horz 1	L3x3x1/4	134	-6080.85	15896.70	38.3	Pass	
		Bracing							
		Redund Diag 1	L3x3x1/4	139	-3993.55	9282.13	43.0	Pass	
		Bracing							
		Redund Hip 1	L3x3x1/4	143	-113.42	14393.50	0.9	Pass	
		Bracing							
<b>T10</b>	<b>60 - 53.3333</b>	<b>Leg</b>	<b>P10.75x.365</b>	<b>147</b>	<b>-440005.00</b>	<b>517553.00</b>	<b>85.0</b>	<b>Pass</b>	
		Diagonal	L6x6x3/8	153	-41178.30	48054.80	85.7	Pass	
<b>T11</b>	<b>53.3333 - 40</b>	<b>Leg</b>	<b>P10.75x.365</b>	<b>159</b>	<b>-438448.00</b>	<b>517553.00</b>	<b>84.7</b>	<b>Pass</b>	
		Diagonal	L6x6x3/8	166	-53507.00	60823.50	88.0	Pass	
							89.9 (b)		
		Horizontal	L5x5x5/16	151	-7630.62	24328.80	31.4	Pass	
		Redund Horz 1	L3x3x5/16	174	-7603.63	17367.30	43.8	Pass	
		Bracing							
		Redund Diag 1	L3x3x5/16	171	-4867.02	10728.60	45.4	Pass	
		Bracing							
		Redund Hip 1	L3 1/2x3 1/2x1/4	172	-116.54	20375.00	0.9	Pass	
		Bracing							
<b>T12</b>	<b>40 - 33.3333</b>	<b>Leg</b>	<b>P10.75x.5</b>	<b>183</b>	<b>-536013.00</b>	<b>699144.00</b>	<b>76.7</b>	<b>Pass</b>	
		Diagonal	L6x6x3/8	189	-44380.50	44572.30	99.6	Pass	
<b>T13</b>	<b>33.3333 - 20</b>	<b>Leg</b>	<b>P10.75x.5</b>	<b>195</b>	<b>-534367.00</b>	<b>699144.00</b>	<b>76.4</b>	<b>Pass</b>	
		Diagonal	L6x6x1/2	202	-57567.70	76651.80	75.1	Pass	
		Horizontal	L5x5x5/16	187	-9295.60	21936.00	42.4	Pass	
		Redund Horz 1	L3x3x5/16	210	-9267.06	15256.20	60.7	Pass	
		Bracing							
		Redund Diag 1	L3x3x5/16	211	-5786.97	9886.45	58.5	Pass	
		Bracing							
		Redund Hip 1	L3 1/2x3 1/2x1/4	215	-125.46	18026.10	0.9	Pass	
		Bracing							
<b>T14</b>	<b>20 - 13.3333</b>	<b>Leg</b>	<b>P12.75x.5</b>	<b>219</b>	<b>-634984.00</b>	<b>844532.00</b>	<b>75.2</b>	<b>Pass</b>	
		Diagonal	L6x6x1/2	225	-48136.10	53853.40	89.4	Pass	
<b>T15</b>	<b>13.3333 - 0</b>	<b>Leg</b>	<b>P12.75x.5</b>	<b>231</b>	<b>-634251.00</b>	<b>844532.00</b>	<b>75.1</b>	<b>Pass</b>	
		Diagonal	L6x6x1/2	238	-62057.40	73370.50	84.6	Pass	
		Horizontal	L5x5x5/16	223	-11012.00	19982.70	55.1	Pass	
		Redund Horz 1	L3 1/2x4x5/16	242	-10999.30	26752.00	41.1	Pass	
		Bracing							
		Redund Diag 1	L3 1/2x4x5/16	243	-6712.11	18089.80	37.1	Pass	
		Bracing							
		Redund Hip 1	L3 1/2x3 1/2x1/4	244	-122.13	16061.20	0.8	Pass	
		Bracing							
							Summary		
							Leg (T10)	85.0	Pass
							Diagonal (T12)	99.6	Pass
							Horizontal (T15)	55.1	Pass
							Top Girt (T1)	9.0	Pass

<b><i>tnxTower</i></b>  <b><i>All-Points Technology Corporation</i></b> <i>116 Grandview Road  Conway, NH 03818  Phone: (603) 496-5853  FAX: (603) 447-2124</i>	<b>Job</b>	185' Self-Supporting Tower	<b>Page</b>	31 of 31
	<b>Project</b>	CT1071510 Bloomfield	<b>Date</b>	11:09:29 06/14/17
	<b>Client</b>	T-Mobile; Site #CTHA142H	<b>Designed by</b>	Rob Adair

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P lb</i>	<i><math>\phi P_{allow}</math> lb</i>	<i>% Capacity</i>	<i>Pass Fail</i>
						Redund Horz 1 Bracing (T13)	60.7	Pass
						Redund Diag 1 Bracing (T13)	58.5	Pass
						Redund Hip 1 Bracing (T13)	0.9	Pass
						Bolt Checks	89.9	Pass
						<b>RATING =</b>	<b>99.6</b>	<b>Pass</b>



## All-Points Technology Corp., P.C.

116 Grandview Road  
Conway, NH 03818  
(603) 496-5853

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Client:	<b>T-Mobile</b>	Site No.:	<b>CTHA142A</b>
Job:	<b>Bloomfield (Tariffville)</b>	Job No.:	<b>CT1071510</b>
Calculated By:	<b>R. Adair</b>	Date:	<b>14-Jun-17</b>

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### Mat Foundation Analysis

#### Program assumes:

Mat is square in plan view.  
Water table is below bottom of mat.  
Unit weight of concrete = 150 pcf  
Unit weight of soil = 100 pcf  
Self-supporting tower with 3 piers

#### Information to be provided:

Pier is round or square in plan dimension ("R" or "S")	Shape =	<b>R</b>
OTM = Overturning Moment to be resisted	OTM =	<b>21508</b> ft-kips
H = Height from ground surface to top of mat (if buried)	H =	<b>5.5</b> ft.
P <sub>M</sub> = Projection of pier above mat	P <sub>M</sub> =	<b>6.0</b> ft.
y = Thickness of mat	y =	<b>1.50</b> ft.
x = Width of mat	x =	<b>45.50</b> ft.
d = Diameter of round pier	d =	<b>6.0</b> ft.
S = Size of tension bars	S =	<b>7</b>

Mass of tower and appurtenances (below)

#### Results:

<u>Component</u>	<u>Mass</u>	<u>Moment Arm</u>	<u>Moment Resist.</u>
Pier	25.4 kips	22.75 ft.	578.9 ft-kips
Overburden	1293.0 kips	22.75 ft.	29415.7 ft-kips
Mat	465.8 kips	22.75 ft.	10597.1 ft-kips

Overturning Moment Resistance : 40591.73 ft-kips  
Factor of Safety = 1.89  
Concrete Quantity = 133.9 c.y.

SATISFACTORY

# Exhibit E

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

T-Mobile Existing Facility

Site ID: CTHA142A

Eversource  
7 Hoskins Road  
Bloomfield, CT 06002

July 16, 2017

**EBI Project Number: 6217003055**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>4.68 %</b>

July 16, 2017

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

Emissions Analysis for Site: **CTHA142A – Eversource**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **7 Hoskins Road, Bloomfield, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 population 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 population 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the 700 MHz Band is approximately 467  $\mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000  $\mu\text{W}/\text{cm}^2$ . 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 **7 Hoskins Road, Bloomfield, 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 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.
- 2) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 4) 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.

- 5) For the following calculations the sample point was the top of a 6-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.
- 6) The antennas used in this modeling are the **RFS APXV18-206516S-A20** for 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-A1M** for 700 MHz channels. There is one **RFS APXV18-206517S-A20** to be installed per sector that will be unused at this time. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APXV18-206516S-A20** has a maximum gain of **16.3 dBd** at its main lobe at 2100 MHz. The **Commscope LNX-6515DS-A1M** has a maximum gain of **14.6 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.
- 7) The antenna mounting height centerline of the proposed antennas is **140.5 feet** above ground level (AGL).
- 8) 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.
- 9) All calculations were done with respect to uncontrolled / general population threshold limits.

**T-Mobile Site Inventory and Power Data**

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXV18-206516S-A20	Make / Model:	RFS APXV18-206516S-A20	Make / Model:	RFS APXV18-206516S-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	140.5	Height (AGL):	140.5	Height (AGL):	140.5
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,678.43	ERP (W):	7,678.43	ERP (W):	7,678.43
Antenna A1 MPE%	1.53	Antenna B1 MPE%	1.53	Antenna C1 MPE%	1.53
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXV18-206517S-A20 (UNUSED)	Make / Model:	RFS APXV18-206517S-A20 (UNUSED)	Make / Model:	RFS APXV18-206517S-A20 (UNUSED)
Gain:	N/A	Gain:	N/A	Gain:	N/A
Height (AGL):	140.5	Height (AGL):	140.5	Height (AGL):	140.5
Frequency Bands	N/A	Frequency Bands	N/A	Frequency Bands	N/A
Channel Count	2	Channel Count	0	Channel Count	0
Total TX Power(W):	0	Total TX Power(W):	0	Total TX Power(W):	0
ERP (W):	0.00	ERP (W):	0.00	ERP (W):	0.00
Antenna A2 MPE%	0.00	Antenna B2 MPE%	0.00	Antenna C2 MPE%	0.00
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	140.5	Height (AGL):	140.5	Height (AGL):	140.5
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.37	Antenna B3 MPE%	0.37	Antenna C3 MPE%	0.37

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	<b>1.89 %</b>
Cingular (AT&T)	0.29 %
Verizon Wireless	2.50 %
<b>Site Total MPE %:</b>	<b>4.68 %</b>

T-Mobile Sector A Total:	1.89 %
T-Mobile Sector B Total:	1.89 %
T-Mobile Sector C Total:	1.89 %
<b>Site Total:</b>	<b>4.68 %</b>

T-Mobile _Max Values per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile AWS - 2100 MHz UMTS	2	1,279.74	140.5	5.09	AWS - 2100 MHz	1000	0.51%
T-Mobile AWS - 2100 MHz LTE	2	2,559.48	140.5	10.17	AWS - 2100 MHz	1000	1.02%
T-Mobile 700 MHz LTE	1	865.21	140.5	1.72	700 MHz	467	0.37%
						<b>Total*:</b>	<b>1.89%</b>

\*NOTE: Totals may vary by 0.01% due to summing of remainders

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	1.89 %
Sector B:	1.89 %
Sector C:	1.89 %
T-Mobile Per Sector Maximum:	1.89 %
Site Total:	4.68 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **4.68%** of the allowable FCC established general population 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.



# Exhibit F

**LETTER OF AUTHORIZATION**

Date: June 27, 2017

EVERSOURCE ENERGY SITE LOCATION: 5-7 St. Andrews Street, Bloomfield, CT. 06002  
LICENCEE: T-Mobile

Eversource Energy, owner of the tower facility located at the address identified above, do hereby authorize T-Mobile, and/or its agent, to use this authorization letter for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for the Licensee's telecommunication's installation.

Sincerely,



Steven J. Florio  
Eversource Energy  
107 Selden Street, Berlin, CT. 06037